



## The Year in Review

The last year has been a productive one for the Centre, starting with our renaming from CSR to CRRD. Many of you have helped to raise the profile of the Centre by wearing our attractive new CRRD sweatshirts. I hope others will consider investing in Centre clothing, including new T-shirts!

Our 8th Annual Research Day, held on 31 May 2016, attracted 152 registrants from McGill, Université de Montréal, University of Ottawa, McMaster University, the Douglas Hospital, and RQR. Keynote lectures were delivered by Drs. Sally Camper (Department of Human Genetics, University of Michigan Medical School), Jodi Flaws (Department of Comparative Biosciences, University of Illinois), and Robert Viger (Centre Hospitalier de l'Université Laval). Trainees presented 6 talks and 39 posters. Special congratulations go to the award winners: Marc-Olivier Turgeon (Oral), Deepak Saini (MSc Poster), Keith Siklenka (PhD Poster), Han (Aileen) Yan (PhD poster), and Chirine Toufaily (Postdoctoral Poster). It is safe to say this meeting is becoming a vital component of the reproductive and developmental biology research community in Quebec!



Poster Session, Research Day 2016

This year we saw an expansion of the monthly Hot Topics in Reproduction and Development research seminar series. We were happy to welcome additional labs from the CRRD as well as colleagues from U de M. Thanks to Dr. Martine Culty for organizing the series this year.

The CRRD, in partnership with the RQR, continues to provide training opportunities for graduate students and post-doctoral fellows through workshops, like "Spermatogenesis And Staging The Cycle Of The Seminiferous Epithelium Of Mouse, Rat and Man" - which this year attracted 25 participants and received rave reviews. Thanks again to Drs. Louis Hermo and Carlos Morales for putting on such an informative and enriching program.

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In other news, Dr. Cristian O'Flaherty's term on the CRRD Executive Committee came to an end after three years of active service. Dr. Makoto Nagano was elected by the membership to replace Cristian starting July 1. We thank Cristian for his service and, in particular, for his leadership in Chairing the Awards Subcommittee. We look forward to working with Makoto over the next 3 years. We would also like to thank Lundi Ly from the Trasler Lab, who was an active Trainee Rep over the past year. Gauthier Schang and Aaron Kwong will assume the roles of co-Trainee Reps over the next year. We are excited by the innovative ideas and activities they will bring to the CRRD.

## Welcome to our new Executive Members!



Makoto Nagano, Member Elect



Aaron Kwong, Co-Trainee Rep



Gauthier Schang, Co-Trainee Rep

The coming year promises to be busy. This fall, we will hold a fellowship competition and will welcome Dr. Stephen Hammes for a CRRD-sponsored lecture in December. Dr. Hammes is the Editor-in-Chief of *Molecular Endocrinology* and the Chief of the Division of Endocrinology and Metabolism at the University of Rochester Medical Center. He will deliver lectures on the main campus on December 5th and at the Glen on the 6th. Stay tuned for more details. Another major activity will be the renewal of the FQRNT grant that funds the RQR. Dr. Derek Boerboom from the Université de Montréal is taking over as principal investigator from Dr. Bruce Murphy. Bruce has been a real leader and terrific ambassador for the reproductive sciences in Quebec. He built one of the strongest networks of reproductive biologists anywhere in the world with the formation of the RQR in 2008. We thank Bruce for his leadership and look forward to working with Derek, our colleagues at Laval U., and throughout the network on the renewal application, which is due in September. If successful, the grant will fund the network until 2023!

On behalf of the Executive Committee, I want to thank you all for past, present, and future contributions to the success of our Centre.

Sincerely,

A handwritten signature in black ink, appearing to read "Daniel Bernard".

Daniel Bernard, Director CRRD

# NOTES FROM THE ROAD

The 41st American Society of Andrology (ASA) Conference was held in New Orleans, Louisiana April 1st-5th, this year. The theme of the meeting was “Old Dogmas, New Ideas: The Changing Landscape in Andrology,” with the conference showcasing the latest science in andrology that has significantly changed, is changing, or has the potential to change the thinking and understanding of the field. CRRD Member Vassilios Papadopoulos is President of the ASA and the meeting was well attended by our members. We awarded stipends to support the travel of six trainees (one Masters student, two PhD students, and three postdoctoral fellows) from four different labs to the conference. Below, are some highlights of the work presented by two of our trainees at the meeting.

## Sunghoon (Daniel) Lee

As a Master’s student in the Papadopoulos lab, I attended the 41st annual conference of the American Society of Andrology in New Orleans with funding from the Centre for Research in Reproduction and Development. Being my first international conference, I was thrilled to see and hear from researchers whom I had only known through reading their papers. In addition, it was great to meet many young scientists and learn about the vast range of work going on in the field of andrology.



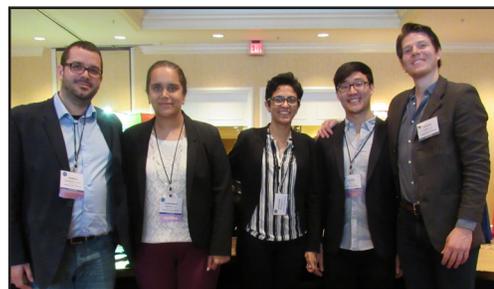
Canal Street, New Orleans

At ASA, I presented work from my Master’s thesis *In utero exposure to DEHP alters steroidogenesis in the adult male offspring: Reversibility of the effects using pharmacological means*. DEHP is a ubiquitously used plasticizer in the production of polyvinyl chloride plastics and has been identified to be an endocrine disruptor. Ongoing research has shown early exposure to DEHP has negative effects on reproductive development in animals with similar associations found in humans. My research revealed that while in utero exposure to DEHP decreased basal testosterone and increased basal corticosterone levels, these changes were reversed upon stimulation with supraphysiological levels of hCG or ACTH, respectively. These results suggest that despite a decrease in basal steroid levels, the steroidogenic capacity of the testes and adrenal glands is maintained following in utero exposure to DEHP.



## Steven Jones

As a graduating PhD student in the laboratory of Dr Martine Culty, I was delighted to receive support from CRRD to attend the 2016 American Society of Andrology (ASA) meeting in New Orleans LA. Serving as my last conference as a graduate student, ASA was a great opportunity to present findings from the third and final chapter of my thesis, receive valuable feedback, and allow me to network with other scientists regarding future opportunities. The work presented was a culmination of previous efforts aimed at determining the impact of fetal exposure to a mixture of low dose endocrine disruptors (EDs; genistein and MEHP) on testis development and function. To investigate further the mechanisms behind ED effects on Leydig cells, studies were conducted that exposed a mouse Leydig cell line (MA-10) to concentrations of EDs relevant to blood levels found in human. Results demonstrated the ability of combined genistein and MEHP to deregulate MA-10 Leydig lipid homeostasis, steroidogenesis and corresponding gene regulation. A working model involving LXR agonism and activation of other transcription factors was proposed. These findings, recently published in *Toxicology*, were novel and highlighted the importance of assessing the impact of ED mixtures in multiple toxicological models.



Members of the Papadopoulos and Culty labs at ASA: E. Campioli, G. Manku, S. Jagannathan, D. Lee, and S. Jones.

Now graduated, I would like to thank CSR/CRRD for continued support through travel awards and scholarships. The funding I’ve received over the years has significantly enriched my academic training and interaction with other scientists. Keep it up!

## We are pleased to announce the winners of our 2015 Funding Competitions!



Simon Wing

### Fall 2015 Grant Competition:

**Simon Wing in collaboration with Makoto Nagano** - \$10,000 (Bridge Grant)

*The role of the Huwe1 ubiquitin ligase in establishment and maintenance of spermatogonia*

Note: We did not hold a Spring 2016 Grant Competition, electing instead to award trainees.

### Spring 2016 Trainee Scholarship Competition:

**Sophia Rahimi**, MSc with J. Trasler  
**Han (Aileen) Yan**, PhD with B. Hales  
\$5,000 each



Sophia Rahimi



Aileen Yan

## Thank you!

Determining the recipients of Grants and Scholarships involves 3 reviewers for each application, including an external reviewer on grants. A huge thank you to the following for reviewing applications to our recent competitions: Bridge - H Clarke, R Slim, P Manjunath; Trainees - M Culty, P Monnier, A Naumova, C Goodyer, J Head, L Jerome-Majewska.

## CRRD Trainees raised \$421 through bake and ice cream sales, allowing us to award \$10,421 in Travel Stipends to 22 trainees from 14 member labs during the 2015-2016 Fiscal Year!

**Keith Siklenka**, PhD with S. Kimmins, **Karl Vieux**, PhD with H. Clarke, and **Laura Whidden**, MSc with J. Trasler  
Society for the Study of Reproduction 2015 Annual Meeting, 18-22 June 2015

**Yassemine Khawajkie**, MSc with R. Slim  
2016 World Congress on Recurrent Pregnancy Loss, 14-17 January 2016

**Aaron Kwong** and **Deepak Saini**, MSc with Y. Yamanaka, and **Enrique Gamero-Estevez**, MSc with A. Ryan  
Canadian Developmental Biology Meeting, 17-20 March 2016

**Yining Li**, PhD and **Luisina Ongaro**, PDF with D Bernard  
ENDO2016, 1-4 April 2016

**Steven Jones**, PhD and **Gurpreet Manku**, PDF with M. Culty, **Sunghoon Lee**, MSc and **Enrico Campioli**, PDF with V. Papadopoulos, **Anne-Marie Downey**, PhD with B. Robaire, and **Mahmoud Aarabi**, PDF with J. Trasler  
American Society of Andrology 41st Annual Conference, 2-5 April 2016

**Han (Aileen) Yan**, PhD with B. Hales  
16th Annual Workshop on Brominated and Other Flame Retardants, 5-6 May 2016

**Oceane Albert**, PDF with B. Robaire  
19th European Testis Workshop, 11-15 June 2016

**Nazem El Hussein**, PhD with B. Hales  
56th Annual Teratology Meeting, 24-30 June 2016

**Fatima Tokhmafshan**, MSc with I. Gupta  
The Allied Genetics 2016 Conference, 13-17 July 2016

**Rodrigo Bohrer**, PhD with Vilceu Bordignon, **Yasmin Schuermann**, PhD with Raj Duggavathi, and **Laleh Abassi**, PhD with Hugh Clarke  
49th Annual Meeting of the Society for the Study of Reproduction, 16-20 July 2016

## Another \$10K earmarked for 2016-2017 Fiscal Year!

Please note: there are no set deadlines associated with these awards; trainees should apply for travel support upon learning the status of their submitted abstract. Maximum 2 travel stipends per lab per fiscal year.

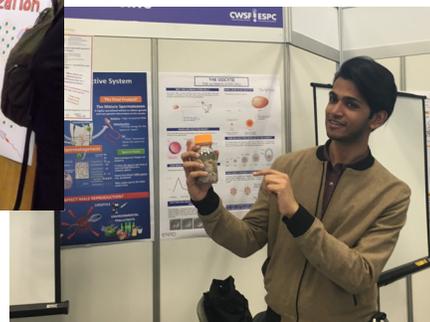
# CRRD at Canada-Wide Science Festival

Charlotte McCaffrey

The 55th Canada-Wide Science Festival (CWSF) brought 500 of Canada's top high school scientists to Montréal May 15-20, 2016 to showcase their solutions to some of the world's most pressing issues while competing for nearly \$1,000,000 in awards, prizes and scholarships. From May 18-20, the exhibit hall, in Tomlinson Fieldhouse, was open to the public and included a Discovery Zone where exhibitors were invited to showcase their organizations and capture the imagination of Canada's next generation. With the potential of 10,000 visitors, CRRD jumped at the opportunity to prepare a booth.

Despite short notice, we managed to create an interactive display including microscopes with histology slides of testes, epididymides and lactating mammary glands; reproductive and developmental biology videos; "Interesting Facts" quiz cards; fertilization puzzles; posters highlighting the male and female sides of reproduction/development; and a Velcro dart game representing fertilization.

The event was a rousing success and fun was had by all involved!



## Fun Facts

1. How many sperm are made with every male human heart-beat: 150, 1500, or 15,000?
2. How many vaginas does a kangaroo have: 1, 2, or 3?
3. What mammal has the longest gestation period?
4. True or False? Dolphins have retractable penises?

Answers on page 6.

## THANK YOU EXHIBITORS!!

Aileen Yan, Yining Li, Luisina Ongaro, Keith Siklenka, Lundi Ly, Yasmin Schuermann, Audrey St-Yves, Kai Sheng, Brandon Vaz, Rohini Bose, and Enrique Gamero staffed the booth and interacted with the finalists, chaperones, teachers' conference participants, general public, and students from school tours over the three days.

Thank you also to Aimee Ryan, Hugh Clarke, Carlos Morales and Anne-Marie Downey who helped organize and prepare the CRRD display.

CRRD members, including Sarah Kimmins, Sophia Rahimi, Yining Li, Gurpreet Manku and Enrico Campioli also participated as judges at the Science Fair.

# Hope Weiler Joins CRRD Membership

We are pleased to welcome Dr. Hope Weiler and her group as the newest additions to the CRRD. Dr. Weiler is the Tier 1 CRC in Nutrition, Development, and Aging and is Director of the Mary Emily Clinical Nutrition Research Unit in the School of Dietetics and Human Nutrition at the Mac campus. She actively researches development and the role of nutrients in bone health, growth, and metabolism working with children, mothers, fathers, and animal models for validation and characterization of molecular mechanisms. She is also involved in studies on the links between vitamin D, folate, BMI, and male fertility. Her recent publication in *Pediatric Obesity*, “Vitamin D supplementation trial in infancy: body composition effects at 3 years of age in a prospective follow-up study from Montréal”, has garnered a lot of attention and is featured below. Dr. Weiler and her team are a great addition to the development and clinical sides of our Centre and we welcome them wholeheartedly!

## Less body fat for toddlers taking vitamin D

*Supplement given during first year of life critical for muscle-mass development*

A healthy intake of vitamin D in the first year of life appears to set children up to have more muscle mass and less body fat as toddlers, according to a new study published in the journal *Pediatric Obesity*.

The findings emerged from research initially aimed at confirming the importance of vitamin D for bone density. The additional benefit in terms of body composition came as a surprise for the research team.

“We were very intrigued by the higher lean mass, the possibility that vitamin D can help infants to not only grow healthy skeletons but also healthy amounts of muscle and less fat,” said Hope Weiler, one of the study’s authors and Director of the Mary Emily Clinical Nutrition Research Unit at McGill University.

For the first time, a connection was made between the benefits of achieving healthy vitamin D status during a baby’s first 12 to 36 months and how muscle mass develops. The researchers achieved this by following up on a 2013 study in which 132 infants in Montréal, Québec, were given a vitamin D3 supplement at one of four different dosages between the ages of 1 month and 12 months.

The new study confirmed the importance for the development of strong bones of a vitamin D supplement of 400 IU/day during a baby’s first year. This amount is in line with current Canadian health guidelines. The researchers found that higher doses did not provide any additional benefit – at least not in terms of bone development.

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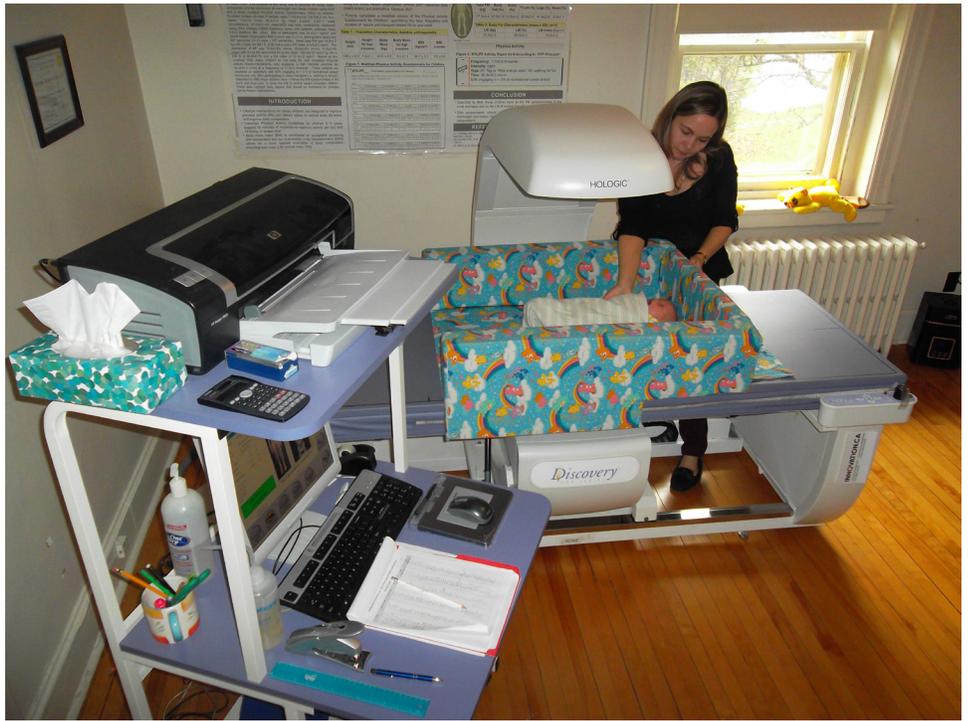
## In the Spotlight



Dr. Hope Weiler

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Less Body Fat

But the body scans used to assess bone density also allowed the team to measure the children's muscle and fat mass. While there were no significant differences in body composition across the different dosage groups, the researchers found children who had vitamin D stores above the threshold recommended by the Canadian Paediatric Society (CPS) averaged around 450 grams less body fat at 3 years of age.



#### **Supplements important in long winters**

Vitamin D supplementation is routinely recommended for babies until they can get an adequate amount through their diet. The skin synthesizes vitamin D when exposed to sunlight, making supplementation all the more important where long winters reduce the opportunity for this to happen. In addition, Health Canada advises parents and caregivers to avoid direct sunlight and avoid use of sun block creams in young infants.

#### **Physical activity also reduces body fat**

Further analysis also indicated a correlation between lean muscle mass and the average level of vitamin D in the body over the first three years of a child's life. The only other factor found to make a significant difference to the children's amount of body fat was their level of physical activity.

“Vitamin D supplementation trial in infancy: body composition effects at 3years of age in a prospective follow-up study from Montréal”, by T. J. Hazell, S. Gallo, C. A. Vanstone, S. Agellon, C. Rodd, and H. A. Weiler, *Pediatric Obesity* doi:10.1111/ijpo.12105

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## **Trasler and Papadopoulos win CIHR Grants**

Congratulations to CRRD Members Jacquetta Trasler and Vassilios Papadopoulos who were successful in the spring CIHR competitions. Trasler received a 7-year Foundation Grant for “Sex-specific susceptibility windows for fetal origins of adult disease and intergenerational effects” while Papadopoulos received two 5-year Project Grants for “Fetal Origin of Endocrine Dysfunction: The Plasticizer Model” and “Regulation of steroid hormone biosynthesis.”

# DONATE NOW!

## Clermont Endowment Fund



Dr. Clermont, 1926-2014

The CRRD is establishing an endowment to host an annual lecture named for our late McGill colleague and stem cell pioneer Dr. Yves Clermont. We hope to have the inaugural Clermont Memorial Lecture at our 2017 Research Day but have a bit of work to do to get to our target of \$50K.

The web link to make direct online contributions is:

<https://www.alumni.mcgill.ca/aoc/online-giving/step1.php?formtype=MED&new=1>. It is important that you specify on the second page/tab of this website that the gift you are making does not go to one of the items in the “select” box, but rather that you fill in the box below: “This gift is specifically designated for the Clermont Lectureship, Centre for Research in Reproduction and Development.”

THANK YOU FOR YOUR SUPPORT!

### Answers to FUN FaCts on page 4

1. 1500. That's right, human males produce about 1500 new sperm per heartbeat!
2. Three - Two side vaginas accept sperm during mating, while a central vagina is used for birthing. Male kangaroos have a two-pronged penis to inseminate the two side vaginas!
3. The Elephant. Elephant cows are pregnant for 22 months. That's almost 2 years!
4. True! A male dolphin can actually use his penis to explore objects just like a hand.



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## FRONTIERS IN REPRODUCTION

April 30-June 12, 2016

The Frontiers in Reproduction (FIR) course was held from April 30 to June 12 at the Marine Biology Laboratory (MBL) in Woods Hole, Massachusetts. This year, the course attracted students from Argentina, Australia, Brazil, Denmark, India, the Netherlands, Sri Lanka, the UK, and the US. As described at <http://www.mbl.edu/fir/>, “FIR is an intensive 6 week laboratory and lecture course for scientists-in-training who seek to improve their knowledge and experimental skills in order to pursue a career in the reproductive sciences. FIR Faculty and FIRBees (students) are free from other responsibilities found at home institutions, enabling full immersion in the FIR experience. Participants’ only responsibilities are to teach and learn. These unique characteristics of FIR, coupled with the rich scientific atmosphere of the MBL, provide an informal and relaxed setting to complement our intense lecture and laboratory program.” Members of the CRRD and RQR have participated as both faculty lecturers and students at FIR over the years. This year, our own Dan Bernard directed Section 1 for the 2nd time. Ying Wang from the Bernard lab ran one of the labs in the Section, also for the 2nd year. We encourage trainees in the Centre to apply for admission for the course in 2017. Faculty with an interest in teaching in FIR should contact Dan.

## Do you have ideas for the next newsletter?

Please send your feedback and suggestions to Charlotte at [crrd@mcgill.ca](mailto:crrd@mcgill.ca).

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