

57th ANNUAL MEETING

virtual

EASD

2021

27 September - 1 October

FINAL PROGRAMME

easd.org

[#EASD2021](https://twitter.com/EASD2021)

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

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DEAR MEMBERS AND GUESTS,

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



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

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

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

A handwritten signature in black ink, which appears to read 'del prato'.

Stefano Del Prato
President EASD/EFSD

WELCOME ADDRESS

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

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



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

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

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

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

Mikael Rydén
Honorary Secretary EASD

European Association for the Study of Diabetes

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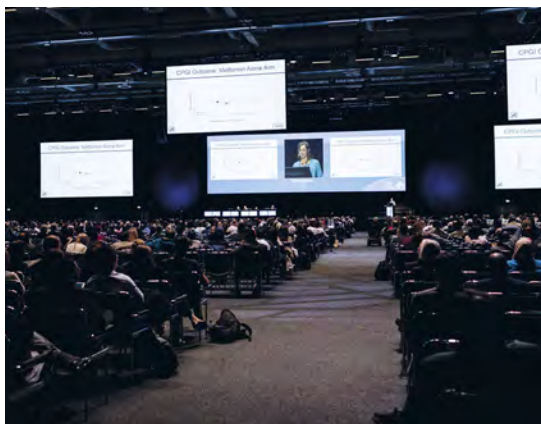
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www.easd.org

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)	2020	Virtual Conference
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 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

JOIN EASD

THE GLOBAL DIABETES COMMUNITY

EASD MEMBERSHIP



"Join EASD and you will become a member of the European diabetes family. This way, you can easily improve your knowledge about all aspects of the disease and follow the latest developments in the world of diabetes available from both scientific as well as clinical practice. It's really worth it!"

Prof. Krzysztof Strojek, Poland



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

Prof. Miriam Cnop, Belgium



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

Asst. Prof. Dario Rahelić, Croatia

CONTACT EASD

The EASD Membership Department is ready to assist:

Phone: +49 211 758 469 0

Email: membership@easd.org

Web: easd.org/membership.html

GENERAL INFORMATION

Format:

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

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

Registration:

Early Registration fees are € 100 for paid-up EASD members and € 215 for non-members (until 27 July 2021). Late registration fees are € 150 for paid-up EASD members and € 265 for non-members.

All registrations have to be made by means of the secured online registration system either prior or during the virtual EASD Annual Meeting dates. For more information, please visit:

<https://www.easd.org/annual-meeting/easd-2021.html>.

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

Technical requirements:

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

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

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

For Presenters and Chairpersons it is mandatory to connect through desktop computers or notebooks with plugged in power supply.

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

Delegates receive:

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

Certificates:

The virtual EASD Annual Meeting 2021 is currently under review process for accreditation with the European Accreditation Council for Continuing Medical Education (EACCME).

Press Registration:

Press delegates can register online through the press registration system. Registered journalists/media will have access to the EASD 2021 online Press Centre and will receive press releases throughout the meeting. The entire scientific programme during the virtual EASD Annual Meeting is open to registered journalists.

EASD/EFSD Booth:

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

Associations' Village:

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

Presenters and Chairpersons:

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

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

All presenters and chairpersons will receive detailed instructions and will be

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

Short Oral Discussion Events

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

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

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

Exhibition:

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

Disclaimer:

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

Advisory Note to Delegates:

EASD is the official registration provider and all EASD activities are handled via the official EASD website: www.easd.org.

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

EASD COMMUNITY PLAZA

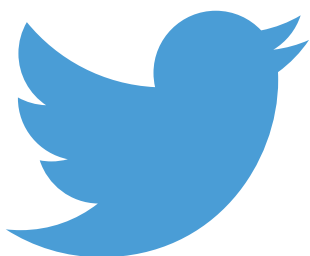
The virtual EASD Community Plaza provides the EASD/EFSD Booth, Diabetologia Booth and the EASD Postgraduate Education Booth as well as the EASD Associations' Village.

EASD ASSOCIATIONS' VILLAGE

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

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

FOLLOW THE DISCUSSION LIVE ON TWITTER



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

#EASD2021

ABSTRACT SELECTION

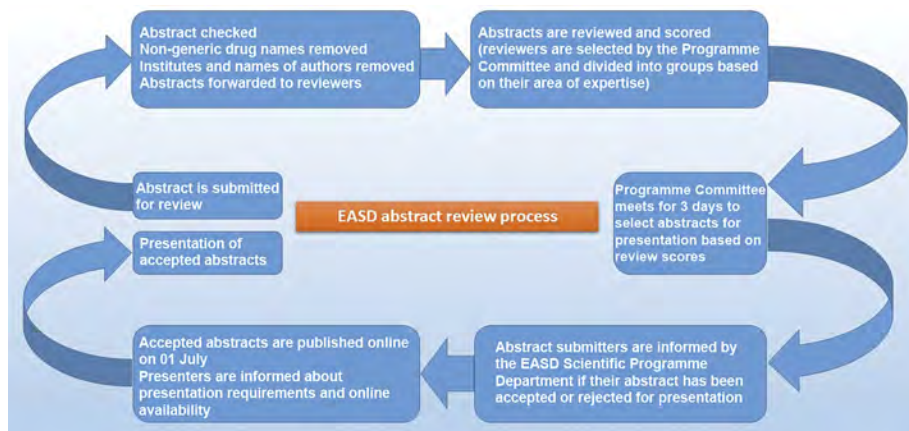
All abstracts accepted for inclusion in the scientific programme were considered anonymously and were scored by 40 Abstract Review Committee Members. 17 Programme Committee Members designed the programme and created Oral and Short Oral Discussion Sessions based upon the anonymous abstracts.

Publication of Abstracts

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

Embargo Policies

Information contained in abstracts may not be released until 1 July when the abstracts are published online. Oral Presentations are under embargo until one (1) minute following the commencement of the speakers' presentation. Short Oral Discussion Presentations are under embargo until 11:30 CEST on Tuesday, 28 September 2021.



Abstract Review Committee

Paul W. Franks, SE
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Stephan Herzig,
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Alexandra Kautzky-
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Peter Rossing,
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Mikael Rydén,
SE (Chair)



Erik Serné,
NL



Christian Herder,
DE



Lorenzo Pasquali,
ES



Raimund
Weitgasser, AT

Tuesday, 28 September

Time	Moscow Hall	Paris Hall	London Hall	Madrid Hall
10:00	Opening and Presidential Address			
10:30	53rd Claude Bernard Lecture			
11:30	OP 1	OP 2	OP 3	OP 4
13:15	OP 7	OP 8	OP 9	OP 10
15:00	36th Camillo Golgi Lecture	15th Albert Renold Lecture	Rising Star Symposium	
16:40	Daily roundup / wrap up			

Barcelona Hall	St Petersburg Hall	Rome Hall	Athens Hall
OP 5	OP 6	Short Orals Event A	
OP 11	OP 12	Short Orals Event B	EFSD Mentorship Programme
Daily roundup / wrap up			

Wednesday, 29 September

Time	Moscow Hall	Paris Hall	London Hall	Madrid Hall
10:00	EASD/ADA Symposium: Optimising diabetes diagnosis, prevention and care: Is precision medicine the answer?	Diabetologia Symposium: Learning from machines – AI in diabetes research and care	EASD/JDRF Symposium: Beta cell (dys)function in type 1 diabetes	Hypoglycaemia: unanswered questions

11:45	OP 13	OP 14	OP 15	OP 16
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13:30	OP 19	OP 20	OP 21	OP 22
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15:15	EASD/Novo Nordisk Foundation Diabetes Prize for Excellence			
16:30		SARS-CoV-2 in human islets: a diabetes epidemic in the making?	Adipose tissue as a therapeutic target in type 2 diabetes: What should we aim for?	More from closed loops
17:30	Daily roundup / wrap up			

Wednesday, 29 September

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

Thursday, 30 September

Time	Moscow Hall	Paris Hall	London Hall	Madrid Hall
10:00	Prediabetes: Does it really matter?	EASD/ESC Symposium: How come not every patient with diabetes develops vascular complications?	Perspectives of the diabetic foot syndrome	New ways to understand kidney disease in diabetes
11:45	OP 25	OP 26	OP 27	OP 28
13:30	OP 31	OP 32	OP 33	OP 34
15:15	56th Minkowski Lecture			
16:15	Michael Berger Debate: Who suffers more: Are women with diabetes at higher cardiovascular risk?	The future of incretin-based treatments	Will human-first approaches finally get to the root cause of diabetic vascular disease?	Devices support diabetes treatment
17:15	Daily roundup / wrap up			

Thursday, 30 September

Barcelona Hall	St Petersburg Hall	Rome Hall	Athens Hall	Milan Hall
Inter-organ communication in diabetes and systemic energy homeostasis	5 years of cardiovascular benefits of GLP-1 receptor agonists: evidence from recent cardiovascular outcomes trials	EASD/ESE Symposium: Diabetes and bone	Next step in incretin therapy: from single to dual agonism	EASD e-Learning: Obesity and type 2 diabetes

OP 29	OP 30	Short Orals Event E		EASD e-Learning: Insulin@100: in combination with GLP-1 RAs and fixed ratio combinations
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OP 35	OP 36	Short Orals Event F		EASD e-Learning: Diabetic neuropathy
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		New data from Dapa-CKD		EASD e-Learning: Insulin@100: insulin in hospital settings
Small vessels, big problems: cerebral small-vessel disease - a potential microvascular complication of diabetes	Harnessing intracellular pathways for therapy	INNODIA - Translational approaches to disease modifying therapy of type 1 diabetes	EMPEROR Preserved Study	
Daily roundup / wrap up				

Friday, 1 October

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

Friday, 1 October

Barcelona Hall	St Petersburg Hall	Rome Hall	Milan Hall
In-hospital management of hyperglycaemia: still a Cinderella of diabetes management?	COVID-19 infection in people with diabetes: a risky combination	EASD-Lancet Symposium: Treatment of obesity: the future of diabetes treatment?	
OP 41	OP 42	Finerenone: a new approach to kidney protection in patients with type 2 diabetes	
OP 47			EASD e-Learning: Insulin@100: novel technologies
Turning stem cells into beta cells	Major results from the Glycaemia Reduction Approaches in Diabetes: a Comparative Effectiveness (GRADE) Study	A novel approach to problematic hypoglycaemia: the HARPdoc RCT	EASD e-Learning: Real World Evidence
Daily roundup / wrap up			
	EASD General Assembly		

EASD E-LEARNING

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

Wednesday, 29 September 2021, Milan Hall

10:00 - 11:30

Chair: E. Patrakeeva, Russia

**P. Jarosz-Chobot, Poland:
Insulin@100: diabetes in kids**

12:00 - 13:30

Chair: P. Choudhary, UK

**F. Snoek, Netherlands:
Fear of hypoglycaemia**

14:00 - 15:30

Chair: B. Wolffenbuttel, Netherlands

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

16:15 - 17:30

Chair: M. Cnop, Belgium

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

Thursday, 30 September 2021, Milan Hall

10:00 - 11:30

Chair: P. Gaede, Denmark

**N. Sattar, UK:
Obesity and type 2 diabetes**

12:00 - 13:30

Chair: C. Mathieu, Belgium

**T. Vilsboll, Denmark:
Insulin@100: in combination with GLP-1 RAs
and fixed ratio combinations**

Thursday, 30 September 2021, Milan Hall

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

**S. Tesfaye, UK:
Diabetic neuropathy**

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

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

Friday, 1 October 2021, Milan Hall

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

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

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

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

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

**M. Evans, UK:
Real World Evidence**

EFSD MENTORSHIP PROGRAMME MEETING

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

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

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

Presentation of the Mentees:

Giuseppe Daniele, Mentee 2017 cohort

Ernesto Maddaloni, Mentee 2107 cohort

Teresa Mezza, Mentee 2017 cohort

Shivani Misra, Mentee 2017 cohort

Rumyana Boykova Dimova-Draganova, Mentee 2018 cohort

Peter van Dijk, Mentee 2020 cohort

**A.J.M. Boulton, Chairman EFSD Mentorship Programme:
Closing remarks**

Questions and Answers

About the EFSD Mentorship Programme:

The major goal of the EFSD Mentorship Programme is to identify and promote the advancement of the next generation of leading clinical diabetologists in Europe.

Through its various activities the Programme will help award recipients ("Mentees") develop into leaders by refining their skills in the three cardinal areas of clinical diabetes, research and communication, thereby keeping them in the field of diabetes and facilitating their appointment to senior academic positions at major European institutions.

EUROPEAN DIABETES FORUM (EUDF) SYMPOSIUM

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

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

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

D.R. Matthews, UK:
Welcome and introduction

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

J. Soderberg, Sweden:
Recommendations for implementation from the Strategic Forum Data & Registries

Best practices – Using registries to improve quality of care and outcomes

T. Danne, Germany: SWEET

K. Eeg-Olofsson, Sweden: The Swedish National Diabetes Register

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

Panel discussion and questions

B. Hauck, Germany: What's in it for people with diabetes?

K. Khunti, UK: How to use feedback from registries in the clinical practice?

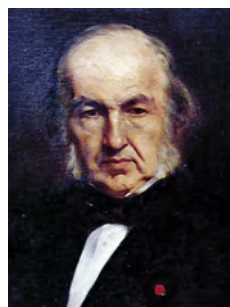
T. Sokol, Croatia: Perspective from the European Parliament

TBA: Perspective from industry

D.R. Matthews, UK:
Closing remarks

CLAUDE BERNARD LECTURE

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



Claude Bernard

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. TCHOBRUTSKY, 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	2020 Virtual	T. KADOWAKI, JP

10:00	OPENING CEREMONY AND PRESIDENTIAL ADDRESS S. Del Prato, President, EASD and EFSD followed by	Moscow Hall
10:30	53RD CLAUDE BERNARD LECTURE	
Chair:	S. Del Prato, President, EASD and EFSD	
Speaker:	J.R. Zierath, Sweden	
Title:	Sending the right signals - How exercise keeps the rhythm in metabolism	

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

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

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



11:30 - 13:00

Moscow Hall

OP 01 Macrovascular disease: large cohorts and large trials

Chair: P. Novodvorsky, Slovakia

1 Association of increased intima media thickness and arteriosclerosis with elevated fasting insulin levels in middle-aged persons

M. Röhling, K. Kempf, H. Kolb, M. Schneider, S. Martin, Germany

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

E. Dal Canto, A.A. Van der Heijden, A.J. Van Ballegooijen, B.I. Lissenberg-Witte, F. Rutters, P. Elders, J.J. Beulens, Netherlands

3 Comparative evaluation of GLP-1 receptor agonists and SGLT-2 inhibitors neuroprotective properties in transient brain ischaemia

A. Simanenkova, N. Timkina, O. Fuks, A. Khalzova, A. Shimshilashvili, V. Timofeeva, T. Karonova, T. Vlasov, Russian Federation

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

A. Zabala, V. Darsalia, M. Lind, A.-M. Svensson, S. Franzén, B. Eliasson, C. Patrone, M. Jonsson, T. Nyström, Sweden

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

G. Ferrannini, J.M. Maldonado, S. Raha, P. Rao-Melacini, R. Khatun, C. Atisso, L. Shurzinske, H. Gerstein, L. Rydén, M.A. Bethel, Sweden, USA, Canada

6 The importance of addressing multiple risk markers in type 2 diabetes: results from LEADER and SUSTAIN 6

E. Hein Zobel, B.J. Von Scholten, T.W. Hansen, F. Persson, S. Rasmussen, B. Wolthers, P. Rossing, Denmark

OP 02 Deep and shallow looks at human beta cell gene expression

Chair: L. Marselli, Italy

7 About time: functional and molecular effects of prolonged ex vivo human islet culture

M. Suleiman, E. Bosi, A. Piron, C. De Luca, M. Tesi, S. Del Guerra, D.L. Eizirik, M. Cnop, P. Marchetti, L. Marselli, Italy, Belgium, USA

8 Identification of mRNA and microRNA transcripts that differ in expression across islet donor sex, age and BMI

W.K. Wong, M.V. Joglekar, A.E. Sørensen, Y. Chew, F. Cheng, T. Loudovaris, H.E. Thomas, R.C. Ma, W.J. Hawthorne, L.T. Dalgaard, A.A. Hardikar, Australia, Denmark, Hong Kong

9 A single cell atlas of de novo beta cell regeneration in adult zebrafish identifies hybrid cell states that facilitates diabetes reversal

P. Chawla, S.P. Singh, L.D. Silva, A. Hnatiuk, M. Kamel, B. Spanjaard, J.P. Junker, N. Ninov, Germany, Belgium

10 An integrated analysis of human pancreatic islet single cells reveals autocrine and paracrine interactions

E. Bosi, L. Marselli, M. Suleiman, M. Tesi, C. De Luca, S. Del Guerra, M. Cnop, D.L. Eizirik, P. Marchetti, Italy, Belgium, USA

11 The transcription factor CEBPG regulates beta cell function

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

12 A long non-coding RNA that harbors a SNP associated with insulin levels regulates TGM2 gene expression in pancreatic beta cells

I. González-Moro, M. Sebastián-de la Cruz, H. Rojas-Márquez, A. Olazagoitia-Garmendia, J. Mentxaka, L.M. Mendoza, A. Lluch, J.M. Fernández-Real, F.J. Ortega, A. Castellanos-Rubio, I. Santin, Spain

11:30 - 13:00

London Hall

OP 03 Many faces of diabetic pregnancy

Chair: R. Corcoy Pla, Spain

13 Sweet pregnancy: digital solutions for an effective management of diabetic pregnancies

M. Löhnert, S. Stichling, C. Eberle, Germany

14 Decreased insulin sensitivity during pregnancy after assisted reproductive therapy in women in the Stork cohort

E. Qvigstad, S.D. Steintorsdottir, K. Godang, M.-C.P. Roland, T. Lekva, Norway

15 Maternal C-peptide reappearance in type 1 diabetes pregnancy: Evidence of beta cell regeneration or fetal hyperinsulinism?

C.L. Meek, R. Oram, T. McDonald, D.S. Feig, A.T. Hattersley, H.R. Murphy, UK, Canada

16 Maternal efficacy, safety, and pregnancy outcomes with degludec vs detemir in the treatment of pregnant women with type 1 diabetes: an international, multicentre, randomised trial

E.R. Mathiesen, R. Corcoy, F. Dunne, M. Ekelund, D.S. Feig, M. Hod, T. Jia, B. Kalyanam, S. Kar, A. Kautzky-Willer, P. Damm, on behalf of the EXPECT study group, Denmark, Spain, Ireland, Canada, Israel, India, Austria

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

S. Knorr, A. Skakkebaek, J. Just, C. Trolle, S. Vang, Z. Lohse, B. Bytoft, P. Damm, K. Højlund, D.M. Jensen, C.H. Gravholt, Denmark

18 Maternal exercise in gestational diabetes has sex-specific effects on offspring adiposity and beta cell function

N. Boonpattawong, S. Schaffner, A. Jang, M.S. Kobor, I. Laher, A.M. Devlin, Canada

OP 04 GLP-1 receptor agonism: higher dose, combination therapy, or both?

Chair: T. Nyström, Sweden

19 Effect of semaglutide 2.4 mg on glucose metabolism and body weight in adults with overweight or obesity and type 2 diabetes in the STEP 2 trial

S.D. Pedersen, M. Davies, L. Færch, O.K. Jeppesen, A. Pakseresht, L. Perreault, J. Rosenstock, I. Shimomura, A. Viljoen, T. Wadden, I. Lingvay, Canada, UK, Denmark, USA, Japan

20 Tirzepatide, a dual GIP/GLP-1 receptor agonist, is effective and safe when added to basal insulin for treatment of type 2 diabetes (SURPASS-5)

D. Dahl, Y. Onishi, P. Norwood, R. Huh, H. Patel, A. Rodriguez, Germany, Japan, USA

21 Semaglutide reduced cardiovascular events regardless of metformin use: a post hoc exploratory subgroup analysis of SUSTAIN 6 and PIONEER 6

M. Husain, A. Consoli, A. De Remigis, A.S. Meyer, S. Rasmussen, S. Bain, Canada, Italy, Denmark, UK

22 Efficacy and safety of tirzepatide versus semaglutide once weekly as add-on therapy to metformin in people with type 2 diabetes (SURPASS-2)

M.J. Davies, J.P. Frias, J. Rosenstock, F. Pérez Manghi, L. Fernández Landó, B.K. Bergman, B. Liu, X. Cui, K. Brown, UK, USA, Argentina

23 Efficacy and safety of GLP-1RAs with or without baseline SGLT-2i: post hoc analysis of the SUSTAIN 10 trial

M. Capehorn, A.-M. Catarig, O. Frenkel, M. Marre, H. Price, A.L. Søndergaard, R. Pratley, UK, Denmark, France, USA

24 Adherence and persistence in patients with type 2 diabetes initiating once-weekly versus once-daily injectable GLP-1 RAs in US clinical practice (STAY study)

W.H. Polonsky, R. Arora, M. Faurby, J. Fernandes, A. Liebl, USA, India, Denmark, Germany

11:30 - 13:00

Barcelona Hall

OP 05 Epidemiology of diabetes complications

Chair: J.E. O'Reilly, UK

25 The natural history of 786 episodes of diabetic ketoacidosis in adults with type 1 and type 2 diabetes

K. Nash, E. Ooi, L. Rengarajan, E. Melson, L. Thomas, A. Johnson, D. Zhou, L. Wallett, S. Ghosh, P. Narendran, P. Kempegowda, UK, Malaysia

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

S. Persson, K. Nilsson, K. Karlsdotter, J. Skogsberg, S. Gustavsson, J. Jendle, K. Steen Carlsson, Sweden

27 One-year trajectories of impaired hypoglycaemia awareness in young people with type 1 diabetes

A. Messaaoui, S. Tenoutasse, L. Hajselova, L. Crenier, Belgium

28 Association and familial co-aggregation of type 1 diabetes with depression, anxiety and stress-related disorders: a population-based cohort study

S. Liu, M. Leone, H. Larsson, P. Lichtenstein, B.M. D'Onofrio, S.E. Bergen, R. Kuja-Halkola, A. Butwicka, Sweden, USA

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

K. Nøkleby, T.J. Berg, I. Mdala, E.S. Buhl, T. Claudi, J.G. Cooper, K.F. Løvaas, S. Sandberg, A.K. Jenum, Norway

30 Assessment of the effect of the COVID-19 pandemic on HbA_{1c} testing: implications for diabetes management and diagnosis

D. Holland, A.H. Heald, C.J. Duff, A.A. Fryer, UK

OP 06 Insights into diabetic retinopathy

Chair: H.-P. Hammes, Germany

31 Evaluation of maculopathy deep learning prediction models using the SDRNT1BIO cohort J

. Mellor, A. Storkey, P.M. McKeigue, H.M. Colhoun, SDRNT1BIO Investigators, Diabetic Retinopathy Clinical Research Network, UK

32 Whole exome- and whole genome sequencing reveals novel rare genetic variants for severe diabetic retinopathy in type 1 diabetes

N. Vuori, J. Haukka, A. Antikainen, V. Harjutsalo, C. Forsblom, N. Sandholm, P.-H. Groop, FinnDiane Study Group, Finland

33 Mapping the daily rhythmic transcriptome in the diabetic retina

H.R. Winter, R. Silk, V. Tiwari, D. Simpson, A. Stitt, E. Beli, UK

34 Transcriptional and post-transcriptional impact of methylglyoxal in human retinal endothelial cells: New players in diabetic retinopathy?

M. Aprile, A. Leone, S. Cataldi, F. Scognamiglio, C. Perfetto, A. Nicolò, C. Nigro, V. Costa, C. Miele, A. Ciccodicola, Italy

35 Two-year progression of retinal neurodegeneration in paediatric patients with type 1 diabetes: the role of glycaemic variability

M. Menduni, F. Picconi, M.C. Parravano, B. Russo, L. Chioma, S. Cianfarani, D. Ylli, P.I. Patera, S. Frontoni, Italy, USA

36 Effect of calcium dobesilate in patients with subclinical diabetic macular oedema: the CADODIAME study

O. Simo-Servat, E. Cordero-Vázquez, H. Brosa, A. Simó-Servat, M. Barraso, X. Valldeperas, M. Barahona, J. García-Arumí, M. Rivas, C. Hernández, L. Lehr, D. Zingg, R. Simó, Spain, Switzerland

Short Oral Discussion Events

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

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

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

During the Short Oral Discussion Events, the presenting author must be available or make arrangements for somebody with knowledge of pre-uploaded presentation to discuss their work with the Chairperson and the participants. The Short Oral Discussion event Chairperson is a scientist with knowledge of the respective field of work. He/she will elaborate on the findings together with the author.

Delegates are invited to discuss and comment on the short oral discussions using the Virtual Conference Tool.

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SO 13	From pregnant women and mice	138
SO 19	Gastro-entero pancreatic factors	144
SO 25	Interaction of digestive system and glucose metabolism	150
SO 31	Clinical aspects of semaglutide	158
SO 37	New approaches to health care delivery	165
SO 43	Insulin pumps	171
SO 49	Neuropathy: from mechanisms to memory	177
SO 55	Not so sweet: cancer and diabetes	183
SO 61	Fatty liver always hides some complications	189

13:15 - 14:15 Short Oral Discussion Event B	Page
SO 02 Diabetes across generations	126
SO 08 Preservation versus destruction of beta cell mass	133
SO 14 Exercise effects beyond blood glucose	139
SO 20 Carbohydrate and protein metabolism	145
SO 26 Cardiorenal consequences of SGLT2 inhibition	152
SO 32 Different aspects of SGLT2 inhibition	159
SO 38 Psychological aspects of diabetes care	166
SO 44 Glycaemic management in special settings and populations	172
SO 50 Nephropathy interventions: from blueberries to SGLT2	178
SO 56 Looking at the brain and its function	184
SO 62 Cardiovascular complications and drugs	190

OP 07 When men are mice: the study of human physiology in humans

Chair: M. Blüher, Germany

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

C.A. Hagemann, M.S. Jensen, S. Holm, L.S. Gasbjerg, M.B. Christensen, S.M. Heimbürger, F. Dela, T. Vilsbøll, B. Holst, F.K. Knop, Denmark

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

S. Kullmann, L. Wagner, R. Veit, J. Machann, A. Fritsche, H. Preissl, A.L. Birkenfeld, M. Heni, Germany

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

F. Vanweert, E. Erazo Tapia, T. Van de Weijer, J. Hoeks, V.B. Schrauwen-Hinderling, P. Schrauwen, M.K. Hesselink, M. Blair, M. Neinast, Z. Arany, E. Phielix, Netherlands, USA

40 Comparative effects of acute hypertriglyceridaemia with or without elevation of non-esterified fatty acids on glucose tolerance, insulin kinetics and beta cell function

D. Trico, B. Astiarraga, M. Seghieri, A. Mengozzi, L. Nesti, S. Baldi, A. Mari, A. Natali, Italy, Spain

41 Pathophysiological changes during weight-loss induced remission of type 2 diabetes in non-obese people

A. Al-Mrabeh, A. Barnes, K. Irvine, T. Kelly, K.G. Hollingsworth, D. Romeres, C. Cobelli, R. Taylor, UK, Italy

42 The Single-Point Insulin Sensitivity Estimator (SPISE) in the prediction of abnormal glucose metabolism in obese children: a long term follow-up study

S. Dule, I. Barchetta, L. Bertocchini, F. Cimini, F. Sentinelli, G. Marini, S. Loche, E. Cossu, M. Baroni, M. Cavallo, Italy

13:15 - 14:45

Paris Hall

OP 08 Bugs on fire

Chair: M.P. Gillum, Denmark

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

J.M. Ratter, H. Maalmi, S. Trenkamp, O.-P. Zaharia, W. Rathmann, N.C. Schloot, K. Straßburger, J. Szendroedi, C. Herder, M. Roden, GDS Group, Germany

44 Visceral adipose tissue-derived PD1-1+ Tconv from obese patients with type 2 diabetes are pro-inflammatory cells with the potential to recirculate to the blood stream

A. Giovenzana, E. Bezzecchi, C. Socci, M. Bissolati, C. Corsini, A. Terulla, G.M. Scotti, S. Cardellini, A. Saibene, M. Morelli, E. Ruggiero, A. Petrelli, Italy

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

M. Clemente-Postigo, G.M. Martin-Nuñez, M.M. Roca-Rodriguez, L. Coin-Araguez, I. Moreno-Indias, I.M. Cornejo-Pareja, F.J. Tinahones, Spain

46 TNFA mediates inflammation-induced effects on PPARG splicing in adipose tissue and mesenchymal precursor cells

S. Cataldi, M. Aprile, C. Perfetto, D. Melillo, S. Giorgetti-Peraldi, M. Cormont, P. Italiani, M. Blüher, J.-F. Tanti, A. Ciccodicola, V. Costa, Italy, France, Germany

47 Empagliflozin-induced gut microbiota alternation reduces obesity in high-fat diet-fed mice

J. Shi, H. Qiu, N. Hou, Y. Liu, F. Han, C. Kan, X. Sun, China

48 Heat shock 70 kDa protein 4 declines after bariatric surgery in association with markers of inflammation and glycaemia

H. Fachim, Z. Iqbal, M. Gibson, I. Baricevic-Jones, A. Campbell, B. Geary, R. Donn, A. Syed, A. Whetton, H. Soran, A. Heald, UK

OP 09 SGLT2 inhibitor trials

Chair: J. Eriksson, Sweden

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

M.E. Lunati, M. Trevisan, A. Gandolfi, C. Pace, N. Betella, G. Favacchio, M. Bulgheroni, L. Bucciarelli, G. Massari, C. Mascardi, A. Girelli, P.S. Morpurgo, M. Mirani, C. Berra, P. Fiorina, Italy

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

C.P. Cannon, F. Cosentino, D.K. McGuire, B. Charbonnel, S. Dagogo-Jack, R.E. Pratley, W.J. Shih, M. Maldonado, A. Pong, I. Gantz, R. Frederich, J.P. Mancuso, U. Masiukiewicz, D.Z. Cherney, USA, Sweden, France, UK, Canada

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

H.J. Lambers Heerspink, S.W. Waijjer, P. Vart, D.Z. Cherney, G. Chertow, A.M. Langkilde, J.J. McMurray, P. Rossing, R. Correa-Rotter, B.V. Stefansson, R. Toto, D. Wheeler, Netherlands, Canada, USA, Sweden, UK, Denmark, Mexico

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

R.E. Pratley, C.P. Cannon, B. Charbonnel, D.Z. Cherney, F. Cosentino, D.K. McGuire, W.J. Shih, M.N. Essex, D. Lawrence, P.L. Jones, J. Liu, I.A. Adamsons, S. Dagogo-Jack, USA, France, Canada, Sweden, UK

53 Empagliflozin versus dapagliflozin for type 2 diabetes in combination with metformin, dipeptidyl peptidase-4 inhibitor and sulfonylurea: 3-year prospective study

E. Ku, H. Jeon, D.-H. Lee, T. Oh, Korea, Republic of

54 Effects of empagliflozin on uric acid levels and gout: observations from the EMPA-REG OUTCOME trial

J.P. Ferreira, S.E. Inzucchi, B. Zinman, M. Mattheus, T. Meinicke, D. Steubl, C. Wanner, France, USA, Canada, Germany

13:15 - 14:45

Madrid Hall

OP 10 Peripheral neuropathy: pathophysiology and intervention

Chair: R. Malik, Qatar

55 Advanced glycation end-products are associated with diabetic neuropathy in young adults with type 1 diabetes

E.F. Al-Saoudi, M.M. Christensen, P. Nawroth, T. Fleming, E.E. Hommel, M.E. Jørgensen, J. Fleischer, C.S. Hansen, Denmark, Germany

56 Progression and regression of small and large nerve fiber pathology and dysfunction in recent-onset type 1 and type 2 diabetes: a 5-year prospective study

G.J. Bönhof, A. Strom, K. Straßburger, Y. Karusheva, J. Szendroedi, M. Roden, D. Ziegler, GDS group, Germany

57 Dys- but not demyelination is the hallmark of diabetic neuropathic lesions

M. Le Marois, R. Longuespee, D. Schwarz, J. Szendrödi, P. Nawroth, T. Fleming, Germany

58 Morphometric abnormalities of the brain in diabetic peripheral neuropathy

G. Sloan, D. Selvarajah, K. Teh, M. Greig, P. Shillo, I.D. Wilkinson, S. Tesfaye, UK

59 Pain processing areas of the brain demonstrate altered microvascular perfusion during spontaneous neuropathic pain

M. Greig, G. Sloan, P. Shillo, D. Selvarajah, I.D. Wilkinson, S. Tesfaye, UK

60 Long-term high frequency (10 kHz) spinal cord stimulation in painful diabetic neuropathy: a randomised controlled trial

E. Petersen, SENZA-PDN Investigators, USA

OP 11 Cardiac complications: mechanisms and possible treatments

Chair: M. Haluzik, Czech Republic

61 Identifying myocardial insulin resistance by positron emission tomography combined with hyperinsulinaemic euglycaemic clamp: a new strategy for phenotyping type 2 diabetes

R. Simo, M. Velasquez, O. Simó-Servat, A. Rojano, B. Paun, R. Marés, C. Hernández, S. Aguadé, J.R. Herance, Spain

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

R. Pylypchuk, New Zealand

63 Autonomic dysfunction is associated with the development of arterial stiffness: the Whitehall II cohort

J.F. Schaarup, M.S. Christensen, A. Hulman, L. Bjerg, C.S. Hansen, D. Vistisen, A.G. Tabák, D.R. Witte, Denmark, UK, Hungary

64 Metabolically healthy obese and cardiovascular events in a nationwide cohort study

G. Fauchier, A. Bisson, C. Semaan, J. Herbert, A. Bodin, D. Angoulvant, G. Lip, P. Ducluzeau, L. Fauchier, France, UK

65 Distribution of cardiovascular risk in type 2 diabetes: results of an analysis using data from CAPTURE study

J. Westerink, H. Bleken Oestergaard, E. Margo Hengeveld, J. Broe Honore, V. Humphreys, F. Mach, G. Yadav, O. Mosenzon, Netherlands, Denmark, Ireland, Switzerland, India, Israel

66 Association of circulating metabolomic biomarkers with incident cardiovascular disease in type 2 diabetes: analysis from the Hong Kong Diabetes Biobank

Q. Jin, A. Luk, C. Lim, E. Lau, R. Ozaki, H. Lee, W. So, Y. Huang, J. Chan, Hong Kong Diabetes Biobank Study Group, R. Ma, China

13:15 - 14:45

Saint Petersburg Hall

OP 12 The long and winding road to prevention and treatment of diabetes

Chair: Z. Semnani-Azad, Canada

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

H. Pomares-Millan, N. Atabaki-Pasdar, A. Poveda, I. Johansson, P.W. Franks, Sweden, USA

68 Epidemiology of hypoglycaemic episodes leading to hospitalisations in Denmark over the last two decades

M.H. Jensen, O. Hejlesen, P. Vestergaard, Denmark

69 The association of hypoglycaemia exposure with subsequent adverse events and severe hypoglycaemia: preliminary results from Hypo-RESOLVE

J.E. O'Reilly, A. Jeyam, T.M. Caparrotta, P. McKeigue, H. Colhoun, the Hypo-RESOLVE consortium, UK

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

S. Franzén, A.-M. Svensson, M. Miftaraj, K. Eeg-Olofsson, B. Eliasson, Sweden

71 Alendronate use and risk of type 2 diabetes: a Danish population-based case-control study

R. Viggers, P. Vestergaard, Denmark

72 Sex-specific differences in patients deceased after bariatric surgery: a retrospective, registry analysis

H. Beiglböck, E. Mörth, B. Reichardt, T. Stamm, B. Itariu, J. Harreiter, M. Hufgard-Leitner, P. Fellinger, J. Eichelster, G. Prager, A. Kautzky, A. Kautzky-Willer, P. Wolf, M. Krebs, Austria, Norway

EFSD European Foundation
for the Study of Diabetes

The background of the central section is a light blue, slightly blurred image of laboratory glassware. In the foreground, a glass dropper is shown with a single drop of liquid hanging from its tip. Behind it, several round-bottom flasks are visible, some containing liquids. The overall aesthetic is clean and scientific.

EFSD

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www.EuropeanDiabetesFoundation.org

CAMILLO GOLGI PRIZE

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



Camillo Golgi

CAMILLO GOLGI LECTURERS:

1986 Rome	G.C. VIBERTI, UK	2004 Munich	A. CERIELLO, IT
1987 Leipzig	D.J. EWING, UK	2005 Athens	C. STEHOUWER, NL
1988 Paris	C.E. MOGENSEN, DK	2006 Copenhagen	M. LAAKSO, FI
1989 Lisbon	G.B. BOLLI, IT	2007 Amsterdam	P. FIORETTO, IT
1990 Copenhagen	P.J. WATKINS, UK	2008 Rome	A. AVOGARO, IT
1991 Dublin	R. OSTERBY, DK	2009 Vienna	P.-H. GROOP, FI
1992 Prague	E. KOHNER, UK	2010 Stockholm	D. ZIEGLER, DE
1993 Istanbul	K.F. HANSSEN, NO	2011 Lisbon	A. BIERHAUS, DE
1994 Düsseldorf	J.E. TOOKE, UK	2012 Berlin	G. PUGLIESE, IT
1995 Stockholm	R. LANDGRAF, DE	2013 Barcelona	T. LAURITZEN, DK
1996 Vienna	M.-R. TASKINEN, FI	2014 Vienna	S. TESFAYE, UK
1997 Helsinki	H.-H. PARVING, DK	2015 Stockholm	H.-P. HAMMES, DE
1998 Barcelona	D.R. TOMLINSON, UK	2016 Munich	P. ROSSING, DK
1999 Brussels	E. STANDL, DE	2017 Lisbon	B.M. FRIER, UK
2000 Jerusalem	U. DI MARIO, IT	2018 Berlin	P.P. NAWROTH, DE
2001 Glasgow	A. FLYVBJERG, DK	2019 Barcelona	R.A. MALIK, QA
2002 Budapest	J. TUOMILEHTO, FI	2020 Virtual	N. SATTAR, UK
2003 Paris	A.J.M. BOULTON, UK		

15:00

36TH CAMILLO GOLGI LECTURE

Moscow Hall

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

Speaker: H.J. Lambers Heerspink, Netherlands

Title: Personalising the treatment for patients with type 2 diabetes: the mean is meaningless

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

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



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

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

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

Tuesday, 28 September

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. 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
2020	Virtual	G.A. RUTTER, UK

15:00

15TH ALBERT RENOLD LECTURE

Paris Hall

Chair: C. Mathieu, Belgium

Speaker: P.L. Herrera, Switzerland

Title: Diabetes remission through insulin secretion by islet non-beta cells

Pedro Herrera is Full Professor at the Faculty of Medicine of Geneva University (Switzerland) where he also heads the Transgenic Core Facility, which he created in 2004, in order to provide other laboratories with access to cutting-edge mouse transgenic techniques.

Professor Herrera performed his first experiments of selective in vivo cell ablation to study the formation of the different pancreatic endocrine cell types in developing mouse embryos under the guidance of Jean-Dominique Vassalli, in the Department led by Lelio Orci. Thanks to the Juvenile Diabetes Research Foundation, he rapidly became an independent young investigator and he was the first to report how to irreversibly “tag” with Cre

recombinase any specific type of cell in a mouse embryo, in order to follow its progeny in the adult. This procedure quickly became the standard approach to study the lineages of cells, from embryo to adult, in health and disease. What he did is to selectively “activate” a gene that he called “reporter”, in order to label cells in mouse tissues. The single-authored seminal paper (published in 2000) was regarded as bringing ground-breaking discoveries with elegant experiments.

During the following years, he showed that there is a population of embryonic pancreatic islet precursors that is multipotent as a cell population but, interestingly, at the single cell level, they are strictly unipotent, i.e., they give rise to only one endocrine cell type. Also, his work on pancreas biology shed light on the origin of adipose tissue during degeneration associated with ageing, and more broadly, on adult cell plasticity as well.

Most recently, observations made in his lab and published in Nature (2010, 2014 and 2019), Nature Cell Biology (2018) and Nature Communications (2021), have led to an innovative breakthrough in the approach to developing new cell replacement therapies for diabetes. Still an early discovery, he has shown that the adult pancreas retains the ability to generate new insulin-producing cells after the near total loss of functional β -cells. This unexpected finding revealed a high degree of cell plasticity, for nearly all the reconstituted β -like cells were indeed adult specialized mature non- β cells (α -, δ - and γ -cells), which had spontaneously reprogrammed to produce insulin. This is particularly striking as his laboratory has now shown that the cellular plasticity is also a feature of human pancreatic islet cells. Beyond diabetes, any degenerative disease will likely benefit from this paradigm shift.



Tuesday, 28 September

15:00

RISING STAR SYMPOSIUM

London Hall

Chair:

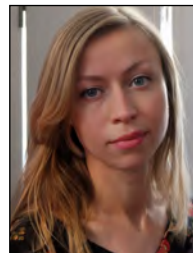
M. Rydén, Sweden

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 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
2008	Rome	R. MALLONE, FR P. SCHRAUWEN, NL M. BLÜHER, DE E. ZEGGINI, UK	2016	Munich	S. KOOIJMAN, NL F. D.'ADDIO, IT N.K.A. SANDHOLM, FI A.G. JONES, UK
2009	Vienna	V. GAULT, UK G.P. FADINI, IT C. HERDER, DE V. LYSENKO, SE	2017	Lisbon	G. CHRISTOFFERSSON, SE T. MEZZA, IT A.R. WOOD, UK Y. YAGHOOTKAR, UK
2010	Stockholm	P. FRANKS, SE F. KNOP, DK C. LINDGREN, UK K. BOUZAKRI, CH	2018	Berlin	M.R. BOON, NL E. DE FRANCO, UK N. DE LEU, BE N.R. GANDASI, SE
2011	Lisbon	I. PROKOPENKO, UK M. RAVIER, FR A.N.E. AKO, UK A.L. BIRKENFELD, DE	2019	Barcelona	S. AHMAD, SE I. MIGUEL-ESCALADA, ES I. NIKOLIC, ES D. TRICO, IT
2012	Berlin	A. BONNEFOND, FR J. BEULENS, NL L. HERRERO, ES H. SELL, DE	2020	Virtual	B. MERINO ANTOLIN, ES L. DOLLET, SE P. LARRAUFIE, FR A. SMINK, NL

Speaker: R. Pirzgalska, Portugal
Title: Neuroimmune regulation of tissue physiology



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



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



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



10:00

Moscow Hall

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

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

M.S. Udler, USA:

Why precision medicine is the future of diabetes medicine

S.J. Griffin, UK:

Why precision medicine is not the future of diabetes medicine

J. Dennis, UK:

Precision diabetes medicine: the devil is in the details

Paris Hall

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

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

F. Theis, Germany:

AI in research: the revenge of algebra?

A. Viñuela, UK:

Large scale multi-omics and genomics research

G. Hartvigsen, Norway:

AI applied in diabetes research and care: glucose control

R.A. Malik, Qatar:

AI applied in diabetes research and care: diabetic neuropathy

S. Wang, Canada:

AI applied in diabetes research and care: wound healing

Discussion

10:00

London Hall

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

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

C. Evans-Molina, USA:

The role of beta cells in the pathogenesis of type 1 diabetes

R. Mallone, France:

Beta cell stress increases their autoimmune vulnerability

R. Mirmira, USA:

Reviving stunned beta cells: Is it possible?

Madrid Hall

Hypoglycaemia: unanswered questions

Chair: P. Choudhary, UK

R.A. Gubitosi-Klug, USA:

Persistent beta cell function and hypoglycaemia: What do we know?

A. Iqbal, UK:

CGM detected hypoglycaemia: What is its clinical relevance?

S.A. Amiel, UK:

Hypoglycaemic unawareness: Strategies to prevent and manage it?

Wednesday, 29 September

10:00

Barcelona Hall

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

Chair: C. Wanner, Germany

**A. Sanyal, USA:
Liver**

**P. Nuutila, Finland:
Heart**

**P. Fioretto, Italy:
Kidney**

Saint Petersburg Hall

Fifty shades of ectopic fat in diabetes

Chair: E. Serné, Netherlands

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

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

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

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

10:00

Rome Hall

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

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

A.-M. Aas, Norway:

Medical nutrition therapy in Europe

D. Yabe, Japan:

Medical nutrition therapy in Asia

D.H. Pesta, Germany:

Physical activity guidelines: East meets West!

C.-H. Kuo, Taiwan:

Exercise in the prevention and treatment of obesity and diabetes for Asians

Wednesday, 29 September

11:45 - 13:15

Moscow Hall

OP 13 Diverse landscape of type 1 diabetes risk

Chair: T. Klupa, Poland

73 Dietary factors and risk of islet autoimmunity and type 1 diabetes: a systematic review and meta-analysis

A.-M. Lampousi, S. Carlsson, J.E. Löfvenborg, Sweden

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

K. Herzog, V.E. Grill, N. Hammar, H. Malmström, M. Talbäck, G. Walldius, S. Carlsson, Sweden, Norway

75 Decreasing age-at-onset of type 1 diabetes in a unique multigenerational cohort

P. Leete, R.J. Aitken, I.V. Wilson, A.E. Long, K.M. Gillespie, UK

76 Follow up of a French cohort of children with a family history of type 1 diabetes

A. Vambergue, T. Lemoine, M. Kyheng, I. Fajardy, C. Leroy, P. Pigny, P. Fontaine, France

77 Large socioeconomic differences in life expectancy and years spent with complications of diabetes: a cohort study in the Scottish population with type 1 diabetes, 2013-2018

A. Höhn, S.J. McGurnaghan, T.M. Caparrotta, A. Jeyam, J.E. O'Reilly, L.A. Blackbourn, S. Hatam, C. Dudel, P.M. McKeigue, H.M. Colhoun, on behalf of SDRN-Epi, UK, Germany

78 Risk of incident obstructive sleep apnoea in patients with type 1 diabetes: a population-based matched controlled cohort study

A.A. Tahrani, Z. Alshehri, A. Subramanian, N.J. Adderley, K.M. Gokhale, M. Karamat, C.J. Ray, P. Kumar, K. Nirantharakumar, UK, Saudi Arabia

OP 14 "Humanomics" in diabetes

Chair: N. Krahmer, Germany

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

A.F. Pina, M.J. Meneses, R. Patarrão, R.T. Ribeiro, J.F. Raposo, L. Gardete-Correia, R. Duarte, J.M. Boavida, J.L. Medina, F. Carli, B. Patrício, A. Gastaldelli, M.P. Macedo, Portugal, Italy

80 Metabolite differences between type 2 diabetes and type 3c diabetes secondary to chronic pancreatitis based on an untargeted metabolomics approach

L. Qi, L. Li, China

81 Regional adipose tissue differences of the proteome reveals an enhanced antioxidative and chaperone activity as a feature of lower body fat in humans

M. Ahmed, M. Todorovic, A. Van Dam, F. Karpe, Sweden, UK

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

E.C. Tore, M.C. Brouwers, P.C. Dagnelie, A. Elshorbagy, S.J. Eussen, J.F. Jansen, C.J. Van der Kallen, E. Kooi, S.J. Meex, T. Olsen, H. Refsum, C.G. Schalkwijk, C.D. Stehouwer, K. Vinknes, M.M. Van Greevenbroek, Netherlands, UK, Norway

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

K. Mai, L. Spranger, J. Bredow, U. Zeitz, U. Grittner, M. Boschmann, S. Dickmann, N. Stobäus, R. Jumpertz-von Schwartzberg, J. Spranger, Germany

84 Cardiovascular risk of former obesity in healthy-weight Americans

M.P. Smith, W. Mansour, B. De Gale, Grenada

11:45 - 13:15

London Hall

OP 15 Fat in the liver: where it comes from and how it can be prevented

Chair: A. Gastaldelli, Italy

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

C. Wernicke, A. Pohrt, L. Pletsch-Borba, N. Meyer, J. Machann, C. Gerbracht, A.F. Pfeiffer, J. Spranger, K. Mai, Germany

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

A.M. Buziau, S.J. Eussen, M. Kooi, C.J. Van der Kallen, M.C. Van Dongen, N.C. Schaper, R.M. Henry, M.T. Schram, D.C. Pieter, M.M. Van Greevenbroek, A. Wesselius, C.G. Schalkwijk, C.D. Stehouwer, M.C. Brouwers, Netherlands

87 Hepatic glycogen and whole-body fat oxidation are not modulated by one night of prolonged fasting in people with non-alcoholic fatty liver

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

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

K. Pafili, S. Kahl, D. Pesta, K. Strassburger, L. Mastrototaro, J. Pützer, B. Dewidar, T. Sarabhai, I. Esposito, M. Schlensak, M. Roden, Germany, Egypt

89 Multi-organ multiparametric magnetic resonance imaging reveals distinct ectopic fat distribution in type 2 diabetics with and without co-existing obesity

T. Waddell, A. Bagur, D. Cunha, H. Thomaides-Brears, R. Banerjee, M. Brady, UK

90 Inferring causal pathways between metabolic processes and liver fat accumulations: an IMI DIRECT study

N. Atabaki Pasdar, H. Pomares-Millan, R.W. Koivula, L.Z. Agudelo, G.N. Giordano, A. Viñuela, E. Thomas, A. Mari, R. Hartmut, M. Ohlsson, J.D. Bell, I. Pavo, E. Pearson, P.W. Franks, IMI DIRECT Consortium, Sweden, UK, USA, Italy, Germany, Austria

OP 16 CKD in diabetes - a costly complication

Chair: P.-H. Groop, Finland

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

S. Nolan, J. Ärnlöv, M.C. Batista, S. Chadban, G.M. Chertow, L. De Nicola, J.-M. Halimi, E. Kanda, G. Li, F.S. Mennini, J.F. Navarro-González, A. Power, L. Retat, N. Tangri, J. Wish, UK, Sweden, Brazil, Australia, USA, Italy, France, China, Spain, Canada

92 Hyper-filtration most strongly predicts decline in estimated glomerular filtration rate: results from analysis of 73,583 person-years

S. Katoh, K. Yokoyama, M. Zeniya, Y. Sakamoto, K. Utsunomiya, R. Nishimura, Japan

93 Metabolic syndrome, and not obesity, is associated with chronic kidney disease in the general US population

E. Muraca, C. Ballabeni, R. Trevisan, G. Perseghin, S. Ciardullo, Italy

94 Non-dipping of nocturnal blood pressure is associated with increased risk of mortality and kidney disease in type 1 diabetes

H. Hjortkjær, F. Persson, S. Theilade, S. Winther, N. Tofte, T. Ahluwalia, P. Rossing, Denmark

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

J.L. Flores-Guerrero, M.C. Osté, A. Gomes Neto, M.F. Eisenga, G. Navis, R.P. Dullaart, S.J. Bakker, Netherlands

96 Fully automated closed-loop versus standard insulin therapy in adults with type 2 diabetes requiring dialysis: a randomised controlled trial

L. Bally, C.K. Boughton, A. Tripyla, S. Hartnell, A. Daly, D. Herzig, M.E. Wilinska, C. Czerlau, A. Fry, R. Hovorka, Switzerland, UK

11:45 - 13:15

Barcelona Hall

OP 17 Don't stop moving: beneficial effects of exercise on diabetes and beyond

Chair: F. Amati, Switzerland

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

J. Hentilä, R. Ojala, M.S. Lietzén, M.A. Heiskanen, S.M. Honkala, R. Lautamäki, E. Löyttyniemi, T. Malm, L. Lahti, J.O. Rinne, K.H. Pietiläinen, J. Kaprio, J.C. Hannukainen, Finland

98 Dynamic profiling of the metabolic response to endurance exercise

M. Hoene, X. Zhao, C. Hu, A. Moller, P. Schneeweiss, M. Heni, A. Birkenfeld, A.M. Niess, A. Peter, R. Lehmann, G. Xu, C. Weigert, Germany, China

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

J. Ukropec, M. Nemec, M. Schon, L. Slobodova, V. Tirpakova, P. Krumpolec, J. Cvecka, P. Turčáni, M. Sedliak, P. Valkovič, B. Ukropcová, Slovakia

100 Resistance exercise training protects beta cell from apoptosis in an in vitro model of type 1 diabetes

G.A. Bronczek, G.M. Soares, E.M. Carneiro, A.C. Boscherio, J.M. Costa-Júnior, Brazil

101 High intensity interval training improves insulin sensitivity and affects mitochondria dynamics in skeletal muscle of type 2 diabetes humans

L. Mastrototaro, M. Apostolopoulou, D. Pesta, K. Strassburger, Y. Karusheva, S. Gancheva, J. Szendroedi, M. Roden, Germany

102 TGF β /mir143/145 associated mis-differentiation affects exercise response

S.I. Dreher, S. Höckele, C. Hoffmann, P. Huypens, A. Moller, A.L. Birkenfeld, A. Peter, J. Beckers, M. Hrabe de Angelis, C. Weigert, Germany

OP 18 Stressed out beta cell organelles

Chair: A. Zorzano, Spain

103 Boosting the pancreatic beta cell function: the influence of nanotopographical cues on cell clustering and organelles crosstalk

A. Galli, A. Marku, N. Dule, P. Marciani, M. Castagna, P. Milani, C. Lenardi, G. Tedeschi, C. Perego, Italy

104 Bcl-xl limits transcriptional and functional decompensation of beta cell mitochondria during chronic exposure to high glucose

D.J. Pasula, R. Shi, A.Z. Shih, A. Chaudry, B. Vanderkruk, B.G. Hoffman, D.S. Luciani, Canada

105 The fate of intracellular sphingosine-1 phosphate regulates beta cell response to fatty acids

Y. Tang, E. Gurgul-Convey, Germany

106 Manf overexpression in pancreatic beta cells protects from streptozotocin-induced beta cell death and diabetes in mice

H. Li, T. Danilova, E. Palm, E. Hakonen, T. Otonkoski, M. Lindahl, Finland

107 Loss of autophagy, Transcription Factor EB (TFEB) and lysosomal homeostasis limit beta cell function and survival under ER stress in vitro and in vivo

Y. Zou, D.J. Pasula, M. Tang, D.L. Dai, G. Soukhacheva, B.C. Verchere, D.S. Luciani, Canada

108 Cell biology of stress granules in pancreatic beta cells

E. Quezada, J. Vasiljevic, M. Solimena, Germany

11:45 - 13:15 Short Oral Discussion Event C	Page
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SO 15 Novel methods to study metabolism in diabetes	140
SO 21 Metabolic control during and after pregnancy	146
SO 27 Glucose-lowering agents: Real World Evidence	153
SO 33 Non-insulin treatment in type 1 and type 2 diabetes	160
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SO 45 Seeing the full picture of diabetic retinopathy	173
SO 51 Burdens and bones in CKD and diabetes	178
SO 57 All you need to know about atherosclerosis and diabetes	185
SO 63 COVID-19: from the known to the unknown	192

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SO 10	Beta cells to the grave in type 1 diabetes	135
SO 16	The many faces of insulin sensitivity	141
SO 22	News from the drug pipeline	147
SO 28	GLP-1 receptor agonists and weight loss	154
SO 34	News from new insulins	162
SO 40	CGM	168
SO 46	Diabetic foot: from cost to COVID	174
SO 52	Predictors of diabetic kidney disease	180
SO 58	Brain, kidney and vascular complications	186
SO 64	Cardiac complications in diabetes and prediabetes	193

13:30 - 15:00

Moscow Hall

OP 19 Diet and nutrition

Chair: M.A. Schroijen, Netherlands

109 Reduced carbohydrate and increased protein and fat during weight loss improve the atherogenic lipid profile in type 2 diabetes

M.N. Thomsen, M.J. Skytte, A. Samkani, A. Astrup, J. Frystyk, E. Chabanova, B. Hartmann, J.J. Holst, T.M. Larsen, S. Madsbad, F. Magkos, H.S. Thomsen, R.L. Walzem, T. Krarup, S.B. Haugaard, Denmark, USA

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

R. Taylor, A.C. Barnes, K.M. Irvine, T.L. Kelly, K.G. Hollingsworth, N. Sattar, M.E. Lean, A. Al-Mrabeh, UK

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

K. Maasen, S.J. Eussen, P.C. Dagnelie, A.J. Houben, C.A. Webers, M.T. Schram, T.T. Berendschot, C.D. Stehouwer, A. Opperhuizen, M.M. Van Greevenbroek, C.G. Schalkwijk, Netherlands

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

O. Johansen, I.J. Neeland, R.L. Zagury, B. Ahrén, J. Neutel, E. Perrin, K. Reyes, E. Berk, M. Von Eynatten, L.H. De Gregório, Switzerland, USA, Brazil, Sweden

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

S. Kabisch, A. Hustig, U. Dambeck, M. Kemper, C. Gerbracht, C. Honsek, J. Machann, M.A. Osterhoff, A.F. Pfeiffer, Germany

114 The effect of dietary carbohydrate restriction beyond weight loss on health-related quality of life and cognition

N.J. Jensen, H.Z. Wodschow, M.J. Skytte, A. Samkani, A. Astrup, J. Frystyk, B. Hartmann, J.J. Holst, T.M. Larsen, S. Madsbad, F. Magkos, K.W. Miskowiak, J. Rungby, S.B. Haugaard, M.N. Thomsen, Denmark

OP 20 Keeping the balance in islet secretion

Chair: A. Tengholm, Sweden

115 Re-internalised Phogrin/IA-2beta is targeted to multigranular bodies devoted to degradation of young insulin secretory granules

I. Kalaidzidis, K.-P. Knoch, J.M. Torkko, A. Sönmez, K. Ganss, Y. Kalaidzidis, M. Solimena, Germany

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

T.G. Hill, Q. Zhang, A.I. Tarasov, L.J. Briant, C. Guida, R. Terron Exposito, P. Rorsman, F.M. Ashcroft, UK

117 Islet beta cell synchrony and second phase activity are governed by α cells upon physiological nutrient mixtures

M. Raoux, M. Jaffredo, K. Leal Fischer, J. Gaitan, A. Pirog, S. Renaud, J. Lang, France

118 Pancreatic alpha and beta cells are globally phase-locked

H. Ren, Y. Li, C. Han, Y. Yu, B. Shi, X. Peng, S. Wu, X. Yang, L. Chen, C. Tang, China

119 Investigating the presence of proglucagon-derived peptides in human pancreas

T. Mezza, N. Wewer Albrechtsen, G. Di Giuseppe, C. Cefalo, S. Moffa, F. Cinti, U. Capece, S. Menchi, G. Quero, S. Alfieri, A. Giaccari, J.J. Holst, Italy, Denmark

120 Modulation of cholesterol homeostasis via pancreatic LDL receptor alteration: impact on beta cell secretory activity

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

13:30 - 15:00

London Hall

OP 21 The adipocentric angle

Chair: N. Venteclef, France

121 Yes-associated protein 1 in adipocytes plays an important role in glucose homeostasis

D.J. Han, R. Aslam, T. Ojha, D.A. Yuen, C.T. Luk, Canada

122 Aberrant overexpression of HOTAIR inhibits abdominal adipogenesis through the epigenetic remodelling of genome-wide DNA methylation and transcription

F.-C. Kuo, Y.-C. Huang, P.-Y. Chen, Taiwan

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

G.Z. Yu, L. Bentley, N.A. Krentz, R. Casero, Y. Bai, K.K. Mattis, S. Holliman, J.M. Torres, A. Mahajan, A.L. Gloyn, R.D. Cox, UK, USA

124 Deletion of CD44 promotes adipogenesis and insulin signalling in adipocytes

X. Weng, S.M. Warburton, C.K. Hennayake, L. Kang, UK

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

M. Vranic, S. Hetty, P.G. Kamble, E. Holbikova, H. Jerchow, S. Skrtic, M.K. Svensson, J.W. Eriksson, M.J. Pereira, Sweden

126 Zmat3 hypomethylation contributes to early senescence of adipose precursor cells from healthy individuals with a family history of type 2 diabetes

R. Spinelli, P. Florese, L. Parrillo, F. Zatterale, M. Longo, M. Pastorino, A. Desiderio, G.A. Raciti, C. Miele, B. Gustafson, A. Nerstedt, U. Smith, F. Beguinot, Italy, Sweden

OP 22 Understanding kidney disease in diabetes

Chair: G. Gruden, Italy

127 Meta-analysis of whole exome and whole genome sequencing data for diabetic nephropathy in individuals with type 1 diabetes

J. Haukka, A. Antikainen, E. Valo, V. Harjutsalo, C. Forsblom, N. Sandholm, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

128 Long non-coding RNA from cells derived from urine in biopsy confirmed kidney disease with diabetes to differentiate diabetic kidney disease from non-diabetic kidney disease

S. Ghosh, M. Basu, A. Raychaudhuri, N.P. Bhattacharyya, India

129 Novel cross-species transcriptional networks, effective genes and signalling pathways of diabetic nephropathy in human and mouse kidney

B.A. Bhat, T. Habib, I. Ahmed, S.S. Jeya, K.A. Fakhro, A.A. Akil, Qatar

130 Soluble Nogo-B upregulates Tie1 receptor: implication for vegfa/vegfr2 signalling in diabetic nephropathy

C. Ricciardi, L. Gnudi, UK

131 Novel compounds found to regulate VEGF-A splicing in diabetic podocytes

M.L. Ayine, Y. Liu, M. Stevens, S. Oltean, UK

132 Circulating tenascin-C levels predict renal progression in type 2 diabetes

D.T. Lui, C. Lee, C.Y. Cheung, C.H. Fong, W. Chow, Y. Woo, K.S. Lam, Hong Kong

13:30 - 15:00

Barcelona Hall

OP 23 Advances in insulin therapy

Chair: T. Heise, Germany

133 Ado09, a co-formulation of pramlintide and insulin A21G improves post-prandial glucose and body weight versus insulin aspart in type 1 diabetes

G. Meiffren, G. Andersen, R. Eloy, C. Seroussi, C. Mégret, S. Famulla, Y.-P. Chan, M. Gaudier, O. Soula, J.H. DeVries, T. Heise, France, Germany

134 Once weekly basal insulin Fc is safe and efficacious in patients with type 2 diabetes previously treated with basal insulin

J. Frias, J. Chien, Q. Zhang, E. Chigutsa, W. Landschulz, P. Wullenweber, A. Haupt, C. Kazda, USA

135 Similar hypoglycaemia duration with once-weekly insulin icodec vs insulin glargine U100 in insulin naive or experienced patients with type 2 diabetes

R. Silver, M. Asong, K. Begtrup, S.R. Heller, L. Liu, J. Rosenstock, USA, Denmark, UK

136 A first in human, single ascending dose study to assess the safety and tolerability, pharmacokinetics, and pharmacodynamics of AB101 in subjects with type 1 diabetes

B.K. Roberts, X. Wang, B. Franey, M. Hernandez, M. Hompesch, USA

137 Final data from a long-term observational study of continuous intraperitoneal insulin infusion in a vulnerable population with diabetes

B. Gehr, N. Oliver, E. Renard, D. Hilgard, K. Mueller, C. Rieger, W. Mueller-Hoffmann, A. Liebl, Germany, UK, France

138 Comparative effectiveness of insulin glargine 300 U/mL and insulin degludec 100 U/mL in insulin naive type 2 diabetes adults: the Restore-2 naive cohort

G.P. Fadini, R. Buzzetti, M. Larosa, M.C. Rossi, A. Nicolucci, D. Cucinotta, Italy

OP 24 Epidemiology of diabetes complications

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

139 Young-onset type 2 diabetes: clinical outcomes in Norwegian general practice

K.L. Tibballs, A. Jenum, E.S. Buhl, Norway

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

S. Kalra, A.K. Das, S. Joshi, A. Mithal, K.M. Prasanna Kumar, A.G. Unnikrishnan, H. Thacker, B. Sethi, S. Chowdhury, R. Ghosh, S. Krishnan, A. Nair, D. Chodankar, A.H. Zargar, LANDMARC Study Group, India

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

A.C. Van Gennip, C.D. Stehouwer, The Maastricht Study, A. Singh-Manoux, T.T. Van Sloten, Netherlands, France, UK

142 Associations between chronic kidney disease, prior cardiovascular conditions and increased mortality in 36.303 type 1 diabetes patients between 2015-2017

L. Lyngfelt, P. Wessman, M. Miftaraj, C. Zhou, S. Franzén, K. Eeg-Olofsson, A.-M. Svensson, B. Eliasson, Sweden

143 Heart failure and renal complications in young- and usual-onset type 2 diabetes among white Caucasians from US and UK

S. Paul, J. Ling, O. Montvida, Australia

144 Risk of long term HbA_{1c} variability on cancer events and cause-specific death in 15,286 patients with type 2 diabetes (The Hong Kong Diabetes Register 1995-2019)

D. Mao, E. Lau, H. Wu, A. Yang, B. Fan, M. Shi, E. Chow, A. Kong, R. Ma, A. Luk, J. Chan, Hong Kong

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
2020	Virtual	J.C. BRÜNING, DE



15:15 **7TH EASD/NOVO NORDISK FOUNDATION** **Moscow Hall**
DIABETES PRIZE FOR EXCELLENCE

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

Speaker: **J.A. Todd, UK**

Title: **From HLA-DQ position 57 and back again**

John Todd FRS, FMedSci, FRCP Hons, PhD is Professor of Precision Medicine at the University of Oxford, Director of the Wellcome Centre for Human Genetics and of the JDRF/Wellcome Diabetes and Inflammation Laboratory (DIL), and an Emeritus Senior Investigator of the National Institute for Health Research.

Previously, Todd was Professor of Human Genetics and a Wellcome Trust Principal Research Fellow at the University of Oxford, and until 2016, Professor of Medical Genetics at the University of Cambridge.

His PhD was in Biochemistry at the University of Cambridge, followed by a postdoctoral fellowship at Stanford University. Todd researches type 1 diabetes (T1D) genetics and disease mechanisms with the goal of delivering clinical interventions. Todd helped pioneer genome-wide genetic studies in common diseases. He then went on to study the associations between disease-associated genetic variants and phenotypes in T1D by founding and deploying the Cambridge BioResource. In the latest phase of his research, to translate basic genetic and immunological knowledge to treatment and prevention, the DIL is testing the efficacy of ultra-low doses of interleukin-2 in newly-diagnosed children with T1D to preserve the remaining pancreatic islet beta-cell insulin production. Todd is also part of the international consortium, Global Platform for the Prevention of Autoimmune Diabetes (GPPAD), aiming to establish primary preventions of T1D in randomised placebo-controlled trials, initially by testing the possibility that daily oral insulin given to children at high genetic risk of T1D can inhibit the autoimmunity that causes T1D.

His research in genetics and diabetes has received several awards and prizes, including the 1995 Minkowski Prize of the European Association for the Study of Diabetes. Todd has supervised 35 PhD students with three in progress and has an h-index of 130 and over 80,000 citations.



15:15

Rome Hall

New data from from Dapa-CKD

Chair: P. Rossing, Denmark

S.E. Inzucchi, USA:

New findings from a metabolic perspective

D.C. Wheeler, UK:

New findings from a nephrology perspective

J.J. McMurray, UK:

New findings from a cardiology perspective

16:30

Paris Hall

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

Chair: A. Op de beeck, Belgium

S. Chen, USA:

Modelling SARS-CoV-2 infection using human organoids

F. Dotta, Italy:

ACE2 expression in human islets

16:30

London Hall

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

Chair: M. Rydén, Sweden

**M.D. Jensen, USA:
Modifying lipid turnover**

**L. Kazak, Canada:
Target intracellular metabolism**

**B.B. Kahn, USA:
Improve the endocrine function**

Madrid Hall

More from closed loops

Chair: S.E. Siegelaar, Netherlands

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

**A. Haidar, Canada:
A novel dual-hormone insulin-and-pramlintide artificial pancreas for type 1 diabetes**

Wednesday, 29 September

16:30

Barcelona Hall

100 years Insulin treatment

Chair: F.K. Knop, Denmark

C.J. Tack, Netherlands:

Forms of insulin treatment in 2021: an individualised approach

T. Vilsbøll, Denmark:

New insulins: What could we get, true value or vague promise?

Saint Petersburg Hall

It is time to be active

Chair: P. Schrauwen, Netherlands

J.R. Zierath, Sweden:

Exercise timing and glucose control

M.K.C. Hesselink, Netherlands:

Stand up or exercise? Muscle adaptations to different forms of physical activity

Results from TriMASTER: a 3-way cross-over trial of precision medicine strategy of 2nd/3rd line therapy in type 2 diabetes

Chair: N. Sattar, UK

A.T. Hattersley, UK:

Precision medicine approaches in type 2 diabetes based on how clinical features influence glycaemic treatment response

E.R. Pearson, UK:

Trial designs to test precision medicine approaches

C. Angwin, UK:

Design of the TriMASTER trial

B.M. Shields, UK:

Results of the TriMASTER trial

A.T. Hattersley, UK:

Clinical and methodological implications of TriMASTER trial results

C.M. Kistorp, Denmark:

Commentary

Panel Q&A

10:00

Moscow Hall

Prediabetes: Does it really matter?

Chair: C. Herder, Germany

C.D.A. Stehouwer, Netherlands:

Prediabetes and diabetic complications: Maastricht Study

D. Ziegler, Germany:

Prediabetic neuropathies?

K. Færch, Denmark:

Cardiovascular risk in prediabetes

Paris Hall

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

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

E. Ahlqvist, Sweden:

It's genes

A.G. Tabak, UK:

It's environment

J. Petrie, UK:

It's drugs

10:00

London Hall

Perspectives of the diabetic foot syndrome

Chair: M. Malecki, Poland

K. van Acker, Belgium:

Epidemiology of diabetic foot syndrome and further prospects

E.B. Jude, UK:

Comprehensive diabetic foot care and prevention

V. Fejfarova, Czech Republic:

New diagnostic and therapeutical approaches to diabetic foot management with a focus on PAD

Madrid Hall

New ways to understand kidney disease in diabetes

Chair: M.F. Gomez, Sweden

M. Pruijm, Switzerland:

The use of functional MRI to understand and predict progression of CKD in diabetes

J. Patrakka, Sweden:

Single cell transcriptomics of kidney tissue: towards a new level of understanding of renal diseases

M. Kretzler, USA:

An integrative systems biology approach in CKD

Thursday, 30 September

10:00

Barcelona Hall

Inter-organ communication in diabetes and systemic energy homeostasis

Chair: S. Herzig, Germany

F. Villarroya, Spain:

Organ communication through adipokines: brown adipose tissue as a novel actor

A. Sehgal, USA:

Inter-organ coordination by circadian clocks and neurogenetic mechanisms

A. Georgiadi, Germany:

Novel endocrine circuits in metabolic control

10:00

Saint Petersburg Hall

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

Chair: J. Buse, USA

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

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

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

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

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

Panel Discussion

Thursday, 30 September

10:00

Rome Hall

EASD/ESE Symposium: Diabetes and bone

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

N. Napoli, Italy:

Pathways that link obesity, metabolic syndrome, type 2 diabetes and musculoskeletal diseases

R. Eastell, UK:

The impact of diabetes on fracture risk

C. Meier, Switzerland:

Antidiabetic treatments and effects on fracture risk

K. Loh, Australia:

Glucoregulatory actions of bone

Panel Discussion

Next step in incretin therapy: from single to dual agonism

Chair: J.J. Meier, Germany

M.J. Davies, UK:

Introduction to the molecule

T. Heise, Germany:

Tirzepatide mechanism of action: effects on endocrine function and insulin resistance in patients with type 2 diabetes

T. Battelino, Slovenia:

Effect of tirzepatide on glycaemic control captured with continuous glucose monitoring in patients with type 2 diabetes (SURPASS-3 CGM)

K. Cusi, USA:

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

S. Del Prato, Italy:

SURPASS 4: Efficacy and safety of tirzepatide once weekly versus insulin glargine in patients with type 2 diabetes and increased cardiovascular risk

J.W. Eriksson, Sweden:

Commentary

Q&A with Speakers and closing remarks by the Chair

11:45 - 13:15

Moscow Hall

OP 25 Disparities and diversity in diabetes epidemiology

Chair: S. Wild, UK

145 Marked and widening and socio-economic inequalities in prevalence of type 2 diabetes in Scotland

S.H. Wild, J. Wang, Scottish Diabetes Research Network epidemiology group, UK

146 Prevalence and characteristics associated with antidepressant and antipsychotic prescribing prior to diagnosis of type 2 diabetes in Scotland

C.R. Greene, S.H. Wild, H. Wu, C.A. Jackson, UK

147 Selection pressures on the ACE2 gene in a Scottish and South Indian type 2 diabetes population

C. Nangia, S. Srinivasan, V. Radha, V. Mohan, C.N. Palmer, UK, India

148 Sex, race, and ethnicity representativeness in cardiovascular outcomes trials in type 2 diabetes: a meta-epidemiological study

I. Avgerinos, T. Karagiannis, A. Liakos, P. Kakotrichi, A. Tsapas, E. Bekiari, Greece, UK

149 GWAS reveals a novel locus associated with kidney function in people of Middle-Eastern decent

S.A. Mohamed, J. Tares, P.W. Franks, L. Bennet, Sweden

150 People with type 1 diabetes of African-Caribbean ethnicity are at increased risk of sight-threatening retinopathy

A. Mangelis, S. Ayis, A. Nirmalakumaran, J. Collins, L. Webster, S.M. Thomas, S. Mann, J. Karalliedde, UK

OP 26 Beta cells: sensing, signalling and secreting

Chair: M. Solimena, Germany

151 Gamma aminobutyric acid-induced calcium signalling in the primary cilium of islet beta cells

G. Sanchez, C. Incedal, J. Prada, T. Dandekar, O. Idevall-Hagren, Sweden, Germany

152 Involvement of extracellular ATP signalling in the diabetogenic response of pancreatic beta cells

T. Brun, D. Duhamel, L. Oberhauser, C. Jiménez-Sánchez, C. Bartley, V. Lavallard, P. Maechler, Switzerland

153 A dual GLP-1/GIP agonist may encompass the beneficial effects of both incretins on pancreatic beta cell function in the absence of beta-arrestin2

N. Zaïmia, S. Costes, S. Dalle, G. Bertrand, M.A. Ravier, France

154 Feeding inhibits the catabolic activity of glutamate dehydrogenase in mouse pancreatic beta cells as revealed by in situ assessment of enzyme activity

Y. Zhou, P. Maechler, Switzerland

155 Alterations in the expression of proteins involved in nuclear-cytoplasmic shuttling of cargo in pancreatic beta cells under the duress of chronic hyperglycaemia

A. Kowluru, S. Elebra, V. Thamilselvan, A. Harajli, USA

156 What regulates insulin granule mobility in the submembrane space? Role of cAMP and adenine nucleotides

B. Gaus, I. Rustenbeck, Germany

11:45 - 13:15

London Hall

OP 27 Prediction tools for outcomes in diabetes

Chair: D. Gordin, Finland

157 Prediction models for future complications in type 1 diabetes

N. Al-Sari, Denmark

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

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

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

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

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

A.E. Hughes, J.A. Houghton, A.J. Chakera, G. Spyer, M.H. Shepherd, S.E. Flanagan, A.T. Hattersley, UK

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

J. Liu, J.-L. Poon, J. Bispham, M. Perez-Nieves, A. Hughes, K. Chapman, B. Mitchell, F. Snoek, L. Fisher, USA, Netherlands

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

G.B. Petersen, S. Byberg, M.V. Fangel, D. Vistisen, L.E. Joensen, H. Vorum, J.K. Kristensen, Denmark

OP 28 Pathogenic mechanisms of complications

Chair: D. Van Raalte, Netherlands

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

J.I. Van Heck, R. Gacesa, R. Stienstra, R.K. Weersma, L.A. Joosten, C.J. Tack, Netherlands

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

M.I. Eriksson, A. Syreeni, E.H. Dahlström, N. Sandholm, C. Forsblom, D. Gordin, T. Tatlisumak, J. Putaala, P.-H. Groop, J. Martola, L.M. Thorn, on behalf of the FinnDiane Study Group, Finland, Sweden

165 Nox5 in circulating peripheral blood mononuclear cells: a potential biomarker in unstable diabetic vascular and renal disease

T.J. Block, K.C. Sourris, W.A. Khan, P. Kantharidis, J.C. Jha, M.E. Cooper, J. Shaw, K. Jandeleit-Dahm, Australia, Germany

166 Dicarbonyl stress alters mitochondrial protein homeostasis in endothelial cells

R. Bulkescher, S. Herzig, J. Szendrödi, P.P. Nawroth, J. Zemva, Germany

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

G. Llaurodo, A. Cano, L. Albert, I. Mazarico, A. Romero, O. Giménez-Palop, S. Fernández-Veledo, J. Vendrell, J.-M. González-Clemente, Spain

168 Wnt regulation and collagen gene expression in the bone of type 2 diabetes elderly women

G. Leanza, F. Tramontana, F. Cannata, A. Piccoli, V. Viola, M. Faraj, R. Strollo, P. Pozzilli, N. Napoli, Italy

11:45 - 13:15

Barcelona Hall

OP 29 Understanding muscle and liver metabolism

Chair: M. Roden, Germany

169 Assessing the association between metabolic flexibility measured upon insulin stimulation and during incremental submaximal exercise

M. Bergman, R.F. Mancilla, Y.M. Bruls, P. Schrauwen, V.B. Schrauwen-Hinderling, M.K. Hesselink, Netherlands

170 TSC22D4 interacts with Akt to regulate insulin sensitivity

B. Ekim Ustunel, S. Demir, G. Wolff, A. Wieder, J. Szendrödi, S. Herzig, Germany

171 C2-ceramide recycling inhibits insulin signalling in muscle cells

C.L. Bandet, S. Tan-Chen, A. Blachnio-Zabielska, J.-P. Pais-de-Barros, P. Ferré, F. Fougelle, H. Le Stunff, E. Hajduch, France, Poland

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

A. Reis-Costa, G.D. Belew, L.C. Tavares, M.J. Meneses, J.G. Jones, Portugal

173 Transcriptional repression of the iron exporter ferroportin via the PI3K-AKT-Foxo1 signalling pathway may explain liver iron overload in patients with type 2 diabetes

R. Qiu, N. Volk, O. Marques, S. Altamura, M.U. Muckenthaler, Germany

174 Ciprofibrate decreases net hepatic glucose uptake and tends to decrease net myocardial glucose uptake in prediabetic male volunteers

V. De Wit-Verheggen, F. Vanweert, J. Raiko, G. Schaart, A. Gemmink, E.B. Nascimento, M.K. Hesselink, J.E. Wildberger, R. Wierds, D. Moutaigne, B. Staels, E. Phielix, P. Schrauwen, V.B. Schrauwen-Hinderling, T. Van de Weijer, Netherlands, Finland, France

OP 30 GLP-1 receptor agonism: putative mechanisms of benefit

Chair: R. IJzerman, Netherlands

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

R.L. Cordiner, A. Mari, K.F. Bedair, E.R. Pearson, UK, Italy

176 Emotional eating is associated with reduced sensitivity to the central effects of GLP-1 receptor agonist treatment

C.C. Van Ruiten, J. Ten Kulve, L. Van Bloemendaal, M. Nieuwdorp, D. Veltman, R.G. IJzerman, Netherlands

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

A. Brønden, H.H. Nerild, C.C. Nexøe-Larsen, P.H. Hellmann, M. Baekdal, I.M. Gether, M.P. Gillum, B. Hartmann, L.B. Knudsen, L.V. Jacobsen, J.F. Rehfeld, J.J. Holst, T. Vilsbøll, D.P. Sonne, F.K. Knop, Denmark

178 Short-term treatment with liraglutide does not improve cardiac diastolic function in patients with type 2 diabetes: a randomised double-blind placebo-controlled trial

A.S. Bojer, M.H. Soerensen, J. Bjerre, P. Gæde, N. Vejlstup, P.L. Madsen, Denmark

179 Glucose-dependent insulinotropic polypeptide (GIP) contributes to sitagliptin-mediated improvement of beta cell function in patients with type 2 diabetes

S. Stensen, L.S. Gasbjerg, M.M. Rosenkilde, B. Hartmann, T. Vilsbøll, J.J. Holst, M.B. Christensen, F.K. Knop, Denmark

180 Semaglutide reduces hsCRP levels across different treatment settings: post hoc analyses of SUSTAIN and PIONEER trials

O. Mosenzon, M. Capehorn, A. De Remigis, S. Rasmussen, P. Weimers, J. Rosenstock, Israel, UK, Denmark, USA

11:45 - 13:15	Short Oral Discussion Event E	Page
SO 05	Therapeutic advances	130
SO 11	In vivo and ex vivo beta cell function in diabetes	136
SO 17	Novel aspects of beta cell and insulin secretion	142
SO 23	Fatty matters	148
SO 29	Novel glucose-lowering agents	155
SO 35	More on insulins	163
SO 41	Closed loop systems	169
SO 47	Autonomic neuropathy	175
SO 53	New insights from animal models of complications	181
SO 59	Vascular complications: mechanisms and risk factors	187

13:30 - 15:00 Short Oral Discussion Event F	Page
SO 06 Genes and genomic engineering	131
SO 12 Sugar Moms	137
SO 18 It must be my hormones	143
SO 24 Glucose-lowering drugs and the liver	149
SO 30 The advantage of dual agonists	157
SO 36 Determinants and consequences of hypoglycaemia	164
SO 42 Other aspects of managing blood glucose levels	170
SO 48 Peripheral neuropathy - predictors of disease and prognosis	176
SO 54 Pathogenic mechanisms of complications	182
SO 60 Hepatic fibrosis: from screening to treatment	188

13:30 - 15:00

Moscow Hall

OP 31 Modelling diabetes long term complications

Chair: G. Medina-Gomez, Spain

181 Mir-34a mediates progression of liver injury from NAFLD to fibrosis in diabetes associated liver fibrosis

Q. Su, UK

182 An siRNA strategy to silence apolipoprotein CIII in the fight against the metabolic syndrome

P. Recio-López, P.-O. Berggren, L. Juntti-Berggren, I. Valladolid-Acebes, Sweden

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

J. Zemva, R. Bulkescher, T. Poth, I. Hausser, C. Rodemer, A. Erhardt, J.G. Okun, S. Herzig, J. Szendrödi, P. Nawroth, Germany

184 Involvement of gut-hormones in regulating female reproductive function in obese and incretin receptor knockout animal models

D. Khan, O.O. Ojo, A. Sridhar, P.R. Flatt, R.C. Moffett, UK

185 Adiporon improves endurance capacity and decreases ectopic lipid deposition in middle-aged obese mice

C. Selvais, Belgium

186 Analysis of the hypothalamic transcriptome controlling counter-regulatory responses to hypoglycaemia

J. Castillo-Armengol, A. Rodriguez Sanchez-Archidona, C. Fledelius, B. Thorens, Denmark, Switzerland

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

Chair: F. Giorgino, Italy

187 Liraglutide may induce impaired diastolic heart function by activation of sympathetic tonus: A group effect of this class of drugs?

S.B. Haugaard, P. Kumaraturai, C. Anholm, O.W. Nielsen, A. Sajadieh, Denmark

188 Liraglutide reduces cardiac adipose tissue in type 2 diabetes: results from the LiraFlame randomised controlled trial

T. Hansen, I. Rasmussen, E. Zobel, R. Ripa, B. Von Scholten, V. Curovic, A. Kjaer, P. Rossing, Denmark

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

C. López-Cano, A. Ciudin, E. Sánchez, F. Tinahones, A. Soto, S. Pellitero, F. Barbé, M. Dalmases, M. García-Ramírez, A. Gaeta, R. Martí, C. Hernández, R. Simó, A. Lecube, Spain

190 Effect of subcutaneous semaglutide on features of the metabolic syndrome in patients with non-alcoholic steatohepatitis

L.L. Gluud, I. Bakulin, S. Ladelund, P.N. Newsome, A. Rendon, A.-S. Sejling, M.E. Tushuizen, K. Cusi, Denmark, Russian Federation, UK, Netherlands, USA

191 Multi-target engagement effect of a novel long-acting Glucagon/GIP/GLP-1 triple agonist (HM15211) in animal model of NASH

J. Choi, J. Lee, J. Kim, H. Kwon, E. Park, J. Lee, D. Kim, Y. Kim, I. Choi, Korea, Republic of

192 In patients with fatty liver, higher fasting GLP-1 levels are associated with increased insulin resistance and reduced beta hydroxybutyrate

G. Mocciaro, F. Carli, M. Gaggini, C. Barbieri, B. Patricio, C. Rosso, A. Armandi, E. Lembo, E. Bugianesi, G. Mingrone, A. Gastaldelli, Italy

13:30 - 15:00

London Hall

OP 33 Diabetic foot problems: from prediction to treatment

Chair: A.J.M. Boulton, UK

193 Metabolomic risk predictors of diabetic foot ulcers

J. Hedegaard Andersen, T. Suvisaiva, K. Trošt, S. Theilade, I. Mattila, A. Rasmussen, M. Frimodt-Møller, P. Rossing, C. Legido-Quigley, T.S. Ahluwalia, Denmark

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

M. Petkovic, M.V. Mouritzen, N. Molchanova, K. Qvist, P. Nyeng, E.C. Leal, E. Carvalho, L.T. Dalgaard, H. Jenssen, Denmark, Portugal

195 Protein tyrosine phosphatase 1B inhibition promotes diabetic wound healing via activation of the antioxidant enzyme heme oxygenase 1

E.C. Leal, A. Figueiredo, D. Santos, M. Delibegovic, E. Carvalho, Portugal, UK

196 A M1/M2-macrophages-regulating new drug for diabetic foot ulcers with poor-controlled HbA_{1c} risk factor in an International Phase 3 study

M.-L. Kuo, S.-C. Chang, Taiwan

197 Long-term outcomes of autologous cell therapy, angioplasty and conservative therapy in patients with chronic limb-threatening ischaemia and diabetes

M. Dubsky, J. Husakova, R. Bem, V. Fejfarova, R. Jarosikova, A. Jirkovska, V. Woskova, Czech Republic

198 Diabetes is not associated with major amputation after open vascular surgery for chronic limb-threatening ischaemia: a nationwide propensity score analysis

E. Lilja, A. Gottsäter, M. Miftaraj, J. Ekelund, B. Eliasson, A.-M. Svensson, M. Zarrouk, S. Acosta, Sweden

OP 34 SGLT2 inhibition: putative mechanisms of benefit

Chair: B. Zinman, Canada

199 The SGLT2 inhibitor ertugliflozin causes a switch of cardiac substrate utilisation leading to reduced cardiac mTOR-signalling, unfolded protein response and apoptosis

P.A. Mann, J. Möllmann, B.M. Klinkhammer, P. Droste, B. Peter, N. Marx, M. Lehrke, Germany

200 Empagliflozin induced white adipocyte browning and modulated mitochondrial dynamics in KK Cg-Ay/J mice and mouse adipocytes

L. Chen, L. Xu, X. Liu, T. Li, X. Li, M. Xue, B. Sun, China

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

J.H. Voigt, K.M. Lauritsen, S.B. Pedersen, T.K. Hansen, N. Møller, N. Jessen, L.C. Gormsen, M.C. Laurenti, C.D. Man, A. Vella, E. Søndergaard, Denmark, USA, Italy

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

T.K. Rönkkö, M.K. Eickhoff, H. Mischak, P. Rossing, F. Persson, T.S. Ahluwalia, Denmark, Germany

203 Effect of SGLT2 inhibition on ketone bodies in patients with stable chronic heart failure

R. Pietschner, J. Kolwelter, A. Bosch, D. Kannenkeril, C. Ott, M. Schiffer, S. Achenbach, R.E. Schmieder, Germany

204 Effects of SGLT2 inhibition on lipid storage and lipolysis in adipose tissue in type 2 diabetes

K.M. Lauritsen, J.H. Voigt, S.B. Pedersen, T.K. Hansen, N. Møller, N. Jessen, L.C. Gormsen, E. Søndergaard, Denmark

13:30 - 15:00

Barcelona Hall

OP 35 Omics and more for type 2 diabetes and complications

Chair: D. Vistisen, Denmark

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

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

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

R.C. Slieker, L.A. Donnelly, L. Lopez-Noriega, G.N. Giordano, M. Åkerlund, IMI-RHAPSODY, I. Pavo, V. Lyssenko, C. Legido Quigley, L. Groop, M. Ibberson, J.W. Beulens, L.M. 't Hart, E.R. Pearson, G.A. Rutter, Netherlands, UK, Sweden, Austria, Norway, Denmark, Switzerland

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

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

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

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

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

L.J. Oost, A.A. Van der Heijden, E.A. Vermeulen, C. Bos, P.J. Elders, R.C. Slieker, S. Kurstjens, M. Van Berkel, J.G. Hoenderop, C.J. Tack, J.W. Beulens, J.H. De Baaij, Netherlands

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

N. Sandholm, J.B. Cole, V. Nair, X. Sheng, H. Liu, N. VanZuydam, E. Ahlqvist, D. Fermin, M. Kretzler, K. Susztak, J.N. Hirschhorn, J.C. Florez, P.-H. Groop, GENIE consortium, Finland, USA, Sweden

OP 36 Optimising insulin therapy

Chair: T. Vilsbøll, Denmark

211 Impact of the fasting plasma glucose titration target on the success of basal insulin titration in insulin-naïve patients with type 2 diabetes: a systematic analysis

J. Wolters, D. Wollenhaupt, M. Abd El Aziz, M.A. Nauck, Germany

212 Advancing therapy in basal insulin users with type 2 diabetes: better clinical outcomes with iGlarLixi vs premix BIAsp 30 in the SoliMix trial

C. Trescoli, J. Rosenstock, R. Emral, L. Sauque-Reyna, V. Mohan, S. Al Sifri, N. Lalic, A. Alvarez, P. Picard, N. Demil, M. Bonnemaire, R.J. McCrimmon, Spain, USA, Turkey, Mexico, India, Saudi Arabia, Serbia, Argentina, France, UK

213 Real-world persistence, adherence, healthcare resource utilisation, and costs in people with type 2 diabetes switching from basal insulin (BI) to 2nd- vs 1st-generation BI

E. Wright, J. Gill, S. Huse, X. Li, T. Reid, F. Zhou, USA

214 Glycaemic improvement in 3,436 people with type 1 diabetes using the Omnipod DASH® Insulin Management System over first 90 days of use

G. Aleppo, D. J. DeSalvo, F. Lauand, L. M. Huyett, A. Chang, T. Vienneau, T. Ly, USA, France

215 Pharmacodynamics, pharmacokinetics, safety, and tolerability of INS068 vs insulin degludec in type 1 diabetes at steady state: a phase I, randomised, double-blind, cross-over-trial

M. Hernandez, B. Franey, J. Wang, Y. Li, B. Zhang, M. Hompesch, USA, China

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

C. Kazda, J. Chien, Q. Zhang, E. Chigutsa, W. Landschulz, P. Wullenweber, A. Haupt, J. Frias, USA

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	1994	Düsseldorf	T. MANDRUP POULSEN, DK
1967	Stockholm	E.R. FROESCH, CH	1995	Stockholm	J. TODD, UK
1968	Louvain	L.A. CARLSON, SE	1996	Vienna	P. RORSMAN, DK
1969	Montpellier	B. HELLMAN, SE	1997	Helsinki	P. FROGUEL, FR
1970	Warsaw	B. JEANRENAUD, CH	1998	Barcelona	J.H. AUWERX, FR
1971	Southampton	C.N. HALES, UK	1999	Brussels	R. SCHARFMANN, FR
1972	Madrid	W.J. MALAISSE, BE	2000	Jerusalem	H. EDLUND, SE
1973	Brussels	L. ORCI, CH	2001	Glasgow	J.R. ZIERATH, SE
1974	Jerusalem	E. CERASI, SE	2002	Budapest	B.O. ROEP, NL
1975	Munich	P. FREYCHET, FR	2003	Paris	M. STUMVOLL, DE
1976	Helsinki	K.D. HEPP, DE	2004	Munich	G.A. RUTTER, UK
1977	Geneva	J. WAHREN, SE	2005	Athens	P. ROSSING, DK
1978	Zagreb	J. NERUP, DK	2006	Copenhagen	M. RODEN, AT
1979	Vienna	S.J.H. ASHCROFT, UK	2007	Amsterdam	M. STOFFEL, CH
1980	Athens	I.-B. TALJEDAL, SE	2008	Rome	J.C. BRÜNING, DE
1981	Amsterdam	P. DE MEYTS, BE	2009	Vienna	G. PERSEGHIN, IT
1982	Budapest	G.F. BOTTAZZO, UK	2010	Stockholm	F. GRIBBLE, UK
1983	Oslo	S.L. HOWELL, UK	2011	Lisbon	N. SATTAR, UK
1984	London	A. LERNMARK, DK	2012	Berlin	T.M. FRAYLING, UK
1985	Madrid	E. VAN OBBERGHEN, FR	2013	Barcelona	M. CNOP, BE
1986	Rome	D. PIPELEERS, BE	2014	Vienna	A.L. GLOYN, UK
1987	Leipzig	J.-L. CARPENTIER, CH	2015	Stockholm	M. BLÜHER, DE
1988	Paris	J.C. HUTTON, UK	2016	Munich	P. SCHRAUWEN, NL
1989	Lisbon	H.U. HÄRING, DE	2017	Lisbon	E.R. PEARSON, UK
1990	Copenhagen	P. A. HALBAN, CH	2018	Berlin	F. BÄCKHED, SE
1991	Dublin	C. BOITARD, FR	2019	Barcelona	F.K. KNOP, DK
1992	Prague	E. VAN SCHAFTINGEN, BE	2020	Virtual	G.P. FADINI, IT
1993	Istanbul	H. YKI-JÄRVINEN, FI			

15:15

INDUCTION OF HONORARY MEMBERS

Moscow Hall

**S. Del Prato, President EASD and EFSD
followed by**

56TH MINKOWSKI LECTURE

Chair: S. Del Prato, President EASD and EFSD

Speaker: A. Bonnefond, France

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

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

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



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

16:15

Moscow Hall

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

Chair: A. Kautzky-Willer, Austria

C.N. Bairey-Merz, USA:
Yes

N. Sattar, UK:
No

Paris Hall

The future of incretin-based treatments

Chair: M.A. Nauck, Germany

F.K. Knop, Denmark:
Activating multiple receptors

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

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

London Hall

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

Chair: A. Avogaro, Italy

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

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

Devices support diabetes treatment

Chair: R. Weitgasser, Austria

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

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

Barcelona Hall

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

Chair: L.M. Thorn, Finland

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

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

Saint Petersburg Hall

Harnessing intracellular pathways for therapy

Chair: B. Cannon, Sweden

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

A. Zeigerer, Germany:
Intracellular transport in systemic energy homeostasis and diabetes

16:15

Rome Hall

INNODIA - Translational approaches to disease modifying therapy of type 1 diabetes: an innovative approach towards understanding and arresting type 1 diabetes

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

C. Mathieu, Belgium:
Introduction

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

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

Discussion

EMPEROR Preserved Study

Chair: F. Zannad, France

J. Butler, USA:

EMPEROR-Preserved: context, design and population

S.D. Anker, Germany:

EMPEROR-Preserved: main results

G. Filippatos, Greece:

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

M. Packer, USA:

Pooled-Analysis of EMPEROR-Reduced and EMPEROR-Preserved trials: key results

A. Norhammar, Sweden:

Commentary

Group Discussion

10:00

Moscow Hall

Retinopathy and artificial intelligence

Chair: H. Colhoun, UK

S.R. Aravind, India:

Diabetic retinopathy screening, a model for AI

A. Storkey, UK:

Deep learning approaches to retinal images for prediction of outcomes in diabetes

Paris Hall

Current guidelines on diabetes management

Chair: P. Fioretto, Italy

C. Wanner, Germany:

Current EASD/ADA and KDIGO guidelines for treating type 2 diabetes with CKD

H.J. Lambers Heerspink, Netherlands:

New data on SGLT2 inhibitors and mineralocorticoid receptor antagonism in type 2 diabetes with CKD

London Hall

Importance of insulin clearance in the regulation of glucose metabolism

Chair: Amalia Gastaldelli, Italy

S. Najjar, USA:

Hepatic insulin clearance: mechanisms

B. Mittendorfer, USA:

Insulin clearance in diabetes and obesity

10:00

Madrid Hall

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

Chair: R.K. Semple, UK

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

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

Barcelona Hall

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

Chair: T. Tankova, Bulgaria

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

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

Saint Petersburg Hall

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

Chair: T. Fall, Sweden

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

**K. Khunti, UK:
Care of people with diabetes post COVID-19 in primary care**

Friday, 1 October

10:00

Rome Hall

EASD-Lancet Symposium: Treatment of obesity: the future of diabetes treatment?

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

H. Yki-Järvinen, Finland:

Back to the basics: Why are obesity and diabetes related?

P. Sumithran, Australia:

Harnessing weight loss interventions for diabetes treatment: How successful have we been?

I. Lingvay, USA:

Back to the future: Is a weight-centric goal for diabetes treatment feasible?

B. Van der Schueren, Belgium:

Type 1 diabetes and obesity: a two-way road filled with potholes

All speakers:

Bring it on! Q&A

Finerenone: a new approach to kidney protection in patients with type 2 diabetes

Chair: A. Solini, Italy

R.A. DeFronzo, USA:

New directions in kidney care in diabetes: targeting mineralocorticoid receptor overactivation with finerenone

G.L. Bakris, USA:

FIDELIO-DKD: cardiorenal outcomes in people with high-risk CKD and type 2 diabetes

L.M. Ruilope, Spain:

FIGARO-DKD: cardiorenal outcomes across the broad spectrum of CKD and type 2 diabetes

J.B. McGill, USA:

Navigating the data for key subgroup

A.L. Birkenfeld, Germany:

Maintaining the course: safety considerations for optimising patient outcomes

R. Agarwal, USA:

Setting the route for CKD and type 2 diabetes care: clinical consequences of the FIDELIO-DKD and FIGARO-DKD data

P.-H. Groop, Finland:

Commentary followed by Q&A

11:15 - 12:15

Moscow Hall

OP 37 Cytokine storm in type 1 diabetes: from signalling to interventions

Chair: L. Marroqui Esclapez, Spain

217 Specific alterations in the STAT1/STAT6 axis may contribute to beta cell loss in type 1 diabetes

K. Afi Leslie, S.J. Richardson, N.G. Morgan, M.A. Russell, UK

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

E.E. Ringqvist, S. Tuomela, M. Mazur, K. Burdsall, A. Parajuli, H. Sork, L. Krogvold, K. Dahl-Jørgensen, C. Matthews, I. Gerling, M. Flodström-Tullberg, Sweden, Norway, USA

219 Using the HALO image analysis platform to study pancreas pathology and insulinitis in young people with recent-onset type 1 diabetes

R.C. Wyatt, P. Leete, M. Padilla, M. Yang, M. Bogdani, G. Deutsch, C. Flaxman, M. Atkinson, I. Kusmartseva, N.G. Morgan, S.J. Richardson, UK, USA

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

C. Mathieu, S. Blomme, S. Caluwaerts, L. Haazen, L. Steidler, K. Van Huynegem, J. Vermeiren, K. Cerosaletti, A. Wiedeman, S.A. Long, E. Serti, AG019-T1D-101 Trial Investigators, P. Rottiers, G.T. Nepom, K.C. Herold, Belgium, USA

OP 38 Novel agents

Chair: M. Muskiet, Netherlands

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

T. Coskun, J.S. Moyers, W. Roell, L. O'Farrell, A. Regmi, A.D. Showalter, K.W. Sloop, D.B. Wainscott, F.S. Willard, J. Ficorilli, O. Cabrera, S. Urva, F. Norouziyan Cooper, J. Alsina-Fernandez, H. Qu, USA

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

C.T. Benson, C. Loghin, Y. Du, M.K. Thomas, T. Coskun, S. Urva, Z. Milicevic, USA

223 Safety and pharmacokinetic study of CPL207280, a novel GPR40 receptor agonist, after a multiple-dose in healthy volunteers

K. Bazydło-Guzenda, K. Jarus-Dziedzic, A. Gierczak-Pachulska, K. Bus-Kwasnik, P.J. Rudzki, M. Wieczorek, Poland

224 DA-1241 a novel GPR119 agonist: Safety, tolerability, pharmacokinetics, and pharmacodynamics: Part 2 of multiple ascending dose study in type 2 diabetes patients

M. Hompesch, B. Franey, M. Grimm, D. Lee, J. Jeong, M.-K. Kim, USA, Korea, Republic of

11:15 - 12:15

London Hall

OP 39 Glucagon metabolism in humans

Chair: J.J. Holst, Denmark

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

K. Prystupa, K. Kantartzis, M. Heni, L. Fritsche, O.-P. Zaharia, I. Yurchenko, K. Bodis, S. Trenkamp, V. Burkart, J. Szendrői, N. Stefan, A.L. Birkenfeld, A. Fritsche, M. Roden, R. Wagner, Germany

226 Increased glucagon sensitivity in totally pancreatectomised patients

I. Rix, A. Lund, L.F. Garvey, K. Owen, C. Hansen, G. Van Hall, J.J. Holst, T. Vilsbøll, F.K. Knop, Denmark

227 Splanchnic and leg glucagon metabolism in healthy adults

A. Basu, R. Ruchi, Y. Yadav, A. Weaver, L. Wilkins, M. Schiavon, C. Cobelli, C. Dalla Man, A. Pandey, K. Johnson, S. Renuse, R. Basu, USA, Italy

228 A 2-year follow-up of RYGB surgery in obesity and type 2 diabetes: enhanced responses of multiple hormones to oral glucose but not i.v. arginine challenge

G. Fanni, P. Katsogiannos, M.J. Pereira, J.W. Eriksson, Sweden

OP 40 Protecting the kidney in diabetes

Chair: N. Sandholm, Finland

229 Protective impact and potential mechanisms of Elabela on DKD via β -arrestins

M. Shi, D. Tan, Y. Chen, W. Gu, H. Zhang, China

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

R. Klar, K. Shahzad, S. Fatima, M. Al-Dabet, I. Gadi, H. Khawaja, A. ElWakiel, P.P. Nawroth, P.R. Mertens, S. Michel, F. Jaschinski, B. Isermann, Germany, Jordan

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

A. Kogot-Levin, L. Hinden, Y. Riahi, I. Abramovich, E. Gottlieb, A. Rothner, L. Kadosh, T. Vaisid, J. Roitelman, E. Cerasi, J. Tam, O. Mosenzon, G. Leibowitz, Israel

232 Acute effects of dapagliflozin on renal oxygenation and perfusion in type 1 diabetes with albuminuria: a randomised, double-blind, placebo-controlled crossover trial

J.C. Laursen, N. S ndergaard Heinrich, J.M. De Melo, B. Haddock, I.K. Rasmussen, F. Safavimanesh, C. Stevns Hansen, J. St rling, H.B. Wiberg Larsson, P.-H. Groop, M. Frimodt-M ller, U.B. Andersen, P. Rossing, Denmark, Finland

11:15 - 12:15

Barcelona Hall

OP 41 Building the evidence base for new devices

Chair: F.W. Gibb, UK

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

J. Fuchs, J.M. Allen, C.K. Boughton, M.E. Wilinska, A. Thankamony, C. De Beaufort, E. Froehlich-Reiterer, T.M. Kapellen, B. Rami-Merhar, S.E. Hofer, F.M. Campbell, J. Sibayan, L. Bocchino, R. Hovorka, KidsAP Consortium, UK, Luxembourg, Belgium, Austria, Germany, USA

234 Cambridge hybrid closed-loop in children and adolescents with type 1 diabetes: a multicentre 6-month randomised trial

C.K. Boughton, L. Kanapka, R. Hovorka, DAN05 Consortium, UK, USA

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

T. Murata, N. Sakane, A. Kuroda, J. Miura, Y. Hirota, K. Kato, M. Toyoda, R. Kouyama, K. Kouyama, A. Shimada, S. Kawashima, Y. Matoba, K. Nishimura, K. Hosoda, The ISCHIA study group, Japan

236 Evaluation of accuracy and safety of the next generation 180-day long-term implantable Eversense CGM system: the PROMISE Study

S. Garg, D. Liljenquist, B. Bode, M. Christiansen, T. Bailey, R. Brazg, D. Denham, A.R. Chang, H. Akturk, A. Dehennis, K.S. Tweden, F.R. Kaufman, USA

OP 42 Cardiovascular disease: predictors and outcomes

Chair: C.J. Tack, Netherlands

237 Respective predictive value of glycation gap and silent myocardial ischaemia for cardio-vascular events in asymptomatic patients with type 2 diabetes

P. Valensi, M. Nguyen, I. Banu, S. Chiheb, E. Cosson, France

238 Validation study for coronary heart disease (CHD) among diabetes patients based on automatic retinal image analysis (ARIA) method

D.R. Owens, J. Lee, Y. Qu, Y. Zhou, L. Ding, S. Liu, W. Yuan, M. Chen, J. Zhang, J.M. Rafferty, R.L. Thomas, B. Zee, UK, China

239 Cardiovascular and renal diseases in type 1 compared with type 2 diabetes: a nationwide observational study

D. Angoulvant, G. Fauchier, C. Semaan, A. Bisson, J. Herbert, P. Ducluzeau, L. Fauchier, France

240 A longitudinal study on the incidence of cardiovascular events in a population of Northern Italy

E. Bianco, M. Dei Cas, M. Bignotto, C. Morano, C. Rigoldi, G. Trevisi, C. Berra, P. Zermiani, M. Zuin, R. Paroni, F. Folli, P. Battezzati, Italy

12:30 - 13:30

Moscow Hall

OP 43 Genes, epigenes and telomeres in type 1 diabetes

Chair: R. Oram, UK

241 Birth weight, BMI in adulthood and latent autoimmune diabetes in adults: a Mendelian randomisation study

Y. Wei, Y. Zhan, J.E. Löfvenborg, T. Tuomi, S. Carlsson, Sweden, Finland

242 The influence of HLA haplotype, number of injections and administration route on the effect of GAD-specific immunotherapy in type 1 diabetes

U. Hannelius, C. Beam, J. Ludvigsson, Sweden, USA

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

E.H. Dahlstrom, L.J. Smyth, A. Syreeni, J. Killner, G.J. McKay, N. Sandholm, C. Forsblom, A. Maxwell, A. McKnight, P.-H. Groop, Finland, UK

244 Telomeres do not always shorten over time in people with type 1 diabetes: a FinnDiane substudy

A. Syreeni, L. Carroll, S. Mutter, A.S. Januszewski, C. Forsblom, M. Lehto, P.-H. Groop, A.J. Jenkins, Finland, Australia

OP 44 Diabetes around the clock!

Chair: C. Dibner, Switzerland

245 The influence of residual beta cell function upon free-living postprandial and nocturnal glycaemic control in individuals with type 1 diabetes

A.C. Shaw, G.S. Taylor, T.J. McDonald, R.A. Oram, J.A. Shaw, D.J. West, UK

246 Diurnal rhythms in the human skeletal muscle metabolome are altered in insulin resistant individuals

J.-F. Harmsen, M. Van Weeghel, J. Wefers, J. Hoeks, R.H. Houtkooper, P. Schrauwen, Netherlands

247 Diurnal pattern of meal tolerance and insulin sensitivity in type 2 diabetes

Y. Yadav, D. Romeres, C. Cobelli, R. Carter, A. Basu, C. Dalla Man, R. Basu, USA, Italy

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

E. Stistrup Lauritzen, J. Støy, C. Bæch-Laursen, N. Grarup, T. Hansen, N. Jessen, N. Møller, B. Hartmann, J. Holst, U. Kampmann, Denmark

12:30 - 13:30

London Hall

OP 45 What surgery can do for you

Chair: K. Virtanen, Finland

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

D. Ben-Zvi, A. AlKurd, B. Moalem, A. Permyakova, H. Israeli, A. Bardugo, L. Hefetz, M. Bergel, A. Haran, S. Azar, J. Tam, R. Grinbaum, R. Ben-Haroush Schyr, Israel

250 Beta cell mass in type 2 diabetes before and after gastric bypass surgery, measured as pancreatic uptake of radiolabeled exendin in human

L.N. Deden, M. Boss, E.J. Hazebroek, F.J. Berends, M. Gotthardt, Netherlands

251 Identification of myokines potentially involved in the improvement of glucose homeostasis induced by bariatric surgery

L. Orioli, J. Derop, M. Canouil, P. Lause, M. De Barsy, A. Loumaye, Y. Deswysen, B. Navez, A. Bonnefond, J.-P. Thissen, Belgium, France

252 Bariatric surgery, type 2 diabetes remission and proteomic changes Z. Iqbal, H. Fachim, M. Gibson, I. Baricevic-Jones, A. Campbell, B. Geary, R. Donn, A. Syed, A. Whetton, H. Soran, A. Heald, UK

OP 46 (Path)ways to develop human beta cells

Chair: M. Rovira, Spain

253 Generation of stem cell derived islets with adult-like cytoarchitecture and function in vitro

V. Lithovius, H. Montaser, T. Barsby, D. Balboa, J. Saarimäki-Vire, H. Vihinen, E. Jokitalo, H. Ibrahim, V. Chandra, T. Otonkoski, Finland

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

T. Barsby, D. Balboa, V. Lithovius, E. Vähäkangas, H. Montaser, A. Nieminen, J. Kvist, J. Ustinov, J. Saarimäki-Vire, T. Otonkoski, Finland, Spain

255 Single cell transcriptomic profiling of the developing human pancreas reveals unique features of maturing islet cells

O. Olaniru, U. Kadolsky, S. Persaud, UK

256 tRNA derived small RNAs regulate the maturation of neonatal beta cell

B. Bayazit, C. Jacovetti, C. Cosentino, J. Sobel, K. Wu, F. Brozzi, A. Rodriguez-Trejo, L. Stoll, C. Guay, R. Regazzi, Switzerland

12:30 - 13:30

Barcelona Hall

OP 47 Hypoglycaemia consequences at system level

Chair: S.A. Amiel, UK

257 Associations of hypoglycaemia and glycaemic variability with cardiac arrhythmias using a long-term monitoring approach in insulin-treated patients with type 2 diabetes

A. Andersen, J.I. Bagger, S.K. Sørensen, M.P. Baldassarre, U. Pedersen-Bjergaard, J.L. Forman, G. Gislason, T.B. Lindhardt, F.K. Knop, T. Vilsbøll, Denmark, Italy

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

C.R. Andreasen, A. Andersen, P.G. Haeghelqvist, K. Abelin, J.V. Lauritsen, P.G. Jørgensen, S. Engberg, J. Faber, J.J. Holst, U. Pedersen-Bjergaard, F.K. Knop, T. Vilsbøll, Denmark

259 Investigating the blood flow responses of different thalamic nuclei to hypoglycaemia in intact and impaired awareness of hypoglycaemia

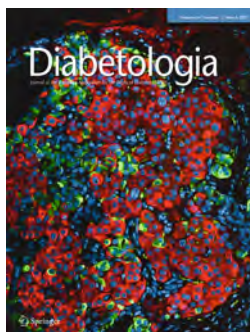
P. Jacob, S.A. Amiel, M. Nwokolo, F. Zelaya, O. O'Daly, P. Choudhary, UK

260 Differential symptoms and hormonal counter-regulation during hypoglycaemia in people with type 1 diabetes and post bariatric hypoglycaemia

V. Lehmann, A. Tripyla, T. Zueger, D. Herzig, N. Styger, C. Albrecht, J. Meier, L. Bally, C. Stettler, Switzerland

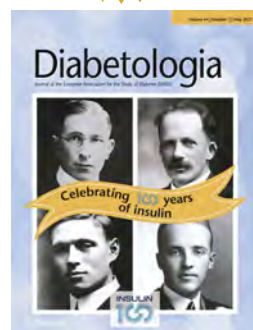
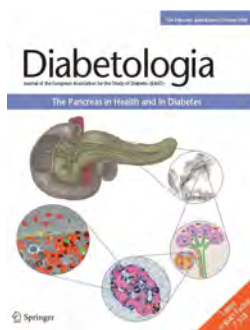
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13:45

Moscow Hall

Management of type 1 diabetes: ADA-EASD Consensus Report 2021

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

R.I.G. Holt, UK:

Introduction and methods, goals and targets

J.H. DeVries, Netherlands:

Diagnosis of type 1 diabetes

R. Weinstock, USA:

Schedule of care

A. Hess-Fischl, USA:

Diabetes self-management education and lifestyle considerations

I.B. Hirsch, USA:

Monitoring

S. Kirkman, USA:

Insulin therapy

E.M. Renard, France:

Hypoglycaemia

F.J. Snoek, Netherlands:

Psychosocial care

K. Nørgaard, Denmark:

DKA

B. Ludwig, Germany:

Pancreas and islet cell transplantation

J. Pettus, USA:

Adjunctive therapy

T. Klupa, Poland:

Special populations

J.S. Skyler, USA:

Emergent and future perspectives

A. Peters, USA:

Key knowledge gaps, question and discussion period

Going to bed with diabetes

Chair: P. Schrauwen, Netherlands

R. Basu, USA:

Nocturnal hepatic glucose metabolism in type 2 diabetes

S.M. Schmid, Germany:

Importance of sleep and circadian rhythm for energy metabolism

R.N. Bergman, USA:

Nocturnal FFA metabolism and insulin sensitivity

London Hall

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

Chair: G. Gruden, Italy

E. Marbán, USA:

Introduction to the world of exosomes / The clinicians guide to exosomes

M. Puhka, Finland:

Urinary extracellular vesicles as a biomarker and a diagnostic tool in diabetic kidney disease

J.P.G. Sluijter, Netherlands:

Extracellular vesicles as a therapeutic tool in cardiovascular disease

13:45

Madrid Hall

My cells are getting old! Ageing in diabetes

Chair: M. Cnop, Belgium

D.A. Sinclair, USA:

The biology of longevity and ageing

D Avrahami, Israel:

Pancreatic endocrine cell maturation state in health and disease

J. Hoeks, Netherlands:

Metabolism, insulin sensitivity and physical fitness of human skeletal muscle in ageing

Barcelona Hall

Turning stem cells into beta cells

Chair: V. Sordi, Italy

H. Lickert, Germany:

From stem cells to beta cells

G.G. Nair, USA:

Functional maturation of human iPSC-derived beta cells

T. Otonkoski, Finland:

Applications of human islet-like organoids in research and in the clinic

13:45

Saint Petersburg Hall

Major results from the Glycaemia Reduction Approaches in Diabetes: a Comparative Effectiveness (GRADE) Study

Chair: S.E. Kahn, USA

D.M. Nathan, USA:

Background, rationale, design, conduct, adherence

J.B. Buse, USA:

Major results: Metabolic, microvascular and cardiovascular with subgroup analyses

M.A. Tiktin, USA:

Side-effects / Adverse events / QOL

N. Younes, USA:

Heterogeneity of treatment effects including baseline factors associated with success

D.R. Matthews, UK:

Discussant

Rome Hall

A novel approach to problematic hypoglycaemia: the HARPdoc RCT

Chair: S.R. Heller, UK

H. Rogers, UK:

The background to HARPdoc

N. De Zoysa, UK:

An overview of the intervention

S.A. Amiel, UK:

The HARPdoc RCT

R.A. Ajjan, UK:

Commentary

Panel discussion with questions from the audience

Friday, 1 October

16:15

Saint Petersburg Hall

EASD General Assembly

For EASD Members only

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00**SO 01 Diabetes epidemiology at scale: registries and large databases**

Chair: T. Fall, Sweden

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

S.R. Tittel, B. Mayer, A. Fritsche, J. Seufert, M. Laimer, S. Zimny, S.M. Schmid, M. Hummel, P. Bramlage, R.W. Holl, Germany, Switzerland

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

D. Galiyeva, A. Gusmanov, Y. Sakko, A. Issanov, K. Atageldiyeva, K. Kadyrzhanuly, A. Sarria-Santamera, A. Nurpeissova, A. Gaipov, Kazakhstan

263 Identifying and delineating the Dutch type 2 diabetes population using an all-payer claims database: characteristics, healthcare utilisation, and expenditures

R.J. Geurten, A.M. Elissen, H.J. Bilo, J.N. Struijs, C. Van Tilburg, D. Ruwaard, Netherlands

264 Association between weight change and incidence of cardiovascular disease events and mortality among adults with type 2 diabetes: a systematic review and meta-analysis

J. Strelitz, E.R. Lawlor, Y. Wu, A. Estlin, G. Nandakumar, A.L. Ahern, S.J. Griffin, UK

265 Mortality rates associated with diabetes are now increasing compared to general population: outcomes from a general practice level analysis in England

M. Whyte, M. Stedman, A. Heald, UK

266 The impact of the timing of pregnancies after bariatric surgery on children's health: a retrospective, registry analysis

M. Krebs, E. Mörth, B. Reichardt, T. Stamm, B. Itariu, J. Harreiter, M. Hufgard-Leitner, P. Fellinger, J. Eichelter, G. Prager, A. Kautzky-Willer, P. Wolf, H. Beiglböck, Austria, Norway

267 Childhood bereavement and risk of type 1 diabetes: a Swedish population-based register study

M.-L. Wernroth, B. Kennedy, K. Fall, B. Svennblad, C. Almqvist, T. Fall, Sweden

268 Total costs of care in patients with type 2 diabetes and cardiovascular disease: a comparative cohort study (OFFSET)

M. Evans, A. Shankar Chandramouli, M. Faurby, K. Sommer Matthiessen, P. Bredahl Mogensen, S. Verma, UK, India, Denmark, Canada

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

SO 02 Diabetes across generations

Chair: R.B. Prasad, Sweden

269 Paternal ketogenic diet in mice programmes offspring fasting metabolism and physical activity

J. Magrill, M. Stolovich-Rain, E. Ben Cnaan, S. Baraghithy, B. Glaser, Y. Tam, Y. Dor, Israel

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

N. Di Pietrantonio, M. Shumliakivska, R. Suades, D. Mandatori, P. DiTomo, G. Formoso, M.P. Baldassarre, F. Cosentino, A. Pandolfi, Italy, Sweden

271 Imprinted genes in beta cell function

G. Hatem, O. Asplund, T. Singh, I. Artner, R.B. Prasad, Sweden

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

A. MacCalman, E. De Franco, A.R. Jeffries, J. Burrage, E.M. Walker, A. Franklin, N.D. Owens, A.T. Hattersley, J. Mill, UK

273 Increased risk of fetal abdominal obesity (FAO) in old and/or obese pregnant women with normal glucose tolerance

Y. Kim, W. Kim, S. Park, Korea, Republic of, USA

274 Both gestational diabetes exposure and maternal methylome interaction impacts offspring epigenetic signature

A. Khamis, M. Canouil, E. Keikkala, S. Hummel, A. Bonnefond, F. Delahaye, M. Väärasmäki, M.-R. Jarvelin, S. Sebert, E. Kajantie, P. Froguel, T. Andrew, France, Finland, Germany, UK

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

C. Cidade-Rodrigues, F.M. Cunha, C. Chaves, F. Castro, C. Pereira, S. Paredes, M. Vieira, A. Melo, O. Figueiredo, A. Morgado, M. Martinho, M. Almeida, M. Almeida, Portugal

276 Postpartum screening of women with gestational diabetes in specialised diabetes practices in the period from 2015 - 2017: data from 12,991 women from the GestDiab registry

U. Linnenkamp, G.G. Greiner, B. Haastert, H. Adamczewski, M. Kaltheuner, D. Weber, A. Icks, Germany

277 A lifestyle intervention to prevent deterioration of glycaemic status among women with previous gestational diabetes: the LIVING trial

N. Tandon, D. Kapoor, J.K. Lakshmi, A. Bhattacharya, L. Billot, A. Patel, India, Australia

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

SO 03 Diet, lifestyle and behaviour

Chair: F. Rutters, Netherlands

278 Vitamin C intake and the risk of islet autoimmunity and type 1 diabetes: The Environmental Determinants of Diabetes in the Young (TEDDY) Study

M. Mattila, S. Niinistö, L.K. Mramba, X. Liu, U. Uusitalo, C. Andrén Aronsson, S. Hummel, H. Parikh, J.M. Norris, S.M. Virtanen, for the TEDDY Study Group, Finland, USA, Sweden, Germany

279 A high-protein and -unsaturated fatty acid diet increases fasting and postprandial insulin sensitivity independently of weight loss: 6-months results of the NutriAct Trial

L. Pletsch-Borba, C. Wernicke, K. Apostolopoulou, N. Meyer, D. Spira, A. Pohrt, C. Gerbracht, A.F. Pfeiffer, J. Spranger, K. Mai, Germany

280 Habitual intake of dietary advanced glycation endproducts is not associated with generalised microvascular function: the Maastricht study

A. Linkens, A. Houben, B. Kroon, M. Schram, T. Berendschot, C. Webers, M. Van Greevenbroek, R. Henry, B. De Galan, C. Stehouwer, S. Eussen, C. Schalkwijk, Netherlands

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

W. Nakanga, R. Andrews, A. Jones, B. Shields, P. Hughes, A. Karabarinde, A. Hattersley, M. Nyirenda, UK, Uganda

282 Tobacco use and interaction with genotypes of human leucocyte antigen in the risk of latent autoimmune diabetes in adults: results from two population-based studies

J. Edstorp, E. Ahlqvist, L. Alfredsson, V. Grill, L. Groop, B. Rasouli, E.P. Sørghjerd, T. Tuomi, B.O. Åsvold, S. Carlsson, Sweden, Norway, Finland

283 Clustering of risk behaviors and associations between risk behaviors and cardio-metabolic risk factors in adult individuals with type 1 diabetes

A.J. Ahola, H. Tikkanen-Dolenc, C. Forsblom, V. Harjutsalo, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

284 Occupational and domestic physical activity and the risk of diabetes in adults: results from a long-term follow-up cohort

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

285 Association between social jetlag and change in glycaemic control in people with type 2 diabetes. The Hoorn diabetes care system cohort

E.J. Bouman, J.W. Beulens, S. Remmelzwaal, L. Groeneveld, N.R. Den Braver, A.A. Van der Heijden, P.J. Elders, F. Rutters, Netherlands

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

SO 04 Prediction models and precision medicine

Chair: R. Slieker, Netherlands

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

A. Thakarakkattil Narayanan Nair, L.A. Donnelly, A.Y. Dawed, S. Gan, R.M. Anjana, C.N. Palmer, V. Mohan, E.R. Pearson, UK, India

287 Recursive partitioning analysis of the glomerular filtration rate optima: the 10-year-health examinees study

Y. Nakasone, H. Koike, K. Yamashita, T. Aizawa, Japan

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

M. Scarale, A. Antonucci, M. Cardellini, M. Copetti, L. Salvemini, R. Menghini, V. Casagrande, G. Ferrazza, O. Lamacchia, S. De Cosmo, R. Di Paola, M. Federici, V. Trischitta, C. Menzaghi, Italy

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

R.L. Thomas, J. Lee, P. Chee, Y. Zhou, M. Lai, J.M. Rafferty, D.R. Owens, B. Zee, UK, China

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

A. Lecube, A. Ciudin, E. Fidilio, L. Gutiérrez-Carrasquilla, A. Caixàs, N. Vilarrasa, A. Simó, R. Vilallonga, M. De la Fuente, A. Luna, E. Sánchez, M. Bueno, C. Hernández, E. Salas, R. Simó, Spain

291 Targetome redirection by adenosine-to-inosine editing of miRNAs could unravel the complexity of diabetic complications

A. Abukiwan, S. Kopf, R. Thiele, J. Szendrödi, P. Nawroth, T. Fleming, Germany

292 Predicting the onset of APECED diabetes

P.M. Paldánus, O. Mäkitie, S. Laakso, Finland

293 Phenotypic and genetic heterogeneity in a Thai glucokinase MODY family reveals the complexity of young-onset diabetes

Y. Thewjitcharon, E. Wanothayaroj, S. Krittiyawong, S. Nakasatien, T.F. Tsoi, C.K. Lim, J.C. Chan, T. Himathongkam, Thailand, China

Short Oral Discussion Event E, Thursday, 11:45 - 13:15**SO 05 Therapeutic advances**

Chair: R. Ma, Hong Kong

294 Cholecalciferol therapy effect on glucose metabolism in patients with prediabetes

A.T. Andreeva, A.O. Ustyuzhanina, A.A. Bystrova, T.L. Karonova, Russian Federation

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

E.S. Andersen, S. Foghsgaard, L. Vedtofte, M.H. Pedersen, J.L. Forman, E.R. Mathiesen, J.A. Svare, J.J. Holst, T.D. Clausen, P. Damm, F.K. Knop, T. Vilsbøll, Denmark

296 Treatment patterns for first- and second-line management of type 2 diabetes in the Middle East and North Africa region: insights from DISCOVER

K. Al-Rubeaan, A. Ehtay, F. Bayram, R. Malek, A. Kok, A. Bennakhi, K. Hafidh, E. Roushdy, V. Rajadhyaksha, M. Alsayed, Saudi Arabia, Lebanon, Turkey, Algeria, South Africa, Kuwait, United Arab Emirates, Egypt, UK

297 The association between hormone therapy and sarcopenia in postmenopausal women: the Korea National Health and Nutrition Examination Survey, 2008-2011

S. Kim, E. Jeon, J.-H. Lee, H.-S. Shon, Korea, Republic of

298 A multivalent vaccine does not accelerate the onset of diabetes in NOD mice

V.M. Stone, M. Butrym, M.M. Hankaniemi, A.-B. Sioofy-Khojine, V.P. Hytönen, H. Hyöty, M. Flodström-Tullberg, Sweden, Finland

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

B.M. Frier, C.J. Child, M. Gorritz, J.K. Multani, C.B. McGuinness, R.L. Wade, H. Kan, J. Settles, UK, USA

300 Changes in HbA_{1c}, BMI and rates of severe hypoglycaemia in 4,113 adults with type 1 or type 2 diabetes using continuous glucose monitoring systems

S. Lanzinger, F. Best, T. Bergmann, M. Laimer, B. Lipovsky, T. Danne, S. Zimny, P. Bramlage, R.W. Holl, Germany, Switzerland, Austria

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

SO 06 Genes and genomic engineering

Chair: O. Hansson, Sweden

301 A case-cohort of genome-wide association analysis of type 2 diabetes in Qataris: an insight from 1.000 Qataromics cohort of biobank

A.A.-S. Akil, I. Ahmed, S.S. PadmaJeya, K.A. Fakhro, Qatar

302 Whole genome- and whole exome sequencing analyses provide novel rare genetic variants for coronary artery disease and stroke in type 1 diabetes

A.A. Antikainen, J. Haukka, L. Thorn, S. Hägg-Holmberg, J. Putaala, A. Ylinen, C. Forsblom, V. Harjutsalo, N. Sandholm, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

303 Epigenetic mechanisms of hyperglycaemic macrophage programming

E. Badillo, K. Moganti, M.M. Dieuwertje, V. Ryabov, H. Klüter, M. Harmsen, J. Kzhyshkowska, Germany, Netherlands

304 Beta cell miR-125b controls glucose homeostasis by targeting lysosomal and mitochondrial genes

A. Martinez-Sanchez, R. Cheung, G. Pizza, D. Rolando, P. Chabosseau, A. Tomas, A. Salowska, T. Burgoyne, I. Leclerc, G.A. Rutter, UK

305 WFS1 gene engineering reverts ER stress related to autophagy dysfunctions in an iPSC-derived beta cell model of Wolfram syndrome

S. Torchio, R. Chimienti, G. Rossi, F. Manenti, M.T. Lombardo, S. Pellegrini, V. Sordi, F. Meschi, T. Raouf, G. Frontino, V. Broccoli, L. Piemonti, Italy

306 CRISPR editing of the PPARGC1A Gly482ser (rs8192678) polymorphism in human white adipose cells shows differential effects on mitochondrial function and adipogenesis

M. Huang, M. Claussnitzer, A. Saadat, H. Mulder, S. Kalamajski, P.W. Franks, Sweden, USA

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

SO 07 Risk factors and consequences of poor glycaemic control

Chair: T. Stulnig, Austria

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

D. Llanera, R. Wilmington, H. Shoo, P. Lisboa, I. Jarman, S. Wong, J. Nizza, D. Sharma, D. Kalathil, S. Rajeev, R. Yadav, Z. Qureshi, R. Narayanan, N. Furlong, S. Nair, UK

308 Impact of COVID-19 lockdown on glycaemic control in patients with type 1 diabetes

S. Stichling, C. Eberle, Germany

309 Impact of COVID-19 lockdown on metabolic control and access to healthcare in patients with diabetes from a tertiary care centre: the CONFI-DIAB study

L. Ludwig, N. Scheyer, T. Remen, B. Guerri, France

310 Diabetes prevalence is rising among young residents in Malmö, Sweden

M. Annersten Gershater, M. Rämgård, S. Zdravkovic, C. Nagorny Holmberg, M. Grahn, M. Andersson, Sweden

311 Insulin secretion with increasing age: a comparison between Middle Eastern immigrants and native Swedes

N. Fadhel Dhaher, N. Shaat, L. Bennet, Sweden

312 Fetuin-a and risk of diabetes-related vascular, including microvascular, complications

A. Birukov, E. Polemiti, S. Jäger, N. Stefan, M.B. Schulze, Germany

313 Risk of type 2 diabetes in polycystic ovary syndrome is associated with obesity: a meta-analysis of observational studies

P. Anagnostis, R.D. Paparodis, J.K. Bosdou, C. Bothou, D. Macut, D.G. Goulis, S. Livadas, Greece, USA, Switzerland, Serbia

314 Prevalence of and factors associated with undiagnosed stage 3 chronic kidney disease in patient with type 2 diabetes: a report from REVEAL-CKD

E. Wittbrodt, P. Kushner, S. Salvatore, S. Kumar, H. Chen, K. Järbrink, J. Garcia Sanchez, A. Abdul Sultan, N. Tangri, USA, Sweden, UK, Canada

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

SO 08 Preservation versus destruction of beta cell mass

Chair: J.-M. Servitja, Spain

315 A fatty acid modified apelin-13 analogue demonstrates benefits on pancreatic islet cell morphology and beta cell preservation in diabetic mouse models

F.P. O'Harte, N. Tandy, C.R. Moffett, P.R. Flatt, N. Irwin, UK

316 High-fat diet-induced upregulation of chemokine Ccl4 in mouse visceral adipose tissue: potential crosstalk with beta cells

T. Ashik, P. Atanes, V. Lee, S.J. Persaud, UK

317 Proteomic profiling of glucose regulated ACC1 phospho-sites in pancreatic beta cells

R. Bany Bakar, S. Liberatori, A. Veprik, N. N.Tebeka, V. A. Morfin, B. E. Kemp, S. Mohammed, J. Cantley, UK, Australia

318 The role of TSC2 acetylation and its subcellular localisation in mitochondrial turnover of pancreatic beta cells

P. Marqués, J. Burillo, C. González, B. Jiménez, G. García, C. Guillén, M. Benito, Spain

319 Regulation of autophagy activity by PERK attenuation contributes to insulin synthesis with an Atg7-dependent manner

S. Moon, M. Kim, J. Lim, M. Kim, K. Park, H. Jung, Korea, Republic of

320 Exposure to bisphenol-A induces pancreatic beta cell apoptosis

R.S. Dos Santos, L. Marroqui, R. Medina-Gali, A. Nadal, Spain

321 Novel islet staging defined by progression of beta cell destruction

B. Ehall, L. Herbsthofer, C. Karacay, C. Harer, P. Kotzbeck, B. Prietl, T.R. Pieber, Austria

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

SO 09 The ins and outs of insulin secretion

Chair: S.J. Ullrich, Germany

322 Loss of maturity in overworked beta cells of normoglycaemic mice

N. Téllez, K. Rivera, C. Fernández, S. Masó, E. Montanya, Spain

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

E. Cowan, J. Sun, J.K. Ofori, C. Luan, E. Zhang, C. Ling, H. Mulder, L. Eliasson, Sweden

324 An integrated microfluidic sensing system platform for dissecting insulin secretion and extracellular Ca^{2+} dynamics of pancreatic islets

W. Huang, J. Zhao, L.M. Nicholas, A. Shallan, C. Priest, C.K. Rayner, H. Ebendorff-Heidepriem, T. Wu, Australia, Egypt

325 The potential role of metal-dependent protein phosphatase, PPM1E in pancreatic B cell function

S. Gheibi, L.R. Cataldo, A. Hamilton, M. Fex, H. Mulder, Sweden

326 Mouse strain- and Ffar1-independent changes of islet transcriptome induced by overnight culture transcriptome induced by overnight culture

S. Ullrich, E. Lorza-Gil, G. Kaiser, S. Sabrautzki, G.K. Przemeck, A.L. Birkenfeld, M. Hrabě de Angelis, H.-U. Häring, F. Gerst, Germany

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

K.W. Toczyska, G. Day, N. Guccio, H. Rosa, B. Liu, S.J. Persaud, UK

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

SO 10 Beta cells to the grave in type 1 diabetes

Chair: I. Santin, Spain

328 Proinflammatory cytokines have a toxic effect on human stem cell-derived beta cells

R. Dettmer, I. Niwolik, I. Mehmeti, E. Gurgul-Convey, O. Naujok, Germany

329 Identification of new therapeutic targets for the treatment of type 1 diabetes based on the survival strategies of pancreatic alpha cells

L. Marroqui, A.A. Perez-Serna, R. Medina-Gali, R.S. Dos Santos, Spain

330 Desensitisation of STAT mediated-signalling during chronic exposure of EndoC- β H1 cells to type I and type II interferons

S. Dhayal, M. Baity, K. Afi Leslie, P. Akhbari, S.J. Richardson, M.A. Russell, N.G. Morgan, UK

331 Sphingosine-1 phosphate lyase overexpression prevents cytokine-mediated beta cell cellular structure damage and lipidome changes

E. Gurgul Convey, Y. Tang, S. Coldewey, M. Gräler, A. Jörns, Germany

332 PTPN2 regulates the interferon signalling in pancreatic beta cells and its expression correlates with therapy outcome in autoimmune diabetes

V. Vandenbempt, B. Elvira, J. Martinez, J. Negueruela, H. Ibrahim, M. Winder, B. Vekerjotaite, S. Pal, F. Rossello, P. Lybaert, T. Otonkoski, C. Gysemans, W. Wu, E. Gurzov, Belgium, Netherlands, Finland, Australia

333 The role of NIK in beta cell-mediated type 1 diabetes

P. Xiao, T. Takiishi, N.M. Violato, G. Licata, F. Dotta, G. Sebastiani, E.N. Gurzov, E. Dejardin, A.K. Cardozo, Belgium, Italy

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

I. Camaya, M. Robinson, J. Santos, J.P. Dalton, B. O'Brien, S. Donnelly, Australia, UK, Ireland

Short Oral Discussion Event E, Thursday, 11:45 - 13:15**SO 11 In vivo and ex vivo beta cell function in diabetes**

Chair: I. Rustenbeck, Germany

335 Beta cell loss in treatment-naïve patients with type 2 diabetes based on disease duration and HbA_{1c} levels: results from 15 clinical trials

M. Blüher, A. Malhotra, G. Bader, Germany, India, Switzerland

336 Beta cell activity modulates treatment response in treatment-naïve patients: exploratory analysis from the VERIFY study

D.R. Matthews, P.M. Paldanius, G. Bader, S. Del Prato, UK, Finland, Switzerland, Italy

337 Human beta cell dedifferentiation might be induced by noradrenergic stimulus

F. Cinti, F. Fantuzzi, A. Carfi, T. Mezza, C. Cefalo, S. Moffa, F. Impronta, G. Di Giuseppe, U. Capece, A. Giaccari, M. Cnop, Italy, Belgium

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

G.M. Soares, S.L. Balbo, G.A. Bronczek, C. Marmentini, L. Zangerolamo, L.A. Velloso, E.M. Carneiro, Brazil

339 Extracorporeal islet-based continuous glucose monitoring sensor in rodents

E. Puginier, F. Poullietier de Gannes, A. Pirog, J. Gaitan, A. Hurtier, Y. Bornat, C. Cruciani-Guglielmacci, C. Magnan, B. Catargi, M. Raoux, S. Renaud, J. Lang, France

340 Islet microcapsules with core-shell structure from Microfluidic electrospray for diabetes treatment

X. Liu, J. Li, J. Sun, L. Li, China

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

A. Amor, A. Casas, A. Pané, S. Ruiz, E. Montagud-Marrahi, A. Molina-Andújar, M. Ruiz, R. Mayordomo, M. Musquera, J. Ferrer-Fàbrega, C. Fondevila, F. Diekmann, P. Ventura-Aguilar, E. Esmatjes, Spain

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

SO 12 Sugar Moms

Chair: A. Kautzky-Willer, Austria

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

D. Hirani, T. Ladha, M. Tan, L. Sykes, B. Jones, A. Dornhorst, C. Yu, R. Agha-Jaffar, S. Robinson, UK

343 Diabetes management delivery and pregnancy outcomes in women with gestational diabetes during the first wave of the 2020 COVID-19 pandemic

M. Wilk, P. Surowiec, B. Matejko, A. Wróbel, J. Zięba-Parkitny, K. Cyganek, H. Huras, M. Małcki, Poland

344 Comparison of clinical and metabolic characteristics, and pregnancy outcomes in women with gestational diabetes depending on the time of diagnosis

M. Zurawska-Klis, K. Czarnik, K. Cypriak, Poland

345 The use of flash glucose monitoring is as effective and safe as self monitoring blood glucose in a cohort of pregnant women with type 1 diabetes using multiple doses of insulin

N. Seguí, V. Perea, D. Tundidor, D. Roca, M. Vidal, J. Bellart, M. Giménez, I. Conget, I. Vinagre, Spain

346 Risk for ketonaemia in type 1 diabetes pregnancies with sensor-augmented pump therapy with predictive low glucose suspend compared to low glucose suspend: a crossover RCT

K. Benhalima, F. Van Nes, P. Gillard, C. Mathieu, Belgium

347 Analysis of insulin requirement during pregnancy in patients with type 1 diabetes treated with a personal insulin pump

M. Kosinski, M. Zurawska-Klis, K. Cypriak, Poland

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

SO 13 From pregnant women and mice

Chair: E.R. Mathiesen, Denmark

348 Maternal overweight and obesity is associated with impaired glucose homeostasis and fetal overgrowth in the absence of gestational diabetes

G. Kotzaeridi, C. Salamon, D. Eppel, T. Linder, I. Rosicky, K. Weisshaupt, W. Henrich, A. Tura, C.S. Göbl, Austria, Germany, Italy

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

T. Linder, A. Eder, I. Rosicky, D. Eppel, K. Redling, F. Geissler, E.A. Huhn, I. Hoesli, C.S. Goebel, Austria, Switzerland

350 Reliance on lipid and protein energy sources is associated with materno-fetal complications in type 1 diabetes pregnancy: a CONCEPTT trial substudy

Z.A. Stewart, C.L. Meek, J. Yamamoto, S. Furse, D.S. Feig, A. Koulman, H.R. Murphy, UK, Canada

351 Enhanced hepatic insulin resistance may counteract metabolic adaption processes during gestation

M. Liebmann, K. Grupe, S. Scherneck, Germany

352 Serum Elabela is associated with inflammatory abnormalities in gestational diabetes

Y. Chen, M. Shi, J. Song, D. Tan, Y. Xu, H. Zhang, X. Zhang, China

353 Improvement of insulin and glucagon secretion profiles by estradiol and serotonin in prediabetic mice during gestation

M. Asuaje Pfeifer, M. Liebmann, K. Grupe, S. Scherneck, Germany

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

SO 14 Exercise effects beyond blood glucose

Chair: J. Hoeks, Netherlands

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

J. Broz, M. Campbell, J. Urbanová, M. Nunes, D. Rahelic, D. Janíčková Žďárská, A. Taniwall, M. Brabec, V. Berka, J. Michalec, J. Polák, Czech Republic, UK, Croatia

355 Effect of 14-week high-intensity interval training on blood lactate concentrations in type 2 diabetes patients

T. Zhao, W. Yao, X. Wang, C. Chen, J. Lu, Q. Lu, J. Cao, J. Tian, M. Schumann, S. Cheng, S. Le, China, Germany, Finland

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

R. Ojala, J. Hentilä, M.S. Lietzén, M.A. Heiskanen, S.M. Honkala, R. Lautamäki, E. Löyttyniemi, T. Malm, L. Lahti, J.O. Rinne, K.H. Pietiläinen, J. Kaprio, K.K. Ivaska, J.C. Hannukainen, Finland

357 Different fueling strategies during racing and training in professional cyclists with type 1 diabetes

J.P. Pitt, R.M. Bracken, S. Scott, F.Y. Fontana, O.M. McCarthy, UK, Switzerland, Italy

358 The effects of regular exercise training on colon glucose uptake in monozygotic twins discordant for BMI

M.S. Lietzén, R. Ojala, J. Hentilä, M.A. Heiskanen, S.M. Honkala, R. Lautamäki, E. Löyttyniemi, T. Malm, L. Lahti, J.O. Rinne, K.H. Pietiläinen, J. Kaprio, P. Iozzo, J.C. Hannukainen, Finland, Italy

359 The level of muscle and intestinal damage biomarkers after an exercise with a predominance of eccentric contractions in male patients with type 1 diabetes

B. Matejko, & Tota, M. Morawska, S. Mrozińska, T. Klupa, M. Małecki, Poland

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

J. Flotyńska, A. Gawrecki, A. Araszkiewicz, M. Parchimowicz, M. Michalski, O. Różańska, M. Stopczyńska-Szymecka, M. Kamiński, A. Cieluch, G. Biegański, A. Michałak, K. Domaszewska, D. Zozulińska-Ziółkiewicz, Poland

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

SO 15 Novel methods to study metabolism in diabetes

Chair: P. Nuutila, Finland

361 Applying a microphysiological 3D human liver-islet microtissue platform to study drug-drug interaction

L. Hoelting, I. Karakoc, C. Rufer, W. Moritz, B. Yesildag, O. Frey, Switzerland

362 Real-time metabolomics of glucose response in pancreatic islet cells resolved using infrared microspectroscopic imaging

A. Tarasov, M. Draper, A. Poonprasartporn, G. Cinque, A. Ka-Lung Chan, UK

363 Single-cell optogenetics and cell-tracking reveal a functional hierarchy connecting leader and follower beta cells in vivo

L. Delgadillo Silva, M. Akhtar, E. Taşöz, N. Ninov, Germany

364 Estimated glucose disposal rate, non-alcoholic fatty liver disease and micro- and macrovascular complications in type 1 diabetes: Towards a new predictor?

J. Mertens, L. Vonghia, E. Dirinck, S. Francque, C. De Block, Belgium

365 Development and evaluation of a glucagon sensitivity test

S.A. Kjeldsen, N.J. Jensen, M.S. Nilsson, J.D. Nybing, F.H. Linden, E. Høgh-Schmidt, M.P. Boesen, S. Madsbad, H.V. Vilstrup, E.B. Rashu, L.L. Gluud, S.B. Haugaard, J.J. Holst, J. Rungby, N.J. Wewer Albrechtsen, Denmark

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

Y.M. Bruls, J. Mevenkamp, R.A. De Graaf, J.E. Wildberger, M.K. Hesselink, P. Schrauwen, L. Lindeboom, V.B. Schrauwen-Hinderling, Netherlands, USA

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00**SO 16 The many faces of insulin sensitivity**

Chair: A. Krook, Sweden

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

T. Saito, H. Saito-Aoki, T. Shimizu, Y. Shimoda, A. Osaki, E. Yamada, S. Okada, M. Yamada, Japan

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

G. Cedersund, B. Casas, S. Bauer, K. Kanebratt, C. Wennberg Hultdt, L. Magnusson, C. Ämmälä, U. Marx, T.B. Andersson, P. Gennemark, L. Vilén, Sweden, Germany

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

A. Kurzbach, M. Schell, D.M. Willmes, N. El-Agroudy, S.R. Bornstein, A. Kleinriders, A.L. Birkenfeld, Germany

370 Insulin sensitivity and beta cell function in IGT and treatment-naïve patients with type 2 diabetes of different ethnicities: a pooled analysis from clinical studies

S. Del Prato, D.R. Matthews, G. Bader, P.M. Paldánus, Italy, UK, Switzerland, Finland

371 Metabolic effects on aortic valves in static and pulsatile 3D cultivation environments

J.I. Selig, J. Boulgaropoulos, N. Niazy, D.M. Ouwers, K. Preuß, R. Westenfeld, A. Lichtenberg, P. Akhyari, M. Barth, Germany

372 Cardiac insulin resistance does not predict mortality or morbidity in ischaemic heart failure

T.V. Luong, M.G. Pedersen, A.L. Ebbenhøj, E. Søndergaard, L.C. Gormsen, Denmark

373 The association of insulin resistance with early predictors of cardiovascular, renal and neurologic complications in patients with type 1 diabetes

A. Barmpagianni, G. Karamanakos, C. Kapelios, M. Bonou, J. Barbetseas, S. Liatis, Greece

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

J. Farup, J. Just, F. De Paoli, L. Lin, J.B. Jensen, T. Billeskov, C. Cömert, A.B. Møller, L. Madaro, U. Kampmann, S.B. Pedersen, P. Bross, P.L. Puri, N. Jessen, Denmark, Italy, USA

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

SO 17 Novel aspects of beta cell and insulin secretion

Chair: M. Cnop, Belgium

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

N. Brusco, G. Licata, G.E. Grieco, D. Fignani, L. Nigi, E. Aiello, F. Cinti, G.P. Sorice, S. Moffa, C.M. Cefalo, A. Mari, A. Giaccari, T. Mezza, G. Sebastiani, F. Dotta, Italy

376 Pancreatic and gut hormone responses to mixed meal test differentiate pancreatic cancer associated diabetes from type 2 diabetes

J. Bao, Y. Zhang, C. Sun, L. Li, China, USA

377 The nutrient sensor mTORC1 regulates insulin secretion by modulating beta cell autophagy

T. Israeli, Y. Riahi, P. Garzon, R. Yeroslaviz-Stolper, L. Kadosh, S. Tornovsky-Babeay, B. Tirosh, E. Cerasi, E. Bernal-Mizrachi, G. Leibowitz, Israel, USA

378 EPDR1, a novel human batokine regulating glucose-stimulated insulin secretion in beta cells

L.R. Cataldo, L. Argemi, D. Geng, S. Gheibi, P. Spéigel, R.B. Prasad, M. Fex, H. Mulder, T. Moritz, Sweden, Denmark

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

M.K. Brahma, P. Xiao, M. Popa, V. Vandenbempt, J. Negueruela, A.K. Cardozo, E.N. Gurzov, Belgium

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

SO 18 It must be my hormones

Chair: M.A. Nauck, Germany

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

M.-A. Le Sollicec, J. Maucotel, A. Arabo, M. Picot, S. Takhlidjt, A. Benani, E. Nedelec, A. Nordqvist, Y. Anouar, N. Chartrel, G. Prévost, France, Sweden

381 Urolithin B protects pancreatic beta cells against IAPP proteotoxicity: a potential strategy for dietary interventions in diabetes

A.F. Raimundo, S. Ferreira, J. Brito, M. Silva, C.N. Dos Santos, R. Menezes, Portugal

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

R. Wagner, S. Eckstein, L. Fritsche, K. Prystupa, H.-U. Häring, A.L. Birkenfeld, A. Peter, A. Fritsche, M. Heni, Germany

383 Effects of irisin on human pancreatic islets from type 2 diabetic subjects

N. Marrano, A. Natalicchio, G. Biondi, A. Borrelli, A. Cignarelli, A. Signorile, L. Vincenti, L.G. Lupo, S. Perrini, L. Laviola, F. Giorgino, Italy

384 Association between bone biomarkers Osteoactivin and Osteoprotegerin with plasma levels of irisin and meteorin-like protein in people with type 2 diabetes and obesity

P. Cherian, I. Al Khairi, M. Jamal, S. Al-Sabah, H. Ali, C. Dsouza, E. Al Shawaf, W. Al-Ali, G. Al-khaledi, F. Al-Mulla, M. Abu-Farha, J. Abubaker, Kuwait

385 Post prandial glucagon metabolism in humans with and without type 1 diabetes

R. Ruchi, M. Schiavon, Y. Yadav, A. Weaver, K. Johnson, S. Renuse, A. Pandey, C. Cobelli, C. Dalla Man, R. Basu, A. Basu, USA, Italy

386 Tmem117 in vasopressin neurons is a novel regulator of counterregulatory response to hypoglycaemia

S. Gaspari, G. Labouèbe, A. Picard, B. Thorens, Switzerland

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

SO 19 Gastro-entero pancreatic factors

Chair: F.K. Knop, Denmark

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

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

388 Characterisation of biological activity and antidiabetic efficacy of a novel neurotensin/xenin fusion peptide in high fat fed mice

N. Irwin, R. Perry, P.R. Flatt, V.A. Gault, UK

389 Circulating dopamine is regulated by gut nutritional signals and acts in the adipose tissue to sensitise for GLP-1 action

P. Matafome, G. Tavares, D. Rosendo-Silva, F. Simões, H. Eickhoff, D. Marques, R. Seica, S. Conde, Portugal

390 Pro-neurotensin levels and the prediction of cardiovascular risk in individuals with type 1 diabetes: a longitudinal study with 10 year follow-up

I. Barchetta, F.A. Cimini, L. Bertoccini, V. Ceccarelli, M.G. Baroni, O. Melander, M.G. Cavallo, Italy, Sweden

391 The feature of the gut microbiota in patients with newly diagnosed type 2 diabetes

K.G. Lobanova, T.Y. Demidova, Russian Federation

392 Altered hormonal milieu in pancreatic islets and intestine accompany alterations of metabolism in high-fat fed Wistar rats

A. Sridhar, D. Khan, P.R. Flatt, R.C. Moffett, UK

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

SO 20 Carbohydrate and protein metabolism

Chair: C.G. Schalkwijk, Netherlands

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

X. Zhang, J. Scheijen, G. Duchateau, M. Alssema, C. Stehouwer, K. Wouters, C. Schalkwijk, Netherlands

394 Glucose suicide mechanisms induced by methylglyoxal

B. Stratmann, Y. Mattern, T. Silva de Carvalho, D. Tschoepe, Germany

395 Anti-hyperglycaemic effect of alpha-cyclodextrin after oral glucose loading via GLP-1 dependent- and independent-pathways

E. Lee, R. Hatano, X. Zhang, J. Miyamoto, I. Kimura, T. Miki, Japan

396 Mechanisms of improvement in glucose tolerance and insulin sensitivity after complex carbohydrate meal in type 2 diabetes

D. Romeres, Y. Yadav, A. Asfa, C. Lane, R. Ruchi, C. Cobelli, C. Dalla Man, A. Basu, R. Basu, Italy, USA

397 Metabolite secretome profiling of human pancreatic islets and rodent beta cells under glucolipotoxicity reveals key mitochondrial metabolism rerouting

J. Perrier, G. Rautureau, J. Rieusset, A.-M. Madec, M.-A. Berger, C. Thivolet, B. Panthu, France

398 Proteome dynamics of extracellular vesicles in plasma following an acute bout of exercise

L. Peijs, N.Z. Jespersen, S. Heywood, B.K. Pedersen, A.S. Deshmukh, Denmark

399 Amino acid- and keto acid-induced changes of the ATP/ADP ratio in alpha cells in comparison with beta cells

D. Brüning, M. Morsi, E. Früh, I. Rustenbeck, Germany, Egypt

400 Gender specific alterations in glucose homeostasis driven by glyoxalase 1: New road towards type 2 diabetes?

M. Campos, J. Morgenstern, T. Poth, N. Volk, J. Szendrödi, P. Nawroth, T. Fleming, Germany

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

SO 21 Metabolic control during and after pregnancy

Chair: M. Maresh, UK

401 Effects of vitamin D3 supplementation in obese pregnant women on maternal and fetal lipid metabolism

J. Harreiter, L. Mendoza, G. Desoye, D. Simmons, M.N. Van Poppel, D. Bancher-Todesca, R. Corcoy, A. Kautzky-Willer, Austria, Spain, Australia

402 Improvements in diabetes related outcomes for women attending peripheral centres: the ATLANTIC DIP experience

C. Newman, A.M. Egan, L.A. Carmody, G. Gaffney, B.B. Kirwan, A. Liew, C.M. McHugh, F. Dunne, Ireland, USA

403 Prediabetic values of OGTT results and HbA_{1c} postpartum as predictors of later development of diabetes in 101 Danish women with previous gestational diabetes

M.H. Christensen, T.P. Lundberg, I.S. Smietana, C.A. Vinter, J. Aalders, L.S. Snogdal, D. Glinborg, K. Højlund, M.S. Andersen, D.M. Jensen, Denmark

404 Is HbA_{1c} associated with materno-fetal complications in type 1 pregnancies?

M. Lemaitre, C. Ternynck, J. Bourry, F. Baudoux, D. Subtil, A. Vambergue, France

405 Duration of breast-feeding associates with anti-atherogenic lipid profile in women

D. Löffler, K. Kantartzis, J. Machann, J. Hummel, A.L. Birkenfeld, A. Peter, A. Fritsche, L. Fritsche, Germany

406 Postpartum oral glucose tolerance test in women with prior gestational diabetes: Does breastfeeding affects the results?

G. Monroy, C. Fernández, T. Caballé, L. Altimira, G. Sáenz de Navarrete, R. Corcoy, Spain

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

SO 22 News from the drug pipeline

Chair: M. Rohm, Germany

407 Liraglutide decreases plasma PCSK9 in patients with type 2 diabetes not treated with statins

B. Vergès, J. Hassid, A. Rouland, B. Bouillet, S. Baillot-Rudoni, J.-M. Petit, L. Duvillard, France

408 Effects of simvastatin on human subcutaneous adipose tissue metabolism

A. Sarsenbayeva, B. NandiJui, P. Barbosa, F. Ahmed, G. Fanni, R. Kristófi, J.W. Eriksson, M.J. Pereira, Sweden, Portugal

409 Exogenous secretin decreases ad libitum food intake and exhibits a biphasic effect on supraclavicular brown adipose tissue activity in healthy men

M.J. Bentzen, S.M. Heimbürger, B. Hartmann, J.J. Holst, M.B. Christensen, F.K. Knop, Denmark

410 Targeting G protein-coupled receptor 110 for the treatment of obesity and its related metabolic diseases

Z. Huang, L. Xu, R. Yang, X. Yan, S. He, A. Xu, Hong Kong

411 Exendin-4 treatment improves adipose tissue microcirculation in obese rats through AMPK -eNOS pathways

L. Han, C. Zhou, X. Zhu, H. Tan, H. Fan, H. Wang, L. Zhong, J. Huang, F. Yan, X. Wen, China

412 Potential effect of a novel combination of GLP-1RA (efpeglenatide) and long-acting glucagon analogue (HM15136) in animal models of metabolic disorder

S. Lee, J. Lee, J. Kim, J. Choi, E. Park, D. Kim, S. Bae, S. Lee, I. Choi, Korea, Republic of

413 Chronic effects of an antifibrotic agent pirfenidone on insulin sensitivity and cardiac function in high-fat diet induced insulin-resistant mice

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

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

SO 23 Fatty matters

Chair: F. Karpe, UK

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

F.J. Ortega, R. Rodríguez-Barrueco, J. Latorre, L. Devis-Jáuregui, A. Lluch, N. Bonifaci, F.J. Llobet, M. Olivan, L. Coll-Iglesias, J.M. Moreno-Navarrete, A. Castells-Nobau, J.M. Fernández-Real, J.M. Silva, D. Llobet-Navas, Spain, USA

415 Increased contribution of fructose to de novo synthesis of saturated over unsaturated fatty acids in mice fed high-sugar and high fat-high sugar diets

J. Jones, G.D. Belew, L. Tavares, M.J. Meneses, M. Macedo, Portugal

416 Purinergic receptor P2X7: a new target for the degradation of lipid droplets by lipophagy

Z. Dong, L. Zhang, China

417 Ectopic lipid deposition upregulates SGLT2 and GLUT1 in renal tubules

T. Li, T. Wu, Z. Sun, China, Australia

418 Regulatory loop of IR signalling is critical for adipocyte dynamics and mitochondrial homeostasis

M. Sakaguchi, S. Okagawa, Y. Okubo, K. Fukuda, M. Igata, T. Kondo, E. Araki, Japan

419 Neonatal overfeeding permanently programs hypertrophic adiposity: potential implications of adipose tissue turnover

I. Palacios-Marin, M. Parra-Vargas, J. Fos-Domènech, F. Ribas-Aulinas, M. Ramon-Krauel, D. Serra, C. Lerin, L. Herrero, J.C. Jimenez-Chillaron, Spain

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

L. Pekkarinen, T. Kantonen, T. Karjalainen, M. Bucci, E. Rebelos, P. Dadson, A. Latva-Rasku, K. Kalliokoski, K. Laitinen, N. Houttu, A. Kirjavainen, T. Rönnemaa, L. Nummenmaa, P. Nuutila, Finland

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

F. Ahmed, P.G. Kamble, S. Hetty, G. Fanni, M. Vranic, A. Sarsenbayeva, A. Dakhel, R. Kristofi, M.J. Pereira, J.W. Eriksson, Sweden

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

SO 24 Glucose-lowering drugs and the liver

Chair: A. Holleboom, Netherlands

422 The glucose-lowering effect of the bile acid sequestrant sevelamer in patients with type 2 diabetes is not mediated by glucagon-like peptide 1

H.H. Nerild, A. Brønden, A.E. Haddouchi, J.J. Holst, D.P. Sonne, T. Vilsbøll, F.K. Knop, Denmark

423 Metformin lowers portal pressure in patients with cirrhosis and portal hypertension: a randomised clinical trial

N. Rittig, N.K. Aagaard, G.E. Villadsen, T.D. Sandahl, N. Jessen, H. Grønbaek, J. George, Denmark, Australia

424 Sodium-glucose linked transporter 2 inhibitors (SGLT2s) and alanine aminotransferase levels (ALT) in the Associated of British Clinical Diabetologists (ABCD) audits

I. Gallen, T.S. Crabtree, A. Gallagher, K. Dhatariya, A. Bickerton, J. Elliott, G. Rayman, R.E. Ryder, UK

425 Long-term effects of ertugliflozin (ERTU) on liver enzymes and indices in patients with type 2 diabetes: analyses from VERTIS CV

K.D. Corbin, S. Dagogo-Jack, C.P. Cannon, B. Charbonnel, D.Z. Cherney, F. Cosentino, D.K. McGuire, W.J. Shih, R. Frederich, J. Liu, A. Pong, N.B. Cater, R.E. Pratley, USA, France, Canada, Sweden

426 Effect of tirzepatide versus insulin degludec on liver fat content and abdominal adipose tissue in patients with type 2 diabetes (SURPASS-3 MRI)

A. Gastaldelli, K. Cusi, L. Fernández Landó, R. Bray, B. Brouwers, Á. Rodríguez, Italy, USA

427 Hepatic impairment has no impact on the clinical pharmacokinetics of tirzepatide

C. Loghin, T. Quinlan, J. Landry, X. Ma, J.A. Martin, S. Urva, USA

428 Blueberry juice counteracts metabolic dysregulation in a rat model of prediabetes by targeting hepatic mitochondrial bioenergetics and metabolic pathways

S. Nunes, S.D. Viana, I. Preguiça, A. Alves, J.S. Teodoro, I. Jarak, R.A. Carvalho, A.P. Rolo, C.M. Palmeira, M.M. Pintado, F. Reis, Portugal

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

SO 25 Interaction of digestive system and glucose metabolism

Chair: B. Eliasson, Sweden

429 Effects of SGLT2-inhibition on postprandial insulin exposure in patients with postbariatric hypoglycaemia: a modelling analysis

D. Herzig, M. Schiavon, M. Hepprich, M.Y. Donath, L. Bally, C. Dalla Man, Switzerland, Italy

430 SGLT2 contributes to glucoregulatory improvements following vertical sleeve gastrectomy in mice

E. Akalestou, L. Lopez-Noriega, M. Hu, I. Leclerc, G.A. Rutter, UK

431 Robust metabolic benefits of a novel orally administered polymeric duodenal exclusion therapy in animal models of type 2 diabetes: an alternative treatment for type 2 diabetes

A. Nimgaonkar, T. Jozefiak, K. Colbert, T. Carlson, J. Petersen, M. Vieira, S. Kulkarni, P.J. Pasricha, J. Vora, S. Polomoscank, USA

432 Orally administered lactate elevates glucagon like peptide-1 and slows gastric emptying in young men

M.G. Pedersen, E. Søndergaard, C.B. Nielsen, M. Johannsen, L. Gormsen, N. Møller, N. Jessen, N. Rittig, Denmark

433 Three weeks of time restricted eating improves fasting glucose in type 2 diabetes patients but does neither increase nocturnal fat oxidation nor insulin sensitivity

C. Andriessen, C. Fealy, A. Veelen, N. Connell, E. Kornips, K. Roumans, J. Hoeks, P. Schrauwen, Netherlands, Ireland

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

H. Gerstein, S. Hall, I. Hramiak, R.J. Sigal, R. Goldenberg, N. Gupta, R. Rabasa-Lhoret, M. Braga, V. Woo, F. Sultan, R. Otto, A. Smith, D. Sherifali, Y.Y. Liu, N. McInnes, Canada

435 Incidence and prevalence of gastrointestinal tolerability in once weekly dulaglutide (3 and 4.5 mg): a posthoc analysis

J. Van, J.P. Frias, E. Bonora, S. Raha, H. Jung, D. Cox, M. König, J. Peleshok, USA, Italy

436 Remission of type 2 diabetes following intensive treatment with insulin glargine/lixisenatide, metformin and lifestyle approaches: results of the REMIT-iGlarLixi trial

N. McInnes, S. Hall, H. Lochnan, S. Harris, Z. Punthakee, R.J. Sigal, I. Hramiak, M. Azharuddin, J. Liutkus, J.-F. Yale, F. Sultan, A. Smith, D. Sherifali, Y.Y. Liu, H. Gerstein, Canada

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45**SO 26 Cardiorenal consequences of SGLT2 inhibition**

Chair: N. Sattar, UK

437 The effect of two different sodium-glucose co-transporter 2 (SGLT2) inhibitors on decreasing serum uric acid level in patients with type 2 diabetes

M.I. Szabo, L. Marton, Á. Szőcs, Á. Farkas, Romania

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

S. Dagogo-Jack, R.E. Pratley, D.Z. Cherney, B. Charbonnel, D.K. McGuire, F. Cosentino, W.J. Shih, J. Liu, R. Frederich, J.P. Mancuso, A. Raji, I. Gantz, USA, Canada, France, Sweden

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

B. Charbonnel, S. Dagogo-Jack, C.P. Cannon, D.Z. Cherney, F. Cosentino, D.K. McGuire, W.J. Shih, J. Liu, A. Pong, I. Gantz, R. Frederich, J.P. Mancuso, R.E. Pratley, France, USA, Canada, Sweden

440 Effects of canagliflozin on hospitalisation for heart failure by baseline eGFR: pooled analysis from the CANVAS Program and CREDENCE

M. Kosiborod, J. Gogate, J. Seufert, K.W. Mahaffey, USA, Australia, Germany

441 Effects of canagliflozin on major adverse cardiovascular events by baseline albuminuria: integrated analyses from the CANVAS Program and CREDENCE trial

D.C. Wheeler, M.R. Weir, J. Gogate, V. Perkovic, K.W. Mahaffey, UK, Australia, USA

442 The effect of SGLT-2 inhibitors on mortality and heart failure in randomised trials versus observational studies

J. Krogh, C. Hjorthøj, S.L. Kristensen, C. Selmer, S.B. Haugaard, Denmark

443 Sodium Glucose Co-Transporter 2 Inhibitors do not increase the risk of hyperkalemia in type 2 diabetes: a systematic review and meta-analysis

C. Charlwood, J. Chudasama, A. Darling, H. Logan Ellis, M. Whyte, UK
V.J. Horváth, A.G. Tabák, Hungary, UK

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

SO 27 Glucose-lowering agents: Real World Evidence

Chair: K. Eeg-Olofsson, Sweden

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

L. Niskanen, M.H. Kyaw, A. Deruaz-Luyet, A. Ustyugova, K. Karlsdotter, M. Tuovinen, P. Casajust, E. Toresson Grip, E. Söreskog, T. Nyström, EMPRISE group, Finland, USA, Germany, Sweden, Spain

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

A. Karasik, S. Lanzinger, E. Chia-Hui Tan, D. Yabe, D. Jung Kim, W. H-H Sheu, C. Melzer-Cohen, R.W. Holl, K. Ha, T. Nyström, L. Niskanen, M. Linnemann Jensen, M.H. Kyaw, J. Núñez, EMPRISE EU and East Asia Study Group, Israel, Germany, Taiwan, Japan, Korea, Republic of, Sweden, Finland, Denmark, USA, Spain

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

J.-F. Yale, A.-M. Catarig, S.-B. Catrina, U. Erhan, T. Sathyapalan, B. Schultes, M. Tariq, S.T. Knudsen, Canada, Denmark, Sweden, UK, Switzerland, India

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

G. Rudofsky, U. Bodholdt, A.-M. Catarig, N. Rajamand Ekberg, U. Erhan, J.F. Liutkus, M. Tariq, P. Holmes, Switzerland, Denmark, Sweden, Canada, India, UK

448 Trends in initiation of GLP-1 RA in patients with type 2 diabetes during 2014 - 2019: a US database study

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

449 Greater adherence and persistence with dulaglutide compared to injectable semaglutide at 6- and 12- months follow-up in U.S. real-world data

R. Mody, J. Manjelievskaia, M. Yu, E.H. Marchlewicz, R. Malik, N.M. Zimmerman, D.E. Irwin, USA

450 Mobile health application as a real-world data resource: self-recorded weight reduction with once-weekly semaglutide

U. Bodholdt, S. Birot, A.-M. Catarig, U. Erhan, F.K. Knop, Denmark

451 Efficacy and safety of alogliptin versus acarbose in Chinese type 2 diabetes individuals with cardiovascular risk or coronary heart disease: a randomised prospective study

B. Gao, W. Gao, H. Wan, F. Xu, R. Zhou, X. Zhang, H. Yin, Q. Ji, China

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

SO 28 GLP-1 receptor agonists and weight loss

Chair: J.P.H. Wilding, UK

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

L. Perreault, M. Davies, J.P. Frias, P.N. Laursen, I. Lingvay, S. Machineni, A. Varbo, J.P. Wilding, S.O. Wallenstein, C.W. Le Roux, USA, UK, Denmark, Ireland

453 Effect of semaglutide 2.4 mg on achievement of weight loss and HbA_{1c} <7%, without hypoglycaemia, in adults with overweight/obesity and type 2 diabetes in STEP 2

R. Goldenberg, L. Færch, D. Horn, A. Jain, O.K. Jeppesen, K. Khunti, A. Pakseresht, L. Perreault, A. Tahrani, A. Viljoen, S. Jacob, Canada, Denmark, USA, UK, Germany

454 Effect of once weekly dulaglutide 3.0 and 4.5 mg in patients with different baseline renal function: post hoc analysis from the AWARD-11 trial

L.-E. García-Pérez, J.M. Maldonado, K.T. Ranta, S. Raha, USA

455 Influence of baseline characteristics on weight loss with semaglutide 2.4 mg in adults with overweight/obesity and type 2 diabetes (STEP 2)

C.W. Le Roux, L. Færch, T. Holst-Hansen, A. Koroleva, R.F. Kushner, S. Lim, I. Lingvay, O. Mosenzon, T.A. Wadden, W.T. Garvey, Ireland, Denmark, USA, Korea, Republic of, Israel

456 Higher doses of dulaglutide induce weight loss in patients with type 2 diabetes regardless of baseline BMI: post hoc analysis of AWARD-11

E. Bonora, J.P. Frias, R. Malik, A. Kwan, S. Raha, A. Bethel, D. Cox, Italy, USA

457 The use of semaglutide alongside other diabetes medications: real-world results from the Association of British Clinical Diabetologists (ABCD) audit programme

T.S. Crabtree, K. Adamson, H. Reid, D. Barnes, S. Sivappriyan, A. Bickerton, I.W. Gallen, R.E. Ryder, UK

458 Body weight loss with oral semaglutide is predominantly mediated by effects other than gastrointestinal adverse events

J.J. Meier, R.M. Agesen, L. Bardtrum, A.Y. Cheng, S. Deenadayalan, E. Montanya, R.E. Pratley, Germany, Denmark, Canada, Spain, USA

459 Benefits of insulin glargine/lixisenatide fixed-ratio combination for patients inadequately controlled on premixed insulin and oral agents

I. Risovic, M. Bojic, D. Djekic, Bosnia and Herzegovina

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

SO 29 Novel glucose-lowering agents

Chair: W. Rathmann, Germany

460 Dual GLP-1 and glucagon receptor agonism with cotadutide significantly increases insulin secretion in overweight and obese adults with type 2 diabetes

R. Golubic, J. Kennet, V. Parker, D. Robertson, D. Luo, L. Hansen, L. Jermutus, P. Ambery, A. Park, M. Evans, UK, USA, Sweden

461 A novel, stable mutation of FGF1 separates the glucose lowering effect from its proliferative properties through interaction with the insulin receptor

M. Janiszewski, E. Drzazga, P. Buda, K. Bazydlo-Guzenda, B. Miedziak, A. Sowinska, O. Abramczyk, J. Hucz-Kalitowska, M. Teska-Kaminska, M. Wieczorek, J. Pieczykolan, Poland

462 VEGF-a/ang-2 neutralisation causes sustained prevention of subretinal macrophage infiltration in a mouse model of spontaneous choroidal neovascularisation

J. Canonica, S. Uhles, R. Foxton, N. Colé, M. Lazendic, M. Garcia Garrido, P. Westenskow, Switzerland

463 Novel GLP-1 analogue, GZR18: a preclinical evaluation in type 2 diabetes models

Y. Wang, M. Zhang, Y. Zhang, F. Xue, Y. Deng, Y. Qian, C. Cui, B. Wei, W. Chen, Z. Gan, USA, China

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

M.A. Noor, K.H. Kim†, W.L. Free, J. Henson, P. Shamanna, S. Ajdari, C.R. Kahn, T.R. Hirst, A.H. Barnett, S.K. Paul, N.N. Gorgani, Australia, India, USA, UK

465 Beneficial antidiabetic actions of a novel V1a and V1b receptor specific AVP analogue in high fat fed mice

C.R. Moffett, S. Mohan, N. Irwin, P.R. Flatt, UK

466 DA-1241 a novel GPR119 agonist: Data on safety, tolerability and pharmacokinetics (PK), from part 1 of a phase 1b multiple ascending dose (MAD) study in healthy volunteers (HV)

B. Franey, M. Grimm, D. Lee, J. Jeong, M.-K. Kim, M. Hompesch, USA, Korea, Republic of

467 A novel, long-acting dual agonist for GIPR/GLP-1R, HISHS-2001, demonstrates effects on HbA_{1c} and weight loss in the db/db mouse model of type 2 diabetes

R. Thennati, V. Burade, A. Garcia-Ocana, R.E. Pratley, G.A. Rutter, T. Vilsbøll, B. Thorens, India, USA, UK, Denmark, Switzerland

468 Effect of probenecid and cyclosporin on the pharmacokinetics of SNAC in healthy subjects

T.K. Thorning, A. Breitschaft, T.B. Jensen, K. Kallenbach, T.A. Bækdal, Denmark, Germany

469 Effects of anti-diabetes therapies on irisin secretion in type 2 diabetes patients

A. Natalicchio, N. Marrano, G. Biondi, G. Le Grazie, A. Montedoro, L. Di Gioia, F. Guarini, A. Borrelli, A. Cignarelli, S. Perrini, L. Laviola, F. Giorgino, Italy

Short Oral Discussion Event F, Thursday, 13:30 - 15:00**SO 30 The advantage of dual agonists**

Chair: D. Mathiesen, Denmark

470 Effect of tirzepatide versus insulin degludec on glycaemic control captured with continuous glucose monitoring in patients with type 2 diabetes (SURPASS-3 CGM)

T. Battelino, R. Bergenstal, A. Rodríguez, L. Fernández Landó, R. Bray, Z. Tong, K. Brown, Slovenia, USA

471 Patient-reported outcomes in patients with type 2 diabetes treated with tirzepatide or placebo as an add-on to basal insulin (SURPASS-5)

M. Yu, K. Boye, R. Huh, H. Patel, A. Rodriguez, Canada, USA

472 Efficacy and safety of tirzepatide, a dual GIP/GLP-1 receptor agonist, compared to insulin degludec in patients with type 2 diabetes (SURPASS-3)

B. Ludvik, F. Giorgino, E. Jódar, J.P. Frias, L. Fernández Landó, K. Brown, R. Bray, Á. Rodríguez, Austria, Italy, Spain, USA

473 Weekly dual GIP/GLP-1 receptor agonist tirzepatide monotherapy improved markers of islet cell function and insulin sensitivity in people with type 2 diabetes (SURPASS-1)

C.J. Lee, V.T. Thieu, H. Mao, M.K. Thomas, USA

474 Efficacy and safety of once weekly tirzepatide, a dual GIP/GLP-1 receptor agonist versus placebo as monotherapy in people with type 2 diabetes (SURPASS-1)

J. Rosenstock, C. Wysham, J.P. Frias, S. Kaneko, C.J. Lee, L. Fernández Landó, H. Mao, X. Cui, V.T. Thieu, USA, Japan

475 Patient-reported outcomes in patients with type 2 diabetes treated with tirzepatide or placebo (SURPASS-1)

K. Boye, M. Yu, C.J. Lee, H. Mao, X. Cui, L. Fernández Landó, V. Thieu, USA

476 Efficacy, safety and tolerability of cotadutide as an add-on therapy in overweight subjects with type 2 diabetes treated with dapagliflozin and metformin

A. Flor, M. Petrone, J. Sanchez, T. Petrohoy, L. Jermutus, L. Hansen, P. Ambery, USA, UK, Sweden

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

SO 31 Clinical aspects of semaglutide

Chair: T. Vilsbøll, Denmark

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

S. Wharton, H.H. Meincke, R.F. Kushner, T.K. Oral, S.D. Pedersen, D.M. Rubino, D.H. Ryan, N. Zeuthen, R.L. Kolotkin, Canada, Denmark, USA, Norway

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

D.M. Rubino, L. Færch, H.H. Meincke, R.F. Kushner, S.D. Pedersen, D.H. Ryan, S. Wharton, N. Zeuthen, R.L. Kolotkin, USA, Denmark, Canada, Norway

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

J.E. Deanfield, M. Davies, W.T. Garvey, O.K. Jeppesen, U. Khalid, M. Kosiborod, R.F. Kushner, P.N. Laursen, D.M. Rubino, S. Verma, UK, USA, Denmark

480 Time spent in glycaemic control after initiating treatment with oral semaglutide vs empagliflozin: an exploratory analysis of the PIONEER 2 trial

F.K. Knop, B. Cariou, E. Christiansen, A.L. Davies, E. Montanya, M.T. Abildlund, J. Rosenstock, Denmark, France, Spain, USA

481 Reduced glycaemic variability with once-weekly semaglutide vs active comparators in post hoc analysis of the SUSTAIN programme

E. Jodar, V.R. Aroda, Y. Kose, M. Kaltoft, A.L. Søndergaard, R. Pratley, Spain, USA, Denmark

482 Derived time in glycaemic range with once-weekly semaglutide vs active comparator: post hoc analysis from the SUSTAIN clinical trial programme

V.R. Aroda, C. De Block, M. Kaltoft, J. Lawson, A.L. Søndergaard, A. Philis-Tsimikas, USA, Germany, Denmark

483 Effect of once-weekly semaglutide on insulin use in subjects with type 2 diabetes: a post hoc analysis of SUSTAIN 6

J. Seufert, C. Desouza, A.R. Kirk, J. Lawson, I. Lingvay, A.L. Søndergaard, S.C. Bain, Germany, USA, Denmark, UK

484 Achievement of near-normal HbA_{1c} with early initiation of oral semaglutide: an exploratory subgroup analysis of PIONEER 1

E.C. Morales-Villegas, V.R. Aroda, L. Bardtrum, E. Christiansen, K. Kallenbach, J. Rosenstock, M. Davies, Mexico, USA, Denmark, UK

485 Incorporating treatment pauses, dosing flexibility and education to support GLP-1RA therapy persistence: data from PIONEER 6

S. Bain, R. Bauer, A.L. Davies, E.B. Kreiner, P. Lin, R. Pratley, V.R. Aroda, UK, Denmark, Canada, USA

486 Neutrophil-to-lymphocyte ratio predicts cardiovascular events in patients with type 2 diabetes: post hoc analysis of SUSTAIN 6 and PIONEER 6

S. Verma, M. Husain, C.M. Madsen, L.A. Leiter, S. Rajan, T. Vilsbøll, S. Rasmussen, P. Libby, Canada, Denmark, USA

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

SO 32 Different aspects of SGLT2 inhibitors

Chair: C.-G. Östenson, Sweden

487 Empagliflozin reduces inflammation and alters bioenergetic metabolism in proinflammatory human macrophages: Clues to mechanisms of vascular protection?

V. Spigoni, G. Cinquegrani, F. Fantuzzi, A. D'Antuono, S. Lorusso, N. Iannozzi, A. Dei Cas, R.C. Bonadonna, Italy

488 Conceptual health economic modelling study of treatment sequencing for SGLT2is

G. Chen, V. Foos, R.L. Martin, R. Hoff, R. Boyce, P. Carter, P. McEwan, UK

489 Empagliflozin reduced the total burden of events leading to or prolonging hospitalisation in EMPA-REG OUTCOME

S.E. Inzucchi, C. Wanner, D. Fitchett, B. Zinman, S.D. Anker, M. Mattheus, O. Vedin, S. Hantel, S.S. Lund, USA, Germany, Canada, Sweden

490 Angiotensin profiles in patients with type 2 diabetes and combination therapy of empagliflozin and linagliptin versus metformin and insulin glargine

A. Bosch, M. Poglitsch, D. Kannenkeril, C. Ott, K. Striepe, R.E. Schmieder, Germany, Austria

491 Efficacy and safety of sotagliflozin in patients with type 2 diabetes: meta-analysis of randomised controlled trials

P. Kakotrichi, I. Avgerinos, T. Karagiannis, T. Michailidis, A. Liakos, A. Tsapas, E. Bekiari, Greece, UK

492 Glycaemic variability of oral semaglutide vs empagliflozin: a post-hoc analysis of PIONEER 2

E. Montanya, M.T. Abildlund, E.B. Kreiner, O. Mosenzon, S. Rosenlund, T. Vilsbøll, Spain, Denmark, Israel

493 Anaplerotic therapy counters ketosis induced by empagliflozin in diabetic sheep

H. Dvir, J. Asiku, M. Kalyesubula, A. Rosov, M. Ross, G. Van Bommel, Israel

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

SO 33 Non-insulin treatment in type 1 and type 2 diabetes

Chair: D.L. Russell-Jones, UK

494 Six-day sc GIP infusion increases plasma NEFA without altering the adipose tissue transcriptome, GIPR levels or plasma markers of inflammation in patients with type 1 diabetes

S.M. Heimbürger, B. Hoe, C.N. Nielsen, B. Hartmann, J.J. Holst, F. Dela, J. Overgaard, J. Størling, T. Vilsbøll, T.F. Dejgaard, C. Pyke, M.B. Christensen, F.K. Knop, Denmark

495 Effects of liraglutide in type 1 diabetes by baseline anthropometrics in ADJUNCT ONE and TWO

T. Dejgaard, L. Bardtrum, E. Christiansen, F. Flindt Kreiner, S. Madsbad, M. Von Herrath, B.J. Von Scholten, C. Mathieu, Denmark, Belgium

496 Multicenter, open-label, two-arm, pilot trial for safe reduction of basal insulin dose combined with SGLT2 inhibitor in type 1 diabetes: RISING-STAR trial

M. Hamaguchi, M. Yamazaki, T. Tanaka, M. Ishii, H. Okada, K. Mitsuhashi, N. Kitagawa, G. Hasegawa, M. Fukui, Japan

497 Real-world efficacy and safety of SGLT2 inhibitors in type 1 diabetes: a two-center cohort retrospective study

F. Van Nes, A. Palanca, F. Ampudia-Blasco, F. Pardo, J. Real, C. Mathieu, Belgium, Spain

498 A pre-exercise low-carbohydrate-high-protein meal stabilises plasma glucose during and after exercise in persons with type 1 diabetes

K.B. Kristensen, A.G. Ranjan, R.M. Bracken, K. Nørgaard, S. Schmidt, Denmark, UK

499 A pragmatic low carbohydrate diet intervention changes neither carbohydrate consumption nor glycaemia appreciably in adolescents and young adults with type 1 diabetes

S.H. Duffus, K.C. Coate, S.S. Jaser, K.D. Niswender, J.M. Gregory, USA

500 Exploring a suitable marker of residual beta cell function associated with glycaemic response to dulaglutide in patients with type 2 diabetes

M. Hasebe, S. Yoshiji, Y. Iwasaki, S. Kimura, Y. Seno, Y. Keidai, T. Haraguchi, K. Iwasaki, Y. Wada, S. Honjo, J. Fujikawa, A. Hamasaki, Japan

501 Fixed-ratio combination of insulin glargine plus lixisenatide (iGlarLixi) improves beta cell function in people with type 2 diabetes

E. Ferrannini, A. Boss, T. Dex, S. Servera, A. Mari, Italy, USA

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

SO 34 News from new insulins

Chair: K. Nørgaard, Denmark

502 Cellular internalisation and localisation of once weekly basal insulin Fc

J. Moyers, C.B. Volk, C. Zhang, USA

503 Ultra Rapid Lispro (URLi) accelerates insulin lispro absorption and insulin action vs lispro in healthy Chinese subjects

Y. Yu, H. Tao, J. Leohr, E. LaBell, D. Coutant, H. Liu, C. Qian, China, USA

504 Faster recovery from hyperglycaemia with ultra rapid lispro vs lispro in patients with type 1 diabetes on continuous subcutaneous insulin infusion

J. Leohr, M.A. Dellva, E. LaBell, J. Arrubla, L. Plum-Mörschel, E. Zijlstra, T. Fukuda, T. Hardy, USA, Germany

505 Achieving HbA_{1c} <7% in insulin naive people with type 2 diabetes on insulin glargine 300 U/mL in interventional vs observational European studies: REALI pooled database

P. Gourdy, D. Mauricio, N. Freemantle, M. Bonnemaiore, G. Bigot, C. Mauquoi, D. Müller-Wieland, R. Bonadonna, France, Spain, UK, Belgium, Germany, Italy

506 Real-world effectiveness and safety of insulin glargine 300 U/mL in insulin-naive people with type 2 diabetes and renal impairment: a subgroup analysis of the ATOS study

A. Tirosh, N. Khan, H. Vargas-Uricoechea, M.A. Mabunay, M. Coudert, V. Pilorget, G. Galstyan, Israel, United Arab Emirates, Colombia, Singapore, France, Russian Federation

507 Assessing infusion site reactions with ultra rapid lispro in continuous subcutaneous insulin infusion

D. Ignaut, J. Cho, J. Elpers, F. Chigutsa, C. Piras de Oliveira, USA

508 CGM-based parameters for once-weekly insulin icodec vs once-daily insulin glargine U100 in insulin-naïve patients with type 2 diabetes

I. Lingvay, R. Beck Bang, L. Liu, J. Mader, J. Pettus, L. Wagner, C. Mathieu, USA, Denmark, Austria, Belgium

509 CGM-based measurements for once-weekly insulin icodec vs once-daily insulin glargine U100 in insulin-treated patients with type 2 diabetes: a post hoc analysis

H.S. Bajaj, R. Beck Bang, A. Gowda, L. Liu, P. Senior, R. Bergenstal, Canada, Denmark, USA

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

SO 35 More on insulins

Chair: J.-B. Gallwitz, Germany

510 Proposed biosimilar insulin aspart (GL-ASP) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence to US-licensed and EU-authorised insulin aspart

L. Plum-Mörschel, E. Uhrmacher, E. Zijlstra, J. Lu, M. Wilson, M. Barton, T. Heise, Germany, USA

511 Proposed biosimilar insulin glargine (GL-GLA) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence to US-licensed and EU-authorised insulin glargine

T. Heise, L. Plum-Mörschel, G. Andersen, J. Lu, M. Wilson, E. Zijlstra, Germany, USA

512 Star.ro - real world data on effectiveness and safety of iglarlixi in people with type 2 diabetes uncontrolled on oral antidiabetic drugs ± basal insulin treatment

C. Guja, C. Bala, A. Cerghizan, B. Mihai, M. Moise, Romania

513 Phase 3 confirmatory study comparing efficacy and safety of proposed biosimilar and reference insulin aspart, combined with metformin, in patients with diabetes

J. Yao, D. Wang, X. Guo, China

514 Proposed biosimilar insulin lispro (GL-LIS) shows pharmacokinetic (PK) and pharmacodynamic (PD) bioequivalence versus US-licensed and EU-authorised insulin lispro

E. Zijlstra, T. Heise, M. Ermer, J. Lu, M. Wilson, L. Plum-Mörschel, Germany, USA

515 Efficacy and safety of iGlarLixi vs insulin glargine 100 U/ml in Chinese people with type 2 diabetes (T2D) inadequately controlled on basal insulin (BI): LixiLan-L-China trial

X. Guo, J. Zhang, X. Dong, Y. Lu, W. Pang, S. Gu, L. Ping, G. Nian, E. Niemoeller, E. Souhami, China, USA, Germany, France

516 Effect of insulin degludec vs insulin glargine U100 on occurrence of nocturnal hypoglycaemia assessed by plasma glucose profiles in people with type 1 diabetes: HypoDeg trial

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

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

SO 36 Determinants and consequences of hypoglycaemia

Chair: M. Evans, UK

517 Prolonged effect of hypoglycaemia on circulating immune cell composition in people with type 1 diabetes

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

518 Development and validation of a risk prediction model for hypoglycaemia in inpatients with type 2 diabetes during intensive insulin therapy

X. Hu, S. Lin, Y. Zhang, W. Xu, L. Gao, China

519 Is obstructive sleep apnoea and/or nocturnal hypoglycaemia associated with arrhythmia in type 1 diabetes?

M.M. Henriksen, H.U. Andersen, B. Thorsteinsson, U. Pedersen-Bjergaard, Denmark

520 Physical activity and type 1 diabetes - habits, management and obstacles

R.F. Johansen, P.L. Kristensen, S. Caunt, E. Søndergaard, S. Heller, S. Molsted, Denmark, UK

521 Hypoglycaemia increases the left ventricular ejection fraction in people with diabetes and healthy controls

T. Wilbek Fabricius, C.E. Verhulst, M. Wienberg, A.L. Duijnhouwer, P.L. Kristensen, B.E. De Galan, U. Pedersen-Bjergaard, Denmark, Netherlands

522 Momentary assessment of type 1 diabetes patient's experiences in glucose variability and mood in real life (MERITS): first findings

M. De Wit, K. Van den Berg, E. Serné, D. Van Raalte, F.J. Snoek, Netherlands

523 The glycaemic status determines the direction of the relationship between the red cell distribution width and HbA_{1c}

D. Tsilingiris, K. Makrilakis, B. Aikaterini, M. Dalamaga, A. Tentolouris, O. Kosta, I. Eleftheriadou, S. Liatis, Greece

Short Oral Discussion Event A, Tuesday, 11:30 - 13:00**SO 37 New approaches to health care delivery**

Chair: R. Holl, Germany

524 Impact of diabetes group visits on patient clinical outcomes: results from a cluster randomised intervention trial among U.S. Midwestern health centres

A.A. Baig, E.M. Staab, S. Siddiqui, M. Zhu, W. Wan, A. Campbell, C. Schaefer, M.T. Quinn, USA

525 Person-centered approach for elderly in chronic disease management

H.E. Hart, A.G. Somers, I. Looijmans- van den Akker, L. Rozendaal, M. Hollander, B. Baar, R.C. Vos, Netherlands

526 The pattern of testing for glycosylated haemoglobin (HbA_{1c}) in people with diabetes is linked to the long term trajectory of blood glucose control

A.A. Fryer, D. Holland, C.J. Duff, A. Heald, UK

527 Effectiveness of diabetes education tailored to psychiatric nurses on quality of diabetes care and psycho-social outcomes in people with diabetes and severe mental illness

L. Knudsen, D.L. Hansen, L.E. Joensen, L.J. Diaz, K.K. Clemmesen, M.E. Joergensen, G.S. Andersen, Denmark

528 A core outcome set for the treatment of pregnant women with pregestational diabetes

O. Kgosidialwa, F. Dunne, INSPIRED Research Group, Ireland

529 Effect of traditional versus communication technology-based health educational intervention focusing on diabetes in Bangladesh: a randomised controlled trial

B. Banu, M. Hossain Khan, L. Ali, R. Sauerborn, A. Souares, Germany, Bangladesh

530 Virtual versus in-person pump and CGM training experiences among adults with diabetes in Europe

E.R. Ye, E. Asamoah, C. Florissi, J. Tait, R. Gowen, C. Pang, R. Wood, USA

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

SO 38 Psychological aspects of diabetes care

Chair: B. Kulzer, Germany

531 A qualitative evidence synthesis exploring the determinants of self-management in adults with severe mental illness

C. Carswell, J.V. Brown, A. Balogun-Katung, J. Taylor, P.A. Coventry, C. Kitchen, I. Kellar, S. Bellass, J. Wright, S. Alderson, J. Lister, R.I. Holt, D. Shiers, N. Siddiqi, DIAMONDS Research Team, UK

532 Prevalence of needle phobia and anxiety among younger subjects with diabetes who are uncontrolled on multiple oral glucose lowering drugs and influence counselling

A. Baidya, India

533 Cognitive decrements and ventricular volume increase are related to white matter lesion presence in type 1 diabetes without peripheral microangiopathy

C.G. Pariz, E. Van Duinkerken, D.G. Corrêa, F.J. Snoek, A.C. Moll, M. Klein, F. Barkhof, R.G. IJzerman, Brazil, Netherlands, UK

534 Effects of bariatric surgery on quality of life, body image and sex life in obese women

L. Di Gioia, S. Perrini, A. Braun, I. Caruso, F. Giordano, F. Guarini, G. Le Grazie, E. Rossi, A. Barbone, A. Cignarelli, A. Natalicchio, L. Laviola, A. Bertolino, F. Giorgino, Italy

535 Motivational interviewing and self-care in type 1 diabetes: a randomised controlled clinical trial

J.C. Betancort Acosta, D. Alvarado Martel, M. Boronat, M.D. Alberiche Ruano, M.A. Algara González, Y. Ramallo Fariña, A.M. Wägner, Spain

536 High diabetes-related distress is associated with cerebral functional and structural alterations in middle-aged patients with type 1 diabetes

L.M. Loureiro, E.V. Duinkerken, M. Klein, F. Barkhof, R. IJzerman, F.J. Snoek, Brazil, Netherlands, UK

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

SO 39 Apps, devices and tools and their impact on diabetes care

Chair: A. Jeyam, UK

537 Are the benefits of FreeStyle Libre evident across a range of indications for its use? A UK Diabetes centre experience

P. Thadani, A. Musharraf, O. Awala, S. Chan, K. Swinhoe, S. Sankar, H. Randeve, N. Gholap, UK

538 Assessing the SPUR adherence diagnostic framework

K. Dolgin, M.-E. Laporte, L. Nabec, H. Mosnier Pudar, G. Reach, L. Kombargi, France

539 Initiating the digital diabetes questionnaire as a clinical tool in routine diabetes care: patients' and professionals' perspectives captured in focus group discussions

M. Svedbo Engström, U.-B. Johansson, E. Linder, J. Leksell, K. Eeg-Olofsson, Sweden

540 Effect of WhatsApp messaging based intervention on insulin adherence and treatment effectiveness in diabetic patients in central India

S. Saboo, B. Saboo, India

541 Long-term HbA_{1c} outcomes with and without intermittent CGM use in adults with type 2 diabetes participating in the Onduo Program

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

542 Development of a new device for screening for peripheral diabetic neuropathy

D. Coppini, J. Dave, V. Dubey, UK, Malta

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

SO 40 CGM

Chair: J. Soupal, Czech Republic

543 High treatment satisfaction and less severe hypoglycaemia after 24-month use of intermittently scanned continuous glucose monitoring

S. Charleer, C. De Block, L. Van Huffel, E. Dirinck, F. Nobels, C. Mathieu, P. Gillard, Belgium

544 Safety and performance evaluation of a novel continuous glucose monitoring system: Lumee Glucose

C. Nguyen, N.Q. Tran, P.T. Ma, H.T. Nguyen, S. Gamsey, C. Lepak, S. Cereceres, K. Rebrin, USA, Viet Nam

545 Performance evaluation of the Glunovo® continuous blood glucose monitoring system in Chinese participants with diabetes

R. Meng, D. Zhu, China

546 Accuracy comparison of the WaveForm cascade CGM system at different body sites over 15 days

M. Rebec, A.-M. Liberati-Pso, R. Dutt-Ballerstadt, USA, Croatia

547 Understanding why we do not have consensus for coefficient of variation with CGM

J.E. Perlman, T.A. Gooley, J. Meyers, I.B. Hirsch, USA

548 GMI might over estimate quality of glycaemic control in diabetes patients

P. Fellingner, K. Rodewald, M. Ferch, A. Kautzky-Willer, Y. Winhofer, Austria

549 The impact of glycaemic variability on the relationship between hypoglycaemia and HbA_{1c}

S.L. Ellis, R.B. McQueen, M. Perez-Nieves, G.T. Alonso, R. Juneja, K. Hannah, L. Fan, E.R. Hankosky, V.N. Shah, Y. Yan, USA

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

SO 41 Closed loop systems

Chair: P.-Y. Benhamou, France

550 Real-world data from 1,988 people with type 1 diabetes on the Omnipod DASH® Insulin Management System with continuous glucose monitoring and cloud-based data management

W. Keuthage, I.B. Hirsch, R.S. Weinstock, I. Hadjiyianni, L.M. Huyett, J. Jantz, S. Lowen, A. Chang, T. Vienneau, T.T. Ly, Germany, USA

551 Daily meal size variation does not affect glycaemic control in adult type 1 diabetes patients equipped with hybrid closed loop DBLG1 system

P. Gimenez, S. Lachal, Y. Tourki, S. Franc, C. Amadou, A. Penfornis, G. Charpentier, P.-Y. Benhamou, France

552 A novel method for unannounced meal detection and control

S. Lachal, Y. Tourki, E. Hunecker, M. Doron, E. Villeneuve, France

553 Glycaemic outcomes and patient satisfaction after 3 months of use of an advanced hybrid closed-loop system use

P.I. Beato-Víborá, F. Gallego-Gamero, A. Ambrojo-López, E. Gil-Poch, I. Martín-Romo, F.J. Arroyo-Díez, Spain

554 Insulin pump interoperability of Diabeloop DBLG1 system

A. Adenis, S. Pou, H. Romero-Ugalde, S. Madrolle, Y. Tourki, S. Franc, G. Charpentier, P. Benhamou, E. Hunecker, France

555 Improvement of outcomes in type 1 diabetic patients with HCL system compared to SAP and PLGS system

P.S. Morpurgo, M.E. Lunati, A. Rossi, I. Cogliati, A. Gandolfi, A.M. Bolla, L. Plebani, G. Volpi, S. Argenti, P. Fiorina, Italy

Short Oral Discussion Event F, Thursday, 13:30 - 15:00**SO 42 Other aspects of managing blood glucose levels**

Chair: A. Maran, Italy

556 Indirect treatment comparison of ready-to-use glucagon rescue treatments for severe hypoglycaemia: nasal glucagon versus liquid stable glucagon

Y. Yan, C.J. Child, K. Syring, Q. Wang, R. Threlkeld, USA

557 Integrated safety analysis of dasiglucagon for the treatment of severe hypoglycaemia

S. Heller, T. Battelino, T. Bailey, R. Tehranchi, L. Klaff, T. Pieber, U. Hovelmann, L. Plum-Morschel, A.E. Melgaard, R. Aronson, L. DiMeglio, T. Danne, UK, Slovenia, USA, Denmark, Austria, Germany, Canada

558 The next-generation glucagon analogue dasiglucagon consistently achieves rapid recovery from hypoglycaemia across subgroups

T. Danne, T. Bailey, R. Tehranchi, L.J. Klaff, T. Pieber, U. Hovelmann, L. Plum-Morschel, A.E. Melgaard, R. Aronson, L.A. DiMeglio, T. Battelino, Germany, USA, Denmark, Austria, Canada, Slovenia

559 Glycaemic tracking of HbA_{1c} in patients with type 1 diabetes has a strong modifiable component reliant on intensive diabetes support

L.M. Quinn, K. Nirantharakumar, P. Narendran, UK

560 Variability of carbohydrate estimation skills in adults with type 1 diabetes

R. Visentin, M. Stoll, M. Bloechlinger, K. Fuchs, D. Herzig, L. Bally, C. Dalla Man, Italy, Switzerland

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

SO 43 Insulin pumps

Chair: R. Hovorka, UK

561 Glycaemic management over 6 months with the Omnipod® 5 automated insulin delivery system

A.L. Carlson, A.B. Criego, T.T. Ly, Omnipod 5 Research Group, USA

562 Biomedical and patient reported outcomes from the PRO solo multi-national, multi-centre clinical trial

K. Barnard-Kelly, N. Oliver, F. Thienel, E. Franek, T. Kuensting, N. Dagenbach, T. Etter, J.K. Mader, UK, Germany, Poland, Austria

563 Glycaemic profiles and treatment patterns: real-world data of 2,536 people with type 2 diabetes using the Omnipod® Insulin Management Systems and cloud-based data management

T. Kader, I.B. Hirsch, R.S. Weinstock, I. Hadjiyianni, L.M. Huyett, J. Jantz, S. Lowen, A. Chang, T. Vienneau, T. Ly, USA

564 Safety evaluation of the Omnipod® 5 automated insulin delivery system over three months of use in adults and children with type 1 diabetes

G.P. Forlenza, S.A. Brown, T.T. Ly, Omnipod 5 Research Group, USA

565 Six months pump treatment improves cardiovascular and endothelial function compared to MDI in patients with type 1 diabetes, independently of HbA_{1c}

A. Kountouri, I. Ikonomidis, J. Thymis, E. Korakas, K. Katogiannis, V. Prentza, K. Balampanis, L. Pliouta, F. Kousathana, G. Kostelli, D. Benas, A. Barmpagianni, G. Dimitriadis, S. Liatis, V. Lambadiari, Greece

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

SO 44 Glycaemic management in special settings and populations

Chair: C.D.T. Byrne, UK

566 Continuous glucose monitoring with multiple daily insulin injections improves perinatal outcomes in women with type 1 diabetes

K. Anderlova, H. Krejčí, M. Mráz, M. Haluzík, M. Kršek, A. Pařízek, P. Šimják, Czech Republic

567 The effect of liver transplantation on total daily doses of insulin requirement

O. Awala, A. Coulden, C. Antza, N. Shah, A. Nahar, L. Kandaswamy, A. Phillips, Z. Khan, S. Upadhyaya, A. Asif, F. Babwah, S. Mostafa, W. Hanif, UK

568 Duodenal jejunal bypass liner (DJBL) for treatment of type 2 diabetes and obesity: risks and benefits among 926 patients in the worldwide EndoBarrier (EB) registry

R.E. Ryder, P. Sen Gupta, R. Stengel, K. Mitchell, R. Drummond, H. Frydenberg, L. Munro, S. Fishman, R. Cohen, C. DeJonge, J. Greve, M. Benes, J. Aberle, K. Laubner, J. Seufert, UK, Germany, Australia, Israel, Brazil, Netherlands, Czech Republic

569 Exogenous insulin therapy failed to improve insulin sensitivity and beta cell function in non-diabetic cystic fibrosis assessed with the oral minimal model method

M. Schiavon, G.M. Toffolo, C. Cobelli, K.S. Nair, A. Moran, Italy, USA

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15**SO 45 Seeing the full picture of diabetic retinopathy**

Chair: T. Peto, UK

570 Impact of ethnicity and glycaemic control on developing sight threatening retinopathy in people with type 2 diabetes

A. Nirmalakumaran, A. Mangelis, S. Thomas, S. Mann, J. Karalliedde, J. Collins, S. Ayis, L. Webster, UK

571 HbA_{1c} variability is associated with microvascular complications in patients with type 1 diabetes: results of the 25-year observation programme

L. Bolotskaya, Y. Golubkina, Russian Federation

572 Urinary proteome and diabetic retinopathy in the Direct-Protect 1 and 2 trials

V. Rotbain Curovic, P. Magalhães, T. He, T.W. Hansen, H. Mischak, P. Rossing, Denmark, Germany

573 Study to evaluate relationship between the various components of serum lipids with retinal hard exudate formation, CSME and the occurrence and increasing severity of DR

A. Das, P. Prusty, S. Guha, A. Bhagat, India

574 Fenofibrate in the prevention and treatment of diabetic retinopathy: systematic review

M. Malowicka, M. Szalanska, E. Lukomska, A. Jakubowska, D. Wilkowski, Poland

575 Modified and conventional contact trans-scleral cyclophotocoagulation for diabetic neovascular glaucoma management

E.A. Mahmoud, S. Fenton, J. Lee, Ireland

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00**SO 46 Diabetic foot: from cost to COVID**

Chair: N. Papanas, Greece

576 Impact of immunosuppressive drugs on the metabolic activity and functional properties of stem cells isolated from the bone marrow of diabetic patients

J. Husakova, B. Echalar, R. Bem, R. Jarosikova, V. Fejfarova, A. Jirkovska, J. Kossel, V. Holan, M. Dubsky, Czech Republic

577 Cost-effectiveness and cost-utility of foot temperature monitoring for preventing diabetic foot ulcer recurrence: a randomised controlled trial

J.J. Van Netten, M.G. Dijkgraaf, W.B. Aan de Stegge, S.A. Bus, Netherlands

578 The impact of the COVID-19 pandemic on the presentation rate and severity of diabetic foot ulcers in Belgium

A.-S. Vanherwegen, P. Lauwers, K. Doggen, F. Nobels, E. Dirinck, IQED-Foot COVID-19 Working Group, Belgium

579 Diabetic foot ulcers: Should a radiological diagnosis of osteitis be treated as osteomyelitis?

K. Bishop, L. Pankaj, D. Hikmat, C. Ooi, UK

580 Enhancement of growth factor expression in chronic diabetic wounds by cold atmospheric plasma: data from the randomised, placebo-controlled, prospective KPWTrial

J. Hiller, B. Stratmann, T.C. Costea, D. Tschoepe, Germany

581 Poor adherence to medication and high HbA_{1c} level predict risk of amputation in patients with diabetes

M. Kaneko, K. Fujihara, M.Y. Harada, M. Kitazawa, Y. Yaguchi, M. Yamamoto, S. Kodama, H. Sone, Japan

582 Evaluation of mortality rate in patients amputated by diabetic foot in a third-level hospital

I. Hernández, A. Ortiz-Zúñiga, A. Pons Bartroli, J. Samaniego, J. Royo Serrando, R. Busquets Net, N. Fernández, R. Simó, C. Hernández, Spain

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

SO 47 Autonomic neuropathy

Chair: C. Hansen, Denmark

583 Does the diagnostic value of the questionnaire for autonomic symptoms COMPASS 31 differ between type 1 and type 2 diabetes?

I. D'Ippolito, M. Menduni, C. D'Amato, C. Greco, M. Leoni, D. Lauro, V. Spallone, Italy

584 Carotid baroreceptor magnetic stimulation abrupt blood pressure elevation buffering, implication to treat unstable hypertension in diabetes

J. Gmitrov, Slovakia, Japan

585 Lowering of blood pressure and pulse rate by switching from DPP-4 inhibitor to luseogliflozin in patients with type 2 diabetes and hypertension

R. Hashimoto-Kameda, K. Cho, H. Nomoto, A. Nakamura, K. Omori, S. Nagai, S. Edagawa, S. Kawata, J. Takeuchi, H. Kameda, Y. Kurihara, T. Atsumi, H. Miyoshi, Japan

586 Association between cardiac autonomic neuropathy, arterial stiffness and diastolic dysfunction in patients with type 2 diabetes

V. Serhiyenko, A. Serhiyenko, V. Segin, L. Serhiyenko, Ukraine

587 Cardiac autonomic function is associated with coronary artery calcification in type 2 diabetes

S. Sivalingam, E.H. Zobel, C.S. Hansen, R.S. Ripa, B.J. Scholten, V.R. Curovic, A. Kjaer, T.W. Hansen, P. Rossing, Denmark

588 Low grade inflammation does not attenuate the association between glycated haemoglobin and parasympathetic tonus in people with type 2 diabetes and pre-diabetes

R. Hadad, S.F. Akobe, P. Weber, P. Kumarathurai, A. Sajadieh, S.B. Haugaard, Denmark

589 Five-year change in body composition is related to heart rate but not related to autonomic dysfunction in The Whitehall II study

C. Hansen, G.S. Andersen, M. Malik, D.R. Witte, E.J. Brunner, A.G. Tabák, M. Kivimäki, D. Vistisen, Denmark, UK

590 Gall bladder ejection fraction as a marker of autonomic neuropathy in type 2 diabetes

N. Dora, A. Shankar, M. Alam, N. Anubhav, India

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

SO 48 Peripheral neuropathy - predictors of disease and prognosis

Chair: F. Picconi, Italy

591 Phase angle as indicator for sarcopenia and diabetic polyneuropathy: a cross-sectional observational study in patients with type 2 diabetes

L. Schimpfle, C. Mooshage, Z. Kender, D. Tsilingiris, F.T. Kurz, J. Szendroedi, J.M. Jende, P. Nawroth, M. Bendszus, S. Kopf, Germany

592 Histamine-induced axon flair response in people with diabetic peripheral neuropathy

J. Roeikjer, S.S. Croosu, T.M. Hansen, J.B. Froekjaer, L. Arendt-Nielsen, C.D. Mørch, N. Ejskjaer, Denmark

593 Altered resting state connectivity in people with diabetic peripheral neuropathy and correlation with functional status

K. Venkataraman, A.Z. Mohamed, F. Nasrallah, Singapore, Australia

594 Relationship between circulating sestrin2 level and diabetic peripheral neuropathy in type 2 diabetic patients

X. Sun, F. Han, E. Mao, C. Kan, N. Hou, China

595 Effect of obesity on the associations of 25-hydroxyvitamin D with prevalent and incident distal sensorimotor polyneuropathy

H. Maalmi, C. Herder, C. Huth, W. Rathmann, G.J. Bönhof, M. Heier, W. Koenig, M. Roden, A. Peters, D. Ziegler, B. Thorand, Germany

596 Diabetic painful neuropathy treatment response with deep learning classification

K. Teh, S. Tesfaye, D. Selvarajah, UK

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

SO 49 Neuropathy: from mechanisms to memory

Chair: S. Tesfaye, UK

597 Brain network disruptions in type 1 diabetes with and without diabetic peripheral neuropathy

S.S. Croosu, J. Røikjer, C.D. Mørch, N. Ejksjaer, J.B. Frøkjær, T.M. Hansen, Denmark

598 Machine learning techniques for the analysis of tactile sensitivity in type 1 diabetes

F. Picconi, A. Moscatelli, A. Pepe, C. Ryan, S. Ciotti, B. Russo, M. Menduni, F. Lacquaniti, S. Frontoni, Italy

599 Mechanism of insulin-induced proliferation and myelin formation in Schwann cells

N. Nakamura, T. Saiki, M. Miyabe, M. Ito, T. Minato, K. Sango, T. Matsubara, K. Naruse, Japan

600 Working memory is affected in type 1 diabetes and neuropathy contributes to the cognitive deterioration

M. Gjela, S.S. Croosu, J. Røikjer, T.M. Hansen, C.D. Mørch, J.B. Frøkjær, N. Ejksjaer, Denmark

601 A novel, multimodal magnetic resonance imaging and a machine learning approach to classifying sensory phenotypes in painful DPN

D. Selvarajah, K. Teh, I. Wilkinson, F. Heiberg-Gibbons, M. Awadh, A. Kelsall, G. Sloan, S. Tesfaye, UK

602 A 5 years follow up observational study of type 1 diabetes patients not attending secondary care clinics

Q. Siah, A. Sharma, A. Howell, C. Dayan, M. Alhadj Ali, UK

Short Oral Discussion Event B, Tuesday, 13:15 - 14:45**SO 50 Nephropathy interventions: from blueberries to SGLT2**

Chair: A. Solini, Italy

603 Blueberry effects on kidney and perirenal adipose tissue in a rat model of high fat diet-induced prediabetic nephropathy

S.D. Viana, P. Vieira, S. Nunes, A. Alves, I. Preguiça, P. Gomes, F. Reis, Portugal

604 S₅-DS-ONJ treatment abrogates the inflammatory events underlying during diabetic nephropathy: the use of adult kidney explants from BB rat as an ex vivo model

A.I. Arroba, L. Gomez-Jaramillo, F. Cano-Cano, E.M. Sanchez-Fernandez, C. Ortiz Mellet, J.M. Garcia-Fernandez, M. Aguilar-Diosdado, Spain

605 Intermittent fasting has short-term effects on albuminuria, AGE formation and acylcarnitines in patients with type 2 diabetes

A. Sulaj, S. Kopf, T. Fleming, A. Teleman, J. Okun, J. Szendroedi, S. Herzig, P. Nawroth, Germany

606 Sodium-glucose cotransporter 2 inhibitors as adjunct therapy for type 1 diabetes and the benefit on cardiovascular and renal disease evaluated by Steno risk engines

E. Buur Stougaard, D. Vistisen, F. Persson, P. Rossing, Denmark

607 Liraglutide plus SGLT2 inhibitors might be synergistically beneficial to reduce progression to end stage renal disease in rapidly progressive diabetes kidney disease

K. Kashima, H. Shimizu, M. Yamada, Japan

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15**SO 51 Burdens and bones in CKD and diabetes**

Chair: S. Hadjadj, France

608 Study of non diabetic kidney disease in type 2 diabetic patients with renal involvement

P. Hans, M. Kumar, India

609 Age-rage and markers of bone metabolism in patients with diabetes type 1 after successful pancreas-kidney transplantation and kidney transplantation alone

A. Severina, I. Larina, I. Maganeva, A. Eremkina, M. Shamkhalova, M. Shestakova, I. Dmitriev, A. Pinchuk, Russian Federation

610 The risk of hip fracture according to the diabetic kidney disease status in the Korean population

S. Lee, H. Choi, J. Yoo, K. Han, K.-A. Kim, Korea, Republic of

611 Reduced levels of the anti-ageing hormone Klotho are associated with increased aortic stiffness in people with type 2 diabetes and kidney disease

N. Fountoulakis, P.-M. Psefteli, R. Siow, L. Gnudi, J. Karalliedde, UK

612 Type 2 diabetes and congestive heart failure are mutually independent predictors of the presence of albuminuria

M. Maechler, A. Vonbank, B. Larcher, A. Mader, L. Sprenger, B. Mutschlechner, M. Benda, A. Muendlein, A. Leiherer, H. Drexel, C.H. Saely, Austria, Liechtenstein

613 Long term complications in type 1 diabetes are associated with an altered inflammatory state: a proteomics approach

M. Ajie, J. Van Heck, R. Stienstra, C.J. Tack, Netherlands

614 Inside CKD: modelling the future global burden of chronic kidney disease in patients with type 2 diabetes

N. Tangri, J. Ärnlöv, M.C. Batista, S. Chadban, G.M. Chertow, L. De Nicola, J.-M. Halimi, E. Kanda, G. Li, F.S. Mennini, J.F. Navarro-González, A. Power, A.A. Sultan, L. Webber, J. Wish, Canada, Sweden, Brazil, Australia, USA, Italy, France, Japan, China, Spain, UK

615 Inside CKD: modelling the direct economic burden of concomitant chronic kidney disease and type 2 diabetes

A. Power, J. Ärnlöv, M.C. Batista, J. Card-Gowers, S. Chadban, G.M. Chertow, L. De Nicola, J.-M. Halimi, E. Kanda, G. Li, F.S. Mennini, J.F. Navarro-González, J.J. Sanchez, N. Tangri, J. Wish, UK, Sweden, Brazil, Australia, USA, Italy, France, Japan, China, Spain, Canada

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

SO 52 Predictors of diabetic kidney disease

Chair: R. Roussel, France

616 Central obesity is associated with the onset of albuminuria in type 1 diabetes

S. Mutter, E.B. Parente, E. Valo, V. Harjutsalo, L. Thorn, C. Forsblom, P.-H. Groop, FinnDiane Study Group, on behalf of the FinnDiane Study Group, Finland

617 Circulating sphingomyelin: A causal risk-factor of chronic kidney disease?

T. Suviataival, P. Rossing, C. Legido-Quigley, Denmark, UK

618 Heparin cofactor II prevents the development of albuminuria in patients with diabetes

T. Hara, Y. Mitsui, S. Masuda, K. Kurahashi, S. Yoshida, T. Otda, T. Yuasa, A. Kuroda, I. Endo, M. Matsuhisa, M. Abe, K.-I. Aihara, Japan

619 Factors associated with occupational sitting in type 1 diabetes

M. Seppälä, H. Tikkanen-Dolenc, C. Forsblom, J. Wadén, M.I. Eriksson, V. Harjutsalo, P.-H. Groop, L.M. Thorn, On behalf of the FinnDiane Study Group, Finland

620 Association between central obesity and rapid decline of eGFR in type 1 diabetes

E.B. Parente, S. Mutter, E. Valo, V. Harjutsalo, C. Forsblom, P.-H. Groop, on behalf of the FinnDiane Study Group, Finland

621 Correlation of urine copper level and microalbuminuria in type 2 diabetic patients

S. Pattanaik, A. Sinha, R. Rajan, A. Mahapatra, India

Short Oral Discussion Event E, Thursday, 11:45 - 13:15**SO 53 New insights from animal models of complications**

Chair: K. Jandeleit-Dahm, Germany

622 Adaption of oxidative phosphorylation machinery compensates hepatic lipotoxicity in early stages of fatty liver

P. Fahlbusch, A. Nikolic, N.-K. Riffelmann, S. Jacob, H. Al-Hasani, S. Hartwig, S. Lehr, B. Knebel, J. Kotzka, Germany

623 Iron aggravates hepatic insulin resistance in the absence of inflammation in a novel db/db mouse model with iron overload

S. Altamura, K. Müdder, A. Schlotterer, T. Fleming, E. Heidenreich, R. Qiu, H. Hammes, P. Nawroth, M. Muckenthaler, Germany

624 Impact of lipotoxicity on mitochondrial DNA modifications in liver and muscle

A. Nikolic, N.-K. Riffelmann, P. Fahlbusch, S. Jacob, H. Al-Hasani, J. Kotzka, B. Knebel, Germany

625 Yg1699, a novel dual systemic SGLT1 and SGLT2 inhibitor, decreases blood glucose and improves kidney function in primates with diabetic kidney disease

C. Li, R. Xu, H. Wang, P. Strumph, J. He, D. Li, China

626 GLP-1 receptor agonists attenuates extracellular matrix secretion via inhibiting HMGB1 signalling in rat mesangial cells

W.S. Gu, Z.W. Wang, M. Shi, H. Zhang, China

627 The role of Nox4-ROS in driving obesogenic bone marrow mesenchymal stem cell phenotype in mice

J.M. Bond, A. Benova, M. Ferencakova, B. Prakash, A.K. Addington, K.S. Specht, S.M. Craige, M. Tencerova, USA, Czech Republic

628 Supplementation of methylglyoxal in drinking water does not affect the cerebral microvasculature and cognitive function in non-diabetic mice

E. Berends, N. Amiri, M.P. Van de Waarenburg, J.L. Scheijen, D.J. Hermes, R.J. Van Oostenbrugge, S. Foulquier, C.G. Schalkwijk, Netherlands

629 Upregulation of hepatic β -oxidation-linked mitochondrial respiration in experimental models of diabetes and fatty liver disease

B. Dewidar, M. Reina Do Fundo, C. Englisch, L. Mastrototaro, D. Pesta, F. Zivehe, C. Röss, I. Esposito, M. Roden, Germany, Austria

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

SO 54 Pathogenic mechanisms of complications

Chair: S.R. Heller, UK

630 Continuous glucose monitoring parameters are related to serum levels of non-enzymatic glycation products in patients with type 1 diabetes

V.V. Klimontov, M.V. Dashkin, J.F. Semenova, Russian Federation

631 Assessment of healthy people and type 2 diabetes patients on skeletal muscle with T1 ρ MRI of calf muscle

L. Guo, China

632 Dynamics of hexokinase-2 linked glycolytic overload mediating endothelial cell dysfunction in high glucose concentration in vitro

P. Thornalley, M. Xue, N. Rabbani, Qatar

633 Fructosamine 3-kinase: activity and polymorphisms of important deglycation enzyme in patients with diabetes

J. Skrha jr, M. Flekac, M. Kalousova, M. Prazny, J. Skrha, Czech Republic

634 Indices of uric acid metabolism as marker of anabolic - catabolic balance in men and women with type 2 diabetes with different phenotypes

A.A. Shuprovich, O.V. Zynych, O.V. Prybyla, N.N. Kushnareva, A.V. Kovalchuk, V.V. Korpachev, Ukraine

635 Proton pump inhibitor induced hypomagnesaemia and mortality: a mediation analyses of the diabetes care system cohort

E.A. Vermeulen, T. Hoekstra, J.J. Rijnhart, J.D. Mackenbach, M.G. Vervloet, J.W. Beulens, Netherlands

636 Pancreas volume in patients with type 1 diabetes: What does it depends on?

M. Ragimov, O. Derevyanko, N. Malysheva, D. Babaeva, L. Ibragimova, T. Nikonova, M. Shestakova, Russian Federation

637 Nodular goiter increases a risk of neurovascular complications in adult patients with type 1 diabetes

A. Rogowicz-Frontczak, B. Falkowski, D. Zozulinska-Ziolkiewicz, Poland

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

SO 55 Not so sweet: cancer and diabetes

Chair: J. Gojda, Czech Republic

638 A CT-Scanner to detect cancer in subjects hospitalised for uncontrolled diabetes and weight loss

M.-A. Barbet-Massin, France

639 The effect of the Danish National colorectal screening program on detecting cancer for patients with diabetes

T. Laurberg, A. Nannsen, L.B. Hansen, M.B. Larsen, B. Andersen, A. Sandbaek, Denmark

640 Cancer cachexia is associated with beta cell dysfunction: cross-sectional study in patients with pancreatic cancer

J. Gojda, E. Vokatý, L. Rossmeislová, P. Tůma, M. Anděl, F. Karpe, Czech Republic, UK

641 Immune infiltration of CD8+ T cells in patients with diabetic pancreatic cancer reduces the malignancy of cancer tissues

Z. Ye, Y. Lv, Y. Zhang, J. Bao, L. Li, China

642 Assessment of glucose metabolic disorders in management of prostate cancer with GnRH agonists

E. Gritskevich, T. Demidova, Russian Federation

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

SO 56 Looking at the brain and its function

Chair: R. McCrimmon, UK

643 Seeing the brain through the eye: relationship between lower retinal thickness and altered grey matter structure

R.B. Rodrigues, H.-T. Nguyen, R.G. IJzerman, F.J. Snoek, F. Barkhof, M. Klein, A.C. Moll, E. Van Duinkerken, F.D. Verbraak, Brazil, Netherlands, UK

644 Retinal microperimetry: an useful tool for the monitoring of the cognitive function in patients with type 2 diabetes

A. Rojano Toimil, O. Simó-Servat, A. Ortiz-Zuñiga, I. Hernandez Hernandez, E. Cordero Vazquez, C. Hernandez Pascual, R. Simó, A. Ciudin, Spain

645 The impact of type 1 diabetes on brain volumes in neurologically asymptomatic adults

T. Claesson, J. Putaala, S. Shams, E. Salli, D.T. Gordin, R. Liebkind, C. Forsblom, T. Tatlisumak, P.-H. Groop, J. Martola, L.M. Thorn, on behalf of the FinnDiane Study Group, Finland, USA, Sweden

646 Reduced cortical gyrification in middle-aged patients with type 1 diabetes is related to lower white matter integrity and worse cognitive performance

J. Dos Santos Silva, R.G. IJzerman, M. Klein, F. Barkhof, A.C. Moll, F.J. Snoek, E. Van Duinkerken, Brazil, Netherlands, UK

647 Cerebral and peripheral microcirculation in type 2 diabetes and obesity, influence of neuropathy and C-peptide

M. Káplár, R. Esze, L. Rajnai, Z. Képes, S. Somodi, M. Emri, I. Garai, Hungary

648 Neuroprotective effects of Zfra 1-31 peptide against high glucose-induced mitochondrial and autophagy defects

C. Carvalho, P.I. Moreira, Portugal

Short Oral Discussion Event C, Wednesday, 11:45 - 13:15**SO 57 All you need to know about atherosclerosis and diabetes**

Chair: M. Mraz, Czech Republic

649 Safety, efficacy and feasibility of a modified variable rate intravenous insulin infusion regime in treating hyperglycaemia in acute coronary syndrome

A.L. Liarakos, P. Tran, M. Keegan, T. Robbins, N. Murthy, H. Randeva, N.N. Gholap, UK

650 Estimated risk of atherosclerotic cardiovascular disease and heart failure in type 2 diabetes without previous cardiovascular events

R. Cannistraci, M. Pozzoli, S. Ciardullo, E. Muraca, G. Manzoni, S. Perra, F. Zerbini, E. Bianconi, A. Mortara, G. Lattuada, G. Perseghin, Italy

651 Coronary calcification and HbA_{1c} in the north Staffordshire cohort of the UK-based national targeted lung health check

S. Raza, I. Hussain, J. Barnett, C. Gidlow, G. Owen, F. Hanna, A. Fryer, UK

652 Disse insulin resistance index is a predictor of hospital outcome of coronary artery bypass grafting in patients with diabetes type 2, prediabetes and normoglycaemia

N. Bezdenezhnykh, A. Sumin, A. Bezdenezhnykh, A. Osokina, A. Kuz'mina, A. Tsepokina, M. Noskov, S. Petrosyan, O. Barbarash, Russian Federation

653 Glucose variability is associated with an adverse vascular profile but only in the presence of insulin resistance in individuals with type 1 diabetes

N. Kietsiroje, R.A. Ajjan, M.D. Campbell, UK, Thailand

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

SO 58 Brain, kidney and vascular complications

Chair: P. Fioretto, Italy

654 The impact of obstructive sleep apnoea on macro- and micro-vascular complications in patients with type 1 diabetes: a population-based retrospective cohort study

Z. Alshehri, A. Subramanian, N.J. Adderley, K.M. Gokhale, M. Karamat, C.J. Ray, P. Kumar, K. Nirantharakumar, A.A. Tahrani, Saudi Arabia, UK

655 Cerebral small vessel disease does not associate with blood glucose control in neurologically asymptomatic individuals with type 1 diabetes

J. Inkeri, K. Adeshara, V. Harjutsalo, C. Forsblom, R. Liebkind, T. Tatlisumak, L.M. Thorn, P.-H. Groop, J. Martola, J. Putaala, D. Gordin, Finland, Sweden

656 Assessment of metabolic risk following initial presentation to transient ischaemic attack clinic

V.C. Shaw, H. Binns, G.A. Doolan, G. Chander, S. Saraf, A. Puttanna, UK

657 Prediction of chronic kidney disease in people with diabetes

N. Afshar, M. Andorra, S. Chittajallu, T. Huschto, V. Babinsky, H. Mikulski, H. Koenig, C. Ringemann, J. Odegard, I. Singh, USA, Spain, Germany, Austria

658 The ceramide- and phosphatidylcholine- based Coronary Event Risk Test 2 (CERT2) and cardiovascular mortality in men and women with type 2 diabetes

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

659 Type 2 diabetes, chronic kidney disease and major cardiovascular events in patients with established coronary artery disease

L. Sprenger, A. Vonbank, B. Larcher, A. Mader, M. Maechler, B. Mutschlechner, M. Benda, A. Leiherer, A. Muendlein, H. Drexel, C.H. Saely, Austria, Liechtenstein

660 Combined dulaglutide-dapagliflozin treatment improves vascular dysfunction and albuminuria vs DPP4 inhibitors independently of glycaemic control

E. Korakas, I. Ikonomidis, J. Thymis, A. Kountouri, K. Katogiannis, D. Benas, V. Prentza, K. Balampanis, L. Pliouta, F. Kousathana, G. Kostelli, G. Dimitriadis, A. Raptis, V. Lambadiari, Greece Z. Huang, K. Ng, Z. Zhang, J. Li, W. Deng, Y. Li, China

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

SO 59 Vascular complications: mechanisms and risk factors

Chair: M. Dubsky, Czech Republic

661 Diabetic retinopathy and skin tissue advanced glycation end products are biomarkers of vascular events in type 2 diabetic patients: results of the prospective precised study

A. Planas Vilaseca, O. Simó-Servat, J. Bañeras, C. Hernández, I. Ferreria-González, R. Simó, Spain

662 Type 2 diabetes and risk of major cardiovascular events in peripheral artery disease versus coronary artery disease patients

C. Saely, A. Vonbank, B. Larcher, A. Mader, M. Maechler, L. Sprenger, B. Mutschlechner, M. Benda, A. Muendlein, A. Leiherer, H. Drexel, Liechtenstein, Austria

663 The role of visceral and subcutaneous adipose tissue distribution determined by CT in the development of subclinical atherosclerosis in type 2 diabetes and obesity

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

664 Elevated serum transferrin may play a vasoprotective role in individuals with type 2 diabetes

A. Ruban Agarvas, S. Kopf, S. Altamura, N. Volk, P. Nawroth, M.U. Muckenthaler, Germany, India

665 Long-term palmitate treatment attenuates endothelial barrier via increased mitochondrial reactive oxygen species and malondialdehyde

A.V. Vorotnikov, M.V. Samsonov, N.V. Podkuychenko, A.Y. Khapchaev, I.S. Stafeev, M.Y. Menshikov, T.N. Vlasik, E.E. Efremov, V.Z. Lankin, M.V. Skulachev, M.V. Shestakova, V.P. Shirinsky, Russian Federation

666 Vascular complications in patients with type 2 diabetes and associated factors in Maghreb (Algeria and Tunisia cohort of the DISCOVER study programme)

R. Malek, M. Azzouz, D. Roula, M. Brouri, A. Hadaoui, Algeria

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

SO 60 Hepatic fibrosis: from screening to treatment

Chair: C. Postic, France

667 Non invasive blood based biomarkers as screening tools for hepatic fibrosis in subjects with type 2 diabetes

A. Meritsi, D. Latsou, E. Manesis, I. Tsoralis, M. Noutsou, I. Gatos, I. Theotokas, P. Zoumpoulis, S. Rapti, E. Tsitsopoulos, P. Koussis, H. Moshoyianni, S. Manolakopoulos, D. Pektasidis, A. Thanopoulou, Greece

668 Anti-fibrotic potential of a novel long-acting glucagon/GIP/GLP-1 triple agonist (HM15211) in preclinical models of fibrosis

J. Kim, J. Lee, S. Lee, H. Kwon, E. Park, S. Bae, D. Kim, Y. Kim, I. Choi, Korea, Republic of

669 Anti-fibrotic effect of a novel long-acting GLP-1/GCG/FGF21/anti-cytokine tetra-specific drug (OGB21502) in CCl₄-induced liver fibrosis mice

M. Kim, R. Kim, Y. Kim, D. Im, S. Park, Korea, Republic of

670 Therapeutic effect of a novel long-acting GLP-1/GCG/FGF21/anti-cytokine tetra-specific drug (OGB21502) in MCD diet-fed NASH mice model

R. Kim, M. Kim, Y. Kim, D. Im, S. Park, Korea, Republic of

671 Growth differentiation factor-15 as a mediating factor in the association between type 2 diabetes and liver fibrosis in NAFLD

J. Bilson, E. Scorletti, L.B. Bindels, P.R. Afolabi, G. Targher, P.C. Calder, J.K. Sethi, C.D. Byrne, UK, Belgium, Italy

672 Relationship between advanced liver fibrosis using transient elastography and diabetic complications: data in 684 patients from the Angiosafe T2D cohort

T. Vidal Trecañ, J.-B. Julla, D. Bellili, A.-F. Herrou, J.-P. Riveline, D. Valla, J.-F. Gautier, L. Castera, France

673 Main determinants of NAFLD based on fibroscan in early stages of glucose intolerance

R. Dimova-Draganova, N. Chakarova, M. Serdarova, C. Marinova, L. Mateva, D. Popov, S. Del Prato, T. Tankova, Bulgaria, Italy

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

SO 61 Fatty liver always hides some complications

Chair: M.P. Macedo, Portugal

674 Nonalcoholic fatty liver disease, liver fibrosis and cardiovascular disease in the general US population

G. Perseghin, R. Cannistraci, S. Mazzetti, A. Mortara, S. Ciardullo, Italy

675 Increased risk of hospitalisations in type 2 diabetes (T2D) with non-alcoholic steatohepatitis (NASH): a prospective study from Hong Kong Diabetes Register

A. Pik-Shan Kong, E. Lau, E. Chow, A. Luk, R. Ma, J. Chan, Hong Kong

676 Subjects with NASH and diabetes have a more unfavourable metabolic profile compared to NAFL with and without diabetes: results from the EPOS study

S. Sabatini, M. Gaggini, M. Allison, R. Younes, C. Rosso, J.M. Schattenberg, V. Ratzl, E. Bugianesi, Q.M. Anstee, A. Gastaldelli, Italy, UK, Germany, France

677 Non-alcoholic fatty liver disease in overweight subjects related to impaired glucose control and increased insulin resistance

T. Forst, I. Botz, M. Berse, A. Schultz, M.-E. Strempler, S. Vosswinkel, S. Baumann, Germany

678 Association between non-alcoholic liver fibrosis scoring systems and micro-macrovascular complications

H. Ataoglu, Ş. Yıldız Şahin, S. Özkabakçı, Turkey

679 Congestive heart failure and the metabolic syndrome are mutually independent predictors of non-alcoholic fatty liver disease

B. Mutschlechner, M. Maechler, A. Vonbank, B. Larcher, A. Mader, L. Sprenger, A. Leiherer, A. Muendlein, M. Benda, H. Drexel, C.H. Saely, Austria, Liechtenstein

680 Current type 2 diabetes, rather than previous gestational diabetes, is associated with liver disease in U.S. women

S. Ciardullo, E. Bianconi, F. Zerbini, G. Perseghin, Italy

681 Non-alcoholic fatty liver indices and their association with glucose metabolism in pregnancy

D. Eppel, T. Linder, G. Kotzaeridi, I. Rosicky, G. Yerlikaya-Schatten, K. Weisshaupt, W. Henrich, A. Tura, M. Roden, C.S. Göbl, Austria, Germany, Italy

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

SO 62 Cardiovascular complications and drugs

Chair: J. Petrie, UK

682 Lipid-lowering in diabetes is not intensified beyond 3-months if coronary angiography with fractional flow reserve (FFR) suggests non-obstructive coronary artery disease

R.S. Vasudevan, I. Xu, H. You, R. Xu, P.R. Taub, M.J. Wilkinson, USA

683 The rate of decline in nocturnal interstitial glucose concentrations influences some electrocardiogram parameters in type 1 diabetes

M. Smallman, O. McCarthy, J. Pitt, R.M. Bracken, UK

684 Empagliflozin ameliorates obesity-induced cardiac dysfunction via activating SIRT3-mediated autophagy

J. Zhang, N. Hou, F. Han, Y. Ma, T. Ye, X. Sun, China

685 Efficacy of intravenous ferric carboxymaltose in patients with iron deficiency following acute heart failure, by diabetes status: a subgroup analysis of the AFFIRM-AHF trial

G. Rosano, P. Ponikowski, C. Vitale, S.D. Anker, J. Butler, V. Fabien, G. Filippatos, B.-A. Kirwan, I.C. Macdougall, M. Metra, F. Ruschitzka, S. Waechter, P. Van der Meer, E.A. Jankowska, on behalf of the AFFIRM-AHF investigators, UK, Poland, Germany, USA, Switzerland, Greece, Italy, Netherlands

686 Effect of saxagliptin on LV structure and function in patients with type 2 diabetes and heart failure: results of measure-HF

P. Bertram, B. Reicher, R.E. Gilbert, S.B. Morgan, K. Swedberg, A.M. Langkilde, J. Monyak, N. Zaozerska, M.N. Kosiborod, USA, Canada, Sweden, Poland

687 Oleate prevents palmitate-induced abnormalities in insulin signalling in human cardiac progenitor cells

R. D'Oria, C. Caccioppoli, R. Schipani, V.A. Genchi, A. Leonardini, G. Santarpino, A. Natalicchio, S. Perrini, A. Cignarelli, A. Milano, L. Laviola, F. Giorgino, Italy

688 Cardiovascular autonomic neuropathy and risk of heart failure in participants with type 2 diabetes enrolled in the DEVOTE trial

R. Pop-Busui, L. Ang, S. Hayek, K. Mizokami-Stout, E. Parvaresh Rizi, I. Lingvay, on behalf of the DEVOTE Study Group, USA, Denmark

689 Meta-analysis of SGLT inhibitors on cardiovascular death or heart failure hospitalisation based on presence of type 2 diabetes, heart failure, or chronic kidney disease

K. Charalampidis, T. Karagiannis, A. Liakos, P. Kakotrichi, A. Tsapas, E. Bekiari, Greece, UK

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

SO 63 COVID-19: from the known to unknown

Chair: K. Khunti, UK

690 Characteristics and predictors of mortality in diabetes patients hospitalised with COVID-19: a single-centre cohort study from Poland

K. Mazur, M. Kania, M. Terlecki, Z. Chaykivska, M. Fiema, M. Kopka, M. Kostrzycka, M. Wilk, J. Hohendorff, T. Klupa, P. Witek, M. Rajzer, B. Katra, M.T. Małeck, Poland

691 The impact of acute-to-chronic glycaemic ratio as a predictor of COVID-19 severity and mortality

J. Ramon, G. Llaureadó, R. Güerri, J.-J. Chillarón, E. Climent, S. Ballesta, D. Benaiges, H. Navarro, N. Fernández, M. Carrera, J.A. Flores-Le Roux, on behalf of COVID-MAR study group, Spain

692 Bamlanivimab + etesevimab for the treatment of COVID-19 in high-risk ambulatory patients including those with diabetes

A. Tahbaz, M. Dougan, A. Nirula, R. Gottlieb, M. Azizad, B. Mocherla, P. Chen, G. Huhn, A. Adams, A. Schade, J. Sabo, D. Patel, P. Klekotka, L. Shen, D. Skovronsky, USA

693 The effectiveness of selected temporary testing protocols for gestational diabetes during the COVID-19 pandemic

M. Kania, M. Kwiatkowska, K. Cyganek, M. Szopa, Poland

694 How COVID-19 has impacted diabetes management in the United States (iNPHORM study)

A. Ratzki-Leewing, S. Harris, J.E. Black, B.L. Ryan, G. Zou, Canada

695 Effects of COVID-19 lockdown on health care for persons with type 2 diabetes in Germany: results from an electronic medical record database

B. Kowall, K. Kostev, R. Landgraf, H. Hauner, R. Bierwirth, W. Rathmann, Germany

Short Oral Discussion Event D, Wednesday, 13:30 - 15:00**SO 64 Cardiac complications in diabetes and prediabetes**

Chair: K. Strojek, Poland

696 Obesity and decreased vibration perception associated with premature cardiovascular mortality in a single centre prospective of study of people with diabetes

D.S. Tesic, D. Andric, M.T. Tomic, S. Andric, M.D. Tomic, Serbia

697 Impact of prediabetes in heart failure with preserved ejection fraction: the NetDiamond cohort

M. Borges-Canha, F. Vasques-Nóvoa, F. A. Saraiva, A. Leite, A. Oliveira, J. Neves, M. Von Hafe, C. Vale, D. Carvalho, A. Leite-Moreira, Portugal

698 Respective role of NT-proBNP and coronary artery calcium score for the detection of silent coronary disease in asymptomatic patients with diabetes

S. Pinto, N. Berkane, M. Nguyen, N. Sellier, E. Cosson, P. Valensi, France

699 WITHDRAWN

700 To study the relationship between the mean platelet volume, immature platelet fraction, and glycaemic control in type 2 diabetes patients

S. Ahsan, R. Roy, M. Prasad, A. Gaurav, India

701 Type 2 diabetes significantly modulates the power of lipoprotein (a) to predict cardiovascular events and mortality in young coronary artery disease patients

A. Vonbank, A. Mader, M. Maechler, B. Larcher, L. Sprenger, B. Mutschlechner, M. Benda, A. Muendlein, A. Leiherer, H. Drexel, C.H. Saely, Austria, Liechtenstein

702 Remnant cholesterol in patients with established cardiovascular disease predicts cardiovascular events both among patients with type 2 diabetes and among non-diabetic subjects

H. Drexel, A. Mader, L. Sprenger, A. Vonbank, B. Larcher, M. Maechler, B. Mutschlechner, M. Benda, A. Leiherer, A. Muendlein, C.H. Saely, Austria, Liechtenstein

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 Afi Leslie, K. 217
 Afshar, N. 657
 Ahmed, F. 421
 Ahmed, M. 81
 Ahola, A. J. 283
 Ahsan, S. 700
 Ajie, M. 613
 Akalestou, E. 430
 Akil, A. A.-S. 301
 Al-Mrabeh, A. 41
 Al-Rubeaan, K. 296
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 Al-Sari, N. 157
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 Banu, B. 529
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A.J.M. Boulton, UK	N. Lalic, RS
F. Bosch, ES	M. Nauck, DE
M. Donath, CH	U. Smith, SE
F. Dotta, IT	A. Tsapas, GR
G.P. Fadini, IT	J. Zierath, SE

EFSD Grant and Fellowship Programmes

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

Boehringer Ingelheim:

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

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

EUDF:

EFSD and EUDF Digitalisation in Diabetes Care Research Grant

This Programme is intended to stimulate and accelerate European research aimed at optimising the use of technology, digital health and innovative treatments to support self-care by people with diabetes, to prevent complications and support quality of life.

Japan Diabetes Society:

EFSD/JDS Reciprocal Travel Research Fellowships

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

JDRF and Lilly:

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

This Programme aims to increase awareness and promote the highest quality of basic biomedical and clinical research in Europe and its associated countries applicable to type 1 diabetes.

Lilly:

EFSD/Lilly European Diabetes Research Programme

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

EFSD/Lilly Young Investigator Research Award Programme

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

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

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

Merck Sharp & Dohme:

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

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

Novo Nordisk A/S:

EFSD/Novo Nordisk Programme for Diabetes Research in Europe

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

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

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

Novo Nordisk Foundation:

EFSD/Novo Nordisk Foundation Future Leaders Award Programme

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

EFSD/Novo Nordisk Foundation Precision Diabetes Medicine Award Programme

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

EFSD Anniversary Fund:

Supported by Boehringer Ingelheim, Lilly and Novo Nordisk

This multi supported programme joins in the celebration of the 100-Year Anniversary of the discovery of insulin with the aim at supporting the most talented investigators in the fields of diabetes research in Europe. Projects may be basic, translational and/or clinical research on diabetes or its comorbidities and complications.

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

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

Further information on EFSD programmes can be found under:

www.EuropeanDiabetesFoundation.org

**SYMPOSIA
ON THE OCCASION
OF THE
57th ANNUAL MEETING
OF THE
EUROPEAN ASSOCIATION
FOR THE STUDY
OF DIABETES**

IDF EUROPE SYMPOSIUM: THE USE OF DATA IN DIABETES - A PATIENT- CENTRED APPROACH

Monday, 27 September 2021

14:30 - 15:45

Berlin Hall

Panel discussion moderated by N. Pall, IDF Europe Chair

DIABETIC FOOT STUDY GROUP SYMPOSIUM: WHAT DO I NEED TO KNOW ABOUT DIABETIC FOOT TODAY?

Tuesday, 28 September 2021

08:30 - 10:00

Berlin Hall

Chairs: N. Papanas, Greece; F. Game, UK

R. Anichini, Italy:
Epidemiology and COVID-19

N. Petrova, UK:
Charcot osteoarthropathy

E. Brocco, Italy:
Diagnosis and prevention of peripheral arterial disease

S. Bus, Netherlands:
Prevention and preventative offloading

J.L. Lázaro-Martínez, Spain:
Physician and surgeon hand-in-hand

Discussion

DIAB IMAGE - BIOMEDICAL IMAGING IN DIABETES STUDY GROUP SYMPOSIUM

Tuesday, 28 September 2021

10:30 - 12:30

Berlin Hall

Chairs: O. Eriksson, Sweden; M. Gotthardt, Netherlands; V. Schrauwen, The Netherlands

O. Eriksson, Sweden:

Welcome address and update on the study group activities

P. Iozzo, Italy:

Investigation of metabolism by PET-CT

M. Krssak, Austria:

Magnetic Resonance Spectroscopy as a tool to investigate metabolic changes in insulin resistance and diabetes

Closed session - annual study group meeting

D&CVD STUDY GROUP SYMPOSIUM: TOWARDS HEART FAILURE AND CARDIOMETABOLIC MANAGEMENT IN TYPE 2 DIABETES

Tuesday, 28 September 2021

13:00 - 15:00

Berlin Hall

Chairs: D. Catrinou, Romania; O. Schnell, Germany

A. Ceriello, Italy:

Welcome

P. Valensi, France:

An homage to 100 years of insulin therapy: What has been achieved regarding cardiovascular complications?

A. Ceriello, Italy:

How can we compromise between gluco- and cardio-centric management of diabetes?

N. Lalic, Serbia:

Heart failure in diabetes mellitus: the role of the diabetologist in the interdisciplinary diagnostic assessment

B. Itzhak, Israel:

Heart failure management: a perspective from diabetes care

E. Standl, Germany:

Heart failure outcomes and COVID-19

General discussion and close

**RMSG SYMPOSIUM:
REACTIVE METABOLITES AND INCREASED RISK
OF SEVERE COVID-19 DISEASE IN OBESITY
AND DIABETES**

Tuesday, 28 September 2021

16:00 - 17:00

Berlin Hall

Chairs: P.J. Thornalley, Qatar; N. Rabbani, Qatar

A. Ceriello, Italy:

Could increased reactive oxygen species (ROS) contribute to severe COVID-19 in obesity and diabetes?

P.J. Thornally, Qatar:

Increased methylglyoxal in obesity and diabetes – friend or foe of SARS-CoV2?

EDNSG SYMPOSIUM: HOT TOPICS IN DIABETES KIDNEY DISEASE

Wednesday, 29 September 2021

08:00 - 10:30

Berlin Hall

Chair: L. Gnudi, UK

H. L. Heerspink, Netherlands:

Clinical trials in DKD – from one size fits all to one fit for everyone

S. Satchell, UK:

Mechanisms of glomerular filtration and disruption in diabetic kidney disease

R. Schmieder, Germany:

Diagnosis and prevention of peripheral arterial disease

N. Montserrat, Spain:

Stem cells and organoids: new avenues in diabetic nephropathy research

L. Gnudi, UK:

Close

**STUDY GROUP ON METABOLIC SURGERY
SYMPOSIUM:
CREATING A NETWORK ON METABOLIC SURGERY
FOR THE TREATMENT OF METABOLIC DISEASE**

Wednesday, 29 September 2021

11:00 - 12:00

Berlin Hall

Chairs: G. Mingrone, Italy; G. Casella, Italy

G. Mingrone, Italy:

Introduction to the MSSG study group

G. Angelini, Italy:

Molecular mechanism of metabolic surgery

M. F. Russo, Italy:

Relationship between body composition and NASH

D. Tsilingiris, Greece:

Long-term effects of bariatric surgery on gut peptide responses and markers of insulin resistance; association with appetite and weight loss

W. Al-Najim, Ireland:

How can IMI SOPHIA benefit to our understanding of predictors of response to metabolic surgery?

T. Le Roy, France:

Gut microbiota, bariatric surgery and diabetes resolution

DESG SYMPOSIUM: THERAPEUTIC PATIENTS' EDUCATION - ONE YEAR EXPERIENCE DURING COVID-19 PANDEMIC

Wednesday, 29 September 2021

12:30 - 14:30

Berlin Hall

Chairs: F. Toti, Albania; M. Hassanein, UK

F. Toti, Albania; I. Alimehmeti, Albania; E. Nelaj, Albania; D. Doracaj, Albania:

Impact of COVID-19 in diabetes and other chronic diseases management

M. Hassanein, UK:

Inpatient management during COVID time: Can technology help?

A. Gupta, India; R. Gupta, India:

Diabetes democracy through digital patient education and training

B. Stepanow, Poland:

The effectiveness of the Diabetofon hotline during COVID-19

Questions and answers

Round table: Therapeutic patients' education in COVID time

D. Rahelic, Croatia; J. Raposo, Portugal; T. Milenkovic, North Macedonia; T. Tankova, Bulgaria; B. Saboo, India; A. Majchrzak, Poland; I. Vlasenko, Ukraine; S. P. Montesinos

T. Milenkovic, North Macedonia; F. Toti, Albania:

Closure

EGIR SYMPOSIUM: WHAT'S THE MATTER WITH ADIPOSE TISSUE AND INSULIN RESISTANCE?

Wednesday, 29 September 2021

15:00 - 15:45

Berlin Hall

Chairs: M. Manco, Italy; A. Gastaldelli, Italy

P. Scherer, USA:

Adipose tissue as a major determinant of systemic insulin sensitivity

T.V. Puig:

Adipose tissue expandability, lipotoxicity and metabolic syndrome

Discussion

NAFLD STUDY GROUP SYMPOSIUM: WHAT'S THE MATTER WITH ADIPOSE TISSUE AND HEPATIC STEATOSIS?

Wednesday, 29 September 2021

16:15 - 17:00

Berlin Hall

Chairs: C. Postic, France; A. Gastaldelli, Italy

S. Klein, Germany:

Alterations in adipose tissue biology in people with hepatic steatosis

M. Roden, Germany:

**Differences in hepatic steatosis and metabolic features of novel
diabetes subtypes**

Discussion

**PCDE SYMPOSIUM:
RESEARCH OUTPUT DURING THE COVID-19
PANDEMIC**

Thursday, 30 September 2021

08:00 - 09:30

Berlin Hall

Chair: P. Topsever, Turkey

**P. Topsever, Turkey:
Introduction**

**S. Kunutsor, UK:
Indirect effect of COVID pandemic on cardiovascular hospitalisations**

**S. van Grondelle, Netherlands:
Impact of COVID pandemic on primary care workforce**

**S. Seidu, UK:
Combined effect of SGLT-2 Is and RAAS Blockage on cardio-renal
outcomes**

**L. i Arboix, Spain:
Diabetes foot risk assessment in primary care**

**P. Topsever, Turkey:
Concluding remarks**

NEURODIAB SYMPOSIUM: DIABETIC NEUROPATHY - THE UNATTENDED BORDERLINE

Thursday, 30 September 2021

10:00 - 12:00

Berlin Hall

Chairs: P. Kempler, Hungary; S. Tesfaye, UK

**U. Alam, UK:
Neuropathy in prediabetes**

**S. Frontoni, Italy:
Diabetic neuropathy: a new vision**

**A. Körei, Hungary:
Do we still need all five standard tests in the diagnosis of
cardiovascular autonomic neuropathy?**

**D. Ziegler, Germany:
Evidence based pharmacotherapy of diabetic polyneuropathy**

**M. Yorek, USA:
Is there an experimental evidence for the neuroprotective role of
insulin?**

HSRHE SYMPOSIUM: HEALTH CARE, HEALTH OUTCOMES AND COSTS FOR PEOPLE WITH DIABETES DURING THE COVID-19 PANDEMIC AND BEYOND

Thursday, 30 September 2021

12:30 - 14:30

Berlin Hall

Chairs: A. Icks, Germany; W. Jeffcoate, UK

M. Narres, Germany:

Hospitalisation rate and mortality among people with and without diabetes during the COVID-19 pandemic year 2020 in comparison to previous years

N. Sattar, UK:

The effects of COVID-19 on the health of people with diabetes

G. Booth, Canada:

Diabetes and COVID-19 severity: a systematic review of the literature

R. Geurten, Netherlands:

Delineating the type 2 diabetes population in the Netherlands using an all-payer claims database: specialist care, medication utilisation and expenditures 2016–2018

A. Icks, Germany:

The future plans of the study group

INTERNATIONAL HYPOGLYCAEMIA STUDY GROUP SYMPOSIUM: LONG-TERM COGNITIVE CONSEQUENCES OF SEVERE HYPOGLYCAEMIA

Thursday, 30 September 2021

15:00 - 17:00

Berlin Hall

Chair: S. Heller, UK

S. Heller, UK:

Welcome and introduction

B. Frier, UK:

**Hypoglycaemia and cognition in type 1 diabetes: new perspectives
from the DCCT/EDIC cohort**

R. McCrimmon, UK:

Hypoglycaemia and cognition in type 2 diabetes

E. Seaquist, USA:

**Blood glucose and cognition: mechanism of the long-term
consequences of severe hypoglycaemia**

L. Gonder-Frederick, USA:

Prevention of cognitive impairment

T. Jones, Australia:

Hypoglycaemia in the paediatric population

Panel discussion: Implications & call to action

S. Heller, UK:

Closing



Industry Sessions

on the occasion of the
57th EASD Annual Meeting

www.easd-industry.com

Organised by



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INDUSTRY SESSION SCHEDULE

Industry Day

Moscow Hall		Novo Nordisk 14:30-16:10
Paris Hall	SANOFI 10:30-12:00	
London Hall		AstraZeneca 14:30-16:00
Madrid Hall		Abbott Diabetes Care 14:30-15:30
Barcelona Hall		MSD 14:30-15:30
Saint Petersburg Hall	Dexcom 12:30-13:30	

INDUSTRY SESSION SCHEDULE

Monday, 27 September 2021

		Novo Nordisk 16:30-17:30		Novo Nordisk 19:00-19:30	
		SANOFI 16:30-18:00			
				Insulet 19:00-20:30	

INDUSTRY SESSION SCHEDULE

Morning

Moscow Hall	MESI, Ltd. 09:00-09:10	
Paris Hall		Novo Nordisk 09:15-09:45
London Hall		AstraZeneca 09:35-09:45
Madrid Hall		Boehringer Ingelheim & Eli Lilly and Company Alliance 09:35-09:45
Barcelona Hall		Eli Lilly and Company 09:35-09:45

Evening

Moscow Hall	Novo Nordisk 17:40-18:40	
Paris Hall	SANOFI 17:40-18:40	
London Hall	AstraZeneca 17:40-18:40	
Madrid Hall	Boehringer Ingelheim & Eli Lilly and Company Alliance / PACE-CME 17:40-18:10	
Barcelona Hall	Ypsomed AG 17:40-19:10	
Saint Petersburg Hall	Medtronic 17:40-19:10	
Berlin Hall	Roche Diabetes Care GmbH 17:40-19:10	
Athens Hall	Bayer AG 17:40-18:40	
Milan Hall	Tandem Diabetes Care, Inc. 17:40-18:40	

INDUSTRY SESSION SCHEDULE

Tuesday, 28 September 2021

	Eli Lilly and Company 19:30-21:00	
	Sciarc GmbH 19:30-20:00	
	DIABELOOP SA 19:30-20:00	

INDUSTRY SESSION SCHEDULE

Morning

London Hall		AstraZeneca 09:20-09:30		AstraZeneca 09:35-09:45
Madrid Hall				Boehringer Ingelheim & Eli Lilly and Company Alliance 09:35-09:45
Barcelona Hall	Eli Lilly and Company 08:45-09:15			

Evening

Moscow Hall	Novo Nordisk 18:30-19:00		Eli Lilly and Company 19:15-19:25
Paris Hall	SANOFI 18:30-19:30		
London Hall	AstraZeneca 18:30-19:00		
Madrid Hall	Boehringer Ingelheim & Eli Lilly and Company Alliance 18:30-19:30		
Barcelona Hall	MSD 18:30-19:30		
Saint Petersburg Hall	Dexcom 18:30-19:30		
Berlin Hall	Medtelligence 18:30-19:30		
Athens Hall	Bayer AG 18:30-19:30		
Meet the Expert			

INDUSTRY SESSION SCHEDULE

Wednesday, 29 September 2021

Eli Lilly and Company 19:30-19:40		Amryt Pharmaceuticals 20:00-21:00
		Eli Lilly and Company 20:00-21:00
Medtronic 19:30-20:00		
	Eli Lilly and Company 20:00-20:30	
	Bayer AG 19:45-20:45	

INDUSTRY SESSION SCHEDULE

Morning

Moscow Hall	Novo Nordisk 09:15-09:45	
Paris Hall		Eli Lilly and Company 09:35-09:45
Meet the Expert	LifeScan 09:15-09:45	

Evening

Moscow Hall	AstraZeneca 18:05-18:15	
Paris Hall	Boehringer Ingelheim & Eli Lilly and Company Alliance 18:05-18:15	
London Hall		LifeScan 18:15-19:15
Madrid Hall		CPC Clinical Research 18:15-19:15
Barcelona Hall		MSD 18:15-18:45
Saint Petersburg Hall		Medscape Education 18:15-19:15
Berlin Hall		SANOFI 18:15-18:45

Morning

Friday, 1 October 2021

London Hall	Medscape Education 08:15-09:15
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Evening

Moscow Hall	Novo Nordisk 17:40-18:40	
Paris Hall		SANOFI 18:45-19:15
Madrid Hall		Eli Lilly and Company 19:00-19:30

INDUSTRY SESSION SCHEDULE

Thursday, 30 September 2021

Nestle Health Science 20:00-21:30

*All stated times in CEST
Status June 2021, details are subject to change.*

MONDAY, 27 SEPTEMBER 2021

12:30 – 13:30

SAINT PETERSBURG HALL

**DEXCOM REAL-TIME CGM INTEROPERABILITY –
THE FOUNDATION FOR PATIENT CHOICE & SUCCESS
IN DIABETES MANAGEMENT**

Organised by: [Dexcom](#)

MONDAY, 27 SEPTEMBER 2021

14:30 – 15:30
BARCELONA HALL

**LATEST CLINICAL UNDERSTANDING FROM VERTIS CV FOR
PATIENTS WITH DIABETES, CARDIOVASCULAR AND RENAL
DISEASE: A CROSS-SPECIALTY DISCUSSION**

Chairs: Chris Cannon (USA), Sam Dagogo-Jack (USA)

14:30 – 14:35 Opening Remarks
Chairs (USA)

**14:35 – 14:45 Ertugliflozin and VERTIS CV – New Data Expanding Our
Understanding for the Treatment of Patients With Type 2
Diabetes and Cardiovascular Disease**
Sam Dagogo-Jack (USA)

**14:45 – 14:55 Recent Data on the Efficacy and Safety of Ertugliflozin
Using Insulin in Patients with Type 2 Diabetes Mellitus
and Established Cardiovascular Disease**
Ildiko Lingvay (USA)

**14:55 – 15:05 The Latest VERTIS CV Heart Failure Results - Adding to
Our Clinical Understanding From a Cardiologist's View**
Francesco Cosentino (SWE)

**15:05 – 15:15 New VERTIS CV Kidney Protection Results - Adding to
Our Clinical Understanding From a Nephrologist's View**
David Cherney (CAN)

**15:15 – 15:28 What Does It All Mean For Our Patients?
A Cross-Specialty Faculty – Roundtable Discussion**
Faculty

15:28 – 15:30 Closing Remarks
Chairs (USA)

Organised by: **MSD**

MONDAY, 27 SEPTEMBER 2021

14:30 – 15:30
MADRID HALL**CRITICAL ADVANCES IN FLASH-BASED CGM: A FOUNDATIONAL APPROACH TO OPTIMIZING HEALTH METRICS AND COSTS ACROSS THE ENTIRE SPECTRUM OF DIABETES CARE**

- 14:30 – 14:40** Program Chair Welcome and Introduction
Mainstreaming CGM Across the Spectrum of Diabetes Care: What Groups Will Benefit?
Type 2 Diabetes? Newly Diagnosed Patients? A Roadmap to Clinical Success and Patient Satisfaction
What Parameters Do We Follow with Ambulatory Glucose Profiling (AGP): Applications of CGM to Both Lifestyle and Pharmacologic Interventions – An Overview
 Tadej Battelino (SVN)
- 14:40 – 14:55** **Real World and Prospective Trials Supporting CGM as a Foundational Approach to Management of Diabetes: How Does Flash-Based CGM Optimize Time in Range, Reduction in Hypoglycemia, and Improve Personalized, A1c Target Goal Attainment?**
Real World Data for Optimizing Multiple, Glycemic/Metabolic Control and Patient Safety Metrics in the Covid-19 Era and Beyond
 Ramzi Ajjan (UK)
- 14:55- 15:10** **Pharmacoeconomic Benefits of Deploying Flash-Based CGM Across the Diabetes Population: Reducing Hospitalizations, Cost Neutrality, and Comparative Costs Among CGM Device Platforms**
Comparing Health Economic Data, Hospitalization Rates, and Clinical Outcomes with Flash-Based CGM
 Partha Kar (UK)
- 15:10 – 15:25** **Applying Flash-Based CGM to the Front Lines of Diabetes Care in the Real World: Patient Case Management Session**
A Case-Based Master Class Using Flash Glucose Monitoring Technology to Improve Glycemic Metrics, Target Goal Attainment, and Therapeutic Safety of Diabetic Treatment Regimens
 Tadej Battelino (SVN)
- 15:25 – 15:30** Program Summary and Vision Statement
The Evolving Foundational Role of Flash-Based Glucose Monitoring Technology in Optimizing Cost Containment and Clinical Outcomes in Persons with Diabetes
A Practical Roadmap for the Application of New Advancements in Flash-Based Glucose Monitoring
 Tadej Battelino (SVN)

Organised by: **Abbott Diabetes Care**

MONDAY, 27 SEPTEMBER 2021

14:30 – 16:00
LONDON HALL

**FROM SCIENCE TO PATIENTS:
MECHANISMS OF ORGAN BENEFIT WITH SGLT2 INHIBITION
STATE OF THE ART LECTURE:
NASH, DISEASE BURDEN AND NEW OPPORTUNITIES**

- 14:30 – 14:35 Welcome**
Elisabeth Björk (AstraZeneca)
Co-Chair: Nayyar Iqbal (AstraZeneca)
- 14:35 – 14:50 Role of water conservation and metabolism in SGLT2 inhibitor mediated organ protection**
Jens Marc Titze (SGP)
- 14:50 – 15:10 Cracking the code in CKD: Mechanisms of renoprotection**
Hiddo Heerspink (NLD)
- 15:10 – 15:30 SGLT2 inhibitors in HF: Piecing together the puzzle of preserved ejection fraction**
Sanjiv Shah (USA)
- 15:30 – 15:40 Panel discussion**
All faculty
- 15:40 – 15:55 State of art lecture: NASH, disease burden and new opportunities – Emerging new modalities to manage NASH**
Arun Sanyal (USA)
- 15:55 – 16:00 Closing remarks**
Regina Fritsche-Danielson (AstraZeneca)

Organised by: **AstraZeneca**

MONDAY, 27 SEPTEMBER 2021

14:30 – 16:10
MOSCOW HALL

CHANGING PARADIGM THROUGH HOLISTIC APPROACHES HOLISTIC APPROACHES TO T2D TREATMENT AND WEIGHT MANAGEMENT IN PEOPLE WITH OBESITY

Chair: Tina Vilsbøll (DNK)

14:30 – 14:35 Welcome

Tina Vilsbøll (DNK)

14:35 – 14:47 Should we have a more holistic treatment approach to improve healthy lifespan in people living with T2D?

Vanita Aroda (USA)

14:47 – 15:10 Panel discussion

Vanita Aroda (USA), Melanie Davies (UK),
John Buse (USA), Nikolaus Marx (GER)

15:10 – 15:20 Treatment intensification in T2D with high-dose semaglutide: SUSTAIN FORTE

Juan Pablo Frias (USA)

15:20 – 15:25 Questions from the audience

15:25 – 15:27 Break

15:27 – 15:29 Welcome back

Tina Vilsbøll (DNK)

15:29 – 15:37 The potential of semaglutide 2.4 mg for weight management

Rachel Batterham (UK)

15:37 – 15:47 Changing the paradigm in obesity care: the STEP 1–4 data

Melanie Davies (UK)

15:47 – 15:57 The clinical impact of double-digit weight loss

John Wilding (UK)

15:57 – 16:10 Questions from the audience

16:10 – 16:12 Thanks and wrap-up

Tina Vilsbøll (DNK)

Organised by: **Novo Nordisk**

MONDAY, 27 SEPTEMBER 2021

16:30 – 17:30
MOSCOW HALL

**CONTINUING BEYOND 100
INSULIN INNOVATIONS – 100 YEARS AND BEYOND**

Chair: Tina Vilsbøll (DNK)

16:30 – 16:35 Welcome

Tina Vilsbøll (DNK)

16:35 – 16:45 Insulin innovations – the past: journey so far

Andreas Liebl (GER)

16:45 – 16:55 Insulin innovations – the present: current scenario

Lena Landstedt-Hallin (SWE)

16:55 – 17:05 Patient case study

Andreas Liebl (GER)

Lena Landstedt-Hallin (SWE)

17:05 – 17:20 Insulin innovations: roadmap to the future

Ronald Goldenberg (CAN)

17:20 – 17:28 Panel discussion

17:28 – 17:30 Thanks and wrap-up

Tina Vilsbøll (DNK)

Organised by: **Novo Nordisk**

MONDAY, 27 SEPTEMBER 2021

**19:00 – 19:30
MOSCOW HALL**

**INTERWOVEN BEYOND TODAY
HIGHLIGHTS AND LEARNINGS: CURRENT DIABETES AND OBESITY
MANAGEMENT AND FUTURE OPPORTUNITIES**

Chair: Tina Vilsbøll (DNK)

19:00 – 19:05 Welcome
Tina Vilsbøll (DNK)

**19:05 – 19:30 Highlights and learnings: current diabetes
and obesity management and future opportunities**

Organised by: **Novo Nordisk**

**TIMELY PAD DETECTION IN DIABETIC PATIENTS.
HOW THE LATEST ABI AND TBI TECHNOLOGY CAN HELP PREVENT
LOWER LIMB ADVERSE EVENTS.**

Speaker: Petra Balažic (Brand Manager at MESI, SVN)

- 1. Prevalence of PAD in diabetic patients**
- 2. Guidelines and good medical practice for arterial assessment**
- 3. Introduction of MESI mTABLET ABI – the automated wireless device for measuring ABI**
- 4. Discovering PAD in cases of non-compressible by measuring Toe-Brachial Index (TBI)**
- 5. Introduction of MESI mTABLET TBI – the simplest wireless device for measuring TBI**

TUESDAY, 28 SEPTEMBER 2021

09:35 – 09:45
LONDON HALL

**ARTIFICIAL INTELLIGENCE MEET HUMAN INTELLIGENCE:
POWERING PRECISION DECISIONS**

Organised by: [AstraZeneca](#)

TUESDAY, 28 SEPTEMBER 2021

**09:15 – 09:45
PARIS HALL**

**CHANGING PARADIGM BY THINKING AHEAD
ORAL SEMAGLUTIDE – WHERE AND HOW DOES IT FIT?**

- 09:15 – 09:20 Overview of oral semaglutide and PIONEER trials**
Filip K Knop (DNK)
- 09:20 – 09:30 Case scenarios based on clinical evidence**
Filip K Knop (DNK)
Vanita Aroda (USA)
- 09:30 – 09:35 Patient-centric practicalities**
Vanita Aroda (USA)
- 09:35 – 09:45 A patient-centered approach with oral semaglutide**
Panel discussion and Q&A (live)

Organised by: Novo Nordisk

TUESDAY, 28 SEPTEMBER 2021

**09:35 – 09:45
MADRID HALL**

**YOUR TIME TO ACT IS NOW:
BREAKING BARRIERS IN T2D CARE**

Speaker: John Buse (USA)

Organised by: [Boehringer Ingelheim & Eli Lilly and Company Alliance](#)

TUESDAY, 28 SEPTEMBER 2021

**09:35 – 09:45
BARCELONA HALL**

GIP & GLP-1 IN PATHOPHYSIOLOGY & TYPE 2 DIABETES

09:35 – 09:37 Welcome and introduction

09:37 – 09:45 T2D Pathophysiology and GIP and GLP-1 Dual Receptor Agonism

Industry Symposia

Organised by: Eli Lilly and Company

TUESDAY, 28 SEPTEMBER 2021

17:40 – 18:10
MADRID HALL

**TEAMING UP TO TACKLE CARDIORENAL RISK IN DIABETES
ROLE OF SGLT2i: HOW TO OVERCOME CLINICAL INERTIA**

- 17:40 – 17:45 The case challenge**
Teaming up to tackle cardiorenal risk in diabetes
Melanie Davies (UK)
- 17:45 – 17:55 Defining treatment goals: SGLT2i, implications from clinical trials and guidelines**
Nikolaus Marx (GER)
- 17:55 – 18:05 Practical Challenges: SGLT2i in the spectrum of diabetes, CVD & CKD: Who and how to manage?**
Melanie Davies (UK)
- 18:05 – 18:10 Discussion: How to overcome clinical inertia?**
Nikolaus Marx (GER)
Melanie Davies (UK)

Organised by: **Boehringer Ingelheim & Eli Lilly and Company Alliance /
PACF-CMF**

TUESDAY, 28 SEPTEMBER 2021

**17:40 – 18:40
MOSCOW HALL**

**COLLECTIVELY TOWARDS MORE
A STEP FORWARD: WEIGHT LOSS AND IMPROVED
CARDIOVASCULAR RISK FACTORS**

- 17:40 – 17:55** **Introduction: obesity, weight loss and CV risk**
Kim Connelly (CAN)
- 17:55 – 18:10** **STEPping forward: cardiovascular risk factors in patients
with overweight or obesity**
Ildiko Lingvay (USA)
- 18:10 – 18:25** **STEPping into the future: managing cardiovascular
outcomes in people with overweight or obesity**
Subodh Verma (CAN)
- 18:25 – 18:40** **Live Q&A**
Chaired by Kim Connelly (CAN)

Organised by: Novo Nordisk

TUESDAY, 28 SEPTEMBER 2021

17:40 – 18:40
LONDON HALL

**TIPPING THE SCALES –
REBALANCING CKD IN T2D MANAGEMENT**

- 17:40 – 17:45 Welcome and introductions**
Silvio Inzucchi (USA)
- 17:45 – 18:05 Why think about CKD?**
Paola Fioretto (ITA)
- 18:05 – 18:20 Rebalancing T2D management with SGLT2 inhibitors**
Peter Rossing (DNK)
- 18:20 – 18:35 Collaboration in the management of T2D –
a nephrologist's perspective**
Patrick Mark (UK)
- 18:35 – 18:40 Summary**
Silvio Inzucchi (USA)

Organised by: **AstraZeneca**

TUESDAY, 28 SEPTEMBER 2021

17:40 – 19:10
SAINT PETERSBURG HALL

**TECHNOLOGIES LEADING TO IMPROVEMENTS
IN CLINICAL OUTCOMES AND BURDEN REDUCTION IN
PEOPLE WITH TYPE 1 DIABETES**

Chair: Ohad Cohen (CHE)

**17:40 – 18:00 Optimizing outcomes with the MiniMed™ 780G system:
evidence from real-world usage**
Ohad Cohen (CHE)

18:00 – 18:20 Best practices with the MiniMed™ 780G System
Tadej Battelino (SVN)

**18:20 – 18:40 Combining InPen and CGM to Improve Glycemic Outcomes
in MDI Users**
Robert Vigersky (USA)

**18:40 – 18:55 Next Steps in the Advancement of technologies for the
treatment of diabetes**
Ali Dianati (USA)

18:55 – 19:10 Questions & Answers
Ohad Cohen (CHE)

Organised by: **Medtronic**

TUESDAY, 28 SEPTEMBER 2021

17:40 – 19:10
BERLIN HALL

**PERSONALISING DIABETES CARE ALONG
THE WHOLE PATIENT JOURNEY**

Chair: Rolf Hinzmann (Roche Diabetes Care, GER)

17:40 – 17:45 Introduction

17:45 – 18:15 Integrated Personalised Diabetes Management drives improved patient-reported outcomes
Kamlesh Khunti (UK)

18:15 – 18:35 Screen, triage and treat – a digital paradigm for risk stratification in CKD
Navdeep Tangri (CAN)

18:35 – 18:55 Innovative therapies and future integrated solutions can enhance management of diabetic eye disease
Praveen Patel (UK)

18:55 – 19:10 Discussion and Closing

Organised by: **Roche Diabetes Care GmbH**

TUESDAY, 28 SEPTEMBER 2021

**17:40 – 19:10
BARCELONA HALL**

**TAKING ANDROID APS MAINSTREAM:
A WORKSHOP FOR CLINICIANS**

- 17:40 – 17:45 Welcome**
James Mayjor (Ypsomed AG, AUS)
- 17:45 – 18:00 What is Android APS**
Neale Cohen (AUS)
- 18:00 – 18:10 Published data**
Martin de Bock (NZL)
- 18:10 – 18:25 Contemporary use**
Neale Cohen (AUS)
- 18:25 – 18:40 Learning and contemporary use**
Martin de Bock (NZL)
- 18:40 – 19:10 Wrap up and Q&A**
James Mayjor (Ypsomed AG, AUS)
Neale Cohen (AUS)
Martin de Bock (NZL)

Organised by: Ypsomed AG

TUESDAY, 28 SEPTEMBER 2021

19:30 – 20:00
PARIS HALL

UNDERSTANDING BIOSIMILAR INSULINS: YOUR PATIENTS' FUTURE

Chairs: Tina Vilsbøll (DNK), Lutz Heinemann (GER)

19:30 – 19:33 Introduction

Tina Vilsbøll (DNK)

**19:33 – 19:43 Biosimilar Insulin Manufacturing:
Why the process IS the product?**

Lutz Heinemann (GER)

**19:43 – 19:53 Why do patient and HCP perceptions about biosimilar
insulin matter?**

Philip Home (UK)

19:53 – 20:00 Discussion and closure

All

Organised by: **Sciarc GmbH** / Supported by a medical education grant
from Gan & Lee

TUESDAY, 28 SEPTEMBER 2021

19:30 – 20:00
ATHENS HALL

WHERE DO WE STAND IN TERMS OF CLINICAL EVIDENCE WITH CLOSED LOOP SYSTEMS?

Chair: Pierre-Yves Benhamou (FRA)

19:30 – 19:35 Introduction
Pierre-Yves Benhamou (FRA)

19:35 – 19:43 Germany:
Experience from Germany with DBLG1 w Accu-Chek
Insight: point of view of a diabetologist and an expert
patient
Bernhard Gehr (GER)

19:43 – 19:53 Spain:
Early experience in Spain with Accu-Chek Insight:
outcomes and key learnings
Ana Chico (ESP)
Rosa Corcoy (ESP)

19:53 – 20:00 Next steps:
Future developments: future developments and
improvements, Kids, DBLG1 with Vicentra in France,
other partnerships ...
Erik Hunecker (FRA)

Organised by: **DIABELOOP SA**

TUESDAY, 28 SEPTEMBER 2021

**19:30 – 21:00
MOSCOW HALL**

**WHAT CAN A FASTER MEALTIME INSULIN MEAN FOR
GLUCOSE CONTROL?**

- Speakers:
- Carolina Piras De Oliveira (Lilly)
 - Emma Wilmot (UK)
 - Andreas Reichel (GER)

Review of key Lyumjev data (including pump data)

Patient case sharing by two thought leaders

Q&A panel discussion with the two thought leaders

Organised by: [Eli Lilly and Company](#)

WEDNESDAY, 29 SEPTEMBER 2021

**08:45 – 09:15
BARCELONA HALL**

INCRETIN INSIGHTS: GIP & GLP-1

- 08:45 – 08:52 Incretin Hormones**
Overview of Pleiotropic Effects of GIP and GLP-1
Tina Vilsbøll (DNK)
- 08:52 – 08:55 Intro to Pathophysiology Animation Video**
- 08:55 – 09:13 Q&A**
Jacek Kiljanski (Lilly)
Tina Vilsbøll (DNK)
- 09:13 – 09:15 Conclusion**
Jacek Kiljanski (Lilly)

Organised by: Eli Lilly and Company

WEDNESDAY, 29 SEPTEMBER 2021

**09:20 – 09:30
LONDON HALL**

**EARLY DIAGNOSIS IS KEY WHEN IT COMES TO CKD –
A PATIENT PERSPECTIVE**

Organised by: [AstraZeneca](#)

WEDNESDAY, 29 SEPTEMBER 2021

**09:35 – 09:45
LONDON HALL**

**DAPA-CKD: REDUCING CARDIO AND RENAL RISK
WITH DAPAGLIFLOZIN IN PATIENTS WITH CKD**

Industry Symposia

Organised by: [AstraZeneca](#)

WEDNESDAY, 29 SEPTEMBER 2021

**09:35 – 09:45
MADRID HALL**

**YOUR CHOICE AFTER METFORMIN:
SGLT2 INHIBITORS OR GLP-1 RECEPTOR AGONISTS?**

Speakers: Merlin Thomas (AUS)
 Silvio Inzucchi (USA)
 Francesco Giorgino (ITA)

Organised by: [Boehringer Ingelheim & Eli Lilly and Company Alliance](#)

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:00
LONDON HALL

**TIPPING THE SCALES –
REBALANCING CKD IN T2D MANAGEMENT**

18:30 – 18:35 Welcome and introductions

Silvio Inzucchi (USA)

**18:35 – 19:00 Tipping the scales – rebalancing CKD in T2D
management: Fireside chat**

Silvio Inzucchi (USA)

Patrick Mark (UK)

Peter Rossing (DNK)

Organised by: **AstraZeneca**

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:00
MOSCOW HALL**CONTINUING BEYOND 100
ONCE-WEEKLY INSULINS: THE EXPERTS' EXPERIENCES**

- 18:30 – 18:32 Welcome**
Athena Philis-Tsimikas (USA)
Simon Heller (UK)
- 18:32 – 18:35 A retrospective look:
100 years since insulin was discovered**
Simon Heller (UK)
- 18:35 – 18:47 Once-weekly basal insulins:
From innovation to RCTs**
Athena Philis-Tsimikas (USA)
- 18:47 – 18:53 Patient-centric care:
How once-weekly options may help get patients to target**
Simon Heller (UK)
- 18:53 – 18:58 Questions from the audience**
Facilitated by:
Athena Philis-Tsimikas (USA)
Simon Heller (UK)
- 18:58 – 19:00 Wrap-up**
Athena Philis-Tsimikas (USA)
Simon Heller (UK)

Organised by: **Novo Nordisk**

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:30
MADRID HALL

**DOES YOUR CLINICAL MANAGEMENT MATCH THE EVIDENCE?
TREATMENT DECISIONS AFTER METFORMIN IN T2D**

Faculty: John Buse (chair, USA)
Nikolaus Marx (GER)
Naresh Kanumilli (UK)
Maria Jose Soler Romeo (ESP)

18:30 – 18:35 Introduction

**18:35 – 19:15 Does your clinical management match the evidence?
Treatment decisions after metformin in T2D**

19:15 – 19:30 Panel discussion and Q&A

Organised by: Boehringer Ingelheim & Eli Lilly and Company Alliance

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:30
BARCELONA HALL**CLINICAL TREATMENT OF PATIENTS WITH DIABETES AND
CARDIOMETABOLIC DISEASE - A CONVERSATION WITH AN
ENDOCRINOLOGIST, CARDIOLOGISTS AND A NEPHROLOGIST**

Chairs: Ofri Mosenzon (ISR), Rich Pratley (USA)
Faculty: Chris Cannon (USA), David Cherney (CAN)

18:30 – 18:33 Opening Remarks
Chairs (ISR, USA)

18:33 – 18:41 Highlighting the Patient with Diabetes and Cardiometabolic Disease
Rich Pratley (USA)

18:41 – 18:49 Answering Unmet Needs – Clinical Understanding of Recent Heart Failure Data for Patients with Diabetes and Cardiovascular Disease
Chris Cannon (USA)

18:49 – 18:57 Adding to the Clinical Understanding for Patients with Diabetes and Cardio-renal Disease
David Cherney (CAN)

18:57 – 19:27 A Cross-Specialty Faculty Roundtable on Meeting the Needs of Patients with Diabetes and Established Cardio-metabolic Disease: Are SGLT2is Best Utilized as a Cardiovascular Drug? A Kidney Drug? A Glycemic Lowering Agent? Or All of the Above?
Faculty

19:27 – 19:30 Closing Remarks
Chairs (ISR, USA)

Organised by: **MSD**

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:30

SAINT PETERSBURG HALL

**DEXCOM REAL-TIME CGM FOR ALL INSULIN REQUIRING
PATIENTS – THE EMERGING STANDARD OF CARE**

Industry Symposia

Organised by: [Dexcom](#)

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:30
BERLIN HALL

INTEGRATING NEW EVIDENCE ON ASCVD AND MICRO-VASCULAR RISK REDUCTION WITH OMEGA-3 FATTY ACIDS

18:30 – 18:35 Welcome, Introductions, Program Overview

Dirk Müller-Wieland (GER)

18:35 – 18:55 New Clinical Evidence of Omega-3 Fatty Acids on ASCVD Event Reduction

Dirk Müller-Wieland (GER)

18:55 – 19:15 Real-world Clinical Implications on Reducing ASCVD Events

Handrean Soran (UK)

19:15 – 19:30 Panel Discussion and Q&A

Handrean Soran (UK), Dirk Müller-Wieland (GER)

Closing Comments

Dirk Müller-Wieland (GER), Handrean Soran (UK)

Organised by: **Medtelligence** / Supported by an unrestricted educational grant from Amarin Pharma, Inc.

WEDNESDAY, 29 SEPTEMBER 2021

18:30 – 19:30
ATHENS HALL

NEW PERSPECTIVES AND INTERDISCIPLINARY INSIGHTS ON THE BENEFITS OF MR ANTAGONISM IN CKD AND T2D

18:30 – 18:35 Welcome and introductions

Jiten Vora (UK)

**18:35 – 18:45 Addressing unmet needs in CKD and T2D with nonsteroidal
MR antagonists**

Roland Schmieder (GER)

**18:45 – 19:00 MR antagonism confers benefits irrespective of
anti-diabetic agents or metabolic status: Insights from
FIDELIO-DKD**

Paola Fioretto (ITA)

**19:00 – 19:15 FIGARO-DKD: Expanding the benefit of MR antagonism
in CKD and T2D**

Samy Hadjadj (FRA)

19:15 – 19:25 Q&A

All faculty

19:25 – 19:30 Summary and close

Jiten Vora (UK)

Organised by: **Bayer AG**

WEDNESDAY, 29 SEPTEMBER 2021

**19:15 – 19:25
MOSCOW HALL**

THE INCRETIN JOURNEY: PAST, PRESENT AND FUTURE

Speaker: Michael Nauck

19:15 – 19:16 Introduction

19:16 – 19:24 The incretin journey: Past, present and future

19:24 – 19:25 Summary

Organised by: [Eli Lilly and Company](#)

WEDNESDAY, 29 SEPTEMBER 2021

**19:30 – 19:40
MOSCOW HALL**

GIP & GLP-1 IN PATHOPHYSIOLOGY & TYPE 2 DIABETES

19:30 – 19:32 Welcome and introduction

19:32 – 19:40 T2D Pathophysiology and GIP and GLP-1 Dual Receptor Agonism

Organised by: Eli Lilly and Company

WEDNESDAY, 29 SEPTEMBER 2021

19:30 – 20:00
LONDON HALL

**INCORPORATING INPEN AND CGM
FOR THE OPTIMIZATION OF MDI THERAPY**

Chair: Robert Vigersky (USA)

19:30 – 19:40 The need and clinical evidence
Robert Vigersky (USA)

19:40 – 20:00 Case Presentation in Type 1 and Type 2 diabetes
Anders Carlson (USA)

Organised by: **Medtronic**

WEDNESDAY, 29 SEPTEMBER 2021

**19:45 – 20:45
MEET THE EXPERT**

**PEOPLE WITH CKD AND T2D;
HOW FINERENONE REDUCES THE RISK OF PROGRESSION
OF KIDNEY DISEASE AND CV OUTCOMES?
JOIN THE SESSION AND ASK OUR EXPERTS!**

Speakers: Paola Fioretto (ITA)
Roland Schmieder (GER)
Samy Hadjadj (FRA)
Jiten Vora (UK)

Organised by: Bayer AG

WEDNESDAY, 29 SEPTEMBER 2021

20:00 – 20:30
MADRID HALL

EVALUATION OF THE INCRETIN EFFECT IN HUMANS

- 20:00 – 20:02** **Evaluation of the incretin effect in humans**
Filip Knop (DNK)
- 20:02 – 20:12** **Contribution of GLP-1 to the incretin effect**
Laerke Gasbjerg (DNK)
- 20:12 – 20:22** **Contribution of GLP-1 to the incretin effect**
Filip Knop (DNK)
- 20:22 – 20:30** **Discussion and Closing**
Laerke Gasbjerg (DNK)

Organised by: **Eli Lilly and Company**

WEDNESDAY, 29 SEPTEMBER 2021

20:00 – 21:00
MOSCOW HALL

**THE DIFFERENTIAL DIAGNOSIS OF ATYPICAL CASES OF
SEVERE INSULIN RESISTANCE –
SUSPECTING AND DIAGNOSING LIPODYSTROPHY**

Chair: Matthias Laudes (GER)

Welcome and introduction

Matthias Laudes (GER)

**Diagnosis of severe insulin resistance and atypical
diabetes and when to suspect lipodystrophy**

Francesco Giorgino (ITA)

**The management of lipodystrophy: clinical challenges
and treatment opportunities**

Vaia Lambadiari (GRC)

Q&A, conclusions

Matthias Laudes (GER)

Organised by: **Amryt Pharmaceuticals**

WEDNESDAY, 29 SEPTEMBER 2021**20:00 – 21:00
PARIS HALL****INTRODUCING TEMPO:
A CONNECTED PEN SYSTEM TO SIMPLIFY
DIABETES MANAGEMENT**

Speakers: Hood Thabit (UK)
Pratik Choudhary (UK)
Bernhard Gehr (GER)

20:00 – 20:10 Welcome and instructions

20:10 – 20:25 The complexities of insulin management

20:25 – 20:35 Introducing the Tempo Connected Pen System

**20:35 – 20:50 Insulin dosing data for more informed treatment
conversations**

20:50 – 21:00 Q&A and closing remarks

Organised by: Eli Lilly and Company

THURSDAY, 30 SEPTEMBER 2021

09:15 – 09:45
MOSCOW HALL

**IMAGINE THE FUTURE,
TODAY THE GLOBAL RISE OF NASH AND LIVER FIBROSIS –
WHAT CAN WE DO?**

09:15 – 09:35 **How and why to identify high-risk patients:
lessons from the clinic**
Elmar Jaeckel (GER)
Lise Lotte Gluud (DNK)

09:35 – 09:45 **The future of NASH: the importance of interdisciplinary
collaboration**
(interactive Q&A)
Elmar Jaeckel (GER)
Lise Lotte Gluud (DNK)

Organised by: **Novo Nordisk**

THURSDAY, 30 SEPTEMBER 2021

09:15 – 09:45
MEET THE EXPERT

**GLUCOSE MONITORING DEVICE INTERFERENTS:
AN UNDER-RECOGNIZED ISSUE
WITH IMPORTANT CLINICAL CONSEQUENCES.**

Speaker: Juan Pablo Frias (USA)

Glucose monitoring interferences when using BGM/CGM.

Organised by: **LifeScan**

THURSDAY, 30 SEPTEMBER 2021

**09:35 – 09:45
PARIS HALL**

THE INCRETIN JOURNEY: PAST, PRESENT AND FUTURE

Speaker: Michael Nauck (GER)

09:35 – 09:36 Introduction

09:36 – 09:44 The incretin journey: Past, present and future

09:44 – 09:45 Summary

Organised by: Eli Lilly and Company

THURSDAY, 30 SEPTEMBER 2021

18:05 – 18:15
PARIS HALL

RESULTS OF EMPAGLIFLOZIN IN PATIENTS WITH HFREF

Speaker: Javed Butler (USA)

Organised by: **Boehringer Ingelheim & Eli Lilly and Company Alliance**

THURSDAY, 30 SEPTEMBER 2021

**18:05 – 18:15
MOSCOW HALL**

**COFFEE BREAK SESSION:
WHOSE PATIENT IS THIS?**

Industry Symposia

Organised by: [AstraZeneca](#)

THURSDAY, 30 SEPTEMBER 2021

18:15 – 18:45
BARCELONA HALL

**CROSS-TALK BETWEEN THE HEART, KIDNEYS &
THE ENDOCRINE SYSTEM – UNDERSTANDING FOR TYPE 2
DIABETES AND CARDIORENAL DISEASE**

- 18:15 – 18:20 Opening Remarks**
Sam Dagogo-Jack (USA)
- 18:20 – 18:43 Cross-talk between the Heart, Kidneys & the Endocrine System – Understanding for Type 2 Diabetes and Cardioresenal Disease**
David Cherney (CAN)
Kim Connelly (CAN)
Sam Dagogo-Jack (USA)
- 18:43 – 18:45 Closing Remarks**
Sam Dagogo-Jack (USA)

Organised by: **MSD**

**CLINICAL PRACTICE EXPERIENCES USING
A PROFESSIONAL DIABETES MANAGEMENT /
TELEMEDICINE ECOSYSTEM DURING COVID
OUTCOMES OF AN EU ADVISORY BOARD ON DIGITAL
THERAPEUTICS AND A LOOK AT ONETOUCH REVEAL
REMOTE MONITORING USAGE IN REAL LIFE**

18:15 – 18:20 Introductions

Elizabeth Holt (USA)

**18:20 – 18:35 Best practices managing people with diabetes using
telemedicine**

- Integrating telemedicine into the clinic work flow
- Effective use of telemedicine during diabetes management & transitions
- Personal experiences (case studies) using telemedicine
- Lessons learned using technology during COVID

**18:35 – 18:45 Understanding the clinical value of the OneTouch eco-
system for HCPs from multiple EU countries during COVID**

- Introducing the OneTouch ecosystem & getting started!
- Overview of a study to canvas HCP clinical experiences with the ecosystem
- Results: HCP insights & acceptance using the ecosystem in five EU countries

Elizabeth Holt (USA)

**18:45 – 18:55 Personal stories from HCPs using the OneTouch ecosystem
during COVID**

- A personal account of an institution using the ecosystem during COVID
- Getting started, integrating to workflow, and connecting with patients

18:55 – 19:05 Real world evidence using the OneTouch ecosystem

- Glycemic control in people with diabetes using the ecosystem
 - Longitudinal changes and correlation with digital engagement
- Mike Grady (UK)

Organised by: **LifeScan**

THURSDAY, 30 SEPTEMBER 2021

18:15 – 19:15
MADRID HALL

WALKING INTO THE FUTURE – MULTIFACETED CARE TO REDUCE VASCULAR RISK IN DIABETES

Moderator: Cecilia Low Wang (USA)

Presenter: Justin Morrison (USA)

Panelists/Discussants:

Subodh Verma (CAN)
Mikhail Kosiborod (USA)
Naomi Hamburg (USA)
Marc Bonaca (USA)
Mark Nehler (USA)

- **Introduction to faculty and program**
- **Presentation of Case 1**
- **Critical Limb Ischemia/Chronic Limb-Threatening Ischemia**
- **Cardiovascular and Limb Events after Peripheral Revascularization**
- **Optimal antithrombotic, glucose-lowering and lipid-lowering therapy**
- **Presentation of Case 2 – 6 Months Later**
- **Acute limb ischemia – associated risk and predictors**
- **New evidence for antithrombotic and anti-diabetes agents in PAD**
- **Walking into the future – Therapies on the horizon**
- **Multifaceted management of PAD**
- **Conclusion**

Organised by: **CPC Clinical Research**

THURSDAY, 30 SEPTEMBER 2021

18:15 – 19:15
SAINT PETERSBURG HALL

**A CALL TO COLLABORATIVE ACTION – SHIELDING THE
DIABETES PATIENT FROM MICRO- AND MACROVASCULAR
RISKS WITH GLP-1 RECEPTOR AGONISTS**

Chair: Naveed Sattar (UK)

**18:15 – 18:30 The Endocrinologist in the Lead
The Right Drug for the Right Patient at the Right Time**
Panel Discussion: lead by Naveed Sattar (UK)

**18:30 – 18:45 The Cardiologist in the Lead
Primary and Secondary Cardiovascular Protection**
Panel Discussion: lead by Mark Petrie (UK)

**18:45 – 19:00 The Primary Care Physician in the Lead
Implementing Proactive Diabetes Care across the Stages**
Panel Discussion: lead by Kamlesh Khunti (UK)

19:00 – 19:15 Panel Discussion and Live Q&A
All Faculty

19:15 Adjourn

Organised by: **Medscape Education** / Supported by an independent
educational grant from Novo Nordisk

THURSDAY, 30 SEPTEMBER 2021

20:00 – 21:30
MADRID HALL

**POSTPRANDIAL GLYCAEMIC EXCURSIONS:
IMPLICATIONS FOR HEALTH AND EFFECTS OF
NONPHARMACOLOGICAL INTERVENTIONS**

- 20:00 – 20:05 Welcome and Introductions**
Bo Åhrén (SWE)
- 20:05 – 20:40 Health risks associated with elevated postprandial glucose or increased glycaemic variability**
Louis Monnier (FRA)
- 20:40 – 21:15 Nonpharmacological interventions for postprandial glucose management**
Bo Åhrén (SWE)
- 21:15 – 21:30 Live Q & A and close**
Interactive discussion with speakers

Organised by: **Nestle Health Science**

FRIDAY, 1 OCTOBER 2021

08:15 – 09:15
LONDON HALL

SURPASSING STANDARDS IN DIABETES CARE – NOVEL DUAL INCRETIN RECEPTOR AGONISTS

- 08:15 – 08:25** **Better Metabolic Health with Incretin-based Therapies – Achievements and Ambitions**
Michael Nauck (GER)
- 08:25 – 08:40** **The Power of novel dual GIP/GLP-1 Receptor Agonists**
Tina Vilsbøll (DNK)
- 08:40 – 09:00** **The Clinical Evidence for GIP/GLP-1 Receptor Agonists – Assessing the Emerging Profile**
Melanie Davies (UK)
- 09:00 – 09:15** **Panel Discussion and Q & A**
All Faculty
- 09:15** **Adjourn**

Organised by: **Medscape Education** / Supported by an independent educational grant from Lilly

FRIDAY, 1 OCTOBER 2021

17:40 – 18:40
MOSCOW HALL

**CHANGING PARADIGM BY THINKING AHEAD:
NEW HORIZONS IN TYPE 2 DIABETES CARE
WITH ORAL SEMAGLUTIDE**

- 17:40 – 17:43 Welcome**
Adie Viljoen (UK)
- 17:43 – 17:51 Early treatment: what are the benefits of early initiation of GLP-1RAs?**
Tina Vilsbøll (DNK)
Juris Meier (GER)
- 17:51 – 18:01 Discussion session 1**
Tina Vilsbøll (DNK)
Juris Meier (GER)
- 18:01 – 18:09 Spotlight on: type 2 diabetes management for those with renal impairment**
Tina Vilsbøll (DNK)
Peter Rossing (DNK)
- 18:09 – 18:19 Discussion and Q&A**
Tina Vilsbøll (DNK)
Peter Rossing (DNK)
- 18:19 – 18:27 Spotlight on: glycaemic management in individuals with T2D and CVD**
Matt Cavender (USA)
David Strain (UK)
- 18:27 – 18:37 Discussion session 2**
Matt Cavender (USA)
David Strain (UK)
- 18:37 – 18:40 A look at what is up and coming**
Adie Viljoen (UK)

Organised by: **Novo Nordisk**

FRIDAY, 1 OCTOBER 2021

19:00 – 19:30
MADRID HALL

THE INCRETIN EFFECT REVISITED

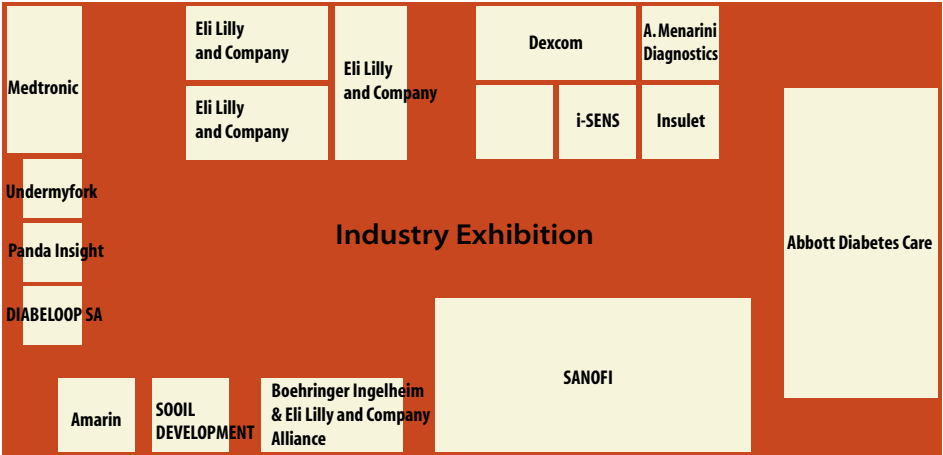
- 19:00 – 19:02 The incretin effect revisited**
Tina Vilsbøll (DNK)
- 19:02 – 19:12 Contra: Can the incretin effect be restored in people with diabetes?**
Juris Meier (GER)
- 19:12 – 19:22 Pro: Can the incretin effect be restored in people with diabetes?**
Tina Vilsbøll (DNK)
- 19:22 – 19:30 Discussion and Closing**
Juris Meier (GER)

Organised by: **Eli Lilly and Company**

3D WORLD / INDUSTRY EXHIBITION



 Landing Point



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*This sponsor can also be visited at their virtual booth in the 3D World.

Status June 2021, details are subject to change.

WELCOME ADDRESS

On behalf of the EASD Board and the 2022 Scientific Programme Committee, I have the pleasure of inviting you to participate in the 58th EASD Annual Meeting in Stockholm, Sweden.

I hope that you will enjoy the present virtual EASD meeting and it might be difficult to focus already now on next year's meeting. Nevertheless, the diabetes research field is progressing at a very fast pace and I am sure you are also looking forward to meeting your colleagues again in person for interdisciplinary scientific exchange, dialogue and debate.



The 2022 Scientific Programme Committee will develop again an outstanding programme with a wide choice of topics covering all aspects of diabetes research and care and you are encouraged to submit your research for consideration for presentation during the meeting by submitting your abstract for review.

I also invite you to enjoy Stockholm's cultural and recreational offerings. Sweden's vibrant capital is sure to be a memorable backdrop to our Annual Meeting.

We look forward to seeing you in Stockholm in September 2022.

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

Mikael Rydén
Honorary Secretary EASD

58th ANNUAL MEETING

19 - 23 SEPTEMBER 2022



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