

**4th Human Milk Oligosaccharides (HMO) in Pregnancy Symposium
&
2nd Early Life Determinants (ELiD) Workshop**

October 5th 2023, Graz, Austria
Aula MedCampus, Neue Stiftingtalstraße 6

Metabolic Legacy of Pregnancy

PROGRAM

Early development in pregnancy has a decisive influence on later health of the baby. It is therefore increasingly perceived as an opportunity to identify, prevent, and regulate interfering influences with the aim of slowing down the rapid increase of non-heritable diseases such as cardiovascular, metabolic, and immunological health problems.

Important human-specific factors of this developmental phase are human milk oligosaccharides (HMOs), complex sugars found in breast milk, but also during pregnancy. HMOs are known for their prebiotic, anti-infective and immunomodulatory effects, among others. In particular maternal metabolism in pregnancy modifies HMO concentration and composition and programs future health of the baby, and thus, leaves its legacy on the offspring.

As pregnancy is a serious transitional phase for the mother, it also shapes her future health. In fact, pregnancy can increase future metabolic and cardiovascular risk, and leaves its legacy on the mother as well. This aspect will also be addressed in this event.

Evelyn Jantscher-Krenn, head of the HMO research group, and Ursula Hiden, head of the research unit ELiD, welcome you to this interlinked event under the joint title *Metabolic Legacy of Pregnancy*, which features a variety of presentations on the topic of HMOs in pregnancy, fetal programming, and the role of maternal metabolism in pregnancy. Enjoy!

The lectures of our international experts (marked with *) can be credited to PhD students as **Guest Lecture**, 2 lectures each count as one Guest Lecture. The signature of the organizers can be obtained directly after the respective presentation.

PROGRAM

from 08.15 *Registration*

08.45 - 09.00 *Welcome and Introduction: Evelyn Jantscher-Krenn & Ursula Hiden*

HMO morning

09.00 – 10.45 *Session I: **Metabolic and cardiovascular (mal)adaptations in pregnancy**, Chair: TBA*

09.00 – 09.25 **Lina Bergman**, Department of Obstetrics and Gynecology, University of Gothenburg, Sweden, (online presentation) ***Prevention of future cardiovascular disease after preeclampsia****

09.25 – 09.50 **Martijn Hoes**, Departments of Clinical Genetics, Cardiology, Genetics and Cell Biology, Maastricht University, The Netherlands, ***Peripartum Cardiomyopathy: cardiac adaptations in pregnancy gone wrong?****

09.50 – 10.05 **Christina Stern**, Department of Obstetrics and Gynecology, Medical University of Graz; ***Metabolic legacy of pregnancy: Maternal outcomes***

10.05 – 10.25 **Evelyn Jantscher-Krenn**, Department of Obstetrics and Gynecology, Medical University of Graz, ***HMO as mediators of adaptations in pregnancy?***

10.25 – 10.35 **Marie-Therese Weiser-Fuchs**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Changes in HMO patterns during oGTT at midpregnancy***

10.35 – 11.05 *Coffee break and posters (HS 5)*

11.05 – 13.00 *Session II: **Postpartum and Lactation: Time of transition**, Chair: TBA*

11.05 – 11.20 **Lukas Schönbacher**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Regulation of serum HMOs by insulin-glucose interplay in lactation***

11.20 – 11.45 **Alecia-Jane Twigger**, Department of Pharmacology, University of Cambridge, UK, ***Single cell analysis of human lactocytes highlights transcriptional changes during lactation****

11.45 – 12.10 **Elena Osto**, Otto Loewi Research Center for Vascular Biology, Immunology and Inflammation, Division of Physiology and Pathophysiology, Medical University of Graz, ***Sex-dependent modulation in endothelial function and atherosclerosis development***

12.10 – 12.20 **Charlotte Neumann**, Diagnostic and Research Institute of Hygiene, Microbiology and Environmental Medicine, Medical University of Graz, ***Female microbiome: Abrupt changes from preconception to pregnancy to postpartum***

12.20 – 12.45 **Dena Ennis**, The Hebrew University of Jerusalem, Israel, ***Relation of HMO composition and variability of Bifidobacterium species in the infant gut***

12.45 – 13.00 **Anna Rath**, University of Applied Sciences Graz/Medical University of Graz, ***Influence of feeding patterns on anthropometric outcomes***

13.00 – 14.00 *Lunch at Mensa*

ELiD afternoon

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- 14.00 – 15.30 *Session I: **Fetal Programming by Maternal Metabolism**, Chair: Ursula Hiden*
- 14.00 – 14.25 **Susana P Pereira**, CNC-Center for Neuroscience and Cell Biology, University of Coimbra; Laboratory for Integrative and Translational Research in Population Health, Faculty of Sports, University of Porto, Portugal, ***Shaping offspring cardiac function by maternal metabolism****
- 14.25 – 14.45 **Silvija Tokic**, Department of Paediatrics and Adolescent Medicine, Medical University of Graz, ***GDM programming of placental endothelial cells***
- 14.45 – 15.00 **Ursula Hiden**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Maternal metabolism determines the function of circulating neonatal endothelial progenitor cells***
- 15.00 – 15.20 **Gernot Desoye**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Fetal programming of adiposity***
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- 15.20 – 15.50 *Coffee break and posters (HS 5)*
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- 15.50 – 17.05 *Session II: **Maternal Influences in Pregnancy**, Chair: Gernot Desoye*
- 15.50 – 16.15 **Carlos Salomon**, Translational Extracellular Vesicles in Obstetrics and Gynaecology-Oncology Group, Royal Brisbane and Women's Hospital, The University of Queensland Centre for Clinical Research, Brisbane, Australia, ***Contribution of extracellular vesicles to fetal programming in GDM****
- 16.15 – 16.25 **Natascha Berger**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Bile acids link metabolism to granulosa cell function***
- 16.25 – 16.35 **Azra Kulovic-Sissawo**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Nephrilysin levels in pregnancy are related to blood pressure***
- 16.35 – 16.45 **Carolina Tocantins**, CNC-Center for Neuroscience and Cell Biology, University of Coimbra, Portugal, ***Pregnancy alters the metabolism of the mother's heart in rodents***
- 16.45 – 16.55 **Anna Dieberger**, Department of Obstetrics and Gynecology, Medical University of Graz, ***Changes in the distribution of subcutaneous adipose tissue throughout pregnancy and its relationship with gestational weight gain***
- 16.55 – 17.05 **Beatrice Brugger**, Gottfried Schatz Research Center, Division of Cell Biology, Histology and Embryology, Medical University of Graz, ***Flow modulation of the villous trophoblast may restrict fetal growth***
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- 17.05 *Concluding remarks*

Guest Lectures

Lina Bergman

Department of Obstetrics and Gynecology, University of Gothenburg, Sweden

Lina Bergman is an Obstetrician working as a consultant in obstetrics and associate professor at the Sahlgrenska University Hospital and Gothenburg University and is affiliated senior researcher at Stellenbosch University, South Africa and Uppsala University, Sweden.

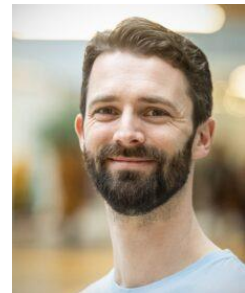


She utilizes her databases and biobanks from South Africa and Sweden to increase the understanding of end-organ complications in preeclampsia and to discover new biomarkers and models to diagnose and predict end organ injury in preeclampsia on short and long-term and for first trimester prediction. In addition, she is involved in treatment studies for early onset preeclampsia.

Martijn Hoes

Departments of Clinical Genetics, Cardiology, Genetics and Cell Biology, Maastricht University, The Netherlands,

Martijn Hoes is Assistant Professor in the Departments of Clinical Genetics (MUMC+), Cardiology (UM), and Genetics and Cell Biology (UM).



Martin Hoes is a biomedical researcher specializing in the use of induced pluripotent stem cells (iPSCs) for cardiac disease modeling, with a particular emphasis on Peripartum Cardiomyopathy (PPCM). By continuously refining tissue engineering methods, he aims to mimic a functional piece of the human heart in a dish, which can aid in uncovering the pathological mechanisms of various cardiovascular diseases.

Susana P Pereira

CNC-Center for Neuroscience and Cell Biology, University of Coimbra, Portugal

Laboratory for Integrative and Translational Research in Population Health, Faculty of Sports, University of Porto, Portugal



In her research, Susanan P Pereira is committed to unveiling how in utero conditions during fetal development can shape lives, increasing the predisposition for disorders such as cardiometabolic disease.

Carlos Salomon

Associate Professor at the Centre for Clinical Research,
Faculty of Medicine, University of Queensland, Australia.

Carlos Salomon is a leading expert in the field of extracellular vesicle biology with diagnostic and therapeutic implications, focussing on obstetrics and gynaecology in his research. He has investigated the release of extracellular vesicles by the placenta during gestation, and tumour cells in ovarian cancer progression, and their utility as a biomarker for a wide range of pregnancy complications, and ovarian cancer.



Alecia-Jane Twigger

Department of Pharmacology and Cambridge Stem Cell Institute,
University of Cambridge

Dr. Alecia-Jane Twigger is currently a Research Associate at the Department of Pharmacology and Cambridge Stem Cell Institute at the University of Cambridge. Starting her research career with a PhD at the Human Lactation Research Group in Western Australia, her work has traversed the mammary gland biology and breast cancer fields, working in Munich and now Cambridge. Her research is focused on better understanding how lactation impacts the long-term health outcomes of the mother-infant dyad.

