



A Newsletter from the CIHR Institute of Nutrition, Metabolism and Diabetes

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INMD *Connections*

Message from Philip Sherman, INMD Scientific Director



From left: Drs. Nabil Seidah and Phil Sherman

This month we are pleased to highlight a success story from the INMD research community: Dr. Nabil G. Seidah (IRCM & Univ. Montreal) and his team have led exciting research describing the function of the proprotein convertase subtilisin kexin 9 (PCSK9). The protein PCSK9 plays a key role in enhancing the cellular degradation of the receptor of low-density lipoprotein (LDL) cholesterol (LDLR) and hence reducing its protein levels. This research has contributed

to the development of a new class of drugs that work by inhibiting the PCSK9 activity on the LDLR, thereby enabling the liver to remove more efficiently LDL cholesterol from the bloodstream, and thus reduce the risk of cardiovascular disease.

PCSK9 inhibitors recently received approval by the U.S. Food and Drug Administration for use in addition to diet and maximally tolerated statin therapy in adults with heterozygous familial hypercholesterolemia and in patients with clinical atherosclerotic cardiovascular disease such as heart attacks or strokes who require additional lowering of LDL cholesterol. In a recent position [statement](#), the [Council on Arteriosclerosis, Thrombosis and Vascular Biology \(ATVB\)](#), (affiliated with the American Heart Association), which includes Canadian researchers Drs. Robert Hegele (Western Univ.) and Ruth McPherson (Univ. Ottawa), noted

that non-statin treatments, including PCSK9 inhibitors, will become an increasingly important tool for lowering LDL cholesterol in appropriately selected patients.

Please check out a recently posted CIHR [interview with Dr. Nabil Seidah](#) showcasing his research and the discovery of this new class of drugs to reduce LDL cholesterol.

Success stories like this help us illustrate the value of Canadian health research and how this research impacts the lives of Canadians. If you have a success story that you would like to share, please contact [Mary-Jo Makarchuk](#).

The [Canadian Lipoprotein Conference](#) took place this year in Toronto at SickKids on October 15-18th, where the research community heard more about the emerging field of non-statin cholesterol inhibitors. I look forward to hearing more about the latest in this exciting field of lipoprotein research!

Warm wishes for the fall season,

Philip M. Sherman, MD, FRCPC
Scientific Director, INMD

Canadian Nutrition Society Webinar: DHA in Maternal and Child Health

Speaker: Dr. Catherine Field, Professor, Food and Nutritional Sciences, University of Alberta

Wednesday November 25, 2015

12:00-13:00 EST

For more information and to register, [click here](#).

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Food & Health Programmatic Grant: Understanding the impact of maternal and infant nutrition on infant and child health



Dr. Sonia Anand (front row, right) and her team

This programmatic grant brings together an alliance of four Birth Cohort studies representing 4,500 mother-baby pairs. The Principal Investigator is Dr. Sonia Anand (McMaster Univ.) and co-investigators include: Drs. Stephanie Atkinson, Allan Becker, Joseph Beyene, Russell de Souza, Judah Denburg, Milan Gupta, Andrew Mente, David

Meyre, Sarah McDonald, Katherine Morrison, Guillaume Pare, Malcolm Sears, Padmaja Subbarao, Mike Surette, Koon Teo, and Gita Wahi. The specific goals of the grant are to:

1. Identify the dietary patterns and specific macronutrient intake levels of pregnant mothers which predict maternal and newborn/infant/child health outcomes;
2. Investigate gene-diet and epigenome-diet interactions in mothers and newborns, and relate these to infant/child outcomes; and
3. Characterize the infant microbiome at one year of age comparing diverse maternal and infant diets, and study associations between the infant microbiome and infant/child health outcomes.

The work supported by this grant has already contributed to the training of two undergraduate students, one Master's graduate student, three doctoral students, and two post-doctoral research fellows. Work enabled by this research program has helped recruit two new faculty members to McMaster Univ.: Dr. Russell de Souza, working on developing methods of characterizing dietary patterns in diverse birth cohorts and Dr. Jennifer Stearns, studying the role of maternal and infant exposures in shaping the infant gut microbiome.

Progress to date includes processing over 2,000 mother-infant pairs for genome wide analysis, 750 infant samples for gene expression and methylation analyses, and genotyping the microbiome of 350 infants at one year of age. Food frequency questionnaires, allergy outcomes, and a number of clinical and environmental exposures have been harmonized across the four cohorts. Methodological approaches to test associations between these factors and clinical outcomes are being refined and will provide novel insights regarding the impact of maternal and in utero exposures and their association with maternal and infant health outcomes during pregnancy, at birth, and in early infancy.

When completed, genome-wide genetic data will have been collected from 4,500 mother-infant pairs, gene expression and epigenome data from 1,000 infants, targeted epigenome analysis in 4,500 infants, and the gut microbiome of 450 infants characterized at one year of age.

Funding Opportunities

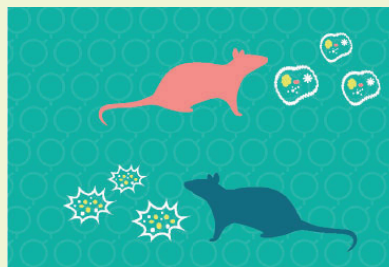
Canadian Environmental Urban Health Research Consortium

CIHR is pleased to announce the launch of a [Canadian Environmental Urban Health Research Consortium \(EUHRC\)](#) funding opportunity, a key component of the [Environments and Health Signature Initiative](#). The total amount available for this funding opportunity is approximately \$4.165 M, enough to fund one grant over five years. The specific objectives of this funding opportunity are to:

- Provide researchers with access to 'analysis-ready' environmental data relevant to the Urban Form;
- Provide researchers with models/methods/analytics to assess environmental exposure to address specific health research questions;
- Lead to the creation of new knowledge of priority environmental health issues in the Urban Form, and accelerate its transfer to relevant stakeholders;
- Enable government agencies to incorporate environmental health research into policy-relevant projects;
- Enable existing cohorts to add environmental data to their datasets;
- Become a resource of leading Canadian scientists to conduct research in the field of environments and health.

For more information on this funding opportunity, contact [Caroline Wong](#).

Catalyst Grant: Sex as a Variable in Biomedical or Translational Research



This funding opportunity aims to encourage biomedical scientists to include sex as a variable in their research questions and experimental designs. The total

amount available for this funding opportunity is \$2.1 M, and the maximum amount per grant is \$75,000 per year for up to two years. **Application Deadline: November 12, 2015.** For more information, visit the [ResearchNet website](#).

Check out CIHR on YouTube!

Check out Phil Sherman on [YouTube](#), discussing the rising health problems associated with obesity in Canada, along with a patient who shares her personal experience about how bariatric care surgery has changed her life.

The Institute of Nutrition, Metabolism and Diabetes (INMD) supports research to enhance health in relation to diet, digestion, excretion, and metabolism; and to address causes, prevention, screening, diagnosis, treatment, support systems, and palliation for a wide range of conditions and problems associated with hormone, digestive system, kidney, and liver function.

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