56th ANNUAL MEETING

EASD

VIRTUAL MEETING AI

21-25 September 2020

FINAL PROGRAMME

easd.org
56TH ANNUAL MEETING OF THE EUROPEAN ASSOCIATION FOR THE STUDY OF DIABETES

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DEAR MEMBERS AND GUESTS,

It is my great honour and pleasure to welcome you to the 56th Annual Meeting of the European Association for the Study of Diabetes, which will take place – due to the severe global impact of the COVID-19 pandemic – as an innovative Virtual Meeting from 21 to 25 September 2020.

We have developed a virtual experience using the latest technology to connect the global diabetes community, share ground-breaking diabetes science and research, and to provide educational opportunities that will extend in the months to come as well. This includes a variety of engaging formats:

- Live-streamed symposia with diabetes experts – including the option to ask questions to the speakers
- Latest research results shared during live-streamed abstract programme in Oral and Poster presentations – including the option to interact with the presenters
- Personalized profile – do not miss any lectures or presentations matching your fields of interest and see and connect with those who shares the same interests
- Interactive discussion hubs – meet your peers for discussions and sharing of ideas and knowledge
- Virtual Exhibitor Exhibition – take a tour through the interactive booths
- Virtual EASD Plaza and Associations‘ Village to explore and mingle in

I look forward to welcoming you online – where, like never before the vast, global diabetes community will be united at the same time – and wish you a very successful and inspiring virtual EASD Annual Meeting 2020.

Stefano Del Prato
President EASD/EFSD
WELCOME ADDRESS

On behalf of the EASD Board and the 2020 Scientific Programme Committee, I have the pleasure of welcoming you to the 56th EASD Annual Meeting.

Even though the meeting cannot take place onsite in Vienna as planned, I do believe that it is more important than ever to connect the global diabetes community and our innovative Virtual Meeting will deliver an abundance of new knowledge and opportunities for networking.

Regardless of whether you are a clinician, basic scientist, nurse, healthcare professional or young academic, you can look forward to an exceptional scientific programme that not only looks to the future, but also deals extensively with current treatments, technologies and care as well as outstanding scientific research.

In addition to the numerous oral and poster presentation sessions, there will be a wide range of invited lectures presented by distinguished scientists and our prize lectures, which are always a highlight of the EASD Annual Meeting.

We look forward to seeing you virtually from 21 to 25 September 2020.

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

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Rheindorfer Weg 3
40591 Düsseldorf
Germany
Phone: +49-211-7584690
www.easd.org
## HISTORY OF THE EASD ANNUAL MEETINGS

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<thead>
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<th>Year</th>
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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

AIDPIT - Artificial Insulin Delivery, Pancreas and Islet Transplantation Study Group
D&CVD - Diabetes and Cardiovascular Disease Study Group
DCSG - Diabetes and Cancer Study Group
DESG - Diabetes Education Study Group
DFSG - Diabetic Foot Study Group
DIAB IMAGE - Biomedical Imaging in Diabetes Study Group
DNSG - Diabetes and Nutrition Study Group
DPSG - Diabetes Pregnancy Study Group
EASDec - Eye Complications Study Group
EDEG - European Diabetes Epidemiology Group
EDNSG - European Diabetic Nephropathy Study Group
EGIR - European Group for the Study of Insulin Resistance
ExPAS - Exercise and Physical Activity Study Group
HSRHE-SG - Health Services Research and Health Economics Study Group
IHSG - International Hypoglycaemia Study Group
INCSG - Incretin Study Group
ISG - Islet Study Group
MSSG - Study Group on Metabolic Surgery
NAFLD - Non-alcoholic fatty liver disease
NEURODIAB - Diabetes Neuropathy Study Group
PCDE - Study Group on Primary Care Research in Diabetology
PSAD - Psychosocial Aspects of Diabetes Study Group
RM-SG - Reactive Metabolites in Diabetes Study Group
SGGD - Study Group on Genetics of Diabetes
MORGAGNI PRIZE

The G.B. Morgagni Prize was instituted in 1984 by a group of distinguished researchers working at the University of Padova Medical School (Italy).

The Prize is named after the great anatomist Giovanni Battista Morgagni (1682-1771). Until 2018, a Gold Medal for an outstanding European scientist, and Young Investigator Awards (Silver Medals) were awarded every 2 years.

From 2020 onwards, the Gold Medal will be awarded during the EASD Annual Meeting every 2 years. The 2020 Gold Medal awardee will be announced during the Presidential Address on Tuesday, 22 September 2020 and the awardee will deliver a lecture, named in honour of Giovanni Battista Morgagni, at the EASD Annual Meeting in the year 2022.

An international panel of prominent experts in the field of clinical research, clinical physiology and metabolism examines and evaluates the candidates based on their qualifications, curriculum vitae, scientific publications as well as on a biennial plan of investigation.

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### MORGAGNI LECTURERS

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<th>Silver Medal</th>
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<td>R. Dentin (Paris)</td>
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<td>2012</td>
<td>M. Stoffel (Zurich)</td>
<td>T. Frayling (Exeter)</td>
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<td>R. Mallone (Paris)</td>
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<td>2014</td>
<td>H.H. Parving (Copenhagen)</td>
<td>A. Gloyn (Oxford)</td>
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<td>P. Collombat (Nice)</td>
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<td>J. Tuomilehto (Helsinki)</td>
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<td>J. Wikström (Stockholm)</td>
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<td>2018</td>
<td>M. Roden (Dusseldorf)</td>
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<td>S.E. Flanagan (Exeter)</td>
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<td>L. Zang (Beijing)</td>
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GENERAL INFORMATION

Format:
The 56th EASD Annual Meeting will take place online as a virtual event from 21-25 September 2020. Registered delegates can access the virtual EASD Annual Meeting by using their email and password from registration or registration number and surname (for group registrations) as login details here: https://www.easd.org/virtualmeeting

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 23 October 2020.

Registration:
Registration fees are € 70 for paid-up EASD members and € 150 for non-members. All registrations have to be made by means of the secured online registration system available under www.easd.org either prior or during the virtual EASD Annual Meeting dates. For more information, please visit: https://www.easd.org/annual-meeting/easd-2020.html

Children under the age of 18 are not permitted to access the EASD 2020 Virtual Meeting.

Technical requirements:
Delegates must ensure at their own expenses 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:**
The virtual EASD Annual Meeting is currently under review process for accreditation with the European Accreditation Council for Continuing Medical Education (EACCME). EACCME has recognition agreements with USA and Canada for ECMEC conversion.

EASD will monitor the attendee’s online presence and issue CME Certificates based on the time spent viewing the programme online from 22 – 25 September 2020. The attendees will need to complete a post event survey to download their CME Certificates.

For a Certificate of Attendance, the attendees will need to complete a post event survey to download their Certificate.

**Press Registration:**
Press delegates can register online through the press registration system. Registered journalists/media will have access to the EASD 2020 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.
Poster presenters can present live but should 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.

**Posters:**
Posters should be uploaded to the system by 12:00 on Sunday, 20 September 2020. The authors are required to be present to discuss their work with a Poster Chairperson during the Poster Events. The Poster Chairperson is a scientist with knowledge of the respective field of work. He/she will elaborate on the findings together with the author.

- **Poster Event A Tuesday**    12:00 - 13:00
- **Poster Event B Tuesday**    13:15 - 14:15
- **Poster Event C Wednesday**  12:00 - 13:00
- **Poster Event D Wednesday**  13:15 - 14:15
- **Poster Event E Thursday**   12:00 - 13:00
- **Poster Event F Thursday**   13:15 - 14:15

**Exhibition:**
For the duration of the virtual EASD Annual Meeting and until 23 October 2020, 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 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.
ABSTRACT SELECTION

All abstracts accepted for inclusion in the scientific programme were considered anonymously and were scored by 38 Abstract Review Committee Members. 18 Programme Committee Members designed the programme and created Oral and Poster 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. Poster Presentations are under embargo until 11:59 CET on Tuesday, 22 September 2020.
### Abstract Review Committee

<table>
<thead>
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<th>Anne-Marie Aas, NO</th>
<th>Ulrik Pedersen-Bjergaard, DK</th>
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<tr>
<td>Hadi Al-Hasani, DE</td>
<td>Frederik Persson, DK</td>
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<td>Juliana C.N. Chan, HK</td>
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PROGRAMME COMMITTEE

Hadi Al-Hasani, DE
Kåre Birkeland, NO
Miriam Cnop, BE

Paul W. Franks, SE
Amalia Gastaldelli, IT
Per-Henrik Groop, FI

Martin Haluzik, CZ
Simon R. Heller, UK
Stephan Herzig, DE
# Tuesday, 22 September

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<tr>
<td>12:00 - 13:30</td>
<td>EASD e-Learning: Therapeutic inertia</td>
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<td>14:00 - 16:00</td>
<td>EUDF Symposium</td>
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# Wednesday, 23 September

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<tr>
<td>08:30</td>
<td>EASD/ADA Symposium: ADA/EASD Precision medicine in diabetes initiative</td>
<td>EASD/ESC Symposium: The dawn of CV risk reduction in type 2 diabetes: 5 years of SGLT2i CV outcome trials</td>
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<td>16:15</td>
<td>Diabetes Prize for Excellence Lecture</td>
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<td>17:30</td>
<td>What is the future of type 1 diabetes treatment?</td>
<td>Diabetes in primary care</td>
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<td>Human islet transcriptomes to gain insight into diabetes: promises and pitfalls</td>
<td>The LIBERATES Trial</td>
<td>Covid-19 and diabetes</td>
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<td>Diabetes and cancer</td>
<td>Multi-dimensional roles of ketone bodies in fuel metabolism, signalling, and therapeutics</td>
<td>An easy to digest guide to precision nutrition</td>
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### Thursday, 24 September

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<tr>
<td>08:30</td>
<td><strong>Diabetologia Symposium 2020:</strong> The pancreas in health and in diabetes</td>
<td>Advances in the pathogenesis and treatment of diabetic complications: going beyond the usual</td>
<td>The important conversation between the heart and the kidney</td>
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<tr>
<td>16:15</td>
<td><strong>Minkowski Lecture</strong></td>
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<td>17:15</td>
<td><strong>Do we need surveillance of the liver of type 2 diabetes patients?</strong></td>
<td><strong>New approaches to reducing hypoglycaemia: hype or hope</strong></td>
<td><strong>When your medicine gives you diabetes</strong></td>
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<tr>
<td>Time</td>
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<td>Innsbruck Hall</td>
<td>Klagenfurt Hall</td>
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<td>08:00</td>
<td>We are what we do not eat</td>
<td>Rising Star Symposium</td>
<td>Primary results of the EMPEROR-Reduced trial</td>
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<td>12:00 - 13:30 EASD e-Learning: Islet cell transplantation</td>
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<td>14:00</td>
<td>New lessons about diabetic complications: 30 years and counting in the DCCT/EDIC</td>
<td>Closing the loop: commercial systems or open source?</td>
<td>18:15 - 20:15 EUDF General Assembly</td>
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## Friday, 25 September

<table>
<thead>
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<th>Time</th>
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<tbody>
<tr>
<td>08:30</td>
<td>Comprehensive approaches with novel biomarkers for predicting purposes</td>
<td>EASD/JDRF Symposium: Human iPSC-derived cells, the state-of-the-art to model diabetes</td>
<td>Targeting the gut to treat diabetes</td>
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<td>12:15</td>
<td>Diabetes on the run: insulin therapy in type 1 diabetes and exercise</td>
<td>Innovative medicines initiative (IMI): the power of public private partnerships in diabetes research</td>
<td>Assessing the true burden of hypoglycaemia</td>
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### Friday, 25 September

<table>
<thead>
<tr>
<th>Salzburg Hall</th>
<th>Innsbruck Hall</th>
<th>Klagenfurt Hall</th>
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<tbody>
<tr>
<td>Uric acid: a biomarker or risk factor for disease - the answer is here!</td>
<td>The role of altered lipid handling in diabetes</td>
<td>Michael Berger debate: ESC vs EASD/ADA-guidelines on diabetes and cardiovascular disease: Same evidence but different interpretations - who's right?</td>
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<td>A gender-sensitive approach pays off in diabetes</td>
<td>EASD/AASD Symposium: Implementation science in diabetes</td>
<td>Semaglutide for the treatment of obesity (STEP-programme)</td>
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</table>
EASD E-LEARNING

Three new EASD e-Learning modules will be launched and presented during live demonstrations with the opportunity for the audience to trial and to provide feedback.

Tuesday, 22 September 2020, 12:00 - 13:30, Wels Hall

Therapeutic inertia
Created with Professor Kamlesh Khunti, UK, in collaboration with Primary Care Diabetes Europe (PCDE)

Wednesday, 23 September 2020, 12:00 - 13:30, Wels Hall

GLP-1 receptor agonists
Created with Professors Tina Vilsboll and Filip Knop, Denmark

Thursday, 24 September 2020, 12:00 - 13:30, Wels Hall

Islet cell transplantation
Created with Professor Francois Pattou, France
EUROPEAN DIABETES FORUM AISBL (EUDF)

EUDF aims to improve outcomes for people with diabetes, and unite stakeholders from across the diabetes landscape in Europe. This includes policy makers, research, scientific societies, patient organisations, nurse associations, institutions connected to diabetes related co-morbidities, industry, governments, regulators, payers and many more.

EUDF will provide the platform for these stakeholders to collaborate and to improve how we, as societies, manage diabetes and jointly advocate for policy change that enables our healthcare systems to cope with the diabetes pandemic. EUDF will support European and national stakeholders in driving a policy conversation, take concrete action to improve diabetes care, and provide a central point of contact for diabetes policy in Europe.

**Wednesday, 23 September 2020, 14:00 - 16:00, Wels Hall**

**Digital health: Hope for diabetes in an uncertain and changing world?**

**Thursday, 24 September 2020, 18:15 - 20:15, Wels Hall**

**General Assembly** (by invitation only)
EFSD MENTORSHIP PROGRAMME

EFSD Future Leaders Mentorship Programme for Clinical Diabetologists supported by an unrestricted educational grant from AstraZeneca

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 by refining their skills, keeping them in the field of diabetes and facilitating their appointment to senior academic positions at major European institutions.

This programme provides a unique opportunity for clinical diabetologists to take part in a broad range of educational and training opportunities centred around a clinical research project, with leading European clinical diabetologists serving as personal mentors.
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

<table>
<thead>
<tr>
<th>Year</th>
<th>City</th>
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<td>1969</td>
<td>Montpellier</td>
<td>C. DE DUVE, BE</td>
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<td>1971</td>
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<td>M. DEROT, FR</td>
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<td>1972</td>
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<td>K. LUNDBAEK, DK</td>
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<td>A.E. DONIACH, CH</td>
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<td>T.R. FRASER, UK</td>
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<td>H.G. HERS, BE</td>
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<td>W. CREUTZFELDT, DE</td>
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<td>D.A. PYKE, UK</td>
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<td>J. MIROUZE, FR</td>
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<td>C. HELLERSTRØM, SE</td>
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8:40  OPENING #EASD2020  Vienna Hall  
S. Del Prato, President, EASD and EFSD

8:45  PRESIDENTIAL ADDRESS  
S. Del Prato, President, EASD and EFSD  
followed by

9:15  52ND CLAUDE BERNARD LECTURE  
Chair:  S. Del Prato, President, EASD and EFSD

Speaker:  T. Kadowaki, Japan

Title:  What is type 2 diabetes? A long journey to seek the truth

Takashi Kadowaki is currently President, Toranomon Hospital. He served as Professor and Chairman, Department of Diabetes and Metabolic Diseases, Graduate School of Medicine, The University of Tokyo as well as Director of the University of Tokyo Hospital. He serves as Chairman of the Board of Directors of The Japan Diabetes Society and Chairman of Board of Directors of Japan Society for the Study of Obesity and also serves as Vice President of The Japanese Association of Medical Sciences. Kadowaki has made seminal contributions in studies of genetics of type 2 diabetes, insulin action and insulin resistance, and adiponectin signalling. In 1988, Kadowaki, with Taylor, identified the first insulin receptor gene mutations in patients with extreme insulin resistance. He went on to identify multiple insulin receptor mutations and made significant contributions toward clarifying structural versus functional correlations of the insulin receptor. After he returned to Japan, using gene targeting strategy, his laboratory determined the physiological roles of key molecules in insulin secretion and insulin action such as beta cell glucokinase and NADH shuttle and insulin receptor substrate-1, P85α PI3 kinase and PPARγ. His laboratory discovered insulin sensitising effect of adiponectin and identified and cloned receptors for adiponectin, AdipoR1 and AdipoR2. Moreover, his laboratory revealed the physiologic roles of AdipoR1 and AdipoR2 in liver, skeletal muscle and other tissues and the pathophysiologic roles of reduced adiponectin effects in obesity-linked diseases such as type 2 diabetes. His laboratory identified agonists for adiponectin receptors (AdipoRon) and also revealed the 3D structure of human AdipoR1 and AdipoR2. More recently, his laboratory has identified 28 new susceptibility loci for type 2 diabetes in the Japanese population, many of which are unique to Japanese and East Asian populations, distinct from those in Caucasian populations. He has authored more than 700 original articles and reviews. He has received many national and international awards including a Medal with Purple Ribbon from the Japanese Government, Japan Academy Prize, and Manpei Suzuki International Prize for Diabetes Research. He served as an Associate Editor of Diabetologia, also served as an editorial board member of Diabetes, Diabetes Care and Journal of Clinical Investigation and currently is on the editorial board of Cell Metabolism and Molecular Metabolism. Thus, Takashi Kadowaki has shown innovative leadership and made outstanding lifetime achievements in diabetes research.
10:15 - 11:45   Vienna Hall

OP 01 Diabetes complications: new insights from cutting edge epidemiology

1 Circulating metabolites significantly improve the prediction of renal dysfunction in type 2 diabetes
M. Scarale, S. De Cosmo, C. Prehn, F. Schena, J. Adamski, V. Trischitta, C. Menzaghi, Italy, Germany

2 Association between insulin-like growth factor binding protein-2 and insulin sensitivity, metformin and mortality in patients with newly diagnosed type 2 diabetes

3 Building clinical risk score systems for predicting all-cause and cardiovascular-specific mortality among type 2 diabetes patients
C.-S. Liu, T.-C. Li, C.-C. Lin, C.-I. Li, Taiwan

4 Incident cardiovascular disease by clustering of favourable risk factors in type 1 diabetes. The EURODIAB Prospective Complications study

5 Bidirectional association between type 2 diabetes and obstructive sleep apnoea: a meta-epidemiological study
T. Karagiannis, E. Athanasiadou, A. Tsapas, E. Bekiari, Greece, UK

6 Glycated haemoglobin, type 2 diabetes and the links to dementia and its major sub types: findings from the Swedish National Diabetes Register
OP 02 News on the insulin secretion front

7 What makes beta cells 1st responders, and are they temporally consistent?
V. Kravets, W.E. Schleicher, J.M. Dwulet, A.M. Davis, R.K. Benninger, USA

8 Beta-arrestin 2 is absolutely required for the potentiation of insulin secretion by GIP

9 Pancreatic beta cell-selective deletion of the mitofusins 1 and 2 (Mfn1 and Mfn2) impairs glucose-stimulated insulin secretion in vitro and in vivo

10 Unveiling the role of a mitochondrially-encoded tRNA-derived fragment in beta cell function
C. Jacovetti, V. Menoud, S. Gattesco, B. Bayazit, R. Regazzi, Switzerland

11 Post-transcriptional co-regulation of insulin secretory granule proteins

12 The mechanosensor Piezo1 mediates glucose sensing and insulin secretion in pancreatic beta cells
M. Barghouth, Y. Ye, Y. Wang, C. Luan, A. Karagiannopoulos, L. Eliasson, P. Rorsman, E. Zhang, E. Renström, Sweden, UK
OP 03 Insulin sensitivity and biomarkers

13 Kinome profiling reveals impaired signalling in primary human skeletal muscle cells carrying a novel Finnish-specific AKT2 gene variant
N. Datta, S. Mäkinen, S. Rangarajan, Y.H. Nyugen, A. Latva-Rasku, P. Nuutila, M. Laakso, H.A. Koistinen, Finland, Netherlands

14 In vivo, up and down hepatic modulation of interactions between ER and mitochondria impacts hepatic insulin sensitivity and steatosis
A. Beaulant, J. Ji-Cao, N. Bendridi, M.-A. Berger, H. Vidal, J. Rieusset, France

15 GDF15 mediates the metabolic effects of PPARβ/δ by activating AMPK
D. Aguilar-Recarte, J. Pizarro-Delgado, L. Peña-Moreno, X. Palomer, S.-J. Lee, M. Vázquez-Carrera, Spain, USA

16 Serum Fetuin-B is positively related to metabolic syndrome and insulin resistance
S. Xue, L. Li, G. Yang, China

17 Carnitine supplementation improves insulin sensitivity and skeletal muscle acetylcarnitine formation in type 2 diabetes patients
Y.M. Bruls, Y.J. Op den Kamp, P. Veeraiah, E. Phielix, B. Havekes, J.E. Wildberger, M.K. Hesselink, P. Schrauwen, V. Schrauwen, Netherlands

18 Remission of type 2 diabetes with return of insulin secretory function restores normal pancreas morphology
R. Taylor, K.G. Hollingsworth, J.A. Shaw, N. Sattar, M.E. Lean, A. Al-Mrabeh, UK
OP 04 Central actions in diabetes

19 Genetic deficiency of CRP confers resistance to obesity and enhances insulin and leptin sensitivity
S. Qiu, L. Li, G. Yang, China

20 Protein tyrosine phosphatase 1B deficiency enhances leptin action to improve glucose homeostasis in IDDM treatment with leptin
Y. Ito, R. Banno, R. Sun, H. Yagimuma, K. Taki, M. Sugiyama, T. Tsunekawa, H. Takagi, H. Arima, Japan

21 Investigating the involvement of hypothalamic de novo ceramide synthesis in resistin/TLR4 induced neuronal inflammation and insulin resistance
J. Guitton, S. Al Rifai, C. Alexandre, M. Taouis, Y. Benomar, H. Le Stunff, France

22 Central nesfatin-1 attenuates hepatic steatosis by suppression of hypothalamic endoplasmic reticulum stress
M. Mokou, L. Li, G. Yang, China

23 Empagliflozin improves insulin sensitivity of the hypothalamus in humans with prediabetes

24 Brain insulin sensitivity is modulated by menstrual cycle
OP 05 Glucose-lowering therapies and the liver

25 Role of bile acids on glucose-lowering by metformin in type 2 diabetes

26 Metformin acutely elevates lactate in the portal vein of humans
N. Rittig, E. Sundelin, H. Grønbæk, N.K. Aagaard, T. Sandahl, G. Villadsen, K. Brøsen, N. Jessen, Denmark

27 Metformin increases GDF15 independent of plasma metformin exposure and its proposed action in the liver
K.J. Kolnes, P.M. Møller, R. Kruse, M.M. Christensen, A. Handberg, K. Højlund, Denmark

28 Acute effects of dapagliflozin on hepatic lipid- and glucose metabolism in humans
P. Wolf, P. Fellinger, H. Beiglböck, L. Pfleger, P. Krumpolec, C. Barbieri, A. Gastaldelli, R. Marculescu, S. Trattnig, A. Kautzky-Willer, M. Krssak, M. Krebs, Austria, Italy

29 Pleiotropic effects of sodium-glucose cotransporter 2 inhibitor versus sulfonylurea in patients with type 2 diabetes and non-alcoholic fatty liver disease
Y. Takeshita, Y. Kita, T. Takamura, Japan

30 A dietary intervention to alter insulin sensitivity, intramyocellular and hepatocellular lipids, postprandial metabolism, and body weight: a 16-week randomised trial
H. Kahleova, K.F. Petersen, G.I. Shulman, J. Alwarith, E. Rembert, A. Tura, M. Hill, R. Holubkov, N.D. Barnard, USA, Italy, Czech Republic
OP 06 Uncomplicating the pathogenesis of diabetes complications in humans

31 Small RNA-seq reveals a specific circulating miRNA signature linked to the type 2 diabetes complications
A. Abukiwan, T. Fleming, R. Thiele, S. Kopf, P. Nawroth, Germany

32 Downregulation of spingosine 1-phosphate receptor might be protective against vascular complications in people with long-term type 1 diabetes
T. Özgümüs, T.J. Berg, V. Lyssenko, Norway

33 The glycolytic by-product methylglyoxal is present in immune cells and may affect their recruitment

34 Role of circulating Wnt1 inducible signalling pathway protein 1 (WISP1) in liver and adipose tissue fibrosis
O. Pivovarova-Ramich, J. Loske, S. Hornemann, M. Markova, N. Seebeck, A. Rosenthal, J. Raila, R. Buschow, V. Lange, A.F. Pfeiffer, N. Rudovich, M. Ouwens, Germany, Switzerland

35 Insulin resistance and altered fibrin clot properties in overweight individuals with type 1 diabetes: A potential mechanism for increased vascular complications?
N. Kietsiriroje, S.M. Pearson, R.A. Ariëns, R.A. Ajjan, UK

36 Chronic complications versus glycaemic variability, time in range and HbA1c in people with type 1 diabetes: sub study of the RESCUE-trial
Poster Events

Poster presentations rank equally with oral presentations. Posters must be available throughout the duration of the Meeting and should be uploaded to the system by 12:00 on Sunday, 20 September 2020.

All posters are presented at six Poster Events which will be held on Tuesday, Wednesday and Thursday from 12:00 to 14:15.

Poster Event A Tuesday 12:00 - 13:00
Poster Event B Tuesday 13:15 - 14:15
Poster Event C Wednesday 12:00 - 13:00
Poster Event D Wednesday 13:15 - 14:15
Poster Event E Thursday 12:00 - 13:00
Poster Event F Thursday 13:15 - 14:15

During the Poster Presentation Sessions, the presenting author must be available or make arrangements for somebody with knowledge of the displayed work to discuss their work with the Poster Chairperson. The Poster 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 posters using the Virtual Conference Tool.
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<td>Poster Event B</td>
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<td>PS 08 Pathophysiology of glucose homeostasis</td>
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<td>PS 14 Prevalence of type 2 diabetes around the world</td>
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<td>PS 86 All about coronary arteries and diabetes</td>
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14:30 - 16:00   Vienna Hall

OP 07 Smoke on the water: Is BAT still hot?

37 Blocking endothelial ROCK2 promotes fat browning and improves metabolic dysfunction
Y. Takeda, K. Matoba, D. Kawanami, Y. Nagai, Y. Kanazawa, T. Yokota, K. Ustunomiya, R. Nishimura, Japan

38 The essential role of the α4 for insulin signalling in metabolic regulation and maintenance of brown adipocyte
M. Sakaguchi, S. Okagawa, Y. Okubo, M. Igata, T. Kondo, E. Araki, Japan

39 Proof-of-concept for CRISPR/Cas9 gene editing in human primary preadipocytes: deletion of FKBP5 and PPARG and effects on adipogenesis and metabolism

40 Understanding Mig-6 functions of brown adipose tissue in adaptive thermogenesis and systemic energy homeostasis
S. Choung, J. Kim, K. Joung, H. Kim, B. Ku, Korea, Republic of

41 Oncostatin M inhibits browning of white adipose tissue via gp130 signalling
P.P. Van Krieken, T.S. Odermatt, M. Blüher, S. Wueest, D. Konrad, Switzerland, Germany

42 Involvement of the Notch pathway and its ligand DNER in obesity-mediated inflammation of adipose tissues
J. Pestel, M. Robert, H. Vidal, A. Eljaafari, France
OP 08 Charting human beta cell failure in type 1 diabetes

43 $^{111}$In-exendin spect imaging suggests presence of residual beta cells in patients with longstanding type 1 diabetes
M. Boss, I. Kusmartseva, W. Woliner-van der Weg, L. Joosten, M. Brom, M. Béhe, C.J. Tack, O.C. Boerman, M.J. Janssen, M. Atkinson, M. Gotthardt, Netherlands, USA, Switzerland

44 Comparative analysis of human pancreatic islets after type 1 diabetes, LADA and type 2 diabetes manifestation
A. Joerns, S. Lenzen, Germany

45 Differential expression of inflammation-related genes in the pancreases of patients with two distinct endotypes of type 1 diabetes
F. Torabi, P. Leete, R. Wyatt, J. Vadakekolathu, D. Boocock, M.D. Turner, S.J. Richardson, N.G. Morgan, M.R. Christie, UK

46 Defects in proinsulin processing vary during disease progression in type 1 diabetes
P. Leete, M.A. Russell, C. Ziller, S.J. Richardson, N.G. Morgan, UK

47 Inhibition of serpinB13 stimulates beta cell development via Notch signalling pathway and delays progression to insulin-dependent diabetes
J. Czyzyk, Y. Kryvalap, USA

48 Efficacy and safety of anti-interleukin (IL)-21 in combination with liraglutide in adults recently diagnosed with type 1 diabetes
OP 09 Novel agents in type 1 diabetes

49 Innodia master protocol for the evaluation of investigational medicinal products in children, adolescents and adults with newly diagnosed type 1 diabetes
D.B. Dunger, S.F. Bruggraber, A.P. Mander, T. Tree, P. Jaroslaw Chmura, M.J. Knip, A.M. Schulte, C. Mathieu, UK, Denmark, Finland, Germany, Belgium

50 The Simplici-T1 trial: activation of glucokinase by TTP399 improves glycaemic control in patients with type 1 diabetes
C. Valcarce, J.L. Freeman, I. Dunn, C. Dvergsten, K.R. Klein, J. Buse, USA

51 Mechanism matter: preliminary evidence that activation of glucokinase by TTP399 does not increase plasma or urine ketones in type 1 diabetes
J.L. Freeman, I. Dunn, C. Valcarce, USA

52 Long-term follow-up study of type 1 diabetes patients previously treated with IMCY-0098 or placebo in young adults with recent-onset type 1 diabetes
N. Bovy, C. Boitard, P. Achenbach, R.D. Leslie, C. Dayan, B. Keymeulen, K.R. Owen, V. Carlier, M. Van Mechelen, J. Van Rampelbergh, Belgium, France, Germany, UK

53 Golimumab preserves beta cell function and reduces insulin use and hypoglycaemia in youth with recently diagnosed type 1 diabetes: the phase 2 T1GER study

54 Development of novel modulators of the GABA<sub>A</sub> receptor for diabetes therapy
J. Eckel, B. Hasse, B. Belgardt, M. Hecht, R. Wördenweber, A. Piechot, M. Roden, Germany
OP 10 Developing better insulins

55 Phase I study investigating the PD, PK and safety of AT247 in comparison to insulin aspart and fast insulin aspart

56 Once-weekly basal insulin icodec offers comparable efficacy and safety vs once-daily insulin glargine U100 in insulin naive patients with type 2 diabetes inadequately controlled on OADs
J. Rosenstock, M. Kjærgaard, D. Møller, M. Hansen, R. Goldenberg, USA, Denmark, Canada

57 Incidence of significant changes in pulmonary function during a 2-year study with inhaled technosphere insulin
N.S. Zaveri, M.C. Jones, J.A. Krueger, B.J. Hoogwerf, A.L. Hoogwerf, P.M. Morey, D.M. Kendall, USA

58 Improved postprandial glucose control with Ultra Rapid Lispro (URLi) versus Lispro with continuous subcutaneous insulin infusion in type 1 diabetes
M. Warren, J. Cho, R. Liu, J. Tobian, D. Ignaut, USA

59 Long-term safety and efficacy of intraperitoneal insulin infusion by implanted pumps in a large series of patients with type 1 diabetes and initial high glucose variability
N. Jeandidier, B. Guerci, E. Renard, on behalf of EVADIAC study group, France

60 Evening oral insulin (ORMD-0801) glycaemic effects in uncontrolled type 2 diabetes patients
R. Eldor, A. Fleming, J. Neutel, K. Homer, M. Kidron, J. Rosenstock, Israel, USA
OP 11 From diagnostics to the end-stage of diabetic kidney disease

61 Evaluation of the diagnostic performance of four creatinine-based glomerular filtration rate estimation equations in people with diabetes
N. Zafari, M. Lotfaliany, L. Churilov, N. Torkamani, R.J. Maclsaac, E.I. Ekinci, Australia

62 Waist-height ratio and waist circumference are the best estimators of visceral fat in type 1 diabetes independently of diabetic nephropathy
S. Mutter, E.B. Parente, V. Harjutsalo, A.J. Ahola, C. Forsblom, P.-H. Groop, FinnDiane Study Group, Finland

63 Genetics of kidney complications in diabetes subtypes
D. Mansour Aly, T. Tuomi, L. Groop, E. Ahlqvist, Sweden, Finland

64 Diabetic kidney disease phenotypes, mortality and incidence of vascular outcomes in a single-centre cohort with type 2 diabetes: a 13-year follow-up observational study
G. Penno, M. Garofolo, E. Gualdani, D. Lucchesi, R. Miccoli, F. Campi, P. Falcetta, P. Francesconi, S. Del Prato, Italy

65 Temporal trends in renal replacement therapy in people with and without type 2 diabetes: the Fremantle Diabetes study
W.A. Davis, T.M. Davis, Australia

66 Long-term mortality among kidney transplant recipients with vs without diabetes: a nationwide cohort study in the United States
14:30 - 16:00 Klagenfurt Hall

**OP 12 NAFLD: Is it all about the liver?**

67 Fatty liver, irrespective of ethnicity, is associated with reduced insulin clearance and hepatic insulin resistance in obese youths
D. Trico, A. Galderisi, A. Mari, N. Santoro, S. Caprio, Italy, USA

68 Prevalence of non-alcoholic steatohepatitis in a cohort of subjects undergoing bariatric surgery
E. Lembo, M.F. Russo, G. Mingrone, Italy

69 Hepatic fibrosis but not steatosis is independently associated with diabetic kidney disease in non-obese patients with type 2 diabetes
D. Seo, Y.-H. Lee, S. Seo, Y. Cho, S. Ahn, S. Hong, Y. Choi, B. Huh, S. Kim, Korea, Republic of

70 Diagnosing at-risk NASH: NIS4 performances in patients with escalating number of metabolic risk factors

71 Role of patatin-like phospholipase domain-containing 3 gene for hepatocellular lipid content in the severe insulin-resistant diabetes cluster

72 Evaluation of determinants of hepatic insulin clearance: a Mendelian randomisation study
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:

1986 Rome G.C. VIBERTI, UK
1987 Leipzig D.J. EWING, UK
1988 Paris C.E. MOGENSEN, DK
1989 Lisbon G.B. BOLLI, IT
1990 Copenhagen P.J. WATKINS, UK
1991 Dublin R. OSTERBY, DK
1992 Prague E. KOHNER, UK
1993 İstanbul K.F. HANSSEN, NO
1994 Düsseldorf J.E. TOOKE, UK
1995 Stockholm R. LANDGRAF, DE
1996 Vienna M.-R. TASKINEN, FI
1997 Helsinki H.-H. PARVING, DK
1998 Barcelona D.R. TOMLINSON, UK
1999 Brussel E. STANDL, DE
2000 Jerusaleem U. DI MARIO, IT
2001 Glasgow A. FLYVBJERG, DK
2002 Budapest J. TUOMILEHTO, FI
2003 Paris A. J. M. BOULTON, UK
2004 Munich A. CERIELLO, IT
2005 Athens C. STEHOUWER, NL
2006 Copenhagen M. LAAKSO, FI
2007 Amsterdam P. FIORETTO, IT
2008 Rome A. AVOGARO, IT
2009 Vienna P.-H. GROOP, FI
2010 Stockholm D. ZIEGLER, DE
2011 Lisbon A. BIERHAUS, DE
2012 Berlin G. PUGLIESE, IT
2013 Barcelona T. LAURITZEN, DK
2014 Vienna S. TESFAYE, UK
2015 Stockholm H.-P. HAMMES, DE
2016 Munich P. ROSSING, DK
2017 Lisbon B.M. FRIER, UK
2018 Berlin P.P. NAWROTH, DE
2019 Barcelona R.A. MALIK, QA
Naveed Sattar graduated in Medicine from the University of Glasgow in 1990 and obtained his PhD in the area of lipid metabolism in 1998. A year later he was appointed Senior Lecturer at the University of Glasgow and an Honorary Consultant in Metabolic Medicine at Glasgow Royal Infirmary. He was promoted to Professor of Metabolic Medicine in 2005, elected to the Royal College of Pathologists the same year, and to the Royal College of Physicians and Surgeons in Glasgow in 2006. In 2016, he became a fellow of the Academy of Medical Sciences (FMedSci).

His research focuses on the pathogenesis, assessment and treatment of diabetes, obesity and cardiovascular disorders. Over the last 20 years, working with numerous colleagues, he has generated multiple relevant papers including with the emerging risk factor consortium and diabetes registries in Scotland, England and Sweden. In addition to epidemiology, he has expertise in biomarkers and clinical trials. He enjoys challenging conventional wisdom and deconstructing ideas into digestible science. His research has been funded by Diabetes UK, The Chief Scientist Office in Scotland, the Medical Research Council, and the British Heart Foundation.

He was the Chair of the SIGN cardiovascular prevention guidelines in 2015, on the editorial Board of JBS3 recommendations in 2014, and has contributed to several European guidelines relevant to CV risk in diabetes. He was an Associate Editor/Advisory Board member for Diabetologia (2010 to 2017), on the International Advisory Board for Lancet Diabetes and Endocrinology (2014 to 2018) and is currently on the editorial board for BMC Medicine and an Associate Editor for Circulation. He has also been involved in several EASD programme committees and was the 2011 recipient of the Minkowski 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. was born in Berlin and 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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<tr>
<th>Year</th>
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<td>2007</td>
<td>Amsterdam</td>
<td>F. ASHCROFT, UK</td>
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<td>J.-C. HENQUIN, BE</td>
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<td>B. THORENS, CH</td>
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<td>T. OTONKOSKI, FI</td>
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A. Renold
1923 - 1988

P. Langerhans Jr.
1847 - 1888
Guy Rutter is Professor and Head of the Section of Cell Biology and Functional Genomics at Imperial College London and a Wellcome Trust Investigator. His chief research goals are to develop new means to enhance insulin secretion in type 2 diabetes by studying the fundamental signalling pathways through which glucose, incretins and other hormones act on the pancreatic beta cell. He deploys knowledge flowing from genome-wide and other genetic studies for this disease, and state-of-the-art technologies ranging from mouse models through genome editing, electrophysiology, super-resolution imaging, transcriptomics and proteomics.

Rutter’s research experience began with a PhD with Dick Denton FRS in the Department of Biochemistry at Bristol University first established by Sir Philip Randle where he studied the regulation of mitochondrial metabolism. He then received an MRC Travelling Fellowship to work on the regulation of insulin secretion under Claes Wollheim in Geneva, in collaboration with the groups of Tullio Pozzan and Rosario Rizzuto in Padua, before returning to Bristol and a brief post doctoral Fellowship with Jeremy Tavare. He established his own laboratory in Bristol in 1995 and moved to Imperial in 2006 where he established the Imperial Network of Excellence in Diabetes at in 2018.

Rutter has served on advisory boards for the MRC (UK), NIH (US), ANR (France), ERC (EU), Wellcome Trust, Diabetes UK, EFSD, DRWF and JDRF, and as an editor for several major journals including Diabetes, Endocrinology and J Biol Chem. He is currently Editor-in-Chief at Frontiers in Endocrinology, Diabetes: Molecular Mechanisms, and chairs the Steering Committee of the EASD’s Islet Study Group.
08:30

Vienna Hall

EASD/ADA Symposium: ADA/EASD Precision medicine in diabetes initiative

Chair: P.W. Franks, Sweden; D. Dabelea, USA

L.H. Philipson, USA:
Precision diabetes medicine in practice

M.S. Udler, USA:
Sub-classification of diabetes: possibilities and challenges

N. Grarup, Denmark:
Genetics and precision diabetes medicine: lessons from Greenland

Linz Hall

EASD/ESC Symposium: The dawn of CV risk reduction in type 2 diabetes: 5 years of SGLT2i CV outcome trials

Chair: D.R. Matthews, UK; A. Norhammar, Sweden

B. Zinman, Canada:
Evolution of clinical use of SGLT2i until EASD 2015, Stockholm

D.K. McGuire, USA:
Accumulated CV data from SGLT2i outcomes trials

N. Marx, Germany:
Mechanistic insights for CV benefits

C. Wanner, Germany:
Accumulated renal data from SGLT2i outcomes trials

D.Z. Cherney, Canada:
Mechanistic insights for renal benefits

S.E. Inzucchi, USA:
Implications for treatment guidelines and future directions
08:30

**Sweet pregnancy**

Chair: E. Wender-Ożegowska, Poland

E. Huvinen, Finland:  
*How does hyperglycaemia during pregnancy affect the offspring?*

F.P. Dunne, Ireland:  
*Prevention of GDM: pitfalls and hope*

P.M. Catalano, USA:  
*20 years HAPO Study: What have we learned so far?*

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**Salzburg Hall**

**Human islet transcriptomes to gain insight into diabetes: promises and pitfalls**

Chair: M. Cnop, Belgium

D.L. Eizirik, Belgium:  
*Making the fullest of transcriptomes: alternative splicing in human beta cells*

M.O. Huising, USA:  
*Islet single cell RNA-sequencing: heterogeneity or noise?*

L. Pasquali, Spain:  
*Integrating transcriptomes with other omics to unveil diabetes aetiology*
The LIBERATES Trial - improving glucose control in patients with diabetes following myocardial infarction: The role of a novel glycaemic monitoring

Chair: S.R. Heller, UK

R.F. Storey, UK:
Glycaemia and myocardial infarction: rationale and study design

D.D. Stocken, UK:
Methodological considerations

R.A. Ajjan, UK:
Results and conclusions

Covid-19 and diabetes

Chair: G.P. Fadini, Italy

J. Chan, Hong Kong:
Overview on Covid-19 in persons with diabetes: What is the evidence?

C. Limbert, Portugal:
What have we learned from Covid-19 in persons with type 1 diabetes?

D.J. Drucker, Canada:
Covid-19 and type 2 diabetes: Do shared pathways have therapeutic implications?
OP 13 Diabetic retinopathy: see what’s new?

73 Assessing retinopathy screening frequency in adolescents with type 1 diabetes using Markov model

74 One-point HbA₁c value does not always reflect current retinopathy while ΣexcessA₁C, an index of total glycaemic exposure, does in type 1 diabetes: a DCCT/EDIC subgroup analysis
A. Hirose, Y. Maeda, M. Minami, A. Goto, K. H Sonoda, S. Kitano, Y. Uchigata, Japan

75 Cerebral small-vessel disease is associated with the severity of diabetic retinopathy in type 1 diabetes

76 Molecular and functional effects of methylglyoxal on human microvascular retinal cells
M. Aprile, A. Leone, F. Scognamiglio, C. Nigro, A. Nicolò, C. Perfetto, S. Cataldi, V. Costa, C. Miele, A. Ciccodicola, Italy

77 The role of AMPK in the mechanism of ischaemic retinopathy: an in vitro study
M.N. Dátilo, G.P. Formigari, J.B. Lopes de Faria, J.M. Lopes de Faria, Brazil

78 Effects of topical administration (eye drops) of semaglutide on retinal neuroinflammation and vascular leakage in experimental diabetes
R. Simó, P. Bogdanov, H. Ramos, J. Huerta, C. Hernández, Spain
OP 14 Taking the long view of diabetes

79 Mapping polypharmacy and it’s association with adverse health outcomes in the Scottish population with type 1 diabetes

80 Insulin resistance at type 2 diabetes diagnosis, not impaired beta cell function, is associated with total mortality
J. Otten, B. Tavelin, S. Söderberg, O. Rolandsson, Sweden

81 Mortality in community-based adults with type 1 diabetes and matched people without diabetes: the Fremantle Diabetes Study Phase I
T.M. Davis, W.A. Davis, Australia

82 Forty-year mortality among patients with first-time hospital-diagnosed overweight or obesity
S.B. Gribsholt, D.K. Farkas, R.W. Thomsen, B. Richelsen, H.T. Sørensen, Denmark

83 Time trends in deaths before 50 years of age in people with type 1 diabetes: a nationwide analysis from Scotland (2004-17)
J.E. O’Reilly, A. Jeyam, T.M. Caparrotta, S. McGurnaghan, P.M. McKeigue, H.M. Colhoun, UK

84 Mortality in first- and second- generation immigrants to Sweden diagnosed with type 2 diabetes
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85 Risk of major congenital malformations, perinatal or neonatal death with insulin detemir vs other basal insulins in pregnant women with pre-existing diabetes: EVOLVE study
E. Mathiesen, A.C. Alibegovic, L. Husemoen, P. Kelkar, D.R. McCance, H.W. De Valk, P. Damm, on behalf of the EVOLVE study group, Denmark, UK, Netherlands

86 Maternal obesity is associated with beta cell dysfunction and impaired insulin action already during early pregnancy
D. Eppel, I. Rosicky, J. Blätter, G. Yerlikaya-Schatten, C. Schatten, P. Husslein, W. Eppel, A. Tura, C.S. Göbl, Austria, Italy

87 Risk prediction of gestational diabetes by low-invasive prediction models at early pregnancy
G. Kotzaeridi, J. Blätter, D. Eppel, I. Rosicky, M. Mittlböck, G. Yerlikaya-Schatten, C. Schatten, P. Husslein, W. Eppel, A. Tura, C.S. Göbl, Austria, Italy

88 GLP-1 hypersecretion in gestational diabetes

89 Comparison of IADPSG with NICE criteria for diagnosis of gestational diabetes
H. Sagili, S. Todi, India

90 Offspring of women with gestational diabetes: a 5 year follow-up
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92 Multiple CRISPR/Cas9 genome editing reveals novel regulators of insulin secretion identified by single cell RNAseq
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93 Cask promotes the plasma membrane targeting of insulin granules via interaction with apba1, stxbp1 and npsh1
K. Zhang, Y. Wang, China

94 No evidence for intra-islet paracrine hormone actions of GIP or GLP-1 to support glucose-stimulated insulin secretion from rat islets

95 The circadian clock nuclear receptor Rev-erbα is implicated in autophagy alteration and beta cell deficit under diabetogenic conditions
S. Costes, D. Laouteouet, M. Ravier, M. Delobel, G. Bertrand, O. Villard, C. Broca, J. Mathieu, A. Wojtusciszyn, S. Dalle, A. Matveyenko, France, USA

96 The bidirectional regulation of the Hippo pathway and autophagy in pancreatic beta cells
K. Annamalai, S. Naik, T. Yuan, B. Lupse, D.-S. Lim, K. Maedler, A. Ardestani, Germany, Korea, Republic of
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98 Association of incident myocardial infarction with insulin resistance and liver fibrosis

99 Ketone bodies acutely affect cardiac autonomic function in patients with type 2 diabetes
N.J. Jensen, M. Nilsson, N. Möller, A. Sajadieh, P. Kumarathurai, J. Rungby, Denmark

100 High urinary dimethylamine and low urinary citrate are associated with coronary artery disease in individuals with type 1 diabetes
A. Antikainen, S. Mutter, N. Sandholm, C. Forsblom, P. Würtz, V. Harjutsalo, P.-H. Groop, Finland

101 Liraglutide and vascular inflammation in type 2 diabetes as assessed by FDG-PET/CT: the LiraFlame study

102 Estimating CVD-free life-years with the addition of semaglutide in people with type 2 diabetes using pooled data from SUSTAIN 6 and PIONEER 6
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103 Mobile health application usage shows long-term improvement on blood glucose control
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104 Glycaemic control among people with type 1 diabetes during lockdown against the SARS-CoV-2 outbreak in Italy
F. Boscari, B.M. Bonora, A. Avogaro, D. Bruttomesso, G.P. Fadini, Italy

105 Real-time CGM usage and estimates of glycaemic control among individuals with type 1 or type 2 diabetes
R. Dowd, G. Norman, J.B. Welsh, T. Walker, A. Parker, USA

106 Beyond BG testing: digital health and intelligent monitoring
D. Shearer, K. Snow, A. Iyer, M. Peeples, USA

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J.E. Layne, H. Zisser, R.M. Bergenstal, R.A. Gabbay, N.A. Barleen, A. Armento Lee, R.F. Dixon, USA

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**OP 19 Decoding the heritable basis of type 2 diabetes**

**109 The expression quantitative trait (eQTL) landscape of type 2 diabetes in 404 human islet samples**


**110 Polygenic risk score in type 2 diabetes risk prediction: genomics to healthcare**

H. Marjonen, T. Paajanen, K. Auro, A. Haukkala, H. Kääriäinen, K. Kristiansson, M. Perola, Finland

**111 Characterisation of the genetic discordance between body mass index and type 2 diabetes: a phenome-wide analysis**


**112 Polygenic scores, diet quality, and type 2 diabetes risk**

J. Merino, M. Guasch-Ferre, J. Li, W. Chung, B. Ma, L. Liang, F.B. Hu, J.C. Florez, USA

**113 Body mass index and kidney function: a two-sample Mendelian randomisation analysis**

A.D. Kjaergaard, D.R. Witte, A. Teumer, C. Ellervik, Denmark, Germany, USA

**114 Hedgehog signalling as a determinant of human fat expansion and distribution**

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**115 Multiple mechanisms of a novel long-acting glucagon analogue, HM15136, on weight loss in animal models of obesity**
J. Lee, S. Lee, J. Kim, J. Lee, S. Lee, S. Bae, D. Kim, Y. Kim, I. Choi, Korea, Republic of

**116 Tirzepatide, a dual GIP/GLP-1 receptor agonist, interrupts metabolic adaptation to dietary restriction**

**117 Safe and efficient delivery of liraglutide and FGF-21 using NH2-HPSNs nanoparticles in vivo and in vitro**
S. Yang, L. Li, G. Yang, China

**118 The impact of bariatric surgery on microvascular complications in patients with type 2 diabetes: a matched controlled population-based cohort study**
P. Singh, N. Adderley, A. Subramanian, K. Gokhale, K.A. Toulis, R. Singhal, S. Bellary, A. Tahrani, K. Nirantharakumar, UK

**119 Improvement in plasma metabolomic profile and hepatic insulin resistance 7 years after Roux-en-Y Gastric Bypass (RYGB)**
C. Barbieri, F. Carli, M. Gaggini, S. Pezzica, B. Astiarraga, M. Palumbo, E. Ferrannini, S. Camastra, A. Gastaldelli, Italy, Spain

**120 Predictors of type 2 diabetes remission after bariatric surgery: findings from 10 years follow up study**
D. Moriconi, S. Guerrini, A. Di Carlo, M. Anselmino, E. Ferrannini, S. Taddei, M. Nannipieri, Italy
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OP 21 SGLT-2 inhibitors: at the heart of the matter

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122 The effects of canagliflozin on heart failure and cardiovascular death by baseline participant characteristics: analysis of the CREDENCE trial

123 Empagliflozin reduces myocardial glucose uptake in persons with type 2 diabetes: a randomised double-blind, placebo-controlled crossover study

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125 Direct and acute metabolic effects of empagliflozin in diabetic mouse hearts: reduced lactate generation mediated through NHE-1 inhibition

126 Effect of empagliflozin on the fibrosis biomarkers and left ventricular haemodynamics in patients with type 2 diabetes and chronic heart failure
D. Lebedev, A. Babenko, Russian Federation

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127 Therapeutic effect of a novel long-acting GLP-1/GIP/Glucagon triple agonist (HM15211) in CDHFD-induced NASH and fibrosis mice
J. Choi, H. Jo, J. Kim, H. Kwon, J. Lee, S. Bae, D. Kim, S. Lee, I. Choi, Korea, Republic of

128 The selective PPAR gamma modulator CHS-131 improves liver histopathology and metabolism in a biopsy-confirmed mouse model of non-alcoholic steatohepatitis and obesity
N. Perakakis, A. Joshi, N. Peradze, K. Stefanakis, G. Li, M. Feigh, G. Rosen, M. Fleming, C.S. Mantzoros, USA, Denmark

129 A direct AMPK activator reduces liver steatosis in a mouse model of NASH

130 Empagliflozin ameliorates obesity associated fatty liver disease by regulating Sestrin2-mediated AMPK-mTOR signalling pathway in obese mice
X. Sun, N. Hou, F. Han, Y. Liu, N. Huang, China

131 Effects of biliopancreatic diversion on non-alcoholic steatohepatitis: 5 years follow up
M.F. Russo, E. Lembo, A. Mari, G. Mingrone, Italy

132 Triple therapy with pioglitazone/exenatide/metformin prevents hepatic fibrosis and steatosis in type 2 diabetes
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133 Once-weekly exenatide effects on EGFR slope and UACR as a function of baseline UACR: an EXSCEL trial post-hoc analysis
A.B. Van der Aart, L.E. Clegg, R.C. Penland, D.W. Boulton, D. Sjöström, R.J. Mentz, R. Holman, H.J. Heerspink, Netherlands, USA, Sweden, UK

134 Renoprotection with semaglutide and liraglutide: Direct or indirect effects?
J.F. Mann, J.B. Buse, T. Idorn, L.A. Leiter, R. Pratley, S. Rasmussen, T. Vilsbøll, B. Wolthers, V. Perkovic, Germany, USA, Denmark, Canada, Australia

135 Liraglutide improves obese-induced renal injury by alleviating uncoupling of glomerular VEGF-NO axis in obese mice
Y. Ma, K. Li, N. Hou, F. Han, X. Han, X. Sun, China

136 Empagliflozin, either alone or in combination with linagliptin, restores autophagy and apoptosis regulators in the kidney in db/db diabetic mice
A. Korbut, N. Muraleva, Y. Taskaeva, N. Bgatova, V. Klimontov, Russian Federation

137 Inhibition of lysine63 ubiquitination prevents in vitro and in vivo the progression of renal fibrosis in diabetic nephropathy
P. Pontrelli, R. Menghini, F. Conserva, V. Casagrande, M. Rossini, A. Stasi, C. Divella, C. Cinefra, S. Simone, G. Pertosa, A. Gallone, M. Federici, L. Gesualdo, Italy

138 Nox5 enhances the progression of diabetic kidney disease independent of renox (Nox4)
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OP 24 Glucagon and hormones beyond

139 Identification of a gut-derived LEAP2 fragment as a novel insulin secretagogue

140 Regulation of substrate choice contributes to the regulation of glucagon secretion from alpha cells in response to glucose
S.L. Armour, M.V. Chibalina, B. Davies, P. Rorsman, J.G. Knudsen, Denmark, UK

141 12-hour glucagon infusion stimulates adipocyte lipolysis and inflammation in vivo in humans
X. Chen, L. Norton, R. DeFronzo, D. Tripathy, USA

142 Hepatic steatosis and glucagon resistance develop in parallel resulting in hyperglucagonaemia and hyperaminoacidaemia

143 Inappropriate glucagon response is associated with early-postprandial glucose excursions in Japanese patients with type 1 diabetes
A. Ito, I. Horie, N. Abiru, A. Kawakami, Japan

144 Neprilysin inhibition increases plasma glucagon concentrations in humans with possible implications for hepatic amino acid metabolism
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**

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<td>2015</td>
<td>Stockholm</td>
<td>SIR S. O’RAHILLY, UK</td>
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<td>2016</td>
<td>Munich</td>
<td>A. HATTERSLEY, UK</td>
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<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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<tr>
<td>2019</td>
<td>Barcelona</td>
<td>D.J. DRUCKER, CN</td>
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Jens Brüning is Director of the Max Planck Institute for Metabolism Research in Cologne, Germany. He also directs the Policlinic for Diabetes, Endocrinology and Preventive Medicine at the University Hospital in Cologne. He has led the establishment of the Cologne Excellence Cluster on Cellular Stress Responses in Aging-Associated Diseases (CECAD) at the University of Cologne and served as its founding Director from 2007-2018. He also has led the re-orientation of the Max Planck Institute to its present focus since his recruitment in 2011.

He studied Medicine in Cologne, Germany, and received his clinical training in Internal Medicine and Endocrinology at the University Hospital in Cologne, Germany, interrupted by a postdoctoral fellowship at the Joslin Diabetes Center in the laboratory of C. Ronald Kahn MD from 1993-1997. In 2003 he became a Professor in Genetics at the University of Cologne, until he took up his current position in 2011.

He has sought to better define the physiological role of insulin action, particularly in the central nervous system as well as to identify molecular mechanisms of obesity-associated insulin resistance. He has received numerous national and international awards including the Gottfried Wilhelm Leibniz Prize by the German Research Foundation (DFG), the Minkowski Award of the EASD, the Outstanding Scientific Achievement Award of the ADA, and the Heinrich-Wieland Prize. He was elected to the Leopoldina, the German National Academy of Science in 2018.
17:30 Vienna Hall

What is the future of type 1 diabetes treatment?

Chair: R. Lehmann, Switzerland

B. Eliasson, Sweden:
Adjunctive therapies in people with type 1 diabetes - beyond insulin

E.J. de Koning, Netherlands:
Beta cell replacement therapy: the cure for type 1 diabetes?

Linz Hall

Diabetes in primary care

Chair: A.J. Boulton, UK

S.J. Griffin, UK:
Multifactorial treatment of diabetes: 10 year follow-up of the ADDITION-EUROPE study

M. Mata, Spain:
How common are cardiorenometabolic diseases in primary care?

K. Khunti, UK:
Should primary care professionals worry more about hypoglycaemia in people with type 2 diabetes?
17:30

Graz Hall

**VERTIS CV outcome**

Chair: M.J. Davies, UK

**R.E. Pratley, USA:**
VERTIS-study design and baseline characteristics

**B. Charbonnel, France:**
Key metabolic outcomes

**F. Cosentino, Sweden:**
Effects on cardiovascular outcomes

**D.Z. Cherney, Canada:**
Late-breaking presentation on renal outcomes

**D.K. McGuire, USA:**
Safety results, interpretation and conclusions

Salzburg Hall

**Diabetes and cancer**

Chair: S. Herzig, Germany

**M. Berriel Diaz, Germany:**
Metabolic dysfunction in cancer cachexia

**E.J. Gallagher, USA:**
Clinical aspects of obesity-driven cancer
17:30  
**Innsbruck Hall**

Multi-dimensional roles of ketone bodies in fuel metabolism, signalling, and therapeutics

Chair: E. Ferrannini, Italy

B. Egan, Ireland:
Ketone bodies: from energy buffer to cellular signalling

A. Ceriello, Italy:
Metabolic impact of ketone bodies production in relation to diet and medications

**Klagenfurt Hall**

An easy to digest guide to precision nutrition

Chair: J. Merino, USA

E.E. Blaak, Netherlands:
Gut feelings about personalised metabolic responses to food

T. Spector, UK:
Genetics in nutrient preference and postprandial metabolism
Diabetologia Symposium 2020: The pancreas in health and in diabetes

Chair: S. Marshall, UK

M. Solimena, Germany:
The making of insulin in health and diabetes

C. Aguayo-Mazzucato, USA:
Functional changes in beta cells during ageing and senescence

M.J. Redondo, USA:
The clinical consequence of heterogeneity between and within the different types of diabetes

Advances in the pathogenesis and treatment of diabetic complications: going beyond the usual

Chair: P. Rossing, Denmark

M.C. Thomas, Australia:
The rave about RAGE

C. Godson, Ireland:
Resolution pharmacology as a strategy to treat macro- and microvascular disease

M.P. Reilly, USA:
LncRNAs: new “links” to metabolic and vascular diseases
8:30 Graz Hall

The important conversation between the heart and the kidney
Chair: P.-H. Groop, Finland

L. Di Lullo, Italy:
Pathophysiological considerations

A. Norhammar, Sweden:
Recent epidemiological data on cardiorenal disease in diabetes

F. Zannad, France:
Pharmacological approach to cardiorenal disease in type 2 diabetes

8:30 Salzburg Hall

We are what we do not eat
Chair: S. Herzig, Germany

K. Klepac, Germany:
Organ-specific responses to intermittent fasting

K.A. Varady, USA:
Clinical application of intermittent fasting

S. Panda, USA:
Circadian clocks, metabolism and fasting
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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

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<th>Year</th>
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| 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. KOOIJMAN, 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 |
Speaker: B. Merino Antolin, Spain
Title: Discovering new targets in endocrine pancreas development: implications of insulin-degrading enzyme

Speaker: L. Dollet, Sweden
Title: Exercise-regulated circadian metabolism in adipose tissue

Speaker: P. Larraufie, France
Title: New insight about enteroendocrine cells: Can their metabolic state regulate their functions?

Speaker: A. Smink, Netherlands
Title: Mimicking the pancreas microenvironment and prevent rejection within islet transplantation device
Empagliflozin for the chronic heart failure and a reduced ejection fraction in patients with and without diabetes: primary results of the EMPEROR-Reduced trial

Chair: M. Packer, USA

J. Butler, USA:
Background and study design

M. Packer, USA:
Primary results

S.D Anker, Germany:
Analysis of patients with and without diabetes

G. Filippatos, Greece:
Safety results

F. Zannad, France:
Meta-analysis of SGLT2 inhibitor heart failure trials

C.J. Bailey, UK:
Commentary

M. Packer, USA:
Concluding remarks and discussion of mechanism of effect
Cutting-edge articles on all aspects of diabetes, from basic science through translational work to clinical research

Email: diabetologia-j@bristol.ac.uk
Web: diabetologia-journal.org    Twitter: @DiabetologiaJnl
OP 25 Incretin based therapies

145 Six-day subcutaneous GIP infusion increases glycaemic time in range in patients with type 1 diabetes
S.M. Heimbürger, B. Hoe, C.N. Nielsen, N.C. Bergmann, B. Hartmann, J.J. Holst, J. Størling, T. Vilsbøll, T.F. Dejgaard, M.B. Christensen, F.K. Knop, Denmark

146 Effects of tirzepatide, a novel dual GIP and GLP-1 receptor agonist, on metabolic profile in patients with type 2 diabetes

147 Reduction of cardiovascular events by GLP-1 receptor agonists is explained by HbA1c reduction
M. Roosimaa, A. Jõgis, Estonia

148 Exploring potential mediators of the cardiovascular benefit of dulaglutide in REWIND
H. Gerstein, H. Colhoun, M. Riddle, K. Branch, M. König, C. Atisso, M. Lakshmanan, R. Mody, C. Hasenour, Canada, UK, USA

149 Cardiovascular (CV) and hypoglycaemia outcomes across age groups in people with type 2 diabetes in the CAROLINA trial

150 Glucagon-like peptide-1 receptor agonists reduce cerebral and cardiovascular events: real world analysis using the National Database of Japan
M. Koshizaka, R. Ishibashi, T. Ishikawa, K. Goda, J. Sato, M. Kitsuregawa, K. Yokote, N. Mitsutake, Japan
10:15 - 11:45  
Linz Hall

OP 26 Unusual forms of diabetes

151 Young-onset type 2 diabetes in White Caucasians and African Americans in the USA: multi-morbidity trend at diagnosis and atherosclerotic cardiovascular disease risk  
S. Paul, D. Koye, O. Montvida, Australia

152 Identification and mechanistic studies of a novel form of neonatal diabetes caused by YIPF5 mutations leading to pancreatic beta cell endoplasmic reticulum stress  

153 Prevalence and BMI of early-onset adult type 2 diabetes in a multiethnic population  
J.D. Ranchagoda, D. Johnston, A. Majeed, J. Valabhji, E. Gregg, S. Misra, UK

154 Islet cell autoantibodies status in patients with MODY phenotype  
E. Romanenkova, N. Zubkova, A. Timofeev, D. Laptev, Russian Federation

155 Linagliptin as add-on treatment to glimepiride in patients with HNF1A-diabetes (MODY3): a randomised, double-blinded, placebo-controlled, crossover trial  

156 Investigating the contribution of the HNF-1αG319S gene variant to childhood-onset type 2 diabetes using beta cell and mouse models  
10:15 - 11:45   Graz Hall

OP 27 Macrovascular complications and beyond

157 Aortic stiffness, peripheral and central haemodynamics in patients
with screen-detected type 2 diabetes: the ADDITION-Denmark study
E. Laugesen, L. Bjerg, S.T. Andersen, A. Sandbæk, M. Charles,
M.E. Jørgensen, D. Witte, Denmark

158 CAPTURE: a cross-sectional study of the contemporary (2019)
prevalence of cardiovascular disease in adults with type 2 diabetes
across 13 countries
O. Mosenzon, A. Alguwaihes, J.L. Arenas Leon, F. Bayram, P. Darmon,
T. Davis, G. Dieuzeide, K.T. Eriksen, T. Hong, C. Lengyel, N.A. Rhee,
G.T. Russo, S. Shirabe, K. Urbancova, S. Vencio, Israel, Saudi Arabia,
Mexico, Turkey, France, Australia, Argentina, Denmark, China, Hungary,
Switzerland, Italy, Japan, Czech Republic, Brazil

159 Derived time-in-range is associated with MACE in type 2 diabetes:
data from the DEVOTE trial
R. Bergenstal, E. Hachmann-Nielsen, K. Kvist, J.B. Buse, USA, Denmark

160 Genetic risk for coronary artery disease is comparable to the risk
imposed by traditional risk factors in individuals with type 1 diabetes
R. Lithovius, A. Antikainen, S. Mutter, E. Valo, C. Forsblom, N. Sandholm,
P.-H. Groop, Finland

161 Prognosis in patients with atrial fibrillation and type 1 diabetes,
type 2 diabetes and severe hypoglycaemia: a nationwide report
S. Karayiannides, A. Norhammar, L. Landstedt-Hallin, L. Friberg,
P. Lundman, Sweden

162 Cardiovascular risk prediction equations for patients with type 2
diabetes derived in a population with comprehensive diabetes
screening
R. Pylypchuk, P. Drury, B. Wu, S. Wells, R. Jackson, New Zealand
OP 28 Linking inflammation to metabolism

163 Netrin-1 mediates adipose immune equilibrium and insulin resistance in type 2 diabetes via UNC5h2 receptor
H. Shi, M. Liu, Y. Qu, C. Li, China

164 Hyperglycaemia epigenetically propels CD34+ hematopoietic stem cell differentiation toward more pro-inflammatory monocyte subpopulation
V. Vigorelli, S. Genovese, G. Pompilio, M. Vinci, Italy

165 Importance of tissue CCL5/CCR5 signalling on monocytic-MDSCs-derived macrophage polarisation and inflammation in epididymal fat of high fat diet-induced obese mice
P.-C. Chan, P.-S. Hsieh, Taiwan

166 Differences in biomarkers of inflammation between novel subgroups of patients with recent-onset diabetes

167 Role of serum uteroglobin as new indicator for obesity and insulin resistance
K. Joung, J. Kim, S. Choung, S. Kang, H. Kim, B. Ku, Korea, Republic of

168 Characterisation of natural killer cell subsets in adipose tissue of morbidly obese subjects associated with type 2 diabetes
OP 29 What's new in automated insulin delivery

169 Glycaemic outcomes and the importance of active insulin time in the Pivotal trial of the MiniMed™ Advanced Hybrid Closed-Loop (AHCL) system

170 Increased time in range and sustained Auto Mode use in 670G hybrid closed-loop system users: real world experience in DIABETER
D. Mul, A. Arrieta, P. Dekker, E. Birnie, T.C. Sas, H.-J. Aanstoot, H.J. Veeze, Netherlands

171 Automated insulin delivery in free-life shows better glucose control when used 24/7 vs evening and night in pre-pubertal children with type 1 diabetes: The Free-life Kid AP Study
E. Renard, N. Tubiana-Rufi, E. Bonnemaison, R. Coutant, F. Dalla-Vale, E. Bismuth, N. Faure, N. Bouhours-Nouet, A. Farret, J. Place, M. Breton, Free-life Kid AP Study Group, France, USA

172 Individual response of automated glycaemic control with the iLet bionic pancreas in the insulin-only vs bihormonal configuration with a stable glucagon analogue, dasiglucagon

173 First home evaluation of the Omnipod Horizon™ automated glucose control system in children with type 1 diabetes
G.P. Forlenza, B.A. Buckingham, A. Criego, S.A. Brown, B.W. Bode, C.J. Levy, T.T. Ly, Omnipod Horizon Study Group, USA

174 Novel fully automated fiasp-plus-pramlintide artificial pancreas for type 1 diabetes: randomised controlled trial
OP 30 Understanding the mechanisms of diabetic kidney disease

175 The protective effect of bone marrow mesenchymal stem cells on diabetic nephropathy modulated by macrophage polarisation
S. Wang, J. Xie, X. Yu, China

176 Activation of the adiponectin receptor ameliorates glomerular inflammation and injury

177 Long non-coding RNA MALAT1 mediates endothelial-to-mesenchymal transition and kidney fibrosis

178 Rock1/ampk axis regulates the development of diabetic kidney disease via modulation of fatty acid utilisation
Y. Nagai, K. Matoba, Y. Takeda, T. Akamine, Y. Kanazawa, T. Yokota, K. Utsunomiya, R. Nishimura, Japan

179 The role of the Irisin-AMPK axis in the improvement of diabetic nephropathy in exercised rats
G.P. Formigari, M.N. Dátilo, J.M. Lopes de Faria, J.B. Lopes de Faria, Brazil

180 Erasing metabolic alteration in proximal tubular cells under hyperglycaemic condition using inducible CRISPR/Cas9 PGC1a hESC-derived 3D kidney organoids
C. Hurtado del Pozo, P. Prado, A. Gavalda-Navarro, E. Garreta, N. Montserrat, Spain
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<th>Event Details</th>
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<td>12:00 - 13:00</td>
<td>Poster Event E&lt;br&gt;PS 05 Type 2 diabetes treatment IRL 123&lt;br&gt;PS 11 Markers and phenotypes of glucose traits 129&lt;br&gt;PS 17 Islets in type 1 diabetes: new players 135&lt;br&gt;PS 23 The ins and outs of carbohydrate metabolism 141&lt;br&gt;PS 29 Studies on insulin resistance 148&lt;br&gt;PS 35 Inflammation in type 2 diabetes 155&lt;br&gt;PS 41 Weight loss interventions 162&lt;br&gt;PS 47 Glycaemic control and incretin-based therapies 170&lt;br&gt;PS 53 Key issues in improving outcomes in people with diabetes, education and costs 178&lt;br&gt;PS 59 Different aspects of insulin therapy 186&lt;br&gt;PS 65 Novel therapies to reduce hypoglycaemia 192&lt;br&gt;PS 71 Is telehealth the answer to improving care in diabetes? 200&lt;br&gt;PS 77 Focus on diabetic foot ulcers 206&lt;br&gt;PS 83 Treatment of NAFLD and diabetes: from food to pharmacology 212&lt;br&gt;PS 89 Atherosclerotic complications: stemming from cells to the kidney 219&lt;br&gt;PS 95 Endothelial cell, circulation and the heart 226</td>
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14:30 - 16:00  Vienna Hall

OP 31 Novel aspects of diabetic neuropathy

181 Altered mitochondrial activity in the thalamus and somatosensory cortex in painful diabetic peripheral neuropathy
G. Sloan, A. Anton, D. Selvarajah, I. Wilkinson, S. Tesfaye, UK

182 Symptoms of peripheral neuropathy early in type 2 diabetes are associated with higher risk of subsequent cardiovascular disease

183 Associations of cardiac autonomic dysfunction with higher plasma lipid metabolites in recent-onset type 2 diabetes
G.J. Bönhof, A. Strom, K. Straßburger, B. Knebel, J. Kotzka, J. Szendroedi, M. Roden, D. Ziegler, Germany

184 Effects of intensive risk factor management on cardiovascular autonomic neuropathy in type 2 diabetes: findings from the ACCORD clinical trial

185 Statin therapy and risk of polyneuropathy in type 2 diabetes: a population-based cohort study

186 Neuromodulation for treatment of painful diabetic neuropathy: a multicentre randomised controlled trial
E. Petersen, SENZA-PDN Investigators, USA
OP 32 Reducing the burden of hypoglycaemia

187 Nasal glucagon was efficacious in reversing insulin-induced hypoglycaemia without increasing risk of secondary hyperglycaemia
M. Giménez, Y. Yan, Q. Wang, C. Child, M. Zhang, Spain, USA

188 Counterregulatory responses to hypoglycaemia in totally pancreatectomised patients
M. Baekdal, A. Lund, M.P. Baldassare, K. Rose, J. Egholk, M.B. Christensen, C.P. Hansen, J.H. Storkholm, J. Faber, B. Hartmann, J.J. Holst, T. Villsbøll, F.K. Knop, Denmark, Italy

189 Amp-activated protein kinase (AMPK) activator R481 amplifies the glucagon response to hypoglycaemia without worsening hyperglycaemia in diabetic rats

190 Limited impact of impaired awareness of hypoglycaemia and severe hypoglycaemia on inflammatory profile in people with type 1 diabetes

191 Early response to hypoglycaemia in type 1 diabetes is dependent on profound brain connectivity changes in response to falling glucose levels
P. Jacob, M. Nwokolo, F. Zelaya, S.A. Amiel, O. O’Daly, P. Choudhary, UK

192 Hyperinsulinaemic-hypoglycaemic glucose clamps in human research: a systematic review of the literature
T. Wilbek Fabricius, C. Verhulst, B.E. De Galan, U. Pedersen-Bjergaard, Denmark, Netherlands
OP 33 What exercise does

193 Exercise changes neuronal processing of food cues in sedentary overweight and obese adults

194 Bicycling and all-cause mortality among individuals with diabetes
M. Ried-Larsen, M.G. Rasmussen, K. Blond, L.B. Andersen, N. Wareham, S. Brage, A. Grøntved, Denmark, Norway, UK

195 High-intensity interval training combining biking and rowing markedly improves insulin sensitivity, body composition and VO$_{2\max}$ in obesity and type 2 diabetes
M.H. Petersen, M.E. De Almeida, E.K. Wentorf, N. Ørtenblad, K. Højlund, Denmark

196 Differences in physiological responses to cardio-pulmonary exercise testing in adults with type 1 diabetes and healthy controls: a pooled analysis
M.L. Eckstein, D. Pesta, O. McCarthy, D.J. West, J. Yardley, T. Zueger, C. Stettler, J. Boufluer Farinha, M.C. Riddell, L. Brugnara, M. Roden, H. Sourij, R.M. Bracken, P. Hofmann, O. Moser, Austria, Germany, UK, Canada, Switzerland, Brazil, Spain

197 Bolus insulin dose depends on previous-day race intensity during 5 days of professional road-cycle racing in athletes with type 1 diabetes: a prospective observational study
M. Dietrich, O. McCarthy, M.L. Eckstein, R.M. Bracken, O. Moser, Austria, UK

198 Plasma aminoadipic acid levels responded to acute and long-term exercise and correlated with insulin sensitivity, pancreatic fat content and C-peptide concentrations in men
S. Lee, A. McCann, P.M. Ueland, C. Drevon, K.I. Birkeland, Norway
14:30 - 16:00  Salzburg Hall

OP 34 Back to the future: risk markers in diabetes

199 Environmental assessment of persistent glycaemic traits in a northern Swedish population
H. Pomares-Millan, A. Poveda, P.W. Franks, Sweden, USA

200 Mapping robust risk factors for the development of type 2 diabetes: a data-driven approach in Lifelines, a prospective cohort study in the Netherlands
T.P. Van der Meer, B.H. Wolffenbuttel, C.J. Patel, Netherlands, USA

201 Plasma concentrations of methylglyoxal during an oral glucose tolerance test are associated with worse beta cell function: the CODAM and Maastricht studies
M.M. Van Greevenbroek, J.L. Scheijen, C.J. Van der Kallen, P.C. Dagnelie, S.J. Eussen, C.D. Stehouwer, C.G. Schalkwijk, Netherlands

202 Visualising heterogeneous islet autoantibody trajectories of children who develop type 1 diabetes from multi-site birth cohort studies
V. Anand, P. Achenbach, J.L. Dunne, W. Hagopian, B. Kwon, M. Lundgren, R. Veijola, B.I. Frohnert, the T1DI Study Group, USA, Germany, Sweden, Finland

203 The transcriptome of islets and exocrine tissue in subjects with long-standing type 1 diabetes

204 Cardiovascular health, genetic predisposition, and lifetime risk of type 2 diabetes in general population
K. Wang, M. Kavousi, T. Vortman, M. Ikram, F. Ahmadizar, Netherlands
OP 35 Diet: not only quantity matters

205 Circulating miRNAs as predictive biomarkers for effectiveness of dietary and exercise intervention for weight loss and metabolic improvement

206 Eating fast speed has a significant impact on postprandial glycaemic excursion in young healthy women: randomised controlled cross-over trial
S. Imai, Y. Saito, S. Kajiyama, T. Miyawaki, N. Ozasa, S. Kajiyama, Y. Hashimoto, M. Fukui, Japan

207 Acute metabolic effects of intermittent fasting in the morning compared to two different breakfasts among lean individuals
D. Tsilingiris, A. Tentolouris, I. Eleftheriadou, I. Anastasiou, O. Kosta, C. Dimosthenopoulos, A. Kokkinos, N. Katsilambros, N. Tentolouris, Greece

208 Manchester Intermittent versus Daily diet Diabetes App Study (MIDDAS). Pilot RCT comparing a continuous with an intermittent low energy diet in patients with type 2 diabetes

209 The effect of dietary fiber on glycaemic control in patients with type 2 diabetes on metformin monotherapy
F. Tramontana, E. Maddaloni, S. Greci, G. Defeudis, R. Strollo, P. Pozzilli, N. Napoli, Italy

210 Association of daily carbohydrate intake with glycaemic control in adults with type 1 diabetes using a hybrid closed-loop system
V. Lehmann, T. Zueger, A. Zeder, L. Bally, M. Laimer, C. Stettler, Switzerland
OP 36 On the road to human islet failure in type 2 diabetes

211 Cross-sectional multi-omics insight from islet and plasma samples into the progression to type 2 diabetes in metabolically profiled pancreatectomised surgical donors

212 Integration of single-cell datasets reveals novel transcriptomic signatures of beta cells in human type 2 diabetes
E. Bosi, L. Marselli, C. De Luca, M. Suleiman, M. Tesi, M. Cnop, D. Eizirik, M. Ibberson, P. Marchetti, Italy, Belgium, Switzerland

213 Single cell transcriptomics of transplanted human islets
L. Chen, A. Ahnmark, X. Li, A. Zhou, J. Liu, Q. Peterson, B. Tyrberg, M.S. Winzell, B. Zarrouki, Sweden, USA, France

214 Endoplasmic reticulum stress contributes to the loss of beta cell identity in human pancreatic islets treated with glibenclamide
C. Fernandez, N. Tellez, V. Gutierrez, K. Rivera, M. Nacher, E. Montanya, Spain

215 Deciphering glucocorticoid-mediated stress responses in the human pancreatic beta cell
A. Karagiannopoulos, J. Ofori, J.L. Esguerra, L. Eliasson, Sweden

216 Mitochondrial STAT3 contributes to pancreatic beta cell adaptation in obesity
A. Schaschkow, L. Pang, S.A. Litwak, E. Maillard, F.M. Paula, D.L. Eizirik, P. Marchetti, D.J. Gough, E.N. Gurzov, Belgium, Australia, France, Italy
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

1966 Aarhus P.J. PELTONEN-PALOTIE, UK 1993 Istanbul H. YKI-JÄRVINEN, FI
1969 Montpellier B. HELLMAN, SE 1996 Vienna P. RORSMAN, DK
1970 Warsaw B. JEANRENAUD, CH 1997 Helsinki P. FROGUEL, FR
1971 Southampton C.N. HALES, UK 1998 Barcelona J.H. AUWERX, FR
1972 Madrid W.J. MALAISSE, BE 1999 Brussels R. SCHARFMAN, FR
1973 Brussels L. ORCI, CH 2000 Jerusalem H. EDLUND, SE
1974 Jerusalem E. CERASI, SE 2001 Glasgow J.R. ZIERATH, SE
1975 Munich P. FREYCHET, FR 2002 Budapest B.O. ROEP, NL
1978 Zagreb J. NERUP, DK 2005 Athens P. ROSSING, DK
1979 Vienna S.J.H. ASHCROFT, UK 2006 Copenhagen M. RODEN, AT
1980 Athens I.-B. TALJEDAL, SE 2007 Amsterdam M. STOFFEL, CH
1981 Amsterdam P. DE MEYTS, BE 2008 Rome J.C. BRÜNING, DE
1982 Budapest G.F. BOTTAZZO, UK 2009 Vienna G. PERSEGHIN, IT
1983 Oslo S.L. HOWELL, UK 2010 Stockholm F. GRIBBLE, UK
1984 London A. LERNMARK, DK 2011 Lisbon N. SATTA, UK
1985 Madrid E. VAN OBBERGHEN, FR 2012 Berlin T.M. FRAYLING, UK
1986 Rome D. PIPELEERS, BE 2013 Barcelona M. CNOP, BE
1989 Lisbon H.U. HÄRING, DE 2016 Munich P. SCHRAUWEN, NL
1990 Copenhagen P. A. HALBAN, CH 2017 Lisbon E.R. PEARSON, UK
1991 Dublin C. BOITARD, FR 2018 Berlin F. BÄCKHED, SE
16:15                  INDUCTION OF HONORARY MEMBERS                  Vienna Hall

S. Del Prato, President EASD and EFSD
followed by

55TH MINKOWSKI LECTURE

Chair:               S. Del Prato, President EASD and EFSD
Speaker:          G.P. Fadini, Italy
Title:                 Should I stay or should I go?
The bone marrow and stem cell traffic in diabetes

Gian Paolo Fadini, MD PhD, is Associate Professor of Endocrinology at the University of Padua, Italy and Associate Medical Director at the Division of Metabolic Diseases of the local University Hospital. After graduating in Medicine, he received clinical training in Endocrinology and Metabolism under Antonio Tiengo at the famous metabolic School of Padua, where the metabolic syndrome was first described in years 1960. He trained in Molecular Cardiology under Stefanie Dammeler in Frankfurt and then received his PhD under the academic supervision of Angelo Avogaro in Padua. Then, he established as head of the Laboratory of Experimental Diabetology at the Veneto Institute of Molecular Medicine. His research activities are devoted to the study of chronic vascular diabetic complications, stem cells in diabetes, angiogenesis, atherosclerosis, vascular calcification and vascular regeneration. With a series of clinical translational studies on endothelial progenitor cells, he has contributed to the understanding of how diabetes induces vascular damage and compromises endothelial repair. As an evolution of this field of study, he has moved to consider the bone marrow as a target of diabetic complications, which regulates vascular stem cells and regeneration. Today, Gian Paolo Fadini is particularly interested in the metabolic and inflammatory signals that affect endogenous stem cells and their contribution to tissue homeostasis. In the field of clinical diabetes, he performed studies using routinely accumulated clinical data on cardiovascular outcomes and real-world effectiveness of glucose lowering medications, pioneering nationwide initiatives like the DARWIN study series. His teaching activity is directed to students of the MD course in Medicine and Surgery and of the Specialty course in Endocrinology and Metabolism. He is Associate Editor for the Journal of Endocrinological Investigation, Nutrition Metabolism & Cardiovascular Disease, and Atherosclerosis, as well as ad hoc reviewer for top-tier journals in the diabetes field. He has authored >270 peer-reviewed scientific publications, with H-index of 48, and has received several national and international prizes, including the Morgagni Silver Medal (2008), the Rising Star Award by the European Association for the Study of Diabetes (2009), the Alcmeone prize of the Italian Diabetes Society (2014), and the USERN Prize in Medicine (2018).
Vienna Hall

17:15

Do we need surveillance of the liver of type 2 diabetes patients?

Chair: M. Roden, Germany; P.N. Newsome, UK

M. Trauner, Austria: Yes

G. Perseghin, Italy: Maybe

Linz Hall

New approaches to reducing hypoglycaemia: hype or hope

Chair: B.E. de Galan, Netherlands

U. Pedersen-Bjergaard, UK: Therapeutic interventions

P. Choudhary, UK: Behavioural interventions

Graz Hall

When your medicine gives you diabetes

Chair: T.G. Jenssen, Norway

M. Hecking, Austria: Diabetes mellitus after solid organ transplantation (PTDM): pathomechanism, diagnosis, prevention, treatment

J.M. de Filette, Belgium: Autoimmune diabetes due to check-point inhibitors
17:15

Salzburg Hall

New lessons about diabetic complications: 30 years and counting in the DCCT/EDIC

Chair: M.E. Cooper, Australia

I.H. de Boer, USA:
Glucose control and beyond on long-term clinical outcomes

R. Natarajan, USA:
DNA methylation and metabolic memory

Innsbruck Hall

Closing the loop: commercial systems or open source?

Chair: C.J. Tack, Netherlands

D.M. Lewis, USA:
Open source options for closed loop: advantages and disadvantages

H.-J. Aanstoot, Netherlands:
Commercial closed loop systems: Are they the best value?

Klagenfurt Hall

TBA
08:30 Vienna Hall

**Comprehensive approaches with novel biomarkers for predicting purposes**

Chair: V. Trischitta, Italy

**M. Pietzner, UK:**
Plasma proteomics for predicting type 2 diabetes and cardiometabolic health outcomes

**J. Deelen, Germany:**
A metabolic profile for predicting all-cause mortality

Linz Hall

**EASD/JDRF Symposium: Human iPSC-derived cells, the state-of-the-art to model diabetes**

Chair: E. De Franco, UK; M. Knip, Finland

**M.C. Nostro, Canada:**
Modelling human pancreatic development with embryonic stem cells

**D. Balboa, Spain:**
Monogenic diabetes

Graz Hall

**Targeting the gut to treat diabetes**

Chair: F.K. Knop, Denmark

**M. Nieuwdorp, Netherlands:**
How can the gut help us to treat diabetes

**M. Mráz, Czech Republik:**
Endoscopic treatment of diabetes: Are we getting there?
08:30

Salzburg Hall

Uric acid: a biomarker or risk factor for disease - the answer is here!
Chair: H.J. Lambers Heerspink, Netherlands

D.I. Feig, USA:
Why is uric acid a potential target for complications?

N. Sandholm, Finland:
No it is only a marker

M. Mauer, USA:
Well let’s test it: allopurinol in type 1 diabetic kidney disease, the PERL study

Innsbruck Hall

The role of altered lipid handling in diabetes
Chair: A. Gastaldelli, Italy

T. Scherer, Austria:
Leptin and fatty acids signals in the cross talk between adipose tissue and other organs

G.F. Lewis, Canada:
Intestinal regulation of plasma triglycerides

Klagenfurt Hall

Michael Berger debate: ESC vs EASD/ADA-guidelines on diabetes and cardiovascular disease: Same evidence but different interpretations - who’s right?
Chair: N. Sattar, UK

F. Cosentino, Sweden:
The cardiologists

P.J. Grant, UK:
The diabetologists
OP 37 A deep dive into the mechanisms of diabetes

217 Pnliprp1 hypermethylation in human exocrine pancreas reveals a link between diabetes and pancreatic cancer

218 Anti-insulin receptor antibodies improve hyperglycaemia in a mouse model of human insulin receptoropathy
G.V. Brierley, H. Webber, E. Rasijeff, S. Grocott, K. Siddle, R.K. Semple, UK

219 Chromatin 3D interaction analysis of the STARD10 locus unveils FCHSD2 as a new regulator of insulin secretion

220 Non-parallel roles of three disulfide bonds in proinsulin folding and pathogenesis of diabetes
Y. Yang, H. Shu, Y. Huang, X. Zhang, L. Ding, M. Liu, China
OP 38 Triggers and drivers of beta cell failure in type 1 diabetes

221 Presentation of insulin granule derived peptides on MHC I in Enterovirus-infected beta cells and type 1 diabetes
Z. Marinicova, M. Ghosh, K.-P. Knoch, A. Petzold, C. Wegbrod, A. Sönmez, R. Scharffmann, S. Stevanović, M. Solimena, Germany, France

222 Diabetogenic CD4⁺ T-cells induce autoimmune diabetes in an interferon regulatory factor 4-dependent manner
T. Niri, S. Akazawa, M. Miwa, M. Kobayashi, N. Abiru, Japan

223 The role of NF-κB-inducing kinase (NIK) in beta cell-mediated inflammation in type 1 diabetes
P. Xiao, T. Takiishi, N.M. Violato, G. Licata, F. Dotta, G. Sebastiani, A.K. Cardozo, Belgium, Italy

224 Ptpn2 is a pro-inflammatory cytokine regulator and novel player in the endoplasmic reticulum stress response in beta cells
B. Elvira Jimenez, V. Vandenbempt, E. Gurzov, Belgium
OP 39 Gastro-entero pancreatic factors: organoids, mice and men

225 Characterisation of human GLP-1 secreting cells after fluorescent tagging in primary ileal organoids

226 Metabolic surgery recovers Ca^{2+} dynamics across pancreatic islets in obese mice

227 Impaired insulin secretion via Wnt signalling induces diabetes in pancreatic cancer patients: insights from a prospective cohort study
M. Lee, H. Park, S. Kang, Korea, Republic of

228 Effect of macronutrient composition and energy content on postprandial secretion of satiety hormones and next meal food intake
C. Martinussen, M.S. Svane, K.N. Bojsen-Møller, B.V. Andersen, O.J. Hulme, D.V. Byrne, H.R. Siebner, K. Hermansen, S. Gregersen, J.F. Rehfeld, B. Hartmann, J.J. Holst, S. Madsbad, Denmark
OP 40 New aspects of novel therapies

229 Effects of 5 weeks of treatment with dapagliflozin, a SGLT2 inhibitor, on energy metabolism in patients with type 2 diabetes

230 The SGLT2 inhibitor empagliflozin does not stimulate compensatory appetite responses in patients with excess adiposity and type 2 diabetes

231 Peripherally administered incretin peptides, including GIP, GLP-1 and a dual GIP/GLP-1 receptor agonists, activate several brain regions in anesthetised rats

232 GIP infusion in patients with type 1 diabetes seems to attenuate postprandial glucose excursions after prandial insulin over-dose and physical activity
OP 41 Fatty matters

233 Liraglutide accelerates the catabolism of apolipoprotein B100 containing lipoproteins (VLDL₁, VLDL₂, IDL and LDL) in patients with type 2 diabetes: an in vivo kinetic study
B. Vergès, B. Bouillet, A. Rouland, S. Baillot-Rudoni, P. Buffier, E. Crevisy, J. Petit, L. Duvillard, France

234 Serine palmitoyl transferase 2 deficiency in mice hepatocytes induces changes in bile acids composition and improves glucose tolerance

235 Difference in lipid metabolism between men and women: implications for the pathophysiology of type 2 diabetes development and remission

236 Characterisation of seven HDL subspecies and their association with incident type 2 diabetes in PREVEND study
S. Sokooti Oskooei, J.L. Flores-Guerrero, L.M. Kieneker, H.J. Heerspink, M.A. Connelly, S.J. Bakker, R.P. Dullaart, Netherlands, USA
OP 42 Diabetes care is expensive

237 Socioeconomic factors and obesity: Are they independently associated with prevalence of diabetes?

238 Estimation of hospitalisations cost savings deriving from a wider application of EMPAREG and LEADER inclusion criteria in the real world practice: data from AMD Annals

239 Costs of diabetes complications: hospital based care and production loss for 392,200 people with type 2 diabetes and matched controls in Sweden
K. Steen Carlsson, E. Andersson, S. Persson, N. Hallén, Å. Ericsson, D. Thielke, P. Lindgren, J. Jendle, Sweden, Denmark

240 Economic burden associated with diabetes technologies: a cross-national comparison of out-of-pocket expenses
T. Froment, A. Thieffry, H. Ballhausen, M. Wäldchen, S. O'Donnell, B. Cleal, Ireland, Denmark, Germany
11:00 - 12:00

Vienna Hall

OP 43 Developing beta cells

241 Real-time functional assessment and quality control of iPSC-derived human beta-like cells for diabetes modelling
M. Jaffredo, N. Krentz, B. Champon, A. Clark, S. Nawaz, C. Duff, S. Renaud, A. Gloyn, J. Lang, M. Raoux, B. Hastoy, France, UK, USA

242 Intravital microimaging of human iPSC-derived surrogate islets in the anterior chamber of the eye

243 Spatiotemporal expression pattern of adhesion G-protein coupled receptors in developing human pancreas reveals a role for GPR56 in developing islets
O.E. Olaniru, K. Toczyska, N. Guccio, S. Giera, X. Piao, A.J. King, P.M. Jones, S.J. Persaud, UK, USA

244 Regulatory role of tyrosine kinase 2 (TYK2) in human pancreatic endocrine differentiation
V. Chandra, H. Ibrahim, J. Kvist, D. Balboa, R.B. Prasad, O.P. Dwivedi, L. Groop, D. Eizirik, T. Otonkoski, Finland, Spain, Sweden, Belgium
11:00 - 12:00  Linz Hall

OP 44 Modelling metabolism: lessons from animals

245 Critical role of TRAPalpha in maintaining beta cell function and glucose homeostasis
X. Li, M. Wang, W. Feng, Y. Huang, X. Zhang, H. Shu, X. Xu, J. Sun, M. Liu, China

246 Glucokinase haploinsufficiency ameliorates glucose intolerance by increasing beta cell mass in db/db mice

247 Stbd1 deficiency results in altered hepatic and cardiac glycogen levels and decreased glucose tolerance in mice
S. Kyriakoudi, A. Drousiotou, P.P. Petrou, Cyprus

248 Dynamic characteristics of high-fat diet model and its temporal transcriptomic landscape of interorgan crosstalk between islet and liver contributing to beta cell dysfunction
R. Gao, H. Jiang, Q. Fu, Q. Zhang, T. Yang, UK, China
11:00 - 12:00 Graz Hall

OP 45 Diabetic foot: new developments in wound healing

249 Extracellular vesicles derived from platelet-rich plasma accelerate dermal wound healing via activation of TGF-β1/Smad2 signalling pathway in a diabetic rat model
S. Rui, L. Li, W. Deng, G. Yang, D. Armstrong, China, USA

250 Vasomotion analysis based on speed-resolved perfusion measurement as a method to investigate microvascular dysfunction in patients with type 2 diabetes

251 Macrophage phenotype in diabetic wound healing
I. Eleftheriadou, A. Tentolouris, I. Anastasiou, D. Tsilingiris, O. Kosta, E. Tzeravini, I. Pateras, N. Tentolouris, Greece

252 Additive effect of miRs-146a and 29a inhibition using in vitro and in vivo wound healing models of type 1 diabetes
M. Petkovic, A.E. Sørensen, E.C. Leal, R.J. Willemoes, H. Jenssen, E.M. Carvalho, L.T. Dalgaard, Denmark, Portugal, USA
OP 46 Challenges in delivering diabetes care: new solutions

253 $\text{HbA}_1\text{c}$ thresholds have substantial impact in screening procedures for those at risk of developing type 2 diabetes
R.S. Greiner, A. Hill, B.A. Knight, T. McDonald, B. Shields, A.G. Jones, L.R. Rodgers, UK

254 Effects of patient-initiated visits in the diabetes outpatient clinic: 2 year RCT (DIATAST - the DIAbetes patient TAkes reSponsibiliTy)
N. Drojdahl Ryg, J. Gram, M. Haghighi, C.B. Juhl, Denmark

255 Monitoring perception of risk and disruption to medical supplies in people with type 1 diabetes during the covid-19 pandemic
S.N. Scott, F.Y. Fontana, T. Zueger, M. Laimer, C. Stettler, Switzerland, USA

256 AMD Annals as a model for improving the quality of diabetes care in Italy
M. Rossi, V. Manicardi, G. Clemente, S. De Cosmo, R. Manti, A. Rocca, P. Pisanu, A. Nicolucci, A. Aglialoro, D. Mannino, P. Di Bartolo, on behalf of AMD Annals Study Group, Italy
OP 47 Thinking about diabetes complications in the brain

257 Neuroprotective properties of incretin-based therapies
A. Simanenkova, A. Yakovleva, N. Timkina, O. Shpilevaya, D. Samsonov,
S. Chefu, T. Karonova, T. Vlasov, Russian Federation

258 Effects of liraglutide and semaglutide on stroke subtypes
in patients with type 2 diabetes: a post hoc analysis of the LEADER,
SUSTAIN 6 and PIONEER 6 trials
W.D. Strain, A.G. Holst, S. Rasmussen, H.A. Saevereid, M.A. James, UK,
Denmark

259 Impaired awareness of hypoglycaemia in type 1 diabetes is
associated with brain structural alterations and increased cerebral
metabolism
N. Stantonyonge, F. Sampedro, S. Martínez-Horta, M. Camacho, B. Gómez,
A. Chico, Spain

260 The importance of HbA$_1c$ levels for the risk of depression
in persons with and without diabetes: a study in four large cohorts
I. Wium-Andersen, E. Hengeveld, J. Rungby, M. Jørgensen, A. Sandbæk,
M. Osler, M. Wium-Andersen, Denmark
OP 48 Insulin secretion in various subgroups

261 Upregulation of Kcnk9 contributes to insulin secretion defect in MODY10

262 Circulating C-peptide levels mirror patterns of residual beta cell mass in the pancreas of children and young people with type 1 diabetes

263 Impaired 1st phase insulin secretion predicts beta cell functional capacity following partial pancreatectomy in humans
T. Mezza, P.M. Ferraro, G. Di Giuseppe, U. Capece, F. Cinti, S. Moffa, C.M. Cefalo, A. Mari, A. Giaccari, Italy

264 In vivo estimates of beta cell mass in 251 normoglycaemic individuals are strongly associated with BMI and insulin resistance
T.M. Frayling, A. Pitt, M. Hudson, B. Knight, R. Nice, T. McDonald, A. Jones, A.T. Hattersley, UK
Diabetes on the run: insulin therapy in type 1 diabetes and exercise

Chair: M. Haluzik, Czech Republic

T. Klupa, Poland:
How to manage insulin therapy around exercise

R. Rabasa-Lhoret, Canada:
The benefits and limits of continuous glucose monitoring around physical activity

K. Picková, Czech Republic:
Physical activity in type 1 diabetes from combined physician/patient perspective

Innovative medicines initiative (IMI): the power of public private partnerships in diabetes research

Chair: U. Smith, Sweden

E.R. Pearson, UK:
IMI DIRECT

B. Thorens, Switzerland:
IMI RHAPSODY

C. Mathieu, Belgium:
IMI INNODIA

M.F. Gomez, Sweden:
IMI BEAt-DKD

A. Vella, USA:
Commentary
Assessing the true burden of hypoglycaemia

Chair: S.R. Heller, UK

P.M. McKeigue, UK:
Determinants of rates of serious hypoglycaemic events in type 1 diabetes: insights from studies of Scottish cohorts using Bayesian statistical models

J.K. Mader, Austria:
Advantages and limitations in an era of new technology

J. Carlton, UK:
The real cost of hypoglycaemia

A gender-sensitive approach pays off in diabetes

Chair: A. Kautzky-Willer, Austria

L. Hjort, Denmark:
How the first 9 months shape your sex-specific risk

F. Mauvais-Jarvis, USA:
New insights in the role of sex hormones in diabetes pathogenesis

J. Harreiter, Austria:
What you need to consider for individualised gender-sensitive care
12:15

Innsbruck Hall

EASD/AASD Symposium: Implementation science in diabetes

Chair: S.F. Dinneen, Ireland; M.-K. Lee, Republic of Korea

J. Presseau, Canada:
Leveraging implementation science to improve diabetes care: an overview

S. Kono, Japan:
AASD/IDF-WPR Diabetes Foot Guideline: implementation in Asia

S.M. McHugh, Ireland:
Developing implementation strategies to improve diabetes care: a case study of diabetic retinopathy screening

Klagenfurt Hall

Semaglutide for the treatment of obesity (STEP-programme)

Chair: L.M. Kaplan, USA

L.M. Kaplan, USA:
Introduction

L.M. Kaplan, USA:
The role of GLP-1 in DM and obesity

M.J. Davies, UK:
From proof of concept: semaglutide

J.P. Wilding, UK:
Continuing the STEP journey

L. Czupryniak, Poland:
Commentary
Poster Event A, Tuesday, 12:00 - 13:00

PS 01 Diabetes and early death

Chair: O. Rolandsson, Sweden


266 Thresholds for postprandial hyperglycaemia and hypertriglyceridaemia associated with increased mortality risk in type 2 diabetes patients: a real-world longitudinal study
T. Takao, M. Suka, H. Yanagisawa, M. Kasuga, Japan

267 Association between exercise capacity and all-cause mortality in people with type 2 diabetes
Y.-J. Lai, Taiwan

268 Discontinuation of diabetes medication in the 10 years before death: a nationwide register-based study
V. Kosjerina, B. Carstensen, M.E. Jørgensen, B. Brock, H.R. Christensen, J. Rungby, G.S. Andersen, Denmark

269 Risk of major adverse cardiovascular events, severe hypoglycaemia and all-cause mortality for widely used anti-hyperglycaemic dual and triple therapies in type 2 diabetes
M.H. Jensen, M. Kjolby, O. Hejlesen, P. Jakobsen, P. Vestergaard, Denmark

270 A prediction model for end-stage kidney disease in type 1 diabetes in the presence of competing risk of death
D. Vistisen, G.S. Andersen, A. Hulman, S.M. Gurnaghan, H.M. Colhoun, J.E. Henriksen, R.W. Thomsen, F. Persson, P. Rossing, M.E. Jørgensen, Denmark, UK
271 The relation between rheumatoid arthritis and diabetes incidence: a systematic review and meta-analysis
Z. Tian, J. McLaughlin, A. Verma, M. Gibson, A.H. Heald, UK

272 Trends in complications in type 1 and type 2 diabetes in Denmark 1996-2018
B. Carstensen, H. Amadid, M.E. Jørgensen, Denmark

273 Genetic determinants of diabetic retinopathy in people with type 1 diabetes
S. McGurnaghan, S. Hatam, A. Spiliopoulou, L.A. Blackbourn, C.N. Palmer, P.M. McKeigue, H.M. Colhoun, UK

274 No improvement in the incidence of lower extremity amputation in the Scottish population with diabetes between 2009 and 2016
K. Hainey, S. Wild, Scottish Diabetes Research Network Epidemiology group, UK

275 Difference cut-off point of haemoglobin $A_1c$ for diagnosing diabetes based on OGTT versus diabetic-specific retinopathy in China
Z. Du, Z. Sun, S. Qiu, China

276 Renal replacement therapy in persons with and without diabetes in Germany 2010-2016
H. Claessen, M. Narres, T. Kvitkina, A. Wilk, H. Friedel, C. Günster, F. Hoffmann, M. Koch, A. Icks, Germany
Poster Event C, Wednesday, 12:00 - 13:00

PS 03 Micro- and macrovascular complications of diabetes

Chair: R. Roussel, France

277 Glucagon-like peptide-1 receptor agonists decrease cancer incidences in type 2 diabetes: a cohort study using the National Database of Health Insurance Claims of Japan

278 The DISCOVER Global Registry: a long term, large scale patient registry of routine care for people with type 2 diabetes
M. Kosiborod, A. Cooper, P. Fenici, K. Khunti, A. Nicolucci, L. Ramirez, J. Sia, H. Vasnawala, J. Wei, C. Lam, USA, UK, Italy, Malaysia, India, China, Singapore, Netherlands

279 Increased risk of falls, fall-related injuries and fractures in people with type 1 and type 2 diabetes compared with the general population: a nationwide cohort study
N.H. Rasmussen, J. Dal, J. Van den Bergh, F. DeVries, M. Hasselstrøm Jensen, P. Vestergaard, Denmark, Netherlands

280 Impact of micro- and macrovascular complications of type 2 diabetes on quality of life: insights from the DISCOVER study
S.V. Arnold, K. Khunti, F. Tang, M.B. Gomes, L. Ji, A. Nicolucci, M.V. Shestakova, H. Watada, A. Cooper, N. Hammar, P. Fenici, J. Medina, M. Kosiborod, USA, UK, Brazil, China, Italy, Russian Federation, Japan, Sweden, Spain

281 BMI and BMI change following incident type 2 diabetes and risk of microvascular and macrovascular complications: the EPIC-Potsdam study
E. Polemiti, J. Baudry, O. Kuxhaus, S. Jäger, M.M. Bergmann, C. Weikert, M.B. Schulze, Germany

282 Atherosclerotic cardiovascular disease among migrants with type 2 diabetes: a nationwide register-based study
G.S. Andersen, S. Byberg, A.-S.D. Bjørkman, A.A. Isaksen, H. Amadid, B. Carstensen, M.E. Jørgensen, Denmark
Poster Event D, Wednesday, 13:15 - 14:15

PS 04 Global view on diabetes complications

Chair: D. Vistisen, Denmark

283 Epidemiology and treatment of chronic kidney disease among commercially-insured patients in the US

284 Diabetic complications at the time of diagnosis of type 2 diabetes

285 Hospitalisation for hypoglycaemia in adults in Denmark, 1997-2017
M.B. Bengtsen, J.S. Knudsen, N. Møller, R.W. Thomsen, Denmark

286 Association between circulating 25-hydroxyvitamin D and cardiometabolic risk factors in rural and urban Cameroon
C.M. Mba, A. Koulman, F.K. Assah, J. Mbanya, N.J. Wareham, UK, Cameroon

287 Visit-to-visit blood lipid variability as predictors of mortality in patients with type 2 diabetes
C.-I. Li, T.-C. Li, C.-C. Lin, C.-S. Liu, Taiwan

288 Risk of morbidity and mortality of COVID-19 in subjects with diabetes in Norway
289 Effectiveness and safety of empagliflozin in routine care patients: interim results from the EMPagliflozin compaRative effectIveness and SafEty (EMPRISE) study
E. Patorno, A. Pawar, L. Bessette, J. Franklin, M. Najafzadeh, D. Wexler, A. Déruaz-Luyet, K. Brodovicz, S. Schneeweiss, USA, Germany

290 The utilisation of long-acting insulin analogues and intermediate-acting insulin in patients with type 2 diabetes in the United Kingdom
V.C. Brunetti, O.H. Yu, R.W. Platt, K.B. Filion, Canada

291 Gender-specific temporal trends and regional differences in treatment of type 2 diabetes: results from the German multicentre registries DPV and DIVE
S. Lanzinger, P. Bramlage, S. Geist, S. Khodaverdi, T. Danne, R.W. Holl, Germany

A. Yang, H. Wu, E.S. Lau, R.C. Ma, A.P. Kong, W.Y. So, A.O. Luk, J.C. Chan, E. Chow, Hong Kong

293 Are interventions with dapagliflozin, metformin and exercise associated with changes in plasma glucagon concentrations in individuals with prediabetes? The PRE-D trial

294 Therapeutic inertia in management of hypertension and dyslipidaemia in young-onset type 2 diabetes and the risk factor burden: evidence from UK primary care
J. Ling, O. Montvida, C. Xue, K. Khunti, S. Paul, Australia, UK
295 Impact of early or late intensification of glucose-lowering therapy in patients with type 2 diabetes: the global DISCOVER study

296 Sodium glucose cotransporter-2 inhibitor treatment and the risk of diabetic ketoacidosis in Denmark: a retrospective cohort study of five years of use
H. Laursen, J. Røikjer, J. Dal, M. Jensen, Denmark

Poster Event F, Thursday, 13:15 - 14:15

PS 06 Unusual forms of diabetes
Chair: M. Vaxillaire, France

297 Whole-exome sequencing in a family with multiple cases of early-onset diabetes reveals a candidate causative mutation in the PTF1A gene
D. Tanaka, S. Okamoto, Y. Liu, K. Iizuka, Y. Hamamoto, Y. Horikawa, D. Yabe, N. Inagaki, Japan

298 Glucokinase deficit prevalence in women with diabetes in pregnancy: a matter of screening selection
O. Bitterman, C. Giuliani, C. Festa, A. Napoli, Italy

299 Combined lifestyle factors and the risk of latent autoimmune diabetes in adults
K. Herzog, E. Ahlqvist, L. Groop, J. Edwall Löfvenborg, R. Hjort, T. Tuomi, S. Carlsson, Sweden, Finland

300 Revisiting HAPO from a population perspective
P. Kaul, A. Savu, L. Moore, R. Yeung, E. Ryan, Canada

301 A novel mutation of HNF1B gene identified in MODY5
Y. Fujita, T. Hyo, Y. Yamazaki, M. Matsubara, Y. Hamamoto, T. Komiya, D. Tanaka, Y. Seino, Japan
302 Molecular biomarkers during gestational diabetes  
S. Dias, S. Adam, P. Rheeder, J. Louw, C. Pheiffer, South Africa

303 A rare cause of type 2 diabetes, dyslipidaemia and pancreatitis: familial partial lipodystrophy: presentation of a family with lipodystrophy  

Poster Event A, Tuesday, 12:00 - 13:00

PS 07 Molecular insights into glucose abnormalities  
Chair: A. Rosengren, Sweden

304 Use of protein informatics to assess how mutations of glucokinase affect enzymatic function  
M.S. Almotawa, N. Rabbani, P.J. Thornalley, Qatar

305 The benefit effect of hepatic ER-associated protein PDI on glucose metabolism  
T. Hong, T. Gu, P. Zhang, D. Zhu, Y. Bi, China

306 Epigenome wide association study of serum vitamin B12 levels in European and South Asian women reveals CpG sites in glucose related genes  

307 Exposure of 3T3-L1 and NIH-3T3 cells to low dose of bisphenol-A induces hypomethylation of PPARγ without enhancing adipogenesis  

308 Line-1 methylation changes relate to cardiovascular complications in type 2 diabetes  
H.A. Fachim, K. Siddals, M. Gibson, A. Heald, UK
Poster Event B, Tuesday, 13:15 - 14:15

PS 08 Pathophysiology of glucose homeostasis

Chair: E. Selvin, USA

309 Brain derived neurotrophic factor (BDNF) methylation and serum levels in patients with impaired glucose regulation (IGR): effect of a lifestyle change intervention
K. Siddals, M. Gibson, A. Heald, H. Fachim, UK

310 Consequences of ketogenic diet and beta-hydroxybutyrate on epigenetic modifications and transcriptional control of cell metabolism in insulin responsive cells and tissues
L. Pirola, S. Nasser, D. Zygała, T. Solé, M. Strigini, A. Balcerczyk, France, Poland

311 MicroRNA changes following a lifestyle intervention in individuals with impaired glucose regulation

312 Lower expression of bile acid transporters and fibroblast growth factor 19 in mucosa biopsies from the intestine of patients with type 2 diabetes compared to healthy controls

313 Gut-derived exosomes in prediabetes: proteomics insight
I.A. Ferreira, R. Machado de Oliveira, A. Teshima, R. Matthiesen, B. Costa-Silva, P. Macedo, Portugal, Japan
Poster Event C, Wednesday, 12:00 - 13:00

PS 09 The inner workings of the pancreas

Chair: L. Eliasson, Sweden

314 Presence of markers associated with viral infections in the pancreas before and after onset of type 1 diabetes
P. Apaolaza Gallegos, D. Balcacean, J. Zapardiel-Gonzalo, S. Richardson, P. Akhbari, N. Morgan, G. Nelson, I. Gerling, I. Kusmartseva, A. Pugliese, T. Rodriguez-Calvo, the nPOD-Virus Group, Germany, UK, USA

315 Regulatory genomic variation in the developing human pancreas

316 TIGER: the translational human pancreatic islet genotype tissue-expression resource

317 Exosomal transfer of miRNAs in response to Coxsackie-viral infection in beta cells
S. Geravandi, B. Dasgupta, H. Liu, K. Maedler, Germany

Poster Event D, Wednesday, 13:15 - 14:15

PS 10 Islets and antibodies in type 1 diabetes

Chair: E. Maddaloni, Italy

318 A visual analytics method to explore the evolution of autoantibodies during progression to type 1 diabetes in multi-site birth cohort studies
B. Kwon, P. Achenbach, V. Anand, J.L. Dunne, W. Hagopian, M. Lundgren, R. Veijola, B.I. Frohnert, the T1DI Study Group, USA, Germany, Sweden, Finland

319 Heterogeneous islet autoantibody evolution trajectories in multi-site birth cohort studies
P. Achenbach, V. Anand, J.L. Dunne, W. Hagopian, B. Kwon, M. Lundgren, R. Veijola, B.I. Frohnert, the T1DI Study Group, Germany, USA, Sweden, Finland
320 High-throughput sequencing of circulating plasma microRNAs in newly diagnosed type 1 diabetes identifies four different patient clusters
G. Sebastiani, G.E. Grieco, D. Fignani, P.J. Chmura, C.A. Brorsson, S. Bruggaber, A. Pugliese, C. Evans-Molina, M. Knip, M. Peakman, A.M. Schulte, S. Brunak, D.B. Dunger, C. Mathieu, F. Dotta, Italy, Denmark, UK, USA, Finland, Germany, Belgium

321 Building a clinical trial simulation tool for disease modifying therapies in type 1 diabetes (TOMI-T1D)
A. Lam, I. O’Doherty, M. Rigby, P. Senior, P. Gottlieb, C. Dayan, Canada, USA, UK

322 Trajectories of childhood adversity and type 1 diabetes: a nationwide study of 1 million children
J. Bengtsson, A. Rieckmann, B. Carstensen, J. Svensson, M.E. Jørgensen, N.H. Rod, Denmark

323 A comparison of patients with type 1 diabetes with and without autoimmune polyglandular syndrome type 2: data from the German/Austrian/Swiss and Luxembourgian DPV registry

324 International comparison of glycaemic control of type 1 diabetes: an update and extension
J.A. McKnight, International Quality of Care for Type 1 Diabetes (IQoC-T1) Group, UK
Poster Event E, Thursday, 12:00 - 13:00

PS 11 Markers and phenotypes of glucose traits

Chair: C. Herder, Germany

325 1,5-anhydroglucitol as a circulating biomarker of beta cell loss independently of diabetes onset
C. Jiménez-Sánchez, T. Mezza, G. Di Giuseppe, A. Giaccari, P. Maechler, Switzerland, Italy

326 The “Squeezer”: an HTML programme designed to estimate relative insulin sensitivity and relative beta cell function using OGTT data
P.H. Contreras, Chile

327 Exploring islet amyloidosis in type 2 diabetes in metabolically profiled pancreatectomised surgical donors
M. Barovic, K. Steinmeyer, F. Burdet, A. Forberger, E. Schöniger, D. Richter, N. Kipke, M. Ibberson, D. Aust, A. Schulte, M. Solimena, Germany, Switzerland

328 Ethnic differences in the link between pancreatic fat and insulin secretion in white European and black African men

329 Novel 3-D spatiotemporal mathematical model proposed to explain type 2 diabetes pathogenesis and its phenotypes
S.N. Shinde, India

330 Altered HOXA5 epigenetic profile associates with restricted adipogenesis in healthy first-degree relatives of type 2 diabetes subjects
Poster Event F, Thursday, 13:15 - 14:15

PS 12 Global aspects on the epidemiology of type 2 diabetes

Chair: M. Schulze, Germany

331 HbA$_1c$ screening in 195,460 ‘non-diabetic’ individuals (40-69 years) identifies 1.1% with undiagnosed diabetes 2 years before clinical diagnosis

332 Spousal concordance in pathophysiological mechanisms and risk factors for type 2 diabetes: a cross-sectional analysis of The Maastricht Study

333 The metabolic pathways between components of stature and HbA$_1c$: a causal structure learning approach in the UK Biobank
L.W. Johnston, C. Wittenbecher, H.T. Vistisen, C.C. Dahm, D.R. Witte, Denmark, USA

334 Heterogeneity of diabetes in young patients: diagnostic questions

335 The effect of occupational position on aging trajectories of glycaemic measures in non-diabetic individuals: The Whitehall II study
A. Tabak, E.J. Brunner, M. Kivimaki, UK

336 Characterisation of novel subgroups of type 2 diabetes in the Ukrainian population
O. Fedotkina, T. Ozgumus, L. Cherviakova, N. Khalimon, T. Sviitleisha, T. Buldenko, P.M. Nilsson, V. Lyssenko, Norway, Ukraine, Sweden
Poster Event A, Tuesday, 12:00 - 13:00

PS 13 Risk factors for type 2 diabetes

Chair: F.M. Finucane, Ireland

337 Risk of type 2 diabetes after hypertensive disorders of pregnancy: a systematic review and meta-analysis
G. Zhao, D. Bhatia, F. Jung, L.L. Lipscombe, Canada

338 Serum regenerating protein I (REG I) joint risk factors scoring model for predicting new onset type 2 diabetes in China
N. Huang, Y. Dai, X. Su, China

339 Epidemiology of diabetes in Russian Federation: What has changed over 2007-2019 yr?
M. Shestakova, O. Vikulova, A. Zheleznyakova, M. Isakov, I. Dedov, Russian Federation

340 Haemoglobin glycation index is associated with incident type 2 diabetes in healthy subjects
H. Kim, J. Lee, Y. Cho, W. Lee, C. Jung, J.-Y. Park, J. Kang, C.-Y. Park, Korea, Republic of

341 Contribution of rare and common genetic variants to early-onset type 2 diabetes
S. Pezzilli, M. Tohidirad, T. Biagini, F. Alberico, L. Mercuri, M.G. Scarale, M. Garofolo, G.C. Mannino, T. Filardi, F. Andreozzi, T. Mazza, Study on Early-onset Type 2 diabetes (SET2) group, S. Prudente, Italy

342 Daily heat exposure for type 2 diabetes
H. Katsuyama, M. Hakoshima, Y. Masui, H. Adachi, A. Sako, S. Inokuma, H. Yanai, Japan
PS 14 Prevalence of type 2 diabetes around the world

Chair: S.J. Griffin, UK

343 Characteristics of people with type 2 diabetes newly initiated with basal insulin therapy: a population-based study using CPRD
M. Adan, S. Seidu, F. Zaccardi, K. Khunti, D. Webb, C. Gillies, M. Davies, R. Lubwama, A. Boss, T. Dex, UK, USA

344 Mapping diabetes in Greece: results from a real-world study
L. Daflla, K.-A. Poulia, J. Doupis, J. Yfantopoulos, Greece

345 Prevalence of dysglycaemia-based chronic disease (DBCD) in Brno, Czech Republic: a new paradigm to address diabetes burden. The Kardiovize study

346 Fatty liver index as predictor for the risk of type 2 diabetes in normoglycaemic subjects: the Di@bet.es study

347 Relationship between vascular endothelium growth factor b levels and metabolic syndrome in the Di@bet.es study: preliminary results
S. García Serrano, A. Lago-Sampedro, S. Valdés, N. Colomo, C. Maldonado, F. Soriguer, G. Rojo-Martínez, Spain

348 Effectiveness of a female community health volunteers-led lifestyle intervention in blood glucose reduction among adults with type 2 diabetes: a cluster-randomised trial
B. Gyawali, R. Sharma, S.R. Mishra, D. Neupane, A. Vaidya, A. Sandbæk, P. Kallestrup, Denmark, Australia, Nepal, USA
PS 15 Risk factors in type 1 diabetes

Chair: H. Shah, USA

349 Incidence of type 1 diabetes over twenty six consecutive years among 15-39-year-old Lithuanian inhabitants
R. Ostrauskas, Lithuania

350 Patterns of autoimmunity of genetically defined adult onset type 1 diabetes are different above and below 30 years of age, without impacting on clinical presentation

351 Association of patient- and disease-related factors with glycaemic target achievement in type 1 diabetes in the SAGE study

352 Characterisation and narrowing of the diabetes locus Nidd/DBA
H. Aga-Barfknecht, N. Hallahan, P. Gottmann, W. Jonas, M. Jaehnert, H. Vogel, A. Schürmann, Germany, Australia

353 Integrated analysis of clinical and multi-dimension omics data from 100 newly diagnosed type 1 diabetes subjects from the INNODIA study
C. Brorsson, P. Chmura, G. Mazzoni, D.D. Dunger, S.F. Brugger, M. Knip, T. Tree, M. Peakman, A.M. Schulte, R. Lahesmaa, T.R. Suvitaival, F. Dotta, G. Sebastiani, C. Mathieu, S. Brunak, Denmark, UK, Finland, USA, Germany, Italy, Belgium

354 Higher level of body mass index (≥ 22 kg/m²) is a useful predictor of non-insulin requirement in Slowly Progressive Insulin-Dependent (Type 1) Diabetes Mellitus (SPIDDM)
T. Onoue, E. Wada, A. Hayase, T. Handa, M. Furukawa, T. Kobayashi, M. Goto, H. Arima, Japan

355 Islet autoantibody qualification for optimising trial design type 1 diabetes prevention studies
I. O’Doherty, J. Burton, J. Hedrick, A. Lernmark, J. Podichetty, K. Romero, J.L. Dunne, Type 1 Diabetes Consortium, USA, Sweden
Poster Event D, Wednesday, 13:15 - 14:15

PS 16 Islet transplants revisited

Chair: P. Marchetti, Italy

356 New reporter pluripotent stem cell lines for the purification of ins-positive pancreatic islet cells
R. Dettmer, O. Naujok, Germany

357 Human 3D islet organoids generation using a novel engineered porous microcarrier platform
Y. Dai, J. Li, X. Zhu, Q. Wei, China

358 Islet stellate cells: a new potential resources for differentiation into beta-like cells
Y. Zhou, Z. Sun, China

359 Co-localisation of islet stellate cells with islet endothelial cells and it’s potential impact on islet microcirculation
Z. Sun, W. Li, Z. Li, P.-O. Carlsson, China, Sweden

360 Factors affecting function of human pancreatic islets after isolation

361 The assessment of intrahepatic islet transplantation using exendin PET imaging

362 Actual 15-year follow-up of pancreas transplant alone (PTA) in patients with type 1 diabetes
W. Baronti, F. Vistoli, L. Marselli, F. Indovina, E. Gianetti, C. Terrenzio, U. Boggi, P. Marchetti, Italy

363 Neoplastic risk assessment ten years after islet transplantation
M.-C. Vantyghem, M. Chetboun, K. Le Mapihan, A. Jannin, J. Kerr-Conte, F. Pattou, France
Poster Event E, Thursday, 12:00 - 13:00

PS 17 Islets in type 1 diabetes: new players

Chair: C. Mathieu, Belgium

364 Optimal ages for screening for type 1 diabetes risk in children
M. Ghalwash, V. Anand, W. Hagopian, M. Lundgren, M. Rewers, R. Veijola, A.-G. Ziegler, J. Dunne, T1DI Study Group, USA, Sweden, Finland, Germany

365 Reduced hepatocellular lipid content precedes diabetes onset in a mouse model of accelerated type 1 diabetes
C. Wessel, M. Rothe, J.-H. Hwang, M. Roden, V. Burkart, Germany

366 Plasmablasts contribute to the development of type 1 diabetes via enhancing T cell cytotoxicity
Q. Ling, J. Lu, D. Zhu, Y. Bi, China

367 Aquaporin-8 is upregulated in cytokine-mediated type-1 diabetes and crucial for H₂O₂ membrane permeability in insulin-producing cells
M. Elsner, A. Jörns, C. Schaal, Germany

368 Lrh1/nr5a2 conveys the anti-diabetic effects of the agonist bl001 and promotes alpha-to-beta-cell conversion in streptozotocin-treated mice

369 Intestinal delivery of proinsulin and IL-10 via Lactococcus lactis combined with low-dose anti-CD3 induces antigen-specific FoxP3+ Tregs in autoimmune diabetic mice
P.-J. Martens, G. Sassi, M. Viaene, J. Laureys, L. Teyton, P. Rottiers, C. Gysemans, C. Mathieu, Belgium, USA

370 MiR-375 levels in newly diagnosed type 1 diabetes: results from a phase 2, multicentre, randomised, placebo controlled trial (MEX0114)
Poster Event F, Thursday, 13:15 - 14:15

PS 18 Beta cells under stress
Chair: H. Al-Hasani, Germany

371 Proinflammatory cytokines impact beta cell lipidome
E. Gurgul Convey, S. Coldewey, M. Gräler, Germany

372 HSPB1 is essential for inducing resistance to proteotoxic stress in beta cells
L. Labriola, V.M. Gomes, R.A. Wailemann, D.R. Almeida, G.S. Arini, A.F. Dos Santos, L.F. Terra, S. Lortz, Brazil, Germany

373 Phasor-flim analysis of beta cell metabolic trajectory upon glucose stimulation
G. Ferri, M. Tesi, F. Massarelli, L. Marselli, P. Marchetti, F. Cardarelli, Italy

374 RhoG mediates pancreatic beta cell dysfunction under the duress of metabolic stress
A. Kowluru, S. Chundru, USA

375 Increased rate of insulin folding generates H$_2$O$_2$ in the lumen of the endoplasmic reticulum and induces ER stress
B. Vidrio Huerta, S. Lortz, Germany

376 Enhancement of palmitate-induced lipotoxicity in INS-1E cells by the HIV medications efavirenz and rilpivirine
S.C. Maandi, J.G. Mabley, UK

377 Phosphoproteome reveals molecular mechanisms of antagonistic effects of sympathetic and parasympathetic neurotransmitters on different islet hormones secretion
Y. He, Q. Fu, K. Xu, M. Zhang, H. Jiang, R. Gao, Y. Qian, Y. Liu, X. Xu, H. Chen, T. Yang, China
PS 19 To live and let die: a beta cell perspective

Chair: A. Chadt, Germany

378 Short-term induction of YAP fosters beta cell proliferation and beta mass expansion
M. Madduri, M. Elawour, S. Rafizadeh, K. Maedler, A. Ardestani, Germany

379 Hub mRNA and lncRNA co-expression network analysis reveals novel ceRNA mechanism for GLP-1RA-mediated protection in beta cells

380 Effects of incretin-based drugs and irisin in pancreatic beta cells treated with pasireotide
G. Biondi, A. Natalicchio, N. Marrano, A. Borrelli, L. Vincenti, A. Cignarelli, S. Perrini, L. Laviola, F. Giorgino, Italy

381 Effect of the selective serotonin reuptake inhibitor paroxetine on mouse beta cell function
K. Toczyska, E.L. Hubber, B. Liu, S.J. Persaud, UK

382 High density lipoproteins and protection against glucolipotoxicity in 1.1B4 beta cells: the role for hsa-miR-21-5p
J. Tarlton, S. Patterson, A. Graham, UK

383 Mesenchymal stromal cell derived exosomes improve islet function and survival
S. Caxaria, C. Rackham, T. Aziz, A. King, P. Jones, UK

384 Exosomes derived from TGF-β1 activated pancreatic stellate cells promote apoptosis of beta cells
X. Zhu, D. Liu, Y. Dai, X. Su, L. Li, China
Poster Event B, Tuesday, 13:15 - 14:15

PS 20 Job description: insulin secretion

Chair: J.-C. Jonas, Belgium

385 Tissue-specific alternative splicing of type 2 ryanodine receptor gene affects insulin biosynthesis in pancreatic beta cells
M. Makino, A. Itaya-Hironaka, A. Yamauchi, S. Sakuramoto-Tsuchida, S. Takasawa, Japan

386 Expression of the CHI-linked S561F CDKAL1 variant affects the insulin processing and release in INS1E cells
A. Marku, A. Galli, E. Di Cairano, S. Ghislanzoni, C. Cosentino, C. Battaglia, C. Perego, Italy, Switzerland

387 Assembly factors of the mitochondrial respiratory chain control glucose-induced insulin secretion in human EndoC-βH1 beta cells
S. Weksler-Zangen, A. Saada, E. Gurgul-Convey, Israel, Germany

388 Mechanotransduction impacts beta cell function by tuning mitochondrial dynamics
A. Galli, E. Maffioli, A. Marku, S. Ghislanzoni, P. Marciani, P. Milani, C. Lenardi, G. Tedeschi, C. Perego, Italy

389 Nudix Hydrolase 2 (NUDT2) is critical for physiological glucose stimulated insulin secretion from INS (832/13) beta cells
E. Cowan, S. Kalamajski, R. Jain, P. Spégel, H. Mulder, M. Fex, Sweden

390 Telmisartan amplifies glucose-stimulated insulin secretion via ion channels, independent of AT1 receptor and PPARγ
T. Liu, L. Cui, Y. Zhang, China

391 Changes in insulin granule mobility and age correspond to changes in secretion after desensitisation and beta cell rest
B. Gaus, I. Rustenbeck, Germany

392 Organic electrochemical transistors (OECTs) as new tool for non-invasive on-line analysis of islet activity
Poster Event C, Wednesday, 12:00 - 13:00

PS 21 Further down the road to human islet failure in type 2 diabetes
Chair: G.A. Rutter, UK

393 Validation of exendin for beta cell imaging: ex vivo autoradiography of human pancreas demonstrates specific accumulation of radiolabeled exendin in islets of Langerhans
M. Gotthardt, T.J. Jansen, M. Buitinga, C. Frielink, M.W. Stommel, M.B. Van der Kolk, H. Van Goor, B.E. De Galan, M. Boss, M. Brom, Netherlands, Belgium

394 Functional genomics of human islet gluco/lipotoxicity and type 2 diabetes
X. Yi, M. Suleiman, A. Piron, L. Marselli, F. Szymczak, D. Eizirik, P. Marchetti, M. Cnop, Belgium, Italy, USA

395 Correlation between ex vivo islet proteomic analysis and in vivo secretory function in humans
C.M. Cefalo, T. Mezza, S. Moffa, F. Cinti, U. Capece, R. Kulkarni, A. Giaccari, Italy, USA

396 Glucose-lowering therapy and ex-vivo beta cell function in type 2 diabetes

397 The mTORC1-PHLPP1/2 axis leads to chronic beta cell failure and dysfunction in diabetes
B. Lupše, K. Annamalai, K. Maedler, A. Ardestani, Germany
Poster Event D, Wednesday, 13:15 - 14:15

PS 22 Sitting and exercising does it all

Chair: R. Bracken, UK

398 Interrupted sitting improves acute postprandial glucose control without increasing risk of hypoglycaemia in people with type 1 diabetes
A. Alobaid, C. Dingena, A. Marsh, E. Coales, L. O’Mahoney, P. Dempsey, M. Francois, R. Ajjan, M. Campbell, UK, Australia

399 Interrupted sitting improves 24-hour glucose control in people with type 1 diabetes
M. Campbell, C. Dingena, A. Marsh, E. Coales, L. O’Mahoney, P. Dempsey, M. Francois, R. Ajjan, A. Alobaid, UK, Australia

400 The physiological, metabolomic and hormonal responses to hypoglycaemia versus euglycaemia during exercise in adults with type 1 diabetes

401 Long duration diabetes is associated with a lower C-peptide concentration and response to aerobic exercise in individuals with type 1 diabetes

402 Cutaneous blood flow after an acute sub-maximal exercise in type 2 diabetic patients without or with small and/or large fiber neuropathy
C. Reynès, F. Plat, H. Ennaifer, L. Rocher, Y. Knapp, A. Vinet, France

403 Exercise non-response in hyperglycaemic NZO mice is associated with elevated concentrations of BCAAs and ketone bodies
404 Separate free fatty acid pools are involved in muscle lipid utilisation
L.S. Chow, D.G. Mashek, M.D. Jensen, USA

405 AMPK and the RabGAPs TBC1D1 and TBC1D4 are necessary but not sufficient for contraction-mediated glucose metabolism in skeletal muscle

Poster Event E, Thursday, 12:00 - 13:00

PS 23 The ins and outs of carbohydrate metabolism
Chair: R. Taylor, UK

406 Post-challenge hypoglycaemia in individuals with “normal glucose tolerance”
L. Hakaste, M. Lehtovirta, L. Groop, T. Tuomi, Finland, Sweden


408 Evaluation of carbohydrate biosynthesis with 18O-enriched water and isotope shifted 13C NMR analysis: proof of concept
M. Coelho, C. Barosa, J. Jones, Portugal

409 Quantifying the contributions of the fructose and glucose components of high-fructose corn syrup formulation (HFCS-55) to hepatic glycogen synthesis
A. Nunez Torres, G.D. Belew, G. DiNunzio, L. Tavares, L. Tavares, J.G. Jones, Portugal
410 Comparison of paracetamol absorption and gastric emptying measured by scintigraphy in relation to rate of appearance of oral glucose and postprandial glycaemia

411 Effect of meal texture on glucose excursions after bariatric surgery

412 Short-term high-starch diet reversibly increases beta cell mass in mice

Poster Event F, Thursday, 13:15 - 14:15

PS 24 Pregnancy: in vitro and in vivo studies
Chair: M. Ramos Alvarez, Spain

413 Nono/sfpq associate with shorter telomeres in villous trophoblasts of first trimester human placentas from insulin resistant mothers

414 T cell specific estrogen receptor alpha deficiency in gestational diabetic mice exhibits enhanced chronic inflammation with Th17 infiltration in visceral adipose tissue
T. Tanaka, T. Wada, K. Uno, S. Oghihara, Q. Ye, H. Tsuneki, A. Nakashima, S. Saito, T. Sasaoka, Japan

415 Pancreatic regenerating protein Iα: a novel predictor for gestational diabetes
J. Li, X. Zhu, L. Li, China
416 Maternal obesity affects DNA integrity and damage repair related functions in the first trimester with consequences for early human cytotrophoblast viability
D. Hoch, M. Bachbauer, C. Pöchauer, T. Kaudela, A. Majali-Martinez, J. Bandres-Meriz, B. Novakovic, A. Garvie, A. Glasner, R. Saffery, L.H. Wong, G. Desoye, Austria, Australia

417 Nuclear receptors regulating inflammatory mediators in fetoplacental endothelial cells in gestational diabetes
M. George, C.C. Gali, C. Tam-Amersdorfer, A. Stracke, J. Strutz, C. Wadsack, U. Panzenboeck, R. Zimmermann, B. Leopold, Austria

418 The role of prolactin receptor in beta cell function and gene expression during pregnancy
C. Huang, V. Shrivastava, G. Makkar, M. Lee, M. Pretorius, B. Radford, Canada

419 Depression and islet function during pregnancy: generation of a depressive phenotype using UCMS
L. Smith, C. Fernandes, S. Simpson, P. Jones, B. Liu, J. Bowe, UK

420 Prebiotic early intervention improves blood glucose in pup mice
Q. Zhang, X. Xiao, M. Li, China
Poster Event A, Tuesday, 12:00 - 13:00

Poster Event A, Tuesday, 12:00 - 13:00

PS 25 Pregnancy: Epidemiology
Chair: M.N.M. Van Poppel, Austria

421 Trends in prevalence and treatment of gestational diabetes in Norway 2013-2018
K. Furu, L. Kjerpeseth, V. Hjellvik, H.L. Gulseth, Norway

422 Differences in gestational diabetes diagnosed in early and late pregnancy
B. Barquiel, P. Parra, N. Hillman, L. Herranz, Spain
423 Monogenic diabetes in pregnancy: How many cases are we missing?
A. Surendran, S.L. White, J. Jarvis, A. Dunkley, Diabetes in Pregnancy GSTT team, A. Brackenridge, UK

424 Risk of major congenital malformations with metformin compared with insulin in pregnancy

425 Is HbA1c dosage relevant at gestational diabetes diagnosis outside identify a preexisting diabetes?
A. Vambergue, F. Barbry, C. Ternynck, H. Wallet, M. Cazaubiel, J. Labreuche, D. Subtil, P. Fontaine, France

426 Diagnosis of gestational diabetes in the first trimester of pregnancy is associated with differences in CGM night profile
O. Krystynik, J. Schovanek, D. Goldmannova, L. Cibickova, D. Karasek, Czech Republic

427 Postpartum screening for type 2 diabetes in women with gestational diabetes. Is it really performed?
G. De Gennaro, C. Bianchi, M. Aragona, L. Battini, A. Brocchi, W. Baronti, E. Minaldi, S. Del Prato, A. Bertolotto, Italy

Poster Event B, Tuesday, 13:15 - 14:15

PS 26 Pregnancy: Who is at risk?
Chair: J. Harreiter, Austria

428 Early gestational diabetes: adverse outcomes are both early and late
R. Mbundu Ilunga, J. Gross, O. Le Dizès, M. Andrey, A. Pauchet, D. Quansah, H. Legardeur, J. Puder, Switzerland

429 Is height an important determinant of postload glucose levels in pregnant women?
430 Maternal mental state correlates with maternal insulin sensitivity and interleukin-6 levels in late pregnancy

431 Influence of triglycerides on insulin sensitivity in gestational diabetes
E.-C. Krzizek, J.M. Brix, A. Tura, G. Pacini, B. Ludvik, Austria, Italy

432 Assisted reproduction technology treatment and risk of gestational diabetes
C. Bianchi, G. De Gennaro, V. Cela, M. Aragona, W. Baronti, E. Minaldi, A. Brocchi, S. Del Prato, A. Bertolotto, Italy

433 Short sleep duration and risk of gestational diabetes in European women
A. Prete, F. Nicolì, G. De Gennaro, A. Bertolotto, M. Aragona, L. Battini, S. Del Prato, C. Bianchi, Italy

434 Triglyceride and glucose index as a predictor of insulin use during pregnancy
K.-S. Kim, K. Han, C.-Y. Park, Korea, Republic of

435 Use of non-nutritive-sweetened soft drink and risk of gestational diabetes
F. Nicolì, A. Prete, G. De Gennaro, A. Bertolotto, M. Aragona, L. Battini, S. Del Prato, C. Bianchi, Italy

436 The influence of gestational diabetes treatment modalities on gut and saliva microbiome composition
P. Popova, E. Tikhonov, Y. Pinto, A. Tkachuk, E. Vasukova, A. Dronova, Y. Bolotko, S. Frishman, E. Pustozerov, T. Pervunina, E. Grineva, O. Koren, Russian Federation, Israel

437 Estimated foetal weight vs abdominal circumference in predicting macrosomia in women with gestational diabetes
I.A. Scott, A. Anbazhagan, S. Leigh-Atkins, K. Cheer, B. Issa, UK
Poster Event C, Wednesday, 12:00 - 13:00

PS 27 Incremental studies on gut hormones
Chair: G.H. Goossens, Netherlands

438 Entero-pancreatic hormone secretion, gastric emptying and glucose absorption after frequently sampled oral glucose and liquid mixed meal tests in healthy young men
S. Veedfald, J.F. Rehfeld, G.V. Hall, L.B. Svendsen, J.J. Holst, Denmark

439 Bitter taste signalling modulates bile acid-induced PYY, but not GLP-1 secretion in healthy humans
C. Xie, X. Wang, M.J. Bound, R.L. Young, K.L. Jones, M. Horowitz, C.K. Rayner, T. Wu, Australia, China

440 Effect of metformin on incretin secretion in patients with type 2 diabetes and chronic heart failure
J. Kopecky jnr, E. Hošková, J. Veleba, V. Melenovský, J. Kopecký sr, T. Pelikánová, Czech Republic

441 Serum bile acids after an oral glucose load in Chinese healthy individuals and patients with type 2 diabetes: relationships with glycaemia

442 Effects of a six-week intervention with glucagon-like peptide-1 receptor analogue on pancreatic volume, oedema and DNA synthesis in obese men

443 Serum levels of the Zonulin family of peptides in individuals from the PREVADIAB 2 cohort, a role in metabolic dysfunction
**444** Dietary N-acyl amines modulate secretion of insulin and GLP-1 as GPCR agonists  
A.K. Drzazga, M. Koziolkiewicz, E. Gendaszewska-Darmach, Poland

**445** Duodenum Nesfatin-1 signalling regulates hepatic glucose metabolism via melanocortin-4 receptor mediated AMPK pathway  
S. Geng, L. Li, G. Yang, China

**Poster Event D, Wednesday, 13:15 - 14:15**

**PS 28 The fundamentals of insulin resistance**

Chair: G.P. Fadini, Italy

**446** Circulating FSTL-1 are correlated to newly diagnosed type 2 diabetes and regulated by exercise  
D. Han, L. Ling, Y. Gangyi, China

**447** Inhibition of NOD1 signalling protects against saturated-fat induced insulin resistance  
F. Shoaib, Y. Tan, A. Giacca, Canada

**448** Totum-63 reduces body weight and improves insulin sensitivity in obese mice through pleiotropic effects on various metabolic organs  

**449** Positive correlation between levels of lipoprotein associated phospholipase A2 and insulin resistance in newly diagnosed type 2 diabetes  
M. Sun, X.L. Zhou, China

**450** Alterations in basal insulin- and mTOR-dependent signalings are closely related to impaired incretin profile and type 2 diabetes among obese patients  
451 Ebselen enhances insulin sensitivity by inhibiting SHIP2 and protects diabetic mice from oxidative stress and inflammation

452 The role of IL-4/STAT6 signalling in regulation of adipocytes glucose metabolism
S. Michurina, I. Stafeev, A. Arfanyan, I. Beloglazova, E. Shevchenko, M. Menshikov, Y. Parfyonova, Russian Federation

453 Up-regulation of IL-8, osteonectin and myonectin mRNAs by intermittent hypoxia via OCT1- and NRF2-mediated mechanisms in skeletal muscle cells
S. Takasawa, R. Shobatake, A. Itaya-Hironaka, M. Makino, S. Sakuramoto-Tsuchida, T. Uchiyama, H. Ota, A. Yamauchi, Japan

454 Inhibition of high-mobility group box 1 release via up-regulation of SIRT1 improved hepatic insulin resistance
R. Meng, B. Feng, Y. Bi, D. Zhu, China

455 Vitamin D deficiency impairs mTorc2/Akt signalling through down regulating Sirt1 and results in increased hepatic gluconeogenesis
Q. Yuan, J. Yang, M. Sun, S. Tang, M. Dong, L. Mao, China

Poster Event E, Thursday, 12:00 - 13:00

PS 29 Studies on insulin resistance
Chair: A. Mitrakou-Fanariotou, Greece

456 Dynamics of insulin resistance assessed by two methods (HOMA and hyperinsulinaemic euglycaemic clamp) during 12 months after bariatric surgery in type 2 diabetes patients

457 Exogenous ATP promotes glucose uptake and utilisation in skeletal muscle cells but does not alter glucose clearance in vivo
A.M. Cruz, C. Beall, UK
458 The effect of saccharin consumption on microbiota composition and insulin sensitivity: a clinical, experimental open label pilot study

459 Effect of a hypercaloric and hypocaloric diet on insulin-induced microvascular recruitment, whole-body glucose uptake and adipose tissue lipolysis

460 Accessible indices of insulin resistance: exploring the associations with hepatic and intramuscular fat accumulation
K. Bowden Davies, V.S. Sprung, J.A. Norman, A. Thompson, J.P. Wilding, G.J. Kemp, D.J. Cuthbertson, UK

461 Insulin resistance in muscle tissue during early diabetic ketoacidosis
F. Fisker, Denmark

462 Simvastatin profoundly impairs energy metabolism in primary human muscle cells
S. Mäkinen, N. Datta, Y.H. Nguyen, P. Kyrylenko, M. Laakso, H.A. Koistinen, Finland

463 Dicarbonyl stress marker, D-lactate, correlates with hyperinsulinaemic-euglycaemic clamp measure of insulin resistance in overweight and obese subjects with type 2 diabetes

464 Uraemic toxins are not adversely associated with estimates of beta cell function and insulin sensitivity in patients with end-stage kidney disease
T. Ebert, S. Hobson, A. Witasp, S. Arefin, K. Kublickiene, H. De Loor, P. Evenepoel, P. Stenvinkel, Sweden, Belgium
PS 30 Treatment of hyperglycaemia in pregnancy

Chair: M. Cormont, France

465 Foetal abdominal obesity in women with screening test positive but negative or having one abnormal value on diagnostic test for gestational diabetes
Y. Kim, W. Kim, W. Park, S. Park, Korea, Republic of, USA

466 Pregestational diabetes and the offspring: comparing the effects according to the type of maternal diabetes and with paternal type 1 diabetes
C. Valverde Tercedor, N. Perdomo Ugarte, Y. García Delgado, Y. Nóvoa Medina, A. Expósito Montesdeoca, A. González Lleó, Y. Brito Casillas, G. Rodríguez González, B. Vega Guedes, A.M. Wägner, Spain

467 Patient features and outcomes at a multidisciplinary, preconceptional care clinic
A. González-Lleó, B. Vega-Guedes, A. López-Alonso, A. Wägner Fahlin, Spain

468 Does hypoglycaemia affect pregnancy outcome in insulin treated gestational diabetes?

469 Prognosis associated with initial care of increased fasting glucose in early pregnancy: a retrospective study
E. Cosson, E. Vicaut, N. Berkane, T. Ciunganu, C. Baudry, J. Boujenah, P. Valensi, L. Carbillon, France

470 Gestational diabetes: an evolving metabolic condition
S. Parrettini, L. Ranucci, A. Caroli, V. Bini, R. Calafiore, E. Torlone, Italy
Poster Event A, Tuesday, 12:00 - 13:00

PS 31 Pancreatic hormones

Chair: B. Thorens, Switzerland

471 Pancreatic hormone and incretin responses to mixed meal test in chronic pancreatitis and related type 3c diabetes
L. Qi, Y. Dai, X. Su, L. Li, S. Pandol, China, USA

472 Role of HDL and apolipoprotein A1 in the modulation of pancreatic alpha cell function
E. Mancuso, G.C. Mannino, R. Spiga, C. Averta, F. Andreozzi, G. Sesti, Italy

473 Selective optogenetic activation of pancreatic delta cells in dynamic insulin and glucagon secretion
C. Santos, M. Muratore, P. Rorsman, Sweden

474 Glucagon induces the hepatic expression of acute-phase proteins and pro-inflammatory cytokines
R. Spiga, G.C. Mannino, E. Mancuso, C. Averta, F. Andreozzi, G. Sesti, Italy

475 Lack of melatonin type 1 receptor results in dysregulated alpha cell function and metabolism

476 Cardiovascular effects of high-dose glucagon: a randomised clinical trial
K.M. Petersen, S. Bøgevig, T. Riis, N.A. Andersson, K.P. Dalhoff, J.J. Holst, F.K. Knop, J. Faber, T.S. Petersen, M.B. Christensen, Denmark

477 Glucagon promotes hepatic autophagy by AMPK-mediated mTORC1 inhibition
Poster Event B, Tuesday, 13:15 - 14:15

PS 32 Insulin secretion in mice and men
Chair: S. Conde, Portugal

478 The incretin effect in subjects with normal glucose tolerance and type 2 diabetes: a systematic review and meta-analysis
E. Grespan, A. Mari, Italy

479 Drug-induced blockade of the voltage-gated potassium channel Kv11.1 (hERG-channel) decreases glucose-stimulated insulin secretion and increases insulin sensitivity
C. Juhl, J. Burgdorf, C. Knudsen, S. Veedfald, J. Holst, J. Kanters, S. Torekov, Denmark

480 Serpina3c protected against high fat diet induced pancreatic dysfunction
J. Ji, China

481 Microvascular dysfunction is associated with beta cell function in the fasting state: The Maastricht Study

482 Relationship between insulin secretion and action and glucose variability in early stages of glucose intolerance
R. Dimova, N. Chakarova, S. Del Prato, T. Tankova, Bulgaria, Italy

Poster Event C, Wednesday, 12:00 - 13:00

PS 33 Something more about obesity
Chair: E.E. Blaak, Netherlands

483 Glycaemic effects and plasma exposure of steviol administration in type 2 diabetic mice
C. Simoens, C. Wuyts, K. Philippaert, K. Beunen, L. Khodaparast, L. Khodaparast, S. Goscinny, J. Van Loco, B. Van der Schueren, R. Vennekens, Belgium
484 The role of peripheral serotonin and its interaction with other hormones in male Wistar rats with obesity and obesity-induced diabetes, studied by using of LP533401
I. Bogomilov, I. Daskalova, V. Mihneva, R. Nikolov, N. Boyadjieva, Bulgaria

485 Correlation of plasma leptin and resistin with novel subgroups of type 2 diabetes
J. Huang, Y. Yang, China

486 Hypercortisolism and altered glucose homeostasis in obese patients in the pre-bariatric surgery assessment

487 Augmented cortisol-axis and symptom response to hypoglycaemia in individuals with overweight and insulin resistance

488 Dysregulated status of neuropeptides CRH, UCN1,2 and SPEXIN with BMI in children
S. Kavalakatt, A. Khadir, D. Madhu, J. Tuomilehto, F. Al Mulla, J. Abubaker, A. Tiss, Kuwait, Finland

489 In obese patients at high risk of diabetes, cardiac autonomic dysfunction is associated with higher blood glucose levels and early insulin resistance markers
P. Valensi, I. Banu, E. Hamo, S. Chiheb, S. Chetouane, E. Cosson, France

490 The association between renal fat amount and renal threshold for glucose
J. Chen, J. Yu, Z. Sun, China
491 Insulin and muscle contraction-induced GLUT4 traffic: integration within specific phosphorylation-patterns of the downstream target TBC1D4
S. Eickelschulte, S. Hartwig, V. Joschko, S. Lehr, A. Chadt, H. Al-Hasani, Germany

492 Transcriptional profiling of muscle cells exposed to hyperinsulinaemia reveals novel regulators of insulin signalling genes
H. Cen, S. Wang, N. Noursadeghi, J.D. Johnson, Canada

493 IDE-driven impairment in hepatic insulin clearance impacts glucose uptake
D.O. Borges, N. Duarte, C. Penha-Gonçalves, M.P. Macedo, Portugal

494 Dopamine acts through distinct mechanisms in liver, adipose tissue and skeletal muscle regulating glucose uptake and insulin receptor and AMPK phosphorylation
G. Tavares, B.F. Melo, F.O. Martins, P. Matafome, S.V. Conde, Portugal

495 Ammonia homeostasis in mice expressing liver mutant glutamate dehydrogenase of the HI/HA syndrome
K. Luczkowska, Y. Zhou, P. Maechler, Switzerland

496 Metabolic effects of beta-lactoglobulin, casein and whey supplementations during controlled catabolic inflammation in humans
M. Mose, N. Møller, N. Jessen, U.R. Mikkelsen, B. Christensen, E. Raakvaag, J.J. Holst, J.L. Jørgensen, N. Rittig, Denmark

497 Reasons for treatment discontinuation in type 2 diabetes: results from an online patient survey in the UK and US
A. Roborel de Climens, E. Pain, A. Boss, A. Shaunik, France, USA
Poster Event E, Thursday, 12:00 - 13:00

PS 35 Inflammation in type 2 diabetes

Chair: T. Stulnig, Austria

498 Indole 3 propionic acid regulates inflammation and metabolic pathways
M. Mavilio, M. Ballanti, L. De Angelis, V. Casagrande, R. Menghini, M. Federici, Italy

499 Glucagon-like peptide-2 exerts a strong anti-inflammatory response on isolated human islets
K. Maedler, T. Klein, Germany

500 Baricitinib counteracts metaflammation thus protecting against diet-induced metabolic abnormalities in mice
D. Collotta, W. Hull, R. Mastrocola, F. Chiazza, A. Cento, C. Murphy, R. Verta, G. Ferreira Alves, G. Gaudioso, F. Fava, M. Aragno, K. Tuohy, C. Thiemermann, M. Collino, Italy, UK

501 Inhibition of histone deacetylase 3 prevents free fatty acid-induced insulin resistance and inflammation through the regulation of mitochondrial metabolisms
J. Jeon, M. Song, H. Lee, S.-E. Choi, Y. Kang, T. Kim, H. Kim, S. Han, N. Lee, K.-W. Lee, Korea, Republic of

502 Anti-inflammatory effects of second-generation antipsychotics on human macrophage-adipocyte communication

503 NK cells invisceral adipose tissue contribute to obesity-associated insulin resistance through macrophage polarisation and low grade inflammation
504 Endothelial glycocalyx profile in type 2 diabetes
B. Della Valle, N.J. Jensen, C. Hempel, M. Svart, N. Møller, J. Rungby, Denmark

505 BVR-A expression in human vat and associations with metabolic and inflammatory alterations
V. Ceccarelli, F.A. Cimini, I. Barchetta, L. Bertoccini, F. Leonetti, D. Capoccia, G. Silecchia, C. Di Cristofano, C. Chiappetta, M.G. Baroni, M. Pierluigi, E. Barone, M.G. Cavallo, Italy

Poster Event F, Thursday, 13:15 - 14:15
PS 36 Models of prediabetes and diabetes
Chair: A. Schürmann, Germany

506 Glycaemic variability in normal mice: Is there any justification for not using females?
M.R. Kennard, A.J. King, M. Nandi, UK

507 The KINGS mouse, a novel model of ER stress induced diabetes
L.F. Daniels Gatward, A.L. Austin, A.J. King, UK

508 Preventative N-acetyl-L-cysteine treatment improved metabolic and beta cell function in HFD type 2 diabetes model
M. Schuurman, M. Wallace, G. Sahi, M. Barillaro, J. Li, R. Wang, Canada

509 Impact of hepatic elovl3 on sleep deprivation induced hepatic steatosis and glucose intolerance
F. Shigiyama, A. Fuchigami, T. Hirose, N. Kumashiro, Japan

510 Insulin-sensitising and anti-inflammatory effects of palmitoleic acid on visceral adipose tissue in a model of prediabetes
D. Miklankova, M. Hüttl, I. Markova, B. Stankova, H. Malinska, Czech Republic
511 Cotadutide, a GLP-1/Gcg receptor co-agonist improves insulin sensitivity and restores normal insulin secretory capacity in DIO mice

512 Dasiglucagon is a novel stable glucagon analogue with fast glucose response following subcutaneous injection in hypoglycaemic rats
F. Macchi, C. Wenander, Denmark

Poster Event A, Tuesday, 12:00 - 13:00

PS 37 Models of obesity and insulin resistance
Chair: B. Staels, France

513 Full body Nr4a3 deletion induces obesity and glucose intolerance
J.S. Tessem, H. Yang, J.A. Herring, USA

514 Genetic deficiency of ectonucleotide pyrophosphatase-6 ameliorates high-fat-diet-induced visceral obesity and diabetes
R. Wang, K.E. Schraut, S.P. Webster, N.M. Morton, UK

515 Inhibition of cardiac hyaluronan deposition improves cardiac function in high-fat diet-induced insulin-resistant mice
V. Musale, A. Hasib, C.K. Hennayake, C.E. Murdoch, L. Kang, UK

516 Withdrawn

517 SGLT2 inhibitor (empagliflozin) markedly improves diabetes-related phenotype in Diabetes with Enlarged Kidneys (DEK) rats
A. Domon, Y. Tochigi, T. Sato, K. Katayama, H. Tazaki, H. Suzuki, Japan

518 Mitochondrially targeted tamoxifen improves diet-induced obesity and diabetes and reduces adipose tissue senescence in experimental mice
Poster Event B, Tuesday, 13:15 - 14:15

PS 38 Lipid metabolism

Chair: F. Giorgino, Italy

519 Plasma lipidomic signature of epicardial fat volume: Rotterdam study
F. Ahmadizar, M. Bos, D. Bos, A. Ikram, M. Ghanbari, M. Kavousi, Netherlands

520 Palmitate-enriched fat ingestion acutely induces insulin resistance likely via lipid-mediated PKCε activation in skeletal muscle of healthy humans

521 Predictive values of ANGPTL8 on risk of all-cause mortality in diabetic patients: from REACTION study
H. Zou, X. Yu, China

522 Hepatic output of palmitic and oleic acids during weight loss and remission of type 2 diabetes
S. Melhem, G. Lietz, N. Sattar, M.E. Lean, R. Taylor, A. Al-Mrabe, UK

523 Glucocorticoids impair HDL-mediated cholesterol efflux but paradoxically increase HDL-cholesterol concentration

524 Which is the best formula to estimate LDL cholesterol: Friedewald or Martin formula? Comparative study in the e_COR study population
C. Ferrinho, A. Alves, M. Bourbon, J. Sequeira Duarte, Portugal
525 Major decreases in the lipidome following liraglutide treatment

526 Short-term bezafibrate treatment affect glucose tolerance by directly acting on insulin sensitivity and insulin secretion
A. Mengozzi, D. Tricò, L. Nesti, M. Masoni, M.T. Scozzaro, S. Baldi, A. Mari, A. Natali, Italy

Poster Event C, Wednesday, 12:00 - 13:00

PS 39 Adipokine signalling
Chair: S. Dankel, Norway

527 Differential release of miRNAs by visceral adipose tissue from obese patients with various metabolic status
J. Laget, F. Galtier, A. Nouvel, M. Morille, P. Géraud, D. Nocca, N. Builles, S. Rebuffat, A. Lajoix, France

528 Type 2 diabetes patients have low CDKN2C expression in adipose tissue and this is associated with reduced lipid storage capacity and elevated free fatty acid levels

529 In vitro lipid accumulation particularities for human subcutaneous adipose derived stem cells in obese bariatric patients-metabolic dysfunction correlations
I. Hristov, A. Tiron, C. Tiron, D. Timofte, B. Mihai, V. Mocanu, Romania

530 Comparison between in vitro differentiation of pancreatic and subcutaneous adipocytes of subjects with normal glucose tolerance
531 Ctrp3, a new anti-inflammatory and cardioprotective adipokine in patients with cardiovascular diseases and type 2 diabetes

532 Increased expression of Granzyme B in adipose tissue of obese subjects associated with sick fat
F. Cimini, I. Barchetta, C. Chiappetta, L. Bertoccini, A. Di Biasio, V. Ceccarelli, C. Di Cristofano, G. Silecchia, F. Leonetti, A. Lenzi, F. Velotti, M. Cavallo, Italy

533 Apelin levels associate with pubertal development, but not with insulin sensitivity, in overweight-obese children: a 6.5 years follow-up evaluation
L. Bertoccini, F. Sentinelli, M. Incani, D. Bailetti, I. Barchetta, F.A. Cimini, V. Ceccarelli, S. Loche, E. Cossu, M.G. Cavallo, M.G. Baroni, Italy

534 Circulating FSTL-1 is a marker for metabolic syndrome in middle-aged and old population
W. Hu, L. Li, G. Yang, China

Poster Event D, Wednesday, 13:15 - 14:15

PS 40 Drugs and environment in obesity
Chair: M. Blüher, Germany

535 Comparative effects of medications for type 2 diabetes on body weight: a systematic review and network meta-analysis of 394 trials
P. Kakotrichi, T. Karagiannis, I. Avgerinos, C. Mantsiou, G. Tousinas, A. Manolopoulos, A. Liakos, K. Dimitrakopoulos, K. Malandris, A. Tsapas, E. Bekiari, Greece, UK

536 Insulin receptor isoforms in human adipogenesis: possible role in the onset of adipose tissue expansion
V.A. Genchi, A. Cignarelli, S. Perrini, S. Porro, C. Caccioppoli, A. Natalicchio, L. Laviola, F. Giorgino, Italy
537 Beneficial effects of a novel long-acting glucagon analogue, HM15136, on obesity and obesity related metabolic disorders in animal models
S. Lee, J. Lee, J. Choi, E. Park, J. Lee, S. Lee, S. Bae, D. Kim, I. Choi, Korea, Republic of

538 Postprandial thermogenesis is reduced in obesity
A. Vosseler, L. Fritsche, J. Hummel, C. Dannecker, N. Stefan, A.L. Birkenfeld, H.-U. Häring, A. Fritsche, R. Wagner, M. Heni, Germany

539 The influence of substitution therapy with levothyroxine for hypothyroidism on physiological mechanisms determining body weight
B.B. Medici, B. Nygaard, J.L. La Cour, M. Krakauer, A. Brønden, M.P. Sonne, T. Vilsbøll, J. Faber, F.K. Knop, Denmark

540 Diet-induced weight loss improves sleep quality and the improvements are sustained after 1 year weight maintenance with exercise and liraglutide: the S-LITE randomised trial

541 Peripheral combination treatment of leptin and SGLT2 inhibitor improved glucose metabolism in insulin-dependent diabetes mice
H. Yaginuma, R. Banno, R. Sun, K. Taki, M. Sugiyama, T. Tsunekawa, H. Takagi, Y. Ito, H. Arima, Japan

542 Metabolic and immuno-phenotype of rare lipomatoses: Dercum disease and Roch-Leri mesosomatic lipomatosis
M. Lemaitre, L. Humbert, S. Boury, G. Lion, M.-C. Vantyghem, France
Poster Event E, Thursday, 12:00 - 13:00

PS 41 Weight loss interventions

Chair: S. Madsbad, Denmark

543 Obese have blunted subcutaneous adipose tissue perfusion responses to GIP or meal, which improve after bariatric surgery

544 Reduction of oxidative stress on DNA and RNA in obese patients after Roux-en-Y gastric bypass surgery: an observational study of changes in urinary markers

545 Effects of bariatric surgery on the incidence of heart failure and atrial fibrillation in patients with type 2 diabetes and obesity

546 Gut hormone release after one anastomosis gastric bypass vs Roux-en Y gastric bypass: similar GLP-1 decrease secretion of GIP
C. Carette, D. De Bandt, D. Bergerot, M. Le Gall, J. Lacorte, S. Czernichow, A. Blanchard, J.-M. Chevallier, C. Rives-Lange, T. Poghosyan, J. Le Beyec - Le Bihan, France

547 Two-year follow-up after gastric bypass surgery: sustained beneficial effect on metabolic health and hormonal dynamics in subjects with type 2 diabetes

548 Low-calorie intake: a key mechanism contributing to the metabolic impacts of Roux-en-Y gastric bypass surgery
549 Differences in adipose tissue-derived molecules in obese patients in the absence or presence of renal dysfunction and impact of bariatric surgery

550 Physical activity levels in elderly type 1 and type 2 diabetes patients and their association with body mass index
Š. Volčanšek, M. Lunder, A. Janež, Slovenia

Poster Event F, Thursday, 13:15 - 14:15
PS 42 Brain matters
Chair: P.M. Nilsson, Sweden

551 Detection of diabetes from whole-body magnetic resonance imaging using deep learning

552 A plant-based meal affects thalamus perfusion differently than an energy- and macronutrient-matched conventional meal in type 2 diabetes, obese, and healthy men
M. Kudláčková, H. Kahleová, J. Tintěra, M. Klementová, L. Thieme, J. Veleba, H. Malinská, M. Mráz, M. Haluzik, R. Pavlovičová, M. Hill, T. Pelikanova, Czech Republic, USA

553 Short-term HFD increases FGF21 mRNA expression in hypothalamic tanycytes and POMC neurons: consequences on the early onset of neuronal inflammation and insulin resistance
C. Alexandre, S. Al-Rifai, G. Poizat, M. Imbernon, V. Prevot, M. Taouis, Y. Benomar, France

554 The regulation of glucose metabolism by astrocytes in diet induced obesity mice
M. Sugiyama, R. Banno, R. Sun, H. Yaginuma, K. Taki, H. Takagi, Y. Ito, K. Yamanaka, H. Arima, Japan
555 Semaglutide 2.4 mg once weekly reduces appetite, reduces energy intake, and improves control of eating in subjects with obesity
D. Skovgaard, A. Breitschaft, A. Wizert, S. Tadayon, M. Friedrichsen, Denmark, Germany

556 Tirzepatide, a dual GIP and GLP-1 receptor agonist, mediates its anorexigenic effect in mice due to a reduction in homeostatic and reward-related feeding
R. Samms, R. Cosgrove, M. Antonellis, B. Droz, W.C. Roell, K.W. Sloop, J.S. Moyers, M. Matthew, P.J. Emmerson, T. Coskun, USA

Poster Event A, Tuesday, 12:00 - 13:00
PS 43 SGLT-2 inhibitors: clinical aspects
Chair: S.E. Siegelaar, Netherlands

557 Sodium glucose transporter 2 inhibitors might have proportional treatment effect to slow down estimated GFR decline in Japanese patients with type 2 diabetes
K. Kashima, H. Shimizu, M. Yamada, Japan

558 Effects of canagliflozin on cardiovascular death and hospitalisation for heart failure by eGFR: integrated analyses of the CANVAS Program and CREDENCE

559 Implications of initial eGFR response to empagliflozin treatment effects

560 Acute declines in eGFR during treatment with canagliflozin and its implications for clinical practice: insights from CREDENCE
561 Cardiorenal and metabolic outcomes of dapagliflozin vs placebo in patients at high cardiovascular risk without established cardiovascular disease: analyses from the DECLARE-TIMI 58 study

562 The add-on effect of SGLT2 inhibitor or thiazolidinedione in patients with type 2 diabetes inadequately controlled with triple oral antidiabetics
H. Kim, Y.-E. Kim, S. Lee, J. Bae, M. Lee, J. Huh, B.-W. Lee, Korea, Republic of

563 Comparison of SGLT2 inhibitor and GLP-1 receptor agonist as addition metformin or metformin plus sulfonylurea: systematic review with indirect comparison meta-analysis

564 Effects of empagliflozin, diet, or both on physical activity and sedentary behaviour in people with type 2 diabetes: analyses from the SEESAW trial

565 Empagliflozin reduces the total burden of all-cause hospitalisations (ACH) and mortality in EMPA-REG OUTCOME

566 Patient phenotypes and SGLT-2 inhibition in type 2 diabetes: insights from the EMPA-REG OUTCOME trial
A. Sharma, A.P. Ofstad, T. Ahmad, B. Zinman, I. Zwiener, D. Fitchett, C. Wanner, J.T. George, S. Hantel, N. Desai, R.J. Mentz, Canada, Norway, USA, Germany
Poster Event B, Tuesday, 13:15 - 14:15

PS 44 Different aspects of SGLT-2 inhibitors

Chair: K. Birkeland, Norway

567 Acid-base changes during diabetic ketoacidosis in type 1 diabetes with/without SGLT2 inhibitor

568 Dapagliflozin induces kidney augmentation: potential mechanism for SGLT2 inhibitor induced nephroprotection
X. Wu, Y. Zhang, K. Thai, L. Nghiem, K.A. Connelly, R.E. Gilbert, Canada

569 Effect of empagliflozin on cardiorenal outcomes and mortality across BMI categories: subgroup analysis of the EMPA-REG OUTCOME trial with a focus on Asian patients
Q. Ji, L. Ji, Y. Mu, J. Zhao, B. Zinman, C. Wanner, J.T. George, I. Zwiener, K. Ueki, K. Yokote, W. Ogawa, O.E. Johansen, China, Canada, Germany, Japan, Norway

570 Patient preferences for newer oral therapies in type 2 diabetes
G. Savarese, A. Sharma, C. Pang, R. Wood, J.T. George, N. Soleymanlou, Sweden, Canada, USA, Germany

571 Glucose kinetics during oral glucose challenge following administration of exenatide and dapagliflozin alone and in combination in type 2 diabetes
M. Alatrach, C. Agyin, J. Adams, O. Lavrynenko, N. Laichuthai, E. Cersosimo, C. Triplitt, A. Gastaldelli, M. Abdul-Ghani, R. DeFronzo, USA, Thailand

572 Empagliflozin facilitates sustained insulin dose reductions in patients with type 2 diabetes and cardiovascular disease: the EMPA-REG OUTCOME trial
M. Vaduganathan, N. Sattar, D. Fitchett, A. Ofstad, M. Brueckmann, J.T. George, S. Verma, M. Mattheus, C. Wanner, S.E. Inzucchi, B. Zinman, J. Butler, USA, UK, Canada, Norway, Germany
573 Effects of intensive exercise, combined with dapagliflozin on body composition in type 2 diabetes: a randomised controlled trial
R. Bouchi, N. Sonoda, J. Itoh, Y. Ono, T. Fukuda, T. Takeuchi, J. Kishimoto, T. Yamada, Y. Ogawa, Japan

574 Empagliflozin decreases fasting and postprandial hyperglycaemia in totally pancreatectomised patients: a randomised, double-blinded, placebo-controlled study
A. Lund, M. Baekdal, S.W. Nielsen, C.P. Hansen, J.H. Storkholm, B. Hartmann, J.J. Holst, T. Vilsbøll, F.K. Knop, Denmark

575 Luseogliflozin protects pancreatic beta cells via improving mitochondrial metabolism

576 Differential effects of SGLT2 inhibitors on mitochondrial oxidative phosphorylation, glucose uptake, cell energy level and metabolism in HepG2 cells and HUVECs
E. Zügner, S. Hagvall, C.S. Elmore, H. Sourij, P. Kotzbeck, R. Esterline, S. Moosmang, H.-C. Yang, C. Magnes, Austria, Sweden, USA

Poster Event C, Wednesday, 12:00 - 13:00
PS 45 Basic aspects of incretin-based therapies
Chair: T. Vilsbøll, Denmark

577 Dulaglutide improves kidney fibrosis biomarker levels in patients with type 2 diabetes and moderate-to-severe chronic kidney disease

578 In vivo PET imaging of the gastric inhibitory polypeptide receptor in pancreas
579 Role of endogenous glucagon-like peptide-1 in the serum triglyceride response to intraduodenal fat infusion in type 2 diabetic patients on vildagliptin
T. Wu, C. Xie, X. Wang, M.J. Bound, J. Grivell, K.L. Jones, M. Horowitz, T.J. Little, C.K. Rayner, Australia, China

580 The GLP-1 receptor agonist GL0034 activates central regions controlling glucose homeostasis and feeding behaviour
A. Picard, D. Tarussio, R. Thennati, V. Burade, B. Thorens, Switzerland, India

581 Liraglutide in combination with metformin improves insulin processing machinery during first phase insulin secretion: a randomised trial

582 A novel long-acting GLP-1 agonist (GL0034) demonstrates remarkable efficacy on HbA$_{1c}$, weight loss and triglycerides in a model of type 2 diabetes, the db/db mouse
R. Thennati, V. Burade, T. Vilsbøll, B. Thorens, G.A. Rutter, India, Denmark, Switzerland, UK

583 Association between fasting serum glucose-dependent insulinotropic polypeptide and carbohydrate antigen 19-9 in type 2 diabetes
L. Huang, H. Huang, China

584 The effect of tirzepatide on gastric emptying (GE) delay in obese mice is abolished with chronic treatment, while the impact on body weight reduction is maintained
Z. Milicevic, S. Urva, L. O’Farrell, E. Beebe, A. Haupt, T. Coskun, USA
Poster Event D, Wednesday, 13:15 - 14:15

PS 46 Clinical outcome of incretin-based therapies

Chair: E. Serne, Netherlands

585 Effect of dulaglutide on kidney function-related outcomes in type 2 diabetes: post hoc analysis from the REWIND trial
J. Shaw, F.T. Botros, R.E. Malik, C.M. Atisso, H. Colhoun, H. Gerstein, Australia, USA, UK, Canada

586 Patient-reported outcomes in patients with type 2 diabetes treated with investigational dulaglutide doses added to metformin (AWARD-11)
D. Cox, Z. Yu, A. Bethel, K.S. Boye, R. Mody, USA

587 Cardio protection with dulaglutide is not depending on baseline therapy with metformin: a subgroup analysis of the REWIND trial

588 Cardiovascular outcomes in patients with type 2 diabetes and reduced eGFR and albuminuria: a REWIND post hoc subgroup analysis
H. Colhoun, R. Malik, F. Botros, C. Atisso, H. Gerstein, UK, USA, Canada

589 Efficacy of investigational dulaglutide doses overall and by baseline HbA1c and BMI: exploratory subgroup analyses of the AWARD-11 trial
E. Bonora, J. Frias, L. Nevarez Ruiz, Z. Yu, Z. Milicevic, R. Malik, A. Bethel, D. Cox, Italy, USA, Mexico

590 Liraglutide and semaglutide reduce cardiovascular events in patients with type 2 diabetes and peripheral arterial disease
S. Verma, S. Rasmussen, H.A. Saevereid, M. Sejersten Ripa, Canada, Denmark
591 Interrelationship between hypoglycaemia and cardiovascular and mortality outcomes in the CAROLINA trial
N. Marx, J. Rosenstock, D.K. McGuire, B. Zinman, M.A. Espeland, J.T. George, M. Mattheus, O.E. Johansen, for the CAROLINA investigators, Germany, USA, Canada, Norway

592 Asian subpopulations may exhibit greater cardiovascular benefit from long-acting glucagon-like peptide I receptor agonists

Poster Event E, Thursday, 12:00 - 13:00

PS 47 Glycaemic control and incretin-based therapies
Chair: B.H.R. Wolffenbuttel, Netherlands

593 Glycaemic and body weight responses to oral semaglutide in the PIONEER trial programme
L. Mellbin, E. Christiansen, C.L. Hertz, M.A. Nielsen, T.Vilsbøll, V.C. Woo, K.M. Dungan, Sweden, Denmark, Canada, USA

594 LIRA-PRIME: a randomised trial in primary care settings of liraglutide versus OAD for glycaemic control in patients with type 2 diabetes not in control on metformin
M. Zoghbi, M.S. Kaltoft, D. Kolhe, J.K. Panda, M. Sargin, B. Wolthers, J. Unger, Lebanon, Denmark, India, Turkey, USA

595 Effects of teneligliptin on continuous glucose monitoring-derived time-in range and glycaemic variability in patients aged 65 years and older with type 2 diabetes
G. Kim, J. Bae, J. Won, S. Kwak, B. Hyun, J. Cha, J. Kim, Korea, Republic of

596 Optimal treatment intensification for glycaemic control in patients with type 2 diabetes on two oral agents: real world comparison of GLP-1, OADs and insulin
C. Desouza, A. Ross Kirk, K. Kant Mangla, M. Lyng Wolden, I. Lingvay, USA, Denmark, India
597 Efficacy and safety of once-weekly dulaglutide versus insulin glargine in Chinese patients with type 2 diabetes and different baseline glycaemic patterns
J. Hou, B. Zhang, Q. Li, China

598 Dulaglutide reduces HbA$_1c$ irrespective of antihyperglycaemic agents, duration of diabetes, BMI and weight loss: a post hoc analysis from the REWIND trial
D. Xavier, A. Kwan, H. Gerstein, J. Basile, J.M. Maldonado, S. Raha, M. Konig, India, USA, Canada

599 Prominent effects of SGLT2 inhibitor canagliflozin combined with DPP-4 teneligliptin on postprandial hyperglycaemia at breakfast and dinner

Poster Event F, Thursday, 13:15 - 14:15

PS 48 Various clinical aspects of incretin-based therapies
Chair: J. Aberle, Germany

600 Very low dose gliclazide lowers blood glucose by increasing incretin effect and beta-cell glucose sensitivity
R.L. Cordiner, A. Mari, A. Tura, E.R. Pearson, UK, Italy

601 Safety and efficiency of the combination of basal insulin with liraglutide in hospitalised patients with type 2 diabetes
S. Papantoniou, Greece

602 Renal impairment has no impact on the clinical pharmacokinetics of tirzepatide
S. Urva, T. Quinlan, J. Landry, J. Martin, C. Loghin, USA

603 Short-acting exenatide and markers of cardiovascular disease in type 1 diabetes: a randomised double-blinded placebo-controlled trial
604 Exercise alone and in combination with liraglutide improves cardiorespiratory fitness and physical functioning during weight loss maintenance

605 Gastrointestinal adverse events with once-weekly semaglutide: risk predictors and effect on semaglutide response
F.K. Knop, S. Harring, I. Holst, K. Kvist, I. Lingvay, T. Vilsbøll, Denmark, USA

606 Effect of liraglutide treatment on weight parameters in children and adolescents with type 2 diabetes: post hoc analysis of the ellipse trial
M.O. Bensignor, E.M. Bomberg, C.T. Bramante, T.V. Divyalasya, P.M. Hale, C.K. Ramesh, K. Rudser, A.S. Kelly, USA, India

607 Superior effect of 1-year treatment with GLP-1 receptor agonist and exercise on weight loss maintenance and body composition after a very low-calorie diet: the S-LITE trial

608 Effects of lixisenatide versus liraglutide (short- and long-acting GLP-1 receptor agonists) on oesophageal and gastric function in patients with type 2 diabetes
D.R. Quast, N. Schenker, B.A. Menge, M.A. Nauck, C. Kapitza, J.J. Meier, Germany

609 Effect on beta cell function in newly diagnosed type 2 diabetes patients after treatment with vildagliptin and metformin: results from the VERIFY study
P.M. Paldánius, S. Del Prato, M. Stumvoll, D.R. Matthews, Finland, Italy, Germany, UK
Poster Event A, Tuesday, 12:00 - 13:00

PS 49 Various aspects of nutrition and diet
Chair: J.W. Beulens, Netherlands

610 Effects of quantified tableware use on glycaemic control in patients with type 2 diabetes

611 Higher habitual intake of dietary dicarbonyls is associated with higher concentrations of plasma dicarbonyls and with skin autofluorescence: The Maastricht study

612 Effects of whey protein and glucose intake on glycaemia and energy intake in older men
A.K. Oberoi, C. Giezenaar, R.S. Rigda, K. Lange, K.L. Jones, I. Chapman, S. Soenen, Australia

613 Loss of the differential response of glucose and glucose responsive hormones with food temperature in type 2 diabetes
Y. Hu, P. Zhang, J.-H. Ma, China

614 Reduced carbohydrate and increased protein and fat in the diet augment the positive effect of weight loss on glucose control in type 2 diabetes patients

615 Effects of Lactobacillus GG supplementation in type 2 diabetes: Are mucin genes expressions important?
B. Eliuz Tipici, E. Coskunpınar, D. Altunkanat, P. Cagatay, B. Omer, S. Palanduz, I. Satman, F. Aral, Turkey
616 Adaptive insuline and glucose metabolism upon prolonged fasting in non-obese but not in obese individuals

617 Effects of a six-month low-carbohydrate diet in patients with type 2 diabetes on glycaemic control, body composition and cardiovascular risk factors

Poster Event B, Tuesday, 13:15 - 14:15

PS 50 Oral therapies: metformin, sensitizers and other non-secretagogues
Chair: N. Hanssen, Netherlands

618 The interaction between metformin and physical activity

619 Effects of 1 year treatment with pioglitazone vs sulfonylurea on lipid metabolism in type 2 diabetes patients
M. Russo, F. Carli, M. Vitale, M. Masulli, L. Bozzetto, G. Della Pepa, S. Pezzica, O. Vaccaro, A. Rivellese, A. Gastaldelli, Italy

620 Real-world evidence in patients with type 2 diabetes treated with gliclazide XR 60 mg during fasting in India: an analysis from the global DIA-RAMADAN study
S. Shaikh, S. Dhand, S. Bhattacharyya, K. Modi, S. Moazam, S. Kolke, Y. Kadam, S. Ahmad, T. Sivagnanam, K. Kundan, India

621 Totum-63, a plant-based active principle, lowers fasting glycaemia in subjects with impaired fasting glycaemia and glucose intolerance: a phase IIA clinical trial
J.-M. Bard, V. Chavanelle, Y. Otero, M. Bargetto, M. Cazaubiel, B. Pereira, P. Sirvent, S. Peltier, France
622 The impact of metformin and levothyroxine on gut microbiota of type 2 diabetic patients with hypothyroidism
K.A. Moskva, O.P. Kikhtyak, L.Y. Lapovets, Ukraine

623 Totum-63: a new promising approach for the management of obesity and risk reduction for developing type 2 diabetes

624 Regional subanalyses of a real-world study in patients with type 2 diabetes treated with gliclazide modified-release during fasting: DIA-RAMADAN
M. Hassanein, A. Durocher, V. Cortese, United Arab Emirates, France

625 Acute effects on glucose tolerance by neprilysin inhibition in patients with type 2 diabetes
N. Wewer Albrechtsen, A. Møller, C. Martinussen, P. Plomgaard, J. Gøtze, S. Kjeldsen, C.F. Deacon, J.J. Holst, S. Madsbad, K. Bojsen-Møller, Denmark

Poster Event C, Wednesday, 12:00 - 13:00

PS 51 Novel agents to treat diabetes and its consequences
Chair: B.O. Åsvold, Norway

626 Stabilising the intestinal epithelial barrier to treat diabetes: Insights gained from Roux-en-Y gastric bypass surgery

627 Substantial cardiovascular benefit from icosapent ethyl in patients with diabetes: REDUCE-IT DIABETES
628 New data in a mouse model of sCNV support the role of Ang-2 inhibition in driving sustained vascular stabilisation and reduced fibrosis progression
J. Canonica, S. Uhles, R. Foxton, F. Revelant, N. Colé, P. Westenskow, C. Ullmer, Switzerland

629 At-001 a new aldose reductase inhibitor with improved selectivity and specificity protects from cellular damage
S. Shendelman, R. Perfetti, G. Yepuri, N. Quadry, R. Ramasamy, A.F. Ghannam, USA

630 Patient-centered management of type 2 diabetes based on clinical scenarios: systematic review, meta-analysis and trial sequential analysis
L. Pinto, D. Rados, L. Reck, G. Pulz, M. Carpena, R. Borges, R. Marobin, M. Beretta, E. Pedrollo, T. Londero, R. Machry, L. Janeczko, M. Falcetta, DRGROSS Study Group, Brazil

631 Clinical and metabolic improvements of golimumab in children with new onset type 1 diabetes: a subpopulation analysis of the T1GER study

632 Addressing safety and specificity with aldose reductase inhibition: development of AT-001 for diabetic cardiomyopathy
R. Perfetti, G. Yepuri, N. Quadry, R. Ramasamy, A.F. Ghannam, S. Shendelman, USA
Poster Event D, Wednesday, 13:15 - 14:15

PS 52 Novel glucose-lowering agents in type 2 diabetes

Chair: A. Tsapas, Greece

633 Undertreatment and overtreatment of patients with type 2 diabetes in Italian AMD Annals initiative
V. Manicardi, G. Clemente, S. De Cosmo, R. Manti, A. Rocca, P. Pisanu, M. Rossi, A. Nicolucci, A. Aglialoro, D. Fava, N. Musacchio, D. Mannino, P. Di Bartolo, on behalf of AMD Annals Study Group, Italy

634 Long-term treatment with imeglimin as add-on to oral antidiabetes therapy in Japanese patients with type 2 diabetes (Times 2)
K. Kaku, J. Dubourg, C. Thang, T. Kaneko, P. Fouqueray, Japan, France

635 Pooled analysis of efficacy of a novel peroxisome proliferators-activated receptor pan-agonist chiglitazar in patients with type 2 diabetes in China from two phase III trials
X. Lu, Z. Ning, H. Cao, H. Yao, D. Pan, China

636 Treatment of type 2 diabetes with a sublingual preparation of repaglinide
K. Pirkalani, Z. Talaerad, Iran, Islamic Republic of

637 Efficacy and safety of imeglimin in combination with insulin in Japanese patients with type 2 diabetes: results of TIMES 3 trial
J. Dubourg, H. Watada, C. Thang, T. Kaneko, P. Fouqueray, France, Japan

638 Long-term treatment with testosterone improves glycaemic control and may result in remission of diabetes in patients with hypogonadism and type 2 diabetes in a registry
N. Penaherrera, K.S. Haider, A. Haider, G. Doros, A. Traish, F. Saad, Germany, USA
Poster Event E, Thursday, 12:00 - 13:00

PS 53 Key issues in improving outcomes in people with diabetes, education and costs
Chair: F. Toti, Albania

639 Evaluation of the SPECTRUM training programme for real-time continuous glucose monitoring: a multicentre prospective study in 120 adults with type 1 diabetes
G. Freckmann, S. Schlüter, P. Wintergerst, L. Heinemann, K. Lange, CGM-TRAIN study group, Germany

640 Diabetes education and self-management in people with diabetes living in low-/middle-income countries: initial results of the cross-sectional phase of IDMPS Wave 8
J.C. Chan, J.J. Gagliardino, H. Ilkova, F. Lavalle, J. Mbanya, A. Ramachandran, M. Shestakova, J.-M. Chantelot, P. Aschner, China, Argentina, Turkey, Mexico, Cameroon, India, Russian Federation, France, Colombia

641 Impact of type 2 diabetes patients‘ knowledge of their individualised HbA$_{1c}$ goal on glycaemic control
R. Boggs, D. Lautsch, G. Milligan, V. Higgins, USA, UK

642 Diabetes care and education provided by diabetes care and education specialists improve clinical, behavioural and quality of life outcomes
L.E. Kolb, USA

643 Awareness of ocular complications of diabetes in community-based people with type 2 diabetes: the Fremantle Diabetes Study Phase II
J. Drinkwater, F.K. Chen, W.A. Davis, T.M. Davis, Australia

644 Development of noninvasive diabetes monitoring method using tear samples
M. Aihara, N. Kubota, T. Kadowaki, Japan
645 The impact of chronic kidney disease on commercial payers in the US
S. Haldrup, W. Wang, A. Dillon, H. Mikulski, I. Singh, J. Odegard, C. Ringemann, T. Kauf, Switzerland, USA, Spain, Germany

646 Increasing access to hard to reach groups in type 2 diabetes structured education
L.A. Jones, M.G. Jenkins, UK

Poster Event F, Thursday, 13:15 - 14:15

PS 54 How to improve diabetes care
Chair: J.F. Raposo, Portugal

647 Rates and estimated cost of primary care consultations in people diagnosed with type 2 diabetes and comorbidities: a retrospective analysis of 8.3 million consultations
S. Abner, B. Coles, F. Zaccardi, S. Seidu, C. Gillies, M.J. Davies, C. Hvid, K. Khunti, UK, Denmark

648 Health care costs associated with incident complications in type 2 diabetes patients: RWD study based on electronic patient information system
T. Peltonen, J. Martikainen, K. Nolvi, R. Sund, Finland

649 Management of glycaemic control in people with type 1 diabetes in low-/middle-income countries: Wave 8 of the International Diabetes Management Practices Study (IDMPS)
J.J. Gagliardino, J.C. Chan, H. Ilkova, F. Lavalle, J. Mbanya, A. Ramachandran, M. Shestakova, J.-M. Chantelot, P. Aschner, Argentina, China, Turkey, Mexico, Cameroon, India, Russian Federation, France, Colombia

650 Glycaemic control and characteristics of people with type 2 diabetes living in low-/middle-income countries: results of the cross-sectional phase of the IDMPS Wave 8
P. Aschner, J.J. Gagliardino, A. Ramachandran, J. Mbanya, M. Shestakova, H. Ilkova, F. Lavalle, J.-M. Chantelot, J.C. Chan, Colombia, Argentina, India, Cameroon, Russian Federation, Turkey, Mexico, France, China
651 Is there a need for improving quality of diabetes care and diabetes support among individuals with coexisting diabetes and severe mental illness?
L. Knudsen, D.L. Hansen, L.E. Joensen, R. Wibaek, M.E. Joergensen, G.S. Andersen, Denmark

652 Improving the uptake of postpartum glucose screening following a gestational diabetes pregnancy
N. Periyathambi, N. Sukumar, D. Parkhi, J. Plester, T. Ritchie, J. Wilson, S. Selvamoni, Y. Weldessalasie, P. Saravanam, UK

653 Housing insecurity and glycaemic control among people with type 2 diabetes
T. Thomas, A. Anton, W. Dyer, A. Adams, J. Schmittdiel, USA

654 The cost of diabetes care in an Irish public hospital
K.M. Friel, P. Gillespie, C. McCauley, M. O’Kane, M. McCann, V. Coates, UK, Ireland

655 Prescription cost and patterns of cardiovascular risk management in type 2 diabetes during the last 20 years: a survey in Greek outpatient diabetes centres

Poster Event A, Tuesday, 12:00 - 13:00

PS 55 The impact of new basal insulins
Chair: T.R. Pieber, Austria

656 Insulin icodec: an insulin analogue suited for once-weekly dosing in type 2 diabetes
U. Hövelmann, L. Brøndsted, N.R. Kristensen, R. Ribel-Madsen, J.H. DeVries, T. Heise, H. Haahr, Germany, Denmark

657 Efficacy and safety of switching to insulin icodec, a once-weekly basal insulin, vs insulin glargine U100 in patients with type 2 diabetes inadequately controlled on OADs and basal insulin
H. Bajaj, J. Isendahl, A. Gowda, K. Stachlewska, J. Rosenstock, Canada, Denmark, USA
658 Effect of three different titration algorithms of insulin icodec vs insulin glargine U100 on time in range in patients with type 2 diabetes inadequately controlled on OADs
I. Lingvay, M. Koefoed, K. Stachlewskawa, M. Hansen, J. Rosenstock, USA, Denmark

659 Insulin glargine 300 U/ml vs first-generation standard-of-care basal insulin analogues in adults with type 2 diabetes by race and ethnicity: ACHIEVE Control study
G. Umpierrez, C. DeFedele, J. Gill, A. Mohamed, E. Wright, L. Meneghini, USA, France

660 Effect of insulin degludec U100 vs insulin glargine U100 on time in range in patients with type 2 diabetes at risk of hypoglycaemia

661 HbA$_1c$ levels and rates of hypoglycaemia with insulin degludec U200 and insulin glargine U300 stratified by renal function subgroups: post hoc analysis from the CONCLUDE trial

662 Early postoperative basal insulin therapy for the prevention of post-transplant diabetes onset after kidney transplantation (ITP-NODAT)
E. Schwaiger, S. Krenn, A. Kurnikowski, E. Nordheim, T.G. Jenssen, M. Hecking, Austria, Norway
Poster Event B, Tuesday, 13:15 - 14:15

PS 56 Insulin therapy: real world studies

Chair: B. Ludvik, Austria

663 Dosage profile of insulin glargine U100 and U300 in patients with type 2 diabetes in real clinical practice: DosInGlar study
N. Duque, E. Artime, I. Romera, J. Lebrec, S. Diaz, A. Sicras, J. Reviriego, Spain, Germany

664 Therapy trends in initial 6 months of the first large-scale longitudinal nationwide study on management and real-world outcomes of diabetes in India (LANDMARC)

665 Real world evidence of initiating basal insulin and GLP-1 receptor agonists in a relatively simultaneous vs sequential order: impact on glycaemic control
V. Fonseca, F. Ampudia-Blasco, R. Lubwama, X.V. Peng, A. Boss, L. Shi, J. Rosenstock, USA, Spain

666 Effectiveness of premix insulin in type 2 diabetes: a retrospective UK cohort study
E. Jude, A. Ali, R. Emral, N. Nanda, R. Lubwama, K. Palmer, A. Shaunik, P. Raskin, F. Gómez Peralta, C. Trescoli, UK, Turkey, USA, Spain

667 Differences in patient-reported outcomes by age and region in adults with type 1 diabetes in the SAGE study

668 A retrospective, observational, cohort study of the use and effectiveness of basal-bolus or premixed insulin in Japanese people with type 2 diabetes
669 Association of patient-reported outcomes scores with glycaemic target achievement in type 1 diabetes in the SAGE study

670 Effectiveness and safety of Gla-300 vs IDeg-100 evaluated with continuous glucose monitoring profile, in adults with type 1 diabetes in routine clinical practice in Spain: OneCARE study
I. Conget, E. Delgado, M.Á. Mangas, C. Morales, J. Caro, M. Gimenez, M. Borrell, Spain

671 Insulin glargine 300 U/ml vs first-generation standard-of-care basal insulin analogues in adults with type 2 diabetes: impact of renal function in the ACHIEVE Control study
L. Meneghini, A. Cheng, P. Evenou, J. Gill, A. Mohamed, G. Umpierrez, USA, Canada, UK, France

Poster Event C, Wednesday, 12:00 - 13:00

PS 57 Insulin therapy: fast acting insulin analogues
Chair: T. Heise, Germany

672 Effect of age on HbA1c, postprandial glucose control, and hypoglycaemia in patients with type 2 diabetes treated with Ultra Rapid Lispro (URLi) or Lispro: PRONTO-T2D
A. Chang, T. Hardy, Q. Zhang, USA

673 Technosphere insulin use in type 1 and type 2 diabetes is associated with weight loss compared to insulin analogues or insulin mixtures over 26 Weeks
A.L. Hoogwerf, D.M. Kendall, N.S. Zaveri, P.M. Morey, B.J. Hoogwerf, USA

674 Dose titration and clinical effects of inhaled technosphere insulin compared to mealtime subcutaneous (SC) analogue insulin therapy in type 1 diabetes
D.M. Kendall, J. Krueger, M.C. Jones, R. Abaniel, P.M. Morey, M. Grant, B.J. Hoogwerf, USA
675 A new concentrated U-200 formulation of Ultra Rapid Lispro (URLi) demonstrated bioequivalence to URLi U-100
H. Linnebjerg, E.S. LaBell, M.A. Dellva, S. Lim, D.E. Coutant, J. Leohr, USA

676 Ultra Rapid Lispro (URLi) showed greater reduction in postprandial glucose (PPG) vs lispro in children, adolescents, and adult patients with type 1 diabetes
T. Danne, R. Aronson, H. Linnebjerg, J. Leohr, E.S. LaBell, D.E. Coutant, Q. Zhang, R. Pollom, Germany, Canada, USA

677 Effect of stratification factors and baseline postprandial glucose on glycaemic control after 26 weeks of Ultra Rapid Lispro (URLi) or Lispro: subgroup analyses of PRONTO-type 1 diabetes
J.I. Cho, J. Bue-Valleskey, T. Hardy, USA

678 Ultra Rapid Lispro (URLi) demonstrates similar time in target range to Lispro with the Medtronic MiniMed 670G hybrid closed-loop system
B. Bode, A. Carlson, R. Liu, T. Hardy, J. Boyd, R. Bergenstal, S. Morrett, D. Ignaut, USA

679 Ultra Rapid Lispro (URLi) accelerates insulin lispro absorption and insulin action vs Lispro: a meta-analysis of pharmacokinetic and glucodynamic data
J. Leohr, M.A. Dellva, K. Carter, E.S. LaBell, H. Linnebjerg, USA

680 Postprandial glucose control using the Medtronic Advanced Hybrid Closed Loop System: faster-acting insulin aspart vs insulin aspart

681 Long-term safety and efficacy of Ultra Rapid Lispro (URLi) in PRONTO-T1D
Poster Event D, Wednesday, 13:15 - 14:15

PS 58 The challenges of insulin therapy in type 2 diabetes
Chair: S. Kaser, Austria

682 Comparisons of ascending versus descending dosage styles in short-term intensive insulin treatment in patients with newly diagnosed type 2 diabetes
Z. Huang, K. Ng, Z. Zhang, J. Li, W. Deng, Y. Li, China

683 Automated insulin delivery (AID) system performance with and without meal announcement: effect of meal macronutrient content
M. Katz, R. Brazg, A. Bartee, A. LaLonde, R. Jones, H. Wolpert, USA

684 Efficacy and safety of fast-acting insulin aspart in adults with type 2 diabetes with different insulin requirements
G. Sesti, W. Lane, M. Ekelund, O. Thórisdóttir, E. Jódar, A. Oviedo, N. Rathor, P. Senior, E. Franek, Italy, USA, Denmark, Spain, Argentina, India, Canada, Poland

685 Diagnostic criteria for post-transplant diabetes after kidney transplantation: an analysis through 2 years in patients from the ITP-NODAT study
A. Kurnikowski, E. Nordheim, E. Schwaiger, S. Krenn, T.G. Jenssen, M. Hecking, Austria, Norway

686 Treatment satisfaction in people with type 2 diabetes receiving basal insulin: results from real-world and randomised controlled studies with insulin glargine 300 U/ml
S. Harris, F.J. Snoek, L.F. Meneghini, F. Lauand, J. Westerbacka, A. Roborel de Climens, K. Khunti, Canada, Netherlands, USA, France, UK

687 Efficacy and safety of insulin glargine 300 U/ml versus glargine 100 U/ml in East Asian population with type 2 diabetes: a patient-level meta-analysis of phase 3 studies
L. Ji, Y. Bi, S. Ye, Y. Huang, X. Zhang, S. Shang, N. Cui, China

688 Contribution of fasting and postprandial plasma glucose to HbA$_1c$ in people with type 2 diabetes on basal-bolus insulin: a meta-analysis of insulin lispro clinical trials
B. Liao, Y. Chen, F. Chigutsa, C. Piras de Oliveira, USA
689 Dual I China: improved glycaemic control with IDegLira versus its mono-components in Chinese patients with type 2 diabetes uncontrolled on oral antidiabetic drugs
W. Wang, B. Agner, B. Luo, L. Liu, M. Liu, Y. Peng, S. Qu, K.A. Stachlewska, G. Wang, Q. Zhang, G. Ning, China, Denmark

690 Dual II China: superior HbA₁c reductions and weight loss with IDegLira vs insulin degludec in Chinese patients with type 2 diabetes inadequately controlled on basal insulin
Y. Pei, B.R. Agner, B. Luo, X. Dong, D. Li, J. Liu, L. Liu, M. Liu, Y. Lu, T. Nishida, X. Xu, Y. Mu, China, Denmark, Japan

691 Comparison of insulin degludec / insulin aspart co-formulation therapy twice-daily with free combination of liraglutide plus IDeg
Y. Aso, M. Sagara, T. Jojima, T. Iijima, T. Tomaru, I. Usui, Japan

Poster Event E, Thursday, 12:00 - 13:00

PS 59 Different aspects of insulin therapy
Chair: K. Nørgaard, Denmark

692 Missing glucose measurements and failure to initiate early postoperative insulin therapy associate with PTDM and dropout-rate in the ITP-NODAT study
S. Krenn, E. Schwaiger, A. Kurnikowski, E. Nordheim, T.G. Jenssen, M. Hecking, Austria, Norway

693 Performance of the Lilly automated insulin delivery (AID) system: results of early phase feasibility study
A. Bartee, A. LaLonde, M. Katz, R. Brazg, M. Christiansen, H. Wolpert, R. Jones, USA

694 The burden of mealtime insulin dosing in adults and children with type 1 diabetes
W. Lane, E. Lambert, J. George, N. Rathor, USA, UK, India

695 Marked heterogeneity of diurnal variability of basal insulin requirements in pump-treated patients with type 1 diabetes
A.M. Lindmeyer, J.J. Meier, M.A. Nauck, Germany
696 Human versus analogue insulin in patients after pancreatectomy: open, prospective, randomised, intervention study

697 An euglycaemic glucose clamp study to evaluate the relative bioavailability of LY2963016 to insulin glargine in healthy Chinese subjects
Y. Ji, Y. Yu, F. Wang, H. Linnebjerg, E.J. Pratt, H. Li, H. Liu, L.S. Tham, China, USA, Singapore

M. Perez-Nieves, R. Juneja, L. Fan, E.S. Meadows, M.J. Lage, E. Eby, USA

699 Personal characteristics influence rapid-acting insulin pharmacokinetics in individuals with type 1 diabetes treated with multiple daily injections
E.M. Coales, A.M. Alobaid, C. Dingena, A. Marsh, R.A. Ajjan, M.D. Campbell, UK

Poster Event F, Thursday, 13:15 - 14:15

PS 60 The continued advance of continuous glucose monitoring
Chair: J. Mader, Austria

700 Relationship between mean glucose and HbA1c is modulated by glycaemic variability
P. Divilly, P. Jacob, S. Amiel, P. Choudhary, UK

701 Marked improvements in HbA1c following flash monitor initiation in people with type 1 diabetes: a nationwide observational study in Scotland
F. Gibb, A. Jeyam, J. McKnight, B. Kennon, S. McGurnaghan, L.A. Blackbourn, P. McKeigue, H.M. Colhoun, on behalf of the Scottish Diabetes Research Network (SDRN) Epidemiology Group, UK

702 Unrestricted use of intermittently-scanned continuous glucose monitoring in youth is associated with high satisfaction and less absence from school
S. Charleer, P. Gillard, K. Casteels, Belgium
703 Continuous glucose monitoring record length and minimum number of daily observations for clinical interpretation
J. Chrzanowski, P. Kucharski, A. Michalak, K. Pagacz, B. Mianowska, A. Szadkowska, W. Fendler, Poland

704 Tracking haemoglobin A1c from CGM data via personalised model of haemoglobin glycation and clearance
C. Fabris, R. Beck, B. Kovatchev, USA

705 Hospitalisations for acute complications before and after FreeStyle Libre® system initiation in people with type 1 and type 2 diabetes in France

706 A comparison of methods used to analyse blood glucose under hypoglycaemic conditions
C.M. Farrell, A.D. McNeilly, S. Hapca, R.J. McCrimmon, UK

Poster Event A, Tuesday, 12:00 - 13:00

PS 61 Insulin pump therapy
Chair: P. Choudhary, UK

707 Usage and handling of insulin pump features by individuals with type 1 diabetes
S. Dürrbeck, G. Kramer, C. Kloos, N. Müller, G. Wolf, N. Kuniss, Germany

708 First results from PRO Solo: patient reported outcomes from a clinical trial comparing a new patch pump with MDI and an established patch pump
J.K. Mader, N. Oliver, I. Vesper, T. Küngsting, K. Barnard-Kelly, Austria, UK, Germany

709 Marked improvements in HbA1c levels following insulin pump therapy initiation in people with type 1 diabetes: a nationwide observational study in Scotland
A. Jeyam, F. Gibb, J. McKnight, B. Kennon, J. O'Reilly, S. McGurnaghan, L.A. Blackbourn, P.M. McKeigue, H.M. Colhoun, on behalf of the Scottish Diabetes Research Network (SDRN) Epidemiology Group, UK
710 A randomised trial to compare efficacy and pharmacy budget impact between regular human and analogue insulins when delivered by a wearable insulin delivery device

711 Efficacy and safety comparison between U-100 human regular insulin and rapid acting insulin when delivered by V-Go insulin delivery device in an older type 2 diabetes

712 Patient-reported outcomes for 2,335 adults with type 2 diabetes using the Omnipod® Insulin Management System show glycaemic improvement over the first 90 days of use
L.M. Huyett, A. Carlson, J. Jantz, A. Chang, T. Vienneau, T.T. Ly, USA

713 Glycaemic control improves over 4 month use of closed loop insulin delivery in school-age children with type 1 diabetes

Poster Event B, Tuesday, 13:15 - 14:15

PS 62 Automated insulin delivery

Chair: R. Hovorka, UK

714 Clinical outcomes after 6 months of use of hybrid closed loop system in children and adults
P.I. Beato Vibora, F. Gallego-Gamero, L. Lázaro-Martín, M. Romero-Pérez, F. Arroyo-Díez, Spain

715 First home evaluation of the Omnipod Horizon™ Automated Glucose Control System in adults with type 1 diabetes
S.A. Brown, B.W. Bode, C.J. Levy, G.P. Forlenza, B.A. Buckingham, A. Criego, T.T. Ly, Omnipod Horizon Study Group, USA
716 Investigating the safety and glycaemic control of fast-acting insulin aspart with a closed-loop delivery system in adults with type 1 diabetes

717 Six-months at-home hybrid closed-loop vs manual insulin delivery with finger-stick blood glucose monitoring in adults with type 1 diabetes: a randomised controlled trial
D.N. O’Neal, S. McAuley, S. Vogrin, L. Bach, N. Cohen, P. Colman, C. Hendrieckx, J. Holmes-Walker, A. Jenkins, J. Kaye, R. McCallum, S. Stranks, S. Trawley, T. Jones, JDRF Australia Hybrid Closed Loop Study Group, Australia

718 Patient-reported outcomes reveal the potential positive impact of hybrid closed-loop systems on users’ emotional well-being
S. Suhl, J. Rost, R. Wood, USA

719 Nine months experience on hybrid closed loop system in children and adolescents previously treated with multiple daily injections
G. Petrovski, J. Campbell, F. Al Khalaf, F. Umer, K. Hussain, Qatar

Poster Event C, Wednesday, 12:00 - 13:00

PS 63 The varied use of technologies in type 2 diabetes
Chair: O. Moser, Austria

720 A comparative study based on real time analysis of physical activity and quality of sleep in early and late night eater patients with type 2 diabetes, using wearable fitness technology
S. Rastogi, D. Verma, India

721 Assessment of sensor performance of a blinded professional continuous glucose monitoring system in hospitalised patients with type 2 diabetes
722 UK 1st National Health Service (NHS) EndoBarrier service for uncontrolled diabesity: 2-year outcomes for all 62 treated patients

723 Glycaemic variability in people with impaired glucose tolerance/prediabetes
K. Douglas, N. Annamalai, P. Moore, S. Thomson, UK

724 How are the relationships between hypoglycaemia over 2 weeks and glycaemic variability different for different measurement durations of glycaemic variability?
S. Takeishi, K. Miura, Japan

725 Endobarrier in diabetes/prediabetes with obstructive sleep apnoea study: the final results

Poster Event D, Wednesday, 13:15 - 14:15

PS 64 Novel applications of technology in diabetes
Chair: B.M. Fisher, UK

726 Accuracy of a subcutaneously inserted NIR spectrometer sensor for continuous glucose, ketone and lactate measurement in interstitial fluid: proof-of-concept in pig model
D. Stocker, H. Huysmans, L. Vlaminck, S. Schauvliege, D. Delbeke, Belgium

727 Machine learning-based glucose prediction with use of continuous glucose and physical activity data: The Maastricht Study

728 The CBmeter pilot study: assessment of carotid body function aimed at early diagnosis of metabolic dysfunction
729 Determinants of glycaemic variability: role of diabetes type, average glycaemic control and hypoglycaemic therapy
R. Ajjan, K. Kao, L. Brandner, T.C. Dunn, Y. Xu, UK, USA

730 The ROTO Track® device improves rotation of insulin injections in type 1 diabetes: a proof-of-concept study
R. Tjalk-Bøggild, C.K. Klarskov, Y.H. Hamid, L. Tarnow, P.L. Kristensen, Denmark

731 GoBolus study: faster aspart impact on glycaemic control in a real-world population with type 1 diabetes on basal/bolus therapy as multiple daily injections using flash glucose monitoring
R. Ziegler, T. Danne, M. Axel Schweitzer, W. Keuthage, S. Kipper, Y. Kretzschmar, J. Simon, Germany

Poster Event E, Thursday, 12:00 - 13:00

PS 65 Novel therapies to reduce hypoglycaemia
Chair: B. De Galan, Netherlands

732 Incident and recurrent hypoglycaemia with linagliptin and glimepiride in the CAROLINA trial

733 Effect of treatment with dapagliflozin on impaired awareness of hypoglycaemia in people with type 1 diabetes
L.A. Van Meijel, C.J. Tack, B.E. De Galan, Netherlands

734 Nasal glucagon reversed insulin-induced hypoglycaemia in adults with diabetes: a pooled analysis
E. Seaquist, K. Khunti, X. Zhang, Q. Wang, Y. Takita, C.J. Child, Y. Nagai, Y. Yan, M. Matsuhisa, USA, UK, Japan

735 Ready-to-use dasiglucagon injection as a fast and effective treatment for severe hypoglycaemia
R. Aronson, T. Pieber, U. Hövelmann, J. Willard, L. Plum-Moerchel, K.M. Knudsen, R. Tehranchi, Canada, Austria, Germany, USA, Denmark
736 Nocturnal hypoglycaemia with insulin degludec and glargine U100 in patients with type 1 diabetes prone to severe nocturnal hypoglycaemia (HypoDEG): a CGM substudy

737 Dasiglucagon ameliorates postprandial hypoglycaemia after Roux-En-Y gastric bypass

738 Immunogenicity and other safety parameters following multiple SC doses of dasiglucagon
T. Pieber, B. Ajala, H. Alassad, O. Steen, D. Dahl, J. White, L. Ge-Zerbe, K.M. Knudsen, R. Tehranchi, Austria, Canada, Germany, USA, Denmark

Poster Event F, Thursday, 13:15 - 14:15
PS 66 Mechanisms and clinical consequences of hypoglycaemia in diabetes
Chair: U. Pedersen-Bjergaard, Denmark

739 Moderate hypoglycaemia affects cognitive function in people with diabetes, irrespective of diabetes type, level of glucose control or hypoglycaemic awareness

740 Attitudes to awareness of hypoglycaemia tip the balance between hypoglycaemia fear and hyperglycaemia avoidance in problematic hypoglycaemia in type 1 diabetes

741 Predictors of severe hypoglycaemias in patients with type 1 diabetes: results from the disease management programmes in North Rhine-Westphalia, Germany
S. Groos, J. Kretschmann, C. Macare, A. Weber, B. Hagen, Germany
742 People with type 1 diabetes and impaired awareness of hypoglycaemia have a delayed reaction to perform a glucose scan during hypoglycaemia: a prospective observational study

743 Development of a fear of hypoglycaemia screener: type 1 diabetes healthcare provider insight
B. Mitchell, J. Bispham, A. Hughes, J. Liu, M. Perez-Nieves, J.-L. Poon, L. Fan, A. McAuliffe-Fogarty, USA

744 Electrophysiological responses to hypoglycaemia in people with type 1 diabetes and impaired awareness of hypoglycaemia

745 How frequent experience people with type 1 diabetes worries about hypoglycaemia and hyperglycaemia and how are these worries associated with the course of glucose?
N. Hermanns, A. Schmitt, D. Ehrmann, T. Haak, B. Kulzer, Germany

746 Conversations and Reactions Around Severe Hypoglycaemia (CRASH): survey responses of people aged 65+ with type 1 diabetes and insulin-treated type 2 diabetes and caregivers

Poster Event A, Tuesday, 12:00 - 13:00

PS 67 Emerging topics in hypoglycaemia

Chair: R. McCrimmon, UK

747 Determining the minimum duration of CGM monitoring to accurately estimate time below range
N. Camerlingo, M. Vettoretti, A. Facchinetti, J.K. Mader, P. Choudhary, G. Sparacino, S. Del Favero, Italy, Austria, UK

748 Headwind: design and evaluation of a vehicle hypoglycaemia warning system in diabetes: a proof of principle study
T. Zueger, V. Lehmann, M. Kraus, S. Feuerriegel, T. Kowatsch, F. Wortmann, M. Laimer, E. Fleisch, C. Stettler, Switzerland
749 Modifiable self-management practices impact morning hypo- and hyperglycaemia in type 1 diabetes
A.J. Ahola, C. Forsblom, V. Harjutsalo, P.-H. Groop, Finland

750 Real-world estimates of severe hypoglycaemia and associated healthcare utilisation in the US: baseline results of the iNPHORM study
A. Ratzki-Leewing, S. Harris, G. Zou, B. Ryan, Canada

751 Impaired insulin secretion as an independent risk factor for unstable glycaemic variability including hypoglycaemia in patients with type 2 diabetes

752 Predictive low glucose suspend (PLGS) necessitates less carbohydrate supplementation to rescue hypoglycaemia: need to revisit current hypoglycaemia treatment guidelines
R. Jones, A. Bartee, M. Katz, A. LaLonde, E. Dassau, H. Wolpert, J.E. Pinsker, USA

753 Glycaemic control and hypoglycaemia in high-risk subgroups of people with type 1 diabetes in the SAGE study
J. Karalliedde, M. Haluzik, E. Renard, G. Bigot, J. Westerbacka, J. Seufert, UK, Czech Republic, France, Germany

754 An evaluation of the safety of pilots with insulin-treated diabetes in Europe flying commercial and non-commercial aircraft

755 Associations between variability in glycated haemoglobin (HbA\textsubscript{1c}) and glycaemic control with severe hypoglycaemia in adults with type 2 diabetes
G. Khee, H.M. Cheen, Y. Tan, P. Lim, S.-Y. Goh, M. Teh, J. Thumboo, Y. Bee, Singapore

756 Hypoglycaemia: making sense of chaotic coding in primary care computerised medical records
W. Hinton, M.D. Feher, N. Munro, H. Kasetty, B.C. Field, S. De Lusignan, UK
Poster Event B, Tuesday, 13:15 - 14:15

PS 68 Investigating diabetes distress and depression

Chair: N. Hermanns, Germany

757 Can mood and energy levels be predicted by glucose levels? The combination of continuous glucose monitoring and ecological momentary assessment
L. Priesterroth, D. Ehrmann, A. Schmitt, P. Rubertus, N. Hermanns, B. Kulzer, Germany

758 Diabetes distress is associated with gastrointestinal symptoms in type 1 diabetes

759 Diabetes distress and diabetes-specific burdens in everyday life with type 1 diabetes: a longitudinal study using EMA and CGM
A. Schmitt, D. Ehrmann, P. Rubertus, B. Kulzer, N. Hermanns, Germany

760 Low levels of soluble TWEAK and HDL-cholesterol and high levels of galectin-3 were independently associated with depression in type 1 diabetes
E.O. Melin, J. Dereke, M. Hillman, Sweden

761 The association of hyperglycaemia and insulin resistance with depressive symptoms over 4 years of follow-up: The Maastricht Study

762 An expression quantitative trait loci (eQTL) analysis of multiple tissues reveals novel genes and molecular pathways underlying type 2 diabetes and depression
Z. Balkhiyarova, J. Maina, M. Kaakinen, A. Nouwen, I. Prokopenko, UK, France
763 Associations between depression, cognitive schemas and distress: a multi-cultural study
A. Nouwen, A.S. Mocan, D. Dumitras, Z. Balkhiyarova, P. Carriedo, L. Indelicato, E. Starostina, K. Van Dam, UK, Romania, Mexico, Italy, Russian Federation

764 The relation of depression symptoms with body fat distribution and the risk of diabetes in women
L. Witek, A. Krentowska, M. Szpakowicz, N. Waszkiewicz, J. Jamiołkowski, K. Kamiński, I. Kowalska, Poland

765 Associations of food addiction with metabolic control, medical complications and depression among patients with type 2 diabetes
J. Nicolau, I. Rodríguez, K. Dotres, M. Arteaga, A. Bonet, P. Sanchís, M. Tamayo, A. Soler, R. Fortuny, L. Masmiquel, Spain

Poster Event C, Wednesday, 12:00 - 13:00

PS 69 Aspects of quality of life and well being
Chair: A. Nouwen, UK

766 Measurement invariance of the PHQ-9 between the general population and people with diabetes: results from a US and a French-Canadian population-based data set
S. Deschênes, A. Nouwen, N. Schmitz, Z. Balkhiyarova, J. Albertorio, Ireland, UK, Canada, USA

767 Associations between mood and mood swings with parameters of glycaemic control in people with type 1 diabetes: longitudinal analysis of daily data
D. Ehrmann, A. Schmitt, P. Rubertus, B. Kulzer, N. Hermanns, Germany

768 Quality of life versus glycaemic variability and time in range in people with type 1 diabetes: sub study of the RESCUE-trial
769 Variations in action plan quality among adults with type 2 diabetes in primary care
P. Kjaer, M. Dedhia, J. Parra, L. Fisher, M.B. Potter, N. Ejskjaer, S. Skovlund, D. Hessler, Denmark, USA

770 Mental health and its association with glucose-lowering medical therapy in gestational diabetes pregnancy: a prospective clinical cohort study
J.J. Puder, L. Gilbert, A. Nikolaou, D. Quansah, J.-B. Rossel, A. Horsch, Switzerland

771 Key differences with hypoglycaemic fear in people using insulin: the association with missed bolus doses exists for type 2 diabetes, but not type 1 diabetes
S.S. Edwards, X. He, J. Johnson, E.S. Meadows, W. Wang, H. Wolpert, W. Polonsky, USA

772 Impact of real-time CGM data sharing on quality of life in adults with type 1 diabetes
A.L. Fortmann, W.H. Polonsky, T. Kurtukova, USA

773 Examination of time in range as a correlate of subjective well-being in glucose sensor users with type 1 diabetes
K. Wang, C. Florissi, C. Pang, R. Wood, dQ&A, USA

774 Functioning of families bringing up children with and without type 1 diabetes
A. Lukacs, V.B. Zagraj, V. Joó, A. Kovács Bartkóné, A. Soós, L. Barkai, Hungary, Slovakia

775 Psychological impact and care needs among 9,869 people with diabetes and caregivers in Denmark
S. Skovlund, K. Arnskov, N. Ejskjaer, Denmark
PS 70 Digital health in type 2 diabetes

Chair: G. Freckmann, Germany

776 Development of a decision aid for primary care to predict the best glucose-lowering treatment after metformin for people with type 2 diabetes

777 Moderate-intensity activity may reduce both the body fat composition and pancreatic glucagon secretion in type 2 diabetes

778 Mobile health-enabled insulin titration: patient experience
A. Bastian, A. Philis-Tsimikas, H. Sandoval, A. Hottinger, L. Parks, T. Sheng, M. Clements, A. Fortmann, USA

779 Development of an evidence-based tool to facilitate individualised treatment decisions for patients with type 2 diabetes in the clinic
J.B. Buse, S. Harring, I. Holst, A.R. Kahkoska, F.K. Knop, K. Kvist, R. Pratley, USA, Denmark

780 Digital nutritional therapy in patients with type 2 diabetes: a real-world outcome analysis
A. Sutter, L. Jones, A. Ghosh, M. Schenk, Switzerland

781 Effective and safe basal-bolus insulin therapy during fasting episodes in hospitalised patients with type 2 diabetes using decision support technology
Poster Event E, Thursday, 12:00 - 13:00

PS 71 Is telehealth the answer to improving care in diabetes?
Chair: L. Heinemann, Germany

782 Type 1 diabetes: analysis of real-world insulin injection patterns
S. Catrina, N. Hartvig, A. Kaas, J. Møller, A.-C. Mårdby, J. Jendle, Sweden, Denmark

783 Predictors of ED and inpatient admissions after hypo- and hyperglycaemic events leveraging remote monitoring data of people with diabetes
W. Lu, R. James, S. Painter, B. Shah, USA

784 Technology use by age and region in adults with type 1 diabetes in the SAGE study
S. Edelman, D. Bruttomesso, K. Close, A.G. Vianna, F. Lauand, S. Brette, E. Renard, USA, Italy, Brazil, France

785 Digital intervention is effective in increasing influenza vaccination in people living with diabetes
S. Samson, J.L. Lee, R. Buzzetti, M. Clement, X. Cos, L. Ji, N. Kanumilli, D. Kerr, L. Martinez, E. Montanya, D. Müller-Wieland, C.-G. Östenson, N. Skolnik, V. Woo, L. Foschini, France, USA, Italy, Canada, Spain, China, UK, Germany, Sweden

786 Real-world validation of a smartphone app featuring blood-glucose prediction algorithms from continuous glucose monitoring data
C. Ringemann, U. Kösters, T. Wörner, D. Duke, Y. Klopfenstein, P. Lustenberger, B. Petersen, Germany, USA, Switzerland

787 Data accuracy and efficiency of an in-silico cloning procedure: results of cloning patients of a long-term free-living artificial pancreas study
E. Campos-Nanez, M. Gerber, S.D. Patek, USA

788 Evaluating the long-term cost-effectiveness of introducing a smart insulin pen in standard-of-care treatment of type 1 diabetes in Sweden
B. Hunt, Å. Ericsson, J. Gundgaard, J.B. Møller, W.J. Valentine, J. Jendle, Switzerland, Sweden, Denmark
789 Trends in the use of diabetes technologies in Germany
L. Heinemann, T. Roos, N. Hermanns, D. Ehrmann, B. Kulzer, Germany

790 Do “looper” have better glycaemic control?
T. Roos, N. Hermanns, D. Ehrmann, L. Heinemann, B. Kulzer, Germany

791 Validating a new classification method for SMBG logging habits in real world data
R. Biven, J. Wrede, R. Bankosegger, J. Kober, C. Ringemann, T. Huschto, B. Petersen, Austria, Germany

Poster Event F, Thursday, 13:15 - 14:15

PS 72 Predicting prognosis of diabetic kidney disease
Chair: C.M. Forsblom, Finland

792 Quantitative levels of serum N-glycans in type 1 diabetes and their role in kidney disease

793 The role of lipoprotein(a) in renal changes within patients with poor vs good glycaemic control

794 Urinary metabolites measured by NMR are associated with genetic variants in individuals with type 1 diabetes
E. Valo, S. Mutter, V. Aittomäki, N. Sandholm, C. Forsblom, P. Würtz, P.-H. Groop, Finland

795 Profiling of gut microbiota and plasma metabolites in persons with type 1 diabetes and kidney disease
796 Urinary cathepsin levels are predictive of the improvement of albuminuria and are associated with elevated excretion of free glucosepane
S. Brings, T. Fleming, S. Herzig, P. Nawroth, S. Kopf, Germany

797 Copeptin and renal function decline, cardiovascular events and mortality in type 1 diabetes

798 DNA damage in white blood cells is associated with progression of renal and lung fibrosis in patients with type 2 diabetes after 3 years of follow-up

799 Plasma adiponectin and changes in renal function in a cohort from the community: the prospective DESIR study
F. Fumeron, R. El Boustany, J.-P. Bastard, S. Fellahi, B. Balkau, M. Marre, N. Venteclef, G. Velho, R. Roussel, France

Poster Event A, Tuesday, 12:00 - 13:00

PS 73 Clinical aspects of diabetic kidney disease
Chair: F. Persson, Denmark

800 The association of albuminuria in youth with type 2 diabetes with in-utero type 2 diabetes exposure is not mediated through altered renal volume

801 Sex disparity in the impact of dysglycaemia on the development of glomerular hyperfiltration
Y. Nakasone, K. Yamashita, H. Koike, M. Komatsu, T. Moriya, T. Aizawa, Japan

802 Characterisation of glomerular hyperfiltration in the early type 2 diabetes: a collaborative study of population-based cohorts
Y. Shimada, Y. Nakasone, K. Yamashita, H. Koike, T. Sakuma, T. Moriya, M. Komatsu, T. Aizawa, Japan
803 Factors associated with change in estimated glomerular filtration rate differ between people with 60 or higher and those with eGFR less than 60
S. Katoh, K. Yokoyama, M. Zeniya, Y. Sakamoto, K. Utsunomiya, R. Nishimura, Japan

804 Cardiovascular autonomic dysfunction is a risk marker of future decline in kidney function in type 1 diabetes

805 Haemoglobin glycation index is associated with progression of diabetic nephropathy in patients with type 2 diabetes
T. Kim, J. Jeon, S. Lee, S. Han, H. Kim, D. Kim, K. Chun, N. Lee, J. Woo, K. Ahn, S. Baik, K.-W. Lee, Korea, Republic of

806 HbA1c followed 30 years from diagnosis and nephropathy in patients with type 1 diabetes: the Viss study
H. Arnqvist, M. Fredriksson, J. Ludvigsson, M. Nordwall, VISS Study Group, Sweden

807 Physical activity in leisure-time rather than at work or housework is associated with a lower risk of diabetic nephropathy: a multicentre cross-sectional study in China
J. Liu, S. Qiu, D. Wang, X. Guo, Z. Sun, China

Poster Event B, Tuesday, 13:15 - 14:15

PS 74 The ROCK and role of experimental kidney disease
Chair: S. Hadjadj, France

808 Pacsin2 phosphorylation at serine 313 is elevated in diabetic kidney disease

809 Lin28a attenuates renal fibrosis caused by unilateral ureteral obstruction in mice
Y. Hwang, G.-S. Jung, K.-M. Lee, Korea, Republic of
810 Differential expression of ROCK isoforms in diabetic kidney disease
K. Matoba, Y. Takeda, Y. Nagai, T. Akamine, Y. Kanazawa, T. Yokota, D. Kawanami, K. Utsunomiya, R. Nishimura, Japan

811 C-peptide affects glyoxalase 1 level in proximal tubular cells in vitro
E. Krocka, D. Galuska, K. Chalasova, L. Pacal, K. Kankova, Czech Republic

812 GLP-1 receptor agonist improves the energy metabolism of mesangial cells induced by high glucose and lipid by regulating mitochondrial homostasis
L. Liu, L. Wang, China

813 The GLP-1 receptor agonist liraglutide improves glomerular filtration rate, renal inflammation and fibrosis in the type 2 diabetic SDT fatty rat
F. Briand, M. Shinohara, E. Brousseau, Y. Kageyama, T. Sulpice, France, Japan

814 Elabela ameliorate renal lesion in type 2 diabetic mice
M. Shi, W. Gu, H. Zhang, China

815 Ntimp3 peptide: a new therapy for diabetic nephropathy
R. Menghini, V. Casagrande, G. Iuliani, S. Menini, M. Mavilio, G. Pugliese, M. Federici, Italy

Poster Event C, Wednesday, 12:00 - 13:00

PS 75 New tools to view diabetic retinopathy

Chair: R. Simo, Spain

816 Waist-height ratio is a predictor of severe retinopathy in adults with type 1 diabetes
E.B. Parente, V. Harjutsalo, C. Forsblom, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

817 Deep learning for classification of laterality of retinal fundus images
L. Díaz, D. Vistisen, M. EikaJørgensen, M. Valerius, J. Nouri Hajari, H.L. Andersen, S. Byberg, Denmark
818 Reteval electroretinography in diabetic retinopathy: real world experience and novel applications

819 Circulating metabolites in relation to presence and development of diabetic retinopathy in individuals with type 1 diabetes
V. Rotbain Curovic, T. Suvitaival, I. Mattila, K. Trošt, S. Theilade, T.W. Hansen, C. Legido-Quigley, P. Rossing, Denmark

820 The circulating lipidome in diabetic retinopathy
T. Suvitaival, V.R. Curovic, L. Ahonen, S. Theilade, T.W. Hansen, C. Legido-Quigley, P. Rossing, Denmark

821 Prevalence of diabetic retinopathy in Chinese hospitalised patients with type 2 diabetes, 2016-2018
Y. Yuan, C.C. Wang, H.S. Wang, China

Poster Event D, Wednesday, 13:15 - 14:15

PS 76 Diabetic retinopathy: screening and intervention
Chair: M. Porta, Italy

822 In South Asian diabetics a first major adverse cardiovascular event occurs after a shorter diabetes duration irrespective of the degree of retinopathy
J. Van Niel, P.H. Duijvestijn, M.H. Van Heugten, M.E. Numans, R.C. Vos, Netherlands

823 Low levels of the circulating anti-ageing hormone Klotho predict the progression of diabetic retinopathy
N. Fountoulakis, A. Corcillo, A. Sohal, F. Farrow, A. Mangelis, S. Ayis, J. Karalliedde, UK

824 Diurnal rhythms of myeloid cells infiltration in the diabetic retina
E. Beli, R. Silk, C. Evans-Molina, M. Grant, UK, USA

825 Effects of fenofibrate on hematopoietic stem/progenitor cells in patients with diabetes and retinopathy: a randomised placebo-controlled trial
B. Bonora, R. Cappellari, M. Mazzucato, A. Avogaro, G. Fadini, Italy
826 Effect of l-type calcium channel blockers on vegf secretion in retinal cells
A. Kumar, S. Mutter, M. Lehto, P.-H. Groop, on behalf of FinnDiane study group, Finland

827 DPP-IV inhibitors for treating early stages of diabetic retinopathy in an experimental model: a dose-efficacy study
H. Ramos, P. Bogdanov, J. Sampedro, M. Valeri, R. Simó, C. Hernández, Spain

Poster Event E, Thursday, 12:00 - 13:00

PS 77 Focus on diabetic foot ulcers
Chair: N. Papanas, Greece

828 Incidence of first diabetic foot ulcer, hospitalisation and mortality in people with diabetes from the primary care setting in the United Kingdom
J. Roeikjer, F. De Vries, N. Ejskjaer, J.P. Van den Bergh, P. Vestergaard, N.C. Schaper, M. Hasselstrøm, O. Klungel, J.H. Driessen, Denmark, Netherlands

829 History of diabetic foot ulcer increases the risk of recurrence in a long-term follow-up cohort in Germany
K. Ogurtsova, S. Morbach, B. Haastert, A. Icks, Germany

830 Malnutrition in a diabetic foot ulcer population: prevalence and relation to ulcer severity and outcome
P. Lauwers, J. Hendriks, A. Verrijken, K. Van Dessel, F. Peiffer, C. De Block, E. Dirinck, Belgium

831 Factors associated with progression to ulceration in a high risk diabetic foot population
M. Oroko, L. Hall, UK
832 Diagnosing osteomyelitis in diabetes foot ulceration

833 Role of custom made insoles in prevention of neuropathic diabetic foot ulcer recurrence
F. Kyrillos, A. Salah, E. EL-Adawy, H. Gawish, Egypt

Poster Event F, Thursday, 13:15 - 14:15

PS 78 Hypertension and vascular disease

Chair: J. Karalliedde, UK

834 Abrupt blood pressure elevation buffering, linkage with microcirculation and vascular Ca$^{2+}$ channel blockade, implication to treat arterial hypertension in diabetes
J. Gmitrov, Slovakia, Japan

835 Kidney injury is associated with hypertension in the Renin-AAV uninephrectomised db/db mouse model of diabetic nephropathy
M.V. Østergaard, I.R. Sørensen, A.A. Pedersen, T. Secher, J.L. Skytte, F.E. Sembach, J. Jelsing, L.N. Fink, N. Vrang, Denmark

836 Comparative effects of medications for type 2 diabetes on blood pressure: a systematic review and network meta-analysis of 192 trials
I. Avgerinos, T. Karagiannis, P. Kakotrichi, C. Mantsiou, G. Tousinas, A. Manolopoulos, A. Liakos, K. Kitsios, A. Tsapas, E. Bekiari, Greece, UK

837 Patiromer to enable spironolactone in patients with resistant hypertension and chronic kidney disease (AMBER): results in the prespecified subgroup with diabetes
P. Rossignol, S. Arthur, A. Conrad, G. Cornea, W.B. White, B. Williams, R. Agarwal, France, USA, Switzerland, UK
838 Benfotiamine and alpha-lipoic acid: effects on arterial stiffness and heart rate variability parameters in patients with diabetic cardiac autonomic neuropathy
V. Serhiyenko, L. Serhiyenko, V. Segin, A. Serhiyenko, Ukraine

839 Afro-caribbean ethnicity predicts significant decline in renal function in people with type 1 diabetes
A. Mangelis, S. Ayis, N. Fountoulakis, J. Collins, S.M. Thomas, J. Karalliedde, UK

840 The emergence of peripheral arterial disease in persons with diabetes in Dar es Salaam, Tanzania, an emerging time bomb in Africa
Z.G. Abbas, J.K. Lutale, L.K. Archibald, Tanzania, United Republic of, USA

Poster Event A, Tuesday, 12:00 - 13:00

PS 79 Cure the pain of diabetic neuropathy
Chair: V. Spallone, Italy

841 Mean amplitude of glycaemic excursions is superior to time in range in detecting cardiovascular autonomic neuropathy in newly diagnosed and drug-naive type 2 diabetic patients
X. Yang, Y. Zhu, W. Xu, J. Weng, China

842 The treatment of erectile dysfunction in younger men with type 2 diabetes is up to 4 times higher than the equivalent non-diabetes population

843 Efficacy and safety of an oral dispersible tablet containing vitamin B$_{12}$ after 12 months of administration in patients with diabetic neuropathy and good glycaemic control

844 Dapagliflozin and measures of cardiovascular autonomic function in patients with type 2 diabetes
L. Ang, K. Kidwell, B. Dillon, J. Reiss, V. Leone, K. Mizokami-Stout, R. Busui, USA

208
845 Glycyrrhizic acid ameliorates dysfunction of peripheral nerve in streptozotocin-induced diabetic rats
Y. Xu, M. Shi, H. Zhang, China

846 Treatment of painful diabetic neuropathy using Frequency Rhythmic Electro Magnetic neural Stimulation: effectiveness in daily practice
B.P. Imholz, J. Heijster, A.A. Tahrani, A. Kooy, Netherlands, UK

Poster Event B, Tuesday, 13:15 - 14:15

PS 80 Understanding clinical neuropathy
Chair: T. Varkonyi, Hungary

847 Understanding the structural changes in diabetic neuropathy
M. Le Marois, R. Longuespee, D. Schwarz, P. Nawroth, T. Fleming, Germany

848 Haptics for the evaluation of tactile dysfunction in type 1 diabetes
F. Picconi, A. Moscatelli, C. Ryan, S. Ciotti, B. Russo, F. Lacquaniti, S. Frontoni, Italy

849 Diabetic neuropathy impacts upper and lower limb muscle strength endurance in patients with type 2 diabetes: a controlled study
B.L. Van Eetvelde, B. Lapauw, P. Poot, K. Vanden Wyngaert, H. Demeyer, D. Cambier, P. Calders, Belgium

850 Dupuytrens contracture as a predictor of peripheral polyneuropathy or diabetic foot syndrome
M. Mieczkowski, T. Głażewski, E. Rosiak, E. Maj, B. Mrozikiewicz-Rakowska, O. Rowiński, L. Czupryniak, Poland

851 Association of long-term air pollution with prevalence and incidence of distal sensorimotor polyneuropathy: KORA F4/FF4 Study
852 Circulating messenger RNA of the protein Myelin Protein Zero as a non-invasive marker for sensory loss of the upper extremity in patients with type 2 diabetes

853 Impaired vibration perception thresholds precede nephropathy and macrovascular disease, but not retinopathy in patients with type 1 diabetes
E. Lindholm, L. Ekman, T. Elgzyri, M. Löndahl, L. Dahlin, Sweden

854 Corneal confocal microscopy detects small fiber neuropathy in patients with severe hypertriglyceridaemia and type 1 diabetes
L. D’Onofrio, A. Kalteniece, M. Ferdousi, I. Petropoulos, G. Ponirakis, R. Buzzetti, R. Malik, H. Soran, Italy, UK, Qatar

Poster Event C, Wednesday, 12:00 - 13:00

PS 81 From artificial intelligence to treatment of diabetic foot

Chair: N.C. Schaper, Netherlands

855 The artificial neuronal network model for six-month prognosis in diabetic foot syndrome
A.A. Poradzka, L. Czupryniak, Poland

856 Epidemiology of lower extremity amputations in individuals with diabetes in Austria, 2014-2017
F. Aziz, B. Reichardt, H.-P. Dimai, C. Caren Sourij, D. Reichart, G. Köhler, H. Sourij, Austria

857 The influence of diabetes duration on the dynamics of foot deformity prevalence in people with diabetes
V. Urbančič-Rovan, I. Štotl, Slovenia
858 Cold atmospheric pressure plasma for accelerated wound healing in diabetic foot: the prospective, randomised, placebo-controlled KPW-Trial

859 Impact of immunosuppressive therapy on healing and clinical course of diabetic foot ulcers
M. Dubsky, R. Bem, A. Nemcova, V. Fejfarova, J. Husakova, A. Jirkovska, V. Woskova, Czech Republic

Poster Event D, Wednesday, 13:15 - 14:15

PS 82 From biomarkers to genetics of diabetic kidney disease
Chair: S.M. Marshall, UK

860 Relationship between genetic risk score for kidney function and diabetic kidney disease progression
D. Galuška, Czech Republic

861 The panel of circulating cytokines in patients with type 2 diabetes and different patterns of chronic kidney disease
V.V. Klimontov, A.I. Korbut, N.B. Orlov, M.V. Dashkin, Russian Federation

862 Trends in the effects of pre-transplant diabetes on mortality and cardiovascular events after kidney transplantation
S. Han, J. Jeon, N. Lee, K. Lee, Korea, Republic of

863 Markers of early kidney damage and corneal nerve regeneration in patients after simultaneous pancreas-kidney transplantation

864 The relationship between circulating Dickkopf-1 levels and urine albumin excretion in type 2 diabetic patients
E. Mao, C. Kan, N. Hou, N. Huang, Y. Liu, F. Han, X. Sun, China
Poster Event E, Thursday, 12:00 - 13:00

**PS 83 Treatment of NAFLD and diabetes: from food to pharmacology**

Chair: M. Krebs, Austria

**865 Effect of high-intensity interval training on liver fat in adults with type 1 diabetes**

**866 Effects of fructose restriction on liver steatosis (FRUITLESS): a double-blind randomised controlled trial**

**867 Feasibility of a very low calorie diet to achieve significant weight loss in patients with advanced non-alcoholic fatty liver disease**

**868 Comparative efficacy of anti-diabetic agents on nonalcoholic fatty liver disease in patients with type 2 diabetes: a network meta-analysis**
C. Liu, China

**869 Oral insulin-induced reduction in liver fat content in type 2 diabetes patients with nonalcoholic steatohepatitis**
M. Kidron, S. Perles, R. Kaloti, R. Ghantous, S. Sanduka, Y. Malaadi, R. Safadi, Israel

**870 Novel long-acting GLP-1/GIP/Glucagon triple agonist (HM15211) exhibits anti-inflammatory and -fibrotic effects in AMLN/TAA induced liver inflammation and fibrosis mice**
H. Jo, Korea, Republic of

**871 Anti-fibrotic effect of a novel long-acting GLP-1/GIP/Glucagon triple agonist (HM15211) in BDL-induced liver fibrosis mice**
J. Kim, H. Jo, J. Lee, S. Lee, H. Kwon, J. Lee, S. Bae, S. Lee, I. Choi, Korea, Republic of
872 Effects of long-term therapy with testosterone on liver metabolism over 11 years in men with hypogonadism and type 2 diabetes: real-world data from a registry study
U. Wissinger, K.S. Haider, A. Haider, G. Doros, A. Traish, F. Saad, Germany, USA

Poster Event F, Thursday, 13:15 - 14:15

PS 84 Mechanisms and prevalence of NAFLD
Chair: M. Macedo, Portugal

873 Effect of PNPLA3 rs738409 genotype and gestational diabetes history on fasting glucagon levels in early NAFLD
Á. Nádasdi, V. Gál, J. Harreiter, K. Rosta, A. Kautzky-Willer, P. Igaz, A. Somogyi, G. Firneisz, Hungary, Austria

874 Regulating mesencephalic astrocyte-derived neurotrophic factor protects hepatic lipid accumulation
M. He, C. Wang, L. Zhang, China

875 Itch E3 ubiquitin ligase is involved in BCAA catabolism and NAFLD
V. Casagrande, G. Iuliani, M. Mavilio, M. Federici, R. Menghini, Italy

876 Multiparametric magnetic resonance imaging of the liver demonstrates the prevalence of steatohepatitis in patients with type 2 diabetes

877 Multiparametric magnetic resonance imaging of the pancreas and liver in patients with type 2 diabetes

878 Impact of the duration of type 2 diabetes on the screening for nonalcoholic fatty liver disease and advanced fibrosis
S. Ciardullo, I. Sala, T. Monti, E. Muraca, E. Bianconi, R. Cannistraci, G. Lattuada, G. Perseghin, Italy
879 The classification of type 2 diabetes according to insulin resistance and beta cell function preservation and their different patterns of complications
Y. Cho, S. Seo, D. Seo, S. Ahn, S. Hong, S. Kim, Korea, Republic of

880 The role of insulin resistance and NAFLD in the cardiometabolic risk profile of type 1 diabetes
J. Mertens, J. Weyler, E. Dirinck, L. Vonghia, S. Francque, C. De Block, Belgium

881 Hepatic steatosis in type 2 diabetes: a survey on prevalence and response to innovative treatments in Italy
M. Morieri, A. Avogaro, G. Fadini, on behalf of the DARWIN-T2D Network of the Italian Diabetes Society, Italy

Poster Event A, Tuesday, 12:00 - 13:00

PS 85 Lipids everywhere: lipid metabolism in the liver and the heart
Chair: J. Boren, Sweden

882 Relationship between hepatic and systemic angiopoietin-like 3, hepatic Vitamin D receptor expression and non-alcoholic fatty liver disease in obesity
I. Barchetta, F.A. Cimini, C. Chiappetta, L. Bertoccini, V. Ceccarelli, D. Capoccia, M. Gaggini, C. Di Cristofano, G. Silecchia, F. Leonetti, A. Gastaldelli, M.G. Cavallo, Italy

883 Relationship between de novo lipogenesis and serum sex hormone-binding globulin in humans

884 Remnant cholesterol in individuals with type 2 diabetes: correlation to components of the metabolic syndrome and triglyceride-glucose index in the DIVE and DPV registries
885 Impact of lipoprotein receptors on cardiac lipotoxicity and diabetic heart metabolic rewiring
G. Norata, L. Da Dalt, M. Audano, N. Mitro, A. Barbuti, A. Catapano, Italy

886 Paraoxonase-1 and Apolipoprotein J as biomarkers in dysmetabolism: a cluster analysis

887 Association between atherogenic index of plasma and coronary artery calcification progression in Korean adults
M. Na, Korea, Republic of

888 Achievement of ESC/EAS lipid treatment goals with evolocumab in patients with type 2 diabetes: analyses of the Banting and Berson trials
A.J. Lorenzatti, J. Chen, M. Monsalvo, H. Wang, J.G. López, R.S. Rosenson, Argentina, China, USA

889 Patients with type 2 diabetes and familial hypercholesterolaemia are at very high cardiovascular risk: data from the HELLAS-FH registry
E.N. Liberopoulos, C.V. Rizos, I. Skoumas, K. Tziomalos, L. Rallidis, V. Kotsis, M. Doumas, E. Skalides, G. Kolovou, A. Garoufi, I. Koutagiar, M. Papagianni, E. Kiouri, C. Antza, M.S. Elisaf, Greece

Poster Event B, Tuesday, 13:15 - 14:15

PS 86 All about coronary arteries and diabetes
Chair: A. Avogaro, Italy

890 Glucose lowering medications use according to cardiac complications in patients with type 2 diabetes in real clinical practice
O. Vikulova, A. Zheleznyakova, M. Isakov, M. Shestakova, Russian Federation

891 Screening asymptomatic patients with diabetes for coronary stenoses suitable for revascularisation: a retrospective evaluation of ESC-EASD guidelines
N. Berkane, E. Cosson, S. Pinto, T. Ciunganu, P. Valensi, France
892 Preoperative cardiac diagnostics in bariatric patients with diabetes: results of a cohort of 258 cases
B.L. Stillhard, T.B. Ngo, M. Slawik, B. Woelnerhanssen, R. Peterli, Switzerland

893 High-sensitivity C-reactive protein has a different prognostic impact in acute myocardial infarction patients with and without diabetes
N. Cosentino, M. Rondinelli, C. Lucci, J. Campodonico, V. Milazzo, M. De Metrio, M. Rubino, G. Marenzi, S. Genovese, Italy

894 Is conventional two-dimensional ultrasound still relevant in asymptomatic patients with type 2 diabetes? DIACAR: a prospective observational study

895 Relationship between triglycerides-glucose index and silent coronary artery disease in asymptomatic patients with type 2 diabetes
M.-T. Nguyen, A. Sultan, E. Cosson, A. Avignon, P. Valensi, France

896 Prevalence and risk factors of coronary heart disease in Chinese hospitalised patients with type 2 diabetes, 2013-2018
C. Wang, Z. Xie, X. Huang, Z. Wang, H. Shangguan, S. Wang, China

897 The impact of acute glycaemic fluctuations on left ventricular systolic function in insulin-treated type 2 diabetes
Poster Event C, Wednesday, 12:00 - 13:00

PS 87 Lipids and glucose: not so good for the heart
Chair: J. Petrie, UK

898 Machine learning algorithms for prediction of progression of vascular complications in type 1 diabetes based on achievement of treatment targets
I. Salna, R. Krikova, L. Pahirko, E. Salna, J. Sokolovska, Latvia

899 Micro- and macrovascular complications in relation to lipid-lowering drug usage among Danish type 2 diabetes subjects
M.E. Jorgensen, M.B. Dunbar, P.F. Rønn, J.S. Knudsen, B. Carstensen, F.I. Persson, H. Amadid, Denmark

900 Real world risk of major outcomes for type 2 diabetes with stable coronary artery disease without prior MI or stroke and THEMIS-like patients using SNDS French claims database

901 Periostin: a new predictor of diabetic coronary artery calcification
Y. Zhu, China

902 Dietary advanced glycation endproducts in the mechanisms linking proteins glycosylation pattern, microbiota, and metabolic inflammation

903 Relation between skin AGEs and the coronary artery calcium score: results of the PRECISED study
A. Planas, O. Simó-Servat, J. Bañeras, C. Hernández, I. Ferreira, R. Simó, Spain
904 Association of advanced glycation end-products with cardiovascular risk parameters in type 1 diabetes individuals with diabetic nephropathy

905 Change in extent of coronary artery disease in people with and without diabetes undergoing coronary angiography
K.V. Kiburg, A.I. MacIsaac, V. Sundararajan, R.J. MacIsaac, Australia

Poster Event D, Wednesday, 13:15 - 14:15

PS 88 Cardiac complications: of mice, rats and cells
Chair: J. Škrha, Czech Republic

906 Metformin inhibits proliferation of fibro-adipogenic progenitors residing in the human heart

907 Effects of palmitate and oleate on apoptosis, autophagy and enzymes of fatty acid metabolism in human cardiac progenitor cells from control and diabetic subjects
R. Schipani, R. D’Oria, C. Caccioppoli, A. Leonardini, A. Natalicchio, S. Perrini, A. Cignarelli, L. Laviola, F. Giorgino, Italy

908 The secretome of visceral adipose cells induces apoptosis of cardiac progenitor cells in human obesity: protective effects of the SGLT2 inhibitor dapagliflozin
S. Porro, S. Perrini, C. Caccioppoli, R. D’Oria, D. Paparella, A. Braun, V.A. Genchi, R. Schipani, G. Palma, A. Cignarelli, A. Natalicchio, L. Laviola, F. Giorgino, Italy

909 Transcription factor Tcf21 regulates fibrosis in ischaemic or hyperglycaemic state
Y. Baba, Y. Mawezawa, T. Minamizuka, N. Kondo, M. Koshizaka, Y. Kobayashi, K. Yokote, Japan
910 Chronic treatment with the AMP kinase activator PXL770 improves cardiac and renal function in diabetes related cardiorenal syndrome

911 GIP suppresses diabetic cardiomyopathy via attenuation of hyperglycaemia-induced oxidative stress generation

912 Cardiomyocyte-specific overexpression of VEGFB isoforms is linked to an expanded coronary vasculature that amplifies the cardiovascular action of insulin
R. Shang, B. Hussein, B. Rodrigues, Canada

913 Treatment with the SGLT2 inhibitor empagliflozin improves cardiac function in rats with chronic heart failure

Poster Event E, Thursday, 12:00 - 13:00

PS 89 Atherosclerotic complications: stemming from cells to the kidney
Chair: P. Kempler, Hungary

914 Conditioned medium from dental pulp stem cells directly activate endothelial cells to promote all process of angiogenesis
M. Kato, S. Tsunekawa, N. Nakamura, E. Miura-Yura, Y. Yamada, Y. Hayashi, Y. Morishita, T. Himeno, M. Kondo, Y. Kato, H. Kamiya, K. Naruse, J. Nakamura, Japan

915 Glucose-dependent insulinotropic polypeptide (GIP) inhibits macrophages foam cell formation via suppression of CD36 expression
916 Down-regulation of FUNDC1-mediated mitophagy aggravates AGEs-induced VSMCs calcification by triggering oxidative stress
X. Sun, N. Liu, China

917 Liraglutide prevents CD34+ stem cell dysfunction induced by high glucose concentrations
M. Vinci, V. Vigorelli, G. Pompilio, S. Genovese, Italy

918 A dipeptidyl peptidase-4 (DPP-4) inhibitor suppresses foam cell formation of macrophages through the suppression of CD36 in type 1 diabetes

919 Elevated non-albuminuric proteinuria is a significant predictor of the progression of carotid artery atherosclerosis in type 2 diabetes, independent of albuminuria
Y.-E. Kim, S. Lee, H. Kim, M. Lee, B.-W. Lee, Korea, Republic of

920 Non-albuminuric diabetic kidney disease in type 1 diabetes: incidence of major vascular outcomes over a 10-year follow-up observational study
M. Garofolo, E. Gualdani, D. Lucchesi, R. Giannarelli, R. Miccoli, P. Francesconi, G. Penno, S. Del Prato, Italy

921 Chronic kidney disease is a type 2 diabetes risk equivalent in patients with established coronary artery disease

922 Cardiorenal disease is the most common first cardiovascular renal disease manifestation associated with increased mortality risk in early stage of type 2 diabetes patients
N. Morita, T. Kadowaki, I. Komuro, P. Yi, S. Okami, Y. Kidani, T. Yajima, Japan
Poster Event F, Thursday, 13:15 - 14:15

PS 90 Stiff arteries and how to avoid them
Chair: M. Mráz, Czech Republic

923 Hyperglycaemia and arterial stiffness across two generations
S. Taimour, Sweden

924 Arterial stiffness in patients with different stages of dysglycaemia
J. Cederqvist, K. Rådholm, M. Persson, G. Engström, J. Engvall, C. Östgren, Sweden

925 Carotid intima-media thickness and arterial stiffness in silent cerebral microbleeds: a study in neurologically asymptomatic individuals with type 1 diabetes

926 HbA1C variability is associated with arterial stiffness in type 1 diabetes
A. Tynjälä, C. Forsblom, V. Harjutsalo, P.-H. Groop, D. Gordin, the FinnDiane Study Group, Finland, USA

927 Atherogenic index of plasma is an independent predictor of arterial stiffness in healthy, Korean men and women
C. Ahn, Korea, Republic of

928 Relationship between arterial stiffness and left ventricular diastolic function in patients with type 2 diabetes
S. Kurioka, Japan

929 Association between polymorphisms in the Sirtuin 1 gene and the risk of coronary artery disease in Chinese Han type 2 diabetes patients
N. Gu, L. Tong, D. Yu, X. Ma, J. Li, X. Guo, J. Zhang, China
930 Comparison of two recent ceramide-based coronary risk prediction scores: CERT and CERT-2

931 The impact of parental risk factors on the risk of stroke in type 1 diabetes

932 Association between lipoprotein-associated phospholipase A2 and lower extremity arterial disease in type 2 diabetes
X. Xu, Q. Wei, China

Poster Event A, Tuesday, 12:00 - 13:00

PS 91 Cardiac function and dysfunction
Chair: A. Flyvbjerg, Denmark

933 Use of loop diuretics and outcomes in patients with type 2 diabetes: findings from the EMPA-REG OUTCOME trial

934 Subclinical echocardiographic indices of myocardial dysfunction in South Asian Indians with type 2 diabetes and glucose intolerance

935 Changes in patterns of physical activity and risk of heart failure in newly diagnosed diabetes
I. Jung, H. Kwon, S.-E. Park, K.-D. Han, E.-J. Rhee, W.-Y. Lee, Korea, Republic of

936 The effect of metformin on GFD-15 levels in patients with heart failure and type 2 diabetes
E. Hoskova, J. Kopecky, J. Veleba, K. Velebova, V. Melenovsky, T. Pelikanova, Czech Republic
937 Non-alcoholic steatohepatitis is associated with diabetic cardiomyopathy in type 2 diabetes

938 Non-invasive assessment of changes in cardiac microvascular function in persons with type 2 diabetes

939 Relationship between resting heart rate and left ventricular dysfunction in a asymptomatic population with type 2 diabetes (DIACAR Study)
I. Banu, Y. Antakly Hanon, G. Chatellier, A. Benhamou, P. Garcon, A. Voican, Y. Moeuf, C. Oriez, M. Aroulanda, P. Abassade, M. Komajda, R. Cador, O. Dupuy, France

Poster Event B, Tuesday, 13:15 - 14:15

PS 92 Cardiovascular complications in humans through and through
Chair: K. Khunti, UK

940 Metabolites of the mitochondrial energy production are associated with future cardiovascular morbidity and mortality in type 1 diabetes

941 Cardiovascular events and mortality in patients newly diagnosed with type 2 diabetes with and without multimorbidity: a real world observational study
B. Coles, F. Zaccardi, C. Hvid, M.J. Davies, K. Khunti, UK, Denmark

942 Sleep apnoea syndrome and macrovascular complications in patients with type 2 diabetes
A. Nishimura, T. Kasai, K. Matsumura, S. Kikuno, K. Nagasawa, K. Narui, Y. Mori, Japan

943 Cardiovascular and pharmacological profile of individuals with type 2 diabetes in primary care in Copenhagen from 2001 to 2015
F. Persson, M. Kriegbaum, B. Lind, M.K. Grand, V. Siersma, C.L. Andersen, Denmark
944 Effect of antidiabetic agents on major adverse cardiovascular events across different age group categories: a meta-analysis of cardiovascular outcome trials
E. Bekiari, T. Karagiannis, E. Athanasiadou, A. Tsapas, Greece, UK

945 Contemporary use of diabetes medications with a cardiovascular indication in adults with type 2 diabetes: a secondary analysis of the multinational CAPTURE study
S. Vencio, A. Alguwaihes, J.L. Arenas Leon, F. Bayram, P. Darmon, G. Dieuzeide, N. Hettiarachchige, T. Hong, M.S. Kaltoft, C. Lengyel, O. Mosenzon, G.T. Russo, S. Shirabe, K. Urbancova, T. Davis, Brazil, Saudi Arabia, Mexico, Turkey, France, Argentina, Denmark, China, Hungary, Israel, Italy, Japan, Czech Republic, Australia

946 Exposure-weighted scoring for metabolic syndrome and the risk of myocardial infarction and stroke: a nationwide population-based study
S.-H. Lee, E. Lee, K. Han, Y.-M. Park, H.-S. Kwon, K.-H. Yoon, M. Kim, Korea, Republic of, USA

947 Metabolic syndrome in patients with type 2 diabetes and atherosclerotic cardiovascular disease (ASCVD): post hoc analyses of the EMPA-REG OUTCOME trial
J.P. Ferreira, S. Verma, F. David, A.P. Ofstad, S. Lauer, I. Zwiener, J.T. George, C. Wanner, B. Zinman, S.E. Inzucchi, France, Canada, Norway, Germany, USA

Poster Event C, Wednesday, 12:00 - 13:00

PS 93 Diabetes and neoplasia
Chair: R.C. Bonadonna, Italy

948 Metformin modulates proliferation and inflammatory responses in activated pancreatic stellate cells and macrophages: implication for pancreatic cancer in type 2 diabetes
M. Zhi, A. Lugea, S.J. Pandol, L. Li, China, USA

949 CA 19-9, miR-200 and GIP in patients with diabetes and pancreatic cancer
P. Škrha, A. Hořínek, M. Anděl, P. Frič, J. Škrha, Czech Republic
950 Single-cell RNA sequencing points to altered IL-10 signalling and metabolism in hyperinsulinaemia-driven pancreatic cancer initiation
A. Zhang, T.J. De Winter, X. Hu, L. Hong, J.L. Kopp, J.D. Johnson, Canada

951 Statin use and pancreatic cancer from comprehensive meta-analysis of 29 studies
B. Dong, L. Li, China

952 Excess risk of thyroid cancer in individuals with type 1 diabetes compared to those without diabetes in Finland: nationwide study
S. Mäkimattila, V. Harjutsalo, C. Forsblom, P.-H. Groop, Finland

953 Metabolic health is the determinant factor for incident colorectal cancer in the obese population: a nationwide population-based cohort study

Poster Event D, Wednesday, 13:15 - 14:15

PS 94 Contemplating cognitive dysfunction in diabetes
Chair: S. Amiel, UK

954 The silent occurrence of cerebral small vessel disease in middle-aged patients with type 2 diabetes
F. Fang, R. Cao, Q. Luo, R.-B. Ge, M.-Y. Lai, J.-Y. Yang, M. Kang, Y.-F. Wang, China

955 Alzheimer’s disease impacts the hypothalamus and induces energetic homeostasis deregulation in mice

956 Chronic hyperglycaemia induces APP phosphorylation at Thr668 and regulates Aβ metabolism via RAS/JNK signalling pathways in vivo and in vitro
S. Tian, R. Huang, S. Wang, China
957 Balance capability and smell identification are associated with cognitive function in middle-aged persons with type 2 diabetes

958 Lower free triiodothyronine is a risk factor of mild cognitive impairment in type 2 diabetes patients with euthyroidism
H. Zhang, W. Zhu, S. Wang, China

Poster Event E, Thursday, 12:00 - 13:00

PS 95 Endothelial cell, circulation and the heart
Chair: N. Marx, Germany

959 Weight loss-induced improvements of endothelial function and cardiovascular risk factors are maintained with exercise, liraglutide or the combination

960 Low-molecular weight fluorophores in type 2 diabetes: associations with diabetes complications and effects of fenofibrate in the FIELD study

961 Sedentary behaviour and physical activity are associated with endothelial dysfunction and low-grade inflammation: the Maastricht Study
962 A mixed nutrient preload attenuates glucose-induced endothelial dysfunction in individuals with abnormal glucose tolerance
L. Nesti, A. Mengozzi, S. Frascerra, S. Baldi, D. Tricò, A. Natali, Italy

963 Tenascin-c deficiency improves cardiac and vascular function in diabetic mice

964 Cardiac and endocrine responses to hyperinsulinaemic hypoglycaemia in healthy and diabetic Göttingen minipigs

965 Oscillating glucose and constant high glucose induce different damage on human stenotic derived aortic valve endothelial cells
P. Poggio, V. Alfieri, V. Loi, V. Myasoedova, P. Songia, D. Moschetta, I. Massaiu, V. Valerio, M. Rondinelli, S. Genovese, Italy

966 Proteomic analysis of hyperglycaemic effects in GLUT4-overexpressing rat cardiomyoblasts: short vs long-term hyperglycaemia
B. Stratmann, B. Eggers, Y. Mattern, K. Marcus, D. Tschoepe, Germany

967 Investigation of peripheral and cerebral microcirculation and visceral-subcutaneous adipose tissue distribution in type 2 diabetes and obesity
Poster Event F, Thursday, 13:15 - 14:15

PS 96 Tradition? No! Non-traditional complications of diabetes

Chair: A. Solini, Italy

968 Bone fractures in individuals with type 2 diabetes aged ≥ 50 years in the DPV registry: effect of glycaemic control and treatment
A. Eckert, J. Mader, M. Altmeier, A. Gillessen, D. Dallmeier, V. Shah, C. Heyer, B. Hartmann, R. Holl, Germany, Austria, USA

969 Sites of fragility fractures in older women and men with and without type 2 diabetes
I. Tasci, B. Basgoz, T. Dogan, M.I. Naharci, Turkey

970 Predicting incident hip fractures in Chinese people with type 2 diabetes using A to G’s: development and validation of a prediction tool
D.T. Lui, C. Lee, W. Chow, C.H. Fong, D.C. Siu, Y. Woo, K.S. Lam, Hong Kong

971 The role of myozenin-1 in diabetic sarcopenia

972 Adverse muscle composition in type 2 diabetes: results from the large UK Biobank imaging study
J. Linge, O. Dahlqvist Leinhard, Sweden

973 Multi-organ metabolomic profiles of high fat-high sucrose fed mice identify the lung as one of the most metabolic remodelled organs in obesity

974 Empagliflozin and obstructive sleep apnoea: exploratory analysis from the EMPA-REG OUTCOME trial
975 Insomnia independently increases the risk of hospitalisation due to multiple morbidities in older adults with type 2 diabetes: a prospective study
S. Qiu, T.C. O, W.M. Chan, L.C. Mak, H.W. Mang, J.C. Chan, A.P. Kong, China

976 Repressed hypoxia inducible factor-1 in diabetes aggravates aspergillus fumigatus infection
X. Zheng, Y. Ye, Y. Chen, J. Sun, H. Zhang, W. Li, W. Wang, S.-B. Catrina, Sweden, China

977 Mannose-binding lectin and risk of infections in type 2 diabetes: a cohort study of 7,305 patients in the Danish DD2 cohort
A. Gedebjerg, R.W. Thomsen, A.D. Kjaergaard, R. Steffensen, J.S. Nielsen, J. Rungby, S. Friborg, I. Brandslund, S. Thiel, H. Beck-Nielsen, H.T. Sørensen, T.K. Hansen, M. Bjerre, Denmark
Presenting authors of oral and poster presentations

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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:

**AstraZeneca:**

**EFSD Future Leaders Mentorship Programme for Clinical Diabetologists supported by AstraZeneca**

The major goal of this Programme is to identify and promote the advancement of the next generation of leading clinical diabetologists in Europe by refining their skills, keeping them in the field of diabetes and facilitating their appointment to senior academic positions at major European institutions.

**Boehringer Ingelheim:**

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

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

**Japan Diabetes Society:**

**EFSD/JDS Reciprocal Travel Research Fellowships**

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

**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.
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 Type 2 Diabetes 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.

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 though significant career development awards over 5 years and fostering their development into the leaders of tomorrow.

Sanofi:

**EFSD/Sanofi Pilot Research Grants for Innovative Measurement of Diabetes Outcomes**
These grants are intended to help develop innovative means to document and validate novel parameters indicative of long-term benefits for patients with diabetes.

**EFSD/Sanofi European Diabetes Research Programme in Macrovascular Complications of Diabetes**
This Programme has been created to stimulate and accelerate European research on macrovascular complications of diabetes. Grants are offered for basic or clinical mechanistic studies.

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](http://www.EuropeanDiabetesFoundation.org)
SYMPOSIA
ON THE OCCASION
OF THE
56th EASD ANNUAL MEETING
OF THE
EUROPEAN ASSOCIATION
FOR THE STUDY
OF DIABETES
IDF EUROPE SYMPOSIUM:
THE FUTURE OF THE ROLE OF DIABETES NURSING

Monday, 21 September 2020 14:30 - 15:45

Villach Hall

Chair: Dr. Niti Pall (Chair IDF Europe)
Moderator: Mr. Bastian Hauck

Key note lecture:
The role of the diabetes nurse across Europe – Today and tomorrow

Panel Discussion 1:
Shifting tasks to explore new ways of providing diabetes care - The place of the diabetes nurse

Panel Discussion 2:
Harnessing the digital transformation – The role of diabetes nurses
NOVEL BIOMARKERS FOR TYPE 2 DIABETES

Tuesday, 22 September 2020 07:30 - 08:30

Villach Hall

Chairs: Paolo Pozzilli, IT and David Leslie, UK

Fahd Al-Mulla, KW:
Lipid-related biomarkers for type 2 diabetes

Nick Wareham, UK:
Molecular biomarkers for type 2 diabetes

Ernesto Maddaloni, IT:
Wrist circumferences for prediction of type 2 diabetes and cardiovascular disease

Under the auspices of:
Campus Bio-Medico, University of Rome, IT
Barts and the London School of Medicine and Dentistry, Queen Mary University of London, UK
Dasman Diabetes Research Institute, Kuwait City, Kuwait
D&CVD STUDY GROUP SYMPOSIUM: NAVIGATING THROUGH THE COVID-19 PANDEMIC AND NEW LESSONS FROM CARDIOVASCULAR OUTCOME TRIALS

Tuesday, 22 September 2020 10:30 - 12:00

Villach Hall

Chairs: Baruch Itzhak, IS and Eberhard Standl, DE

Antonio Ceriello, IT:
Welcome

Antonio Ceriello, IT:
Issues of cardiovascular risk management in people with diabetes in the Covid-19 pandemic

Paul Valensi, FR:
Preventing heart failure in diabetes: integrating messages from the VERTIS trial

Oliver Schnell, DE:
Integrating results of recent cardiovascular outcome trials into strategies for the prevention of cardiovascular disease in diabetes

General discussion and close
EGIR STUDY GROUP SYMPOSIUM:
NEW ASPECTS OF INSULIN RESISTANCE

Tuesday, 22 September 2020  12:30 - 14:00

Villach Hall

Chairs: Caroline Bonner, FR and John Petrie, UK

Geltrude Mingrone, IT:
Diabetes and obesity increase Covid 19 severity

Kurt Hojlund, DK:
The regulation of GDF15 and FGF21 by exercise, nutrition and metformin in humans with and without type 2 diabetes

Vincent Prevot, FR:
Tanycytes, master regulators of liraglutide hypothalamic uptake and metabolic actions
PCDE SYMPOSIUM:
A DISEASE STATE APPROACH TO THE
PHARMACOLOGICAL MANAGEMENT OF TYPE 2
DIABETES IN PRIMARY CARE: A POSITION
STATEMENT BY PRIMARY CARE DIABETES EUROPE

Tuesday, 22 September 2020 14:30 - 15:30

Villach Hall

Samuel Seidu, UK:
Background, rationale and methodology

Kamlesh Khunti, UK:
Categorization of risk phenotypes in type 2 diabetes from the primary care perspective

Stefan Jansson, SE:
Consensus recommendations

Xavier Cos, ES:
Practical implications of the guidance in various countries across Europe
IHSG SYMPOSIUM: 
THE CLINICAL IMPACT OF HYPOGLYCAEMIA

Wednesday, 23 September 2020  
08:00 - 09:30

Villach Hall

Rory McCrimmon, UK:  
Welcome

Kamlesh Khunti, UK:  
The global burden of hypoglycaemia

Linda Gonder-Frederick, US:  
Impaired awareness of hypoglycaemia

Stephanie Amiel, UK:  
Reductions in hypoglycaemia: how much is enough?

IHSG Steering Committee:  
Meet the Experts Panel discussion and Q&A

The regulation of GDF15 and FGF21 by exercise, nutrition and metformin in humans with and without type 2 diabetes

Rory McCrimmon, UK:  
Close
DESG SYMPOSIUM: DIABETES IN COVID-19 ERA: A CHALLENGE AND OPPORTUNITY FOR PEOPLE WITH DIABETES’ EDUCATION

Wednesday, 23 September 2020 10:00 - 11:30

Villach Hall

Mohamed Hassanein, UK:
How did we all cope: the patient, the family and the diabetes service?

Florian Toti, AL:
People with diabetes their needs and fears during lockdown. Results of a questionnaire with diabetic patients in Albania.

Evgenya Patrakeeva, RU:
COVID-19 psychological impact and outcomes in patients with diabetes

Tsvetalina Tankova, BG:
Role of technology in diabetes control during COVID-19

Round Table: What have we learnt during COVID-19 crisis. What can we do more? Better?

Moderator: Jean-Philippe Assal, CH and Tatjana Milenkovic, MK

Participants: Joao Filipe Raposo, PT; Anna Majchrzak, PL; Banshi Saboo, IN; Dario Rahelic, HR; Elena Shelestova, GE; Line Kleinbreil, FR

Florian Toti, AL and Joao Filipe Raposo, PT:
Closure
Wednesday, 23 September 2020 12:00 - 13:30

Villach Hall

Chairs: Amalia Gastaldelli, IT and Paula Macedo, PT

Michele Vacca, UK:
TGF/BMP signaling, stellate cells and NASH progression: is it just a matter of fat and scars? The BMP8B paradigm

Christopher Byrne, UK:
The intestinal microbiome and NAFLD: is modification of the gut microbiota a therapeutic option?

Sven Francque, BE:
Current and future pharmacological treatment options for NAFLD/NASH
Wednesday, 23 September 2020  14:00 - 15:30

Villach Hall

Chair: Michael Maresh, UK

The DPSG Study Group - an introduction

Shakila Thangaratinam, UK:
Weight management interventions and maternal and fetal outcomes - the iWIP programme

Katrien Benhalima, BE:
First trimester screening and early diagnosis of GDM

Ute Schaefer-Graf, DE:
Current obstetric issues in diabetes

Discussion and conclusions
RMSG SYMPOSIUM:
MATHEMATICAL METABOLIC MODELLING -
TOWARDS INTRINSIC PREDICTION OF RISK OF
DEVELOPING INSULIN RESISTANCE AND DIABETIC
VASCULAR COMPLICATIONS

Wednesday, 23 September 2020  16:00 - 17:00

Villach Hall

Chairs: Paul J. Thornalley, QA and Naila Rabbani, QA

Nicola Lai, IT:
Integrated computational and experimental strategies to study
metabolic dysfunction associated to insulin resistance and type 2
diabetes

Alberto de la Fuente, QA:
Mathematical modelling of metabolic dysfunction associated with
vascular complications of diabetes

Panel Discussion
Thursday, 24 September 2020 10:00 - 11:30

Villach Hall

Chairs: Solomon Tesfaye, UK and Peter Kempler, HU

Tamás Várkonyi, HU:
Gastrointestinal motility in diabetes – any connection between symptoms and findings?

Rodica Pop-Busui, US:
Epidemiology of diabetic neuropathy

Vincenza Spallone, IT:
Cardiovascular autonomic neuropathy

Rajiv Gandhi, UK:
Mortality in diabetic neuropathy
Thursday, 24 September 2020 12:00 - 13:30

Villach Hall

Dominik Pesta, DE and Richard Bracken, UK:
Welcome address and introduction

Brendan Egan, IE:
Reductions in dietary carbohydrate content in type 2 diabetes: theory, practice and potential interactions with exercise

3 short talks
PSAD SYMPOSIUM:
CELEBRATING 25 YEARS OF ADVANCEMENT IN
RESEARCH AND PRACTICE IN THE PSYCHOSOCIAL
ASPECTS OF DIABETES

Thursday, 24 September 2020 14:00 - 15:30
Villach Hall

Chair: Arie Nouwen, UK

Frank Snoek, NL:
25 years of psychosocial research in diabetes

Maartje de Wit, NL:
Contributions of psychosocial research to the understanding and integration of the social context of diabetes in care

Thomas Kubiak; DE:
Psychosocial aspects of diabetes technology
Symposia
INDUSTRY PROGRAMME ON THE OCCASION OF THE VIRTUAL EASD ANNUAL MEETING 2020
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Status July 2020, details are subject to change.
### Symposia Overview

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### Monday, 21 September 2020

Status July 2020, details are subject to change.
## Industry Symposia Schedule

### Tuesday, 22 September 2020

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Status July 2020, details are subject to change.
Morning Session

09:00-10:45 Beyond complexity: Integrating care to simplify management

- Opening video - The integrated future of care: Technologies as enablers for improving patient care and experience
- Keynote address: Remodeling diabetes care in the age of public health crises
- Focus: Making integrated care a reality
- Many hands make light work: The integrated care team
- Living with diabetes: Communication and clinical care in the age of telemedicine
- Q&A

Organised by: Sanofi
MONDAY, 21 SEPTEMBER 2020  
VILLACH HALL

TRANSLATING CLINICAL EVIDENCE FOR SENSOR-BASED GLUCOSE MONITORING AND TECHNOLOGICAL INNOVATIONS TO THE FRONT LINES OF DIABETES PRACTICE

Morning Session

Welcome and Introduction

10:30-10:40  Applying Sensor-Based Technology to Optimize Blood Glucose Time-in-Range (TIR), Health Metrics Across the Comprehensive Spectrum of Diabetes Care: Establishing a New, Guideline- and Evidence-Based Standard of Care for Persons with Diabetes
   Tadej Battelino, Program Chair

10:40-10:55  Applying Sensor-Based Glucose Monitoring and Telemedicine to Optimize Real World Impact and Diabetes Management in the Age of Covid-19—What Have the Studies Taught Us? How Do We Apply Them to Diabetes Practice Now?
   Partha Kar

10:55-11:10  A Practical Roadmap for Using Registry Data and Trial-Based Evidence to Guide Use of Sensor-Based, Glucose Monitoring: Focus on Results from the Swedish National Diabetes Register (NDR) to Optimize Multi-Dose Insulin (MDI) Therapy in Persons with Diabetes
   Katarina Eeg-Olofsson

11:10-11:25  Translating Guidelines and Meta-Analysis Trials to Guide Practical Aspects of Diabetes Care: Using Sensor-Based Glucose Monitoring to Improve Time in Range (TIR) for Persons with Diabetes on Non-Insulin Regimens
   Richard Bergenstal

PROGRAM CHAIR’S SUMMARY AND VISION STATEMENT FOR CGM ACROSS THE SPECTRUM OF DIABETES CARE

11:25-11:30  The Foundational Role of Sensor-Based Glucose Monitoring Technology—How Should Clinicians and Patients Collaborate to Maximize Blood Glucose Time in Range and Improve Safety and Health Outcomes in Persons with Diabetes?
   Tadej Battelino, Program Chair

Organised by: Abbott
Beyond the Old Paradigms: Towards Precise Solutions in Diabetes Management - Session 2

Morning Session

11:00-12:30 Beyond generalization: Making insulin management relevant to individuals

- T1D unmet needs: Therapeutic strategies for addressing suboptimal glycemic control
- Generational change: Basal insulin use in children and adolescents with T1D
- Confident self-management: Helping individuals take control
- Achieving control with insulin in special populations
- Q&A

Organised by: Sanofi
Lunch Session

12:00-12:05 Welcome and introductions
Kamlesh Khunti

12:05-12:10 Minding the gap in patient care: Do we act on what we know?
Learnings from a patient
Patient case

12:10-12:55 Evidence with SGLT2 inhibitors in the cardiorenal-metabolic setting
Paola Fioretto
Silvio Inzucchi
Mark Petrie

12:55-13:10 SGLT2 inhibitors in clinical practice
Kamlesh Khunti

13:10-13:25 Why don’t we act on what we know?
Simon Moore

13:25-13:55 Can SGLT2 inhibitors bridge the gap in patient care?
Panel discussion and Q&A
All faculty

13:55-14:00 Time to close the meeting...and the gap
Kamlesh Khunti
Silvio Inzucchi

Organised by: AstraZeneca
PERSONALISING THE MANAGEMENT OF DIABETES AND ITS COMPlications

Lunch Session

Chairs: Antonio Ceriello (Italy) & Rolf Hinzmann (Roche Diabetes Care Mannheim, Germany)

12:30-12:35 Introduction by chairs
Antonio Ceriello & Rolf Hinzmann (Roche Diabetes Care Mannheim, Germany)

12:35-12:53 Integrated Personalised Diabetes Management (iPDM):
Diabetes outcomes through an open ecosystem
Speaker: tbd

12:53-13:11 How machine learning can improve glucose predictions and
personalised decision support in everyday therapy
Speaker: Tina Wörner (Roche Diabetes Care Mannheim, Germany)

13:11-13:29 Clinical evidence shows: Micropumps demonstrate new
opportunities to optimise insulin pump therapy
Speaker: Nick Oliver (London, UK)

13:29-13:47 Personalised cardiovascular risk management: Pivotal in
preventing complications in people with diabetes
Speaker: James Januzzi (Boston, MA, USA)

13:47-13:55 Questions and answers

13:55-14:00 Closing by chairs

Organised by: Roche Diabetes Care GmbH
MONDAY, 21 SEPTEMBER 2020 12:30-14:00
INNSBRUCK HALL

IMPLEMENTATION AND REAL-WORLD PRACTICE OF RTCGM IN REMOTE VISITS BEFORE, DURING AND AFTER COVID-19

Lunch Session

12:30-12:35  Introduction
Keri Leone MS, RD, CDCES; Sr. Director, Global Medical Science & Education; Dexcom, Inc. (USA)

12:35-13:05  Implementing Real Time CGM in Remote Pediatric Clinics - Learning from University of Gothenburg
Prof. Peter Adolfsson; Clinical Professor Dept. of Pediatrics; University of Gothenburg (SE)

Prof. Troels Krarup Hansen; Center Director Steno Diabetes Center; Aarhus University; (DK)

13:35-14:00  Faculty Discussion/Questions and Answers

Organised by: DexCom
MONDAY, 21 SEPTEMBER 2020

12:30-14:30

VIENNA HALL

ADVANCING DIABETES TREATMENT:
NEW STANDARDS IN PATIENT-CENTERED CARE
INCREASING OPPORTUNITY FOR INDIVIDUALISED CARE WITH AN ORAL GLP-1RA

Lunch Session

12:30-12:33  Welcome  Chair: Filip Knop (Denmark)

12:33-12:38  Innovation in the GLP-1RA landscape: expanding options for individualised care  Tina Vilsbøll (Denmark)

12:38-12:48  An oral GLP-1RA in the incretin landscape  Juris Meier (Germany)

12:48-12:58  Navigating the evolving treatment landscape: head-to-head comparisons  Richard Pratley (USA)

12:58-13:08  The vulnerable patient: the use of semaglutide in renal impairment and late stage disease  Ofri Mosenzon (Israel)

13:08-13:16  Diving deeper into the PIONEER programme: exploring different patient populations  Stephen Bain (UK)

13:16-13:25  Clinical perspectives: an oral GLP-1RA to individualise diabetes treatment  All

13:25-13:30  Break

Organised by: Novo Nordisk A/S
MONDAY, 21 SEPTEMBER 2020
12:30-14:30
VIENNA HALL

ADVANCING DIABETES TREATMENT:
NEW STANDARDS IN PATIENT-CENTERED CARE
BEYOND GLYCAEMIC CONTROL: NEW DIRECTIONS IN PATIENT-CENTERED CARE

Afternoon Session

Welcome back
Chair: Filip Knop (Denmark)

13:30-13:38 Across the continuum of care: efficacy with once-weekly semaglutide
Alice Cheng (Canada)

13:38-13:52 Cardiovascular benefit: a closer look at semaglutide and the evolution of treatment guidelines
David Strain (UK)

13:52-14:00 Clinical perspectives: implications of evolving guidelines for patient care
All

INNOVATIONS IN INSULIN TREATMENT:
NEW OPPORTUNITIES FOR PATIENT-CENTERED CARE

14:00-14:07 Glycaemic variability with modern basal insulins: have we conquered hypoglycaemia?
Eden Miller (USA)

14:07-14:22 Raising the bar for innovation with weekly basal insulin
Julio Rosenstock (USA)

14:22-14:30 Clinical perspectives: what does innovation in insulin therapy mean for patient outcomes?
All

Organised by: Novo Nordisk A/S
Beyond the status quo: Solutions for people with uncontrolled T2D

- The road well-travelled: Dysglycemia in T2D and the challenges in getting to goal
- Another path: The rationale for fixed-ratio combination therapies
- Along the way: Clinical outcomes with fixed-ratio combinations in people with T2D
- Living with diabetes: Managing the patient experience with fixed-ratio combinations
- Q&A
Afternoon Session

14:30-14:35  Welcome and introduction
EMPA-REG OUTCOME: 5 years later
Silvio Inzucchi and Sarah Jarvis

14:35-14:55  Metformin should remain as „foundation therapy“ for the majority of patients with T2D
• YES (Francesco Giorgino)
• NO (Nikolaus Marx)
Moderator: Silvio Inzucchi
Debate: Francesco Giorgino and Nikolaus Marx

14:55-15:15  The preferred second-line therapy in patients with T2D is:
• An SGLT2 inhibitor (Silvio Inzucchi)
• A GLP-1 RA (Francesco Giorgino)
Moderator: Merlin Thomas
Debate: Silvio Inzucchi and Francesco Giorgino

15:15-15:35  In the treatment of patients with T2D, the focus should be on:
• The heart (Nikolaus Marx)
• The kidney (Merlin Thomas)
Moderator: Silvio Inzucchi
Debate: Nikolaus Marx and Merlin Thomas

15:35-15:45  The PCP perspective on patient care
Sarah Jarvis

15:45-16:00  Panel discussion and Q&A
Moderator: Silvio Inzucchi
Francesco Giorgino, Sarah Jarvis, Nikolaus Marx and Merlin Thomas

16:00  Final remarks and close
Silvio Inzucchi

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance
MONDAY, 21 SEPTEMBER 2020
14:30-16:00
KLAGENFURT HALL

BAQSIMI: REVOLUTION FOR SEVERE
HYPOGLYCAEMIA RESCUE

Afternoon Session

14:30-14:35  Welcome and Introductions
Tadej Battelino (Slovenia)

14:35-15:15  Severe Hypoglycaemia Myths and BAQSIMI Clinical Profile
Tadej Battelino (Slovenia)

15:15-15:40  BAQSIMI: Setting Your Patients Up For Success
Jennifer Sherr (United States)

15:40-15:55  Panel Discussion
All Faculty

15:55-16:00  Closing Remarks
Tadej Battelino (Slovenia)

This symposium is restricted to HCPs.

Organised by: Lilly
MINIMED™ 780G SYSTEM: IMPROVING CLINICAL OUTCOMES WHILE REDUCING DIABETES MANAGEMENT BURDEN

Afternoon Session

Chair: Prof Ohad Cohen

14:30-14:50 The Need for Automating Insulin Delivery
Ohad Cohen

14:50-15:05 Algorithm and functioning of the MiniMed™ 780G System
Ali Dianaty

15:05-15:25 Clinical Outcomes
Tadej Battelino

15:25-15:45 HCPs’ and Users’ Experience
Amir Tirosh

15:45-16:00 Q&A Session
Ohad Cohen

Organised by: Medtronic International Trading Sàrl
SCIENCE TO PATIENTS: DEEPER INTO THE CARDIO-RENAL-METABOLIC CONTINUUM

Afternoon Session

14:30-14:35 Welcome
Elisabeth Björk (AstraZeneca)
Chair: Jiten Vora (UK)
Co-chair: Nayyar Iqbal (AstraZeneca)

14:35-15:10 SGLT2 inhibitors, GLP-1 receptor agonists, and metabolism: What’s new in 2020?
• The role of glucagon and ketones
• Mimicry of the intermittent fasted state
• The role of mTOR and SIRT1/AMPK
• Metabolic effects of combining SGLT2 inhibitors with GLP-1 receptor agonists

John Buse (USA)
Angelo Avogaro (Italy)

15:10-15:35 Closing in on mechanisms of renoprotection
• Mechanisms of renoprotection of SGLT2 inhibitors and GLP-1 receptor agonists
• Mechanistic effects of SGLT2 inhibitor monotherapy with and without ACE inhibitors

Hiddo Lambers Heerspink (Netherlands)

15:35-16:00 Understanding the mechanistics and outstanding challenges in heart failure
• Brief overview of HFpEF - clinical characteristics, pathophysiological mechanisms, and ongoing clinical trials
• Deep dive into mechanisms of risk reduction in HFrEF with SGLT2 inhibitors

Javed Butler (USA)

16:00-16:25 Panel discussion
Chair: Jiten Vora (UK)

16:25-16:30 Closing remarks
Jiten Vora (UK)
Regina Fritsche-Danielson (AstraZeneca)

Organised by: AstraZeneca
Afternoon Session

Chairs: Sam Dagogo-Jack (US) and Chris Cannon (US)

Faculty: David Cherney (CAN), Kim Connelly (CAN), Francisco Cosentino (SWE)

14:30-14:35 Chair Welcome and Opening Remarks
Co-Chairs: Sam Dagogo-Jack (US) and Chris Cannon (US)

Scientific Spotlight:
14:35-14:50 Understanding the Effects of Hyperglycemia on the Kidney and the Heart
Speaker: David Cherney (CAN)

14:50-15:05 Understanding the Interplay Between Kidney Physiology and the Heart
Speaker: Kim Connelly (CAN)

15:05-15:20 The Mechanisms Underlying the Cardio-renal Crosstalk: A Conversation Among Specialties
Speakers: David Cherney (CAN), Kim Connelly (CAN), Sam Dagogo-Jack (US)

Adressing Clinical Questions:
15:20-15:35 VERTIS CV - An Overview of Results for the Treatment of Patients With Type 2 Diabetes and Cardiovascular Disease
Speaker: Sam Dagogo-Jack (US)

15:35-15:50 VERTIS CV: New Insights in Heart Failure Understanding
Speaker: Francisco Cosentino (SWE)

15:50-16:05 Kidney Results from VERTIS CV
Speaker: David Cherney (CAN)

16:05-16:25 Learning From VERTIS CV - A Faculty Roundtable Discussion
Speakers: All Faculty

16:25-16:30 Final Comments and Summary
Chairpersons

Organised by: MSD
Beyond medicine: Disruptive technologies and metrics

- Changing management paradigms: Understanding modern metrics
- Living with diabetes: Understanding the data to help change behavior
- Improving outcomes: What time-in-range means for patients
- Disrupting the status quo: Towards greater integration with new technologies
- Q&A
- The integrated future of care: Technologies as enablers for improving patient care and experience (repeat of opening video)

Organised by: Sanofi
MONDAY, 21 SEPTEMBER 2020

ADVANCING DIABETES TREATMENT:
NEW STANDARDS IN PATIENT-CENTERED CARE
INCREASING OPPORTUNITY FOR INDIVIDUALISED CARE WITH AN ORAL GLP-1RA

Afternoon Session

16:00-16:03 Welcome
Chair: Filip Knop (Denmark)

16:03-16:08 Innovation in the GLP-1RA landscape: expanding options for individualised care
Tina Vilsbøll (Denmark)

16:08-16:18 An oral GLP-1RA in the incretin landscape
Juris Meier (Germany)

16:18-16:28 Navigating the evolving treatment landscape: head-to-head comparisons
Richard Pratley (USA)

16:28-16:38 The vulnerable patient: the use of semaglutide in renal impairment and late stage disease
Ofri Mosenzon (Israel)

16:38-16:46 Diving deeper into the PIONEER programme: exploring different patient populations
Stephen Bain (UK)

16:46-16:55 Clinical perspectives: an oral GLP-1RA to individualise diabetes treatment
All

16:55-17:00 Break

Organised by: Novo Nordisk A/S
Afternoon Session

Welcome back
Chair: Filip Knop (Denmark)

17:00-17:08  Across the continuum of care: efficacy with once-weekly semaglutide
             Alice Cheng (Canada)

17:08-17:22  Cardiovascular benefit: a closer look at semaglutide and the evolution of treatment guidelines
             David Strain (UK)

17:22-17:30  Clinical perspectives: implications of evolving guidelines for patient care
             All

INNOVATIONS IN INSULIN TREATMENT:
NEW OPPORTUNITIES FOR PATIENT-CENTERED CARE

17:30-17:37  Glycaemic variability with basal insulins: have we conquered hypoglycaemia?
             Eden Miller (USA)

17:37-17:52  Raising the bar for innovation with weekly basal insulin
             Julio Rosenstock (USA)

17:52-18:00  Clinical perspectives: what does innovation in insulin therapy mean for patient outcomes?
             All

Organised by: Novo Nordisk A/S
NEW EVIDENCE & BEST PRACTICES DRIVING RTCGM AS STANDARD OF CARE DURING PREGNANCY AND ACROSS THE LIFESPAN

Afternoon Session

17:00-17:05  Introduction  
Keri Leone MS, RD, CDCES; Sr. Director, Global Medical Science & Education; Dexcom, Inc. (USA)

17:05-17:35  Best Practices of Using Real Time CGM During Pregnancy  
Prof. Helen Murphy; Clinical Professor Dept. of Medicine; University of East Anglia (UK)

17:35-18:05  New Evidence Proving rtCGM as Standard of Care Across the Lifespan  
Prof. Hood Thabit; Consultant Diabetologia & Honorary Sr. Lecturer; Manchester University (UK)

18:05-18:30  Faculty Discussion/Questions and Answers

Organised by: DexCom
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<thead>
<tr>
<th>Time</th>
<th>Session Title</th>
<th>Speaker</th>
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<tbody>
<tr>
<td>18:45-18:50</td>
<td>Welcome and introduction</td>
<td>John Deanfield</td>
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<td>Chair: John Deanfield (UK)</td>
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<tr>
<td>18:50-19:00</td>
<td>New insights into CV risk in obesity</td>
<td>Erin Bohula</td>
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<td>(US)</td>
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<td>19:00-19:15</td>
<td>Impact of weight loss on CV risk</td>
<td>John Wilding</td>
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<td>(UK)</td>
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<td>19:15-19:30</td>
<td>Future perspectives on treating CVD in patients with obesity</td>
<td>Stephen Nicholls</td>
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<td>(Australia)</td>
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<tr>
<td>19:30-19:45</td>
<td>Panel discussion and meeting closure</td>
<td>All</td>
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</tbody>
</table>

Organised by: Novo Nordisk A/S
Afternoon Session

Chair: Matthias Blüher

18:45-19:00 Welcome and introduction
Clinical inertia and treatment intensification
Matthias Blüher

19:00-19:15 VERIFY results in the context of disease pathogenesis
Helmut Brath

19:15-19:30 Early combination treatment in practice
Juliana Chan

19:30-19:40 Q&A panel discussion
Chair moderated

19:40-19:45 Closing remarks
Matthias Blüher

WHO BENEFITS MOST FROM AN EARLY COMBINATION TREATMENT APPROACH IN TYPE 2 DIABETES?

Organised by: Novartis Pharma AG
Afternoon Session

18:45-18:55 Why to screen for hypogonadism in men with prediabetes/diabetes
Describe the epidemiology and burden of hypogonadism in obese, prediabetic/diabetic men. And an overview of the recommendations for screening.

Geoff Hacket

18:55-19:10 Can testosterone treatment prevent Diabetes?

Gary Wittert

19:10-19:25 Can testosterone treatment reverse Diabetes?
Present the evidence of remission of diabetes.

Sandeep Dhinsda

19:25-19:40 Transforming the evidence into clinical practice
Putting the evidence into perspective, rapidly describe which patients will benefit from Testosterone based on the evidence. And discuss how is the best way to apply this evidence in clinical practice.

Geoff Hacket

19:40-19:45 Questions
Geoff Hacket

Organised by: BAYER
PIONEERING PATHWAYS FOR 2ND-GENERATION BASAL INSULIN USE: ADVANCING THE CONVERSATION

Afternoon Session

<table>
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<tr>
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<tr>
<td>18:45</td>
<td>Welcome and introduction</td>
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<tr>
<td>18:50</td>
<td>Let's talk hypoglycemia: an under-recognized unmet need in people on basal insulin</td>
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<tr>
<td>19:05</td>
<td>Deepening the dialogue: the clinical effects of 2nd-generation basal insulins</td>
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<tr>
<td>19:20</td>
<td>Beyond the current conversation: the path towards better patient care and outcomes</td>
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<tr>
<td>19:35</td>
<td>Tell us more (Panel discussion)</td>
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</tbody>
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Organised by: Sanofi
WEDNESDAY, 23 SEPTEMBER 2020

VILLACH HALL

METFORMIN - THE HEART OF THE MATTER

Afternoon Session

18:45-19:45

Introduction and chair
G. Schernthaner

The big picture: The effect of metformin on T2DM MACE
C. Bailey

The closeup: The effect of metformin on the myocardium
H. Wiggers

Organised by: Merck KGaA
THE MINERALOCORTICOID RECEPTOR: A NOVEL TARGET IN CHRONIC KIDNEY DISEASE AND TYPE 2 DIABETES

Afternoon Session

18:45-18:50  Welcome and introduction
              Peter Rossing

18:50-19:10  CKD in T2D: how serious is the problem?
              Paola Fioretto

19:10-19:30  Inflammation and fibrosis: how does it affect CKD progression and is it a suitable treatment target?
              Katherine Tuttle

19:30-19:50  Targeting the mineralocorticoid receptor to reduce CKD in T2D: is it time for a new treatment paradigm?
              Peter Rossing

19:50-20:10  Q&A
              All

20:10-20:15  Close
              Peter Rossing

Organised by: BAYER
UPDATE ON LIPID MANAGEMENT IN DIABETES

Afternoon Session

18:45-18:48 Introductions and Program Overview
• Introduce faculty and agenda
• How contemporary CVOTs including REDUCE-IT have changed the landscape of managing patients with diabetes at high risk of ASCVD events
• Why this program is important (new data and strategies to improve outcomes for millions)

Deepak L. Bhatt, Chair

18:48-19:08 What’s New in Lipid Management
• Update on LDL reduction; focus on patients with diabetes
• Update on TG-lowering; focus on patients with diabetes

Deepak L. Bhatt

19:08-19:28 Update on Diabetes Management
• Update on therapeutics
• Update on guidelines: AACE, ADA, segue into EU guidelines for Dirk

Yehuda Handelsman

19:28-19:48 Practical Considerations for Cardioprotection in Diabetes
ESC guidelines. Treating patients with diabetes for primary and secondary prevention; glucose lowering and lipids for ASCVD prevention. Agents that work well together, combinations to avoid, strategic considerations to optimize outcomes, lack of benefit of dietary supplement OM-3s

Dirk Müller-Wieland

19:48-20:00 Panel Discussion
Deepak L. Bhatt with Faculty

20:00-20:15 Q&A-Live
Deepak L. Bhatt with Faculty

Organised by: Amarin Pharma, Inc.
Afternoon Session

Chair: Tina Vilsbøll (Steno Diabetes Center, Denmark)

18:45-18:55 Welcome and objectives
Chair: Tina Vilsbøll

18:55-19:15 Competing risk in Diabetes: Cardiovascular and renal risk - which is more important?
Oliver Schnell

19:15-19:35 Diabetic Kidney disease: hidden or ignored culprit in Type 2 diabetes
David Wheeler

Tina Vilsbøll

19:55-20:15 Panel discussion
Tina Vilsbøll, Oliver Schnell and James Burton

Organised by: Mundibiopharma Limited
BUILDING BRIDGES: SIMPLIFYING AND PERSONALIZING DIABETES MANAGEMENT AND CARE

Afternoon Session

18:45-18:50 Welcome and introduction
18:50-19:05 Mind the gap: Understanding differences in efficacy and real-world effectiveness
19:05-19:20 Reducing the diabetes burden: Principles and practicalities of precision and simplification
19:20-19:35 Building bridges through therapeutic simplification
19:35-19:45 Q&A

Organised by: Sanofi
### Afternoon Session

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<td><strong>Welcome and introduction</strong></td>
<td>Chair: Stephen Gough (Denmark)</td>
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<tr>
<td>18:50-19:05</td>
<td><strong>Rethinking solutions to reduce the burden of hypoglycaemia</strong></td>
<td>Simon Heller (UK)</td>
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<tr>
<td>19:05-19:20</td>
<td><strong>Digital technology for better outcomes with insulin therapy</strong></td>
<td>Liana Billings (US) and Christophe De Block (Belgium)</td>
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<tr>
<td>19:20-19:35</td>
<td><strong>Simplifying complexity to overcome clinical inertia in insulin therapy</strong></td>
<td>Martin Haluzik (Czech Republic)</td>
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<td>19:35-19:40</td>
<td><strong>Break</strong></td>
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<tr>
<td>19:40-19:55</td>
<td><strong>Redefining diabetes management with a once-weekly insulin</strong></td>
<td>Harpreet Bajaj (Canada)</td>
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<td>19:55-20:15</td>
<td><strong>Panel discussion and closing remarks</strong></td>
<td>All faculty</td>
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Organised by: Novo Nordisk A/S
Afternoon Session

Chairs: Chris Cannon (US), Rich Pratley (US)
Faculty: David Cherney (CAN), Francisco Cosentino (SWE)

18:45-18:50 Opening Remarks
Co-Chairs: Chris Cannon (US), Rich Pratley (US)

18:50-19:05 VERTIS CV - An Overview of Results for the Treatment of Patients With Type 2 Diabetes and Cardiovascular Disease
Speaker: Chris Cannon (US)

19:05-19:20 VERTIS CV Cardiovascular and Heart Failure Results: Adding to Our Clinical Understanding From a Cardiologist’s View
Speaker: Francisco Cosentino (SWE)

19:20-19:35 VERTIS CV Kidney Results: Adding to Our Clinical Understanding From a Nephrologist’s View
Speaker: David Cherney (CAN)

19:35-19:50 VERTIS CV Results: Adding to Our Clinical Understanding From an Endocrinologist’s View
Speaker: Rich Pratley (US)

19:50-20:10 Learnings From VERTIS CV - A Cross Specialty Faculty Roundtable Discussion
Speakers: Faculty

20:10-20:15 Closing Remarks
Co-Chairs: Chris Cannon (US), Rich Pratley (US)

Organised by: MSD
TUESDAY, 22 SEPTEMBER 2020

ENHANCING PATIENT CARE
INTO THE FUTURE

Morning Session

10:30-10:50  Rapid-fire questions: overcoming treatment inertia and optimising patient care for T2D in clinical practice
Melanie Davies (UK) and John Buse (USA)

10:50-11:00  Q&A
All faculty

Organised by: Novo Nordisk A/S

TUESDAY, 22 SEPTEMBER 2020

CARDIOMETABOLIC COLLABORATION:
CURRENT REALITY AND CHALLENGES -
AND A WAY FORWARD

Morning Session

11:30-11:35  Where are we now? The unmet needs of cardiometabolic patients (a case story)
Stephan Jacob and Matthew Cavender

11:35-11:42  Where are we now? (the endocrinologist perspective - based on the case story)
Stephan Jacob (Germany)

11:42-11:49  The road to success (the cardiologist’s perspective - based on the case story)
Matthew Cavender (US)

11:50-12:00  Panel discussion
All

Organised by: Novo Nordisk A/S
TUESDAY, 22 SEPTEMBER 2020 13:00-13:30
Industry „Meet the Expert“-Sessions

PERSPECTIVES FROM DIFFERENT SPECIALITIES ON THE JOINT CLINICAL PRACTICE GUIDELINES FOR THE MANAGEMENT OF NON-ALCOHOLIC FATTY LIVER DISEASE

Lunch Session

13:00-13:20  Overview of the joint EASL-EASD-EASO recommendations of the diagnosis, management and follow-up of patients with NAFLD
Hannele Yki-Jarvinen (Finland) and Philip Newsome (UK)

13:20-13:30  Q&A
All faculty

Organised by: Novo Nordisk A/S

TUESDAY, 22 SEPTEMBER 2020 14:00-14:30
Industry „Meet the Expert“-Sessions

NEW LEARNINGS FROM THE VERTIS CV OUTCOME TRIAL FOR OUR PATIENTS WITH TYPE 2 DIABETES AND CARDIOVASCULAR DISEASE

Afternoon Session

Faculty: Samuel Dagogo-Jack (US)

14:00-14:05  Opening Remarks

14:05-14:28  New Learnings from the VERTIS CV Outcome Trial for Our Patients with Type 2 Diabetes and Cardiovascular Disease

14:28-14:30  Closing Remarks

Organised by: MSD
KDIGO MEET-THE-EXPERT SESSION

Afternoon Session

15:00-15:10 Management of Diabetes in CKD  
Presenter: Peter Rossing

15:10-15:20 Living with Diabetes and CKD  
Presenter: Tami Sadusky

15:20-15:30 Q&A

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance
SEVERE METABOLIC SYNDROME BASED ON A SINGLE MISSING HORMONE? SHARPEN YOUR EYES FOR LIPODYSTROPHY

Morning Session

Chair: Martin Wabitsch

10:30-11:00 Martin Wabitsch
Prof. Martin Wabitsch will discuss the challenges to finalize a diagnosis of lipodystrophy, focusing on the clinical presentation of partial lipodystrophy patients. The presentation is intended to increase the awareness and stimulate the diagnostic suspect, especially in these patients.

Organised by: AMRYT PHARMACEUTICALS

ACCELERATING CHANGE WITH SGLT2 INHIBITORS TO IMPROVE OUTCOMES IN T2D

Morning Session

11:30-12:00 The evidence around cardiorenal disease in Type 2 diabetes
Naresh Kanumilli (UK)

Taking action to reduce cardiorenal morbidity through SGLT2 inhibition
Francesco Giorgino (Italy)

Q&A

Organised by: AstraZeneca
Meet the Expert Sessions

Lunch Session

Chair: Giovanni Ceccarini

13:00-13:30 Giovanni Ceccarini
Prof. Giovanni Ceccarini will address the treatment options for lipodystrophy, discussing results with traditional diabetological and lipid lowering therapies, and illustrate the efficacy and safety profile of leptin replacement therapy with metreleptin, focusing on partial lipodystrophy patients.

Organised by: AMRYT PHARMACEUTICALS

WEDNESDAY, 23 SEPTEMBER 2020 13:00-13:30
THE CLINICAL AND METABOLIC COMPLEXITY OF LIPODYSTROPHY, OLD CHALLENGES AND NEW TREATMENT OPPORTUNITIES

WEDNESDAY, 23 SEPTEMBER 2020 14:00-14:30
IS BASAL-BOLUS STILL THE GO-TO OPTION FOR THE UNCONTROLLED T2D BASAL INSULIN PATIENT?

Lunch Session

14:00-14:08 Effectiveness of basal-bolus in T2D
Gurpreet Anand (Switzerland)

14:08-14:23 Alternatives to basal-bolus in T2D: basal insulin + GLP-1 RA synergies
Adie Viljoen (UK) & Gurpreet Anand (Switzerland)

14:23-14:30 Q&A
All faculty

Organised by: Novo Nordisk A/S
INTRODUCING THE 7-DAYS WEAR MEDTRONIC™ EXTENDED INFUSION SET & RESERVOIR

Afternoon Session

15:00-15:05 The need for longer Infusion sets duration
Ohad Cohen

15:05-15:17 Technology behind the 7-days Wear Extended Infusion Set & Reservoir
Sarnath Chattaraj

15:17-15:30 The Clinical Evidence
Ohad Cohen

Organised by: Medtronic International Trading Sàrl
THURSDAY, 24 SEPTEMBER 2020 10:30-11:00
Industry „Meet the Expert“-Sessions

DIABELOOP: WHERE DO WE STAND WITH THE FRENCH CLOSED-LOOP SYSTEMS?

Morning Session

10:30-10:50  Outcomes from the real life experience with DBLG1  
Dr. Coralie Amadou (France)

Advanced development for highly unstable diabetes: first results of the DBLHU study  
Prof. Pierre-Yves Benhamou (France)

Insights of the future development pipeline  
Erik Huneker, co founder and CEO of Diabeloop

10:50-11:00  Live Q&A  
Chairmen: Guillaume Charpentier and Pierre-Yves Benhamou

Organised by: DIABELOOP

THURSDAY, 24 SEPTEMBER 2020 11:30-12:00  
Industry „Meet the Expert“-Sessions

INTRODUCING LYUMJEV, A FAST-ACTING INSULIN TO IMPROVE GLYCEMIC CONTROL

Morning Session

11:30-11:50  Main presentation  
Dr. Emma Wilmot will be delivering an engaging, live presentation that focuses on the Lyumjev efficacy and safety profile and its important impact on clinical care for people with diabetes  
Emma Wilmot (UK)

11:50-12:00  Discussion and Q&A  
Carolina Piras De Oliveira (USA)  
Emma Wilmot (UK)

Organised by: Lilly
Lunch Session

14:00-14:30  Insights and benefits of the intuitive mylife YpsoPump system, including the connected Dexcom G6 CGM system as part of Ypsomed’s mylife Loop program. The mylife Loop program presents as its core objective to not only fully integrate CGM values but also to simplify our patient’s life by providing full remote control of the insulin pump and a smartphone-based automated insulin delivery.

Q&A Session

Speaker: James Mayjor (Australia)

Organised by: Ypsomed AG

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Afternoon Session

Speaker: Robert Vigersky

15:00-15:30  Guardian™ Connect System

Robert Vigersky

The Impact of Predicting Hypoglycemia

Robert Vigersky

Case Studies

Robert Vigersky

Organised by: Medtronic International Trading Sàrl
CHALLENGING THE STATUS QUO: ADDRESSING THE NEED FOR THERAPEUTIC INTENSIFICATION IN ADULT PATIENTS WITH HIGH HBA1C AND HELPING THEM GET TO GOAL

Morning Session

10:30-11:00  Challenging the status quo: Addressing the need for therapeutic intensification in adult patients with high HbA1c and helping them get to goal

Organised by: Sanofi

THE BIOSIMILAR JOURNEY: PAST, PRESENT, AND FUTURE

Morning Session

11:30-12:00  How to ensure similarity: the regulatory pathway for biosimilar insulins
Tim Heise (Germany)

The economic implications of biosimilar insulin: where we’ve been and where we’re going?
Irl Hirsch (USA)

Organised by: Gan & Lee Pharmaceuticals
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Status July 2020, details are subject to change
On behalf of the EASD Board and the 2021 Scientific Programme Committee, I have the pleasure of welcoming you the 57th 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 during the challenging times we are currently facing. Nevertheless, the diabetes research field is progressing at a very fast pace and I am sure you are also looking forward to meet your colleagues again in person for interdisciplinary scientific exchange, dialogue and debate.

The 2021 Scientific Programme Committee will, together with your own valuable contributions, develop again an outstanding programme with a wide choice of symposia, oral and posters presentations as well as prize lectures, honouring the achievements of distinguished researchers.

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.

Mikael Rydén
Honorary Secretary EASD
FOLLOW THE DISCUSSION
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#EASD2020

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EASD European Association
for the Study of Diabetes