

56th ANNUAL MEETING

**EASD**

VIRTUAL  
MEETING

**AI**

21-25 September 2020

**FINAL PROGRAMME**

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

**50**



# 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.

A handwritten signature in black ink, appearing to read 'Stefano Del Prato', written in a cursive style.

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 56<sup>th</sup> 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.

A handwritten signature in blue ink, appearing to read 'Mikael Rydén'.

Mikael Rydén  
Honorary Secretary EASD

# European Association for the Study of Diabetes

## **BOARD**

S. Del Prato, IT	President
C. Mathieu, BE	Senior Vice-President
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P. Wilson, BE	Board Member
W. Winzer, DE	Board Member

## **HEADQUARTERS DÜSSELDORF**

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

# European Association for the Study of Diabetes

## HISTORY OF THE EASD ANNUAL MEETINGS

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





# European Association for the Study of Diabetes

**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.



# European Association for the Study of Diabetes

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

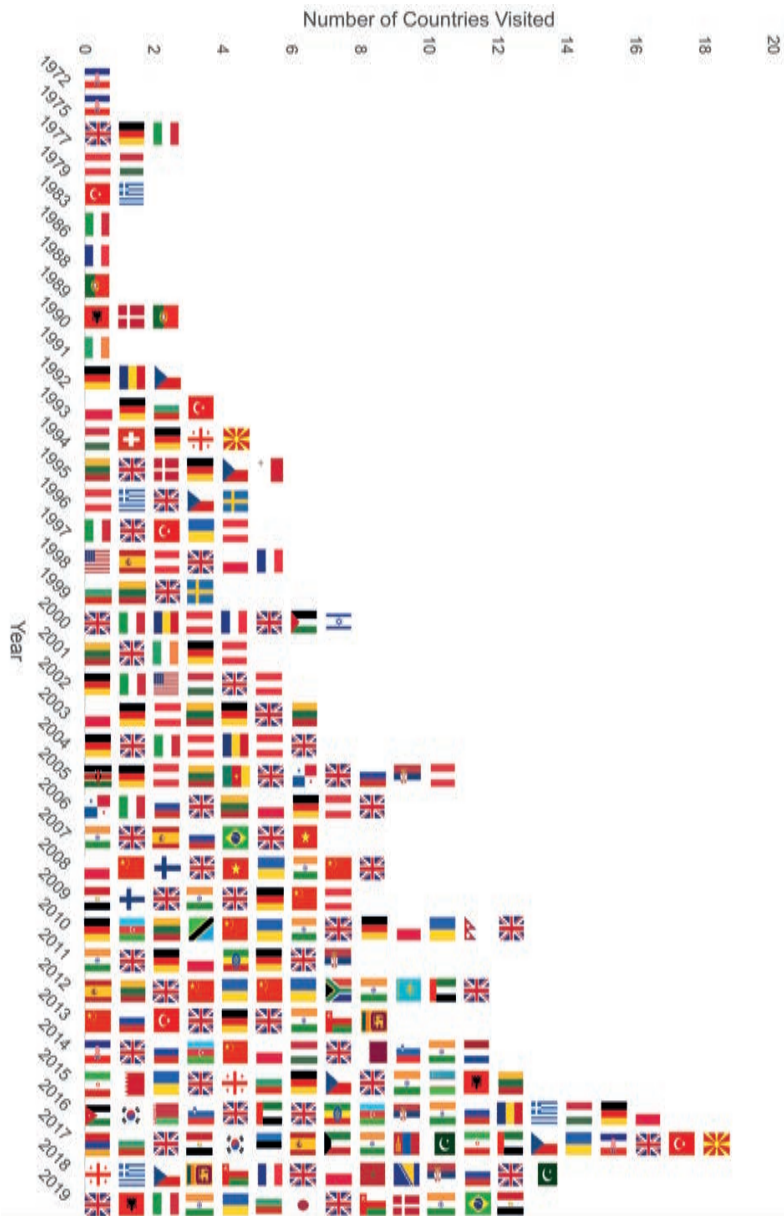
The European Association for the Study of Diabetes



EASD is committed not only to strengthening diabetes research, but also to facilitating the application of patient care. EASD has a long history of organising innovative clinical postgraduate courses all over the world.

# European Association for the Study of Diabetes

## EASD POSTGRADUATE COURSES



# European Association for the Study of Diabetes

## **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

2010	Gold Medal:	O. Pedersen (Aarhus)
	Silver Medal:	M. Cnop (Brussels) R. Dentin (Paris)
2012	Gold medal:	M. Stoffel (Zurich)
	Silver medal:	T. Frayling (Exeter) R. Mallone (Paris)
2014	Gold medal:	H.H. Parving (Copenhagen)
	Silver medal:	A. Gloyn (Oxford) P. Collombat (Nice)
2016	Gold medal:	J. Tuomilehto (Helsinki)
	Silver medal:	L. Marcovecchio (Chieti) J. Wikström (Stockholm)
2018	Gold medal:	M. Roden (Dusseldorf)
	Silver medal:	F. Montecucco (Rome) S.E. Flanagan (Exeter) E. Gurzov (Bruxelles) L. Zang (Beijing)

## 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](http://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<sup>®</sup>, Firefox<sup>®</sup> or Safari<sup>®</sup>.

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<sup>®</sup> browser for Apple<sup>®</sup> 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:**

Certificates will be available for download at [www.easd.org](http://www.easd.org) via your MyEASD account from 28 September 2020 onwards until one day before the beginning of next year's Annual Meeting.

The virtual EASD Annual Meeting 2020 has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME®) to provide Continuing Medical Education for a maximum of 26 European CME credits (ECMEC®s). Kindly note, that only the sessions within the scope of the EASD Scientific Programme are considered for EACCME® Accreditation. In addition, only sessions watched between 22 September 2020 08:40 hrs CEST and 25 September 2020 13:45 hrs CEST are considered for EACCME® Accreditation.

**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](mailto: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](http://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

Anne-Marie Aas, NO  
Hadi Al-Hasani, DE  
Juliana C.N. Chan, HK  
Miriam Cnop, BE  
Lena Eliasson, SE  
Paul W. Franks, SE  
Amalia Gastaldelli, IT  
Per-Henrik Groop, FI  
Martin Haluzik, CZ  
Simon R. Heller, UK  
Stephan Herzig, DE  
Steven E. Kahn, US  
Katerina Kankova, CZ  
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Tomasz Klupa, PL  
Nebojsa Lalic, RS  
Julia Mader, AT  
Gema Medina-Gomez, ES  
Hindrik Mulder, SE  
Ulrik Pedersen-Bjergaard, DK  
Frederik Persson, DK  
John Petrie, UK  
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Magalie Ravier, FR  
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Peter Rossing, DK  
Guy A. Rutter, UK  
Mikael Rydén, SE  
Annette Schürmann, DE  
Erik Serné, NL  
Hetal Shah, US  
Anna Solini, IT  
Harald Sourij, AT  
Cees J. Tack, NL  
Vincenzo Trischitta, IT  
Raimund Weitgasser, AT  
Christian Wolfrum, CH  
Dan Ziegler, DE

## PROGRAMME COMMITTEE



Hadi Al-Hasani,  
DE



Kåre Birkeland,  
NO



Miriam Cnop,  
BE



Paul W. Franks,  
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Amalia Gastaldelli,  
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Per-Henrik Groop,  
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Martin Haluzik,  
CZ



Simon R. Heller,  
UK



Stephan Herzig,  
DE



Steven E. Kahn,  
US



Alexandra Kautzky-  
Willer, DE



Peter Rossing,  
DK



Mikael Rydén,  
SE (Chair)



Erik Semé,  
NL



Cees J. Tack,  
NL



Vincenzo Trischitta,  
IT



Daniël van Raalte,  
NL



Raimund  
Weitgasser, AT

## Tuesday, 22 September

Time	Vienna Hall	Linz Hall	Graz Hall
08:40	Opening #EASD2020		
08:45	Presidential Address		
09:15	Claude Bernard Lecture		
Break			
10:15	OP 1	OP 2	OP 3
Break			
12:00	Poster Event A		
Break			
13:15	Poster Event B		
Break			
14:30	OP 7	OP 8	OP 9
Break			
16:15	Camillo Golgi Lecture		
16:55		Albert Renold Lecture	
Break			
18:10			



## Tuesday, 22 September

Salzburg Hall	Innsbruck Hall	Klagenfurt Hall	Wels Hall
Break			
OP 4	OP 5	OP 6	
Break			
Poster Event A			12:15 -13:15 EASD e-Learning: GLP-1 receptor agonists
Break			
Poster Event B			
Break			
OP 10	OP 11	OP 12	
Break			
Break			
		General Assembly	

## Wednesday, 23 September

Time	Vienna Hall	Linz Hall	Graz Hall
08:30	EASD/ADA Symposium: ADA/EASD Precision medicine in diabetes initiative	EASD/ESC Symposium: The dawn of CV risk reduction in type 2 diabetes: 5 years of SGLT2i CV outcome trials	Sweet pregnancy
Break			
10:15	OP 13	OP 14	OP 15
Break			
12:00	Poster Event C		
Break			
13:15	Poster Event D		
Break			
14:30	OP 19	OP 20	OP 21
Break			
16:15	Diabetes Prize for Excellence Lecture		
Break			
17:30	What is the future of type 1 diabetes treatment?	Diabetes in primary care	VERTIS CV outcome

## Wednesday, 23 September

Salzburg Hall	Innsbruck Hall	Klagenfurt Hall	Wels Hall
Human islet transcriptomes to gain insight into diabetes: promises and pitfalls	The LIBERATES Trial	Covid-19 and diabetes	
Break			
OP 16	OP 17	OP 18	
Break			
Poster Event C			12:15 -13:15 EASD e-Learning: Islet cell transplantation
Break			
Poster Event D			
Break			14:00 - 16:00 EUDF Symposium: Digital health: Hope for diabetes in an uncertain and changing world?
OP 22	OP 23	OP 24	
Break			
Break			
Diabetes and cancer	Multi-dimensional roles of ketone bodies in fuel metabolism, signalling, and therapeutics	An easy to digest guide to precision nutrition	

## Thursday, 24 September

Time	Vienna Hall	Linz Hall	Graz Hall
08:30	Diabetologia Symposium 2020: The pancreas in health and in diabetes	Advances in the pathogenesis and treatment of diabetic complications: going beyond the usual	The important conversation between the heart and the kidney
Break			
10:15	OP 25	OP 26	OP 27
Break			
12:00	Poster Event E		
Break			
13:15	Poster Event F		
Break			
14:30	OP 31	OP 32	OP 33
Break			
16:15	Minkowski Lecture		
Break			
17:15	Do we need surveillance of the liver of type 2 diabetes patients?	New approaches to reducing hypoglycaemia: hype or hope	When your medicine gives you diabetes

## Thursday, 24 September

Salzburg Hall	Innsbruck Hall	Klagenfurt Hall	Wels Hall
We are what we do not eat	Rising Star Symposium	Primary results of the EMPEROR-Reduced trial	
Break			
OP 28	OP 29	OP 30	
Break			
Poster Event E			12:15 -13:15 EASD e-Learning: Therapeutic inertia
Break			
Poster Event F			
Break			
OP 34	OP 35	OP 36	14:00 -14:30 EFSD Mentorship Programme
Break			
Break			
New lessons about diabetic complications: 30 years and counting in the DCCT/EDIC	Closing the loop: commercial systems or open source?	DAPA-CKD trial	18:15 - 20:15 EUDF General Assembly (By invitation only)

## Friday, 25 September

Time	Vienna Hall	Linz Hall	Graz Hall
08:30	Comprehensive approaches with novel biomarkers for predicting purposes	EASD/JDRF Symposium: Human iPSC-derived cells, the state-of-the-art to model diabetes	Targeting the gut to treat diabetes
Break			
09:45	OP 37	OP 38	OP 39
Break			
11:00	OP 43	OP 44	OP 45
Break			
12:15	Diabetes on the run: insulin therapy in type 1 diabetes and exercise	Innovative medicines initiative (IMI): the power of public private partnerships in diabetes research	Assessing the true burden of hypoglycaemia

## Friday, 25 September

Salzburg Hall	Innsbruck Hall	Klagenfurt Hall
Uric acid: a biomarker or risk factor for disease - the answer is here!	The role of altered lipid handling in diabetes	Michael Berger debate: ESC vs EASD/ADA-guidelines on diabetes and cardiovascular disease: Same evidence but different interpretations - who's right?
Break		
OP 40	OP 41	OP 42
Break		
OP 46	OP 47	OP 48
Break		
A gender-sensitive approach pays off in diabetes	EASD/AASD Symposium: Implementation science in diabetes	Semaglutide for the treatment of obesity (STEP-programme)



## 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, 12:15 - 13:15, Wels Hall**

Chair: C. Mathieu, Belgium

**E. Kennedy, UK:  
Introduction**

**T. Vilsboll and F. Knop, Denmark:  
GLP-1 receptor agonists**

**Wednesday, 23 September 2020, 12:15 - 13:15, Wels Hall**

Chair: C. Mathieu, Belgium

**E. Kennedy, UK:  
Introduction**

**F. Pattou, J. Kerr-Conte and M.-C. Vantyghem, France:  
Islet cell transplantation**

**Thursday, 24 September 2020, 12:15 - 13:15, Wels Hall**

Chair: C. Mathieu, Belgium

**E. Kennedy, UK:  
Introduction**

**K. Khunti, UK:  
Therapeutic inertia**  
Created in collaboration with Primary Care Diabetes Europe (PCDE)

## EUROPEAN DIABETES FORUM AISBL (EUDF)

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

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

**C. Mathieu, BE:** Introduction - EUDF: a new vision of integrated action and collaborative advocacy

### **Increased digital diabetes services – country best practices & hurdles**

Chair: C. Mathieu, BE

**T. Valentin, BE:** A vision for digitally enabled diabetes care

**M. Guidi, IT:** Towards the future: diabetes care and digital services

**J. Hagen, DE:** DiGA Fast Track: Germany's new, structured way to give access to digital healthcare solutions

**C. Thivolet, FR:** ÉTAPES: Experimentation of Telemedicine to Ameliorate the Health Care Paths in France

**B. Timar, RO:** Those with diabetes in the pandemic context: The Romanian experience

### **Integration of digital services in chronic disease management during and after COVID**

Chair: D. R. Matthews, UK

**B. Hauck, DE:** Living with diabetes in times of COVID

**R. Forde, UK:** The impact of the COVID-19 pandemic on diabetes nurses in Europe: A pan-European survey

**X. Cos, ES:** The management of COVID in those with type 2 diabetes, the elderly and those with complications

**C. Busoi, RO:** Perspective from the European Parliament to implement digital services

**Panel Discussion (All):** What is the best practice and how do we promote this?

**C. Mathieu, BE:** Conclusion and launch of Strategic Forum on selfcare, technology and digitalization

**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.

**Thursday, 24 September 2020, 14:00 - 14:30, Wels Hall**

#### **The Mentees of the 2020 cohort will be inaugurated**

Mentee: Thomas Ebert, Sweden  
Mentor: Peter Rossing, Denmark

Mentee: Peter van Dijk, The Netherlands  
Mentor: Patrick Choudhary, UK



**MEMBERSHIP**



**RESEARCH**



**ANNUAL MEETING**



**JOURNAL**



**EDUCATION**



**VIRTUAL MEETING**



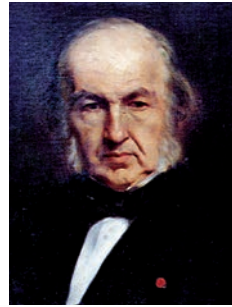
**STUDY GROUPS**



**PRIZES**

## 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*

## CLAUDE BERNARD LECTURERS

1969 Montpellier	C. DE DUVE, BE	1995 Stockholm	M. BERGER, DE
1970 Warsaw	E.W. SUTHERLAND, US	1996 Vienna	J.D. WARD, UK
1971 Southampton	M. DEROT, FR	1997 Helsinki	C.E. MOGENSEN, DK
1972 Madrid	K. LUNDBAEK, DK	1998 Barcelona	C. WOLLHEIM, CH
1973 Brussels	A.E. DONIACH, CH	1999 Brussels	J.P. ASSAL, CH
1974 Jerusalem	T.R. FRASER, UK	2000 Jerusalem	W. MALAISSE, BE
1975 Munich	R.G. SPIRO, US	2001 Glasgow	P.E. CRYER, US
1976 Helsinki	H.G. HERS, BE	2002 Budapest	M.R. TASKINEN, FI
1977 Geneva	D.L. COLEMAN, US	2003 Paris	M. BROWNLEE, US
1978 Zagreb	W. CREUTZFELDT, DE	2004 Munich	C.R. KAHN, US
1979 Vienna	D.A. PYKE, UK	2005 Athens	J.J. HOLST, DK
1980 Athens	R.H. UNGER, US	2006 Copenhagen	L. GROOP, SE
1981 Amsterdam	G.R.E. MEYER-SCHWICKERATH, DE	2007 Amsterdam	E. VAN OBBERGHEN, FR
1982 Budapest	J. MIROUZE, FR	2008 Rome	R.A. DEFRONZO, US
1983 Oslo	C. HELLERSTRÖM, SE	2009 Vienna	O. PEDERSEN, DK
1984 London	P.J. LEFEBVRE, BE	2010 Stockholm	M. KASUGA, JP
1985 Madrid	E.F. PFEIFFER, DE	2011 Lisbon	E. FERRANNINI, IT
1986 Rome	W. K. WALDHÄUSL, AT	2012 Berlin	D.J. DRUCKER, CA
1987 Leipzig	H. KEEN, UK	2013 Barcelona	M. LAAKSO, FI
1988 Paris	T. DECKERT, DK	2014 Vienna	D. ACCILI, USA
1989 Lisbon	G. TCHOBROUTSKY, FR	2015 Stockholm	H.-U. HÄRING, DE
1990 Copenhagen	K.G.M.M. ALBERTI, UK	2016 Munich	M.E. COOPER, AU
1991 Dublin	E. SHAFRIR, IL	2017 Lisbon	B. THORENS, CH
1992 Prague	P.H. BENNETT, US	2018 Berlin	J. TUOMILEHTO, KW
1993 Istanbul	D. ANDREANI, IT	2019 Barcelona	S.E. KAHN, US
1994 Düsseldorf	G. REAVEN, US		

**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, P85 $\alpha$  PI3 kinase and PPAR $\gamma$ . His laboratory discovered insulin sensitising effect of adiponectin and identified and cloned receptors for adiponectin, AdipoR1 and AdipoR2. Moreover, his laboratory revealed the physiological roles of AdipoR1 and AdipoR2 in liver, skeletal muscle and other tissues and the pathophysiological 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.



**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**

M.R. Kristiansen, J.S. Nielsen, I. Brandslund, D.A. Olsen, J.V. Stidsen, S.K. Nicolaisen, R. Hjortebjerg, J. Frystyk, Denmark

**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**

S. Soulimane, Y.D. Vogtschmidt, M. Toeller, B. Balkau, N. Chaturvedi, J.H. Fuller, S.S. Soedamah-Muthu, Netherlands, UK, Germany, France

**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**

C. Celis-Morales, S. Franzén, A.-M. Svensson, N. Sattar, S. Gudbjornsdottir, UK, Sweden

**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**

M.A. Ravier, J. Obeid, M. Leduc, S. Costes, P. Gilon, S. Dalle, G. Bertrand, France, Belgium

**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**

G.A. Rutter, E. Georgiadou, T. Rodriguez, C. Muralidharan, M. Martinez, P. Chabosseau, A. Tomas, G. Carrat, A. Di Gregorio, I. Leclerc, A.K. Linnemann, UK, USA

**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**

J. Vasiljević, D. Vasiljević, C. Niehage, C. Wegbrod, K. Ganss, A. Soenmez, A. Friedrich, B. Hoflack, M. Selbach, M. Solimena, Germany

**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. Beulant, J. Ji-Cao, N. Bendridi, M.-A. Berger, H. Vidal, J. Rieusset, France

**15 GDF15 mediates the metabolic effects of PPAR $\beta/\delta$  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. Guittton, 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**

S. Kullmann, R. Wagner, J. Hummel, C. Dannecker, A. Vosseler, L. Fritsche, K. Kantartzis, J. Machann, H.-U. Haering, A. Fritsche, H. Preissl, M. Heni, Germany

**24 Brain insulin sensitivity is modulated by menstrual cycle**

J. Hummel, C. Benkendorff, A. Vosseler, L. Fritsche, S. Kullmann, A.L. Birkenfeld, H. Preissl, H.-U. Häring, A. Fritsche, A. Peter, R. Wagner, M. Heni, Germany

**OP 05 Glucose-lowering therapies and the liver****25 Role of bile acids on glucose-lowering by metformin in type 2 diabetes**

D.J. Sansome, S. Veedefald, C. Xie, M. Bound, J. Grivell, K.L. Jones, M. Horowitz, C.K. Rayner, T. Wu, Australia

**26 Metformin acutely elevates lactate in the portal vein of humans**

N. Rittig, E. Sundelin, H. Grønabæk, 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. Fellingner, H. Beiglböck, L. Pflieger, P. Krumpolec, C. Barbieri, A. Gastaldelli, R. Marculescu, S. Trattinig, 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. Özgümüş, T.J. Berg, V. Lyssenko, Norway

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

X. Zhang, N. Hanssen, A. Bektić, M. Van Oeteren, J. Scheijen, M. Streeter, J. Van de Gaar, D. Spiegel, K. Wouters, C. Schalkwijk, Netherlands, USA

**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 HbA<sub>1c</sub> in people with type 1 diabetes: sub study of the RESCUE-trial**

A. El Malahi, M. Van Elsen, S. Charleer, F. De Ridder, K. Ledeganck, B. Keymeulen, L. Crenier, R. Radermecker, B. Lapauw, C. Vercammen, F. Nobels, C. Mathieu, P. Gillard, C. De Block, Belgium

## 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.

<b>12:00 - 13:00 Poster Event A</b>		<b>Page</b>
<b>PS 01</b>	<b>Diabetes and early death</b>	<b>119</b>
<b>PS 07</b>	<b>Molecular insights into glucose abnormalities</b>	<b>125</b>
<b>PS 13</b>	<b>Risk factors for type 2 diabetes</b>	<b>131</b>
<b>PS 19</b>	<b>To live and let die: a beta cell perspective</b>	<b>137</b>
<b>PS 25</b>	<b>Pregnancy: Epidemiology</b>	<b>143</b>
<b>PS 31</b>	<b>Pancreatic hormones</b>	<b>151</b>
<b>PS 37</b>	<b>Models of obesity and insulin resistance</b>	<b>157</b>
<b>PS 43</b>	<b>SGLT-2 inhibitors: clinical aspects</b>	<b>164</b>
<b>PS 49</b>	<b>Various aspects of nutrition and diet</b>	<b>173</b>
<b>PS 55</b>	<b>The impact of new basal insulins</b>	<b>180</b>
<b>PS 61</b>	<b>Insulin pump therapy</b>	<b>188</b>
<b>PS 67</b>	<b>Emerging topics in hypoglycaemia</b>	<b>194</b>
<b>PS 73</b>	<b>Clinical aspects of diabetic kidney disease</b>	<b>202</b>
<b>PS 79</b>	<b>Cure the pain of diabetic neuropathy</b>	<b>208</b>
<b>PS 85</b>	<b>Lipids everywhere: lipid metabolism in the liver and the heart</b>	<b>214</b>
<b>PS 91</b>	<b>Cardiac function and dysfunction</b>	<b>222</b>

<b>13:15 - 14:15 Poster Event B</b>		<b>Page</b>
<b>PS 02</b>	<b>Living with chronic diabetes complications</b>	<b>120</b>
<b>PS 08</b>	<b>Pathophysiology of glucose homeostasis</b>	<b>126</b>
<b>PS 14</b>	<b>Prevalence of type 2 diabetes around the world</b>	<b>132</b>
<b>PS 20</b>	<b>Job description: insulin secretion</b>	<b>138</b>
<b>PS 26</b>	<b>Pregnancy: Who is at risk?</b>	<b>144</b>
<b>PS 32</b>	<b>Insulin secretion in mice and men</b>	<b>152</b>
<b>PS 38</b>	<b>Lipid metabolism</b>	<b>158</b>
<b>PS 44</b>	<b>Different aspects of SGLT-2 inhibitors</b>	<b>166</b>
<b>PS 50</b>	<b>Oral therapies: metformin, sensitizers and other non-secretagogues</b>	<b>174</b>
<b>PS 56</b>	<b>Insulin therapy: real world studies</b>	<b>182</b>
<b>PS 62</b>	<b>Automated insulin delivery</b>	<b>189</b>
<b>PS 68</b>	<b>Investigating diabetes distress and depression</b>	<b>196</b>
<b>PS 74</b>	<b>The ROCK and role of experimental kidney disease</b>	<b>203</b>
<b>PS 80</b>	<b>Understanding clinical neuropathy</b>	<b>209</b>
<b>PS 86</b>	<b>All about coronary arteries and diabetes</b>	<b>215</b>
<b>PS 92</b>	<b>Cardiovascular complications in humans through and through</b>	<b>223</b>

**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  $\alpha 4$  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**

P.G. Kamble, S. Hetty, M. Vranic, K. Almy, C. Castillejo-López, X.M. Abalo, M.J. Pereira, J.W. Eriksson, Sweden

**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 <sup>111</sup>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**

C. Mathieu, M. Von Herrath, S.C. Bain, B. Bode, J.O. Clausen, K. Coppieters, L. Gaysina, J. Gumprecht, T. Krarup Hansen, C. Morales Portillo, O. Mosenzon, S. Segel, G. Tsoukas, T.R. Pieber, Belgium, USA, UK, Denmark, Russian Federation, Poland, Spain, Israel, Canada, Austria

**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. Bruggaber, A.P. Mander, T. Tree, P. Jaroslaw Chmura, M.J. Knip, A.M. Schulte, C. Mathieu, UK, Denmark, Finland, Germany, Belgium

**50 The Simpli-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**

T. Quattrin, M.J. Haller, A.K. Steck, E. Felner, Y. Li, Y. Xia, J.H. Leu, M.R. Rigby, R. Zoka, J.A. Hedrick, F. Verduyck, USA, Belgium

**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**

E. Svehlikova, T. Augustin, F. Lawrence, D. Gerring, S. Howell, J. Jezek, L. Zakrzewski, C. Magnes, T.R. Pieber, Austria, UK

**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. Kjærsgaard, 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. MacIsaac, 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. Galdani, D. Lucchesi, R. Miccoli, F. Campi, P. Falchetta, 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**

J.L. Harding, M.E. Pavkov, Z. Wang, S.R. Benoit, N.R. Burrows, G. Imperatore, A. Albright, R.E. Patzer, USA

**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**

R. Hanf, V. Ratziu, S.A. Harrison, S. Francque, Q.M. Anstee, N. Dam, Y. Hajji, A. Roudot, J. Brozek, B. Staels, D.W. Hum, P. Birman, S. Hosmane, P. Chaumat, A.J. Sanyal, France, USA, Belgium, UK

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

O.P. Zaharia, K. Strassburger, B. Knebel, Y. Kupriyanova, Y. Karusheva, M. Wolkersdorfer, K. Bódis, D. Markgraf, V. Burkart, J.-H. Hwang, J. Kotzka, H. Al-Hasani, J. Szendroedi, M. Roden, GDS Group, Germany, Austria

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

A. Lamprinou, J. Machann, F. Schick, S.S. Eckstein, C. Dalla Man, R. Visentin, N. Stefan, A.L. Birkenfeld, A. Peter, H.-U. Häring, A. Fritsche, M. Heni, R. Wagner, Germany, Italy

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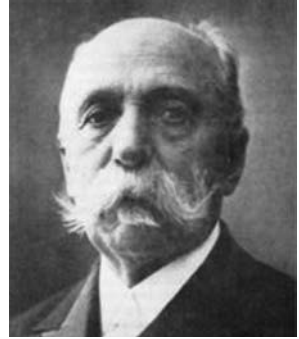
**GRANTS & FELLOWSHIPS**  
**AVAILABLE THROUGHOUT THE YEAR**

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

Tuesday, 22 September

## 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*

## CAMILLO GOLGI LECTURERS:

1986 Rome	G.C. VIBERTI, UK	2003 Paris	A. J. M. BOULTON, UK
1987 Leipzig	D.J. EWING, UK	2004 Munich	A. CERIELLO, IT
1988 Paris	C.E. MOGENSEN, DK	2005 Athens	C. STEHOUWER, NL
1989 Lisbon	G.B. BOLLI, IT	2006 Copenhagen	M. LAAKSO, FI
1990 Copenhagen	P.J. WATKINS, UK	2007 Amsterdam	P. FIORETTO, IT
1991 Dublin	R. OSTERBY, DK	2008 Rome	A. AVOGARO, IT
1992 Prague	E. KOHNER, UK	2009 Vienna	P.-H. GROOP, FI
1993 Istanbul	K.F. HANSSEN, NO	2010 Stockholm	D. ZIEGLER, DE
1994 Düsseldorf	J.E. TOOKE, UK	2011 Lisbon	A. BIERHAUS, DE
1995 Stockholm	R. LANDGRAF, DE	2012 Berlin	G. PUGLIESE, IT
1996 Vienna	M.-R. TASKINEN, FI	2013 Barcelona	T. LAURITZEN, DK
1997 Helsinki	H.-H. PARVING, DK	2014 Vienna	S. TESFAYE, UK
1998 Barcelona	D.R. TOMLINSON, UK	2015 Stockholm	H.-P. HAMMES, DE
1999 Brussels	E. STANDL, DE	2016 Munich	P. ROSSING, DK
2000 Jerusalem	U. DI MARIO, IT	2017 Lisbon	B.M. FRIER, UK
2001 Glasgow	A. FLYVBJERG, DK	2018 Berlin	P.P. NAWROTH, DE
2002 Budapest	J. TUOMILEHTO, FI	2019 Barcelona	R.A. MALIK, QA

16:15

35TH CAMILLO GOLGI LECTURE

Vienna Hall

Chair:

S. Del Prato, President, EASD and EFSD

Speaker:

N. Sattar, UK

Title:

**Cardiovascular risks in diabetes: new insights from simple observations**

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.



## ALBERT RENOLD PRIZE

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



A. Renold  
1923 - 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.



P. Langerhans Jr.  
1847 - 1888

## ALBERT RENOLD LECTURERS

2007	Amsterdam	F. ASHCROFT, UK
2008	Rome	J.-C. HENQUIN, BE
2009	Vienna	B. THORENS, CH
2010	Stockholm	S. SEINO, JP
2011	Lisbon	M. PRENTKI, CA
2012	Berlin	D.L. EIZIRIK, BE
2013	Barcelona	P. RORSMAN, UK
2014	Vienna	S.E. KAHN, US
2015	Stockholm	A. HATTERSLEY, UK
2016	Munich	M.S. GERMAN, US
2017	Lisbon	J. FERRER, UK
2018	Berlin	R.N. KULKARNI, US
2019	Barcelona	T. OTONKOSKI, FI

**16:55**                      **14TH ALBERT RENOLD LECTURE**

**Linz Hall**

**Chair:**                      **C. Mathieu, Belgium**

**Speaker:**                 **G.A. Rutter, UK**

**Title:**                      **Metabolic and functional specialisation of the pancreatic beta cell**

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 Tavares. 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.

**18:10**    **Virtual EASD General Assembly  
Discussions and Questions**

**Klagenfurt Hall**

**Tuesday, 22 September**

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

Graz Hall

**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?**

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**

08:30

Innsbruck Hall

**The LIBERATES Trial - improving gLuucose control in patlents with diaBETes following myocaRdial infArction: The role of a novEI 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**

Klagenfurt Hall

**Covid-19 and diabetes**

Chair: G.P. Fadini, Italy

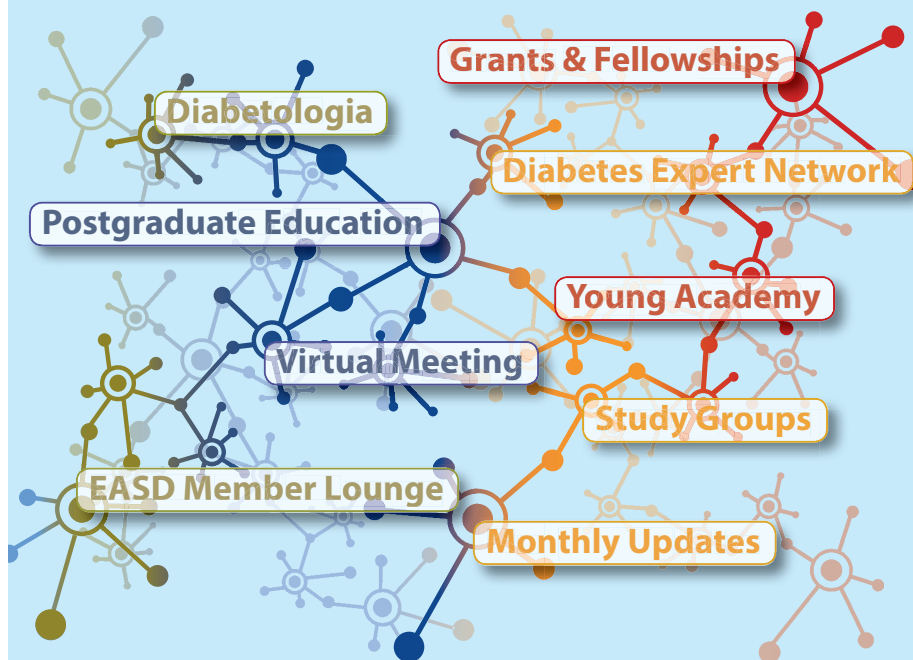
**J. Chan, Hong Kong:  
Overview on Covid-19 in persons with diabetes: What is the evidence?**

**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?**

# Join EASD

The International Diabetes Community



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**EASD** European Association  
for the Study of Diabetes

Wednesday, 23 September

**OP 13 Diabetic retinopathy: see what's new?****73 Assessing retinopathy screening frequency in adolescents with type 1 diabetes using Markov model**

A.S. Januszewski, V. Velayutham, P. Benitez-Aguirre, M. Craig, G. Liew, Y. Cho, A.J. Jenkins, K. Donaghue, Australia

**74 One-point HbA<sub>1c</sub> value does not always reflect current retinopathy while  $\Sigma$ excessA1C, 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**

M.I. Eriksson, P. Summanen, D. Gordin, C. Forsblom, S. Shams, R. Liebkind, T. Tatlisumak, J. Putaala, P.-H. Groop, J. Martola, L.M. Thorn, Finland, Sweden, USA

**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**

A. Höhn, A. Jeyam, T. Caparrotta, S. McGurnaghan, J. O'Reilly, H. Colhoun, and on behalf of SDRN-Epi, UK

**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**

L. Bennet, R. Udumyan, C. Östgren, O. Rolandsson, S. Jansson, P. Wändell, Sweden



**OP 15 Pregnancy in diabetes prediction and outcomes****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**

L. Fritsche, M. Heni, S.S. Eckstein, M.J. Winzenried, J. Hummel, A.L. Birkenfeld, H. Preissl, H.-U. Häring, A. Peter, A. Fritsche, R. Wagner, Germany

**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**

V. Bartakova, B. Baratova, K. Chalasova, P. Janku, K. Kankova, Czech Republic

**OP 16 Signals and networks in beta cell failure**

**91 Impact of hepatic or pancreatic tissue selective PCSK9-deficiency on pancreas morphology, insulin release and glucose metabolism**

C. Perego, A. Marku, L. Da Dalt, A. Galli, A.L. Catapano, D.G. Norata, Italy

**92 Multiple CRISPR/Cas9 genome editing reveals novel regulators of insulin secretion identified by single cell RNAseq**

A. Lopez-Pascual, A. Lindqvist, J. Martínez-López, N. Wierup, Sweden

**93 Cask promotes the plasma membrane targeting of insulin granules via interaction with *apba1*, *stxbp1* and *npsb1***

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**

O. Cabrera, J. Ficorilli, J.L. Shaw, F. Echeverri, O.G. Chepurny, C.A. Leech, F. Schwede, G.G. Holz, USA, Germany

**95 The circadian clock nuclear receptor Rev-erb $\alpha$  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. Wojtuszczyń, 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

**OP 17 Broken heart in diabetes****97 Clustering of patients with type 2 diabetes and established CV disease for prediction of disease progression and MACE (SAVOR-TIMI 53 trial)**

Y. Aoki, B. Hamrén, L.E. Clegg, C. Stahre, D.L. Bhatt, I. Raz, B.M. Scirica, J. Oscarsson, B. Carlsson, Sweden, USA, Israel

**98 Association of incident myocardial infarction with insulin resistance and liver fibrosis**

C. Möser, O.P. Zaharia, M. Rothe, J.-H. Hwang, P. Bobrov, V. Burkart, F. Bönner, C. Jung, M. Kelm, M. Roden, J. Szendrödi, Germany

**99 Ketone bodies acutely affect cardiac autonomic function in patients with type 2 diabetes**

N.J. Jensen, M. Nilsson, N. Møller, 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**

R. Ripa, E.H. Zobel, B.J. Von Scholten, L.J. Diaz, J.K. Jensen, V.R. Curovic, T.W. Hansen, P. Rossing, A. Kjaer, Denmark

**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**

J. Westerink, K. Sommer Matthiessen, S. Nuhofo, U. Fainberg, M. Lyng Wolden, F. Visseren, N. Sattar, Netherlands, Denmark, UK

**OP 18 Unlocking the potential of digital health**

**103 Mobile health application usage shows long-term improvement on blood glucose control**

V. Eichinger, J. Kober, R. Biven, L. Schuster, J. Wrede, Austria

**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

**107 Change in HbA<sub>1c</sub> with and without intermittent use of continuous glucose monitoring in adults with type 2 diabetes participating in a virtual diabetes clinic**

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

**108 Evaluation of the one year efficiency of the EDUC@DOM telemonitoring and tele-education programme for type 2 diabetic patients**

N. Costa, M. Mounié, J. Martini, C. Latorre, J.-C. Buisson, M.-C. Chauchard, J. Delaunay, S. Schiir-Bonnans, S. Taoui, B. Lepage, H. Colineaux, P. Gourdy, L. Molinier, H. Hanaire, M.-C. Turnin, France

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<b>PS 15</b>	<b>Risk factors in type 1 diabetes</b>	<b>133</b>
<b>PS 21</b>	<b>Further down the road to human islet failure in type 2 diabetes</b>	<b>139</b>
<b>PS 27</b>	<b>Incremental studies on gut hormones</b>	<b>146</b>
<b>PS 33</b>	<b>Something more about obesity</b>	<b>152</b>
<b>PS 39</b>	<b>Adipokine signalling</b>	<b>159</b>
<b>PS 45</b>	<b>Basic aspects of incretin-based therapies</b>	<b>167</b>
<b>PS 51</b>	<b>Novel agents to treat diabetes and its consequences</b>	<b>175</b>
<b>PS 57</b>	<b>Insulin therapy: fast acting insulin analogues</b>	<b>183</b>
<b>PS 63</b>	<b>The varied use of technologies in type 2 diabetes</b>	<b>190</b>
<b>PS 69</b>	<b>Aspects of quality of life and well being</b>	<b>197</b>
<b>PS 75</b>	<b>New tools to view diabetic retinopathy</b>	<b>204</b>
<b>PS 81</b>	<b>From artificial intelligence to treatment of diabetic foot</b>	<b>210</b>
<b>PS 87</b>	<b>Lipids and glucose: not so good for the heart</b>	<b>217</b>
<b>PS 93</b>	<b>Diabetes and neoplasia</b>	<b>224</b>

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<b>PS 04</b>	<b>Global view on diabetes complications</b>	<b>122</b>
<b>PS 10</b>	<b>Islets and antibodies in type 1 diabetes</b>	<b>127</b>
<b>PS 16</b>	<b>Islet transplants revisited</b>	<b>134</b>
<b>PS 22</b>	<b>Sitting and exercising does it all</b>	<b>140</b>
<b>PS 28</b>	<b>The fundamentals of insulin resistance</b>	<b>147</b>
<b>PS 34</b>	<b>More about metabolism</b>	<b>154</b>
<b>PS 40</b>	<b>Drugs and environment in obesity</b>	<b>160</b>
<b>PS 46</b>	<b>Clinical outcome of incretin-based therapies</b>	<b>169</b>
<b>PS 52</b>	<b>Novel glucose-lowering agents in type 2 diabetes</b>	<b>177</b>
<b>PS 58</b>	<b>The challenges of insulin therapy in type 2 diabetes</b>	<b>185</b>
<b>PS 64</b>	<b>Novel applications of technology in diabetes</b>	<b>191</b>
<b>PS 70</b>	<b>Digital health in type 2 diabetes</b>	<b>199</b>
<b>PS 76</b>	<b>Diabetic retinopathy: screening and intervention</b>	<b>205</b>
<b>PS 82</b>	<b>From biomarkers to genetics of diabetic kidney disease</b>	<b>211</b>
<b>PS 88</b>	<b>Cardiac complications: of mice, rats and cells</b>	<b>219</b>
<b>PS 94</b>	<b>Contemplating cognitive dysfunction in diabetes</b>	<b>225</b>

**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**

A. Piron, L. Alonso, I. Morán, M. Defrance, M. Guindo, S. Bonàs, J. Ferrer, A.L. Gloyn, J.L. Esguerra, L. Marselli, P. Marchetti, D.L. Eizirik, D. Torrents, M. Cnop, J. Mercader, Belgium, Spain, UK, Sweden, Italy, USA

**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**

D.E. Coral Candelo, J. Fernández-Tajes, N. Tsereteli, P.W. Franks, Sweden

**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**

A.D. Van Dam, E.M. Toledo, N.Y. Loh, M.J. Neville, K.E. Pinnick, M. Todorčević, R. Dumbill, L.B. Wittemans, C. Langenberg, F. Karpe, C. Christodoulides, UK

**OP 20 Feeding the pipeline: from drugs to surgery**

**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**

T. Coskun, W.C. Roell, L.S. O'Farrell, E.C. Beebe, A. Regmi, P.J. Emmerson, Z. Milicevic, A. Haupt, USA

**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



**OP 21 SGLT-2 inhibitors: at the heart of the matter****121 Cardiovascular outcomes of patients with type 2 diabetes treated with SGLT-2 inhibitors versus GLP-1 receptor agonists in real life**

G. Fadini, E. Longato, B. Di Camillo, G. Sparacino, L. Gubian, A. Avogaro, Italy

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

D. De Zeeuw, C. Arnett, J.-W. Li, C.P. Cannon, B.L. Neuen, H.J. Heerspink, B. Neal, D.M. Charytan, G. Bakris, T.-H. Chang, N. Rosenthal, B. Zinman, V. Perkovic, M.J. Jardine, K.W. Mahaffey, Netherlands, Australia, USA, UK, Canada

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

K.M. Lauritsen, L.C. Gormsen, T.K. Hansen, B.R. Nielsen, M. Johannsen, J. Hansen, H. Wiggers, H.E. Bøtker, L.P. Tolbod, N. Møller, E. Søndergaard, Denmark

**124 Effects of 6 weeks of treatment with dapagliflozin, a sodium-glucose co-transporter 2 inhibitor, on myocardial function and metabolism in patients with type 2 diabetes**

J. Oldgren, S. Laurila, A. Åkerblom, A. Latva-Rasku, E. Rebelos, H. Isackson, M. Saarenhovi, O. Eriksson, K. Heurling, E. Johansson, U. Wilderäng, C. Karlsson, E. Ferrannini, J. Oscarsson, P. Nuutila, Sweden, Finland, Italy

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

C.J. Zuurbier, L. Uthman, D. Bakker, S. Sari, M.W. Hollmann, N.C. Weber, S.M. Houten, H. Zhang, R. Coronel, M. Van Weeghel, Netherlands, USA

**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

**OP 22 New Treatments for NAFLD: Hope or Hype?**

**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**

K.M. Mather, M.L. Boland, E.L. Rivers, A. Srivastava, M. Schimpl, P. Hemsley, J. Robinson, P.T. Wan, J.L. Hansen, J. Trevaskis, D.M. Smith, USA, UK

**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**

O. Lavrynenko, M. Abdul-Ghani, M. Alatrach, C. Puckett, J. Adams, E. Cersosimo, N. Alkhoury, R.A. DeFronzo, USA

**OP 23 Addressing potential new treatments of diabetic kidney disease****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)**

J.C. Jha, S. Urner, A. Dai, M. Cooper, K. Jandeleit-Dahm, Australia, Germany

**OP 24 Glucagon and hormones beyond****139 Identification of a gut-derived LEAP2 fragment as a novel insulin secretagogue**

C.A. Hagemann, C. Zhang, T. Jorsal, K.T. Rigbolt, M. Falkenhahn, S. Theis, M. Christensen, T. Vilsbøll, N. Vrang, J. Jelsing, F.K. Knop, Denmark, Germany

**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**

M. Winther-Sørensen, K.D. Galsgaard, A. Santos, J. Pedersen, A.S. Hassing, M. Dall, J.T. Treebak, S.A. Kjeldsen, F.K. Knop, M.P. Werge, P.L. Eriksen, H. Vilstrup, L. Gluud, J.J. Holst, N.J. Wewer Albrechtsen, Denmark

**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**

S.A. Kjeldsen, S. Zraika, S. Mongovin, L.H. Hansen, D. Terzic, P.D. Mark, P. Plomgaard, J.P. Gøtze, The Liver-Alpha-Cell Axis Group, J.E. Hunt, M.M. Rosenkilde, G.H. Goossens, E.E. Blaak, J.J. Holst, N.J. Wewer Albrechtsen, Denmark, USA, Netherlands

## 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

2015	Stockholm	SIR S. O’RAHILLY, UK
2016	Munich	A. HATTERSLEY, UK
2017	Lisbon	P.E. SCHERER, US
2018	Berlin	G.S. HOTAMISLIGIL, US
2019	Barcelona	D.J. DRUCKER, CN



**16:15**                    **6TH EASD/NOVO NORDISK FOUNDATION**      **Vienna Hall**  
**DIABETES PRIZE FOR EXCELLENCE**

**Chair:**                    **S. Del Prato, President EASD and EFSD**

**Speaker:**                **J.C. Brüning, Germany**

**Title:**                    **Brain insulin action in CNS-dependent control of  
metabolism**

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: L. Czupryniak, Poland

**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**

8:30

Vienna Hall

**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**

Linz Hall

**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**

Thursday, 24 September

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**

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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**8:20**

**RISING STAR SYMPOSIUM**

**Innsbruck Hall**

**Chair: M. Rydén, Sweden**

The Rising Star Symposium aims to identify promising and innovative keen researchers who are developing their research activities in Europe. Selected candidates will have the opportunity to present an overview of their past and ongoing research activities during a multidisciplinary research symposium at the EASD Annual Meeting. Four candidates have been selected.

**Rising Star Awardees**

2005	Athens	P.-O. CARLSSON, SE A.L. GLOYN, UK M. CNOP, BE N. MARX, DE	2013	Barcelona	A. ROSENGREN, SE J.A. POSPISILIK, DE D.J. PREISS, UK G. SUMARA, FR
2006	Copenhagen	G. DA SILVA XAVIER, UK M. FLODSTRÖM-TULLBERG, SE M. FEDERICI, IT J.J. MEIER, DE	2014	Vienna	G.H. GOOSSENS, NL H.J. HEERSPINK, NL L. PASQUALI, ES R. STIENSTRA, NL
2007	Amsterdam	T. FRAYLING, UK A. TENGHOLM, SE E.R. PEARSON, UK N. STEFAN, DE	2015	Stockholm	M. HENI, DE D. HODSON, UK R. NOGUEIRAS, ES R.A. SCOTT, UK S. KOOIJMAN, NL F. D'ADDIO, IT N.K.A. SANDHOLM, FI A.G. JONES, UK G. CHRISTOFFERSSON, SE T. MEZZA, IT A.R. WOOD, UK Y. YAGHOOTKAR, UK M.R. BOON, NL E. DE FRANCO, UK N. DE LEU, BE N.R. GANDASI, SE S. AHMAD, SE I. MIGUEL-ESCALADA, ES I. NIKOLIC, ES D. TRICO, IT
2008	Rome	R. MALLONE, FR P. SCHRAUWEN, NL M. BLÜHER, DE E. ZEGGINI, UK	2016	Munich	
2009	Vienna	V. GAULT, UK G.P. FADINI, IT C. HERDER, DE V. LYSSSENKO, SE	2017	Lisbon	
2010	Stockholm	P. FRANKS, SE F. KNOP, DK C. LINDGREN, UK K. BOUZAKRI, CH	2018	Berlin	
2011	Lisbon	I. PROKOPENKO, UK M. RAVIER, FR A.N.E. AKO, UK A.L. BIRKENFELD, DE	2019	Barcelona	
2012	Berlin	A. BONNEFOND, FR J. BEULENS, NL L. HERRERO, ES H. SELL, DE			

**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



8:30

Klagenfurt Hall

**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**

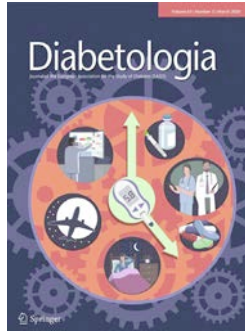
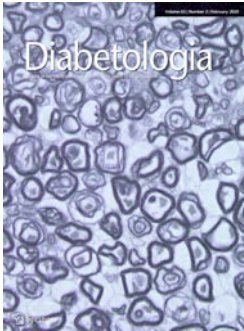
**M. Packer, USA:  
Concluding remarks and discussion of mechanism of effect**

**C.J. Bailey, UK:  
Commentary**

# Diabetologia

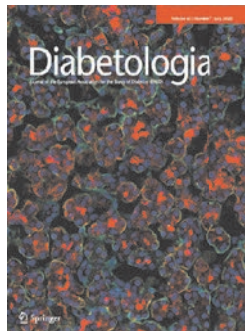
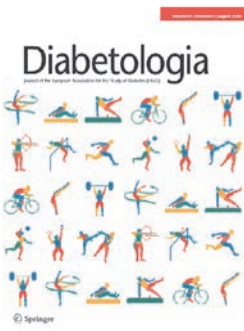
Journal of the European Association for the Study of Diabetes (EASD)

Thursday, 24 September



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**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**

V. Pirro, J.A. Willency, J.M. Wilson, K.D. Roth, Y. Lin, K.A. Collins, G. Ruotolo, A. Haupt, C.B. Newgard, K.L. Duffin, USA

**147 Reduction of cardiovascular events by GLP-1 receptor agonists is explained by HbA<sub>1c</sub> 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. Konig, 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**

M.A. Espeland, R.E. Pratley, J. Rosenstock, T. Kadowaki, Y. Seino, B. Zinman, N. Marx, D.K. McGuire, K.R. Andersen, M. Mattheus, A. Keller, O.E. Johansen, on behalf of the CAROLINA investigators, USA, Japan, Canada, Germany, Norway

**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

**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**

F. Fantuzzi, C. Demarez, E. De Franco, H. Ibrahim, Y. Cai, T. Sawatani, H. Shakeri, N. Pachera, M. Lytrivi, K. Patel, M. Yildiz, D.L. Eizirik, T. Otonkoski, A.T. Hattersley, M. Cnop, Belgium, Italy, UK, Finland, Turkey

**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**

A.S. Christensen, S. Hædersdal, J. Støy, H. Storgaard, U. Kampmann, M. Seghieri, J.J. Holst, T. Hansen, F.K. Knop, T. Vilsbøll, Denmark

**156 Investigating the contribution of the HNF-1 $\alpha$ G319S gene variant to childhood-onset type 2 diabetes using beta cell and mouse models**

C.A. Doucette, T.S. Morriseau, K. Hunt, M. Fonseca, C. Nian, V.W. Dolinsky, F.C. Lynn, Canada

**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<sup>+</sup> 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**

H. Maalmi, C. Herder, K. Strassburger, O.-P. Zaharia, J. Ratter, Y. Karusheva, K. Bódis, W. Rathmann, D. Markgraf, V. Burkart, J. Szendroedi, M. Roden, Germany

**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**

M.E. Haugstøyl, M. Cornillet, N. Stiglund, K. Strand, G. Mellgren, N. Björkström, J. Fernø, Norway, Sweden

10:15 - 11:45

Innsbruck Hall

**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**

A. Carlson, B. Bode, M. Christiansen, S. Garg, K. Kaiserman, M. Kipnes, D. Liljenquist, A. Philis-Tsimikas, R. Pop-Busui, J. Reed, J. Sherr, D. Shulman, R. Slover, J. Thrasher, AHCL Study Group, USA

**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. Bonnemaïson, 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**

J.S. Sherwood, C.A. Balliro, R.Z. Jafri, L.E. Castellanos, M. Hillard, M. Sullivan, R. Selagamsetty, E. Greaux, H. Zheng, F. El-Khatib, E.R. Damiano, S.J. Russell, USA

**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**

M. Tsoukas, D. Majdpour, J. Rutkowski, A. El Fathi, J.-F. Yale, N. Garfield, L. Legault, A. Haidar, Canada

**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**

S.H. Lindfors, Z. Polianskyte-Prause, E. Lehtonen, J. Tienari, H. Nisen, T. Mirtti, S.H. Lehtonen, Finland

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

R. Bijkerk, A. Lafzi, Y.W. Au, W. Stam, J.M. Duijs, A. Koudijs, E. Liewers, T.J. Rabelink, H. Kazan, A.J. Van Zonneveld, Netherlands, Turkey

**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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<b>PS 11</b>	<b>Markers and phenotypes of glucose traits</b>	<b>129</b>
<b>PS 17</b>	<b>Islets in type 1 diabetes: new players</b>	<b>135</b>
<b>PS 23</b>	<b>The ins and outs of carbohydrate metabolism</b>	<b>141</b>
<b>PS 29</b>	<b>Studies on insulin resistance</b>	<b>148</b>
<b>PS 35</b>	<b>Inflammation in type 2 diabetes</b>	<b>155</b>
<b>PS 41</b>	<b>Weight loss interventions</b>	<b>162</b>
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<b>PS 59</b>	<b>Different aspects of insulin therapy</b>	<b>186</b>
<b>PS 65</b>	<b>Novel therapies to reduce hypoglycaemia</b>	<b>192</b>
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<b>PS 06 Unusual forms of diabetes</b>	<b>124</b>
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<b>PS 60 The continued advance of continuous glucose monitoring</b>	<b>187</b>
<b>PS 66 Mechanisms and clinical consequences of hypoglycaemia in diabetes</b>	<b>193</b>
<b>PS 72 Predicting prognosis of diabetic kidney disease</b>	<b>201</b>
<b>PS 78 Hypertension and vascular disease</b>	<b>207</b>
<b>PS 84 Mechanisms and prevalence of NAFLD</b>	<b>213</b>
<b>PS 90 Stiff arteries and how to avoid them</b>	<b>221</b>
<b>PS 96 Tradition? No! Non-traditional complications of diabetes</b>	<b>228</b>



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**

L. Bjerg, D.H. Christensen, S.K. Nicolaisen, J.S. Nielsen, S.T. Andersen, M.E. Jørgensen, T.S. Jensen, A. Sandbæk, H. Andersen, H. Bech-Nielsen, H.T. Sørensen, D.R. Witte, R.W. Thomsen, M. Charles, Denmark

**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**

R. Pop-Busui, Y. Tang, H. Shaw, C.R. Bueno, X. Sun, J. Mitri, M. Sambataro, L. Sambado, H.C. Gerstein, V. Fonseca, A. Doria, USA, Italy, Canada

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

D.H. Christensen, F.P. Kristensen, B.C. Callaghan, S.T. Knudsen, S.H. Sindrup, E.L. Feldman, L. Østergaard, H. Andersen, T.S. Jensen, H.T. Sørensen, R.W. Thomsen, Denmark, USA

**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**

C. Beall, A.M. Cruz, P.G. Weightman Potter, J.M. Vlachaki Walker, Y. Malekizadeh, K.R. Pye, S.J. Shaw, K.L. Ellacott, UK, USA

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

N. Ali, A.W. Janssen, B.E. De Galan, C.J. Tack, M. Jaeger, L. Van de Wijer, W. Van der Heijden, R. Ter Horst, P. Vart, A. Van Gool, L.A. Joosten, M.G. Netea, R. Stienstra, Netherlands

**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**

L. Wagner, S. Kullmann, R. Veit, P. Schneeweiss, A. Nieß, H. Preissl, A.L. Birkenfeld, A. Peter, H.-U. Häring, A. Fritsche, A. Böhm, C. Weigert, M. Heni, Germany

**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. Bouffleur 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 amino adipic 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**

L. Granlund, M. Wahlhütter, A. Hedin, P. Seiron, O. Korsgren, M. Lundberg, O. Skog, Sweden

**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**

M. Clemente-Postigo, L. Coin-Aragüez, J. Fernandez-Garcia, J. Alcaide-Torres, R. El Bekay, M. Bernal-Lopez, M. Macias-Gonzalez, F.J. Tinahones, Spain

**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**

B.G. Issa, M. Harvie, S. McDiarmid, R. Johnson, A. Vyas, A. Aglan, H. Ruane, A. Hulme, K. Sellers, L.A. Jones, M.G. Jenkins, UK

**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**

L. Wigger, M. Barovic, A.D. Brunner, F. Marzetta, E. Schöniger, F. Mehl, N. Kipke, K. Simons, M. Distler, A.M. Schulte, M. Mann, M. Ibberson, M. Solimena, Switzerland, Germany

**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**

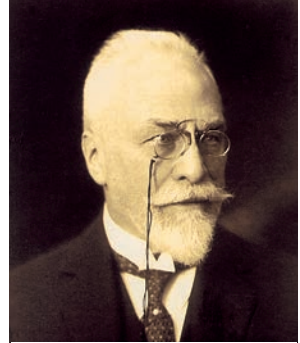
A. Schaschkow, L. Pang, S.A. Litwak, E. Maillard, F.M. Paula, D.L. Eizirik, P. Marchetti, D.J. Gough, E.N. Gurzov, Belgium, Australia, France, Italy

## 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.



*O. Minkowski*

## MINKOWSKI LECTURERS

1966	Aarhus	P.J. PELTONEN-PALOTIE, UK	1993	Istanbul	H. YKI-JÄRVINEN, FI
1967	Stockholm	E.R. FROESCH, CH	1994	Düsseldorf	T. MANDRUP POULSEN, DK
1968	Louvain	L.A. CARLSON, SE	1995	Stockholm	J. TODD, UK
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. SCHARFMANN, 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
1976	Helsinki	K.D. HEPP, DE	2003	Paris	M. STUMVOLL, DE
1977	Geneva	J. WAHREN, SE	2004	Munich	G.A. RUTTER, UK
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. SATTAR, UK
1985	Madrid	E. VAN OBBERGHEN, FR	2012	Berlin	T.M. FRAYLING, UK
1986	Rome	D. PIPELEERS, BE	2013	Barcelona	M. CNOP, BE
1987	Leipzig	J.-L. CARPENTIER, CH	2014	Vienna	A.L. GLOYN, UK
1988	Paris	H.C. HUTTON, UK	2015	Stockholm	M. BLÜHER, DE
1989	Lisbon	J.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
1992	Prague	E. VAN SCHAFTINGEN, BE	2019	Barcelona	F.K. KNOP, DK

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 Dimmeler 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).



Thursday, 24 September



17:15

Vienna Hall

**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. Jensen, 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

**DAPA-CKD trial**

Chair: S.M. Marshall, UK

**P. Rossing, Denmark:  
Background and rationale of the DAPA-CKD trial**

**D.C. Wheeler, UK:  
Design and patient population**

**H.J.L. Heerspink, Netherlands:  
Results of the DAPA-CKD trial**

**C. Mathieu, Belgium:  
Commentary**

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:**

**Modelling monogenic diabetes with human pluripotent stem cells**

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 lipid mobilisation and lipoprotein secretion: highly regulated, underappreciated**

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**

Friday, 25 September

**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**

A. Khamis, M. Canouil, L. Marselli, R. Boutry, M. Suleiman, N. Jonckheere, A.M. Schulte, M. Solimena, A. Bonnefond, I. Van Seuningen, M. Ibberson, A. Jörns, S. Lenzen, P. Marchetti, P. Froguel, France, UK, Italy, Germany, Switzerland

**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**

M. Hu, I. Cebola, G. Carrat, S. Nawaz, A. Khamis, M. Canouil, P. Froguel, A. Schulte, M. Solimena, M. Ibberson, P. Marchetti, P. Gadue, B. Hastoy, H. McMahon, G. Rutter, UK, France, Germany, Switzerland, Italy, USA

**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. Scharfmann, S. Stevanović, M. Solimena, Germany, France

**222 Diabetogenic CD4<sup>+</sup> 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- $\kappa$ B-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**

F. Reimann, D. Goldspink, V. Lu, E. Miedzybrodzka, C. Smith, R. Foreman, L. Billing, R. Kay, F. Gribble, UK

**226 Metabolic surgery recovers Ca<sup>2+</sup> dynamics across pancreatic islets in obese mice**

E. Akalestou, K. Suba, L. Lopez-Noriega, E. Georgiadou, P. Chabosseau, I. Leclerc, V. Salem, G.A. Rutter, UK

**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**

Y. Op den Kamp, M. De Ligt, B.D. Dautzenberg, R. Esterline, J. Hoeks, V.B. Schrauwen-Hinderling, B. Havekes, J. Oscarsson, E. Phielix, P. Schrauwen, Netherlands, USA, Sweden

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

M.J. Davies, E.L. Baldry, D.H. Bodicoat, S. Chatterjee, C.L. Edwardson, L.J. Gray, K. Khunti, J.A. Sargeant, D.J. Stensel, D.R. Webb, J.P. Wilding, S.A. Willis, T. Yates, J.A. King, UK

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

J.M. Wilson, L. Becerra, K. Goetter, K. Briley, A. Novicki, D. Cissell, R.M. Smith, M. Ai, P.J. Emmerson, Z. Milicevic, A. Haupt, T. Coskun, USA

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

B. Hoe, S.M. Heimbürger, L.S. Gasbjerg, A.R. Lanng, M.B. Lynggaard, B. Hartmann, J.J. Holst, T. Vilsbøll, A. Lund, S. Engberg, T.F. Dejgaard, M.B. Christensen, F.K. Knop, Denmark



**OP 41 Fatty matters****233 Liraglutide accelerates the catabolism of apolipoprotein B100 containing lipoproteins (VLDL<sub>1</sub>, VLDL<sub>2</sub>, 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**

J. Lallement, E. Foppen, F. Lachkar, D. Rainteau, G. Merlan, F. Preitner, A. Rebelo Pimentel, M. Schiffano, M. Croyal, M. Krempf, F. Fougelle, T. Tordjmann, H. Le Stunff, C. Magnan, C. Cruciani-Guglielmacci, France, Switzerland

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

A. Al-Mrabeh, S. Melhem, S. Zhyzhneuskaya, C. Peters, A. Barnes, A. Jesuthasan, K.G. Hollingsworth, N. Sattar, M.E. Lean, R. Taylor, UK

**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?**

S. Liatis, G. Touloumi, N. Kalpourtzi, I. Ioannidis, S. Iraklianos, A. Raptis, A. Sotiropoulos, A. Karakosta, G. Karamanakis, K. Makrilakis, Greece

**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**

A. Da Porto, V. Manicardi, C.B. Giorda, E. Manicardi, A. Agliadoro, R. Fornego, A. Nicolucci, A. Rocca, M. Rossi, G. Russo, D. Mannino, P. Di Bartolo, Italy

**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**

K. Zhao, Y. Shi, J. Yu, L. Yu, A. Mael, A. Kolton, T. Joyce, J. Odorico, P.-O. Berggren, S.-N. Yang, Sweden, USA

**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

Friday, 25 September

**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**

K. Omori, A. Nakamura, H. Miyoshi, K. Takahashi, H. Nomoto, H. Kameda, K. Cho, Y. Terauchi, T. Atsumi, Japan

**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- $\beta$ 1/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**

F. Iredahl, E. Tesselaar, R. Mirdell, H. Jonasson, S. Bergstrand, F.H. Nyström, C.J. Östgren, I. Fredriksson, M. Larsson, T. Strömberg, Sweden

**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

Friday, 25 September

**OP 46 Challenges in delivering diabetes care: new solutions**

**253 HbA<sub>1c</sub> 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. Agliatoro, D. Mannino, P. Di Bartolo, on behalf of AMD Annals Study Group, Italy

11:00 - 12:00

Innsbruck Hall

**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<sub>1c</sub> 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

Friday, 25 September

**OP 48 Insulin secretion in various subgroups**

**261 Upregulation of Kcnk9 contributes to insulin secretion defect in MODY10**

J. Qiao, W. Chen, Y. Xiong, X. Li, H. Shu, Y. Huang, W. Feng, X. Zhang, A. Anjum, D. Larkin, X. Chen, S. Vadrevu, L.S. Satin, P. Arvan, M. Liu, China, USA

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

A.L. Carr, J.R. Inshaw, C.S. Flaxman, P. Leete, N.G. Morgan, J.A. Todd, R.A. Oram, S.J. Richardson, R.E. Besser, UK

**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



12:15

Vienna Hall

**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**

Linz Hall

**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**

12:15

Graz Hall

**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**

Salzburg Hall

**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**

Friday, 25 September

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 Diabetic Foot Guidelines: implementation in Asia and WPR**

**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

**265 Estimating life years lost to diabetes: outcomes from analysis of National Diabetes Audit and Office of National Statistics data England**

M. Stedman, M. Davies, M. Livingston, R. Alshames, M. Lunt, G. Rayman, R. Gadsby, A.H. Heald, UK

**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

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

**PS 02 Living with chronic diabetes complications**

Chair: M.-L. Morieri, Italy

**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<sub>1c</sub> 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**

R. Ishibashi, M. Koshizaka, T. Ishikawa, N. Mitsutake, J. Sato, K. Goda, M. Kitsuregawa, K. Yokote, 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. Vasawala, 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. De Vries, 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**

T. Kauf, W. Wang, A. Dillon, H. Mikulski, I. Singh, J. Odegard, C. Ringemann, S. Haldrup, Switzerland, USA, Spain, Germany

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

A. Pappas, A. Gikas, E. Markakis, A. Anyfantakis, M. Bristianou, B. Chryssoula, A. Kontouri, A. Kouloukoura, E. Kyrlaki, G. Dimitriadis, L. Lanaras, K. Makrilakis, V. Lampadiari, Greece

**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**

H.L. Gulseth, V. Hjellvik, Ø. Karlstad, H.N. Eide, L.C. Stene, I. Ariansen, K.E. Telle, W. Nystad, S.E. Håberg, Norway

**Poster Event E, Thursday, 12:00 - 13:00****PS 05 Type 2 diabetes treatment IRL**

Chair: I. Barchetta, Italy

**289 Effectiveness and safety of empagliflozin in routine care patients: interim results from the EMPagliflozin compaRative effectlveness 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

**292 Secular trends in drug utilisation among adults with type 2 diabetes 2001-2019: a 19-year analysis of the Hong Kong Diabetes Registry**

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**

K.K. Clemmensen, M.B. Blond, H. Amadid, L. Bruhn, D. Vistisen, K. Karstoff, F. Persson, M. Ried-Larsen, J.J. Holst, N.J. Wewer Albrechtsen, S. Torekov, J.S. Quist, M.E. Jørgensen, K. Færch, Denmark

**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**

L. Ramirez, L. Ji, F. Bonnet, H. Chen, A. Cooper, N. Hammar, P. Leigh, G.L. Saraiva, J. Medina, A. Nicolucci, W. Rathmann, M.V. Shestakova, F. Surmont, F. Tang, H. Watada, UK, China, France, USA, Sweden, Spain, Italy, Germany, Russian Federation, Japan

**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. Pfeiffer, South Africa

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

G.A. Molnar, S. Sánchez Iglesias, E. Csajbok, Z. Nagy, D. Araujo-Vilar, I. Wittmann, Hungary, Spain

**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**

N. Frago-Bargas, G.-H. Moen, S. Lee-Ødegård, J.O. Opsahl, L. Sletner, A.K. Jenum, R.B. Prasad, L.C. Groop, E. Qvigstad, K.I. Birkeland, C. Sommer, Norway, Australia, Sweden

**307 Exposure of 3T3-L1 and NIH-3T3 cells to low dose of bisphenol-A induces hypomethylation of PPAR $\gamma$  without enhancing adipogenesis**

J. Naderi, F. Zatterale, M. Longo, M. Campitelli, G. Cacace, I. Prevenzano, C. Nigro, C. Miele, F. Beguinot, Italy

**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. Zygala, T. Solé, M. Strigini, A. Balcerczyk, France, Poland

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

C. Loureiro, K. Siddals, H. Fachim, C. Dalton, G. Reynolds, C. Zhen, M. Gibson, A. Heald, UK, USA

**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**

H.H. Nerild, A. El Haddouchi, A. Brønden, T. Jorsal, D.P. Sonne, J. Jelsing, K. Rigbolt, T. Vilsbøll, F.K. Knop, Denmark

**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. Balcecean, 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**

A. MacCalman, E. De Franco, A.R. Jeffries, E.J. Hannon, J. Davies, J. Burrage, N.G. Morgan, A.T. Hattersley, J. Mill, UK

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

L. Alonso, A. Piron, I. Morán, R. Royo, M. Puiggròs, M. Guindo-Martínez, S. Bonàs-Guarch, A. Gloyn, J.L. Esguerra, J. Ferrer, P. Marchetti, D.L. Eizirik, J. Mercader, M. Cnop, D. Torrents, Spain, Belgium, UK, USA, Sweden, Italy

**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. Bruggraber, 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**

G. De Sousa, S.R. Tittel, R. Bachran, R. Birnbacher, J. Brückel, D. Dunstheimer, H. Haberland, M. Hess, W. Karges, R. Oeverink, A. Veigel, N. Prinz, Germany, Austria, Switzerland

**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**

M. Ladwa, O. Bello, O. Hakim, F. Shojaee-Moradie, L. Boselli, J. Peacock, G. Charles-Edwards, M. Umpleby, R.C. Bonadonna, S.A. Amiel, L.M. Goff, UK, Italy

**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**

L. Parrillo, R. Spinelli, P. Florese, A. Desiderio, A. Leone, A. Nicolò, D. Conza, G.A. Raciti, U. Smith, F. Beguinot, Italy, Sweden

**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<sub>1c</sub> screening in 195,460 'non-diabetic' individuals (40-69 years) identifies 1.1% with undiagnosed diabetes 2 years before clinical diagnosis**

K.G. Young, N.J. Thomas, A.G. Jones, A. McGovern, B.M. Shields, I. Barroso, A.T. Hattersley, UK

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

O. Silverman-Retana, S. Brinkhues, A. Hulman, C.D. Stehouwer, N.H. Dukers-Muijers, R.K. Simmons, H. Bosma, S.J. Eussen, A. Koster, P.C. Dagnelie, H.H. Savelberg, N.C. Schaper, D.R. Witte, M.T. Schram, Denmark, Netherlands

**333 The metabolic pathways between components of stature and HbA<sub>1c</sub>: 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**

I.V. Kononenko, A.Y. Mayorov, O.M. Schmidt, E.O. Koksharova, Z.A. Kalmykova, A.N. Tyulpakov, M.V. Shestakova, Russian Federation

**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. Sviatileisha, 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. Androozzi, 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



**Poster Event B, Tuesday, 13:15 - 14:15****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. Dafla, 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**

J.P. Gonzalez-Rivas, J.I. Mechanick, M.M. Infante-Garcia, J.R. Medina-Inojosa, I. Pavlovka, O. Hlinomaz, P. Zak, S. Kunzova, R. Nieto-Martinez, M. Skladaná, J. Brož, J.P. Hernandez, F. Lopez-Jimenez, G.B. Stokin, Czech Republic, USA, Venezuela, Bolivarian Republic of

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

E. Garcia Escobar, S. Valdés, F. Soriguer, A. Lago-Sampedro, S. García-Serrano, N. Colomo, C. Maldonado, L. Castaño, E. Delgado, J. Franch-Nadal, F.-J. Cháves, A. Calle, G. Rojo-Martínez, Spain

**347 Relationship between vascular endothelium growth factor b levels and metabolic syndrome in the Di@bet.es study: preliminary results**

S. Garcia 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

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

N. Thomas, A. Hill, P. Tippet, T. McDonald, B. Knight, A. Carr, R. Oram, A. Hattersley, M. Weedon, A. Jones, UK

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

J. Seufert, H. Ikegami, S. Brette, V. Pilorget, F. Lauand, E.G. Wilmot, E. Renard, J.J. Gagliardino, Germany, Japan, France, UK, Argentina

**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. Bruggraber, M. Knip, T. Tree, M. Peakman, A.M. Schulte, R. Lahesmaa, T.R. Suviolaiva, F. Dotta, G. Sebastiani, C. Mathieu, S. Brunak, Denmark, UK, Finland, USA, Germany, Italy, Belgium

**354 Higher level of body mass index ( $\geq 22$  kg/m<sup>2</sup>) 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**

C. De Luca, M. Suleiman, A.M. Schulte, D.L. Eizirik, M. Tesi, W. Baronti, E. Bosi, M. Solimena, M. Cnop, P. Marchetti, L. Marselli, Italy, Germany, Belgium

**361 The assessment of intrahepatic islet transplantation using exendin PET imaging**

T.J. Jansen, M. Buitinga, M. Boss, E.J. De Koning, M.A. Engelse, M.F. Nijhoff, I. Velikyan, O. Korsgren, O. Eriksson, M. Brom, M. Gotthardt, Netherlands, Belgium, Sweden

**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. Vantyghe, 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 H<sub>2</sub>O<sub>2</sub> 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**

N. Cobo-Vuilleumier, E. Martin-Vazquez, P.I. Lorenzo, I. Diaz-Contreras, F. Martin, J.M. Gerdes, J. Ferrer, Y.S. Romero-Zerbo, M. Garcia, F.J. Bermúdez-Silva, M. Gannon, P. Collombat, B.R. Gauthier, Spain, Germany, USA, France

**369 Intestinal delivery of proinsulin and IL-10 via Lactococcus lactis combined with low-dose anti-CD3 induces antigen-specific FoxP3<sup>+</sup> 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)**

L. Piemonti, V. Lampasona, I. Marzinotto, E. Bosi, P. Pozzilli, F. Giorgino, E. Cossu, T. Linn, L. Rose, B. Keymeulen, P. Gillard, L. Daffonchio, P. Ruffini, A.R. Maurizi, M. Allegretti, Italy, Germany, Belgium

**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<sub>2</sub>O<sub>2</sub> 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

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

L.J. Cui, T. Bai, H.H. Yang, L.P. Zhi, Z.H. Liu, T. Liu, H. Xue, X.H. Yang, X. Zhao, Z.T. Wen, Z.H. Lu, Y.F. Liu, Y. Zhang, China

**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- $\beta$ 1 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- $\beta$ H1 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. Spéjel, H. Mulder, M. Fex, Sweden

**390 Telmisartan amplifies glucose-stimulated insulin secretion via ion channels, independent of AT1 receptor and PPAR $\gamma$** 

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**

M. Abarkan, D. Mafilaza, A. Pirog, G. Pathak, G. N'Kaoua, R. O'Connor, M.J. Donahue, M. Raoux, S. Renaud, J. Lang, France

**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**

M. Suleiman, C. De Luca, A.M. Schulte, D.L. Eizirik, M. Tesi, E. Gianetti, M. Solimena, E. Bosi, M. Cnop, P. Marchetti, L. Marselli, Italy, Germany, Belgium

**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**

O. McCarthy, J. Pitt, R. Churm, G.J. Dunseath, C. Jones, L. Bally, C.T. Nakas, R. Deere, M.L. Eckstein, S.C. Bain, O. Moser, R.M. Bracken, UK, Switzerland, Greece, Austria

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

J.P. Pitt, O. McCarthy, O. Moser, M.L. Eckstein, R. Deere, S.C. Bain, R. Churm, G.J. Dunseath, C. Jones, R.M. Bracken, UK, Austria

**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**

C.A. Springer, C. Binsch, D. Herebian, B. Knebel, M. Lienhard, R. Herwig, A. Chadt, H. Al-Hasani, Germany

**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**

L. Espelage, C. De Wendt, L. Toska, C. Springer, T. Benninghoff, T. Stermann, A. Chadt, H. Al-Hasani, Germany

**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

**407 Estimating pentose phosphate pathway activity from the analysis of hepatic glycogen  $^{13}\text{C}$ -isotopomers from [U- $^{13}\text{C}$ ]fructose**

G.D. Belew, L. Tavares, A.N. Torres, G.D. Nunzio, J.G. Jones, Portugal

**408 Evaluation of carbohydrate biosynthesis with  $^{18}\text{O}$ -enriched water and isotope shifted  $^{13}\text{C}$  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**

R. Bizzotto, C.K. Rayner, L.E. Watson, L.K. Phillips, K. Lange, M.J. Bound, J. Grivell, T. Wu, K.L. Jones, M. Horowitz, E. Ferrannini, D. Tricò, S. Frascerra, A. Natali, A. Mari, Italy, Australia

**411 Effect of meal texture on glucose excursions after bariatric surgery**

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

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

S. Ueno, Y. Seino, A. Masuda, S. Sakai, M. Murase, H. Fujisawa, M. Shibata, T. Takayanagi, Y. Sugimura, Y. Hayashi, A. Suzuki, Japan

**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**

J. Bandres-Meriz, D. Hoch, A. Majali-Martinez, T.M. Kaudela, A. Glasner, S. Honeder, M. Schittmayer-Schantl, R. Birner-Gruenberger, B. Novakovic, R. Saffery, G. Desoye, Austria, Australia

**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. Ogihara, Q. Ye, H. Tsuneki, A. Nakashima, S. Saito, T. Sasaoka, Japan

**415 Pancreatic regenerating protein  $\alpha$ : 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. Pöchlauer, 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 Probiotic 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**

L.J. Kjerpeseth, C.E. Cesta, A. Engeland, K. Furu, M. Gissler, H.L. Gulseth, Ó.Ö. Hálfðánarson, Ø. Karlstad, H. Kieler, M.K. Leinonen, M. Nørgaard, L. Pazzagli, L. Pedersen, H. Zoega, J.M. Cohen, Norway, Sweden, Finland, Iceland, Australia, Denmark

**425 Is HbA<sub>1c</sub> 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. Schovaneck, 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?**

M.M. Svebis, A. Kun, B.A. Domján, E. Szabó, J. Tornóczki, G. Visolyi, V.J. Horváth, A.G. Tabák, Hungary, UK

**430 Maternal mental state correlates with maternal insulin sensitivity and interleukin-6 levels in late pregnancy**

I. Bauer, F. Schleger, L. Fritsche, N. Schneider, M. Breuer, M. Weiss, J. Pauluschke-Fröhlich, A.L. Birkenfeld, M. Heni, H. Preissl, A. Fritsche, Germany

**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. Pustozarov, 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**

X. Wang, C. Chen, C. Xie, M. Horowitz, K.L. Jones, C.K. Rayner, Z. Sun, T. Wu, China, Australia

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

M.S. Svane, H.H. Johannesen, C. Martinussen, K.N. Bojsen-Møller, M.L. Hansen, A.E. Hansen, C. Deacon, B. Hartmann, S.H. Keller, A. Loft, A. Kjaer, S. Madsbad, J. Löfgren, J.J. Holst, N.J. Wewer Albrechtsen, Denmark

**443 Serum levels of the Zonulin family of peptides in individuals from the PREVADIAB 2 cohort, a role in metabolic dysfunction**

I. Sousa-Lima, R.S. Patarrão, M. Meneses, A.F. Pina, M. Coelho, J.F. Raposo, R.T. Ribeiro, L. Gardete-Correia, R. Duarte, J. Boavida, I. Correia, R. Andrade, J. Medina, J.G. Jones, M. Macedo, Portugal

**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**

B. Guigas, H.J. Van der Zande, A. Zawistowska-Deniziak, J.M. Lambooj, F. Otto, L. Lantier, O.P. McGuinness, V. Chavanelle, Y. Otero, S.L. Peltier, P. Sirvent, Netherlands, USA, France

**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 signalling are closely related to impaired incretin profile and type 2 diabetes among obese patients**

I. Stafeev, I. Sklyanik, K. Yah'yaev, E. Shestakova, A. Yurasov, M. Menshikov, A. Vorotnikov, Y. Parfyonova, M. Shestakova, Russian Federation



**451 Ebselen enhances insulin sensitivity by inhibiting SHIP2 and protects diabetic mice from oxidative stress and inflammation**

Z. Polianskyte-Prause, T.A. Tolvanen, S. Lindfors, K. Kon, L.C. Hautala, H. Wang, T. Wada, H. Tsuneki, T. Sasaoka, S. Lehtonen, Finland, Japan

**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**

I. Sklyanik, E. Shestakova, I. Stafeev, K. Yah'yaev, A. Yurasov, M. Menshikov, A. Vorotnikov, Y. Parfyonova, M. Shestakova, Russian Federation

**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**

K. Kalin, K. Rådholm, M. Wennberg, V. Tremaroli, H. Brolin, M. Woodward, F. Bäckhed, O. Rolandsson, Sweden, Australia

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

A.L. Emanuel, R.I. Meijer, D.H. Van Raalte, M. Diamant, M.H. Kramer, M.J. Serlie, E.C. Eringa, E.H. Serné, Netherlands

**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**

P. Thornalley, M. Xue, K. Weston, R. Ali Alsiddig, A. Diane, I. Abdalhakam, M. Alkasem, M. Shraim, H. Rustom, A. Hashish, M. Dehbi, M. Skarulis Young, Qatar, UK

**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

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

P. Thomakos, O. Kepaptsoglou, C. Barreto, A. Korantzis, A. Trouva, I. Sklavounos, I. Taraoune, D. Trouvas, C.S. Zoupas, Greece

**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**

C.L. Lyons, A. Hamilton, D. Grajales, L. Shcherbina, A. Lindqvist, E.E. Cowan, N. Wierup, H. Mulder, M. Fex, Sweden

**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**

K.D. Galsgaard, J. Lee, B.T. Hubbard, X.-M. Zhang, G.W. Cline, A.R. Nasiri, J.J. Holst, N.J. Wewer Albrechtsen, K.F. Pertersen, G.I. Shulman, Denmark, USA

**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**

W. Li, M. Schram, S. Sep, T. Berendschot, C. Webers, A. Kroon, C. Van der Kallen, R. Henry, S. Eussen, N. Schaper, P. Dagnelie, M. Van Greevenbroek, C. Schalkwijk, C. Stehouwer, A. Houben, Netherlands

**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. Gosciny, 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**

E. Muraca, S. Ciardullo, S. Perra, F. Zerbin, A. Oltolini, R. Cannistraci, E. Bianconi, M. Villa, G. Manzoni, G. Lattuada, G. Perseghin, Italy

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

M.H. Lundqvist, K. Almy, U. Wiklund, N. Abrahamsson, P.G. Kamble, M.J. Pereira, J.W. Eriksson, Sweden

**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

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

**PS 34 More about metabolism**

Chair: J. Hoeks, Netherlands

**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. Gaudio, 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**

A. Sarsenbayeva, P. Dipta, M. Lundqvist, K. Almy, B. Tirosh, J.W. Eriksson, M.J. Pereira, Sweden, Israel

**503 NK cells in visceral adipose tissue contribute to obesity-associated insulin resistance through macrophage polarisation and low grade inflammation**

K. Wouters, Y.H. Kusters, M. Bijnen, S. Wetzels, X. Zhang, Pauline Linssen, Katrien Gaens, A.J. Houben, E. Kooi, C.J. Van der Kallen, Kenneth Verboven, Johan Jocken, Ellen E Blaak, Peter J Joris, Jogchum Plat, Ronald P Mensink, Femke Al Ehlens, Lotte Wieten, Jan Willem Greve, Sander S Rensen, C.D. Stehouwer, C.G. Schalkwijk, Netherlands, France



**504 Endothelial glycocalyx profile in type 2 diabetes**

B. DellaValle, 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. Bertocchini, 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 elov13 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**

R.C. Laker, L. Lantier, O.P. McGuinness, S. Will, K. Kuszpit, A. Alfaro, N. Bhagroo, L. Jerminus, C.J. Rhodes, USA

**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**

J. Trnovska, E. Davidova, P. Svoboda, H. Kratochvilova, M. Mraz, S. Hubackova, J. Neuzil, M. Haluzik, Czech Republic, Australia

**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 PKC $\epsilon$  activation in skeletal muscle of healthy humans**

T. Sarabhai, C. Koliaki, L. Mastrototaro, S. Kahl, D. Pesta, M. Apostolopoulou, M. Wolkersdorfer, A. Bönner, P. Bobrov, D. Markgraf, C. Herder, M. Roden, Germany, Austria

**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-Mrabeh, UK

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

B. Bouillet, T. Gautier, D. Denimal, M. Samson, D. Masson, J.-P. Pais de Barros, G. Maquart, M. Xolin, H. Dalle, A. Grosfeld, M. Moldes, B. Fève, B. Vergès, France

**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**

A. Wretling, E.H. Zobel, R.S. Ripa, B.J. Von Scholten, T. Suviolaiva, T.W. Hansen, H. Vestergaard, A. Kjaer, C. Legido-Quigley, P. Rossing, Denmark, UK

**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**

M.J. Pereira, S. Skrtic, P.G. Kamble, M. Vranic, P. Katsogiannos, J. Kullberg, J.W. Eriksson, Sweden

**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**

M. Barroso Oquendo, E. Lorza-Gil, F. Gerst, F. Fend, A. Königsrainer, R. Wagner, M. Heni, H.-U. Häring, A.L. Birkenfeld, S. Ullrich, D. Siegel-Axel, Germany

**531 Ctrp3, a new anti-inflammatory and cardioprotective adipokine in patients with cardiovascular diseases and type 2 diabetes**

H. Kratochvílová, B.J. Kasperová, Z. Lacinová, I. Laňková, J. Trnovská, I. Netuka, P. Ivák, J. Mahřík, D. Hlaváček, M. Mráz, M. Haluzík, Czech Republic

**532 Increased expression of Granzyme B in adipose tissue of obese subjects associated with sick fat**

F. Cimini, I. Barchetta, C. Chiappetta, L. Bertocchini, 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. Bertocchini, 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.A. Nauck, 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**

C. Janus, S.B. Jensen, J. Lundgren, L.M. Olsen, C.R. Juhl, B.M. Stallknecht, J.J. Holst, S. Madsbad, S.S. Torekov, Denmark

**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**

T. Saari, J. Koffert, H. Honka, J. Teuho, S. Kauhanen, E. Löyttyniemi, R. Parkkola, V. Oikonen, A. Lindqvist, N. Wierup, K.A. Virtanen, L. Groop, P. Nuutila, Finland, Sweden

**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**

E.R. Carlsson, M. Fenger, T. Henriksen, L.K. Kjaer, D. Worm, D.L. Hansen, S. Madsbad, H.E. Poulsen, Denmark

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

G. Höskuldottir, N. Sattar, M. Miftaraj, I. Näslund, J. Ottosson, S. Franzén, A.-M. Svensson, B. Eliasson, Sweden, UK

**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**

K.E. Almby, P. Katsogiannos, P. Kamble, M.J. Pereira, U. Wiklund, J.W. Eriksson, Sweden

**548 Low-calorie intake: a key mechanism contributing to the metabolic impacts of Roux-en-Y gastric bypass surgery**

Q. Chen, K. Alexiadou, B. Jones, C. Sands, M.R. Lewis, S.R. Bloom, T. Tan, J. Li, UK

**549 Differences in adipose tissue-derived molecules in obese patients in the absence or presence of renal dysfunction and impact of bariatric surgery**

R. Vila-Bedmar, M. Martín-Taboada, B. Lanzón, I. González de Pablos, L. Torres, P. Gomez-Rodriguez, E. Rodríguez-Cuellar, A.E. Rodriguez-Rodriguez, S. Luis-Lima, E. Porrini, E. Morales, G. Medina-Gomez, Spain

**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**

R. Wagner, B. Dietz, J. Machann, P. Schwab, J. Dienes, S. Reichert, A.L. Birkenfeld, H.-U. Haering, F. Schick, N. Stefan, M. Heni, H. Preissl, B. Schoelkopf, S. Bauer, A. Fritsche, Germany, Switzerland

**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**

K.W. Mahaffey, G. Bakris, J. Blais, C. Cannon, D. Cherney, C.V. Damaraju, J. Gogate, T. Greene, H.J. Heerspink, J.L. Januzzi, M. Kosiborod, A. Levin, I. Lingvay, M. Weir, V. Perkovic, USA, Canada, Australia, Netherlands

**559 Implications of initial eGFR response to empagliflozin treatment effects**

B.J. Kraus, M.R. Weir, G.L. Bakris, M. Mattheus, D.Z. Cherney, N. Sattar, H.J. Heerspink, I. Ritter, M. Von Eynatten, B. Zinman, S.E. Inzucchi, C. Wanner, A. Koitka-Weber, Germany, USA, Canada, UK, Netherlands

**560 Acute declines in eGFR during treatment with canagliflozin and its implications for clinical practice: insights from CREDENCE**

H.J. Heerspink, M. Oshima, M.J. Jardine, R. Agarwal, G. Bakris, D.M. Charytan, D. De Zeeuw, A. Levin, K.W. Mahaffey, B. Neal, C. Pollock, N. Rosenthal, D.C. Wheeler, H. Zhang, V. Perkovic, Australia, Netherlands, Japan, USA, Canada, UK, China

**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**

A. Cahn, I. Raz, L.A. Leiter, O. Mosenzon, S.A. Murphy, D.L. Bhatt, D.K. McGuire, J.P. Wilding, I.A. Gause-Nilsson, A. Langkilde, M. Sabatine, S.D. Wiviott, Israel, Canada, USA, UK, Sweden

**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**

C. Jung, Y. Cho, J. Lee, H. Kim, J. Kang, C.-Y. Park, J.-Y. Park, W. Lee, Korea, Republic of

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

J.A. Sargeant, J.A. King, E.L. Baldry, D.H. Bodicoat, C.L. Edwardson, K. Khunti, D.J. Stensel, D.R. Webb, J.P. Wilding, T. Yates, M.J. Davies, UK

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

S.E. Inzucchi, B. Zinman, C. Wanner, D. Fitchett, S.D. Anker, S. Pocock, S. Kaspers, J.T. George, O.E. Johansen, W. Jamal, S. Hantel, S.S. Lund, USA, Canada, Germany, UK, Norway

**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**

I. Mursic, E. Svehlikova, W. Regitnig, M. Urschitz, M. Wolf, M. Brunner, T. Augustin, C. Magnes, A. Eberl, T. Heise, O. Klein, H. Sourij, T. Pieber, Austria, Germany

**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**

Y. Yamauchi, A. Nakamura, K. Takahashi, S. Kawata, K. Tsuchida, K. Omori, H. Nomoto, H. Kameda, K.Y. Cho, T. Yokota, T. Anzai, H. Miyoshi, Y. Terauchi, T. Atsumi, Japan

**576 Differential effects of SGLT2 inhibitors on mitochondrial oxidative phosphorylation, glucose uptake, cell energy level and metabolism in HepG2 cells and HUVECs**

E. Züchner, 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**

K.R. Tuttle, J.M. Wilson, Y. Lin, H.-R. Qian, K. Kelly-Boruff, F. Genovese, M. Karsdal, K.L. Duffin, F.T. Botros, USA, Denmark

**578 In vivo PET imaging of the gastric inhibitory polypeptide receptor in pancreas**

O. Eriksson, I. Velikyan, T. Haack, M. Bossart, A. Evers, I. Laitinen, O. Plettenburg, G. Antoni, L. Johansson, S. Pierrou, M. Wagner, Sweden, Germany

**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**

C. Anholm, P. Kumarathurai, M.G. Skytte, O.W. Nielsen, O.P. Kristiansen, P. Barker, K. Burling, M. Fenger, S. Madsbad, A. Sajadieh, S.B. Haugaard, Denmark, UK

**582 A novel long-acting GLP-1 agonist (GL0034) demonstrates remarkable efficacy on HbA<sub>1c</sub>, 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**

G. Ferrannini, H.C. Gerstein, H.M. Colhoun, G.R. Dagenais, R. Diaz, L. Dyal, M. Lakshmanan, L. Mellbin, J. Probstfield, M.C. Riddle, J.E. Shaw, L. Rydén, Sweden, Canada, UK, Argentina, USA, Australia

**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 HbA<sub>1c</sub> 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**

W. Lee, Y. Cho, J. Lee, H. Kim, J. Kang, C.-Y. Park, J.-Y. Park, C. Jung, Korea, Republic of

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<sub>1c</sub> 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**

K. Cho, H. Nomoto, S. Kawata, K. Tsuchida, K. Omori, A. Nakamura, T. Atsumi, H. Miyoshi, Japan

**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**

N.J. Johansen, T.F. Dejgaard, A. Lund, C. Schlüntz, E.L. Larsen, H.E. Poulsen, J.P. Goetze, H.J. Møller, T. Vilsbøll, H.U. Andersen, F.K. Knop, Denmark



**604 Exercise alone and in combination with liraglutide improves cardiorespiratory fitness and physical functioning during weight loss maintenance**

S.B. Jensen, C. Janus, J.R. Lundgren, C.R. Juhl, M.B. Blond, B.M. Stallknecht, J.J. Holst, S. Madsbad, S.S. Torekov, Denmark

**605 Gastrointestinal adverse events with once-weekly semaglutide: risk predictors and effect on semaglutide response**

F.K. Knop, S. Haring, 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**

S.S. Torekov, C. Janus, J. Lundgren, S.B. Jensen, C.R. Juhl, M.B. Blond, L. Olsen, R.M. Christensen, M.S. Svane, T.Q. Bandholm, K.N. Bojsen-Møller, J.-E.B. Jensen, B.M. Stallknecht, J.J. Holst, S. Madsbad, Denmark

**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. Kapitzka, 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. Paldánus, 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**

C.-H. Leung, C.-Y. Tsai, S.-C. Liu, P.-H. Hsu, S.-M. Chuang, M.-S. Tzeng, Taiwan

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

K. Maasen, J.L. Scheijen, S.J. Eussen, C.J. Van der Kallen, P.C. Dagnelie, C.D. Stehouwer, M.M. Van Greevenbroek, C.G. Schalkwijk, Netherlands

**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**

M.N. Thomsen, M.J. Skytte, A. Samkani, M.H. Carl, P. Weber, A. Astrup, T.M. Larsen, J. Frystyk, J.J. Holst, B. Hartmann, H. Thomsen, E. Chabanova, S. Madsbad, S.B. Haugaard, T. Krarup, Denmark

**615 Effects of Lactobacillus GG supplementation in type 2 diabetes: Are mucin genes expressions important?**

B. Eliuz Tipici, E. Coskunpinar, 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**

N.J. Tripolt, P.N. Pferschy, A. Obermayer, H. Kojzar, B. Obermayer, M. Zanker, C. Sourij, T.R. Pieber, O. Moser, M.L. Eckstein, R. Riedl, H. Sourij, Austria

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

E.M. Gram-Kampmann, C.D. Hansen, M.B. Hugger, J.M. Jensen, J.C. Brønd, P. Hermann, M.H. Olsen, A. Krag, H. Beck-Nielsen, K. Højlund, Denmark

**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**

N.S. Pilmark, M. Lyngbæk, L. Oberholzer, I. Elkjær, C. Petersen-Bønding, K. Kofoed, C. Siebenmann, K. Kellenberger, G.V. Hall, J. Abildgaard, C.A. Lauridsen, M. Ried-Larsen, B.K. Pedersen, K.B. Hansen, K. Karstoft, Denmark, Italy, Switzerland

**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**

V. Chavanelle, Y. Otero, D. Ripoché, C. Langhi, M. Bargetto, F. LeJoubioux, B. Guigas, N. Boisseau, T. Maugard, G. Pickering, M. Cazaubiel, S. Peltier, P. Sirvent, France, Netherlands

**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**

M. Hankir, T. Langseder, E. Bankoglu, Y. Ghoreishi, U. Dischinger, M. Kurlbaum, M. Kroiss, C. Otto, C.W. Le Roux, T. Arora, F. Seyfried, N. Schlegel, Germany, Ireland, Denmark

**627 Substantial cardiovascular benefit from icosapent ethyl in patients with diabetes: REDUCE-IT DIABETES**

D. Bhatt, E. Brinton, M. Miller, P.G. Steg, T.A. Jacobson, S.B. Ketchum, R.T. Doyle, R.A. Juliano, L. Jiao, C. Granowitz, O. Ganda, R. Busch, D. Herrington, J.-C. Tardif, C. Ballantyne, USA, France, Canada

**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**

E. Felner, T. Quattrin, M.J. Haller, A.K. Steck, Y. Li, Y. Xia, J.H. Leu, F. Vercruysse, R. Zoka, J.A. Hedrick, M.R. Rigby, USA, Belgium

**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. Agliandolo, 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. Talaeerad, 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. Lavallo, 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<sub>1c</sub> 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. Weldessalasia, P. Saravanan, UK

**653 Housing insecurity and glycaemic control among people with type 2 diabetes**

T. Thomas, A. Anton, W. Dyer, A. Adams, J. Schmittziel, 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**

M. Ziori, K. Athanasakis, A. Papazafiropoulou, A. Koutsovasilis, S. Driva, E. Prodromiadou, A. Sotiropoulos, I. Georgopoulos, D. Gougourelas, A. Melidonis, S. Bousboulas, S. Liatis, Greece

**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. Ribbel-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. Stachlewska, 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**

R. Goldenberg, V.R. Aroda, L.K. Billings, A.S. Christiansen, A.M. Donatsky, E. Parvaresh Rizi, G. Podgorski, K. Raslova, D.C. Klonoff, R.M. Bergenstal, Canada, USA, Denmark, South Africa, Slovakia

**661 HbA<sub>1c</sub> 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**

S.R. Heller, T.R. Pieber, H.S. Bajaj, T. Jia, K. Khunti, D.C. Klonoff, S. Ladelund, L.A. Leiter, L. Wagner, A. Philis-Tsimikas, UK, Austria, Canada, Denmark, USA

**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)**

H. Thacker, R. Ghosh, A.K. Das, A. Mithal, S. Joshi, K.M. Prasanna Kumar, S. Kalra, A.G. Unnikrishnan, B. Sethi, S. Mohanasundaram, S. Menon, A. Nair, N. Rais, S. Chowdhury, LANDMARC study group, India

**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**

L. Berard, F.J. Ampudia-Blasco, S. Brette, D. Bruttomesso, K. Close, H. Ikegami, D. Jurišić-Eržen, F. Lauand, A. Peters, V. Pilorget, B. Ramanathan, E. Renard, E.G. Wilmot, A. Roborel de Climens, Canada, Spain, France, Italy, USA, Japan, Croatia, India, UK

**668 A retrospective, observational, cohort study of the use and effectiveness of basal-bolus or premixed insulin in Japanese people with type 2 diabetes**

M. Baxter, H. Miyoshi, T. Kimura, M. Hattori, Y. Morimoto, M. Tamiwa, D. Marinkovich, T. Hirose, UK, Japan, Australia

**669 Association of patient-reported outcomes scores with glycaemic target achievement in type 1 diabetes in the SAGE study**

E.G. Wilmot, F.J. Ampudia-Blasco, L. Berard, S. Brette, L.E. Calliari, E. Fitts, K. Close, J.J. Gagliardino, F. Lauand, A. Peters, E. Renard, A. Roborel de Climens, J. Seufert, UK, Spain, Canada, France, Brazil, USA, Argentina, Germany

**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 HbA<sub>1c</sub>, 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**

M.H. Lee, S. Vogrin, B. Paldus, D. Morrison, D. Zaharieva, J. Lu, H. Jones, E. Netzer, C. Sims, R.J. MacIsaac, B. Grosman, A. Roy, N. Kurtz, A. Jenkins, D.N. O'Neal, Australia, USA

**681 Long-term safety and efficacy of Ultra Rapid Lispro (URLi) in PRONTO-T1D**

J.M. Bue-Valleskey, L.J. Klaff, J. Cho, M.A. Dellva, N. Schloot, J. Miura, D. Dahl, J. Tobian, USA, Japan, Germany

**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<sub>1c</sub> 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 HbA<sub>1c</sub> 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. Barteo, 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**

J. Jurczynska, W. Korcz, G. Lech, S. Hammoud, W. Pawlowski, M. Slodkowski, L. Czupryniak, Poland

**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

**698 Trends in U.S. insulin use for people with diabetes: 2009-2017**

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 HbA<sub>1c</sub> is modulated by glycaemic variability**

P. Divilly, P. Jacob, S. Amiel, P. Choudhary, UK

**701 Marked improvements in HbA<sub>1c</sub> 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 A<sub>1c</sub> 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<sup>®</sup> system initiation in people with type 1 and type 2 diabetes in France**

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

**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. Künsting, K. Barnard-Kelly, Austria, UK, Germany

**709 Marked improvements in HbA<sub>1c</sub> 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**

P.F. Mora, D.R. Sutton, Jr, A. Gore, B.S. Baliga, R. Goldfaden, C. Nikkel, J. Sink II, B. Adams-Huet, USA

**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**

D.R. Sutton, Jr, P.F. Mora, A. Gore, B.S. Baliga, R. Goldfaden, C. Nikkel, J. Sink II, B. Adams-Huet, USA

**712 Patient-reported outcomes for 2,335 adults with type 2 diabetes using the Omnipod<sup>®</sup> 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**

M.D. Breton, L.G. Kanapka, R.W. Beck, L. Ekhlaspour, G.P. Forlenza, E. Cengiz, M. Schoelwer, K. Ruedy, C.C. Kollman, S.A. Weinzimer, M. DeBoer, B.A. Buckingham, D. Cherňavsky, R.P. Wadwa, iDCL Trial Research Group, USA

**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<sup>™</sup> 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**

S.J. Russell, C.A. Balliro, M. Ekelund, F. El-Khatib, T. Graungaard, R. Jafri, N. Rathor, J. Sherwood, E.R. Damiano, USA, Denmark

**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**

H.C. Haberl, T. Pöttler, D.A. Hochfellner, F. Aberer, H. Ziko, L. Bytyqi, P. Baumann, J. Samonigg, P. Beck, A. Fahrleitner-Pammer, J.K. Mader, Austria

**722 UK 1st National Health Service (NHS) EndoBarrier service for uncontrolled diabetes: 2-year outcomes for all 62 treated patients**

R.E. Ryder, M. Yadagiri, S.P. Irwin, W. Burbridge, M.C. Wyres, R. Allden, T. Bashir, J.P. Bleasdale, P. Sen Gupta, E.N. Fogden, M.P. Anderson, UK

**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**

M. Yadagiri, F.Y. Kinney, N. Ashman, J. Adams, M.C. Wyres, E.S. Sharratt, C. Greenwood, M.H. Lang, J. Bleasdale, E. Fogden, M. Anderson, C. Walton, M.A. Greenstone, R.E. Ryder, UK

**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. Vlamincx, S. Schauvliege, D. Delbeke, Belgium

**727 Machine learning-based glucose prediction with use of continuous glucose and physical activity data: The Maastricht Study**

Y.D. Foreman, W.P. Van Doorn, N.C. Schaper, H.H. Savelberg, A. Koster, C.J. Van der Kallen, A. Wesselius, S.J. Eussen, M.T. Schram, P.C. Dagnelie, B.E. De Galan, O. Bekers, C.D. Stehouwer, S.J. Meex, M.C. Brouwers, Netherlands

**728 The CBmeter pilot study: assessment of carotid body function aimed at early diagnosis of metabolic dysfunction**

M. Lages, G.C. Brito, N.V. Lopes, R. Fonseca-Pinto, S. Feijó, A. Vieira, I. Ribeiro, L. Carvalho, C.G. Silva, M.P. Guarino, Portugal

**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**

B. Zinman, J. Rosenstock, O.E. Johansen, M. Hoiberg, E. Pfarr, M. Mattheus, T. Meinicke, J.T. George, M.A. Espeland, D.K. McGuire, N. Marx, S. Kahn, Canada, USA, Norway, Germany

**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**

J. Brøsen, R.M. Agesen, A.C. Alibegovic, H.U. Andersen, H. Beck-Nielsen, P. Gustenhoff, T.K. Hansen, C. Hedetoft, T. Jensen, C.B. Juhl, S.S. Lerche, K. Nørgaard, H.-H. Parving, L. Tarnow, U. Pedersen-Bjergaard, Denmark

**737 Dasiglucagon ameliorates postprandial hypoglycaemia after Roux-En-Y gastric bypass**

C.K. Nielsen, C.C. Øhrstrøm, U.L. Kielgast, D.L. Hansen, A. Lund, T. Vilsbøll, F.K. Knop, Denmark

**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**

C.E. Verhulst, T.W. Fabricius, G. Nefs, R.P. Kessels, C.J. Tack, U. Pedersen-Bjergaard, B.E. De Galan, Netherlands, Denmark

**740 Attitudes to awareness of hypoglycaemia tip the balance between hypoglycaemia fear and hyperglycaemia avoidance in problematic hypoglycaemia in type 1 diabetes**

R. Maclean, P. Jacob, S. Haywood, P. Choudhary, S. Heller, E. Toschi, D. Kariyawasam, A. Brooks, H. Rogers, E.L. Smith, L. Gonder-Frederick, N. De Zoysa, S.A. Amiel, UK, USA

**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**

M. Cigler, H. Ziko, H. Elsayed, D. Hochfellner, T. Pöttler, A. Müller, M.L. Eckstein, L. Knoll, H. Sourij, J.K. Mader, O. Moser, Austria

**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**

P. Novodvorsky, A. Bernjak, A. Smith, E. Downs, M.F. Arshad, A.I. Oprescu, R.M. Jacques, J. Lee, I. Ahmed, S.R. Heller, UK

**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**

F. Snoek, E. Spaepen, D.M. Bushnell, C. Child, Z. Balantac, B.D. Mitchell, M. Peyrot, Netherlands, USA

**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**

A. Miya, A. Nakamura, T. Handa, H. Nomoto, H. Kameda, K.Y. Cho, S. Nagai, H. Miyoshi, T. Atsumi, Japan

**752 Predictive low glucose suspend (PLGS) necessitates less carbohydrate supplementation to rescue hypoglycaemia: need to revisit current hypoglycaemia treatment guidelines**

R. Jones, A. Barteo, M. Katz, A. LaLonde, E. Dassau, H. Wolpert, J.E. Pinsky, 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**

G.L. Garden, J.L. Hine, S.J. Mitchell, E.J. Hutchison, T.P. Gaffney, V. Hofmann, B.M. Frier, K.M. Shaw, S.R. Heller, G. Koehler, G.A. Roberts, D.L. Russell-Jones, UK, Ireland, Austria

**755 Associations between variability in glycated haemoglobin (HbA<sub>1c</sub>) 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**

L.Q. Huynh, S. Ng, D. Xie, M. Hargreaves, T. Arunachala Murthy, T. Wu, C.K. Rayner, K.L. Jones, M. Horowitz, C.S. Marathe, Australia

**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**

A.F. Geraets, S. Köhler, R. Muzambi, C.G. Schalkwijk, A. Oenema, S.J. Eussen, P.C. Dagnelie, C.D. Stehouwer, N.C. Schaper, R.M. Henry, C.J. Van der Kallen, A. Wesselius, A. Koster, F.R. Verhey, M.T. Schram, Netherlands, UK

**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. Sanchis, 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**

P. Gillard, A. El Malahi, M. Van Elsen, S. Charleer, F. De Ridder, K. Ledeganck, B. Keymeulen, L. Crenier, R. Radermecker, B. Lapauw, C. Vercammen, F. Nobels, C. Mathieu, C. De Block, Belgium

**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. Ejksjaer, 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. Ejksjaer, Denmark

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

**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**

J.M. Dennis, L.A. Donnelly, W.E. Henley, A.G. Jones, A.P. McGovern, N. Sattar, R.R. Holman, E.R. Pearson, A.T. Hattersley, B.M. Shields, UK

**777 Moderate-intensity activity may reduce both the body fat composition and pancreatic glucagon secretion in type 2 diabetes**

M. Miuchi, A. Hatano, M. Takeuchi, M. Okada, Y. Katayama, S. Tsuruoka, C. Takeuchi, Japan

**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. Haring, 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**

D.A. Hochfellner, R. Rainer, F. Aberer, K.M. Lichtenegger, P. Beck, F. Fruhwald, A.R. Rosenkranz, L.-P. Kamolz, J.K. Mader, J. Plank, Austria

**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. Mårdbj, 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**

I. Thoma, M. Colombo, A.A. Shehni, S.J. McGurnaghan, L.A. Blackbourn, H. Wilkinson, A. Collier, A.W. Patrick, J.R. Petrie, P.M. McKeigue, R. Saldova, H.M. Colhoun, on behalf of the Scottish Diabetes Research Network Type 1 Bioresource Investigators (SDRNT1BIO), UK, Italy, Ireland

**793 The role of lipoprotein(a) in renal changes within patients with poor vs good glycaemic control**

S. Kirana, M. Poudel, J. Vortherms, K.-P. Mellwig, O. Sauzet, D. Hinse, D. Horstkotte, N. Bogunovic, L. Faber, C. Knabbe, D. Tschöpe, V. Rudolph, F. Van Buuren, Germany

**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**

P. Henriksen, S.A. Winther, J.K. Vogt, T.H. Hansen, L. Ahonen, T. Suviataival, M. Frimodt-Møller, T.W. Hansen, T. Hansen, H.-H. Parving, C. Legido-Quigley, P. Rossing, O. Pedersen, Denmark, UK

**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**

N.S. Heinrich, S. Theilade, S.A. Winther, N. Tofte, T.S. Ahluwalia, J.L. Jeppesen, F. Persson, T.W. Hansen, J.P. Goetze, P. Rossing, Denmark

**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**

S. Kopf, Z. Kender, L. Alvarez-Ramos, M. Höffgen, R. Prikulis, T. Fleming, P.P. Nawroth, Germany

**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**

B.A. Wicklow, E.A. Sellers, J.M. McGavock, J. Hamilton, S. Hadjiyannakis, T. Pinto, M. Jetha, C. Panagiotopoulos, A.B. Dart, Canada

**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**

T. Bjerre-Christensen, S.A. Winther, N. Tofte, S. Theilade, T.S. Ahluwalia, M. Lajer, T.W. Hansen, P. Rossing, C.S. Hansen, Denmark

**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 HbA<sub>1c</sub> 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**

R. Bouslama, V.P. Dumont, S.H. Lindfors, L. Paavolainen, J. Tienari, H.O. Nisen, T. Mirtti, C. Forsblom, D.T. Gordin, P.-H. Groop, S. Suetsugu, S.H. Lehtonen, Finland, Japan

**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. Eika Jørgensen, M. Valerius, J. Nouri Hajari, H.L. Andersen, S. Byberg, Denmark

**818 Reteval electroretinography in diabetic retinopathy: real world experience and novel applications**

E.J. Tabet, J. Wong, T. Wu, M.I. Constantino, M. McGill, B. Wu, L.M. Molyneaux, S.M. Twigg, Australia

**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**

K. Larsen, S. Dwarampudi, C. Uffendell, S. Miller, L. Wang, C. O'Dowd, U. Srinivas-Shankar, UK

**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<sup>2+</sup>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-naïve 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**

M. Albanese, A.H. Heald, M. Whyte, M. Lunt, M. Livingston, R. Gadsby, G. Hackett, S.G. Anderson, M. Stedman, Switzerland, UK

**843 Efficacy and safety of an oral dispersible tablet containing vitamin B<sub>12</sub> after 12 months of administration in patients with diabetic neuropathy and good glycaemic control**

T. Didangelos, E. Karlafti, E. Margariti, P. Giannulaki, Z. Kontoninas, C. Margaritidis, S. Tesfaye, A. Hatzitolios, Greece, UK

**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

**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. Proot, K. Vanden Wyngaert, H. Demeyer, D. Cambier, P. Calders, Belgium

**850 Dupuytren's 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**

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

**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**

Z. Kender, J. Morgenstern, L. Alvarez-Ramos, R. Prikulis, T. Fleming, P.P. Nawroth, S. Kopf, Germany

**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. Štötl, Slovenia

**858 Cold atmospheric pressure plasma for accelerated wound healing in diabetic foot: the prospective, randomised, placebo-controlled KPW-Trial**

T.-C. Costea, B. Stratmann, C. Nolte, J. Hiller, J. Schmidt, J. Reindel, K. Masur, W. Motz, J. Timm, W. Kerner, D. Tschoepe, Germany

**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**

A. Severina, I. Larina, M. Shamkhalova, E. Artemova, L. Nikankina, M. Shestakova, I. Dmitriev, A. Pinchuk, M. Kaabak, G. Musaeva, Russian Federation

**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**

A.S. Lee, N.A. Johnson, M. McGill, J. Overland, C. Luo, C.J. Baker, S. Martinez-Huenchullan, J. Wong, J.R. Flack, S.M. Grieve, S.M. Twigg, Australia, Chile

**866 Effects of fructose restriction on liver steatosis (FRUITLESS): a double-blind randomised controlled trial**

N. Simons, P. Veeraiyah, P.I. Simons, N.C. Schaper, M. Kooi, V.B. Schrauwen-Hinderling, E.J. Feskens, L.E. Van der Ploeg, M.D. Van den Eynde, C.G. Schalkwijk, C.D.A. Stehouwer, M.C. Brouwers, Netherlands

**867 Feasibility of a very low calorie diet to achieve significant weight loss in patients with advanced non-alcoholic fatty liver disease**

J.H. Scragg, L. Avery, S. Cassidy, G.S. Taylor, L. Haigh, M. Boyle, Q.M. Anstee, S. McPherson, K. Hallsworth, UK

**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. Nádasi, 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**

E. Brown, T. Waddell, S. Mouchti, A. Roca-Fernandez, H. Thomaidis-Brears, M. Wilton, A. Williams, G.J. Kemp, J.P. Wilding, M. Kelly, G. Thanabalasingham, D.J. Cuthbertson, R. Banerjee, UK

**877 Multiparametric magnetic resonance imaging of the pancreas and liver in patients with type 2 diabetes**

T.H. Waddell, S. Mouchti, D. Halliday, H. Thomaidis-Brears, A. Dennis, H. Wilman, R. Nicholls, M. Kelly, A. Roca-Fernandez, R. Banerjee, UK

**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. Bertocchini, 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**

P.I. G. Simons, O. Valkenburg, I. Telgenkamp, K.M. Van der Waaij, D.M. De Groot, J.A. Bons, M.R. Taskinen, J. Bören, P. Schrauwen, D. Cassiman, C. Schalkwijk, C.D. Stehouwer, V.B. Schrauwen-Hinderling, L. Hodson, M.C.J. Brouwers, Netherlands, Finland, Sweden, Belgium, UK

**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**

J. Brandts, S.R. Tittel, P. Bramlage, T. Danne, P. Schermann, E. Hess, M. Huptas, R.W. Holl, D. Müller-Wieland, Germany, Austria

**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**

M.J. Meneses, A.F. Pina, I. Sousa-Lima, R.S. Patarrão, R.T. Ribeiro, L. Gardete-Correia, R. Duarte, J.M. Boavida, I. Correia, R. Andrade, J.L. Medina, J.F. Raposo, M.P. Macedo, Portugal

**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**

A. Ben Hamou, Y. Anatakly Henon, A. Alamri, G. Chatellier, I. Banu, P. Garçon, A. Voican, Y. Moeuf, C. Oriez, M. Aroulanda, P. Abassade, M. Fumery, M. Komajda, R. Cador, O. Dupuy, France

**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. Shanguan, S. Wang, China

**897 The impact of acute glycaemic fluctuations on left ventricular systolic function in insulin-treated type 2 diabetes**

A. Andersen, P.G. Jørgensen, J.I. Bagger, M.P. Baldassarre, M. Christensen, K.U. Abelin, J. Faber, U. Pedersen-Bjergaard, J.J. Holst, T. Lindhardt, G. Gislason, F.K. Knop, T. Vilsbøll, Denmark, Italy

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**

P. Blin, P. Darmon, P. Henry, E. Guiard, M.-A. Bernard, C. Dureau-Pournin, H. Maïzi, F. Thomas-Delecourt, R. Lassalle, C. Droz-Perroteau, N. Moore, France

**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**

R. Mastrocola, D. Collotta, F. Manig, R. Verta, M. Le Berre, F. Fava, G. Gaudio, M. Aragno, F. Chiazza, M. Hellwig, J.Q. Gerlach, K.M. Tuohy, L. Joshi, T. Henle, M. Collino, Italy, Germany, Ireland

**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**

K. Adeshara, D. Gordin, A. Antikainen, M. Lehto, C. Forsblom, P.-H. Groop, Finland

**905 Change in extent of coronary artery disease in people with and without diabetes undergoing coronary angiography**

K.V. Kiburg, A.I. Maclsaac, V. Sundararajan, R.J. Maclsaac, 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**

A. Møller, A.H. Larsen, L. Lin, J. Farup, L.P. Tolbod, T. Billeskov, J.B. Jensen, E.I. Sundelin, S. Jakobsen, S.B. Pedersen, F.V. DePaoli, Y. Luo, J. Frøkiær, H. Wigger, N. Jessen, Denmark

**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**

Y. Stephan, M. Soulié, L. Nicol, P. Gluais-Dagorn, S. Hallakou-Bozec, V. Richard, P. Mulder, France

**911 GIP suppresses diabetic cardiomyopathy via attenuation of hyperglycaemia-induced oxidative stress generation**

M. Hiromura, Y. Mori, H. Kushima, T. Saito, N. Osaka, M. Terasaki, H. Yashima, M. Ohara, T. Fukui, T. Hirano, S.-I. Yamagishi, Japan

**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**

M. Soulié, Y. Stephan, L. Nicol, J.-P. Henry, V. Richard, M.P. Pieper, P. Mulder, France, Germany

**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**

H. Yashima, M. Terasaki, T. Saito, Y. Mori, M. Hiromura, H. Kushima, M. Koshibu, N. Osaka, M. Ohara, T. Fukui, Y. Seino, Y. Yamada, T. Hirano, S.-I. Yamagishi, Japan



**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<sup>+</sup> 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**

M. Terasaki, H. Yashima, Y. Mori, T. Saito, M. Hiromura, H. Kushima, M. Koshibu, N. Osaka, M. Ohara, T. Fukui, T. Hirano, S.-I. Yamagishi, Japan

**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**

C.H. Saely, L. Sprenger, A. Vonbank, B. Larcher, A. Mader, M. Maechler, D. Zanolin-Purin, A. Leiberer, A. Muendlein, H. Drexel, Liechtenstein, Austria

**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**

J. Inkeri, A. Tynjälä, C. Forsblom, R. Liebkind, T. Tatlisumak, L.M. Thorn, P.-H. Groop, S. Shams, J. Putaala, J. Martola, D. Gordin, Finland, Sweden, USA

**926 HbA<sub>1c</sub> 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**

H. Drexel, A. Muendlein, C.H. Saely, R. Laaksonen, M. Laaperi, A. Vonbank, A. Mader, B. Larcher, M. Maechler, L. Sprenger, P. Fraunberger, A. Leiherer, Austria, Liechtenstein, Finland

**931 The impact of parental risk factors on the risk of stroke in type 1 diabetes**

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

**932 Association between lipoprotein-associated phospholipase A<sub>2</sub> 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**

P. Pellicori, D. Fitchett, M. Kosiborod, A.P. Ofstad, L. Seman, B. Zinman, I. Zwiener, C. Wanner, J.T. George, S.E. Inzucchi, J. Testani, J.G. Cleland, UK, Canada, USA, Norway, Germany

**934 Subclinical echocardiographic indices of myocardial dysfunction in South Asian Indians with type 2 diabetes and glucose intolerance**

S.K. Vasan, M. Gowri, V.S. Thomson, A.G. Anoop, J. Suresh, B. Antonisamy, F. Jebasingh, F. Karpe, M. Johnson, C. Osmond, C.H. Fall, UK, India

**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**

D.-H. Cho, J.-O. Chung, D.-J. Chung, Korea, Republic of

**938 Non-invasive assessment of changes in cardiac microvascular function in persons with type 2 diabetes**

I.B. Rasmussen, P. Hasbak, B. Scholten, J.C. Laursen, E.H. Zobel, L. Holmvang, R.S. Ripa, P. Rossing, A. Kjaer, T.W. Hansen, Denmark

**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**

N. Tofte, T. Suvitaival, K. Trost, I.M. Mattila, S. Theilade, S.A. Winther, M. Frimodt-Møller, C. Legido-Quigley, P. Rossing, Denmark

**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. Kalsoft, 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**

Y. Cho, J. Lee, H. Kim, J. Kang, C.-Y. Park, J.-Y. Park, W. Lee, C. Jung, Korea, Republic of

**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**

L. Zangerolamo, J.F. Vettorazzi, C. Solon, D.F. Engel, G.M. Soares, L.A. Velloso, E.M. Carneiro, A.C. Boschero, H.C. Barbosa, Brazil

**956 Chronic hyperglycaemia induces APP phosphorylation at Thr668 and regulates A $\beta$  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**

H. Suzuki, M. Midorikawa, Y. Suzuki, H. Sato, K. Nemoto, K. Yamauchi, Y. Sugano, Y. Osaki, H. Iwasaki, M. Sekiya, N. Yahagi, Y. Hada, T. Arai, H. Shimano, Japan

**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**

J.R. Lundgren, E.M. Bladbjerg, C. Janus, L. Gliemann, L.M. Olsen, C.R. Juhl, S.B. Jensen, R. Thirumathyam, B.M. Stallknecht, J.J. Holst, J.D. Hove, S. Madsbad, C. Antoinades, S.S. Torekov, Denmark, UK

**960 Low-molecular weight fluorophores in type 2 diabetes: associations with diabetes complications and effects of fenofibrate in the FIELD study**

D. Chen, A.S. Januszewski, R.S. Scott, R.L. O'Connell, N.R. Aryal, D.R. Sullivan, G.F. Watts, M.-R. Taskinen, P.J. Barter, J.D. Best, J. Simes, A.C. Keech, A.J. Jenkins, Australia, New Zealand, Finland

**961 Sedentary behaviour and physical activity are associated with endothelial dysfunction and low-grade inflammation: the Maastricht Study**

E.J. Vandercappellen, A. Koster, H.H. Savelberg, S.J. Eussen, P.C. Dagnelie, N.C. Schaper, M.T. Schram, C.J. Van der Kallen, M.M. Van Greevenbroek, A. Wesselius, C.D. Stehouwer, R.M. Henry, Netherlands

**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**

Z. Arnold, F. Nagel, L.P. Szabo, E. Acar, I. Aykac, A.J. Fee, A. Josvai, S. Hallström, V.E. Tretter, F. Balogh, M. Szekeres, G. Nadasy, B.K. Podesser, A. Kiss, Austria, USA, Hungary

**964 Cardiac and endocrine responses to hyperinsulinaemic hypoglycaemia in healthy and diabetic Göttingen minipigs**

M.L. Skøttrup, A. Vegge, G.K. Povlsen, R. Slaaby, J. Kildegaard, U. Pedersen-Bjergaard, L.H. Olsen, Denmark

**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. Tschöepe, Germany

**967 Investigation of peripheral and cerebral microcirculation and visceral-subcutaneous adipose tissue distribution in type 2 diabetes and obesity**

M. Káplár, M. Emri, R. Esze, L. Rajnai, S. Somodi, M. Mikó, Z. Képes, G. Nagy, Á. Káplár, L. Balkay, I. Garai, Hungary



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  $\geq 50$  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**

K.-P. Cheng, K.-L. Huang, H.-C. Hung, Y.-F. Du, A.-C. Lin, C.-Y. Hu, H.-T. Wu, H.-Y. Ou, Taiwan

**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**

B. Panthu, G. Rautureau, S. Guibert, C. Lefevre, J. Perrier, A. Alves, M.-A. Berger, C. Pinteur, M. Godet, A.-M. Madec, J. Rieusset, B. Morio, A. Mey, France

**974 Empagliflozin and obstructive sleep apnoea: exploratory analysis from the EMPA-REG OUTCOME trial**

I.J. Neeland, B. Eliasson, T. Kasai, N. Marx, B. Zinman, S.E. Inzucchi, C. Wanner, I. Zwiener, B. Wojcek, H. Yaggi, O. Johansen, USA, Sweden, Japan, Germany, Canada, Norway

**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

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# European Foundation for the Study of Diabetes

**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.

## **BOARD**

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C. Mathieu, BE	Senior Vice-President
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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:**

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### **Japan Diabetes Society:**

#### **EFSD/JDS Reciprocal Travel Research Fellowships**

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### **JDRF and Lilly:**

#### **EFSD/JDRF/Lilly European Programme in Type 1 Diabetes Research**

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## Lilly:

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### **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.

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### **EFSD/Sanofi Pilot Research Grants for Innovative Measurement of Diabetes Outcomes**

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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.

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

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**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 DIABETES NURSING IN EUROPE

**Monday, 21 September 2020**

**14:30 - 15:45**

## **Villach Hall**

Chair: Dr Niti Pall, Chair IDF Europe

### **Key note lecture:**

#### **The role of the diabetes nurse across Europe – Today and tomorrow**

Ms Anne-Marie Felton, President Foundation of European Nurses in Diabetes (FEND)

### **Panel Discussion:**

#### **Shifting tasks to explore new ways of providing diabetes care - The place of the diabetes nurse**

Moderator: Mr Bastian Hauck

#### **The policymaker's perspective**

Mr Miklos Szócska, Director of Institute of Digital Health Services of Semmelweis University

#### **The nurse's perspective**

Prof Anne-Marie Rafferty, President of the Royal College of Nursing (RCN)

### **Panel Discussion:**

#### **Harnessing the digital transformation – The role of diabetes nurses**

Moderator: Mr. Bastian Hauck

#### **The Healthcare Professional's Perspective**

Prof Dr Tatjana Milenković, Board Member IDF Europe, President, Macedonian Scientific Association of Endocrinologists and Diabetologists and Ms Aldona, Danylienne, Board Member IDF Europe

#### **The Patient's Perspective**

Mr Chris Aldred, Board Member IDF Europe, Diabetes Advocate

### **Take Home Messages & Closing Remarks**

Prof Nebojsa Lalic, Chair-Elect, IDF Europe, Director of the Clinic for Endocrinology, Diabetes and Metabolic Diseases, Clinical Center of Serbia

# 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**



# NAFLD STUDY GROUP SYMPOSIUM: NAFLD: FROM MECHANISM TO TREATMENT

**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**

# DIABETIC PREGNANCY STUDY GROUP SYMPOSIUM

***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**

# NEURODIAB SYMPOSIUM

**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**

# EXERCISE AND PHYSICAL ACTIVITY STUDY GROUP SYMPOSIUM

**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

**Mette Y. Johansen, DK:**  
The underlying mechanisms of type 2 diabetes remission – one year after an intensive lifestyle intervention

**Nanna S. Pilmark, DK:**  
The interaction between metformin and physical activity

**Jason P. Pitt, UK:**  
Long duration diabetes is associated with a lower C-peptide concentration and response to aerobic exercise in individuals with type 1 diabetes

**Martin Schön, DE:**  
Higher capacity for muscle carnosine loading in non-obese, physically active adults is paralleled by lower protein glycation, enhanced carbonyl species excretion and post-exercise muscle phosphocreatine recovery

**Katharina Herzog, SE:**  
Combined lifestyle factors and the risk of latent autoimmune diabetes in adults

**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**



# INDUSTRY PROGRAMME ON THE OCCASION OF THE VIRTUAL EASD ANNUAL MEETING 2020



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## INDUSTRY SYMPOSIA SCHEDULE

## Symposia Overview

Monday, 21 September 2020

	09:30	10:30	11:30	12:30	13:30
Villach Hall		Abbott 10:30-11:30			
Graz Hall		Sanofi 10:00-11:00	Sanofi 11:10-12:10		Sanofi 13:00-14:00
Linz Hall				AstraZeneca 12:00-14:00	
Salzburg Hall					Roche Diabetes Care GmbH 12:30-14:00
Vienna Hall					Novo Nordisk A/S 12:30-14:30
Innsbruck Hall					DexCom 12:30-14:00
Klagenfurt Hall					

Status September 2020, details are subject to change.

## INDUSTRY SYMPOSIA SCHEDULE

### Symposia Overview

Monday, 21 September 2020

14:30	15:30	16:30	17:30	18:30
	MSD 14:30-16:30			
Sanofi 14:10-15:10				
	AstraZeneca 14:30-16:30			
	Medtronic International Trading Sàrl 15:00-16:30			
		Novo Nordisk A/S 16:00-18:00		
	Boehringer Ingelheim & Eli Lilly and Company Alliance 14:30-16:00		DexCom 17:00-18:30	
	Lilly 14:30-16:00			

### Symposia Overview

Tuesday, 22 September 2020

	19:15-20:15
<b>Vienna Hall</b>	Insulet 19:15-20:15

Status September 2020, details are subject to change.

## INDUSTRY SYMPOSIA SCHEDULE

### Symposia Overview

Wednesday, 23 September 2020

	18:45	19:15	19:45	20:15
Vienna Hall		Novo Nordisk A/S 18:45-19:45		
Innsbruck Hall		Novartis Pharma AG 18:45-19:45		
Klagenfurt Hall		BAYER 18:45-19:45		
Villach Hall		Merck KGaA 18:45-19:45		
Wels Hall		Sanofi 18:45-19:45		
Graz Hall		BAYER 18:45-20:15		
Linz Hall		Amarin Pharma, Inc 18:45-20:15		
Salzburg Hall		Mundibiopharma Limited 18:45-20:15		

### Symposia Overview

Thursday, 24 September 2020

	18:45	19:15	19:45	20:15
Linz Hall		Sanofi 18:45-19:45		
Klagenfurt Hall		CHANGE IME, an imc group company (AstraZeneca) 18:45-19:45		
Vienna Hall		Novo Nordisk A/S 18:45-20:15		
Graz Hall		MSD 18:45-20:15		

### Symposia Overview

Friday, 23 September 2020

	14:00-15:00			
Vienna Hall	Tandem Diabetes Care 14:00-15:00			

## MEET THE EXPERT SESSIONS

### Meet the Expert Overview

Tuesday, 22 September 2020

<b>Morning</b>	<b>10:30-11:00</b>	<b>11:30-12:00</b>
	Novo Nordisk A/S	Novo Nordisk A/S
<b>Lunch</b>	<b>13:00-13:30</b>	<b>14:00-14:30</b>
	Novo Nordisk A/S	MSD
<b>Afternoon</b>	<b>15:00-15:30</b>	
	Boehringer Ingelheim	

### Meet the Expert Overview

Wednesday, 23 September 2020

<b>Morning</b>	<b>10:30-11:00</b>	<b>11:30-12:00</b>
	AMRYT PHARMACEUTICALS	AstraZeneca
<b>Lunch</b>	<b>13:00-13:30</b>	<b>14:00-14:30</b>
	AMRYT PHARMACEUTICALS	Novo Nordisk A/S
<b>Afternoon</b>	<b>15:00-15:30</b>	
	Medtronic International Trading Sàrl	

### Meet the Expert Overview

Thursday, 24 September 2020

<b>Morning</b>	<b>10:30-11:00</b>	<b>11:30-12:00</b>
	DIABELOOP	Lilly
<b>Lunch</b>		<b>14:00-14:30</b>
		Ypsomed AG
<b>Afternoon</b>	<b>15:00-15:30</b>	
	Medtronic International Trading Sàrl	

### Meet the Expert Overview

Friday, 25 September 2020

<b>Morning</b>	<b>10:30-11:00</b>	<b>11:30-12:00</b>
	Sanofi	Gan & Lee Pharmaceuticals

Status September 2020, details are subject to change.

MONDAY, 21 SEPTEMBER 2020

10:00-11:00  
GRAZ HALL

**BEYOND THE OLD PARADIGMS: TOWARDS PRECISE  
SOLUTIONS IN DIABETES MANAGEMENT - SESSION 1**

BEYOND COMPLEXITY: INTEGRATING CARE TO SIMPLIFY MANAGEMENT

**Morning Session**

Chair: Kamlesh Khunti

**10:00-10:05**      **Opening welcome**  
Kamlesh Khunti

**10:05-10:20**      **Keynote address: Remodeling diabetes care in the age of public health crises**  
Kamlesh Khunti

**10:20-10:30**      **Focus: Making integrated care and digital health a reality**  
David Kerr

**10:30-10:40**      **Living with diabetes: Communication and clinical care in the age of telemedicine**  
Emma Wilmot

**10:40-10:55**      **Towards precise solutions and outcomes**  
Ronan Roussel

**10:55-11:00**      **Summary**

**Organised by: Sanofi**

MONDAY, 21 SEPTEMBER 2020

10:30-11:30  
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**

MONDAY, 21 SEPTEMBER 2020

11:10-12:10  
GRAZ HALL

**BEYOND THE OLD PARADIGMS: TOWARDS PRECISE  
SOLUTIONS IN DIABETES MANAGEMENT - SESSION 2**

BEYOND GENERALIZATION: MAKING INSULIN MANAGEMENT RELEVANT TO INDIVIDUALS

**Morning Session**

Chair: Thomas Danne

**11:10-11:15 Introduction**  
Thomas Danne

**11:15-11:25 T1D unmet needs: Therapeutic strategies for addressing  
suboptimal glycemic control**  
Eric Renard

**11:25-11:35 Generational change: Basal insulin use in children and  
adolescents with T1D**  
Thomas Danne

**11:35-11:50 Confident self-management: Helping individuals take control**  
Alice YY Cheng

**11:50-12:05 Achieving control with insulin in special populations**  
Luigi Meneghini

**12:05-12:10 Summary**

**Organised by: Sanofi**

MONDAY, 21 SEPTEMBER 2020

12:00-14:00  
LINZ HALL

**BRIDGING THE GAP BETWEEN KNOWLEDGE AND  
ACTION WITH SGLT2 INHIBITORS**

**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**



MONDAY, 21 SEPTEMBER 2020

12:30-14:00  
SALZBURG HALL

**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)

**12:35-13:01 Integrated Personalised Diabetes Management (iPDM):  
Diabetes outcomes through an open ecosystem**  
Speaker: Jörg Hölzing (Roche Diabetes Care, Switzerland)

**13:01-13:23 Clinical evidence shows: Micropumps demonstrate new  
opportunities to optimise insulin pump therapy**  
Speaker: Nick Oliver (London, UK)

**13:23-13:45 Personalised cardiovascular risk management: Pivotal in  
preventing complications in people with diabetes**  
Speaker: James Januzzi (Boston, MA, USA)

**13:45-13:55 Discussion**

**13:55-14:00 Closing**  
Rolf Hinzmann (Roche Diabetes Care, Germany)

**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)
- 13:05-13:35**      **Developing a Flexible and Remote Diabetes Clinic Using Real-Time CGM**  
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 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**

MONDAY, 21 SEPTEMBER 2020

13:00-14:00  
GRAZ HALL

**BEYOND THE OLD PARADIGMS: TOWARDS PRECISE  
SOLUTIONS IN DIABETES MANAGEMENT - SESSION 3**

BEYOND TRADITION: SOLUTIONS FOR PEOPLE WITH UNCONTROLLED T2D

**Afternoon Session**

Chair: Julio Rosenstock

**13:00-13:05 Introduction**  
Julio Rosenstock

**13:05-13:15 The road well-travelled: Dysglycemia in T2D and the challenges  
in getting to goal**  
Francesco Giorgino

**13:15-13:25 Another path: The rationale for fixed-ratio combination therapies**  
Leigh Perreault

**13:25-13:40 Along the way: Clinical outcomes with fixed-ratio combinations  
in people with T2D**  
Juan Pablo Frias

**13:40-13:55 Living with diabetes: Managing the patient experience with  
fixed-ratio combinations**  
Katie Withmire and Martin Haluzik

**13:55-14:00 Summary**

**Organised by: Sanofi**

MONDAY, 21 SEPTEMBER 2020

14:10-15:10  
GRAZ HALL

**BEYOND THE OLD PARADIGMS: TOWARDS PRECISE  
SOLUTIONS IN DIABETES MANAGEMENT - SESSION 4**  
BEYOND MEDICINE: DISRUPTIVE TECHNOLOGIES AND METRICS

**Afternoon Session**

Chair: Richard Bergenstal

- 14:10-14:15 Introduction**  
Richard M. Bergenstal
- 14:15-14:25 Changing management paradigms: Understanding modern metrics**  
Pratik Choudhary
- 14:25-14:40 Improving outcomes: What time-in-range means for patients**  
Richard M. Bergenstal
- 14:40-14:50 Living with diabetes: Understanding the data to help change behavior**  
Katharine Barnard-Kelly
- 14:50-15:05 Disrupting the status quo: Towards greater integration with new technologies**  
David Kerr
- 15:05-15:10 Summary**

Organised by: Sanofi

MONDAY, 21 SEPTEMBER 2020

14:30-16:00  
INNSBRUCK HALL

**ACROSS T2D SYMPOSIUM: „AN ENDOCRINOLOGIST,  
A CARDIOLOGIST AND A NEPHROLOGIST WALK INTO A BAR...“  
CROSS-SPECIALTY DEBATES IN DIABETES**

**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: PREPARING YOUR PATIENTS 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)
- 15:15-15:25**      **Questions and Answers**  
Tadej Battelino (Slovenia)
- 15:25-15:50**      **Preparing Your Patients with BAQSIMI**  
Jennifer Sherr (United States)
- 15:50-15:55**      **Panel Discussion**  
Jennifer Sherr (United States)
- 15:55-16:00**      **Closing Remarks**  
Jennifer Sherr (United States)

This symposium is restricted to HCPs.

**Organised by: Lilly**



MONDAY, 21 SEPTEMBER 2020

14:30-16:30  
VILLACH HALL

**BUILDING THE LATEST SCIENTIFIC AND CLINICAL UNDERSTANDING  
FOR THE TREATMENT OF PATIENTS WITH TYPE 2 DIABETES**

**Afternoon Session**

Chairs: Sam Dagogo-Jack (US) and Chris Cannon (US)

Faculty: David Cherney (CAN), Kim Connelly (CAN),  
Francesco Cosentino (SWE)

**14:30-14:35 Chair Welcome and Opening Remarks**  
Co-Chairs: Sam Dagogo-Jack (US) and Chris Cannon (US)

**14:35-14:50 Addressing Clinical Questions:  
VERTIS CV - An Overview of Results for the Treatment of  
Patients With Type 2 Diabetes and Cardiovascular Disease**  
Speaker: Sam Dagogo-Jack (US)

**14:50-15:05 VERTIS CV: New Insights in Heart Failure Understanding**  
Speaker: Francesco Cosentino (SWE)

**15:05-15:20 Kidney Results from VERTIS CV**  
Speaker: David Cherney (CAN)

**15:20-15:40 Learnings From VERTIS CV - A Faculty Roundtable Discussion**  
Speaker: Chris Cannon (US), David Cherney (CAN),  
Francesco Cosentino (SWE), Sam Dagogo-Jack (US)

**15:40-15:55 Scientific Spotlight:  
Understanding the Effects of Hyperglycemia on the Kidney and  
the Heart**  
Speaker: David Cherney (CAN)

**15:55-16:10 Understanding the Interplay Between Kidney Physiology and  
the Heart**  
Speaker: Kim Connelly (CAN)

**16:10-16:25 The Mechanisms Underlying the Cardio-renal Crosstalk:  
A Conversation Among Specialties**  
Speakers: David Cherney (CAN), Kim Connelly (CAN),  
Sam Dagogo-Jack (US)

**16:25-16:30 Final Comments and Summary**  
Co-Chairs

**Organised by: MSD**

**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 mechanistic 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**

MONDAY, 21 SEPTEMBER 2020

15:00-16:30  
SALZBURG HALL

**MINIMED™780G SYSTEM: IMPROVING CLINICAL OUTCOMES WHILE  
REDUCING DIABETES MANAGEMENT BURDEN**

**Afternoon Session**

Chair: Ohad Cohen

**15:00-15:20 The Need for Automating Insulin Delivery**  
Ohad Cohen

**15:20-15:35 Algorithm and functioning of the MiniMed™ 780G System**  
Ali Dianaty

**15:35-15:55 Clinical Outcomes**  
Tadej Battelino

**15:55-16:15 HCPs` and Users` Experience**  
Amir Tirosh

**16:15-16:30 Q&A Session**  
Ohad Cohen

**Organised by: Medtronic International Trading Sàrl**

MONDAY, 21 SEPTEMBER 2020

16:00-18:00  
VIENNA HALL

**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**

MONDAY, 21 SEPTEMBER 2020

16:00-18:00  
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)

- 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**

MONDAY, 21 SEPTEMBER 2020

17:00-18:30  
INNSBRUCK HALL

**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

TUESDAY, 22 SEPTEMBER 2020

19:15-20:15  
VIENNA HALL

**INNOVATIONS IN OMNIPOD® TECHNOLOGY  
FOR THE TREATMENT OF DIABETES**

**Afternoon Session**

- |                    |   |
|--------------------|---|
| <b>19:15-19:20</b> | <b>Welcome</b><br>Dr. Trang Ly (USA)  |
| <b>19:20-19:30</b> | <b>Innovation in User Experience with the Omnipod DASH® System</b><br>Dr. Trang Ly (USA)                    |
| <b>19:30-19:45</b> | <b>Real World Evidence of the Omnipod® System</b><br>Thomas Danne (Germany)                                 |
| <b>19:45-20:00</b> | <b>Transitioning patients to the Omnipod DASH® System: Clinical Case Reviews</b><br>Dr. Jackie Elliott (UK) |
| <b>20:00-20:10</b> | <b>Future of insulin delivery technologies</b><br>Dr. Trang Ly (USA)  |
| <b>20:10-20:15</b> | <b>Close and Q&amp;A</b><br>Dr. Trang Ly (USA) / All  |

**Organised by: Insulet**

WEDNESDAY, 23 SEPTEMBER 2020

18:45-19:45  
VIENNA HALL

**IMPROVING CV RISK MANAGEMENT IN  
PATIENTS WITH OBESITY**

**Afternoon Session**

- 18:45-18:50**     **Welcome and introduction**  
Chair: John Deanfield (UK)
- 18:50-19:00**     **New insights into CV risk in obesity**  
Erin Bohula (US)
- 19:00-19:15**     **Impact of weight loss on CV risk**  
John Wilding (UK)
- 19:15-19:30**     **Future perspectives on treating CVD in patients with obesity**  
Stephen Nicholls (Australia)
- 19:30-19:45**     **Panel discussion and meeting closure**  
All

**Organised by: Novo Nordisk**



WEDNESDAY, 23 SEPTEMBER 2020

18:45-19:45  
INNSBRUCK HALL

**WHO BENEFITS MOST FROM AN EARLY COMBINATION  
TREATMENT APPROACH IN TYPE 2 DIABETES?**

**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

**Organised by: Novartis Pharma AG**

**TESTOSTERONE TREATMENT FOR MEN WITH  
HYPOGONADISM AND PREDIABETES/DIABETES**

**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 Hackett
- 18:55-19:10**     **Can testosterone treatment prevent Diabetes?**  
Testosterone treatment for prediabetic, obese men with low testosterone. Insights for the T4DM study.  
  
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 Hackett
- 19:40-19:45**     **Questions**  
Geoff Hackett

**Organised by: BAYER**

WEDNESDAY, 23 SEPTEMBER 2020

18:45-19:45  
VILLACH HALL

## METFORMIN - THE HEART OF THE MATTER

### Afternoon Session

- |             |   |
|-------------|---|
| 18:45-18:55 | <b>Introduction and chair</b><br>G. Schernthaner                            |
| 18:55-19:20 | <b>The big picture: The effect of metformin on T2DM MACE</b><br>C. Bailey   |
| 19:20-19:45 | <b>The closeup: The effect of metformin on the myocardium</b><br>H. Wiggers |

Organised by: Merck KGaA

WEDNESDAY, 23 SEPTEMBER 2020

18:45-19:45  
WELS HALL

**PIONEERING PATHWAYS FOR 2ND-GENERATION BASAL  
INSULIN USE: ADVANCING THE CONVERSATION**

**Afternoon Session**

- 18:45-18:50**      **Welcome and introduction**  
Robert Ritzel
- 18:50-19:05**      **Let's talk hypoglycemia: an under-recognized unmet need in  
people on basal insulin**  
Rory McCrimmon
- 19:05-19:20**      **Deepening the dialogue: the clinical effects of 2nd-generation  
basal insulins**  
Alice YY Cheng
- 19:20-19:35**      **Beyond the current conversation: the path towards better  
patient care and outcomes**  
Ronan Roussel
- 19:35-19:45**      **Tell us more (Panel discussion)**  
All faculty

**Organised by: Sanofi**

WEDNESDAY, 23 SEPTEMBER 2020

18:45-20:15  
GRAZ HALL

**THE MINERALOCORTICOID RECEPTOR: A NOVEL TARGET  
IN CHRONIC KIDNEY DISEASE AND TYPE 2 DIABETES**

**Afternoon Session**

- |                    |   |
|--------------------|---|
| <b>18:45-18:50</b> | <b>Welcome and introduction</b><br>Peter Rossing  |
| <b>18:50-19:10</b> | <b>CKD in T2D: how serious is the problem?</b><br>Paola Fioretto  |
| <b>19:10-19:30</b> | <b>Inflammation and fibrosis: how does it affect CKD progression and is it a suitable treatment target?</b><br>Katherine Tuttle |
| <b>19:30-19:50</b> | <b>Targeting the mineralocorticoid receptor to reduce CKD in T2D: is it time for a new treatment paradigm?</b><br>Peter Rossing |
| <b>19:50-20:10</b> | <b>Q&amp;A</b><br>All   |
| <b>20:10-20:15</b> | <b>Close</b><br>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

### **Sponsored by Medtelligence.**

Supported by an unrestricted educational grant from Amarin Pharma, Inc.

**Organised by: Amarin Pharma, Inc**

WEDNESDAY, 23 SEPTEMBER 2020

18:45-20:15  
SALZBURG HALL

**SETTING A NEW DIRECTION IN MANAGING  
TYPE 2 DIABETES - RENAL AND CV PERSPECTIVES**

**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

**19:35-19:55 Paradigm shifts in diabetes: the importance of guidelines in changing clinical practice**  
Tina Vilsbøll

**19:55-20:15 Panel discussion**  
Tina Vilsbøll, Oliver Schnell and James Burton

**Organised by: Mundibiopharma Limited**

THURSDAY, 24 SEPTEMBER 2020

18:45-19:45  
LINZ HALL

**BUILDING BRIDGES: SIMPLIFYING AND PERSONALIZING  
DIABETES MANAGEMENT AND CARE**

**Afternoon Session**

Chair: Kamlesh Khunti

**18:45-18:50**      **Welcome and introduction**  
Kamlesh Khunti

**18:50-19:05**      **Mind the gap: Understanding differences in efficacy and  
real-world effectiveness**  
Kamlesh Khunti

**19:05-19:20**      **Reducing the diabetes burden: Principles and practicalities of  
precision and simplification**  
Ewan Pearson

**19:20-19:35**      **Building bridges through therapeutic simplification**  
Julio Rosenstock

**19:35-19:45**      **Q&A**  
All

**Organised by: Sanofi**



THURSDAY, 24 SEPTEMBER 2020

18:15-19:45  
KLAGENFURT HALL

**DAPA-CKD: APPLYING CLINICAL EVIDENCE  
TO CLINICAL PRACTICE**

**Afternoon Session**

- 18:15-18:20**      **Welcome and introductions**  
Co-chairs: Hiddo Lambers Heerspink, David Wheeler
- 18:20-18:40**      **Implications for the kidney**  
Ricardo Correa-Rotter
- 18:40-19:00**      **Implications for the heart**  
John McMurray
- 19:00-19:20**      **Implications for practice**  
Paolo Fioretto
- 19:20-19:45**      **Q&A**  
All faculty
- 19:45**              **Meeting close**  
Hiddo Lambers Heerspink

**EBAC-accredited CME Symposium**

**Organised by: Sponsored by an unrestricted educational grant from  
AstraZeneca**

THURSDAY, 24 SEPTEMBER 2020

18:45-20:15  
VIENNA HALL

**EXPLORING NEW PARADIGMS IN INSULIN THERAPY  
TO IMPROVE OUTCOMES**

**Afternoon Session**

- 18:45-18:50**     **Welcome and introduction**  
Chair: Stephen Gough (Denmark)
- 18:50-19:05**     **Rethinking solutions to reduce the burden of hypoglycaemia**  
Simon Heller (UK)
- 19:05-19:20**     **Digital technology for better outcomes with insulin therapy**  
Liana Billings (US) and Christophe De Block (Belgium)
- 19:20-19:35**     **Simplifying complexity to overcome clinical inertia in insulin therapy**  
Martin Haluzik (Czech Republic)
- 19:35-19:40**     *Break*
- 19:40-19:55**     **Redefining diabetes management with a once-weekly insulin**  
Harpreet Bajaj (Canada)
- 19:55-20:15**     **Panel discussion and closing remarks**  
All faculty

**Organised by: Novo Nordisk A/S**

THURSDAY, 24 SEPTEMBER 2020

18:45-20:15  
GRAZ HALL

**CLINICAL LEARNINGS FROM VERTIS CV FOR PATIENTS WITH  
DIABETES AND CARDIOVASCULAR DISEASE:  
A CROSS SPECIALTY DISCUSSION**

**Afternoon Session**

Chairs: Chris Cannon (US), Rich Pratley (US)

Faculty: David Cherney (CAN), Francesco 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: Francesco 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**

**FRIDAY, 25 SEPTEMBER 2020**

**14:00-15:00  
VIENNA HALL**

**IMPROVING TIME IN RANGE WITH THE T:SLIM X2 INSULIN PUMP  
AND CONTROL-IQ TECHNOLOGY**

**Afternoon Session**

- 14:00-14:18**      **Automated bolus and basal modulation with Control-IQ technology leads to better glycemic outcomes in adults and children**  
Marc Breton, PhD, University of Virginia
- 14:18-14:36**      **Impact of Control-IQ technology on glycemic control for school age children with T1D**  
Paul Wadwa, MD, Barbara Davis Center of Diabetes
- 14:36-14:46**      **Real-World Experience with Control-IQ technology**  
Steph Habif, EdD, MS, Tandem Diabetes Care
- 14:46-15:00**      **Q&A**

**Organised by: Tandem Diabetes Care**

TUESDAY, 22 SEPTEMBER 2020

10:30-11:00  
Industry „Meet the Expert“-Sessions**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

11:30-12:00  
Industry „Meet the Expert“-Sessions**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-Järvinen (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**

TUESDAY, 22 SEPTEMBER 2020

15:00-15:30  
Industry „Meet the Expert“-Sessions

**KDIGO DIABETES IN CKD GUIDELINE  
MEET-THE-EXPERT SESSION**

**Afternoon Session**

Chair: Ian de Boer

**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**

WEDNESDAY, 23 SEPTEMBER 2020

10:30-11:00  
Industry „Meet the Expert“-Sessions

**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**

WEDNESDAY, 23 SEPTEMBER 2020

11:30-12:00  
Industry „Meet the Expert“-Sessions

**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**



WEDNESDAY, 23 SEPTEMBER 2020

13:00-13:30  
Industry „Meet the Expert“-Sessions

**THE CLINICAL AND METABOLIC COMPLEXITY  
OF LIPODYSTROPHY, OLD CHALLENGES AND NEW  
TREATMENT OPPORTUNITIES**

**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

14:00-14:30  
Industry „Meet the Expert“-Sessions

**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) &amp; Gurpreet Anand (Switzerland)

**14:23-14:30****Q&A**

All faculty

**Organised by: Novo Nordisk A/S**

WEDNESDAY, 23 SEPTEMBER 2020

15:00-15:30  
Industry „Meet the Expert“-Sessions

**INTRODUCING THE 7-DAY WEAR MEDTRONIC EXTENDED  
INFUSION SET & RESERVOIR**

**Afternoon Session**

Moderator: Ohad Cohen

**15:00-15:05 The need for longer Infusion set duration**  
Ohad Cohen

**15:05-15:17 Technology behind the 7-day 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**  
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THURSDAY, 24 SEPTEMBER 2020

14:00-14:30  
Industry „Meet the Expert“-Sessions

## YPSOMED'S ROAD TO AN INDIVIDUALISED AND SMARTPHONE-CONTROLLED THERAPY

### 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

THURSDAY, 24 SEPTEMBER 2020

15:00-15:30  
Industry „Meet the Expert“-Sessions

## GUARDIAN™ CONNECT CGM: PREDICTING AND MITIGATING GLYCEMIC EXCURSIONS IN THE REAL-WORLD

### 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

FRIDAY, 25 SEPTEMBER 2020

10:30-11:00  
Industry „Meet the Expert“-Sessions

**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 T2D patients with high HbA1c and helping them get to goal**  
Martin Haluzik

Organised by: Sanofi

FRIDAY, 25 SEPTEMBER 2020

11:30-12:00  
Industry „Meet the Expert“-Sessions

**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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Abbott	X	London	L.08
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BAYER	X	Rome	R.07 (commercial) R.08 (medical)
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Novo Nordisk A/S	X	London	L.05
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SNAQ	X	Paris	P.08
SOOIL Development Co., Ltd	X	Rome	R.09
Tandem Diabetes Care	X		
VITREX MEDICAL & CHIRANA T. INJECTA	X		
WeHealth	X	Paris	P.03
Ypsomed AG	X	Rome	R.12

## WELCOME ADDRESS

On behalf of the EASD Board and the 2021 Scientific Programme Committee, I have the pleasure of welcoming you to 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.

A handwritten signature in blue ink, appearing to read 'Mikael Rydén'.

Mikael Rydén  
Honorary Secretary EASD

# 57th ANNUAL MEETING

27 SEPTEMBER – 1 OCTOBER

STOCKHOLM | SWEDEN

# EASD

≡ 2021 ≡



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