
DOHaD Canada

Issue 4, July 2022

Editor's Note

In 2017, when DOHaD Canada held its first annual meeting, we wrote an editorial introduction to an accompanying special issue highlighting Canada's role and commitment to DOHAD research. We wrote about societal issues that constitute some of Canada's greatest health challenges (early adversity, environmental conditions, vulnerable populations, among others), and how these issues have shaped the DOHaD research landscape (The J DOHaD article can be found [here](#)). Next month Canada will host two important meetings in Vancouver: The Second International Indigenous DOHaD Gathering and the 2022 DOHaD World Congress, both of which incorporate these themes and many others. Hosting these meetings shows that Canada is a stalwart of the International DOHaD community. In this issue of DOHaD Digest, we've chosen research highlights to draw attention to some excellent research underway in the province of British Columbia, where these meetings will be held. Our west coast colleagues have contributed enormously to the research, leadership, and advocacy on behalf of DOHaD Canada and other institutions, so we thought it fitting to celebrate these efforts in this issue.

While the international meetings have occupied a fair share of global attention over the past two years, there's a lot happening within DOHaD Canada that may have been gone unnoticed. For example, the Education and Trainee Development Committees have developed educational programs and networking opportunities (e.g., DOHaD-focused courses, Slack page, trainee and ECI-centered seminar series, to name a few) in an effort to engage members of DOHaD Canada and build a more interactive and collaborative society. Many of these initiatives will be launched within the next few months, which gives us a lot to look forward to, even after the last vestiges of summer (and with it the World Congress and Indigenous DOHaD Gathering) are behind us.

Last but certainly not least, DOHaD Canada is making progress on its Equity, Diversity, Inclusion and Indigeneity (EDII) framework. A working group, headed by Maria Ospina, has proposed a draft outline for the society's policies and strategies to promote belonging, dignity and justice. Perhaps long overdue, these discussions are timely in the wake of the US Supreme Court's decision to overturn Roe v. Wade. The decision is discriminatory of all pregnant individuals in the US (and its effects will almost certainly be felt in Canada – see this [article](#) published in the CMAJ), but will especially affect those of low income - a group that disproportionately includes underrepresented minorities; the ruling runs diametrically opposed to the concepts espoused by

EDII. Despite this setback, public bewilderment in response to the ruling makes us optimistic for a brighter future ahead. DOHaD Canada recognizes that eternal vigilance is needed in the struggle for a free and just society, and we will continue to advocate for universal rights and inclusivity for all.

See you all in Vancouver!!

The ECO Committee

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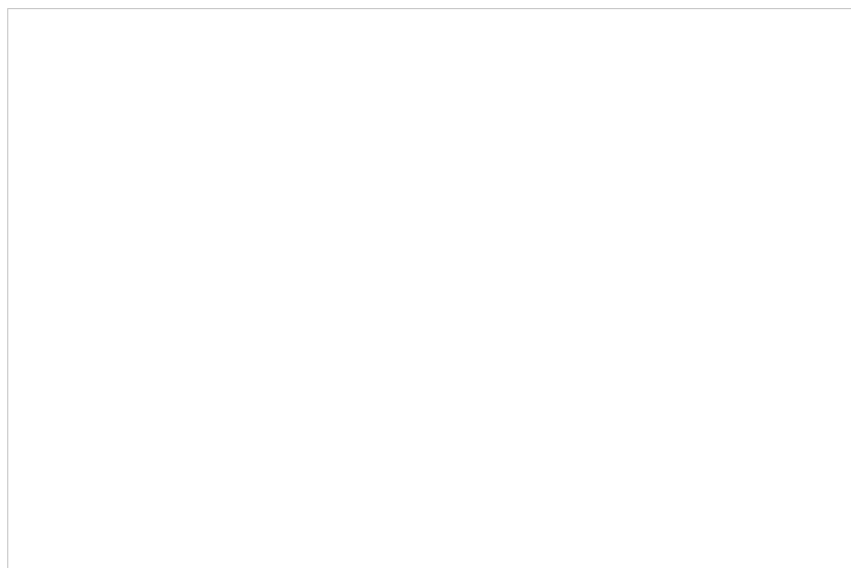
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Research Highlights: Dr. Liisa Galea

Sex and Gender Matter for DOHaD (and let's not forget about mom)!

Dr. Liisa Galea is Professor of Psychology and Distinguished University Scholar at the University of British Columbia (UBC). She is Health Advisor to UBC's Office of the VP, Research & Innovation (VPRI) in partnership with the Canadian Institutes of Health Research (CIHR), Lead of the Women's Health Research Cluster and a Scientific Advisor for the Women's Health Research Institute. Dr. Galea was recently appointed inaugural Treliving Chair in Women's Mental Health by the Centre for Addiction and Mental Health. Her research investigates how sex hormones influence brain health and disease in both females and males.



Women are more likely to live longer but are also more likely to suffer from chronic disease and side effects from drugs than men. In fact, women are diagnosed on average two years later than men for the same disorder, and more likely to present with “atypical” symptoms of disease. On the other hand, age plays a role in sex differences in disease, as males are typically more susceptible to neuro-developmental disorders than females (e.g. autism, ADHD), but females are more likely to be diagnosed with mental health disorders after the pubertal transition compared to males. The National Institutes of Health (NIH) and others understood these health disparities by sex and gender were largely due to the lack of investigation in clinical trials of women and girls and mandated their incorporation into clinical trials in 1993. Yet here we are almost 20 years later, has progress been made?

By now, many researchers are well aware that funding agencies and publishers are requiring that research consider sex and gender. Since 2010 funding applications to the Canadian Institutes for Health Research (CIHR) have a required section asking if and how sex and/or gender will be considered in the proposed research. In 2019, sex and gender-based analysis (SGBA) was officially added to the scoring of CIHR grants, while the NIH added sex as a biological variable (SABV) as a scorable factor in reviewing their grants in 2016. Although arguably we are in the early stages of SGBA and SABV awareness, our latest research shows that there has been an impressive uptake in the percentage of studies using males and females comparing studies published in 2009 to 2019 (across 6 journals), such that 70% of all neuroscience and psychiatry studies examined included males and females! Although we should celebrate this success, there are signs we still have work to do. A dismal 5% of studies in our sample examined whether sex played a role in the results! That’s a far cry from the 70% of studies that used males and females. These findings are important as George Bernard Shaw said, “Progress is impossible without change” and our results show that little progress has been made in harnessing the power that sex differences can unleash for scientific discovery and unearthing new effective therapies for neurological and psychiatric disease. Time and time again, we observe that underlying mechanisms in neuroscience can be completely different in males compared to females and so it is necessary to keep employing both sexes throughout the experiment and use sex as a discovery variable to really uncover any potential impact of sex as a factor.

Lastly, our findings from the same study showed that the percentage of female-only studies was very low at 3% and has not changed in ten years. Pregnancy affects female health and can have long-lasting effects on disease risk – but is rarely studied. All too often in DOHAD research, the effects on the mother (birth parent or father) are ignored. Let’s work to change that narrative. The comprehensive study of the influence of sex and gender is part of precision medicine which also requires in-depth analyses within sex and within genders. All of us, regardless of our sex or gender, lose out when sex and gender are not considered in research.

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Research Highlights: Amanda Rowlands

Amanda Rowlands is a PhD candidate in the Maternal and Child Health Lab in the Faculty of Health Sciences at Simon Fraser University. Her research explores how stress, metabolic energy, and sleep patterns affect reproductive development among adolescent girls.

Adolescence is a critical developmental period during women's reproductive lifespans, and social, physical, and ecological challenges in the early environment affect the pace of reproductive development. Socio-ecological challenges are energetically costly, and may cause a shift away from investment in reproductive efforts, thus delaying reproductive development and impacting other reproductive and health outcomes later in adulthood. In humans, changes in energy allocation are mediated by the stress axis, the process by which stress hormones are triggered and released. Sleep is another mechanism involved in energy restoration to recover from the costs of challenging factors in the environment. An objective of this work is to examine how stress axis activity and sleep patterns interact with each other, resulting in consequences for energy availability and allocation into physiological processes such as reproduction.

My project explores longitudinal changes in the interactions between stress, metabolic energy, and sleep across women's reproductive lifespans, and aims to answer questions such as 1) how does sleep change across the adolescent transition, 2) how does stress activity change from childhood, to adolescence, to adulthood, and 3) does metabolic energy availability change across a women's reproductive lifespan. I work with data and bio-specimen samples collected as part of Dr. Pablo Nepomnaschy's Society, Environment, and Reproduction (SER) study, a longitudinal study that has been ongoing in Guatemala since 2000. This study will add to our knowledge by characterizing stress, energy, and sleep patterns in adolescent girls, and what physical or socio-ecological factors may be impacting the timing and tempo of this adolescent transition. The insights gained from this research project will be shared with relevant communities and stakeholders, as well as study participants, to provide evidence for the development of interventions during adolescence in order to optimize women's health and development across the lifespan.

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Links to papers:

<https://www.annualreviews.org/doi/abs/10.1146/annurev-anthro-102317-045930>

<https://pubmed.ncbi.nlm.nih.gov/34831907/>

Trainee Committee Highlights: Infographics Award Winners

Thank you to all the DOHaD Canada trainees for your participation in our 1st infographics competition! It was a great success and we are very proud of our incredibly talented trainees.

Top Ranked Infographics (in no particular order):

Vanessa De Rubeis

Taylor Scheidl

Fernandez Iciar

Marina White

Savana Biondic

Lubna Anis

Alyssa Wiedemeyer



Trainee Committee Highlights: New Members

Meet the new Trainee Development Committee Members-at-Large:

Jessica Puranda

Jessica is a first year PhD student who fast-tracked from her MSc. She completed her HBSc. in Biomedical Science at the University of Ottawa. Her supervisor is Dr. Kristi Adamo, a Professor in the School of Human Kinetics and the Faculty of Medicine at the University of Ottawa. Dr. Adamo's research program is grounded in the DOHaD approach. Jessica's project will be characterizing reproductive health, bone health and musculoskeletal injury in female Canadian Armed Forces members. Jessica has been involved with several projects related to physical activity during pregnancy. In her spare time Jessica enjoys engaging in various forms of physical activity including biking and beach volleyball. She also enjoys spending her down time playing the piano and ukulele. Jessica will be serving a 12-month term on the DOHaD Canada trainee development committee. She is looking forward to this learning experience and helping to expand opportunities within DOHaD Canada for all trainees.

Savana Biondic

Savana is originally from Mississauga, Ontario. She completed both her undergraduate and masters degrees in Biomedical Sciences at the University of Guelph, where she studied the effects of endocrine disrupting compounds on bovine preimplantation development. She then moved to Montreal, Quebec to begin a PhD in the laboratory of Sophie Petropoulos. Here the main focus of her research is to investigate the role of microRNAs in mammalian preimplantation embryonic cell fate decisions. Outside of the lab she enjoys spending time outdoors, playing the piano and eating good food. Savana is set to serve a 12-month term on the DOHaD Canada trainee development committee.

Elnaz Vaghef-Mehrabani

Elnaz is a postdoctoral associate at the University of Calgary. She is originally from Iran and completed all her degrees in Nutritional Sciences at Tabriz University of Medical Sciences, Iran. Her research is focused on "food for mood". Specifically, she is interested in the role of maternal nutrition on maternal and offspring's mental health. Gut-microbiome is something she is into as well, particularly in relation to mental health. In her personal life, nothing pleases Elnaz more than spending time with her family and playing with her toddler. She also enjoys reading and cooking. Elnaz is a member of the DOHaD Canada trainee development committee (TDC) and hopes to be of efficient help to the committee's goals during her 12-months term.

Prospectus: Indigenous DOHaD Gathering 2022

Please join us at ilhenaylhs chet s7elji: Nourishing Our Ancestors' Dreams - the Second International Indigenous DOHaD* Gathering in Vancouver, BC on August 24 - 26, 2022.

What is the Gathering? A gathering to learn and share about supporting Indigenous women, babies and families, centred on healthy pregnancies, healthy babies, healthy communities and healthy futures.

Who is it for? Indigenous Elders, Knowledge Holders, community members, parents, midwives & doulas, health & social services practitioners, and academic researchers

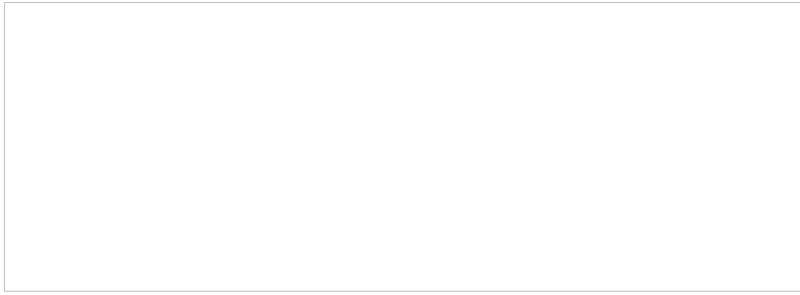
When and where is the Gathering? We are meeting on Wednesday August 24 through Friday August 26, 2022 in Vancouver BC, on the lands of the xʷməθkʷəʔəm (Musqueam), Skw_ xwú7mesh (Squamish), and səliwətaʔt (Tseil-Waututh) peoples.

What will we be doing? Connecting with one another to share what we are learning and doing to revitalize cultural teachings, practices and traditions, and establish new ways of supporting moms, babies and families in communities. We are planning interactive knowledge sharing sessions along with group presentations, collaborative art and land-based learning opportunities, along with songs, dances and stories.

Ensuring a safe space for all! We aim to provide a safe and comfortable space for Indigenous community members and practitioners to come together with researchers to share their knowledge and learn from each other. We will have specific supports for Elders, Knowledge Holders and community members, and opportunities for all attendees to experience the cultural practices of the Host Nations.

Registration is open!! Please visit our website at www.indigenousandohadgathering.org for more information! You can also reply to info@indigenousandohadgathering.org with any questions you may have. And please feel free to pass this invitation on to others who may be interested.

We hope to see you at ilhenaylhs chet s7elji - Nourishing Our Ancestors' Dreams!



Prospectus: DOHaD 2022

The DOHaD 2022 Program and Executive Committee are delighted to share updated details about the DOHaD World Congress, to be held in Vancouver August 22-31, 2022 in conjunction with the 12th annual meeting of the Kids Brain Health Network.

Already over 650 abstracts have been submitted from 47 countries! There is still time to register for the congress. Don't miss your chance to present your DOHaD-related research and network with colleagues as you learn about 'Social and Environmental Disruptions in DOHaD: Successful Interventions for a Healthy Future! An exciting programme with not-to-be-missed keynote speakers is waiting for you in Vancouver, including talks from:

Kang Lee, AI, Facial Recognition, Transdermal Imaging (Canada)
Elaine Holmes, Microbiome in DOHaD and Ageing (Australia)
Tracy Bale, Stress and Neurodevelopment (USA)
Vikram Patel, Burden of Mental Disorder, Poverty and Social Disadvantage (India & USA) Anne Ferguson-Smith, Epigenetic Regulation of Early Development (UK)
David Edwards, MRI, Brain Imaging (UK)
Tiffany Green, Health Economics and Health Inequities (USA)
Shinichi Kuriyama, Harmonisation of Genetics and Lifestyle in Personalised Medicine (Japan)
Linda Richter, Pandemics and Childhood Adversity (South Africa)
Cesar Victora, Child Health and Nutrition (Brazil)

We are also delighted to support the DOHaD trainee subcommittee for the exciting pre-Congress trainee workshops! Learn more about this in this newsletter's Trainee Section, and if you are a trainee, sign up!

Keep checking the DOHaD 2022 Congress [website](#) for up-to-date information!

Announcements

Election Results

We are very pleased to announce that **Maryam Kebbe** was elected to occupy the DOHaD Canada Trainee Council member seat.

With no other nominees running, six sitting council members whose first term would expire in 2022 were automatically reappointed for a second and final term of three years:

- **Stephane Bourque** (AB)
- **Vern Dolinsky** (MB)
- **Mike Kobor** (BC)
- **Pablo Nepomnaschy** (BC)
- **Stephen Renaud** (ON)
- **Ian Weaver** (NS)

We thank these Council members for their continued service to our Society.

Events

American Society of Animal Science (ASAS) Perinatal Biology Symposium (August 28–31, 2022; Aspen, Colorado). Click [here](#) for details.

Society of Toxicology of Canada 54th Annual Symposium "*Environmental and Lifestyle Exposure to Endocrine Disrupting Chemicals: From Cells to Society*" (November 30 - December 2, 2022; Ottawa ON). Click [here](#) for details.

Publications

Yoshida-Montezuma Y, Sivapathasundaram B, Brown HK, Keown-Stoneman C, de Souza RJ, To T, Borkhoff CM, Birken CS, Maguire JL, Anderson LN. Association of Late Preterm Birth and Size for Gestational Age With Cardiometabolic Risk in Childhood. [JAMA Netw Open. 2022 May 2;5\(5\):e2214379.](#)

Iacono L and Regelmann MO (2022) Late Preterm Birth and the Risk of Cardiometabolic Disease. [JAMA Netw Open. 2022 May 2;5\(5\):e2214385.](#)

Scott H, Martinelli L, Grynspan G, Bloise E, Connor KL. Preterm Birth Associates With Increased Placental Expression of MDR Transporters Irrespective of Prepregnancy BMI. [J Clin Endocrinol Metab. 2022 Mar 24;107\(4\):1140-1158.](#)

Korgan AC, Foxx CL, Hashmi H, Sago SA, Stamper CE, Heinze JD, O'Leary E, King JL, Perrot TS, Lowry CA, Weaver ICG. Effects of paternal high-fat diet and maternal rearing environment on the gut microbiota and behavior. [Sci Rep. 2022 Jun 17;12\(1\):10179.](#)

Lecante LL, Gaye B, Delbes G. Impact of in utero rat exposure to 17-alpha-ethinylestradiol or genistein on testicular development and germ cell gene expression. [Front Toxicol. 2022 Jun 2;4:893050.](#)

Turner, S., McGann, B. & Brockway, M. A review of the disruption of breastfeeding supports in response to the COVID-19 pandemic in five Western countries and applications for clinical practice. [Int Breastfeed J. 2022 May 15;17\(1\):38.](#)

Awards/Honours

Dr. Ashley Wazana and on his two new grants from CIHR on Addressing the Wider Health Impacts of COVID-19: Identifying COVID-related mental health problems and resiliency in youth to inform intervention policy from pre-pandemic levels of maternal environmental adversity and mood and Understanding and mitigating the impacts of the COVID-19 pandemic on children, youth and families in Canada.

Dr. Galea was appointed inaugural Treliving Chair in Women's Mental Health by the Centre for Addiction and Mental Health. See the announcement [here](#).

Opportunities

Tenure-Track Position in DOHaD - University of Ottawa. For details or to apply, click [here](#).