



# DOHaD Digest

*Canadian DOHaD Society's Newsletter*



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## Editors' Note

*By Stephane Bourque, Kristin Connor, Anita Kozyrskyj, Maria Ospina, Shelby Oke, Stephen Renaud*

At long last, members of the Engagement, Communications and Outreach Committee (ECO) are pleased to release the first issue of DOHaD Digest, our updated newsletter series for DOHaD Canada. DOHaD Digest will serve as a communication channel for our members by providing important updates on society affairs and upcoming events, including the DOHaD 2022 World Congress, punctuated by musings of the newsletter editors. DOHaD Digest is also an ideal venue to profile some of our society members and the outstanding work they do – from trainees to community members and academic researchers. We strive to promote equity, diversity, and inclusion in our DOHaD Digest content and features, and aim to showcase the breadth and depth of research, researchers and key stakeholders in our pan-Canadian DOHaD community.

The DOHaD Digest includes a section dedicated entirely to the Trainee and Development Committee (TDC). In this inaugural issue, we introduce you to the members of the TDC, who work

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tirelessly on behalf of the trainees in the society. We encourage all DOHaD Canada trainees to reach out and engage with the TDC and the rest of the DOHaD community. In these challenging times, involvement in community may be an ideal way to ward off the alienating effects of mandated isolation.

We also want to hear from you, our members! If you have publications or other news you would like to profile in DOHaD Digest, please reach out to us so we can share it with the community. If you would like to be considered for the Highlights section of an upcoming newsletter, please let us know about yourself and your work. If you have any feedback, please let us know! You can reach out to us at [communications@dohad.ca](mailto:communications@dohad.ca).

Lastly, we would like to draw attention to the fact that November 20 is World Children's day—a day in which we promote international unity with the goal of improving children's welfare all around the world. On this date in 1959, the United Nations (UN) General Assembly adopted the Declaration of the Rights of the Child, and in 1989 the UN General Assembly adopted the convention on the Rights of the Child. In the spirit of day, we would like to highlight Canada's most recent collaborative effort to champion Children's health and well-being. The #WeCANforKids initiative is led by the Children's Healthcare Canada, the Pediatric Chairs of Canada, UNICEF Canada and CIHR-IHDCYH and aims to define frameworks to measurably improve health outcomes of children and youth in Canada. Check out [www.wecanforkids.ca](http://www.wecanforkids.ca) for more information.

We hope you enjoy the first issue of DOHaD Digest.



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## President's Message

*By Dr. Stephen Matthews*

Welcome to DOHaD Digest from DOHaD Canada, our new and updated newsletter. I would like to thank Dr. Stephane Bourque and members of the DOHaD Canada Engagement, Communications and Outreach Committee, for leading this new and exciting initiative.

DOHaD Digest is a great forum to highlight Canadian DOHaD research, and its translation to improving the lives of Canadians and beyond. It also allows us to spotlight exciting new programs closely linked to DOHaD, such as the Inspiring Healthy Futures Initiative [www.wecanforkids.ca](http://www.wecanforkids.ca) that has just launched.

Preparations for DOHaD 2022, Vancouver are moving forward at pace led by Drs Janice Bailey and John Challis. This will be an exciting meeting and an opportunity to showcase DOHaD Canada. Read more in the following pages.

Our DOHaD Canada community continues to grow, now with over 370 members from across Canada, of which 44% are trainees! We want to hear from you, so please reach out and connect.

# Prospectus: DOHaD 2022

*By Drs. Janice Bailey and John Challis, Co-Chairs, DOHaD 2022 World Congress*

We are delighted to formally announce that the next DOHaD World Congress will take place in Vancouver, British Columbia (Canada) between August 27-31, 2022. It will be preceded by integrated satellites on DOHaD in animal production, to be held in Québec City in the fall of 2021 and a second satellite on DOHaD and Indigenous health, to be held in Kananaskis or Canmore, in mid-August 2022. Reports from each of these satellites will inform symposia at the Vancouver Congress.

In 2022, the DOHaD Congress will be held in conjunction with the Annual Meeting of the **Kids Brain Health Network** (KBHN) in its third cycle as a Canadian Network of Centres of Excellence (NCE). DOHaD and KBHN share many scientific and policy goals. We are excited by the ability to bring trainees and investigators from each group to the same integrated Congress.

Planning for the Congress is well underway. Our trainee committee led by Kozeta Miliku and Sandy Davidge have proposed an outstanding 2-day program of workshops, seminars, and networking events. The Program and Executive Committee is currently finalizing invitations to an exceptional group of keynote speakers. We anticipate that each day the highest scoring abstracts submitted by trainees will be presented as award lectures in plenary sessions. We are developing an exciting list of symposium and workshop topics, and will be delighted to receive your thoughts on areas that you would like to propose or be discussed.

Finally, in this pandemic time, we are concurrently planning for the possibility of virtual or hybrid sessions, seeking ways that enhance your involvement and create networking opportunities. Please give us your input, thoughts and ideas.

We look forward to seeing you in Vancouver for the DOHaD 2022 World Congress, in conjunction with the Annual meeting of the Kids Brain Health Network. We promise an outstanding meeting where mountains meet the ocean in one of the world's greatest cities.

**View our opening video, visit our web site (<https://www.dohad2022.com>) and follow us on Twitter at @DOHaD2022.**

We also encourage the DOHaD Canada members to help us with some of our DOHaD 2022 Congress communications. We are looking to you to help us identify:

(i) who we should be engaging with on social media (e.g. researchers, key thought/opinion leaders, key organizations); (ii) who we should reach out to in the international community to contribute to blog posts on the DOHaD 2022 Congress website, and (iii) other meetings (local, national, international) you attend where we could cross-promote the upcoming DOHaD 2022 Congress. **We welcome your ideas, so please share via our Google Spreadsheet:**

[https://docs.google.com/spreadsheets/d/1c9pUW8YAlz2XKnZvKwEM35654\\_yS6l4BQLduz1bAHPM/edit?usp=sharing](https://docs.google.com/spreadsheets/d/1c9pUW8YAlz2XKnZvKwEM35654_yS6l4BQLduz1bAHPM/edit?usp=sharing)



**DOHaD WORLD  
CONGRESS 2022  
VANCOUVER • CANADA**  
**EQUITY • ENVIRONMENT • ENGAGEMENT**

# Trainee Highlights: Meet the TDC

## Dr. Kozeta Miliku, Co-Chair

Kozeta is a Postdoctoral Fellow in the Department of Medicine at McMaster University. She is currently leading the 12-year visit of North-America's largest birth cohort in the CHILD Cohort Study. Her research is focused on the fields of nutrition and genetics, and the developmental origins of chronic disease, including cardiometabolic health, asthma and allergies. In addition to her role with DOHaD Canada, Kozeta sits on the Executive and Programming Committee for the 2022 DOHaD International Congress and Co-Chairs the Trainee and Networking Committee. Kozeta.Miliku@umanitoba.ca @KozetaMiliku



## Christian Bellissimo, Co-Chair

Christian is a PhD Candidate in the Department of Biochemistry and Biomedical Science at McMaster University. His research investigates the impacts of maternal metabolic dysfunction on early placental development and the local intrauterine immune environment, and how these changes impact early life metabolism and immunity. Christian is one of two trainee representatives that sit on the DOHaD Canada Board. bellisc@mcmaster.ca @CJBellissimo

## Dr Luseadra McKerracher

Luseadra is a Postdoctoral Fellow in the Faculty of Health Sciences and the Faculty of Arts and Social Sciences at McMaster University, and incoming junior fellow at the Aarhus Institute for Advanced Studies at Aarhus University (Aarhus, Denmark). Her research interests include biocultural and health equity, with a particular focus on nutrition during pregnancy. Her upcoming research in Denmark will focus on pregnancy health and political marginalization, engagement and activism. luseadram@gmail.com @luseadra



## Shelby Oke

*Liaises with DOHaD Canada Engagement, Communications and Outreach Committee and the DOHaD 2022 International Congress Communications Committee.* Shelby is a PhD candidate in the Department of Physiology and Pharmacology, Schulich School of Medicine and Dentistry, University of Western Ontario. Her research uses models of maternal protein restriction and maternal THC exposure to study the effects of postnatal catch-up growth on mitochondrial function in IUGR offspring, and on long-term hepatic function. soke2@uwo.ca @shelbyoke

## Marina White

*Liaises with DOHaD Canada Scientific Program Committee and the DOHaD 2022 International Congress Communications Committee.* Marina is a PhD candidate in the Department of Health Sciences at Carleton University. Her research investigates the role of maternal nutrition and the placenta in early life programming of neurodevelopment and growth, with a focus on pregnancies complicated by maternal HIV infection or fetal spina bifida. marina.white@carleton.ca @MarinaKWhite





# Diagnostic and therapeutic strategies for prenatal inflammation: targeting the placenta to protect the mother and child

*Dr. Sylvie Girard, Associate Professor, Centre de Research due CHU Sainte-Justine, Université de Montréal*

Over 10% of all pregnancies have complications, including fetal growth restriction, preeclampsia and premature deliveries, meaning that over 35,000 pregnancies/year are abnormal across Canada. These complicated pregnancies are strongly associated with elevated risk of later occurring diseases in the infant, a process known as fetal programming of health and diseases. Children prenatally exposed to one or multiple of these complications have higher risk of life-long complications such as neurodevelopmental disorders and cardiovascular diseases.



My research program has been dedicated to the understanding of the mechanisms underlying these complications, and particularly the role of prenatal inflammation and its impact on placental function. Our overall goal is to develop tools to identify new diagnostic and therapeutic strategies targeting prenatal inflammation. Our work has focused first on the prenatal period. We, and others, have shown that pregnancy at high risk of complications presented elevated levels of alarmins, namely endogenous inflammatory mediators, in the maternal circulation (Girard S et al., AJRI, 2014). One of these mediators, uric acid, a marker of preeclampsia, is associated with an altered maternal immune profile and causes fetal growth restriction, the latter which we showed using a newly developed preclinical model (Brien ME et al., J Immunol, 2017; Biol Reprod, 2019). The mechanisms of action of other endogenous inflammatory mediators, such as HMGB1, are also being investigated to differentiate between their physiological and pathological actions within the placenta (Gaudreault V et al., under review). The detection of inflammatory mediators in the maternal circulation could be an attractive diagnostic tool and we observed that even if inflammation is present towards delivery in normal pregnancies, the inflammatory profile was different in pregnancy that presented with complications (Brien ME et al., AJRI, 2020). Alongside, we have been testing therapeutic strategies targeting inflammation which provide promising new possibilities (Nadeau-Vallée M et al., J Immunol, 2015, 2017). On the other hand, in the postnatal period, we recently begun investigating the possibility to use the placenta as a diagnostic tool to identify high-risk infants in a cohort of premature babies as well as getting an integrated view of the preterm birth syndrome through combined analysis of the maternal immune profile, whole-genome sequencing analysis of the placenta and child development. Globally, every aspect of my work is dedicated to the understanding of the role of prenatal inflammation in order to promote safer pregnancies and lead to the programming of a healthier future for the child.

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# Optimizing inter-generational health through preconception dietary intake

*By Dragana Misita, MSc Student, Department of Nutrition and Food Science, University of Alberta*

I am a 2nd year MSc student working on projects that promote optimal dietary intake before and after pregnancy. I have an undergraduate degree from the University of Alberta in Nutrition and Food Science, and I am a Registered Dietitian with strong interest in DOHaD. I am particularly interested in finding ways to help women and men improve preconception health and dietary intake; evidence strongly suggests that improving women's and men's preconception health may be the most effective way to optimize long-term health outcomes in children and subsequent generations.

Health complications in pregnancy are a common topic of research, but much less is known about women and men's preconception health, and the specific role that diet during this period plays in pregnancy health. I work directly with Dr. Rhonda Bell at the University of Alberta, and in 2019, together with our colleagues from the University of Toronto (Dr. Cindy-Lee Dennis and Dr. Catherine Birken) and McMaster University (Dr. Stephanie Atkinson) we collected information about the preconception knowledge, beliefs, attitudes and health, including diet, of women and men living in Canada. Information about diet was collected from more than 1200 adults with a newly adapted, short, food frequency questionnaire called PrimeScreen. PrimeScreen is unique as it includes only 24 questions, takes 10 minutes or less to complete, and assesses individual's weekly frequency intake of foods and food groups over the last month.



There are 2 parts to my thesis: 1) To validate the PrimeScreen against another standard dietary assessment method (repeat 24-hour recalls) and 2) To describe and compare the dietary intake of adults who were or were not considering a pregnancy within the next 5 years. My work will flow directly into a new Canadian intervention cohort called Healthy Life Trajectories Initiative, Canada.

My experiences as a graduate student thus far have been extremely rewarding and have given me new perspective and appreciation for DOHaD research. I am honoured and excited to contribute to this field, and will undoubtedly always have my "DOHaD glasses" on as I move forward in my career.

As I am still recruiting participants for the validation piece of my thesis project, I would greatly appreciate you sharing the following link with anyone who you think may be interested in taking part and contributing to this research: <https://redcap.link/prepdstudy>

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