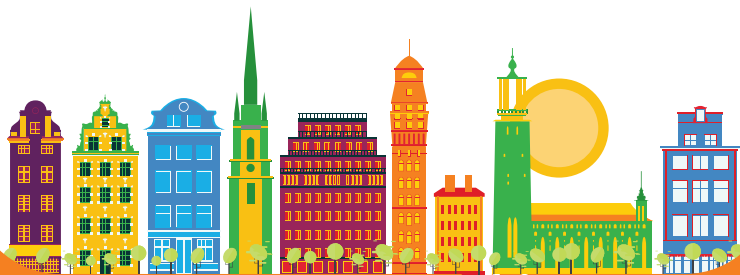


# 58th ANNUAL MEETING

European Association for the Study of Diabetes

# EASD 2022 STOCKHOLM & ONLINE



19 - 23 September 2022

#EASD2022

[easd.org](http://easd.org)



# 58TH EASD ANNUAL MEETING

<b>Content</b>	<b>Page</b>
<b>Welcome Address</b> . . . . .	<b><u>2</u></b>
<b>About EASD</b> . . . . .	<b><u>4</u></b>
EASD Academy . . . . .	<u>5</u>
<b>About EFSD</b> . . . . .	<b><u>6</u></b>
<b>General Information</b> . . . . .	<b><u>10</u></b>
Registration . . . . .	<u>10</u>
In person attendance onsite in Stockholm . . . . .	<u>11</u>
Floorplan . . . . .	<u>12</u>
Transportation . . . . .	<u>15</u>
Online attendance via virtual meeting platform . . . . .	<u>18</u>
Speakers and Chairpersons . . . . .	<u>19</u>
<b>Programme</b> . . . . .	<b><u>22</u></b>
Programme Committee . . . . .	<u>22</u>
Abstract Review . . . . .	<u>23</u>
Programme Overview . . . . .	<u>24</u>
<b>Tuesday, 20 September 2022</b> . . . . .	<b><u>32</u></b>
Claude Bernard Lecture . . . . .	<u>32</u>
Short Oral Discussions Event A . . . . .	<u>40</u>
Short Oral Discussions Event B . . . . .	<u>41</u>
Camillo Golgi Lecture . . . . .	<u>50</u>
Albert Renold Lecture . . . . .	<u>52</u>
Rising Star Symposium . . . . .	<u>54</u>
<b>Wednesday, 21 September 2022</b> . . . . .	<b><u>56</u></b>
Short Oral Discussions Event C . . . . .	<u>66</u>
Short Oral Discussions Event D . . . . .	<u>67</u>
Diabetes Prize for Excellence Lecture . . . . .	<u>76</u>
Morgagni Prize Lecture . . . . .	<u>78</u>
<b>Thursday, 22 September 2022</b> . . . . .	<b><u>84</u></b>
Short Oral Discussions Event E . . . . .	<u>96</u>
Short Oral Discussions Event F . . . . .	<u>97</u>
Minkowski Lecture . . . . .	<u>106</u>
Centennial Anniversary Prize Lecture . . . . .	<u>108</u>
<b>Friday, 23 September 2022</b> . . . . .	<b><u>114</u></b>
<b>Short Oral Discussions</b> . . . . .	<b><u>134</u></b>
<b>Presenter Index</b> . . . . .	<b><u>218</u></b>
<b>Sattelite Symposia on the occasion of the 58th EASD Annual Meeting</b> . . . . .	<b><u>231</u></b>
<b>Industry Sessions the occasion of the 58th EASD Annual Meeting</b> . . . . .	<b><u>249</u></b>
<b>Industry Exhibition the occasion of the 58th EASD Annual Meeting</b> . . . . .	<b><u>308</u></b>

# WELCOME ADDRESS

## Dear Members and Guests,

As the current President of the European Association for the Study of Diabetes, I have the pleasure of welcoming you to the 58th EASD Annual Meeting.



After two years of online meetings during the pandemic, we finally have the chance to get together again and I look forward to seeing as many of you in Stockholm, Sweden as possible.

It will be a fantastic experience to reconnect with your peers, mingle with other attendees, run from one hall to another and to sit for a discussion with your collaborators. Nonetheless, we know many of you may still have limitations to travel. Don't worry, we will not miss the chance to reach out to you, and therefore, the 58th EASD Annual Meeting will be a hybrid event, making sure all the novel information that will be presented during the Meeting can be readily available to all.

A significant effort has been made by the Scientific Programme Committee to develop a programme covering the most recent developments and breaking news in the various fields of research in diabetes and its related complications. Across up to nine parallel tracks, a wide range of topics will be discussed during exciting symposia, thought-provoking debates, prize lectures, numerous oral and short oral discussion sessions, and a dedicated e-Learning track. New formats will characterize the 58th EASD Annual Meeting. Please, check out the short oral discussion presentations online beforehand and join the live discussion during the sessions to actively participate in debating the many new research findings. But there is even more than that. We are embarking on more ecologic sustainability of the EASD Annual Meeting and with the 58th edition this year we will start our green strategy with less traveling, less paper, and less waste.

For all these reasons the 58th EASD Annual Meeting will represent a unique opportunity for the global diabetes community. On behalf of the EASD Board and the entire EASD team, I invite you to join us in person or online - in both cases, it will be a new experience.

We look forward to welcoming all of you! Let's get together and continue fighting diabetes!

**Stefano Del Prato**  
President EASD/EFSD

# WELCOME ADDRESS

## Dear Colleagues and Friends,

On behalf of the 2022 Scientific Programme Committee, I have the pleasure of welcoming you to the 58th EASD Annual Meeting in my home town Stockholm.



This year we will merge onsite and online participation into a new vibrant hybrid experience to offer a unique opportunity for interdisciplinary scientific exchange, dialogue and debate.

Regardless of whether you are a clinician, basic scientist, nurse, health-care professional, or young academic, the Scientific Programme of the EASD Annual Meeting 2022 will deliver an abundance of new knowledge covering the latest innovations and developments in the treatment of type 1 and type 2 diabetes and their associated complications.

This will be my last year serving as the EASD Honorary Secretary and it has been both an honour and a challenge to work with the scientific programme over the last few years. I want to give my wholehearted thanks to all the talented colleagues in the programme committees as well as the EASD staff in helping setting up strong and exciting scientific sessions year after year.

Let me therefore take this opportunity to introduce my distinguished colleague Prof Tina Vilsbøll as the incoming EASD Honorary Secretary. I am convinced you will all agree that Prof Vilsbøll is an excellent choice to develop an outstanding programme for the EASD Annual Meeting next year together with the 2023 Scientific Programme Committee.

Please join me in welcoming Prof Tina Vilsbøll and I look forward to seeing you – onsite or online – in September 2022.

**Mikael Rydén**

Honorary Secretary EASD

# ABOUT EASD

The **European Association for the Study of Diabetes e.V. (EASD)** is a non-profit, medical scientific association with the aim to encourage and support research in the field of diabetes, the rapid diffusion of acquired knowledge and to facilitate its application.

EASD is one of the largest networks for diabetologists worldwide.

Membership is open to health care professionals, scientists, nurses and students from all over the world who are interested in the field of diabetes.

The EASD Annual Meeting is one of the largest diabetes-related conferences in the world, the scientific programme includes more than 1,200 talks and presentations on the latest results in basic and clinical diabetes research.

EASD is also actively involved in postgraduate education with a portfolio ranging from e-Learning activities to basic hands-on training courses including workshops to focused meetings on specific topics of diabetes research and care to collaborations with national associations across the globe.

In 2000, EASD increased its commitment to stimulate diabetes research in Europe by creating the European Foundation for the Study of Diabetes (EFSD). Since its inception, the EFSD has committed over €100 million to diabetes research in Europe by various funding means.

EASD is the publisher of the journal *Diabetologia*, a major monthly international diabetes journal with a high and rising impact factor.

For more information, please visit: [www.easd.org](http://www.easd.org).

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## EASD and EFSD Board:

Stefano Del Prato, Italy (President)  
Chantal Mathieu, Belgium  
Allan Flyvbjerg, Denmark  
Fiona Gribble, UK  
Ruth Loos, Denmark  
Hindrik Mulder, Sweden  
Mikael Rydén, Sweden  
Patrick Schrauwen, Netherlands  
Michele Solimena, Germany  
Coen Stehouwer, Netherlands  
Petra Wilson, Belgium  
Wilfried Winzer, Germany

## EASD Headquarters:

European Association for the Study of Diabetes (EASD) e.V.

Rheindorfer Weg 3  
40591 Düsseldorf  
Germany

Phone: +49 211 758 469 0  
Email: [info@easd.org](mailto:info@easd.org)

## EASD Academy

The EASD Academy is an initiative that aims to support, train, mentor, and create opportunities for scientists, clinicians, and students who are at an early or intermediate stage of their career, with an interest in diabetes research and/or clinical practice.

Join our inaugural session at this year's EASD Annual Meeting, to launch the EASD Academy.

You will hear about the goals and initiatives of the Academy from the board members, contribute to an interactive Q&A session with two inspirational EASD prize-winning speakers, and have the opportunity to network with the EASD Academy team, other early-career researchers and clinicians, and EASD board members.

**Tuesday, 20 September 2022, 17:45 - 19:15** EASD Member Lounge

### Launch of the EASD Academy: time to kick start your career

- 17:45 - 18:00* Introduction from the EASD Academy Board outlining the goals of the initiative
- 18:00 - 18:10* Inspirational career-focused talk from an EASD prizewinner (clinician)
- 18:10 - 18:20* Interactive Q&A, chaired by members of the Academy board
- 18:20 - 18:30* Inspirational career-focused talk from an EASD prizewinner (scientist)
- 18:30 - 18:40* Interactive Q&A, chaired by members of the Academy board
- 18:40 - 19:15* Networking

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# ABOUT EFSD

The **European Foundation for the Study of Diabetes (EFSD)** was created by the European Association for the Study of Diabetes (EASD) in order to support more actively diabetes research in Europe and to serve the goals of EASD.

The EFSD began its work in 2000 and has become a significant European funding agency for diabetes research, and is continually striving to enhance diabetes awareness in Europe.

Since inception, EFSD has committed over €120 million to European diabetes research by way of a wide range of grant and fellowship funding initiatives.

For more information, please visit:  
[www.europeandiabetesfoundation.org](http://www.europeandiabetesfoundation.org).

## EFSD Scientific Board:

C. Stehouwer, Netherlands (Chair)  
H. Al-Hasani, Germany  
M. Blüher, Germany  
F. Bosch, Spain  
A. Boulton, UK  
M. Donath, Switzerland  
G.P. Fadini, Italy  
P. Fioretto, Italy  
N. Lalic, Serbia  
M. Nauck, Germany  
E. Renard, France  
M. Roden, Germany  
U. Smith, Sweden

**EFSD is greatly indebted to the following companies and organisations for their most generous support of European diabetes research**

## Boehringer Ingelheim:

### EFSD/Boehringer Ingelheim European Research Programme on “Multi-System Challenges in Diabetes”

This Programme is intended to stimulate and accelerate European research on the interrelation and crosstalk of different organs (e.g. heart, kidney, pancreas, gut, liver and brain) and related pathophysiology in diabetes and its complications and the impact of therapeutic interventions for this complex condition.

## Japan Diabetes Society:

### EFSD/JDS Reciprocal Travel Research Fellowships

The objective of these Fellowships is to encourage collaborative research between Europe and Japan in the field of diabetes.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



## Lilly:

### **EFSD/Lilly European Diabetes Research Programme**

This Programme aims to promote increased European diabetes research and to raise public awareness and political understanding of the magnitude and burden of the disease. Grants are offered for any area of basic or clinical diabetes research.

### **EFSD/Lilly Young Investigator Research Award Programme**

The objective of these Young Investigator Research Awards is to encourage innovative research in the field of diabetes and its complications, and to promote excellence in medical education.

### **EFSD/Lilly EXPLORING AND APPLYING NEW STRATEGIES IN DIABETES (EXPAND) Programme**

This Programme aims to assess with dedicated research projects, potential strategies that could be implemented in Europe and rolled out in low-and middle income countries to favour the improvement of quality of care for all people living with diabetes.

## Merck Sharp & Dohme:

### **EFSD European Research Programme on “New Targets for Diabetes or Obesity-related Metabolic Diseases” supported by MSD**

This Programme is intended to stimulate and accelerate European research focusing on the identification and molecular understanding of new targets for the treatment of type 2 diabetes or obesity-related metabolic diseases.

## Novo Nordisk A/S:

### **EFSD/Novo Nordisk Programme for Diabetes Research in Europe**

This Programme aims to promote high-quality diabetes research in Europe, and accepts applications from all fields of clinical and basic diabetes research.

### **EASD Rising Star Symposium & EFSD Research Fellowship Programme supported by Novo Nordisk**

This combined EASD/EFSD initiative aims to identify promising and innovative young researchers in basic and clinical diabetes research.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Novo Nordisk Foundation:

### EFSD/Novo Nordisk Foundation Future Leaders Award Programme

This Programme is intended to identify outstanding clinical and basic scientists in European diabetes research in the transition from post-doctoral/clinical fellow to a tenured academic appointment in diabetes research in Europe and support them through significant career development awards over 5 years and fostering their development into the leaders of tomorrow.

EASD  
EFSD

GENERAL  
INFO

### EFSD/Novo Nordisk Foundation Precision Diabetes Medicine Award Programme

This Programme is based on scientific quality, innovation potential and a clear translational focus; bringing basic knowledge to use at the patient level in terms of e.g. disease prognosis, treatment prediction or patient stratification.

PROGRAMME

TUESDAY

### Sanofi:

WEDNESDAY

### EFSD/Sanofi “Outlook to the next 100 years of insulin: Innovative insulin delivery and monitoring systems”

The Programme is intended to stimulate and accelerate European research aimed at understanding and improving insulin delivery and action.

THURSDAY

FRIDAY

### EFSD/Sanofi European Diabetes Research Programme in diabetes associated with cardiovascular disease

This Programme is intended to stimulate and accelerate European research aimed at improving understanding of cardiovascular disease associated with diabetes. Grants are offered for basic and clinical studies.

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

In addition, the **EFSD Albert Renold Travel Fellowships** enables young scientists to stay at other institutions in order to learn new techniques in basic or clinical diabetes research.

INDUSTRY

PROGRAMME

EFSD awards are strictly competitive and decisions are based upon a rigorous and fully independent peer-review process.

EXHIBITION

Further information on EFSD programmes can be found under:  
[www.europeandiabetesfoundation.org](http://www.europeandiabetesfoundation.org)

**EFSD** European Foundation  
for the Study of Diabetes

**EFSD**  
**FUNDING**  
**DIABETES RESEARCH**

**SINCE 2000**

**GRANTS & FELLOWSHIPS**  
**AVAILABLE THROUGHOUT THE YEAR**

**[www.EuropeanDiabetesFoundation.org](http://www.EuropeanDiabetesFoundation.org)**

# GENERAL INFORMATION

## Format

The 58th EASD Annual Meeting will take place as a hybrid event from 19 to 23 September 2022, offering in person and virtual attendance for registered delegates.

All sessions in the scientific programme will take place onsite at the meeting venue in Stockholm at the time indicated in the programme and will be live-streamed for delegates attending the meeting virtually. Recordings of all sessions will be available afterwards, access to session recordings will be limited to registered delegates until 21 October 2022.

## Meeting venue

The in person meeting will take place at:

### Stockholmsmässan

Mässvägen 1, Älvsjö  
12580 Stockholm, Sweden  
[www.stockholmsmassan.se](http://www.stockholmsmassan.se)

The virtual meeting platform for online attendance is available from EASD's website [www.easd.org](http://www.easd.org).

## Registration

Children under the age of 18 are not permitted to access the 58th EASD Annual Meeting.

### EASD offers two types of registration for the Annual Meeting 2022:

**In person attendance** to join onsite at the meeting venue in Stockholm, Sweden. In person registration includes:

- Name Badge
- Access to the Scientific Programme
- Access to the Exhibition
- Public transportation ticket valid for 5 days (starting from the day the ticket is activated)
- Access to the Virtual Meeting platform (incl. live and on demand sessions, Industry content)
- Certification based on the in person and / or virtual attendance

## Advisory Note

Please be aware of “fraudulent” third party companies offering EASD services e.g. registration or hotel accommodation.

EASD is the official registration provider and all EASD activities are handled via the official EASD website: [www.easd.org](http://www.easd.org).

Interplan is the official accommodation provider handling all hotel requests. Booking platform: [easd22.interplan.de/Booking.html](http://easd22.interplan.de/Booking.html)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Virtual attendance** to follow the Annual Meeting online. Virtual registration includes:

- Access to the Virtual Meeting platform (incl. live and on demand sessions, Industry content)
- Certification based on the delegates watch time monitored via their personal MyEASD account

All registrations prior to the EASD Annual Meeting dates have to be made by means of the secured online registration system. For more information, please visit: [www.easd.org/annual-meeting/easd-2022.html](http://www.easd.org/annual-meeting/easd-2022.html).

During the EASD Annual Meeting dates, in person registrations can be made by the online registration system or at the onsite registration counter at the venue in Stockholm, Sweden.

Virtual registrations can only be made by the online registration system.

## Certificates

The 58th EASD Annual Meeting is currently under review by the European Accreditation Council for Continuing Medical Education (EACCME®) to provide Continuing Medical Education credits.

Certificates will be available for download via your MyEASD account. It will be mandatory to complete the congress evaluation survey to receive certification.

The Certificate of Attendance will be available online from 26 September 2022.

The EACCME Certificate will be available online from 24 October 2022.

## Information for in person attendance onsite in Stockholm

### Face Masks:

EASD strongly recommends wearing a mask at all times when inside the congress venue.

### Registration counters are open:

Sunday	18 September 2022	12:00 - 18:00
Monday	19 September 2022	08:00 - 18:00
Tuesday	20 September 2022	07:00 - 19:00
Wednesday	21 September 2022	07:00 - 19:00
Thursday	22 September 2022	07:00 - 19:00
Friday	23 September 2022	07:00 - 14:00

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

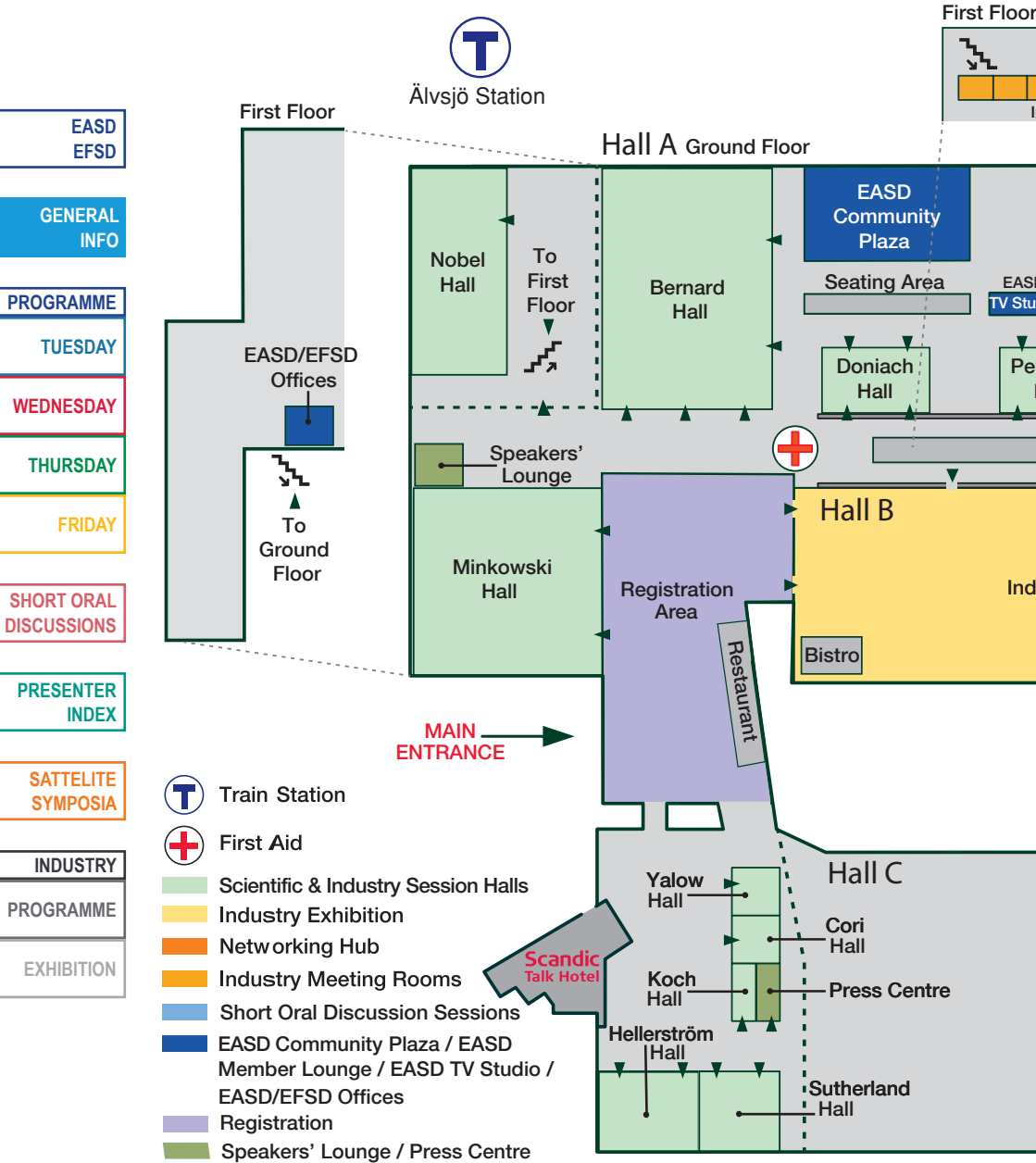
SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

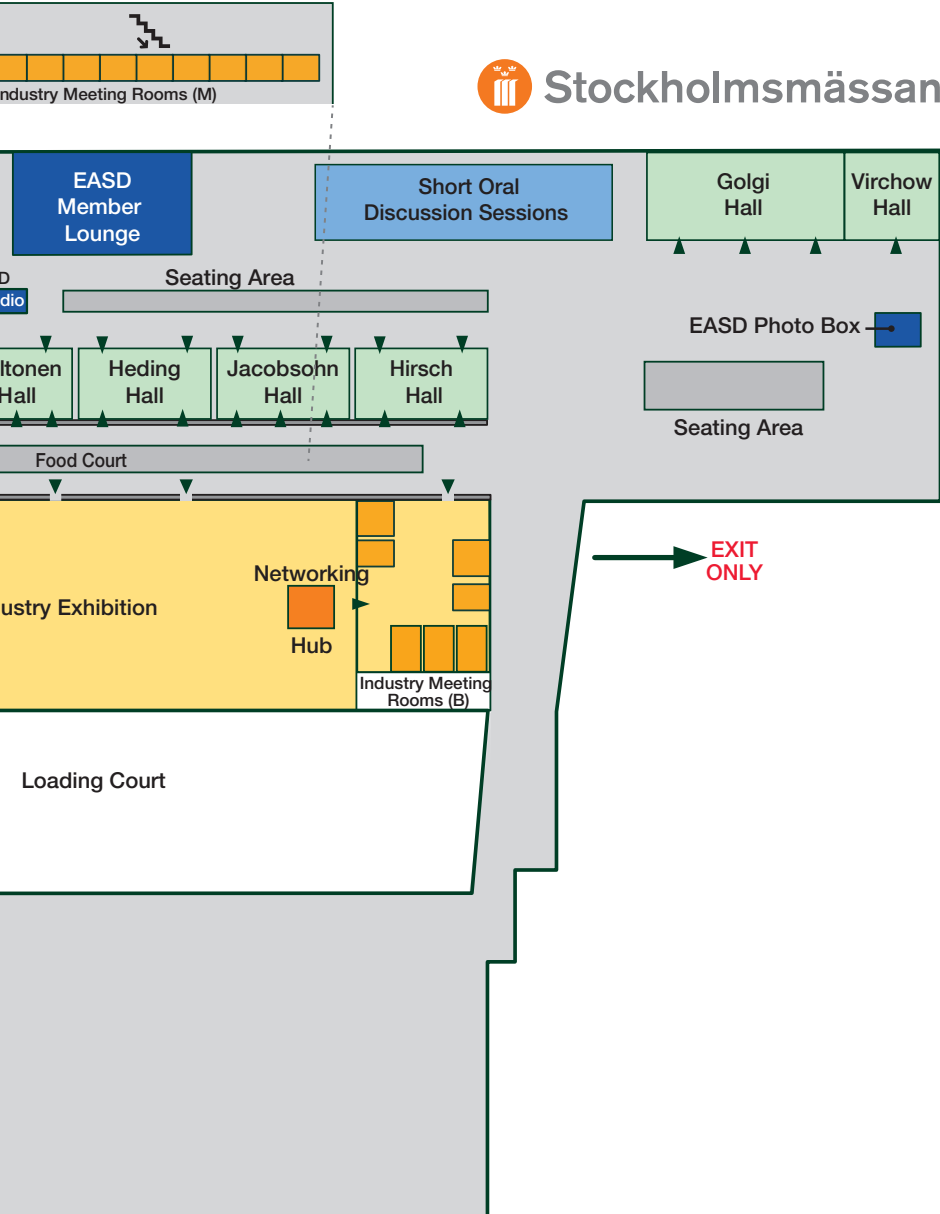
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# STOCKHOLM



## Stockholmsmässan



EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Badges:

The delegates' name badges serve as an admission pass to all scientific sessions and the exhibition. Delegates are asked to keep their name badges displayed at all times during the meeting. Badges can be replaced and will be charged for.

EASD EFSD	Delegate	EASD Faculty	Press	Staff
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GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

Supervisor	Organiser	Exhibitor	Technical Services
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## First Aid:

The First Aid Centre is located between the A-Gallery and the B-Gallery, behind the Kiosk "Pressbyrån". In case of emergency, please contact the nearest security or staff member.

## Restaurants:

Stockholmsmässan offers 10 different restaurants, bistros and cafés, located all over the venue.

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Cloakroom/Lost and Found Counter:

A cloakroom with facilities for luggage storage and lost and found is located in the Entrance Hall.

Suitcases (except cabin trolleys) are not allowed in the halls.

## Silence Room:

To get access to the silence room, please contact the Stockholmsmässan Information Desk in the Entrance Hall.

## EASD Community Plaza:

The EASD Community Plaza is located in Hall A and provides the **EASD Member Lounge**, the **EASD/EFSD Booth**, the Diabetologia Booth, Virtual Meeting Tower, EASD TV Studio, seating areas and charging stations for mobile devices.



## Opening hours EASD Booth and Member Lounge:

Monday	19 September 2022	08:00 - 18:00
Tuesday	20 September 2022	08:00 - 18:00
Wednesday	21 September 2022	08:00 - 18:30
Thursday	22 September 2022	08:00 - 18:30
Friday	23 September 2022	08:00 - 14:00

## Exhibition - Opening Hours:

Tuesday	20 September 2022	09:00 - 16:30
Wednesday	21 September 2022	09:30 - 16:30
Thursday	22 September 2022	09:30 - 16:30

## Hotels:

INTERPLAN Congress, Meeting & Event Management AG

Phone: +49 89 54 82 34 818

Email: [hotels.easd@interplan.de](mailto:hotels.easd@interplan.de)

Booking platform: [easd22.interplan.de/Booking.html](https://easd22.interplan.de/Booking.html)

## Security:

Any suspicious or unidentified items onsite at the meeting venue are to be reported immediately to the nearest staff member. Security staff are on duty to ensure that all persons entering the venue are wearing a badge. For your safety, it is strongly advised to leave all your valuables in a safe at your hotel.

## Insurance:

The registration fees do not include the insurance of participants against accidents, sickness, cancellation, theft, property loss or damage. Participants are advised to take out adequate insurance especially with regards to travel.

## Transportation

Free public transportation during the Meeting within Stockholm (except Airport Train).

Registered (in person) delegates receive a public transportation ticket, which is valid for 5 days (19 - 23 September 2022). The ticket will be handed out together with the name badge.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# Stockholm - Spårtrafikkarta Rail

EASD  
EFSD

GENERAL  
INFO

## Tunnelbana Metro

- 10 11 Blå linjen **Blue Line**
- 13 14 Röda linjen **Red Line**
- 17 18 19 Gröna linjen **Green Line**

## Pendeltåg Commuter rail

- 40 41 42 43 44 Pendeltåg **Commuter rail**
- 48

## Spårvagn / Lokalbana Tram / Light rail

- 7 Spårväg City **Tram**
- 12 Nockebybanan **Tram**
- 21 Lidingsöbanan **Tram**
- 30 31 Tvärbanan **Tram**
- 25 26 Saltsjöbanan **Light rail**
- 27 28 29 Roslagsbanan **Light rail**

## Förklaringar Key to symbols

- Flygplats **Airport**
- SL Kundtjänst **SL Customer Services**
- Bytespunkt **Interchange station**
- Bytespunkt med gångavstånd **Interchange station within walking distance**

## Trafikinformation Service information

For information om SL:s hela trafiksystem, besök sl.se eller ring 08-600 10 00.

For information about the SL rail network system, please visit sl.se/en or call 08-600 10 00.

## Biljetter Tickets

For information om biljetter och försäljningsställen, se biljettsida, sl.se, SL-appen eller kontakta personalen. Särskilda avgifter och biljetter gäller för resor till och från Arlanda C, Kivista och Uppsala C.

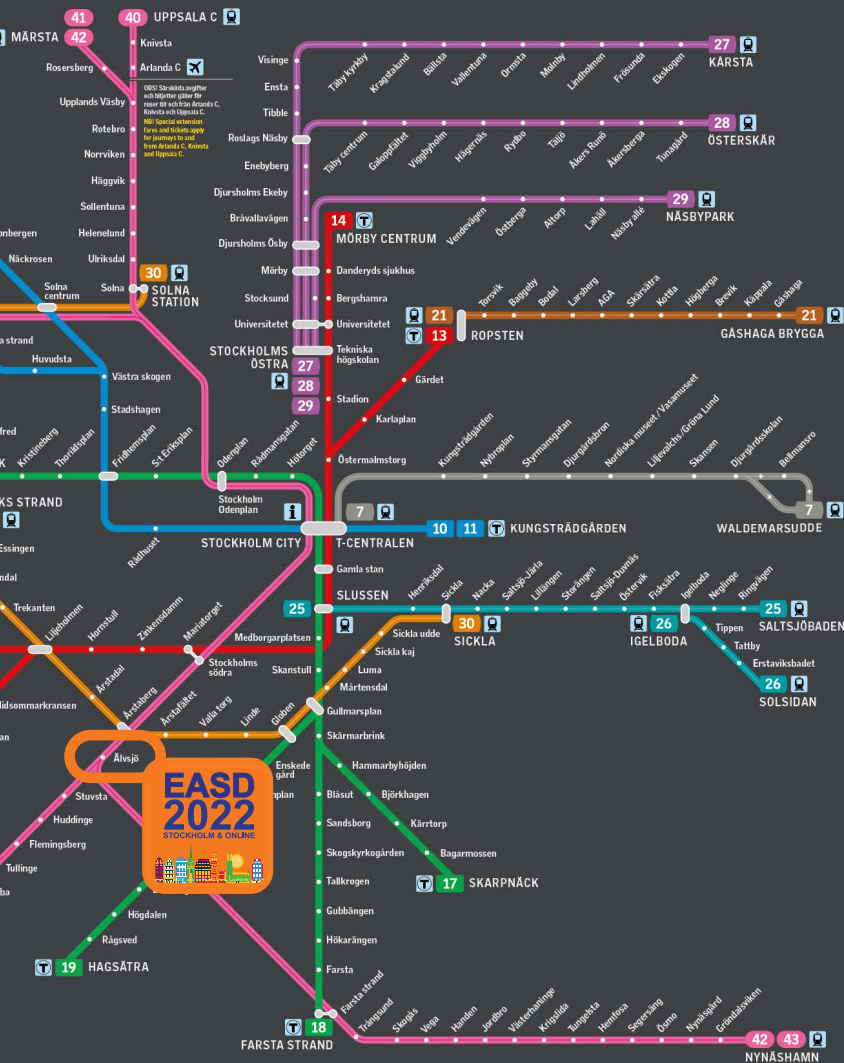
For information about tickets and sales outlets, please see SL website, visit sl.se/en or the SL app, or contact the staff. Special extension fares and tickets apply for journeys to and from Arlanda C, Kivista and Uppsala C.



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# MAP STOCKHOLM

## Network Map



EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## By taxi:

Taxi Stockholm	+46 88-15 00 00	Taxi Kurir	+46 88-30 00 00
Sverige Taxi	+46 20-20 20 20	TopCab	+46 8 33 33 33

## By commuter trains (public transport):

The commuter trains stop at Älvsjö Station, which is right next to Stockholmsmässan. The journey by commuter train from Stockholm City to Stockholmsmässan takes 10 minutes and the trains depart 8 - 14 times per hour. Fast and environmental friendly!

EASD  
EFSO

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Airport Express Train:

EASD Annual Meeting 2022 delegates will get a 15% discount on online tickets for the airport train between Arlanda airport and Stockholm city. Please use the discount code EASD22 when purchasing your tickets online at [www.arlandaexpress.com](http://www.arlandaexpress.com).

**Note:** The discount code will be applicable 90 days ahead of the EASD Annual Meeting 2022

## By car:

Follow the signs towards Älvsjö/Mässan by E4/E20.

## Information for online attendance via the virtual meeting platform

Registered delegates can access the virtual meeting platform via their personal MyEASD account by using the personalised link or login details (both provided on the registration confirmation). In person delegates can find their login details also on the name badge. There are two options to access the virtual meeting platform:

- You can use your personal link provided in the registration confirmation or
- Access by clicking the ACCESS HERE banner on the EASD website [www.easd.org](http://www.easd.org).

In both cases you will be asked to login with your MyEASD account. In case you do not have an account, please create your account first.

**Please note:** If you have been registered by a group or a third party you will need to connect your personal MyEASD account with your registration when accessing the virtual meeting platform for the first time. You will be asked to enter your Family Name and Registration Number (Reg. No.) as shown on your registration confirmation / name badge during the onboarding process.

## Technical requirements:

Delegates must ensure at their own expense that they meet the technical requirements necessary for following the EASD Annual Meeting virtually. In addition to the necessary hardware, the following requirements will be needed:

- A stable internet connection with a minimum of 5 MBITs (data speed) to follow the online programme,
- A browser in an up-to-date version e.g. Chrome®, Firefox® or Safari®.

EASD recommends the participation via PC/Mac Computers and a resolution of Full HD 1920x1080 pixels or higher. Cookie and Pop-Up blocking measures may lead to problems. On smart phone/tablet devices only basic viewing features are being supported. It is recommended to use the Safari® browser for Apple® devices.

EASD is not responsible if delegates are unable to successfully access the virtual meeting platform if they do not fulfil the technical requirements.

## Speakers and Chairpersons

All speakers and chairpersons are expected to attend the EASD Annual Meeting in Stockholm, Sweden, in person to participate live at the time indicated in the programme.

### Presentation Instructions:

Presentation Instructions are available for [Oral Presentations](#) and [Short Oral Presentations](#).

### Speakers' Lounge:

The Speakers' Lounge is located behind the Entrance Area. All speakers are asked to check their presentations at the Speakers' Lounge at least three hours before the scheduled presentation time. If the presentation is scheduled in the morning, speakers are kindly asked to check their presentation at the Speakers' Lounge the day before.

### Opening hours Speakers' Lounge:

Sunday	18 September 2022	12:00 - 18:00
Monday	19 September 2022	08:00 - 18:00
Tuesday	20 September 2022	07:00 - 19:00
Wednesday	21 September 2022	07:00 - 19:00
Thursday	22 September 2022	07:00 - 19:00
Friday	23 September 2022	07:00 - 14:00

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Short Oral Discussions Events:

Short Oral Discussions rank equally with Oral Presentations. A short PowerPoint presentation without audio must be uploaded to the presentation management platform latest by Monday, 19 September 2022, noon.

All Short Oral Discussions will take place during six events which will be held on Tuesday, Wednesday and Thursday

EASD EFSD	Short Oral Discussions Event A	Tuesday	11:45 - 12:45
	Short Oral Discussions Event B	Tuesday	13:00 - 14:00
	Short Oral Discussions Event C	Wednesday	12:00 - 13:00
GENERAL INFO	Short Oral Discussions Event D	Wednesday	13:15 - 14:15
	Short Oral Discussions Event E	Thursday	12:00 - 13:00
	Short Oral Discussions Event F	Thursday	13:15 - 14:15

### PROGRAMME

#### TUESDAY

#### WEDNESDAY

#### THURSDAY

#### FRIDAY

#### SHORT ORAL DISCUSSIONS

#### PRESENTER INDEX

#### SATELLITE SYMPOSIA

#### INDUSTRY

#### PROGRAMME

#### EXHIBITION

### Disclaimer

All efforts will be made to adhere to the programme as provided. However, EASD and its agents reserve the right to alter or cancel, without prior notice, any of the arrangements, timetables, plans or other items relating directly or indirectly to the Meeting, for any case beyond their reasonable control. EASD and the local conference organisers are not liable for any other loss or inconvenience caused as a result of such changes.

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 .ABSTRACTS

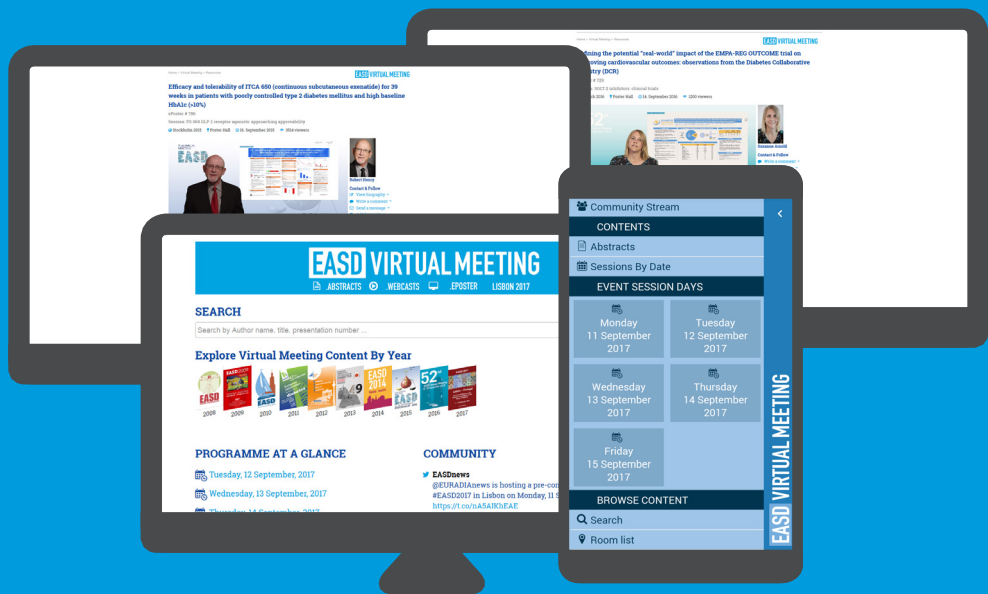
 .WEBCASTS

 .EPOSTER

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The EASD Virtual Meeting has changed the face of scientific meetings as we know it and is now one of the world's leading platforms for showcasing scientific excellence.

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Point the browser on your desktop or mobile device to [easdvirtualmeeting.org](http://easdvirtualmeeting.org) to access this invaluable resource. You can also scan the code below.

Easy to navigate, the EASD Virtual Meeting contains 1000's of presentations from recent years and is updated hourly during the Annual Meeting with the newest content.

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**EASD** VIRTUAL MEETING



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# PROGRAMME COMMITTEE

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Switzerland



Christian Herder,  
Germany

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EFSD



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France



Stephan Herzig,  
Germany

GENERAL  
INFO



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PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY



Leszek Czupryniak,  
Poland



Anne Peters,  
USA

SHORT ORAL  
DISCUSSIONS



Lena Eliasson,  
Sweden



John Petrie,  
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PRESENTER  
INDEX



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Netherlands

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME



Luigi Gnudi,  
Italy



Lena Thorn,  
Finland

EXHIBITION



Gabriella Gruden,  
Italy



Allan A Vaag,  
Denmark



# ABSTRACTS

1221 abstracts were received by the Association and 878 abstracts were accepted for inclusion. All abstracts were considered anonymously and were scored by the Abstract Review Committee members.

The Programme Committee members designed the programme and created Oral and Short Oral Discussion Sessions upon the anonymous abstracts.

## Publication of Abstracts

Accepted abstracts are published in the Abstract Volume by Diabetologia. Abstracts are also available online.

## Embargo Policies

Information contained in abstracts may not be released until 1 July 2022 when the abstracts are published online. Oral Presentations are under embargo until the commencement of the speaker's presentation. Short Oral Discussion Presentations are under embargo until 11:45 CEST on Tuesday, 20 September 2022.

## Abstract Review Committee

In addition to the members of the Programme Committee, the Abstract Review Committee comprises the following members:

Myriam Aouadi, Sweden	Anna Krook, Sweden	Niina Sandholm, Finland
Caroline Bonner, France	Ruth Loos, Denmark	Matthias Schulze, Germany
Simon Dankel, Norway	Gema Medina, Spain	Anna Solini, Italy
Charna Dibner, Switzerland	Timo Mueller, Germany	Tsvetalina Tankova, Bulgaria
Tine Willum Hansen, Denmark	Mototsugu Nagao, Japan	Anders Tengholm, Sweden
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Janaka Karalliedde, UK	Martin Prazny, Czech Republic	

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# TUESDAY, 20 SEPTEMBER 2022

	TIME	BERNARD HALL	MINKOWSKI HALL	GOLGI HALL	NOBEL HALL
<b>EASD</b> <b>EFSD</b>	08:30 - 09:00	Presidential Address			
<b>GENERAL</b> <b>INFO</b>	09:00 - 09:45	54th Claude Bernard Lecture			
<b>PROGRAMME</b>	10:00 - 11:30	<b>OP 1</b>	<b>OP 2</b>	<b>OP 3</b>	<b>OP 4</b>
<b>TUESDAY</b>	11:45 - 12:45	<b>Short Oral Discussion Sessions - Event A</b>			
<b>WEDNESDAY</b>					
<b>THURSDAY</b>	13:00 - 14:00	<b>Short Oral Discussion Sessions - Event B</b>			
<b>FRIDAY</b>					
<b>SHORT ORAL DISCUSSIONS</b>	14:15 - 15:45	<b>OP 7</b>	<b>OP 8</b>	<b>OP 9</b>	<b>OP 10</b>
<b>PRESENTER INDEX</b>	16:00 - 17:00	37th Camillo Golgi Lecture	16th Albert Renold Lecture	Rising Star Symposium (16:00 - 17:40)	
<b>SATELLITE SYMPOSIA</b>					
<b>INDUSTRY</b>					
<b>PROGRAMME</b>					
<b>EXHIBITION</b>					

# TUESDAY, 20 SEPTEMBER 2022

DONIACH HALL	PELTONEN HALL	HEDING HALL	JACOBSON HALL	VIRCHOW HALL
OP 5	OP 6			
Short Oral Discussion Sessions - Event A				EASD e-Learning: Lifestyle intervention
Short Oral Discussion Sessions - Event B				EASD e-Learning: Comorbidities in type 1 and type 2 diabetes
OP 11	OP 12			

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# WEDNESDAY, 21 SEPTEMBER 2022

	TIME	BERNARD HALL	MINKOWSKI HALL	GOLGI HALL	NOBEL HALL
<b>EASD EFSD</b>	08:30 - 10:00	EASD/ADA Symposium: Precision medicine in type 2 diabetes: How far can we get?	Diabetologia Symposium: Remission of type 2 diabetes – fact or fiction?	COVID-19 and diabetes	A New Hope (© Star Wars) or Strange New Worlds (© Star Trek): submerging diabetes into emerging technologies
<b>GENERAL INFO</b>					
<b>PROGRAMME</b>					
<b>TUESDAY</b>	10:15 - 11:45	<b>OP 13</b>	<b>OP 14</b>	<b>OP 15</b>	<b>OP 16</b>
<b>WEDNESDAY</b>		<b>Short Oral Discussion Sessions - Event C</b>			
<b>THURSDAY</b>	12:00 - 13:00				
<b>FRIDAY</b>		<b>Short Oral Discussion Sessions - Event D</b>			
<b>SHORT ORAL DISCUSSIONS</b>	13:15 - 14:15				
<b>PRESENTER INDEX</b>					
	14:30 - 16:00	<b>OP 19</b>	<b>OP 20</b>	<b>OP 21</b>	<b>OP 22</b>
<b>SATELLITE SYMPOSIA</b>	16:15 - 17:15	EASD-Novo Nordisk Foundation Future Diabetes Prize for Excellence			EASD Morgagni Prize
<b>INDUSTRY</b>					
<b>PROGRAMME</b>					
<b>EXHIBITION</b>	17:30 - 18:30	EFSD/Novo Nordisk Foundation Future Leaders Symposium	Modulators of glucose and lipotoxicity	Debate: Insulin-free type 2 diabetes treatment is...	The heat is on! Diabetes and climate change
	18:45 - 19:45				

# WEDNESDAY, 21 SEPTEMBER 2022

DONIACH HALL	PELTONEN HALL	HEDING HALL	JACOBSOHN HALL	VIRCHOW HALL
From models to clinic: much more than just a catwalk	Cell biology for diabetologists: A piece of cake?	Overcoming challenges in obesity medicine: The SURMOUNT Clinical Development Program	UKPDS 44-year follow-up	
OP 17	OP 18			
Short Oral Discussion Sessions - Event C				EASD e-Learning: Dual incretin receptor agonists: Is GIP receptor agonism the key for success?
Short Oral Discussion Sessions - Event D				EASD e-Learning: Diabetic kidney disease and KDIGO guidelines
OP 23	OP 24			
Epigenetic regulation and diabetes	EASD/JDRF Symposium: Prevention of type 1 diabetes, is it possible?			Intended self-injury and suicide amongst people with diabetes: tackling this public health challenge
	EASD General Assembly			

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# THURSDAY, 22 SEPTEMBER 2022

	TIME	BERNARD HALL	MINKOWSKI HALL	GOLGI HALL	NOBEL HALL
EASD EFSD	08:30 - 10:00	Juggling with lipids to find new targets for managing diabetes and comorbidities	New insights to prevention of microvascular complications	Delivering the best of diabetes care in under-resourced populations – how much of the wishful thinking?	Metabolic insights from single-cell studies: clinical implications
GENERAL INFO					
PROGRAMME					
TUESDAY	10:15 - 11:45	OP 25	OP 26	OP 27	OP 28
WEDNESDAY					
THURSDAY	12:00 - 13:00	Short Oral Discussion Sessions - Event E			
FRIDAY					
SHORT ORAL DISCUSSIONS	13:15 - 14:15	Short Oral Discussion Sessions - Event F			
PRESENTER INDEX	14:30 - 16:00	OP 31	OP 32	OP 33	OP 34
SATELLITE SYMPOSIA	16:15 - 17:00	57th Minkowski Lecture	EASD-Lilly Centennial Anniversary Prize Lecture		
INDUSTRY					
PROGRAMME	17:15 - 18:15	The 3 P's of large vessels in type 1 diabetes	Is it the genes or the epigenetics behind diabetic kidney disease?	Debate: "... and CGM for all"	Thermogenic activation of adipose tissue: the holy grail in the treatment of diabetes?
EXHIBITION					

# THURSDAY, 22 SEPTEMBER 2022

DONIACH HALL	PELTONEN HALL	HEDING HALL	JACOBSOHN HALL	VIRCHOW HALL
Flexing muscle metabolism to battle diabetes: What can we learn from omics?	Cells talk in fatty liver disease	Re-inventing the insulin experience: exploring the prospects of once-weekly insulins	Mineralocorticoid receptor overactivation: novel approach to treatment of multi-organ impact with finerenone	
OP 29	OP 30	EFSD Mentorship Programme		
Short Oral Discussion Sessions - Event E				EASD e-Learning: ADA/EASD management of type 1 diabetes consensus report
Short Oral Discussion Sessions - Event F				EASD e-Learning: Technology and type 1 diabetes
OP 35	OP 36			
A clinical perspective on the Krebs cycle and insulin sensitivity	New little players in beta cell function			DELIVER Trial

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# FRIDAY, 23 SEPTEMBER 2022

	TIME	BERNARD HALL	MINKOWSKI HALL	GOLGI HALL	NOBEL HALL
<b>EASD EFSD</b>	08:30 - 09:30	EASD/ESC Symposium: New perspectives on heart function and failure in diabetes	Diabetic nephropathy or diabetic kidney disease? In search of a phenotype	How much can people with type 1 diabetes benefit from adjunct therapies?	Diabetes in old age: myths and fact
<b>GENERAL INFO</b>					
<b>PROGRAMME</b>	09:45 - 10:45	<b>OP 37</b>	<b>OP 38</b>	<b>OP 39</b>	<b>OP 40</b>
<b>TUESDAY</b>					
<b>WEDNESDAY</b>	11:00 - 12:00	<b>OP 43</b>	<b>OP 44</b>	<b>OP 45</b>	<b>OP 46</b>
<b>THURSDAY</b>					
<b>FRIDAY</b>	12:15 - 13:45	Management of hyperglycaemia in type 2 diabetes: ADA/EASD Consensus Report 2022	Gut microbiome: a link between autonomic neuropathy and kidney disease in diabetes?	Targeting energy sensing to treat diabetes	The power of dietary policies: evidence from population-based studies
<b>SHORT ORAL DISCUSSIONS</b>					
<b>PRESENTER INDEX</b>					
<b>SATELLITE SYMPOSIA</b>					
<b>INDUSTRY</b>					
<b>PROGRAMME</b>					
<b>EXHIBITION</b>					



# FRIDAY, 23 SEPTEMBER 2022

DONIACH HALL	PELTONEN HALL	HEDING HALL	JACOBSOHN HALL	VIRCHOW HALL
Fasting and feeding: the most important F-words in metabolism	Three reasons for why non-coding RNAs are important in metabolic control	Hepatokines: Do they play a role in diabetes and NAFLD?	10th East-West Forum: Care through the eyes of the patient (08:30 - 10:00)	
OP 41	OP 42			
OP 47	OP 48			
Lipids all over the place: Are lipid droplets friends or foe?	The Greek alphabet revisited: focus on all pancreatic islet cells	Epidemiology of diabetes and COVID-19 hospitalisation in Europe: a European Collaboration (12:15 - 13:15)	The crucial role of primary care for integrated diabetes management (12:15 - 13:15)	

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

08:30 - 09:00

Bernard Hall

### Presidential Address

*Speaker:* Stefano Del Prato, Italy  
**President EASD/EFSD**

09:00 - 09:45

Bernard Hall

### 54th Claude Bernard Lecture

*Chair:* Stefano Del Prato, Italy

*Speaker:* Michael A Nauck, Germany  
**An updated incretin concept for tomorrow**

Professor **Michael A. Nauck**, MD, Dr. h.c. is Head of Clinical Research at the Diabetes, Endocrinology and Metabolism Section, Medical Department 1, St. Josef-Hospital and teaches at the Ruhr-University Bochum, Bochum, Germany.

He was trained in gastroenterology and endocrinology with Werner Creutzfeldt and since has had a particular research interest in the role of gastrointestinal peptide hormones (incretins: glucose-dependent insulinotropic polypeptide, GIP, and glucagon-like peptide-1, GLP-1) in the physiological regulation of metabolism and in the pathophysiology of type 2 diabetes. He has contributed pivotal studies proving a definite therapeutic potential of GLP-1 in patients with type 2 diabetes. Since, he has been involved in the development of incretin-based glucose-lowering medications such as GLP-1 receptor agonists and, more recently, co-agonists able to stimulate other receptors besides the GLP-1 receptor (e.g., tirzepatide), and inhibitors of dipeptidyl peptidase-4. Additional areas of interest include diagnostic challenges regarding insulinomas, cardiovascular complications of type 2 diabetes, and the modification this risk in type 2-diabetic patients by using beneficial glucose-lowering pharmacotherapy.



Michael Nauck's scientific contributions have been honoured with several awards, including the Ferdinand-Bertram Award (1993), the Werner-Creutzfeldt Award (2007) and the Paul Langerhans Medal (2012) of the German Diabetes Association. In 2017, he was appointed Doctor honoris causa by the University of Copenhagen, Denmark.

Michael Nauck is member of the German, European, and American Diabetes Associations, and of the International Diabetes Federation. He has served as reviewer for all major diabetes journals and has published more than 240 original articles and 150 reviews or book chapters. His publications have been quoted > 65000 times, his "H-index" is 107, and he has been identified as a "highly-cited researcher" (among the top 1 %) in recent years (Web of Knowledge).

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# EASD CLAUDE BERNARD MEDAL AND LECTURE

The Claude Bernard Medal and Lectureship is the EASD's highest award in recognition of contributions to the advancement of knowledge in the field of diabetes and related metabolic diseases.

The aim of the Lectureship is to honour an individual's innovative leadership and lifetime achievements in diabetes research.

The Claude Bernard Prize is generously supported by Sanofi.

EASD  
EFSD

GENERAL  
INFO

## EASD Claude Bernard Lecturers

2021	J.R. Zierath (SE)
2020	T. Kadowaki (JP)
2019	S.E. Kahn (US)
2018	J. Tuomilehto (KW)
2017	B. Thorens (CH)
2016	M.E. Cooper (AU)
2015	H.-U. Häring (DE)
2014	D. Accili (US)
2013	M. Laakso (FI)
2012	D. Drucker (CA)
2011	E. Ferrannini (IT)
2010	M. Kasuga (JP)
2009	O. Pedersen (DK)
2008	R.A. deFronzo (US)
2007	E. Van Obberghen (FR)
2006	L. Groop (SE)
2005	J.J. Holst (DK)
2004	C.R. Kahn (US)
2003	M. Brownlee (US)
2002	M.-R. Taskinen (FI)
2001	P.E. Cryer (US)
2000	W. Malaisse (BE)
1999	J.-P. Assal (CH)
1998	C. Wollheim (CH)
1997	C.E. Morgensen (DK)
1996	J.D. Ward (UK)
1995	M. Berger (DE)

1994	G. Reaven (US)
1993	D. Andreani (IT)
1992	P.H. Bennett(US)
1991	E. Shafrir (IL)
1990	K.G. Alberti (UK)
1989	G. Tchobroutsky (FR)
1988	T. Deckert (DK)
1987	H. Keen (UK)
1986	W.K. Waldhäusl (AT)
1985	E.F. Pfeiffer (DE)
1984	P.J. Lefébvre (BE)
1983	C. Hellerström (SE)
1982	J. Mirouze (FR)
1981	G.R. Meyer-Schwickerath (DE)
1980	R.H. Unger (US)
1979	D.A. Pyke (UK)
1978	W. Creutzfeldt (DE)
1977	D.L. Coleman (US)
1976	H.G. Hers (BE)
1975	R.G. Spiro (US)
1974	T.R. Fraser (UK)
1973	A.E. Renold (CH)
1972	K. Lundbaek (DK)
1971	M. Dérot (FR)
1970	E.W. Sutherland (US)
1969	C. de Duve (BE)

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 01 Diet: from plants to cans***Chair:* M.B. Schulze, Germany**1 Diet and all-cause mortality in individuals with type 2 diabetes: a systematic review and meta-analysis of prospective studies**

J. Barbaresko, A. Lang, E. Szczerba, C. Baechle, L. Schwingshackl, M. Neuenschwander, S. Schlesinger, Germany

EASD  
EFSD**2 Appropriate consumption of different animal-based foods to reduce type 2 diabetes risk: an umbrella review of meta-analyses of prospective studies**

A. Giosuè, I. Calabrese, G. Riccardi, O. Vaccaro, M. Vitale, Italy

GENERAL  
INFO**3 Ultra-processed food consumption and risk of type 2 diabetes: results from three prospective cohort studies in the US**

Z. Chen, N. Khandpur, C. Monteiro, S. Rossato, T. Fung, J.E. Manson, W. Willett, E.B. Rimm, F.B. Hu, Q. Sun, J.-P. Drouin-Chartier, USA, Brazil, Canada

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**4 The association between plant-based diet indices and obesity and metabolic diseases in Chinese adults: longitudinal analyses from the China Health and Nutrition survey**

B. Chen, J. Zeng, M. Qin, W. Xu, Z. Zhang, X. Li, S. Xu, China

**5 Longitudinal serum branched-chain amino acids, lifestyle intervention and the risk of type 2 diabetes in the Finnish Diabetes Prevention study**

J. Kivelä, J. Meinilä, M. Uusitupa, J. Tuomilehto, J. Lindström, Finland, Saudi Arabia

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEX**6 Fasting ketone bodies and incident type 2 diabetes in the general population**

T. Szili-Torok, M.H. De Borst, E. Garcia, R.T. Gansevoort, R.P. Dullaart, M.A. Connelly, S.J. Bakker, U.J. Tietge, Netherlands, USA, Sweden

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 02 SGLT2 inhibitors: promiscuous pleiotropy***Chair:* A. Solini, Italy**7 Effect of SGLT2 inhibitor dapagliflozin on skeletal muscle fatty acid metabolism in patients with type 2 diabetes**

A. Gemmink, Y.J. Op den Kamp, M. De Ligt, B. Dautzenberg, R. Esterline, J. Hoeks, V.B. Schrauwen-Hinderling, S. Kersten, B. Havekes, T.R. Koves, D.M. Muoio, M.K. Hesselink, J. Oscarsson, E. Phielix, P. Schrauwen, Netherlands, USA, Sweden

EASD  
EFSD**8 The effect of SGLT2 inhibitor dapagliflozin on substrate metabolism in humans with prediabetes**

A. Veelen, C. Andriessen, Y. Op den Kamp, E. Erazo Tapia, M. De Ligt, J. Mevenkamp, J. Jörgensen, E. Moonen-Kornips, G. Schaart, B. Havekes, J. Oscarsson, V. Schrauwen-Hinderling, E. Phielix, P. Schrauwen, Netherlands, Sweden

GENERAL  
INFO**9 Metabolome analysis of the effects by SGLT2 inhibitor ipragliflozin and metformin on human metabolites, and relationship with clinical data in a randomised controlled study**

M. Koshizaka, A. Tsukagoshi, R. Ishibashi, Y. Maezawa, K. Yokote, Japan

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**10 Effect of Dapagliflozin on renal and hepatic glucose kinetics in type 2 diabetes and NGT subjects**

D. Tripathy, C. Solis-Herrera, X. Chen, A. Hansis-Diarte, R. Chilton, R. DeFronzo, E. Cersosimo, USA

SHORT ORAL  
DISCUSSIONS**11 Different effects of SGLT-2 inhibitors on subcutaneous and epicardial adipose tissue metabolome in severe heart failure subjects**

B.J. Kasperova, M. Mraz, O. Kuda, T. Cajka, D. Hlavacek, J. Mahrik, S. Stemberkova-Hubackova, I. Pleyerova, K. Rosolova, P. Svoboda, P. Novodvorsky, P. Ivak, V. Melenovsky, I. Netuka, M. Haluzik, Czech Republic, UK

PRESENTER  
INDEXSATELLITE  
SYMPOSIA**12 Empagliflozin-induced metabolic changes and cardiac function in patients with type 2 diabetes: a randomised cross-over MRI study with insulin as comparator**

R. Thirumathyam, G. Hall, J.P. Gøtze, J.J. Holst, U. Dixen, E.A. Richter, N. Vejlstrup, S. Madsbad, P.L. Madsen, N.B. Jørgensen, Denmark

INDUSTRY

PROGRAMME

EXHIBITION

**OP 03 Risk for CVD and CKD**

*Chair:* J.W. Eriksson, Sweden

**13 CSII is associated with lower NAFLD indices in patients with type 1 diabetes**

L. Bozzetto, G. Della Pepa, E. Raso, R. Boccia, S. Gianfrancesco, A.A. Rivellese, G. Annuzzi, Italy

EASD  
EFSD

GENERAL  
INFO

**14 Increased prevalence of NAFLD in adults with glomerular hyperfiltration: a 8 year cohort study based on 147,162 Koreans**

D.-J. Koo, S. Park, Republic of Korea

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**15 Increased risk for microvascular outcome in NAFLD: a nationwide, population-based cohort study**

T. Ebert, L. Widman, P. Stenvinkel, H. Hagström, Germany, Sweden

**16 Fatty liver index is an independent risk factor for all-cause mortality and major cardiovascular events in type 1 diabetes: a 10-year observational study**

G. Penno, M. Garofolo, D. Lucchesi, E. Gualdani, P. Falchetta, M. Giambalvo, P. Francesconi, S. Del Prato, Italy

**17 Sub-optimal glycaemic control and insulin resistance in young adults with type 1 diabetes increases platelet expression of P-selectin and phosphatidylserine**

R.C. Sagar, S.M. Pearson, N. Kietsiroje, M. Hindle, K. Naseem, R. Ajjan, UK

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**18 Non-invasive fibrosis scores as prognostic biomarkers of liver and cardiovascular events and all-cause mortality in adults with type 2 diabetes in the UK: a longitudinal study**

M. Jara, Q.M. Anstee, T.L. Berentzen, L.M. Nitze, M.S. Kjær, K.K. Mangla, J.M. Tarp, K. Khunti, Denmark, UK

INDUSTRY

PROGRAMME

EXHIBITION

**OP 04 Walking with diabetes**

*Chair:* P. Vas, United Kingdom

**19 Prevalence, incidence and risk factors for Charcot foot in patients with diabetes: a nationwide Swedish study**

G. Tsatsaris, N. Rajamand Ekberg, T. Fall, S. Catrina, Sweden

**20 Genome wide association meta study of diabetic foot ulcers**

S. Altintas, G. Bouland, A. Veluchamy, M. Thangam, E. Lindholm, W. Meng, J.A. Andersen, C.S. Hansen, L.T. Dalgaard, C. Palmer, E. Ahlqvist, L.M. Hart, A. Rasmussen, P. Rossing, T.S. Ahluwalia, Denmark, Netherlands, UK, Sweden

**21 Bone morphogenetic protein-7 promotes diabetic wound healing by decreasing inflammation and matrix metalloproteinase-9 expression**

E.C. Leal, J. Da Silva, A. Figueiredo, Y.-H. Tseng, E. Carvalho, Portugal, USA

**22 Novel topical esmolol hydrochloride for diabetic foot ulcer: phase 3, randomised, double-blind, placebo-controlled, multi-centre study**

A. Rastogi, S.A. Kulkarni, S.K. Deshpande, S. Agarwal, V. Vishwanathan, A.G. Unnikrishnan, Galnobax Study Group, India

**23 Flexor tendon tenotomy treatment of the diabetic foot: a multicentre randomised controlled trial**

J. Askø Andersen, A. Rasmussen, S. Engberg, J. Bencke, M. Frimodt-Møller, K. Kirketerp-Møller, P. Rossing, Denmark

**24 Saving the foot: simple orthopaedic intervention to adjust the mechanics of the ulcerated neuropathic foot improves outcomes by reducing sepsis, amputation and mortality**

J. Blong, A. Sharpe, J. Cairney-Hill, A. Gorman, M. Allen, S. Haycocks, M. Stedman, A. Robinson, E. Gee, A. Heald, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 05 How to become a fat cell**

*Chair:* G. Medina-Gomez, Spain

**25 Fas (CD95) activation inhibits browning of white adipose tissue in obesity**

S. Wueest, P.P. Van Krieken, N.K. Konrad, C. Koch, M.S. Wiedemann, M. Borsigova, S. Boettcher, M. Blüher, D. Konrad, Switzerland, Germany

EASD  
EFSD

**26 Aripiprazole, but not olanzapine, directly inhibits human adipocyte differentiation and glucose metabolism**

M. Vranic, V. Ferreira, S. Hetty, A. Sarsenbayeva, F. Ahmed, G. Fanni, Á.M. Valverde, J. Eriksson, M.J. Pereira, Sweden, Spain

GENERAL  
INFO

**27 Senescent adipose stromal cells-derived CCL5 induces endothelial dysfunction, a key step in the onset of atherosclerosis**

L. Le Pelletier, K. Ngoni Ayissi, J. Gorwood, F. Boccara, M. Auclair, M. Atlan, B. Fève, J. Capeau, C. Lagathu, V. Béréziat, France

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**28 Requirement of plakoglobin during the early stages of adipogenesis**

F. Abou Azar, S. Allali, M. Abayomi, S. Yuen, S. Del Veliz, Y. Mugabo, F. Paré, G. Lavoie, P.P. Roux, G.E. Lim, Canada

**29 Ampk  $\gamma$ 2 is an essential player in adipogenesis and adipocyte function**

Y. Cheng, X. Hui, Hong Kong

SHORT ORAL  
DISCUSSIONS

**30 Estrogen receptor beta knockdown reduces differentiation of preadipocytes from postmenopausal women**

F. Ahmed, S. Hetty, M. Vranic, G. Fanni, M.J. Pereira, J.W. Eriksson, Sweden

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**OP 06 Intracellular regulation of insulin release**

*Chair:* K. Bouzakri, France

**31 Glucose metabolites upstream of glyceraldehyde 3-phosphate dehydrogenase trigger activation of the mechanistic target of rapamycin complex 1 pathway in diabetic islets**

E. Haythorne, M. Lloyd, J. Walsby-Tickle, J. Sandbrink, G. Cyranka, J. McCullagh, F.M. Ashcroft, UK

**32 Deletion of Carboxypeptidase E in beta cells disrupts proinsulin processing and accelerates streptozotocin-induced hyperglycaemia in mice**

Y.-C. Chen, A.J. Taylor, K. Fok, M. Komba, X.-Q. Dai, J.M. Fulcher, A. Swensen, A.E. Patterson, R.I. Klein Geltink, W.-J. Qian, P.E. MacDonald, C.B. Verchere, Canada, USA

**33 Identification of TBL1 and TBLR1 as novel regulators of insulin transcription in beta cells**

A.A. Walth, R. Terron Exposito, A.-C. König, S.M. Hauck, A. Feuchtinger, P.E. MacDonald, M. Rohm, Germany, Canada

**34 Single-cell-resolution imaging of alpha/beta cell metabolic response to glucose stimulation in living human-derived Langerhans islets**

F. Cardarelli, F. Azzarello, L. Pesce, V. De Lorenzi, G. Ferri, M. Tesi, S. Del Guerra, P. Marchetti, Italy

**35 Mitochondrial AASS-mediated l-lysine degradation is required to maintain beta cell function**

L. Cataldo, Q. Gao, K. Trost, M. Fex, H. Mulder, T. Moritz, Denmark, Sweden

**36 Quantification of the dynamics of Ins2 gene activity**

J.C. Chu, H. Modi, S. Skovsø, C. Ellis, N.A. Krentz, Y.B. Zhao, H. Cen, N. Noursadeghi, E. Panzhinskiy, Y. Xia, S. Xuan, M.O. Huising, T.J. Kieffer, F.C. Lynn, J.D. Johnson, Canada, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# SHORT ORAL DISCUSSIONS EVENT A

	<b>11:45 - 12:45</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
		SO 01 Epigenetics rules. . . . .	<u>134</u>
		SO 07 SARS-CoV2 and other viruses . . . . .	<u>140</u>
EASD EFSD		SO 13 It's getting complicated . . . . .	<u>146</u>
GENERAL INFO		SO 19 How complicated is type 1 diabetes? . . . . .	<u>152</u>
PROGRAMME		SO 25 Insulin sensitivity: lessons from cellular and animal models . . . . .	<u>157</u>
TUESDAY		SO 31 Gut feelings are good . . . . .	<u>163</u>
WEDNESDAY		SO 37 Dietary and nutritional interventions. . . . .	<u>169</u>
THURSDAY		SO 43 Glucose lowering agents . . . . .	<u>176</u>
FRIDAY		SO 49 Is newer (insulin) always better? . . . . .	<u>183</u>
SHORT ORAL DISCUSSIONS		SO 55 From low to high and back: the many faces of insulin therapy . . . . .	<u>190</u>
PRESENTER INDEX		SO 61 Saving the feet . . . . .	<u>196</u>
SATELLITE SYMPOSIA		SO 67 Flames and scars in NAFLD: pathogenesis and therapy . . . . .	<u>202</u>
INDUSTRY		SO 73 Diabetes in the vessels . . . . .	<u>209</u>
PROGRAMME		SO 79 Focus on the heart and beyond. . . . .	<u>215</u>
EXHIBITION			

# SHORT ORAL DISCUSSIONS EVENT B

<b>13:00 - 14:00</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
SO 02	Pregnancy and diabetes . . . . .	<u>135</u>
SO 08	Benefits of a healthy lifestyle . . . . .	<u>141</u>
SO 14	COVID-19 around the globe . . . . .	<u>147</u>
SO 20	The other diabetes and islet function . . . . .	<u>153</u>
SO 26	Novel markers and omics signatures . . . . .	<u>158</u>
SO 32	Latest drug avenues to treatment . . . . .	<u>164</u>
SO 38	SGLT2 inhibitors and renal outcomes . . . . .	<u>170</u>
SO 44	Lessons from trials . . . . .	<u>177</u>
SO 50	Is longer better? Looking for different basal insulin approaches . . . . .	<u>184</u>
SO 56	Diversity of life with diabetes . . . . .	<u>191</u>
SO 62	Brain, nerve, and heart interaction . . . . .	<u>197</u>
SO 68	From brain circulation to cognitive dysfunction . . . . .	<u>203</u>
SO 74	Weighing risks of cardiovascular complications . . . . .	<u>210</u>

EASD  
EFSD

GENERAL  
INFO

PROGRAMME  
TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# EASD E-LEARNING SESSIONS

In these sessions you will be able to interact live with the EASD e-Learning authors and ask all you ever wanted to know but never dared to ask.

We invite you to join the discussion.

**12:00 - 12:45**

**Virchow Hall**

EASD  
EFSD

## EASD e-Learning: Lifestyle intervention

GENERAL  
INFO

*Chair:* Caterina Conte, Italy

*Speaker:* Roy Taylor, UK, Richard Bracken, UK and Dominik Pesta, Germany:

**Lifestyle intervention**

PROGRAMME

TUESDAY

WEDNESDAY

**13:00 - 13:45**

**Virchow Hall**

THURSDAY

## EASD e-Learning: Comorbidities in type 1 and type 2 diabetes

FRIDAY

*Chair:* Miriam Cnop, Belgium

*Speaker:* Bruce Wolffenbuttel, Netherlands and Cees Tack, Netherlands:

**Comorbidities in type 1 and type 2 diabetes**

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

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A vertical decorative graphic on the right side of the page, divided into four horizontal sections. The top section is blue with white and red DNA double helix structures. The second section is red with white and multi-colored DNA double helix structures. The third section is teal with white and blue atomic models. The bottom section is light blue with white and dark blue circular patterns resembling cells or molecules.

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**OP 07 Finding a phenotype for diabetic kidney disease***Chair:* N. Sandholm, Finland**37 Genome-wide analysis of treatment-resistant hypertension in individuals with and without diabetes**

A.A. Antikainen, H. Sáñez Tähtisalo, S. Mutter, R. Lithovius, P.-H. Groop, K. Kontula, T. Hiltunen, N. Sandholm, Finland

EASD  
EFSD**38 DNA methylation is a risk factor for kidney failure in individuals with type 1 diabetes**

A. Syreeni, E.H. Dahlström, L.J. Smyth, Y. Gupta, C. Forsblom, J. Kilner, G.J. McKay, A. Maxwell, A. McKnight, P.-H. Groop, N. Sandholm, Finland, UK

GENERAL  
INFO**39 The genetic background predicts the type of renal lesions and the progression of fibrosis in patients with type 2 diabetes**

P. Pontrelli, C. Cinefra, F. Conserva, M. Fiume, A. Gallone, F. Pesce, F. Giorgino, L. Gesualdo, Italy

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**40 Loss of the transcription factor Tcf21 in adult podocytes leads to susceptibility in diabetic kidney disease**

N. Teramoto, Y. Maezawa, T. Minamizuka, M. Koshizaka, Y. Endo, Y. Akimoto, K. Yokote, Japan

**41 Empagliflozin attenuates obesity-related kidney dysfunction and NLRP3 inflammasome activity through the HO-1/adiponectin axis**

T. Ye, J. Zhang, J. Shi, C. Kan, F. Han, N. Hou, X. Sun, China

SHORT ORAL  
DISCUSSIONS**42 Identification of markers for predicting the onset of chronic kidney disease in older people with type 2 diabetes by metabolomic profiling: Edinburgh Type 2 Diabetes Study**

J. Krasauskaite, B.R. Conway, C.J. Weir, Z. Huang, J.F. Price, UK

PRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## OP 08 Cardiovascular disease mechanisms: something new on the table?

*Chair:* A.A. Vaag, Sweden

### 43 C-reactive protein, C-peptide, and risk of cardiovascular events and mortality after type 2 diabetes diagnosis: a Danish cohort study

A.D. Kjaergaard, A. Gedebjerg, M. Bjerre, J. Nielsen, J. Rungby, I. Brandslund, M. Maeng, H. Beck-Nielsen, A.A. Vaag, H.T. Sørensen, T.K. Hansen, R.W. Thomsen, Denmark

### 44 Mechanistic insights into the effects of empagliflozin in patients with type 2 diabetes and heart failure

A. Elrakaybi, K. Laubner, Q. Zhou, G. Päch, H. Schmitt, M.J. Hug, J. Seufert, Germany, Egypt, Switzerland

### 45 Effect of semaglutide on MACE by baseline kidney function in participants with type 2 diabetes and high risk of cardiovascular disease: SUSTAIN 6 and PIONEER 6 post hoc analysis

P. Rossing, S. Bain, H. Bosch-Traberg, O. Frenkel, H.L. Heerspink, S. Rasmussen, L. Mellbin, Denmark, UK, Netherlands, Sweden

### 46 Overexpression of miR-210 attenuates endothelial dysfunction in a mouse model of obesity and type 2 diabetes

A. Collado, T. Jiao, G. Zaccagnini, J. Yang, M. Carlström, F. Martelli, J. Pernow, Z. Zhou, Sweden, Italy

### 47 Inhibition of microRNA-181c rescues diabetes-impaired angiogenesis through activation of key angiogenesis mediators

E.L. Solly, J. Mulangala, B.A. Di Bartolo, S.J. Nicholls, P.J. Psaltis, C.A. Bursill, J.T. Tan, Australia

### 48 Association between microangiopathic complications and cardiac structure and function in asymptomatic patients with type 2 diabetes

M. Nguyen, S. Pinto, P. Poignard, P. Valensi, France

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## OP 09 Fighting diabetes with tubes, scanners, and catheters

Chair: L. Czupryniak, Poland

### 49 Advances in diabetes management: has pregnancy glycaemic control in women with type 1 diabetes changed in the last decades?

F. Citro, F. Nicoli, M. Aragona, L. Battini, C. Bianchi, S. Del Prato, A. Bertolotto, Italy

EASD  
EFSD

GENERAL  
INFO

### 50 Fully automated closed-loop insulin delivery vs standard insulin therapy in adults with type 2 diabetes: an open-label, single-centre randomised crossover trial

C.K. Boughton, A.B. Daly, M. Nwokolo, S. Hartnell, M.E. Wilinska, A. Cezar, M.L. Evans, R. Hovorka, UK

PROGRAMME  
TUESDAY

WEDNESDAY

### 51 Important decrease of hospitalisations for acute diabetes events before and after FreeStyle Libre® system initiation in type 2 diabetes with basal insulin therapy in France

J.-P. Riveline, F. Levrat-Guillen, B. Detournay, E. Vicaut, G. De Pouvourville, C. Emery, B. Guerci, France, UK

THURSDAY

FRIDAY

### 52 Accuracy of a real-time continuous glucose monitoring system during cardiac surgery with hypothermic extracorporeal circulation

D. Herzig, M. Vettoretti, D.P. Guensch, A. Melmer, A.C. Goerg, A. Kadner, A. Facchinetti, A. Vogt, L. Bally, Switzerland, Italy

SHORT ORAL  
DISCUSSIONS

### 53 Evidence of significant reduction in pain and sensory symptoms of diabetic neuropathy with 10kHz spinal cord stimulation: 24-month RCT outcomes

E. Petersen, T.G. Stauss, J.A. Scowcroft, J.L. White, S.M. Sills, K. Amirdelfan, M.N. Guirguis, J. Xu, C. Yu, A. Nairizi, D. Patterson, V. Galan, R.S. Taylor, D. Caraway, N.A. Mekhail, USA, UK

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

### 54 Duodenal jejunal bypass liner (DJBL) treatment for type 2 diabetes and obesity: glycaemic and CVD risk factor improvements vs risks in patients treated worldwide

R.E. Ryder, P. Sen Gupta, T. Battelino, P. Kotnik, J. Teare, A. Ruban, H. Frydenberg, L. Munro, S. Fishman, R. Cohen, C. De Jonge, J.-W. Greve, H. Sourij, K. Laubner, J. Seufert, UK, Slovenia, Australia, Israel, Brazil, Netherlands, Austria, Germany

INDUSTRY

PROGRAMME

EXHIBITION



**OP 10 Beta cells: protecting what is precious***Chair:* C. Bonner, France**55 Early effects of treatment with intralymphatic administration of rhGAD65 in LADA appear similar to those observed in type 1 diabetes**

I. Hals, A. Björklund, C.N. Balasuriya, R. Casas, J. Ludvigsson, V. Grill, Norway, Sweden

**56 Loss of beta cell Scn9a Na<sup>+</sup> channel activity is protective in the context of type 1 diabetes while suppressing glucose stimulated insulin secretion**

P. Overby, S. Provenzano, G. Sun, N. Nahirney, J. Kolic, S. Skovsø, J.D. Johnson, Canada

**57 Tirzepatide improves multiple aspects of beta cell function**

K. Mather, A. Mari, J. Li, S. Urva, T. Heise, J. DeVries, E. Pratt, R. Heine, M. Thomas, Z. Milicevic, USA, Italy, Germany

**58 Shotgun proteomics unveils mechanisms behind metformin-induced protection against pro-inflammatory cytokine-induced human islet cell damage**

M. Tesi, L. Giusti, F. Ciregia, L. Marselli, L. Zallocco, M. Suleiman, C. De Luca, S. Del Guerra, D.L. Eizirik, M. Cnop, M.R. Mazzoni, P. Marchetti, A. Lucacchini, M. Ronci, Italy, Belgium

**59 Irisin administration restores beta cell functional mass in a mouse model of type 2 diabetes**

N. Marrano, G. Biondi, A. Borrelli, M. Rella, L. Roberto, A. Cignarelli, S. Perrini, L. Laviola, F. Giorgino, A. Natalicchio, Italy

**60 Non-invasive evaluation of the preservation effect of imeglimin on pancreatic beta cell mass using <sup>111</sup>In-labeled exendin-4 SPECT/CT imaging**

M. Fauzi, T. Murakami, H. Fujimoto, A. Botagarova, K. Sakaki, S. Kiyobayashi, N. Inagaki, Japan

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## OP 11 Adipose tissue profiling and cardio-metabolic risk

Chair: M. Blüher, Germany

### 61 The effect of ovariectomy and estradiol substitution on metabolic parameters and transcriptomic profile of adipose tissue in a prediabetic model

I. Markova, M. Huttl, D. Miklankova, L. Sedova, O. Seda, H. Malinska, Czech Republic

EASD  
EFSD

GENERAL  
INFO

### 62 Mir-15b mediates the obesity-induced adipocyte insulin resistance by targeting insulin receptor

L. Xingjing, China

PROGRAMME

TUESDAY

### 63 Impact of rare heterozygous mutations of PCSK1 on obesity: implication for treatment with MC4R agonists

L. Folon, M. Baron, M. Derhourhi, B. Balkau, G. Charpentier, S. Franc, R. Roussel, M. Canouil, P. Froguel, A. Bonnefond, France, UK

WEDNESDAY

THURSDAY

### 64 Obesity specific N6-methyladenosine (m6A) RNA modification in human adipose tissue

T. Rønningen, Y. Zeng, M. Visnovska, M.B. Dahl, J. Wang, L. La Cour Poulsen, J.A. Kristinsson, T. Mala, J.K. Hertel, J. Hjelmæsæth, T.G. Valderhaug, H.H. He, Y. Böttcher, Norway, Canada

FRIDAY

SHORT ORAL  
DISCUSSIONS

### 65 Waist-to-hip ratio is a stronger, more consistent predictor of all-cause mortality than BMI

I. Khan, M. Chong, A. Le, P. Mohammadi-Shemirani, R. Morton, C. Brinza, M. Kiflen, S. Narula, L. Akhabir, S. Mao, K. Morrison, M. Pigeyre, G. Paré, Ireland, Canada

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

### 66 Single-cell RNA sequencing of human visceral adipose tissue identifies new macrophage clusters in health and obese type 2 diabetes

Y. Yuan, H. Wang, H. Sun, Y. Bi, China

INDUSTRY

PROGRAMME

EXHIBITION

**OP 12 GWAS and more***Chair:* S. Carlsson, Sweden**67 Genetics of serum C-peptide in type 1 diabetes**

A.D. Paterson, D. Roshandel, A. Spiliopoulou, S. McGurnaghan, S.B. Bull, P.M. McKeigue, H.M. Colhoun, Canada, UK

**68 Genome-wide association study on stroke in type 1 diabetes**

E.H. Dahlstrom, A. Antikainen, L. Thorn, A. Syreeni, S. Hägg-Holmberg, J. Putaala, V. Harjutsalo, P.-H. Groop, N. Sandholm, Finland

**69 Identification of novel type 1 and type 2 diabetes genes by colocalisation of human islet eQTL and GWAS variants**

A. Piron, M.L. Colli, M. Defrance, D.L. Eizirik, J.M. Mercader, M. Cnop, Belgium, USA

**70 The impact of rare pathogenic variants of GLIS3 on type 2 diabetes**

S. Meulebrouck, M. Canouil, M. Derhourhi, B. Balkau, G. Charpentier, S. Franc, M. Michel, R. Roussel, M. Vaxillaire, P. Froguel, A. Bonnefond, France, UK

**71 Sequencing of 448 Greenlandic individuals uncovers a novel splice-affecting HNF1A variant with large population impact on diabetes**

M.E. Jørgensen, A.C. Thuesen, F.F. Stæger, A. Kaci, M.H. Solheim, I. Aukrust, E. Jørsboe, C.G. Santander, A. Gilly, M.L. Pedersen, E. Zeggini, L. Bjørkhaug, A. Albrechtsen, I. Moltke, T. Hansen, Greenland, Denmark, Norway, Germany

**72 A common variant in the ketohexokinase gene is associated with fructosuria and cardiometabolic outcomes**

A.M. Buziau, C.G. Schalkwijk, J.L. Scheijen, P.I. Simons, C.J. Van der Kallen, S.J. Eussen, N.C. Schaper, P.C. Dagnelie, M.M. Van Greevenbroek, A. Wesselius, C.D. Stehouwer, M.C. Brouwers, Netherlands

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 37th Camillo Golgi Lecture

*Chair:* Stefano Del Prato, Italy

*Speaker:* Michael Horowitz, Australia

**Gastric emptying in diabetes - backwards and forwards:  
a perspective from the antipodes**

**Michael Horowitz** graduated in Medicine from the University of Adelaide in 1977 and obtained both his PhD and Fellowship of the Royal Australasian College of Physicians in 1984. He was appointed to a Personal Chair at the University of Adelaide in 1995 and as the Director of the Endocrine and Metabolic Unit at the Royal Adelaide Hospital in 1997. In 2014 he became an inaugural Fellow of the Australian Academy of Health and Medical Sciences and in 2022 was awarded the degree of Doctor of Science by the University of Adelaide.

His research activities focus on gastrointestinal motor, sensory, and hormonal function, particularly gastric emptying, in relation to diabetes, appetite regulation and critical illness. He has led the Centre of Research Excellence (CRE) in Translating Nutritional Science to Good Health at the University of Adelaide since its inception in 2007 – the training and sustained mentorship of clinician-scientists represents a focus of his career.



Professor Horowitz's research, facilitated by the development and application of novel investigative techniques, has revealed the significance of gastric emptying (GE) (both normal and disordered) to upper gastrointestinal symptoms and the glycaemic, appetite and blood pressure responses to a meal in diabetes. Accordingly, gastric emptying is now appreciated to be integral to the pathogenesis and personalised management of type 1, type 2 and type 3c diabetes. His research has been supported by continuous funding from the National Health and Medical Research Council of Australia since 1980, including a current L3 Investigator Grant (2020-24)

Professor Horowitz is a current member of the editorial boards of 7 international journals, an Editor of *Nutrients* and Editor-in-Chief of the *World Journal of Diabetes*. He is an author of 754 peer-reviewed papers, 42 book chapters and 2 books.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# EASD CAMILLO GOLGI PRIZE

The EASD Camillo Golgi Prize is awarded for outstanding contributions in the field of the histopathology, pathogenesis, prevention and treatment of the complications of diabetes, which have been carried out in Europe by a member of EASD normally resident in Europe.

Publications in internationally recognized scientific journals over the last 5 years should demonstrate continuing activity, originality and excellence in the field.

The Camillo Golgi Prize is generously supported by Novo Nordisk.

## EASD Camillo Golgi Lecturers

2021	H.L. Heerspink (NL)	2003	A. Boulton (UK)
2020	N. Sattar (UK)	2002	J. Tuomiletho (FI)
2019	R.A. Malik (QA)	2001	A. Flyvbjerg (DK)
2018	P.P. Nawroth (DE)	2000	U. Di Mario (IT)
2017	B.M. Frier (UK)	1999	E. Standl (DE)
2016	P. Rossing (DK)	1998	D.R. Tomlinson (UK)
2015	H.-P. Hammes (DE)	1997	H.-H. Parving (DK)
2014	S. Tesfaye (UK)	1996	M.-R. Taskinen (FI)
2013	T. Lauritzen (DK)	1995	R. Landgraf (DE)
2012	G. Pugliese (IT)	1994	J.E. Tooke (UK)
2011	A. Bierhaus (DE)	1993	K.F. Hansen (NO)
2010	D. Ziegler (DE)	1992	E. Kohner (UK)
2009	P.-H. Groop (FI)	1991	R. Osterby (DK)
2008	A. Avogaro (IT)	1990	P.J. Watkins (UK)
2007	P. Fioretto (IT)	1989	G.B. Bolli (IT)
2006	M. Laakso (FI)	1988	C.E. Morgensen (DK)
2005	C. Stehouwer (NL)	1987	D.J. Ewing (UK)
2004	A. Ceriello (IT)	1986	G.C. Viberti (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 16th Albert Renold Lecture

*Chair:* Chantal Mathieu, Belgium

*Speaker:* Maike Sander, USA

### Deconstructing development to reconstruct beta cells from stem cells

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Dr. **Maike Sander** is the Director of the Pediatric Diabetes Research Center and Co-Director of the Center for Diabetes in the Institute of Engineering in Medicine at the University of California, San Diego.

Over the past 25 years, Dr. Sander's research has centered on understanding the molecular mechanisms that control the formation and function of insulin-producing pancreatic beta cells with the goal to identify novel therapeutic approaches for diabetes. Her recent work has focused on stem cell-derived islet models, which she has utilized to study genetic causes of diabetes and to uncover mechanisms of human beta cell development and maturation.



Her honours include the Grodsky Award from the Juvenile Diabetes Research Foundation, the Humboldt Foundation Research Award, a Berlin Institute of Health Einstein Visiting Professorship, and election to the American Society for Clinical Investigation, the Association of American Physicians, and the German National Academy of Sciences.

Dr. Sander graduated with a medical degree from the University of Heidelberg Medical School in Germany and conducted postdoctoral training at the University of California, San Francisco. Before joining the University of California, San Diego in 2008, she held faculty positions at Hamburg Medical School, Germany and the University of California, Irvine.

# EASD ALBERT RENOLD PRIZE

Prize for an EASD member's outstanding achievements in research on the islets of Langerhans.

The Albert Renold Prize honours the memory of Albert Renold, the distinguished diabetologist, researcher and also one of the founding members of EASD

The Albert Renold Prize is generously supported by Lilly.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## EASD Albert Renold Lecturers

2021	P.L. Herrera (CH)
2020	G.A. Rutter (UK)
2019	T. Otonkoski (FI)
2018	R.N. Kulkarni (US)
2017	J. Ferrer (UK)
2016	M.S. German (US)
2015	A. Hattersley (UK)
2014	S. Kahn (US)

2013	P. Rorsman (UK)
2012	D. Eizirik (BE)
2011	M. Prentki (CA)
2010	S. Seino (JP)
2009	B. Thorens (CH)
2008	J.-C. Henquin (BE)
2007	F. Ashcroft (UK)

Rising Star Symposium

Chair: Mikael Rydén, Sweden

Speaker: Diego Balboa, Spain:  
**Genome regulation of human beta cell development and function**



EASD  
EFSD

GENERAL  
INFO

John Dennis, UK:  
**Precision medicine in type 2 diabetes: modelling individual-level outcomes to target treatment**



PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

Matthew B Johnson, UK:  
**The power of rare disease: insights into beta cell autoimmunity from monogenic autoimmunity**



SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

Salwan Maqdasy, Sweden:  
**Perturbed glutamine turnover in adipocytes drives white adipose tissue dysfunction**



SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



# RISING STAR SYMPOSIUM AND FELLOWSHIP

The EASD Rising Star Symposium and EFSD Rising Star Fellowship Programme aims to identify promising and innovative young researchers who are developing their research activities in Europe.

The Rising Star Symposium and Fellowship is generously supported by Novo Nordisk.

## EASD Rising Star Symposium Lecturers

2021	R. Pirzgalska (PT) I. Sen (SE) B.N. Stocks (DK) O.P. Zaharia (DE)	2017	G. Christoffersson (SE) T. Mezza (IT) A. Wood (UK) H. Yaghootkar (UK)
2020	B. Merino Antolin (ES) L. Dollet (SE) P. Larraufie (FR) A.M. Smink (NL)	2016	F. D'Addio (IT) A. Jones (UK) S. Kooijman (NL) N. Sandholm (FI)
2019	S. Ahmad (SE) I. Miguel-Escalada (ES) I. Nikolic (ES) D. Trico (IT)	2015	M. Heni (DE) D. Hodson (DE) R. Nogueiras (ES) R. Scott (UK)
2018	M. Boon (NL) E. De Franco (UK) N. De Leu (BE) N. Gandasi (SE)	2014	G.H. Goossens (NL) H.J. Lambers Heerspink (NL) L. Pasquali (ES) R. Stienstra (NL)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

08:30 - 10:00

Bernard Hall

**EASD/ADA Symposium: Precision medicine in type 2 diabetes: How far can we get?**

*Chair:* Christian Herder, Germany and Robert A Gabbay, USA

*Speaker:* Paul Franks, Sweden:  
**Chances and opportunities with precision medicine**

Robert Wagner, Germany:  
**Precision medicine in prediabetes and prevention**

Phong BH Nguyen, Germany:  
**Systems biology and artificial intelligence in precision medicine**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

08:30 - 10:00

Minkowski Hall

**Diabetologia Symposium: Remission of type 2 diabetes – fact or fiction?**

*Chair:* Hindrik Mulder, Sweden

*Speaker:* Amy E Rothberg, USA:  
**Diabetes remission – definition, diagnosis and monitoring**

Michael Lean, UK:  
**Diabetes remission – how is it achieved? (lifestyle, pharmacotherapy, surgery)**

Blandine Laferrère, USA:  
**Diabetes remission – why it may not last**

08:30 - 10:00

Golgi Hall

**COVID-19 and diabetes**

*Chair:* John Petrie, UK

*Speaker:* Barbara Ludwig, Germany:  
**Risk phenotypes of diabetes associated with severe COVID-19**

Martin K Rutter, UK:  
**Impact of COVID-19 on diagnoses, monitoring, and mortality in people with type 2 diabetes**

Stefan R Bornstein, Germany:  
**Obesity, diabetes and post-COVID-19 syndrome**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

08:30 - 10:00

Nobel Hall

**A New Hope (© Star Wars) or Strange New Worlds (© Star Trek):  
submerging diabetes into emerging technologies**

*Chair:* Chair: Lutz Heinemann, Germany

*Speaker:* Moshe Phillip, Israel:  
**Are we becoming robots? AID systems for everyone with type 1 diabetes: strengths and limitations**

Richard IG Holt, UK:  
**“I just called to say I love you...” Diabetes tools for telemedicine: What we learned from COVID-19 and beyond?**

Steven J Russell, USA:  
**Betting for the next best thing in digital diabetes technology**

**08:30 - 10:00**

**Doniach Hall**

**From models to clinic: much more than just a catwalk**

*Chair:* M Paula Macedo, Portugal

*Speaker:* João F Raposo, Portugal:  
**The path from clustering in type 2 diabetes to health-based value**

Paola Tognini, Italy:  
**Neural plasticity, nutrition and metabolic diseases**

Jan Boren, Sweden:  
**Models to unveil metabolic diseases molecular mechanisms**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**08:30 - 10:00**

**Peltonen Hall**

**Cell biology for diabetologists: A piece of cake?**

*Chair:* Maria Rohm, Germany

*Speaker:* Anja Zeigerer, Germany:  
**Endocytosis and systemic energy homeostasis**

Luca Scorrano, Italy:  
**Targeting mitochondrial dynamics and the urea cycle to treat obesity**

Bart van de Sluis, Netherlands:  
**From endosomes to arteriosclerosis**

08:30 - 10:00

Heding Hall

**Overcoming challenges in obesity medicine: The SURMOUNT Clinical Development Program**

*Chair:* Tina Vilsbøll, Denmark

*Speaker:* Carel Le Roux, Ireland:  
**Background and Rationale for the SURMOUNT-CWM Program**

Ania M Jastreboff, USA:  
**SURMOUNT-1 Efficacy and safety data**

Steven Nissen, USA:  
**Morbidity and mortality in obesity: SURMOUNT-MMO Trial**

Luc van Gaal, Belgium:  
**Commentary**

**followed by panel Q&A**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

08:30 - 10:00

Jacobsohn Hall

**UKPDS 44-year follow-up**

*Chair:* Ian W Campbell, UK

*Speaker:* Amanda I Adler, UK:  
**UKPDS perspective, legacy effects and 44-year follow-up data**

Rury R Holman, UK:  
**Clinical outcomes at 44 years: do the legacy effects persist?**

Philip M Clarke, UK:  
**Economic analysis of lifetime outcomes of UKPDS treatment policies**

William N Whiteley, UK:  
**Impact of UKPDS treatment policies on dementia outcomes**

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 13 Beyond type 1 and type 2***Chair:* H. Maalmi, Germany**73 Clusters of prediabetes and type 2 diabetes stratify all-case mortality in a cohort of participants undergoing invasive coronary diagnostics**EASD  
EFSD

K. Prystupa, G.E. Delgado, A.P. Moissl, M.E. Kleber, M. Heni, A.L. Birkenfeld, A. Fritsche, W. März, R. Wagner, Germany

GENERAL  
INFO**74 Novel clusters of prediabetes and their association with progression and regression: a 3-year follow-up study**

Y. Liu, M. Sang, S. Qiu, Z. Sun, China

PROGRAMME

TUESDAY

**75 Incidence of HbA<sub>1c</sub>-defined prediabetes and progression to type 2 diabetes: a nationwide study with routine care laboratory data**

S.K. Nicolaisen, R.W. Thomsen, D. Witte, H.T. Sørensen, L. Pedersen, Denmark

WEDNESDAY

THURSDAY

**76 Antibody positive patients with type 2 diabetes who rapidly progress to insulin have similar characteristics and type 1 genetic risk scores as patients with type 1 diabetes**

V. Simpson, N. Thomas, A.V. Hill, B.M. Shields, S. Deshmukh, T.J. McDonald, A.G. Jones, StartRight Study Group, UK

FRIDAY

SHORT ORAL  
DISCUSSIONS**77 Children with newly-diagnosed diabetes but no autoantibodies should be genetically tested**

M. Harsunen, J.L. Kettunen, T. Härkönen, P. Vähäsalo, R. Veijola, J. Ilonen, P.J. Miettinen, M. Knip, T. Tuomi, Finland

PRESENTER  
INDEXSATELLITE  
SYMPOSIA**78 Penetrance of MODY is substantially lower in clinically unselected cohort: important implications for opportunistic genomic testing**

K. Patel, U. Mirshahi, K. Colclough, C. Wright, A. Wood, R. Beaumont, T. Laver, R. Stahl, A. Golden, J. Goehringer, Geisinger-Regeneron DiscovEHR Collaboration, T. Frayling, A. Hattersley, D. Carey, M. Weedon, UK, USA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 14 Exercising your tissues in shape**

*Chair:* F. Amati, Switzerland

**79 Does exercise matter? The effects of different volumes of exercise on beta cell function in patients with newly diagnosed type 2 diabetes**

M. Lyngbaek, G. Legaard, N. Nielsen, T. Almdal, M. Ried-Larsen, K. Karstoft, Denmark

**80 Improved beta cell function following eight weeks high-intensity interval training combining rowing and cycling in type 2 diabetes**

M.H. Petersen, M.E. De Almeida, E.K. Wentorf, J.V. Stidsen, N. Ørtenblad, K. Højlund, Denmark

**81 Exercise-responsive non-coding RNAs in the regulation of skeletal muscle metabolism**

E. Caria, I. Sen, M. Katayama, M. Savikj, A.M. Abdelmoez, J.A. Smith, N.J. Pilon, J.R. Zierath, A. Krook, Sweden

**82 Exercise-induced crosstalk between immune cells and adipocytes in humans: role of oncostatin-M**

L. Dollet, L.L. Lundell, A.V. Chibalin, L.A. Pendergrast, N.J. Pilon, K. Caidahl, A.S. Deshmukh, T. De Castro Barbosa, M. Rydén, R. Barrès, H. Wallberg-Henriksson, J.R. Zierath, A. Krook, Sweden, Denmark

**83 High intensity interval training improves whole-body insulin sensitivity and skeletal muscle oxidative capacity and favourably affects hepatic fat storage**

M. Bergman, R. Mancilla, P. Veeraiyah, V.H. De Wit-Verheggen, Y.M. Bruls, J. Hoeks, V.B. Schrauwen-Hinderling, M.K. Hesselink, Netherlands

**84 The plasma and tissue metabolomics responses to high intensity interval training and its importance in insulin resistance in obesity and type 2 diabetes**

P.M. Møller, M.H. Petersen, M.E. De Almeida, N. Ørtenblad, J. Havelund, N.J. Færgeman, K. Højlund, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 15 Preserving kidney function***Chair:* J. Karalliedde, UK**85 Effects of treatment with semaglutide, empagliflozin and the combination on kidney function in type 2 diabetes: impact of oxygenation and perfusion**

S. Gullaksen, L. Vernstrøm, S.S. Sørensen, K.L. Funck, P.L. Poulsen, E.G. Laugesen, Denmark

EASD  
EFSDGENERAL  
INFO**86 Low blood oxygen saturation is associated with microvascular complications in individuals with type 1 diabetes**

J.-C. Laursen, H.I. Mizrak, S.K. Heckquet, H. Kufaishi, M. Frimodt-Møller, C.S. Hansen, P. Rossing, Denmark

PROGRAMME

TUESDAY

**87 Development in eGFR trajectories in people with diabetic nephropathy**

C.G. Poulsen, K. Jesse, B. Carstensen, M. Frimodt-Moeller, T.W. Hansen, F. Persson, D. Vistisen, P. Rossing, Denmark

WEDNESDAY

THURSDAY

**88 Shifts in KDIGO CKD risk groups with empagliflozin: Renoprotection from SGLT2 inhibition across the spectrum of risk**

S.E. Inzucchi, B. Zinman, M. Mattheus, D. Steubl, A.P. Ofstad, C. Wanner, USA, Canada, Germany, Norway

FRIDAY

SHORT ORAL  
DISCUSSIONS**89 Sotagliflozin, a dual SGLT1 and SGLT2 inhibitor, reduces the risk of cardiovascular and renal disease as assessed by Steno Risk Engines in adults with type 1 diabetes**

E.B. Stougaard, P. Rossing, D. Vistisen, P. Banks, M. Girard, M.J. Davies, F. Persson, Denmark, USA

PRESENTER  
INDEXSATTELITE  
SYMPOSIA**90 Morphological and functional ultrasound features of diabetic kidney disease phenotypes in people with type 2 diabetes**

M. Garofolo, V. Napoli, D. Lucchesi, S. Accogli, M. Mazzeo, P. Rossi, P. Falchetta, M. Giambalvo, E. Neri, G. Penno, S. Del Prato, Italy

INDUSTRY

PROGRAMME

EXHIBITION



**OP 16 Flames and scars in the liver***Chair:* J. Jones, Portugal**91 Role of the constitutive androstane receptor CAR in sex- and gut microbiota-dependent non-alcoholic fatty liver disease**

M. Huillet, F. Lasserre, A. Polizzi, V. Alquier-Bacquie, A. Fougerat, C. Rives, C. Martin, J. Bruse, J.H. Wan, B. Chassaing, S. Lotersztajn, L. Gamet-Payraastre, H. Guillou, N. Loiseau, S. Ellero-Simatos, France

**92 Hepatic fat and macrophages are increased in livers of diabetic patients without NAFLD**

A. Korn, C. Nadeem, E. Bos, H.W. Niessen, S. Simsek, P.A. Krijnen, Netherlands

**93 Ubiquitin-proteasome system dysfunction in the liver of severely obese men with and without type 2 diabetes**

B. Stocks, E. Näslund, J.R. Zierath, A.S. Deshmukh, Denmark, Sweden

**94 Liver inflammation increases the proliferation of oval cells during non-alcoholic fatty liver disease**

S. Calero Pérez, I. Barahona, P. Valdecantos, Á.M. Valverde, Spain

**95 Phthalate exposure is associated with NAFLD, but not with liver fibrosis in the United States**

S. Ciardullo, E. Muraca, R. Cannistraci, G. Lattuada, G. Perseghin, Italy

**96 The fibrotic NASH index: a simple non-invasive score to screen for liver disease in individuals with metabolic risk factors**

F. Tavaglione, O. Jamialahmadi, A. De Vincentis, S. Qadri, V. Bruni, S. Carotti, G. Perrone, D. Tuccinardi, S. Manfrini, P. Pozzilli, A. Picardi, H. Yki-Järvinen, L. Valenti, U. Vespasiani-Gentilucci, S. Romeo, Italy, Sweden, Finland

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## OP 17 Toying with monitoring: from Present Continuous to Future Perfect

Chair: D. Zozulinska-Ziolkiewicz, Poland

### 97 Gaps remain in achieving target type 1 diabetes glycaemic goals despite advanced technologies

L. Laffel, J. Liu, L. Titievsky, K. Hagan, T. Liu, K. Chandarana, J. Gaglia, W. Wolf, J. Bispham, K. Chapman, D. Finan, R. Bergenstal, USA

EASD  
EFSD

GENERAL  
INFO

### 98 Intermittently scanned continuous glucose monitoring is associated with a long-term glucose-lowering effect for type 1 diabetes patients in poor glycaemic control

M.H. Jensen, S.L. Cichosz, P. Gustenhoff, A. Nikontovic, O. Hejlesen, P. Vestergaard, Denmark

PROGRAMME

TUESDAY

### 99 Conversion from FreeStyle Libre to FreeStyle Libre 2 is associated with improvements in continuous glucose monitoring metrics

F.W. Gibb, R.H. Stimson, R.J. Wright, S. Forbes, M.W. Strachan, A. Dover, UK

WEDNESDAY

THURSDAY

FRIDAY

### 100 Efficacy and safety of real-time continuous glucose monitoring guiding insulin administration in the hospital: a randomised clinical trial

G.E. Umpierrez, R.J. Galindo, M.A. Urrutia, P. Vellanki, A.L. Migdal, G.M. Davis, F.J. Pasquel, M. Fayfman, T. Idrees, L. Peng, L.G. Singh, E.K. Spanakis, USA

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

### 101 Cutaneous reactions associated with diabetes adhesives devices: results of the CutaDiab study

M. Diedisheim, A. Sola-Gazagnes, A. Carlier, L. Potier, A. Hartemann, S. Jacqueminet, C. Pecquet, J.-B. Julla, T. Vidal-Trecan, J.-F. Gautier, E. Larger, D. Dubois Laforgue, R. Roussel, J.-P. Riveline, France

SATELLITE  
SYMPOSIA

INDUSTRY

### 102 Impact of treatment costs on the cost-effectiveness of real-time continuous glucose monitoring vs self-monitoring of blood glucose in type 1 diabetes patients in the United Kingdom

H. Alshannaq, G. Cogswell, G.J. Norman, P.M. Lynch, S. Roze, USA, France

PROGRAMME

EXHIBITION

**OP 18 Cross-talk communication in the pancreas**

*Chair:* L. Eliasson, Sweden

**103 Chronic hyperglycaemia leads to dysregulated  $\delta$ -cell metabolism and reduced glucose-stimulated somatostatin secretion from the pancreatic islets**

T.G. Hill, A.I. Tarasov, M. Wallace, E. Haythorne, L.J. Briant, G. Cyranka, F.M. Ashcroft, UK

**104 Paracrine signalling in delta cells is disturbed in human type 2 diabetes**

L. Matuskeviciene, O.M. Hmeadi, P.-E. Lund, S. Barg, Sweden

**105 The requirement of beta cells to the glucose responsiveness of alpha cells depends on the depolarisation status of alpha cells**

F. Khattab, P. Gilon, Belgium

**106 Antecedent hypoglycaemia enhances intra-islet  $\alpha$ - $\delta$ -cell paracrine feedback loop to impair  $\alpha$ -cell glucagon secretion**

R. Gao, S. Acreman, P. Rorsman, Q. Zhang, UK

**107 Insulin-like growth factor binding protein 7 reduces glucose stimulated insulin secretion and downregulates key beta cell transcription factors**

E. Westholm, A. Karagiannopoulos, A. Wendt, L. Eliasson, Sweden

**108 Role of tRNA-derived fragments in the cross-talk between immune cells and beta cells during type 1 diabetes pathogenesis**

F. Brozzi, C. Cosentino, C. Jacovetti, K. Wu, V. Menoud, M.B. Bayazit, C. Guay, R. Regazzi, Switzerland

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# SHORT ORAL DISCUSSIONS EVENT C

	<b>12:00 - 13:00</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
		SO 03 Food, drinks and spices . . . . .	<u>136</u>
EASD EFSD		SO 09 Type 1 diabetes: from molecules to treatment . . . . .	<u>142</u>
		SO 15 Calcium signalling in the islet: we are still learning . . . . .	<u>148</u>
GENERAL INFO		SO 21 The fat burning the islets . . . . .	<u>154</u>
PROGRAMME		SO 27 If you cannot measure it, you cannot improve it: novel methods in diabetes research . . . . .	<u>159</u>
TUESDAY		SO 33 Insulin in action . . . . .	<u>165</u>
WEDNESDAY		SO 39 Newer agents - cardiovascular outcomes . . . . .	<u>171</u>
THURSDAY		SO 45 Beta cell function and glucose control. . . . .	<u>178</u>
FRIDAY		SO 51 Even “old dogs” can learn new tricks . . . . .	<u>185</u>
SHORT ORAL DISCUSSIONS		SO 57 Type 1 diabetes: still the challenge number one . . . . .	<u>192</u>
		SO 63 Diversity of the diabetic kidney. . . . .	<u>198</u>
PRESENTER INDEX		SO 69 Type 1 diabetes: new findings and complications . . . . .	<u>205</u>
SATELLITE SYMPOSIA		SO 75 Emerging comorbidities in diabetes: clinical associations and mechanisms . . . . .	<u>211</u>
INDUSTRY			
PROGRAMME			
EXHIBITION			

# SHORT ORAL DISCUSSIONS EVENT D

<b>13:15 - 14:15</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
SO 04	Starting with autoimmunity . . . . .	<u>137</u>
SO 10	Diversity in diabetes . . . . .	<u>143</u>
SO 16	A new niche to replace beta cells. . . . .	<u>149</u>
SO 22	Exercise and diabetes: much to learn!. . . . .	<u>155</u>
SO 28	Understanding insulin sensitivity: lessons from the clinic. . . . .	<u>160</u>
SO 34	The hepato-skeletal impact on metabolic control. . . . .	<u>166</u>
SO 40	Incretins: impact on BMI . . . . .	<u>173</u>
SO 46	Incretins everywhere . . . . .	<u>179</u>
SO 52	Money isn't everything?. . . . .	<u>186</u>
SO 58	Autonomic rhythm. . . . .	<u>193</u>
SO 64	New treatment avenues for the diabetic kidney. . . . .	<u>199</u>
SO 70	Circulating markers of cardiovascular risk . . . . .	<u>206</u>
SO 76	Cancer and type 2 diabetes: interconnections and mortality . . . . .	<u>212</u>

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# EASD E-LEARNING SESSIONS

In these sessions you will be able to interact live with the EASD e-Learning authors and ask all you ever wanted to know but never dared to ask.

We invite you to join the discussion.

**12:00 - 12:45**

**Virchow Hall**

EASD  
EFSD

## **EASD e-Learning: Dual incretin receptor agonists: Is GIP receptor agonism the key for success?**

GENERAL  
INFO

*Chair:* Chantal Mathieu, Belgium

*Speaker:* Michael Nauck, Germany, Stefano Del Prato, Italy, Baptist Gallwitz, Germany, Clifford Bailey, UK and Francesco Giorgino, Italy:

**Dual incretin receptor agonists: Is GIP receptor agonism the key for success?**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**13:00 - 13:45**

**Virchow Hall**

## **EASD e-Learning: Diabetic kidney disease and KDIGO guidelines**

*Chair:* Bruce Wolffenbuttel, Netherlands

*Speaker:* Peter Rossing, Denmark, Hiddo Lambers Heerspink, Netherlands and Niina Sandholm, Finland:

**Diabetic kidney disease and KDIGO guidelines**

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

### COVID-19

Caring for diabetes during the pandemic: stay safe and keep informed

FIND OUT MORE

### Around the diabetes world in 80 days

Join us on a guided tour of the diabetes world in 80 diverse countries

FIND OUT MORE

### Insulin@100

100 years in 100 features: celebrating insulin's centenary year

FIND OUT MORE

### The patient who changed the way I think about diabetes

Our new podcast series

FIND OUT MORE

### The long and the short of it

Two experts, two takes, one hot topic

FIND OUT MORE

### 5 things we don't yet know

Top researchers' top 5 research questions

FIND OUT MORE

### Insulin in my country

National perspectives on the insulin experience

FIND OUT MORE

### The briefing room

Leading experts debate leading diabetes questions

FIND OUT MORE

**OP 19 GLP1 agonists: from here to eternity**

*Chair:* M. Haluzik, Czech Republic

**109 Dulaglutide in youth with type 2 diabetes: results of the AWARD-PEDS randomised, placebo-controlled trial**

S. Arslanian, T. Hannon, P. Zeitler, L. Chao, C. Boucher-Berry, M. Barrientos-Pérez, E. Bismuth, S. Dib, J. Cho, D. Cox, USA, Mexico, France, Brazil

EASD  
EFSD

GENERAL  
INFO

**110 Beta cell function and sensitivity to incretins before and after Roux-en-Y gastric bypass in patients with type 2 diabetes**

M.S. Svane, M. Hindsø, C. Martinussen, C. Dirksen, N.B. Jørgensen, B. Hartmann, V.B. Kristiansen, J.J. Holst, K.N. Bojsen-Møller, S. Madsbad, Denmark

PROGRAMME

TUESDAY

**111 Ly3437943 (LY), a novel triple GIP/GLP-1/glucagon receptor agonist, provides glucose lowering and weight loss in patients with type 2 diabetes after 12 weeks of treatment**

Z. Milicevic, S. Urva, M. Loh, T. Coskun, Y. Du, C.T. Benson, C. Loghin, A. Haupt, USA

WEDNESDAY

THURSDAY

FRIDAY

**112 Effect of liraglutide on muscle fat infiltration in adults with overweight or obesity: a randomised clinical trial**

K.V. Patel, A. Pandey, C. Ayers, J. Linge, O.D. Leinhard, P.H. Joshi, I.J. Neeland, USA, Sweden

SHORT ORAL  
DISCUSSIONS

**113 Glucagon-like peptide 1 receptor agonists and gallbladder or biliary diseases: data from the FDA Adverse Event Reporting System**

H. Zhang, L. He, J. Wang, N. Yang, W. Li, L. Xu, Y. Li, F. Ping, China

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**114 Once-daily oral small molecule GLP-1R agonist PF-07081532 robustly reduces glucose and body weight within 4-6 weeks in adults with type 2 diabetes and non-diabetic adults with obesity**

C. Buckeridge, N. Tsamandouras, S. Carvajal-Gonzalez, L.S. Brown, K.L. Chidsey, A.R. Saxena, USA

INDUSTRY

PROGRAMME

EXHIBITION



**OP 20 NAFLD and treatment**

*Chair:* A. Holleboom, Netherlands

**115 One night of prolonged fasting improves nocturnal substrate oxidation without modulating hepatic glycogen in individuals with NAFL and healthy age-matched individuals**

K.H. Roumans, A. Veelen, C. Andriessen, J. Mevenkamp, P. Veeraiah, B. Havekes, H.P. Peters, L. Lindeboom, P. Schrauwen, V.B. Schrauwen-Hinderling, Netherlands

**116 Therapeutic benefits of 17 $\alpha$ -estradiol in hepatic fibrosis**

S. Ali Mondal, R. Sathiaseelan, B. Miller, M. Stout, USA

**117 The effect of a 16-week diet intervention with or without differing amounts of exercise volume on hepatic fat content in people with type 2 diabetes**

C. Durrer, M. Lyngbæk, B. Liebetrau, G.E. Legård, T.P. Almdal, M.A. Lund, M. Ried-Larsen, Denmark

**118 Ezetimibe combination therapy with statin for non-alcoholic fatty liver disease: a randomised controlled trial (ESSENTIAL study)**

Y. Kim, Republic of Korea

**119 Time-restricted feeding and obeticholic acid/semaglutide drug combination have a different impact on non-alcoholic steatohepatitis in diet-induced obese mice**

F. Briand, N. Breyner, E. Grasset, T. Sulpice, France

**120 Cellular resistance to reactive metabolites is reversely affected by acute glucose stress and caloric restriction in type 2 diabetes patients with complications**

A. Sulaj, E. Von Rauchhaupt, C. Rodemer, R. Bulkescher, E. Kliemank, S. Kopf, P.P. Nawroth, J. Szendroedi, J. Zemva, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 21 Retinopathy future vision***Chair:* T. Nyström, Sweden**121 An early window of opportunity: risk factors for diabetic retinopathy are associated with early retinal neurodegenerative changes: The Maastricht Study**

F. Van der Heide, S. Mokhtar, R. Henry, A. Kroon, P. Dagnelie, T. Berendschot, S. Eussen, J. Schouten, M. Schram, C. Van der Kallen, M. Van Greevenbroek, H. Savelberg, N. Schaper, C. Webers, C. Stehouwer, Netherlands

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**122 Transcriptome analysis reveals that retinal neuromodulation is the main underlying mechanism of the neuroprotective effect of sitagliptin in diabetic retina**

H. Ramos, P. Bogdanov, J. Huerta, A. Deàs-Just, C. Hernández, R. Simó, Spain

**123 Presence of retinopathy and kidney and cardiovascular events in type 2 diabetes and normoalbuminria: a post-hoc analysis of The PRIORITY study**

T. Hansen, V. Rotbain Curovic, N. Tofte, M.K. Lindhardt, C. Delles, M. Frimodt-Møller, H. Mischak, F. Persson, H. Von der Leyen, P. Rossing, on the behalf of the PRIORITY Study Group, Denmark, UK, Germany

**124 Stroke incidence increases with severity of diabetic retinopathy and maculopathy in people with type 1 diabetes**

M.I. Eriksson, K. Hietala, P. Summanen, C. Forsblom, J. Putaala, A. Ylinen, S. Hägg-Holmberg, P.-H. Groop, L.M. Thorn, on behalf of the FinnDiane Study, Finland

**125 Fenofibrate use and diabetic retinopathy progression in patients with type 2 diabetes: a propensity-matched cohort study**

N. Kim, J. Kim, K. Kim, J. Bae, K. Kim, S. Kim, Republic of Korea

**126 Blocking haemopexin with specific antibodies: a new experimental strategy for treating diabetic retinopathy**

R. Simó, P. Bogdanov, A. Duarri, A. Salas, D. Sabater, H. Ramos, H. Isla, C. Hernández, Spain

**OP 22 Giving birth with diabetes**

*Chair:* J. Puder, Switzerland

**127 Glycaemic control and complication rate through pregnancy and thirteen-years post-partum in women with microalbuminuria (type 1 diabetes)**

N. Asatiani, R. Kurashvili, E. Inashvili, E. Shelestova, T. Akhobadze, Georgia

**128 Glucose response patterns based on 75g OGTTs during pregnancy and their association with the risk of macrosomia: a latent class analysis of three cohort studies**

L. Fritsche, A. Hulman, K. Prystupa, M. Heni, S.L. White, A.L. Birkenfeld, A. Peter, A. Fritsche, A. Kun, L. Poston, A. Tabak, R. Wagner, Germany, Denmark, UK, Hungary

**129 Changes in body fat partitioning and insulin resistance between preconception and postpartum in Singaporean women: the SPRESTO study**

S. Sadananthan, N. Michael, Y. Manuel, K. Thirumurugan, J. Yaligar, M. Tint, K. Tan, K.M. Godfrey, P.D. Gluckman, Y. Chong, Y. Lee, J.K. Chan, S.-Y. Chan, J.G. Eriksson, S. Velan, Singapore, UK

**130 Maternal diabetes and attention-deficit/hyperactivity disorder in childhood**

C.E. Cesta, K.K. Man, L.J. Kjerpeseth, L. Gao, Nordic Pregnancy Drug Safety Studies (NorPreSS) consortium, A.Y. Chan, M.H. Hsieh, E.C. Lai, H. Zoega, I.C. Wong, Sweden, Hong Kong, UK, Norway, Netherlands, Taiwan, Iceland, Australia

**131 Pregestational diabetes and risk of congenital heart defects in the offspring: French nationwide study using the French PMSI-MCO database**

M. Lemaitre, G. Bourdon, A. Bruandet, X. Lenne, D. Subtil, T. Rakza, A. Vambergue, France

**132 Beta cell function, hepatic insulin clearance and insulin sensitivity in South Asian and Nordic women after gestational diabetes**

A. Sharma, I. Nerموen, E. Qvigstad, C. Sommer, N. Sattar, J. Gill, H. Gulseth, S. Sollid, K. Birkeland, S. Lee-Ødegård, Norway, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 23 Are we too slow to outlaw the low?***Chair:* T. Battelino, Slovenia**133 Severe hypoglycaemia presenting to a hospital emergency department: clinical characteristics and mortality outcomes**

S.H. Song, B.M. Frier, UK

EASD  
EFSD**134 Determining the incidence and clinical predictors of severe hypoglycaemia in patients receiving insulin and sulphonylureas for type 2 diabetes**

R.L. Cordiner, K. Bedair, L. Donnelly, G. Leese, E.R. Pearson, UK

GENERAL  
INFO**135 Dishabituation with high intensity exercise improves hormonal and symptom responses to hypoglycaemia in people with type 1 diabetes and impaired awareness of hypoglycaemia**

C.M. Farrell, A.D. McNeilly, S.M. Hapca, T.W. Jones, P.A. Fournier, D. West, R.J. McCrimmon, UK, Australia

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**136 Decreased branched-chain amino acids and elevated fatty acids during antecedent hypoglycaemia in type 1 diabetes**

R. She, N. Al-Sari, I. Mattila, P. Henriksen, J. Pedersen, A.-S. Sejling, C. Legido-Quigley, U. Pedersen-Bjergaard, Denmark, UK

SHORT ORAL  
DISCUSSIONS**137 Recurrent low glucose exposure (RLG) induces intrinsic metabolic adaptations in pancreatic alphaTC1.9 cells**

K.M. Partridge, N.G. Morgan, K.L. Ellacott, C. Beall, UK

PRESENTER  
INDEX**138 The impact of CGM with a predictive hypoglycaemia alert function on hypoglycaemia in physical activity for people with type 1 diabetes: PACE study**

S. Rilstone, N. Oliver, B. Tanushi, N. Hill, UK

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 24 How to burn energy***Chair:* B. Cannon, Sweden**139 The oxidative phenotype of abdominal and femoral adipose tissue in women with normal weight or obesity**

I.G. Lempesis, N. Hoebbers, Y. Essers, J.W. Jocken, L.J. Dubois, E.E. Blaak, K.N. Manolopoulos, G.H. Goossens, UK, Netherlands

**140 Pdgfra-specific deletion of Alms1 in mice recapitulates the obesity and insulin resistance of global Alms1 KO and this cannot be explained by discoordinated ciliary dynamics**

E.J. McKay, I.H. Luijten, D. McCormick, P. Mill, R.K. Semple, UK

**141 A larger brown fat volume and lower mean radiodensity are related to a greater cardiometabolic risk, especially in young men**

F. Acosta, G. Sanchez-Delgado, B. Martinez-Tellez, F. Osuna-Prieto, A. Mendez-Gutierrez, C. M. Aguilera, A. Gil, J. Llamas Elvira, J. Ruiz Ruiz, Finland, Spain, USA, Netherlands

**142 Brown adipose tissue content of triglycerides, but not SUV, is associated with cardiovascular risk markers in volunteers from a tropical region**

M. Monfort-Pires, G.R. Silva, P. Dadson, G.A. Nogueira, M. U-Din, K.A. Virtanen, L.A. Velloso, Finland, Brazil

**143 Humans with metabolically active brown fat demonstrate higher capacity to catabolise branched chain amino acids**

M. U-Din, V. De Mello Laaksonen, K. Hanhineva, J. Newman, K. Kristiansen, M. Klingenspor, T. Fromme, T. Niemi, M. Taittonen, T. Saari, J. Raiko, P. Nuutila, K.A. Virtanen, Finland, USA, Denmark, Germany

**144 Hepatocyte PPAR $\alpha$  is required for the sensing of adipose-derived fatty acids and for full brown adipose tissue activation during lipolysis**

A. Fougerat, G. Schoiswohl, A. Polizzi, M. Régnier, C. Wagner, B. Tramunt, S. Ellero-Simatos, L. Payrastre, C. Postic, W. Wahli, N. Loiseau, A. Montagner, D. Langin, A. Lass, H. Guillou, France, Austria, Switzerland

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## EASD-Novo Nordisk Foundation Diabetes Prize for Excellence

*Chair:* Stefano Del Prato, Italy

*Speaker:* Anette-Gabriele Ziegler, Germany  
**Starting the clock to type 1 diabetes**

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

A specialist in internal medicine, endocrinology, and diabetes, Prof. Dr. **Anette-Gabriele Ziegler** leads the Institute of Diabetes Research at Helmholtz Munich, and is Chair of Diabetes at the Faculty of Medicine, Technical University Munich, Germany. She is also speaker of the Global Platform for the Prevention of Autoimmune Diabetes (GPPAD), and an academy head of the German Center for Diabetes Research DZD e.V.

Dr. Ziegler's primary research goal is understanding the pathogenesis of type 1 diabetes and finding a preventive treatment for a world without type 1 diabetes. Her main research focuses on identification of genetic, immune and environmental determinants of the disease, the introduction of polygenic risk scores, and the translation of findings into predictive staging that enables trials to prevent type 1 diabetes. She initiated the landmark and worldwide first birth cohort study in diabetes, BABYDIAB, with seminal discoveries on the precocious start of islet autoimmunity in the first year of life, and insulin as the initial target of autoantibodies. The success of the BABYDIAB study led to the multinational birth-cohort initiative TEDDY (The Environmental Determinant of Diabetes in the Young), of which she is Principal Investigator for the German Clinical Center.



She cofounded GPPAD, which introduced polygenic risk score-based newborn screening and also started the first population-based screening for early stage type 1 diabetes in childhood, the Fr1da-study, which has paved the way for prevention trials in a public health setting. She is a member of the TRIALNET, TEDDY, INNODIA, and GPPAD consortia.

# EASD-Novo Nordisk Foundation Diabetes Prize for Excellence

The EASD-Novo Nordisk Foundation Diabetes Prize for Excellence awards an internationally recognised researcher who has contributed significantly to advances in the understanding, prevention or treatment of diabetes or its complications.

The awardee's research may focus on prevention, treatment and/or basic research in physiological biochemistry.

The EASD-Novo Nordisk Foundation Diabetes Prize for Excellence is generously supported by the Novo Nordisk Foundation.

## EASD-Novo Nordisk Foundation Diabetes Prize for Excellence Lecturers

2021	J.A. Todd (UK)
2020	J.C. Brüning (DE)
2019	D.J. Drucker (CA)
2018	G.S. Hotamisligil (US)

2017	P.E. Scherer (US)
2016	A. Hattersley (UK)
2015	S. O'Rahilly (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Morgagni Prize Lecture**

*Chair:* Mlriam Cnop, Belgium

*Speaker:* Giuseppe Daniele, Italy:  
**Visual brain plasticity and metabolism: beyond food sight**

Olga Ramich, Germany:  
**The best time to eat: chrononutrition to combat obesity and diabetes**

**Giuseppe Daniele** is Associate Professor at the Faculty of Medicine of the University of Pisa, Italy.

He trained in Medicine at the University of Pisa under Prof. Del Prato's supervision and started his international career as a postdoctoral fellow under the direct supervision of Ralph DeFronzo at the University of Texas Health Science Center in San Antonio, USA.



While a fellow, he trained on a variety of sophisticated techniques (hyperinsulinemic euglycemic/hyperglycemic clamp, mixed meal test with tracers technique, indirect calorimetry, radioisotope turnover technology) for the evaluation of glucose metabolism in vivo in humans and applied them to a clinical projects involving the pathophysiology of type 2 diabetes, the metabolic effects of GLP-1 receptor agonists, and the mechanism of action of SGLT2 inhibitors. He then focused on the role of central nervous system on glucose metabolism. For this purpose, he turned to human brain imaging techniques and expanded his knowledge on brain function and glucose metabolism under the supervision of Prof. Fox at the University of Texas Health Science Center in San Antonio, USA. After the postdoctoral fellowship he returned to the University of Pisa in 2016 where he joined the Medical Faculty.

In 2017 he commenced the EFSD Future Leaders Mentorship Programme for Clinical Diabetologists in collaboration with Prof. Häring and Prof. Heni at the University of Tübingen, Germany. He contributed to develop a new technique to assess brain plasticity in vivo and in ambulatory setting by the study of vision and binocular rivalry in patients with obesity and diabetes in collaboration with Prof. Morrone, head of Pisa Vision Lab.

To expand these new methodologies, he founded in 2021 a multidisciplinary neuroscience laboratory equipped with innovative devices including a high-density EEG and functional Near-Infrared Spectroscopy combined with brain magnetic stimulator to further examining the pathophysiology underlying brain impact of obesity and diabetes.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



PD Dr. **Olga Ramich** graduated in Human Physiology and completed her master degree in Biology in 2004 at the Institute of Cell Biophysics of the Pushchino State University in Russia. As a research associate, she joined the Institute of Molecular Genetics of the Russian Academy of Sciences in Moscow, working on genetic risk factors for cardiovascular diseases and diabetes, and proceeded to investigate this topic during her guest scientist visit to Germany in 2005.

Awarded with a German Academic Exchange Service (DAAD) scholarship, she moved in 2006 to Germany to join a group of Prof. Pfeiffer at the Charité-Universitätsmedizin Berlin and where she completed her PhD in Medical Science. Afterwards, she completed her postdoctoral studies at the German Institute of Human Nutrition Potsdam-Rehbrücke (DIfE), working on the pathophysiological and molecular mechanisms of metabolic regulation by nutrition. In 2018, she completed a habilitation in Experimental Nutritional Science at the Charité-Universitätsmedizin Berlin and was appointed as a Leader of the Research Group “Molecular Nutritional Medicine” at the DIfE.



Olga Ramich's current research focuses on the implication of circadian clock in the nutritional regulation of metabolism and in the pathogenesis of obesity and diabetes. She has a long-year expertise in human dietary intervention trial and experimental laboratory work. Her research has been funded by German Research Foundation (DFG), German Diabetes Society (DDG), and German Center for Diabetes Research (DZD). Olga Ramich was awarded with prestigious scientific prizes including Adam-Heller-Prize of the DDG/Abbott in 2020 and numerous travel grants.

As a recognized expert, Olga Ramich contribute as a reviewer in a wide range of nutritional and medical journals and funding research organizations and is on the editorial board of Clinical Nutrition and Frontiers in Nutrition.

## EASD MORGAGNI PRIZE

The Morgagni Prize is awarded every second year to young scientists in the field of clinical research, clinical physiology and metabolism who are EASD members and based at a research institution in Europe.

The Morgagni Prize was instituted in 1984 by a group of distinguished researchers working at the University of Padova Medical School (Italy) and since 2020, the prize will be awarded during the EASD Annual Meeting.

The Morgagni Prize is generously supported by Servier.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

17:30 - 18:30

Bernard Hall

EFSD/Novo Nordisk Foundation Future Leaders Symposium

Chair: Fatima Bosch, Spain

Speaker: Claire Meek, UK:  
**An unwelcome inheritance: childhood obesity after gestational diabetes**

Trine Moholdt, Norway

**Before the beginning: preconception lifestyle interventions to improve future metabolic health**

Atul S Deshmukh, Denmark:

**Discovery of *exerkines* by mass spectrometry based proteomics**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

17:30 - 18:30

Minkowski Hall

Modulators of gluco- and lipotoxicity

Chair: John Jones, Portugal

Speaker: Jules Griffin, UK:  
**The contribution of the liver**

Gilles Mithieux, France:

**The contribution of the intestine**

17:30 - 18:30

Golgi Hall

Debate: Insulin-free type 2 diabetes treatment is...

Chair: Leszek Czupryniak, Poland

Speaker: Bruce HR Wolffenbuttel, Netherlands:  
**...nonsense**

Apostolos Tsapas, Greece:

**...coming**

**17:30 - 18:30**

**Nobel Hall**

**The heat is on! Diabetes and climate change**

*Chair:* Amalia Gastaldelli, Italy

*Speaker:* Fiona Adshead, UK:  
**Diabetes, climate change and global health**

Lutz Heinemann, Germany:  
**The need for less waste and more recycling in diabetes technology**

Raffaella Bosurgi, UK:  
**Limiting global temperature increases to protect health**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**17:30 - 18:30**

**Doniach Hall**

**Epigenetic regulation and diabetes**

*Chair:* Miriam Cnop, Belgium

*Speaker:* Charlotte A Ling, Sweden:  
**Can epigenetics be of clinical use in diabetes?**

Lori Sussel, USA:  
**Epigenetics and lncRNA in diabetes development**

**17:30 - 18:30**

**Peltonen Hall**

**EASD/JDRF Symposium: Prevention of type 1 diabetes, is it possible?**

*Chair:* Sofia Carlsson, Sweden and Sanjoy Dutta, USA

*Speaker:* Anette G Ziegler, Germany:  
**New avenues in the prevention of type 1 diabetes**

Lars C Stene, Norway:  
**Genes vs environment in the development of type 1 diabetes**

**Intended self-injury and suicide amongst people with diabetes: tackling this public health challenge**

*Chair:* Richard IG Holt, UK

*Speaker:* Danny R Chernavvsky, USA:

**Experiences and unmet needs of people with diabetes**

Tadej Battelino, Slovenia:

**Identification and coding of self-injurious and suicidal acts: unmasking the scale of the challenge**

Marissa Town, USA and Katharine Barnard-Kelly, UK:

**Impact of suicidal acts on family members and influence on relationships/support structures**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**MEMBERSHIP**



**RESEARCH**



**ANNUAL MEETING**



**JOURNAL**

# EASD

European Association for the Study of Diabetes



**EDUCATION**



**VIRTUAL MEETING**



**ACADEMY**



**PRIZES**

**08:30 - 10:00**

**Bernard Hall**

**Juggling with lipids to find new targets for managing diabetes and comorbidities**

*Chair:* Amalia Gastaldelli, Italy

*Speaker:* Scott Summers, USA:  
**Scary lipids in diabetes**

Panu K Luukkonen, Finland:  
**Horrendous lipids for the liver**

Reijo Laaksonen, Finland:  
**Monstruous lipids for the cardiovascular system**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**08:30 - 10:00**

**Minkowski Hall**

**New insights to prevention of microvascular complications**

*Chair:* Paola Fioretto, Italy

*Speaker:* Frederik Persson, Denmark:  
**What is the residual risk after adapting current multifactorial prevention modalities?**

Rafael Simó, Spain:  
**What can we still do for prevention of diabetic retinopathy?**

Anna Solini, Italy:  
**What can we still do for prevention of diabetic kidney disease?**

**08:30 - 10:00**

**Golgi Hall**

**Delivering the best of diabetes care in under-resourced populations – how much of the wishful thinking?**

*Chair:* Anne Peters, USA

*Speaker:* Shivani Agarwal, USA:

**How can we approach healthcare inequities in the US?**

Tzvetalina Tankova, Bulgaria:

**European perspective: challenges beyond access**

Somia Iqtadar, Pakistan:

**Asia is where it all happens! News from the world diabetes capitals**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**08:30 - 10:00**

**Nobel Hall**

**Metabolic insights from single-cell studies: clinical implications**

*Chair:* Niklas Mejhert, Sweden

*Speaker:* Elin Grundberg, USA:

**The cellular landscape and the link to insulin sensitivity / type 2 diabetes in: white adipose tissue**

Nils Wierup, Sweden:

**The cellular landscape and the link to insulin sensitivity / type 2 diabetes in: pancreas**

Niels Jessen, Denmark:

**The cellular landscape and the link to insulin sensitivity / type 2 diabetes in: skeletal muscle**

08:30 - 10:00

Doniach Hall

**Flexing muscle metabolism to battle diabetes: What can we learn from omics?**

*Chair:* Patrick Schrauwen, Netherlands

*Speaker:* Michael Snyder, USA:

**Novel insights into understanding and managing diabetes**

EASD  
EFSD

GENERAL  
INFO

David James, Australia:

**Phosphoproteomics from exercise to diabetes**

Romain R Barrès, Denmark:

**Epigenetic rewiring of skeletal muscle after exercise training**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

08:30 - 10:00

Peltonen Hall

**Cells talk in fatty liver disease**

*Chair:* Karim Bouzakri, France

*Speaker:* Philipp Kaldis, Sweden:

**At the crossroads of lipid and glucose metabolism**

Charlotte L Scott, Belgium:

**Macrophage and lipid metabolism**

Antonio Vidal-Puig, UK:

**Triglyceride storage in macrophage**



**Re-inventing the insulin experience: exploring the prospects of once-weekly insulins**

Chair: Tina Vilsbøll, Denmark

*Speaker:* Athena Philis-Tsimikas, USA:  
**Why do we need once-weekly insulins?**

Juan P Frias, USA:  
**The scientific innovation behind once-weekly insulins**

Chantal Mathieu, Belgium:  
**The clinical evidence to date**

Athena Philis-Tsimikas, USA:  
**Pathways to the future**

Stefano Del Prato, Italy:  
**Commentary: Taking once-weekly insulins to the real world**

**followed by Q&A**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Mineralocorticoid receptor overactivation: novel approach to treatment of multi-organ impact with finerenone

*Chair:* Per-Henrik Groop, Finland

*Speaker:* Per-Henrik Groop, Finland:  
**Welcome and introduction**

EASD  
EFSD

GENERAL  
INFO

Luiza Caramori, USA:

**MR overactivation: targeting systemic impact with non-steroidal MRA**

Janet McGill, USA:

**FIDELITY: Cardiorenal outcomes across the whole spectrum of CKD in type 2 diabetes**

Peter Rossing, Denmark:

**Key subgroup analyses from the trial programme**

Andreas L Birkenfeld, Germany:

**Safety and considerations for optimising patient outcomes**

Jennifer B Green, USA and Hiddo J Lambers Heerspink, Netherlands:

**Clinical consequences from FIDELITY and horizons of the FINEOVATE program**

**followed by Q&A and group discussion**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 25 Lipid in and out of the liver***Chair:* J. Haas, France**145 Skeletal muscle derived myokine affects insulin sensitivity and lipogenesis in a human hepatocyte spheroid model**

J.-B. Potier, A. Dumond, A. Fardellas, M. Pinget, M. Aouadi, K. Bouzakri, France, Sweden

**146 The PNPLA3 I148M variant increases intrahepatic lipolysis and beta oxidation and decreases de novo lipogenesis and hepatic mitochondrial function in vivo in humans**

P.K. Luukkonen, K. Porthan, N. Ahlholm, F. Rosqvist, S. Dufour, X.-M. Zhang, J. Dabek, T.E. Lehtimäki, W. Seppänen, M. Orho-Melander, L. Hodson, K.F. Petersen, G.I. Shulman, H. Yki-Järvinen, USA, Finland, Sweden, UK

**147 Effect of tirzepatide on fasting lipids in patients with type 2 diabetes: meta-analysis of randomised controlled trials**

T. Karagiannis, I. Avgerinos, A. Tzapas, E. Bekiari, Greece, UK

**148 Lipidomic and metabolomics profiling in low birth weight men reveals a dysmetabolic phenotype associated with increased liver fat**

L. Elingaard-Larsen, C. Brøns, S. Villumsen, L. Justesen, A. Thuesen, M. Ali, M. Kim, C. Legido-Quigley, G. Van Hall, E. Rubæk Danielsen, T. Hansen, A. Vaag, Denmark

**149 3-hydroxybutyrate infusion suppresses free fatty acid concentrations in type 1 diabetes patients and healthy men**

M. Bangshaab, M.V. Svart, N. Rittig, M.G. Pedersen, N. Møller, Denmark

**150 Inhibition of VEGF-B signalling prevents non-alcoholic fatty liver disease development and progression**

A. Falkevall, A. Mehlem, E. Folestad, M. Zeitelhofer, P. Scotney, U. Eriksson, Sweden, Australia

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 26 The dark side of diabetes***Chair:* A. Rawshani, Sweden**151 Risk of incident diabetes after hysterectomy: results from the E3N cohort study**

F. Bonnet, P. Vaduva, N. Laouali, G. Fagherazzi, M. Kvaskoff, France, USA, Luxembourg

EASD  
EFSD**152 Association between endometriosis and risk of type 2 diabetes: results of the E3N prospective cohort study**

P. Vaduva, N. Laouali, G. Fagherazzi, F. Bonnet, M. Kvaskoff, France, USA, Luxembourg

GENERAL  
INFO**153 Cardiovascular and metabolic morbidity in women with previous gestational diabetes: a nationwide register-based cohort study**

M.H. Christensen, K.H. Rubin, T.G. Petersen, E.A. Nohr, C.A. Vinter, M.S. Andersen, D.M. Jensen, Denmark

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**154 Association of type 2 diabetes, according to the number of risk factors within target range, with incident major depressive disorder and incident depressive symptoms**

A.C. Van Gennip, T.T. Van Sloten, A.A. Kroon, S. Köhler, A. Koster, S.J. Eussen, B.E. De Galan, M.T. Schram, C.D. Stehouwer, Netherlands

SHORT ORAL  
DISCUSSIONS**155 Pre(diabetes) and a higher level of glycaemia are continuously associated with corneal neurodegeneration: The Maastricht Study**

S.B. Mokhtar, F.C. Van der Heide, K.A. Oyaert, C.J. Van der Kallen, T.T. Berendschot, F. Scarpa, A. Colonna, B.E. De Galan, M.M. Van Greevenbroek, C.G. Schalkwijk, R.M. Nuijts, M.T. Schram, C.A. Webers, C.D. Stehouwer, Netherlands, Italy

PRESENTER  
INDEXSATELLITE  
SYMPOSIA**156 Multimorbidity in type 1 diabetes is common and associated with increased mortality**

A. Ylinen, S. Hägg-Holmberg, S. Mutter, S. Satuli-Autere, V. Harjutsalo, C. Forsblom, P.-H. Groop, L.M. Thorn, The FinnDiane Study Group, Finland

INDUSTRY

PROGRAMME

EXHIBITION

**OP 27 Improving your insulin sensitivity: lessons from human studies**

*Chair:* E. Phielix, Netherlands

**157 Circulating microRNA signatures in prepubertal children with obesity and insulin resistance**

D. Santos, P. Porter-Gill, S. Bennuri, G. Good, L. Delhaey, A.E. Sørensen, R. Shannon, L.T. Dalgaard, B. Elisabet, E. Carvalho, Portugal, USA, Denmark

**158 Insulin resistance and visceral or ectopic fat deposition may independently determine metabolic and cardiovascular complications in type 1 diabetes**

J.R. Snaith, D.J. Holmes-Walker, J.R. Greenfield, Australia

**159 Circulating succinate response is associated with insulin sensitivity and glucose tolerance**

B.D. Astiarraga, L.M. Guasch, M. Arnoriaga-Rodriguez, J. Fernandez-Real, J. Vendrell, S. Fernandez-Veledo, Spain

**160 Repeated exposure to cold-induced shivering thermogenesis improves glucose homeostasis in overweight and obese adults**

A.J. Sellers, S.M. Van Beek, D. Hashim, H. Pallubinsky, E. Moonen-Kornips, G. Schaart, A. Gemmink, T. Van de Weijer, M.K. Hesselink, P. Schrauwen, J. Hoeks, W. Van Marken Lichtenbelt, Netherlands

**161 Thromboxane is elevated in men after exercise and improves skeletal muscle glucose uptake and whole-body glucose homeostasis**

A.M. Abdelmoez, M. Borg, L. Dollet, J.A. Smith, A. Chibalin, A. Krook, J.R. Zierath, N.J. Pilon, Sweden, Denmark

**162 High dietary fat intake increases glucagon levels and the glucagon-to-insulin-ratio in healthy lean subjects**

B. Schuppelius, R. Schüler, O. Pivovarova-Ramich, S. Hornemann, A. Busjahn, J. Machann, M. Kruse, A.F. Pfeiffer, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 28 Desirable diets***Chair:* C. Conte, Italy**163 Undesired side effects of a formula diet on erythropoietic parameters: data from two randomised controlled trials**

S. Kabisch, S.L. Jahn, U. Dambeck, M. Kemper, C. Gerbracht, C. Honsek, N.M. Meyer, M.A. Osterhoff, A.F. Pfeiffer, J. Spranger, Germany

EASD  
EFSD**164 An isoenergetic multifactorial diet reduces pancreatic fat and increases postprandial insulin response in patients with type 2 diabetes: a randomised controlled trial**

G. Della Pepa, G. Costabile, V. Brancato, D. Salamone, A. Corrado, M. Vitale, C. Cavaliere, M. Mancini, M. Salvatore, D. Luongo, G. Riccardi, A.A. Rivellese, G. Annuzzi, L. Bozzetto, Italy

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

**165 The role of glucagon in type 2 diabetes remission by weight loss**

E. Lalama, K. Ruether, J. Zhang, B. Schuppelius, N. Kraenkel, M. Csanalosi, S. Kabisch, E. Latz, A. Christ, A.F. Pfeiffer, Germany

THURSDAY

FRIDAY

**166 Determinants of blood glucose concentrations after a high carbohydrate meal in type 2 diabetes: a multiple linear regression analysis**

C. Xie, R.J. Jalleh, W. Huang, Y. Sun, K.L. Jones, M. Horowitz, C.K. Rayner, T. Wu, Australia

SHORT ORAL  
DISCUSSIONS**167 The 'early' postprandial glucagon response to a mixed meal is dependent on the rate of gastric emptying in type 2 diabetes**

W. Huang, C. Xie, N.J. Albrechtsen, K.L. Jones, M. Horowitz, C.K. Rayner, T. Wu, Australia, Denmark

PRESENTER  
INDEXSATELLITE  
SYMPOSIA**168 Disparities in blood glucose and incretin responses to intraduodenal glucose infusion in healthy young males and females**

T. Wu, C. Xie, W. Huang, Y. Sun, M. Horowitz, K.L. Jones, C.K. Rayner, Australia

INDUSTRY

PROGRAMME

EXHIBITION

**OP 29 Saving sweet souls**

*Chair:* D. Pongrac Barlovic, Slovenia

**169 Psychological resilience is predictive of future HbA<sub>1c</sub> and mental health status in adults with new onset type 1 diabetes**

S.M. Brackley, N. Thomas, A. Hill, B. Shields, T. McDonald, C. Fox, J. Huber, A. Jones, UK

**170 Caregiver-report adherence in diabetes questionnaire is predictive of 10-year HbA<sub>1c</sub> trajectories in children and adolescents with type 1 diabetes: a population-based study**

K.P. Marks, N.H. Birkebæk, F. Pouwer, E.H. Ibfelt, M. Thastum, M.B. Jensen, Denmark

**171 Associations between generalised anxiety disorder, glycaemic management, and demographic factors among adults with diabetes in Europe**

E. Cox, E. Ye, R. Wood, C. Pang, USA

**172 Relationship between elevated diabetes distress and DSM-5 personality traits: evidence from the Czech validation sample**

J. Konecna, D. Lacko, K.D. Riegel, Czech Republic

**173 High burden of depression, anxiety and severe obesity in young women with newly diagnosed type 2 diabetes: reports from a Swedish multicentre study of 1027 patients**

E.O. Melin, P. Wanby, T. Neumark, S. Holmberg, A.-S. Nilsson Neumark, K. Johansson, M. Landin-Olsson, H. Thulesius, M. Hillman, M. Thunander, Sweden

**174 Let the patient choose! Patient preferences for type 2 diabetes therapy in the trimester double-blind three-way randomised crossover trial**

B. Shields, C. Angwin, A.G. Jones, R.R. Holman, N. Sattar, N. Britten, E. Pearson, M. Shepherd, A.T. Hattersley, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 30 Novel ways of beta cell replacement***Chair:* M. Fex, Sweden**175 A highly oxygenated hydrogel enhanced the survival of human islets encapsulated within macroencapsulation devices**

D.A. Domingo-Lopez, D. Brandhorst, E. O'Cearbhaill, F. Coulter, L. McDonough, H. Brandhorst, S. Deotti, P. Johnson, H. Kelly, G.P. Duffy, Ireland, UK

EASD  
EFSDGENERAL  
INFO**176 Microsphere-based bioartificial islet with beta cells and mesenchymal stem cells co-encapsulation for diabetes treatment**

J. Sun, L. Li, China

PROGRAMME

TUESDAY

**177 Parallel single cell RNA sequencing and spatial transcriptomics analysis of the developing human pancreas**

O. Olaniru, U. Kadolsky, S. Kannambath, H. Vaikkinen, K. Fung, P. Dhimi, S.J. Persaud, UK

WEDNESDAY

THURSDAY

**178 Elucidating the role of TFB1M genetic variants in diabetogenic mechanisms using genome-edited stem cell models**

F. Roberts, S. Hladkou, T. Singh, R. Prasad, M. Fex, H. Mulder, Sweden

FRIDAY

**179 Stem cell-derived islets display functional and metabolic maturation post-engraftment**

T. Barsby, E. Vähäkangas, H. Montaser, J. Ustinov, J. Saarimäki-Vire, T. Otonkoski, Finland

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEX**180 MicroRNAs predictive of islet graft function in islet transplant recipients**

W.K. Wong, M.V. Joglekar, V. Saini, C.X. Dong, P.S. Kunte, B.L. Anderson, K.Z. Dajani, A.M. Simpson, P.E. MacDonald, P.A. Senior, K.K. Danielson, A.M. Shapiro, A.A. Hardikar, Australia, India, Canada, USA

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**EFSD Mentorship Programme Meeting 2022**

*Chair:* Claudia Cavelti-Weder, Switzerland

*Speaker:* Stefano Del Prato, Italy:  
**Introduction of the Mentees**

**Presentation of the Mentees 2018 cohort**

Francesca Cinti, Catholic University of the Sacred Heart - Rome, Italy

Jan Gojda, Charles University - Prague, Czech Republic  
Rocky Strollo, University Campus Bio-Medico - Rome, Italy

Domenico Tricó, St Anna School of Advanced Studies - Pisa, Italy

Stefano Del Prato, Italy:  
**Closing remarks**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# SHORT ORAL DISCUSSIONS EVENT E

	<b>12:00 - 13:00</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
		SO 05 Genetics of type 2 diabetes . . . . .	<u>138</u>
		SO 11 Novel biomarkers and risk factors . . . . .	<u>144</u>
EASD EFSD		SO 17 Intracellular signalling balancing beta cell survival and death . . . . .	<u>150</u>
GENERAL INFO		SO 23 Gestational diabetes and pregnancy. . . . .	<u>155</u>
PROGRAMME		SO 29 Glucose homeostasis regulation beyond insulin . . . . .	<u>161</u>
TUESDAY		SO 35 Metabolic inflexibility and complications in humans . . . . .	<u>167</u>
WEDNESDAY		SO 41 Incretins: basic science . . . . .	<u>174</u>
THURSDAY		SO 47 Treatments, molecules and outcomes: a smorgasbord . . . . .	<u>180</u>
FRIDAY		SO 53 Pumping, looping, freeing. . . . .	<u>187</u>
SHORT ORAL DISCUSSIONS		SO 59 Getting a grip on nerves. . . . .	<u>194</u>
PRESENTER INDEX		SO 65 Translating signals in the diabetic kidney . . . . .	<u>200</u>
SATELLITE SYMPOSIA		SO 71 Prevention and treatment of cardiovascular complications . . . . .	<u>207</u>
INDUSTRY		SO 77 Disclosing fatty liver disease mechanisms . . . . .	<u>213</u>
PROGRAMME			
EXHIBITION			

# SHORT ORAL DISCUSSIONS EVENT F

<b>13:15 - 14:15</b>	<b>Short Oral Discussion Area</b>	<b>Page</b>
SO 06	Sometimes one gene is enough . . . . .	<u>139</u>
SO 12	Different facets of type 2 diabetes treatment . . . . .	<u>145</u>
SO 18	Stressing the beta cell into dysfunction . . . . .	<u>151</u>
SO 24	Life with diabetes from conception to delivery . . . . .	<u>156</u>
SO 30	Non-classical regulators of metabolism . . . . .	<u>162</u>
SO 36	Modelling obesity and type 2 diabetes. . . . .	<u>168</u>
SO 42	Clinical epidemiology and pharmacotherapy . . . . .	<u>175</u>
SO 48	Hypoglycaemia: hip hip hooray yet to come . . . . .	<u>182</u>
SO 54	Making sense out of sensors and data. . . . .	<u>189</u>
SO 60	Preventing microvascular complications . . . . .	<u>195</u>
SO 66	Mechanisms of diabetic kidney disease . . . . .	<u>201</u>
SO 72	Diabetes dysmetabolism dialogues with the cardiovascular component . . . . .	<u>208</u>
SO 78	Screening tools, lipids and novel biomarkers. . . . .	<u>214</u>

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

## EASD E-LEARNING SESSIONS

In these sessions you will be able to interact live with the EASD e-Learning authors and ask all you ever wanted to know but never dared to ask.

We invite you to join the discussion.

**12:00 - 12:45**

**Virchow Hall**

EASD  
EFSD

### **EASD e-Learning: ADA/EASD management of type 1 diabetes consensus report**

GENERAL  
INFO

*Chair:* Apostolos Tsapas, Greece

*Speaker:* Richard Holt, UK, Anne Peters, USA and Barbara Ludwig, Germany:

### **ADA/EASD management of type 1 diabetes consensus report**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**13:00 - 13:45**

**Virchow Hall**

### **EASD e-Learning: Technology and type 1 diabetes**

*Chair:* Pratik Choudhary, UK

*Speaker:* Julia Mader, Austria and Thomas Danne, Germany:  
**Technology and type 1 diabetes**

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

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 <p>Sign In / Register to enrol</p> <p>Non-alcoholic fatty liver disease</p>	 <p>Sign In / Register to enrol</p> <p>Real-world evidence</p>	 <p>Sign In / Register to enrol</p> <p>Cardiovascular health and diabetes</p>	 <p>Sign In / Register to enrol</p> <p>SGLT-2 inhibitors</p>	 <p>Sign In / Register to enrol</p> <p>Insulin resistance</p>
 <p>Sign In / Register to enrol</p> <p>Diabetic foot disease</p>	 <p>Sign In / Register to enrol</p> <p>Islet transplantation</p>	 <p>Sign In / Register to enrol</p> <p>Diabetes and the kidney</p>	 <p>Sign In / Register to enrol</p> <p>Time in range</p>	 <p>Sign In / Register to enrol</p> <p>Adjunct therapies</p>
 <p>Sign In / Register to enrol</p> <p>Technology and type 1 diabetes</p>	 <p>Sign In / Register to enrol</p> <p>Gestational Diabetes Mellitus (GDM)</p>	 <p>Sign In / Register to enrol</p> <p>The pathogenesis of type 1 diabetes</p>	 <p>Sign In / Register to enrol</p> <p>Diagnosis of type 1 diabetes</p>	 <p>Sign In / Register to enrol</p> <p>GLP-1 receptor agonists</p>

**OP 31 Diabetes: size matters**

Chair: D. Witte, Denmark

**181 IDF diabetes atlas: global prevalence estimates of prediabetes for 2021 and projections for 2045**

D.J. Magliano, M. Fang, M. Rooney, K. Ogurtsova, E. Boyko, E. Selvin, Australia, USA, Germany

EASD  
EFSD

**182 Body size change from childhood to adulthood and type 2 diabetes risk**

G.D. Carrasquilla, T.O. Kilpeläinen, R.J. Loos, Denmark

GENERAL  
INFO

**183 Type 2 diabetes, and its modulating effect on the aging body, studied using voxel-wise analysis of whole-body MR images**

J. Kullberg, A. Martinez Mora, N. Ahmad, F. Malmberg, R. Strand, L. Johansson, T. Fall, S.C. Larsson, L. Lind, H. Ahlström, Sweden

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**184 Low birth weight is associated with lower age and BMI at the time of type 2 diabetes diagnosis in the Danish DD2 cohort**

A.L. Hansen, R.W. Thomsen, C. Brøns, H.M. Svane, J.S. Nielsen, P. Vestergaard, K. Højlund, N. Jessen, M. Olsen, T. Hansen, H.T. Sørensen, A.A. Vaag, Denmark

SHORT ORAL  
DISCUSSIONS

**185 Four weeks of carbohydrate overfeeding induce widespread dysmetabolic traits in men born with a low birth weight compared to matched normal birth weight controls**

C. Brøns, A.B. Thuesen, S.O. Villumsen, L. Justesen, L.O. Elingaard-Larsen, J. Størling, M. Kim, C. Legido-Quigley, G. Van Hall, E.R. Danielsen, T. Hansen, A.A. Vaag, Denmark

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**186 Efficacy of metformin in preventing progression to diabetes in Chinese subjects with impaired glucose regulation: results from a multicentre, open-label RCT**

L. Zhang, Y. Zhang, S. Shen, X. Wang, Q. Li, L. Ji, N. Sun, G. Li, CDDP study group, China

INDUSTRY

PROGRAMME

EXHIBITION

**OP 32 Pain or no pain?**

*Chair:* V. Spallone, Italy

**187 Painful diabetic peripheral neuropathy in type 1 diabetes in the Epidemiology of Diabetes Interventions and Complications (EDIC) study**

B.H. Braffett, L. El ghormli, J.W. Albers, E.L. Feldman, R.A. Gubitosi-Klug, W. Herman, C.L. Martin, T.J. Orchard, B.A. Perkins, N.H. White, J.M. Lachin, R. Pop-Busui, DCCT/EDIC Research Group, USA

**188 Increased functional connectivity of the Thalamus and primary Somatosensory cortex and insular cortex following treatment withdrawal: a potential biomarker of painful-DPN**

G. Sloan, D. Selvarajah, K. Teh, I. Wilkinson, S. Tesfaye, UK

**189 Better target engagement of opioid receptor systems in responders to neuropathic pain treatment: a neurotransmitter-enriched functional connectivity mapping study**

D. Selvarajah, K. Teh, J. Mcallister, A. Anandhanarayanan, J. Fan, G. Sloan, S. Tesfaye, UK

**190 Declining incident rates of distal polyneuropathy in a cohort study, but with distinct age-related patterns between diabetes types in the period 1996-2018**

H. Mizrak, H. Amadid, P. Rossing, D. Vistisen, C. Hansen, Denmark

**191 Type 2 diabetes phenotypes and polyneuropathy: a prevalence study in the DD2 Cohort**

F.P. Kristensen, D.H. Christensen, B.C. Callaghan, J. Stidsen, J.S. Nielsen, K. Højlund, T.S. Jensen, P. Vestergaard, N. Jessen, T. Hansen, R.W. Thomsen, Denmark, USA

**192 Environmental risk factors of incident distal sensorimotor polyneuropathy: results from the population-based KORA F4/FF4 study**

C. Herder, S. Zhang, K. Wolf, H. Maalmi, G.J. Bönhof, W. Rathmann, L. Schwettmann, B. Thorand, M. Roden, A. Schneider, D. Ziegler, A. Peters, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 33 Therapy outside the box***Chair:* J. Kerr-Conte, France**193 Discovery of malonic acid as a novel adipocyte beiging molecule**

C. Luk, N.J. Haywood, K.I. Bridge, K.J. Simmons, N.Y. Yuldasheva, P. Sukumar, L.D. Roberts, S.B. Wheatcroft, R.M. Cubbon, M.T. Kearney, UK

EASD  
EFSD**194 Hepatic S100A9-TLR4-MTORC1 axis normalises diabetic ketogenesis**

G. Ursino, G. Ramadori, A. Höfler, S. Odouard, P. Teixeira, F. Visentin, C. Veyrat-Durebex, G. Lucibello, R. Firnkes, S. Ricci, J. Elmquist, T. Vogl, A. Boland, R. Coppari, Switzerland, USA, Germany

GENERAL  
INFO

PROGRAMME

TUESDAY

**195 Validation of duodenal targeting by oral pharmacologic duodenal exclusion therapy for treatment of type 2 diabetes**

T. Carlson, A. Nimgaonkar, T. Guerina, K. Colbert, S. Polomoscanik, J. Petersen, T. Jozefiak, M. Fineman, USA

WEDNESDAY

THURSDAY

**196 Human engineered skeletal muscle to treat insulin resistance in type 2 diabetes**

H. Shoyhet, Y. Herman, M. Beckerman, E. Karnieli, S. Levenberg, Israel

FRIDAY

**197 Oral long-acting menin inhibitor normalises type 2 diabetes in two rat models**

T. Butler, S. Mourya, W. Li, B. Law, T. Archer, T. Kinoshita, P. Somanath, USA

SHORT ORAL  
DISCUSSIONS**198 G1p-1/gdf15 dual agonist to treat obesity and hyperglycaemia in mice and non-human primates**

Y.Y. Zhang, A. Kharitonov, X.Y. Zhao, X.N. Dong, Y.Y. Zhang, H.X. Zou, Y.G. Jin, W. Guo, P. Zhai, X. Chen, China

PRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**OP 34 Insulin signalling, novelties from the petri dish!***Chair:* J. Ukropec, Slovakia**199 Finnish-specific AKT2 gene variant leads to impaired insulin signalling in human myotubes**

S. Mäkinen, N. Datta, Y.H. Nguyen, V.M. Olkkonen, A. Latva-Rasku, P. Nuutila, M. Laakso, H.A. Koistinen, Finland

**200 Role of Diacylglycerol kinase  $\delta$  in skeletal muscle glucose metabolism in type 2 diabetes**

F. Tramontana, M. Kuefner, A. Krook, J.R. Zierath, Sweden

**201 Pharmacological inhibition of Integrin  $\alpha 5\beta 1$  improves insulin sensitivity in H9C2 cells and cardiac performance in obese mice**

A.K. Banah, V. Musale, C.K. Hennayake, C.E. Murdoch, L. Kang, UK

**202 Impact of protein kinase D2 in the regulation of hepatic insulin sensitivity**

P. Rada, A.B. Hitos, E. Rey, E. Carceller-López, J. Pose-Utrilla, C. García-Monzón, G. Sabio, T. Iglesias, Á. González-Rodríguez, Á.M. Valverde, Spain

**203 Alpha-melanocyte stimulatory hormone ( $\alpha$ MSH): a novel and potent regulator of glucose tolerance in humans**

N.G. Docherty, P. Swan, B. Johnson, S. Samarasinghe, M. Cowley, C.W. Le Roux, A.D. Miras, Ireland, UK, Australia

**204 Abrogation of circular dorsal ruffles by hyper insulinemia impairs insulin receptor internalisation and recycling**

A. Teshima, M.A. Correia, L.M. Oliveira, D.C. Barral, R.M. De Oliveira, M.P. Macedo, Portugal

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 35 Different pathways involved in killing the beta cell***Chair:* M. Cnop, Belgium**205 IER3IP1 mutations lead to ER stress-induced neonatal diabetes**

H. Montaser, S. Leppänen, H. Ibrahim, S. Eurola, J. Saarimäki-Vire, T. Otonkoski, Finland

EASD  
EFSD**206 Inhibition of the type 1 diabetes candidate gene PTPN2 aggravates tumor necrosis factor alpha-induced human beta cell dysfunction and death**

A. Roca Rivada, S. Marín Cañas, M.L. Colli, D.L. Eizirik, Belgium

GENERAL  
INFO

PROGRAMME

TUESDAY

**207 GDF11 improve age-dependent beta cell deterioration in mouse and man**

R. Wu, Sweden

WEDNESDAY

**208 Insulin, proinsulin and PC1/3 expression heterogeneity and beta cell function in diabetes**

P.S. Apaolaza Gallegos, Y.C. Chen, K. Grewal, Y. Lurz, B. Verchere, T. Rodriguez-Calvo, Germany, Canada

THURSDAY

FRIDAY

**209 FFA1/Gq - Gi interaction determines glucose-induced insulin secretion of neonatal beta cells**

F. Gerst, E. Lorza-Gil, G. Kaiser, T. Ulven, E. Kostenis, H.-U. Häring, A.L. Birkenfeld, S. Ullrich, Germany, Denmark

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEX**210 Oral administration of the small molecule cathepsin S inhibitor LY3000328 accelerates disease onset and impairs glucose tolerance in non-obese diabetic mice**

T. Fløyel, C. Frørup, M. Haupt-Jørgensen, L.J. Holm, K. Pedersen, M.Ø. Mønsted, K. Buschard, J. Størling, F. Pociot, Denmark

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 36 Central aspects of diabetes**

*Chair:* T.D. Mueller, Germany

**211 Involvement of hypothalamic de novo ceramide synthesis in central resistin-induced glucose intolerance: impact on hypothalamic and hepatic inflammation**

J. Guitton, C. Alexandre, M. Taouis, M. López, Y. Benomar, H. Le Stunff, France, Spain

**212 Effect of high fat diet and exendin 4 on inhibitory neurotransmission markers and insulin signalling in the brain in high fat fed mice**

V. Sancho, A. Faraone, A. Dardano, S. Del Prato, M. Mainardi, G. Daniele, Italy

**213 Central action of FGF19 improves energy homeostasis in diet-induced obese mice**

L. Zangerolamo, M. Carvalho, C. Solon, G.M. Soares, L.A. Velloso, H.C. Barbosa, Brazil

**214 Modulation of hypothalamic AMPK phosphorylation by Olanzapine controls energy balance and body weight**

V. Ferreira, C. Folgueira, M. Guillén, P. Zubiaur, D. Grajales, A. Sarsenbayeva, P. López Larrubia, J.W. Eriksson, M.J. Pereira, F. Abad-Santos, G. Sabio, P. Rada, Á.M. Valverde, Spain, Sweden

**215 Effect of interesterified fat and its metabolites on inflammation and insulin resistance in hypothalamus**

J.E. Miyamoto, R.M. Santos, B.P. Siqueira, A. Reginato, J. Guitton, P.L. Menta, T.G. Ramalheira, A.S. Torsoni, L.M. Ignácio-Souza, M.A. Torsoni, H. Le Stunff, C. Magnan, M. Milanski, Brazil, France, USA

**216 A role for GIP in the regulation of food intake and body weight in mice**

J.E. Lewis, T. Darwish, F. Reimann, F.M. Gribble, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 57th Minkowski Lecture

*Chair:* Stefano Del Prato, Italy

*Speaker:* Martin Heni, Germany:

**The insulin resistant brain: impact on whole-body metabolism and body fat distribution**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Martin Heni** is a medical doctor with a strong research focus on the pathogenesis, clinical course, and optimized treatment of type 2 diabetes and obesity.

He investigates the inter-organ communication in the control of human metabolism and how these processes are regulated by the brain. He aims to discover fundamental central control mechanisms of body fat distribution and whole-body metabolism, and clarify their clinical impact. As a physician researcher he has a strong translational focus. He works to bridge the gap between basic research and mechanistic studies in humans.



Martin Heni studied Medicine in Greifswald, Germany and Tübingen, Germany where he graduated in 2008. As a research fellow with the DFG Research training group 794, he finished his experimental thesis in 2008. He was board certified for Internal Medicine and Endocrinology and Diabetology in 2015.

Since 01/2016 he worked as an attending physician and was head of the Clinical Research Center for Diabetes at the University Hospital Tübingen, Germany and IDM (Institute for Diabetes Research and Metabolic Diseases of the Helmholtz Center Munich). In 2022, he was appointed as a full professor at Ulm University, Germany and is head of the Division for Endocrinology and Diabetology at Ulm University Hospital.

# EASD MINKOWSKI PRIZE

The Minkowski Prize awards research contributing to the advancement of knowledge concerning diabetes which has been carried out by an EASD member normally residing in Europe.

The prize will be awarded to an outstanding researcher with no more than ten years full time experience as an independent investigator in the year of the nomination.

The Minkowski Prize is generously supported by Lilly.

EASD  
EFSD

GENERAL  
INFO

## EASD Minkowski Lecturers

2021	A. Bonnefond (FR)
2020	G.P. Fadini (IT)
2019	F.K. Knop (DK)
2018	F. Bäckhed (SE)
2017	E.R. Pearson (UK)
2016	P. Schrauwen (NL)
2015	M. Blüher (DE)
2014	A. Gloyn (UK)
2013	M. Cnop (BE)
2012	T.M. Frayling (UK)
2011	N. Sattar (UK)
2010	F. Gribble (UK)
2009	G. Perseghin (IT)
2008	J.C. Brüning (DE)
2007	M. Stoffel (CH)
2006	M. Roden (DE)
2005	P. Rossing (DK)
2004	G.A. Rutter (UK)
2003	M. Stumvoll (DE)
2002	B.O. Roep (NL)
2001	J.R. Zierath (SE)
2000	H. Edlund (SE)
1999	R. Scharfmann (FR)
1998	J.H. Auwerx (FR)
1997	P. Froguel (FR)
1996	P. Rorsman (DK)
1995	J. Todd (UK)
1994	T. Mandrup Poulson (DK)

1993	H. Yki-Järvinen (FI)
1992	E. van Schaffingen (BE)
1991	C. Boitard (FR)
1990	P. Halban (CH)
1989	H.-U. Häring (DE)
1988	J.C. Hutton (UK)
1987	J.-L. Carpentier (CH)
1986	D. Pipeleers (BE)
1985	E. Van Obberghen (FR)
1984	A. Lernmark (DK)
1983	S.L. Howell (UK)
1982	G.F. Bottazzo (UK)
1981	P. De Meyts (BE)
1980	I.-B. Taljedal (SE)
1979	S.J. Ashcroft (UK)
1978	J. Nerup (DK)
1977	J. Wahren (SE)
1976	K.D. Hepp (DE)
1975	P. Freychet (FR)
1974	E. Cerasi (SE)
1973	L. Orci (IT/CH)
1972	W.J. Malaisse (BE)
1971	C.N. Hales (UK)
1970	B. Jeanrenaud (CH)
1969	B. Hellman (SE)
1968	L.A. Carlson (SE)
1967	E.R. Froesch (CH)
1966	P.J. Randle (UK)

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**16:15 - 17:00**

**Minkowski Hall**

**EASD-Lilly Centennial Anniversary Prize Lecture**

*Chair:* Allan Flyvbjerg, Denmark

*Speaker:* TBA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

# EASD-LILLY CENTENNIAL ANNIVERSARY PRIZE

The EASD-Lilly Centennial Anniversary Prize recognise individual researchers who have significantly contributed through innovative approaches to the development and evolution of treatment and management of diabetes.

Starting in 2022, the award will be bestowed for three consecutive years on the occasion of the EASD Annual Meeting. Each year will identify the awardee among those who have contributed to three different fields:

- 2022:** Innovative pharmacologic therapies
- 2023:** Landmark achievements in the pathogenesis of diabetes
- 2024:** Clinical and diagnostic innovation in the management of diabetes and its complications

The EASD-Lilly Centennial Anniversary Prize is generously supported by Lilly.

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**17:15 - 18:15**

**Bernard Hall**

**The 3 P's of large vessels in type 1 diabetes**

*Chair:* Lena Thorn, Finland

*Speaker:* Andrew D Paterson, Canada:

**Pathogenesis and genetics underlying cardiovascular disease in type 1 diabetes**

Helen M Colhoun, UK:

**Prediction of cardiovascular disease in type 1 diabetes**

Tina Costacou, USA:

**Prevention of cardiovascular disease in type 1 diabetes**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**17:15 - 18:15**

**Minkowski Hall**

**Is it the genes or the epigenetics behind diabetic kidney disease?**

*Chair:* Niina Sandholm, Finland

*Speaker:* Jose C Florez, USA:

**It is the genes**

Amy J McKnight, UK:

**It is the epigenetics**

**17:15 - 18:15**

**Golgi Hall**

**Debate: "... and CGM for all"**

*Chair:* Asimina Mitrakou-Fanariotou, Greece

*Speaker:* Maciej T Malecki, Poland:

**Yes**

J Hans DeVries, Netherlands:

**No**



**17:15 - 18:15**

**Nobel Hall**

**Thermogenic activation of adipose tissue: the holy grail in the treatment of diabetes?**

*Chair:* Mikael Rydén, Sweden

*Speaker:* Christian Wolfrum, Switzerland:

**Thermogenic activation: What have we learned so far?**

Kirsi A Virtanen, Finland:

**Is thermogenic activation a feasible therapeutic avenue in humans?**

EASD  
EFSD

GENERAL  
INFO

**17:15 - 18:15**

**Doniach Hall**

**A clinical perspective on the Krebs cycle and insulin sensitivity**

*Chair:* Amalia Gastaldelli, Italy

*Speaker:* Shawn C Burgess, USA:

**Ins and outs of the tricarboxylic acid (TCA) cycle: the central role of anaplerosis**

Esther Phielix, Netherlands:

**Boosting BCAA oxidation improves metabolic health in humans**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

**17:15 - 18:15**

**Peltonen Hall**

**New little players in beta cell function**

*Chair:* Lena Eliasson, Sweden

*Speaker:* Romano Regazzi, Switzerland:

**Islet circRNA in diabetes development**

Mariana Igoillo-Esteve, Belgium:

**tRNA in the pathogenesis of diabetes**

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**DELIVER Trial**

*Chair:* Naveed Sattar, UK

*Speaker:* Pardeep S Jhund, UK:  
**Background, significance and methods**

Silvio E Inzucchi, USA:  
**Baseline characteristics and results**

Mikhail Kosiborod, USA:  
**Summary and conclusions**

**followed by panel discussion and Q&A**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

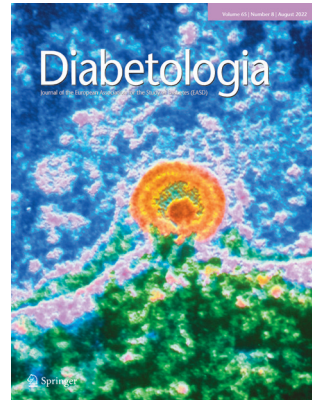
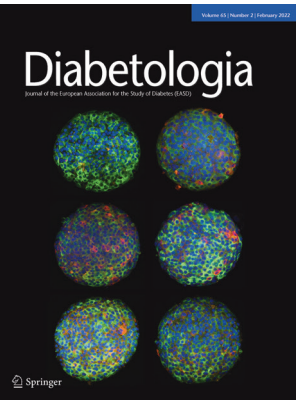
INDUSTRY

PROGRAMME

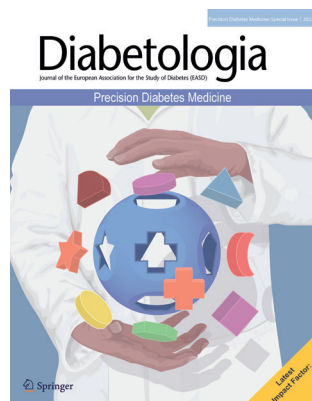
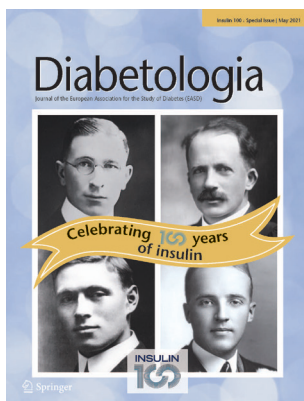
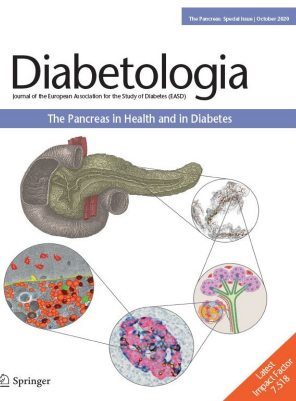
EXHIBITION

# Diabetologia

Journal of the European Association for the Study of Diabetes (EASD)



Cutting-edge articles on all aspects of diabetes, from basic science through translational work to clinical research



Themed issues on timely topics published annually

Web: [diabetologia-journal.org](http://diabetologia-journal.org)

Twitter: @DiabetologiaJnl

08:30 - 09:30

Bernard Hall

**EASD/ESC Symposium: New perspectives on heart function and failure in diabetes**

*Chair:* Allan A Vaag, Denmark and Francesco Cosentino, Sweden

*Speaker:* Lars H Lund, Sweden:

**Heart failure in type 2 diabetes: Is it about HFpEF, HFrEF or both? Status and the next step**

EASD  
EFSD

GENERAL  
INFO

Nikolaus Marx, Germany:

**Diabetes and the heart: the most recent advances**

PROGRAMME

08:30 - 09:30

Minkowski Hall

TUESDAY

**Diabetic nephropathy or diabetic kidney disease? In search of a phenotype**

WEDNESDAY

THURSDAY

*Chair:* Janaka Karalliedde, UK

*Speaker:* Luiza Caramori, USA:

**Diabetic kidney disease vs diabetic nephropathy: What can we learn from kidney biopsies?**

FRIDAY

SHORT ORAL  
DISCUSSIONS

Monika A Niewczas, USA:

**Paradigm shift in clinical practice, eGFR and/or albuminuria as indicator for DKD?**

PRESENTER  
INDEX

08:30 - 09:30

Golgi Hall

SATELLITE  
SYMPOSIA

**How much can people with type 1 diabetes benefit from adjunct therapies?**

INDUSTRY

*Chair:* Chantal Mathieu, Belgium

*Speaker:* Jerry R Greenfield, Australia:

**GLP-1 agonists**

PROGRAMME

EXHIBITION

Parth Narendran, UK:

**SGLT2 inhibitors**

Husam A Ghanim, USA:

**Combination therapy**

**08:30 - 09:30**

**Nobel Hall**

**Diabetes in old age: myths and facts**

*Chair:* Sarah Wild, UK

*Speaker:* Alan J Sinclair, UK:

**Prognostic indicators in the complex illness of older people**

Brenda Bongaerts, Germany:

**Intensive glucose-lowering therapy and polypharmacy in older persons with type 2 diabetes**

EASD  
EFSD

GENERAL  
INFO

**08:30 - 09:30**

**Doniach Hall**

**Fasting and feeding: the most important F-words in metabolism**

*Chair:* Joris Hoeks, Netherlands

*Speaker:* Mauricio Castro-Sepulveda, Chile:

**Mitochondrial metabolism regulated by fasting-feeding cycle**

Normand Boulé, Canada:

**Fasted exercise training in type 2 diabetes**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**08:30 - 09:30**

**Peltonen Hall**

**Three reasons for why non-coding RNAs are important in metabolic control**

*Chair:* Stephan Herzig, Germany

*Speaker:* Manuel Gil Lozano, Germany:

**miRNA as therapeutic tools in diabetes**

Francesco Dotta, Italy:

**miRNA signatures in diabetes therapy prediction**

Timothy Bowen, UK:

**How to manipulate miRNAs for diabetes therapy**

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**08:30 - 09:30**

**Heding Hall**

**Hepatokines: Do they play a role in diabetes and NAFLD?**

*Chair:* M Paula Macedo, Portugal

*Speaker:* Young-Bum Kim, USA:  
**Apolipoprotein J**

Catherine Postic, France:  
**FGF21 and ANGPTLs**

EASD  
EFSD

GENERAL  
INFO

**08:30 - 10:00**

**Jacobsohn Hall**

**10th East-West Forum: Care through the eyes of the patient**

*Chair:* Sean Dinneen, Ireland  
Toshimasa Yamauchi, Japan

*Speaker:* Marleen J Kunneman, Netherlands, USA:  
**Making care fit in the lives and loves of people with diabetes**

Hideki Hashimoto, Japan:  
**Eradicating diabetes stigma**

Bastian Hauck, Germany:  
**Changing the world through diabetes advocacy, one tweet at a time**

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 37 Insulin deficiencies and cardiovascular disease**

Chair: L. Thorn, Finland

**217 Incidence of cardiovascular disease in latent autoimmune diabetes in adults**

Y. Wei, E. Ahlqvist, T. Andersson, T. Tuomi, S. Carlsson, Sweden

**218 Endotrophin is a risk marker of complications in a type 1 diabetes cohort**

A.L. Møller, N.H. Tougaard, P.F. Rønn, T.W. Hansen, F. Genovese, M.A. Karsdal, D.G. Rasmussen, P. Rossing, Denmark

**219 Predictors of arterial stiffness in patients with type 1 diabetes: importance of long-term glycaemic control and physical activity**

S. Helleputte, P. Calders, J. Marlier, T. De Backer, B. Lapauw, Belgium

**220 Hyperglycaemia and hypoglycaemia exposure are differentially associated with micro- and macrovascular complications in adults with type 1 diabetes**

A. Mesa, M. Giménez, I. Pueyo, V. Perea, C. Viñals, J. Blanco, I. Vinagre, T. Serés-Noriega, L. Boswell, E. Esmatjes, I. Conget, A.J. Amor, Spain

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 38 It is always a D-D-Day: diabetes, digital, device***Chair:* M. Prazny, Czech Republic**221 Long term weight loss in a primary care-anchored eHealth lifestyle coaching programme in Denmark: a randomised controlled trial**

L. Hesseldal, J.R. Christensen, T.B. Olesen, M.H. Olsen, P.R. Jakobsen, J.T. Lauridsen, D.H. Laursen, J.B. Nielsen, J. Søndergaard, C.J. Brandt, Denmark

EASD  
EFSDGENERAL  
INFO**222 Telehealth versus in-person standard care in patients with type 1 diabetes treated with multiple doses of insulin: an open-label randomised controlled trial**

S. Ballesta, J.J. Chillarón, Y. Inglada, A. Rodriguez, E. Climent, G. Llauradó, H. Camell, J.A. Flores, D. Benaiges, Spain

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**223 Association between HbA<sub>1c</sub> and time in range in adults with type 1 diabetes using sensor-based glucose monitoring: a Swedish National Diabetes Register population-based study**

E. Kjölhede, J. Nätman, J. Ekelund, S. Salö, N.F. Nielsen, B. Eliasson, K. Eeg-Olofsson, Sweden, Denmark

**224 Accuracy of continuous glucose monitoring systems during exercise-related hypoglycaemia in patients with type 1 diabetes**

K. Maytham, P.G. Hagelqvist, U. Pedersen-Bjergaard, F.K. Knop, A. Andersen, T. Vilsbøll, Denmark

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATTELITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**OP 39 Too little sugar is also bad: understanding hypoglycaemia**

*Chair:* J. Rungby, Denmark

**225 Tmem117 in AVP neurons regulates the counterregulatory response to hypoglycaemia**

S. Gaspari, G. Labouèbe, A. Picard, A. Rodriguez Sanchez-Archidona, B. Thorens, Switzerland

**226 Molecular investigations of defective hypoglycaemia counter-regulation in a murine model of type-2 diabetes: a multi-omics study**

J. Castillo-Armengol, A. Rodriguez Sanchez-Archidona, C. Fledelius, F. Marzetta, B. Thorens, Denmark, Switzerland

**227 Heart rate variability, an index of autonomic function, is associated with C-peptidogenic index, an index of beta cell function: The Maastricht study**

E. Rinaldi, F. Van der Heide, R. Henry, A. Kroon, C. Van der Kallen, S. Eussen, E. Bonora, R. Bonnadonna, M. Trombetta, C. Zusi, C. Schalkwijk, M. Van Greevenbroek, C. Stehouwer, Italy, Netherlands

**228 Agpat5 in AgRP neurons is required for hypoglycaemia-induced glucagon secretion**

A. Strembitska, G. Labouebe, A. Picard, X.P. Berney, D. Tarussio, M. Jan, B. Thorens, Switzerland

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 40 When the clock ticks**

*Chair:* L. Dollet, Sweden

**229 Time-of-day effects of exercise training on multi-tissue metabolome and skeletal muscle proteome profiles in men with type 2 diabetes**

M. Savikj, S. Ben, S. Shogo, K. Caidahl, A. Krook, A.S. Deshmukh, J.R. Zierath, H. Wallberg-Henriksson, Sweden, Denmark, USA

EASD  
EFSD

GENERAL  
INFO

**230 Beta cell functional heterogeneity underpinning coordinated oscillatory activity is not fixed**

K. Suba, B. Hansen, Y. Patel, B.M. Owen, W. Distaso, V. Salem, UK

PROGRAMME

TUESDAY

**231 Time-of-day influences post-exercise metabolism in mouse adipose tissue**

L.A. Pendergrast, L. Dollet, L.S. Lundell, A.M. Ehrlich, S.P. Ashcroft, J.T. Treebak, A. Krook, J.R. Zierath, Sweden, Denmark

WEDNESDAY

THURSDAY

**232 The effects of hyperglycaemia on the circadian clock in TALLYHO/JngJ mice**

S.P. Ashcroft, A.M. Ehrlich, T.S. Nielsen, S. Larsen, J.T. Treebak, J.R. Zierath, Denmark, Sweden

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 41 Viruses and diabetes: more than COVID-19***Chair:* K. Khunti, UK**233 SARS-CoV-2 infection and subsequent risk of type 1 diabetes in 1.2 million children**

H.L. Gulseth, P.L. Ruiz, K. Størdal, Ø. Karlstad, N. Gunnes, N.A. Lund-Blix, H. Bøås, L.C. Stene, G. Tapia, Norway

**234 Relation of incident type 1 diabetes to recent COVID-19 infection: cohort study using e-health record linkage in Scotland**

H.M. Colhoun, S. McGurnaghan, L. Blackbourn, L.E. Bath, D.A. McAllister, T.M. Caparrotta, S.H. Wild, S.N. Wood, D. Stockton, P.M. McKeigue, UK

**235 Modifiable risk factors including HbA<sub>1c</sub> and BMI are consistently associated with severe influenza, pneumonia, and Covid-19 infection outcomes in people with type 2 diabetes**

R. Hopkins, K.G. Young, J. Godwin, D. Raja, N.J. Thomas, B.M. Shields, J.M. Dennis, A.P. McGovern, UK

**236 Enterovirus infection and risk of islet autoimmunity and type 1 diabetes: systematic review and meta-analysis of molecular studies**

S.R. Isaacs, A. Roy, B. Dance, D.B. Foskett, A.J. Maxwell, W.D. Rawlinson, K.W. Kim, M.E. Craig, Australia

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 42 Moving towards the beta cell plasma membrane***Chair:* A. Tomas, UK**237 OSBP-mediated PI(4)P-cholesterol exchange at endoplasmic reticulum-secretory granule contact sites controls insulin secretion**

S. Panagiotou, P.M. Nguyen, A. Wendt, L. Eliasson, A. Tengholm, O. Idevall-Hagren, Sweden

EASD  
EFSD**238 Presynaptic scaffold protein, liprin, regulates glucose stimulated insulin secretion and the spatial organisation of exocytosis in pancreatic beta cells**

K. Deng, N. Hallahan, P. Thorn, Australia

GENERAL  
INFO**239 Vamp8 is an endosomal v-SNARE involved in GLP1R trafficking and inhibits insulin exocytosis**

L. Liu, M. Marshall, J. Saras, S. Barg, Sweden

PROGRAMME

TUESDAY

WEDNESDAY

**240 Villin interacts with Snap25 and its expression increases in tamoxifen-treated EndoC- $\beta$ H3 cells**

H. Mziaut, I. Kalaidzidis, J. Dehghany, A. Gheisari, M. Herbig, J.-C. Escolano, A. Sönmez, M. Von Bülow, M. Lohmann, Y. Kalaidzidis, M. Meyer-Hermann, J. Guck, A. Schulte, R. Scharfmann, M. Solimena, Germany, France

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 43 Microvascular cocktail**

*Chair:* L. Gnudi, UK

**241 Prognostic value of diabetes microvascular complication for 21-years all-cause mortality**

L. Sacchetta, M. Chiriaco, G. Forotti, S. Leonetti, L. Nesti, A. Natali, A. Solini, D. Trico, Italy

**242 Three-years follow up of retinal neurodegeneration and neuropathic characteristics in pediatric type 1 diabetic patients**

M. Menduni, F. Picconi, M.C. Parravano, B. Russo, A. Maiorino, L. Chioma, S. Cianfarani, D. Ylli, P.I. Patera, S. Frontoni, Italy, USA

**243 Progression of diabetic retinopathy in a prospective randomised trial comparing Everolimus versus Mycophenolate therapy in pancreas and kidney transplant recipients**

B. Hagerf (Voglova), Z. Hladikova, L. Nemetova, M. Zahradnicka, K. Kesslerova, T. Sosna, F. Saudek, Czech Republic

**244 Circulating proteins associated with risk of progression to ESKD in type 1 diabetes: results of multi-cohort study**

J.K. Haukka, Z.M. Dom, V. Curovic, K. Ihara, E. Satake, S. Mutter, C. Forsblom, A. Doria, N. Sandholm, P. Rossing, P.-H. Groop, A. Galecki, A. Krolewski, Finland, USA, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 44 Grading insulin therapy: simple, simpler, the safest***Chair:* D. Mauricio, Spain**245 Delayed prandial insulin boluses are frequent and associated with glucose control in type 1 diabetes patients on advanced technologies**

R. Triggiani, R. De Angelis, L. Bozzetto, G. Annuzzi, Italy

EASD  
EFSDGENERAL  
INFO**246 With which dose of NPH insulin to start at bedtime? Study in a cohort of 1006 patients with type 2 diabetes and failure of oral antidiabetic drugs**

B. Mertes, S. Gödde, G. Egidi, T. Uebel, G. Kramer, N. Kuniß, Germany

PROGRAMME

TUESDAY

**247 Comparison of the basal insulin analogues Gla-300 and IDeg 100 using continuous glucose monitoring in people with type 1 diabetes: the InRange randomised controlled trial**

T. Battelino, T. Danne, S. Edelman, P. Choudhary, E. Renard,

J. Westerbacka, B. Mukherjee, P. Picard, V. Pilorget, R. Bergenstal, Slovenia, Germany, USA, UK, France

WEDNESDAY

THURSDAY

FRIDAY

**248 Switching from multiple insulin injections to a fixed combination of degludec and liraglutide in patients with type 2 diabetes: Simplify study: results after 3 months**

E. Martinka, I. Drapecka, I. Tkac, Slovakia

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 45 Newer agents, better outcomes**

*Chair:* J.P.H. Wilding, UK

**249 Effect of empagliflozin on left ventricular contractility and peak oxygen uptake in subjects with type 2 diabetes without heart disease: results of the EMPA-HEART trial**

L. Nesti, N.R. Pugliese, P. Sciuto, D. Tricò, A. Dardano, I. Fabiani, A. Natali, Italy

**250 Novel subgroups of patients with type 2 diabetes show differential cardiovascular and kidney benefits with canagliflozin: a data-driven proteomic cluster analysis**

M. Schechter, A. Koshino, N. Jongs, B. Neal, C. Arnott, V. Perkovic, M.K. Hansen, H.J. L. Heerspink, Netherlands, Australia, USA

**251 SGLT-2 inhibitors and GLP-1 receptor agonists are associated with lower mortality in younger people with type 2 diabetes and a first myocardial infarction between 2016 and 2020**

M. Löndahl, S. Puvaneswaralingam, E. Uddman, K. Filipsson, Sweden

**252 Efficacy of ertugliflozin (ERTU) on hospitalisation for heart failure (HHF) across the spectrum of pre-trial ejection fraction (EF): post hoc analyses of VERTIS CV**

A. Pandey, A.A. Kolkailah, F. Cosentino, C.P. Cannon, R. Frederich, D.Z. Cherney, S. Dagogo-Jack, R.E. Pratley, N.B. Cater, I. Gantz, J.P. Mancuso, D.K. McGuire, USA, Sweden, Canada

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 46 Profiling human diabetes risk***Chair:* K.I. Birkeland, Norway**253 Clustering analysis based on parameters of glucose metabolism shows different lipidomic profile among men and women**

A. Pina, M.J. Meneses, R. Ribeiro, R. Patarrão, F. Carli, J. Boavida, J.F. Raposo, A. Gastaldelli, M.P. Macedo, Portugal, Italy

EASD  
EFSDGENERAL  
INFO**254 Dynamics of intramyocellular lipid content during the initial course of type 1 and type 2 diabetes**

M. Schön, K. Strassburger, Y. Kupriyanova, O.P. Zaharia, K. Bódis, I. Yurchenko, C. Möser, M. Huttasch, M. Bombrich, V. Schrauwen-Hinderling, V. Burkart, M. Roden, Germany

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**255 Diabetes remission by weight loss in 'normal' weight people with type 2 diabetes: the ReTUNE study**

R. Taylor, A.C. Barnes, K.M. Irvine, L. Clark, A. Al-Mrabeh, A. Solovyova, T.L. Kelly, K.G. Hollingsworth, C. Martin-Ruiz, R.R. Holman, D. Romeres, C. Cobelli, UK, USA, Italy

SHORT ORAL  
DISCUSSIONS**256 Machine-learning prediction of obesity-related multi-morbidities**

L.E. Lund, R.L. Nielsen, Z. McVey, R.R. Kitchen, L.G. Leal, A.T. Schreyer, T. Monfeuga, K.S. Matthiessen, M.L. Wolden, R. Gupta, UK, Denmark

PRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



**OP 47 Novel mechanistic insights in peripheral insulin sensitivity**

*Chair:* J. Jendle, Sweden

**257 Proteome-wide mechanisms of hyperinsulinemia and sucrose-induced, tissue-specific insulin resistance**

H.H. Cen, V.R. Richard, Y.H. Xia, S. Skovsø, J.D. Botezelli, X. Hu, J. Collier, R.P. Zahedi, C.H. Borchers, J.D. Johnson, Canada, USA

**258 Impact of human Kallistatin on the metabolic phenotype of diet induced obese mice**

L. Sandforth, J. Reinke, S. Brachs, D. Willmes, J.D. McBride, A. Peter, J. Spranger, J.-X. Ma, G.I. Shulman, J. Jordan, S. Haufe, A.L. Birkenfeld, Germany, USA

**259 Down-regulated FXR signalling in the gut in subjects with prediabetes and type 2 diabetes**

F. De Vito, E. Suraci, R. Marasco, F. Andreozzi, M.L. Hribal, F. Luzza, G. Sesti, T.V. Fiorentino, Italy

**260 Expression, phosphorylation, and oligomerisation of TBC1D1 splice variants from human skeletal muscle cells**

A.D. Bedou, T. Stermann, S. Eickelschulte, A. Chadt, H. Al-Hasani, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**OP 48 How we loose our beta cells**

*Chair:* M. Flodstrom Tullberg, Sweden

**261 Glutamate decarboxylase autoantibody characteristics can stratify those at risk of early insulin requirement in adult-onset type 2 diabetes**

S.L. Grace, A.E. Long, K.M. Gillespie, A.J. Williams, V. Lampasona, P. Achenbach, E.R. Pearson, T.J. McDonald, A.G. Jones, UK, Italy, Germany

EASD  
EFSD

GENERAL  
INFO

**262 GLP-1R modulates the alloimmune response as a T cells negative costimulatory molecule**

V. Usuelli, M. Ben Nasr, A. Seelam, V. Fiorentino, F. D'Addio, C. Loretelli, E. Assi, G. Zuccotti, F. Folli, P. Fiorina, Italy

PROGRAMME

TUESDAY

**263 Targeting pancreatic islet NLRP3 improves islet graft revascularisation in an insulin-dependent manner**

S. Wrublewsky, T. Speer, L. Nalbach, A.S. Boewe, M. Pack, L.P. Roma, M.D. Hoffmann, B.M. Schmitt, A. Weinzierl, M.D. Menger, M.W. Laschke, E. Ampofo, Germany

WEDNESDAY

THURSDAY

FRIDAY

**264 Metabolic stress by high fat diet increased diabetes incidence in the LEW.1AR1-IDDM rat model of autoimmune diabetes without trigger by systemic inflammation**

J.-N. Dahmen, T. Schöppe, M. Tiedge, Germany

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Management of hyperglycaemia in type 2 diabetes: ADA/EASD Consensus Report 2022

*Chair:* Stefano Del Prato, Italy and Robert A Gabbay, USA

*Speaker:* Melanie J Davies, UK:

### Introduction

Peter Rossing, Denmark and Billy S Collins, USA:

### The rationale

Vanita R Aroda, USA, Geltrude Mingrone, Italy and Tsvetalina Tankova, Bulgaria:

### Therapeutic options

Apostolos Tsapas, Greece and Jennifer B Green, USA:

### Personalised approach

Chantal Mathieu, Belgium, Nisa M Maruthur, USA and Sylvia E Rosas, USA:

### Strategies for implementation

John B Buse, USA:

### Conclusions and unmet needs

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

12:15 - 13:45

Minkowski Hall

**Gut microbiome: a link between autonomic neuropathy and kidney disease in diabetes?**

*Chair:* Luigi Gnudi, UK

*Speaker:* John R Kirby, USA:

**Microbiome and cardiovascular disease and hypertension**

Estelle Grasset, France:

**Diabetes: role of autonomic neuropathy and gut microbiome**

Lior Lobel, Israel:

**Kidney function: role of diet, gut and its microbiome**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

12:15 - 13:45

Golgi Hall

**Targeting energy sensing to treat diabetes**

*Chair:* Gabriella Gruden, Italy

*Speaker:* Frank A Duca, USA:

**The gut-brain axis**

Gian Paolo Fadini, Italy:

**SGLT inhibition**

Graham Rena, UK:

**Targeting mitochondrial function for metabolic health**

12:15 - 13:45

Nobel Hall

### The power of dietary policies: evidence from population-based studies

*Chair:* Anette E Buyken, Germany

*Speaker:* Anette E Buyken, Germany:  
**Nutrition policy: Which instruments are available and how can we assess their effectiveness?**

Laura Cornelsen, UK:  
**The impact of taxation on obesity and diabetes-related behaviours and outcomes in the UK**

Maartje P Poelman, Netherlands:  
**European Union-level policies on food environment**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

12:15 - 13:45

Doniach Hall

### Lipids all over the place: Are lipid droplets friends or foe?

*Chair:* Matthijs KC Hesselink, Netherlands and Francesca Amati, Switzerland

*Speaker:* Orián Shirihai, USA:  
**Mitochondria-lipid droplet contact, are their roles only going one way?**

Rajat Singh, USA:  
**How to use a lipid droplets efficiently - regulation of lipophagy**

K Sreekumaran Nair, USA:  
**Lipodystrophy, when lipid droplets get dysfunctional**

**12:15 - 13:45**

**Peltonen Hall**

**The Greek alphabet revisited: focus on all pancreatic islet cells**

*Chair:* Patrik Rorsman, UK

*Speaker:* Quan Zhang, UK:  
**Role of delta cells in islet regulation**

Sebastian Barg, Sweden:  
**Understanding exocytosis in islet cells**

Mark O Huising, USA:  
**Urocortin3 in islet hormone secretion**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**12:15 - 13:15**

**Heding Hall**

**Epidemiology of diabetes and COVID-19 hospitalisation in Europe:  
a European Collaboration**

*Chair:* Kamlesh Khunti, UK

*Speaker:* Samy Hadjadj, France:  
**Data from France**

Dídac Mauricio, Spain:  
**Data from Spain**

Rustam Rea, UK:  
**Data from UK**

Sarah Wild, UK:  
**Challenges of data harmonisation**

**followed by discussion**

**The crucial role of primary care for integrated diabetes management**

*Chair:* Xavier Cos, Spain

*Speaker:* Stefan Jansson, Sweden:  
**How continuity of care can enable integration of care and vice versa**

Samuel Seidu, UK

**Integrated care models: benefit beyond expectation**

**followed by Q&A and discussion**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 01 Epigenetics rules***Chair:* C.A. Ling, Sweden**265 Sorting of human pancreatic islets by flow cytometry into alpha and beta cells reveals unique novel genes expressed in the different cell types**

J.K. Ofori, K. Bacos, A. Perfilyev, A. Wendt, U. Krus, L. Eliasson, C. Ling, Sweden

EASD  
EFSDGENERAL  
INFO**266 Impact of type 2 diabetes-associated variants at the SLC30A8 locus on transcriptional activity and function of human b cells and super-enhancer at SLC30A8 gene locus**

M. Hu, I. Kim, M. Canouil, S. Bonas-Guarch, A.A. Khamis, J. Ferrer, P. Froguel, G.R. Rutter, UK, France, Spain

PROGRAMME

TUESDAY

**267 Genomic enhancers regulations in type 2 diabetes**

E. Carcarino, M. Didisheim, C. Vandiedonck, D. Girard, R. Nielsen, H.-J. Garchon, H. Mambu-Manbueni, J.-B. Julla, L. Potier, R. Roussel, S. Mandrup, J.-F. Gautier, N. Venteclef, France, Denmark

WEDNESDAY

THURSDAY

**268 Hyperglycaemia induces endothelial dysfunction via epigenetic regulation driven by histone methyltransferase EZH2**

J. Sánchez-Ceinos, S. Hussain, A. Waheed-Khan, L. Zhang, J. Pernow, F. Cosentino, Sweden, Australia

FRIDAY

SHORT ORAL  
DISCUSSIONS**269 Altered H3K4me3 profile on TFAM promoter causes preadipocytes and mitochondrial alterations in first-degree relatives of type 2 diabetics**

F. Zatterale, M. Longo, A. Desiderio, R. Spinelli, L. Parrillo, M. Campitelli, P. Florese, U. Smith, G.A. Raciti, F. Beguinot, Italy, Sweden

PRESENTER  
INDEXSATELLITE  
SYMPOSIA**270 Could miR-295-3p be a novel epigenetic regulator of GLUT4?**

J.V. Esteves, L.S. Amendola, M.M. Okamoto, U.F. Machado, Brazil

INDUSTRY

**271 Hyperglycaemia induces Toll-like receptor activation in macrophages**

L. Badillo Garcia, K. Moganti, M. Mossel, V. Ryabov, M. Harsen, H. Klüter, J. Kzhyshkowska, Germany, Netherlands

PROGRAMME

EXHIBITION



**SO 02 Pregnancy and diabetes***Chair:* A.G. Tabák, Hungary**272 The impact of multiple deprivation on gestational diabetes incidence**

S. Jeyaparam, UK

**273 Exposure to non-insulin 2nd-line glucose-lowering medications in early pregnancy and risk of major congenital malformations**

S. Hernandez Diaz, R. Rotem, K.F. Huybrechts, B.T. Bateman, K. Furu, G. Chodick, E.W. Seely, E. Patorno, C.E. Cesta, USA, Norway, Israel, Sweden

**274 Gestational weight gain in women with pregestational diabetes and risk of small for gestational age newborns**

V. Davila-Batista, B. Vega Guedes, A. González-Lleó, A. Wägner, Spain

**275 Prevalence of gestational diabetes in women with a family history of type 2 diabetes in first- and second-degree relatives**

C. Monod, G. Kotzaeridi, T. Linder, D. Eppel, I. Rosicky, V. Filippi, A. Tura, I. Hoesli, C.S. Göbl, Austria, Switzerland, Italy

**276 Role of histone methyltransferase MLL1-driven H3K4me3 in the transmission of oxidative and inflammatory phenotypes to the offspring of women with gestational diabetes**

N. Di pietrantonio, M. Shumliakivska, J. Sánchez-Ceinós, D. Mandatori, A. Rakow, P. Di Tomo, M.P. Baldassarre, M. Sennström, G. Formoso, T. Bonfini, A. Pandolfi, F. Cosentino, Sweden, Italy

**277 Differential epigenetic profile related to carbohydrates metabolism pathways in pregnant women with gestational diabetes**

T.M. Linares-Pineda, N. Peña-Montero, A. Fernández-Valero, M. Suarez, F. Lima, M. Molina-Vega, M.J. Picón, S. Morcillo, Spain

**278 A genotype-informed gestational diabetes prediction algorithm highlights importance of unified diagnostic criteria**

L. Mendizabal, M. Arregui, J. Valerio, A. Ramos, N. De la Torre, A. Barabash, I. Urrutia, A. Cortazar, S. Gaztambide, L. Castaño, A. Martinez-Martinez, E. Camarillo, L. Simon, M. Zulueta, A. Calle-Pascual, Spain, Mexico

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 03 Food, drinks and spices**

Chair: C. Wittenbecher, USA

**279 The association between pre-Ramadan diabetes education and metabolic parameters in Muslims with type 2 diabetes: a retrospective study**

P.J. Elders, A.A. Van der Heijden, M. Hassanein, S. Bouchareb, Netherlands, United Arab Emirates

EASD  
EFSD

GENERAL  
INFO

**280 A beneficial effect of cinnamon and red capsicum intake on postprandial changes in plasma metabolites evoked by a high-carbohydrate meal in men with overweight/obesity**

M. Ciborowski, A. Hameed, E. Adamska-Patruno, J. Godzien, P. Czajkowski, U. Krasowska, K. Pietrowska, J. Fiedorczyk, K. Miniewska, M. Moroz, W. Bauer, J. Sieminska, M. Gorska, A. Kretowski, Poland

PROGRAMME

TUESDAY

WEDNESDAY

**281 Tea consumption and the risk of type 2 diabetes: a cohort study and updated systematic review and dose-response meta-analysis**

X. Li, J. Zeng, B. Chen, Q. Yan, Y. Cui, W. Xu, X. Zhang, S. Xu, China

THURSDAY

**282 Habitual intake of dietary dicarbonyls is associated with greater insulin sensitivity and lower prevalence of type 2 diabetes: the Maastricht Study**

K. Maasen, S.J. Eussen, P.C. Dagnelie, A. Opperhuizen, C.D. Stehouwer, M.M. Van Greevenbroek, C.G. Schalkwijk, Netherlands

FRIDAY

SHORT ORAL  
DISCUSSIONS

**283 Circulating short chain fatty acids as potential new biomarkers for the prediction of type 2 diabetes risk**

G. Llaurado, A. Junza, E. Rubinat, O. Yanes, X. Correig, D. Mauricio, J. Vendrell, S. Fernández-Veledo, Spain

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**284 Interaction between dairy product intake or phospholipid odd chain fatty acids and GAD65 autoantibodies on the incidence of adult onset diabetes**

A.-M. Lampousi, S. Carlsson, J.E. Löfvenborg, on behalf of the EPIC-InterAct consortium, Sweden

INDUSTRY

PROGRAMME

**285 GABA and sitagliptin prevent impairment of beta cell function caused by high-fat diet**

Z. Wang, L. Fan, Y. Ni, A. Ma, D. Wu, Y. Zhao, J. Li, Q. Cui, Y. Zhou, L. Zhang, Y.-R. Lou, G. Prud'homme, Q. Wang, China, Canada

EXHIBITION

**SO 04 Starting with autoimmunity**

Chair: S. Carlsson, Sweden

**286 Childhood screening and interception strategies: an economic cohort simulation model**

J.L. Dunne, L. Ferrat, R.B. McQueen, R. Neusner, R.A. Oram, M. Rewers, M.R. Trusheim, USA, UK

**287 Family history of type 1 diabetes is associated with incidence of multiple islet autoimmunity but not with progression to clinical type 1 diabetes: the MIDIA study**

L. Stene, Norway

**288 The incidence of childhood-onset type 1 diabetes, time trends and association to population composition in Sweden: a 40-year follow-up**

I. Waernbaum, T. Lind, A. Möllsten, G. Dahlquist, Sweden

**289 Prevalence of positivity for diabetes-associated autoantibodies in patients classified and treated as type 2 diabetes and their further characterisation**

M. Rončáková, A. Davani, V. Mikušová, P. Novodvorsky, E. Martinka, Slovakia, Czech Republic, UK

**290 Interaction between tobacco use and genetic susceptibility in the risk of LADA and type 2 diabetes**

J. Edstorp, E. Ahlqvist, L. Alfredsson, V. Grill, B. Rasouli, E.P. Sørgjerd, T. Tuomi, B. Åsvold, S. Carlsson, Sweden, Norway, Finland

**291 Routine islet autoantibody testing in clinically diagnosed adult-onset type 1 diabetes can help identify misclassification and guide successful insulin cessation**

R.J. Eason, N.J. Thomas, A.V. Hill, B.A. Knight, A. Carr, A.T. Hattersley, T.J. McDonald, B.M. Shields, A.G. Jones, StartRight Study Group, UK

**292 Progression of robustly defined adult onset type 1 diabetes is unaffected by onset age suggesting their inclusion in intervention studies is possible**

N. Thomas, A. Hill, R. Bolt, P. Tippet, B. Shields, T. McDonald, A. Jones, StartRight Study group, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**293 Use of HOMA-IR and Matsuda Index as indicators of insulin resistance in autoantibody positive relatives of patients with type 1 diabetes**

A. Petrelli, A. Bichisecchi, D. Carnovale, F. Cugnata, A. Stabilini, R. Bonfanti, E. Bosi, L. Piemonti, J. Sosenko, Italy, USA

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

EASD  
EFSD

GENERAL  
INFO

**SO 05 Genetics of type 2 diabetes**

*Chair:* A. Chadt, Germany

**294 Role of GWAS associated purinergic receptor P2RY1 gene in insulin secretion and the impact of rare variants on type 2 diabetes risk**

A. Dance, M. Derhourhi, M. Canouil, M. Marre, G. Charpentier, A. Bonnefond, P. Froguel, France, UK

**295 Effects of risk gene variants of type 2 diabetes and fatty liver disease on plasma amino acid levels in middle aged women prone to diabetes**

A. Nadasdi, Z. Kukor, V. Gál, T. Masszi, A. Guttman, A. Patócs, P. Igaz, A. Somogyi, G. Firneisz, Hungary

**296 Kdelr3 mutation is associated with higher risk for diabetes development in NZO mice**

D. Altenhofen, J. Khuong, K. Kaiser, T. Kuhn, S. Görigk, S. Lebek, T. Stermann, B. Knebel, A. Schürmann, A. Chadt, H. Al-Hasani, Germany

**297 Allelic editing of the PPARGC1A Gly482Ser shows allele-dependent causal effects on cold-induced UCP-1 expression and PGC-1 $\alpha$  protein stability in human brown adipocytes**

M. Huang, H. Mulder, S. Kalamajski, P. Franks, Sweden

**298 iPSCs derived from insulin resistant offspring of type 2 diabetes patients harbor genetic defects**

B. Memon, A. Elsayed, I. Bettahi, N. Suleiman, I. Younis, E. Wehedy, F. El-Ejeh, A. Abou-Samra, E. Abdelalim, Qatar

**299 Strong association between variants in MiRNA genes and risk of type 2 diabetes in a Greek population**

X. Tsekmekidou, M. Grammatiki, G. Karaliolios, E. Melidou, P. Rakitzi, T. Koufakis, F. Tsetsos, M. Georgitsi, A. Roumeliotis, N. Papanas, P. Paschou, J. Yovos, K. Kotsa, Greece

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 300 Investigating the effect of the HNF-1a G319S variant on liver and pancreas function under different physiological states

M. Sebastian, T. Morriseau, C. Doucette, Canada

### Short Oral Discussions Event F Thursday, 13:15 - 14:15

#### SO 06 Sometimes one gene is enough

Chair: T. Tuomi, Finland

#### 301 Monogenic diabetes in Slovakia: mutational spectrum and HNF1A functional studies

D. Gasperikova, M. Skopkova, T. Valkovicova, Z. Dobiasova, M. Sklenar, V. Rambani, S. Borecka, Slovak Monogenic Diabetes Study Group, J. Stanik, Slovakia

#### 302 Genetic screening for monogenic diabetes using whole exome sequencing in a single hospital cohort in Japan

S. Tanaka, H. Akagawa, M. Ogata, N. Iwasaki, Japan

#### 303 Clinical spectrum associated with variants in the INS gene in patients with suspected monogenic diabetes

M. Gomes Porras, R. García Moreno, M. Güemes Hidalgo, R. Vallejo Mora, M. Ruiz De Adana, J. Gómez Zumaquero, Á. Campos Barros, Spain

#### 304 Loss of FOXA2 induces ER stress and hepatic steatosis and alters developmental gene expression in human iPSC-derived hepatocytes

E.M. Abdelalim, M. Aghadi, R. Elgendy, Qatar, Sweden

#### 305 Single cell transcriptomics highlights impaired differentiation in stem cell-derived beta cells from a Wolfram syndrome patient

S. Torchio, R. Chimienti, F. Manenti, M.T. Lombardo, V. Zamarian, S. Pellegrini, V. Sordi, L. Piemonti, Italy

#### 306 Dach1 associated with familial diabetes decreases insulin secretion if silenced

V. Schwitzgebel, C. Jimenez Sanchez, R. Dusaulcy, J.-L. Blouin, I. Stankute, R. Verkauskiene, F. Reimann, F. Gribble, P. Maechler, Switzerland, Lithuania, UK

#### 307 Aetiology and pathogenesis of HNF1A-MODY using human islets deficient of HNF1A and a new heterozygous mouse model (Hnf1a<sup>Δe4-10</sup>) of the human disease

A. Acosta Montalvo, C. Saponaro, J. Thévenet, M. Chiral, A. Piron, N. Delalleau, G. Pasquetti, M. Moreno Lopez, V. Gmyr, M. Cnop, J. Kerr-Conte, F. Pattou, M. Pontoglio, A. Liston, C. Bonner, France, Belgium

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**308 Novel modification of monogenic diabetes gene panel test improves diagnosis of 6q24 methylation related diabetes**

R. Kumar, M. Wakeling, E.D. Franco, E.J. Self, S.E. Flanagan, A.T. Hattersley, K.A. Patel, UK

**309 Genome-wide CRISPR screens identify therapeutic targets for HNF1A-deficient diabetes**

M. Cuenca-Ardura, M. De Vas, D. Balboa, J. Ferrer, Spain, UK

EASD  
EFSD

**310 Low-dose treatment with sulfonylureas improves hyperglucagonemia after a glucose challenge in HNF1A-MODY individuals and Hnf1a<sup>-/-</sup> mice**

C. Saponaro, I. Spiliotis, A. Acosta-Montalvo, L. Anguelova, J. Thevenet, M. Chiral, V. Gmyr, J. Kerr-Conte, F. Pattou, M. Pontoglio, K. R. Owen, C. Bonner, France, UK

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 07 SARS-CoV2 and other viruses**

*Chair:* D. Eriksson Hogling, Sweden

**311 Long and short isoforms of SARS-CoV-2 receptor Angiotensin I-Converting Enzyme type 2 (ACE2) are increased in pancreatic islets of type 2 diabetes patients**

D. Fignani, G. Licata, E. Aiello, G.E. Grieco, C. Formichi, L. Nigi, L. Marselli, P. Marchetti, G. Sebastiani, F. Dotta, Italy

**312 Pre-vaccination glucose time in range positively correlates with antibody response to SARs-CoV2 mRNA vaccine BNT162b2 in patients with type 1 diabetes**

M. Briganti, G. Alhamar, V. Viola, M. Faraj, C. Zannella, G. Franci, C. Fusco, C. Isgro, G. Leanza, A. Spinelli, S. Peralice, G. Matarese, P. Pozzilli, M. Galgani, R. Strollo, Italy, Kuwait, Germany

**313 Association between SARS-CoV-2 infection and presymptomatic type 1 diabetes or celiac autoimmunity in general population children: Autoimmunity Screening for Kids (ASK)**

M. Rewers, C. Geno Rasmussen, F. Dong, M. Stahl, L. Yu, B.I. Frohnert, K. Simmons, E. Liu, A.K. Steck, for ASK Study Group, USA

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**314 Coxsackie virus protease 2A alters the sorting of insulin secretory granule cargoes and induces the premature activation of cathepsins**

K.-P. Knoch, A. Kosok, Z. Marinicova, I. Kalaidzidis, Y. Kalaidzidis, A. Müller, A. Sönmez, C. Wegbrod, K. Ganss, M. Solimena, Germany

**315 No association between incidence of type 1 diabetes and rotavirus vaccination in Swedish children**

A. Rangert, C. Oldin, M. Golsäter, J. Ludvigsson, K. Åkesson, Sweden

**316 The influence of glucocorticoid therapy on glucose metrics monitored by continuous glucose monitoring in hospitalised patients with diabetes and infection**

M.T. Olsen, C.K. Klarskov, A.K. Jensen, N.A. Windum, B. Lindegaard, P.L. Kristensen, Denmark

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 08 Benefits of a healthy lifestyle**

*Chair:* L. Bennet, Sweden

**317 Incidence of type 2 diabetes and factors associated with it in the PPP-Botnia Study**

V. Ahuja, L. Hakaste, O.P. Dwivedi, M. Lehtovirta, B. Isomaa, K. Lahti, T. Tuomi, Finland

**318 Lifestyle risk factors and metabolic markers of cardiovascular diseases in Bangladeshi rural-to-urban male migrants compared with their non-migrant siblings**

S.J. Mumu, D. Merom, Australia

**319 Does health-related lifestyle modify the association between type 2 diabetes and dementia risk? Finding from UK Biobank prospective cohort study**

J. Boonpor, J. Xing, S.R. Gray, F.K. Ho, C. Celis-Morales, UK, Chile

**320 Lifestyle behaviour patterns and incident type 2 diabetes in the Dutch Lifelines cohort study**

M.F. Duan, L.H. Dekker, J.-J. Carrero, G. Navis, Netherlands, Sweden

**321 DNA methylation patterns reflect individual lifestyle independent from obesity**

I. Klemp, A. Hoffmann, L. Müller, T. Hagemann, K. Horn, J. Thiery, M. Löffler, R. Burkhardt, M. Blüher, K. Krohn, M. Scholz, R. Baber, P.W. Franks, P. Kovacs, M. Keller, Germany, Sweden

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**322 Associations of physical activity and sedentary time with indices of beta cell function and insulin resistance in type 2 diabetes**

S.L. Domazet, J. Tarp, J.V. Stidsen, R.W. Thomsen, K. Højlund, A. Groentved, J.C. Broend, J. Nielsen, Denmark

**323 Cluster randomised trial to investigate the impact of applying a diabetes risk score in primary care on change in physical activity**

E. Seidel-Jacobs, F. Kohl, M. Tamayo, J. Rosenbauer, M.B. Schulze, O. Kuss, W. Rathmann, Germany

**324 Accelerometer-derived physical activity and sedentary time and cardiac biomarkers: the Maastricht Study**

E.J. Vandercappellen, A. Koster, R.M. Henry, C.J. Van der Kallen, N.C. Schaper, H.H. Savelberg, S.J. Eussen, P.C. Dagnelie, M.T. Schram, M.M. Van Greevenbroek, A. Wesselius, S.J. Meex, J.P. Kooman, A.A. Kroon, C.D. Stehouwer, Netherlands

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 09 Type 1 diabetes: from molecules to treatment**

*Chair:* T. Klupa, Poland

**325 Automatising immune phenotyping of type 1 diabetes samples using a machine learning workflow**

J.A. Vera-Ramos, B. Prietl, L. Herbsthofer, P. López-García, V. Pfeifer, T. Pieber, Austria

**326 Transcription and splicing regulation by NLRC5 shape the interferon response in human pancreatic beta cells**

F. Szymczak, M. Alvelos, S. Marín-Cañías, Â. Castela, S. Demine, M.L. Colli, A. Op de Beeck, L. Marselli, P. Marchetti, D.L. Eizirik, Belgium, USA, Italy

**327 Identification of circulating isomiRNAs as predictive biomarkers of beta cell decline in type 1 diabetes**

G.E. Grieco, S. Auddino, M. Bruttini, D. Fignani, A. Mori, E. Aiello, G. Licata, G. Sebastiani, F. Dotta, Italy

**328 Plasma levels of the miR-193b/365a cluster in combination with clinical parameters predict response to Lactococcus lactis-based antigen-specific combination therapy**

G. Sassi, G. Licata, G. Ventriglia, D. Ellis, N. Van Damme, S. Caluwaerts, A. Mori, P. Rottiers, C. Mathieu, F. Dotta, C. Gysemans, G. Sebastiani, Belgium, Italy



**329 The effect of type 1 diabetes on lumbar spinal cord transcriptome**

K. Zglejc-Waszak, A. Korytko, M. Banach, J. Juranek, Poland

**330 Submicron ultrasound contrast agents as therapeutic vehicles in type 1 diabetes**

M. Ciccaglione, E. Abenojar, K. McDaniel, M. Sticco-Ivins, A. Michels, A. Exner, R. Benninger, USA

**331 Reprogramming gastrointestinal cells: A new strategy to restore endogenous insulin production for diabetes?**

C. Ayachi, T. Napolitano, S. Silvano, M. Plaisant, J. Becam, A. Sousa de veiga, E. Pichery, P. Collombat, France

**332 Continuous glucose monitoring identifies early dysglycaemia in very young children at risk of type 1 diabetes being followed in the Australian ENDIA pregnancy cohort study**

A. Haynes, A. Tully, G.J. Smith, M.A. Penno, M.E. Craig, J.M. Wentworth, M. Harris, P.G. Colman, G. Soldatos, A.J. Anderson, K.J. McGorm, H. Oakey, J. Couper, E.A. Davis, on behalf of the ENDIA Study Group, Australia

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 10 Diversity in diabetes**

*Chair:* O.P. Zaharia, Germany

**333 Variation in the relationship between fasting glucose and HbA<sub>1c</sub>: implications for the diagnosis of diabetes in different age and ethnic groups**

Y. Ram, Y. Xu, T.C. Dunn, R. Ajjan, USA, UK

**334 Subclassification of 3,529 individuals with type 2 diabetes**

D.H. Christensen, S.K. Nicolaisen, E. Ahlqvist, J.V. Stidsen, J.S. Nielsen, K. Højlund, S. García-Calzón, C. Ling, I. Brandslund, P. Vestergaard, C. Brøns, R.W. Thomsen, A. Vaag, Denmark, Sweden, Spain

**335 Socio-economic inequalities in the prevalence and incidence of pharmacologically-treated diabetes in France in 2020**

M. Guion, L. Mandereau-Bruno, E. Cosson, S. Fosse-Edorh, France

**336 Gender disparities in time-to-initiation of cardioprotective glucose-lowering drugs in patients with type 2 diabetes and cardiovascular disease: a nationwide cohort study**

K.L. Funck, L. Bjerg, A.A. Isaksen, A. Sandbæk, E.L. Grove, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**337 About one-in-three new onset diabetic ketosis cases is caused by ketosis-prone type 2 diabetes in adults: a systematic review and meta-analysis**

A. Kovacs, S. Bunduc, D.S. Veres, D. Palinkas, E.B. Gagy, K. Marta, J.P. Hegyi, B. Eross, E. Mihaly, E. Sipter, P. Panczel, P. Hegyi, N. Hosszufalusi, Hungary

**338 Metabolically healthy obese is actually not healthy but at a risk for developing diabetes: a retrospective study**

S. Mizushiri, M. Daimon, Japan

EASD  
EFSD

GENERAL  
INFO

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

PROGRAMME

**SO 11 Novel biomarkers and risk factors**

TUESDAY

*Chair:* N. Rajamand Ekberg, Sweden

WEDNESDAY

**339 Sphingolipids in type 2 diabetes: a meta-analysis**

M. Muilwijk, T. Wong, G. Burchell, S. Remmelzwaal, J.W. Beulens, Netherlands

THURSDAY

**340 Role of soluble leptin receptor in diabetes prevention? Combination of cross-sectional, clinical intervention and Mendelian randomisation studies**

C. Sommer, K.G. Vangberg, G.-H. Moen, D.M. Evans, S. Lee-Ødegård, I.K. Blom-Høgestøl, L. Sletner, A.K. Jenum, C.A. Drevon, H.L. Gulseth, K.I. Birkeland, Norway, Australia

FRIDAY

SHORT ORAL  
DISCUSSIONS

**341 Plasma concentrations of complement C3 explain part of the associations of several measures of adiposity with type 2 diabetes: the Maastricht study**

S. Jin, C.G. Schalkwijk, S.J. Eussen, A. Koster, E. Kooi, M.C. Brouwers, C.D. Stehouwer, M.M. Van Greevenbroek, Netherlands

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

**342 Identifying biomarkers of psoriasis-driven metabolic disease**

V.S. Gesheva, S. Sayers, E. Evans, G. Bewick, R. Andres-Ejarque, I. Tosi, P. DiMeglio, R. Hannen, P. Caton, UK

PROGRAMME

**343 Night blindness and risk of diabetes in the Chinese population: a multi-centre, cross-sectional study**

J. Wang, Y. Liu, Y. Zhou, Y. Ding, S. Qiu, Z. Sun, China

EXHIBITION

**344 Association between periodontitis and undiagnosed glucose intolerance status in apparently healthy young adults aged <40 years**

Y. Lyu, J. Kim, S. Kim, Republic of Korea

**345 The association between social jetlag and the metabolic syndrome and type 2 diabetes: a systematic review and meta-analysis**

E.J. Bouman, J.W. Beulens, L. Groeneveld, R.S. De Kruijk, L. Schoonmade, S. Remmelzwaal, P.J. Elders, F. Rutters, Netherlands

**346 The association of vital exhaustion and burnout with (measures of) the metabolic syndrome: a systematic review and meta-analysis**

S.H. Kremers, J.W. Beulens, M. Strikwerda, S. Remmelzwaal, P.J. Elders, F. Rutters, Netherlands

**347 Association between cholecystectomy and dysglycaemia: cross-sectional and prospective analyses**

M. Sang, C. Xie, Y. Liu, S. Qiu, X. Wang, Z. Sun, T. Wu, China, Australia

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

**SO 12 Different facets of type 2 diabetes treatment**

*Chair:* N. Lalic, Serbia

**348 Prolonged use of proton pump inhibitors and risk of type 2 diabetes: results from a large population-based nested case-control study**

G. Perseghin, F. Rea, L. Savaré, G. Morabito, G. Corrao, S. Ciardullo, Italy

**349 Risk factors for development of de novo post transplantation diabetes from 8 weeks after kidney transplantation**

R. Carlsen, A. Åsberg, M. Svensson, K.I. Birkeland, I. Bressendorff, H.L. Gulseth, K. Midtvedt, T.G. Jenssen, Norway, Denmark

**350 Glycated haemoglobin and diabetes treatment trajectories in type 2 diabetes: the Fremantle Diabetes Study Phase II**

W.A. Davis, T.M. Davis, Australia

**351 Fracture risk in treatment with GLP-1RA compared to DPP-4i: a Danish nationwide cohort study**

Z.K. Al-Mashhadi, R. Viggers, R. Fuglsang-Nielsen, P. Vestergaard, S. Gregersen, J. Starup-Linde, Denmark

**352 Metformin affects DNA methylation patterns in newly-diagnosed patients with type 2 diabetes**

S. Garcia-Calzon, S. Schrader, A. Perflyev, C. Ling, Sweden, Spain

## 353 Transcriptional and epigenetic changes in skeletal muscle of persons with diabetes after bariatric surgery

L. Kovac, M. Ouni, S. Gancheva, S. Kahl, M. Jähnert, M. Roden, A. Schürmann, Germany

### Short Oral Discussions Event A

Tuesday, 11:45 - 12:45

EASD  
EFSD

#### SO 13 It's getting complicated

*Chair:* K. Jandeleit-Dahm, Australia

#### 354 Causes and determinants of mortality in community-based people with type 1 diabetes: The Fremantle Diabetes Study Phase I

T.M. Davis, W.A. Davis, Australia

#### 355 Relationships between CGM-derived metrics and risk factors for hypoglycaemia among patients with type 2 diabetes with TIR more than 70%

J. Lu, D. Chen, W. Xu, D. Yang, Z. Liu, B. Lin, China

#### 356 Incidence and characteristics of hyperosmolar hyperglycaemic state: a Danish cohort study

E.V. Rosager, A.L. Heltø, L. Friis-Hansen, J. Petersen, F.E. Nielsen, S.B. Haugaard, R. Gregersen, Denmark

#### 357 Stress hyperglycaemia is associated with an increased risk of post-acute pancreatitis diabetes

J. Zhang, Y. Lv, L. Li, China

#### 358 Fasting proinsulin independently predicts incident type 2 diabetes in the general population, particularly in subjects with hypertension or kidney dysfunction

S. Sokooti Oskooei, W.A. Dam, T. Szili-Torok, J. Gloerich, A.J. Van Gool, A. Post, M.H. De Borst, R.T. Gansevoort, H.J. Heerspink, R.P. Dullaart, S.J. Bakker, Netherlands

#### 359 Differential proportion trends of primary lower limb amputations associated with diabetes or peripheral arterial disease between age groups in Quebec, Canada

S. O'Connor, C. Blais, E.A. Sidi, J. Leclerc, P. Poirier, Canada

#### 360 Cardiovascular outcomes in patients with both diabetes and phenotypic familial hypercholesterolaemia: a nationwide register-based cohort study

J. Brinck, E. Hagström, J. Nåtman, S. Franzén, K. Eeg-Olofsson, D. Nathanson, B. Eliasson, Sweden

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**361 Costs of major complications in people with and without diabetes in Tasmania, Australia**

N.T. Dinh, B. De Graaff, J.A. Campbell, M.D. Jose, J. Burgess, T. Saunder, A. Kitsos, N. Wiggins, A.J. Palmer, Australia, Viet Nam

**362 Cause-specific excess risk of hospitalisation in people with type 2 diabetes compared to the general population in Australia, 2010-2017**

D. Tomic, A. Salim, J.I. Morton, J.E. Shaw, D.J. Magliano, Australia

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 14 COVID-19 around the globe**

*Chair:* G. Tapia, Norway

**363 The role of glycated haemoglobin, body mass index and waist-to-hip ratio in determining the risk of COVID-19 and long COVID**

A. Knuppel, S.V. Eastwood, R.J. Silverwood, K.M. Tilling, A.D. Hughes, D.M. Williams, N. Chaturvedi, UK

**364 Hyperglycaemia, but not previous diagnosis of diabetes, is an independent indicator of poor outcome in patients hospitalised for severe COVID-19**

E. Eletto, R. Aldigeri, A. Dei Cas, A. Ticinesi, A. Nouvenne, B. Prati, E. Balestreri, A. Vazzana, M. Antonini, V. Spigoni, S. Schirò, N. Sverzellati, T. Meschi, R. Bonadonna, Italy

**365 Prevalence and incidence of treated diabetes during the COVID-19 pandemic: real-world data from the Greek national electronic prescription database**

C. Sifarikas, G. Karamanakos, K. Makrilakis, K. Mathioudakis, A. Tsolakidis, S. Liatis, Greece

**366 Impacts of the COVID-19 outbreak on glycaemic control and body composition in individuals with glucose intolerance in Japan**

S. Yoshiji, T. Murakami, R. Tsukaguchi, M. Ogura, K. Shide, N. Inagaki, Japan

**367 The clinical course of Covid-19 in diabetes patients: a nation-wide multistate modelling cohort study**

H. Amadid, P. Rønn, L. Diaz, B. Carstensen, P. Rossing, D. Vistisen, Denmark

**368 Temporal trends in risk of severe COVID-19 infection in persons with diabetes**

J.V. Stidsen, A. Green, L. Rosengaard, K. Højlund, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**369 New-onset hyperglycaemia in nondiabetic patients hospitalised for COVID-19: prevalence, risk factors and post-discharge outcomes**

E. Falbo, M. Ferrante, S. Damanti, M. Cilla, J. Castellani, R. De Lorenzo, G. Vitali, S. Martinenghi, C. Magnaghi, E. Bosi, P. Rovere-Querini, C. Conte, Italy

**370 Covid-19 associated hyperglycaemia relates to both insulin resistance and beta cell dysfunction**

J. Gojda, A. Lang, M. Krbcová, A. Ouřadová, K. Koudelková, V. Šebo, A. Gvozdeva, L. Slagmolen, J. Potočková, F. Karpe, S. Schlesinger, Czech Republic, Germany, Belgium, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 15 Calcium signalling in the islet: we are still learning**

*Chair:* E. Illegems, Sweden

**371 A-cell Ca<sup>2+</sup> oscillations and glucagon secretion depend on Ca<sup>2+</sup> release from the endoplasmic reticulum**

S. Acreman, G. Denwood, R. Gao, J. Ma, P. Rorsman, Q. Zhang, UK

**372 Focal adhesion kinase and the functional consequences of beta cell polarity**

D. Jevon, K. Deng, N. Hallahan, N. Flores-Rodriguez, W.J. Gan, P. Thorn, Australia

**373 The beta cell primary cilium is an autonomous Ca<sup>2+</sup> organelle involved in GABA signalling**

T.C. Incedal, G. Sanchez, O. Idevall-Hagren, Sweden

**374 Optogenetic stimulation of pancreatic beta cells to investigate gap junction coupling among heterogenous subpopulations**

C.H. Levitt, USA

**375 Quantifying the relationship between emergent islet function, gap junctions, and beta cell dynamics: a network theory approach**

J. Briggs, J. Dwulet, V. Kravets, D. Albers, R. Benninger, USA

**376 Illuminating the mechanism for G<sub>i/o</sub> protein-coupled receptor inhibition of beta cell Ca<sup>2+</sup> influx and insulin secretion**

M.T. Dickerson, P.K. Dadi, K.E. Zaborska, A.Y. Nakhe, C.M. Schaub, J.R. Dobson, N.M. Wright, J.C. Lynch, C.F. Scott, D.A. Jacobson, USA

**377 Pancreatic delta cells switched islet Ca<sup>2+</sup> oscillation modes by inhibiting endogenous glucagon from alpha cells**

H. Ren, Y. Li, Y. Yu, T. Chang, W. Qian, X. Yang, L. Chen, C. Tang, China

**378 Three-dimensional imaging reveals conserved patterns of calcium wave in the pancreatic islet**

Y. Yu, H. Ren, Y. Li, X. Yang, L. Chen, C. Tang, China

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 16 A new niche to replace beta cells**

*Chair:* I. Artner, Sweden

**379 Stem cell-derived, fully differentiated islet cells for type 1 diabetes**

C. Ricordi, A. Naji, M.R. Rickels, B. Bruinsma, G. Marigowda, L. Ross, C. Wang, F. Pagliuca, B. Sanna, L.S. Kean, A. Peters, P. Witkowski, J. Markmann, USA

**380 An improved approach for generation of beta cell like insulin-producing cells from induced pluripotent stem cells**

B. Cetin, A.D. Sanlioglu, Turkey

**381 Endoc-βH5 human beta cells: a unique thaw and go model for accelerating diabetes research with highly functional and ready-to-use human beta cells**

H. Olleik, B. Bianchi, France

**382 Exendin-4 enhances GSIS through upregulation of MAFA and mitochondrial oxidative phosphorylation machinery genes in hPSC-derived beta cells**

A. Diane, R. Bin Abdul Mu-u-min, H.H. Al-Siddiqi, Qatar

**383 Co-transplantation of pancreatic islets and microvascular fragments effectively restores normoglycaemia in diabetic mice**

E. Ampofo, S. Wrublewsky, A. Weinzierl, I. Hornung, M. Menger, M. Laschke, Germany

**384 Comparison of different hyaluronic acid-based matrices to maintain human islet survival in macroencapsulation devices**

D. Brandhorst, H. Brandhorst, D.A. Domingo-Lopez, E. O’Cearbhaill, L. McDonough, F.B. Coulter, S. Deotti, H. Kelly, G. Duffy, P.R. Johnson, UK, Ireland

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**385 Proteome profiling of whole plasma and plasma-derived extracellular vesicles facilitates the detection of tissue biomarkers in the NOD mouse**

V.M. Stone, I. Diaz Lozano, H. Sork, M. Eldh, M. Pernemalm, S. Gabrielsson, M. Flodström-Tullberg, Sweden, Estonia

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 17 Intracellular signalling balancing beta cell survival and death**

*Chair:* L. Eliasson, Sweden

**386 Differential spatiotemporal GLP-1 receptor signalling in primary pancreatic beta cells**

M.A. Ravier, N. Zaïmia, G. Bertrand, France

**387 The expression and function of CLEC11A in human pancreatic islets and human EndoC- $\beta$ H1 cells**

J. Cen, R. Shi, G. Westermark, Z. Sun, N. Welsh, J. Lau, Sweden, China

**388 CD47/SIRP-alpha: a critical axis that may contribute to beta cell loss in type 1 diabetes**

K. Afi Leslie, S.J. Richardson, N.G. Morgan, M.A. Russell, UK

**389 Peptide X, a promising inhibitor of MP001 protein, which improves human pancreatic islet survival and function**

A. Langlois, M. Kanzaki, G. Bechtluft, M. Pinget, K. Bouzakri, France, Japan

**390 Islet macrophage depletion does not prevent amyloid-induced upregulation of tissue plasminogen activator (tPA)**

N. Esser, M.F. Hogan, A.T. Templin, R. Akter, J.J. Castillo, D.P. Raleigh, S. Zraika, R.L. Hull, S.E. Kahn, USA, Belgium

**391 Pancreatic beta cells are resistant to RIPK1 kinase-mediated death**

T. Takiishi, P. Xiao, E.A. Gurzov, M. Bertrand, A.K. Cardozo, Belgium

**392 Identification of a human-specific alteration of beta cell function after prolonged culture of pancreatic islets under glucotoxic conditions**

M. Tariq, A.H. De Souza, H. Chae, M. Jaffredo, A. Wojtuszczyz, M. Raoux, P. Gilon, C. Broca, J.-C. Jonas, Belgium, France

**393 Identifying factors linking hyperglycaemia-induced metabolic dysregulation to loss of insulin biosynthesis in pancreatic beta cells**

M. Lloyd, E. Haythorne, F. Ashcroft, UK



**SO 18 Stressing the beta cell into dysfunction***Chair:* J. Rieusset, France**394 Gliclazide protects against oxidative stress and mitochondrial toxicity in beta cells exposed to the antiretroviral agent rilpivirine**

S.C. Maandi, J.G. Mabley, UK

**395 Alpha4 contributes to the metabolic dysfunction of the pancreatic beta cell under metabolic stress**

A. Kowluru, M. Hali, USA

**396 Glutamate dehydrogenase activation elicits biphasic insulin secretion and implicates a metabolic pathway with proline and glutamate in beta cell stimulus-secretion coupling**

S. Gheibi, Sweden

**397 The role of luminal H<sub>2</sub>O<sub>2</sub> in ER Ca<sup>2+</sup> dysregulation and toxicity of palmitate in insulin-secreting INS-1E cells**

I. Mehmeti, S. Sharifi, M. Böger, S. Lortz, Germany

**398 Vimentin as a regulator of cell survival and endoplasmic reticulum stress in pancreatic alpha and beta cells**

L. Marroqui, A. Pérez-Serna, R.M. Medina-Gali, R.S. Dos Santos, Spain

**399 The IGFBP3/TMEM219 pathway regulates homeostasis of pancreatic endocrine progenitors**

E. Assi, F. D'addio, A. Maestroni, V. Usuelli, M. Ben Nasr, C. Loretelli, A. Abdelsalam, A. Seelam, L. Loreggian, A. Petrazzuolo, G. Zuccotti, P. Fiorina, Italy

**400 Mining the transcriptome of target tissues of autoimmune and degenerative pancreatic beta cell and brain diseases to identify novel therapies**

X. Yi, B.M. De Souza, T. Sawatani, F. Szymczak, L. Marselli, P. Marchetti, M. Cnop, D.L. Eizirik, Belgium, Italy

**401 Sorla is an endocytic receptor for pro-islet amyloid polypeptide and is protective against islet amyloid formation**

A.Z. Shih, Y.C. Chen, C.B. Verchere, T.E. Willnow, Germany, Canada

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 19 How complicated is type 1 diabetes?**

*Chair:* J. Lau Boerjesson, Sweden

**402 Trace positive GAD65 antibodies in adult onset type 1 diabetes re-associated a wide variety of metabolic phenotypes**

K. Wyne, USA

EASD  
EFSD

**403 Glycaemic parameters measured by CGM alter hypoglycaemia-induced inflammatory responses in people with type 1 diabetes**

M. Ajie, C. Verhulst, J. Van Heck, T.W. Fabricius, U. Pedersen-Bjergaard, C. Tack, R. Stienstra, B. De Galan, Netherlands, Denmark

GENERAL  
INFO

**404 Evidence of atypical non-autoimmune diabetes amongst young people diagnosed with type 1 diabetes in Cameroon: results from young-onset diabetes in sub-Saharan Africa study**

J.C. Katte, E. Sobngwi, M.Y. Dehayem, S. Deshmukh, K. Patel, B. Shields, A.T. Hattersley, T.J. McDonald, A.G. Jones, UK, Cameroon

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**405 Net proteome and bioenergetic profile of PMA- and ionomycin-stimulated neutrophils point to metabolic alterations in neutrophils of people with longstanding type 1 diabetes**

S. Bissenova, D. Ellis, A. Callebaut, R. Derua, G. Eelen, M. Buitinga, C. Mathieu, C. Gysemans, L. Overbergh, Belgium, Netherlands

SHORT ORAL  
DISCUSSIONS

**406 The ELSA Study: UK paediatric general population screening for type 1 diabetes: “sooner we screen, sooner we can intervene”**

L.M. Quinn, D. Shukla, S.M. Greenfield, T. Barrett, P. Narendran, UK

PRESENTER  
INDEX

**407 Phase I study investigating PK and PD of highly concentrated insulin aspart AT278 U500**

E. Svehlikova, V. Hoeller, M. Urschitz, M. Wolf, B. Lackner, C. Magnes, M. Ratzer, D. Gerring, J. Jezek, S.J. Howell, L. Zakrzewski, V. Pillai, N. Ashcroft, F. Lawrence, T.R. Pieber, Austria, UK

SATELLITE  
SYMPOSIA

INDUSTRY

**408 Relationships between cytokine storm and stress hyperglycaemia in hospitalised patients with COVID-19**

A. Da Porto, G. Colussi, C. Tascini, M. Fabris, E. Sozio, M. Peghin, F. Curcio, C. Catena, L. Sechi, Italy

PROGRAMME

EXHIBITION

**409 Impact of the COVID-19 lockdown on behaviour, stress, anxiety and glycaemic control in patients with beta cell transplantation for type 1 diabetes**

C.P. Landstra, M.M. Ruissen, H. Regeer, M.F. Nijhoff, B.E. Ballieux, P.J. Van der Boog, A.P. De Vries, S.D. Huisman, E.J. De Koning, Netherlands

**SO 20 The other diabetes and islet function**

Chair: N. Wierup, Sweden

**410 Single-cell sequencing reveals preserved pancreatic islet cell identity by administration of metabolite-based diet in autoimmune diabetes**

V. Vandenbempt, S.E. Eski, M.K. Brahma, A. Li, S. Demine, P. Xiao, A.K. Cardozo, S.P. Singh, E. Mariño, C. Gysemans, E.N. Gurzov, Belgium, Australia

**411 Immunoreactivities against different tyrosine-phosphatase 2 (IA-2)<sup>(256-760)</sup> epitopes characterise distinct clinical phenotypes in LADA**

L. D'Onofrio, C. Tiberti, F. Panimolle, R. Amendolara, S. Zampetti, E. Maddaloni, R. Buzzetti, Italy

**412 Progressive pancreatic morphological changes and pro-inflammatory cell density in cystic fibrosis is associated with islet atrophy**

Y. Al-Selwi, O. Govaere, Y. Bury, R. Coulthard, D. Tiniakos, G. Klöppel, J.A. Shaw, N. Kattner, UK, Greece, Germany

**413 Insulin and glucagon doublepositive cells in islets from pancreatic resections of children with congenital hyperinsulinism**

J. Schultz, C. Wolke, R. Waterstradt, F. Dombrowski, W. Bartlen, M. Tiedge, U. Lendeckel, S. Baltrusch, Germany

**414 Investigating the role of a novel MODY-associated gain-of-function mutation in TALK-1 in islet dysfunction and glucose intolerance**

A.Y. Nakhe, J. Kim, P.K. Dadi, K.E. Zaborska, D.A. Jacobson, USA

**415 The glucocorticoid dexamethasone strongly induces ZBTB16 expression in human insulin-secreting beta cells**

A. Karagiannopoulos, E. Westholm, J. Ofori, E. Cowan, J. Esguerra, L. Eliasson, Sweden

**416 Differential expression of phosphorylated Tau forms in the brain, nerves and pancreas in health and disease**

C. Lekka, S. Dhayal, H. Tulmin, C.S. Flaxman, M.L. Zeissler, N.G. Morgan, J.A. Todd, S. Richardson, I.M. Stefana, UK

**417 Mechanistic investigation into the role of type 2 diabetes-associated STARD10 in insulin secretion and pancreatic beta cells**

W. Tan, N. Amirruddin, M. Hu, S. Muralidharan, P. Banke, F. Torta, N.H. Ng, G.A. Rutter, A.K. Teo, Singapore, UK, Canada

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 21 The fat burning the islets**

Chair: M. Nagao, Sweden

**418 Islet autotransplantation/total pancreatectomy vs pancreatoduodenectomy in patients at high risk for POPF: a prospective randomised trial**

L. Piemonti, R. Melzi, R. Nano, A. Mercalli, F. Aleotti, G. Capretti, A. Zerbi, G. Balzano, Italy

EASD  
EFSD

GENERAL  
INFO

**419 Alterations of human islet G protein-coupled receptor expressomes in response to obesity**

Z. Lyu, M. Zhao, D. Hopkins, P. Atanes, S.J. Persaud, UK

PROGRAMME

TUESDAY

**420 Islet mRNA expression of GRKs,  $\beta$ -arrestins and RGS proteins in humans and mice under conditions of obesity**

J. Starikova, P. Atanes, D. Hopkins, M. Zhao, S.J. Persaud, UK

WEDNESDAY

**421 Perilipin 2 protects against lipotoxicity-induced islet fibrosis by restoring islet stellate cells quiescence**

Y. Zhou, H. Wang, Y. Wang, Z. Sun, J. Ma, China

THURSDAY

FRIDAY

**422 Short-chain fatty acids receptors modulate the function and plasticity of pancreatic alpha cells**

A. Sánchez-Roncero, T. Fernández-Marcelo, P. Martínez-Oca, R. Sánchez-Domínguez, J.C. Segovia, F. Escrivá, C. Álvarez, E. Fernández-Millán, Spain

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

**423 Characterisation of visceral adipose tissue-derived Ccl4 on beta cell function**

T. Ashik, P. Atanes, N. Haq, G.A. Bewick, S.J. Persaud, UK

SATELLITE  
SYMPOSIA

**424 Oxidative ER stress in beta cells: the role of ERO-1 $\alpha$  in palmitate-mediated toxicity**

S. Sharifi, I. Mehmeti, Germany

INDUSTRY

PROGRAMME

**425 Intrapancreatic adipose tissue accumulation is associated to beta cell dedifferentiation in humans**

F. Cinti, T. Mezza, C. Cefalo, S. Moffa, F. Impronta, G. Di Giuseppe, U. Capece, G. Ciccarelli, L. Soldovieri, I. Severi, S. Cinti, A. Giaccari, Italy

EXHIBITION

## Short Oral Discussions Event D Wednesday, 13:15 - 14:15

### SO 22 Exercise and diabetes: much to learn!

*Chair:* B. Stocks, Denmark

#### 426 Positive effects of physical activity on prescription on glycaemic control, fitness and quality of life in newly diagnosed type 2 diabetic patients in a randomised control trial

T.N. Nguyen, I. Van der Ploeg, C.J. Sundberg, H.T. Vu, Viet Nam, Sweden

#### 427 Blood glucose response to cycling and running in individuals with type 1 diabetes: a systematic review and meta-analysis

M.L. Eckstein, F. Aziz, F. Aberer, S. Böckel, R.T. Zimmer, M. Erlmann, H. Sourij, O. Moser, Germany, Austria

#### 428 Pulmonary function in uncomplicated type 1 diabetes: blunted during exercise even though normal at rest

I. Jlali, E. Heyman, R. Matran, G. Marais, A. Descatoire, R. Rabasa-Lhoret, M. Pawlak-Chaouch, P. Mucci, P. Fontaine, G. Baquet, S. Tagougui, France, Canada

#### 429 Barriers to exercise in type 1 diabetes individuals with insulin resistance

A.M. Alobaid, M.A. Zulyniak, M. Hopkins, M.D. Campbell, UK

#### 430 Insulin glargine u300 versus insulin degludec around spontaneous exercise sessions in people with type 1 diabetes: the Ultraflexi-1 study

H. Sourij, A. Mueller, F. Aberer, F. Aziz, H. Kojzar, C. Sourij, A. Obermayer, F. Abbas, M.L. Eckstein, J. Lenz, C. Sternad, P.N. Pferschy, N.J. Tripolt, H. Ziko, O. Moser, Austria, Germany

## Short Oral Discussions Event E Thursday, 12:00 - 13:00

### SO 23 Gestational diabetes and pregnancy

*Chair:* K.E. Berntorp, Sweden

#### 431 Impaired pregravid beta cell function is associated with adipose tissue insulin resistance and increased risk of gestational diabetes

N. Michael, S.A. Sadananthan, J. Yaligar, S.L. Loy, L.J. Li, K.H. Tan, K. Godfrey, P.D. Gluckman, Y.S. Chong, Y.S. Lee, M. Wlodek, S.Y. Chan, J.K. Chan, S. Velan, J.G. Eriksson, Singapore, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**432 Analysis of factors determining neonatal birth weight in patients with type 1 diabetes treated with personal insulin pump**  
M. Zurawska-Klis, M. Kosinski, K. Cypryk, Poland

**433 Prolactin levels associate with insulin secretion in pregnancy and are reduced in multi- vs nulliparous women**  
D. Löffler, J. Hummel, L. Sandforth, A.L. Birkenfeld, H. Preissl, A. Peter, A. Fritsche, R. Wagner, M. Heni, L. Fritsche, Germany

EASD  
EFSD

**434 Hypoglycaemia increases during pregnancy after gastric bypass: the Bariatric surgery And consequences for Mother and Baby In pregnancy (BAMBI) study**

L.L. Stentebjerg, L.R. Madsen, R.K. Støvning, L.T. Andersen, C.A. Vinter, C.B. Juhl, D.M. Jensen, Denmark

GENERAL  
INFO

**435 Body composition and effect of insulin treatment during pregnancy in Socs2<sup>-/-</sup> mice with gestational diabetes and macrosomia**

L. Hernandez-Baraza, C. Valverde-Tercedor, M. Díaz, A.M. Wägner, L. Fernández-Pérez, B. Guerra, Y. Brito-Casillas, Spain

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**436 Insulin sensitivity, growth differentiation factor-15 and fetuin-B during pregnancy after assisted reproductive therapy in the STORK cohort**

E. Qvigstad, M.-C.P. Roland, K. Godang, T. Lekva, Norway

**437 Metabolic syndrome prevalence in women with gestational diabetes**

V. Bartakova, K. Chalasova, L. Pacal, P. Janku, K. Kankova, Czech Republic

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

SATELLITE  
SYMPOSIA

**SO 24 Life with diabetes from conception to delivery**

*Chair:* TBA

INDUSTRY

PROGRAMME

EXHIBITION

**438 Pregnancy in women with hyperglycaemia in pregnancy: impact of multiples vulnerabilities on fetal growth**

H. Bihan, C. Nachtargaele, E. Vicaud, M. Sal, N. Berkane, S. Pinto, S. Tatulashvili, M. Fermat, L. Carbillon, E. Cosson, France

**439 The relationship between clinically significant neonatal hypoglycaemia and cord blood C-peptide levels in neonates of mothers with type 1 diabetes**

G. Aharon-Hananel, K. Levi, R. Hemi, E. Barhod, O. Kordi-Patime, S. Mazaki-Tovi, R. Yoeli-Ullman, T. Cukierman-Yaffe, Israel

**440 The contribution of maternal glucose to birth weight is less in Uganda (sub-Saharan Africa) compared to white and black ethnic groups in the HAPO study**

W.P. Nakanga, I. Sekitoleko, R.C. Andrews, T. Salome, A.G. Jones, B.M. Shields, A.T. Hattersley, M.J. Nyirenda, UK, Uganda

**441 The use of intermittently scanned CGM vs sensor augmented pump in a cohort of pregnant women with type 1 diabetes: efficacy on glycaemic control and pregnancy outcomes.**

C. Font, N. Seguí, V. Perea, M. Rabassa, D. Roca, J. Bellart, M. Giménez, I. Conget, I. Vinagre, Spain

**442 Are pre-pregnancy body mass index and gestational weight gain associated with maternal and infant adverse outcomes in French women with type 1 diabetes?**

A. Vambergue, V. Laurent, M. Lemaitre, C. Ternynck, J. Bourry, F. Baudoux, D. Subtil, France

**443 Does the prognosis of gestational diabetes differ whether it is diagnosed through fasting and/or post-load high glucose values?**

E. Cosson, M. Sal, N. Berkane, S. Pinto, C. Nachtergaele, S. Tatulashvili, J.-J. Portal, E. Vicaut, L. Carbillon, H. Bihan, France

**444 Polyhydramnios in early pregnancy with normal OGTT is an indicator for further investigation regarding suboptimal glucose patterns in In Vitro Fertilisation pregnancies**

P. Thomakos, C. Barreto, A. Korantzis, O. Kepaptsoglou, I. Sklavounos, E. Faros, C.S. Zoupas, Greece

**445 Free fatty acid-induced alterations in hepatic glucose metabolism during gestation in prediabetic mice**

M. Liebmann, M. Asuaje Pfeifer, S. Scherneck, Germany

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 25 Insulin sensitivity: lessons from cellular and animal models**

*Chair:* M. Trajkovski, Switzerland

**446 Development of a 3D innervated human muscle-on-a chip model for diabetes research**

J. Son, J. Ahn, O.-K. Hong, S. Lee, S. Chung, Republic of Korea

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**447 Epithelial insulin signalling: A gatekeeper of the gut barrier function?**

S. Guilmeau, D. Gueddouri, M. Cauzac, F. Sicherre, G. Boudry, A.-F. Burnol, France

**448 Dietary sugar intake contributes to poor metabolic health and increased NASH-fibrosis risk in mice, regardless of glycaemic index**

S.G. Lucic Fisher, A.E. Brandon, M. Huang, S.M. Solon-Biet, K.S. Bell-Anderson, Australia

EASD  
EFSD

**449 A new role of endoplasmic reticulum-mitochondria calcium coupling in nutrient-induced Glucagon-Like Peptide 1 (GLP-1) secretion by L cells**

A. Humbert, J. Rieusset, France

GENERAL  
INFO

**450 Hexokinase-2 linked scheduled glycolysis as a driver of insulin resistance linked dysglycaemia: evidence in the murine C2C12 myotube model in vitro**

M. Xue, N. Rabbani, P. Thornalley, Qatar

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**451 Loss of insulin-degrading enzyme function leads to impaired glucagon signalling and enhanced mitochondrial respiration in hepatocytes**

C.M. González-Casimiro, J. Santo-Domingo, I. Cózar-Castellano, G. Perdomo, Spain

SHORT ORAL  
DISCUSSIONS

**452 Effects of protein restriction on glucose tolerance and large intestine morphofunction in C57Bl/6 mice**

K.M. de Oliveira, B.L. Alves, J.A. Silva Junior, G.M. Soares, F. Mousovich-Neto, R.A. Ribeiro, E.M. Carneiro, Brazil

PRESENTER  
INDEX

**453 A hepatic vesicular glucose production dependent on Caveolin-1 controls energy and glucose metabolism**

L. Da Costa, C. Saint-Béat, C. Bron, A. Duchamp, G. Mithieux, A. Gautier-Stein, France

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 26 Novel markers and omics signatures**

*Chair:* T. Nyström, Sweden

**454 Increased methylglyoxal formation in plasma and tissues during a glucose tolerance test originates from exogenous glucose and is enhanced in diabetes**

X. Zhang, J. Scheijen, G. Duchateau, M. Alsema, M. Teunissen, D. Sun, T. Kusters, G. Dole, C. Stehouwer, K. Wouters, C. Schalkwijk, Netherlands



#### **455 Skeletal muscle creatine metabolism is altered in type 2 diabetes**

D. Rizo-Roca, L.A. Pendergrast, A.V. Chibalin, H.K. Karlsson, M. Rydén, E. Näslund, J.R. Zierath, A. Krook, Sweden

#### **456 Reduced incretin effect is an early sign of diabetes appearance.**

##### **A study in a human model of beta cell mass reduction**

G. Di Giuseppe, C.M. Cefalo, S. Moffa, F. Cinti, G. Ciccarelli, L. Soldovieri, U. Capece, F. Impronta, A. Mari, R.N. Kulkarni, J.J. Holst, A. Giaccari, T. Mezza, Italy, USA, Denmark

#### **457 Ex vivo and in vivo experimental investigation of miR-148a-3p as a novel therapy for insulin secretion and type 2 diabetes**

E. Cowan, C. Luan, J.K. Ofori, A. Karagiannopoulos, J.L. Esguerra, C. Ling, E. Zhang, L. Eliasson, Sweden

#### **458 Transcriptional abnormalities in adipose tissue of humans with inherited insulin resistance**

R. Kruse, A.B. Hansen, N. Sahebkhthiari, K. Brusgaard, K. Højlund, Denmark

#### **459 Oral D-xylose plasma appearance as a biomarker for intestinal glucose absorption in minipigs**

R. Goutchtat, C. Marciniak, G. Baud, M. Gobert, V. Vangelder, A. Quenon, A. Dive, M. Pottier, T. Rabier, S. Lapière, V. Raverdy, R. Caiazzo, T. Hubert, F. Pattou, France

#### **460 Single-cell transcriptomic analysis of human enteroendocrine cells in primary ileal and duodenal organoid culture**

R. Bany Bakar, C.A. Smith, V.B. Lu, N. Guccio, D. Goldspink, E. Miedzybrodzka, F.M. Gribble, F. Reimann, UK

### **Short Oral Discussions Event C    Wednesday, 12:00 - 13:00**

#### **SO 27    If you cannot measure it, you cannot improve it: novel methods in diabetes research**

*Chair:*    M. Buitinga, Netherlands

#### **461 Do indices from mixed meal tolerance test follow the hyperbolic relationship between insulin sensitivity and insulin secretion?**

N. Nielsen, K. Karstoft, H. Ellingsgaard, L. Lehrskov, N. Pilmark, M. Ried-Larsen, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**462 Tissue-specific and whole-body insulin sensitivity by integrated imaging and hyperinsulinaemic euglycaemic clamp: a repeatability study in type 2 diabetes subjects**

I. Laitinen, H. Litorp, F. Sjöberg, H. Haraldsson, S. Ekström, S. Pierrou, S. Southeikal, M. Lu, T. Coskun, Z. Milicevic, L. Johansson, Sweden, USA

**463 The insulin sensitivity index derived from euglycaemic clamps is correlated to liver fat content determined by magnetic resonance spectroscopy in type 1 diabetes**

J. Mertens, S. Francque, M. Spinhoven, F. Vanhevel, C. De Block, Belgium

EASD  
EFSD

GENERAL  
INFO

**464 Evaluation of renal glucose uptake with [<sup>18</sup>F]FDG-PET: methodological advancements and clinical outcomes**

E. Rebelos, A. Mari, V. Oikonen, H. Iida, P. Nuutila, E. Ferrannini, Finland, Italy

PROGRAMME

TUESDAY

**465 Zinc-dependent insulin multimerisation: a study using FRET**

R. Fritzen, A.J. Gourley, C.A. Blindauer, J. Penedo, A.J. Stewart, UK

WEDNESDAY

**466 Mechanisms underlying nutrient sensing in human glucose-dependent insulinotropic polypeptide secreting cells**

N. Guccio, E.L. Miedzybrodzka, C.A. Smith, R. Bany Bakar, F. Reimann, F.M. Gribble, UK

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 28 Understanding insulin sensitivity: lessons from the clinic**

*Chair:* J. Gojda, Czech Republic

**467 Comparison of predictive value of insulin resistance indices in young women with polycystic ovary syndrome**

S. Hong, Y.-A. Sung, Y. Hong, H. Lee, K. Jeong, H. Chung, D. Song, H. Jung, Republic of Korea

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

**468 Identification of myokines potentially involved in the improvement of glucose homeostasis after bariatric surgery**

L. Orioli, M. Canouil, K. Sawadogo, L. Ning, L. Deldicque, P. Lause, M. De Barsey, P. Froguel, A. Loumaye, Y. Deswysen, B. Navez, A. Bonnefond, J.-P. Thissen, Belgium, France, UK

EXHIBITION

**469 Do sex differences in pediatric type 1 diabetes exist? A systematic review**

S.A. De Vries, C.L. Verheugt, D. Mul, M. Nieuwdorp, T.C. Sas, Netherlands

**470 Effects of Lisosan-G on postprandial hypoglycaemia after bariatric surgery**

D. Moriconi, S. Baldi, L. Antonioli, L. Pucci, S. Taddei, M. Nannipieri, Italy

**471 Rabson-mendenhall syndrome: a rare cause of severe insulin resistance**

R. Helal, T. Muammar, E.G. Fojas, N. Lessan, United Arab Emirates

**472 Metformin has dual effects on insulin hypersecretion: opportunity to improve glucose metabolism in children with obesity**

Q. Wen, R. Stenlid, A.I. Chowdhury, I. Ciba, B.K. Aydin, S.Y. Cerenius, A. Forslund, P. Bergsten, Sweden

**473 Changes in insulin sensitivity and the presence of partial clinical remission in type 1 diabetes: Prospective InLipoDiab1 study**

A. Grzelka-Wozniak, A.S. Januszewski, P. Niedzwiecki, A.J. Jenkins, D. Zozulinska-Ziolkiewicz, A. Uruska, Poland, Australia

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

**SO 29 Glucose homeostasis regulation beyond insulin**

*Chair:* A. Wojtuszczyzn, Switzerland

**474 Carotid body: a new intervenient of GLP-1 effects in cardiometabolic homeostasis**

D. Sampaio-Pires, F.O. Martins, B.F. Melo, J.F. Sacramento, S.V. Conde, Portugal

**475 Insulin resistance is associated with an elevated glucose-dependent cortisol axis response: Impact in type 2 diabetes?**

M.H. Lundqvist, M.J. Pereira, J.W. Eriksson, Sweden

**476 The ghrelin-NPY system in adipose tissue as a potential therapeutic target in type 2 diabetes**

D. Rosendo-Silva, H. Eickhoff, P. Gomes, T. Monteiro-Alfredo, S. Viana, A.S. Pires, M. Abrantes, F. Reis, F. Botelho, R. Seica, P. Matafome, Portugal

**477 Effect of ghrelin infusion on glucose tolerance and appetite after sleeve gastrectomy**

N. Hedbäck, M.-L. Dichman, C. Dirksen, K.N. Bojsen-Møller, N.B. Jørgensen, M. Hindsø, V.B. Kristiansen, J.J. Holst, M.S. Svane, S. Madsbad, Denmark

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

**478 Pentose phosphate pathway utilisation of gluconeogenic glucose-6-phosphate is increased in mice fed a high-fat/high-fructose diet compared to high-fructose alone**

G. Belew, A. Costa, M. Meneses, I. Viegas, L. Tavares, P. Oliveira, M. Macedo, J. Jones, Portugal

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

EASD  
EFSD

GENERAL  
INFO

**SO 30 Non-classical regulators of metabolism**

*Chair:* N. Mejhert, Sweden

**479 Extracellular miRNAs related to obesity and type 2 diabetes as potential biomarkers for adipose tissue dysfunction**

M. Clemente-Postigo, C. Tercero-Alcazar, M. Blasco-Montolio, R. Guzmán-Ruíz, M. Malagon, Spain

**480 Investigation of small non-coding RNA modulation in islet macrophages during obesity and diabetes**

C. Cosentino, A. Galli, F. Brozzi, R. Regazzi, Switzerland, Italy

**481 Cxcl12/sdf-1 regulates skeletal muscle immunometabolism in type 2 diabetes**

N.J. Pillon, L. Lehtonen, A. Marica, J.A. Smith, A.V. Chibalin, A. Krook, J.R. Zierath, Sweden

**482 Bax Inhibitor 1 protects against pancreatic beta cell death and metabolic disorders**

M. Blanc, P. Xiao, J. Gilleron, M. Janona, S. Lacas-Gervais, L. Yvan-Charvet, P. Gual, A. K Cardozo, B. Bailly-Maitre, France, Belgium

**483 A potential role of liver-expressed ASK1 in body weight regulation**

A. Goergen, T.D. Challa, S. Wueest, D. Konrad, Switzerland

**484 Effect of maternal age and metabolic syndrome on early embryo development in a mouse model**

J. Lilao-Garzon, Y. Brito-Casillas, S. Munoz-Descalzo, A. Wägner, Spain

**485 Effect of lipotoxic hepatocyte-derived extracellular vesicles in pancreas inflammation and beta cell functionality**

R. Alén, N. Cobo-Vuilleumier, B.R. Gauthier, I. Garcia-Martinez, Á.M. Valverde, Spain

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**486 Neurometabolic and behavioural alterations in the adolescent offspring upon maternal glycation**

A. Amaro, D. Sousa, M. Sá-Rocha, M. Júnior, C. Barra, T. Monteiro, R. Mello-Gomes, F.I. Baptista, P. Matafome, Portugal, Brazil

**487 Exposure to obesogenic environments during perinatal development modulates nutrient-sensing pathways in adipose tissue**

D. Sousa, A. Amaro, M.F. Junior, S. Pereira, M. Rocha, C. Barra, R. Mello-Gomes, P. Oliveira, P. Matafome, Portugal

EASD  
EFSD

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

GENERAL  
INFO

**SO 31 Gut feelings are good**

*Chair:* P. Larraufie, France

**488 Gut-hormone ghrelin regulates female reproductive function in healthy and high-fat fed rodents**

D. Khan, A. Sridhar, P.R. Flatt, R.C. Moffett, UK

**489 Relation between intestinal acetate production and plasma glucose levels in healthy subjects**

M. Wijdeveld, Netherlands

**490 Mechanisms underlying the beneficial effects of bariatric surgery on cardiometabolic risk in a ten-year long cohort study**

S. Simati, D. Tsilingiris, A. Angelidi, K. Stefanakis, N. Tentolouris, I. Anastasiou, A. Alexandrou, C. Mantzoros, A. Kokkinos, Greece, USA

**491 Analysis of intestinal morphology and incretin-producing cells using tissue optical clearing and 3-D imaging**

T. Hatoko, N. Harada, S. Tokumoto, S. Yamane, E. Ikeguchi-Ogura, T. Kato, T. Yasuda, H. Tatsuoka, S. Shimazu-Kuwahara, D. Yabe, Y. Hayashi, N. Inagaki, Japan

**492 Gut derived extracellular vesicles have high affinity to the liver and their enrichment in lipids is associated to the development of metabolic diseases**

R.M. De Oliveira, I. Ferreira, I. Coelho, F. Carli, B. Costa-Silva, A. Gastaldelli, P. Macedo, Portugal, Italy

**493 Intestinal dysbiosis and serum metabolites suggest an early progression to type 2 diabetes in patients with extreme obesity**

A. Penesova, L. Kubanova, I. Hric, K. Šoltýs, Ž. Rádiková, M. Kolisek, V. Bielik, Slovakia

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

#### **494 Bile acids after bariatric surgery: a gateway to mitochondrial activation in human adipocytes**

S. Heinonen, E. Herbers, B. Van der Kolk, T. Saarinen, A. Perino, J. Kuula, A. Hakkarainen, H. Peltoniemi, P.-H. Groop, E. Pirinen, K. Schoonjans, M. Neuvonen, M. Niemi, A. Juuti, K. Pietiläinen, Finland, Switzerland

#### **495 Different impact of dietary fructose and galactose on metaflammation in rats: protective effects of prebiotic fructooligosaccharydes supplementation**

R. Mastrocola, D. Collotta, F. El-Masri, C. Murzio, E. Aimaretti, M. Aragno, J. Frank, M. Collino, Italy, Germany

#### **496 Altered glucose tolerance conditions are associated with an activation of ER stress related responses in the gut**

T.V. Fiorentino, F. De Vito, R. Marasco, E. Suraci, M.L. Hribal, F. Andreozzi, F. Luzzza, G. Sesti, Italy

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

### **Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

#### **SO 32 Latest drug avenues to treatment**

*Chair:* K.A. Toulis, Greece/United Kingdom

#### **497 Effect of the early and postponed statin therapy after menopause on metabolic and inflammatory factors in rat model of prediabetes**

M. Hüttl, I. Markova, H. Malinska, D. Miklankova, T. Hlinka, J. Pitha, H. Bartuskova, Czech Republic

#### **498 Impact of once-weekly subcutaneous semaglutide 2.4 mg on metabolic syndrome in the 2-year, randomised controlled STEP 5 trial**

R.L. Batterham, M. Bhatta, T. Holst-Hansen, K. Kandler, G. Rigas, W.T. Garvey, UK, Denmark, Australia, USA

#### **499 Associations between weight loss and glycaemic control with once-weekly semaglutide 1.0 mg and 2.4 mg in the STEP 2 trial**

M. Davies, L. Færch, B. Goldman, A. Pakseresht, S. Pedersen, J. Rosenstock, I. Lingvay, UK, Denmark, Canada, USA

#### **500 Dapagliflozin protects human cardiac progenitor cells from deleterious effects of the secretome from visceral adipose cells of obese subjects**

G. Palma, C. Caccioppoli, R. D'Oria, V.A. Genchi, I. Calderoni, A. Braun, G. Santarpino, A.D. Milano, A. Cignarelli, A. Natalicchio, L. Laviola, A. Pezzolla, F. Giorgino, S. Perrini, Italy

**501 The effects of MS-275, HDAC Class I inhibitor, in diabetic skeletal muscle atrophy**

J. Jeon, S.-E. Choi, J. Jeong, S. Park, Y. Kang, T. Kim, S.-Y. Ahn, H. Kin, S. Han, N. Lee, D. Kim, K.-W. Lee, Republic of Korea

**502 Svep1-based peptide as a potential therapeutic agent against adipose tissue dysfunction**

N. Kislev, D. Benayahu, Israel

**503 Effects of the bile acid TUDCA on glucose metabolism and skeletal muscle loss in senile mice**

M. Carvalho, L. Zangerolamo, L.B. Santos, H.C. Barbosa, Brazil

**504 Empagliflozin effect on renal parameters and metabolism in a prediabetic rat model: urinary proteomic and metabolomic approach**

H. Malinska, I. Markova, M. Hüttl, D. Miklankova, J. Stastny, P. Kacer, Czech Republic

**505 SGLT2 inhibition prevents high fat diet-induced glucose intolerance, but not weight gain, in C57BL/6 male mice**

T. Li, W. Zhu, Z. Sun, C. Rayner, R. Young, T. Wu, China, Australia

**506 Metreleptin robustly increases resting-state brain connectivity in patients with lipodystrophy**

H. Schlögl, A. Villringer, K. Miehle, M. Stumvoll, K. Mueller, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 33 Insulin in action**

*Chair:* M. Sander, USA

**507 Different CD36 subcellular localisation in beta cells between diabetes-prone and -resistant mice: possible involvement of CD36 in beta cell dysfunction**

M. Nagao, A. Asai, M. Okazaki-Hada, H. Sugihara, L. Eliasson, S. Oikawa, Japan, Sweden

**508 Preservation of glucose homeostasis in mice with conditional beta cell specific deletion of the dual leucine zipper kinase in a prediabetic condition**

J. Duque Escobar, K.A. Köster, M. Dethlefs, S. Schröder, E. Oetjen, Germany

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**509 Impaired insulin secretion by decreased potassium conductance of beta cells in a prediabetic mouse model**

M. Asuaje Pfeifer, K. Grupe, M. Liebmann, I. Rustenbeck, S. Scherneck, Germany

**510 Endogenous glucose-dependent insulinotropic polypeptide (GIP) facilitates postprandial intestinal lipid uptake**

L.S. Gasbjerg, M.M. Helsted, S. Stensen, L.S. Krogh, A.H. Sparre-Ulrich, B. Hartmann, T. Vilsbøll, M.B. Christensen, J.J. Holst, C. Christoffersen, F.K. Knop, M.M. Rosenkilde, Denmark

EASD  
EFSD

GENERAL  
INFO

**511 Inhibition of pyruvate dehydrogenase kinase 4 alleviates insulin resistance through the PI3K/AKT signalling pathway**

M.-J. Kim, R. Kim, S. Kwon, J.-H. Jeon, I.-K. Lee, Republic of Korea

PROGRAMME

TUESDAY

**512 The roles of SCD enzyme and appetite hormones in the associations of plasma cysteine with obesity and insulin resistance: The Maastricht Study**

E.C. Tore, B. Adriaans, A.K. Elshorbagy, M.C. Brouwers, P.C. Dagnelie, S.J. Eussen, T.E. Gundersen, E. Kooi, Y.H. Kusters, T. Olsen, H. Refsum, C.G. Schalkwijk, C.D. Stehouwer, K.J. Vinknes, M.M. Van Greevenbroek, Netherlands, UK, Norway

WEDNESDAY

THURSDAY

FRIDAY

**513 Bone morphogenetic protein 4 (BMP4) and its receptor BMPR1A in human adipose tissue and its regulation by insulin and free fatty acids**

M. Dobrzycka, M. Stefanowicz, N. Matulewicz, A. Nikolajuk, J. Dadan, P. Mysliwiec, I. Kowalska, M. Karczewska-Kupczewska, Poland

SHORT ORAL  
DISCUSSIONS

**514 Interleukin-33 (IL33) inhibits glucose uptake in human adipocytes and its expression in adipose tissue is elevated in insulin resistance and type 2 diabetes**

M.J. Pereira, A. Azim, B.N. Jui, J. Kullberg, M.H. Lundqvist, J.W. Eriksson, Sweden

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 34 The hepato-skeletal impact on metabolic control**

*Chair:* A. Krook, Sweden

**515 Hepatic OPA1 deficiency impacts mitochondrial plasticity, lipoprotein metabolism and liver steatosis**

G. Norata, A. Moregola, P. Uboldi, L. Scorrano, L. Da Dalt, Italy

EXHIBITION



**516 Adenosine: a new functional marker and therapeutic target for the link insulin resistance-non-alcoholic fatty liver disease**

R.E. Figueiredo, F.O. Martins, R.O. Oliveira, S.V. Conde, Portugal

**517 Disturbance of hepatic tight junctions by hypercaloric diets precedes intestinal barrier disruption**

M.J. Meneses, B. Patrício, G.D. Belew, F. Carli, J.G. Jones, A. Gastaldelli, M.P. Macedo, Portugal, Italy

**518 Fetuin-a promotes lipid induced DPP4 expression in pancreatic beta cells**

S. Nag, S. Mandal, R. Kundu, India

**519 The effects of deferoxamine (DFO) on DEX-induced muscle atrophy in C57BL/6J mice**

K.-W. Lee, S.-E. Choi, J. Jeong, S. Park, M. Song, Y. Son, Y. Kang, T. Kim, S.-Y. Ahn, H. Kim, S. Han, J. Jeon, N. Lee, D. Kim, Republic of Korea

**520 Meta-inflammation and de novo lipogenesis markers are involved in metabolic associated fatty liver disease progression in BTBR ob/ob mice**

S. Mas, Spain

**521 Skeletal muscle mitochondrial inertia is associated with carnitine acetyltransferase protein activity and physical function in humans**

M.K. Hesselink, R. Mancilla, L. Lindeboom, L. Grevendonk, J. Hoeks, T.R. Koves, D.M. Muoio, P. Schrauwen, V.B. Schrauwen-Hinderling, Netherlands, USA

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

**SO 35 Metabolic inflexibility and complications in humans**

*Chair:* J. Jendle, Sweden

**522 A genetic polymorphism with structural impact, blood levels, expression in adipose tissue, and engineered adipocytes functionally link Olfactomedin 2 to obesity**

A. Lluch, J. Latorre, I. Espadas, J. Moreno-Navarrete, A. Martín-Montalvo, J. Fernández-Real, F. Ortega, Spain

**523 Development of a predictive model for short and medium-term weight loss in people with type 2 diabetes attending a weight management programme**

L. Al-Abdullah, P. Welsh, J. Logue, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**524 Metabolic inflexibility in type 2 diabetes is supported by untargeted metabolomics during OGTT**

G. Fanni, J.W. Eriksson, M.J. Pereira, Sweden

**525 The relationship between obesity and depression is partly dependent on metabolic status: a nationwide inpatient sample database study**

Z. Wang, J. Zhao, X. Fan, China

EASD  
EFSD

**526 Oxytocin correlates with body dysmorphic concerns and predicts weight loss in patients with obesity after a very low carbohydrate ketogenic diet**

R. Tozzi, R. Rossetti, S. Basciani, D. Masi, R. Risi, A. Balena, M. Spoltore, M. Watanabe, S. Mariani, L. Gnessi, C. Lubrano, Italy

GENERAL  
INFO

PROGRAMME

TUESDAY

**527 Type 2 diabetes is associated with decreased activation and increased cytokine production by blood lymphocytes: a human flow cytometry study**

D. Gašparini, I. Kavazović, Ž. Mijolović, I. Klarić, A. Prunk Drmić, V. Peršić, F.M. Wensveen, T. Turk Wensveen, Croatia

WEDNESDAY

THURSDAY

**528 Relationship between soluble receptor for advanced glycation end products (sRAGE) and obesity in individuals with type 1 diabetes during a median follow-up of 12 years**

K. Adeshara, E.B. Parente, V. Harjutsalo, M. Lehto, P.-H. Groop, on behalf of FinnDiane Study Group, Finland

FRIDAY

SHORT ORAL  
DISCUSSIONS

**529 Probing Zn<sup>2+</sup>-HSA interactions using mutagenesis and isothermal titration calorimetry**

A.J. Stewart, S.J. Hierons, D. Wu, S. Arya, C.A. Blindauer, U

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

INDUSTRY

**SO 36 Modelling obesity and type 2 diabetes**

*Chair:* B. Merino Antolin, Spain

PROGRAMME

**530 Arrest of long-chain acylcarnitine synthesis prevents inflammation and insulin resistance in adipose tissue of high-fat diet-fed TMLHE knockout mice**

E. Liepins, B. Svalbe, H. Cirule, M. Videja, M. Dambrova, Latvia

EXHIBITION

**531 Haematopoietic cell-derived Oncostatin M regulates metabolic responses to high-fat diet in mice**

M. Albiero, S. Ciciliot, A. Rodella, L. Migliozzi, F.I. Amendolagine, G. Zuccolotto, A. Rosato, G.P. Fadini, Italy

**532 Irisin protects against obesity-related kidney disease by regulating perirenal adipose tissue function in obese mice**

X. Sun, F. Han, C. Kan, N. Hou, China

**533 The adipocyte-specific deletion of the tumor suppressor gene CDKN2a improves glucose tolerance in high-fat diet-fed mice**

Y. Kahoul, J. Moutaigne, E. Caron, A. Bongiovanni, F. Oger, P. Froguel, A. Bonnefond, J.-S. Annicotte, C. Breton, France

**534 Nbw4 locus on mouse chromosome 4 harbors candidate genes which protect from fat accumulation and obesity**

J. Khuong, D. Altenhofen, T. Kuhn, S. Görigk, S. Lebek, B. Knebel, A. Schürmann, A. Chadt, H. Al-Hasani, Germany

**535 Identification of candidate genes for metabolic traits in an obese mouse model integrating multiomics data**

D. Hesse, M. Delpero, M. Sprechert, D. Arends, G.A. Brockmann, Germany

**536 Neurometabolic changes in the hippocampus of type 2 diabetic rats: an imaging perspective towards clinical applications**

B. Caramelo, T. Monteiro-Alfredo, J. Martins, J. Sereno, B. Manadas, M. Castelo-Branco, P. Matafome, Portugal

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 37 Dietary and nutritional interventions**

*Chair:* C. Cavelti-Weder, Switzerland

**537 Ketogenic diet administration to mice after a high fat diet regimen promotes histone  $\beta$ -hydroxybutyralion associated to weight loss and improved metabolic fitness**

S. Nasser, T. Solé, N. Vega, A. Balcerczyk, M. Strigini, L. Pirola, France, Poland

**538 A 36-month high-protein and high-unsaturated fatty-acid dietary intervention improves HbA<sub>1c</sub> in subjects aged 50-80y: preliminary results of the NutriAct Trial**

L. Pletsch-Borba, C. Wernicke, N. Meyer, T. Huong Nguyen, A. Pohrt, S. Hornemann, C. Gerbracht, A. Pfeiffer, J. Spranger, K. Mai, Germany

**539 Intermittent fasting by the 5:2 diet is feasible and improves risk factors for cardio-vascular disease equally in type 2 diabetes and overweight subjects without diabetes**

A. Hellberg, N. Rajamand Ekberg, M.L. Sundqvist, I. Eriksson, A. Lindén Hirschberg, S.-B. Catrina, K. Brismar, Sweden

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

**540 Short term isocaloric ketogenic diet modulates NLRP3 inflammasome via  $\beta$ -hydroxybutyrate and fibroblast growth factor 21**  
S. Woo, Republic of Korea

**541 Pre-meal low-dose whey protein microgel increases bioavailability of branched chain amino acids in people with type 2 diabetes: a randomised, PBO-controlled crossover study**

O. Johansen, B. Ahrén, J. Corthesy, Y. Grzywinski, M. Von Eynatten, I.J. Neeland, Switzerland, Sweden, USA

EASD  
EFSD

**542 Effects of 10-h time-restricted eating on body weight and cardiometabolic health in individuals at high risk of type 2 diabetes (RESET): a randomised controlled trial**

J.S. Quist, H. Pedersen, M.M. Jensen, K.K. Clemmensen, J. Størling, N.J. Wewer Albrechtsen, J.J. Holst, S.S. Torekov, D. Vistisen, M.E. Jørgensen, S. Panda, C. Brock, G. Finlayson, M.B. Blond, K. Færch, Denmark, UK, USA

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**543 Intermittent fasting is safe and improves metabolic parameters in people with insulin treated type 2 diabetes: a randomised controlled trial**

A. Obermayer, N.J. Tripolt, P.N. Pferschy, H. Kojzar, F. Aziz, A. Müller, A. Jacan, M. Schauer, A. Oulhaj, F. Aberer, C. Sourij, T.R. Pieber, B. Obermayer-Pietsch, V. Stadlbauer, H. Sourij, Austria, United Arab Emirates

**544 Vegetable juice preload ameliorates postprandial glucose concentration in healthy women: a randomised cross-over trial**

S. Imai, S. Kajiyama, T. Miyawaki, N. Ozasa, S. Kajiyama, Y. Hashimoto, M. Fukui, Japan

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**Short Oral Discussions Event B** **Tuesday, 13:00 - 14:00**

**SO 38 SGLT2 inhibitors and renal outcomes**

*Chair:* P. Fioretto, Italy

**545 Initiation of the SGLT2 inhibitor canagliflozin to prevent kidney outcome guided by HbA<sub>1c</sub> and predicted risk of kidney failure**

S. Tye, N. Jong, S.G. Coca, J. Sundström, C. Arnott, B. Neal, V. Perkovic, P. Vart, H.J. Lambers Heerspink, Netherlands, USA, Sweden, Australia

**546 Effects of dietary sodium and protein intake on early dip of GFR levels in subjects with type 2 diabetes treated with SGLT2 inhibitors**

M. Seghieri, C. Colombi, C. Gaudio, C. Merciai, A. Rosati, C.M. Baggio, Italy

INDUSTRY

PROGRAMME

EXHIBITION

**547 Real-world safety of dapagliflozin in elderly patients with type 2 diabetes in China: post-hoc analysis of the DONATE study**

L. Guo, J. Wang, L. Li, L. Yuan, S. Chen, H. Wang, T. Li, L. Qi, H. Yang, China

**548 To protect the kidney by SGLT2 inhibitors, individualised eGFR slope analysis is needed because of the heterogeneity in each person**

K. Kashima, H. Shimizu, M. Yamada, Japan

**549 Combination treatment impacts levels of endotrophin in the drug combinations for rewriting trajectories of renal pathologies in type 2 diabetes (DC-Ren) study**

F. Genovese, A.L. Møller, S. Thöni, F. Keller, S. Sharifli, D.G. Rasmussen, G. Mayer, Denmark, Austria

**550 Sodium-glucose link transporter-2 inhibitors in reduced renal function: cross-class comparison from the Association of British Clinical Diabetologists (ABCD) audits**

T.S. Crabtree, A. Bickerton, K. Dhatariya, A. Gallagher, J. Elliott, R. Raghavan, I.W. Gallen, R.E. Ryder, UK

**551 Cardiovascular and kidney outcomes with canagliflozin according to type 2 diabetes treatment targets at baseline: data from the CANVAS Program and CREDENCE**

J. Seufert, V. Woo, M.A. Tsoukas, S.W. Tobe, A. Slee, W. Rapattoni, F.G. Ang, D.C. Wheeler, Germany, Canada, USA, Australia, UK

**552 Albuminuria lowering effect of dapagliflozin, eplerenone and their combination in patients with chronic kidney disease a randomised cross-over clinical trial**

M. Provenzano, H.J. L. Heerspink, M. Puchades, C. Garofalo, N. Jongs, M. Adreucci, L. De Nicola, J. Gorriz, Netherlands, Spain, Italy

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 39 Newer agents - cardiovascular outcomes**

*Chair:* J.P.H. Wilding, United Kingdom

**553 Interleukin-6 and cardiovascular outcome in patients with type 2 diabetes: new insights from CANVAS**

A. Koshino, M. Schechter, T. Sen, B.L. Neuen, C. Arnott, B. Neal, V. Perkovic, P.M. Ridker, K.R. Tuttle, M.K. Hansen, H.J. Heerspink, Netherlands, Australia, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**554 Cardiovascular effectiveness of SGLT-2 inhibitors and GLP-1 receptor agonists in routine care of frail people with type 2 diabetes**  
A. Kutz, C. Gopalakrishnan, D.H. Kim, E. Patorno, USA

**555 Precision medicine in type 2 diabetes: integrating trial and real-world evidence can provide accurate estimates of heart failure benefit when initiating SGLT2-inhibitors**

K.G. Young, A.P. McGovern, R. Hopkins, D. Raya, N.A. Sattar, R.R. Holman, E.R. Pearson, A.T. Hattersley, A.G. Jones, B.M. Shields, J.M. Dennis, UK

EASD  
EFSD

**556 GIP infusion acutely decreases blood pressure and increases heart rate in men with type 2 diabetes, concomitantly with increased pro-atrial natriuretic peptide levels**

N.M. Sørum, L.S. Gasbjerg, M.M. Andersen, S.M. Heimbürger, L.S. Krogh, J.J. Holst, T. Vilsbøll, A. Lund, D. Terzic, N.C. Bergmann, F.K. Knop, Denmark

GENERAL  
INFO

PROGRAMME

TUESDAY

**557 Sustainability of HbA<sub>1c</sub> control of tirzepatide vs insulin glargine in people with type 2 diabetes and increased cardiovascular risk: SURPASS-4**

S.E. Kahn, S. Del Prato, I. Pavo, D.R. Franco, Z. Yang, R.J. Wiese, E.R. Pearson, USA, Netherlands, Brazil, UK

WEDNESDAY

THURSDAY

FRIDAY

**558 Systolic blood pressure reduction with tirzepatide across SURPASS programme: a mediation analysis using weight loss as a factor**

O. Mosenzon, I. Lingvay, K. Brown, X. Cui, L. Fernández Landó, H. Patel, Israel, USA

SHORT ORAL  
DISCUSSIONS

**559 Dapagliflozin improves arterial stiffness, myocardial performance and endothelial glycocalyx in patients with type 1 diabetes after four months treatment**

V. Lambadiari, A. Kountouri, K. Katogiannis, G. Pavlidis, E. Korakas, L. Pliouta, G. Kostelli, K. Balampanis, J. Thymis, A. Raptis, I. Ikonomidis, Greece

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**560 Impact of empagliflozin on insulin use in patients with heart failure with preserved ejection fraction (HFpEF) and type 2 diabetes: sub-analysis from EMPEROR-Preserved trial**

J. Butler, J.B. Green, J. Rosenstock, on behalf of the EMPEROR Trial Committees and Investigators, USA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 40 Incretins: impact on BMI**

*Chair:* S. Bain, United Kingdom

**561 Tirzepatide shows beneficial effects on body fat distribution pattern in people with type 2 diabetes**

J. Linge, B. Cariou, I.J. Neeland, O. Dahlqvist Leinhard, M. Petersson, L. Fernandez, R. Bray, A. Rodriguez, Sweden, France, USA

**562 Semaglutide 2.4 mg reduces the 10-year type 2 diabetes risk in people with overweight or obesity**

T.W. Garvey, T. Holst-Hansen, P.N. Laursen, A.R. Rinnov, L. Wilkinson, USA, Denmark

**563 Semaglutide 2.4 mg improved glucose metabolism and reverted prediabetes to normoglycaemia in adults with overweight or obesity vs liraglutide 3.0 mg (STEP 8)**

D.M. Rubino, T.W. Garvey, B. Goldman, U. Khalid, J. Rosenstock, R. Sørrig, USA, Denmark

**564 Tirzepatide reduces appetite, energy intake and fat mass in people with type 2 diabetes**

T. Coskun, T. Heise, J. DeVries, S. Urva, J. Li, E.J. Pratt, M.K. Thomas, K.J. Mather, J. Dunn, A. Haupt, Z. Milicevic, USA, Germany, Netherlands

**565 Changes in abdominal fat and clinical/analytical parameters in tirzepatide- or insulin degludec-treated patients with type 2 diabetes (SURPASS-3 MRI)**

A. Gastaldelli, K. Cusi, L. Fernández Landó, R. Bray, A. Torcello-Gómez, B. Brouwers, Á. Rodríguez, Italy, USA

**566 Tirzepatide induces weight loss in patients with type 2 diabetes regardless of baseline BMI: a post hoc analysis of SURPASS-1 through SURPASS-5 studies**

J.P. Wilding, A.Y. Kwan, J.M. Maldonado, H. Wang, N. Rasouli, UK, USA

**567 Effect of once-weekly semaglutide 2 mg vs 1 mg on HbA<sub>1c</sub> and body weight by baseline demographic subgroups: SUSTAIN FORTE post hoc analysis**

J.P. Frias, L. Bardtrum, Y. Hansen, I. Lingvay, S. Macura, N. Tentolouris, J.B. Buse, USA, Denmark, Greece

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 568 Tirzepatide-induced weight loss in type 2 diabetes is independent of nausea, vomiting, or diarrhoea

H. Patel, K. Khunti, H.W. Rodbard, H.S. Bajaj, R. Bray, Z. Kindracki, Á. Rodríguez, USA, UK, Canada

### Short Oral Discussions Event E

Thursday, 12:00 - 13:00

EASD  
EFSD

#### SO 41 Incretins: basic science

*Chair:* A. Andersen, Denmark

GENERAL  
INFO

#### 569 Comprehensive characterisation of the human gain-of-function GLP-1r variant Ala316Thr in pancreatic beta cells

L. El Eid, R.-M. Rujan, G. Deganutti, B. Jones, C. Reynolds, A. Tomas, UK

PROGRAMME

TUESDAY

#### 570 Bi 456906, structural properties and pharmacology of the novel glucagon and glucagon-like peptide-1 receptor (GCGR/GLP-1R) dual agonist

R. Augustin, T. Zimmermann, L. Thomas, T. Baader-Pagler, P. Haebel, E. Simon, H. Klein, R. Santhanam, W. Reindl, B. Bajrami, W. Rist, I. Uphues, D. Hamprecht, H. Neubauer, Germany, Australia

WEDNESDAY

THURSDAY

FRIDAY

#### 571 Using a BRET based high throughout screening approach to identify previously approved drugs that can be repurposed to ameliorate type 1 diabetes

S. He, G. Lim, Canada

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

#### 572 A novel oral cannabinoid receptor-1 inverse agonist induces additive weight loss and improves metabolic biomarkers in DIO mice in combination with semaglutide or tirzepatide

M. Morningstar, S. Ferreira, A. Kolodziej, T. Blumen, Z. Jin, H. Deng, B. White, R. Brake, USA

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

#### 573 Liraglutide treatment attenuates inflammation markers in the cardiac, cerebral and renal microvasculature in streptozotocin-induced diabetic rats

S. Simsek, A. Korn, U. Baylan, R.W. Emmens, C.G. Schalkwijk, H.W. Niessen, P.A. Krijnen, Netherlands

#### 574 Dual amylin and calcitonin receptor agonist treatment in type 2 diabetic rats protects against cardiovascular and renal complications

A.T. Larsen, S.A. Melander, M.A. Karsdal, K. Henriksen, Denmark, Switzerland



**575 Deorphanisation of black widow spider GLP-1: validation of GLP-1 receptor agonist action relevant to human islet insulin secretion in vitro**  
G.G. Holz, A.N. Liles, R.P. Doyle, C.A. Leech, O.G. Chepurny, USA

**576 Empagliflozin protects from diet-induced obesity, insulin resistance and hepatic steatosis in mice**  
B. Radlinger, C. Röss, S. Folie, K. Salzmann, W. Salvenmoser, M. Graber, J. Hirsch, J. Holfeld, C. Kremser, P. Moser, G. Staudacher, T. Jelenik, M. Roden, H. Tilg, S. Kaser, Austria, Germany

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

**SO 42 Clinical epidemiology and pharmacotherapy**

*Chair:* S. Wild, UK

**577 Patients with type 2 diabetes present similar immunological response to COVID-19 BNT162b2 mRNA vaccine with healthy subjects: a prospective cohort study**  
S. Paschou, V. Karalis, T. Psaltopoulou, I. Charitaki, A. Skirou, V. Iconomidou, V. Vasileiou, G. Kassi, A. Vryonidou, A. Kokkinos, N. Tentolouris, E. Haziaggelaki, I. Trougakos, E. Terpos, M. Dimopoulos, Greece

**578 Clinically relevant predictors of cardiovascular events in patients with type 2 diabetes: a pooled analysis from clinical studies**  
A. Malhotra, G. Bader, India, Switzerland

**579 Dramatic changes in use of glucose-lowering drugs in Denmark from 2005 through 2021: a nationwide study**  
T. Vilsbøll, J.H. Andersen, J. Søndergaard, R.W. Thomsen, A. Pottegaard, Denmark

**580 Higher adherence and persistence for dulaglutide compared to oral semaglutide at 6- months follow-up with U.S. real-world data**  
R. Paczkowski, M.M. Hoog, J. Peleshok, M. Yu, A. Huang, B. Limone, J. Manjelicvskaia, USA

**581 Use of metformin in pregnant women with polycystic ovarian syndrome (PCOS): a cohort study in the United Kingdom**  
K. Brand, C. Foch, E. Boutmy, Germany

**582 Metformin and B12 deficiency: a retrospective study of the prevalence of B12 deficiency in patients on metformin**  
L. Young, R. Rasheed, H. Bibi, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**583 HbA<sub>1c</sub> and weight changes with semaglutide at 6- and 12-months post commencement: updated results from the ABCD semaglutide audit**

B.C. Field, T.S. Crabtree, K. Adamson, D. Barnes, S. Sivappriyan, A. Bickerton, A. Gallagher, I.W. Gallen, I. Idris, R.E. Ryder, UK

**584 Costs associated with healthcare resources utilisation among empagliflozin vs GLP-1RAs initiators in routine clinical care in Denmark**

R.W. Thomsen, L.W. Christensen, J. Kahlert, J.S. Knudsen, A. Ustyugova, S. Sandgaard, P. Holmgaard, L.H. Ehlers, H.T. Sørensen, Denmark, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event A** **Tuesday, 11:45 - 12:45**

**SO 43 Glucose lowering agents**

*Chair:* I. Idris, UK

**585 Achievement of HbA<sub>1c</sub> ≤6.5% (47.5 mmol/mol), with ≥10% weight loss, without hypoglycaemia in patients treated with tirzepatide vs comparators in SURPASS program**

J.A. Levine, A. Cheng, P. Choudhary, I. Lingvay, E. Gomez Valderas, S.E. Allen, K. Ranta, V.T. Thieu, USA, Canada, UK

**586 Tirzepatide leads to significant improvement in postprandial glycaemic control in people with type 2 diabetes (SURPASS 1-5)**

C.J. Lee, E. Spanakis, R. Bray, K. Brown, L.K. Billings, K. Chivukula, A. Rodriguez, F. Giorgino, USA, Italy

**587 Results from a 12-week proof-of-concept study of a novel oral non-peptide GLP-1 receptor agonist in patients with type 2 diabetes**

E. Pratt, X. Ma, R. Liu, D. Robins, K. Sloop, A. Haupt, C. Benson, Singapore, USA

**588 Efficacy, safety and tolerability of danuglipron (PF-06882961) over 12 weeks in adults with type 2 diabetes**

D.N. Gorman, A.R. Saxena, J. Frias, R.N. Lopez, N. Tsamandouras, M.J. Birnbaum, UK, USA

**589 Oral small molecule GLP-1 receptor agonist danuglipron (PF-06882961) results in glucose lowering and body weight loss over 16 weeks in adults with type 2 diabetes**

A.R. Saxena, J. Frias, L.S. Brown, D.N. Gorman, N. Tsamandouras, M.J. Birnbaum, USA, UK

**590 Oral menin inhibitor, BMF-219, displays a significant and durable reduction in HbA<sub>1c</sub> in a type 2 diabetes rat model**

P. Somanath, S. Mourya, W. Li, T. Archer, B. Law, D. Lu, T. Rughwani, L. Kumar, T. Kinoshita, M. Balakrishnan, T. Butler, USA

**591 Patients with type 2 diabetes reach glycaemic targets faster with tirzepatide compared to semaglutide and titrated insulin degludec**

A. Viljoen, K.M. Pantalone, R.J. Galindo, X. Cui, R. Huh, L. Fernández Landó, H. Patel, UK, USA

**592 Oxyntomodulin analog LY3305677 (LY) improves glycaemic control and weight loss in healthy volunteers and subjects with type 2 diabetes**

C. Benson, L. Tham, Y. Du, S. Gurbuz, K.J. Mather, C. Tang, D.A. Robins, M.K. Thomas, USA, Singapore

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 44 Lessons from trials**

*Chair:* M. Blüher, Germany

**593 Finerenone in patients across the spectrum of CKD and type 2 diabetes by GLP-1RA use**

M.L. Caramori, P. Rossing, S. Anker, G. Filippatos, B. Pitt, V. Fonseca, G.E. Umpierrez, M. Lambelet, P. Viswanathan, R. Lawatscheck, A. Joseph, G. Bakris, USA, Denmark, Germany, Greece

**594 Effect of semaglutide versus placebo on cardiovascular outcomes by baseline HbA<sub>1c</sub>: SUSTAIN 6 and PIONEER 6 post hoc analysis**

L.G. Mellbin, D.L. Bhatt, J.-P. David, M.C. Petrie, S. Rasmussen, P.A. Schytz, T. Vilsbøll, Sweden, USA, Denmark, UK

**595 Tirzepatide reduces serum triglyceride concentrations irrespective of concomitant fibrate use in SURPASS-4 participants with type 2 diabetes at high cardiovascular risk**

T. Várkonyi, S. Del Prato, I. Pavo, C. Nicolay, R.J. Wiese, S.E. Kahn, Hungary, Italy, USA

**596 Anti-drug antibodies do not impact pharmacokinetics, efficacy, and safety of Tirzepatide: analysis of data from seven phase 3 studies**

B. Calderon, G. Mullins, M.E. Hodsdon, Y. Li, G. Anglin, S. Urva, K.B. Schneck, J.N. Bardos, R. Fonseca Martins, K. Brown, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**597 Greater time spent in glycaemic control with oral semaglutide vs oral comparators**

F.K. Knop, B. Cariou, J. Eliasson, G. Frappin, M.S. Kaltoft, E. Montanya, J. Rosenstock, Denmark, France, Spain, USA

**598 Patient characteristics associated with achievement of normoglycaemia following treatment with tirzepatide in the SURPASS 1-4 trials**

L. Vázquez, J. Rosenstock, S. Del Prato, D. Reis Franco, B. Dai, G. Weerakkody, L. Fernández-Landó, B.K. Bergman, A. Rodríguez, Spain, USA, Italy, Brazil

EASD  
EFSD

GENERAL  
INFO

**599 Long-term efficacy and safety of evogliptin add-on therapy to dapagliflozin plus metformin combinations in poorly controlled patients with type 2 diabetes**

J. Moon, H. Kim, C. Chung, K. Won, K. Han, C. Park, J. Won, D. Kim, G. Koh, E. Kim, J. Yu, E. Hong, C. Lee, K. Yoon, Republic of Korea

PROGRAMME

TUESDAY

**600 Glycaemic effect of tirzepatide by duration of diabetes**

J. Kiljanski, C. De Block, C. Mathieu, H. Sapin, J. Peleshok, USA, Belgium

WEDNESDAY

THURSDAY

FRIDAY

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 45 Beta cell function and glucose control**

*Chair:* S. Misra, UK

SHORT ORAL  
DISCUSSIONS

**601 Empagliflozin improves beta cell function independently of relief of glucotoxicity in patients with type 2 diabetes**

N.B. Jørgensen, R. Thirumathyam, E.A. Richter, G.V. Hall, J.P. Gøtze, M. Fenger, P.L. Madsen, J.J. Holst, S. Madsbad, Denmark

PRESENTER  
INDEX

**602 Fasting 32-33 split proinsulin and intact proinsulin levels are reduced by liraglutide and metformin in combination. A randomised double-blind trial**

C. Anholm, P. Kumarathurai, M. Skytte, O.W. Nielsen, O.P. Kristiansen, K. Burling, P. Barker, M. Fenger, S. Madsbad, A. Sajadieh, S.B. Haugaard, Denmark, UK

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**603 Tirzepatide improved markers of islet cell function and insulin sensitivity compared to semaglutide in people with type 2 diabetes**

K. Brown, L. Fernández Landó, B. Bergman, M.K. Thomas, B. Liu, C. Lee, USA

**604 Association between variants in TCF7L2, CTRB1/2 and GLP-1R genes and response to therapy with glucagon-like peptide-1 receptor agonists in patients with type 2 diabetes**

A. Kyriakidou, A.V. Kyriazou, T. Koufakis, Y. Vasilopoulos, X. Tsekmekidou, I. Avramidis, S. Baltagiannis, D.G. Goulis, P. Zebekakis, K. Kotsa, Greece

**605 Post-prandial glucose reduction with YG1699 compared to dapagliflozin in subjects with type 1 diabetes**

P. Lapuerta, S. Urbina, A. Wittle, J. He, C. Li, T. Li, China, USA

**606 Greater improvement in insulin sensitivity per unit weight loss with tirzepatide compared to selective GLP-1 receptor agonism**

M.K. Thomas, K.J. Mather, A. Mari, J. Li, T. Heise, J. DeVries, S. Urva, T. Coskun, Z. Milicevic, A. Haupt, USA, Italy, Germany, Netherlands

**607 Dipeptidyl peptidase-4 inhibitors and gallbladder or biliary disease in type 2 diabetes: systematic review and meta-analysis of randomised controlled trials**

L. He, J. Wang, N. Yang, L. Xu, W. Li, F. Ping, J. Huang, Y. Li, H. Zhang, China

**608 Glycaemic response to meals with a high glycaemic index consumed in the morning and evening among students with early and late chronotype-ChroNu Study**

B. Stutz, B. Krueger, J. Goletzke, N. Jankowicz, C. Herder, U. Alexy, A.E. Buyken, Germany

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 46 Incretins everywhere**

*Chair:* M.P. Macedo, Portugal

**609 Multifactorial risk reduction with oral semaglutide vs comparators in the treatment of type 2 diabetes**

V.R. Aroda, J. Eliasson, B. Mallng, J.J. Meier, L.L. Nielsen, T. Vilsbøll, K. Khunti, USA, Denmark, Germany, UK

**610 Reduced risk of kidney function loss in patients with type 2 diabetes treated with GLP-1 receptor agonists versus basal insulin**

C. Melzer Cohen, M. Schechter, I. Yanuv, A. Rozenberg, G. Chodick, T. Abrahamsen, A. Clark, J. Lawson, A. Karasik, O. Mosenzon, Israel, Denmark

**611 Chronic administration of the novel hypoglycaemic peptide exhibits robust efficacy in a diet-induced model of obesity and type 2 diabetes**

N. Mitkin, V. Pavshintsev, I. Doronin, G. Babkin, A. Malyshev, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## 612 Effectiveness and tolerability of once-weekly GLP-1 receptor agonists in clinical practice: a focus on switching between once-weekly molecules in type 2 diabetes

G. Formoso, G. Di Dalmazi, S. Coluzzi, M.P. Baldassarre, A. Ghit, G. Graziano, M.C. Rossi, B. Ciappini, M. Milo, F. Carrieri, A. Nicolucci, A. Consoli, Italy

EASD  
EFSD

## 613 Multiple dose-ranging study of the novel glucagon/GLP-1 receptor dual agonist BI 456906 vs placebo and open-label weekly semaglutide reference control in type 2 diabetes

J. Rosenstock, M. Blüher, B. Schmid, J. Hoefler, A. Hennige, USA, Germany

GENERAL  
INFO

## 614 Glycaemic control with tirzepatide in people with type 2 diabetes by baseline HbA<sub>1c</sub> ≤ 69.4 mmol/mol or >69.4 mmol/mol

C. De Block, G. Aleppo, J.A. Levine, E.G. Valderas, B.D. Benneyworth, Belgium, USA

PROGRAMME

TUESDAY

## 615 The real-world observational prospective study of health outcomes with dula and liraglutide in type 2 diabetes patients (TROPHIES): 24-m clinical characteristics and treatment patterns

A. Dib, B. Guerri, F. Giorgino, K. Boye, M. Fächtenbusch, E. Heitmann, J. Lebec, M. Orsini Federici, M. Yu, L.-E. García-Pérez, France, Italy, USA, Germany, Canada, Spain

WEDNESDAY

THURSDAY

FRIDAY

## 616 Effects of a novel long acting GIP/GLP-1/Glucagon tri-receptor agonist, HISHS-3001, on HbA<sub>1c</sub>, body weight and lipid metabolism

R. Thennati, V. Burade, A. Garcia-Ocana, R. Pratley, G. Rutter, T. Vilsbøll, B. Thorens, India, USA, Canada, Denmark, Switzerland

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

## Short Oral Discussions Event E Thursday, 12:00 - 13:00

SATELLITE  
SYMPOSIA

### SO 47 Treatments, molecules and outcomes: a smorgasbord

*Chair:* A.A. Vaag, Denmark

INDUSTRY

PROGRAMME

## 617 Effects of tirzepatide versus insulin glargine 100 U/mL on kidney outcomes in participants with type 2 diabetes in SURPASS-4

H.J. Heerspink, N. Sattar, I. Pavo, A. Haupt, K.L. Duffin, Z. Yang, R.J. Wiese, K.R. Tuttle, D.Z. Cherney, Netherlands, UK, USA, Canada

EXHIBITION

**618 Cardiorenal and safety outcomes with finerenone in patients with obesity, CKD and type 2 diabetes**

L.K. Billings, S.D. Anker, G.L. Bakris, G. Filippatos, B. Pitt, L. Ruilope, J. Green, O. Mosenzon, K.M. Pantalone, C. Ahlers, A. Lage, R. Lawatscheck, A. Scalise, P. Rossing, USA, Germany, Greece, Spain, Israel, Brazil, Denmark

**619 Betaine: a regulator of mitochondria and endoplasmic reticulum contact points (MAMs) of the hepatocytes**

A. Alves, F. Lamarche, E. Meugnier, S. Pesenti, R. Lefebvre, A. Bassot, E. Loizon, C. Moinard, B. Morio, France, Canada

**620 Effects of finerenone in patients with chronic kidney disease and type 2 diabetes are independent of HbA<sub>1c</sub> at baseline, HbA<sub>1c</sub> variability and duration of diabetes**

J.B. McGill, R. Agarwal, S.D. Anker, G.L. Bakris, G. Filippatos, B. Pitt, L.M. Ruilope, A.L. Birkenfeld, M.L. Caramori, M. Brinker, A. Joseph, A. Lage, R. Lawatscheck, C. Scott, P. Rossing, USA, Germany, Greece, Spain, Brazil, UK, Denmark

**621 Effects of ertugliflozin on uric acid and gout-related outcomes: post hoc analyses from VERTIS CV**

V.S. Sridhar, F. Cosentino, S. Dagogo-Jack, R. Pratley, R. Frederich, M. Noyes Essex, M. Maldonado, C.-C. Liu, J.P. Mancuso, D.Z. Cherney, Canada, Sweden, USA, UK

**622 Interactions between early DPP-4is initiation and HbA<sub>1c</sub> variability with risk of insulin requirement in type 2 diabetes: real-world evidence from a prospective cohort**

A. Yang, J. Cheung, H. Wu, E.S. Lau, R.C. Ma, A.P. Kong, W.Y. So, A.O. Luk, J.C. Chan, E. Chow, Hong Kong

**623 Effects of acute and sub-chronic treatment with metformin on postprandial blood pressure and heart rate in diet-controlled type 2 diabetes**

D.R. Quast, C. Xie, M.J. Bound, J. Grivell, K.L. Jones, M. Horowitz, C.K. Rayner, M.A. Nauck, J.J. Meier, L. Phillips, T. Wu, Germany, Australia

**624 Caffeine ameliorates diet-induced insulin resistance by impacting brown adipose tissue function**

A.C. Soares, I.B. Martins, S.M. Farreca, F.O. Martins, A. Capucho, B.F. Melo, S.V. Conde, Portugal

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 48 Hypoglycaemia: hip hip hooray yet to come**

Chair: B.H.R. Wolffenbuttel, Netherlands

**625 Hypo-metrics: associations between hypoglycaemia awareness, blood glucose range and patient-reported hypoglycaemia symptoms in type 1 diabetes**

G. Martine-Edith, P. Divilly, N. Zaremba, U. Søholm, Z. Mahmoudi, M. Gomes, M. Broadley, J. Speight, S.A. Amiel, F. Pouwer, P. Choudhary, Hypo-RESOLVE Consortium, UK, Denmark, Australia

EASD  
EFSDGENERAL  
INFO**626 Persistence of impaired awareness of hypoglycaemia, severe hypoglycaemic events and suboptimal glycaemic control despite advanced diabetes technologies**

J. Sherr, J. Liu, L. Titievsky, K. Hagan, T. Liu, K. Chandarana, J. Gaglia, W. Wolf, J. Bispham, K. Chapman, D. Finan, J. Pettus, USA

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**627 The prevalence of hypoglycaemia remains unchanged despite advances in the management of type 1 diabetes**

F.A. Baxter, N. Baillie, A.R. Dover, R.H. Stimson, F.W. Gibb, S. Forbes, UK

**628 Patterns of sensor-detected hypoglycaemia in long-duration CGM data from a diabetes registry**

P.M. Baumann, D.A. Hochfellner, M. Cigler, L. Roubik, T. Pöttler, J.K. Mader, on behalf of the Hypo-RESOLVE Consortium, Austria

SHORT ORAL  
DISCUSSIONS**629 Real-world estimates of severe hypoglycaemia and associated healthcare utilisation in the US: prospective, longitudinal results of the iNPHORM study**

A. Ratzki-Leewing, J. Black, A. Kahkoska, B. Ryan, S. Harris, Canada, USA

PRESENTER  
INDEXSATTELITE  
SYMPOSIA**630 Level of physical activity and risk of severe hypoglycaemia in type 1 diabetes**

P.L. Kristensen, S. Caunt, R.F. Johansen, S.E. Sander, E. Søndergaard, S. Heller, S. Mølsted, Denmark, UK

INDUSTRY

PROGRAMME

**631 Glycaemic events during exercise can be effectively predicted with machine learning using only start glucose and duration**

C.L. Russon, R.C. Andrews, R.M. Pulsford, N. Vaughan, M. Allen, UK

EXHIBITION

**632 Sustained pro-inflammatory effects following hypoglycaemia in people with type 1 or type 2 diabetes**

J.I. Van Heck, C.E. Verhulst, T.W. Fabricius, R. Stienstra, C.J. Tack, U. Pedersen-Bjergaard, B.E. De Galan, hypo-RESOLVE consortium, Netherlands, Denmark



**633 Impact of polymorphism in the beta-2 receptor gene on the metabolic response to epinephrine before and after repeated hypoglycaemia in healthy humans**

K.Z. Rokamp, N.V. Olsen, F. Dela, L. Grønlykke, N.H. Secher, B. Thorsteinnsson, U. Pedersen-Bjergaard, Denmark

**Short Oral Discussions Event A**      **Tuesday, 11:45 - 12:45**

**SO 49 Is newer (insulin) always better?**

*Chair:* J. Gumprecht, Poland

**634 Ado09, a co-formulation of pramlintide and insulin A21G, improves body weight and treatment satisfaction compared to insulin lispro in people with type 1 diabetes (PwT1D)**

R. Eloy, M. Gaudier, E. Baumgaertner, C. Seroussi, C. Mégret, B. Kronshage, Y.-P. Chan, O. Soula, T. Heise, G. Andersen, France, Germany

**635 Tertiary CGM endpoints comparing second-generation basal insulin analogues glargine 300 U/mL and degludec 100 U/mL in people with type 1 diabetes: inrange randomised controlled trial**

R. Bergenstal, S. Edelman, P. Choudhary, T. Danne, E. Renard, J. Westerbacka, B. Mukherjee, P. Picard, V. Pilorget, T. Battelino, USA, UK, Germany, France, Slovenia

**636 Congenital malformations among offspring of women with type 1 diabetes using insulin pump: a prospective cohort study**

I.H. Thorius, L.L. Husemoen, R.B. Nordsborg, A.C. Alibegovic, M.-A. Gall, J. Petersen, E.R. Mathiesen, Denmark

**637 Patient and physician experience of hypoglycaemia during basal insulin titration in type 2 diabetes in the US**

S. Harris, K. Mohammedi, M. Bertolini, V. Walker, M. Carlyle, F. Liz Zhou, J. Seufert, J. Anderson, Canada, France, USA, Germany

**638 Impact of hypoglycaemia on insulin titration and fasting plasma glucose in basal insulin-treated type 2 diabetes: a subanalysis of the SoliMix trial**

R. Ritzel, R.J. McCrimmon, J. Rosenstock, O. Deyneli, A. Alvarez, E. Souhami, L. Melas-Melt, F. Giorgino, Germany, UK, USA, Turkey, Argentina, France, Italy

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**639 Once-weekly insulin icodec: comparable total exposure following administration in different subcutaneous injection regions**

L. Plum-Mörschel, L.R. Andersen, S. Hansen, U. Hövelmann, P. Krawietz, N.R. Kristensen, L.L. Lehrskov, H. Haahr, Germany, Denmark

**640 A novel once weekly basal insulin Fc achieved similar glycaemic control with a comparable safety profile versus insulin degludec in patients with type 1 diabetes**

C. Kazda, J. Bue-Valleskey, J. Chien, Q. Zhang, E. Chigutsa, W. Landschulz, P. Wullenweber, A. Haupt, D. Dahl, USA, Germany

**641 Comparison of day and night closed-loop with faster-acting insulin aspart vs insulin aspart mimicking under-estimation of carbohydrates or missed meal bolus**

H. Thabit, W. Mubita, M.E. Wilinska, J. Rubio, M. Karuppan, J. Schofield, R. Hovorka, L. Leelarathna, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event B**

**Tuesday, 13:00 - 14:00**

**SO 50 Is longer better? Looking for different basal insulin approaches**

*Chair:* I.N. Migdalis, Greece

**642 Effect of insulin degludec vs insulin glargine U100 on continuous glucose monitoring recorded metrics in people with type 1 diabetes and nocturnal severe hypoglycaemia**

J.M. Brøsen, R.M. Agesen, A.C. Alibegovic, H.U. Andersen, P. Gustenhoff, T.K. Hansen, C. Hedetoft, T.J. Jensen, C.B. Juhl, C.R. Stolberg, S.S. Lerche, K. Nørgaard, H.-H. Parving, L. Tarnow, U. Pedersen-Bjergaard, Denmark

**643 Efficacy and safety of insulin icodec in patients with type 2 diabetes: a meta-analysis of randomised phase II trials**

D. Dimayuga, M. Villa, M. Maningat-Goco, Philippines

**644 Iglarlix vs basal plus rapid-acting insulin in adults with type 2 diabetes advancing from basal insulin therapy: the SoliSimplify real-world study**

R.J. McCrimmon, A.Y. Cheng, G. Galstyan, K. Djaballah, X. Li, M. Coudert, J. Frias, UK, Canada, Russian Federation, France, USA

**645 Indirect treatment comparison (ITC) of efficacy and safety of insulin glargine 300 U/mL with once-daily-insulin premix in type 2 diabetes**

R. Malik, S. Ghosh, R. Emral, R. Malek, L. Zeng, Y. Huang, M.A. Mabunay, W. Landgraf, P. Guyot, E. Schenk, D. Pushkarna, R. Ritzel, Qatar, India, Turkey, Algeria, China, Singapore, Germany, France, Canada

**646 Three types of technology for insulin delivery and their effects on glycaemic related outcomes in patients with type 1 diabetes**

L.B. Pedersen, N. Drøjdahl-Ryg, C.B. Juhl, K. Schousboe, Denmark

**647 Hypoglycaemia frequency and physiological response to double or triple doses of once-weekly insulin icodec versus once-daily insulin glargine in type 2 diabetes**

T.R. Pieber, K.N. Arfelt, R. Cailleateau, K.M. Due Thomsen, M. Hart, I. Mursic, E. Svehlikova, M. Urschitz, H. Haahr, Austria, Denmark

**648 Glycaemic control in people with type 2 diabetes (T2D) switching from NPH to insulin glargine 300 U/mL (Gla-300): REALI pooled database**

D. Müller-Wieland, N. Freemantle, R. Bonadonna, C. Mauquoi, G. Bigot, M. Bonnemaire, P. Gourdy, D. Mauricio, Germany, UK, Italy, Belgium, France, Spain

**649 Once weekly basal insulin Fc demonstrated similar glycaemic control to once daily insulin degludec in insulin-naïve patients with type 2 diabetes**

J.M. Bue-Valleskey, C. Kazda, C. Ma, J. Chien, Q. Zhang, E. Chigutsa, W. Landschulz, J. Swan, A. Haupt, J. Frias, USA

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 51 Even “old dogs” can learn new tricks**

*Chair:* D. Rahelic, Croatia

**650 Efficacy of therapeutic patient education interventions in metabolic disorders: a systematic review and meta-analysis**

J.C. Correia, A. Waqas, K. Gariani, F.R. Jornayvaz, Z. Pataky, Switzerland, UK

**651 Patients find online education programmes helpful, but many feel they learn more from face to face programmes**

R. Asir, N. Burt, E. Waite, K.D. Ganapathy, P. Narendran, R.C. Andrews, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**652 What are people's preferences for the 'choice talk' in the diabetes treatment decision-making process?**

A. Tichler, D.F. Hertroijs, M.C. Brouwers, D. Ruwaard, M.J. Hiligsmann, J.D. De Jong, A.M. Elissen, Netherlands

**653 Comprehensive diabetes education in care homes: 1 year analysis of impact from the CARES diabetes in care homes national programme**

A. Puttanna, J. Ridgeway, L. Willcocks, S. Gregory, L. Heggs, UK

EASD  
EFSD

**654 Legacy effects of sleep education programme in people with type 2 diabetes and short sleep duration: a prospective follow-up study**

J. Cheung, K. Woo, R. Cheung, M. Lee, E. Lau, C. Chiu, E. Chow, A. Luk, R. Ma, J. Chan, Y. Wing, A. Kong, Hong Kong

GENERAL  
INFO

**655 The importance of education for diabetes control in patients with type 1 diabetes using intermittently scanned continuous glucose monitoring**

R. Bem, D. Vávra, Z. Hladikova, J. Mašková, V. Havlová, Z. Lachmanová, K. Sochorová, Czech Republic

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**656 Resources used by HCPs to educate PWD about TIR**

A. Sommi, N. Sainz, E. Asamoá, E. Shoger, R. Wood, C. Alexander, USA

**657 Healthcare professionals' knowledge, usage, and attitudes towards the use of time in range in diabetes management: an online survey across seven countries**

A.Y. Cheng, A. Ginovker, T.B. Christensen, U.R. Patted, Y.M. Kothawade, C. De Block, Canada, USA, Denmark, India, Belgium

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

SATELLITE  
SYMPOSIA

**SO 52 Money isn't everything?**

*Chair:* N. Sattar, United Kingdom

INDUSTRY

PROGRAMME

EXHIBITION

**658 Speed of recovery of testing for management of diabetes in the aftermath of COVID-19 is slower in areas of greater social deprivation: findings from a UK study**

D. Holland, A. Heald, F. Hanna, P. Wu, A. Fryer, UK

**659 Direct and indirect costs of peripheral artery disease in type 2 diabetes: a matched case-control study**

K. Nilsson, K. Carlsson, M. Faurby, M. Wolden, Sweden, Denmark

**660 Early death and loss of life expectancy years in type 2 diabetes are linked to the effective management of health comorbidities**

M. Whyte, M. Stedman, A.H. Heald, I. Laing, UK

**661 Socioeconomic status and metabolic control in Swedish children with type 1 diabetes**

O. Pekkari, J. Ludvigsson, K. Åkesson, Sweden

**662 Early death and loss of life expectancy years in type 2 diabetes are linked to local population demographics and lifestyle**

M. Stedman, A.H. Heald, M. Whyte, UK

**663 Direct and indirect costs of atherosclerotic CVD in type 2 diabetes: a matched case-control study in 160,000 individuals**

K. Steen Carlsson, K. Nilsson, M. Lyng Wolden, M. Faurby, Sweden, Denmark

**664 Cumulative cardiovascular or renal disease (CVRD) hospital costs for type 2 diabetics free of CVRD at baseline: a 5-year cohort study in the SNDS nationwide claims database**

P. Zaoui, P. Blin, M. Joubert, E. Guiard, D. Sark, C. Dureau-Pournin, M.A. Bernard, R. Lassalle, F. Thomas-Delecourt, S. Bineau, N. Moore, C. Droz-Perroteau, P. Jourdain, France

**665 Real world healthcare costs among patients using self-monitoring blood glucose compared to continuous glucose monitoring in non-intensively treated type 2 diabetes**

F. Giorgino, E. Repetto, J. Rötschke, E. Acmet, G. Bergman, R. Maroun, A. Wu, I. Duncan, D. Kerr, Italy, USA, Germany, Netherlands, Switzerland

**666 Smart insulin pen caps versus standard of care: a Canadian cost-effectiveness analysis**

K. Quansah, K. Hansen, K. Chan, S. Muratov, S. Khoudigian, M. Lamotte, Canada, Belgium

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

**SO 53 Pumping, looping, freeing**

*Chair:* A. Szadkowska, Poland

**667 Predictors of time in target glucose range in real-world users of the MiniMed™ 780G system**

J. Castaneda, A. Arrieta, T. Van den Heuvel, O. Cohen, Netherlands, Switzerland

INDUSTRY

PROGRAMME

EXHIBITION

**668 New ex-vivo method to assess subcutaneous absorption events during basal administration through pump: proof of concept**

P. Jacquemier, Y. Retory, A. Schmidt, C. Virbel-Fleischman, J. Cuenco, A. Ostertag, M. Cohen Solal, J.-B. Julla, L. Potier, N. Venteclef, J.-F. Gautier, J.-P. Riveline, France

**669 Recently diagnosed with type 1 diabetes: glycaemic outcomes with the Omnipod® 5 Automated Insulin Delivery System**

G.P. Forlenza, D.J. DeSalvo, B.W. Bode, A.B. Criego, S.A. Brown, M.J. Schoelwer, S.N. Mehta, L.M. Laffel, S.A. MacLeish, L.M. Huyett, J. Boyd, R.E. Gurlin, T.T. Ly, Omnipod 5 Research Group, USA

EASD  
EFSD

GENERAL  
INFO

**670 Glycaemic outcomes over 15 months in people with type 1 diabetes with the Omnipod® 5 Automated Insulin Delivery System**

A. Criego, A.L. Carlson, T.T. Ly, Omnipod 5 Research Group, USA

PROGRAMME

TUESDAY

**671 Advanced hybrid closed-loop system rapidly achieves and maintains good glycaemic control in type 1 diabetes adults despite of previous treatment**

C. Quiros, A.-C. Nuria, R. Silvia, P. Verónica, Spain

WEDNESDAY

THURSDAY

**672 Comparison of hybrid closed-loop systems, AndroidAPS and Control-IQ in patients with type 1 diabetes: the CODIAC study**

D.Q. Dat, A. Hásková, L. Radovnická, E. Horová, G. Grunberger, C.G. Parkin, M. Prázný, J. Šoupal, Czech Republic, USA

FRIDAY

SHORT ORAL  
DISCUSSIONS

**673 Exploring characteristics and real-world experiences using the software updatable t:slim X2 insulin pump in people with diabetes living with disabilities**

H. Singh, G. Alencar, M. Manning, H. Sanchez, S. Habif, USA

PRESENTER  
INDEX

**674 Differences in the efficacy of an advanced hybrid closed-loop system in type 1 diabetes subjects with previous pump therapy experience compared to MDI**

P.I. Beato-Vibora, A. Ambrojo-López, M. Fernández-Bueso, E. Gil-Poch, I. Martín-Romo, F.J. Arroyo-Díez, Spain

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**SO 54 Making sense out of sensors and data***Chair:* A. Janez, Slovenia**675 Patient-reported outcome measures during the first year at a virtual clinic for type 1 diabetes**

O. Tamir, T. Kolobov, E. Tarshish, R. Nissanholtz-Gannot, Israel

**676 A pragmatic health informatics systems approach for aiding clinical prioritisation in a hospital based cohort of 4013 people with diabetes**

J. Karalliedde, O. French, A. Smith, L. Newcombe, B. Malhotra, C. Spellman, N. Patel, P. Sen Gupta, D. Kariyawasam, D. Rajasingam, S. Thomas, UK

**677 Efficacy and safety of an open-source automated insulin delivery system over 48 weeks of use in the CREATE randomised controlled trial**

M.J. Burnside, D.M. Lewis, H.R. Crocket, R.A. Meier, J.A. Williman, C.A. Jefferies, A.M. Faherty, R.G. Paul, C.S. Lever, S.K. Price, C.M. Frewen, S.D. Jones, T.C. Gunn, B.J. Wheeler, M.I. De Bock, New Zealand, USA

**678 Perceived benefits of TIR varies between patient CGM users vs HCPs**

N. Sainz, A. Sommi, E. Asamoia, E. Shoger, R. Wood, C. Alexander, USA

**679 Introduction of isCGM with glucose alarms to regular isCGM users under real-life conditions: What is the benefit?**

D.A. Hochfellner, P.M. Baumann, A.K. Reinhard, J.K. Mader, Austria

**680 Continuous glucose monitoring metrics and pregnancy outcomes in insulin treated diabetes: a post-hoc analysis of the GlucoMOMS trial**

A. Van der Wel, D. Rademaker, R. Van Eekelen, GlucoMOMS Study Group, I. Evers, A. Franx, S. Siegelaar, B. Van Rijn, H. DeVries, R. Painter, Netherlands

**681 Comparison between duration and nadir of symptomatic and asymptomatic sensor-detected hypoglycaemia in people with type 1 diabetes**

M.M. Gomes, Z. Mahmoudi, G. Mathine-Edith, P. Divilly, N. Zaremba, U. Søholm, M. Broadley, F. Pouwer, S.A. Amiel, P. Choudhary, Denmark, UK, Australia

**682 Glycaemic control using intermittently scanned CGM in severe COVID-19 patients with diabetes requiring methylprednisolone therapy: a retrospective observational study**

M. Uchihara, N. Kodani, R. Bouchi, S. Saito, Y. Miyazato, N. Ihana-Sugiyama, M. Ohsugi, A. Tanabe, K. Ueki, M. Hojo, H. Kajio, Japan

EASD  
EFSDGENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONSPRESENTER  
INDEXSATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## SO 55 From low to high and back: the many faces of insulin therapy

Chair: S.A. Paschou, Greece

### 683 Comparing the rates and duration of sensor detected hypoglycaemia and patient reported hypoglycaemia based on diabetes type and awareness status: Hypo-METRICS trial

P.M. Divilly, G. Martine-Edith, Z. Mahmoudi, N. Zarembo, U. S holm, F. Pouwer, S.A. Amiel, P. Choudhary, UK, Denmark

EASD  
EFSD

GENERAL  
INFO

### 684 Indirect Treatment Comparison (ITC) of three ready-to-use glucagon treatments for severe hypoglycaemia: nasal glucagon, glucagon injection, and dasiglucagon injection

M. Gim nez, K. Khunti, K. Syring, L. Baker, S. Chenji, R. Threlkeld, Y. Yan, M. Matsuhisa, Spain, UK, USA, Japan

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

### 685 Incretin hormone and glucoregulatory responses to nutrients in individuals with and without post-bariatric hypoglycaemia: a systematic review

R.J. Jalleh, M. Umaphysivam, J. Louise, M.P. Plummer, A. Deane, K.L. Jones, M. Horowitz, Australia

SHORT ORAL  
DISCUSSIONS

### 686 Predictive value of fasting C-peptide levels and continuous glucose monitoring-defined coefficient of variation for hypoglycaemia in each stage of chronic kidney disease

S. Kwon, J. Park, S. Cho, S. Park, Y.-B. Lee, G. Kim, K. Hur, J. Kim, S.-M. Jin, Republic of Korea

PRESENTER  
INDEX

### 687 Adjustment of insulin Degludec to Reduce post-Exercise (nocturnal) hypoglycaemia in people with diabetes: the ADREM study

L.C. Drenthen, E.J. Abbink, D.H. Thijssen, C.J. Tack, B.E. De Galan, Netherlands

SATELLITE  
SYMPOSIA

INDUSTRY

### 688 Glycaemic control with Ultra Rapid Lispro (URLi) vs lispro in children and adolescents with type 1 diabetes: PRONTO-Peds

D.R. Franco, R. Wadwa, L.M. Laffel, M.A. Dellva, R.K. Pollom, Brazil, USA

PROGRAMME

EXHIBITION

### 689 Titration patterns of insulin glargine 300 U/mL in insulin-naive people with type 2 diabetes and clinical outcomes: a subgroup analysis of ATOS study

A. Tirosh, A. Singh, H. Vargas-Uricoechea, M.A. Mabunay, G. Bigot, M. Naqvi, G. Galstyan, Israel, India, Colombia, Singapore, France, Russian Federation



**690 Early deescalation with IDegLira in patients with type 2 diabetes using short-term intensive insulin therapy to correct severe hyperglycaemia**

Z. Taybani, B. Bótyik, A. Veres, R. Szerencsi, K. Fehértemplomi, M. Zatykó, G. Csatári, B. Géczi, M. Katkó, T. Varkonyi, Hungary

**Short Oral Discussions Event B** **Tuesday, 13:00 - 14:00**

**SO 56 Diversity of life with diabetes**

*Chair:* K. Strojek, Poland

**691 Impact of the first COVID-19 wave in the Netherlands on glycaemic control in persons with type 2 diabetes**

J.M. Van den Berg, E.I. Holthuis, B.N. Baak, J.A. Overbeek, K.M. Swart, M.T. Blom, P.J. Elders, R.M. Herings, Netherlands

**692 Depression in type 1 diabetes and type 2 diabetes: linking patient experience with clinical records**

U. Waheed, A.H. Heald, A. Paisley, K. Grady, E. Solomon, M.P. Stedman, UK

**693 Effects on metabolic control and body composition of insulin therapy optimisation in patients with Cystic Fibrosis Related Diabetes (CFRD)**

V. Grancini, L. Porcaro, A. Gaglio, V. Resi, L. Giarratana, E. Orsi, Italy

**694 Retrospective analysis of daily basal bolus insulin requirement in people with type 2 diabetes in non-ICU care**

S. Krishnamoorthy, L. Balakrishnan, A. Ravi, India

**695 Burden of hypoglycaemia and impaired awareness of hypoglycaemia in people with diabetes on peritoneal dialysis**

H. Eid, M. Onyema, S. Haboosh, J. Dick, D. Moutzouris, P. Vas, N. Paray, J. Williams, J. Karalliedde, UK

**696 The impact of fasting Ramadan on glycaemic indices in people with type 1 diabetes using flash glucose monitoring: an observational study**

E.Y. Alyusuf, A. Alrajeh, M.E. Al-Sofiani, A.M. Alguwaihes, Saudi Arabia

**697 Empathy and linguistics in digital health interactions to prevent gestational diabetes in women at risk: a pilot study**

E. Rey Velasco, H. Sæderup Pedersen, T.C. Skinner, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**698 Correlation between the regression of microalbuminuria, blood pressure reduction and remission of type 2 diabetes: results of six month RCCT with whole-body digital twin technology**

S. Joshi, J. Mohammed, M. Mohammed, T. Poon, M. Dharmalingam, B. Saboo, S. Damodharan, A. Vadavi, M. Thajudeen, A. Keshavamurthy, S. Mohammed, P. Shamanna, India, USA

EASD  
EFSD

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

GENERAL  
INFO

**SO 57 Type 1 diabetes: still the challenge number one**

*Chair:* B. Mankovsky, Ukraine

PROGRAMME

**699 Effect of 24 months of optimised glucose control on residual C-peptide secretion in youth with new onset type 1 diabetes**

J. Ware, C.K. Boughton, J.M. Allen, M.E. Wilinska, A. Thankamony, T. Randell, A. Ghatak, R.E. Besser, D. Elleri, N. Trevelyan, F.M. Campbell, R. Bailey, G. Dunseath, R. Hovorka, on behalf of the CLOuD Consortium, UK, USA

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**700 Sociodemographic differences in physical activity in people with type 1 diabetes**

S. Elton Sander, S. Molsted, S. Caunt, E. Søndergaard, R.F. Johansen, S. Heller, P.L. Kristensen, Denmark, UK

SHORT ORAL  
DISCUSSIONS

**701 Which patient-reported outcomes should be measured in routine diabetes care?**

K. Hamilton, R. Forde, M. Due-Christensen, K. Eeg-Olofsson, D. Nathanson, S. Rossner, S. Vikstrom-Greve, A.-K. Porth, Y. Seidler, L. Delbecque, A. Ozdemir Saltik, Y. Hasler, T. Stamm, D. Hopkins, A. Forbes, UK, Sweden, Austria, USA, Switzerland

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**702 Continuous monitoring in-vivo with an islet-based microfluidic biosensor**

M. Raoux, E. Puginier, A. Pirog, F. Poullietier de Gannes, J. Gaitan, A. Hurtier, M. Monchablon, J. Cieslak, S. Renaud, J. Lang, France

INDUSTRY

PROGRAMME

**703 Development of non-invasive saliva glucose measuring device (D-SaLife) and clinical evaluation according to ISO 15197:2013 criteria**

K. Han, I.-S. Jang, M.-S. Kwon, J.-W. Kye, E. Shim, D.-C. Kim, K. Min, Republic of Korea

EXHIBITION

**704 Cognitive assessment in elderly with type 1 diabetes on insulin pump: a cross-sectional observational study**

A. Rizzi, L. Tartaglione, F. L'Abbate, G. Masone Iacobucci, D. Quaranta, L. Leo, G.E. Rizzo, D. Pitocco, Italy

**705 Reduction of basal insulin to prevent exercise induced hypoglycaemia during two types of exercise in adults and adolescents with type 1 diabetes using insulin pump therapy**

J. Molveau, É. Myette-Côté, S. Tagougui, C. Suppère, E. Heyman, V. Messier, L. Legault, R. Rabasa-Lhoret, Canada, France

**706 Efficacy and safety of ultra-rapid lispro compared to insulin lispro in adults with type 1 diabetes**

Z. Zhou, J. Ma, T. Lei, Z. An, Y. Xue, F.P. Manghi, P. Garcia, J. Xu, Y. Yuan, X. Yan, China, Argentina, Mexico, USA

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 58 Autonomic rhythm**

*Chair:* G. Rayman, United Kingdom

**707 Prevalence of peripheral and cardiovascular autonomic neuropathy in Greenlanders with diabetes and prediabetes based on national normative reference data**

M.M. Christensen, C.S. Hansen, D. Vistisen, J. Fleischer, D.R. Witte, M.E. Jørgensen, Denmark, Greenland

**708 Diabetic cardiovascular autonomic neuropathy: link between arterial stiffness, insulin resistance, melatonin and some vasoactive peptides**

V.A. Serhiyenko, V.B. Segin, A.A. Serhiyenko, L.M. Serhiyenko, Ukraine

**709 Collagen turnover is associated with cardiovascular autonomic and peripheral neuropathy in type 1 diabetes: Novel pathophysiological mechanism?**

C. Hansen, D.G. Rasmussen, T.W. Hansen, S.H. Nielsen, S. Theilade, M.A. Karsdal, F. Genovese, P. Rossing, Denmark

**710 Inflammatory markers and cardiovascular autonomic neuropathy in type 1 diabetes**

R. Pop-Busui, L. Ang, S. Gunaratnam, Y. Huang, C. Martin, A. Burant, J. Reis, P. Blakely, A. Vasbinder, L. Zhao, K. Mizokami-Stout, E.L. Feldman, S. Hayek, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**711 Visceral adiposity is associated with autonomic dysfunction in adults with autoimmune diabetes**

E. Maddaloni, M. Watanabe, R. Cassano Cassano, D. Masi, R. Amendolara, S. Sterpetti, L. D'Onofrio, C. Moretti, A. Siena, L. Gnessi, R. Buzzetti, Italy

**712 Association of premature ejaculation with diabetic peripheral neuropathy among patients with type 2 diabetes attending at a tertiary level hospital of Bangladesh**

M. Ahmed, F. Yasmin, A. Morshed, T. Islam, Bangladesh

**713 Co-existence of peripheral and autonomic neuropathy in type 1 diabetes with and without pain**

C.D. Morch, J. Roeikjer, S. Santhiapillai Croosu, T.M. Hansen, J.B. Frøkjær, C. Brock, N. Ejksjaer, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

WEDNESDAY

**SO 59 Getting a grip on nerves**

*Chair:* D. Selvarajah, UK

THURSDAY

FRIDAY

**714 Retinal neurodegeneration as a marker of diabetic peripheral neuropathy and cognitive impairment in type 2 diabetes**

F. Picconi, M. Menduni, A. Maiorino, M. Parravano, B. Russo, N. Lois, R. Simo' Canonge, S. Frontoni, Italy, Ireland, Spain

SHORT ORAL  
DISCUSSIONS

**715 Serum 25-hydroxyvitamin D levels in relation to the risk of peripheral neuropathy in Chinese patients with type 2 diabetes**

Y. Yang, J. Wang, Y. Ding, L. Zhang, China

PRESENTER  
INDEX

**716 Periodic fasting might delay progression of thermal hypoalgesia in patients with type 2 diabetes and diabetic neuropathy**

E. Von Rauchhaupt, S. Kopf, Z. Kender, V. Longo, P.P. Nawroth, J. Szendroedi, A. Sulaj, Germany, USA, Italy

SATELLITE  
SYMPOSIA

INDUSTRY

**717 Sciatic nerve fractional anisotropy and neurofilament light chain protein are related to sensorimotor deficit of the upper and lower limbs in patients with type 2 diabetes**

Z. Kender, J.M. Jende, F.T. Kurz, D. Tsilingiris, L. Schimpfle, A. Sulaj, E. Von Rauchhaupt, P.P. Nawroth, M. Bendszus, J. Szendroedi, S. Kopf, Germany

PROGRAMME

EXHIBITION

**718 Dynamic contrast enhanced MRI reveals adverse effects of glucose control on perfusion of the sciatic nerve in type 2 diabetes patients with and without diabetic polyneuropathy**

C.M. Mooshage, L. Schimpfle, Z. Kender, J. Szendrödi, S. Heiland, M. Bendszus, S. Kopf, F.T. Kurz, J.M. Jende, Germany

**719 Circulating metabolites associated with diabetic sensorimotor peripheral neuropathy among individuals with type 1 diabetes**

B.A. Sørlund, C.S. Hansen, K. Sulek, C. Legido-Quigley, P. Rossing, T.S. Ahluwalia, Denmark

**720 Perception threshold tracking: a novel methods for assessing the function of large and small nerve fibers in diabetic peripheral neuropathy**

J. Røikjer, S.S. Croosu, J.B. Frøkjær, T.M. Hansen, N. Ejksjaer, C.D. Mørch, Denmark

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

**SO 60 Preventing microvascular complications**

*Chair:* R. Simo, Spain

**721 Safe and efficient 2-year screening intervals allocated by manual and automated grading in nationwide diabetic retinopathy screening**

A.D. Fleming, J. Mellor, W. Jiang, A. Storkey, C.J. Styles, P.M. McKeigue, H.M. Colhoun, UK

**722 The use of the IDx-DR software as a simple screening tool for the detection of diabetic retinopathy in patients at the diabetes outpatient clinic**

S. Huber, V. Parzer, A. Pollreisz, B. Ludvik, J. Brix, Austria

**723 Screening of diabetic retinopathy with Aireen medical device: high sensitivity and agreement with ophthalmologists**

M. Prázný, M. Slíva, T. Humel, J. Bayer, M. Šín, R. Ženíšková, D. Fillová, L. Valešová, J. Hlaváček, Czech Republic

**724 Why has the incidence of certifications for sight and severe sight impairment due to diabetic retinopathy increased in Wales: Could the National Diabetes Audit hold the key?**

R.L. Thomas, A. Zeke, R.V. North, R. Reynolds, G. Williams, D. Flanagan, C. Bunce, S.D. Luzio, D.R. Owens, UK

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

**725 How a simple clinical scoring system complements COMPASS 31 questionnaire in predicting cardiovascular autonomic neuropathy in type 1 and type 2 diabetes**

I. D'Ippolito, M. Menduni, C. D'Amato, C. Greco, M. Leoni, D. Lauro, V. Spallone, Italy

EASD  
EFSD

**726 Quantitative sensory testing may identify clinical phenotypes with high risk of progression to sensory loss in diabetic neuropathy**

D. Tsilingiris, L. Schimpfle, A. Sulaj, E. Von Rauchhaupt, P. Nawroth, J. Szendroedi, S. Kopf, Z. Kender, Germany

GENERAL  
INFO

**727 Minimal resource pre-screening tools for chronic kidney disease in people with type 2 diabetes: a global validation study**

R. Sisk, C. Sammut-Powell, J. Budd, R. Cameron, M. Edge, E. Vazquez-Mendez, A. Bedenkov, H. Vasnawala, S.B. Goncalves, UK, Mexico, India, Argentina

PROGRAMME

TUESDAY

WEDNESDAY

**Short Oral Discussions Event A**

**Tuesday, 11:45 - 12:45**

THURSDAY

**SO 61 Saving the feet**

FRIDAY

*Chair:* N. Papanas, Greece

SHORT ORAL  
DISCUSSIONS

**728 Temporal trends in major, minor and recurrent lower extremity amputations in Belgium from 2009 to 2018**

P. Lauwers, K. Wouters, H. Avalosse, J. Vanoverloop, F. Nobels, I. Dumont, G. Matricali, P. Felix, J. Hendriks, E. Dirinck, Belgium

PRESENTER  
INDEX

**729 Mortality rates after lower extremity amputation in Belgium from 2009 to 2018**

E. Dirinck, K. Wouters, H. Avalosse, J. Vanoverloop, F. Nobels, I. Dumont, G. Matricali, P. Felix, J. Hendriks, P. Lauwers, Belgium

SATELLITE  
SYMPOSIA

**730 The association between mortality and use of SGLT-2 inhibitor and GLP-1 receptor agonists younger people with type 2 diabetes and a first PAD diagnosis between 2016 and 2020**

E. Uddman, S. Puvaralingam, K. Filipsson, M. Löndahl, Sweden

INDUSTRY

PROGRAMME

EXHIBITION

**731 The effectiveness of an affordable Toa Uzito (offloading) device for improving diabetic foot ulcer in the developing world**

Z.G. Abbas, J.K. Lutale, L.K. Archibald, Tanzania, United Republic of, USA

**732 Exploring MMP9 as a prognostic marker in post debridement wound fluid of diabetes related foot ulcers, and the possibility of a point-of-care test**

M.S. Longfield, V. Nube, J.M. White, S.V. McLennan, P. Boughton, D. Min, S.M. Twigg, Australia

**733 Effect of human amniotic membrane on umbilical vein endothelial cells of gestational diabetic mothers: new insight in wound healing and diabetic foot ulcer**

C. Pipino, I. Cappellacci, P. Di Tomo, A. Bernabé-García, J. Stelling-Férez, N. Di Pietrantonio, L. Pelusi, M.P. Baldassarre, F.J. Nicolás, A. Pandolfi, Italy, Spain

**734 Proteomic signature reveals potential diagnostic biomarkers for chronic diabetic foot ulcerations**

M. Petkovic, A.E. Sørensen, E.C. Leal, R.J. Willemoes, H. Jenssen, T.S. Ahluwalia, A. Rasmussen, E. Carvalho, L.T. Dalgaard, Denmark, Portugal

**735 Nomogram model for predicting the risk of sepsis in diabetic foot patients**

P. Huang, X. Zhao, Y. Gu, China

**Short Oral Discussions Event B** **Tuesday, 13:00 - 14:00**

**SO 62 Brain, nerve, and heart interaction**

*Chair:* R. Pop-Busui, United States

**736 Functional brain alterations in regions involved in sensory processing in diabetic peripheral neuropathy and neuropathic pain**

S.S. Croosu, J. Røikjer, C.D. Mørch, N. Ejskjaer, J.B. Frøkjær, T.M. Hansen, Denmark

**737 Identification of painful diabetic neuropathy subtypes from functional connectivity resting state MRI patterns: a novel data driven machine learning approach**

K. Teh, J. Mcallister, A. Anandhanarayanan, J. Fan, G. Sloan, S. Tesfaye, D. Selvarajah, UK

**738 Mood disorders are related to thalamic H1-MRS metabolite parameters in type 1 diabetes**

M. Greig, G. Sloan, P.R. Shillo, D. Selvarajah, I.D. Wilkinson, S. Tesfaye, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**739 HMGB1 inhibition protects Schwann cells from high glucose-induced cytotoxicity**

M. Shi, J. Song, X. Zheng, Y. Chen, W. Gu, H. Zhang, China

**740 Arterial baroreflex vs vascular blood pressure buffering mechanism, potential implication to treat unstable hypertension in diabetes**

J. Gmitrov, Slovakia, Japan

EASD  
EFSD

**741 Impact of reduced eGFR, high HbA<sub>1c</sub> and cardiovascular disease on mortality in people with Charcot foot**

J. Schoug, P. Katzman, M. Löndahl, Sweden

GENERAL  
INFO

PROGRAMME

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

TUESDAY

**SO 63 Diversity of the diabetic kidney**

*Chair:* E. Bezerra Parente, Finland

WEDNESDAY

**742 Chronic kidney disease in a contemporary nationwide register of patients with and without type 2 diabetes**

T.G. Jennsen, K. Sveen, J. Bodegård, M. Thuresson, K.I. Birkeland, Norway, Sweden

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

**743 Relationship between genetic risk scores for type 2 diabetes and kidney function and adverse diabetes outcomes**

L. Pacal, D. Galuška, K. Chalásová, J.A. Hubáček, V. Lánská, K. Kaňková, Czech Republic

PRESENTER  
INDEX

**744 Trajectories of estimated glomerular filtration rate and their association with ethnicity and the risk of progression of chronic kidney disease in people with type1 diabetes**

S.A. Ayis, A. Mangelis, N. Fountoulakis, L. Gnudi, S.M. Thomas, J. Collins, D. Hopkins, J. Karalliedde, UK

SATELLITE  
SYMPOSIA

INDUSTRY

**745 The inflection point of the estimated glomerular filtration rate is higher in people with an increasing to decreasing trend than in people with different trends**

S. Katoh, K. Yokoyama, M. Zeniya, Y. Sakamoto, K. Utsunomiya, R. Nishimura, Japan

PROGRAMME

EXHIBITION

**746 Concurrence of diabetic kidney disease and metabolic dysfunction-associated fatty liver disease is associated with heart failure**

K.-A. Kim, J. Yoo, S. Lee, H. Choi, K. Han, Republic of Korea



**747 Association of microvascular complications with death in patients with diabetes and COVID-19: international effort -CORONADO, ABCD-COVID19, AMERICADO studies**

S. Hadjadj, P.-J. Saulnier, Y. Ruan, X. Zhu, R. Rea, P. Gourdy, B. Cariou, A. Myers, K. Khunti, for the CORONADO, the ABCD COVID-19 diabetes national audit and AMERICADO investigators, France, UK, USA

**748 Glucose and c-peptide peak times are associated with chronic complications in patients with type 2 diabetes**

Y.Q. Jiang, X.L. Wang, X.Q. Zhao, Y. Sun, P. Huang, S.H. Ji, R.Y. Hu, Y.J. Gu, China

**749 Kidney biopsy in patients with diabetes and nephrotic range-proteinuria; clinical value and correlation with clinical and laboratory findings**

T. Stratigou, E. Kardalas, A. Paikopoulou, D.A. Vassiliadi, G. Ioannidis, C. Christodoulidou, S. Tsagarakis, Greece

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 64 New treatment avenues for the diabetic kidney**

*Chair:* L. Thorn, Finland

**750 Albuminuria lowering effect of dapagliflozin, exenatide and their combination in patients with type 2 diabetes: a randomised cross-over clinical trial**

A.B. Van der Aart-van der Beek, E. Apperloo, N. Jongs, D.B. Rouw, D. Sjöström, D.H. Van Raalte, K. Hoogenberg, H.J. Heerspink, Netherlands, Sweden

**751 Design of the COmbination effect of Flnerenone and Empagliflozin in participants with chronic kidney disease and type 2 diabetes using an UACR Endpoint study (CONFIDENCE)**

J.B. Green, A.K. Mottl, G. Bakris, H.J. Heerspink, J.F. Mann, J.B. McGill, M. Nangaku, P. Rossing, C. Scott, A. Gay, R. Agarwal, USA, Netherlands, Germany, Japan, Denmark, UK

**752 Optimisation of albuminuria lowering treatment by cross-over rotation to four different drug classes**

V. Rotbain Curovic, M.Y. Kroonen, N. Jongs, E.H. Zobel, T.W. Hansen, G.D. Laverman, A. Kooy, F. Persson, P. Rossing, H.J. Heerspink, Denmark, Netherlands

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**753 Post approval, observational, concurrent study to assess clinical effectiveness and safety of dapagliflozin in diabetic kidney disease: INTENSE - DAPA study**

K. Korukonda, India

**754 Anserine is a H<sub>2</sub>S releasing molecule and therefore a therapeutic agent in diabetic nephropathy**

C. Wetzel, T. Pfeffer, J. Zemva, R. Bulkescher, K. Klingbeil, C.P. Schmitt, V. Peters, Germany

EASD  
EFSD

**755 Therapeutic blocking of NPRC, a podocyte - expressed target, is kidney protective in diabetic nephropathy**

D. Dabaghie, E. Charrin, M. Lal, J. Patrakka, Sweden

GENERAL  
INFO

**756 Effect of dapagliflozin on arterial stiffness and biomarkers of arterial ageing in people with type 2 diabetes and kidney disease**

D. Stathi, N. Fountoulakis, M. Flaquer, A. Corcillo, A. Panagiotou, A. Mangelis, S. Ayis, L. Gnudi, J. Karalliedde, UK

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**757 Beneficial effects on metabolic disorders by a long-acting glucagon analogue, HM15136, in pre-clinical models**

J. Lee, S. Lee, J. Kim, E. Park, J. Lee, D. Kim, S. Bae, S. Lee, I. Choi, Republic of Korea

SHORT ORAL  
DISCUSSIONS

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

**SO 65 Translating signals in the diabetic kidney**

*Chair:* F. Persson, Denmark

**758 Reduced mitochondrial DNA copy number (mtDNA-CN) in type 1 diabetes and kidney damage and correlates thereof and mtDNA-CN changes over time**

A.S. Januszewski, L.M. Carroll, Y. Wen-Loh, M.L. Huang, D.N. O'Neal, A.J. Jenkins, Australia

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**759 Urinary long noncoding RNA to differentiate diabetic kidney disease (DKD) from non-diabetic kidney disease (NDKD)**

M. Basu, S. Neogi, P. Mukhopadhyay, N.P. Bhattacharyya, A. Raychaudhury, S. Ghosh, India

**760 Renal carnosine and anserine concentrations protect against diabetes induced renal interstitial fibrosis and oxidative stress**

T. Pfeffer, P. Kirschner, C. Wetzel, M. Bartosova, T. Poth, G. Poschet, J. Zemva, I. Damgov, S.F. Garbade, K. Klingbeil, C. Schmitt, V. Peters, Germany

**761 Association between plasma hypoxanthine and diabetic kidney disease (DKD) in a Japanese population**

M. Yamamoto, S. Harada, T. Okamura, K. Fujihara, S. Kodama, T. Yamada, H. Sone, T. Takebayashi, Japan

**762 Advanced glycation endproducts in chronic kidney disease in subjects with and without diabetes: AGEs highly responsive to renal function decline and diabetes**

N. Rabbani, S. Panagiotopoulos, R.J. MacIsaac, D. Yue, G.R. Fulcher, M.A. Roberts, E. Ekinci, P.J. Thornalley, Qatar, Australia

**763 Use of spot urine urea nitrogen to estimate protein intake in patients with diabetic chronic kidney disease**

J.Y. Lee, Y.H. Kim, S.J. Kim, S.S. Kang, S.B. Kim, Republic of Korea

**764 Standards of diabetes care in people with diabetes on peritoneal dialysis: an audit at three large university hospital foundation trusts**

M. Onyema, H. Eid, N.B. Paray, J. Dick, D. Moutzouris, J. Williams, P. Vas, J. Karalliedde, UK

**Short Oral Discussions Event F      Thursday, 13:15 - 14:15**

**SO 66 Mechanisms of diabetic kidney disease**

*Chair:* R.J.M. Coward, UK

**765 System $\chi_c$ -overexpression protects renal tubular epithelial cells from oxidative damage by GSH depletion**

S. Yoo, M. Kim, J. Bae, J. Choi, J. Bang, H. Chin, G. Koh, Republic of Korea

**766 Tunneling nanotubes-mediated lysosome transfer protects podocytes from diabetes-induced injury**

F. Barutta, S. Bellini, I. Gesmundo, G. Togliatto, G. Gruden, Italy

**767 Accumulation of trimethylamine N-oxide in renal tissue induces mitochondrial dysfunction in insulin-resistant mice**

M. Videja, M. Makrecka-Kuka, S. Korzh, E. Sevostjanovs, H. Cirule, E. Liepinsh, M. Dambrova, Latvia

**768 Changes in body composition after kidney-pancreas transplantation and its association with 25-OH vitamin D3 in type 1 diabetes**

E.B. Parente, S. Mutter, C. Forsblom, V. Harjutsalo, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

**769 Up-regulation of dopamine  $\beta$ -hydroxylase and phenylethanolamine N-methyltransferase by intermittent hypoxia via down-regulation of microRNA-375 in neuronal cells**

S. Takasawa, R. Shobatake, Y. Takeda, T. Uchiyama, A. Yamauchi, M. Makino, S. Sakuramoto-Tsuchida, K. Asai, R. Hirota, R. Fujii, H. Ota, A. Itaya-Hironaka, Japan

**770 Alternative splicing of the apoptosis gene Bcl-x in diabetic nephropathy**

S. Oltean, M. Ayine, M. Stevens, UK

EASD  
EFSD

GENERAL  
INFO

**771 Pegph20 attenuates hyaluronan-CD44 mediated renal injury in obesity related glomerulopathy**

B. Qi, V. Musale, K. Li, China, UK

PROGRAMME

TUESDAY

**772 Functional and morphological renal changes in a Göttingen Minipig model of obesity-related and diabetic nephropathy**

B.O. Christoffersen, C.A. Kristensen, R. Lindgaard, R.K. Kirk, B.M. Viuff, P.H. Kvist, H.D. Pedersen, T.P. Ludvigsen, T. Skovgaard, J.J. Fels, T. Martinussen, L.B. Christiansen, S. Cirera, L.H. Olsen, Denmark

WEDNESDAY

THURSDAY

FRIDAY

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 67 Flames and scars in NAFLD: pathogenesis and therapy**

*Chair:* R.M. De Oliveira, Portugal

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

**773 The diversity of macrophages and their role during non alcoholic fatty liver disease**

R. Thibaut, L. Orliaguet, T. Ejlalmanesh, M. Diedisheim, R. Ballaire, H. Fohrer-Ting, C. Klein, N. Venteclef, F. Alzaid, France

SATELLITE  
SYMPOSIA

**774 Sexually dimorphic metabolic response to an obesogenic diet according to the amino acid source in mice**

C. Rives, V. Alquier-Bacquie, S. Ellero-Simatós, A. Polizzi, F. Lasserre, T. Levade, F. Sabourdy, M. Huillet, N. Loiseau, H. Guillou, A. Fougerat, L. Payrastre, France

INDUSTRY

PROGRAMME

EXHIBITION

**775 Inflammation may prevent hepatocyte damage promoted by steatosis**

G. Perrot, C. Ardon-Zitoun, A. Lang, G. Mithieux, F. Rajas, France

**776 Hepatocyte-specific CCN1 gene deletion exacerbates the severity of NASH fibrosis in an established mouse model of high fat feeding and diabetes**

S.N. Parry, X. Wang, D. Min, M. Huang, P.F. Williams, A. Leask, S.M. Twigg, Australia, Canada

**777 Elevated fibrosis in non-diabetic obese individuals: comparison of liver fibrosis measured by magnetic resonance imaging**

A. Askeland, M. Gjela, R.W. Rasmussen, K. Højlund, M. Mellergaard, J.B. Frøkjær, A. Handberg, Denmark

**778 Anti-inflammatory and anti-fibrotic effects of a novel long-acting Glucagon/GIP/GLP-1 triple agonist, HM15211, in TAA induced mouse model of liver injury and fibrosis**

J. Kim, J. Lee, Y. Kim, S. Lee, H. Kwon, E. Park, J. Choi, S. Bae, D. Kim, S. Lee, I. Choi, Republic of Korea

**779 Anti-fibrotic potential of a novel long-acting GLP-1/GCG/FGF21/IL-1RA tetra-specific drug (OGB21502) in preclinical mice models**

M. Hwang, J. Kim, N. Chang, M. Kim, Y. Kim, D. Im, S. Park, Republic of Korea

**780 The association between changes in fatty liver index and BARD score with cardiovascular disease and mortality in patients with new-onset type 2 diabetes**

J. Park, G. Kim, B.-S. Kim, K.-D. Han, S. Kwon, S. Park, Y.-B. Lee, S.-M. Jin, J.-H. Kim, Republic of Korea

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 68 From brain circulation to cognitive dysfunction**

*Chair:* J. Rungby, Denmark

**781 Inhibition of NLRP3 ameliorates lipid accumulation in diabetic-associated cognitive dysfunction**

W. Zhu, T. Niu, T. Li, H. Zhang, S. Wang, China

**782 Cardio-metabolic factors and risk of dementia in people with type 2 diabetes in England: a large retrospective cohort study**

E.P. Vamos, H. Lai, M. Sharabiani, E.W. Gregg, J. Valabhji, L. Middleton, C. Millett, A. Majeed, A. Bottle, K. Chang, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**783 Insulin resistance and systemic low-grade inflammation reduce risk of developing dementia in a nationwide cohort study of type 2 diabetes patients**

J.S. Nielsen, N.J. Jensen, L.W. Christensen, H.T. Sørensen, K. Højlund, R.W. Thomsen, J. Rungby, Denmark

**784 Retinal microperimetry: a useful tool to predict and monitor the cognitive decline in patients with type 2 diabetes >65 years: a 3 years follow-up study**

A. Ciudin, A. Ortiz-Zuñiga, J. Vasquez-de Sebastian, C. Tejero, O. Simó-Servat, C. Hernandez, R. Simó, Spain

EASD  
EFSD

GENERAL  
INFO

**785 Type 2 diabetes and mood, anxiety and stress-related disorders: a genetically informative register-based cohort study**

S. Liu, M. Leone, J.F. Ludvigsson, S. Gudbjörnsdottir, P. Lichtenstein, S. Bergen, H. Larsson, R. Kuja-Halkola, A. Butwicka, Sweden

PROGRAMME

TUESDAY

**786 Polygenic risk of type 2 diabetes is associated with vascular dementia but not Alzheimer's disease**

E. Dybjer, A. Kumar, K. Nägga, G. Engström, N. Mattsson-Carlgren, P.M. Nilsson, O. Melander, O. Hansson, Sweden

WEDNESDAY

THURSDAY

**787 Cerebral microcirculation and cerebrovascular reactivity in type 2 diabetes and obesity, influence of haptoglobin polymorphism**

M. Káplár, B. Coghi, R. Esze, L. Rajnai, Z. Képes, S. Somodi, G. Paragh, M. Katkó, M. Emri, I. Garai, Hungary

FRIDAY

SHORT ORAL  
DISCUSSIONS

**788 Prevalence of cognitive impairment, functional impairment and paroxysmal atrial fibrillation among middle-aged patients with diabetes**

C.M. Khoo, K. Htike, A.M. Reshma, Y.H. Eric, C.S. Raymond, Y. Dong, Y.Y. Dan, Singapore

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**789 High-mobility group box 1 protein mediates the cross-talk between neuron and microglia results from advanced glycation end products in diabetic mice with neuroinflammation**

H. Zhang, Z. Zhang, W. Zhu, T. Niu, China

INDUSTRY

PROGRAMME

EXHIBITION

**SO 69    Type 1 diabetes: new findings and complications**

*Chair:*    R.I.G. Holt, UK

**790 Exercise-related hypoglycaemia induces hypercoagulable changes in patients with type 1 diabetes**

P.G. Hagelqvist, A. Andersen, K. Maytham, S. Engberg, U. Pedersen-Bjergaard, P.I. Johansson, F.K. Knop, T. Vilsbøll, Denmark

**791 Increased incidence of neurodegenerative diseases in Finnish individuals with type 1 diabetes**

S. Satuli-Autere, V. Harjutsalo, M. Eriksson, S. Hägg-Holmberg, H. Öhman, P.-H. Groop, L. Thorn, Finland

**792 Masp-2 deficiency and the development of diabetic kidney disease in a mouse model of type 1 diabetes**

C.B. Holt, L. Halkjær, T. Dudler, W.J. Schwaeble, T.K. Hansen, S. Thiel, J.A. Østergaard, Denmark, USA, UK

**793 Non-alcoholic fatty liver disease and type 1 diabetes**

I. Moreno-Ruiz, I. Martín-Timón, J. Modamio-Molina, S. Bacete-Cebrian, M. Zubillaga-Gómez, L. Zeng, O. Meizoso-Pita, V. Triviño-Yannuzzi, I. Huguet-Moreno, M. Llaverro-Valero, C. Lara-Moreno, C. Sevillano-Collantes, Spain

**794 Evaluation of deep learning prediction models for cardiovascular risk prediction using fundus images from the Scottish Diabetic Retinopathy Screening programme**

J. Mellor, W. Jiang, A.D. Fleming, C.J. Styles, A. Storkey, P.M. McKeigue, H.M. Colhoun, Scottish Diabetes Research Network Epidemiology Group, UK

**795 The contribution of insulin resistance and glycaemia on fibrin related clot parameters in young adults with type 1 diabetes**

S.M. Pearson, N. Kietsiroje, R.C. Sagar, M.D. Campbell, D.D. Stocken, S. Plein, R.A. Ajjan, UK

**796 Sustained QT prolongation 60-min post hypoglycaemic recovery in patients with type 1 diabetes**

C.R. Andreasen, A. Andersen, P.G. Hagelqvist, K. Maytham, J. Lauritsen, S. Engberg, B. Hartmann, J. Faber, U. Pedersen-Bjergaard, F.K. Knop, T. Vilsbøll, Denmark

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**797 The presence and extent of microvascular disease is independently associated with subclinical atherosclerosis in patients with type 1 diabetes**

A. Barmpagianni, A. Kountouri, V. Lambadiari, S. Liatis, Greece

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

EASD  
EFSD

**SO 70 Circulating markers of cardiovascular risk**

*Chair:* M. Brouwers, Netherlands

GENERAL  
INFO

**798 Long-chain polyphosphates cause a distinct kidney injury phenotype and exacerbate LPS-induced acute kidney injury in mouse**

A. Pirttiniemi, H. Salmenkari, J. Lindén, K. Adeshara, S. Lehtonen, P.-H. Groop, M. Lehto, Finland, Australia

PROGRAMME

TUESDAY

**799 Increase in specific ceramides associate to heart and kidney outcomes in type 1 diabetes**

A. Wretling, V. Rotbain Curovic, T. Suvitaival, S. Theilade, N. Tofte, S.A. Winther, T. Vilsbøll, H. Vestergaard, P. Rossing, C. Legido-Quigley, Denmark, UK

WEDNESDAY

THURSDAY

FRIDAY

**800 Plasma mannose and a first myocardial infarction: associations according to glycaemic state**

E. Fortin, G. Ferrannini, B. Campi, L. Mellbin, A. Norhammar, P. Näsman, A. Saba, E. Ferrannini, L. Rydén, Sweden, Italy

SHORT ORAL  
DISCUSSIONS

**801 Liver function markers predict cardiovascular and renal outcomes in the CANVAS Program**

E. Ferrannini, G. Ferrannini, N. Rosenthal, M.K. Hansen, Italy, Sweden, USA

PRESENTER  
INDEX

**802 Therapeutic potential of Crispr/Cas-9 gene edited apolipoprotein B-null cells and insulin signalling in lipoprotein metabolism**

Q. Su, H. Wade, UK

SATELLITE  
SYMPOSIA

INDUSTRY

**803 Leptin correlates with pulse wave velocity independently of BMI, inflammation, home blood pressure and HbA<sub>1c</sub> in both men and women in a large population-based cohort**

C. Vavrouch, C. Östgren, J. Engvall, F.H. Nyström, L. Jonasson, Sweden

PROGRAMME

**804 Low-density lipoprotein-cholesterol levels in migrants and native Danes with type 2 diabetes**

A.A. Isaksen, A. Sandbæk, M.V. Skriver, G.S. Andersen, L. Bjerg, Denmark

EXHIBITION



**805 Serum sphingolipidomic profile and high density lipoprotein subfractions in obese dyslipidaemic type 2 diabetic patients**

M. Aslan, I. Aslan, D. Aydın, Y. Koca, Ç. Yılmaz, T. Çeker, A. Öztüzün, Turkey

**Short Oral Discussions Event E Thursday, 12:00 - 13:00**

**SO 71 Prevention and treatment of cardiovascular complications**

*Chair:* C.D.A. Stehouwer, Netherlands

**806 Risk of stroke in patients with type 2 diabetes receiving semaglutide or a dipeptidyl peptidase-4 inhibitor: a real-world US claims database analysis**

M. Evans, M. Husain, O. Frenkel, K. Mangla, A. Srivastava, I. Lingvay, UK, Canada, Denmark, India, USA

**807 Synergistic effects of combination treatment with semaglutide and empagliflozin on 24h and central blood pressure in type 2 diabetes**

L. Vernstrøm, S. Gullaksen, K.L. Funck, E. Laugesen, P.L. Poulsen, Denmark

**808 Lesser improvement of physical activity after a cardiac rehabilitation program in patients at risk of diabetes or increased artery stiffness**

P. Valensi, M. Nguyen, M. Duval, M. Sylva, G. Amah, N. Chaib, S. Gagey, C. Guiti, K. Abdennbi, France

**809 Calcitriol treatment does not improve left ventricular hypertrophy in patients with type 2 diabetes and stage 3 CKD: results of a randomised controlled trial**

L. Gnudi, N. Fountoulakis, A. Panagiotou, A. Corcillo, G. Maltese, M. Flaquer, R. Franks, A. Chiribiri, S. Ayis, J. Karalliedde, UK

**810 Four months treatment with dapagliflozin or dulaglutide improves cardiovascular function in patients with type 2 diabetes and ischaemic stroke**

A. Kountouri, I. Ikonomidis, V. Prentza, K. Katogiannis, G. Pavlidis, E. Korakas, L. Pliouta, G. Kostelli, E. Michalopoulou, J. Thymis, K. Balampanis, A. Raptis, G. Tsvigoulis, V. Lambadiari, Greece

**811 Using CVD risk scores to select between GLP-1RA or SGLT2i therapy in type 2 diabetes: modelling the combined effects on both major atherosclerotic and heart failure events**

J.W. Sacre, D.J. Magliano, J.E. Shaw, Australia

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**812 Adherence to antihypertensive and lipid-lowering treatment is associated with better CVD outcomes in individuals with type 1 diabetes and moderate albuminuria**

R. Lithovius, S. Mutter, E.B. Parente, V. Harjutsalo, P.-H. Groop, Finland

**813 Metformin therapy is associated with higher myocardial perfusion reserve and improved survival in patients with type 2 diabetes: a multicentre study**

N. Sharrack, K.D. Knott, J.L. Yeo, T. Kotecha, S. Thirunavukarasu, A. Chowdhary, E. Levelt, J. Moon, G.P. McCann, M. Fontana, P. Kellman, C.P. Gale, J.P. Greenwood, P.P. Swoboda, S. Plein, UK, USA

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

**SO 72 Diabetes dysmetabolism dialogues with the cardiovascular component**

*Chair:* L. Rydén, Sweden

**814 Oleate prevents palmitate-induced abnormalities in insulin signalling in human cardiac progenitor cells by inhibiting p38 MAPK and c-Jun phosphorylation**

L. Laviola, R. D'Oria, I. Calderoni, C. Caccioppoli, V.A. Genchi, G. Santarpino, A.D. Milano, A. Leonardini, A. Natalicchio, S. Perrini, A. Cignarelli, F. Giorgino, Italy

**815 The effect of methylglyoxal on the pro-angiogenic function of mouse adipose-derived stem cells (mADSCs)**

A. Leone, A. Nicolò, I. Prevezano, D. Conza, F. Fiory, P. Mirra, L. Ulianich, F. Beguinot, C. Miele, C. Nigro, Italy

**816 High glucose effects on PCSK9 expression in aortic VSMC: role of PCSK9 inhibitors**

C. Barale, E. Melchionda, I. Russo, Italy

**817 Cell-specific role of insulin in a model of restenosis under insulin sensitive and insulin resistant conditions**

M. Gonzalez Medina, Z. Liu, A. Giacca, Canada

**818 Chronic hyperglycaemia inhibits TCA cycle in GLUT4 overexpressing H9C2 cells**

B. Stratmann, B. Eggers, Y. Mattern, T. Silva de Carvalho, K. Marcus, D. Tschoepe, Germany

**819 O-glcNacylation attenuated ages-induced neuroinflammation by inhibiting nf-Kb p65/nlrp3 inflammatory signalling pathway**

T. Niu, W. Zhu, H. Zhang, S. Wang, China

**820 HDL particles' function of cholesterol efflux capacity in newly diagnosed type 1 diabetes: prospective InLipoDiab1 study**

A. Uruska, A. Rohatgi, A. Grzelka-Wozniak, S. Saldanha, J. Flotynska, A. Cieluch, A. Kaczmarek, A. Pypec, D. Zozulinska-Ziolkiewicz, Poland, USA

**821 Serum metabolites and cerebral small-vessel disease in type 1 diabetes**

S. Mutter, J. Inkeri, L. Thorn, G.L. King, H. Shah, P.-H. Groop, J. Putaala, J. Martola, N. Sandholm, D. Gordin, on behalf of the FinnDiane Study Group, Finland, USA

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 73 Diabetes in the vessels**

*Chair:* A. Natali, Italy

**822 Endotrophin as a risk marker of complications in a type 2 diabetes cohort**

N.H. Tougaard, A.L. Møller, P.F. Rønn, T.W. Hansen, F. Genovese, M.A. Karsdal, D.G. Rasmussen, P. Rossing, Denmark

**823 Mitogenic signalling pathways in valvular interstitial cells and their dependency from diabetic conditions**

J.I. Selig, F.A. Kraft, E. Adler, D.M. Ouwens, A. Lichtenberg, P. Akhyari, M. Barth, Germany

**824 Dulaglutide prevents high-glucose induced endothelial senescence and the capture of microvesicles by endothelial cells**

F. Moschovaki Filippidou, N. Sbat, F. Zobairi, F. Toti, L. Kessler, France

**825 High glucose concentration-induced dicarbonyl stress in human aortal endothelial cells activates the unfolded protein response and NLRP3 Inflammasome**

P. Thornalley, M. Xue, N. Rabbani, Qatar

**826 Alpha-tubulin deacetylation impairs angiogenesis and induces endothelial-to-mesenchymal transition**

J. Kim, W. Ham, W. Lee, Republic of Korea

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**827 A six-month low-carbohydrate diet high in fat in patients with type 2 diabetes does not affect the vasodilatory reactivity of the brachial artery**

E.M. Gram-Kampmann, T.B. Olesen, C.D. Hansen, M.B. Hugger, J.M. Jensen, P. Hermann, M.H. Olsen, A. Krag, K. Højlund, Denmark

**828 Perivascular adipose tissue remodelling impairs vasoreactivity in thermoneutral-housed rats**

A.C. Keller, M.M. Henckel, J. Chun, L.A. Knaub, G.B. Pott, G.G. James, L.A. Walker, J.E.-B. Reusch, USA

**829 One-year treatment with dulaglutide and dapagliflozin improves endothelial function and albuminuria compared to DPP-4 inhibitors**

E. Korakas, I. Ikonomidis, J. Thymis, A. KOUNTOURI, K. Katogiannis, G. Pavlidis, D. Tsilivarakis, V. Prentza, K. Balampanis, L. Pliouta, F. Kousathana, G. Kostelli, G. Dimitriadis, A. Raptis, V. Lambadiari, Greece

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Short Oral Discussions Event B Tuesday, 13:00 - 14:00**

**SO 74 Weighing risks of cardiovascular complications**

*Chair:* H. Wallberg-Henriksson, Sweden

**830 Assessment of skin autofluorescence association with glycated haemoglobin, cardiovascular risk markers and concomitant chronic diseases in children with type 1 diabetes**

B. Mianowska, M. Jankowska, I. Pietrzak, J. Chrzanowski, J. Solek, A. Szadkowska, Poland

**831 First occurred cardiovascular or renal disease (CVRD) cumulative incidence for type 2 diabetics free of CVRD at baseline: a 5-year SNDS nationwide claims database cohort study**

P. Blin, M. Joubert, P. Zaoui, E. Guiard, D. Sark, C. Dureau-Pournin, M.A. Bernard, R. Lassalle, F. Thomas-Delecourt, S. Bineau, N. Moore, C. Droz-Perroteau, P. Jourdain, France

**832 The association between hemoglobin A<sub>1c</sub> and development of cardiovascular disease in males and females without diabetes at baseline: a population inception cohort study**

P. Kaul, L. Chu, D.A. Dover, R.O. Yeung, D.T. Eurich, P. Senior, S. Butalia, Canada

**833 Association between age at diagnosis of type 2 diabetes and cardiovascular and mortality risks: a nationwide population-based study**

D. Seo, M. Kim, Y. Cho, S. Ahn, S. Hong, S. Kim, Republic of Korea

**834 The added value of ECG abnormalities in predicting incident cardiovascular disease risk for people with type 2 diabetes: the Hoorn Diabetes Care System cohort**

P.P. Harms, R.A. Herings, S.J. Welten, S. Remmelzwaal, F. Rutters, J.W. Beulens, G. Nijpels, P.P. Elders, M.T. Blom, Netherlands

**835 Cardiovascular risk factor control in patients with type 2 diabetes and coronary artery disease versus stroke**

P. Balasubramanian, W. Kernan, K.N. Sheth, A.P. Ofstad, M. Mattheus, N. Marx, S.E. Inzucchi, USA, Norway, Germany

**836 Deviations from the ADA/EASD treatment algorithm is associated with higher cardiovascular events and death in type 2 diabetes under routine care**

M.L. Morieri, E. Longato, B. Di Camillo, G. Sparacino, A. Avogaro, G.P. Fadini, Italy

**837 High levels of physical activity are associated with a reduced risk of CVD regardless of sedentary time among type 2 diabetes patients**

Y. Wu, W. Wang, J. Zhao, The MIDiab Study Group, China

**Short Oral Discussions Event C Wednesday, 12:00 - 13:00**

**SO 75 Emerging comorbidities in diabetes: clinical associations and mechanisms**

*Chair:* R. Thomsen, Denmark

**838 Anti-fibrotic potential of a novel long-acting Glucagon/GIP/ GLP-1 triple agonist (HM15211) in preclinical models of idiopathic pulmonary fibrosis**

S. Lee, J. Kim, J. Lee, J. Kim, Y.-H. Ban, J. Lee, S. Bae, D. Kim, S. Lee, I. Choi, Republic of Korea

**839 Disruption of the intestinal barrier is associated with markers of kidney injury in DSS-induced colitis in mice**

H. Salmenkari, K. Adeshara, A. Pirttiniemi, J. Lindén, S. Lehtonen, P.-H. Groop, M. Lehto, Finland

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**840 Sodium/glucose co-transporter-2 inhibitors and the risk of gout in patients with type 2 diabetes: a propensity score matched, prevalent-new user design study**

A. Subramanian, C. Sainsbury, K. Gokhale, K. Nirantharakumar, K. Toulis, UK

**841 Reactivity to angiotensin II and structural changes of diabetic gut in an early model STZ-induced diabetes**

M. Esteves-Monteiro, M. Ferreira-Duarte, D. Menezes-Pinto, P. Dias-Pereira, M. Morato, M. Duarte-Araújo, Portugal

EASD  
EFSD

**842 Increased glycaemic variability evaluated by continuous glucose monitoring is associated with osteoporosis in type 2 diabetes patients**

R. Huang, H. Wang, Z. Shen, T. Cai, Y. Zhou, Y. Wang, J. Wu, J. Ma, China

GENERAL  
INFO

**843 Increased Fibrosis-4 (Fib-4) score reveals low bone mineralisation in obese individuals with or without type 2 diabetes**

I. Barchetta, F.A. Cimini, S. Dule, G. Passarella, A. Dellanno, A. Di Biasio, G. Silecchia, F. Leonetti, M.G. Cavallo, Italy

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

**844 Prognosis in men and women with atrial fibrillation without and with type 1 and type 2 diabetes: a nationwide propensity-matched cohort study**

S. Karayiannides, P. Lundman, L. Landstedt-Hallin, L. Friberg, A. Norhammar, Sweden

SHORT ORAL  
DISCUSSIONS

**845 Insulin resistance in obstructive sleep apnea: Is there a role for mitochondrial dysfunction in the liver?**

J.L. Fernandes, F.O. Martins, B.F. Melo, E. Olea, J. Prieto-Lloret, A. Obeso, A. Rocher, J.F. Sacramento, S.V. Conde, Portugal, Spain

PRESENTER  
INDEX

**846 The impact of obesity and diabetes chronic complications in COVID-19 patients**

A. Andrita, A.-M. Militaru, A. Nica, E. Rusu, C. Dobjanschi, G. Radulian, Romania

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

**Short Oral Discussions Event D Wednesday, 13:15 - 14:15**

**SO 76 Cancer and type 2 diabetes: interconnections and mortality**

*Chair:* J. Hellman, Sweden

**847 The impact of diabetes associated risk factors on survival among individuals with type 2 diabetes and breast -, lung-, colorectal- or prostate cancer**

T. Laurberg, D.R. Witte, S. Gudbjörnsdottir, B. Eliasson, L. Bjerg, Denmark, Sweden

EXHIBITION

### **848 Versican proteoglycan as new link between type 2 diabetes and breast cancer**

A. Parascandolo, V. D'Esposito, M.R. Ambrosio, T. Migliaccio, M.F. Di Tolla, F. D'Alterio, L. Zinna, P. Mirra, C. Miele, L. Insabato, M. Pace, D. Russo, S. Pignatiello, F. Beguinot, P. Formisano, Italy

### **849 Genetic profiles of whole tumours from individuals with type 3c diabetes indicate immune-mediated mechanisms may not underlie insulin deficiency**

J.L. Hill, T.G. Hill, N.G. Morgan, S.J. Richardson, UK

### **850 A pan-cancer analysis of the oncogenic role of regenerating protein1 alpha(REG1A) in human tumors**

H. WANG, L. LI, China

### **851 Insulin receptors in pancreatic acinar cells contribute to pancreatic cancer development**

A. Zhang, K.H. Chu, Y. Xia, T. Ruitter, J. Yang, J. Lin, N. Chen, D.F. Schaeffer, J.L. Kopp, J.D. Johnson, Canada

### **852 Triglyceride-glucose index and all-cause mortality, and incidence of vascular events in subjects with type 2 diabetes: results from a 13-year follow-up observational study**

P. Falchetta, M. Garofolo, D. Lucchesi, E. Gualdani, M. Giambalvo, P. Francesconi, S. Del Prato, G. Penno, Italy

### **853 The prognostic impact of HbA<sub>1c</sub> and diabetes on mortality in chronic heart failure**

K. Sveen, M. Grundtvig, L. Gullestad, K.I. Birkeland, Norway

### **854 Age-related difference in the impact of diabetes on all-cause mortality after acute myocardial infarction**

P.-S. Song, J.-O. Jeong, Republic of Korea

## **Short Oral Discussions Event E Thursday, 12:00 - 13:00**

### **SO 77 Disclosing fatty liver disease mechanisms**

*Chair:* A. Holleboom, Netherlands

### **855 Extracellular vesicle-mediated crosstalk between hepatocytes and endothelial cells in non-alcoholic fatty liver disease condition**

S.-H. Lee, J. Lee, M. Rhee, J. Yu, K.-H. Yoon, Republic of Korea

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**856 Impact of phenylacetic acid, a microbiota-derived metabolite, on hepatic endoplasmic reticulum-mitochondria interactions and steatosis**

R. Lefebvre, C. Caussy, J. Rieusset, France

**857 Lower serum PRL is associated with the development of non-alcoholic fatty liver disease**

P. Xu, P. Zhang, Y. Zhu, Y. Bi, China

EASD  
EFSD

**858 Association between visceral adipocyte size and non-alcoholic fatty liver disease in subjects with different degrees of adiposity**

H. Sun, T. Gu, D. Fang, Y. Yuan, H. Wang, Y. Bi, China

GENERAL  
INFO

**859 Non-alcoholic fatty liver disease (NAFLD) is an independent risk factor for developing new-onset diabetes after acute pancreatitis**

Y. Lv, J. Zhang, T. Yang, L. Li, China

PROGRAMME

TUESDAY

**860 A mouse model for metabolic stress-induced nonalcoholic fatty liver disease and subsequent hepatocellular carcinoma**

B.-K. Jeong, W. Choi, W.-I. Choi, J. Moon, P. Kim, J. Park, H. Kim, Republic of Korea

WEDNESDAY

THURSDAY

**861 Increased hepatic dicarbonyl stress decreases expression of the drug metabolising enzymes cytochrome (CYP) p450 3A4 and carboxylesterase 1**

M. Maandi, S.C. Maandi, J.G. Mabley, UK

FRIDAY

SHORT ORAL  
DISCUSSIONS

**862 Lipotoxicity-induced hepatocyte injury is prevented by a novel allosteric modulator of the GABA<sub>A</sub> receptor**

E. Rohbeck, A. Stein, C. Niersmann, A. Romero, B. Knebel, M. Roden, T. Romacho, J. Eckel, Germany, Spain

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

**Short Oral Discussions Event F Thursday, 13:15 - 14:15**

INDUSTRY

**SO 78 Screening tools, lipids and novel biomarkers**

*Chair:* P. Nilsson, Sweden

PROGRAMME

**863 Measures of insulin resistance as a screening tool for dysglycaemia in patients with coronary artery disease: a report from the EUROASPIRE V population**

G. Ferrannini, D. De Bacquer, I. Erlund, V. Gyberg, K. Kotseva, L. Mellbin, A. Norhammar, O. Schnell, J. Tuomilehto, T. Vihervaara, D. Wood, L. Ryden, Sweden, Belgium, Finland, Ireland, UK, Germany, Saudi Arabia

EXHIBITION



**864 Impact of RAGE and IL-6 polymorphisms in the progression for angiopathy in patients with type 2 diabetes**

M. Bicho, C. Fonseca, A.C. Santos, J.F. Raposo, A. Valente, Portugal

**865 Erythrocyte membrane fluidity as a novel biomarker for a quantitative evaluation of residual cardiovascular risk in diabetic patients**

G. Bianchetti, C. Cefalo, C. Ferreri, A. Sansone, C. Serantoni, A. Abeltino, T. Mezza, P. Ferraro, M. De Spirito, A. Giaccari, G. Maulucci, Italy

**866 Comparison of effects of canagliflozin, dapagliflozin and empagliflozin on cardio-renal biomarkers in 150 patients with type 2 diabetes**

V. Teli, V. Gupta, India

**867 Prevalence of lipodystrophy and agreement between clinical and radiological imaging methods in diagnosing lipodystrophy in insulin requiring subjects with diabetes**

A. Baidya, S. Dey, R. Bhadra, India

**868 Pro-atherosclerotic alterations in lipoprotein particle distribution and size are associated with a high triglyceride to HDL-cholesterol (TG/HDL) ratio**

M. Chiriaco, N. Santoro, S. Caprio, D. Tricò, Italy, USA

**869 Triglyceride-glucose index as predictor for re-hospitalisation for heart failure after acute myocardial infarction**

J.-O. Jeong, P. Song, S. An, Republic of Korea

**870 Effects of polyphenols on cholesterol efflux and insulin secretion in MIN6 cells**

K. Matsuki, Y. Kimura, K. Matsumura, H. Murakami, J. Tanabe, M. Daimon, Japan

**Short Oral Discussions Event A Tuesday, 11:45 - 12:45**

**SO 79 Focus on the heart and beyond**

*Chair:* J. Raposo, Portugal

**871 Metabolism of valvular interstitial cells is glucose dependent and susceptible to different diabetic conditions**

M. Barth, J.I. Selig, H.V. Krug, C. Küppers, D.M. Ouwens, A. Lichtenberg, P. Akhyari, Germany

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

### **872 Influence of glycaemic status on the risk of cardiovascular events after a myocardial infarction**

M. Wijkman, B. Claggett, K. Jering, M. Yilmaz, M. Claeys, C. De Pasquale, P. Kerkar, T. Moccetti, M. Ntsekhe, D. Sim, M. Studenčan, M. Tokmakova, A. Zaman, Y. Zhou, E. Lewis, Sweden, USA, Turkey, Belgium, Australia, India, Switzerland, South Africa, Singapore, Slovakia, Bulgaria, UK

### **873 Physical activity and diastolic dysfunction in people with with type 2 diabetes**

A.G. Hoek, I.R. Jankipersad, E. Dal Canto, N.R. Den Braver, R. Meer, P.J. Elders, J.W. Beulens, Netherlands

### **874 Glycaemic variability is associated with diastolic dysfunction in patients with type 2 diabetes**

Y.Y. Dzhun, G.B. Mankovsky, N.M. Rudenko, Y.Y. Marushko, Y.A. Saenko, B.M. Mankovsky, Ukraine

### **875 Prognostic models for heart failure in patients with type 2 diabetes: a systematic review and meta-analysis**

G. Kostopoulos, I. Doundoulakis, K.A. Toulis, T. Karagiannis, A. Tsapas, A.-B. Haidich, Greece, UK

### **876 Assessment of cardiovascular events in a real-world high-risk cohort with type 2 diabetes or atheroscleortic cardiovascular disease in Germany**

M. Verket, N. Kossack, J. Brandts, T. Schönfelder, K. Schütt, D. Häckl, N. Marx, D. Müller-Wieland, Germany

### **877 External validation of SCORE2-OP for predicting 10-year CVD risk in an older population with type 2 diabetes: Edinburgh Type 2 Diabetes study**

Z. Huang, J. Krasauskaite, L. Klaric, J.F. Wilson, J.F. Price, UK

### **878 Weight fluctuation and cardiovascular outcomes: a systematic review and meta-analysis**

R.J. Massey, M.K. Siddiqui, E.R. Pearson, A.Y. Dawed, UK

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

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**Prof. Krzysztof Strojek, Poland**



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**Prof. Miriam Cnop, Belgium**



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**Asst. Prof. Dario Rahelić, Croatia**

## CONTACT EASD

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# PRESENTING AUTHORS OF ORALS AND SHORT ORAL DISCUSSIONS

## Last Name, Initials, Presentation Number

	Abbas, Z. G. . . . .	731	Asir, R. . . . .	651
	Abdelalim, E. M. . . . .	304	Askeland, A. . . . .	777
	Abdelmoez, A. M. . . . .	161	Askø Andersen, J. . . . .	23
EASD EFSD	Abou Azar, F. . . . .	28	Aslan, M. . . . .	805
	Acosta, F. . . . .	141	Assi, E. . . . .	399
	Acosta Montalvo, A. . . . .	307	Astiarraga, B. D. . . . .	159
GENERAL INFO	Acreman, S. . . . .	371	Asuaje Pfeifer, M. . . . .	509
	Adeshara, K. . . . .	528	Augustin, R. . . . .	570
	Afi Leslie, K. . . . .	388	Ayachi, C. . . . .	331
PROGRAMME	Aharon-Hananel, G. . . . .	439	Ayis, S. A. M. . . . .	744
TUESDAY	Ahmed, F. . . . .	30	Badillo Garcia, L. . . . .	271
	Ahmed, M. . . . .	712	Baidya, A. . . . .	867
WEDNESDAY	Ahuja, V. . . . .	317	Balasubramanian, P. . . . .	835
	Ajie, M. . . . .	403	Ballesta, S. . . . .	222
THURSDAY	Al-Abdullah, L. . . . .	523	Banah, A. K. . . . .	201
	Al-Mashhadi, Z. K. . . . .	351	Bangshaab, M. . . . .	149
	Al-Selwi, Y. . . . .	412	Bany Bakar, R. . . . .	460
FRIDAY	Albiero, M. . . . .	531	Barale, C. . . . .	816
	Alén, R. . . . .	485	Barbaresko, J. . . . .	1
SHORT ORAL DISCUSSIONS	Ali Mondal, S. . . . .	116	Barchetta, I. . . . .	843
	Alobaid, A. M. . . . .	429	Barpaggianni, A. . . . .	797
	Alshannaq, H. . . . .	102	Barsby, T. . . . .	179
PRESENTER INDEX	Altenhofen, D. . . . .	296	Bartakova, V. . . . .	437
	Altintas, S. . . . .	20	Barth, M. . . . .	871
	Alves, A. . . . .	619	Barutta, F. . . . .	766
SATELLITE SYMPOSIA	Alyusuf, E. Y. . . . .	696	Basu, M. . . . .	759
	Amadid, H. . . . .	367	Battelino, T. . . . .	247
	Amaro, A. . . . .	486	Batterham, R. L. . . . .	498
INDUSTRY	Ampofo, E. . . . .	383	Baumann, P. M. . . . .	628
	Andreasen, C. R. . . . .	796	Baxter, F. A. . . . .	627
PROGRAMME	Andrita, A. . . . .	846	Beato-Vibora, P. I. . . . .	674
	Anholm, C. . . . .	602	Bedou, A. Didi. . . . .	260
EXHIBITION	Antikainen, A. A. . . . .	37	Belew, G. . . . .	478
	Apaolaza Gallegos, P. S. . . . .	208	Bem, R. . . . .	655
	Aroda, V. R. . . . .	609	Benson, C. . . . .	592
	Arslanian, S. . . . .	109	Bergental, R. . . . .	635
	Asatiani, N. . . . .	127	Bergman, M. . . . .	83
	Ashcroft, S. P. . . . .	232	Bianchetti, G. . . . .	865
	Ashik, T. . . . .	423	Bicho, M. . . . .	864

## Last Name, Initials, Presentation Number

Bihan, H. . . . .	438	Cataldo, L. . . . .	35
Billings, L. K. . . . .	618	Cen, H. Howard. . . . .	257
Bissenova, S. . . . .	405	Cen, J. . . . .	387
Blanc, M. . . . .	482	Cesta, C. E. . . . .	130
Blin, P. . . . .	831	Cetin, B. . . . .	380
Blong, J. . . . .	24	Chen, B. . . . .	4
Bonnet, F. . . . .	151	Chen, Y.-C. . . . .	32
Boonpor, J. . . . .	319	Chen, Z. . . . .	3
Boughton, C. K. . . . .	50	Cheng, A. Y. Y. . . . .	657
Bouman, E. J. . . . .	345	Cheng, Y. . . . .	29
Bozzetto, L. . . . .	13	Cheung, J. . . . .	654
Brackley, S. M. . . . .	169	Chiriaco, M. . . . .	868
Braffett, B. H. . . . .	187	Christensen, D. H. . . . .	334
Brand, K. . . . .	581	Christensen, M. H. . . . .	153
Brandhorst, D. . . . .	384	Christensen, M. M. B. . . . .	707
Briand, F. . . . .	119	Christoffersen, B. O. . . . .	772
Briganti, S. . . . .	312	Chu, J. C. M. . . . .	36
Briggs, J. . . . .	375	Ciardullo, S. . . . .	95
Brinck, J. . . . .	360	Ciborowski, M. . . . .	280
Brøns, C. . . . .	185	Ciccaglione, M. . . . .	330
Brøsen, J. M. B. . . . .	642	Cinti, F. . . . .	425
Brown, K. . . . .	603	Citro, F. . . . .	49
Brozzi, F. . . . .	108	Ciudin, A. . . . .	784
Buckeridge, C. . . . .	114	Clemente-Postigo, M. . . . .	479
Bue-Valleskey, J. M. . . . .	649	Colhoun, H. M. . . . .	234
Burnside, M. J. . . . .	677	Collado, A. . . . .	46
Butler, J. . . . .	560	Cordiner, R. L. M. . . . .	134
Butler, T. . . . .	197	Correia, J. C. . . . .	650
Buziau, A. M. . . . .	72	Cosentino, C. . . . .	480
Calderon, B. . . . .	596	Coskun, T. . . . .	564
Calero Pérez, S. . . . .	94	Cosson, E. . . . .	443
Caramelo, B. . . . .	536	Cowan, E. . . . .	457
Caramori, M. Luiza. . . . .	593	Cox, E. . . . .	171
Carcarino, E. . . . .	267	Crabtree, T. S. J. . . . .	550
Cardarelli, F. . . . .	34	Criego, A. . . . .	670
Caria, E. . . . .	81	Croosu, S. S. . . . .	736
Carlsen, R. . . . .	349	Cuenca-Ardura, M. . . . .	309
Carlson, T. . . . .	195	D'Ippolito, I. . . . .	725
Carrasquilla, G. D. . . . .	182	D'Onofrio, L. . . . .	411
Carvalho, M. . . . .	503	Da Costa, L. . . . .	453
Castaneda, J. . . . .	667	Da Porto, A. . . . .	408
Castillo-Armengol, J. . . . .	226	Dabaghie, D. . . . .	755

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, Initials, Presentation Number

	Dahlstrom, E. H. . . . .	68	El Eid, L. . . . .	569
	Dahmen, J.-N. . . . .	264	Elders, P. J. M. . . . .	279
	Dance, A. . . . .	294	Eletto, E. . . . .	364
	Dat, D. Q. . . . .	672	Elingaard-Larsen, L. . . . .	148
	Davies, M. . . . .	499	Eloy, R. . . . .	634
	Davila-Batista, V. . . . .	274	Elrakaybi, A. . . . .	44
<b>EASD</b>	Davis, T. M. E. . . . .	354	Elton Sander, S. . . . .	700
<b>EFSD</b>	Davis, W. A. . . . .	350	Eriksson, M. I. . . . .	124
	De Block, C. . . . .	614	Esser, N. . . . .	390
<b>GENERAL</b>	de Oliveira, K. M. . . . .	452	Esteves, J. V. . . . .	270
<b>INFO</b>	de Oliveira, R. M. . . . .	492	Esteves-Monteiro, M. . . . .	841
	De Vito, F. . . . .	259	Evans, M. . . . .	806
<b>PROGRAMME</b>	de Vries, S. A. G. . . . .	469	Falbo, E. . . . .	369
	Della Pepa, G. . . . .	164	Falcetta, P. . . . .	852
<b>TUESDAY</b>	Deng, K. . . . .	238	Falkevall, A. . . . .	150
	Di Giuseppe, G. . . . .	456	Fanni, G. . . . .	524
<b>WEDNESDAY</b>	Di pietrantonio, N. . . . .	276	Farrell, C. M. . . . .	135
	Diane, A. . . . .	382	Fauzi, M. . . . .	60
<b>THURSDAY</b>	Dib, A. . . . .	615	Fernandes, J. L. . . . .	845
	Dickerson, M. T. . . . .	376	Ferrannini, E. . . . .	801
<b>FRIDAY</b>	Diedisheim, M. . . . .	101	Ferrannini, G. . . . .	863
	Dimayuga, D. . . . .	643	Ferreira, V. . . . .	214
<b>SHORT ORAL</b>	Dinh, N. T. T. . . . .	361	Field, B. C. T. . . . .	583
<b>DISCUSSIONS</b>	Dirinck, E. . . . .	729	Fignani, D. . . . .	311
	Divilly, P. M. . . . .	683	Figueiredo, R. E. . . . .	516
<b>PRESENTER</b>	Dobrzycka, M. . . . .	513	Fiorentino, T. V. . . . .	496
<b>INDEX</b>	Docherty, N. G. . . . .	203	Fleming, A. D. . . . .	721
	Dollet, L. . . . .	82	Fløyel, T. . . . .	210
<b>SATELLITE</b>	Domazet, S. L. . . . .	322	Folon, L. . . . .	63
<b>SYMPOSIA</b>	Domingo-Lopez, D. A. . . . .	175	Font, C. . . . .	441
	Drenthen, L. C. A. . . . .	687	Forlenza, G. P. . . . .	669
<b>INDUSTRY</b>	Duan, M. F. . . . .	320	Formoso, G. . . . .	612
	Dunne, J. L. . . . .	286	Fortin, E. . . . .	800
<b>PROGRAMME</b>	Duque Escobar, J. . . . .	508	Fougerat, A. . . . .	144
	Durrer, C. . . . .	117	Franco, D. R. . . . .	688
<b>EXHIBITION</b>	Dybjær, E. . . . .	786	Frias, J. P. . . . .	567
	Dzhun, Y. Y. . . . .	874	Fritsche, L. . . . .	128
	Eason, R. J. . . . .	291	Fritzen, R. . . . .	465
	Ebert, T. . . . .	15	Funck, K. L. . . . .	336
	Eckstein, M. L. . . . .	427	Gašparini, D. . . . .	527
	Edstorp, J. . . . .	290	Gao, R. . . . .	106
	Eid, H. . . . .	695	Garcia-Calzon, S. . . . .	352

## Last Name, Initials, Presentation Number

Garofolo, M. ....	90	Hals, I. ....	55
Garvey, T. W. ....	562	Hamilton, K. ....	701
Gasbjerg, L. S.. ....	510	Han, K. ....	703
Gaspari, S. ....	225	Hansen, A. L. ....	184
Gasperikova, D. ....	301	Hansen, C. ....	709
Gastaldelli, A. ....	565	Hansen, T. ....	123
Gemmink, A. ....	7	Harms, P. P. ....	834
Genovese, F. ....	549	Harris, S. ....	637
Gerst, F. ....	209	Harsunen, M. ....	77
Gesheva, V. S. ....	342	Hatoko, T. ....	491
Gheibi, S. ....	396	Haukka, J. K. ....	244
Gibb, F. W. ....	99	Haynes, A. ....	332
Giménez, M. ....	684	Haythorne, E. ....	31
Giorgino, F. ....	665	He, L. ....	607
Giosuè, A. ....	2	He, S. ....	571
Gmitrov, J. ....	740	Hedbäck, N. ....	477
Gnudi, L. ....	809	Heerspink, H. J. L. ....	617
Goergen, A. ....	483	Heinonen, S. ....	494
Gojda, J. ....	370	Helal, R. ....	471
Gomes, M. M. ....	681	Hellberg, A. ....	539
Gomes Porras, M. ....	303	Helleputte, S. ....	219
Gonzalez Medina, M. ....	817	Herder, C. ....	192
González-Casimiro, C. M. ....	451	Hernandez Diaz, S. ....	273
Gorman, D. N. ....	588	Hernandez-Baraza, L. ....	435
Goutchtat, R. ....	459	Herzig, D. ....	52
Grace, S. L. ....	261	Hesse, D. ....	535
Gram-Kampmann, E. M. ....	827	Hesseldal, L. ....	221
Grancini, V. ....	693	Hesselink, M. K. C. ....	521
Green, J. B. ....	751	Hill, J. L. E. ....	849
Greig, M. ....	738	Hill, T. G. ....	103
Grieco, G. E. ....	327	Hochfellner, D. A. ....	679
Grzelka-Wozniak, A. ....	473	Hoek, A. G. ....	873
Guccio, N. ....	466	Holland, D. ....	658
Guilmeau, S. ....	447	Holt, C. B. ....	792
Guion, M. ....	335	Holz, G. G.. ....	575
Guitton, J. ....	211	Hong, S. ....	467
Gullaksen, S. ....	85	Hopkins, R. ....	235
Gulseth, H. L. ....	233	Hu, M. ....	266
Guo, L. ....	547	Huang, M. ....	297
Hadjadj, S. ....	747	Huang, P. ....	735
Hagelqvist, P. G. ....	790	Huang, R. ....	842
Hagerf (Voglova), B. ....	243	Huang, W. ....	167

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, Initials, Presentation Number

	Huang, Z. ....	877	Kazda, C. ....	640
	Huber, S. ....	722	Keller, A. C..	828
	Huillet, M. ....	91	Kender, Z. ....	717
	Humbert, A. ....	449	Khan, D. ....	488
	Hüttl, M. ....	497	Khan, I. ....	65
	Hwang, M. ....	779	Khattab, F. ....	105
<b>EASD</b>	Imai, S. ....	544	Khoo, C. Meng.	788
<b>EFSD</b>	Incedal, T. C. ....	373	Khuong, J. ....	534
	Inzucchi, S. E..	88	Kiljanski, J. ....	600
<b>GENERAL</b>	Isaacs, S. R. ....	236	Kim, J. ....	778
<b>INFO</b>	Isaksen, A. A. ....	804	Kim, J. ....	826
	Jacquemier, P. ....	668	Kim, K.-A. ....	746
<b>PROGRAMME</b>	Jalleh, R. J. ....	685	Kim, M.-J. ....	511
<b>TUESDAY</b>	Januszewski, A. S. ....	758	Kim, N. ....	125
	Jara, M. ....	18	Kim, Y. ....	118
<b>WEDNESDAY</b>	Jensen, M. H. ....	98	Kislev, N. ....	502
	Jenssen, T. G. ....	742	Kivelä, J. ....	5
<b>THURSDAY</b>	Jeon, J. ....	501	Kjaergaard, A. D. ....	43
	Jeong, B.-K. ....	860	Kjölhede, E. ....	223
	Jeong, J.-O. ....	869	Klemp, I. ....	321
<b>FRIDAY</b>	Jevon, D. ....	372	Knoch, K.-P. ....	314
	Jeyaparam, S. ....	272	Knop, F. K. ....	597
<b>SHORT ORAL</b>	Jiang, Y. Qiu. ....	748	Knuppel, A. ....	363
<b>DISCUSSIONS</b>	Jin, S. ....	341	Konecna, J. ....	172
	Jlali, I. ....	428	Koo, D.-J. ....	14
<b>PRESENTER</b>	Johansen, O. ....	541	Korakas, E. ....	829
<b>INDEX</b>	Jørgensen, M. E. ....	71	Korn, A. ....	92
	Jørgensen, N. B. ....	601	Korukonda Dr, K. ....	753
<b>SATELLITE</b>	Joshi, S. ....	698	Koshino, A. ....	553
<b>SYMPOSIA</b>	Kabisch, S. ....	163	Koshizaka, M. ....	9
	Kahn, S. E. ....	557	Kostopoulos, G. ....	875
<b>INDUSTRY</b>	Kahoul, Y. ....	533	Kountouri, A. ....	810
<b>PROGRAMME</b>	Káplár, M. ....	787	Kovac, L. ....	353
	Karagiannis, T. ....	147	Kovacs, A. ....	337
	Karagiannopoulos, A. ....	415	Kowluru, A. ....	395
<b>EXHIBITION</b>	Karalliedde, J. ....	676	Krasauskaite, J. ....	42
	Karayiannides, S. ....	844	Kremers, S. H. M. ....	346
	Kashima, K. ....	548	Krishnamoorthy, S. ....	694
	Kasperova, B. J. ....	11	Kristensen, F. P. ....	191
	Katoh, S. ....	745	Kristensen, P. L. ....	630
	Katte, J. C. ....	404	Kruse, R. ....	458
	Kaul, P. ....	832	Kullberg, J. ....	183



## Last Name, Initials, Presentation Number

Kumar, R. ....	308	Liu, L. ....	239
Kutz, A. ....	554	Liu, S. ....	785
Kwon, S. ....	686	Liu, Y. ....	74
Kyriakidou, A. ....	604	Llaurado, G. ....	283
L Heerspink, H. ....	552	Lloyd, M. ....	393
Laffel, L. ....	97	Lluch, A. ....	522
Laitinen, I. ....	462	Löffler, D. ....	433
Lalama, E. ....	165	Löndahl, M. ....	251
Lambadiari, V. ....	559	Longfield, M. S. G. ....	732
Lampousi, A.-M. ....	284	Lu, J. ....	355
Landstra, C. P. ....	409	Lucic Fisher, S. G. ....	448
Langlois, A. ....	389	Luk, C. ....	193
Lapuerta, P. ....	605	Lund, L. E. ....	256
Larsen, A. T. ....	574	Lundqvist, M. H. ....	475
Laurberg, T. ....	847	Luukkonen, P. K. ....	146
Laursen, J.-C. ....	86	Lv, Y. ....	859
Lauwers, P. ....	728	Lyngbaek, M. ....	79
Laviola, L. ....	814	Lyu, Y. ....	344
Le Pelletier, L. ....	27	Lyu, Z. ....	419
Leal, E. C. ....	21	Maandi, M. ....	861
Lee, C. J. ....	586	Maandi, S. C. ....	394
Lee, J. ....	757	Maasen, K. ....	282
Lee, J. Yun. ....	763	Maddaloni, E. ....	711
Lee, K.-W. ....	519	Magliano, D. J. ....	181
Lee, S. ....	838	Mäkinen, S. ....	199
Lee, S.-H. ....	855	Malhotra, A. ....	578
Lefebvre, R. ....	856	Malik, R. ....	645
Lekka, C. ....	416	Malinska, H. ....	504
Lemaitre, M. ....	131	Markova, I. ....	61
Lempesis, I. G. ....	139	Marks, K. P. ....	170
Leone, A. ....	815	Marrano, N. ....	59
Levine, J. A. ....	585	Marroqui, L. ....	398
Levitt, C. H. ....	374	Martine-Edith, G. ....	625
Lewis, J. E. ....	216	Martinka, E. ....	248
Li, T. ....	505	Mas, S. ....	520
Li, X. ....	281	Massey, R. J. ....	878
Liebmann, M. ....	445	Mastrocola, R. ....	495
Liepins, E. ....	530	Mather, K. ....	57
Lilao-Garzon, J. ....	484	Matsuki, K. ....	870
Linares-Pineda, T. M. ....	277	Matuseviciene, L. ....	104
Linge, J. ....	561	Maytham, K. ....	224
Lithovius, R. ....	812	McCrimmon, R. J. ....	644

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, Initials, Presentation Number

	McGill, J. B. . . . .	620	Mziaut, H. . . . .	240
	McKay, E. J. . . . .	140	Nadasdi, A. . . . .	295
	Mehmeti, I. . . . .	397	Nag, S. . . . .	518
	Melin, E. O. . . . .	173	Nagao, M. . . . .	507
	Mellbin, L. G. . . . .	594	Nakanga, W. P. . . . .	440
	Mellor, J. . . . .	794	Nakhe, A. Y. . . . .	414
EASD	Melzer Cohen, C. . . . .	610	Nasser, S. . . . .	537
EFSD	Memon, B. . . . .	298	Nesti, L. . . . .	249
	Mendizabal, L. . . . .	278	Nguyen, M. . . . .	48
GENERAL	Menduni, M. . . . .	242	Nguyen, T. N. . . . .	426
INFO	Meneses, M. Joao. . . . .	517	Nicolaisen, S. K. . . . .	75
	Mertens, J. . . . .	463	Nielsen, J. S. . . . .	783
PROGRAMME	Mertes, B. . . . .	246	Nielsen, N. . . . .	461
	Mesa, A. . . . .	220	Nilsson, K. . . . .	659
TUESDAY	Meulebrouck, S. . . . .	70	Niu, T. . . . .	819
	Mianowska, B. . . . .	830	Norata, G. . . . .	515
WEDNESDAY	Michael, N. . . . .	431	O'Connor, S. . . . .	359
	Milicevic, Z. . . . .	111	Obermayer, A. . . . .	543
THURSDAY	Mitkin, N. . . . .	611	Ofori, J. K. . . . .	265
	Miyamoto, J. E. . . . .	215	Olaniru, O. . . . .	177
FRIDAY	Mizrak, H. . . . .	190	Olleik, H. . . . .	381
	Mizushiri, S. . . . .	338	Olsen, M. T. . . . .	316
SHORT ORAL	Mokhtar, S. B. A. . . . .	155	Oltean, S. . . . .	770
DISCUSSIONS	Møller, A. L. . . . .	218	Onyema, M. . . . .	764
	Møller, P. M. . . . .	84	Orioli, L. . . . .	468
	Molveau, J. . . . .	705	Overby, P. . . . .	56
PRESENTER	Monfort-Pires, M. . . . .	142	Pacal, L. . . . .	743
INDEX	Monod, C. . . . .	275	Paczkowski, R. . . . .	580
	Montaser, H. . . . .	205	Palma, G. . . . .	500
SATELLITE	Moon, J. . . . .	599	Panagiotou, S. . . . .	237
SYMPOSIA	Mooshage, C. M. . . . .	718	Pandey, A. . . . .	252
	Morch, C. D. . . . .	713	Parascandolo, A. . . . .	848
INDUSTRY	Moreno-Ruiz, I. . . . .	793	Parente, E. B. . . . .	768
	Moriconi, D. . . . .	470	Park, J. . . . .	780
PROGRAMME	Morieri, M. L. . . . .	836	Parry, S. N. . . . .	776
	Morningstar, M. . . . .	572	Partridge, K. M. . . . .	137
EXHIBITION	Moschovaki Filippidou, F. . . . .	824	Paschou, S. . . . .	577
	Mosenzon, O. . . . .	558	Patel, H. . . . .	568
	Muilwijk, M. . . . .	339	Patel, K. . . . .	78
	Müller-Wieland, D. . . . .	648	Patel, K. V. . . . .	112
	Mumu, S. J. . . . .	318	Paterson, A. D. . . . .	67
	Mutter, S. . . . .	821	Pearson, S. M. . . . .	795

## Last Name, Initials, Presentation Number

Pedersen, L. B. H. ....	646	Ramos, H. ....	122
Pekkari, O. ....	661	Rangert, A. ....	315
Pendergrast, L. A. ....	231	Raoux, M. ....	702
Penesova, A. ....	493	Rastogi, A. ....	22
Penno, G. ....	16	Ratzki-Leewing, A. ....	629
Pereira, M. J. ....	514	Ravier, M. A. ....	386
Perrot, G. ....	775	Rebelos, E. ....	464
Perseghin, G. ....	348	Ren, H. ....	377
Petersen, E. ....	53	Rewers, M. ....	313
Petersen, M. H. ....	80	Rey Velasco, E. ....	697
Petkovic, M. ....	734	Ricordi, C. ....	379
Petrelli, A. ....	293	Rilstone, S. ....	138
Pfeffer, T. ....	760	Rinaldi, E. ....	227
Picconi, F. ....	714	Ritzel, R. ....	638
Pieber, T. R. ....	647	Riveline, J.-P. ....	51
Piemonti, L. ....	418	Rives, C. ....	774
Pillon, N. J. ....	481	Rizo-Roca, D. ....	455
Pina, A. ....	253	Rizzi, A. ....	704
Pipino, C. ....	733	Roberts, F. ....	178
Piron, A. ....	69	Roca Rivada, A. ....	206
Pirttiniemi, A. ....	798	Rohbeck, E. ....	862
Pletsch-Borba, L. ....	538	Røikjer, J. ....	720
Plum-Mörschel, L. ....	639	Rokamp, K. Z. ....	633
Pontrelli, P. ....	39	Rončáková, M. ....	289
Pop-Busui, R. ....	710	Rønningen, T. ....	64
Potier, J.-B. ....	145	Rosager, E. V. ....	356
Poulsen, C. G. ....	87	Rosendo-Silva, D. ....	476
Pratt, E. ....	587	Rosenstock, J. ....	613
Prázný, M. ....	723	Rossing, P. ....	45
Prystupa, K. ....	73	Rotbain Curovic, V. ....	752
Puttanna, A. ....	653	Roumans, K. H. M. ....	115
Qi, B. ....	771	Rubino, D. M. ....	563
Quansah, K. ....	666	Russon, C. L. ....	631
Quast, D. R. ....	623	Ryder, R. E. J. ....	54
Quinn, L. M. ....	406	Sacchetta, L. ....	241
Quiros, C. ....	671	Sacre, J. W. ....	811
Quist, J. S. ....	542	Sadanathan, S. ....	129
Qvigstad, E. ....	436	Sagar, R. C. ....	17
Rabbani, N. ....	762	Sainz, N. ....	678
Rada, P. ....	202	Salmenkari, H. ....	839
Radlinger, B. ....	576	Sampaio-Pires, D. ....	474
Ram, Y. ....	333	Sánchez-Ceinos, J. ....	268

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, Initials, Presentation Number

	Sánchez-Roncero, A. . . . .	422	Sloan, G. . . . .	188
	Sancho, V. . . . .	212	Snaith, J. R. . . . .	158
	Sandforth, L. . . . .	258	Soares, A. C. F. . . . .	624
	Sang, M. . . . .	347	Sokooti Oskooei, S. . . . .	358
	Santos, D. . . . .	157	Solly, E. L. . . . .	47
	Saponaro, C. . . . .	310	Somanath, P. . . . .	590
EASD	Sassi, G. . . . .	328	Sommer, C. . . . .	340
EFSD	Satuli-Autere, S. . . . .	791	Sommi, A. . . . .	656
	Savikj, M. . . . .	229	Son, J. . . . .	446
GENERAL	Saxena, A. R. . . . .	589	Song, P.-S. . . . .	854
INFO	Schechter, M. . . . .	250	Song, S. H. . . . .	133
	Schlögl, H. . . . .	506	Sørland, B. A.. . . .	719
PROGRAMME	Schön, M. . . . .	254	Sørum, N. M. . . . .	556
	Schoug, J. . . . .	741	Sourij, H. . . . .	430
TUESDAY	Schultz, J. . . . .	413	Sousa, D. . . . .	487
	Schuppelius, B. . . . .	162	Sridhar, V. S. . . . .	621
WEDNESDAY	Schwitzgebel, V. . . . .	306	Starikova, J. . . . .	420
	Sebastian, M. . . . .	300	Stathi, D. . . . .	756
THURSDAY	Seghieri, M. . . . .	546	Stedman, M. . . . .	662
	Seidel-Jacobs, E. . . . .	323	Steen Carlsson, K. . . . .	663
FRIDAY	Selig, J. I. . . . .	823	Stene, L. . . . .	287
	Sellers, A. J. . . . .	160	Stentebjerg, L. L. . . . .	434
SHORT ORAL	Selvarajah, D. . . . .	189	Stewart, A. J.. . . .	529
DISCUSSIONS	Seo, D. . . . .	833	Stidsen, J. V.. . . .	368
	Serhiyenko, V. A.. . . .	708	Stocks, B. . . . .	93
	Seufert, J. . . . .	551	Stone, V. M. . . . .	385
PRESENTER	Sharifi, S. . . . .	424	Stougaard, E. B. . . . .	89
INDEX	Sharma, A. . . . .	132	Stratigou, T. . . . .	749
	Sharrack, N. . . . .	813	Stratmann, B. . . . .	818
SATELLITE	She, R. . . . .	136	Strembitska, A. . . . .	228
SYMPOSIA	Sherr, J. . . . .	626	Stutz, B. . . . .	608
	Shi, M. . . . .	739	Su, Q. . . . .	802
INDUSTRY	Shields, B. . . . .	174	Suba, K. . . . .	230
	Shih, A. Zi. Le. . . . .	401	Subramanian, A. . . . .	840
PROGRAMME	Shoyhet, H. . . . .	196	Sulaj, A. . . . .	120
	Siafarikas, C. . . . .	365	Sun, H. . . . .	858
EXHIBITION	Simati, S. . . . .	490	Sun, J. . . . .	176
	Simó, R. . . . .	126	Sun, X. . . . .	532
	Simpson, V. . . . .	76	Svane, M. S. . . . .	110
	Simsek, S. . . . .	573	Sveen, K. . . . .	853
	Singh, H. . . . .	673	Svehlikova, E. . . . .	407
	Sisk, R. . . . .	727	Syreeni, A. . . . .	38

## Last Name, Initials, Presentation Number

Szili-Torok, T. . . . .	6	Uchihara, M. . . . .	682
Szymczak, F. . . . .	326	Uddman, E. . . . .	730
Takasawa, S. . . . .	769	Umpierrez, G. E. . . . .	100
Takiishi, T. . . . .	391	Ursino, G. . . . .	194
Tamir, O. . . . .	675	Uruska, A. . . . .	820
Tan, W. . . . .	417	Usuelli, V. . . . .	262
Tanaka, S. . . . .	302	Vaduva, P. . . . .	152
Tariq, M. . . . .	392	Valensi, P. . . . .	808
Tavaglione, F. . . . .	96	Vambergue, A. . . . .	442
Taybani, Z. . . . .	690	Vamos, E. P. . . . .	782
Taylor, R. . . . .	255	van den Berg, J. M. . . . .	691
Teh, K. . . . .	737	van der Aart-van der Beek, A. B. . . . .	750
Teli, V. . . . .	866	van der Heide, F. . . . .	121
Teramoto, N. . . . .	40	van der Wel, A. . . . .	680
Teshima, A. . . . .	204	van Gennip, A. C. E. . . . .	154
Tesi, M. . . . .	58	van Heck, J. I. P. . . . .	632
Thabit, H. . . . .	641	Vandenbempt, V. . . . .	410
Thennati, R. . . . .	616	Vandercappellen, E. J. . . . .	324
Thibaut, R. . . . .	773	Várkonyi, T. . . . .	595
Thirumathyam, R. . . . .	12	Vavrch, C. . . . .	803
Thomakos, P. . . . .	444	Vázquez, L. . . . .	598
Thomas, M. K. . . . .	606	Veelen, A. . . . .	8
Thomas, N. . . . .	292	Vera-Ramos, J. A. . . . .	325
Thomas, R. L. . . . .	724	Verket, M. . . . .	876
Thomsen, R. W. . . . .	584	Vernstrøm, L. . . . .	807
Thorius, I. H. . . . .	636	Videja, M. . . . .	767
Thornalley, P. . . . .	825	Viljoen, A. . . . .	591
Tichler, A. . . . .	652	Vilsbøll, T. . . . .	579
Tirosh, A. . . . .	689	von Rauchhaupt, E. . . . .	716
Tomic, D. . . . .	362	Vranic, M. . . . .	26
Torchio, S. . . . .	305	Waernbaum, I. . . . .	288
Tore, E. C. . . . .	512	Waheed, U. . . . .	692
Tougaard, N. H. . . . .	822	Walth, A. A. . . . .	33
Tozzi, R. . . . .	526	WANG, H. . . . .	850
Tramontana, F. . . . .	200	Wang, J. . . . .	343
Triggiani, R. . . . .	245	Wang, Z. . . . .	285
Tripathy, D. . . . .	10	Wang, Z. . . . .	525
Tsatsaris, G. . . . .	19	Ware, J. . . . .	699
Tsekmekidou, X. . . . .	299	Wei, Y. . . . .	217
Tsilingiris, D. . . . .	726	Wen, Q. . . . .	472
Tye, S. . . . .	545	Westholm, E. . . . .	107
U-Din, M. . . . .	143	Wetzel, C. . . . .	754

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, Initials, Presentation Number

	Whyte, M. ....	660	Zhu, W. ....	781
	Wijdeveld, M. ....	489	Zurawska-Klis, M. ....	432
	Wijkman, M. ....	872		
	Wilding, J. P. H. ....	566		
	Wong, W. K. M. ....	180		
	Woo, S. ....	540		
EASD	Wretlind, A. ....	799		
EFSD	Wrublewsky, S. ....	263		
	Wu, R. ....	207		
GENERAL	Wu, T. ....	168		
INFO	Wu, Y. ....	837		
	Wueest, S. ....	25		
PROGRAMME	Wyne, K. ....	402		
	Xie, C. ....	166		
TUESDAY	Xingjing, L. ....	62		
	Xu, P. ....	857		
WEDNESDAY	Xue, M. ....	450		
	Yamamoto, M. ....	761		
THURSDAY	Yang, A. ....	622		
	Yang, Y. ....	715		
FRIDAY	Ye, T. ....	41		
	Yi, X. ....	400		
SHORT ORAL	Ylinen, A. ....	156		
DISCUSSIONS	Yoo, S. ....	765		
	Yoshiji, S. ....	366		
PRESENTER	Young, K. G. ....	555		
INDEX	Young, L. ....	582		
	Yu, Y. ....	378		
SATELLITE	Yuan, Y. ....	66		
SYMPOSIA	Zangerolamo, L. ....	213		
	Zaoui, P. ....	664		
INDUSTRY	Zatterale, F. ....	269		
PROGRAMME	Zglejč-Waszak, K. ....	329		
	Zhang, A. ....	851		
EXHIBITION	Zhang, H. ....	113		
	Zhang, H. ....	789		
	Zhang, J. ....	357		
	Zhang, L. ....	186		
	Zhang, X. ....	454		
	Zhang, Y. Y. ....	198		
	Zhou, Y. ....	421		
	Zhou, Z. ....	706		

# INVITED SPEAKERS

## Last Name, First Name, Page

Adler, Amanda I. . . . .	59	Gil Lozano, Manuel . . . . .	115
Adshead, Fiona . . . . .	81	Grasset, Estelle . . . . .	130
Agarwal, Shivani . . . . .	85	Green, Jennifer B. . . . .	88, 129
Aroda, Vanita R. . . . .	129	Greenfield, Jerry R. . . . .	114
Balboa, Diego. . . . .	54	Griffin, Jules . . . . .	80
Barg, Sebastian . . . . .	132	Grundberg, Elin . . . . .	85
Barnard-Kelly, Katharine . . . . .	82	Hadjadj, Samy . . . . .	132
Barrès, Romain R. . . . .	86	Hashimoto, Hideki . . . . .	116
Battelino, Tadej . . . . .	82	Hauck, Bastian. . . . .	116
Birkenfeld, Andreas L. . . . .	88	Heinemann, Lutz . . . . .	81
Bongaerts, Brenda . . . . .	115	Heni, Martin . . . . .	106
Boren, Jan . . . . .	58	Holman, Rury R. . . . .	59
Bornstein, Stefan R. . . . .	57	Holt, Richard I. G. . . . .	57
Bosurgi, Raffaella . . . . .	81	Horowitz, Michael. . . . .	50
Boulé, Normand . . . . .	115	Huising, Mark O. . . . .	132
Bowen, Timothy . . . . .	115	Igoillo-Esteve, Mariana . . . . .	111
Burgess, Shawn C. . . . .	111	Inzucchi, Silvio E. . . . .	112
Buse, John B. . . . .	129	Iqtadar, Somia . . . . .	85
Buyken, Anette E. . . . .	131	James, David . . . . .	86
Caramori, Luiza . . . . .	88, 114	Jansson, Stefan P. O. . . . .	133
Castro-Sepulveda, Mauricio . . . . .	115	Jastreboff, Ania M. . . . .	59
Chernavsky, Daniel R. . . . .	82	Jessen, Niels . . . . .	85
Clarke, Philip M. . . . .	59	Jhund, Pardeep S. . . . .	112
Colhoun, Helen M. . . . .	110	Johnson, Matthew B. . . . .	54
Collins, Billy S. . . . .	129	Kaldis, Philipp. . . . .	86
Cornelsen, Laura . . . . .	131	Kim, Young-Bum . . . . .	116
Costacou, Tina . . . . .	110	Kirby, John R. . . . .	130
Daniele, Giuseppe . . . . .	78	Kosiborod, Mikhail . . . . .	112
Davies, Melanie J. . . . .	129	Kunneman, Marleen J. . . . .	116
Del Prato, Stefano . . . . .	87	Laaksonen, Reijo . . . . .	84
Dennis, John . . . . .	54	Laferrère, Blandine . . . . .	56
Deshmukh, Atul S. . . . .	80	Lambers Heerspink, Hiddo L. . . . .	88
DeVries, J. Hans . . . . .	110	Le Roux, Carel . . . . .	59
Dotta, Francesco . . . . .	115	Lean, Michael. . . . .	56
Duca, Frank A. . . . .	130	Ling, Charlotte A. . . . .	81
Fadini, Gian P. . . . .	130	Lobel, Lior. . . . .	130
Florez, Jose C. . . . .	110	Ludwig, Barbara. . . . .	57
Franks, Paul W. . . . .	56	Lund, Lars H. . . . .	114
Frias, Juan P. . . . .	87	Luukkonen, Panu K. . . . .	84
Ghanim, Husam A. . . . .	114	Malecki, Maciej T. . . . .	110

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## Last Name, First Name, Page

	Maqdasy, Salwan . . . . .	54	Snyder, Michael . . . . .	86
	Maruthur, Nisa M. . . . .	129	Solini, Anna . . . . .	84
	Marx, Nikolaus . . . . .	114	Stene, Lars C. . . . .	81
	Mathieu, Chantal . . . . .	87, 129	Summers, Scott . . . . .	84
	Mauricio, Didac . . . . .	132	Sussel, Lori . . . . .	81
	McGill, Janet . . . . .	88	Tankova, Tsvetalina . . . . .	85, 129
EASD	McKnight, Amy J. . . . .	110	Tognini, Paola. . . . .	58
EFSD	Meek, Claire L. . . . .	80	Town, Marissa . . . . .	82
	Mingrone, Geltrude . . . . .	129	Tsapas, Apostolos . . . . .	80, 129
GENERAL	Mithieux, Gilles. . . . .	80	van de Sluis, A. J. A. Bart. . . . .	58
INFO	Moholdt, Trine . . . . .	80	van Gaal, Luc. . . . .	59
	Nair, K. S. . . . .	131	Vidal-Puig, Antonio. . . . .	86
PROGRAMME	Narendran, Parth . . . . .	114	Virtanen, Kirsi A. . . . .	111
	Nauck, Michael A. . . . .	32	Wagner, Robert . . . . .	56
TUESDAY	Nguyen, Phong B. H. . . . .	56	Whiteley, William N. . . . .	59
	Niewczas, Monika A. . . . .	114	Wierup, Nils . . . . .	85
WEDNESDAY	Nissen, Steven . . . . .	59	Wild, Sarah. . . . .	132
	Paterson, Andrew D. . . . .	110	Wolffenbuttel, Bruce H. R. . . . .	80
THURSDAY	Persson, Frederik. . . . .	84	Wolfrum, Christian . . . . .	111
	Phielix, Esther . . . . .	111	Zeigerer, Anja. . . . .	58
FRIDAY	Philis-Tsimikas, Athena . . . . .	87	Zhang, Quan . . . . .	132
	Phillip, Moshe. . . . .	57	Ziegler, Anette G. . . . .	76, 81
SHORT ORAL	Poelman, Maartje P. . . . .	131		
DISCUSSIONS	Postic, Catherine . . . . .	116		
	Ramich, Olga . . . . .	78		
PRESENTER	Raposo, João F. . . . .	58		
INDEX	Rea, Rustam . . . . .	132		
	Regazzi, Romano . . . . .	111		
SATELLITE	Rena, Graham . . . . .	130		
SYMPOSIA	Rosas, Sylvia E. . . . .	129		
	Rossing, Peter . . . . .	88, 129		
INDUSTRY	Rothberg, Amy E. . . . .	56		
	Russell, Steven J. . . . .	57		
PROGRAMME	Rutter, Martin . . . . .	57		
	Sander, Maike . . . . .	52		
EXHIBITION	Scorrano, Luca. . . . .	58		
	Scott, Charlotte L. . . . .	86		
	Seidu, Samuel . . . . .	133		
	Shirihai, Orian . . . . .	131		
	Simó, Rafael. . . . .	84		
	Sinclair, Alan J. . . . .	115		
	Singh, Rajat . . . . .	131		



**SATTELITE  
SYMPOSIA  
ON THE  
OCCASION  
OF THE  
58TH  
EASD  
ANNUAL  
MEETING**

**DNSG Symposium:**  
**Updated dietary guidelines for the treatment and prevention of diabetes**

**Monday, 19 September 2022, 09:00 - 11:00, Koch Hall**

*Speaker:* Anne-Marie Aas:  
**Opening remarks**

Andreas Pfeiffer:  
**Updating process**

Ulf Riserus:  
**Recommendations for macronutrients**

John Sivenpiper:  
**Dietary patterns**

Mike Lean:  
**Weight management and weight reduction**

Matti Uusitupa:  
**Prevention of type 2 diabetes**

Andreas Pfeiffer and Anne-Marie Aas:  
**Discussion**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**DESG Symposium:**  
**Therapeutic patient education - past, present and future**

**Monday, 19 September 2022, 11:30 - 13:30, Koch Hall**

*Speaker:* Tatjana Milenkovic and Florian Toti:  
**Introduction of the symposium**

Dario Rahelic:  
**Insulin therapy – 100 years after discovery**

Tatjana Milenkovic:  
**Insulin and the evolution of diabetes education**

M. Hassanein:  
**Hyperglycemia – ‘The forgotten’ enemy**  
**Questions and Answers**

*Moderator:* Joao Filipe Raposo

*Speaker:* T. Tankova, A. Majchrzak, I. Vlasenko, I. Shaltout,  
 S. Pico Montesinos and C. Bala:  
**Round Table: Is therapeutic patient’s education in crisis or not?**

*Moderator:* Florian Toti  
**DESG Prize – Best Abstract 2022**

*Speaker:* Tiziana Assal and Jean-Philippe Assal:  
**New strategies to develop therapeutic patient’s education - sensorial passport**

Tatjana Milenkovic and Florian Toti:  
**Closure**

EASD EFSD
GENERAL INFO
PROGRAMME
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SHORT ORAL DISCUSSIONS
PRESENTER INDEX
SATELLITE SYMPOSIA
INDUSTRY
PROGRAMME
EXHIBITION

**HSRHE Symposium:  
How can we get patients moving**

**Monday, 19 September 2022, 14:00 - 15:30, Koch Hall**

*Chair:* Andrea Icks, Germany

*Speaker:* Andrea Icks, Germany:  
**Opening remarks**

Matthias Sutter, Germany:  
**Nudging - improving health with simple interventions**

Stephanie Bonn, Sweden:  
**App-technology to increase physical activity among patients with type 2 diabetes**

Andrea Icks, Germany:  
**Closing remarks**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## IDF Europe Symposium:

### Improving the HCP-PwD interaction for better health outcomes, quality of life and resilient health systems

Monday, 19 September 2022, 16:00 - 17:30, Yalow Hall

*Chair:* Niti Pall, UK

*Speaker:* Niti Pall, UK:

#### **Welcome and introduction**

Presentation of the work of IDF Europe's platform of people living with type 2 diabetes

João Filipe Raposo, Portugal, Elena Shelestova, Georgia, Yvonne Johns, UK and Pinar Topsever, Turkey:

#### **Panel 1 – The HCP-PwD relationship: how to support a multi-disciplinary approach?**

Naresh Kanumilli, UK, Konstantinos Makrilakis, Greece and Yvonne Johns, UK:

#### **Panel 2 - Guidelines from theory to point of care; Guardians For Health implementation initiative**

Maartje Roskams, Belgium, Yvonne Johns, UK, Manuel Cabezas, The Netherlands and Tatjana Milenkovic, North Macedonia:

#### **Panel 3 - How can traditional and new decentralised clinical trials support PwD empowerment and self-management and improve PwD-HCP interaction?**

Nebojsa Lalic, Serbia:

#### **Wrap-up and Closing remarks**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## DIAB IMAGE Symposium

Monday, 19 September 2022, 16:00 - 18:00, Koch Hall

*Chair:* Vera Schrauwen, Martin Krssak, Marti Boss and Olof Eriksson

*Speaker:* Vera Schrauwen, Martin Krssak, Marti Boss and Olof Eriksson:

**Welcome address and update on the DIAB IMAGE study group activities**

Jan Eriksson, Sweden:

**Can imaging define typ 2 diabetes? A journey from pathophysiology towards precision medicine**

Ladislav Valkovic, UK:

**Metabolic imaging of the diabetic heart using magnetic resonance spectroscopy and imaging**

Vera Schrauwen, Martin Krssak, Marti Boss and Olof Eriksson:

**Concluding remarks**

**Annual Study Group meeting, election of board members**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## DPSG Symposium:

### Diagnosis and management of gestational diabetes

Tuesday, 20 September 2022, 09:00 - 11:00, Koch Hall

*Chair:* Adam Tabak

*Speaker:* Jardena Puder, Switzerland:  
**Cardiometabolic and mental health in women with early gestational diabetes mellitus: A prospective cohort study**

Christian Göbl, Austria:  
**The use of continuous glucose monitoring for women with GDM**

Eszter Vanky, Norway:  
**The use of metformin for women with GDM and type 2 diabetes in pregnancy**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## D&CVD Symposium:

### The cardio-renal-metabolic challenge in type 2 diabetes

Tuesday, 20 September 2022, 11:45 - 13:30, Koch Hall

*Chair:* Doina Catrinou, Romania and Jan Škrha, Czech Republic

*Speaker:* Eberhard Standl, Germany:

**Cardio-renal-metabolic interplay: Emerging notions and basic clinical treatment strategies**

EASD  
EFSD

GENERAL  
INFO

Paul Valensi, France:

**SGLT2-inhibitors: Key treatment option beyond type 2 diabetes regardless of cardiac ejection fraction**

PROGRAMME

TUESDAY

Oliver Schnell, Germany:

**Finerenone – New magic drug reducing cardio-renal disease?**

WEDNESDAY

THURSDAY

Mahmoud Ibrahim, USA:

**Envisaging a new interdisciplinary subspecialty training in medicine for dealing with the cardio-renal-metabolic challenge in type 2 diabetes**

FRIDAY

SHORT ORAL  
DISCUSSIONS

All chairs and speakers together with Lars Rydén, Sweden, Per-Henrik Groop, Finland, Nebojsa Lalic, Serbia, Baruch Itzhak, Israel and Dario Rahelic, Croatia:

**Interdisciplinary panel discussion with diabetologists, cardiologists, nephrologists, primary care physicians**

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



## #dedoc° Symposium:

### What we wish you knew - and why

Tuesday, 20 September 2022, 14:00 - 15:30, Koch Hall

*Chair:* Bastian Hauck, Germany and Renza Scibilia, Australia

*Speaker:* Chantal Mathieu, Belgium:

#### **Words of Welcome**

#### **Novel forms of online peer support developed during Covid**

Andrea Limbourg, France:

#### **Online peer support and the DOC's response to COVID**

Jeff Hitchcock, USA:

#### **How children with diabetes coped with, transformed and thrived despite lockdown**

Salih Hendricks, South Africa:

#### **Reaching out to build a community for diabetic amputees**

Tom Dean, UK:

#### **Introducing the all-new Twitter #DiabetesChat**

Bastian Hauck, Germany:

#### **The new hybrid: #docday° and the #dedoc° voices responding to virtual conferences**

#### **Open discussion and questions**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## PCDE Symposium

Tuesday, 20 September 2022, 16:00 - 17:00, Koch Hall

*Speaker:* Pinar Topsever, Turkey:  
**Introduction**

Phillippe Domeyer, Greece:  
**Quality assessment of type 2 diabetes care in Greece: setting indicators from a primary care perspective**

Xavier Cos, Spain:  
**Epidemiology of SARS-CoV-2 in persons with diabetes mellitus and obesity in Catalonia - Study epiCOVID19DMO**

Samuel Seidu, UK:  
**Association of erectile dysfunction and PDE5 inhibitor usage with the risk of cardiovascular disease and mortality in patients with diabetes: A systematic review and meta-analysis**

Pinar Topsever, Turkey:  
**Concluding remarks**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**RM-SG Symposium:**  
**Insulin resistance - new insights and nutritional approaches to therapy**

**Wednesday, 21 September 2022, 09:00 - 11:00, Koch Hall**

*Chair:* Naila Rabbani, Qatar and Paul J Thornalley, Qatar

*Speaker:* Andreas FH Pfeiffer, Germany:  
**Nutritional modulation of insulin resistance**

Paul J Thornalley, Qatar:  
**Hexokinase-2 linked unscheduled glycolysis hypothesis of insulin resistance - link of insulin resistance to impaired fasting glucose**

Naila Rabbani, Qatar:  
**Correction of insulin resistance in overweight and obese subjects by dietary supplement Glo1 inducer - Healthy Aging Through Functional Food Study**

All speakers and Shahrad Taheri, Qatar:  
**Panel discussion**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## ExPAS Symposium:

### From molecular insights to exercise prescription: how to improve diabetes and its complications

Wednesday, 21 September 2022, 11:30 - 13:30, Koch Hall

*Speaker:* Juleen Zierath:

**Exerkines and their link to insulin sensitivity in type 2 diabetes**

EASD  
EFSD

GENERAL  
INFO

Sheri Colberg:

**Exercise for all? How to account for diabetes complications when prescribing exercise**

The key notes will be followed by short talks around the respective topic of the symposium

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## EUDF Symposium

### Meeting the diabetes challenge with data registries, integrated care and digitalisation

Wednesday, 21 September 2022, 14:00 - 16:00, Koch Hall

*Chair:* C. Mathieu, Belgium and Stefano Del Prato, Italy

*Speaker:* Stefano Del Prato, Italy:  
**Welcome and introduction**

**What makes data registries, integrated care, self-care and digitalisation intrinsic parts of diabetes care?**

Robert Heine, USA:  
**Enabling high quality diabetes care**

Joao Filipe Raposo, Portugal:  
**Five priorities for advancing integrated care**

Peter Schwarz, Germany:  
**The promise of digital tools: A roadmap for apps**

Casja Lindberg, Sweden, Jeannette Soderberg, Sweden, Juliana Chan, Hong Kong, Katarina Eeg-Olofsson, Sweden, Pinar Topsever, Turkey and Tadej Battelino, Slovenia:  
**Open discussion and questions**

Chantal Mathieu, Belgium:  
**Closing remarks**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**IHSG Symposium:**  
**Hypoglycaemia among elderly people with diabetes**  
**Wednesday, 21 September 2022, 16:30 - 17:30, Koch Hall**

*Chair:* Lawrence Leiter, Canada

*Speaker:* Lawrence Leiter, Canada:  
**Welcome and introduction**

Sophia Zoungas, Australia and Kamlesh Khunti, UK:  
**Examining epidemiology and unmet needs**

Elizabeth Seaquist, USA:  
**Management of hypoglycaemia**

All speakers:  
**Panel discussion**

Lawrence Leiter, Canada:  
**Closing summary**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## EDNSG Symposium

Thursday, 22 September 2022, 08:30 - 10:00, Koch Hall

*Chair:* Luigi Gnudi and Samy Hadjadj

*Speaker:* Michel Marre:

**Diabetic nephropathy, a changing and challenging phenotype. A critical view on how the clinician can make a difference.**

Richard Coward:

**Insulin resistance in diabetic nephropathy. Targeting the podocyte: novel treatments around the corner?**

David Long:

**Kidney lymphatics from development to disease: a new treatment target for diabetic nephropathy.**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## NEURODIAB Symposium:

### Challenges in the care of people with diabetic neuropathy: neuropathic pain and autonomic symptoms

Thursday, 22 September 2022, 10:30 – 12:15, Koch Hall

*Chair:* Vincenza Spallone, Italy and Peter Kempler, Hungary

*Speaker:* Francois Pouwer, Denmark:  
**Psychological aspects as therapeutic target: not just the pain but the whole person**

Aruna V. Sarma, USA:  
**Female sexual dysfunction: an overlooked, yet meaningful diabetes complication**

Christina Brock, Denmark:  
**Gastrointestinal neuropathy: the interplay between symptoms and dysmotility**

Artur Fedorowski, Sweden:  
**Orthostatic hypotension: what's new in causes, consequences, and management**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



## EGIR Symposium:

### Diabetes, comorbidities and the importance of inter-organ cross talk

Thursday, 22 September 2022, 13:00 - 15:00, Koch Hall

*Chair:* John Petrie and John Jones

*Speaker:* Stefano Romeo:  
**NAFLD and susceptibility to diabetes**

Paula Macedo:  
**NAFLD spectrum in diabetes settings: from clinical to molecular mechanisms**

Amalia Gastaldelli:  
**The importance of hepatic insulin clearance in NASH and diabetes**

Chiara Saponaro:  
**Liraglutide enhances insulin secretion only under hyperglycaemic conditions: good or bad news?**

Andrea Natali:  
**Fat, leptin and insulin clearance**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## INCSG Symposium:

### GLP-1 dual and multi-agonist peptides: which additional activities to dial in?

Thursday, 22 September 2022, 15:30 - 17:30, Koch Hall

*Chair:* Jens Juul Holst; Denmark and Fiona Gribble, UK

*Speaker:* Jens Juul Holst, Denmark and Fiona Gribble, UK:  
**Opening words**

EASD  
EFSD

GENERAL  
INFO

Matthias Tschöp, Germany:  
**Introduction to GLP-1 based dual and triple agonist peptides**

PROGRAMME

TUESDAY

Ricardo Samms, USA:  
**GLP-1 – GIP combination**

WEDNESDAY

Elizabeth Killion, USA:  
**GLP-1 - GIPR-Ab combination**

THURSDAY

FRIDAY

Phil Ambery, Sweden:  
**GLP-1 – glucagon combination**

SHORT ORAL  
DISCUSSIONS

Thomas Lutz, Switzerland:  
**GLP-1 with amylin combination**

PRESENTER  
INDEX

**General discussion**

Michael Nauck, Germany  
**Closing remarks**

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION



# Industry Sessions

on the occasion of the  
58<sup>th</sup> EASD Annual Meeting



[www.easd-industry.com](http://www.easd-industry.com)

Organised by



**INTERPLAN**  
media & service gmbh

## INDUSTRY SESSION SCHEDULE

Monday, 19 September 2022

	Bernard Hall	Golgi Hall	Nobel Hall	Doniach Hall
EASD EFSD	Novo Nordisk A/S 09:00 – 15:30			
GENERAL INFO		Sanofi 10:30 – 17:30		
PROGRAMME				
TUESDAY			MSD 13:00 – 14:00	Dexcom 13:00 – 14:00
WEDNESDAY				
THURSDAY				
FRIDAY			Science Collected 16:00 – 17:30	
SHORT ORAL DISCUSSIONS				

Tuesday, 20 September 2022

	Heding Hall	Jacobsohn Hall	Hirsch Hall	Hellerström Hall
PRESENTER INDEX				
SATELLITE SYMPOSIA				
INDUSTRY	Sanofi 18:00 – 18:30	Abbott 18:00 – 19:00	Novo Nordisk A/S 18:00 – 19:00	Boehringer Ingelheim & Eli Lilly and Company 18:00 – 19:00
PROGRAMME				
EXHIBITION				

## INDUSTRY SESSION SCHEDULE

Monday, 19 September 2022

Peltonen Hall	Heding Hall	Jacobsohn Hall
	Medical Learning Institute, Inc. and Endocrine Society 13:00 – 14:00	AstraZeneca 13:00 – 14:30
Abbott 14:30 – 16:00		
	Roche Diabetes Care 16:00 – 17:30	Nestlé Health Science 16:30 – 17:30

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Tuesday, 20 September 2022

Sutherland Hall	Yalow Hall	Cori Hall	Koch Hall
		Eli Lilly and Company* 08:15 – 08:25	
MSD 18:00 – 18:30	Ypsomed AG 18:00 – 19:00	Tandem Diabetes Care 18:00 – 19:00	Medtronic International Trading Sàrl 18:00 – 19:30

\*virtual only session

All stated times in CEST

Status August 2022, details are subject to change.

## INDUSTRY SESSION SCHEDULE

### Wednesday, 21 September 2022

	Heding Hall	Jacobsohn Hall	Hirsch Hall	Hellerström Hall
EASD EFSD				
GENERAL INFO				
PROGRAMME				
TUESDAY				
WEDNESDAY				
THURSDAY				
FRIDAY				
SHORT ORAL DISCUSSIONS				
PRESENTER INDEX				
SATELLITE SYMPOSIA				
INDUSTRY PROGRAMME				
EXHIBITION				

### Thursday, 22 September 2022

	Heding Hall	Jacobsohn Hall	Hirsch Hall	Hellerström Hall
EASD EFSD				
GENERAL INFO				
PROGRAMME				
TUESDAY				
WEDNESDAY				
THURSDAY				
FRIDAY				
SHORT ORAL DISCUSSIONS				
PRESENTER INDEX				
SATELLITE SYMPOSIA				
INDUSTRY PROGRAMME				
EXHIBITION				

### Friday, 23 September 2022

Hirsch Hall
PACE-CME 08:00 – 08:30

## INDUSTRY SESSION SCHEDULE

Wednesday, 21 September 2022

Sutherland Hall	Yalow Hall	Cori Hall
	Merck KGaA 07:30 – 08:30	Eli Lilly and Company* 08:15 – 08:25
	Ypsomed AG* 18:30 – 18:40	
Boehringer Ingelheim & Eli Lilly and Company 18:45 – 19:15		

Thursday, 22 September 2022

Sutherland Hall	Yalow Hall	Cori Hall
		Eli Lilly and Company* 08:15 – 08:25
Sciarc GmbH 18:30 – 19:00	Ascensia Diabetes Care Holdings AG 18:30 – 19:30	

Friday, 23 September 2022

Cori Hall
Eli Lilly and Company* 08:15 – 08:25

*\*virtual only session*

*All stated times in CEST  
Status August 2022, details are subject to change.*

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

## MEET THE EXPERT

## NETWORKING HUB (EXHIBITION HALL)

### Tuesday, 20 September 2022

09:45 – 10:15	Eli Lilly and Company
11:30 – 12:00	Novo Nordisk A/S
12:45 – 13:15	Madrigal Pharmaceuticals
14:00 – 14:30	Eli Lilly and Company
15:45 – 16:15	Medtronic International Trading Sàrl

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

### Wednesday, 21 September 2022

10:00 – 10:30	Diabeloop SA
11:45 – 12:15	Medtronic International Trading Sàrl
13:00 – 13:30	Abbott
14:15 – 14:45	Novo Nordisk A/S
16:00 – 16:30	Abbott

### Thursday, 22 September 2022

10:00 – 10:30	Eli Lilly and Company
11:45 – 12:15	Novo Nordisk A/S
13:00 – 13:30	SANOFI
14:15 – 14:45	Novo Nordisk A/S
16:00 – 16:30	Eli Lilly and Company

## INDUSTRY PODCASTS

- Boehringer Ingelheim & Eli Lilly and Company

All stated times in CEST  
Status August 2022, details are subject to change.

The detailed Industry Programme can be found on this website: [www.easd-industry.com](http://www.easd-industry.com).



MONDAY, 19 SEPTEMBER 2022

09:00 – 15:30  
BERNARD HALL

## DIABETES, OBESITY AND YOUR PATIENT: NEW PERSPECTIVES ON PERSON – CENTRED APPROACHES TO CARE

**Chairs:** Rachel Batterham (UK)  
Juris Meier (GER)

EASD  
EFSD

### Clinical challenges in obesity care: innovate, optimise and overcome

09:00 – 09:10 **Welcome**

Rachel Batterham (UK)  
Juris Meier (GER)

GENERAL  
INFO

09:10 – 09:25 **What does a holistic approach to diabetes and obesity care look like?**

Rachel Batterham (UK)  
Juris Meier (GER)

PROGRAMME

TUESDAY

09:25 – 09:40 **Overcoming clinical challenges – optimising outcomes for people with obesity**

Rachel Batterham (UK)

WEDNESDAY

09:40 – 10:00 **Bridging the gap: recent advances in the clinical management of obesity**

Sue Pedersen (CAN)  
Carel le Roux (IRL)  
Domenica Rubino (USA)

THURSDAY

FRIDAY

10:00 – 10:15 **Evolving therapeutics and approaches in obesity care**

Lee Kaplan (USA)

SHORT ORAL  
DISCUSSIONS

10:15 – 10:30 **Panel discussion**

All faculty

PRESENTER  
INDEX

10:30 – 10:45 **Coffee break**

### Reducing risks: the contribution of GLP-1RAs to holistic diabetes care

10:45 – 10:50 **Welcome back**

Rachel Batterham (UK)  
Juris Meier (GER)

SATELLITE  
SYMPOSIA

10:50 – 11:05 **Getting the full potential out of early diabetes treatment**

Tina Vilsbøll (DNK)

INDUSTRY

PROGRAMME

11:05 – 11:20 **IGNITE the fire: insights from RWE**

Vanita Aroda (USA)

EXHIBITION

11:20 – 11:35 **Beyond glycaemic control: the role of GLP-1RAs in lowering cardiovascular risk**

Ofri Mosenzon (ISR)

MONDAY, 19 SEPTEMBER 2022

09:00 – 15:30  
BERNARD HALL

11:35 – 11:50 **Taking a different perspective: a multidisciplinary approach in ASCVD and type 2 diabetes**  
Mikhail Kosiborod (USA)

EASD  
EFSD

11:50 – 12:10 **Panel discussion**  
All faculty

12:10 – 13:05 **Lunch break**

GENERAL  
INFO

**Diabetes management of the future:  
once-weekly insulin and digital health solutions**

13:05 – 13:10 **Welcome back**  
Rachel Batterham (UK)  
Juris Meier (GER)

PROGRAMME

TUESDAY

13:10 – 13:25 **Challenges and unmet needs in basal insulin therapy**  
Andreas Liebl (GER)

WEDNESDAY

13:25 – 13:40 **Advancing management with once-weekly insulin**  
Ildiko Lingvay (USA)

THURSDAY

13:40 – 13:55 **The bigger picture: once-weekly insulin and digital health solutions together**  
Julia Mader (AUT)

FRIDAY

13:55 – 14:20 **Panel discussion**  
All faculty

SHORT ORAL  
DISCUSSIONS

14:20 – 14:40 **Coffee break**

PRESENTER  
INDEX

**Future direction in long-term T1D care with cell therapy**

14:40 – 14:45 **Welcome back**  
Rachel Batterham (UK)  
Juris Meier (GER)

SATELLITE  
SYMPOSIA

14:45 – 15:00 **Cell therapy: innovation in treating chronic disease**  
Klara Owen (DNK)

INDUSTRY

15:00 – 15:20 **Going beyond glucose control:  
a new approach for T1D treatment**  
Klara Owen (DNK)  
Jacob Sten Petersen (DNK)  
Julia Mader (AUT)

PROGRAMME

15:20 – 15:30 **Meeting close**  
Rachel Batterham (UK)  
Juris Meier (GER)

EXHIBITION

Organised by: **Novo Nordisk A/S**

## PERSONALISING CHOICE IN DIABETES CARE: A SCIENTIFIC IMMERSIVE EXPERIENCE

This session will allow delegates to walk through an immersive experience. During this session, an esteemed faculty will explore the nature of personalisation in clinical care and how it can help to improve the lives of those with diabetes.

Those attending will move through different ‘zones’, where they will experience visually impactful presentations, as well as interactive faculty discussions and future-focussed talks. Themes will include insulin therapy; simplifying therapy through combination treatments; and personalisation through digital support.

### Tour 1

**10:30 – 10:40 Introduction: Navigating choice in care**  
Jeremy Pettus (USA)

**10:40 – 10:55 Evidence-based choices on the path to insulin**  
Alice Cheng (CAN)

**10:55 – 11:15 Simplifying experiences through choice**  
Francesco Giorgino (ITA), Leigh Perreault (USA)

**11:15 – 11:30 Choosing personalized care through digital solutions**  
Katharine Barnard (UK), William Polonsky (USA)

**11:30 – 11:45 Informing choices for Type 1 diabetes**  
Jeremy Pettus (USA), Richard Bergental (USA)

**11:45 – 12:00 Session close and networking: The choice is yours**

### Tour 2

**12:15 – 12:25 Introduction: Navigating choice in care**  
Jeremy Pettus (USA)

**12:25 – 12:40 Evidence-based choices on the path to insulin**  
Stewart Harris (CAN)

**12:40 – 13:00 Simplifying experiences through choice**  
Rory McCrimmon (UK), Alice Cheng (CAN)

**13:00 – 13:15 Choosing personalized care through digital solutions**  
Hayden Bosworth (USA), Frank Snoek (NLD)

**13:15 – 13:30 Informing choices for Type 1 diabetes**  
Jay Skyler (USA), Thomas Danne (GER)

**13:30 – 13:45 Session close and networking: The choice is yours**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

MONDAY, 19 SEPTEMBER 2022

10:30 – 17:30  
GOLGI HALL

**Tour 3**

**14:00 – 14:10 Introduction: Navigating choice in care**  
Jeremy Pettus (USA)

EASD  
EFSD

**14:10 – 14:25 Evidence-based choices on the path to insulin**  
Stewart Harris (CAN)

GENERAL  
INFO

**14:25 – 14:45 Simplifying experiences through choice**  
Rory McCrimmon (UK), Alice Cheng (CAN)

PROGRAMME

**14:45 – 15:00 Choosing personalized care through digital solutions**  
Katharine Barnard (UK), William Polonsky (USA)

TUESDAY

**15:00 – 15:15 Informing choices for Type 1 diabetes**  
Jay Skyler (USA), Thomas Danne (GER)

WEDNESDAY

**15:15 – 15:30 Session close and networking: The choice is yours**

**Tour 4**

**16:00 – 16:10 Introduction: Navigating choice in care**  
Jeremy Pettus (USA)

THURSDAY

**16:10 – 16:25 Evidence-based choices on the path to insulin**  
Alice Cheng (CAN)

FRIDAY

**16:25 – 16:45 Simplifying experiences through choice**  
Francesco Giorgino (ITA), Leigh Perreault (USA)

SHORT ORAL  
DISCUSSIONS

**16:45 – 17:00 Choosing personalized care through digital solutions**  
Hayden Bosworth (USA), Frank Snoek (NLD)

PRESENTER  
INDEX

**17:00 – 17:15 Informing choices for Type 1 diabetes**  
Jeremy Pettus (USA), Richard Bergental (USA)

SATELLITE  
SYMPOSIA

**17:15 – 17:30 Session close and networking: The choice is yours**

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Sanofi**

MONDAY, 19 SEPTEMBER 2022

13:00 – 14:00  
NOBEL HALL

**EXPANDING OUR CLINICAL UNDERSTANDING:  
NEW INSIGHTS FROM VERTIS CV FOR PATIENTS WITH  
DIABETES AND CARDIOVASCULAR DISEASE**

- 13:00 – 13:05 Opening Remarks
- 13:05 – 13:15 New Insights on Heart Failure from the VERTIS CV Study form a Cardiologist's View
- 13:15 – 13:20 Q & A
- 13:20 – 13:35 New Insights re: Incident Obstructive Sleep Apnea and SGLT2is: An Analysis from the VERTIS CV Trial
- 13:35 – 13:40 Q & A
- 13:40 – 13:55 What This Latest Information from VERTIS CV Means For Our Patients:  
A Cross-Specialty Faculty Roundtable Discussion
- 13:55 – 14:00 Closing Remarks

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **MSD**

MONDAY, 19 SEPTEMBER 2022

13:00 – 14:00  
DONIACH HALL

**DEXCOM rtCGM: THE LEADING PORTFOLIO  
OF PRODUCTS TO MEET HCP AND PATIENTS' NEEDS**

EASD  
EFSD

13:00 – 13:05 **Welcome & Introduction**

GENERAL  
INFO

13:05 – 13:25 **Early Experience with Dexcom ONE:  
Simplicity, Performance & Cost-Centricity**  
Jackie Elliott (UK)

PROGRAMME

13:25 – 13:40 **Clinical and Practical Experience with Dexcom G7:  
New Accuracy Data & Feature Utilization**  
Hood Thabit (UK)

TUESDAY

WEDNESDAY

13:40 – 13:55 **Dexcom G6: The Interoperable and Connected rtCGM  
Solution For Your Basal: Bolus Treated Patients**  
Thorsten Siegmund (GER)

THURSDAY

13:55 – 14:00 **Q&A**

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Dexcom**

MONDAY, 19 SEPTEMBER 2022

13:00 – 14:00  
HEDING HALL

**POTENTIAL BENEFITS OF INCRETINS BEYOND  
GLYCEMIC CONTROL IN T2D**

- 13:00 – 13:15 Show Me the Data:**  
**Clinical Trial Refresher | New Evidence | Potential Benefits**  
Michael A. Nauck (GER)
- 13:15 – 13:25 Questions and answers**  
Michael A. Nauck (GER)
- 13:25 – 13:45 Case Study Central:**  
**Clinical Implications | Safety/Tolerability, Dose Escalation,  
Side Effect Management**  
Bernhard Ludvik (AUT)  
Juan Pablo Frias (USA)
- 13:45 – 13:50 Questions and answers**  
Bernhard Ludvik (AUT)  
Juan Pablo Frias (USA)
- 13:50 – 14:00 Ask Me Anything:**  
**Incretins Edition**  
All faculty

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by:** **Provided by Medical Learning Institute, Inc. and  
Endocrine Society supported by an educational grant  
from Eli Lilly and Company**

MONDAY, 19 SEPTEMBER 2022

13:00 – 14:30  
JACOBSON HALL

## SGLT2 INHIBITORS – THE SCIENCE BEHIND ORGAN BENEFITS

EASD  
EFSD

**Chair:** Jiten Vora (UK)  
**Co-chair:** Nayyar Iqbal (USA)

GENERAL  
INFO

**13:00 – 13:05 Welcome and introductions**  
Jiten Vora (UK)  
Nayyar Iqbal (USA)  
Elisabeth Björk (SWE)

PROGRAMME

TUESDAY

**13:05 – 13:15 Do metabolic changes explain organ benefits?**  
Jiten Vora (UK)

WEDNESDAY

**13:15 – 13:45 Are mechanisms of SGLT2 inhibition the same across the EF spectrum?**  
Lars Lund (SWE)

THURSDAY

FRIDAY

**13:45 – 14:05 The science underlying renal benefits**  
Volker Vallon (USA)

SHORT ORAL  
DISCUSSIONS

**14:05 – 14:25 Panel discussion**  
Jiten Vora (UK)  
Lars Lund (SWE)  
Volker Vallon (USA)

PRESENTER  
INDEX

**14:25 – 14:30 Closing remarks**  
Jiten Vora (UK)  
Regina Fritsche-Danielson (SWE)

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: [AstraZeneca](#)



MONDAY, 19 SEPTEMBER 2022

14:30 – 16:00  
PELTONEN HALL

**IMPLICATIONS AND TRANSLATION OF RECENT TECHNOLOGICAL  
ADVANCES IN FLASH-BASED GLUCOSE MONITORING TO THE  
FRONT LINES OF DIABETES MANAGEMENT**

**Chair:** Katarina Eeg-Olofsson (SWE)

**14:30 – 14:40 The Expanding Foundational Role and Practical Aspects of Deploying Flash-Based Technology to Optimize Metabolic Health Metrics and Clinical Outcomes in Persons with Diabetes**  
Katarina Eeg-Olofsson (SWE)

**14:40 – 15:00 The Evolving Mandate and Real World, Evidentiary Basis for Deploying Flash-Based Glycemic Monitoring Across the Full Spectrum of Diabetes Care**  
Emma Wilmot (UK)

**15:00 – 15:20 How Can CGM Technology and Ambulatory Glucose Profile (AGP)-Driven Care Optimize Real World, Clinical Outcomes in Persons Across the Full Spectrum of Diabetes?**  
Ramzi Ajjan (UK)

**15:20 – 15:50 Translating Guidelines, Clinical Trials and Meta-Analysis Trials to Guide Practical Aspects of Glycemic Management: Patient Case Management Sessions**  
Katarina Eeg-Olofsson (SWE)

**15:50 – 16:00 Question and Answer Session**  
Katarina Eeg-Olofsson (SWE)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Abbott**

MONDAY, 19 SEPTEMBER 2022

16:00 – 17:30  
NOBEL HALL

**SGLT2 INHIBITION: LOOKING AT THE BIGGER PICTURE  
THE FABLE OF THE FOUR DOCTORS AND THE ELEPHANT**

EASD  
EFSD

**Chair:** Silvio Inzucchi (USA)

GENERAL  
INFO

**16:00 – 16:10 Welcome and Introductions**  
Silvio Inzucchi (USA)

PROGRAMME

**16:10 – 16:25 Looking beyond glucose – cardiorenal risk**  
Paola Fioretto (ITA)

TUESDAY

**16:25 – 16:45 Don't wait to protect the kidneys!**  
Hiddo Lambers Heerspink (NLD)

WEDNESDAY

**16:45 – 16:55 Don't forget about the heart!**  
Silvio Inzucchi (USA)

THURSDAY

**16:55 – 17:05 Not my patient, our patient**  
Samuel Seidu (UK)

FRIDAY

**17:05 – 17:25 Panel discussion and Q&A**  
All faculty

SHORT ORAL  
DISCUSSIONS

**17:25 – 17:30 Closing remarks**  
Silvio Inzucchi (USA)

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by:** Education provider – Science Collected // supported by  
an unrestricted educational grant from AstraZeneca

MONDAY, 19 SEPTEMBER 2022

16:00 – 17:30  
HEDING HALL

**THE GLOBAL DIABETES BURDEN CALLS FOR A HOLISTIC  
APPROACH TO ADVANCE PATIENT EMPOWERMENT  
AND ACCESS TO INNOVATION**

**Chairs:** Partha Kar (UK)  
Rolf Hinzmänn (GER)

**16:00 – 16:05 Introduction**  
Partha Kar (UK)  
Rolf Hinzmänn (GER)

**16:05 – 16:30 Evolving technologies and therapies:  
For the many or for the few?**  
Partha Kar (UK)

**16:30 – 16:55 Heart failure: a major but underappreciated complication  
– new ADA guidance**  
Rodica Pop-Busui (USA)

**16:55 – 17:20 Enhancing care for patients with diabetic eye disease:  
post-pandemic landscape and innovation**  
Praveen Patel (UK)

**17:20 – 17:30 Discussion & Closing**  
All faculty

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Roche Diabetes Care**

MONDAY, 19 SEPTEMBER 2022

16:30 – 17:30  
JACOBSON HALL

**IMPLICATIONS OF ELEVATED POSTPRANDIAL GLUCOSE AND  
NUTRITIONAL APPROACHES FOR POSTPRANDIAL GLUCOSE  
MANAGEMENT WITH A FOCUS ON WHEY PROTEINS**

EASD  
EFSD

**Chair:** Ian J. Neeland (USA)

GENERAL  
INFO

**16:30 – 16:35 Welcome and Introductions**  
Ian J. Neeland (USA)

PROGRAMME

**16:35 – 16:55 Implications of Elevated Postprandial Glucose**  
John Sievenpiper (CAN)

TUESDAY

**16:55 – 17:15 Nutritional Approaches for Postprandial Glucose  
Management with a Focus on Whey Proteins**  
Bo Ahrén (SWE)

WEDNESDAY

THURSDAY

**17:15 – 17:30 Q & A and Closing Remarks**

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Nestlé Health Science**

TUESDAY, 20 SEPTEMBER 2022

08:15 – 08:25

VIRTUAL ONLY: CORI HALL

AGENDA COMING SOON

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: [Eli Lilly and Company](#)

TUESDAY, 20 SEPTEMBER 2022

09:45 – 10:15  
NETWORKING HUB

## IMPORTANCE OF WEIGHT MANAGEMENT IN T2D

EASD  
EFSD

09:45 – 10:15 **Importance of weight management in T2D**

**Followed by discussion**

Alice Cheng (CAN)

Rachel Batterham (UK)

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

TUESDAY, 20 SEPTEMBER 2022

11:30 – 12:00  
NETWORKING HUB

**PASSING THE BATON:  
SYNCHRONISING INTERDISCIPLINARY CARE IN NASH**

- 11:30 – 11:32 Introduction**  
A. G. (Onno) Holleboom (NLD)
- 11:32 – 11:40 Living with NASH: a marathon, not a sprint**  
A. G. (Onno) Holleboom (NLD)
- 11:40 – 11:50 If you want to go far, go together – a comparison between individual and multi-disciplinary management**  
A. G. (Onno) Holleboom (NLD)  
Emmanuel Tsochatzis (UK)
- 11:50 – 11:58 Crossing the finishing line: successful transition to effective NASH management**  
Emmanuel Tsochatzis (UK)
- 11:58 – 12:00 Summary and conclusion**  
A. G. (Onno) Holleboom (NLD)  
Emmanuel Tsochatzis (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Novo Nordisk A/S**

TUESDAY, 20 SEPTEMBER 2022

12:45 – 13:15  
NETWORKING HUB

**NON-ALCOHOLIC FATTY LIVER AND T2DM –  
THE INTERSECTION OF ENDOCRINOLOGY AND HEPATOLOGY**

EASD  
EFSD

**Faculty:** Jörn Schattenberg (GER)  
Cyrielle Caussy (FRA)

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: Madrigal Pharmaceuticals**



TUESDAY, 20 SEPTEMBER 2022

14:00 – 14:30  
NETWORKING HUB

**GLYCEMIC TARGETS REVISITED:  
WHAT HBA1C GOALS SHOULD BE FOLLOWED IN 2022**

**14:00 – 14:30 Glycemic targets revisited:  
what Hba1c goals should be followed in 2022  
Followed by discussion**  
Tina Vilsbøll (DNK)  
Juris Jendrik Meier (GER)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

TUESDAY, 20 SEPTEMBER 2022

15:45 – 16:15  
NETWORKING HUB

**HOW SMART INSULIN PENS ARE TRANSFORMING MDI THERAPY:  
PERSPECTIVES FROM OUR R&D CLINICAL EXPERT**

EASD  
EFSD

**Chair:** Anna-Rea Laubscher (CHE)

GENERAL  
INFO

**15:45 – 16:15** **How Smart Insulin Pens are Transforming MDI therapy:  
Perspectives from our R&D Clinical Expert**  
Madison Smith (USA)

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by:** [Medtronic International Trading Sàrl](#)

TUESDAY, 20 SEPTEMBER 2022

18:00 – 18:30  
HEDING HALL

**LET'S TALK ABOUT CGM EVIDENCE: USING BASAL INSULINS  
IN T1D IN DAILY LIFE AND WHEN EXERCISING**

**18:00 – 18:20 Expert Discussion**  
Tadej Battelino (SVN)  
Othmar Moser (GER)

**18:20 – 18:30 Q&A**  
Tadej Battelino (SVN)  
Othmar Moser (GER)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Sanofi**

TUESDAY, 20 SEPTEMBER 2022

18:00 – 19:00  
JACOBSON HALL

**FREESTYLE: ONE TECH GENERATION AHEAD TO IMPROVE  
YOUR IMPACT IN DIABETES CARE**

- 18:00 – 18:05** Welcome & Introduction  
Magnus Löndahl
- 18:05 – 18:20** Next-Level STANDARD OF CARE for Your Practice
- 18:20 – 18:30** Next-Level INNOVATION for Your Practice
- 18:30 – 18:45** Next-Level CONNECTIVITY for Your Practice
- 18:45 – 19:00** Q&A  
All Faculty

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Abbott**

TUESDAY, 20 SEPTEMBER 2022

18:00 - 19:00  
HIRSCH HALL

**TARGETING CV RISK FACTORS WITH GLP-1 RAS  
IN PEOPLE WITH OBESITY**

**Chair:** Michael Lincoff (USA)

**18:00 – 18:05 Welcome and introduction**  
Michael Lincoff (USA)

**18:05 – 18:15 CV risk: What's weight got to do with it?**  
John Deanfield (UK)

**18:15 – 18:25 Improvements in CV risk factors: STEP by STEP**  
Benjamin M. Scirica (USA)

**18:25 – 18:35 SELECT and STEP-HFpEF: New horizons**  
Michael Lincoff (USA)

**18:35 – 18:55 Panel discussion**  
All speakers

**18:55 – 19:00 Closing**  
Michael Lincoff (USA)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: Novo Nordisk A/S**

TUESDAY, 20 SEPTEMBER 2022

18:00 – 19:00  
HELLERSTRÖM HALL

**DON'T WAIT FOR THE FUTURE:  
BE PROACTIVE FOR YOUR PATIENTS WITH T2D NOW!**

EASD  
EFSD

**Chair:** John Buse (USA)

GENERAL  
INFO

**18:00 – 18:05 Welcome and introduction**  
John Buse (USA)

PROGRAMME

**18:05 – 18:50 Discussion between four experts**  
John Buse (USA)  
David Cherney (CAN)  
Xavier Cos (ESP)  
Shelley Zieroth (CAN)

TUESDAY

WEDNESDAY

**18:50 – 19:00 Audience Q&A, summary and close**  
All faculty  
moderated by John Buse (USA)

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: [Boehringer Ingelheim & Eli Lilly and Company](#)**

TUESDAY, 20 SEPTEMBER 2022

18:00 – 18:30  
SUTHERLAND HALL

**CROSS-TALK CONTINUED:  
THE HEART, KIDNEYS & THE ENDOCRINE SYSTEM –  
UNDERSTANDING FOR TYPE 2 DIABETES AND CARDIORENAL DISEASE**

**Chair:** Samuel Dagogo-Jack (USA)

**18:00 – 18:05 Opening Remarks**  
Samuel Dagogo-Jack (USA)

**18:05 – 18:20 Cross-talk between the Heart, Kidneys & the Endocrine System – Latest Understanding for Type 2 Diabetes and Cardiorenal Disease**  
Samuel Dagogo-Jack (USA)  
Kim Connelly (CAN)  
Per-Henrik Groop (FIN)

**18:20 – 18:28 Q & A**  
All faculty

**18:28 – 18:30 Closing Remarks**  
Samuel Dagogo-Jack (USA)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **MSD**

**TUESDAY, 20 SEPTEMBER 2022**

**18:00 – 19:00  
YALOW HALL**

**AGENDA COMING SOON**

**EASD  
EFSD**

**GENERAL  
INFO**

**PROGRAMME**

**TUESDAY**

**WEDNESDAY**

**THURSDAY**

**FRIDAY**

**SHORT ORAL  
DISCUSSIONS**

**PRESENTER  
INDEX**

**SATELLITE  
SYMPOSIA**

**INDUSTRY**

**PROGRAMME**

**EXHIBITION**

**Organised by: [Ypsomed AG](#)**



TUESDAY, 20 SEPTEMBER 2022

18:00 – 19:00  
CORI HALL

**MORE MOMENTS THAT COUNT – USING THE TANDEM  
SYSTEM TO DELIVER IMMEDIATE & SUSTAINED RESULTS  
FOR YOUR PATIENTS**

**Optimizing the t:Slim X2 with Control-IQ Technology for  
Patients**

Peter Adolfsson

**Real-World Patient Outcomes with Control-IQ  
Technology**

Jordan Pinsker

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Tandem Diabetes Care**

TUESDAY, 20 SEPTEMBER 2022

18:00 – 19:30  
KOCH HALL

## EXPANDING THE USE OF TECHNOLOGY FOR TREATMENT OF DIABETES: A DEEP DIVE INTO THE OLDER POPULATION

EASD  
EFSD

**Chair:** Johan Jendle (SWE)  
Robert Vigersky (USA)

GENERAL  
INFO

**18:00 – 18:10 Current state of diabetes in the older people**  
Johan Jendle (SWE)

PROGRAMME

TUESDAY

**18:10 – 18:25 The association between hyperglycemia and cognitive, physical & functional capacity amongst older people with diabetes**

Tali Cukierman-Yaffe (ISR)

WEDNESDAY

**18:25 – 18:40 Hypoglycemia in older people with diabetes**  
Simon Heller (UK)

THURSDAY

**18:40 – 18:55 Hybrid closed-loop therapy in older people with type 1 diabetes: Results from the ORACL study**  
David O'Neal (AUS)

FRIDAY

SHORT ORAL  
DISCUSSIONS

**18:55 – 19:10 The MiniMed 780G system: real-world evidence in users aged 55 and above**  
Ohad Cohen (ISR)

PRESENTER  
INDEX

**19:10 – 19:30 Summary and Q&A**  
Robert Vigersky (USA)

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: [Medtronic International Trading Sàrl](#)

WEDNESDAY, 21 SEPTEMBER 2022

07:30 – 08:30  
YALOW HALL

## METFORMIN 100: PAST, PRESENT AND FUTURE

- Chair:** Ian Campbell (UK)
- 07:30 – 07:35** **One century with metformin**  
Ian Campbell (UK)
- 07:35 – 07:53** **Metformin in Diabetes Complications – Cardiovascular and Renal effects**  
Juliana Chan (HKG)
- 07:53 – 08:10** **Metformin in Diabetes Prevention – the Chinese Diabetes Prevention Program**  
Guangwei Li (CHN)
- 08:10 – 08:27** **Metformin in Aging Complications – Cognitive impairment & Alzheimer's disease**  
Jose Luchsinger (USA)
- 08:27 – 08:30** **A new century for metformin – wrap-up and close out**  
Ian Campbell (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Merck KGaA**

WEDNESDAY, 21 SEPTEMBER 2022

08:15 – 08:25  
VIRTUAL ONLY: CORI HALL

**WEIGHT MANAGEMENT AS A PRIMARY TREATMENT GOAL  
FOR TYPE 2 DIABETES:  
TIME TO REFRAME THE CONVERSATION**

EASD  
EFSD

GENERAL  
INFO

Ildiko Lingvay (USA)

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

WEDNESDAY, 21 SEPTEMBER 2022

10:00 – 10:30  
NETWORKING HUB

**SUPPORTING PATIENT EMPOWERMENT AND IMPROVING  
GLYCEMIC OUTCOMES WITH CONNECTED PENS AND  
ARTIFICIAL INTELLIGENCE. FROM DBLG1 TO DBL4PEN**

**Chair:** Erik Huneker (FRA)

**10:00 – 10:05 Introduction**  
Erik Huneker (FRA)

**10:05 – 10:15 How CGMs & connected pens are improving patient care**  
Lutz Heinemann (GER)

**10:15 – 10:25 “DBL-4pen” first simulator results & our clinical validation program**  
Pierre-Yves Benhamou (FRA)

**10:25 – 10:30 Q&A**  
All faculty

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Diabeloop SA**

WEDNESDAY, 21 SEPTEMBER 2022

11:45 – 12:15  
NETWORKING HUB

## SUCCESSFUL INITIATION OF THE MINIMED 780G SYSTEM

EASD  
EFSD

**Chair:** Ohad Cohen (ISR)

GENERAL  
INFO

**11:45 – 11:55 Introducing the MiniMed 780G system**  
Ohad Cohen (ISR)

PROGRAMME

**11:55 – 12:15 Successful initiation of the MiniMed 780G system:  
practical case**  
Goran Petrovski (QAT)

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by:** [Medtronic International Trading Sàrl](#)

WEDNESDAY, 21 SEPTEMBER 2022

13:00 – 13:30  
NETWORKING HUB

**TIME TO MOVE BEYOND A1C WITH TIME IN RANGE –  
AN EXPERT DEBATE ON THE NEXT-LEVEL STANDARD OF  
DIABETES CARE**

13:00 – 13:15 Key challenges with the Gold Standard A1c in diabetes management in the daily practice

13:15 – 13:30 How can TIR empower my diabetes team in the daily practice?

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Abbott**

WEDNESDAY, 21 SEPTEMBER 2022

14:15 – 14:45  
NETWORKING HUB

## CONNECTED FOR CARE: DIGITAL HEALTH – MEET THE EXPERT

EASD  
EFSD

**Chair:** Thomas Danne (GER)

GENERAL  
INFO

**14:15 – 14:20 Welcome**  
Thomas Danne (GER)

PROGRAMME

TUESDAY

**14:20 – 14:25 Digital health: Current Reality and Challenges  
(Unmet needs in glycaemic control: The role of smart  
devices)**  
Thomas Pieber (AUT)

WEDNESDAY

**14:25 – 14:30 Smart digital solutions: Integrating therapy and care for  
people with diabetes  
(Smart insulin pens: advancing digital care for diabetes)**  
Peter Adolfsson (SWE)

THURSDAY

FRIDAY

**14:30 – 14:45 Q&A**  
All faculty

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Novo Nordisk A/S**



WEDNESDAY, 21 SEPTEMBER 2022

16:00 – 16:30  
NETWORKING HUB

## UNDERSTANDING THE IMPORTANCE OF INDIVIDUALIZING GLYCEMIC TARGETS – AN EXPERT DEBATE ON INDIVIDUALIZED TARGET RANGES AND PERCENTAGES

16:00 – 16:15 How to individualize Time in Range goals of my patients

16:15 – 16:30 How to individualize my patients' percentage goals of their personal target ranges

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Abbott**

WEDNESDAY, 21 SEPTEMBER 2022

18:30 – 18:40

VIRTUAL ONLY: YALOW HALL

## AGENDA COMING SOON

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: [Ypsomed AG](#)

WEDNESDAY, 21 SEPTEMBER 2022

18:45 – 19:15  
HEDING HALL

**ADDRESSING BOTH FASTING AND POST-PRANDIAL  
HYPERGLYCEMIA – A SIMPLE KEY TO BETTER GLYCEMIC  
CONTROL IN DIABETES MANAGEMENT?**

**Chair:** Rory McCrimmon (UK)

**18:45 – 18:50 Timely Treatment Intensification – the Key to Better Glycemic Control**  
Rory McCrimmon (UK)

**18:50 – 19:00 Complex Insulin Regimens versus Fixed-Ratio Combinations in Clinical Practice**  
Robert Ritzel (GER)

**19:00 – 19:10 Where do GLP-1 RA/Basal Insulin FRCs fit into the Diabetes Treatment Algorithm?**  
Roopa Mehta (MEX)

**19:10 – 19:15 Panel Discussion**  
Rory McCrimmon (UK)  
Roopa Mehta (MEX)  
Robert Ritzel (GER)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: Medscape Education Global // supported by an independent educational grant from Sanofi**

WEDNESDAY, 21 SEPTEMBER 2022

18:45 – 20:15  
JACOBSON HALL

**FASTER\* RAPID-ACTING INSULIN AND SMART PENS:  
THE FUTURE OF MULTIPLE DAILY INJECTION THERAPY**

EASD  
EFSD

**Chair:** Partha Kar (UK)

GENERAL  
INFO

**18:45 – 18:55 Welcome and Introductions**

Partha Kar (UK)

PROGRAMME

TUESDAY

**18:55 – 19:25 Lyumjev® (insulin lispro): A \*Faster Rapid-Acting Insulin**

Andreas Liebl (GER)

WEDNESDAY

**19:25 – 19:45 Tempo™: A Connected Pen System**

Pratik Choudhary (UK)

THURSDAY

**19:45 – 20:05 Practical Application of Lyumjev® and Tempo™**

Pratik Choudhary (UK)

Andreas Liebl (GER)

FRIDAY

**20:05 – 20:15 Q&A and Closing Remarks**

Partha Kar (UK)

SHORT ORAL  
DISCUSSIONS

\*a faster absorption and action than Humalog®

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: Eli Lilly and Company**

WEDNESDAY, 21 SEPTEMBER 2022

18:45 – 20:15  
HIRSCH HALL

**PATIENT-CENTRIC TREATMENT OF TYPE 2 DIABETES –  
WHERE AND HOW DOES SEMAGLUTIDE FIT?**

- Chair:** Alice Cheng (CAN)
- 18:45 – 18:48 Welcome and introduction**  
Alice Cheng (CAN)
- 18:48 – 19:01 Early control matters**  
Kamlesh Khunti (UK)
- 19:01 – 19:14 A patient centered approach with semaglutide**  
John Wilding (UK)
- 19:14 – 19:27 Treatment of ASCVD in T2D**  
Kim Conelly (CAN)
- 19:27 – 19:40 Managing T2D later in the disease journey**  
Filip Knop (DNK)
- 19:40 – 19:53 Time to focus on optimal utilization of GLP-1 RAs in clinical practice**  
Tina Vilsbøll (DNK)
- 19:53 – 20:13 Panel Discussion and Q&A**  
All speakers
- 20:13 – 20:15 Closing remarks**  
Alice Cheng (CAN)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Novo Nordisk A/S**

WEDNESDAY, 21 SEPTEMBER 2022

18:45 – 19:45  
HELLERSTRÖM HALL

## NONSTEROIDAL MRAS IN CKD AND T2D: CURRENT KNOWLEDGE AND PRACTICAL INSIGHTS

EASD  
EFSD

**Chair:** Peter Rossing (DNK)

GENERAL  
INFO

**18:45 – 18:50 Welcome and introductions**  
Peter Rossing (DNK)

PROGRAMME

TUESDAY

**18:50 – 19:00 The importance of guidelines for identification and treatment of CKD in T2D: Where are we now**  
Janet McGill (USA)

WEDNESDAY

**19:00 – 19:20 The cardiorenal benefits of nonsteroidal MRAs: Insights from across the CKD in T2D patient spectrum**  
Peter Rossing (DNK)

THURSDAY

**19:20 – 19:35 Finerenone in clinical practice: Approaches for optimising the patient experience**  
Magnus Löndahl (SWE)

FRIDAY

SHORT ORAL  
DISCUSSIONS

**19:35 – 19:45 Q&A and close**  
Peter Rossing (DNK)

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Bayer AG**

WEDNESDAY, 21 SEPTEMBER 2022

18:45 – 19:15  
SUTHERLAND HALL

**BEYOND GLYCAEMIC CONTROL:  
HOW FAR HAVE WE COME?**

- Chair:** Jiten Vora (UK)
- 18:45 – 18:50 Welcome and introduction**  
Jiten Vora (UK)
- 18:50 – 19:10 Discussion between two experts**  
Jiten Vora (UK)  
Sarah Davies (UK)
- 19:10 – 19:15 Audience Q&A, summary and close**  
All faculty  
moderated by Jiten Vora (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Boehringer Ingelheim & Eli Lilly and Company**

THURSDAY, 22 SEPTEMBER 2022

08:15 – 08:25  
VIRTUAL ONLY: CORI HALL

**AGENDA COMING SOON**

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**



THURSDAY, 22 SEPTEMBER 2022

10:00 – 10:30  
NETWORKING HUB

**BENEFITS AND DRAWBACKS OF EARLY  
EFFECTIVE INTERVENTION IN T2D**

10:00 – 10:30 **Benefits and drawbacks of early effective intervention in T2D**  
**Followed by discussion**  
Partha Kar (UK)  
Kamlesh Khunti (UK)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

THURSDAY, 22 SEPTEMBER 2022

11:45 – 12:15  
NETWORKING HUB

**WHERE AND HOW DOES SEMAGLUTIDE FIT IN THE TREATMENT  
OF TYPE 2 DIABETES? – A CASE-BASED DISCUSSION**

EASD  
EFSD

**Chair:** Filip Knop (DNK)

GENERAL  
INFO

**11:45 – 11:50 Welcome and Introduction**  
**Overview of semaglutide, PIONEER and SUSTAIN trials**  
Filip Knop (DNK)

PROGRAMME

TUESDAY

**11:50 – 12:00 Case based discussions on clinical evidence**  
Filip Knop (DNK)  
Melanie Davies (UK)

WEDNESDAY

**12:00 – 12:05 Patient-centric practicalities**  
Filip Knop (DNK)  
Melanie Davies (UK)

THURSDAY

FRIDAY

**12:05 – 12:15 Panel discussion, Q&A and closing remarks**  
Filip Knop (DNK)  
Melanie Davies (UK)

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

**Organised by: Novo Nordisk A/S**

THURSDAY, 22 SEPTEMBER 2022

13:00 – 13:30  
NETWORKING HUB

AGENDA COMING SOON

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Sanofi**

THURSDAY, 22 SEPTEMBER 2022

14:15 – 14:45  
NETWORKING HUB

## ONCE WEEKLY INSULIN: REINVENTING THE INSULIN EXPERIENCE

EASD  
EFSD

**Chair:** Tina Vilsbøll (DNK)

GENERAL  
INFO

**14:15 – 14:17 First phase 3 evidence for a once-weekly insulin**  
Stephen Bain (UK)

PROGRAMME

**14:17 – 14:27 First phase 3 evidence for a once-weekly insulin**  
Athena Philis-Tsimikas (USA)

TUESDAY

**14:27 – 14:45 Advancing diabetes management with once-weekly insulin**

WEDNESDAY

**Panel discussion and Q&A**  
All faculty

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Novo Nordisk A/S**

THURSDAY, 22 SEPTEMBER 2022

16:00 – 16:30  
NETWORKING HUB

AGENDA COMING SOON

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

THURSDAY, 22 SEPTEMBER 2022

18:30 – 19:30  
HEDING HALL

**NONSTEROIDAL MRAS IN PATIENTS WITH CKD AND T2D:  
WHAT IS NEXT FOR FINERENONE?**

EASD  
EFSD

**Chair:** Samy Hadjadj (FRA)

GENERAL  
INFO

**18:30 – 18:35 Welcome and introductions**  
Samy Hadjadj (FRA)

PROGRAMME

**18:35 – 19:00 Optimising treatment of CKD associated with T2D:  
Time for a combination therapy approach?**  
Hiddo Heerspink (NLD)

TUESDAY

**19:00 – 19:10 Nonsteroidal MRAs beyond CKD in T2D:  
New paths to uncover**  
Paola Fioretto (ITA)

WEDNESDAY

THURSDAY

**19:10 – 19:20 Finerenone in routine clinical practice:  
Looking beyond the data from pivotal trials**  
Christoph Wanner (GER)

FRIDAY

**19:20 – 19:30 Q&A and close**  
Samy Hadjadj (FRA)

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Bayer AG**

THURSDAY, 22 SEPTEMBER 2022

18:30 – 20:00  
JACOBSON HALL

**THE EVOLUTION OF OMNIPOD®:  
IMPROVED GLYCAEMIC CONTROL WITH EXPANDING  
TECHNOLOGICAL SOLUTIONS FOR TYPE 1 DIABETES**

**Chair:** Eric Renard (FRA)

**18:30 – 19:00 Freedom of Choice & Diabetes Management with the Omnipod DASH® System**  
Emma Wilmot (UK)

**19:00 – 19:30 Omnipod® 5 – A Tubeless Automated Insulin Delivery System: Clinical Experience & Evidence to Date**  
Gregory Forlenza (USA)

**19:30 – 20:00 Advanced Data and Future Directions with the Omnipod® 5 System**  
Eric Renard (FRA)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Insulet**

THURSDAY, 22 SEPTEMBER 2022

18:30 – 20:00  
HIRSCH HALL

## CLASSROOM TO CLINIC™: UPDATES AND BEST PRACTICE FOR GLP-1 RAS IN TYPE 2 DIABETES

EASD  
EFSD

**Chair:** John Buse (USA)

**18:30 – 18:35** **Welcome, pre-symposium test & chair's opening remarks**  
John Buse (USA)

GENERAL  
INFO

**18:35 – 18:45** **True or False quiz: GLP-1 RA general knowledge**  
Tina Vilsbøll (DNK)  
John Wilding (UK)

PROGRAMME

TUESDAY

**18:45 – 19:00** **Multifactorial effects of GLP-1 RAs: A review of the latest evidence**  
John Wilding (UK)

WEDNESDAY

THURSDAY

**19:00 – 19:05** **Q&A**  
All faculty

FRIDAY

**19:05 – 19:15** **Guideline approaches to T2D: how much has changed?**  
Tina Vilsbøll (DNK)

SHORT ORAL  
DISCUSSIONS

**19:15 – 19:20** **Q&A**  
All faculty

PRESENTER  
INDEX

**19:20 – 19:40** **Case studies: GLP-1 RAs in practice**  
Tina Vilsbøll (DNK)  
John Wilding (UK)

SATELLITE  
SYMPOSIA

**19:40 – 19:50** **Q&A**  
All faculty

INDUSTRY

**19:50 – 19:55** **Using Classroom to Clinic™**  
John Buse (USA)

PROGRAMME

EXHIBITION

**19:55 – 20:00** **Chair's close, post-test and commitment to change**  
John Buse (USA)

**Organised by:** [Diabetes Knowledge into Practice™](#)



THURSDAY, 22 SEPTEMBER 2022

18:30 – 19:00  
HELLERSTRÖM HALL

## EVA PHARMA SYMPOSIUM

**Chair:** Péter Kempler (HUN)

**18:30 – 18:35 Introduction & Welcoming by EVA Pharma**

Riad Armanious (EGY)

**18:35 – 18:50 Diabetic Neuroapthy, A therapeutic approach from pathogenetic prospective**

Dan Ziegler (GER)

**18:50 – 19:00 Q&A and Closing Remarks**

Péter Kempler (HUN)

Dan Ziegler (GER)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **EVA PHARMA**

THURSDAY, 22 SEPTEMBER 2022

18:30 – 19:00  
SUTHERLAND HALL

## EXCELLENCE IN TREATMENT OF CHRONIC KIDNEY DISEASE WITH SGLT-2 INHIBITORS

EASD  
EFSD

**Chair:** Per-Henrik Groop (FIN)

GENERAL  
INFO

**18:30 – 18:35 Welcome & Introduction**  
Per-Henrik Groop (FIN)

PROGRAMME

TUESDAY

**18:35 – 18:45 Removing barriers to the treatment of CKD**  
Jennifer Green (USA)

WEDNESDAY

**18:45 – 18:55 New paths to improve clinical results in CKD with SGLT2-inhibitors**  
Peter Rossing (DNK)

THURSDAY

**18:55 – 19:00 Discussion & Closure**  
Per-Henrik Groop (FIN)

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Sciarc GmbH // supported by an educational grant from Boehringer Ingelheim & Eli Lilly and Company**

THURSDAY, 22 SEPTEMBER 2022

18:30 – 19:30  
YALOW HALL

**CGM IN THE ADA / EASD CONSENSUS REPORT AND  
EVERSENSE E3 CGM IN CLINICAL PRACTICE**

- 18:30 – 18:50** **CGM in ADA / EASD Consensus report. Use of Eversense in diabetes treatment.**  
Tomasz Klupa (POL)
- 18:50 – 19:10** **Eversense CGM System in clinical practice.**  
Sergio Di Molfetta (ITA)
- 19:10 – 19:30** **The new evolution of Eversense technology.**  
Francine Kaufman (USA)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Ascensia Diabetes Care Holdings AG**

FRIDAY, 23 SEPTEMBER 2022

08:00 – 08:30  
HIRSCH HALL

## IS HFPEF HIDING IN YOUR PRACTICE? AN EXPERT DEBATE ON THE EMERGING ROLE OF DIABETOLOGISTS

EASD  
EFSD

**Chair:** Silvio Inzucchi (USA)

GENERAL  
INFO

**08:00 – 08:05 Introduction**  
Silvio Inzucchi (USA)

PROGRAMME

**08:05 – 08:10 Update on new developments of HFpEF and diabetes**  
Silvio Inzucchi (USA)

TUESDAY

**08:10 – 08:15 HFpEF and Diabetes: What are the clinical challenges?**  
Pardeep Jhund (UK)

WEDNESDAY

THURSDAY

**08:15 – 08:30 How does new evidence impact the need for identification and management of patients with HFpEF and diabetes?**  
All faculty

FRIDAY

### Educational Objectives

The overall objectives of the symposium are to:

- Describe the findings of trials with SGLT2i in patients with heart failure
- Identify the clinical challenges in HFpEF and diabetes
- Discuss the role of diabetologists in the identification of HFpEF and early initiation of SGLT2i in a multidisciplinary approach

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **PACE-CME // funded by an unrestricted educational grant provided by AstraZeneca**

FRIDAY, 23 SEPTEMBER 2022

08:15 – 08:25  
VIRTUAL ONLY: CORI HALL

**WEIGHT MANAGEMENT AS A PRIMARY TREATMENT GOAL FOR  
TYPE 2 DIABETES: TIME TO REFRAME THE CONVERSATION**

Ildiko Lingvay (USA)

EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

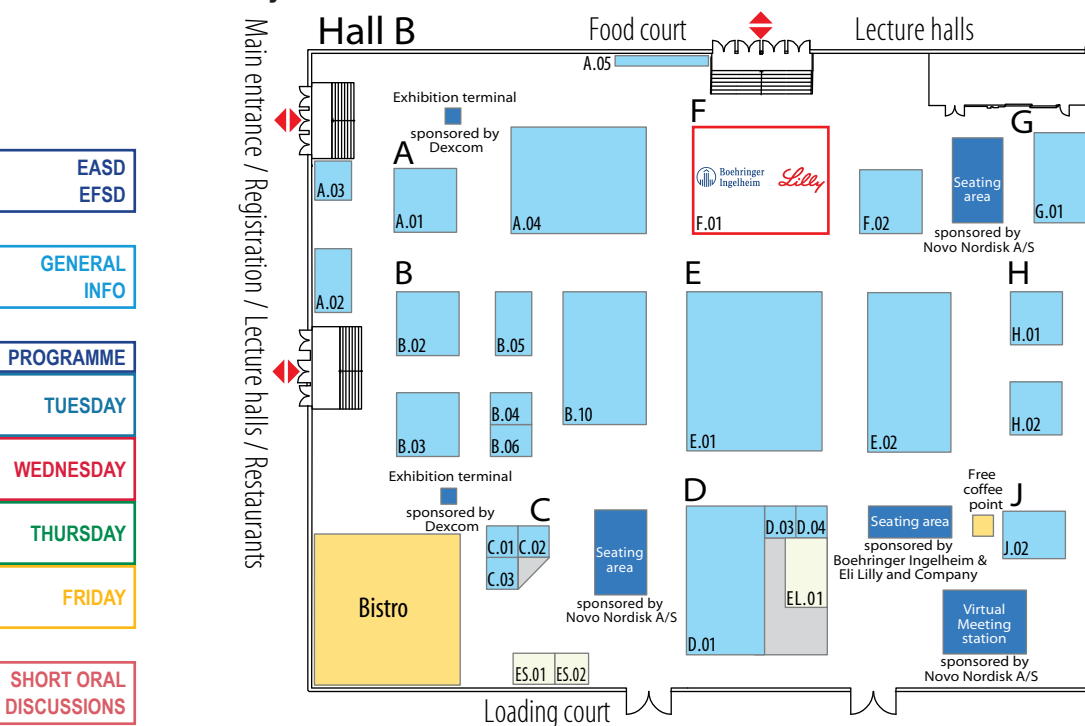
INDUSTRY

PROGRAMME

EXHIBITION

Organised by: **Eli Lilly and Company**

## Industry Exhibition – Hall B / List of Exhibitors



EASD  
EFSD

GENERAL  
INFO

PROGRAMME

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SHORT ORAL  
DISCUSSIONS

PRESENTER  
INDEX

SATELLITE  
SYMPOSIA

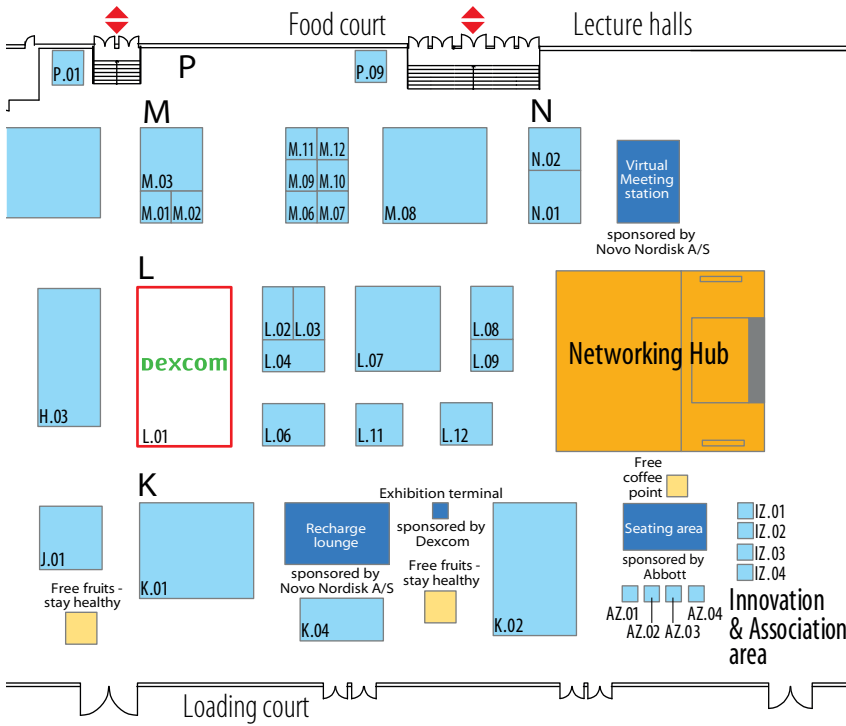
INDUSTRY

PROGRAMME

EXHIBITION

Company	Booth	Company	Booth
A.Menarini Diagnostics SRL	K.01	Eli Lilly and Company	A.04
Abbott	E.02	EVA PHARMA	H.02
Aidian Oy	C.01	Exhibitor lounge	EL.01
Amarin Switzerland GmbH	B.05	Fractyl Health, Inc.	M.01
Ascensia Diabetes Care Holdings AG	M.03	Gan & Lee Pharmaceuticals	L.07
AstraZeneca	K.02	Glooko	L.06
Bayer AG	B.10	GlucoRx	J.02
Bionime	F.02	Health Training Lab SL (Sendo Diabetes)	IZ.01
Bioscientifica Publishing	C.02	Hedia	L.09
Boehringer Ingelheim & Eli Lilly and Company	F.01	Impeto Medical	M.12
Cardiometabolic Forum	A.03	Infinovo Medical Co. Ltd	N.01
Dexcom	L.01	Insulet	A.01
Diabeloop SA	M.06	International Hypoglycaemia Study Group (IHSG)	AZ.03
Diabetes Knowledge into Practice™	P.01	Interplan / Schenker exhibitor services	ES.01
Diabetes Research & Wellness Foundation	AZ.04	i-SENS	B.02
Diamyd Medical	C.03	JANVIER LABS	D.04
Digital Diabetes Analytics	IZ.03	Madrigal Pharmaceuticals	A.02

## Industry Exhibition – Hall B / List of Exhibitors



- EASD  
EFSD
- GENERAL  
INFO
- PROGRAMME
- TUESDAY
- WEDNESDAY
- THURSDAY
- FRIDAY
- SHORT ORAL  
DISCUSSIONS
- PRESENTER  
INDEX
- SATELLITE  
SYMPOSIA
- INDUSTRY
- PROGRAMME
- EXHIBITION

Company	Booth	Company	Booth
Mcure Co., Ltd.	D.03	Pic Solution/MTD Group	N.02
MED TRUST Handelsges.m.b.H.	K.04	POCTech Co., Ltd.	L.12
Medscape Diabetes	M.08	ProScientio, Inc.	L.04
Medtronic International Trading Sàrl	H.03	Research Diets, Inc.	M.02
Medtrum Technologies Inc.	J.01	RETMARKER	IZ.04
Merck KGaA	Company Profile	Roche Diabetes Care	Company Profile
Mercodia	M.07	Sanofi	G.01
MESI, Ltd.	B.04	SOOIL Development	L.03
m-events Lead Retrieval services	ES.02	Tandem Diabetes Care	B.03
Microlife AG	L.02	Terumo Corporation	H.01
Microtech Medical (Hangzhou) Co., Ltd.	L.11	uMotif	M.10
MSD	Company Profile	Vertex Pharmaceuticals	L.08
Neodyne Biosciences, Inc.	M.09	Wisepress Medical Bookshop	A.05
Nestlé Health Science	Company Profile	Wuxi BioHerмес	
Nightingale Health Oy	B.06	Biomedical Technology Co., Ltd.	M.11
Novo Nordisk A/S	E.01	Ypsomed AG	D.01
PharmaSens AG	IZ.02		
Phoenix Europe GmbH	P.09		

Status August 2022, details are subject to change.



2-6 October 2023  
Hamburg, Germany

# 59<sup>TH</sup> ANNUAL MEETING

EUROPEAN ASSOCIATION  
FOR THE STUDY OF DIABETES

SEE YOU NEXT YEAR IN HAMBURG FOR #EASD2023!



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