# 57TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION FOR THE STUDY OF DIABETES

## Content

<table>
<thead>
<tr>
<th>Content</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>EASD</td>
<td>4</td>
</tr>
<tr>
<td>General Information</td>
<td>10</td>
</tr>
<tr>
<td>EASD Community Plaza</td>
<td>15</td>
</tr>
<tr>
<td>Programme at a Glance</td>
<td>20</td>
</tr>
<tr>
<td>Ask the EASD e-Learning Expert Sessions</td>
<td>28</td>
</tr>
<tr>
<td>EFSD Mentorship Programme</td>
<td>30</td>
</tr>
<tr>
<td>EUDF Symposium</td>
<td>31</td>
</tr>
<tr>
<td><strong>Tuesday, 28 September</strong></td>
<td></td>
</tr>
<tr>
<td>Claude Bernard Lecture</td>
<td>32</td>
</tr>
<tr>
<td>Short Oral Discussion Event A</td>
<td>41</td>
</tr>
<tr>
<td>Short Oral Discussion Event B</td>
<td>42</td>
</tr>
<tr>
<td>Camillo Golgi Lecture</td>
<td>50</td>
</tr>
<tr>
<td>Albert Renold Lecture</td>
<td>52</td>
</tr>
<tr>
<td>Rising Star Symposium</td>
<td>54</td>
</tr>
<tr>
<td><strong>Wednesday, 29 September</strong></td>
<td></td>
</tr>
<tr>
<td>Short Oral Discussion Event C</td>
<td>66</td>
</tr>
<tr>
<td>Short Oral Discussion Event D</td>
<td>67</td>
</tr>
<tr>
<td>Diabetes Prize for Excellence Lecture</td>
<td>74</td>
</tr>
<tr>
<td><strong>Thursday, 30 September</strong></td>
<td></td>
</tr>
<tr>
<td>Short Oral Discussion Event E</td>
<td>92</td>
</tr>
<tr>
<td>Short Oral Discussion Event F</td>
<td>93</td>
</tr>
<tr>
<td>Minkowski Lecture</td>
<td>100</td>
</tr>
<tr>
<td><strong>Friday, 1 October</strong></td>
<td></td>
</tr>
<tr>
<td>Short Orals</td>
<td>127</td>
</tr>
<tr>
<td>Index of Presenting Authors</td>
<td>196</td>
</tr>
<tr>
<td>Index of Symposium Speakers</td>
<td>206</td>
</tr>
<tr>
<td>European Foundation for the Study of Diabetes (EFSD)</td>
<td>208</td>
</tr>
<tr>
<td>Symposia on the occasion of the 57th EASD Annual Meeting</td>
<td>212</td>
</tr>
<tr>
<td>Industry Symposia and Meet the Expert Sessions on the occasion of the 57th EASD Annual Meeting (organised by INTERPLAN)</td>
<td>227</td>
</tr>
<tr>
<td>58th EASD Annual Meeting</td>
<td>300</td>
</tr>
</tbody>
</table>
DEAR MEMBERS AND GUESTS,

It will be my great honour and pleasure to welcome you to the 57th Annual Meeting of the European Association for the Study of Diabetes, which will take place from 27 September to 1 October 2021.

Due to the ongoing global impact of the COVID-19 pandemic, and the continued uncertainty regarding travel, events, public gatherings and public health, we have decided to run the EASD Annual Meeting in 2021 again as an online event.

Last year the Virtual Meeting was a success with more than 20,000 participants, many of whom have expressed their appreciation of the Scientific Programme and the increased opportunity for a flexible participation. We have learned a lot and we have done our best to take advantage of that lesson to develop a new, improved, virtual EASD Annual Meeting 2021 platform to offer state-of-the-art diabetes science along with a state-of-the-art virtual get together to connect the global diabetes community and to provide educational opportunities.

I look forward to welcoming you online – where the global diabetes community will be united to experience the wealth of scientific content provided in the EASD 2021 Scientific Programme – and wish you a very successful and inspiring virtual EASD Annual Meeting 2021.

Stefano Del Prato
President EASD/EFSD
WELCOME ADDRESS

On behalf of the 2021 Scientific Programme Committee, I have the pleasure of inviting you to join us for the 57th EASD Annual Meeting and look forward to welcome you online.

The EASD Annual Meeting has a longstanding tradition of not only presenting science of the highest calibre, but also of bringing researchers and clinicians of the highest calibre together.

This year will be no exception and will be even more accommodating thanks to our virtual platform offering ample opportunities to socialise and network with peers from all over the world.

The scientific programme will comprise of stimulating symposia, numerous oral presentations and short oral discussion sessions as well as prize lectures, honouring the achievements of both distinguished researchers and promising research talents.

I look forward to seeing you virtually from 27 September to 1 October 2021.

Mikael Rydén
Honorary Secretary EASD
European Association for the Study of Diabetes

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www.easd.org
HISTORY OF THE EASD ANNUAL MEETINGS

1965 Montecatini  
1966 Aarhus  
1967 Stockholm (IDF)  
1968 Louvain  
1969 Montpellier  
1970 Warsaw  
1971 Southampton  
1972 Madrid  
1973 Brussels (IDF)  
1974 Jerusalem  
1975 Munich  
1976 Helsinki  
1977 Geneva  
1978 Zagreb  
1979 Vienna (IDF)  
1980 Athens  
1981 Amsterdam  
1982 Budapest  
1983 Oslo  
1984 London  
1985 Madrid (IDF)  
1986 Rome  
1987 Leipzig  
1988 Paris  
1989 Lisbon  
1990 Copenhagen  
1991 Dublin  
1992 Prague  
1993 Istanbul  
1994 Düsseldorf  
1995 Stockholm  
1996 Vienna  
1997 Helsinki (IDF)  
1998 Barcelona  
1999 Brussels  
2000 Jerusalem  
2001 Glasgow  
2002 Budapest  
2003 Paris (IDF)  
2004 Munich  
2005 Athens  
2006 Copenhagen  
2007 Amsterdam  
2008 Rome  
2009 Vienna  
2010 Stockholm  
2011 Lisbon  
2012 Berlin  
2013 Barcelona  
2014 Vienna  
2015 Stockholm  
2016 Munich  
2017 Lisbon  
2018 Berlin  
2019 Barcelona  
2020 Virtual Conference
The mission of EASD is to promote excellence in diabetes care through research and education

Since its foundation in 1965, EASD has been organising an Annual Meeting, which has become the largest international annual conference on diabetes research worldwide. Although the meetings have grown so dramatically, they are still driven by the academic traditions of the founding members. The EASD Meeting is a meeting of members where guests are welcome. Chairpersons of oral presentations and poster sessions are chosen exclusively from the EASD membership. The abstracts are evaluated on a strictly anonymous basis and the selection is based exclusively on the quality of the science, regardless of the place of work. The EASD Honorary Secretary is solely responsible for inviting speakers and chairpersons for symposia and lectures. Comments, advice and proposals from the membership and the Programme Committee are welcome. None of the speakers or chairpersons at the EASD Annual Meeting receives an honorarium; reimbursement of their travel costs is exclusively provided by the Association.

EASD and its Foundation EFSD are academic charities dedicated to diabetes research. As an academic society, EASD encourages cooperation with industry and other institutions conducting and funding diabetes research. EASD is committed to transparency. In 2005, its Annual Meeting endorsed the following policy with respect to duality of interest: prior to the Meeting speakers invited to symposia or lectures declare to EASD the existence of any relationship or arrangement that could be reasonably considered to affect the content of the presentation. Invited speakers who declare a duality of interest are asked by EASD to disclose this on a slide of their presentation.

Any occasional, positive balance resulting from the Annual Meeting is used to encourage further diabetes research in Europe. Increasingly, major end-point related trials are carried out to evaluate diabetes treatments. EASD encourages these trials and provides an outstanding forum to announce their results to the scientific community.
The EASD regulations on the presentation of major clinical trials state that all data of the trial must be openly available, and clear information should be provided on the role of the funding source/sponsor on study design, data collection, analysis and interpretation of the data. Moreover, a commentator, nominated by the EASD Honorary Secretary, must have prior access to the data in order to prepare an unbiased review. EASD Meetings are organised in such a way as to ensure the academic independence of physicians and scientists as the patients’ advocates.

Article 1, Section 2
Statutes of the European Association for the Study of Diabetes, Diabetologia 1, 256-260 (1965):

The aims of the Association are to encourage and support research in the field of diabetes, to rapidly spread acquired knowledge and to facilitate its application.
### EASD HAS THE FOLLOWING STUDY GROUPS

<table>
<thead>
<tr>
<th>Study Group</th>
<th>Description</th>
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<tbody>
<tr>
<td>AIDPIT - Artificial Insulin Delivery, Pancreas</td>
<td>Artificial Insulin Delivery, Pancreas and Islet Transplantation Study Group</td>
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<td>D&amp;CVD - Diabetes and Cardiovascular Disease</td>
<td>Diabetes and Cardiovascular Disease Study Group</td>
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<td>DCSG - Diabetes and Cancer Study Group</td>
<td>Diabetes and Cancer Study Group</td>
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<td>DESG - Diabetes Education Study Group</td>
<td>Diabetes Education Study Group</td>
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<td>DFSG - Diabetic Foot Study Group</td>
<td>Diabetic Foot Study Group</td>
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<td>DIAB IMAGE - Biomedical Imaging in Diabetes</td>
<td>Biomedical Imaging in Diabetes Study Group</td>
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<td>DNSG - Diabetes and Nutrition Study Group</td>
<td>Diabetes and Nutrition Study Group</td>
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<td>DPSG - Diabetes Pregnancy Study Group</td>
<td>Diabetes Pregnancy Study Group</td>
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<td>EASDec - Eye Complications Study Group</td>
<td>Eye Complications Study Group</td>
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<tr>
<td>EDEG - European Diabetes Epidemiology Group</td>
<td>European Diabetes Epidemiology Group</td>
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<td>EDNSG - European Diabetic Nephropathy Study Group</td>
<td>European Diabetic Nephropathy Study Group</td>
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<td>EGIR - European Group for the Study of Insulin</td>
<td>European Group for the Study of Insulin Resistance</td>
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<td>ExPAS - Exercise and Physical Activity Study</td>
<td>Exercise and Physical Activity Study Group</td>
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<tr>
<td>HSRHE-SG - Health Services Research and Health</td>
<td>Health Services Research and Health Economics Study Group</td>
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<tr>
<td>IHSG - International Hypoglycaemia Study Group</td>
<td>International Hypoglycaemia Study Group</td>
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<td>INCSG - Incretin Study Group</td>
<td>Incretin Study Group</td>
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<td>ISG - Islet Study Group</td>
<td>Islet Study Group</td>
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<td>MSSG - Study Group on Metabolic Surgery</td>
<td>Study Group on Metabolic Surgery</td>
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<td>NAFLD - Non-alcoholic fatty liver disease</td>
<td>Non-alcoholic fatty liver disease</td>
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<td>NEURODIAB - Diabetes Neuropathy Study Group</td>
<td>Diabetes Neuropathy Study Group</td>
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<td>PCDE - Study Group on Primary Care Research in</td>
<td>Study Group on Primary Care Research in Diabetology</td>
</tr>
<tr>
<td>PSAD - Psychosocial Aspects of Diabetes Study</td>
<td>Psychosocial Aspects of Diabetes Study Group</td>
</tr>
<tr>
<td>RM-SG - Reactive Metabolites in Diabetes Study</td>
<td>Reactive Metabolites in Diabetes Study Group</td>
</tr>
<tr>
<td>SGGD - Study Group on Genetics of Diabetes</td>
<td>Study Group on Genetics of Diabetes</td>
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</table>
“Join EASD and you will become a member of the European diabetes family. This way, you can easily improve your knowledge about all aspects of the disease and follow the latest developments in the world of diabetes available from both scientific as well as clinical practice. It’s really worth it!”

Prof. Krzysztof Strojek, Poland

“Being a diabetologist, a clinical researcher and a basic researcher, becoming a member of the EASD was and is the perfect thing to do: the EASD combines these different facets in its activities in order to promote the best clinical care and excellence in diabetes research. Join the international diabetes community!”

Prof. Miriam Cnop, Belgium

“I originally joined for professional reasons but quickly realised that EASD offers much more. Through EASD I have expanded my professional network and joined a community of passionate peers that is not just shaping the future of diabetes research, care and education but also working to ensure that, one day, a life-changing breakthrough will be made.”

Asst. Prof. Dario Rahelić, Croatia

JOIN EASD
THE GLOBAL DIABETES COMMUNITY

CONTACT EASD
The EASD Membership Department is ready to assist:

Phone: +49 211 758 469 0
Email: membership@easd.org
Web: easd.org/membership.html
GENERAL INFORMATION

Format:
The 57th EASD Annual Meeting will take place online as a virtual event from 27 September to 1 October 2021. Registered delegates can access the virtual EASD Annual Meeting via their personal MyEASD account by using the personalised link or login details (both provided in their registration confirmation).

All sessions in the scientific programme will take place live and interactive at the time indicated in the programme (all references to a date or deadline mentioned here refer to the Central European Time Zone (CEST). Recordings of all sessions will be available afterwards, access will be limited to registered delegates until 31 October 2021.

Registration:
Early Registration fees are € 100 for paid-up EASD members and € 215 for non-members (until 27 July 2021). Late registration fees are € 150 for paid-up EASD members and € 265 for non-members. All registrations have to be made by means of the secured online registration system either prior to or during the virtual EASD Annual Meeting dates. For more information, please visit: https://www.easd.org/annual-meeting/easd-2021.html.

Children under the age of 18 are not permitted to access the virtual EASD Annual Meeting 2021.

Technical requirements:
Delegates must ensure at their own expense that they meet the technical requirements necessary for participation in the virtual EASD Annual Meeting. 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 smartphone/tablet devices only basic viewing features are being supported. It is recommended to use the Safari® browser for Apple® devices.
For Presenters and Chairpersons it is mandatory to connect through desktop computers or notebooks with plugged in power supply.

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

Delegates receive:
- Admission to live-streamed and recorded Scientific Programme
- Admission to the virtual Industry Exhibition
- Admission to the virtual EASD Community Plaza with EASD/EFSD booth, Diabetologia and EASD Postgraduate Education booths as well as the Associations’ Village
- Admission to interactive chat/discussion hubs

Certificates:
Kindly note, that your watch time will be monitored via your MyEASD account, which will be the basis of your certification.
Certificates will be available for download via your MyEASD account. It will be mandatory to complete the congress evaluation survey to receive certification.
- Certificate of Attendance available from 4 October 2021
- EACCME Certificate (TBC – application still under review)
- CME Certificate for German delegates (Teilnahmebescheinigung) available between 4 October and 22 October 2021

Certificate of Attendance
The criteria for this certification is a minimum watch time of 60 minutes from 27 September to 31 October 2021.

EACCME Certificate
The virtual Annual Meeting scientific programme is currently under the review process for accreditation with the European Accreditation Council for Continuing Medical Education (EACCME).

CME Certificate for German delegates – Teilnahmebescheinigung
The virtual 57th EASD Annual Meeting 2021 has been accredited with 24 CME credits of category B by the Ärztekammer Nordrhein. 3 credits will be given per half day for EASD scientific sessions (colour code: dark blue as shown in the online programme) watched live and on demand between 28 September 10:00 hrs and 1 October 2021 17:30 hrs.
The Ärztekammer Nordrhein is a national institution. German doctors need to enter their EFN number when downloading their certificate. This EFN Number will be automatically forwarded to the Ärztekammer Nordrhein after the virtual meeting.

Teilnahmebescheinigung für deutsche Teilnehmer
Das virtuelle 57. EASD Annual Meeting 2021 wurde von der Ärztekammer Nordrhein mit 24 Fortbildungspunkten der Kategorie B anerkannt. Für Vorträge innerhalb des wissenschaftlichen Programmes der EASD (Farbcode: dunkelblau im online Programm) die zwischen dem 28. September 10:00 Uhr und dem 1. Oktober 2021 17:30 Uhr live oder auf Abruf verfolgt werden, werden pro halber Tag 3 Fortbildungspunkte vergeben.
**Press Registration:**
Press delegates can register online through the press registration system. Registered journalists/media will have access to the EASD 2021 online Press Centre and will receive press releases throughout the Meeting. The entire scientific programme during the virtual EASD Annual Meeting is open to registered journalists.

**EASD/EFSD Booth:**
The EASD/EFSD Booth is located in the virtual EASD Community Plaza.

**Associations' Village:**
The Associations' Village is located in the virtual EASD Community Plaza.

**Presenters and Chairpersons:**
All sessions in the scientific programme will take place live and interactive at the time indicated in the programme schedule. Symposia and OP presenters should present live and participate in follow-up Q&A session.

Short Oral presenters must pre-record their presentation and should be present to view their session and be available for the follow-on discussions and Q&A.

All presenters and chairpersons will receive detailed instructions and will be invited to individual trial presentations with admin staff prior to the virtual EASD Annual Meeting to test the presentation and Q&A system. In case of any questions, please contact: presentation@easd.org.

**Short Oral Discussion Events**
Short oral discussions rank equally with oral presentations. A short pre-recorded PowerPoint presentation including audio must be uploaded to the EASD virtual meeting platform by the indicated deadline prior to the start of the virtual meeting; this will allow attendees to pre-view the short presentation and thus be able to follow the short summary by the presenter and engage in the discussion during the live/interactive and moderated short oral discussion session.
All short oral discussion sessions will take place during six Events which will be held on Tuesday, Wednesday and Thursday from 11:30 to 15:00.

Short Oral Discussion Event A Tuesday 11:30 - 13:00
Short Oral Discussion Event B Tuesday 13:15 - 14:45
Short Oral Discussion Event C Wednesday 11:45 - 13:15
Short Oral Discussion Event D Wednesday 13:30 - 15:00
Short Oral Discussion Event E Thursday 11:45 - 13:15
Short Oral Discussion Event F Thursday 13:30 - 15:00

Exhibition:
For the duration of the virtual EASD Annual Meeting, delegates receive access to the virtual Industry Exhibition. Delegates can select, before accessing industry areas, which personal information can be passed to companies – to this extent a list of companies will be available for viewing.

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 conference organisers are not liable for any other loss or inconvenience caused as a result of such changes.

Advisory Note to Delegates:
EASD is the official registration provider and all EASD activities are handled via the official EASD website: www.easd.org. Please be aware of “fraudulent” third party companies offering EASD services e.g. registration.
EASD COMMUNITY PLAZA

The virtual EASD Community Plaza provides the EASD/EFSD Booth, Diabetologia Booth and the EASD Postgraduate Education Booth as well as the EASD Associations’ Village.

EASD ASSOCIATIONS’ VILLAGE

The EASD Associations’ Village brings together EASD Study Groups, international diabetes associations and societies. Each represented association has an exhibition stand displaying its current activities and highlighting its work and practices.

The EASD Associations’ Village is a multinational networking platform which aims to further increase and facilitate the exchange of knowledge and experiences among diabetes associations, and to provide information to physicians and researchers from all over the world on the existing associations.

FOLLOW THE DISCUSSION
LIVE ON TWITTER

Tweet live #EASD2021 and follow @EASDnews
**ABSTRACT SELECTION**

All abstracts accepted for inclusion in the scientific programme were considered anonymously and were scored by 40 Abstract Review Committee Members. 17 Programme Committee Members designed the programme and created Oral and Short Oral Discussion Sessions based upon the anonymous abstracts.

**Publication of Abstracts**
Accepted abstracts are published in the Volume of Abstracts which is part of Diabetologia, the official journal of the Association. Abstracts are available online in the EASD Virtual Meeting.

**Embargo Policies**
Information contained in abstracts may not be released until 1 July when the abstracts are published online. Oral Presentations are under embargo until one (1) minute following the commencement of the speakers’ presentation. Short Oral Discussion Presentations are under embargo until 11:30 CEST on Tuesday, 28 September 2021.
<table>
<thead>
<tr>
<th>Author Name</th>
<th>Country</th>
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<tbody>
<tr>
<td>Paul W. Franks, SE</td>
<td>SE</td>
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<tr>
<td>Christian Herder, DE</td>
<td>DE</td>
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<tr>
<td>Adam G. Tabák, HU</td>
<td>HU</td>
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<tr>
<td>Sarah Wild, UK</td>
<td>UK</td>
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<tr>
<td>Dorte Vistisen, DK</td>
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<tr>
<td>Miriam Cnop, BE</td>
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<tr>
<td>Lorenzo Pasquali, ES</td>
<td>ES</td>
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<tr>
<td>Meritxell Rovira, ES</td>
<td>ES</td>
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<tr>
<td>Lorella Marselli, IT</td>
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<tr>
<td>Susanne J. Ullrich, DE</td>
<td>DE</td>
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<tr>
<td>Alexandra Kautzky-Willer, AT</td>
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<td>Patrick Schrauwen, NL</td>
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<td>Francesca Amati, CH</td>
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<td>Brendan Egan, IE</td>
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<td>Martin Clodi, AT</td>
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<td>Stephan Herzig, DE</td>
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<td>Mikael Rydén, SE</td>
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<tr>
<td>Maria Rohm, DE</td>
<td>DE</td>
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<tr>
<td>Nicolas Venteclef, FR</td>
<td>FR</td>
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<tr>
<td>Kirsi Virtanen, FI</td>
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<tr>
<td>Erik Serné, NL</td>
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<td>Björn Eliasson, SE</td>
<td>SE</td>
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<tr>
<td>Jan Westerink, NL</td>
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<td>Jan W. Eriksson, SE</td>
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<tr>
<td>Thomas Nyström, SE</td>
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<tr>
<td>Raimund Weitgasser, AT</td>
<td>AT</td>
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<tr>
<td>Helen Colhoun, UK</td>
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<tr>
<td>Martin Rutter, UK</td>
<td>UK</td>
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<tr>
<td>Daniël van Raalte, NL</td>
<td>NL</td>
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<tr>
<td>Kåre I. Birkeland, NO</td>
<td>NO</td>
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<tr>
<td>Peter Rossing, DK</td>
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<tr>
<td>Lena M. Thorn, FI</td>
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<tr>
<td>Samy Hadjadj, FR</td>
<td>FR</td>
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<td>Luigi Gnudi, UK</td>
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<td>Frederik Persson, DK</td>
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<td>Steven E. Kahn, US</td>
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<td>Amalia Gastaldelli, IT</td>
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<td>Martin Haluzik, CZ</td>
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<td>John Petrie, UK</td>
<td>UK</td>
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<td>Maria Paula Macedo, PT</td>
<td>PT</td>
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</tbody>
</table>
PROGRAMME COMMITTEE

Patrick Schrauwen, NL

Björn Eliasson, SE

Miriam Cnop, BE

Paul W. Franks, SE

Amalia Gastaldelli, IT

Helen Colhoun, UK

Martin Haluzik, CZ

Lena M. Thorn, FI

Stephan Herzig, DE
Steven E. Kahn, US

Mikael Rydén, SE (Chair)

Lorenzo Pasquali, ES

Alexandra Kautzky-Willer, DE

Erik Serné, NL

Raimund Weitgasser, AT

Peter Rossing, DK

Christian Herder, DE
## Tuesday, 28 September

<table>
<thead>
<tr>
<th>Time</th>
<th>Moscow Hall</th>
<th>Paris Hall</th>
<th>London Hall</th>
<th>Madrid Hall</th>
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<tr>
<td>10:00</td>
<td>Opening and Presidential Address</td>
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<td>10:30</td>
<td>53rd Claude Bernard Lecture</td>
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<td>13:15</td>
<td>OP 7</td>
<td>OP 8</td>
<td>OP 9</td>
<td>OP 10</td>
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<tr>
<td>15:00</td>
<td>36th Camillo Golgi Lecture</td>
<td>15th Albert Renold Lecture</td>
<td>Rising Star Symposium</td>
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<tr>
<td>16:40</td>
<td>Daily roundup / wrap up</td>
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### Tuesday, 28 September

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<tr>
<th>Barcelona Hall</th>
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#### Event A
- **OP 5**
- **OP 6**
- **Short Orals Event A**

#### Event B
- **OP 11**
- **OP 12**
- **Short Orals Event B**
- **EFSD Mentorship Programme**

#### Daily roundup / wrap up
## Wednesday, 29 September

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<tr>
<th>Time</th>
<th>Moscow Hall</th>
<th>Paris Hall</th>
<th>London Hall</th>
<th>Madrid Hall</th>
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<tbody>
<tr>
<td>10:00</td>
<td><strong>EASD/ADA Symposium:</strong> Optimising diabetes diagnosis, prevention and care: Is precision medicine the answer?</td>
<td><strong>Diabetologia Symposium:</strong> Learning from machines – AI in diabetes research and care</td>
<td><strong>EASD/JDRF Symposium:</strong> Beta cell (dys)function in type 1 diabetes</td>
<td>Hypoglycaemia: unanswered questions</td>
</tr>
<tr>
<td>11:45</td>
<td><strong>OP 13</strong></td>
<td><strong>OP 14</strong></td>
<td><strong>OP 15</strong></td>
<td><strong>OP 16</strong></td>
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<td>13:30</td>
<td><strong>OP 19</strong></td>
<td><strong>OP 20</strong></td>
<td><strong>OP 21</strong></td>
<td><strong>OP 22</strong></td>
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<tr>
<td>15:15</td>
<td><strong>EASD/Novo Nordisk Foundation Diabetes Prize for Excellence</strong></td>
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<tr>
<td>16:30</td>
<td><strong>SARS-CoV-2 in human islets: a diabetes epidemic in the making?</strong></td>
<td><strong>Adipose tissue as a therapeutic target in type 2 diabetes: What should we aim for?</strong></td>
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<td><strong>More from closed loops</strong></td>
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<tr>
<td>17:30</td>
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<td><strong>Daily roundup / wrap up</strong></td>
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### Wednesday, 29 September

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<tr>
<td>The liver, heart and kidney triangle: linking major organs in the complications of dysglycaemia</td>
<td>Fifty shades of ectopic fat in diabetes</td>
<td>EASD/AASD Joint Symposium: Medical nutrition therapy, physical activity and exercise for diabetes</td>
<td>EASD e-Learning: Insulin@100: insulin in specific populations</td>
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<tr>
<td><strong>OP 17</strong></td>
<td><strong>OP 18</strong></td>
<td><strong>Short Orals Event C</strong></td>
<td><strong>EASD e-Learning:</strong> Fear of hypoglycaemia</td>
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<tr>
<td><strong>OP 23</strong></td>
<td><strong>OP 24</strong></td>
<td><strong>Short Orals Event D</strong></td>
<td><strong>EUDF Symposium:</strong> It takes more than just a registry to improve care</td>
<td><strong>EASD e-Learning:</strong> Non-alcoholic fatty liver disease</td>
</tr>
<tr>
<td>100 years insulin treatment</td>
<td>It is time to be active</td>
<td>New data from Dapa-CKD</td>
<td>Results from TriMASTER: a 3-way cross-over trial of precision medicine strategy of 2nd/3rd line therapy in type 2 diabetes</td>
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<td><strong>EASD e-Learning:</strong> Insulin@100: insulin and exercise</td>
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**Daily roundup / wrap up**
## Thursday, 30 September

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<tr>
<th>Time</th>
<th>Moscow Hall</th>
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<tbody>
<tr>
<td>10:00</td>
<td>Prediabetes: Does it really matter?</td>
<td>EASD/ESC Symposium: How come not every patient with diabetes develops vascular complications?</td>
<td>Perspectives of the diabetic foot syndrome</td>
<td>New ways to understand kidney disease in diabetes</td>
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<tr>
<td>11:45</td>
<td>OP 25</td>
<td>OP 26</td>
<td>OP 27</td>
<td>OP 28</td>
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<td>13:30</td>
<td>OP 31</td>
<td>OP 32</td>
<td>OP 33</td>
<td>OP 34</td>
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<tr>
<td>15:15</td>
<td>56th Minkowski Lecture</td>
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<tr>
<td>17:15</td>
<td>Daily roundup / wrap up</td>
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### Thursday, 30 September

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<tbody>
<tr>
<td>Inter-organ communication in diabetes and systemic energy homeostasis</td>
<td>5 years of cardiovascular benefits of GLP-1 receptor agonists: evidence from recent cardiovascular outcomes trials</td>
<td>EASD/ESE Symposium: Diabetes and bone</td>
<td>Next step in incretin therapy: from single to dual agonism</td>
<td>EASD e-Learning: Obesity and type 2 diabetes</td>
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<tr>
<th>OP 29</th>
<th>OP 30</th>
<th>Short Orals Event E</th>
<th>EASD e-Learning: Insulin@100: in combination with GLP-1 RAs and fixed ratio combinations</th>
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<tr>
<th>OP 35</th>
<th>OP 36</th>
<th>Short Orals Event F</th>
<th>EASD e-Learning: Diabetic neuropathy</th>
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<tr>
<th>Small vessels, big problems: cerebral small-vessel disease - a potential microvascular complication of diabetes</th>
<th>New data from Dapa-CKD</th>
<th>Harnessing intracellular pathways for therapy</th>
<th>INNODIA - Translational approaches to disease modifying therapy of type 1 diabetes</th>
<th>EMPEROR Preserved Study</th>
<th>EASD e-Learning: Insulin@100: insulin in hospital settings</th>
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**Daily roundup / wrap up**
### Friday, 1 October

<table>
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<tr>
<th>Time</th>
<th>Moscow Hall</th>
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<th>Madrid Hall</th>
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<tbody>
<tr>
<td>10:00</td>
<td>Retinopathy and artificial intelligence</td>
<td>Current guidelines on diabetes management</td>
<td>Importance of insulin clearance in the regulation of glucose metabolism</td>
<td>Debate: Preventing diabetic complications – 100 years on from insulin: Which of the newer classes will prevail?</td>
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<tr>
<td>11:15</td>
<td>OP 37</td>
<td>OP 38</td>
<td>OP 39</td>
<td>OP 40</td>
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<td>12:30</td>
<td>OP 43</td>
<td>OP 44</td>
<td>OP 45</td>
<td>OP 46</td>
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<tr>
<td>13:45</td>
<td>Management of type 1 diabetes: ADA-EASD Consensus Report 2021</td>
<td>Going to bed with diabetes</td>
<td>What do the cells talk about and how? Extracellular vesicles: biomarker, diagnostic tool or therapeutic vehicle</td>
<td>My cells are getting old! Ageing in diabetes</td>
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<tr>
<td>15:15</td>
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<td>Daily roundup / wrap up</td>
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<td>16:15</td>
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# Friday, 1 October

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<tr>
<td>OP 41</td>
<td>OP 42</td>
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<td></td>
<td>Finerenone: a new approach to kidney protection in patients with type 2 diabetes</td>
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<td>EASD e-Learning: Insulin@100: novel technologies</td>
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<td>OP 47</td>
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<tr>
<td>Turning stem cells into beta cells</td>
<td>Major results from the Glycaemia Reduction Approaches in Diabetes: a Comparative Effectiveness (GRADE) Study</td>
<td>A novel approach to problematic hypoglycaemia: the HARPdoc RCT</td>
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<td>EASD e-Learning: Real World Evidence</td>
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<td>Daily roundup / wrap up</td>
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<td>EASD General Assembly</td>
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ASK THE EASD E-LEARNING EXPERT SESSIONS

In these sessions you will be able to interact live with the EASD e-Learning authors and ask all your questions in relation to the topic. We invite you to join the discussion.

Wednesday, 29 September 2021, Milan Hall

10:00 - 11:30  Chair: E. Patrakeeva, Russia

P. Jarosz-Chobot, Poland and C. de Beaufort; Luxembourg:
Insulin@100: diabetes in kids

12:00 - 13:30  Chair: P. Choudhary, UK

F. Snoek, Netherlands:
Fear of hypoglycaemia

14:00 - 15:30  Chair: B. Wolffentuttel, Netherlands

M. Roden, Germany:
Non-alcoholic fatty liver disease

16:15 - 17:30  Chair: M. Cnop, Belgium

M. Riddell, Canada:
Insulin@100: insulin and exercise

Thursday, 30 September 2021, Milan Hall

10:00 - 11:30  Chair: P. Gaede, Denmark

N. Sattar, UK:
Obesity and type 2 diabetes

12:00 - 13:30  Chair: C. Mathiue, Belgium

T. Vilsboll, Denmark:
Insulin@100: in combination with GLP-1 RAs and fixed ratio combinations
Thursday, 30 September 2021, Milan Hall

14:00 - 15:30 Chair: S. Dinneen, Ireland

S. Tesfaye, UK:
Diabetic neuropathy

16:00 - 17:30 Chair: E. Noctor, Ireland

G. Umpierrez, USA:
Insulin@100: insulin in hospital settings

Friday, 1 October 2021, Milan Hall

10:00 - 11:30 Chair: B. Wolffenbuttel, Netherlands

E. de Koning, Netherlands:
Insulin@100: physiological replacement

12:00 - 13:30 Chairs: E. Patrakeeva, Russia and P. Choudhary, UK

T. Battelino, Slovenia and M. Phillip, Israel:
Insulin@100: novel technologies

14:00 - 15:30 Chair: A. Tsapas, Greece

M. Evans, UK:
Real World Evidence
EFSD MENTORSHIP PROGRAMME MEETING

Tuesday, 28 September 2021, 13:00 - 14:00, Athens Hall

A.J.M. Boulton, Chairman EFSD Mentorship Programme: Welcome and Introduction of the Mentorship Programme

S. Del Prato, President EASD/EFSD: Introduction of the Mentees

Presentation of the Mentees:

- Giuseppe Daniele, Mentee 2017 cohort
- Ernesto Maddaloni, Mentee 2107 cohort
- Teresa Mezza, Mentee 2017 cohort
- Shivani Misra, Mentee 2017 cohort
- Rumyana Boykova Dimova-Draganova, Mentee 2018 cohort
- Peter van Dijk, Mentee 2020 cohort

S. Del Prato, President EASD/EFSD: Closing remarks

Questions and Answers

About the EFSD Mentorship Programme:

The major goal of the EFSD Mentorship Programme is to identify and promote the advancement of the next generation of leading clinical diabetologists in Europe. Through its various activities the Programme will help award recipients (“Mentees”) develop into leaders by refining their skills in the three cardinal areas of clinical diabetes, research and communication, thereby keeping them in the field of diabetes and facilitating their appointment to senior academic positions at major European institutions.
EUROPEAN DIABETES FORUM (EUDF) SYMPOSIUM

IT TAKES MORE THAN JUST A REGISTRY TO IMPROVE CARE: HOW CAN WE USE DATA TO RAISE AWARENESS AND INITIATE ACTION TO IMPROVE OUTCOMES FOR PEOPLE WITH DIABETES?

Wednesday, 29 September 2021, 14:00 - 16:00, Athens Hall

Chairs: C. Mathieu, Belgium, D.R. Matthews, UK

D.R. Matthews, UK:
Welcome and introduction

B. Mikkelsen, Norway:
Developing missing targets: the diabetes treatment target

R.J. Heine, USA:
Recommendations for implementation from the Strategic Forum Data & Registries

Best practices – Using registries to improve quality of care and outcomes
T. Danne, Germany: SWEET
K. Eeg-Olofsson, Sweden: The Swedish National Diabetes Register

A. Rys, Poland:
How to re-use health data for the benefit of public health, research and innovation?

Panel discussion and questions
B. Hauck, Germany: What’s in it for people with diabetes?
K. Khunti, UK: How to use feedback from registries in the clinical practice?
J. Soderberg. Sweden: What are the opportunities for research?
T. Sokol, Croatia: What is the perspective of the European Parliament?
M. Bujas-Bobanovic, Croatia: What are the perspectives from industry?

D.R. Matthews, UK:
Closing remarks
CLAUDE BERNARD LECTURE

The Claude Bernard Lectureship recognises contributions to the advancement of knowledge in the field of diabetes mellitus and related metabolic diseases. The Claude Bernard Award is presented to the lecturer by the President of the EASD at the Award Ceremony immediately preceding this lecture.

CLAUDE BERNARD LECTURERS

1969 Montpellier               C. DE DUVE, BE
1970 Warsaw                    E.W. SUTHERLAND, US
1971 Southampton               M. DEROT, FR
1972 Madrid                      K. LUNDBAEK, DK
1973 Brussels                   A.E. DONIACH, CH
1974 Jerusalem                  T.R. FRASER, UK
1975 Munich                     R.G. SPIRO, US
1976 Helsinki                   H.G. HERS, BE
1978 Zagreb                      W. CREUTZFELDT, DE
1979 Vienna                      D.A. PYKE, UK
1980 Athens                     R.H. UNGER, US
1981 Amsterdam                 G.R.E. MEYER-SCHWICKERATH, DE
1982 Budapest                   J. MIROUZE, FR
1983 Oslo                        C. HELLERSTRÖM, SE
1984 London                     P.J. LEFEBVRE, BE
1985 Madrid                      E.F. PFEIFFER, DE
1986 Rome                       W. K. WALDHÄUSL, AT
1987 Leipzig                     H. KEEN, UK
1988 Paris                      T. DECKERT, DK
1989 Lisbon                      G. TCHOBROUTSKY, FR
1990 Copenhagen                K.G.M.M. ALBERTI, UK
1991 Dublin                     E. SHAFFIR, IL
1992 Prague                     P.H. BENNETT, US
1993 Istanbul                   D. ANDREANI, IT
1994 Düsseldorf                G. REAven, US
1995 Stockholm                 M. BERGER, DE
1996 Vienna                     J.D. WARD, UK
1997 Helsinki                   C.E. MOGENSEN, DK
1998 Barcelona                 C. WOLLHEIM, CH
1999 Brussels                   J.P. ASSAL, CH
2000 Jerusalem                  W. MALAISSE, BE
2001 Prague                      P.E. CRYER, US
2002 München                    M.R. TASKINEN, FI
2003 Amsterdam                 M. BROWNLEE, US
2004 Munich                     C.R. KAHN, US
2005 Athens                    J.J. HOLST, DK
2006 Copenhagen                L. GROOP, SE
2007 Stockholm                 E. VAN OBBERGHEN, FR
2008 Rome                       R.A. DEFRONZO, US
2009 Jerusalem                  O. PEDERSEN, DK
2010 Stockholm                 M. KASUGA, JP
2011 Barcelona                  E. FERRANNINI, IT
2012 Berlin                    D.J. DRUCKER, CA
2013 Barcelona                  M. LAAKSO, FI
2014 Vienna                     D. ACCILI, USA
2015 Stockholm                  H.-U. HÄRING, DE
2016 Munich                      M.E. COOPER, AU
2017 Lisbon                     B. THORENS, CH
2018 Berlin                     J. TUOMILEHTO, KW
2019 Barcelona                  S.E. KAHN, US
2020 Virtual                    T. KADOWAKI, JP
10:00 OPENING CEREMONY AND PRESIDENTIAL ADDRESS
S. Del Prato, President, EASD and EFSD
followed by

10:30 53RD CLAUDE BERNARD LECTURE
Chair: S. Del Prato, President, EASD and EFSD
Speaker: J.R. Zierath, Sweden
Title: Sending the right signals - How exercise keeps the rhythm in metabolism

Juleen R. Zierath is a native of Milwaukee Wisconsin. She is Professor of Experimental Physiology at Karolinska Institutet, Stockholm, Sweden and Professor of Integrative Physiology and Executive Director at the Novo Nordisk Foundation Center for Basic Metabolic Research at University of Copenhagen, Denmark. She performs translational research to delineate mechanisms for the development of insulin resistance in type 2 diabetes. Current work is focused on the role of epigenetic modifications in the development of insulin resistance and the interaction between circadian rhythms and exercise training in the control of metabolism.

Zierath is a member of the Nobel Assembly and Nobel Committee for Physiology or Medicine. She is a Member of the Royal Swedish Academy of Science and Academia Europaea. She is former Chairman of the Nobel Committee, Chairman of the Board of Directors of the Keystone Symposia, and President of the European Association for the Study of Diabetes. She is past Editor-in-Chief of Diabetologia and currently holds editorial positions with several scientific journals in the fields of endocrinology, metabolism, and interdisciplinary sciences.

Zierath has received the Minkowski Prize from the European Association for the Study of Diabetes, the Datta Lectureship Award for outstanding achievement from the Federation of European Biochemical Society, the Harold Rifkin Award for Distinguished International Service in the Cause of Diabetes, the Knud Lundbaek Award from the Scandinavian Society for the Study of Diabetes, J.B. Wolffe Memorial Lectureship Award from the American College of Sports Medicine, The Nordic Medicine Prize for Research in Diabetes, and a Distinguished Alumnus Award and Honorary Doctorate of Science from University of Wisconsin-River Falls.
OP 01 Macrovascular disease: large cohorts and large trials

Chair: P. Novodvorsky, Slovakia

1 Association of increased intima media thickness and arteriosclerosis with elevated fasting insulin levels in middle-aged persons
M. Röhling, K. Kempf, H. Kolb, M. Schneider, S. Martin, Germany

2 Kidney function measures and cardiovascular outcomes in people with diabetes: the Hoorn Diabetes Care System cohort

3 Comparative evaluation of GLP-1 receptor agonists and SGLT-2 inhibitors neuroprotective properties in transient brain ischaemia
A. Simanenkova, N. Timkina, O. Fuks, A. Khalzova, A. Shimshilashvili, V. Timofeeva, T. Karonova, T. Vlasov, Russian Federation

4 Insulin resistance and risk of first stroke in type 2 diabetes: a nationwide cohort study

5 Gender differences in cardiovascular risk, treatment, and outcomes: a post-hoc analysis from the REWIND trial

6 The importance of addressing multiple risk markers in type 2 diabetes: results from LEADER and SUSTAIN 6
E. Hein Zobel, B.J. Von Scholten, T.W. Hansen, F. Persson, S. Rasmussen, B. Wolthers, P. Rossing, Denmark
OP 02 Deep and shallow looks at human beta cell gene expression

Chair: L. Marselli, Italy

7 About time: functional and molecular effects of prolonged ex vivo human islet culture
M. Suleiman, E. Bosi, A. Piron, C. De Luca, M. Tesi, S. Del Guerra, D.L. Eizirik, M. Cnop, P. Marchetti, L. Marselli, Italy, Belgium, USA

8 Identification of mRNA and microRNA transcripts that differ in expression across islet donor sex, age and BMI
W.K. Wong, M.V. Joglekar, A.E. Sørensen, Y. Chew, F. Cheng, T. Loudovaris, H.E. Thomas, R.C. Ma, W.J. Hawthorne, L.T. Dalgaard, A.A. Hardikar, Australia, Denmark, Hong Kong

9 A single cell atlas of de novo beta cell regeneration in adult zebrafish identifies hybrid cell states that facilitates diabetes reversal
P. Chawla, S.P. Singh, L.D. Silva, A. Hnatiuk, M. Kamel, B. Spanjaard, J.P. Junker, N. Ninov, Germany, Belgium

10 An integrated analysis of human pancreatic islet single cells reveals autocrine and paracrine interactions
E. Bosi, L. Marselli, M. Suleiman, M. Tesi, C. De Luca, S. Del Guerra, M. Cnop, D.L. Eizirik, P. Marchetti, Italy, Belgium, USA

11 The transcription factor CEBPG regulates beta cell function
A. Lopez-Pascual, A. Lindqvist, J.A. Martínez-Lópe, J. Hjerling-Leffler, N. Wierup, Sweden

12 A long non-coding RNA that harbors a SNP associated with insulin levels regulates TGM2 gene expression in pancreatic beta cells
OP 03 Many faces of diabetic pregnancy

Chair: R. Corcoy Pla, Spain

13 Sweet pregnancy: digital solutions for an effective management of diabetic pregnancies
M. Löhnert, S. Stichling, C. Eberle, Germany

14 Decreased insulin sensitivity during pregnancy after assisted reproductive therapy in women in the Stork cohort
E. Qvigstad, S.D. Steintorsdottir, K. Godang, M.-C.P. Roland, T. Lekva, Norway

15 Maternal C-peptide reappearance in type 1 diabetes pregnancy: Evidence of beta cell regeneration or fetal hyperinsulinism?
C.L. Meek, R. Oram, T. McDonald, D.S. Feig, A.T. Hattersley, H.R. Murphy, UK, Canada

16 Maternal efficacy, safety, and pregnancy outcomes with degludec vs detemir in the treatment of pregnant women with type 1 diabetes: an international, multicentre, randomised trial
E.R. Mathiesen, R. Corcoy, F. Dunne, M. Ekelund, D.S. Feig, M. Hod, T. Jia, B. Kalyanam, S. Kar, A. Kautzky-Willer, P. Damm, on behalf of the EXPECT study group, Denmark, Spain, Ireland, Canada, Israel, India, Austria

17 Epigenetic alterations in offspring born to mothers with type 1 diabetes (the EPICOM study)

18 Maternal exercise in gestational diabetes has sex-specific effects on offspring adiposity and beta cell function
N. Boonpatrawong, S. Schaffner, A. Jang, M.S. Kabor, I. Laher, A.M. Devlin, Canada
OP 04 GLP-1 receptor agonism: higher dose, combination therapy, or both?

Chair: T. Nyström, Sweden

19 Effect of semaglutide 2.4 mg on glucose metabolism and body weight in adults with overweight or obesity and type 2 diabetes in the STEP 2 trial
S.D. Pedersen, M. Davies, L. Færch, O.K. Jeppesen, A. Pakseresht, L. Perreault, J. Rosenstock, I. Shimomura, A. Viljoen, T. Wadden, I. Lingvay, Canada, UK, Denmark, USA, Japan

20 Tirzepatide, a dual GIP/GLP-1 receptor agonist, is effective and safe when added to basal insulin for treatment of type 2 diabetes (SURPASS-5)
D. Dahl, Y. Onishi, P. Norwood, R. Huh, H. Patel, A. Rodriguez, Germany, Japan, USA

21 Semaglutide reduced cardiovascular events regardless of metformin use: a post hoc exploratory subgroup analysis of SUSTAIN 6 and PIONEER 6
M. Husain, A. Consoli, A. De Remigis, A.S. Meyer, S. Rasmussen, S. Bain, Canada, Italy, Denmark, UK

22 Efficacy and safety of tirzepatide versus semaglutide once weekly as add-on therapy to metformin in people with type 2 diabetes (SURPASS-2)
M.J. Davies, J.P. Frias, J. Rosenstock, F. Pérez Manghi, L. Fernández Landó, B.K. Bergman, B. Liu, X. Cui, K. Brown, UK, USA, Argentina

23 Efficacy and safety of GLP-1RAs with or without baseline SGLT-2i: post hoc analysis of the SUSTAIN 10 trial
M. Capehorn, A.-M. Catarig, O. Frenkel, M. Marre, H. Price, A.L. Søndergaard, R. Pratley, UK, Denmark, France, USA

24 Adherence and persistence in patients with type 2 diabetes initiating once-weekly versus once-daily injectable GLP-1 RAs in US clinical practice (STAY study)
W.H. Polonsky, R. Arora, M. Faurby, J. Fernandes, A. Liebl, USA, India, Denmark, Germany
25 The natural history of 786 episodes of diabetic ketoacidosis in adults with type 1 and type 2 diabetes

26 Burden of established cardiovascular disease in people with type 2 diabetes and matched controls: hospital-based care, days absent from work, costs, and mortality

27 One-year trajectories of impaired hypoglycaemia awareness in young people with type 1 diabetes
A. Messaaoui, S. Tenoutsasse, L. Hajselova, L. Crenier, Belgium

28 Association and familial co-aggregation of type 1 diabetes with depression, anxiety and stress-related disorders: a population-based cohort study
S. Liu, M. Leone, H. Larsson, P. Lichtenstein, B.M. D’Onofrio, S.E. Bergen, R. Kuja-Halkola, A. Butwicka, Sweden, USA

29 High adherence to recommended diabetes follow-up procedures by general practitioners is associated with lower estimated cardiovascular risk

30 Assessment of the effect of the COVID-19 pandemic on HbA1c testing: implications for diabetes management and diagnosis
D. Holland, A.H. Heald, C.J. Duff, A.A. Fryer, UK
OP 06 Insights into diabetic retinopathy

Chair: H.-P. Hammes, Germany

31 Evaluation of maculopathy deep learning prediction models using the SDRNT1BIO cohort
J. Mellor, A. Storkey, P.M. McKeigue, H.M. Colhoun, SDRNT1BIO Investigators, Diabetic Retinopathy Clinical Research Network, UK

32 Whole exome- and whole genome sequencing reveals novel rare genetic variants for severe diabetic retinopathy in type 1 diabetes
N. Vuori, J. Haukka, A. Antikainen, V. Harjutsalo, C. Forsblom, N. Sandholm, P.-H. Groop, FinnDiane Study Group, Finland

33 Mapping the daily rhythmic transcriptome in the diabetic retina
H.R. Winter, R. Silk, V. Tiwari, D. Simpson, A. Stitt, E. Beli, UK

34 Transcriptional and post-transcriptional impact of methylglyoxal in human retinal endothelial cells: New players in diabetic retinopathy?
M. Aprile, A. Leone, S. Cataldi, F. Scognamiglio, C. Perfetto, A. Nicolò, C. Nigro, V. Costa, C. Miele, A. Ciccodicola, Italy

35 Two-year progression of retinal neurodegeneration in paediatric patients with type 1 diabetes: the role of glycaemic variability
M. Menduni, F. Picconi, M.C. Parravano, B. Russo, L. Chioma, S. Cianfarani, D. Ylli, P.I. Patera, S. Frontoni, Italy, USA

36 Effect of calcium dobesilate in patients with subclinical diabetic macular oedema: the CADODIAME study
O. Simo-Servat, E. Cordero-Vázquez, H. Brosa, A. Simó-Servat, M. Barraso, X. Valdeperas, M. Barahona, J. García-Arumí, M. Rivas, C. Hernández, L. Lehr, D. Zingg, R. Simó, Spain, Switzerland
**Short Oral Discussion Events**

Short oral discussions rank equally with oral presentations. A short pre-recorded PowerPoint presentation including audio must be uploaded to the EASD virtual meeting platform by the indicated deadline prior to the start of the virtual meeting; this will allow attendees to pre-view the short presentation and thus be able to follow the short summary by the presenter and engage in the discussion during the live/interactive and moderated short oral discussion session.

All short oral discussion sessions will take place during six events which will be held on Tuesday, Wednesday and Thursday from 11:30 to 15:00.

<table>
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<tr>
<th>Event</th>
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<tr>
<td>Short Oral Discussion Event A</td>
<td>Tuesday</td>
<td>11:30 - 13:00</td>
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<td>Short Oral Discussion Event B</td>
<td>Tuesday</td>
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During the Short Oral Discussion Events, the presenting author must be available or make arrangements for somebody with knowledge of pre-uploaded presentation to discuss their work with the Chairperson and the participants. The Short Oral Discussion event Chairperson is a scientist with knowledge of the respective field of work. He/she will elaborate on the findings together with the author.

Delegates are invited to discuss and comment on the short oral discussions using the Virtual Conference Tool.
<table>
<thead>
<tr>
<th>Session</th>
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<th>Page</th>
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<tbody>
<tr>
<td>SO 01</td>
<td>Diabetes epidemiology at scale: registries and large databases</td>
<td>125</td>
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<tr>
<td>SO 07</td>
<td>Risk factors and consequences of poor glycaemic control</td>
<td>132</td>
</tr>
<tr>
<td>SO 13</td>
<td>From pregnant women and mice</td>
<td>138</td>
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<tr>
<td>SO 19</td>
<td>Gastro-entero pancreatic factors</td>
<td>144</td>
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<tr>
<td>SO 25</td>
<td>Interaction of digestive system and glucose metabolism</td>
<td>150</td>
</tr>
<tr>
<td>SO 31</td>
<td>Clinical aspects of semaglutide</td>
<td>158</td>
</tr>
<tr>
<td>SO 37</td>
<td>New approaches to health care delivery</td>
<td>165</td>
</tr>
<tr>
<td>SO 43</td>
<td>Insulin pumps</td>
<td>171</td>
</tr>
<tr>
<td>SO 49</td>
<td>Neuropathy: from mechanisms to memory</td>
<td>177</td>
</tr>
<tr>
<td>SO 55</td>
<td>Not so sweet: cancer and diabetes</td>
<td>183</td>
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<tr>
<td>SO 61</td>
<td>Fatty liver always hides some complications</td>
<td>189</td>
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Tuesday, 28 September
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<tr>
<th>13:15 - 14:15 Short Oral Discussion Event B</th>
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<tbody>
<tr>
<td>SO 02 Diabetes across generations</td>
<td>126</td>
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<tr>
<td>SO 08 Preservation versus destruction of beta cell mass</td>
<td>133</td>
</tr>
<tr>
<td>SO 14 Exercise effects beyond blood glucose</td>
<td>139</td>
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<tr>
<td>SO 20 Carbohydrate and protein metabolism</td>
<td>145</td>
</tr>
<tr>
<td>SO 26 Cardiorenal consequences of SGLT2 inhibition</td>
<td>152</td>
</tr>
<tr>
<td>SO 32 Different aspects of SGLT2 inhibition</td>
<td>159</td>
</tr>
<tr>
<td>SO 38 Psychological aspects of diabetes care</td>
<td>166</td>
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<tr>
<td>SO 44 Glycaemic management in special settings and populations</td>
<td>172</td>
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<td>SO 50 Nephropathy interventions: from blueberries to SGLT2</td>
<td>178</td>
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<tr>
<td>SO 56 Looking at the brain and its function</td>
<td>184</td>
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<td>SO 62 Cardiovascular complications and drugs</td>
<td>190</td>
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OP 07 When men are mice: the study of human physiology in humans

Chair: M. Blüher, Germany

37 Exogenous LEAP2 improves postprandial glucose tolerance and reduces ad libitum food intake in men

38 Effect of a hypercaloric diet on brain insulin sensitivity and liver fat in normal-weight men

39 Effect of lowering branched-chain amino acid levels in patients with type 2 diabetes using sodium-phenylbutyrate

40 Comparative effects of acute hypertriglyceridaemia with or without elevation of non-esterified fatty acids on glucose tolerance, insulin kinetics and beta cell function
D. Trico, B. Astiarraga, M. Seghieri, A. Mengozzi, L. Nesti, S. Baldi, A. Mari, A. Natali, Italy, Spain

41 Pathophysiological changes during weight-loss induced remission of type 2 diabetes in non-obese people
A. Al-Mrabeh, A. Barnes, K. Irvine, T. Kelly, K.G. Hollingsworth, D. Romeres, C. Cobelli, R. Taylor, UK, Italy

42 The Single-Point Insulin Sensitivity Estimator (SPISE) in the prediction of abnormal glucose metabolism in obese children: a long term follow-up study
S. Dule, I. Barchetta, L. Bertoccini, F. Cimini, F. Sentinelli, G. Marini, S. Loche, E. Cossu, M. Baroni, M. Cavallo, Italy
13:15 - 14:45  
Paris Hall

**OP 08 Bugs on fire**

Chair: M.P. Gillum, Denmark

**43 Leukocyte counts and T cell frequencies differ between novel subgroups of diabetes**

**44 Visceral adipose tissue-derived PD1-1+ Tconv from obese patients with type 2 diabetes are pro-inflammatory cells with the potential to recirculate to the blood stream**
A. Giovenzana, E. Bezzecchi, C. Socci, M. Bissolati, C. Corsini, A. Terulla, G.M. Scotti, S. Cardellini, A. Saibene, M. Morelli, E. Ruggiero, A. Petrelli, Italy

**45 Plasma lipopolysaccharide levels and its relationship with glycaemic status and gut microbiota changes associated with H. pylori infection**

**46 TNFA mediates inflammation-induced effects on PPARG splicing in adipose tissue and mesenchymal precursor cells**
S. Cataldi, M. Aprile, C. Perfetto, D. Melillo, S. Giorgetti-Peraldi, M. Cormont, P. Italiani, M. Blüher, J.-F. Tanti, A. Ciccodicola, V. Costa, Italy, France, Germany

**47 Empagliflozin-induced gut microbiota alternation reduces obesity in high-fat diet-fed mice**
J. Shi, H. Qiu, N. Hou, Y. Liu, F. Han, C. Kan, X. Sun, China

**48 Heat shock 70 kDa protein 4 declines after bariatric surgery in association with markers of inflammation and glycaemia**
OP 09 SGLT2 inhibitor trials

Chair: J. Eriksson, Sweden

49 Safety and efficacy of SGLT2-inhibitors in over 70 years old type 2 diabetic patients: 1 year of follow up

50 Cardiorenal outcomes with ertugliflozin by baseline cardiorenal medications: an analysis from VERTIS CV

51 Efficacy and safety of dapagliflozin on kidney and cardiovascular outcomes by baseline albuminuria: a secondary analysis of the DAPA-CKD trial

52 Ertugliflozin in older patients with type 2 diabetes: an analysis from VERTIS CV

53 Empagliflozin versus dapagliflozin for type 2 diabetes in combination with metformin, dipeptidyl peptidase-4 inhibitor and sulfonylurea: 3-year prospective study
E. Ku, H. Jeon, D.-H. Lee, T. Oh, Korea, Republic of

54 Effects of empagliflozin on uric acid levels and gout: observations from the EMPA-REG OUTCOME trial
J.P. Ferreira, S.E. Inzucchi, B. Zinman, M. Mattheus, T. Meinicke, D. Steuobl, C. Wanner, France, USA, Canada, Germany
OP 10 Peripheral neuropathy: pathophysiology and intervention

Chair: R. Malik, Qatar

55 Advanced glycation end-products are associated with diabetic neuropathy in young adults with type 1 diabetes
E.F. Al-Saoudi, M.M. Christensen, P. Nawroth, T. Fleming, E.E. Hommel, M.E. Jørgensen, J. Fleischer, C.S. Hansen, Denmark, Germany

56 Progression and regression of small and large nerve fiber pathology and dysfunction in recent-onset type 1 and type 2 diabetes: a 5-year prospective study
G.J. Bönhof, A. Strom, K. Straßburger, Y. Karusheva, J. Szendroedi, M. Roden, D. Ziegler, GDS group, Germany

57 Dys- but not demyelination is the hallmark of diabetic neuropathic lesions
M. Le Marois, R. Longuespee, D. Schwarz, J. Szendrödi, P. Nawroth, T. Fleming, Germany

58 Morphometric abnormalities of the brain in diabetic peripheral neuropathy
G. Sloan, D. Selvarajah, K. Teh, M. Greig, P. Shillo, I.D. Wilkinson, S. Tesfaye, UK

59 Pain processing areas of the brain demonstrate altered microvascular perfusion during spontaneous neuropathic pain
M. Greig, G. Sloan, P. Shillo, D. Selvarajah, I.D. Wilkinson, S. Tesfaye, UK

60 Long-term high frequency (10 kHz) spinal cord stimulation in painful diabetic neuropathy: a randomised controlled trial
E. Petersen, SENZA-PDN Investigators, USA
13:15 - 14:45 Barcelona Hall

OP 11 Cardiac complications: mechanisms and possible treatments

Chair: M. Haluzik, Czech Republic

61 Identifying myocardial insulin resistance by positron emission tomography combined with hyperinsulinaemic euglycaemic clamp: a new strategy for phenotyping type 2 diabetes
R. Simo, M. Velasquez, O. Simó-Servat, A. Rojano, B. Paun, R. Marés, C. Hernández, S. Aguadé, J.R. Herance, Spain

62 Do cardiovascular risk prediction models developed in primary care patients with type 2 diabetes perform better than the general population models? PREDICT cohort study
R. Pylypchuk, New Zealand

63 Autonomic dysfunction is associated with the development of arterial stiffness: the Whitehall II cohort
J.F. Schaarup, M.S. Christensen, A. Hulman, L. Bjerg, C.S. Hansen, D. Vistisen, A.G. Tabák, D.R. Witte, Denmark, UK, Hungary

64 Metabolically healthy obese and cardiovascular events in a nationwide cohort study
G. Fauchier, A. Bisson, C. Semaan, J. Herbert, A. Bodin, D. Angoulvant, G. Lip, P. Ducluzeau, L. Fauchier, France, UK

65 Distribution of cardiovascular risk in type 2 diabetes: results of an analysis using data from CAPTURE study
J. Westerink, H. Bleken Oestergaard, E. Margo Hengeveld, J. Broe Honore, V. Humphreys, F. Mach, G. Yadav, O. Mosenzon, Netherlands, Denmark, Ireland, Switzerland, India, Israel

66 Association of circulating metabolomic biomarkers with incident cardiovascular disease in type 2 diabetes: analysis from the Hong Kong Diabetes Biobank
Q. Jin, A. Luk, C. Lim, E. Lau, R. Ozaki, H. Lee, W. So, Y. Huang, J. Chan, Hong Kong Diabetes Biobank Study Group, R. Ma, China
OP 12 The long and winding road to prevention and treatment of diabetes

Chair: Z. Semnani-Azad, Canada

67 Predicting sensitivity and resilience to modifiable risk factors for cardiometabolic disease

68 Epidemiology of hypoglycaemic episodes leading to hospitalisations in Denmark over the last two decades
M.H. Jensen, O. Hejlesen, P. Vestergaard, Denmark

69 The association of hypoglycaemia exposure with subsequent adverse events and severe hypoglycaemia: preliminary results from Hypo-RESOLVE
J.E. O'Reilly, A. Jeyam, T.M. Caparrotta, P. McKeigue, H. Colhoun, the Hypo-RESOLVE consortium, UK

70 Heterogeniety in the effects of two anti-diabetic drugs evaluated using machine learning applied to registry data

71 Alendronate use and risk of type 2 diabetes: a Danish population-based case-control study
R. Viggers, P. Vestergaard, Denmark

72 Sex-specific differences in patients deceased after bariatric surgery: a retrospective, registry analysis
EFSD European Foundation for the Study of Diabetes

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www.EuropeanDiabetesFoundation.org
CAMILLO GOLGI PRIZE

Camillo Golgi (1843 - 1926) was awarded the Nobel Prize in 1906 for his studies on the nervous system and kidney physiology. 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 mellitus, which have been carried out in Europe by a member of EASD normally resident in Europe. The awardee delivers a lecture named in honour of Camillo Golgi at the EASD Annual Meeting in the year of the award.

CAMILLO GOLGI LECTURERS:

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<th>Year</th>
<th>City</th>
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Hiddo Lambers Heerspink is Professor of Clinical Trials and Personalized Medicine and a clinical trialist at the Department of Clinical Pharmacy and Pharmacology at the University Medical Center Groningen.

He is also visiting professor at the University of New South Wales in Sydney. He studied pharmacy at the University of Groningen and received his PhD from the University Medical Center Groningen.

L. Heerspink’s research interests focus on optimising current treatment strategies and finding new therapeutic approaches to halt the progression of kidney and cardiovascular diseases in patients with diabetes with a specific focus on personalized medicine.

He leads numerous clinical trials with new interventions to reduce diabetes related kidney and cardiovascular complications. His main expertise includes clinical trial design, personalized medicine and methodological aspects and statistical analyses of clinical trials.

L. Heerspink has authored and co-authored over 350 peer-reviewed publications and is editorial board member of Diabetes Obesity and Metabolism and the Clinical Journal of the American Society of Nephrology.
ALBERT RENOLD PRIZE

The Albert Renold Prize and Lecture honours the memory of A. Renold, the distinguished diabetologist and researcher. The aim of the Lectureship is to recognise an individual's outstanding contribution to the advancement of knowledge in the field of research on the islets of Langerhans. Not only do many generations of scientists consider A. Renold their principal mentor, but he was also one of the founding fathers of EASD, serving as Honorary Secretary (1965-1969) and President (1974-1977). He trained with the eminent diabetologist, E.P. Joslin, and was the first full-time director of the Joslin Research Laboratory in the mid-1950s. In 1963, he returned to Geneva, where he founded the Institut de Biochimie Clinique. Under his leadership, it became an international centre of excellence in islet research until his death in 1988.

P. Langerhans Jr. began medical studies at the University of Jena and completed them in Berlin. The discovery of the islets of Langerhans was published in his thesis in 1869. Later he became Professor of Pathology in Freiburg. He also gained fame due to his discovery of the Langerhans cells in the skin. In 1887, while living on the island of Madeira, progressive renal failure brought his medical activities to an end and he died of uraemia in 1888.

ALBERT RENOLD LECTURERS

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<td>R.N. KULKARNI, US</td>
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<td>2019</td>
<td>Barcelona</td>
<td>T. OTONKOSKI, FI</td>
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<td>2020</td>
<td>Virtual</td>
<td>G.A. RUTTER, UK</td>
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Pedro Herrera is Full Professor at the Faculty of Medicine of Geneva University (Switzerland) where he also heads the Transgenic Core Facility, which he created in 2004, in order to provide other laboratories with access to cutting-edge mouse transgenic techniques. Professor Herrera performed his first experiments of selective in vivo cell ablation to study the formation of the different pancreatic endocrine cell types in developing mouse embryos under the guidance of Jean-Dominique Vassalli, in the Department led by Lelio Orci. Thanks to the Juvenile Diabetes Research Foundation, he rapidly became an independent young investigator and he was the first to report how to irreversibly “tag” with Cre recombinase any specific type of cell in a mouse embryo, in order to follow its progeny in the adult. This procedure quickly became the standard approach to study the lineages of cells, from embryo to adult, in health and disease. What he did is to selectively “activate” a gene that he called “reporter”, in order to label cells in mouse tissues. The single-authored seminal paper (published in 2000) was regarded as bringing ground-breaking discoveries with elegant experiments. During the following years, he showed that there is a population of embryonic pancreatic islet precursors that is multipotent as a cell population but, interestingly, at the single cell level, they are strictly unipotent, i.e., they give rise to only one endocrine cell type. Also, his work on pancreas biology shed light on the origin of adipose tissue during degeneration associated with ageing, and more broadly, on adult cell plasticity as well.

Most recently, observations made in his lab and published in Nature (2010, 2014 and 2019), Nature Cell Biology (2018) and Nature Communications (2021), have led to an innovative breakthrough in the approach to developing new cell replacement therapies for diabetes. Still an early discovery, he has shown that the adult pancreas retains the ability to generate new insulin-producing cells after the near total loss of functional β-cells. This unexpected finding revealed a high degree of cell plasticity, for nearly all the reconstituted β-like cells were indeed adult specialized mature non-β cells (α-, δ- and γ-cells), which had spontaneously reprogrammed to produce insulin. This is particularly striking as his laboratory has now shown that the cellular plasticity is also a feature of human pancreatic islet cells. Beyond diabetes, any degenerative disease will likely benefit from this paradigm shift.
The Rising Star Symposium aims to identify promising and innovative keen researchers who are developing their research activities in Europe. Selected candidates will have the opportunity to present an overview of their past and ongoing research activities during a multidisciplinary research symposium at the EASD Annual Meeting. Four candidates have been selected.

**Rising Star Awardees**

2005 Athens  
P.-O. CARLSSON, SE  
A.L. GLOYN, UK  
M. CNOP, BE  
N. MARX, DE  

2006 Copenhagen  
G. DA SILVA XAVIER, UK  
M. FLODSTRÖM-TULLBERG, SE  
M. FEDERICI, IT  
J.J. MEIER, DE  

2007 Amsterdam  
T. FRAYLING, UK  
A. TENGHOLM, SE  
E.R. PEARSON, UK  
N. STEFAN, DE  

2008 Rome  
R. MALLONE, FR  
P. SCHRAUWEN, NL  
M. BLÜHER, DE  
E. ZEGGINI, UK  

2009 Vienna  
V. GAULT, UK  
G.P. FADINI, IT  
C. HERDER, DE  
V. LYSENKO, SE  

2010 Stockholm  
P. FRANKS, SE  
F. KNOP, DK  
C. LINDGREN, UK  
K. BOUZAKRI, CH  

2011 Lisbon  
I. PROKOPENKO, UK  
M. RAVIER, FR  
A.N.E. AKO, UK  
A.L. BIRKENFELD, DE  

2012 Berlin  
A. BONNEFOND, FR  
J. BEULENS, NL  
L. HERRERO, ES  
H. SELL, DE  

2013 Barcelona  
A. ROSENGREN, SE  
J.A. POSPISILIK, DE  
D.J. PREISS, UK  
G. SUMARA, FR  

2014 Vienna  
G.H. GOOSSENS, NL  
H.J. HEERSPINK, NL  
L. PASQUALI, ES  
R. STIENSTRA, NL  

2015 Stockholm  
M. HENI, DE  
D. HODSON, UK  
R. NOGUEIRAS, ES  
R.A. SCOTT, UK  

2016 Munich  
S. KOOUMAN, NL  
F. D'ADDIO, IT  
N.K.A. SANDHOLM, FI  
A.G. JONES, UK  

2017 Lisbon  
G. CHRISTOFFERSSON, SE  
T. MEZZA, IT  
A.R. WOOD, UK  
Y. YAGHOOTKAR, UK  

2018 Berlin  
M.R. BOON, NL  
E. DE FRANCO, UK  
N. DE LEU, BE  
N.R. GANDASI, SE  

2019 Barcelona  
S. AHMAD, SE  
I. MIGUEL-ESCALADA, ES  
I. NIKOLIC, ES  
D. TRICO, IT  

2020 Virtual  
B. MERINO ANTOLIN, ES  
L. DOLLET, SE  
P. LARRAUFIE, FR  
A. SMINK, NL
Speaker: R. Pirzgalska, Portugal
Title: Neuroimmune regulation of tissue physiology

Speaker: I. Sen, Sweden
Title: Role of ncRNAs in the regulation of skeletal muscle metabolism, growth and insulin sensitivity

Speaker: B.N. Stocks, Denmark
Title: Proteomics in the study of metabolism and type 2 diabetes

Speaker: O.P. Zaharia, Germany
Title: Refining novel diabetes classifications by using markers of adipogenesis and adipose tissue distribution
10:00

Moscow Hall

EASD/ADA Symposium: Optimising diabetes diagnosis, prevention and care: Is precision medicine the answer?

Chair: P.W. Franks, Sweden; R.A. Gabbay, USA

M.S. Udler, USA:
Why precision medicine is the future of diabetes medicine

S.J. Griffin, UK:
Why precision medicine is not the future of diabetes medicine

J. Dennis, UK:
Precision diabetes medicine: the devil is in the details

Paris Hall

Diabetologia Symposium: Learning from machines – AI in diabetes research and care

Chair: H. Mulder, Sweden; J. Busik, USA

F. Theis, Germany:
AI in research: the revenge of algebra?

A. Viñuela, UK:
Large scale multi-omics and genomics research

G. Hartvigsen, Norway:
AI applied in diabetes research and care: glucose control

R.A. Malik, Quatar:
AI applied in diabetes research and care: diabetic neuropathy

S. Wang, Canada:
AI applied in diabetes research and care: wound healing

Discussion
10:00

London Hall

EASD/JDRF Symposium: Beta cell (dys)function in type 1 diabetes

Chair: S.J. Richardson, UK; A.J. Kowalski, USA

C. Evans-Molina, USA:
The role of beta cells in the pathogenesis of type 1 diabetes

R. Mallone, France:
Beta cell stress increases their autoimmune vulnerability

R. Mirmira, USA:
Reviving stunned beta cells: Is it possible?

Madrid Hall

Hypoglycaemia: unanswered questions

Chair: P. Choudhary, UK

R.A. Gubitosi-Klug, USA:
Persistent beta cell function and hypoglycaemia: What do we know?

A. Iqbal, UK:
CGM detected hypoglycaemia: What is its clinical relevance?

S.A. Amiel, UK:
Hypoglycaemic unawareness: Strategies to prevent and manage it?
10:00

The liver, heart and kidney triangle: linking major organs in the complications of dysglycaemia

Chair: C. Wanner, Germany

A. Sanyal, USA:
Liver

P. Nuutila, Finland:
Heart

P. Fioretto, Italy:
Kidney

Fifty shades of ectopic fat in diabetes

Chair: E. Serné, Netherlands

L.V.C. Valenti, Italy:
MAFLD versus NAFLD: Let the contest begin!

E. Eringa, Netherlands:
Perivascular fat and control of perfusion

A. Gemmink, Netherlands:
Skeletal muscle lipid droplets and insulin resistance; it is all about dynamics!

S.J. Ullrich, Germany:
What role do fat cells play in the pancreas?
10:00

Rome Hall

EASD/AASD Joint Symposium: Medical nutrition therapy, physical activity and exercise for diabetes

Chair: B. Ukropcova, Slovakia; D. Zhu, China

A.-M. Aas, Norway:
Medical nutrition therapy in Europe

D. Yabe, Japan:
Medical nutrition therapy in Asia

D.H. Pesta, Germany:
Physical activity guidelines: East meets West!

C.-H. Kuo, Taiwan:
Exercise in the prevention and treatment of obesity and diabetes for Asians
11:45 - 13:15
Moscow Hall

**OP 13 Diverse landscape of type 1 diabetes risk**

Chair: T. Klupa, Poland

**73 Dietary factors and risk of islet autoimmunity and type 1 diabetes: a systematic review and meta-analysis**
A.-M. Lampousi, S. Carlsson, J.E. Löfvenborg, Sweden

**74 Alterations in biomarkers of carbohydrate and lipid metabolism up to 20 years before the diagnosis of type 1 diabetes: findings from the AMORIS cohort**

**75 Decreasing age-at-onset of type 1 diabetes in a unique multigenerational cohort**
P. Leete, R.J. Aitken, I.V. Wilson, A.E. Long, K.M. Gillespie, UK

**76 Follow up of a French cohort of children with a family history of type 1 diabetes**
A. Vambergue, T. Lemoine, M. Kyheng, I. Fajardy, C. Leroy, P. Pigny, P. Fontaine, France

**77 Large socioeconomic differences in life expectancy and years spent with complications of diabetes: a cohort study in the Scottish population with type 1 diabetes, 2013-2018**
A. Höhn, S.J. McGurnaghan, T.M. Caparrotta, A. Jeyam, J.E. O'Reilly, L.A. Blackbourn, S. Hatam, C. Dudel, P.M. McKeigue, H.M. Colhoun, on behalf of SDRN-Epi, UK, Germany

**78 Risk of incident obstructive sleep apnoea in patients with type 1 diabetes: a population-based matched controlled cohort study**
11:45 - 13:15  
Paris Hall

**OP 14 "Humanomics" in diabetes**

Chair: N. Krahmer, Germany

**79 Fasting lipidomic analysis: a tool to unveil type 2 diabetes heterogeneity**

**80 Metabolite differences between type 2 diabetes and type 3c diabetes secondary to chronic pancreatitis based on an untargeted metabolomics approach**
L. Qi, L. Li, China

**81 Regional adipose tissue differences of the proteome reveals an enhanced antioxidative and chaperone activity as a feature of lower body fat in humans**
M. Ahmed, M. Todorcevic, A. Van Dam, F. Karpe, Sweden, UK

**82 Distinct associations of plasma methionine and cysteine with regional fat distribution: the CODAM and the Maastricht studies**

**83 Thrifty energy phenotype predicts weight regain: results of a randomised controlled trial**

**84 Cardiovascular risk of former obesity in healthy-weight Americans**
M.P. Smith, W. Mansour, B. De Gale, Grenada
OP 15 Fat in the liver: where it comes from and how it can be prevented

Chair: A. Gastaldelli, Italy

85 Long-term effect of a diet high in unsaturated fat and dietary protein on intrahepatic lipids and circulating FGF21 levels: results of a randomised controlled trial

86 Fructose intake from fruit juice and sugar sweetened beverages, but not from fruit, is associated with higher intrahepatic lipid content: The Maastricht Study

87 Hepatic glycogen and whole-body fat oxidation are not modulated by one night of prolonged fasting in people with non-alcoholic fatty liver
K.H. Roumans, P. Veeraiah, J. Mevenkamp, B. Havekes, H.P. Peters, L. Lindeboom, P. Schrauwen, V.B. Schrauwen-Hinderling, Netherlands

88 Visceral adipose tissue mitochondrial function is reduced in humans with non-alcoholic fatty liver disease and correlates with insulin resistance

89 Multi-organ multiparametric magnetic resonance imaging reveals distinct ectopic fat distribution in type 2 diabetics with and without co-existing obesity
T. Waddell, A. Bagur, D. Cunha, H. Thomaides-Brears, R. Banerjee, M. Brady, UK

90 Inferring causal pathways between metabolic processes and liver fat accumulations: an IMI DIRECT study
OP 16 CKD in diabetes - a costly complication

Chair: P.-H. Groop, Finland

91 Inside CKD: modelling the clinical and economic impact of routine screening for albuminuria in people with type 2 diabetes

92 Hyper-filtration most strongly predicts decline in estimated glomerular filtration rate: results from analysis of 73,583 person-years
S. Katoh, K. Yokoyama, M. Zeniya, Y. Sakamoto, K. Utsunomiya, R. Nishimura, Japan

93 Metabolic syndrome, and not obesity, is associated with chronic kidney disease in the general US population
E. Muraca, C. Ballabeni, R. Trevisan, G. Perseghin, S. Ciardullo, Italy

94 Non-dipping of nocturnal blood pressure is associated with increased risk of mortality and kidney disease in type 1 diabetes
H. Hjortkjær, F. Persson, S. Theilade, S. Winther, N. Tofte, T. Ahluwalia, P. Rossing, Denmark

95 High plasma concentrations of folic acid are associated with increased risk of graft failure in renal transplant recipients with type 2 diabetes

96 Fully automated closed-loop versus standard insulin therapy in adults with type 2 diabetes requiring dialysis: a randomised controlled trial
L. Bally, C.K. Boughton, A. Tripyla, S. Hartnell, A. Daly, D. Herzig, M.E. Wilinska, C. Czerlau, A. Fry, R. Hovorka, Switzerland, UK
OP 17 Don’t stop moving: beneficial effects of exercise on diabetes and beyond

Chair: F. Amati, Switzerland

97 Regular exercise training improves skeletal muscle glucose uptake in monozygotic twin pairs discordant for body weight

98 Dynamic profiling of the metabolic response to endurance exercise
M. Hoene, X. Zhao, C. Hu, A. Moller, P. Schneeweiss, M. Heni, A. Birkenfeld, A.M. Niess, A. Peter, R. Lehmann, G. Xu, C. Weigert, Germany, China

99 Effects of regular exercise and carnosine on muscle energy metabolism and cognitive performance in the overweight elderly population

100 Resistance exercise training protects beta cell from apoptosis in an in vitro model of type 1 diabetes
G.A. Bronczek, G.M. Soares, E.M. Carneiro, A.C. Boschero, J.M. Costa-Júnior, Brazil

101 High intensity interval training improves insulin sensitivity and affects mitochondria dynamics in skeletal muscle of type 2 diabetes humans
L. Mastrototaro, M. Apostolopoulu, D. Pesta, K. Strassburger, Y. Karusheva, S. Gancheva, J. Szendroedi, M. Roden, Germany

102 TGFβ/mir143/145 associated mis-differentiation affects exercise response
S.I. Dreher, S. Höckele, C. Hoffmann, P. Huypens, A. Moller, A.L. Birkenfeld, A. Peter, J. Beckers, M. Hrabe de Angelis, C. Weigert, Germany
OP 18 Stressed out beta cell organelles

Chair: A. Zorzano, Spain

103 Boosting the pancreatic beta cell function: the influence of nanotopographical cues on cell clustering and organelles crosstalk
A. Galli, A. Marku, N. Dule, P. Marciani, M. Castagna, P. Milani, C. Lenardi, G. Tedeschi, C. Perego, Italy

104 Bcl-xl limits transcriptional and functional decompensation of beta cell mitochondria during chronic exposure to high glucose
D.J. Pasula, R. Shi, A.Z. Shih, A. Chaudry, B. Vanderkruk, B.G. Hoffman, D.S. Luciani, Canada

105 The fate of intracellular sphingosine-1 phosphate regulates beta cell response to fatty acids
Y. Tang, E. Gurgul-Convey, Germany

106 Manf overexpression in pancreatic beta cells protects from streptozotocin-induced beta cell death and diabetes in mice
H. Li, T. Danilova, E. Palm, E. Hakonen, T. Otonkoski, M. Lindahl, Finland

107 Loss of autophagy, Transcription Factor EB (TFEB) and lysosomal homeostasis limit beta cell function and survival under ER stress in vitro and in vivo
Y. Zou, D.J. Pasula, M. Tang, D.L. Dai, G. Soukhacheva, B.C. Verchere, D.S. Luciani, Canada

108 Cell biology of stress granules in pancreatic beta cells
E. Quezada, J. Vasiljevic, M. Solimena, Germany
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>SO 03</td>
<td>Diet, lifestyle and behaviour</td>
<td>127</td>
</tr>
<tr>
<td>SO 09</td>
<td>The ins and outs of insulin secretion</td>
<td>134</td>
</tr>
<tr>
<td>SO 15</td>
<td>Novel methods to study metabolism in diabetes</td>
<td>140</td>
</tr>
<tr>
<td>SO 21</td>
<td>Metabolic control during and after pregnancy</td>
<td>146</td>
</tr>
<tr>
<td>SO 27</td>
<td>Glucose-lowering agents: Real World Evidence</td>
<td>153</td>
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<tr>
<td>SO 33</td>
<td>Non-insulin treatment in type 1 and type 2 diabetes</td>
<td>160</td>
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<tr>
<td>SO 39</td>
<td>Apps, devices and tools and their impact on diabetes care</td>
<td>167</td>
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<tr>
<td>SO 45</td>
<td>Seeing the full picture of diabetic retinopathy</td>
<td>173</td>
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<tr>
<td>SO 51</td>
<td>Burdens and bones in CKD and diabetes</td>
<td>178</td>
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<tr>
<td>SO 57</td>
<td>All you need to know about atherosclerosis and diabetes</td>
<td>185</td>
</tr>
<tr>
<td>SO 63</td>
<td>COVID-19: from the known to the unknown</td>
<td>192</td>
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<td>13:30 - 15:00</td>
<td>Short Oral Discussion Event D</td>
<td>Prediction models and precision medicine</td>
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<td>Beta cells to the grave in type 1 diabetes</td>
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<td>The many faces of insulin sensitivity</td>
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<td>News from the drug pipeline</td>
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<td>GLP-1 receptor agonists and weight loss</td>
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<td>News from new insulins</td>
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<td>Diabetic foot: from cost to COVID</td>
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<td>Predictors of diabetic kidney disease</td>
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<td>Brain, kidney and vascular complications</td>
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<td>Cardiac complications in diabetes and prediabetes</td>
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OP 19 Diet and nutrition

Chair: M.A. Schroijen, Netherlands

109 Reduced carbohydrate and increased protein and fat during weight loss improve the atherogenic lipid profile in type 2 diabetes
M.N. Thomsen, M.J. Skytte, A. Samkani, A. Astrup, J. Frystyk, E. Chabanova, B. Hartmann, J.J. Holst, T.M. Larsen, S. Madsbad, F. Magkos, H.S. Thomsen, R.L. Walzem, T. Krarup, S.B. Haugaard, Denmark, USA

110 Intra-organ fat content during weight loss-induced remission of type 2 diabetes in people with normal or raised BMI

111 Habitual intake of dietary methylglyoxal is associated with less low-grade inflammation, but also with impaired retinal microvascular function: The Maastricht Study

112 Very-low dose pre-meal whey protein microgels reduce postprandial glucose in type 2 diabetes: a randomised, placebo-controlled crossover study

113 Investigation of sex-dependent effects of a one-year low-carb- vs low-fat intervention in patients with high-risk prediabetes - a randomised controlled trial

114 The effect of dietary carbohydrate restriction beyond weight loss on health-related quality of life and cognition
OP 20 Keeping the balance in islet secretion

Chair: A. Tengholm, Sweden

115 Re-internalised Phogrin/IA-2beta is targeted to multigranular bodies devoted to degradation of young insulin secretory granules
I. Kalaidzidis, K.-P. Knoch, J.M. Torkko, A. Sönmez, K. Ganss, Y. Kalaidzidis, M. Solimena, Germany

116 The importance of islet δ-cell ATP-sensitive K⁺ channel (K_ATP) function for somatostatin secretion and islet hormone balance

117 Islet beta cell synchrony and second phase activity are governed by α cells upon physiological nutrient mixtures
M. Raoux, M. Jaffredo, K. Leal Fischer, J. Gaitan, A. Pirog, S. Renaud, J. Lang, France

118 Pancreatic alpha and beta cells are globally phase-locked
H. Ren, Y. Li, C. Han, Y. Yu, B. Shi, X. Peng, S. Wu, X. Yang, L. Chen, C. Tang, China

119 Investigating the presence of proglucagon-derived peptides in human pancreas
T. Mezza, N. Wewer Albrechtsen, G. Di Giuseppe, C. Cefalo, S. Moffa, F. Cinti, U. Capece, S. Menchi, G. Quero, S. Alfieri, A. Giaccari, J.J. Holst, Italy, Denmark

120 Modulation of cholesterol homeostasis via pancreatic LDL receptor alteration: impact on beta cell secretory activity
A. Marku, L. Da Dalt, A. Galli, N. Dule, D. Norata, A.L. Catapano, C. Perego, Italy
OP 21 The adipocentric angle

Chair: N. Venteclef, France

121 Yes-associated protein 1 in adipocytes plays an important role in glucose homeostasis
D.J. Han, R. Aslam, T. Ojha, D.A. Yuen, C.T. Luk, Canada

122 Aberrant overexpression of HOTAIR inhibits abdominal adipogenesis through the epigenetic remodelling of genome-wide DNA methylation and transcription
F.-C. Kuo, Y.-C. Huang, P.-Y. Chen, Taiwan

123 The type 2 diabetes gene RREB1 plays a role in high-fat diet induced adipogenesis in mice

124 Deletion of CD44 promotes adipogenesis and insulin signalling in adipocytes
X. Weng, S.M. Warburton, C.K. Hennayake, L. Kang, UK

125 The role of CDKN2C in the regulation of human adipocyte metabolism

126 Zmat3 hypomethylation contributes to early senescence of adipose precursor cells from healthy individuals with a family history of type 2 diabetes
OP 22 Understanding kidney disease in diabetes

Chair: G. Gruden, Italy

127 Meta-analysis of whole exome and whole genome sequencing data for diabetic nephropathy in individuals with type 1 diabetes
J. Haukka, A. Antikainen, E. Valo, V. Harjutsalo, C. Forsblom, N. Sandholm, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

128 Long non-coding RNA from cells derived from urine in biopsy confirmed kidney disease with diabetes to differentiate diabetic kidney disease from non-diabetic kidney disease
S. Ghosh, M. Basu, A. Raychaudhuri, N.P. Bhattacharyya, India

129 Novel cross-species transcriptional networks, effective genes and signalling pathways of diabetic nephropathy in human and mouse kidney
B.A. Bhat, T. Habib, I. Ahmed, S.S. Jeya, K.A. Fakhro, A.A. Akil, Qatar

130 Soluble Nogo-B upregulates Tie1 receptor: implication for vegfa/vegfr2 signalling in diabetic nephropathy
C. Ricciardi, L. Gnudi, UK

131 Novel compounds found to regulate VEGF-A splicing in diabetic podocytes
M.L. Ayine, Y. Liu, M. Stevens, S. Oltean, UK

132 Circulating tenascin-C levels predict renal progression in type 2 diabetes
D.T. Lui, C. Lee, C.Y. Cheung, C.H. Fong, W. Chow, Y. Woo, K.S. Lam, Hong Kong
13:30 - 15:00

Barcelona Hall

OP 23 Advances in insulin therapy

Chair: T. Heise, Germany

133 Ado09, a co-formulation of pramlintide and insulin A21G improves post-prandial glucose and body weight versus insulin aspart in type 1 diabetes
G. Meiffren, G. Andersen, R. Eloy, C. Seroussi, C. Mégret, S. Famulla, Y.-P. Chan, M. Gaudier, O. Soula, J.H. DeVries, T. Heise, France, Germany

134 Once weekly basal insulin Fc is safe and efficacious in patients with type 2 diabetes previously treated with basal insulin
J. Frias, J. Chien, Q. Zhang, E. Chigutsa, W. Landschulz, P. Wullenweber, A. Haupt, C. Kazda, USA

135 Similar hypoglycaemia duration with once-weekly insulin icodex vs insulin glargine U100 in insulin naive or experienced patients with type 2 diabetes
R. Silver, M. Asong, K. Begtrup, S.R. Heller, L. Liu, J. Rosenstock, USA, Denmark, UK

136 A first in human, single ascending dose study to assess the safety and tolerability, pharmacokinetics, and pharmacodynamics of AB101 in subjects with type 1 diabetes
B.K. Roberts, X. Wang, B. Franey, M. Hernandez, M. Hompesch, USA

137 Final data from a long-term observational study of continuous intraperitoneal insulin infusion in a vulnerable population with diabetes
B. Gehr, N. Oliver, E. Renard, D. Hilgard, K. Mueller, C. Rieger, W. Mueller-Hoffmann, A. Liebl, Germany, UK, France

138 Comparative effectiveness of insulin glargine 300 U/mL and insulin degludec 100 U/mL in insulin naive type 2 diabetes adults: the Restore-2 naive cohort
G.P. Fadini, R. Buzzetti, M. Larosa, M.C. Rossi, A. Nicolucci, D. Cucinotta, Italy
13:30 - 15:00  Saint Petersburg Hall

OP 24 Epidemiology of diabetes complications

Chair: A.O.Y. Luk, Hong Kong

139 Young-onset type 2 diabetes: clinical outcomes in Norwegian general practice
K.L. Tibballs, A. Jenum, E.S. Buhl, Norway

140 Diabetes complications among patients from metropolitan versus non-metropolitan cities in India: one year results of LANDMARC

141 Risk factors, incident dementia, cognitive performance and structural brain abnormalities in individuals with type 2 diabetes

142 Associations between chronic kidney disease, prior cardiovascular conditions and increased mortality in 36,303 type 1 diabetes patients between 2015-2017

143 Heart failure and renal complications in young- and usual-onset type 2 diabetes among white Caucasians from US and UK
S. Paul, J. Ling, O. Montvida, Australia

144 Risk of long term HbA\textsubscript{1c} variability on cancer events and cause-specific death in 15,286 patients with type 2 diabetes (The Hong Kong Diabetes Register 1995-2019)
EASD-Novo Nordisk Foundation Diabetes Prize for Excellence

EASD, in partnership with the Novo Nordisk Foundation, is again pleased to announce the “Diabetes Prize for Excellence” which was awarded for the first time in 2015.

The EASD-Novo Nordisk Foundation Diabetes Prize for Excellence is to be awarded to an internationally recognised researcher who has contributed significantly to our understanding of diabetes and/or its treatment. The Prize awardee’s research may focus on prevention, treatment and/or basic research in physiological biochemistry.

The awardee will deliver a keynote lecture after the award ceremony.

The history of the Novo Nordisk Foundation commences in 1922 when August Krogh, who received the Nobel Prize for Physiology/Medicine in 1920, returned from Canada and the United States holding permission to produce insulin in the Nordic countries. In 1923, the first Foundation was formed - Nordisk Insulinlaboratorium and Nordisk Insulin Foundation which should become the forerunners for the Novo Nordisk Foundation. Today, the Novo Nordisk Foundation is an independent foundation with the vision to improve the health and welfare of people by contributing to research and development.

**DIABETES PRIZE FOR EXCELLENCE LECTURER**

<table>
<thead>
<tr>
<th>Year</th>
<th>City</th>
<th>Lecturer</th>
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<tbody>
<tr>
<td>2015</td>
<td>Stockholm</td>
<td>SIR S. O’RAHILLY, UK</td>
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<tr>
<td>2016</td>
<td>Munich</td>
<td>A. HATTERSLEY, UK</td>
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<tr>
<td>2017</td>
<td>Lisbon</td>
<td>P.E. SCHERER, US</td>
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<td>2018</td>
<td>Berlin</td>
<td>G.S. HOTAMISLIGIL, US</td>
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<td>2019</td>
<td>Barcelona</td>
<td>D.J. DRUCKER, CN</td>
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<td>2020</td>
<td>Virtual</td>
<td>J.C. BRÜNING, DE</td>
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John Todd FRS, FMedSci, FRCP Hons, PhD is Professor of Precision Medicine at the University of Oxford, Director of the Wellcome Centre for Human Genetics and of the JDRF/Wellcome Diabetes and Inflammation Laboratory (DIL), and an Emeritus Senior Investigator of the National Institute for Health Research. Previously, Todd was Professor of Human Genetics and a Wellcome Trust Principal Research Fellow at the University of Oxford, and until 2016, Professor of Medical Genetics at the University of Cambridge. His PhD was in Biochemistry at the University of Cambridge, followed by a postdoctoral fellowship at Stanford University. Todd researches type 1 diabetes (T1D) genetics and disease mechanisms with the goal of delivering clinical interventions. Todd helped pioneer genome-wide genetic studies in common diseases. He then went on to study the associations between disease-associated genetic variants and phenotypes in T1D by founding and deploying the Cambridge BioResource. In the latest phase of his research, to translate basic genetic and immunological knowledge to treatment and prevention, the DIL is testing the efficacy of ultra-low doses of interleukin-2 in newly-diagnosed children with T1D to preserve the remaining pancreatic islet beta-cell insulin production. Todd is also part of the international consortium, Global Platform for the Prevention of Autoimmune Diabetes (GPPAD), aiming to establish primary preventions of T1D in randomised placebo-controlled trials, initially by testing the possibility that daily oral insulin given to children at high genetic risk of T1D can inhibit the autoimmunity that causes T1D. His research in genetics and diabetes has received several awards and prizes, including the 1995 Minkowski Prize of the European Association for the Study of Diabetes. Todd has supervised 35 PhD students with three in progress and has an h-index of 130 and over 80,000 citations.
15:15

New data from from Dapa-CKD

Chair: P. Rossing, Denmark

S.E. Inzucchi, USA:
New findings from a metabolic perspective

D.C. Wheeler, UK:
New findings from a nephrology perspective

J.J. McMurray, UK:
New findings from a cardiology perspective

16:30

SARS-CoV-2 in human islets: a diabetes epidemic in the making?

Chair: A. Op de beeck, Belgium

S. Chen, USA:
Modelling SARS-CoV-2 infection using human organoids

F. Dotta, Italy:
ACE2 expression in human islets
16:30

London Hall

Adipose tissue as a therapeutic target in type 2 diabetes: What should we aim for?

Chair: M. Rydén, Sweden

M.D. Jensen, USA:
Modifying lipid turnover

L. Kazak, Canada:
Target intracellular metabolism

B.B. Kahn, USA:
Improve the production of signalling lipids

Madrid Hall

More from closed loops

Chair: S.E. Siegelaar, Netherlands

P. Choudhary, UK:
The advantages of a single hormone approach

A. Haidar, Canada:
A novel dual-hormone insulin-and-pramlintide artificial pancreas for type 1 diabetes
16:30 Barcelona Hall

100 years Insulin treatment

Chair: F.K. Knop, Denmark

C.J. Tack, Netherlands:
Forms of insulin treatment in 2021: an individualised approach

T. Vilsbøll, Denmark:
New insulins: What could we get, true value or vague promise?

Saint Petersburg Hall

It is time to be active

Chair: P. Schrauwen, Netherlands

J.R. Zierath, Sweden:
Exercise timing and glucose control

M.K.C. Hesselink, Netherlands:
Stand up or exercise? Muscle adaptations to different forms of physical activity
Results from TriMASTER: a 3-way cross-over trial of precision medicine strategy of 2nd/3rd line therapy in type 2 diabetes

Chair: N. Sattar, UK

A.T. Hattersley, UK:
Precision medicine approaches in type 2 diabetes based on how clinical features influence glycaemic treatment response

E.R. Pearson, UK:
Trial designs to test precision medicine approaches

C. Angwin, UK:
Design of the TriMASTER trial

B.M. Shields, UK:
Results of the TriMASTER trial

A.T. Hattersley, UK:
Clinical and methodological implications of TriMASTER trial results

C.M. Kistorp, Denmark:
Commentary

Panel Q&A
10:00

Moscow Hall

Prediabetes: Does it really matter?

Chair: C. Herder, Germany

C.D.A. Stehouwer, Netherlands: Prediabetes: innocent or guilty? Insights from the Maastricht Study

D. Ziegler, Germany: Prediabetic neuropathies?

K. Færch, Denmark: Cardiovascular risk in prediabetes

Paris Hall

EASD/ESC Symposium: How come not every patient with diabetes develops vascular complications?

Chair: M. Haluzik, Czech Republic; S. Achenbach, Germany

T. Tuomi, Finland: It’s genes

A.G. Tabak, UK: It’s environment

J. Petrie, UK: It’s drugs
10:00

**London Hall**

**Perspectives of the diabetic foot syndrome**

Chair: M. Malecki, Poland

K. van Acker, Belgium:
Epidemiology of diabetic foot syndrome and further prospects

E.B. Jude, UK:
Comprehensive diabetic foot care and prevention

V. Fejfarova, Czech Republic:
New diagnostic and therapeutical approaches to diabetic foot management with a focus on PAD

**Madrid Hall**

**New ways to understand kidney disease in diabetes**

Chair: M.F. Gomez, Sweden

M. Pruijm, Switzerland:
The use of functional MRI to understand and predict progression of CKD in diabetes

K. Susztak, USA:
Single cell transcriptomics of kidney tissue: towards a new level of understanding of renal diseases

M. Kretzler, USA:
An integrative systems biology approach in CKD
10:00
Barcelona Hall

Inter-organ communication in diabetes and systemic energy homeostasis

Chair: S. Herzig, Germany

F. Villarroya, Spain:
Organ communication through adipokines: brown adipose tissue as a novel actor

A. Sehgal, USA:
Inter-organ coordination by circadian clocks

A. Georgiadi, Germany:
Novel endocrine circuits in metabolic control
10:00

Saint Petersburg Hall

5 years of cardiovascular benefits of GLP-1 receptor agonists: evidence from recent cardiovascular outcomes trials

Chair: J. Buse, USA

D.J. Drucker, Canada:
The evolution of GLP-1 receptor agonist

S.P. Marso, USA:
Cardiovascular benefits of GLP-1 receptor agonists: evidence from recent outcome trials

O. Mosenzon, Israel:
Renal benefits of GLP-1 receptor agonists: evidence from recent outcome trials

N. Marx, Germany:
Mechanistic insights in the cardiorenal benefits of GLP-1 receptor agonists

I. Lingvay, USA:
Impact of guidelines on management of type 2 diabetes and future directions of GLP-1 receptor agonists

Panel Discussion
10:00  Rome Hall

EASD/ESE Symposium: Diabetes and bone

Chair: C. Mathieu, Belgium; M. Reincke, Germany

N. Napoli, Italy:
Pathways that link obesity, metabolic syndrome, type 2 diabetes and musculoskeletal diseases

R. Eastell, UK:
The impact of diabetes on fracture risk

C. Meier, Switzerland:
Antidiabetic treatments and effects on fracture risk

K. Loh, Australia:
Glucoregulatory actions of bone

Panel Discussion
Next step in incretin therapy: from single to dual agonism

Chair: J.J. Meier, Germany

M.J. Davies, UK:
Introduction to the molecule

T. Heise, Germany:
Tirzepatide mechanism of action: effects on endocrine function and insulin resistance in patients with type 2 diabetes

T. Battelino, Slovenia:
Effect of tirzepatide on glycaemic control captured with continuous glucose monitoring in patients with type 2 diabetes (SURPASS-3 CGM)

K. Cusi, USA:
The effects of tirzepatide on liver fat content and abdominal adipose tissue in patients with type 2 diabetes (SURPASS-3 MRI)

S. Del Prato, Italy:
SURPASS 4: Efficacy and safety of tirzepatide once weekly versus insulin glargine in patients with type 2 diabetes and increased cardiovascular risk

J.W. Eriksson, Sweden:
Commentary

Q&A with Speakers and closing remarks by the Chair
OP 25 Disparities and diversity in diabetes epidemiology

Chair: S. Wild, UK

145 Marked and widening and socio-economic inequalities in prevalence of type 2 diabetes in Scotland
S.H. Wild, J. Wang, Scottish Diabetes Research Network epidemiology group, UK

146 Prevalence and characteristics associated with antidepressant and antipsychotic prescribing prior to diagnosis of type 2 diabetes in Scotland
C.R. Greene, S.H. Wild, H. Wu, C.A. Jackson, UK

147 Selection pressures on the ACE2 gene in a Scottish and South Indian type 2 diabetes population
C. Nangia, S. Srinivasan, V. Radha, V. Mohan, C.N. Palmer, UK, India

148 Sex, race, and ethnicity representativeness in cardiovascular outcomes trials in type 2 diabetes: a meta-epidemiological study
I. Avgerinos, T. Karagiannis, A. Liakos, P. Kakotrichi, A. Tsapas, E. Bekiari, Greece, UK

149 GWAS reveals a novel locus associated with kidney function in people of Middle-Eastern decent
S.A. Mohamed, J. Tares, P.W. Franks, L. Bennet, Sweden

150 People with type 1 diabetes of African-Caribbean ethnicity are at increased risk of sight-threatening retinopathy
A. Mangelis, S. Ayis, A. Nirmalakumaran, J. Collins, L. Webster, S.M. Thomas, S. Mann, J. Karalliedde, UK
OP 26 Beta cells: sensing, signalling and secreting

Chair: M. Solimena, Germany

151 Gamma aminobutyric acid-induced calcium signalling in the primary cilium of islet beta cells
G. Sanchez, C. Incedal, J. Prada, T. Dandekar, O. Idevall-Hagren, Sweden, Germany

152 Involvement of extracellular ATP signalling in the diabetogenic response of pancreatic beta cells
T. Brun, D. Duhamel, L. Oberhauser, C. Jiménez-Sánchez, C. Bartley, V. Lavallard, P. Maechler, Switzerland

153 A dual GLP-1/GIP agonist may encompass the beneficial effects of both incretins on pancreatic beta cell function in the absence of beta-arrestin2
N. Zaïmia, S. Costes, S. Dalle, G. Bertrand, M.A. Ravier, France

154 Feeding inhibits the catabolic activity of glutamate dehydrogenase in mouse pancreatic beta cells as revealed by in situ assessment of enzyme activity
Y. Zhou, P. Maechler, Switzerland

155 Alterations in the expression of proteins involved in nuclear-cytoplasmic shuttling of cargo in pancreatic beta cells under the duress of chronic hyperglycaemia
A. Kowluru, S. Elebra, V. Thamilselvan, A. Harajli, USA

156 What regulates insulin granule mobility in the submembrane space? Role of cAMP and adenine nucleotides
B. Gaus, I. Rustenbeck, Germany
11:45 - 13:15

**OP 27 Prediction tools for outcomes in diabetes**

Chair: D. Gordin, Finland

157 **Prediction models for future complications in type 1 diabetes**

N. Al-Sari, Denmark

158 **Validation of the classification for type 2 diabetes into five subgroups: a report from the ORIGIN trial**

M. Pigeyre, S. Hess, M.F. Gomez, O. Asplund, L. Groop, G. Pare, H. Gerstein, Canada, Germany, Sweden

159 **Machine learning approaches for prediction of nocturnal hypoglycaemia in patients with type 1 diabetes in a hospital setting**

V.B. Berikov, R.M. Kozinetz, J.F. Semenova, V.V. Klimontov, Russian Federation

160 **Non-invasive prenatal diagnosis of fetal genotype in pregnant women with GCK-MODY: the impact of precision medicine on antenatal care**


161 **Validation of fear of hypoglycaemia screener: results from the T1D Exchange Registry**


162 **Mental illness, ethnicity and civil status are associated with non-attendance in diabetic retinopathy screening among people with type 2 diabetes**

G.B. Petersen, S. Byberg, M.V. Fangel, D. Vistisen, L.E. Joensen, H. Vorum, J.K. Kristensen, Denmark
OP 28 Pathogenic mechanisms of complications

Chair: D. Van Raalte, Netherlands

163 The gut microbiome composition is altered in long-standing type 1 diabetes and associated with disease-related complications

164 No association between haptoglobin genotype and cerebral small-vessel disease in type 1 diabetes

165 Nox5 in circulating peripheral blood mononuclear cells: a potential biomarker in unstable diabetic vascular and renal disease
T.J. Block, K.C. Sourris, W.A. Khan, P. Kantharidis, J.C. Jha, M.E. Cooper, J. Shaw, K. Jandeleit-Dahm, Australia, Germany

166 Dicarbonyl stress alters mitochondrial protein homeostasis in endothelial cells
R. Bulkescher, S. Herzig, J. Szendrödi, P.P. Nawroth, J. Zemva, Germany

167 Insulin resistance associates with arterial stiffness in type 1 diabetes: a novel component of double diabetes

168 Wnt regulation and collagen gene expression in the bone of type 2 diabetes elderly women
G. Leanza, F. Tramontana, F. Cannata, A. Piccoli, V. Viola, M. Faraj, R. Strollo, P. Pozzilli, N. Napoli, Italy
11:45 - 13:15 Barcelona Hall

OP 29 Understanding muscle and liver metabolism

Chair: M. Roden, Germany

169 Assessing the association between metabolic flexibility measured upon insulin stimulation and during incremental submaximal exercise
M. Bergman, R.F. Mancilla, Y.M. Bruls, P. Schrauwen, V.B. Schrauwen-Hinderling, M.K. Hesselink, Netherlands

170 TSC22D4 interacts with Akt to regulate insulin sensitivity
B. Ekim Ustunel, S. Demir, G. Wolff, A. Wieder, J. Szendrödi, S. Herzig, Germany

171 C2-ceramide recycling inhibits insulin signalling in muscle cells

172 The impact of different lipogenic diets on indirect pathway contributions to hepatic glycogen synthesis

173 Transcriptional repression of the iron exporter ferroportin via the PI3K-AKT-Foxo1 signalling pathway may explain liver iron overload in patients with type 2 diabetes
R. Qiu, N. Volk, O. Marques, S. Altamura, M.U. Muckenthaler, Germany

174 Ciprofibrate decreases net hepatic glucose uptake and tends to decrease net myocardial glucose uptake in prediabetic male volunteers
OP 30 GLP-1 receptor agonism: putative mechanisms of benefit

Chair: R. IJzerman, Netherlands

175 Combination very low dose sulphonylurea and DPP4 inhibitor have a potent glucose lowering effect through augmentation of beta cell function without increase in hypoglycaemia

176 Emotional eating is associated with reduced sensitivity to the central effects of GLP-1 receptor agonist treatment
C.C. Van Ruiten, J. Ten Kulve, L. Van Bloemendaal, M. Nieuwdorp, D. Veltman, R.G. IJzerman, Netherlands

177 Liraglutide decreases postprandial fibroblast growth factor 19 and glucagon-like peptide 2, and increases postprandial cholecystokinin in individuals with obesity

178 Short-term treatment with liraglutide does not improve cardiac diastolic function in patients with type 2 diabetes: a randomised double-blind placebo-controlled trial
A.S. Bojer, M.H. Soerensen, J. Bjerre, P. Gæde, N. Vejlstrup, P.L. Madsen, Denmark

179 Glucose-dependent insulinotropic polypeptide (GIP) contributes to sitagliptin-mediated improvement of beta cell function in patients with type 2 diabetes
S. Stensen, L.S. Gasbjerg, M.M. Rosenkilde, B. Hartmann, T. Vilsbøll, J.J. Holst, M.B. Christensen, F.K. Knop, Denmark

180 Semaglutide reduces hsCRP levels across different treatment settings: post hoc analyses of SUSTAIN and PIONEER trials
O. Mosenzon, M. Capehorn, A. De Remigis, S. Rasmussen, P. Weimers, J. Rosenstock, Israel, UK, Denmark, USA
<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>11:45 - 13:15</td>
<td>Short Oral Discussion Event E</td>
<td></td>
</tr>
<tr>
<td>SO 05</td>
<td>Therapeutic advances</td>
<td>130</td>
</tr>
<tr>
<td>SO 11</td>
<td>In vivo and ex vivo beta cell function in diabetes</td>
<td>136</td>
</tr>
<tr>
<td>SO 17</td>
<td>Novel aspects of beta cell and insulin secretion</td>
<td>142</td>
</tr>
<tr>
<td>SO 23</td>
<td>Fatty matters</td>
<td>148</td>
</tr>
<tr>
<td>SO 29</td>
<td>Novel glucose-lowering agents</td>
<td>155</td>
</tr>
<tr>
<td>SO 35</td>
<td>More on insulins</td>
<td>163</td>
</tr>
<tr>
<td>SO 41</td>
<td>Closed loop systems</td>
<td>169</td>
</tr>
<tr>
<td>SO 47</td>
<td>Autonomic neuropathy</td>
<td>175</td>
</tr>
<tr>
<td>SO 53</td>
<td>New insights from animal models of complications</td>
<td>181</td>
</tr>
<tr>
<td>SO 59</td>
<td>Vascular complications: mechanisms and risk factors</td>
<td>187</td>
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<td>Time</td>
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<td>13:30 - 15:00</td>
<td>Short Oral Discussion Event F</td>
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<tr>
<td>SO 06</td>
<td>Genes and genomic engineering</td>
<td>131</td>
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<tr>
<td>SO 12</td>
<td>Sugar Moms</td>
<td>137</td>
</tr>
<tr>
<td>SO 18</td>
<td>It must be my hormones</td>
<td>143</td>
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<td>SO 24</td>
<td>Glucose-lowering drugs and the liver</td>
<td>149</td>
</tr>
<tr>
<td>SO 30</td>
<td>The advantage of dual agonists</td>
<td>157</td>
</tr>
<tr>
<td>SO 36</td>
<td>Determinants and consequences of hypoglycaemia</td>
<td>164</td>
</tr>
<tr>
<td>SO 42</td>
<td>Other aspects of managing blood glucose levels</td>
<td>170</td>
</tr>
<tr>
<td>SO 48</td>
<td>Peripheral neuropathy - predictors of disease and prognosis</td>
<td>176</td>
</tr>
<tr>
<td>SO 54</td>
<td>Pathogenic mechanisms of complications</td>
<td>182</td>
</tr>
<tr>
<td>SO 60</td>
<td>Hepatic fibrosis: from screening to treatment</td>
<td>188</td>
</tr>
</tbody>
</table>
OP 31 Modelling diabetes long term complications

Chair: G. Medina-Gomez, Spain

181 Mir-34a mediates progression of liver injury from NAFLD to fibrosis in diabetes associated liver fibrosis
Q. Su, UK

182 An siRNA strategy to silence apolipoprotein CIII in the fight against the metabolic syndrome
P. Recio-López, P.-O. Berggren, L. Junnti-Berggren, I. Valladolid-Acebes, Sweden

183 Loss of Hsp70 leads to increased albuminuria in a STZ-induced diabetic mouse model

184 Involvement of gut-hormones in regulating female reproductive function in obese and incretin receptor knockout animal models
D. Khan, O.O. Ojo, A. Sridhar, P.R. Flatt, R.C. Moffett, UK

185 Adiporon improves endurance capacity and decreases ectopic lipid deposition in middle-aged obese mice
C. Selvais, Belgium

186 Analysis of the hypothalamic transcriptome controlling counter-regulatory responses to hypoglycaemia
J. Castillo-Armengol, A. Rodriguez Sanchez-Archidona, C. Fledelius, B. Thorens, Denmark, Switzerland
13:30 - 15:00

Paris Hall

OP 32 Benefits of GLP-1: from traditional to non-traditional complications

Chair: F. Giorgino, Italy

187 Liraglutide may induce impaired diastolic heart function by activation of sympathetic tonus: A group effect of this class of drugs?
S.B. Haugaard, P. Kumaraturai, C. Anholm, O.W. Nielsen, A. Sajadieh, Denmark

188 Liraglutide reduces cardiac adipose tissue in type 2 diabetes: results from the LiraFlame randomised controlled trial
T. Hansen, I. Rasmussen, E. Zobel, R. Ripa, B. Von Scholten, V. Curovic, A. Kjaer, P. Rossing, Denmark

189 Positive impact of liraglutide on pulmonary function in patients with type 2 diabetes: data from the randomised cross-over LIRALUNG study

190 Effect of subcutaneous semaglutide on features of the metabolic syndrome in patients with non-alcoholic steatohepatitis
L.L. Gluud, I. Bakulin, S. Ladelund, P.N. Newsome, A. Rendon, A.-S. Sejling, M.E. Tushuizen, K. Cusi, Denmark, Russian Federation, UK, Netherlands, USA

191 Multi-target engagement effect of a novel long-acting Glucagon/GIP/GLP-1 triple agonist (HM15211) in animal model of NASH
J. Choi, J. Lee, J. Kim, H. Kwon, E. Park, J. Lee, D. Kim, Y. Kim, I. Choi, Korea, Republic of

192 In patients with fatty liver, higher fasting GLP-1 levels are associated with increased insulin resistance and reduced beta hydroxybutirate
G. Mocciaro, F. Carli, M. Gaggini, C. Barbieri, B. Patricio, C. Rosso, A. Armandi, E. Lembo, E. Bugianesi, G. Mingrone, A. Gastaldelli, Italy
OP 33 Diabetic foot problems: from prediction to treatment

Chair: A.J.M. Boulton, UK

193 Metabolomic risk predictors of diabetic foot ulcers

194 IDR-1018 peptide improves wound healing in vitro and when topically applied to skin wounds in a model of type 1 diabetes

195 Protein tyrosine phosphatase 1B inhibition promotes diabetic wound healing via activation of the antioxidant enzyme heme oxygenase 1
E.C. Leal, A. Figueiredo, D. Santos, M. Delibegovic, E. Carvalho, Portugal, UK

196 A M1/M2-macrophages-regulating new drug for diabetic foot ulcers with poor-controlled HbA$_{1c}$ risk factor in an International Phase 3 study
M.-L. Kuo, S.-C. Chang, Taiwan

197 Long-term outcomes of autologous cell therapy, angioplasty and conservative therapy in patients with chronic limb-threatening ischaemia and diabetes
M. Dubsky, J. Husakova, R. Bem, V. Fejfarova, R. Jarosikova, A. Jirkovska, V. Woskova, Czech Republic

198 Diabetes is not associated with major amputation after open vascular surgery for chronic limb-threatening ischaemia: a nationwide propensity score analysis
OP 34 SGLT2 inhibition: putative mechanisms of benefit

Chair: B. Zinman, Canada

199 The SGLT2 inhibitor ertugliflozin causes a switch of cardiac substrate utilisation leading to reduced cardiac mTOR-signalling, unfolded protein response and apoptosis
P.A. Mann, J. Möllmann, B.M. Klinkhammer, P. Droste, B. Peter, N. Marx, M. Lehrke, Germany

200 Empagliflozin induced white adipocyte browning and modulated mitochondrial dynamics in KK Cg-Ay/J mice and mouse adipocytes
L. Chen, L. Xu, X. Liu, T. Li, X. Li, M. Xue, B. Sun, China

201 SGLT2 inhibition improves beta cell function and glucose tolerance, but does not affect glucose or FFA uptake in skeletal muscle

202 Urinary proteomics and the effect of dapagliflozin treatment in persons with type 2 diabetes and diabetic kidney disease: a randomised crossover trial

203 Effect of SGLT2 inhibition on ketone bodies in patients with stable chronic heart failure
R. Pietschner, J. Kolwelter, A. Bosch, D. Kannenkeril, C. Ott, M. Schiffer, S. Achenbach, R.E. Schmieder, Germany

204 Effects of SGLT2 inhibition on lipid storage and lipolysis in adipose tissue in type 2 diabetes
13:30 - 15:00

**OP 35 Omics and more for type 2 diabetes and complications**

Chair: D. Vistisen, Denmark

205 *CpG sites associated with insulin resistance and related novel variants suggest a possible mechanism linking insulin resistance and cardiometabolic traits*


206 *Novel biomarkers for glycaemic deterioration in type 2 diabetes: an IMI RHAPSODY study*


207 *Mirror effects of rare OPRD1 variants on the aetiology of type 2 diabetes and obesity*

S. Meulebrouck, G. Quériat, M. Baron, M. Canouil, M. Derhourhi, B. Balkau, G. Charpentier, S. Franc, M. Marre, R. Roussel, R. Scharffmann, P. Froguel, A. Bonnefond, France

208 *Multi-phenotype association analysis reveals shared biological pathways between type 2 diabetes and depression*

J.G. Maina, Z. Balkhiyarova, M. Kaakinen, A. Nouwen, I. Prokopenko, France, UK

209 *Serum magnesium is inversely associated with heart failure, atrial fibrillation and microvascular complications in type 2 diabetes*


210 *Genome-wide meta-analysis and omics integration identifies novel genes for diabetic kidney disease*

OP 36 Optimising insulin therapy

Chair: T. Vilsbøll, Denmark

211 Impact of the fasting plasma glucose titration target on the success of basal insulin titration in insulin-naive patients with type 2 diabetes: a systematic analysis
J. Wolters, D. Wollenhaupt, M. Abd El Aziz, M.A. Nauck, Germany

212 Advancing therapy in basal insulin users with type 2 diabetes: better clinical outcomes with iGlarLixi vs premix BIAsp 30 in the SoliMix trial
C. Trescoli, J. Rosenstock, R. Emral, L. Sauque-Reyna, V. Mohan, S. Al Sifri, N. Lalic, A. Alvarez, P. Picard, N. Demil, M. Bonnemaire, R.J. McCrimmon, Spain, USA, Turkey, Mexico, India, Saudi Arabia, Serbia, Argentina, France, UK

213 Real-world persistence, adherence, healthcare resource utilisation, and costs in people with type 2 diabetes switching from basal insulin (BI) to 2nd- vs 1st-generation BI
E. Wright, J. Gill, S. Huse, X. Li, T. Reid, F. Zhou, USA

214 Glycaemic improvement in 3,436 people with type 1 diabetes using the Omnipod DASH® Insulin Management System over first 90 days of use
G. Aleppo, D. J. DeSalvo, F. Lauand, L. M. Huyett, A. Chang, T. Vienneau, T. T. Ly, USA, France

215 Pharmacodynamics, pharmacokinetics, safety, and tolerability of INS068 vs insulin degludec in type 1 diabetes at steady state: a phase I, randomised, double-blind, cross-over-trial
M. Hernandez, B. Franey, J. Wang, Y. Li, B. Zhang, M. Hompesch, USA, China

216 Glycaemic control with once weekly basal insulin Fc in persons with type 2 diabetes using continuous glucose monitoring in a phase 2 study
MINKOWSKI PRIZE

The prize will be given in relation to research which has been carried out by a person normally residing in Europe.

It is awarded for distinction, manifested by publications which contribute to the advancement of knowledge in the field of diabetes mellitus.

The prize commemorates Oskar Minkowski (1858-1931) who successfully performed the extirpation of the pancreas in dogs in 1889 and noticed that they developed diabetes.

MINKOWSKI LECTURERS

<table>
<thead>
<tr>
<th>Year</th>
<th>City</th>
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<tr>
<td>1966</td>
<td>Aarhus</td>
<td>P.J. PELTONEN-PALOTIE, UK</td>
<td>1994</td>
<td>Düsseldorf</td>
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<td>Louvain</td>
<td>L.A. CARLSON, SE</td>
<td>1996</td>
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<td>B. JEANRENAUD, CH</td>
<td>1998</td>
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<td>C.N. HALES, UK</td>
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<td>W.J. MALAISSE, BE</td>
<td>2000</td>
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15:15  INDUCTION OF HONORARY MEMBERS  Moscow Hall

S. Del Prato, President EASD and EFSD

followed by

56TH MINKOWSKI LECTURE

Chair:  S. Del Prato, President EASD and EFSD

Speaker:  A. Bonnefond, France

Title:  Hunt for rare variants of pretty little things in the genetics of diabetes

Amélie Bonnefond is Director of Research (Inserm) at the INSERM/CNRS 1283/8199 unit, (Lille Pasteur Institute and University of Lille).

She heads a team tackling “Metabolic functional (epi)genomics and their abnormalities in type 2 diabetes and related disorders”. She is also the current scientific director of the PIA-funded EquipEx LIGAN-PM platform dedicated to the use of next-generation sequencing in precision medicine. She is a visiting professor at Imperial College London where she teaches in several Master courses.

She was laureate of the 2012 Rising Star award from European Association for the Study of Diabetes (EASD), the 2018 Auguste Loubatières award from the French-speaking Association for Diabetes (SFD), and a European Research Council Starting Grant.
16:15
Moscow Hall

Michael Berger Debate: Who suffers more: Are women with diabetes at higher cardiovascular risk?

Chair: A. Kautzky-Willer, Austria

C.N. Bairey-Merz, USA:
Yes

N. Sattar, UK:
No

Paris Hall

The future of incretin-based treatments

Chair: M.A. Nauck, Germany

F.K. Knop, Denmark:
Activating multiple receptors

T.R. Pieber; Austria:
Established items in new packaging

P.N. Newsome, UK:
Is the liver a target of GLP-1?

London Hall

Will human-first approaches finally get to the root cause of diabetic vascular disease?

Chair: A. Avogaro, Italy

L. Bjerre Knudsen, Denmark:
Mechanistic studies on GLP-1 analogues in atherosclerosis

K.E. Bornfeldt, USA:
Apolipoprotein C3 and its mechanisms in diabetic vascular disease
16:15

Madrid Hall

Devices support diabetes treatment

Chair: R. Weitgasser, Austria

G. Freckmann, Germany:
Glucose sensors on the rise: new technologies?

L. Gonder-Frederick, USA:
Psychological challenges raised by diabetes technology

Barcelona Hall

Small vessels, big problems: cerebral small-vessel disease - a potential microvascular complication of diabetes

Chair: L.M. Thorn, Finland

H.S. Markus, UK:
General aspects of cerebral small-vessel disease and link to type 2 diabetes

E. van Duinkerken, Netherlands:
Clinical picture of cerebral small-vessel disease in adults with type 1 diabetes

Saint Petersburg Hall

Harnessing intracellular pathways for therapy

Chair: B. Cannon, Sweden

G.I. Shulman, USA:
Uncouplers in fatty liver therapy

A. Zeigerer, Germany:
Intracellular transport in systemic energy homeostasis and diabetes
INNODIA - Translational approaches to disease modifying therapy of type 1 diabetes: an innovative approach towards understanding and arresting type 1 diabetes

Chair: C. Mathieu, Belgium; M. Peakman, USA

C. Mathieu, Belgium:
Introduction

S. Brunak, Denmark:
Multiomics analysis for biomarker discovery in type 1 diabetes: the First 100 newly diagnosed in INNODIA

T. Danne, Germany:
INNODIA pathways to clinical intervention in type 1 diabetes

Discussion
EMPEROR Preserved Study

Chair: F. Zannad, France

J. Butler, USA:  
EMPEROR-Preserved: context, design and population

S.D. Anker, Germany:  
EMPEROR-Preserved: main results

G. Filippatos, Greece:  
New data from EMPEROR-Preserved: patient population, efficacy endpoints and safety of empagliflozin in patients with and without diabetes

M. Packer, USA:  
Pooled-Analysis of EMPEROR-Reduced and EMPEROR-Preserved trials: key results

A. Norhammar, Sweden:  
Commentary

Group Discussion
10:00

Moscow Hall

Retinopathy and artificial intelligence

Chair: H. Colhoun, UK

S. R. Aravind, India:
Diabetic retinopathy screening, a model for AI

A. Storkey, UK:
Deep learning approaches to retinal images for prediction of outcomes in diabetes

Paris Hall

Current guidelines on diabetes management

Chair: P. Fioretto, Italy

C. Wanner, Germany:
Current EASD/ADA and KDIGO guidelines for treating type 2 diabetes with CKD

H. J. Lambers Heerspink, Netherlands:
New data on SGLT2 inhibitors and mineralocorticoid receptor antagonism in type 2 diabetes with CKD

London Hall

Importance of insulin clearance in the regulation of glucose metabolism

Chair: Amalia Gastaldelli, Italy

S. Najjar, USA:
Hepatic insulin clearance: mechanisms

B. Mittendorfer, USA:
Insulin clearance in diabetes and obesity
10:00

**Madrid Hall**

**Debate: Preventing diabetic complications – 100 years on from insulin: Which of the newer classes will prevail?**

Chair: R.K. Semple, UK

**M.A. Nauck, Germany:**
100 years later, it’s GLP-1 receptor agonists

**J.P.H. Wilding, UK:**
100 years later, it’s SGLT2 inhibitors

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**Barcelona Hall**

**In-hospital management of hyperglycaemia: still a Cinderella of diabetes management?**

Chair: T. Tankova, Bulgaria

**G. van den Berghe, Belgium:**
Treatment of hyperglycaemia in ICU: tight or not too tight?

**J. Mader, Austria:**
Treatment of hyperglycaemia in general ward: glucose targets and best approaches

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**Saint Petersburg Hall**

**COVID-19 infection in people with diabetes: a risky combination**

Chair: T. Fall, Sweden

**S. Schlesinger, Germany:**
Diabetes and risk of COVID-19 progression and mortality – epidemiological perspective

**K. Khunti, UK:**
Care of people with diabetes post COVID-19 in primary care
EASD-Lancet Symposium: Treatment of obesity: the future of diabetes treatment?

Chair: J. Bagenal, UK; M.J. Davies, UK

H. Yki-Järvinen, Finland:
Back to the basics: Why are obesity and diabetes related?

P. Sumithran, Australia:
Harnessing weight loss interventions for diabetes treatment: How successful have we been?

I. Lingvay, USA:
Back to the future: Is a weight-centric goal for diabetes treatment feasible?

B. Van der Schueren, Belgium:
Type 1 diabetes and obesity: a two-way road filled with potholes

All speakers:
Bring it on! Q&A
Finerenone: a new approach to kidney protection in patients with type 2 diabetes

Chair: A. Solini, Italy

R.A. DeFronzo, USA:
New directions in kidney care in diabetes: targeting mineralocorticoid receptor overactivation with finerenone

G.L. Bakris, USA:
FIDELIO-DKD: cardiorenal outcomes in people with high-risk CKD and type 2 diabetes

L.M. Ruilope, Spain:
FIGARO-DKD: cardiorenal outcomes across the broad spectrum of CKD and type 2 diabetes

J.B. McGill, USA:
Navigating the data for key subgroup

A.L. Birkenfeld, Germany:
Maintaining the course: safety considerations for optimising patient outcomes

R. Agarwal, USA:
Setting the route for CKD and type 2 diabetes care: clinical consequences of the FIDELIO-DKD and FIGARO-DKD data

P.-H. Groop, Finland:
Commentary followed by Q&A
217 Specific alterations in the STAT1/STAT6 axis may contribute to beta cell loss in type 1 diabetes
K. Afi Leslie, S.J. Richardson, N.G. Morgan, M.A. Russell, UK

218 Type III interferons are expressed in human pancreas at type 1 diabetes onset and induce immunostimulatory and antiviral activities in human beta cells

219 Using the HALO image analysis platform to study pancreas pathology and insulitis in young people with recent-onset type 1 diabetes
R.C. Wyatt, P. Leete, M. Padilla, M. Yang, M. Bogdani, G. Deutsch, C. Flaxman, M. Atkinson, I. Kusmartseva, N.G. Morgan, S.J. Richardson, UK, USA

220 Ag019 ActoBiotics as monotherapy or in association with teplizumab in recent-onset type 1 diabetes was safe and demonstrated encouraging metabolic and immunological effects
OP 38 Novel agents

Chair: M. Muskiet, Netherlands

221 The novel GIP, GLP-1, and glucagon triple receptor agonist LY3437943 exhibits robust efficacy in preclinical models of obesity and diabetes

222 Novel GIP/GLP-1/glucagon receptor agonist LY3437943: a first in human dose study in healthy subjects

223 Safety and pharmacokinetic study of CPL207280, a novel GPR40 receptor agonist, after a multiple-dose in healthy volunteers
K. Bazydlo-Guzenda, K. Jarus-Dziedzic, A. Gierczak-Pachulska, K. Bus-Kwasnik, P.J. Rudzki, M. Wieczorek, Poland

224 DA-1241 a novel GPR119 agonist: Safety, tolerability, pharmacokinetics, and pharmacodynamics: Part 2 of multiple ascending dose study in type 2 diabetes patients
M. Hompesch, B. Franey, M. Grimm, D. Lee, J. Jeong, M.-K. Kim, USA, Korea, Republic of
OP 39 Glucagon metabolism in humans

Chair: J.J. Holst, Denmark

225 Different patterns of glucose- and glucagon-stimulated insulin secretion in new diabetes subphenotypes

226 Increased glucagon sensitivity in totally pancreatectomised patients

227 Splanchnic and leg glucagon metabolism in healthy adults
A. Basu, R. Ruchi, Y. Yadav, A. Weaver, L. Wilkins, M. Schiavon, C. Cobelli, C. Dalla Man, A. Pandey, K. Johnson, S. Renuse, R. Basu, USA, Italy

228 A 2-year follow-up of RYGB surgery in obesity and type 2 diabetes: enhanced responses of multiple hormones to oral glucose but not i.v. arginine challenge
G. Fanni, P. Katsogiannos, M.J. Pereira, J.W. Eriksson, Sweden
OP 40 Protecting the kidney in diabetes

Chair: N. Sandholm, Finland

229 Protective impact and potential mechanisms of Elabela on DKD via β-arrestins
M. Shi, D. Tan, Y. Chen, W. Gu, H. Zhang, China

230 Chop-ASO ameliorates glomerular and tubular damage on top of ace-inhibition in diabetic nephropathy

231 SGLT2 inhibition prevents acute kidney injury by inhibiting glucose transport and mTORC1 activity in proximal tubule cells

232 Acute effects of dapagliflozin on renal oxygenation and perfusion in type 1 diabetes with albuminuria: a randomised, double-blind, placebo-controlled crossover trial
OP 41 Building the evidence base for new devices

Chair: F.W. Gibb, UK

233 Cambridge hybrid closed-loop in very young children with type 1 diabetes: a multi-national 4-month randomised trial

234 Cambridge hybrid closed-loop in children and adolescents with type 1 diabetes: a multicentre 6-month randomised trial
C.K. Boughton, L. Kanapka, R. Hovorka, DAN05 Consortium, UK, USA

235 Effect of intermittent-scanning CGM to glycaemic control including hypoglycaemia and quality of life of patients with type 1 diabetes (ISCHIA study)

236 Evaluation of accuracy and safety of the next generation 180-day long-term implantable Eversense CGM system: the PROMISE Study
OP 42 Cardiovascular disease: predictors and outcomes

Chair: C.J. Tack, Netherlands

237 Respective predictive value of glycation gap and silent myocardial ischaemia for cardio-vascular events in asymptomatic patients with type 2 diabetes
P. Valensi, M. Nguyen, I. Banu, S. Chiheb, E. Cosson, France

238 Validation study for coronary heart disease (CHD) among diabetes patients based on automatic retinal image analysis (ARIA) method
D.R. Owens, J. Lee, Y. Qu, Y. Zhou, L. Ding, S. Liu, W. Yuan, M. Chen, J. Zhang, J.M. Rafferty, R.L. Thomas, B. Zee, UK, China

239 Cardiovascular and renal diseases in type 1 compared with type 2 diabetes: a nationwide observational study
D. Angoulvant, G. Fauchier, C. Semaan, A. Bisson, J. Herbert, P. Ducluzeau, L. Fauchier, France

240 A longitudinal study on the incidence of cardiovascular events in a population of Northern Italy
12:30 - 13:30

Moscow Hall

**OP 43 Genes, epigenes and telomeres in type 1 diabetes**

Chair: R. Oram, UK

**241 Birth weight, BMI in adulthood and latent autoimmune diabetes in adults: a Mendelian randomisation study**
Y. Wei, Y. Zhan, J.E. Löfvenborg, T. Tuomi, S. Carlsson, Sweden, Finland

**242 The influence of HLA haplotype, number of injections and administration route on the effect of GAD-specific immunotherapy in type 1 diabetes**
U. Hannelius, C. Beam, J. Ludvigsson, Sweden, USA

**243 Epigenome-wide association study identifies differentially methylated DNA sites for diabetic kidney disease in type 1 diabetes**

**244 Telomeres do not always shorten over time in people with type 1 diabetes: a FinnDiane substudy**
12:30 - 13:30

OP 44 Diabetes around the clock!

Chair: C. Dibner, Switzerland

245 The influence of residual beta cell function upon free-living postprandial and nocturnal glycaemic control in individuals with type 1 diabetes
A.C. Shaw, G.S. Taylor, T.J. McDonald, R.A. Oram, J.A. Shaw, D.J. West, UK

246 Diurnal rhythms in the human skeletal muscle metabolome are altered in insulin resistant individuals
J.-F. Harmsen, M. Van Weeghel, J. Wefers, J. Hoeks, R.H. Houtkooper, P. Schrauwen, Netherlands

247 Diurnal pattern of meal tolerance and insulin sensitivity in type 2 diabetes
Y. Yadav, D. Romeres, C. Cobelli, R. Carter, A. Basu, C. Dalla Man, R. Basu, USA, Italy

248 The effect of melatonin on incretin hormones: results from experimental and randomised clinical studies
12:30 - 13:30

OP 45 What surgery can do for you

Chair: K. Virtanen, Finland

249 Sleeve gastrectomy suppresses hepatic glucose production and increases hepatic insulin clearance independent of weight loss

250 Beta cell mass in type 2 diabetes before and after gastric bypass surgery, measured as pancreatic uptake of radiolabeled exendin in human
L.N. Deden, M. Boss, E.J. Hazebroek, F.J. Berends, M. Gotthardt, Netherlands

251 Identification of myokines potentially involved in the improvement of glucose homeostasis induced by bariatric surgery
L. Orioli, J. Derop, M. Canouil, P. Lause, M. De Bary, A. Loumaye, Y. Deswysen, B. Navez, A. Bonnefond, J.-P. Thissen, Belgium, France

252 Bariatric surgery, type 2 diabetes remission and proteomic changes
12:30 - 13:30   Madrid Hall

OP 46 (Path)ways to develop human beta cells

Chair: M. Rovira, Spain

253 Generation of stem cell derived islets with adult-like cytoarchitecture and function in vitro
V. Lithovius, H. Montaser, T. Barsby, D. Balboa, J. Saarimäki-Vire, H. Vihinen, E. Jokitalo, H. Ibrahim, V. Chandra, T. Otonkoski, Finland

254 Mapping glucose metabolism and function in human pluripotent stem cell derived islets

255 Single cell transcriptomic profiling of the developing human pancreas reveals unique features of maturing islet cells
O. Olaniru, U. Kadolsky, S. Persaud, UK

256 tRNA derived small RNAs regulate the maturation of neonatal beta cell
12:30 - 13:30   Barcelona Hall

OP 47 Hypoglycaemia consequences at system level

Chair: S.A. Amiel, UK

257 Associations of hypoglycaemia and glycaemic variability with cardiac arrhythmias using a long-term monitoring approach in insulin-treated patients with type 2 diabetes
A. Andersen, J.I. Bagger, S.K. Sørensen, M.P. Baldassarre, U. Pedersen-Bjergraard, J.L. Forman, G. Gislason, T.B. Lindhardt, F.K. Knop, T. Vilsbøll, Denmark, Italy

258 The impact of acute fluctuations in plasma glucose on echocardiographic derived measures of systolic function in patients with type 1 diabetes

259 Investigating the blood flow responses of different thalamic nuclei to hypoglycaemia in intact and impaired awareness of hypoglycaemia
P. Jacob, S.A. Amiel, M. Nwokolo, F. Zelaya, O. O’Daly, P. Choudhary, UK

260 Differential symptoms and hormonal counter-regulation during hypoglycaemia in people with type 1 diabetes and post bariatric hypoglycaemia
V. Lehmann, A. Tripyla, T. Zueger, D. Herzig, N. Styger, C. Albrecht, J. Meier, L. Bally, C. Stettler, Switzerland
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Management of type 1 diabetes: ADA-EASD Consensus Report 2021

Chair: R.I.G. Holt, UK; A. Peters, USA

R.I.G. Holt, UK:
Introduction and methods, goals and targets

J.H. DeVries, Netherlands:
Diagnosis of type 1 diabetes

R. Weinstock, USA:
Schedule of care

A. Hess-Fischl, USA:
Diabetes self-management education and lifestyle considerations

I.B. Hirsch, USA:
Monitoring

S. Kirkman, USA:
Insulin therapy

E.M. Renard, France:
Hypoglycaemia

F.J. Snoek, Netherlands:
Psychosocial care

K. Nørgaard, Denmark:
DKA

B. Ludwig, Germany:
Pancreas and islet cell transplantation

J. Pettus, USA:
Adjunctive therapy

T. Klupa, Poland:
Special populations

J.S. Skyler, USA:
Emergent and future perspectives

A. Peters, USA:
Key knowledge gaps, question and discussion period
13:45

Paris Hall

Going to bed with diabetes

Chair: P. Schrauwen, Netherlands

R. Basu, USA:
Nocturnal hepatic glucose metabolism in type 2 diabetes

S.M. Schmid, Germany:
Importance of sleep and circadian rhythm for energy metabolism

R.N. Bergman, USA:
Nocturnal FFA metabolism and insulin sensitivity

London Hall

What do the cells talk about and how? Extracellular vesicles: biomarker, diagnostic tool or therapeutic vehicle

Chair: G. Gruden, Italy

E. Marbán, USA:
Introduction to the world of exosomes / The clinicians guide to exosomes

M. Puhka, Finland:
Urinary extracellular vesicles as a biomarker and a diagnostic tool in diabetic kidney disease

J.P.G. Sluijter, Netherlands:
Extracellular vesicles as a therapeutic tool in cardiovascular disease
13:45

**Madrid Hall**

My cells are getting old! Ageing in diabetes

Chair: M. Cnop, Belgium

**D.A. Sinclair, USA:**
The biology of longevity and ageing

**D Avrahami, Israel:**
Pancreatic endocrine cell maturation state in health and disease

**J. Hoeks, Netherlands:**
Metabolism, insulin sensitivity and physical fitness of human skeletal muscle in ageing

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**Barcelona Hall**

Turning stem cells into beta cells

Chair: V. Sordi, Italy

**H. Lickert, Germany:**
From stem cells to beta cells

**G.G. Nair, USA:**
Functional maturation of human iPSC-derived beta cells

**T. Otonkoski, Finland:**
Applications of human islet-like organoids in research and in the clinic
Major results from the Glycaemia Reduction Approaches in Diabetes: a Comparative Effectiveness (GRADE) Study

Chair: S.E. Kahn, USA

D.M. Nathan, USA:
Background, rationale, design, conduct, adherence

J.B. Buse, USA:
Major results: Metabolic, microvascular and cardiovascular with subgroup analyses

M.A. Tiktin, USA:
Side-effects / Adverse events / QOL

N. Younes, USA:
Heterogeneity of treatment effects including baseline factors associated with success

D.R. Matthews, UK:
Discussant

Panel discussion with questions from the audience

A novel approach to problematic hypoglycaemia: the HARPdoc RCT

Chair: S.R. Heller, UK

H. Rogers, UK:
The background to HARPdoc

N. De Zoysa, UK:
An overview of the intervention

S.A. Amiel, UK:
The HARPdoc RCT

R.A. Ajjan, UK:
Commentary

Panel discussion with questions from the audience
16:15

Saint Petersburg Hall

EASD General Assembly

For EASD Members only
Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 01 Diabetes epidemiology at scale: registries and large databases
Chair: T. Fall, Sweden

261 Disease heterogeneity of adult diabetes patients based on routine clinical parameters at diagnosis: results from the German/Austrian DPV registry

262 Epidemiology of diabetes in Kazakhstan: data from unified nationwide electronic healthcare system 2014 - 2019

263 Identifying and delineating the Dutch type 2 diabetes population using an all-payer claims database: characteristics, healthcare utilisation, and expenditures
R.J. Geurten, A.M. Elissen, H.J. Bilo, J.N. Struijs, C. Van Tilburg, D. Ruwaard, Netherlands

264 Association between weight change and incidence of cardiovascular disease events and mortality among adults with type 2 diabetes: a systematic review and meta-analysis
J. Strelitz, E.R. Lawlor, Y. Wu, A. Estlin, G. Nandakumar, A.L. Ahern, S.J. Griffin, UK

265 Mortality rates associated with diabetes are now increasing compared to general population: outcomes from a general practice level analysis in England
M. Whyte, M. Stedman, A. Heald, UK

266 The impact of the timing of pregnancies after bariatric surgery on children’s health: a retrospective, registry analysis
267 Childhood bereavement and risk of type 1 diabetes: a Swedish population-based register study
M.-L. Wernroth, B. Kennedy, K. Fall, B. Svennblad, C. Almqvist, T. Fall, Sweden

268 Total costs of care in patients with type 2 diabetes and cardiovascular disease: a comparative cohort study (OFFSET)
M. Evans, A. Shankar Chandramouli, M. Faurby, K. Sommer Matthiessen, P. Bredahl Mogensen, S. Verma, UK, India, Denmark, Canada

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 02 Diabetes across generations
Chair: R.B. Prasad, Sweden

269 Paternal ketogenic diet in mice programmes offspring fasting metabolism and physical activity
J. Magrill, M. Stolovich-Rain, E. Ben Cnaan, S. Baraghithy, B. Glaser, Y. Tam, Y. Dor, Israel

270 Hyperglycaemic memory: role of epigenetic signature in the transmission of gestational diabetes-associated inflammatory and pro-oxidant phenotype

271 Imprinted genes in beta cell function

272 Methylomic trajectories in the human pancreas: from fetal development to adulthood

273 Increased risk of fetal abdominal obesity (FAO) in old and/or obese pregnant women with normal glucose tolerance
Y. Kim, W. Kim, S. Park, Korea, Republic of, USA
274 Both gestational diabetes exposure and maternal methylome interaction impacts offspring epigenetic signature

275 New clinical score to predict glucose intolerance at postpartum reclassification in women with gestational diabetes

276 Postpartum screening of women with gestational diabetes in specialised diabetes practices in the period from 2015 - 2017: data from 12,991 women from the GestDiab registry
U. Linnenkamp, G.G. Greiner, B. Haastert, H. Adamczewski, M. Kaltheuner, D. Weber, A. Icks, Germany

277 A lifestyle intervention to prevent deterioration of glycaemic status among women with previous gestational diabetes: the LIVING trial
N. Tandon, D. Kapoor, J.K. Lakshmi, A. Bhattacharya, L. Billot, A. Patel, India, Australia

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15
SO 03 Diet, lifestyle and behaviour
Chair: F. Rutters, Netherlands

278 Vitamin C intake and the risk of islet autoimmunity and type 1 diabetes: The Environmental Determinants of Diabetes in the Young (TEDDY) Study
M. Mattila, S. Niinistö, L.K. Mramba, X. Liu, U. Uusitalo, C. Andrén Aronsson, S. Hummel, H. Parikh, J.M. Norris, S.M. Virtanen, for the TEDDY Study Group, Finland, USA, Sweden, Germany

279 A high-protein and -unsaturated fatty acid diet increases fasting and postprandial insulin sensitivity independently of weight loss: 6-months results of the NutriAct Trial
280 Habitual intake of dietary advanced glycation endproducts is not associated with generalised microvascular function: the Maastricht study

281 Oral glucose tolerance test results are altered by the size of the last meal before the test

282 Tobacco use and interaction with genotypes of human leucocyte antigen in the risk of latent autoimmune diabetes in adults: results from two population-based studies
J. Edstorp, E. Ahlqvist, L. Alfredsson, V. Grill, L. Groop, B. Rasouli, E.P. Sørgjerd, T. Tuomi, B.O. Åsvold, S. Carlsson, Sweden, Norway, Finland

283 Clustering of risk behaviors and associations between risk behaviors and cardio-metabolic risk factors in adult individuals with type 1 diabetes
A.J. Ahola, H. Tikkanen-Dolenc, C. Forsblom, V. Harjutsalo, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

284 Occupational and domestic physical activity and the risk of diabetes in adults: results from a long-term follow-up cohort
L. He, J. Wang, N. Yang, L. Xu, J. Huang, W. Li, F. Ping, Y. Li, H. Zhang, China

285 Association between social jetlag and change in glycaemic control in people with type 2 diabetes. The Hoorn diabetes care system cohort
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 04 Prediction models and precision medicine

Chair: R. Slieker, Netherlands

286 Phenotypic and genetic determinants of glycaemic deterioration among Asian Indian type 2 diabetes population

287 Recursive partitioning analysis of the glomerular filtration rate optima: the 10-year-health examinees study
Y. Nakasone, H. Koike, K. Yamashita, T. Aizawa, Japan

288 A serum resistin and multi-cytokine inflammatory pathway is associated with and helps predict all-cause mortality in type 2 diabetes: a step toward precision medicine

289 Estimation and validation of machine-learning-based retinal image analysis for detection of the risk of undiagnosed diabetes

290 A clinical-genetic score for predicting type 2 diabetes remission after bariatric surgery: the OBEGEN project

291 Targetome redirection by adenosine-to-inosine editing of miRNAs could unravel the complexity of diabetic complications
A. Abukiwan, S. Kopf, R. Thiele, J. Szendrődi, P. Nawroth, T. Fleming, Germany
292 Predicting the onset of APECED diabetes  
P.M. Paldánius, O. Mäkitie, S. Laakso, Finland

293 Phenotypic and genetic heterogeneity in a Thai glucokinase MODY family reveals the complexity of young-onset diabetes  
Y. Thewjitcharon, E. Wanothayaroj, S. Krittiyawong, S. Nakasatien, T.F. Tsoi, C.K. Lim, J.C. Chan, T. Himathongkam, Thailand, China

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 05 Therapeutic advances

Chair: R. Ma, Hong Kong

294 Cholecalciferol therapy effect on glucose metabolism in patients with prediabetes  
A.T. Andreeva, A.O. Ustyuzhanina, A.A. Bystrova, T.L. Karonova, Russian Federation

295 Five years of treatment with liraglutide improves glucose tolerance in women with prior gestational diabetes, but effects are lost after wash-out  

296 Treatment patterns for first- and second-line management of type 2 diabetes in the Middle East and North Africa region: insights from DISCOVER  
K. Al-Rubeaan, A. Echtay, F. Bayram, R. Malek, A. Kok, A. Bennakhi, K. Hafidh, E. Roushy, V. Rajadhyaaksha, M. Alsayed, Saudi Arabia, Lebanon, Turkey, Algeria, South Africa, Kuwait, United Arab Emirates, Egypt, UK

297 The association between hormone therapy and sarcopenia in postmenopausal women: the Korea National Health and Nutrition Examination Survey, 2008-2011  
S. Kim, E. Jeon, J.-H. Lee, H.-S. Shon, Korea, Republic of
298 A multivalent vaccine does not accelerate the onset of diabetes in NOD mice
V.M. Stone, M. Butrym, M.M. Hankaniemi, A.-B. Sioofy-Khojine, V.P. Hytönen, H. Hyöty, M. Flodström-Tullberg, Sweden, Finland

299 Risk factors for severe hypoglycaemia in adults with insulin-treated type 2 diabetes

300 Changes in HbA1c, BMI and rates of severe hypoglycaemia in 4,113 adults with type 1 or type 2 diabetes using continuous glucose monitoring systems
S. Lanzinger, F. Best, T. Bergmann, M. Laimer, B. Lipovsky, T. Danne, S. Zimny, P. Bramlage, R.W. Holl, Germany, Switzerland, Austria

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 06 Genes and genomic engineering
Chair: O. Hansson, Sweden

301 A case-cohort of genome-wide association analysis of type 2 diabetes in Qatari: an insight from 1.000 Qataromics cohort of biobank
A.A.-S. Akil, I. Ahmed, S.S. Padma Jeya, K.A. Fakhro, Qatar

302 Whole genome- and whole exome sequencing analyses provide novel rare genetic variants for coronary artery disease and stroke in type 1 diabetes
A.A. Antikainen, J. Haukka, L. Thorn, S. Hägg-Holmberg, J. Putaala, A. Ylinen, C. Forsblom, V. Harjutsalo, N. Sandholm, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

303 Epigenetic mechanisms of hyperglycaemic macrophage programming
E. Badillo, K. Moganti, M.M. Dieuwertje, V. Ryabov, H. Klüter, M. Harmsen, J. Kzhyshkowska, Germany, Netherlands

304 Beta cell miR-125b controls glucose homeostasis by targeting lysosomal and mitochondrial genes
A. Martinez-Sanchez, R. Cheung, G. Pizza, D. Rolando, P. Chabosseau, A. Tomas, A. Salowska, T. Burgoyne, I. Leclerc, G.A. Rutter, UK
305 WFS1 gene engineering reverts ER stress related to autophagy dysfunctions in an iPSC-derived beta cell model of Wolfram syndrome
S. Torchio, R. Chimienti, G. Rossi, F. Manenti, M.T. Lombardo, S. Pellegrini, V. Sordi, F. Meschi, T. Raouf, G. Frontino, V. Broccoli, L. Piemonti, Italy

306 CRISPR editing of the PPARGC1A Gly482ser (rs8192678) polymorphism in human white adipose cells shows differential effects on mitochondrial function and adipogenesis
M. Huang, M. Claussnitzer, A. Saadat, H. Mulder, S. Kalamajski, P.W. Franks, Sweden, USA

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 07 Risk factors and consequences of poor glycaemic control
Chair: T. Stulnig, Austria

307 Clinical characteristics of COVID-19 patients in a regional population with diabetes: the ACCREDIT study

308 Impact of COVID-19 lockdown on glycaemic control in patients with type 1 diabetes
S. Stichling, C. Eberle, Germany

309 Impact of COVID-19 lockdown on metabolic control and access to healthcare in patients with diabetes from a tertiary care centre: the CONFI-DIAB study
L. Ludwig, N. Scheyer, T. Remen, B. Guerci, France

310 Diabetes prevalence is rising among young residents in Malmö, Sweden M. Annersten Gershater, M. Rämgård, S. Zdravkovic, C. Nagorny Holmberg, M. Grahn, M. Andersson, Sweden

311 Insulin secretion with increasing age: a comparison between Middle Eastern immigrants and native Swedes
N. Fadhel Dhaher, N. Shaat, L. Bennet, Sweden
312 Fetuin-a and risk of diabetes-related vascular, including microvascular, complications
A. Birukov, E. Polemiti, S. Jäger, N. Stefan, M.B. Schulze, Germany

313 Risk of type 2 diabetes in polycystic ovary syndrome is associated with obesity: a meta-analysis of observational studies
P. Anagnostis, R.D. Paparodis, J.K. Bosdou, C. Bothou, D. Macut, D.G. Goulis, S. Livadas, Greece, USA, Switzerland, Serbia

314 Prevalence of and factors associated with undiagnosed stage 3 chronic kidney disease in patient with type 2 diabetes: a report from REVEAL-CKD
E. Wittbrodt, P. Kushner, S. Salvatore, S. Kumar, H. Chen, K. Järbrink, J. Garcia Sanchez, A. Abdul Sultan, N. Tangri, USA, Sweden, UK, Canada

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 08 Preservation versus destruction of beta cell mass
Chair: J.-M. Servitja, Spain

315 A fatty acid modified apelin-13 analogue demonstrates benefits on pancreatic islet cell morphology and beta cell preservation in diabetic mouse models
F.P. O'Harte, N. Tandy, C.R. Moffett, P.R. Flatt, N. Irwin, UK

316 High-fat diet-induced upregulation of chemokine Ccl4 in mouse visceral adipose tissue: potential crosstalk with beta cells
T. Ashik, P. Atanes, V. Lee, S.J. Persaud, UK

317 Proteomic profiling of glucose regulated ACC1 phospho-sites in pancreatic beta cells
R. Bany Bakar, S. Liberatori, A. Veprik, N. N.Tebeka, V. A. Morfin, B. E. Kemp, S. Mohammed, J. Cantley, UK, Australia

318 The role of TSC2 acetylation and its subcellular localisation in mitochondrial turnover of pancreatic beta cells
P. Marqués, J. Burillo, C. González, B. Jiménez, G. García, C. Guillén, M. Benito, Spain
319 Regulation of autophagy activity by PERK attenuation contributes to insulin synthesis with an Atg7-dependent manner
S. Moon, M. Kim, J. Lim, M. Kim, K. Park, H. Jung, Korea, Republic of

320 Exposure to bisphenol-A induces pancreatic beta cell apoptosis
R.S. Dos Santos, L. Marroqui, R. Medina-Gali, A. Nadal, Spain

321 Novel islet staging defined by progression of beta cell destruction

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 09 The ins and outs of insulin secretion
Chair: S.J. Ullrich, Germany

322 Loss of maturity in overworked beta cells of normoglycaemic mice
N. Téllez, K. Rivera, C. Fernández, S. Masó, E. Montanya, Spain

323 Novel miR-29 mitochondrial-associated gene pathways predicted to regulate beta cell insulin secretion

324 An integrated microfluidic sensing system platform for dissecting insulin secretion and extracellular Ca\(^2+\) dynamics of pancreatic islets
W. Huang, J. Zhao, L.M. Nicholas, A. Shallan, C. Priest, C.K. Rayner, H. Ebendorff-Heidepriem, T. Wu, Australia, Egypt

325 The potential role of metal-dependent protein phosphatase, PPM1E in pancreatic B cell function
S. Gheibi, L.R. Cataldo, A. Hamilton, M. Fex, H. Mulder, Sweden
326 Mouse strain- and Ffar1-independent changes of islet transcriptome induced by overnight culture transcriptome induced by overnight culture

327 Therapeutically relevant concentrations of atypical antipsychotic drugs, aripiprazole and clozapine, promote beta cell mass expansion

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 10 Beta cells to the grave in type 1 diabetes

Chair: I. Santin, Spain

328 Proinflammatory cytokines have a toxic effect on human stem cell-derived beta cells
R. Dettmer, I. Niwolik, I. Mehmeti, E. Gurgul-Convey, O. Naujok, Germany

329 Identification of new therapeutic targets for the treatment of type 1 diabetes based on the survival strategies of pancreatic alpha cells
L. Marroqui, A.A. Perez-Serna, R. Medina-Gali, R.S. Dos Santos, Spain

330 Desensitisation of STAT mediated-signalling during chronic exposure of EndoC-βH1 cells to type I and type II interferons
S. Dhayal, M. Baity, K. Afi Leslie, P. Akhbari, S.J. Richardson, M.A. Russell, N.G. Morgan, UK

331 Sphingosine-1 phosphate lyase overexpression prevents cytokine-mediated beta cell cellular structure damage and lipidome changes
E. Gurgul Convey, Y. Tang, S. Coldewey, M. Gräler, A. Jörns, Germany

332 PTPN2 regulates the interferon signalling in pancreatic beta cells and its expression correlates with therapy outcome in autoimmune diabetes
333 The role of NIK in beta cell-mediated type 1 diabetes
P. Xiao, T. Takiishi, N.M. Violato, G. Licata, F. Dotta, G. Sebastiani, E.N. Gurzov, E. Dejardin, A.K. Cardozo, Belgium, Italy

334 The parasite-derived peptide, FhHDM-1, promotes beta cell function and survival via PI3K/Akt signalling to prevent type 1 diabetes

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 11 In vivo and ex vivo beta cell function in diabetes
Chair: I. Rustenbeck, Germany

335 Beta cell loss in treatment-naive patients with type 2 diabetes based on disease duration and HbA1c levels: results from 15 clinical trials
M. Blüher, A. Malhotra, G. Bader, Germany, India, Switzerland

336 Beta cell activity modulates treatment response in treatment-naive patients: exploratory analysis from the VERIFY study
D.R. Matthews, P.M. Paldánius, G. Bader, S. Del Prato, UK, Finland, Switzerland, Italy

337 Human beta cell dedifferentiation might be induced by noradrenergic stimulus
F. Cinti, F. Fantuzzi, A. Carfi, T. Mezza, C. Cefalo, S. Moffa, F. Impronta, G. Di Giuseppe, U. Capece, A. Giaccari, M. Cnop, Italy, Belgium

338 In vivo and in vitro effect of vertical sleeve gastrectomy upon glucose-insulin homeostasis and beta cell function and survival

339 Extracorporeal islet-based continuous glucose monitoring sensor in rodents
E. Puginier, F. Poulletier de Gannes, A. Pirog, J. Gaitan, A. Hurtier, Y. Bornat, C. Cruciani-Guglielmacci, C. Magnan, B. Catargi, M. Raoux, S. Renaud, J. Lang, France
340 Islet microcapsules with core-shell structure from Microfluidic electrospray for diabetes treatment
X. Liu, J. Li, J. Sun, L. Li, China

341 Weight gain following pancreas transplantation in type 1 diabetes is associated with a worse glycaemic profile: a retrospective cohort study

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 12 Sugar Moms

Chair: A. Kautzky-Willer, Austria

342 Diagnosing gestational diabetes: COVID-19 criteria vs oral glucose tolerance test

343 Diabetes management delivery and pregnancy outcomes in women with gestational diabetes during the first wave of the 2020 COVID-19 pandemic
M. Wilk, P. Surowiec, B. Matejko, A. Wróbel, J. Zięba-Parkitny, K. Cyganek, H. Huras, M. Małecki, Poland

344 Comparison of clinical and metabolic characteristics, and pregnancy outcomes in women with gestational diabetes depending on the time of diagnosis
M. Żurawska-Klis, K. Czarnik, K. Cypryk, Poland

345 The use of flash glucose monitoring is as effective and safe as self monitoring blood glucose in a cohort of pregnant women with type 1 diabetes using multiple doses of insulin
N. Seguí, V. Perea, D. Tundidor, D. Roca, M. Vidal, J. Bellart, M. Giménez, I. Conget, I. Vinagre, Spain
346 Risk for ketonaemia in type 1 diabetes pregnancies with sensor-augmented pump therapy with predictive low glucose suspend compared to low glucose suspend: a crossover RCT
K. Benhalima, F. Van Nes, P. Gillard, C. Mathieu, Belgium

347 Analysis of insulin requirement during pregnancy in patients with type 1 diabetes treated with a personal insulin pump
M. Kosinski, M. Zurawska-Klis, K. Cypryk, Poland

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 13 From pregnant women and mice

Chair: E.R. Mathiesen, Denmark

348 Maternal overweight and obesity is associated with impaired glucose homeostasis and fetal overgrowth in the absence of gestational diabetes
G. Kotzaeridi, C. Salamon, D. Eppel, T. Linder, I. Rosicky, K. Weisshaupt, W. Henrich, A. Tura, C.S. Göbl, Austria, Germany, Italy

349 Impact of prepregnancy overweight and obesity on treatment modality and pregnancy outcome in women with gestational diabetes

350 Reliance on lipid and protein energy sources is associated with materno-fetal complications in type 1 diabetes pregnancy: a CONCEPTT trial substudy
Z.A. Stewart, C.L. Meek, J. Yamamoto, S. Furse, D.S. Feig, A. Koulman, H.R. Murphy, UK, Canada

351 Enhanced hepatic insulin resistance may counteract metabolic adaption processes during gestation
M. Liebmann, K. Grupe, S. Scherneck, Germany
352 Serum Elabela is associated with inflammatory abnormalities in gestational diabetes
Y. Chen, M. Shi, J. Song, D. Tan, Y. Xu, H. Zhang, X. Zhang, China

353 Improvement of insulin and glucagon secretion profiles by estradiol and serotonin in prediabetic mice during gestation
M. Asuaje Pfeifer, M. Liebmann, K. Grupe, S. Scherneck, Germany

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 14 Exercise effects beyond blood glucose
Chair: J. Hoeks, Netherlands

354 Glycaemic excursions during a standardised bout of hypoglycaemia-inducing physical activity and subsequent hypoglycaemia treatment in adult type 1 diabetes patients

355 Effect of 14-week high-intensity interval training on blood lactate concentrations in type 2 diabetes patients
T. Zhao, W. Yao, X. Wang, C. Chen, J. Lu, Q. Lu, J. Cao, J. Tian, M. Schumann, S. Cheng, S. Le, China, Germany, Finland

356 Regular exercise training improves femoral bone marrow metabolism in monozygotic twin pairs discordant for body weight

357 Different fueling strategies during racing and training in professional cyclists with type 1 diabetes
J.P. Pitt, R.M. Bracken, S. Scott, F.Y. Fontana, O.M. McCarthy, UK, Switzerland, Italy
358 The effects of regular excercise training on colon glucose uptake in monozygotic twins discordant for BMI

359 The level of muscle and intestinal damage biomarkers after an exercise with a predominance of eccentric contractions in male patients with type 1 diabetes
B. Matejko, &. Tota, M. Morawska, S. Mrozińska, T. Klupa, M. Małecki, Poland

360 Assessment of factors influencing changes in blood lactate levels in children and adolescents with type 1 diabetes during a football tournament (GoalDiab Study)

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 15 Novel methods to study metabolism in diabetes
Chair: P. Nuutila, Finland

361 Applying a microphysiological 3D human liver-islet microtissue platform to study drug-drug interaction
L. Hoelting, I. Karakoc, C. Rufer, W. Moritz, B. Yesildag, O. Frey, Switzerland

362 Real-time metabolomics of glucose response in pancreatic islet cells resolved using infrared microspectroscopic imaging
A. Tarasov, M. Draper, A. Poonprasartporn, G. Cinque, A. Ka-Lung Chan, UK

363 Single-cell optogenetics and cell-tracking reveal a functional hierarchy connecting leader and follower beta cells in vivo
L. Delgadillo Silva, M. Akhtar, E. Taşöz, N. Ninov, Germany

364 Estimated glucose disposal rate, non-alcoholic fatty liver disease and micro- and macrovascular complications in type 1 diabetes: Towards a new predictor?
J. Mertens, L. Vonghia, E. Dirinck, S. Francque, C. De Block, Belgium
365 Development and evaluation of a glucagon sensitivity test

366 In-vivo determination of NAD metabolites in skeletal muscle, using phosphorus magnetic resonance spectroscopy

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 16 The many faces of insulin sensitivity
Chair: A. Krook, Sweden

367 The extracellular vesicles from myotubes improved insulin-stimulated glucose uptake in adipocytes by regulating AMPK pathway and Glut4 expression

368 Insulin resistance and type 2 diabetes studied using a new combination of microphysiological systems and mathematical modelling

369 Deletion of the mammalian Indy homologue (Slc13a5) improves hepatic insulin sensitivity through vagal nerve signalling

370 Insulin sensitivity and beta cell function in IGT and treatment-naive patients with type 2 diabetes of different ethnicities: a pooled analysis from clinical studies
S. Del Prato, D.R. Matthews, G. Bader, P.M. Paldánius, Italy, UK, Switzerland, Finland
371 Metabolic effects on aortic valves in static and pulsatile 3D cultivation environments
J.I. Selig, J. Boulgaropoulos, N. Niazy, D.M. Ouwens, K. Preuß, R. Westenfeld, A. Lichtenberg, P. Akhyari, M. Barth, Germany

372 Cardiac insulin resistance does not predict mortality or morbidity in ischaemic heart failure
T.V. Luong, M.G. Pedersen, A.L. Ebbehøj, E. Søndergaard, L.C. Gormsen, Denmark

373 The association of insulin resistance with early predictors of cardiovascular, renal and neurologic complications in patients with type 1 diabetes
A. Barmpagianni, G. Karamanakos, C. Kapelios, M. Bonou, J. Barbetseas, S. Liatis, Greece

374 Human skeletal muscle THY1+fibro-adipogenic progenitors are associated with muscle degeneration in type 2 diabetic patients

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 17 Novel aspects of beta cell and insulin secretion

Chair: M. Cnop, Belgium

375 Proinsulin insulin in situ localisation defects are associated to UPR response and loss of beta cell phenotype in islets of type 2 diabetic and glucose intolerant living donors

376 Pancreatic and gut hormone responses to mixed meal test differentiate pancreatic cancer associated diabetes from type 2 diabetes
J. Bao, Y. Zhang, C. Sun, L. Li, China, USA
377 The nutrient sensor mTORC1 regulates insulin secretion by modulating beta cell autophagy

378 EPDR1, a novel human batokine regulating glucose-stimulated insulin secretion in beta cells
L.R. Cataldo, L. Argemi, D. Geng, S. Gheibi, P. Spégel, R.B. Prasad, M. Fex, H. Mulder, T. Moritz, Sweden, Denmark

379 The Nova1-Bim axis in pancreatic beta cells does not alter glucose homeostasis in obesity and multiple low-dose streptozotocin-induced diabetes

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 18 It must be my hormones
Chair: M.A. Nauck, Germany

380 Evaluation of the 26RFa/GPR103 peptidergic system in a mouse model of insulinopenia

381 Urolithin B protects pancreatic beta cells against IAPP proteotoxicity: a potential strategy for dietary interventions in diabetes
A.F. Raimundo, S. Ferreira, J. Brito, M. Silva, C.N. Dos Santos, R. Menezes, Portugal

382 Postprandial dynamics of proglucagon cleavage products and their relation to metabolic health

383 Effects of irisin on human pancreatic islets from type 2 diabetic subjects
N. Marrano, A. Natalicchio, G. Biondi, A. Borrelli, A. Cignarelli, A. Signorile, L. Vincenti, L.G. Lupo, S. Perrini, L. Laviola, F. Giorgino, Italy
384 Association between bone biomarkers Osteoactivin and Osteoprotegerin with plasma levels of irisin and meteorin-like protein in people with type 2 diabetes and obesity

385 Post prandial glucagon metabolism in humans with and without type 1 diabetes
R. Ruchi, M. Schiavon, Y. Yadav, A. Weaver, K. Johnson, S. Renuse, A. Pandey, C. Cobelli, C. Dalla Man, R. Basu, A. Basu, USA, Italy

386 Tmem117 in vasopressin neurons is a novel regulator of counterregulatory response to hypoglycaemia
S. Gaspari, G. Labouèbe, A. Picard, B. Thorens, Switzerland

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 19 Gastro-entero pancreatic factors
Chair: F.K. Knop, Denmark

387 Importance of endogenous GLP-1 and GIP for postprandial glucose tolerance after Roux-en-Y gastric bypass and sleeve gastrectomy surgery

388 Characterisation of biological activity and antidiabetic efficacy of a novel neurotensin/xenin fusion peptide in high fat fed mice
N. Irwin, R. Perry, P.R. Flatt, V.A. Gault, UK

389 Circulating dopamine is regulated by gut nutritional signals and acts in the adipose tissue to sensitize for GLP-1 action
390 Pro-neurotensin levels and the prediction of cardiovascular risk in individuals with type 1 diabetes: a longitudinal study with 10 year follow-up
I. Barchetta, F.A. Cimini, L. Bertocci, V. Ceccarelli, M.G. Baroni, O. Melander, M.G. Cavallo, Italy, Sweden

391 The feature of the gut microbiota in patients with newly diagnosed type 2 diabetes
K.G. Lobanova, T.Y. Demidova, Russian Federation

392 Altered hormonal milieu in pancreatic islets and intestine accompany alterations of metabolism in high-fat fed Wistar rats
A. Sridhar, D. Khan, P.R. Flatt, R.C. Moffett, UK

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 20 Carbohydrate and protein metabolism
Chair: C.G. Schalkwijk, Netherlands

393 The postprandial methylglyoxal formation during an oral glucose tolerance test is derived from exogenous glucose

394 Glucose suicide mechanisms induced by methylglyoxal
B. Stratmann, Y. Mattern, T. Silva de Carvalho, D. Tschoepe, Germany

395 Anti-hyperglycaemic effect of alpha-cyclodextrin after oral glucose loading via GLP-1 dependent- and independent-pathways
E. Lee, R. Hatano, X. Zhang, J. Miyamoto, I. Kimura, T. Miki, Japan

396 Mechanisms of improvement in glucose tolerance and insulin sensitivity after complex carbohydrate meal in type 2 diabetes
D. Romeres, Y. Yadav, A. Asfa, C. Lane, R. Ruchi, C. Cobelli, C. Dalla Man, A. Basu, R. Basu, Italy, USA

397 Metabolite secretome profiling of human pancreatic islets and rodent beta cells under glucolipotoxicity reveals key mitochondrial metabolism rerouting
J. Perrier, G. Rautureau, J. Rieusset, A.-M. Madec, M.-A. Berger, C. Thivolet, B. Panthu, France
398 Proteome dynamics of extracellular vesicles in plasma following an acute bout of exercise
L. Peijs, N.Z. Jespersen, S. Heywood, B.K. Pedersen, A.S. Deshmukh, Denmark

399 Amino acid- and keto acid-induced changes of the ATP/ADP ratio in alpha cells in comparison with beta cells
D. Brüning, M. Morsi, E. Früh, I. Rustenbeck, Germany, Egypt

400 Gender specific alterations in glucose homeostasis driven by glyoxalase 1: New road towards type 2 diabetes?
M. Campos, J. Morgenstern, T. Poth, N. Volk, J. Szendrödi, P. Nawroth, T. Fleming, Germany

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 21 Metabolic control during and after pregnancy
Chair: M. Maresh, UK

401 Effects of vitamin D3 supplementation in obese pregnant women on maternal and fetal lipid metabolism
J. Harreiter, L. Mendoza, G. Desoye, D. Simmons, M.N. Van Poppel, D. Bancher-Todesca, R. Corcoy, A. Kautzky-Willer, Austria, Spain, Australia

402 Improvements in diabetes related outcomes for women attending peripheral centres: the ATLANTIC DIP experience
C. Newman, A.M. Egan, L.A. Carmody, G. Gaffney, B.B. Kirwan, A. Liew, C.M. McHugh, F. Dunne, Ireland, USA

403 Prediabetic values of OGTT results and HbA1c postpartum as predictors of later development of diabetes in 101 Danish women with previous gestational diabetes

404 Is HbA1c associated with materno-fetal complications in type 1 pregnancies?
M. Lemaitre, C. Ternynck, J. Bourry, F. Baudoux, D. Subtil, A. Vambergue, France
405 Duration of breast-feeding associates with anti-atherogenic lipid profile in women
D. Löffler, K. Kantartzis, J. Machann, J. Hummel, A.L. Birkenfeld, A. Peter, A. Fritsche, L. Fritsche, Germany

406 Postpartum oral glucose tolerance test in women with prior gestational diabetes: Does breastfeeding affect the results?
G. Monroy, C. Fernández, T. Caballé, L. Altimira, G. Sáenz de Navarrete, R. Corcoy, Spain

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 22 News from the drug pipeline
Chair: M. Rohm, Germany

407 Liraglutide decreases plasma PCSK9 in patients with type 2 diabetes not treated with statins
B. Vergès, J. Hassid, A. Rouland, B. Bouillet, S. Baillot-Rudoni, J.-M. Petit, L. Duvillard, France

408 Effects of simvastatin on human subcutaneous adipose tissue metabolism

409 Exogenous secretin decreases ad libitum food intake and exhibits a biphasic effect on supraclavicular brown adipose tissue activity in healthy men
M.J. Bentzen, S.M. Heimbürger, B. Hartmann, J.J. Holst, M.B. Christensen, F.K. Knop, Denmark

410 Targeting G protein-coupled receptor 110 for the treatment of obesity and its related metabolic diseases
Z. Huang, L. Xu, R. Yang, X. Yan, S. He, A. Xu, Hong Kong

411 Exendin-4 treatment improves adipose tissue microcirculation in obese rats through AMPK -eNOS pathways
L. Han, C. Zhou, X. Zhu, H. Tan, H. Fan, H. Wang, L. Zhong, J. Huang, F. Yan, X. Wen, China
412 Potential effect of a novel combination of GLP-1RA (efpeglenatide) and long-acting glucagon analogue (HM15136) in animal models of metabolic disorder
S. Lee, J. Lee, J. Kim, J. Choi, E. Park, D. Kim, S. Bae, S. Lee, I. Choi, Korea, Republic of

413 Chronic effects of an antifibrotic agent pirfenidone on insulin sensitivity and cardiac function in high-fat diet induced insulin-resistant mice
V. Musale, C.K. Hennayake, C.E. Murdoch, L. Kang, UK

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 23 Fatty matters
Chair: F. Karpe, UK

414 A microRNA cluster controls fat cell differentiation and adipose tissue expansion by regulating SNCG

415 Increased contribution of fructose to de novo synthesis of saturated over unsaturated fatty acids in mice fed high-sugar and high fat-high sugar diets
J. Jones, G.D. Belew, L. Tavares, M.J. Meneses, M. Macedo, Portugal

416 Purinergic receptor P2X7: a new target for the degradation of lipid droplets by lipophagy
Z. Dong, L. Zhang, China

417 Ectopic lipid deposition upregulates SGLT2 and GLUT1 in renal tubules
T. Li, T. Wu, Z. Sun, China, Australia

418 Regulatory loop of IR signalling is critical for adipocyte dynamics and mitochondrial homeostasis
M. Sakaguchi, S. Okagawa, Y. Okubo, K. Fukuda, M. Igata, T. Kondo, E. Araki, Japan
419 Neonatal overfeeding permanently programs hypertrophic adiposity: potential implications of adipose tissue turnover

420 Insulin-stimulated brain glucose uptake correlates negatively with peripheral insulin sensitivity already in the early phase of metabolic dysregulation

421 Divergent effects of estradiol and its receptors on human adipocyte glucose uptake: impact of menopausal status

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 24 Glucose-lowering drugs and the liver
Chair: A. Holleboom, Netherlands

422 The glucose-lowering effect of the bile acid sequestrant sevelamer in patients with type 2 diabetes is not mediated by glucagon-like peptide 1
H.H. Nerild, A. Brønden, A.E. Haddouchi, J.J. Holst, D.P. Sonne, T. Vilsbøll, F.K. Knop, Denmark

423 Metformin lowers portal pressure in patients with cirrhosis and portal hypertension: a randomised clinical trial
N. Rittig, N.K. Aagaard, G.E. Villadsen, T.D. Sandahl, N. Jessen, H. Grønbæk, J. George, Denmark, Australia

424 Sodium-glucose linked transporter 2 inhibitors (SGLT2s) and alanine aminotransferase levels (ALT) in the Associated of British Clinical Diabetologists (ABCD) audits
I. Gallen, T.S. Crabtree, A. Gallagher, K. Dhatariya, A. Bickerton, J. Elliott, G. Rayman, R.E. Ryder, UK
425 Long-term effects of ertugliflozin (ERTU) on liver enzymes and indices in patients with type 2 diabetes: analyses from VERTIS CV

426 Effect of tirzepatide versus insulin degludec on liver fat content and abdominal adipose tissue in patients with type 2 diabetes (SURPASS-3 MRI)
A. Gastaldelli, K. Cusi, L. Fernández Landó, R. Bray, B. Brouwers, Á. Rodríguez, Italy, USA

427 Hepatic impairment has no impact on the clinical pharmacokinetics of tirzepatide
C. Loghin, T. Quinlan, J. Landry, X. Ma, J.A. Martin, S. Urva, USA

428 Blueberry juice counteracts metabolic dysregulation in a rat model of prediabetes by targeting hepatic mitochondrial bioenergetics and metabolic pathways
S. Nunes, S.D. Viana, I. Preguiça, A. Alves, J.S. Teodoro, I. Jarak, R.A. Carvalho, A.P. Rolo, C.M. Palmeira, M.M. Pintado, F. Reis, Portugal

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 25 Interaction of digestive system and glucose metabolism

Chair: B. Eliasson, Sweden

429 Effects of SGLT2-inhibition on postprandial insulin exposure in patients with postbariatric hypoglycaemia: a modelling analysis
D. Herzig, M. Schiavon, M. Hepprich, M.Y. Donath, L. Bally, C. Dalla Man, Switzerland, Italy

430 SGLT2 contributes to glucoregulatory improvements following vertical sleeve gastrectomy in mice
E. Akalestou, L. Lopez-Noriega, M. Hu, I. Leclerc, G.A. Rutter, UK
431 Robust metabolic benefits of a novel orally administered polymeric duodenal exclusion therapy in animal models of type 2 diabetes: an alternative treatment for type 2 diabetes
A. Nimgaonkar, T. Jozefiak, K. Colbert, T. Carlson, J. Petersen, M. Vieira, S. Kulkarni, P.J. Pasricha, J. Vora, S. Polomoscanik, USA

432 Orally administered lactate elevates glucagon like peptide-1 and slows gastric emptying in young men
M.G. Pedersen, E. Søndergaard, C.B. Nielsen, M. Johannsen, L. Gormsen, N. Møller, N. Jessen, N. Rittig, Denmark

433 Three weeks of time restricted eating improves fasting glucose in type 2 diabetes patients but does neither increase nocturnal fat oxidation nor insulin sensitivity
C. Andriessen, C. Fealy, A. Veelen, N. Connell, E. Kornips, K. Roumans, J. Hoeks, P. Schrauwen, Netherlands, Ireland

434 Remission of type 2 diabetes following a short-term intervention with insulin glargine and metformin/sitagliptin: results of the REMIT-sita randomised controlled trial

435 Incidence and prevalence of gastrointestinal tolerability in once weekly dulaglutide (3 and 4.5 mg): a posthoc analysis
J. Van, J.P. Frias, E. Bonora, S. Raha, H. Jung, D. Cox, M. Konig, J. Peleshok, USA, Italy

436 Remission of type 2 diabetes following intensive treatment with insulin glargine/lixisenatide, metformin and lifestyle approaches: results of the REMIT-iGlarLixi trial
Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 26 Cardiorenal consequences of SGLT2 inhibition

Chair: N. Sattar, UK

437 The effect of two different sodium-glucose co-transporter 2 (SGLT2) inhibitors on decreasing serum uric acid level in patients with type 2 diabetes
M.I. Szabo, L. Marton, Á. Szőcs, Á. Farkas, Romania

438 Glycaemic efficacy and safety of ertugliflozin in patients with type 2 diabetes and stage 3 chronic kidney disease: an analysis from VERTIS CV

439 Cardiorenal outcomes with ertugliflozin by baseline glucose-lowering agent: an analysis from VERTIS CV

440 Effects of canagliflozin on hospitalisation for heart failure by baseline eGFR: pooled analysis from the CANVAS Program and CREDENCE
M. Kosiborod, J. Gogate, J. Seufert, K.W. Mahaffey, USA, Australia, Germany

441 Effects of canagliflozin on major adverse cardiovascular events by baseline albuminuria: integrated analyses from the CANVAS Program and CREDENCE trial
D.C. Wheeler, M.R. Weir, J. Gogate, V. Perkovic, K.W. Mahaffey, UK, Australia, USA

442 The effect of SGLT-2 inhibitors on mortality and heart failure in randomised trials versus observational studies
J. Krogh, C. Hjorthøj, S.L. Kristensen, C. Selmer, S.B. Haugaard, Denmark

443 Sodium Glucose Co-Transporter 2 Inhibitors do not increase the risk of hyperkalemia in type 2 diabetes: a systematic review and meta-analysis
C. Charlwood, J. Chudasama, A. Darling, H. Logan Ellis, M. Whyte, UK
V.J. Horváth, A.G. Tabák, Hungary, UK
Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 27 Glucose-lowering agents: Real World Evidence

Chair: K. Eeg-Olofsson, Sweden

444 Healthcare resource utilisation after empagliflozin initiation in Europe: real-world evidence from the EMPRISE study

445 Effectiveness and safety of empagliflozin in routine care in Europe and East Asia: results from the empagliflozin comparative effectiveness and safety (EMPRISE) study

446 Real-world use of once-weekly semaglutide in diverse patient populations with type 2 diabetes: pooled analysis of four SURE studies

447 Patients reaching treatment targets with once-weekly semaglutide in real-world practice: pooled analysis of four SURE studies

J. Broe Honoré, M.N. Kosiborod, V.R. Aroda, L.L. Husemoen, A.B. Jensen, K.S. Matthiessen, I. Lingvay, Denmark, USA

449 Greater adherence and persistence with dulaglutide compared to injectable semaglutide at 6- and 12- months follow-up in U.S. real-world data
450 Mobile health application as a real-world data resource: self-recorded weight reduction with once-weekly semaglutide
U. Bodholdt, S. Birot, A.-M. Catarig, U. Erhan, F.K. Knop, Denmark

451 Efficacy and safety of alogliptin versus acarbose in Chinese type 2 diabetes individuals with cardiovascular risk or coronary heart disease: a randomised prospective study
B. Gao, W. Gao, H. Wan, F. Xu, R. Zhou, X. Zhang, H. Yin, Q. Ji, China

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 28 GLP-1 receptor agonists and weight loss

Chair: J.P.H. Wilding, UK

452 Once-weekly semaglutide 2.4 mg improved glucose metabolism and prediabetes in adults with overweight or obesity in the STEP 1 trial

453 Effect of semaglutide 2.4 mg on achievement of weight loss and HbA1c <7%, without hypoglycaemia, in adults with overweight/obesity and type 2 diabetes in STEP 2
R. Goldenberg, L. Færch, D. Horn, A. Jain, O.K. Jeppesen, K. Khunti, A. Pakseresht, L. Perreault, A. Tahrani, A. Viljoen, S. Jacob, Canada, Denmark, USA, UK, Germany

454 Effect of once weekly dulaglutide 3.0 and 4.5 mg in patients with different baseline renal function: post hoc analysis from the AWARD-11 trial
L.-E. García-Pérez, J.M. Maldonado, K.T. Ranta, S. Raha, USA

455 Influence of baseline characteristics on weight loss with semaglutide 2.4 mg in adults with overweight/obesity and type 2 diabetes (STEP 2)
456 Higher doses of dulaglutide induce weight loss in patients with type 2 diabetes regardless of baseline BMI: post hoc analysis of AWARD-11
E. Bonora, J.P. Frias, R. Malik, A. Kwan, S. Raha, A. Bethel, D. Cox, Italy, USA

457 The use of semaglutide alongside other diabetes medications: real-world results from the Association of British Clinical Diabetologists (ABCD) audit programme
T.S. Crabtree, K. Adamson, H. Reid, D. Barnes, S. Sivappriyan, A. Bickerton, I.W. Gallen, R.E. Ryder, UK

458 Body weight loss with oral semaglutide is predominantly mediated by effects other than gastrointestinal adverse events
J.J. Meier, R.M. Agesen, L. Bardtrum, A.Y. Cheng, S. Deenadayalan, E. Montanya, R.E. Pratley, Germany, Denmark, Canada, Spain, USA

459 Benefits of insulin glargine/lixisenatide fixed-ratio combination for patients inadequately controlled on premixed insulin and oral agents
I. Risovic, M. Bojic, D. Djekic, Bosnia and Herzegovina

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 29 Novel glucose-lowering agents

Chair: W. Rathmann, Germany

460 Dual GLP-1 and glucagon receptor agonism with cotadutide significantly increases insulin secretion in overweight and obese adults with type 2 diabetes
R. Golubic, J. Kennet, V. Parker, D. Robertson, D. Luo, L. Hansen, L. Jermutus, P. Ambery, A. Park, M. Evans, UK, USA, Sweden

461 A novel, stable mutation of FGF1 separates the glucose lowering effect from its proliferative properties through interaction with the insulin receptor
462 VEGF-a/ang-2 neutralisation causes sustained prevention of subretinal macrophage infiltration in a mouse model of spontaneous choroidal neovascularisation
J. Canonica, S. Uhles, R. Foxton, N. Colé, M. Lazendic, M. Garcia Garrido, P. Westenskow, Switzerland

463 Novel GLP-1 analogue, GZR18: a preclinical evaluation in type 2 diabetes models
Y. Wang, M. Zhang, Y. Zhang, F. Xue, Y. Deng, Y. Qian, C. Cui, B. Wei, W. Chen, Z. Gan, USA, China

464 Oz101, an oligofructose prebiotic, may ameliorate beta cell deterioration associated with long-term sulphonylurea therapy in type 2 diabetes patients: a pilot study

465 Beneficial antidiabetic actions of a novel V1a and V1b receptor specific AVP analogue in high fat fed mice
C.R. Moffett, S. Mohan, N. Irwin, P.R. Flatt, UK

466 DA-1241 a novel GPR119 agonist: Data on safety, tolerability and pharmacokinetics (PK), from part 1 of a phase 1b multiple ascending dose (MAD) study in healthy volunteers (HV)
B. Franey, M. Grimm, D. Lee, J. Jeong, M.-K. Kim, M. Hompesch, USA, Korea, Republic of

467 A novel, long-acting dual agonist for GIPR/GLP-1R, HISHS-2001, demonstrates effects on HbA$_1c$ and weight loss in the db/db mouse model of type 2 diabetes
R. Thennati, V. Burade, A. Garcia-Ocana, R.E. Pratley, G.A. Rutter, T. Vilsbøll, B. Thorens, India, USA, UK, Denmark, Switzerland

468 Effect of probenecid and cyclosporin on the pharmacokinetics of SNAC in healthy subjects
T.K. Thorning, A. Breitschaft, T.B. Jensen, K. Kallenbach, T.A. Bækdal, Denmark, Germany

469 Effects of anti-diabetes therapies on irisin secretion in type 2 diabetes patients
A. Natalicchio, N. Marrano, G. Biondi, G. Le Grazie, A. Montedoro, L. Di Gioia, F. Guarini, A. Borrelli, A. Cignarelli, S. Perrini, L. Laviola, F. Giorgino, Italy
Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 30 The advantage of dual agonists

Chair: D. Mathiesen, Denmark

470 Effect of tirzepatide versus insulin degludec on glycaemic control captured with continuous glucose monitoring in patients with type 2 diabetes (SURPASS-3 CGM)
T. Battelino, R. Bergenstal, A. Rodríguez, L. Fernández Landó, R. Bray, Z. Tong, K. Brown, Slovenia, USA

471 Patient-reported outcomes in patients with type 2 diabetes treated with tirzepatide or placebo as an add-on to basal insulin (SURPASS-5)
M. Yu, K. Boye, R. Huh, H. Patel, A. Rodriguez, Canada, USA

472 Efficacy and safety of tirzepatide, a dual GIP/GLP-1 receptor agonist, compared to insulin degludec in patients with type 2 diabetes (SURPASS-3)
B. Ludvik, F. Giorgino, E. Jódar, J.P. Frias, L. Fernández Landó, K. Brown, R. Bray, Á. Rodríguez, Austria, Italy, Spain, USA

473 Weekly dual GIP/GLP-1 receptor agonist tirzepatide monotherapy improved markers of islet cell function and insulin sensitivity in people with type 2 diabetes (SURPASS-1)
C.J. Lee, V.T. Thieu, H. Mao, M.K. Thomas, USA

474 Efficacy and safety of once weekly tirzepatide, a dual GIP/GLP-1 receptor agonist versus placebo as monotherapy in people with type 2 diabetes (SURPASS-1)
J. Rosenstock, C. Wysham, J.P. Frias, S. Kaneko, C.J. Lee, L. Fernández Landó, H. Mao, X. Cui, V.T. Thieu, USA, Japan

475 Patient-reported outcomes in patients with type 2 diabetes treated with tirzepatide or placebo (SURPASS-1)
K. Boye, M. Yu, C.J. Lee, H. Mao, X. Cui, L. Fernández Landó, V. Thieu, USA

476 Efficacy, safety and tolerability of cotadutide as an add-on therapy in overweight subjects with type 2 diabetes treated with dapagliflozin and metformin
A. Flor, M. Petrone, J. Sanchez, T. Petrohoy, L. Jermutus, L. Hansen, P. Ambery, USA, UK, Sweden
SO 31 Clinical aspects of semaglutide

Chair: T. Vilsbøll, Denmark

477 Semaglutide 2.4 mg improves patient-reported outcome measures of physical functioning in adults with overweight or obesity and type 2 diabetes in the STEP 2 trial

478 Semaglutide 2.4 mg improves health-related quality of life in adults with overweight or obesity and type 2 diabetes in the STEP 2 trial

479 Treatment with once-weekly semaglutide 2.4 mg improves cardiometabolic risk factors in adults with overweight or obesity and type 2 diabetes: STEP 2 post-hoc analysis

480 Time spent in glycaemic control after initiating treatment with oral semaglutide vs empagliflozin: an exploratory analysis of the PIONEER 2 trial
F.K. Knop, B. Cariou, E. Christiansen, A.L. Davies, E. Montanya, M.T. Abildlund, J. Rosenstock, Denmark, France, Spain, USA

481 Reduced glycaemic variability with once-weekly semaglutide vs active comparators in post hoc analysis of the SUSTAIN programme
E. Jodar, V.R. Aroda, Y. Kose, M. Kaltoft, A.L. Søndergaard, R. Pratley, Spain, USA, Denmark

482 Derived time in glycaemic range with once-weekly semaglutide vs active comparator: post hoc analysis from the SUSTAIN clinical trial programme
V.R. Aroda, C. De Block, M. Kaltoft, J. Lawson, A.L. Søndergaard, A. Philis-Tsimikas, USA, Germany, Denmark
**483** Effect of once-weekly semaglutide on insulin use in subjects with type 2 diabetes: a post hoc analysis of SUSTAIN 6  

**484** Achievement of near-normal HbA\(_1c\) with early initiation of oral semaglutide: an exploratory subgroup analysis of PIONEER 1  
E.C. Morales-Villegas, V.R. Aroda, L. Bardtrum, E. Christiansen, K. Kallenbach, J. Rosenstock, M. Davies, Mexico, USA, Denmark, UK

**485** Incorporating treatment pauses, dosing flexibility and education to support GLP-1RA therapy persistence: data from PIONEER 6  
S. Bain, R. Bauer, A.L. Davies, E.B. Kreiner, P. Lin, R. Pratley, V.R. Aroda, UK, Denmark, Canada, USA

**486** Neutrophil-to-lymphocyte ratio predicts cardiovascular events in patients with type 2 diabetes: post hoc analysis of SUSTAIN 6 and PIONEER 6  
S. Verma, M. Husain, C.M. Madsen, L.A. Leiter, S. Rajan, T. Vilsbøll, S. Rasmussen, P. Libby, Canada, Denmark, USA

**Short Oral Discussion Event B, Tuesday, 13:15 - 14:45**

**SO 32 Different aspects of SGLT2 inhibitors**

Chair: C.-G. Östenson, Sweden

**487** Empagliflozin reduces inflammation and alters bioenergetic metabolism in proinflammatory human macrophages: Clues to mechanisms of vascular protection?  
V. Spigoni, G. Cinquegrani, F. Fantuzzi, A. D'Antuono, S. Lorusso, N. Iannozzi, A. Dei Cas, R.C. Bonadonna, Italy

**488** Conceptual health economic modelling study of treatment sequencing for SGLT2is  
G. Chen, V. Foos, R.L. Martin, R. Hoff, R. Boyce, P. Carter, P. McEwan, UK

**489** Empagliflozin reduced the total burden of events leading to or prolonging hospitalisation in EMPA-REG OUTCOME  
S.E. Inzucchi, C. Wanner, D. Fitchett, B. Zinman, S.D. Anker, M. Mattheus, O. Vedin, S. Hantel, S.S. Lund, USA, Germany, Canada, Sweden
490 Angiotensin profiles in patients with type 2 diabetes and combination therapy of empagliflozin and linagliptin versus metformin and insulin glargine
A. Bosch, M. Poglitsch, D. Kannenkeril, C. Ott, K. Striepe, R.E. Schmieder, Germany, Austria

491 Efficacy and safety of sotagliflozin in patients with type 2 diabetes: meta-analysis of randomised controlled trials
P. Kakotrichi, I. Avgerinos, T. Karagiannis, T. Michailidis, A. Liakos, A. Tsapas, E. Bekiari, Greece, UK

492 Glycaemic variability of oral semaglutide vs empagliflozin: a post-hoc analysis of PIONEER 2
E. Montanya, M.T. Abildlund, E.B. Kreiner, O. Mosenzon, S. Rosenlund, T. Vilsbøll, Spain, Denmark, Israel

493 Anaplerotic therapy counters ketosis induced by empagliflozin in diabetic sheep
H. Dvir, J. Asiku, M. Kalyesubula, A. Rosov, M. Ross, G. Van Bommel, Israel

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15
SO 33 Non-insulin treatment in type 1 and type 2 diabetes
Chair: D.L. Russell-Jones, UK

494 Six-day sc GIP infusion increases plasma NEFA without altering the adipose tissue transcriptome, GIPR levels or plasma markers of inflammation in patients with type 1 diabetes

495 Effects of liraglutide in type 1 diabetes by baseline anthropometrics in ADJUNCT ONE and TWO
T. Dejgaard, L. Bardtrum, E. Christiansen, F. Flindt Kreiner, S. Madsbad, M. Von Herrath, B.J. Von Scholten, C. Mathieu, Denmark, Belgium
496 Multicenter, open-label, two-arm, pilot trial for safe reduction of basal insulin dose combined with SGLT2 inhibitor in type 1 diabetes: RISING-STAR trial

497 Real-world efficacy and safety of SGLT2 inhibitors in type 1 diabetes: a two-center cohort retrospective study
F. Van Nes, A. Palanca, F. Ampudia-Blasco, F. Pardo, J. Real, C. Mathieu, Belgium, Spain

498 A pre-exercise low-carbohydrate-high-protein meal stabilises plasma glucose during and after exercise in persons with type 1 diabetes
K.B. Kristensen, A.G. Ranjan, R.M. Bracken, K. Nørgaard, S. Schmidt, Denmark, UK

499 A pragmatic low carbohydrate diet intervention changes neither carbohydrate consumption nor glycaemia appreciably in adolescents and young adults with type 1 diabetes

500 Exploring a suitable marker of residual beta cell function associated with glycaemic response to dulaglutide in patients with type 2 diabetes

501 Fixed-ratio combination of insulin glargine plus lixisenatide (iGlarLixi) improves beta cell function in people with type 2 diabetes
E. Ferrannini, A. Boss, T. Dex, S. Servera, A. Mari, Italy, USA
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 34 News from new insulins

Chair: K. Nørgaard, Denmark

502 Cellular internalisation and localisation of once weekly basal insulin Fc
J. Moyers, C.B. Volk, C. Zhang, USA

503 Ultra Rapid Lispro (URLi) accelerates insulin lispro absorption and insulin action vs lispro in healthy Chinese subjects
Y. Yu, H. Tao, J. Leohr, E. LaBell, D. Coutant, H. Liu, C. Qian, China, USA

504 Faster recovery from hyperglycaemia with ultra rapid lispro vs lispro in patients with type 1 diabetes on continuous subcutaneous insulin infusion
J. Leohr, M.A. Dellva, E. LaBell, J. Arrubla, L. Plum-Mörschel, E. Zijlstra, T. Fukuda, T. Hardy, USA, Germany

505 Achieving HbA$_{1c}$ <7% in insulin naive people with type 2 diabetes on insulin glargine 300 U/mL in interventional vs observational European studies: REALI pooled database
P. Gourdy, D. Mauricio, N. Freemantle, M. Bonnemaire, G. Bigot, C. Mauquoi, D. Müller-Wieland, R. Bonadonna, France, Spain, UK, Belgium, Germany, Italy

506 Real-world effectiveness and safety of insulin glargine 300 U/mL in insulin-naive people with type 2 diabetes and renal impairment: a subgroup analysis of the ATOS study
A. Tirosh, N. Khan, H. Vargas-Uricoechea, M.A. Mabunay, M. Coudert, V. Pilorget, G. Galstyan, Israel, United Arab Emirates, Colombia, Singapore, France, Russian Federation

507 Assessing infusion site reactions with ultra rapid lispro in continuous subcutaneous insulin infusion
D. Ignaut, J. Cho, J. Elpers, F. Chigutsa, C. Piras de Oliveira, USA
508 CGM-based parameters for once-weekly insulin icodec vs once-daily insulin glargine U100 in insulin-naive patients with type 2 diabetes
I. Lingvay, R. Beck Bang, L. Liu, J. Mader, J. Pettus, L. Wagner, C. Mathieu, USA, Denmark, Austria, Belgium

509 CGM-based measurements for once-weekly insulin icodec vs once-daily insulin glargine U100 in insulin-treated patients with type 2 diabetes: a post hoc analysis
H.S. Bajaj, R. Beck Bang, A. Gowda, L. Liu, P. Senior, R. Bergenstal, Canada, Denmark, USA

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 35 More on insulins
Chair: J.-B. Gallwitz, Germany

510 Proposed biosimilar insulin aspart (GL-ASP) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence to US-licenced and EU-authorised insulin aspart
L. Plum-Mörschel, E. Uhrmacher, E. Zijlstra, J. Lu, M. Wilson, M. Barton, T. Heise, Germany, USA

511 Proposed biosimilar insulin glargine (GL-GLA) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence to US-licenced and EU-authorised insulin glargine
T. Heise, L. Plum-Mörschel, G. Andersen, J. Lu, M. Wilson, E. Zijlstra, Germany, USA

512 Star.ro - real world data on effectiveness and safety of iglarlixi in people with type 2 diabetes uncontrolled on oral antidiabetic drugs ± basal insulin treatment
C. Guja, C. Bala, A. Cerghizan, B. Mihai, M. Moise, Romania

513 Phase 3 confirmatory study comparing efficacy and safety of proposed biosimilar and reference insulin aspart, combined with metformin, in patients with diabetes
J. Yao, D. Wang, X. Guo, China
514 Proposed biosimilar insulin lispro (GL-LIS) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence versus US-licenced and EU-authorised insulin lispro
E. Zijlstra, T. Heise, M. Ermer, J. Lu, M. Wilson, L. Plum-Mörschel, Germany, USA

515 Efficacy and safety of iGlarLixi vs insulin glargine 100 U/ml in Chinese people with type 2 diabetes (T2D) inadequately controlled on basal insulin (BI): LixiLan-L-China trial
X. Guo, J. Zhang, X. Dong, Y. Lu, W. Pang, S. Gu, L. Ping, G. Nian, E. Niemoeller, E. Souhami, China, USA, Germany, France

516 Effect of insulin degludec vs insulin glargine U100 on occurrence of nocturnal hypoglycaemia assessed by plasma glucose profiles in people with type 1 diabetes: HypoDeg trial

Short Oral Discussion Event F, Thursday, 13:30 - 15:00
SO 36 Determinants and consequences of hypoglycaemia
Chair: M. Evans, UK

517 Prolonged effect of hypoglycaemia on circulating immune cell composition in people with type 1 diabetes

518 Development and validation of a risk prediction model for hypoglycaemia in inpatients with type 2 diabetes during intensive insulin therapy
X. Hu, S. Lin, Y. Zhang, W. Xu, L. Gao, China

519 Is obstructive sleep apnoea and/or nocturnal hypoglycaemia associated with arrhythmia in type 1 diabetes?
M.M. Henriksen, H.U. Andersen, B. Thorsteinsson, U. Pedersen-Bjergaard, Denmark
520 Physical activity and type 1 diabetes - habits, management and obstacles
R.F. Johansen, P.L. Kristensen, S. Caunt, E. Søndergaard, S. Heller, S. Molsted, Denmark, UK

521 Hypoglycaemia increases the left ventricular ejection fraction in people with diabetes and healthy controls

522 Momentary assessment of type 1 diabetes patient’s experiences in glucose variability and mood in real life (MERITS): first findings
M. De Wit, K. Van den Berg, E. Serné, D. Van Raalte, F.J. Snoek, Netherlands

523 The glycaemic status determines the direction of the relationship between the red cell distribution width and \( \text{HbA}_{1c} \)
D. Tsilingiris, K. Makrilakis, B. Aikaterini, M. Dalamaga, A. Tentolouris, O. Kosta, I. Eleftheriadou, S. Liatis, Greece

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 37 New approaches to health care delivery
Chair: R. Holl, Germany

524 Impact of diabetes group visits on patient clinical outcomes: results from a cluster randomised intervention trial among U.S. Midwestern health centres
A.A. Baig, E.M. Staab, S. Siddiqui, M. Zhu, W. Wan, A. Campbell, C. Schaefer, M.T. Quinn, USA

525 Person-centered approach for elderly in chronic disease management
H.E. Hart, A.G. Somers, I. Looijmans- van den Akker, L. Rozendaal, M. Hollander, B. Baar, R.C. Vos, Netherlands

526 The pattern of testing for glycosylated haemoglobin (\( \text{HbA}_{1c} \)) in people with diabetes is linked to the long term trajectory of blood glucose control
A.A. Fryer, D. Holland, C.J. Duff, A. Heald, UK
527 Effectiveness of diabetes education tailored to psychiatric nurses on quality of diabetes care and psycho-social outcomes in people with diabetes and severe mental illness

528 A core outcome set for the treatment of pregnant women with pregestational diabetes
O. Kgosidialwa, F. Dunne, INSPIRED Research Group, Ireland

529 Effect of traditional versus communication technology-based health educational intervention focusing on diabetes in Bangladesh: a randomised controlled trial
B. Banu, M. Hossain Khan, L. Ali, R. Sauerborn, A. Souares, Germany, Bangladesh

530 Virtual versus in-person pump and CGM training experiences among adults with diabetes in Europe
E.R. Ye, E. Asamoa, C. Florissi, J. Tait, R. Gowen, C. Pang, R. Wood, USA

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 38 Psychological aspects of diabetes care
Chair: B. Kulzer, Germany

531 A qualitative evidence synthesis exploring the determinants of self-management in adults with severe mental illness

532 Prevalence of needle phobia and anxiety among younger subjects with diabetes who are uncontrolled on multiple oral glucose lowering drugs and influence counselling
A. Baidya, India
533 Cognitive decrements and ventricular volume increase are related to white matter lesion presence in type 1 diabetes without peripheral microangiopathy
C.G. Pariz, E. Van Duinkerken, D.G. Corrêa, F.J. Snoek, A.C. Moll, M. Klein, F. Barkhof, R.G. IJzerman, Brazil, Netherlands, UK

534 Effects of bariatric surgery on quality of life, body image and sex life in obese women
L. Di Gioia, S. Perrini, A. Braun, I. Caruso, F. Giordano, F. Guarini, G. Le Grazie, E. Rossi, A. Barbone, A. Cignarelli, A. Natalichio, L. Laviola, A. Bertolino, F. Giorgino, Italy

535 Motivational interviewing and self-care in type 1 diabetes: a randomised controlled clinical trial
J.C. Betancort Acosta, D. Alvarado Martel, M. Boronat, M.D. Alberiche Ruano, M.A. Algara González, Y. Ramallo Fariña, A.M. Wägner, Spain

536 High diabetes-related distress is associated with cerebral functional and structural alterations in middle-aged patients with type 1 diabetes
L.M. Loureiro, E.V. Duinkerken, M. Klein, F. Barkhof, R. IJzerman, F.J. Snoek, Brazil, Netherlands, UK

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 39 Apps, devices and tools and their impact on diabetes care
Chair: A. Jeyam, UK

537 Are the benefits of FreeStyle Libre evident across a range of indications for its use? A UK Diabetes centre experience
P. Thadani, A. Musharraf, O. Awala, S. Chan, K. Swinhoe, S. Sankar, H. Randeva, N. Gholap, UK

538 Assessing the SPUR adherence diagnostic framework
K. Dolgin, M.-E. Laporte, L. Nabec, H. Mosnier Pudar, G. Reach, L. Kombargi, France
539 Initiating the digital diabetes questionnaire as a clinical tool in routine diabetes care: patients’ and professionals' perspectives captured in focus group discussions

540 Effect of WhatsApp messaging based intervention on insulin adherence and treatment effectiveness in diabetic patients in central India
S. Saboo, B. Saboo, India

541 Long-term HbA$_1c$ outcomes with and without intermittent CGM use in adults with type 2 diabetes participating in the Onduo Program
J.E. Layne, R.M. Bergenstal, N.A. Barleen, R.F. Dixon, H. Zisser, USA

542 Development of a new device for screening for peripheral diabetic neuropathy
D. Coppini, J. Dave, V. Dubey, UK, Malta

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 40 CGM
Chair: J. Soupal, Czech Republic

543 High treatment satisfaction and less severe hypoglycaemia after 24-month use of intermittently scanned continuous glucose monitoring
S. Charleer, C. De Block, L. Van Huffel, E. Dirinck, F. Nobels, C. Mathieu, P. Gillard, Belgium

544 Safety and performance evaluation of a novel continuous glucose monitoring system: Lumee Glucose
C. Nguyen, N.Q. Tran, P.T. Ma, H.T. Nguyen, S. Gamsey, C. Lepak, S. Cereceres, K. Rebrin, USA, Viet Nam

545 Performance evaluation of the Glunovo® continuous blood glucose monitoring system in Chinese participants with diabetes
R. Meng, D. Zhu, China
546 Accuracy comparison of the WaveForm cascade CGM system at different body sites over 15 days
M. Rebec, A.-M. Liberati-Pso, R. Dutt-Ballerstadt, USA, Croatia

547 Understanding why we do not have consensus for coefficient of variation with CGM
J.E. Perlman, T.A. Gooley, J. Meyers, I.B. Hirsch, USA

548 GMI might over estimate quality of glycaemic control in diabetes patients
P. Fellinger, K. Rodewald, M. Ferch, A. Kautzky-Willer, Y. Winhofer, Austria

549 The impact of glycaemic variability on the relationship between hypoglycaemia and HbA1c
S.L. Ellis, R.B. McQueen, M. Perez-Nieves, G.T. Alonso, R. Juneja, K. Hannah, L. Fan, E.R. Hankosky, V.N. Shah, Y.Yan, USA

Short Oral Discussion Event E, Thursday, 11:45 - 13:15
SO 41 Closed loop systems

Chair: P.-Y. Benhamou, France

550 Real-world data from 1,988 people with type 1 diabetes on the Omnipod DASH® Insulin Management System with continuous glucose monitoring and cloud-based data management
W. Keuthage, I.B. Hirsch, R.S. Weinstock, I. Hadjiyianni, L.M. Huyett, J. Jantz, S. Lowen, A. Chang, T. Vienneau, T.T. Ly, Germany, USA

551 Daily meal size variation does not affect glycaemic control in adult type 1 diabetes patients equipped with hybrid closed loop DBLG1 system
P. Gimenez, S. Lachal, Y. Tourki, S. Franc, C. Amadou, A. Penfornis, G. Charpentier, P.-Y. Benhamou, France

552 A novel method for unannounced meal detection and control
S. Lachal, Y. Tourki, E. Huneker, M. Doron, E. Villeneuve, France

553 Glycaemic outcomes and patient satisfaction after 3 months of use of an advanced hybrid closed-loop system use
P.I. Beato-Víbora, F. Gallego-Gamero, A. Ambrojo-López, E. Gil-Poch, I. Martín-Romo, F.J. Arroyo-Díez, Spain
554 Insulin pump interoperability of Diabeloop DBLG1 system
A. Adenis, S. Pou, H. Romero-Ugalde, S. Madrolle, Y. Tourki, S. Franc, G. Charpentier, P. Benhamou, E. Huneker, France

555 Improvement of outcomes in type 1 diabetic patients with HCL system compared to SAP and PLGS system
P.S. Morpurgo, M.E. Lunati, A. Rossi, I. Cogliati, A. Gandolfi, A.M. Bolla, L. Plebani, G. Volpi, S. Argenti, P. Fiorina, Italy

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 42 Other aspects of managing blood glucose levels

Chair: A. Maran, Italy

556 Indirect treatment comparison of ready-to-use glucagon rescue treatments for severe hypoglycaemia: nasal glucagon versus liquid stable glucagon
Y. Yan, C.J. Child, K. Syring, Q. Wang, R. Threlkeld, USA

557 Integrated safety analysis of dasiglucagon for the treatment of severe hypoglycaemia
S. Heller, T. Battelino, T. Bailey, R. Tehranchi, L. Klaff, T. Pieber, U. Hovelmann, L. Plum-Morschel, A.E. Melgaard, R. Aronson, L. DiMeglio, T. Danne, UK, Slovenia, USA, Denmark, Austria, Germany, Canada

558 The next-generation glucagon analogue dasiglucagon consistently achieves rapid recovery from hypoglycaemia across subgroups

559 Glycaemic tracking of HbA_1c in patients with type 1 diabetes has a strong modifiable component reliant on intensive diabetes support
L.M. Quinn, K. Niranthanarakumar, P. Narendran, UK
560 Variability of carbohydrate estimation skills in adults with type 1 diabetes
R. Visentin, M. Stoll, M. Bloechlinger, K. Fuchs, D. Herzig, L. Bally, C. Dalla Man, Italy, Switzerland

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 43 Insulin pumps

Chair: R. Hovorka, UK

561 Glycaemic management over 6 months with the Omnipod® 5 automated insulin delivery system
A.L. Carlson, A.B. Criego, T.T. Ly, Omnipod 5 Research Group, USA

562 Biomedical and patient reported outcomes from the PRO solo multi-national, multi-centre clinical trial
K. Barnard-Kelly, N. Oliver, F. Thienel, E. Franek, T. Kuensting, N. Dagenbach, T. Etter, J.K. Mader, UK, Germany, Poland, Austria

563 Glycaemic profiles and treatment patterns: real-world data of 2,536 people with type 2 diabetes using the Omnipod® Insulin Management Systems and cloud-based data management
T. Kader, I.B. Hirsch, R.S. Weinstock, I. Hadjiyianni, L.M. Huyett, J. Jantz, S. Lowen, A. Chang, T. Vienneau, T. Ly, USA

564 Safety evaluation of the Omnipod® 5 automated insulin delivery system over three months of use in adults and children with type 1 diabetes
G.P. Forlenza, S.A. Brown, T.T. Ly, Omnipod 5 Research Group, USA

565 Six months pump treatment improves cardiovascular and endothelial function compared to MDI in patients with type 1 diabetes, independently of HbA1c
SO 44 Glycaemic management in special settings and populations

Chair: C.D.T. Byrne, UK

566 Continuous glucose monitoring with multiple daily insulin injections improves perinatal outcomes in women with type 1 diabetes
K. Anderlova, H. Krejčí, M. Mráz, M. Haluzík, M. Kršek, A. Pařízek, P. Šimják, Czech Republic

567 The effect of liver transplantation on total daily doses of insulin requirement

568 Duodenal jejunal bypass liner (DJBL) for treatment of type 2 diabetes and obesity: risks and benefits among 926 patients in the worldwide EndoBarrier (EB) registry
R.E. Ryder, P. Sen Gupta, R. Stengel, K. Mitchell, R. Drummond, H. Frydenberg, L. Munro, S. Fishman, R. Cohen, C. De Jonge, J. Greve, M. Benes, J. Aberle, K. Laubner, J. Seufert, UK, Germany, Australia, Israel, Brazil, Netherlands, Czech Republic

569 Exogenous insulin therapy failed to improve insulin sensitivity and beta cell function in non-diabetic cystic fibrosis assessed with the oral minimal model method
M. Schiavon, G.M. Toffolo, C. Cobelli, K.S. Nair, A. Moran, Italy, USA
Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 45 Seeing the full picture of diabetic retinopathy

Chair: T. Peto, UK

570 Impact of ethnicity and glycaemic control on developing sight threatening retinopathy in people with type 2 diabetes
A. Nirmalakumaran, A. Mangelis, S. Thomas, S. Mann, J. Karalliedde, J. Collins, S. Ayis, L. Webster, UK

571 HbA$_{1c}$ variability is associated with microvascular complications in patients with type 1 diabetes: results of the 25-year observation programme
L. Bolotskaya, Y. Golubkina, Russian Federation

572 Urinary proteome and diabetic retinopathy in the Direct-Protect 1 and 2 trials
V. Rotbain Curovic, P. Magalhães, T. He, T.W. Hansen, H. Mischak, P. Rossing, Denmark, Germany

573 Study to evaluate relationship between the various components of serum lipids with retinal hard exudate formation, CSME and the occurrence and increasing severity of DR
A. Das, P. Prusty, S. Guha, A. Bhagat, India

574 Fenofibrate in the prevention and treatment of diabetic retinopathy: systematic review
M. Malowicka, M. Szalanska, E. Lukomska, A. Jakubowska, D. Wilkowski, Poland

575 Modified and conventional contact trans-scleral cyclophotocoagulation for diabetic neovascular glaucoma management
E.A. Mahmoud, S. Fenton, J. Lee, Ireland
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 46 Diabetic foot: from cost to COVID

Chair: N. Papanas, Greece

576 Impact of immunosuppressive drugs on the metabolic activity and functional properties of stem cells isolated from the bone marrow of diabetic patients
J. Husakova, B. Echalar, R. Bem, R. Jarosikova, V. Fejfarova, A. Jirkovska, J. Kossi, V. Holan, M. Dubsky, Czech Republic

577 Cost-effectiveness and cost-utility of foot temperature monitoring for preventing diabetic foot ulcer recurrence: a randomised controlled trial
J.J. Van Netten, M.G. Dijkgraaf, W.B. Aan de Stegge, S.A. Bus, Netherlands

578 The impact of the COVID-19 pandemic on the presentation rate and severity of diabetic foot ulcers in Belgium

579 Diabetic foot ulcers: Should a radiological diagnosis of osteitis be treated as osteomyelitis?
K. Bishop, L. Pankaj, D. Hikmat, C. Ooi, UK

580 Enhancement of growth factor expression in chronic diabetic wounds by cold atmospheric plasma: data from the randomised, placebo-controlled, prospective KPWTRIAL
J. Hiller, B. Stratmann, T.C. Costea, D. Tschoepe, Germany

581 Poor adherence to medication and high HbA$_1$c level predict risk of amputation in patients with diabetes
M. Kaneko, K. Fujihara, M.Y. Harada, M. Kitazawa, Y. Yaguchi, M. Yamamoto, S. Kodama, H. Sone, Japan

582 Evaluation of mortality rate in patients amputated by diabetic foot in a third-level hospital
Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 47 Autonomic neuropathy

Chair: C. Hansen, Denmark

583 Does the diagnostic value of the questionnaire for autonomic symptoms COMPASS 31 differ between type 1 and type 2 diabetes?
I. D'Ippolito, M. Menduni, C. D'Amato, C. Greco, M. Leoni, D. Lauro, V. Spallone, Italy

584 Carotid baroreceptor magnetic stimulation abrupt blood pressure elevation buffering, implication to treat unstable hypertension in diabetes
J. Gmitrov, Slovakia, Japan

585 Lowering of blood pressure and pulse rate by switching from DPP-4 inhibitor to luseogliflozin in patients with type 2 diabetes and hypertension

586 Association between cardiac autonomic neuropathy, arterial stiffness and diastolic dysfunction in patients with type 2 diabetes
V. Serhiyenko, A. Serhiyenko, V. Segin, L. Serhiyenko, Ukraine

587 Cardiac autonomic function is associated with coronary artery calcification in type 2 diabetes

588 Low grade inflammation does not attenuate the association between glycated haemoglobin and parasympathetic tonus in people with type 2 diabetes and pre-diabetes
R. Hadad, S.F. Akobe, P. Weber, P. Kumarathurai, A. Sajadieh, S.B. Haugaard, Denmark
589 Five-year change in body composition is related to heart rate but not related to autonomic dysfunction in The Whitehall II study
C. Hansen, G.S. Andersen, M. Malik, D.R. Witte, E.J. Brunner, A.G. Tabák, M. Kivimäki, D. Vistisen, Denmark, UK

590 Gall bladder ejection fraction as a marker of autonomic neuropathy in type 2 diabetes
N. Dora, A. Shankar, M. Alam, N. Anubhav, India

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 48 Peripheral neuropathy - predictors of disease and prognosis
Chair: F. Picconi, Italy

591 Phase angle as indicator for sarcopenia and diabetic polyneuropathy: a cross-sectional observational study in patients with type 2 diabetes

592 Histamine-induced axon flair response in people with diabetic peripheral neuropathy
J. Roeikjer, S.S. Croosu, T.M. Hansen, J.B. Froekjaer, L. Arendt-Nielsen, C.D. Mørch, N. Ejskjaer, Denmark

593 Altered resting state connectivity in people with diabetic peripheral neuropathy and correlation with functional status
K. Venkataraman, A.Z. Mohamed, F. Nasrallah, Singapore, Australia

594 Relationship between circulating sestrin2 level and diabetic peripheral neuropathy in type 2 diabetic patients
X. Sun, F. Han, E. Mao, C. Kan, N. Hou, China

595 Effect of obesity on the associations of 25-hydroxyvitamin D with prevalent and incident distal sensorimotor polyneuropathy
596 Diabetic painful neuropathy treatment response with deep learning classification  
K. Teh, S. Tesfaye, D. Selvarajah, UK

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 49 Neuropathy: from mechanisms to memory
Chair: S. Tesfaye, UK

597 Brain network disruptions in type 1 diabetes with and without diabetic peripheral neuropathy  
S.S. Croosu, J. Røikjer, C.D. Mørch, N. Ejskjaer, J.B. Frøkjær, T.M. Hansen, Denmark

598 Machine learning techniques for the analysis of tactile sensitivity in type 1 diabetes  
F. Picconi, A. Moscatelli, A. Pepe, C. Ryan, S. Ciotti, B. Russo, M. Menduni, F. Lacquaniti, S. Frontoni, Italy

599 Mechanism of insulin-induced proliferation and myelin formation in Schwann cells  
N. Nakamura, T. Saiki, M. Miyabe, M. Ito, T. Minato, K. Sango, T. Matsubara, K. Naruse, Japan

600 Working memory is affected in type 1 diabetes and neuropathy contributes to the cognitive deterioration  
M. Gjela, S.S. Croosu, J. Røikjer, T.M. Hansen, C.D. Mørch, J.B. Frøkjær, N. Ejskjaer, Denmark

601 A novel, multimodal magnetic resonance imaging and a machine learning approach to classifying sensory phenotypes in painful DPN  

602 A 5 years follow up observational study of type 1 diabetes patients not attending secondary care clinics  
Q. Siah, A. Sharma, A. Howell, C. Dayan, M. Alhadj Ali, UK
Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 50 Nephropathy interventions: from blueberries to SGLT2
Chair: A. Solini, Italy

603 Blueberry effects on kidney and perirenal adipose tissue in a rat model of high fat diet-induced prediabetic nephropathy
S.D. Viana, P. Vieira, S. Nunes, A. Alves, I. Preguiça, P. Gomes, F. Reis, Portugal

604 Ss-DS-ONJ treatment abrogates the inflammatory events underlying during diabetic nephropathy: the use of adult kidney explants from BB rat as an ex vivo model
A.I. Arroba, L. Gomez-Jaramillo, F. Cano-Cano, E.M. Sanchez-Fernandez, C. Ortiz Mellet, J.M. Garcia-Fernandez, M. Aguilar-Diosdado, Spain

605 Intermittent fasting has short-term effects on albuminuria, AGE formation and acylcarnitines in patients with type 2 diabetes

606 Sodium-glucose cotransporter 2 inhibitors as adjunct therapy for type 1 diabetes and the benefit on cardiovascular and renal disease evaluated by Steno risk engines
E. Buur Stougaard, D. Vistisen, F. Persson, P. Rossing, Denmark

607 Liraglutide plus SGLT2 inhibitors might be synergistically beneficial to reduce progression to end stage renal disease in rapidly progressive diabetes kidney disease
K. Kashima, H. Shimizu, M. Yamada, Japan

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 51 Burdens and bones in CKD and diabetes
Chair: S. Hadjadj, France

608 Study of non diabetic kidney disease in type 2 diabetic patients with renal involvement
P. Hans, M. Kumar, India
609 Age-rage and markers of bone metabolism in patients with diabetes type 1 after successful pancreas-kidney transplantation and kidney transplantation alone

610 The risk of hip fracture according to the diabetic kidney disease status in the Korean population
S. Lee, H. Choi, J. Yoo, K. Han, K.-A. Kim, Korea, Republic of

611 Reduced levels of the anti-ageing hormone Klotho are associated with increased aortic stiffness in people with type 2 diabetes and kidney disease
N. Fountoulakis, P.-M. Psefteli, R. Siow, L. Gnudi, J. Karalliedde, UK

612 Type 2 diabetes and congestive heart failure are mutually independent predictors of the presence of albuminuria

613 Long term complications in type 1 diabetes are associated with an altered inflammatory state: a proteomics approach
M. Ajie, J. Van Heck, R. Stienstra, C.J. Tack, Netherlands

614 Inside CKD: modelling the future global burden of chronic kidney disease in patients with type 2 diabetes
N. Tangri, J. Ärnlöv, M.C. Batista, S. Chadban, G.M. Chertow, L. De Nicola, J.-M. Halimi, E. Kanda, G. Li, F.S. Mennini, J.F. Navarro-González, A. Power, A.A. Sultan, L. Webber, J. Wish, Canada, Sweden, Brazil, Australia, USA, Italy, France, Japan, China, Spain, UK

615 Inside CKD: modelling the direct economic burden of concomitant chronic kidney disease and type 2 diabetes
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 52 Predictors of diabetic kidney disease

Chair: R. Roussel, France

616 Central obesity is associated with the onset of albuminuria in type 1 diabetes
S. Mutter, E.B. Parente, E. Valo, V. Harjutsalo, L. Thorn, C. Forsblom, P.-H. Groop, FinnDiane Study Group, on behalf of the FinnDiane Study Group, Finland

617 Circulating sphingomyelin: A causal risk-factor of chronic kidney disease?
T. Suvitaival, P. Rossing, C. Legido-Quigley, Denmark, UK

618 Heparin cofactor II prevents the development of albuminuria in patients with diabetes

619 Factors associated with occupational sitting in type 1 diabetes

620 Association between central obesity and rapid decline of eGFR in type 1 diabetes
E.B. Parente, S. Mutter, E. Valo, V. Harjutsalo, C. Forsblom, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

621 Correlation of urine copper level and microalbuminuria in type 2 diabetic patients
S. Pattanaik, A. Sinha, R. Rajan, A. Mahapatra, India
Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 53 New insights from animal models of complications

Chair: K. Jandeleit-Dahm, Germany

622 Adaption of oxidative phosphorylation machinery compensates hepatic lipotoxicity in early stages of fatty liver
P. Fahlbusch, A. Nikolic, N.-K. Riffelmann, S. Jacob, H. Al-Hasani, S. Hartwig, S. Lehr, B. Knebel, J. Kotzka, Germany

623 Iron aggravates hepatic insulin resistance in the absence of inflammation in a novel db/db mouse model with iron overload
S. Altamura, K. Müdder, A. Schlotterer, T. Fleming, E. Heidenreich, R. Qiu, H. Hammes, P. Nawroth, M. Muckenthaler, Germany

624 Impact of lipotoxicity on mitochondrial DNA modifications in liver and muscle
A. Nikolic, N.-K. Riffelmann, P. Fahlbusch, S. Jacob, H. Al-Hasani, J. Kotzka, B. Knebel, Germany

625 Yg1699, a novel dual systemic SGLT1 and SGLT2 inhibitor, decreases blood glucose and improves kidney function in primates with diabetic kidney disease
C. Li, R. Xu, H. Wang, P. Strumph, J. He, D. Li, China

626 GLP-1 receptor agonists attenuates extracellular matrix secretion via inhibiting HMGB1 signalling in rat mesangial cells
W.S. Gu, Z.W. Wang, M. Shi, H. Zhang, China

627 The role of Nox4-ROS in driving obesogenic bone marrow mesenchymal stem cell phenotype in mice
628 Supplementation of methylglyoxal in drinking water does not affect the cerebral microvasculature and cognitive function in non-diabetic mice
E. Berends, N. Amiri, M.P. Van de Waarenburg, J.L. Scheijen, D.J. Hermes, R.J. Van Oostenbrugge, S. Foulquier, C.G. Schalkwijk, Netherlands

629 Upregulation of hepatic β-oxidation-linked mitochondrial respiration in experimental models of diabetes and fatty liver disease
B. Dewidar, M. Reina Do Fundo, C. Englisch, L. Mastrototaro, D. Pesta, F. Zivehe, C. Ress, I. Esposito, M. Roden, Germany, Austria

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 54 Pathogenic mechanisms of complications

Chair: J.L. Ruas, Sweden

630 Continuous glucose monitoring parameters are related to serum levels of non-enzymatic glycation products in patients with type 1 diabetes
V.V. Klimontov, M.V. Dashkin, J.F. Semenova, Russian Federation

631 Assessment of healthy people and type 2 diabetes patients on skeletal muscle with T1ρ MRI of calf muscle
L. Guo, China

632 Dynamics of hexokinase-2 linked glycolytic overload mediating endothelial cell dysfunction in high glucose concentration in vitro
P. Thornalley, M. Xue, N. Rabbani, Qatar

633 Fructosamine 3-kinase: activity and polymorphisms of important deglycation enzyme in patients with diabetes
J. Skrha jr, M. Flekac, M. Kalousova, M. Prazny, J. Skrha, Czech Republic

634 Indicies of uric acid metabolism as marker of anabolic - catabolic balance in men and women with type 2 diabetes with different phenotypes
A.A. Shuprovich, O.V. Zinych, O.V. Prybyla, N.N. Kushnareva, A.V. Kovalchuk, V.V. Korpachev, Ukraine
635 Proton pump inhibitor induced hypomagnesaemia and mortality: a mediation analyses of the diabetes care system cohort

636 Pancreas volume in patients with type 1 diabetes: What does it depends on?

637 Nodular goiter increases a risk of neurovascular complications in adult patients with type 1 diabetes
A. Rogowicz-Frontczak, B. Falkowski, D. Zozulinska-Ziolkiewicz, Poland

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 55 Not so sweet: cancer and diabetes
Chair: J. Gojda, Czech Republic

638 A CT-Scanner to detect cancer in subjects hospitalised for uncontrolled diabetes and weight loss
M.-A. Barbet-Massin, France

639 The effect of the Danish National colorectal screening program on detecting cancer for patients with diabetes
T. Laurberg, A. Nannsen, L.B. Hansen, M.B. Larsen, B. Andersen, A. Sandbaek, Denmark

640 Cancer cachexia is associated with beta cell dysfunction: cross-sectional study in patients with pancreatic cancer
J. Gojda, E. Vokatý, L. Rossmeislová, P. Tůma, M. Anděl, F. Karpe, Czech Republic, UK

641 Immune infiltration of CD8+ T cells in patients with diabetic pancreatic cancer reduces the malignancy of cancer tissues
Z. Ye, Y. Lv, Y. Zhang, J. Bao, L. Li, China

642 Assessment of glucose metabolic disorders in management of prostate cancer with GnRH agonists
E. Gritskevich, T. Demidova, Russian Federation
Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

SO 56 Looking at the brain and its function

Chair: R. McCrimmon, UK

643 Seeing the brain through the eye: relationship between lower retinal thickness and altered grey matter structure

644 Retinal microperimetry: an useful tool for the monitoring of the cognitive function in patients with type 2 diabetes

645 The impact of type 1 diabetes on brain volumes in neurologically asymptomatic adults

646 Reduced cortical gyrification in middle-aged patients with type 1 diabetes is related to lower white matter integrity and worse cognitive performance
J. Dos Santos Silva, R.G. IJzerman, M. Klein, F. Barkhof, A.C. Moll, F.J. Snoek, E. Van Duinkerken, Brazil, Netherlands, UK

647 Cerebral and peripheral microcirculation in type 2 diabetes and obesity, influence of neuropathy and C-peptide
M. Káplár, R. Esze, L. Rajnai, Z. Képes, S. Somodi, M. Emri, I. Garai, Hungary

648 Neuroprotective effects of Zfra 1-31 peptide against high glucose-induced mitochondrial and autophagy defects
C. Carvalho, P.I. Moreira, Portugal
Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 57 All you need to know about atherosclerosis and diabetes
Chair: M. Mraz, Czech Republic

649 Safety, efficacy and feasibility of a modified variable rate intravenous insulin infusion regime in treating hyperglycaemia in acute coronary syndrome
A.L. Liarakos, P. Tran, M. Keegan, T. Robbins, N. Murthy, H. Randeva, N.N. Gholap, UK

650 Estimated risk of atherosclerotic cardiovascular disease and heart failure in type 2 diabetes without previous cardiovascular events
R. Cannistraci, M. Pozzoli, S. Ciardullo, E. Muraca, G. Manzoni, S. Perra, F. Zerbini, E. Bianconi, A. Mortara, G. Lattuada, G. Perseghin, Italy

651 Coronary calcification and HbA$_1c$ in the north Staffordshire cohort of the UK-based national targeted lung health check

652 Disse insulin resistance index is a predictor of hospital outcome of coronary artery bypass grafting in patients with diabetes type 2, prediabetes and normoglycaemia
N. Bezdenezhnykh, A. Sumin, A. Bezdenezhnykh, A. Osokina, A. Kuz’mina, A. Tsepokina, M. Noskov, S. Petrosyan, O. Barbarash, Russian Federation

653 Glucose variability is associated with an adverse vascular profile but only in the presence of insulin resistance in individuals with type 1 diabetes
N. Kietsiriroje, R.A. Ajjan, M.D. Campbell, UK, Thailand
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 58 Brain, kidney and vascular complications

Chair: P. Fioretto, Italy

654 The impact of obstructive sleep apnoea on macro- and micro-vascular complications in patients with type 1 diabetes: a population-based retrospective cohort study

655 Cerebral small vessel disease does not associate with blood glucose control in neurologically asymptomatic individuals with type 1 diabetes

656 Assessment of metabolic risk following initial presentation to transient ischaemic attack clinic
V.C. Shaw, H. Binns, G.A. Doolan, G. Chander, S. Saraf, A. Puttanna, UK

657 Prediction of chronic kidney disease in people with diabetes
N. Afshar, M. Andorra, S. Chittajallu, T. Huschto, V. Babinsky, H. Mikulski, H. Koenig, C. Ringemann, J. Odegard, I. Singh, USA, Spain, Germany, Austria

658 The ceramide- and phosphatidylcholine- based Coronary Event Risk Test 2 (CERT2) and cardiovascular mortality in men and women with type 2 diabetes

659 Type 2 diabetes, chronic kidney disease and major cardiovascular events in patients with established coronary artery disease
660 Combined dulaglutide-dapagliflozin treatment improves vascular dysfunction and albuminuria vs DPP4 inhibitors independently of glycaemic control

Short Oral Discussion Event E, Thursday, 11:45 - 13:15

SO 59 Vascular complications: mechanisms and risk factors
Chair: M. Dubsky, Czech Republic

661 Diabetic retinopathy and skin tissue advanced glycation end products are biomarkers of vascular events in type 2 diabetic patients: results of the prospective precised study
A. Planas Vilaseca, O. Simó-Servat, J. Bañeras, C. Hernández, I. Ferreria-González, R. Simó, Spain

662 Type 2 diabetes and risk of major cardiovascular events in peripheral artery disease versus coronary artery disease patients
C. Saely, A. Vonbank, B. Larcher, A. Mader, M. Maechler, L. Sprenger, B. Mutschlechner, M. Benda, A. Muendlein, A. Leiherer, H. Drexel, Liechtenstein, Austria

663 The role of visceral and subcutaneous adipose tissue distribution determined by CT in the development of subclinical atherosclerosis in type 2 diabetes and obesity
R. Esze, L. Rajnai, L. Balkay, Z. Képes, S. Somodi, M. Emri, I. Garai, M. Káplár, Hungary

664 Elevated serum transferrin may play a vasoprotective role in individuals with type 2 diabetes
A. Ruban Agarvas, S. Kopf, S. Altamura, N. Volk, P. Nawroth, M.U. Muckenthaler, Germany, India
665 Long-term palmitate treatment attenuates endothelial barrier via increased mitochondrial reactive oxygen species and malondialdehyde

666 Vascular complications in patients with type 2 diabetes and associated factors in Maghreb (Algeria and Tunisia cohort of the DISCOVER study programme)
R. Malek, M. Azzouz, D. Roula, M. Broui, A. Hadaoui, Algeria

Short Oral Discussion Event F, Thursday, 13:30 - 15:00

SO 60 Hepatic fibrosis: from screening to treatment
Chair: C. Postic, France

667 Non invasive blood based biomarkers as screening tools for hepatic fibrosis in subjects with type 2 diabetes

668 Anti-fibrotic potential of a novel long-acting glucagon/GIP/GLP-1 triple agonist (HM15211) in preclinical models of fibrosis
J. Kim, J. Lee, S. Lee, H. Kwon, E. Park, S. Bae, D. Kim, Y. Kim, I. Choi, Korea, Republic of

669 Anti-fibrotic effect of a novel long-acting GLP-1/GCG/FGF21/anti-cytokine tetra-specific drug (OGB21502) in CCl4-induced liver fibrosis mice
M. Kim, R. Kim, Y. Kim, D. Im, S. Park, Korea, Republic of

670 Therapeutic effect of a novel long-acting GLP-1/GCG/FGF21/anti-cytokine tetra-specific drug (OGB21502) in MCD diet-fed NASH mice model
R. Kim, M. Kim, Y. Kim, D. Im, S. Park, Korea, Republic of

671 Growth differentiation factor-15 as a mediating factor in the association between type 2 diabetes and liver fibrosis in NAFLD
J. Bilson, E. Scorletti, L.B. Bindels, P.R. Afolabi, G. Targher, P.C. Calder, J.K. Sethi, C.D. Byrne, UK, Belgium, Italy

190
672 Relationship between advanced liver fibrosis using transient elastography and diabetic complications: data in 684 patients from the Angiosafe T2D cohort

673 Main determinants of NAFLD based on fibroscan in early stages of glucose intolerance
R. Dimova-Draganova, N. Chakarova, M. Serdarova, C. Marinova, L. Mateva, D. Popov, S. Del Prato, T. Tankova, Bulgaria, Italy

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00

SO 61 Fatty liver always hides some complications
Chair: M.P. Macedo, Portugal

674 Nonalcoholic fatty liver disease, liver fibrosis and cardiovascular disease in the general US population
G. Perseghin, R. Cannistraci, S. Mazzetti, A. Mortara, S. Ciardullio, Italy

675 Increased risk of hospitalisations in type 2 diabetes (T2D) with non-alcoholic steatohepatitis (NASH): a prospective study from Hong Kong Diabetes Register
A. Pik-Shan Kong, E. Lau, E. Chow, A. Luk, R. Ma, J. Chan, Hong Kong

676 Subjects with NASH and diabetes have a more unfavourable metabolic profile compared to NAFL with and without diabetes: results from the EPOS study
S. Sabatini, M. Gaggini, M. Allison, R. Younes, C. Rosso, J.M. Schattenberg, V. Ratziu, E. Bugianesi, Q.M. Anstee, A. Gastaldelli, Italy, UK, Germany, France

677 Non-alcoholic fatty liver disease in overweight subjects related to impaired glucose control and increased insulin resistance
T. Forst, I. Botz, M. Berse, A. Schultz, M.-E. Strempler, S. Vosswinkel, S. Baumann, Germany

678 Association between non-alcoholic liver fibrosis scoring systems and micro-macrovascular complications
H. Ataoglu, Ş. Yıldız Şahin, S. Özkabakçı, Turkey
Congestive heart failure and the metabolic syndrome are mutually independent predictors of non-alcoholic fatty liver disease

Current type 2 diabetes, rather than previous gestational diabetes, is associated with liver disease in U.S. women
S. Ciardullo, E. Bianconi, F. Zerbini, G. Perseghin, Italy

Non-alcoholic fatty liver indices and their association with glucose metabolism in pregnancy
D. Eppel, T. Linder, G. Kotzaeridi, I. Rosicky, G. Yerlikaya-Schatten, K. Weisshaupt, W. Henrich, A. Tura, M. Roden, C.S. Göbl, Austria, Germany, Italy

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45

Cardiovascular complications and drugs
Chair: J. Petrie, UK

Lipid-lowering in diabetes is not intensified beyond 3-months if coronary angiography with fractional flow reserve (FFR) suggests non-obstructive coronary artery disease
R.S. Vasudevan, I. Xu, H. You, R. Xu, P.R. Taub, M.J. Wilkinson, USA

The rate of decline in nocturnal interstitial glucose concentrations influences some electrocardiogram parameters in type 1 diabetes
M. Smallman, O. McCarthy, J. Pitt, R.M. Bracken, UK

Empagliflozin ameliorates obesity-induced cardiac dysfunction via activating SIRT3-mediated autophagy
J. Zhang, N. Hou, F. Han, Y. Ma, T. Ye, X. Sun, China
685 Efficacy of intravenous ferric carboxymaltose in patients with iron deficiency following acute heart failure, by diabetes status: a subgroup analysis of the AFFIRM-AHF trial
G. Rosano, P. Ponikowski, C. Vitale, S.D. Anker, J. Butler, V. Fabien, G. Filippatos, B.-A. Kirwan, I.C. Macdougall, M. Metra, F. Ruschitzka, S. Waechter, P. Van der Meer, E.A. Jankowska, on behalf of the AFFIRM-AHF investigators, UK, Poland, Germany, USA, Switzerland, Greece, Italy, Netherlands

686 Effect of saxagliptin on LV structure and function in patients with type 2 diabetes and heart failure: results of measure-HF
P. Bertram, B. Reicher, R.E. Gilbert, S.B. Morgan, K. Swedberg, A.M. Langkilde, J. Monyak, N. Zaozerska, M.N. Kosiborod, USA, Canada, Sweden, Poland

687 Oleate prevents palmitate-induced abnormalities in insulin signalling in human cardiac progenitor cells
R. D’Oria, C. Caccioppoli, R. Schipani, V.A. Genchi, A. Leonardini, G. Santarpino, A. Natalicchio, S. Perrini, A. Cignarelli, A. Milano, L. Laviola, F. Giorgino, Italy

688 Cardiovascular autonomic neuropathy and risk of heart failure in participants with type 2 diabetes enrolled in the DEVOTE trial
R. Pop-Busui, L. Ang, S. Hayek, K. Mizokami-Stout, E. Parvaresh Rizi, I. Lingvay, on behalf of the DEVOTE Study Group, USA, Denmark

689 Meta-analysis of SGLT inhibitors on cardiovascular death or heart failure hospitalisation based on presence of type 2 diabetes, heart failure, or chronic kidney disease
K. Charalampidis, T. Karagiannis, A. Liakos, P. Kakotrichi, A. Tsapas, E. Bekiari, Greece, UK
Short Oral Discussion Event C, Wednesday, 11:45 - 13:15

SO 63 COVID-19: from the known to unknown

Chair: K. Khunti, UK

690 Characteristics and predictors of mortality in diabetes patients hospitalised with COVID-19: a single-centre cohort study from Poland

691 The impact of acute-to-chronic glycaemic ratio as a predictor of COVID-19 severity and mortality

692 Bamlanivimab + etesevimab for the treatment of COVID-19 in high-risk ambulatory patients including those with diabetes

693 The effectiveness of selected temporary testing protocols for gestational diabetes during the COVID-19 pandemic
M. Kania, M. Kwiatkowska, K. Cyganek, M. Szopa, Poland

694 How COVID-19 has impacted diabetes management in the United States (iNPHORM study)
A. Ratzki-Leewing, S. Harris, J.E. Black, B.L. Ryan, G. Zou, Canada

695 Effects of COVID-19 lockdown on health care for persons with type 2 diabetes in Germany: results from an electronic medical record database
B. Kowall, K. Kostev, R. Landgraf, H. Hauner, R. Bierwirth, W. Rathmann, Germany
Short Oral Discussion Event D, Wednesday, 13:30 - 15:00

SO 64 Cardiac complications in diabetes and prediabetes

Chair: K. Strojek, Poland

696 Obesity and decreased vibration perception associated with premature cardiovascular mortality in a single centre prospective of study of people with diabetes
D.S. Tesic, D. Andric, M.T. Tomic, S. Andric, M.D. Tomic, Serbia

697 Impact of prediabetes in heart failure with preserved ejection fraction: the NetDiamond cohort

698 Respective role of NT-proBNP and coronary artery calcium score for the detection of silent coronary disease in asymptomatic patients with diabetes
S. Pinto, N. Berkane, M. Nguyen, N. Sellier, E. Cosson, P. Valensi, France

699 WITHDRAWN

700 To study the relationship between the mean platelet volume, immature platelet fraction, and glycaemic control in type 2 diabetes patients
S. Ahsan, R. Roy, M. Prasad, A. Gaurav, India

701 Type 2 diabetes significantly modulates the power of lipoprotein (a) to predict cardiovascular events and mortality in young coronary artery disease patients
A. Vonbank, A. Mader, M. Maechler, B. Larcher, L. Sprenger, B. Mutschlechner, M. Benda, A. Muendlein, A. Leicherer, H. Drexel, C.H. Saely, Austria, Liechtenstein

702 Remnant cholesterol in patients with established cardiovascular disease predicts cardiovascular events both among patients with type 2 diabetes and among non-diabetic subjects
<table>
<thead>
<tr>
<th>Last Name, Initials, Presentation Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abukiwan, A. 291</td>
</tr>
<tr>
<td>Adenis, A. 554</td>
</tr>
<tr>
<td>Af Leslie K. 217</td>
</tr>
<tr>
<td>Afshar, N. 657</td>
</tr>
<tr>
<td>Ahmed, F. 421</td>
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<tr>
<td>Ahmed, M. 81</td>
</tr>
<tr>
<td>Ahola, A. J. 283</td>
</tr>
<tr>
<td>Ahsan, S. 700</td>
</tr>
<tr>
<td>Ajie, M. 613</td>
</tr>
<tr>
<td>Akalestou, E. 430</td>
</tr>
<tr>
<td>Akil, A. A.-S. 301</td>
</tr>
<tr>
<td>Al-Mrabeah, A. 41</td>
</tr>
<tr>
<td>Al-Rubeaan, K. 296</td>
</tr>
<tr>
<td>Al-Saoudi, E. F. 55</td>
</tr>
<tr>
<td>Al-Sari, N. 157</td>
</tr>
<tr>
<td>Aleppo, G. 214</td>
</tr>
<tr>
<td>Alshehri, Z. 654</td>
</tr>
<tr>
<td>Altamura, S. 623</td>
</tr>
<tr>
<td>Amor, A. 341</td>
</tr>
<tr>
<td>Anagnostis, P. 313</td>
</tr>
<tr>
<td>Anderlova, K. 566</td>
</tr>
<tr>
<td>Andersen, A. 257</td>
</tr>
<tr>
<td>Andersen, E. S. 295</td>
</tr>
<tr>
<td>Andreasen, C. R. 258</td>
</tr>
<tr>
<td>Andreeva, A. T. 294</td>
</tr>
<tr>
<td>Andriessen, C. 433</td>
</tr>
<tr>
<td>Angoulvant, D. 239</td>
</tr>
<tr>
<td>Annersten Gershater, M. 310</td>
</tr>
<tr>
<td>Antikainen, A. A. 302</td>
</tr>
<tr>
<td>Aprile, M. 34</td>
</tr>
<tr>
<td>Aroda, V. R. 482</td>
</tr>
<tr>
<td>Arroba, A. I. 604</td>
</tr>
<tr>
<td>Ashik, T. 316</td>
</tr>
<tr>
<td>Asuaje Pfeifer, M. 353</td>
</tr>
<tr>
<td>Atabaki Pasdar, N. 90</td>
</tr>
<tr>
<td>Ataoglu, H. 678</td>
</tr>
<tr>
<td>Avgerinos, I. 148</td>
</tr>
<tr>
<td>Awala, O. 567</td>
</tr>
<tr>
<td>Ayine, M. L. 131</td>
</tr>
<tr>
<td>Badillo, E. 303</td>
</tr>
<tr>
<td>Baidya, A. 532</td>
</tr>
<tr>
<td>Baig, A. A. 524</td>
</tr>
<tr>
<td>Bain, S. 485</td>
</tr>
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<td>Bajaj, H. S. 509</td>
</tr>
<tr>
<td>Bally, L. 96</td>
</tr>
<tr>
<td>Bandet, C. L. 171</td>
</tr>
<tr>
<td>Banu, B. 529</td>
</tr>
<tr>
<td>Bany Bakar, R. 317</td>
</tr>
<tr>
<td>Bao, J. 376</td>
</tr>
<tr>
<td>Barbet-Massin, M.-A. 638</td>
</tr>
<tr>
<td>Barchetta, I. 390</td>
</tr>
<tr>
<td>Barmpaglietti, A. 373</td>
</tr>
<tr>
<td>Barnard-Kelly, K. 562</td>
</tr>
<tr>
<td>Barsby, T. 254</td>
</tr>
<tr>
<td>Basu, A. 227</td>
</tr>
<tr>
<td>Battelino, T. 470</td>
</tr>
<tr>
<td>Bayazit, B. 256</td>
</tr>
<tr>
<td>Bazydlo-Guzenda, K. 223</td>
</tr>
<tr>
<td>Beato-Vibora, P. I. 553</td>
</tr>
<tr>
<td>Beiglböck, H. 72</td>
</tr>
<tr>
<td>Ben-Zvi, D. 249</td>
</tr>
<tr>
<td>Benhalima, K. 346</td>
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<tr>
<td>Benson, C. T. 222</td>
</tr>
<tr>
<td>Bentzen, M. J. 409</td>
</tr>
<tr>
<td>Berends, E. 628</td>
</tr>
<tr>
<td>Bergman, M. 169</td>
</tr>
<tr>
<td>Berikov, V. B. 159</td>
</tr>
<tr>
<td>Bertram, P. 686</td>
</tr>
<tr>
<td>Betancourt Acosta, J. C. 535</td>
</tr>
<tr>
<td>Bezdenzhynkyh, N. 652</td>
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<tr>
<td>Bhat, B. A. 129</td>
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<td>Bianco, E. 240</td>
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<tr>
<td>Bilson, J. 671</td>
</tr>
<tr>
<td>Birukov, A. 312</td>
</tr>
<tr>
<td>Bishop, K. 579</td>
</tr>
<tr>
<td>Block, T. J. 165</td>
</tr>
<tr>
<td>Blüher, M. 335</td>
</tr>
<tr>
<td>Bodholdt, U. 450</td>
</tr>
<tr>
<td>Bojer, A. S. 178</td>
</tr>
<tr>
<td>Bolotskaya, L. 571</td>
</tr>
<tr>
<td>Bond, J. M. 627</td>
</tr>
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<td>Bönhof, G. J. 56</td>
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<td>Last Name, Initials, Presentation Number</td>
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<td>Bonora, E. 456</td>
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<td>Boonpattrawong, N. 18</td>
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<td>Borges-Canha, M. 697</td>
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<td>Bosch, A. 490</td>
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<td>Bosi, E. 10</td>
</tr>
<tr>
<td>Boughton, C. K. 234</td>
</tr>
<tr>
<td>Bouman, E. J. 285</td>
</tr>
<tr>
<td>Boye, K. 475</td>
</tr>
<tr>
<td>Brahma, M. K. 379</td>
</tr>
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<td>Broe Honoré, J. 448</td>
</tr>
<tr>
<td>Bronczek, G. A. 100</td>
</tr>
<tr>
<td>Brønden, A. 177</td>
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<td>Brøsen, J. M. B. 516</td>
</tr>
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<td>Broz, J. 354</td>
</tr>
<tr>
<td>Bruls, Y. M. H. 366</td>
</tr>
<tr>
<td>Brun, T. 152</td>
</tr>
<tr>
<td>Brüning, D. 399</td>
</tr>
<tr>
<td>Brusco, N. 375</td>
</tr>
<tr>
<td>Bulkescher, R. 166</td>
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<tr>
<td>Buur Stougaard, E. 606</td>
</tr>
<tr>
<td>Buziau, A. M. 86</td>
</tr>
<tr>
<td>Camaya, I. 334</td>
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<tr>
<td>Campos, M. 400</td>
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<tr>
<td>Cannistraci, R. 650</td>
</tr>
<tr>
<td>Cannon, C. P. 50</td>
</tr>
<tr>
<td>Canonica, J. 462</td>
</tr>
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<td>Capehorn, M. 23</td>
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<td>Carlson, A. L. 561</td>
</tr>
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<td>Carswell, C. 531</td>
</tr>
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<td>Carvalho, C. 648</td>
</tr>
<tr>
<td>Castillo-Armengol, J. 186</td>
</tr>
<tr>
<td>Cataldi, S. 46</td>
</tr>
<tr>
<td>Cataldo, L. R. 378</td>
</tr>
<tr>
<td>Cedersund, G. 368</td>
</tr>
<tr>
<td>Charalampidis, K. 689</td>
</tr>
<tr>
<td>Charbonnel, B. 439</td>
</tr>
<tr>
<td>Charleer, S. 543</td>
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<td>Charlwood, C. 443</td>
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<td>Chawla, P. 9</td>
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<td>Chen, G. 488</td>
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<tr>
<td>Chen, L. 200</td>
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<tr>
<td>Chen, Y. 352</td>
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<td>Cherian, P. 384</td>
</tr>
<tr>
<td>Choi, J. 191</td>
</tr>
<tr>
<td>Christensen, M. H. 403</td>
</tr>
<tr>
<td>Ciardullo, S. 680</td>
</tr>
<tr>
<td>Cidade-Rodrigues, C. 275</td>
</tr>
<tr>
<td>Cinti, F. 337</td>
</tr>
<tr>
<td>Claesson, T. 645</td>
</tr>
<tr>
<td>Clemente-Postigo, M. 45</td>
</tr>
<tr>
<td>Coppini, D. 542</td>
</tr>
<tr>
<td>Corbin, K. D. 425</td>
</tr>
<tr>
<td>Cordiner, R. L. M. 175</td>
</tr>
<tr>
<td>Coskun, T. 221</td>
</tr>
<tr>
<td>Cowan, E. 323</td>
</tr>
<tr>
<td>Crabtree, T. S. J. 457</td>
</tr>
<tr>
<td>Croosu, S. S. 597</td>
</tr>
<tr>
<td>D'Ipplolito, I. 583</td>
</tr>
<tr>
<td>D'Oria, R. 687</td>
</tr>
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<td>Dagogo-Jack, S. 438</td>
</tr>
<tr>
<td>Dahl, D. 20</td>
</tr>
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<td>Dahlstrom, E. H. 243</td>
</tr>
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<td>Dal Canto, E. 2</td>
</tr>
<tr>
<td>Danne, T. 558</td>
</tr>
<tr>
<td>Das, A. 573</td>
</tr>
<tr>
<td>Davies, M. J. 22</td>
</tr>
<tr>
<td>de Wit, M. 522</td>
</tr>
<tr>
<td>de Wit-Verheggen, V. 174</td>
</tr>
<tr>
<td>Deanfield, J. E. 479</td>
</tr>
<tr>
<td>Deden, L. N. 250</td>
</tr>
<tr>
<td>Dejgaard, T. 495</td>
</tr>
<tr>
<td>Del Prato, S. 370</td>
</tr>
<tr>
<td>Delgadillo Silva, L. 363</td>
</tr>
<tr>
<td>Dettmer, R. 328</td>
</tr>
<tr>
<td>Dewidar, B. 629</td>
</tr>
<tr>
<td>Dhayal, S. 330</td>
</tr>
<tr>
<td>Di Gioia, L. 534</td>
</tr>
<tr>
<td>di Pietrantonio, N. 270</td>
</tr>
<tr>
<td>Dimova-Draganova, R. 673</td>
</tr>
<tr>
<td>Dolgin, K. 538</td>
</tr>
<tr>
<td>Dong, Z. 416</td>
</tr>
<tr>
<td>Dora, N. 590</td>
</tr>
</tbody>
</table>
Presenting authors of orals and short oral discussions

<table>
<thead>
<tr>
<th>Last Name, Initials, Presentation Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>dos Santos, R. S. 320</td>
</tr>
<tr>
<td>dos Santos Silva, J. 646</td>
</tr>
<tr>
<td>Dreher, S. I. 102</td>
</tr>
<tr>
<td>Drexel, H. 702</td>
</tr>
<tr>
<td>Dubsky, M. 197</td>
</tr>
<tr>
<td>Duffus, S. H. 499</td>
</tr>
<tr>
<td>Dule, S. 42</td>
</tr>
<tr>
<td>Dvir, H. 493</td>
</tr>
<tr>
<td>Edstorp, J. 282</td>
</tr>
<tr>
<td>Ehall, B. 321</td>
</tr>
<tr>
<td>Ekim Ustunel, B. 170</td>
</tr>
<tr>
<td>Ellis, S. L. 549</td>
</tr>
<tr>
<td>Eppel, D. 681</td>
</tr>
<tr>
<td>Eriksson, M. I. 164</td>
</tr>
<tr>
<td>Esze, R. 663</td>
</tr>
<tr>
<td>Evans, M. 268</td>
</tr>
<tr>
<td>Fachim, H. 48</td>
</tr>
<tr>
<td>Fadhel Dhaher, N. 311</td>
</tr>
<tr>
<td>Fadini, G. P. 138</td>
</tr>
<tr>
<td>Fahlbusch, P. 622</td>
</tr>
<tr>
<td>Fanni, G. 228</td>
</tr>
<tr>
<td>Farup, J. 374</td>
</tr>
<tr>
<td>Fauchier, G. 64</td>
</tr>
<tr>
<td>Fellinger, P. 548</td>
</tr>
<tr>
<td>Ferrannini, E. 501</td>
</tr>
<tr>
<td>Ferrannini, G. 5</td>
</tr>
<tr>
<td>Ferreira, J. P. 54</td>
</tr>
<tr>
<td>Flor, A. 476</td>
</tr>
<tr>
<td>Flores-Guerrero, J. L. 95</td>
</tr>
<tr>
<td>Flotynska, J. 360</td>
</tr>
<tr>
<td>Forlenza, G. P. 564</td>
</tr>
<tr>
<td>Forst, T. 677</td>
</tr>
<tr>
<td>Fountoulakis, N. 611</td>
</tr>
<tr>
<td>Fragoso-Bargas, N. 205</td>
</tr>
<tr>
<td>Franey, B. 466</td>
</tr>
<tr>
<td>Franzén, S. 70</td>
</tr>
<tr>
<td>Frias, J. 134</td>
</tr>
<tr>
<td>Frier, B. M. 299</td>
</tr>
<tr>
<td>Fryer, A. A. 526</td>
</tr>
<tr>
<td>Fuchs, J. 233</td>
</tr>
<tr>
<td>Galiyeva, D. 262</td>
</tr>
<tr>
<td>Gallen, I. 424</td>
</tr>
<tr>
<td>Galli, A. 103</td>
</tr>
<tr>
<td>Gao, B. 451</td>
</tr>
<tr>
<td>García-Pérez, L.-E. 454</td>
</tr>
<tr>
<td>Garg, S. 236</td>
</tr>
<tr>
<td>Gaspari, S. 386</td>
</tr>
<tr>
<td>Gastaldelli, A. 426</td>
</tr>
<tr>
<td>Gaus, B. 156</td>
</tr>
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<td>Gehr, B. 137</td>
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<td>Gerstein, H. 434</td>
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<td>Geurten, R. J. 263</td>
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<td>Gheibi, S. 325</td>
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<td>Ghosh, S. 128</td>
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<td>Gimenez, P. 551</td>
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<td>Giovenzana, A. 44</td>
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<td>Gluud, L. L. 190</td>
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<td>González-Moro, I. 12</td>
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<td>Griskevich, E. 642</td>
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<td>Gu, W. Sha. 626</td>
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<td>Guo, L. 631</td>
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<td>Gurgul Convey, E. 331</td>
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<td>Hagemann, C. A. 37</td>
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<td>Hamaguchi, M. 496</td>
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<td>Han, D. J. J. 121</td>
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<td>Hans, P. 608</td>
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<td>Hansen, C. 589</td>
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<td>Hansen, T. 188</td>
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<tr>
<td>Last Name, Initials, Presentation Number</td>
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<tr>
<td>Harmsen, J.-F. 246</td>
</tr>
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<td>Harreiter, J. 401</td>
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<td>Hart, H. E. 525</td>
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<td>Haukka, J. 127</td>
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<td>He, L. 284</td>
</tr>
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<td>Heimbürger, S. M. N. 494</td>
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<td>Hein Zobel, E. 6</td>
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<td>Hentilä, J. 97</td>
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<td>Hernández, I. 582</td>
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<td>Hernandez, M. 215</td>
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<td>Herzig, D. 429</td>
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<td>Herzog, K. 74</td>
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<td>Hill, T. G. 116</td>
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<td>Hiller, J. 580</td>
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<tr>
<td>Hindsø, M. 387</td>
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<td>Hirani, D. 342</td>
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<tr>
<td>Hjortkjær, H. 94</td>
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<tr>
<td>Hoelting, L. 361</td>
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<tr>
<td>Hoene, M. 98</td>
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<td>Höhn, A. 77</td>
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<td>Holland, D. 30</td>
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<td>Hompesch, M. 224</td>
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<td>Huang, Z. 410</td>
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<td>Hughes, A. E. 160</td>
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<td>Husakova, J. 576</td>
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<td>Inzucchi, S. E. 489</td>
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<td>Irwin, N. 388</td>
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<td>Israeli, T. 377</td>
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<td>Jacob, P. 259</td>
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<td>Janiszewski, M. 461</td>
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<td>Jensen, M. H. 68</td>
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<tr>
<td>Jensen, N. J. 114</td>
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<td>Jin, Q. 66</td>
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<td>Jodar, E. 481</td>
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<td>Johansen, O. 112</td>
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<td>Karasik, A. 445</td>
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<td>Kashima, K. 607</td>
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<td>Kgosidialwa, O. 528</td>
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<td>Kietsiriroje, N. 653</td>
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<td>Klimontov, V. V. 630</td>
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<td>Knop, F. K. 480</td>
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<td>Knorr, S. 17</td>
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<td>Knudsen, L. 527</td>
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<td>Kogot-Levin, A. 231</td>
</tr>
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<td>Korakas, E. 660</td>
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</table>

Presenting authors of orals and short oral discussions
<table>
<thead>
<tr>
<th>Last Name, Initials, Presentation Number</th>
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<tbody>
<tr>
<td>Kosiborod, M. 440</td>
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<tr>
<td>Kosinski, M. 347</td>
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<tr>
<td>Kotzaeridi, G. 348</td>
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<td>Kountouri, A. 565</td>
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<td>Kowall, B. 695</td>
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<td>Kowluru, A. 155</td>
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<td>Kristensen, K. B. 498</td>
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<td>Kuo, M.-L. 196</td>
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<td>Kurzbach, A. 369</td>
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<td>Lachal, S. 552</td>
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<td>Lambers Heerspink, H. J. 51</td>
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<td>Lampousi, A.-M. 73</td>
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<tr>
<td>Lanzinger, S. 300</td>
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<td>Laurberg, T. 639</td>
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<td>Lauritsen, K. M. 204</td>
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<td>Le Marois, M. 57</td>
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<td>Le Solliec, M.-A. 380</td>
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<td>Liebmann, M. 351</td>
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<td>Lietzén, M. S. 358</td>
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<td>Lilja, E. 198</td>
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<td>Linder, T. 349</td>
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<td>Lingvay, I. 508</td>
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<td>Llanera, D. 307</td>
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<td>López-Cano, C. 189</td>
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<td>Lopez-Pascual, A. 11</td>
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<td>Loureiro, L. M. 536</td>
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<td>Ludwig, L. 309</td>
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<td>Lui, D. T. W. 132</td>
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<td>Lunati, M. E. 49</td>
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<td>Luong, T. V. 372</td>
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<td>Lyngfelt, L. 142</td>
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<td>Maalmei, H. 595</td>
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<td>Magrill, J. 269</td>
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<td>Mahmoud, E. A. 575</td>
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<td>Mai, K. 83</td>
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<td>Maina, J. G. 208</td>
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<td>Malek, R. 666</td>
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<tr>
<td>Last Name, Initials, Presentation Number</td>
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<td>Marrano, N. 383</td>
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<td>Marroqui, L. 329</td>
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<td>Martinez-Sanchez, A. 304</td>
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<td>Mastrototaro, L. 101</td>
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<td>Matafome, P. 389</td>
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<td>Mathiesen, E. R. 16</td>
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</tr>
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<td>Matthews, D. R. 336</td>
</tr>
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<td>Mazur, K. 690</td>
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<td>McInnes, N. 436</td>
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<td>Meek, C. L. 15</td>
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<td>Meier, J. J. 458</td>
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<td>Mellor, J. 31</td>
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<td>Menduni, M. 35</td>
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<td>Meng, R. 545</td>
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<td>Mertens, J. 364</td>
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<td>Messaaoui, A. 27</td>
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<td>Meulebrouck, S. 207</td>
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<td>Mezza, T. 119</td>
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<td>Mocciaro, G. 192</td>
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<td>Mody, R. 449</td>
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<td>Moffett, C. R. 465</td>
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<td>Mohamed, S. A. 149</td>
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<td>Monroy, G. 406</td>
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<td>Montanya, E. 492</td>
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<td>Moon, S. 319</td>
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<td>Morpurgo, P. S. 555</td>
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<td>Mosenzon, O. 180</td>
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<td>Musale, V. 413</td>
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<td>Mutschlechner, B. 679</td>
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<td>Mutter, S. 616</td>
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<td>Nakamura, N. 599</td>
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<td>Nakanga, W. 281</td>
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<td>Nakasone, Y. 287</td>
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<td>Nangia, C. 147</td>
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<td>Nash, K. 25</td>
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<td>Natalicchio, A. 469</td>
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<td>Nerild, H. H. 422</td>
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<td>Newman, C. 402</td>
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<td>Nguyen, C. 544</td>
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<td>Nikolic, A. 624</td>
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<td>Noor, M. A. 464</td>
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<td>Nunes, S. 428</td>
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<td>O'Harte, F. P. M. 315</td>
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<td>O'Reilly, J. E. 69</td>
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<tr>
<td>Ojala, R. 356</td>
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<td>Olaniru, O. 255</td>
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<td>Oost, L. J. 209</td>
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<td>Orioli, L. 251</td>
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<td>Ortega, F. J. 414</td>
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<tr>
<td>Owens, D. R. 238</td>
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<td>Pafili, K. 88</td>
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<td>Palacios-Marin, I. 419</td>
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<td>Paldánius, P. M. 292</td>
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<td>Parente, E. B. 620</td>
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<td>Pariz, C. G. 533</td>
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<td>Pasula, D. J. 104</td>
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<td>Pattanaik, S. 621</td>
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<td>Paul, S. 143</td>
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<td>Pedersen, M. G. B. 432</td>
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<td>Pedersen, S. D. 19</td>
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<td>Peijis, L. 398</td>
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<td>Perrier, J. 397</td>
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<td>Perseghin, G. 674</td>
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<td>Petersen, E. 60</td>
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Presenting authors of orals and short oral discussions
<table>
<thead>
<tr>
<th>Last Name, Initials, Presentation Number</th>
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<td>Petersen, G. B. 162</td>
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<td>Petkovic, M. 194</td>
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<td>Picconi, F. 598</td>
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<td>Pietschner, R. 203</td>
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<td>Pigeyre, M. 158</td>
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<td>Pik-Shan Kong, A. 675</td>
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<td>Pina, A. F. 79</td>
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<td>Pinto, S. 698</td>
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<td>Pitt, J. P. 357</td>
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<td>Pletsch-Borba, L. 279</td>
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<td>Raimundo, A. F. 381</td>
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<td>Ramon, J. 691</td>
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<td>Raoux, M. 117</td>
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<tr>
<td>Rebec, M. 546</td>
</tr>
<tr>
<td>Recio-López, P. 182</td>
</tr>
<tr>
<td>Reis-Costa, A. 172</td>
</tr>
<tr>
<td>Ren, H. 118</td>
</tr>
<tr>
<td>Ricciardi, C. 130</td>
</tr>
<tr>
<td>Ringqvist, E. E. 218</td>
</tr>
<tr>
<td>Risovic, I. 459</td>
</tr>
<tr>
<td>Rittig, N. 423</td>
</tr>
<tr>
<td>Rix, I. 226</td>
</tr>
<tr>
<td>Roberts, B. K. 136</td>
</tr>
<tr>
<td>Rodrigues, R. B. 643</td>
</tr>
<tr>
<td>Roeikjer, J. 592</td>
</tr>
<tr>
<td>Rogowicz-Frontczak, A. 637</td>
</tr>
<tr>
<td>Röhling, M. 1</td>
</tr>
<tr>
<td>Rojano Toimil, A. 644</td>
</tr>
<tr>
<td>Romeres, D. 396</td>
</tr>
<tr>
<td>Rönkkö, T. K. E. 202</td>
</tr>
<tr>
<td>Rosano, G. 685</td>
</tr>
<tr>
<td>Rosenstock, J. 474</td>
</tr>
<tr>
<td>Rotbain Curovic, V. 572</td>
</tr>
<tr>
<td>Roumans, K. H. M. 87</td>
</tr>
<tr>
<td>Ruban Agarvas, A. 664</td>
</tr>
<tr>
<td>Rubino, D. M. 478</td>
</tr>
<tr>
<td>Ruchi, R. 385</td>
</tr>
<tr>
<td>Rudofsky, G. 447</td>
</tr>
<tr>
<td>Ryder, R. E. J. 568</td>
</tr>
<tr>
<td>Sabatini, S. 676</td>
</tr>
<tr>
<td>Saboo, S. 540</td>
</tr>
<tr>
<td>Saely, C. 662</td>
</tr>
<tr>
<td>Saito, T. 367</td>
</tr>
<tr>
<td>Sakaguchi, M. 418</td>
</tr>
<tr>
<td>Sanchez, G. 151</td>
</tr>
<tr>
<td>Sandholm, N. 210</td>
</tr>
<tr>
<td>Sarsenbayeva, A. 408</td>
</tr>
<tr>
<td>Scarale, M. 288</td>
</tr>
<tr>
<td>Schaarup, J. F. R. 63</td>
</tr>
<tr>
<td>Schiavon, M. 569</td>
</tr>
<tr>
<td>Schimpfle, L. 591</td>
</tr>
<tr>
<td>Seguí, N. 345</td>
</tr>
<tr>
<td>Selig, J. I. 371</td>
</tr>
<tr>
<td>Selvais, C. 185</td>
</tr>
<tr>
<td>Selvarajah, D. 601</td>
</tr>
<tr>
<td>Seppälä, M. 619</td>
</tr>
<tr>
<td>Serhiyenko, V. 586</td>
</tr>
<tr>
<td>Seufert, J. 483</td>
</tr>
<tr>
<td>Severina, A. 609</td>
</tr>
<tr>
<td>Shaw, A. C. 245</td>
</tr>
<tr>
<td>Shaw, V. C. 656</td>
</tr>
<tr>
<td>Shi, J. 47</td>
</tr>
<tr>
<td>Shi, M. 229</td>
</tr>
</tbody>
</table>
Shuprovich, A. A. 634
Siah, Q. 602
Silver, R. 135
Simanenkova, A. 3
Simo, R. 61
Simo-Servat, O. 36
Sivalingam, S. 587
Skrha jr., J. 633
Slieker, R. C. 206
Sloan, G. 58
Smallman, M. 683
Smith, M. P. 84
Soares, G. M. 338
Spigoni, V. 487
Spinelli, R. 126
Sprenger, L. 659
Sridhar, A. 392
Stensen, S. 179
Stewart, Z. A. 350
Stichling, S. 308
Stistrup Lauritzen, E. 248
Stone, V. M. 298
Stratmann, B. 394
Strelitz, J. 264
Su, Q. 181
Sulaj, A. 605
Suleiman, M. 7
Sun, X. 594
Suvitaival, T. 617
Svedbo Engström, M. 539
Syreeni, A. 244
Szabo, M. I. M. 437
Tahbaz, A. 692
Tahmani, A. A. 78
Tandon, N. 277
Tang, Y. 105
Tangri, N. 614
Tarasov, A. 362
Taylor, R. 110
Teh, K. 596
Téllez, N. 322
Tesic, D. Sreten. 696
Thadani, P. 537
Thakarakkattil Narayanan Nair, A. 286
Thennati, R. 467
Thewjitcharon, Y. 293
Thomas, R. L. 289
Thomsen, M. N. 109
Thornalley, P. 632
Thorning, T. K. 468
Tibballs, K. L. 139
Tirossh, A. 506
Tittel, S. R. 261
Toczyska, K. W. 327
Torchio, S. 305
Tore, E. C. 82
Trescoli, C. 212
Trico, D. 40
Tsilingiris, D. 523
Ukropec, J. 99
Ullrich, S. 326
Valensi, P. 237
Vambergue, A. 76
Van, J. 435
van Gennip, A. C. E. 141
van Heck, J. I. P. 163
van Nes, F. 497
van Netten, J. J. 577
Van Ruiten, C. C. 176
Vandenbempt, V. 332
Vanherweghen, A.-S. 578
Vanweert, F. 39
Vasudevan, R. S. 682
Venkataraman, K. 593
Vergès, B. 407
Verhulst, C. E. M. 517
Verma, S. 486
Vermeulen, E. A. 635
Viana, S. D. 603
Vidal Trecan, T. 672
Viggers, R. 71
Visentin, R. 560
<table>
<thead>
<tr>
<th>Last Name, Initials, Presentation Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voigt, J. H. 201</td>
</tr>
<tr>
<td>Vonbank, A. 701</td>
</tr>
<tr>
<td>Vorotnikov, A. V. 665</td>
</tr>
<tr>
<td>Vranic, M. 125</td>
</tr>
<tr>
<td>Vuori, N. 32</td>
</tr>
<tr>
<td>Waddell, T. 89</td>
</tr>
<tr>
<td>Wagner, R. 382</td>
</tr>
<tr>
<td>Wang, Y. 463</td>
</tr>
<tr>
<td>Wei, Y. 241</td>
</tr>
<tr>
<td>Weng, X. 124</td>
</tr>
<tr>
<td>Wernicke, C. 85</td>
</tr>
<tr>
<td>Wernroth, M.-L. 267</td>
</tr>
<tr>
<td>Westerink, J. 65</td>
</tr>
<tr>
<td>Wharton, S. 477</td>
</tr>
<tr>
<td>Wheeler, D. C. 441</td>
</tr>
<tr>
<td>Whyte, M. 265</td>
</tr>
<tr>
<td>Wilbek Fabricius, T. 521</td>
</tr>
<tr>
<td>Wild, S. H. 145</td>
</tr>
<tr>
<td>Wilk, M. 343</td>
</tr>
<tr>
<td>Winter, H. R. 33</td>
</tr>
<tr>
<td>Wittbrodt, E. 314</td>
</tr>
<tr>
<td>Wolters, J. 211</td>
</tr>
<tr>
<td>Wong, W. K. M. 8</td>
</tr>
<tr>
<td>Wright, E. 213</td>
</tr>
<tr>
<td>Wyatt, R. C. 219</td>
</tr>
<tr>
<td>Xiao, P. 333</td>
</tr>
<tr>
<td>Yadav, Y. 247</td>
</tr>
<tr>
<td>Yale, J.-F. 446</td>
</tr>
<tr>
<td>Yan, Y. 556</td>
</tr>
<tr>
<td>Yao, J. 513</td>
</tr>
<tr>
<td>Ye, E. R. 530</td>
</tr>
<tr>
<td>Ye, Z. 641</td>
</tr>
<tr>
<td>Yu, G. Z. 123</td>
</tr>
<tr>
<td>Yu, M. 471</td>
</tr>
<tr>
<td>Yu, Y. 503</td>
</tr>
<tr>
<td>Zabala, A. 4</td>
</tr>
<tr>
<td>Zaïmia, N. 153</td>
</tr>
<tr>
<td>Zemva, J. 183</td>
</tr>
<tr>
<td>Zhang, J. 684</td>
</tr>
<tr>
<td>Zhang, X. 393</td>
</tr>
<tr>
<td>Zhao, T. 355</td>
</tr>
<tr>
<td>Zhou, Y. 154</td>
</tr>
<tr>
<td>Zijlstra, E. 514</td>
</tr>
<tr>
<td>Zou, Y. 107</td>
</tr>
<tr>
<td>Zurawska-Klis, M. 344</td>
</tr>
</tbody>
</table>

204
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The wide range of diabetes modules that will populate this platform have been designed with international experts in the field and they use innovative multimedia and challenging knowledge checks to help you to learn more about this fast-moving area.

easd-elearning.org
Invited speakers

Last Name, First Name, Page
Aas, Anne-Marie  59
Agarwal, Rajiv  109
Ajjan, Ramzi A.  125
Amiel, Stephanie A.  57, 125
Angwin, Catherine  79
Anker, Stefan D.  105
Aravind, Sosale R.  106
Avrahani, Dana  124
Bairey Merz, C. Noel  102
Bakris, George L.  109
Basu, Rita  123
Battelino, Tadej  85
Bergman, Richard N.  123
Birkenfeld, Andreas L.  109
Bjerre Knudsen, Lotte  102
Bonnefond, Amélie  101
Borrenfelt, Karin E.  102
Brunak, Søren  104
Buse, John B.  125
Butler, Javed  105
Chen, Shuibing  76
Choudhary, Pratik  77
Cusi, Kenneth  85
Danne, Thomas  104
Davies, Melanie J.  85
De Zoysa, Nicole  125
DeFronzo, Ralph A.  109
Del Prato, Stefano  85
Dennis, John  56
DeVries, J. Hans  122
Dotta, Francesco  76
Drucker, Daniel J.  83
Eastell, Richard  84
Eriksson, Jan W.  85
Eringa, Etto  58
Evans-Molina, Carmella  57
Faech, Kristine  80
Fejfarova, Vladimira  81
Filippatos, Gerasimos  105
Fioretto, Paola  58

Last Name, First Name, Page
Freckmann, Guido  103
Gemmink, Anne  58
Georgiadi, Anastasia  82
Gonder-Frederick, Linda  103
Griffin, Simon J.  56
Groop, Per-Henrik  109
Gubitosi-Klug, Rose A.  57
Haidar, Ahmad  77
Hartvigsen, Gunnar  56
Hattersley, Andrew T.  79
Heise, Tim  85
Herrera, Pedro L.  53
Hesseling, Matthijs K.C.  78
Hess-Fischl, Amy  122
Hirsch, Irl B.  122
Hoeks, Joris  124
Holt, Richard I.G.  122
Inzucchi, Silvio E.  76
Iqbal, Ahmed  57
Jensen, Michael D.  77
Jude, Edward B.  81
Kahn, Barbara B.  77
Kazak, Lawrence  77
Khunti, Kamlesh  107
Kirkman, Sue  122
Kistorp, Caroline M.  79
Klupa, Tomasz  122
Knop, Filip K.  102
Kretzler, Matthias  81
Kuo, Chia-Hua  59
Lambers Heerspink, Hiddo J.  51, 106
Lickert, Heiko  124
Lingvay, Ildiko  83, 108
Loh, Kim  84
Ludwig, Barbara  122
Mader, Julia  107
Malik, Rayaz A.  56
Mallone, Roberto  57
Marban, Eduardo  123
Markus, Hugh S.  103
Invited speakers

Last Name, First Name, Page
Marso, Steven P.  83
Marx, Nikolaus  83
Mathieu, Chantal  104
Matthews, David R.  125
McGill, Janet B.  109
McMurray, John J.  76
Meier, Christian  84
Mirmira, Raghavendra  57
Mittendorfer, Bettina  106
Mosenzon, Ofri  83
Nair, Gopika G.  124
Najjar, Sonia M.  106
Napoli, Nicola  84
Nathan, David M.  125
Nauck, Michael A.  107
Newsome, Philip N.  102
Nørgaard, Kirsten  122
Norhammar, Anna  105
Nuutila, Pirjo  58
Otonkoski, Timo  124
Packer, Milton  105
Pearson, Ewan R.  79
Pesta, Dominik H.  59
Peters, Anne  122
Petrie, John  80
Petitus, Jeremy  122
Pieber, Thomas R.  102
Pirzgalska, Roksana  55
Pruijm, Menno  81
Puhka, Maija  123
Renard, Eric M.  122
Rogers, Helen  125
Ruilope, Luis M.  109
Sanyal, Arun  58
Sattar, Naveed  102
Schlesinger, Sabrina  107
Schmid, Sebastian M.  123
Sehgal, Amita  82
Sen, Ilke  55
Shields, Beverley M.  79

Last Name, First Name, Page
Shulman, Gerald I.  103
Sinclair, David A.  124
Skyler, Jay S.  122
Sluijter, Joost P.G.  123
Snoek, Frank J.  122
Stehouwer, Coen D.A.  80
Stocks, Ben  55
Storkey, Amos J.  106
Sumithran, Priya  108
Susztak, Katalin  81
Tabák, Adam G.  80
Tack, Cees J.  78
Theis, Fabian  56
Tiktin, Margaret A.  125
Todd, John A.  75
Tuomi, Tiinamaija  80
Udler, Miriam S.  56
Ullrich, Susanne J.  58
Valenti, Luca V.C.  58
Van Acker, Kristien  81
Van den Berghe, Greet  107
Van der Schueren, Bart  108
van Duinkerken, Eelco  103
Villarroya, Francesc  82
Vilsbøll, Tina  78
Viñuela, Ana  56
Wang, Sheila  56
Wanner, Christoph  106
Weinstock, Ruth  122
Wheeler, David  76
Wilding, John P.H.  107
Yabe, Daisuke  59
Yki-Järvinen, Hannele  108
Younes, Naj  125
Zaharia, Oana Patricia  55
Zeigerer, Anja  103
Ziegler, Dan  80
Zierath, Juleen R.  33, 78
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 €100 million to European diabetes research by way of a wide range of grant and fellowship funding initiatives.

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EFSD Grant and Fellowship Programmes

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.

**EUDF:**

**EFSD and EUDF Digitalisation in Diabetes Care Research Grant**
This Programme is intended to stimulate and accelerate European research aimed at optimising the use of technology, digital health and innovative treatments to support self-care by people with diabetes, to prevent complications and support quality of life.

**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.

**JDRF and Lilly:**

**EFSD/JDRF/Lilly European Programme in Type 1 Diabetes Research**
This Programme aims to increase awareness and promote the highest quality of basic biomedical and clinical research in Europe and its associated countries applicable to type 1 diabetes.
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 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.
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 postdoctoral/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.

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.

EFSD Anniversary Fund:

Supported by Boehringer Ingelheim, Lilly and Novo Nordisk
This multi supported programme joins in the celebration of the 100-Year Anniversary of the discovery of insulin with the aim at supporting the most talented investigators in the fields of diabetes research in Europe. Projects may be basic, translational and/or clinical research on diabetes or its comorbidities and complications.

In addition, the EFSD Albert Renold Travel Fellowships are available throughout the year, and enable young scientists to stay at other institutions in order to learn new techniques in basic or clinical diabetes research.

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

Further information on EFSD programmes can be found under:

www.EuropeanDiabetesFoundation.org
SYMPOSIA
ON THE OCCASION
OF THE
57th ANNUAL MEETING
OF THE
EUROPEAN ASSOCIATION
FOR THE STUDY
OF DIABETES
IDF EUROPE SYMPOSIUM:
THE USE OF DATA IN DIABETES - A PATIENT-CENTRED APPROACH

Monday, 27 September 2021          14:30 - 15:45

Berlin Hall

Moderator: N. Pall, UK

Panelists:

B. Hauck, Germany

H. van Haastert, Belgium

S. Shepered, UK

N. Klazinga, Netherlands

T. Ross, Bahrain

M. Chlebus, Belgium

K. Kivinen, Finland
DIABETIC FOOT STUDY GROUP SYMPOSIUM:
WHAT DO I NEED TO KNOW ABOUT
DIABETIC FOOT TODAY?

Tuesday, 28 September 2021 08:30 - 10:00

Berlin Hall

Chairs: N. Papanas, Greece; F. Game, UK

R. Anichini, Italy:
Epidemiology and COVID-19

N. Petrova, UK:
Charcot osteoarthropathy

E. Brocco, Italy:
Diagnosis and prevention of peripheral arterial disease

S. Bus, Netherlands:
Prevention and preventative offloading

J.L. Lázaro-Martínez, Spain:
Physician and surgeon hand-in-hand

Discussion
Tuesday, 28 September 2021  
10:30 - 12:30

Berlin Hall

Chairs: O. Eriksson, Sweden; M. Gotthardt, Netherlands; V. Schrauwen, The Netherlands

O. Eriksson, Sweden:  
Welcome address and update on the study group activities

P. Iozzo, Italy:  
Investigation of metabolism by PET-CT

M. Krssak, Austria:  
Magnetic Resonance Spectroscopy as a tool to investigate metabolic changes in insulin resistance and diabetes

Closed session - annual study group meeting
D&CVD STUDY GROUP SYMPOSIUM: TOWARDS HEART FAILURE AND CARDIOMETABOLIC MANAGEMENT IN TYPE 2 DIABETES

Tuesday, 28 September 2021 13:00 - 15:00

Berlin Hall

Chairs: D. Catrinoiu, Romania; O. Schnell, Germany

A. Ceriello, Italy:
Welcome

P. Valensi, France:
An homage to 100 years of insulin therapy: What has been achieved regarding cardiovascular complications?

A. Ceriello, Italy:
How can we compromise between gluco- and cardio-centric management of diabetes?

N. Lalic, Serbia:
Heart failure in diabetes mellitus: the role of the diabetologist in the interdisciplinary diagnostic assessment

B. Itzhak, Israel:
Heart failure management: a perspective from diabetes care

E. Standl, Germany:
Heart failure outcomes and COVID-19

General discussion and close
RMSG SYMPOSIUM: REACTIVE METABOLITES AND INCREASED RISK OF SEVERE COVID-19 DISEASE IN OBESITY AND DIABETES

Tuesday, 28 September 2021 16:00 - 17:00

Berlin Hall

Chairs: N. Rabbani, Qatar; M. Al-Asmakh, Qatar

A. Ceriello, Italy:
Could increased reactive oxygen species (ROS) contribute to severe COVID-19 in obesity and diabetes?

P.J. Thornally, Qatar:
Increased methylglyoxal in obesity and diabetes – friend or foe of SARS-CoV2?
EDNSG SYMPOSIUM:
HOT TOPICS IN DIABETES KIDNEY DISEASE

Wednesday, 29 September 2021 08:00 - 10:30

Berlin Hall

Chair: L. Gnudi, UK

H. L. Heerspink, Netherlands:
Clinical trials in DKD – from one size fits all to one fit for everyone

S. Satchell, UK:
Mechanisms of glomerular filtration and disruption in diabetic kidney disease

R. Schmieder, Germany:
Devices based interventions for CKD and DKD

N. Montserrat, Spain:
Stem cells and organoids: new avenues in diabetic nephropathy research

L. Gnudi, UK:
Close
Wednesday, 29 September 2021 11:00 - 12:00

Berlin Hall

Chairs: G. Mingrone, Italy; G. Casella, Italy

G. Mingrone, Italy:  
Introduction to the MSSG study group

G. Angelini, Italy:  
Molecular mechanism of metabolic surgery

M. F. Russo, Italy:  
Relationship between body composition and NASH

D. Tsilingiris, Greece:  
Long-term effects of bariatric surgery on gut peptide responses and markers of insulin resistance; association with appetite and weight loss

W. Al-Najim, Ireland:  
How can IMI SOPHIA benefit to our understanding of predictors of response to metabolic surgery?

T. Le Roy, France:  
Gut microbiota, bariatric surgery and diabetes resolution
**DESG SYMPOSIUM:**
**THERAPEUTIC PATIENTS’ EDUCATION - ONE YEAR EXPERIENCE DURING COVID-19 PANDEMIC**

*Wednesday, 29 September 2021*  
12:30 - 14:30

**Berlin Hall**

Chairs: F. Toti, Albania; M. Hassanein, UK

F. Toti, Albania; I. Alimehmeti, Albania; E. Nelaj, Albania; D. Doracaj, Albania:  
Impact of COVID-19 in diabetes and other chronic diseases management

M. Hassanein, UK:  
Inpatient management during COVID time: Can technology help?

A. Gupta, India; R. Gupta, India:  
Diabetes democracy through digital patient education and training

B. Stepanow, Poland:  
The effectiveness of the Diabetofon hotline during COVID-19

Questions and answers

Round table: Therapeutic patients’ education in COVID time
D. Rahelic, Croatia; J. Raposo, Portugal; T. Milenkovic, North Macedonia; T. Tankova, Bulgaria; B. Saboo, India; A. Majchrzak, Poland; I. Vlasenko, Ukraine; S. P. Montesinos

T. Milenkovic, North Macedonia; F. Toti, Albania:  
Closure
EGIR SYMPOSIUM:
WHAT’S THE MATTER WITH ADIPOSE TISSUE AND INSULIN RESISTANCE?

Wednesday, 29 September 2021 15:00 - 15:45

Berlin Hall

Chairs: M. Manco, Italy; A. Gastaldelli, Italy

P. Scherer, USA:
Adipose tissue as a major determinant of systemic insulin sensitivity

T.V. Puig:
Adipose tissue expandability, lipotoxicity and metabolic syndrome

Discussion
NAFLD STUDY GROUP SYMPOSIUM:
WHAT’S THE MATTER WITH ADIPOSE TISSUE AND HEPATIC STEATOSIS?

Wednesday, 29 September 2021  16:15 - 17:00

Berlin Hall

Chairs: C. Postic, France; A. Gastaldelli, Italy

S. Klein, Germany:
Alterations in adipose tissue biology in people with hepatic steatosis

M. Roden, Germany:
Differences in hepatic steatosis and metabolic features of novel diabetes subtypes

Discussion
**Thursday, 30 September 2021**

08:00 - 09:30

Berlin Hall

Chair: P. Topsever, Turkey

P. Topsever, Turkey:
Introduction

S. Kunutsor, UK:
Indirect effect of COVID pandemic on cardiovascular hospitalisations

S. van Grondelle, Netherlands:
Impact of COVID pandemic on primary care workforce

S. Seidu, UK:
Combined effect of SGLT-2 Is and RAAS Blockage on cardio-renal outcomes

L. i Arboix, Spain:
Diabetes foot risk assessment in primary care

P. Topsever, Turkey:
Concluding remarks
**Thursday, 30 September 2021**

10:00 - 12:00

**Berlin Hall**

Chairs: P. Kempler, Hungary; S. Tesfaye, UK

**U. Alam, UK:**
Neuropathy in prediabetes

**S. Frontoni, Italy:**
Diabetic neuropathy: a new vision

**A. Körei, Hungary:**
Do we still need all five standard tests in the diagnosis of cardiovascular autonomic neuropathy?

**D. Ziegler, Germany:**
Evidence based pharmacotherapy of diabetic polyneuropathy

**M. Yorek, USA:**
Is there an experimental evidence for the neuroprotective role of insulin?
HSRHE SYMPOSIUM:
HEALTH CARE, HEALTH OUTCOMES AND COSTS FOR PEOPLE WITH DIABETES DURING THE COVID-19 PANDEMIC AND BEYOND

*Thursday, 30 September 2021 12:30 - 14:30*

**Berlin Hall**

Chair: A. Icks, Germany; W. Jeffcoate, UK

**M. Narres, Germany:**
Hospitalisation rate and mortality among people with and without diabetes during the COVID-19 pandemic year 2020 in comparison to previous years

**N. Sattar, UK:**
The effects of COVID-19 on the health of people with diabetes

**G. Booth, Canada:**
Diabetes and COVID-19 severity: a systematic review of the literature

**R. Geurten, Netherlands:**
Delineating the type 2 diabetes population in the Netherlands using an all-payer claims database: specialist care, medication utilisation and expenditures 2016–2018

**A. Icks, Germany:**
The future plans of the study group
Symposia

INTERNATIONAL HYPOGLYCAEMIA STUDY GROUP
SYMPOSIUM:
LONG-TERM COGNITIVE CONSEQUENCES OF
SEVERE HYPOGLYCAEMIA

Thursday, 30 September 2021 15:00 - 17:00

Berlin Hall

Chair: S. Heller, UK

S. Heller, UK:
Welcome and introduction

B. Frier, UK:
Hypoglycaemia and cognition in type 1 diabetes: new perspectives from the DCCT/EDIC cohort

R. McCrimmon, UK:
Hypoglycaemia and cognition in type 2 diabetes

E. Seaquist, USA:
Blood glucose and cognition: mechanism of the long-term consequences of severe hypoglycaemia

L. Gonder-Frederick, USA:
Prevention of cognitive impairment

T. Jones, Australia:
Hypoglycaemia in the paediatric population

Panel discussion: Implications & call to action

S. Heller, UK:
Closing
Industry Sessions
on the occasion of the
57th EASD Annual Meeting

www.easd-industry.com

Organised by

INTERPLAN
media & service gmbh
## INDUSTRY SESSION SCHEDULE

### Industry Day

<table>
<thead>
<tr>
<th>Location</th>
<th>Event</th>
<th>Time</th>
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<tbody>
<tr>
<td>Moscow Hall</td>
<td>Novo Nordisk</td>
<td>14:30-16:10</td>
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<tr>
<td>Paris Hall</td>
<td>SANOFI</td>
<td>10:30-12:00</td>
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<tr>
<td>London Hall</td>
<td>AstraZeneca</td>
<td>14:30-16:00</td>
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<td>Madrid Hall</td>
<td>Abbott Diabetes Care</td>
<td>14:30-15:30</td>
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<td>MSD</td>
<td>14:30-15:30</td>
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<td>Saint Petersburg Hall</td>
<td>Dexcom</td>
<td>12:30-13:30</td>
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<td>Meet the Expert</td>
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## Industry Session Schedule

### Monday, 27 September 2021

<table>
<thead>
<tr>
<th>Time</th>
<th>Company</th>
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### INDUSTRY SESSION SCHEDULE

#### Morning

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<th>Location</th>
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<tr>
<td>Moscow Hall</td>
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<td>09:00-09:10</td>
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<td>Paris Hall</td>
<td>Novo Nordisk</td>
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<td>Boehringer Ingelheim &amp; Eli Lilly and Company Alliance</td>
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#### Evening

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<td>Bayer AG</td>
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<td>Tandem Diabetes Care, Inc.</td>
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# INDUSTRY SESSION SCHEDULE

## Morning

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## Evening

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### Industry Session Schedule

**Wednesday, 29 September 2021**

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## INDUSTRY SESSION SCHEDULE

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### Evening

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<td>CPC Clinical Research</td>
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### Friday, 1 October 2021

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### Evening

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<td>Eli Lilly and Company</td>
<td>19:00-19:30</td>
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Thursday, 30 September 2021

Nestle Health Science
20:00-21:30
CONNECTIONS AND COMBINATIONS:
SUPPORTING PEOPLE TO HELP CONTROL THEIR DIABETES

Session 1: Combining insulin with technology:
Towards connected care solutions

10:30 – 10:40 Symposium introduction
Richard Bergenstal (USA)

10:40 – 10:55 Keynote lecture: A turning point in diabetes management
Richard Bergenstal (USA)

10:55 – 11:15 Insulin as part of the treatment journey: Across diabetes populations and moments
Alice Y.Y. Cheng (CAN)
Jeremy Pettus (USA)

11:15 – 11:35 Advances in glycemic metrics: The value of time-in-range for people with diabetes
Richard Bergenstal (USA)

11:35 – 11:50 Integrating therapy and care for people with diabetes:
The value of connected solutions (roundtable discussion)
David Kerr (USA)
Jeremy Pettus (USA)
Lori Berard (CAN)

11:50 – 12:00 Q&A and session summary
Richard Bergenstal (USA) and all speakers

Organised by: SANOFI
DEXCOM REAL-TIME CGM INTEROPERABILITY – THE FOUNDATION FOR PATIENT CHOICE & SUCCESS IN DIABETES MANAGEMENT

Organised by: Dexcom
LATEST CLINICAL UNDERSTANDING FROM VERTIS CV FOR PATIENTS WITH DIABETES, CARDIOVASCULAR AND RENAL DISEASE: A CROSS-SPECIALTY DISCUSSION

Chairs: Chris Cannon (USA), Sam Dagogo-Jack (USA)

14:30 – 14:35 Opening Remarks
Chairs (USA)

14:35 – 14:45 Ertugliflozin and VERTIS CV – New Data Expanding Our Understanding for the Treatment of Patients With Type 2 Diabetes and Cardiovascular Disease
Sam Dagogo-Jack (USA)

14:45 – 14:55 Recent Data on the Efficacy and Safety of Ertugliflozin Using Insulin in Patients with Type 2 Diabetes Mellitus and Established Cardiovascular Disease
Ildiko Lingvay (USA)

14:55 – 15:05 The Latest VERTIS CV Heart Failure Results - Adding to Our Clinical Understanding From a Cardiologist’s View
Francesco Cosentino (SWE)

15:05 – 15:15 New VERTIS CV Kidney Protection Results - Adding to Our Clinical Understanding From a Nephrologist’s View
David Cherney (CAN)

15:15 – 15:28 What Does It All Mean For Our Patients?
A Cross-Specialty Faculty – Roundtable Discussion
Faculty

15:28 – 15:30 Closing Remarks
Chairs (USA)

Organised by: MSD
CRITICAL ADVANCES IN FLASH-BASED CGM: A FOUNDATIONAL APPROACH TO OPTIMIZING HEALTH METRICS AND COSTS ACROSS THE ENTIRE SPECTRUM OF DIABETES CARE

14:30 – 14:40  Program Chair Welcome and Introduction
Mainstreaming CGM Across the Spectrum of Diabetes Care: What Groups Will Benefit?
Type 2 Diabetes? Newly Diagnosed Patients? A Roadmap to Clinical Success and Patient Satisfaction
What Parameters Do We Follow with Ambulatory Glucose Profiling (AGP): Applications of CGM to Both Lifestyle and Pharmacologic Interventions – An Overview
Tadej Battelino (SVN)

14:40 – 14:55  Real World and Prospective Trials Supporting CGM as a Foundational Approach to Management of Diabetes: How Does Flash-Based CGM Optimize Time in Range, Reduction in Hypoglycemia, and Improve Personalized, A1c Target Goal Attainment?
Real World Data for Optimizing Multiple, Glycemic/Metabolic Control and Patient Safety Metrics in the Covid-19 Era and Beyond
Ramzi Ajjan (UK)

Comparing Health Economic Data, Hospitalization Rates, and Clinical Outcomes with Flash-Based CGM
Partha Kar (UK)

15:10 – 15:25  Applying Flash-Based CGM to the Front Lines of Diabetes Care in the Real World: Patient Case Management Session
A Case-Based Master Class Using Flash Glucose Monitoring Technology to Improve Glycemic Metrics, Target Goal Attainment, and Therapeutic Safety of Diabetic Treatment Regimens
Tadej Battelino (SVN)

15:25 – 15:30  Program Summary and Vision Statement
The Evolving Foundational Role of Flash-Based Glucose Monitoring Technology in Optimizing Cost Containment and Clinical Outcomes in Persons with Diabetes
A Practical Roadmap for the Application of New Advancements in Flash-Based Glucose Monitoring
Tadej Battelino (SVN)

Organised by: Abbott Diabetes Care
MONDAY, 27 SEPTEMBER 2021
14:30 – 16:00
LONDON HALL

FROM SCIENCE TO PATIENTS:
MECHANISMS OF ORGAN BENEFIT WITH SGLT2 INHIBITION
STATE OF THE ART LECTURE:
NASH, DISEASE BURDEN AND NEW OPPORTUNITIES

Chair: Hiddo Heerspink (NLD)
Co-Chair: Nayyar Iqbal (AstraZeneca)

14:30 – 14:35 Welcome
Hiddo Heerspink (NLD)
Elisabeth Björk (AstraZeneca)
Nayyar Iqbal (AstraZeneca)

14:35 – 14:50 Role of water conservation and metabolism in SGLT2
inhibitor mediated organ protection
Jens Marc Titze (SGP)

14:50 – 15:10 Cracking the code in CKD: Mechanisms of renoprotection
Hiddo Heerspink (NLD)

15:10 – 15:30 SGLT2 inhibitors in HF: Piecing together the puzzle of
preserved ejection fraction
Sanjiv Shah (USA)

15:30 – 15:40 Panel discussion
All faculty

15:40 – 15:55 State of art lecture: NASH, disease burden and new
opportunities – Emerging new modalities to manage NASH
Arun Sanyal (USA)

15:55 – 16:00 Closing remarks
Regina Fritsche-Danielson (AstraZeneca)

Organised by: AstraZeneca
CHANGING PARADIGM THROUGH HOLISTIC APPROACHES
HOLISTIC APPROACHES TO T2D TREATMENT AND WEIGHT MANAGEMENT IN PEOPLE WITH OBESITY

Chair: Tina Vilsbøll (DNK)

14:30 – 14:35 Welcome
Tina Vilsbøll (DNK)

14:35 – 14:47 Should we have a more holistic treatment approach to improve healthy lifespan in people living with T2D?
Vanita Aroda (USA)

14:47 – 15:10 Panel discussion
Vanita Aroda (USA), Melanie Davies (UK), John Buse (USA), Nikolaus Marx (GER)

15:10 – 15:20 Treatment intensification in T2D with high-dose semaglutide: SUSTAIN FORTE
Juan Pablo Frias (USA)

15:20 – 15:25 Questions from the audience

15:25 – 15:27 Break

15:27 – 15:29 Welcome back
Tina Vilsbøll (DNK)

15:29 – 15:37 The potential of semaglutide 2.4 mg for weight management
Rachel Batterham (UK)

15:37 – 15:47 Changing the paradigm in obesity care: the STEP 1–4 data
Melanie Davies (UK)

15:47 – 15:57 The clinical impact of double-digit weight loss
John Wilding (UK)

15:57 – 16:10 Questions from the audience

16:10 – 16:12 Thanks and wrap-up
Tina Vilsbøll (DNK)

Organised by: Novo Nordisk
CONTINUING BEYOND 100
INSULIN INNOVATIONS – 100 YEARS AND BEYOND

Organised by: Novo Nordisk

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>16:30 – 16:35</td>
<td>Welcome</td>
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<td>16:35 – 16:45</td>
<td>Insulin innovations – the past: journey so far</td>
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<td>Andreas Liebl (GER)</td>
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<td>16:45 – 16:55</td>
<td>Insulin innovations – the present: current scenario</td>
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<td>Lena Landstedt-Hallin (SWE)</td>
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<td>16:55 – 17:05</td>
<td>Patient case study</td>
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<td>Andreas Liebl (GER)</td>
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<td>Lena Landstedt-Hallin (SWE)</td>
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<td>17:05 – 17:20</td>
<td>Insulin innovations: roadmap to the future</td>
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<td>Ronald Goldenberg (CAN)</td>
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<td>17:20 – 17:28</td>
<td>Panel discussion</td>
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<td>17:28 – 17:30</td>
<td>Thanks and wrap-up</td>
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<td>Tina Vilsbøll (DNK)</td>
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CONNECTIONS AND COMBINATIONS: SUPPORTING PEOPLE TO HELP CONTROL THEIR DIABETES

Session 2: Combining efficacy and simplicity to help improve glycemic control

16:30 – 16:35 Session 2 introduction
Julio Rosenstock (USA)

16:35 – 16:55 Simultaneous approach to therapeutic intensification: Who, when and why
Yehuda Handelsman (USA)
Leigh Perreault (USA)

16:55 – 17:15 Guiding personalized care with injectable therapies: Considering the needs of your patient
Stewart Harris (CAN)
Davida Kruger (USA)

17:15 – 17:35 Advancing insulin therapy in adults with T2D: Outcomes from the SoliMix trial
Julio Rosenstock (USA)

17:35 – 17:45 Q&A and session summary
Julio Rosenstock (USA) and all speakers

Organised by: SANOFI
MONDAY, 27 SEPTEMBER 2021
18:00 – 18:30
MEET THE EXPERT

Organised by: SANOFI

Chair: Julio Rosenstock (USA)
Speaker: Rory McCrimmon (UK)
INTERWOVEN BEYOND TODAY
HIGHLIGHTS AND LEARNINGS: CURRENT DIABETES AND OBESITY MANAGEMENT AND FUTURE OPPORTUNITIES

Chair: Tina Vilsbøll (DNK)

19:00 – 19:05 Welcome
Tina Vilsbøll (DNK)

19:05 – 19:30 Highlights and learnings: current diabetes and obesity management and future opportunities
BEYOND GLYCEMIA: CAN NOVEL TECHNOLOGY ALLEVIATE THE BURDEN OF DIABETES?

Chair: Trang Ly

Speakers: Alice Cheng
          William Polonsky
          Peter Jennings

Organised by: Insulet
TIMELY PAD DETECTION IN DIABETIC PATIENTS.
HOW THE LATEST ABI AND TBI TECHNOLOGY CAN HELP PREVENT LOWER LIMB ADVERSE EVENTS.

Speaker: Petra Balažic (Brand Manager at MESI, SVN)

1. Prevalence of PAD in diabetic patients
2. Guidelines and good medical practice for arterial assessment
3. Introduction of MESI mTABLET ABI – the automated wireless device for measuring ABI
4. Discovering PAD in cases of non-compressible by measuring Toe-Brachial Index (TBI)
5. Introduction of MESI mTABLET TBI – the simplest wireless device for measuring TBI

Organised by: MESI, Ltd.
ARTIFICIAL INTELLIGENCE MEET HUMAN INTELLIGENCE: POWERING PRECISION DECISIONS

Organised by: AstraZeneca
TUESDAY, 28 SEPTEMBER 2021
09:15 – 09:45
PARIS HALL

CHANGING PARADIGM BY THINKING AHEAD
ORAL SEMAGLUTIDE – WHERE AND HOW DOES IT FIT?

09:15 – 09:20  Overview of oral semaglutide and PIONEER trials
Filip K Knop (DNK)

09:20 – 09:30  Case scenarios based on clinical evidence
Filip K Knop (DNK)
Vanita Aroda (USA)

09:30 – 09:35  Patient-centric practicalities
Vanita Aroda (USA)

09:35 – 09:45  A patient-centered approach with oral semaglutide
Panel discussion and Q&A (live)

Organised by:  Novo Nordisk
YOUR TIME TO ACT IS NOW:
BREAKING BARRIERS IN T2D CARE

Speaker: John Buse (USA)
GIP & GLP-1 IN PATHOPHYSIOLOGY & TYPE 2 DIABETES

09:35 – 09:37 Welcome and introduction

09:37 – 09:45 T2D Pathophysiology and GIP and GLP-1 Dual Receptor Agonism

Organised by: Eli Lilly and Company
TEAMING UP TO TACKLE CARDIORENAL RISK IN DIABETES
ROLE OF SGLT2I: HOW TO OVERCOME CLINICAL INERTIA

17:40 – 17:45 The case challenge
Teaming up to tackle cardiorenal risk in diabetes
Melanie Davies (UK)

17:45 – 17:55 Defining treatment goals: SGLT2i, implications from clinical trials and guidelines
Nikolaus Marx (GER)

17:55 – 18:05 Practical Challenges: SGLT2i in the spectrum of diabetes, CVD & CKD: Who and how to manage?
Melanie Davies (UK)

18:05 – 18:10 Discussion: How to overcome clinical inertia?
Nikolaus Marx (GER)
Melanie Davies (UK)

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance / PACE-CME
TUESDAY, 28 SEPTEMBER 2021

MOSCOW HALL

COLLECTIVELY TOWARDS MORE
A STEP FORWARD: WEIGHT LOSS AND IMPROVED CARDIOVASCULAR RISK FACTORS

17:40 – 17:55  Introduction: obesity, weight loss and CV risk
                Kim Connelly (CAN)

17:55 – 18:10  STEPPing forward: cardiovascular risk factors in patients with overweight or obesity
                Ildiko Lingvay (USA)

18:10 – 18:25  STEPPing into the future: managing cardiovascular outcomes in people with overweight or obesity
                Subodh Verma (CAN)

18:25 – 18:40  Live Q&A
                Chaired by Kim Connelly (CAN)

Organised by:  Novo Nordisk
THE ENDURING POTENTIAL OF INSULIN:  
A LEGACY OF LIFE-CHANGING INNOVATION

17:40 – 17:45  Symposium introduction  
           Jay Skyler (USA)

17:45 – 18:00  100 years of insulin therapy for diabetes: From discovery to innovation  
           Hertzel Gerstein (CAN)

18:00 – 18:10  Basal insulin and the challenge of hypoglycemia: A real-world perspective  
           Stewart Harris (CAN)

18:10 – 18:25  Using 2nd-generation basal insulins: Lessons from clinical trials to the real world  
           Emma Wilmot (UK)

18:25 – 18:35  Celebrating 100 years – recognizing insulin’s role in diabetes management (roundtable discussion)  
           All speakers

18:35 – 18:40  Summary and close  
           Jay Skyler (USA)
## TIPPING THE SCALES – REBALANCING CKD IN T2D MANAGEMENT

**TUESDAY, 28 SEPTEMBER 2021  17:40 – 18:40**  
**LONDON HALL**

**Organised by:** AstraZeneca

<table>
<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>17:40 – 17:45</td>
<td>Welcome and introductions</td>
<td>Silvio Inzucchi (USA)</td>
</tr>
<tr>
<td>17:45 – 18:05</td>
<td>Why think about CKD?</td>
<td>Paola Fioretto (ITA)</td>
</tr>
<tr>
<td>18:05 – 18:20</td>
<td>Rebalancing T2D management with SGLT2 inhibitors</td>
<td>Peter Rossing (DNK)</td>
</tr>
<tr>
<td>18:20 – 18:35</td>
<td>Collaboration in the management of T2D – a nephrologist’s perspective</td>
<td>Patrick Mark (UK)</td>
</tr>
<tr>
<td>18:35 – 18:40</td>
<td>Summary</td>
<td>Silvio Inzucchi (USA)</td>
</tr>
</tbody>
</table>
TUESDAY, 28 SEPTEMBER 2021
17:40 – 18:40
ATHENS HALL

TESTOSTERONE TREATMENT FOR MEN WITH HYPOGONADISM AND PREDIABETES/DIABETES

17:40 – 17:50  The perspective of the patient with hypogonadism
Geoff Hackett (UK)

17:50 – 18:05  Timely detection of hypogonadism:
The importance of searching proactively
Janine David (UK)

18:05 – 18:20  Health benefits of treating men with hypogonadism and prediabetes/diabetes
Mathis Grossmann (AUS)

18:20 – 18:35  How to treat functional hypogonadism:
challenges on the long term
Abraham Morgentaler (USA)

18:35 – 18:40  Conclusions and Q&A
Geoff Hackett (UK)

Organised by:  Bayer AG
TUESDAY, 28 SEPTEMBER 2021 17:40 – 18:40
MILAN HALL

RETHINKING PATIENT SELECTION IN THE ERA OF ADVANCED HYBRID CLOSED-LOOP SYSTEMS

Organised by: Tandem Diabetes Care, Inc.
TECHNOLOGIES LEADING TO IMPROVEMENTS IN CLINICAL OUTCOMES AND BURDEN REDUCTION IN PEOPLE WITH TYPE 1 DIABETES

Chair: Ohad Cohen (CHE)

17:40 – 18:00 Optimizing outcomes with the MiniMed™ 780G system: evidence from real-world usage
Ohad Cohen (CHE)

18:00 – 18:20 Best practices with the MiniMed™ 780G System
Tadej Battelino (SVN)

18:20 – 18:40 Combining InPen and CGM to Improve Glycemic Outcomes in MDI Users
Robert Vigersky (USA)

18:40 – 18:55 Next Steps in the Advancement of technologies for the treatment of diabetes
Ali Dianati (USA)

18:55 – 19:10 Questions & Answers
Ohad Cohen (CHE)

Organised by: Medtronic
PERSONALISING DIABETES CARE ALONG THE WHOLE PATIENT JOURNEY

Chair: Rolf Hinzmann (Roche Diabetes Care, GER)

17:40 – 17:45 Introduction

17:45 – 18:15 Integrated Personalised Diabetes Management drives improved patient-reported outcomes
Kamlesh Khunti (UK)

18:15 – 18:35 Screen, triage and treat – a digital paradigm for risk stratification in CKD
Navdeep Tangri (CAN)

18:35 – 18:55 Innovative therapies and future integrated solutions can enhance management of diabetic eye disease
Praveen Patel (UK)

18:55 – 19:10 Discussion and Closing

Organised by: Roche Diabetes Care GmbH
TAKING ANDROID APS MAINSTREAM: 
A WORKSHOP FOR CLINICIANS

17:40 – 17:45 Welcome
James Mayjor (Ypsomed AG, AUS)

17:45 – 18:00 What is Android APS
Neale Cohen (AUS)

18:00 – 18:10 Published data
Martin de Bock (NZL)

18:10 – 18:25 Contemporary use
Neale Cohen (AUS)

18:25 – 18:40 Learning and contemporary use
Martin de Bock (NZL)

18:40 – 19:10 Wrap up and Q&A
James Mayjor (Ypsomed AG, AUS)
Neale Cohen (AUS)
Martin de Bock (NZL)

Organised by: Ypsomed AG
UNDERSTANDING BIOSIMILAR INSULINS: YOUR PATIENTS’ FUTURE

Chairs: Tina Vilsbøll (DNK), Lutz Heinemann (GER)

19:30 – 19:33 Introduction
Tina Vilsbøll (DNK)

19:33 – 19:43 Biosimilar Insulin Manufacturing: Why the process is the product?
Lutz Heinemann (GER)

19:43 – 19:53 Why do patient and HCP perceptions about biosimilar insulin matter?
Philip Home (UK)

19:53 – 20:00 Discussion and closure
All

Organised by: Sciarc GmbH / Supported by a medical education grant from Gan & Lee
WHERE DO WE STAND IN TERMS OF CLINICAL EVIDENCE WITH CLOSED LOOP SYSTEMS?

Chair: Pierre-Yves Benhamou (FRA)

19:30 – 19:35 Introduction
Pierre-Yves Benhamou (FRA)

19:35 – 19:43 Germany:
Experience from Germany with DBLG1 w Accu-Chek
Insight: point of view of a diabetologist and an expert patient
Bernhard Gehr (GER)

19:43 – 19:53 Spain:
Early experience in Spain with Accu-Chek Insight:
outcomes and key learnings
Ana Chico (ESP)
Rosa Corcoy (ESP)

19:53 – 20:00 Next steps:
Future developments: future developments and improvements, Kids, DBLG1 with Vicentra in France,
other partnerships …
Erik Huneker (FRA)
WHAT CAN A FASTER MEALTIME INSULIN MEAN FOR GLUCOSE CONTROL?

19:30 – 19:35  Welcome and Introductions
   Carolina Piras de Oliveira

19:35 – 20:10  Review of Lyumjev (insulin lispro) multi-daily injection clinical studies in T1 and T2 diabetes and Patient Case #1
   Emma Wilmot (UK)

20:10 – 20:45  Review of Lyumjev (insulin lispro) CSII clinical studies in T1 diabetes and Patient Case #2
   Andreas Reichel (GER)

20:45 – 21:00  Q&A and Closing Remarks

Organised by:  Eli Lilly and Company
INCRETIN INSIGHTS: GIP & GLP-1

08:45 – 08:52 Incretin Hormones
   Overview of Pleiotropic Effects of GIP and GLP-1

08:52 – 08:55 Intro to Pathophysiology Animation Video

08:55 – 09:13 Q&A

09:13 – 09:15 Conclusion

Organised by: Eli Lilly and Company
EARLY DIAGNOSIS IS KEY WHEN IT COMES TO CKD – A PATIENT PERSPECTIVE

Organised by: AstraZeneca
DAPA-CKD: REDUCING CARDIO AND RENAL RISK WITH DAPAGLIFLOZIN IN PATIENTS WITH CKD

Organised by: AstraZeneca
YOUR CHOICE AFTER METFORMIN:
SGLT2 INHIBITORS OR GLP-1 RECEPTOR AGONISTS?

Speakers: Merlin Thomas (AUS)
Silvio Inzucchi (USA)
Francesco Giorgino (ITA)

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance
TIPPING THE SCALES –
REBALANCING CKD IN T2D MANAGEMENT

18:30 – 18:35 Welcome and introductions
Silvio Inzucchi (USA)

18:35 – 19:00 Tipping the scales – rebalancing CKD in T2D management: Fireside chat
Silvio Inzucchi (USA)
Patrick Mark (UK)
Peter Rossing (DNK)

Organised by: AstraZeneca
CONTINUING BEYOND 100
ONCE-WEEKLY INSULINS: THE EXPERTS’ EXPERIENCES

18:30 – 18:32 Welcome
Athena Philis-Tsimikas (USA)
Simon Heller (UK)

18:32 – 18:35 A retrospective look:
100 years since insulin was discovered
Simon Heller (UK)

18:35 – 18:47 Once-weekly basal insulins:
From innovation to RCTs
Athena Philis-Tsimikas (USA)

18:47 – 18:53 Patient-centric care:
How once-weekly options may help get patients to target
Simon Heller (UK)

18:53 – 18:58 Questions from the audience
Facilitated by:
Athena Philis-Tsimikas (USA)
Simon Heller (UK)

18:58 – 19:00 Wrap-up
Athena Philis-Tsimikas (USA)
Simon Heller (UK)

Organised by: Novo Nordisk
ADVANCING INJECTABLE THERAPY IN ADULTS WITH T2D: FINDINGS FROM THE SOLIMIX TRIAL

18:30 – 18:35 Introduction
Julio Rosenstock (USA)

18:35 – 18:55 Glycemic goals and overcoming barriers: Unmet needs for people with T2D
Roundtable discussion
Presentation: Francesco Giorgino (ITA)
Roundtable: Francesco Giorgino (ITA), Julio Rosenstock (USA)

18:55 – 19:15 Advancing basal insulin therapy in the SoliMix trial: What does it mean for adults with T2D?
Rory McCrimmon (UK), Katherine Whitmire (USA)

19:15 – 19:25 Panel discussion
Moderator: Julio Rosenstock (USA)
and all speakers

19:25 – 19:30 Summary and close
Julio Rosenstock (USA)

Organised by: SANOFI
WEDNESDAY, 29 SEPTEMBER 2021
18:30 – 19:30
MADRID HALL

DOES YOUR CLINICAL MANAGEMENT MATCH THE EVIDENCE?
TREATMENT DECISIONS AFTER METFORMIN IN T2D

Speakers: John Buse (chair, USA)
Nikolaus Marx (GER)
Naresh Kanumilli (UK)
Maria Jose Soler Romeo (ESP)

18:30 – 18:35 Introduction

18:35 – 19:15 Does your clinical management match the evidence?
Treatment decisions after metformin in T2D

19:15 – 19:30 Panel discussion and Q&A

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance
WEDNESDAY, 29 SEPTEMBER 2021
18:30 – 19:30
BARCELONA HALL

CLINICAL TREATMENT OF PATIENTS WITH DIABETES AND CARDIOMETABOLIC DISEASE - A CONVERSATION WITH AN ENDOCRINOLOGIST, CARDIOLOGISTS AND A NEPHROLOGIST

Chairs: Ofri Mosenzon (ISR), Rich Pratley (USA)

18:30 – 18:33 Opening Remarks
Chairs (ISR, USA)

18:33 – 18:41 Highlighting the Patient with Diabetes and Cardiometabolic Disease
Rich Pratley (USA)

18:41 – 18:49 Answering Unmet Needs – Clinical Understanding of Recent Heart Failure Data for Patients with Diabetes and Cardiovascular Disease
Chris Cannon (USA)

18:49 – 18:57 Adding to the Clinical Understanding for Patients with Diabetes and Cardio-renal Disease
David Cherney (CAN)

18:57 – 19:27 A Cross-Specialty Faculty Roundtable on Meeting the Needs of Patients with Diabetes and Established Cardiometabolic Disease: Are SGLT2is Best Utilized as a Cardiovascular Drug? A Kidney Drug? A Glycemic Lowering Agent? Or All of the Above?
Faculty

19:27 – 19:30 Closing Remarks
Chairs (ISR, USA)

Organised by: MSD
DEXCOM REAL-TIME CGM FOR ALL INSULIN REQUIRING PATIENTS – THE EMERGING STANDARD OF CARE

Organised by: Dexcom
INTEGRATING NEW EVIDENCE ON ASCVD AND MICRO-VASCULAR RISK REDUCTION WITH OMEGA-3 FATTY ACIDS

18:30 – 18:35 Welcome, Introductions, Program Overview
Dirk Müller-Wieland (GER)

18:35 – 18:55 New Clinical Evidence of Omega-3 Fatty Acids on ASCVD Event Reduction
Dirk Müller-Wieland (GER)

18:55 – 19:15 Real-world Clinical Implications on Reducing ASCVD Events
Handrean Soran (UK)

19:15 – 19:30 Panel Discussion and Q&A
Handrean Soran (UK), Dirk Müller-Wieland (GER)

Closing Comments
Dirk Müller-Wieland (GER), Handrean Soran (UK)

Organised by: Medtelligence / Supported by an unrestricted educational grant from Amarin Pharma, Inc.
NEW PERSPECTIVES AND INTERDISCIPLINARY INSIGHTS ON
THE BENEFITS OF MR ANTAGONISM IN CKD AND T2D

Chair: Paola Fioretto (ITA)

18:30 – 18:35 Welcome and introductions
Paola Fioretto (ITA)

18:35 – 18:45 Addressing unmet needs in CKD and T2D with nonsteroidal MR antagonists
Roland Schmieder (GER)

18:45 – 19:00 MR antagonism confers benefits irrespective of anti-diabetic agents or metabolic status: Insights from FIDELIO-DKD
Paola Fioretto (ITA)

19:00 – 19:15 FIGARO-DKD: Expanding the benefit of MR antagonism in CKD and T2D
Samy Hadjadj (FRA)

19:15 – 19:25 Q&A
All faculty

19:25 – 19:30 Summary and close
Paola Fioretto (ITA)

Organised by: Bayer AG
THE INCRETIN JOURNEY: PAST, PRESENT AND FUTURE

19:15 – 19:16 Introduction


19:24 – 19:25 Summary

Organised by: Eli Lilly and Company
GIP & GLP-1 IN PATHOPHYSIOLOGY & TYPE 2 DIABETES

19:30 – 19:32 Welcome and introduction

19:32 – 19:40 T2D Pathophysiology and GIP and GLP-1 Dual Receptor Agonism

Organised by: Eli Lilly and Company
COMBINING INPEN™ SYSTEM AND CGM TO IMPROVE GLYCEMIC OUTCOMES IN MDI USERS

Chair: Robert Vigersky (USA)

19:30 – 19:40 The need for smart pen for MDI users
   Robert Vigersky (USA)

19:40 – 20:00 Case Presentation in Type 1 and Type 2 diabetes
   Anders Carlson (USA)
PEOPLE WITH CKD AND T2D;
HOW FINERENONE REDUCES THE RISK OF PROGRESSION
OF KIDNEY DISEASE AND CV OUTCOMES?
JOIN THE SESSION AND ASK OUR EXPERTS!

Speakers:  
Paola Fioretto (ITA)  
Roland Schmieder (GER)  
Samy Hadjadj (FRA)
EVALUATION OF THE INCRETIN EFFECT IN HUMANS

20:00 – 20:02  Evaluation of the incretin effect in humans
20:02 – 20:12  Contribution of GLP-1 to the incretin effect
20:12 – 20:22  Contribution of GLP-1 to the incretin effect
20:22 – 20:30  Discussion and Closing

Organised by:  Eli Lilly and Company
THE DIFFERENTIAL DIAGNOSIS OF ATYPICAL CASES OF SEVERE INSULIN RESISTANCE – SUSPECTING AND DIAGNOSING LIPODYSTROPHY

Chair: Matthias Laudes (GER)

20:00 – 20:10 Welcome and introduction
Matthias Laudes (GER)

20:10 – 20:30 Diagnosis of severe insulin resistance and atypical diabetes and when to suspect lipodystrophy
Francesco Giorgino (ITA)

20:30 – 20:50 The management of lipodystrophy: clinical challenges and treatment opportunities
Vaia Lambadiari (GRC)

20:50 – 21:00 Q&A, conclusions
Matthias Laudes (GER)

Organised by: Amryt Pharmaceuticals
WEDNESDAY, 29 SEPTEMBER 2021  20:00 – 21:00  PARIS HALL

INTRODUCING TEMPO:  
A CONNECTED PEN SYSTEM TO SIMPLIFY  
DIABETES MANAGEMENT

20:00 – 20:10  Welcome and instructions
20:10 – 20:25  The complexities of insulin management
20:25 – 20:35  Introducing the Tempo Connected Pen System
20:35 – 20:50  Insulin dosing data for more informed treatment conversations
20:50 – 21:00  Q&A and closing remarks

Organised by:  Eli Lilly and Company
THURSDAY, 30 SEPTEMBER 2021
09:15 – 09:45
MOSCOW HALL

IMAGINE THE FUTURE,
TODAY THE GLOBAL RISE OF NASH AND LIVER FIBROSIS –
WHAT CAN WE DO?

09:15 – 09:35  How and why to identify high-risk patients:
   lessons from the clinic
   Elmar Jaeckel (GER)
   Lise Lotte Gluud (DNK)

09:35 – 09:45  The future of NASH: the importance of interdisciplinary
   collaboration
   (interactive Q&A)
   Elmar Jaeckel (GER)
   Lise Lotte Gluud (DNK)

Organised by: Novo Nordisk
GLUCOSE MONITORING DEVICE INTERFERENTS: AN UNDER-RECOGNIZED ISSUE WITH IMPORTANT CLINICAL CONSEQUENCES.

Speaker: Andreas Pfützner (GER)

Glucose monitoring interferences when using BGM/CGM.
THE INCRETIN JOURNEY:
PAST, PRESENT AND FUTURE

09:35 – 09:36  Introduction
09:36 – 09:44  The incretin journey: Past, present and future
09:44 – 09:45  Summary

Organised by:  Eli Lilly and Company
RESULTS OF EMPAGLIFLOZIN IN PATIENTS WITH HFREF

Speaker: Javed Butler (USA)

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance
THURSDAY, 30 SEPTEMBER 2021

COFFEE BREAK SESSION:
WHOSE PATIENT IS THIS?

Organised by: AstraZeneca
THE REAL-WORLD BURDEN AND COST OF DIABETES:
RESULTS FROM THE INPHORM STUDY

18:15 – 18:30  The real-world burden and cost of diabetes:
Results from the iNPHORM study
Stewart Harris (CAN)
Alexandria Ratzki-Leewing (CAN)

18:30 – 18:45  Live Q&A
Stewart Harris (CAN)
Alexandria Ratzki-Leewing (CAN)

Organised by: SANOFI
CROSS-TALK BETWEEN THE HEART, KIDNEYS & THE ENDOCRINE SYSTEM – UNDERSTANDING FOR TYPE 2 DIABETES AND CARDIORENAAL DISEASE

THURSDAY, 30 SEPTEMBER 2021

18:15 – 18:20 Opening Remarks
Sam Dagogo-Jack (USA)

18:20 – 18:43 Cross-talk between the Heart, Kidneys & the Endocrine System – Understanding for Type 2 Diabetes and Cardiorenal Disease
David Cherney (CAN)
Kim Connelly (CAN)
Sam Dagogo-Jack (USA)

18:43 – 18:45 Closing Remarks
Sam Dagogo-Jack (USA)

Organised by: MSD
THURSDAY, 30 SEPTEMBER 2021  18:15 – 19:15
LONDON HALL

CLINICAL PRACTICE EXPERIENCES USING A PROFESSIONAL DIABETES MANAGEMENT / TELEMEDICINE ECOSYSTEM DURING COVID OUTCOMES OF AN EU ADVISORY BOARD ON DIGITAL THERAPEUTICS AND A LOOK AT ONETOUCH REVEAL REMOTE MONITORING USAGE IN REAL LIFE

18:15 – 18:20  Introductions
Elizabeth Holt (USA)

18:20 – 18:35  Best practices managing people with diabetes using telemedicine
Elizabeth Holt (USA)

18:35 – 18:45  Understanding the clinical value of the OneTouch ecosystem for HCPs from multiple EU countries during COVID
Elizabeth Holt (USA)

18:45 – 18:55  Personal stories from HCPs using the OneTouch ecosystem during COVID

18:55 – 19:05  Real world evidence using the OneTouch ecosystem
Mike Grady (UK)

19:05 – 19:15  Live Q&A
Elizabeth Holt (USA)
Mike Grady (UK)

Organised by: LifeScan
THURSDAY, 30 SEPTEMBER 2021
18:15 – 19:15
MADRID HALL

WALKING INTO THE FUTURE – MULTIFACETED CARE TO REDUCE VASCULAR RISK IN DIABETES

Chair: Cecilia Low Wang (USA)
Co-Chair: Mark Nehler (USA)

18:15 – 18:20 Introduction to faculty and program
Cecilia Low Wang (USA)

18:20 – 18:22 Introduction to the Case
Justin Morrison (USA)

18:22 – 18:25 Peripheral Artery Disease Background
Cecilia Low Wang (USA)

18:25 – 18:28 Progression of Case
Justin Morrison (USA)

18:28 – 18:38 Panel Discussion
Rupert Bauersachs (GER), Marc Bonaca (USA), Naomi Hamburg
(USA), Mikhail Kosiborod (USA), Mark Nehler (USA), Subodh
Verma (CAN), Cecilia Low Wang (USA)

18:38 – 18:44 Antithrombotic therapy
Marc Bonaca (USA)

18:44 – 18:53 Glucose-lowering therapy
Mikhail Kosiborod (USA), Subodh Verma (CAN),
Cecilia Low Wang (USA)

18:53 – 18:58 Lipid-modifying therapy
Justin Morrison (USA)

18:58 – 19:02 When is surgery needed?
Mark Nehler (USA)

19:02 – 19:05 Walking into the future – Therapies on the horizon
Marc Bonaca (USA)

19:05 – 19:15 Panel Discussion: Multifaceted management of PAD
and Diabetes and Conclusion
Rupert Bauersachs (GER), Marc Bonaca (USA), Naomi Hamburg
(USA), Mikhail Kosiborod (USA), Justin Morrison (USA), Mark
Nehler (USA), Subodh Verma (CAN), Cecilia Low Wang (USA)

Organised by: CPC Clinical Research
A CALL TO COLLABORATIVE ACTION – SHIELDING THE DIABETES PATIENT FROM MICRO- AND MACROVASCULAR RISKS WITH GLP-1 RECEPTOR AGONISTS

Chair: Naveed Sattar (UK)

18:15 – 18:30 The Endocrinologist in the Lead
 The Right Drug for the Right Patient at the Right Time
 Panel Discussion: lead by Naveed Sattar (UK)

18:30 – 18:45 The Cardiologist in the Lead
 Primary and Secondary Cardiovascular Protection
 Panel Discussion: lead by Mark Petrie (UK)

18:45 – 19:00 The Primary Care Physician in the Lead
 Implementing Proactive Diabetes Care across the Stages
 Panel Discussion: lead by Kamlesh Khunti (UK)

19:00 – 19:15 Panel Discussion and Live Q&A
 All Faculty

19:15 Adjourn

Organised by: Medscape Education / Supported by an independent educational grant from Novo Nordisk
POSTPRANDIAL GLYCAEMIC EXCURSIONS: IMPLICATIONS FOR HEALTH AND EFFECTS OF NONPHARMACOLOGICAL INTERVENTIONS

THURSDAY, 30 SEPTEMBER 2021
20:00 – 21:30
MADRID HALL

Organised by: Nestle Health Science

20:00 – 20:05 Welcome and Introductions
Bo Ahrén (SWE)

20:05 – 20:40 Health risks associated with elevated postprandial glucose or increased glycaemic variability
Louis Monnier (FRA)

20:40 – 21:15 Nonpharmacological interventions for postprandial glucose management
Bo Ahrén (SWE)

21:15 – 21:30 Live Q & A and close
Interactive discussion with speakers
## SURPASSING STANDARDS IN DIABETES CARE – NOVEL DUAL INCRETIN RECEPTOR AGONISTS

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
<th>Speaker(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:15 – 08:25</td>
<td>Better Metabolic Health with Incretin-based Therapies – Achievements and Ambitions</td>
<td>Michael Nauck (GER)</td>
</tr>
<tr>
<td>08:25 – 08:40</td>
<td>The Power of novel dual GIP/GLP-1 Receptor Agonists</td>
<td>Tina Vilsbøll (DNK)</td>
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<td>08:40 – 09:00</td>
<td>The Clinical Evidence for GIP/GLP-1 Receptor Agonists – Assessing the Emerging Profile</td>
<td>Melanie Davies (UK)</td>
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<tr>
<td>09:00 – 09:15</td>
<td>Panel Discussion and Q &amp; A</td>
<td>All Faculty</td>
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<td>09:15</td>
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</tbody>
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Organised by: Medscape Education / Supported by an independent educational grant from Lilly
CHANGING PARADIGM BY THINKING AHEAD:
NEW HORIZONS IN TYPE 2 DIABETES CARE
WITH ORAL SEMAGLUTIDE

17:40 – 17:43 Welcome
Adie Viljoen (UK)

17:43 – 17:51 Early treatment: what are the benefits of early initiation of GLP-1RAs?
Tina Vilsbøll (DNK)
Juris Meier (GER)

17:51 – 18:01 Discussion and Q&A
Tina Vilsbøll (DNK)
Juris Meier (GER)

18:01 – 18:09 Spotlight on: type 2 diabetes management for those with renal impairment
Tina Vilsbøll (DNK)
Peter Rossing (DNK)

18:09 – 18:19 Discussion and Q&A
Tina Vilsbøll (DNK)
Peter Rossing (DNK)

18:19 – 18:27 Spotlight on: Medical management in individuals with T2D and CV risk
Matt Cavender (USA)
David Strain (UK)

18:27 – 18:37 Discussion and Q&A
Matt Cavender (USA)
David Strain (UK)

18:37 – 18:40 A look at what is up and coming
Adie Viljoen (UK)

Organised by: Novo Nordisk
SUBTYPE CLASSIFICATION OF T2D: ARE WE THERE YET?

18:45 – 19:00  Subtype Classification of T2D: Are We There Yet?
Hertzel Gerstein (CAN)

19:00 – 19:15  Live Q&A
Hertzel Gerstein (CAN)

Organised by: SANOFI
THE INCRETIN EFFECT REVISITED

19:00 – 19:02  The incretin effect revisited

19:02 – 19:12  Contra: Can the incretin effect be restored in people with diabetes?

19:12 – 19:22  Pro: Can the incretin effect be restored in people with diabetes?

19:22 – 19:30  Discussion and Closing

Organised by:  Eli Lilly and Company
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Status September 2021, details are subject to change.
WELCOME ADDRESS

On behalf of the EASD Board and the 2022 Scientific Programme Committee, I have the pleasure of inviting you to participate in the 58th EASD Annual Meeting in Stockholm, Sweden.

I hope that you will enjoy the present virtual EASD meeting and it might be difficult to focus already now on next year’s meeting. Nevertheless, the diabetes research field is progressing at a very fast pace and I am sure you are also looking forward to meeting your colleagues again in person for interdisciplinary scientific exchange, dialogue and debate.

The 2022 Scientific Programme Committee will develop again an outstanding programme with a wide choice of topics covering all aspects of diabetes research and care and you are encouraged to submit your research for consideration for presentation during the meeting by submitting your abstract for review.

I also invite you to enjoy Stockholm’s cultural and recreational offerings. Sweden’s vibrant capital is sure to be a memorable backdrop to our Annual Meeting.

We look forward to seeing you in Stockholm in September 2022.

Mikael Rydén
Honorary Secretary EASD
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