



Presented by the McMaster
Women in Science and Engineering Initiative



March 7th – 8th, 2014, McMaster University
Celebrating the 103rd International Women's Day

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Acknowledgements

WISE is deeply indebted to all of our McMaster University and community sponsors for their continued support in helping us achieve our goals. Without this support, none of our activities would be possible.

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We would also like to thank the many conference judges and volunteers for their time, effort, and support.



Welcome Statement

Welcome to CREST 2014! CREST, Current Research in Engineering, Science, & Technology, is an annual multi-disciplinary research conference hosted by the McMaster Women in Science and Engineering (WISE) Initiative. This year marks our 8th anniversary and we are thrilled to present you with this year's exciting new program. We know you will find it educational, stimulating, and inspiring!

We are very lucky to have Dr. Lisa DeBruine as our keynote speaker for 2014. Dr. DeBruine is an internationally recognized scientist at the University of Glasgow's Institute of Neuroscience & Psychology, where her research focuses on kin recognition, facial resemblance, and face perception. We will also be hearing from four academic panelists (Dr. Nickett Donaldson-Kabwe, Dr. Ayesha Khan, Dr. Laura Melnyk, and Dr. Cherrie Small) as well as four industry panelists (Lynn Perry, Laura Krick, Dr. Karen Moffat, and Dr. Kyla Sask) where obtaining careers in academia and industry, respectively, will be discussed.

On Friday morning, we will hold a financial workshop, entitled 'Short-Term Solutions and Long-Term Planning'. Presented by experienced financial officers from TD Bank, this workshop will help you learn how to make the most of the funding you receive. In the afternoon we will open up the floor for a discussion about specific issues related to leadership and women's involvement in the workplace. Inspired by the highly acclaimed bestseller, "Lean In: Women, Work, and the Will to Lead", authored by Facebook COO, and Time's 100 Most Influential People in the World, Sheryl Sandberg, this Open-Forum Debate will be led by you (yes, YOU), and moderated by Dr. Cheryl Quenneville.

The greatest part about CREST, as always, is the student participation. There will be approximately fifty research talks and poster presentations taking place over the course of the conference. The top oral and poster presentations will be awarded a trip to the National WISE Conference being held March 22-23, 2014, at the University of Toronto. For further details regarding poster session presentations or research talk sessions, please refer to pages 14-18.

Finally, you will notice famous female scientists on the cover of our proceedings as well. Short biographies of these amazing women can be found on page _____.

We hope you enjoy CREST 2014!

Your 2013-2014 WISE Initiative:

Blessing Bassegy, Mackenzie Becker, Lauren Bradford, Carla Brown, Roopali Chaudhary, Sophia Dong, Irina Ghilic, Fran Lasowski, Kelly Martin, Sindy Murali, Kasia Pisanski, Molly Pottruff, Talena Rambarran, Dora Rosati, Supriya Verma, and Jennifer Walsh.

About the McMaster WISE Initiative

The McMaster WISE Initiative (WISE) was formed in 2006 as a result of a survey conducted at McMaster University that revealed a strong need for a forum in which female graduate students can identify, discuss, and learn about gender-related issues specific to their field of work and study. Under the initial leadership of ten female graduate students from various science and engineering departments at McMaster University, WISE began by offering bi-weekly science talks featuring women in science and engineering, as well as a round table conference.

WISE now hosts monthly social and professional development workshops open to all students on campus, from organizing nuclear reactor tours, to assisting to host the Whidden Lecture for this year, to facilitating a “Pottery Painting Night”, and “TED talk & movie nights,” featuring thought-provoking talks, films, and documentaries. In addition, WISE facilitates a mentorship program, which began as ‘Muffins ‘n Mentors’ project, in which a small group of graduate students met with one or two female professors, acting as mentors, over a casual breakfast. These meetings have proved to be enlightening and informative, with discussion ranging from dress code in the office to the difficulties faced by graduate students. Thanks to the encouragement and support of the WISE Mentors, the WISE Initiative is currently organizing a one-on-one mentorship program where graduate students will be personally connected to interested faculty members and/or alumni students.

Finally, WISE organizes our annual multidisciplinary meeting to highlight and celebrate the exciting research conducted by students, post-docs, and faculty in sciences and engineering. The meeting gathers close to 150 participants every year and features research presentations, workshops, panel discussions, and keynote addresses by leading female executives and scientists. Workshop topics at the conference range from issues faced by mostly females, and ones that affect both female and male academics equally. Topics discussed include, but are not limited to: balancing life and work, grant-writing tips, finding jobs both in and outside of academia, and imposter syndrome, just to name a few.

WISE is run by a group of graduate students from various departments at McMaster. We welcome anyone to join our group and to get involved in organizing the yearly events and the annual meeting. Everyone—undergraduate and graduate students, post-docs, faculty, female and male—are welcome.

For more information about WISE, and regular updates about our monthly events, visit our website at <http://www.science.mcmaster.ca/wise/>. To send us your comments, questions, and ideas, email us at wiseinitiative@gmail.com.

Schedule Overview

Friday, March 7th

9:00am – 10:00am	Registration Open Coffee provided	CH
	Welcome and Opening Remarks by the WISE Initiative Steering Committee	
10:00am – 11:00am	Short-Term Solutions and Long-Term Planning Laura Stanciulescu Shari Munt	CH
11:00am – 11:30am	Networking and Coffee Break	CH
11:30am – 12:30pm	Lean In? An Open-Forum Debate Moderator: Dr. Cheryl Quenneville	CH
12:30pm – 1:30pm	Lunch	CH
1:30pm – 2:45pm	Academic Panel Discussion: Life After Your Ph.D. Dr. Nickett Donaldson-Kabwe Dr. Ayesha Khan Dr. Laura Melnyk Dr. Cherrie Small	CH
2:45pm – 3:00pm	Coffee Break	CH
3:00pm – 4:00pm	Academic Keynote Address Dr. Lisa DeBruine 'Facial resemblance and human kin recognition'	CH
4:00pm – 5:30pm	Poster Session	CH

*CH: Celebration Hall, lower level of Kenneth Taylor Hall
(Maps on pages 23-24)*

Schedule Overview

Saturday, March 8th

9:00am – 10:00am	Registration Open Coffee provided	PC 205
10:00am – 11:00am	Oral Research Presentations Microbial Session: <i>Collected many of the earliest marine dinosaur fossils</i> Enviro Session: <i>Wrote 'Silent Spring' helping launch the Green Movement</i> Origins & Ancient Times Session: <i>Developed the mathematics behind aerodynamics</i>	PC 204 PC 311 PC 316
11:00am – 11:30am	Coffee Break	PC 205
11:30am – 12:15pm	Oral Research Presentations Elemental Session: <i>Helped discover the molecular structures of DNA and RNA</i> Children Session: <i>Shaped our understanding of primate kin and social systems</i>	PC 311 PC 316
<p>--- Walk from the Psychology Building to the Phoenix Bar and Grill ---</p>		
12:15pm – 1:45pm	Lunch	Phoenix
<p>--- Walk from the Phoenix Bar and Grill to the Psychology Building ---</p>		
1:45pm – 3:00pm	Industry Panel Discussion: Outside the Ivory Tower Lynn Perry Laura Krick Dr. Karen Moffat Dr. Kyla Sask	PC 237

3:00pm – 4:00pm	<p>Oral Research Presentations</p> <p>Change the World Session: <i>Cited in historical accounts of development of the computer</i></p> <p>Healing Session: <i>Named one of the 50 most powerful women in business</i></p> <p>Signs & Repair Session: <i>Her research was essential to the discovery of nuclear fission</i></p>	<p>PC 204</p> <p>PC 311</p> <p>PC 316</p>
4:00pm – 4:15pm	Coffee and Refreshments	PC 205
4:15pm – 5:15pm	<p>WISE Keynote Address Dr. Lisa DeBruine ‘Identities’</p>	PC 155
5:15pm – 7:00pm	<p>Award Ceremony & Closing Remarks Wine and Cheese Reception</p>	PC 205

PC: Psychology Building
Phoenix Bar & Grill
(Maps on pages 23-24)

CREST 2014 Keynote Speaker

Lisa DeBruine, Ph.D.

Reader, Institute of Neuroscience and Psychology
University of Glasgow, Scotland



Dr. DeBruine's research combines theories from evolutionary biology and cognitive psychology with methods from experimental psychology, behavioural ecology and experimental economics, to explore how physical appearance affects social decision-making. Her most prominent research investigates how people respond to facial resemblance and other potential cues of kinship. She is also interested in how the visual system learns about faces and what visual adaptation effects can tell us about the face processing system. Dr. DeBruine has published more than 130 papers in peer-reviewed journals on these topics. In addition, her research is frequently featured in newspapers, magazines and science documentaries, and she has participated in numerous public science events, including the Royal Society of London's Summer Science Fair and French Science Week.

Dr. DeBruine was appointed to the Royal Society of Edinburgh's inaugural Young Academy in 2012 and was elected co-chair in 2013. She is a Council Member of the Human Behavior and Evolution Society (HBES) and serves as Associate Editor for the journal *Evolution and Human Behaviour*. She received the HBES New Investigator Award in 2002 and the prestigious Early Career Award in 2012.

Academic Keynote Address

Friday, March 7th: 3:00pm – 4:00pm, Celebration Hall

Facial resemblance and human kin recognition

Kinship moderates important social outcomes, such as interpersonal violence and sexual behaviour. Two evolutionary theories predict that mechanisms influencing behavior towards individuals depending on their degree of relatedness may be selected for in social species. While inclusive fitness theory leads to the prediction that organisms may display more altruism towards closely-related kin than more distantly-related individuals, optimal outbreeding theory suggests that kinship may also be considered when choosing a mate. In order to behaviourally discriminate between individuals with different levels of relatedness, organisms must be able to perceive cues of kinship. Facial resemblance is one such potential cue in humans. Computer-graphic manipulation of face images has made it possible to experimentally test hypotheses about human kin recognition by facial phenotype matching. I will review experimental evidence that humans respond to facial resemblance in ways consistent with inclusive fitness theory and considerations of the costs of inbreeding, namely by increasing prosocial behaviour and positive attributions toward individuals displaying facial cues of kinship and selectively decreasing positive attributions in the context of a sexual relationship.

WISE Keynote Address

Saturday, March 8th: 4:15pm – 5:15pm, PC 155

Identities

Many identities have contributed to my career as a scientist. While I currently work in an institute of neuroscience and psychology, I have been academically trained in anthropology, biology, women's studies and psychology. I am a researcher, a teacher, a mentor, an editor for my academic field's main journal and a leader of my national young academy. I am a partner, a mother, an American and an immigrant to Scotland. I am female, white, bisexual, able-bodied, cisgendered and in my late 30s. In this talk, I will describe my personal career path with special emphasis on these multiple identities. In particular, I will discuss the challenges and joys of having simultaneous identities of woman, partner, parent and scientist, such as the two-body problem and parental leave. I will also discuss issues of intersectionality and representation both within the practice of science itself and within the external structures that promote and regulate science.

Workshop Schedule

Friday, March 7th, Celebration Hall

Short-Term Solutions and Long-Term Planning

Friday, March 7th: 10:00am – 11:00am, Celebration Hall

Certified Financial Planners will provide a breakdown of the do's and don'ts of student finance as well as provide tips for balancing your accounts, budgeting your money, and making a long-term plan for your finances. Whether you are well-funded or eating ramen noodles for dinner every night, this workshop promises to be highly informative and useful for all.

Laura Stanciulescu & Shari Munt
Certified Financial Planners (CFP)
TD Canada Trust

Lean In? An Open-Forum Debate

Friday, March 7th: 11:30am – 12:30pm, Celebration Hall

For the first time in CREST's history, we are going to open the floor up for an open discussion about controversial women's issues lead by you, the faculty and students that are faced with these issues on a daily basis. Whether you are male or female, we know that many of you have strong opinions about women's issues, whereas others are not sure where they stand. We hope to have an enlightening discussion about various issues and topics related to women's involvement in the workplace and female leadership. This workshop was inspired by the highly acclaimed bestseller, "Lean In: Women, Work, and the Will to Lead", authored by Facebook COO, and Time's 100 Most Influential People in the World, Sheryl Sandberg. The moderator of this debate will be Dr. Cheryl Queeneville.

Moderator:

Dr. Cheryl Quenneville (Ph.D.)
Assistant Professor, Mechanical Engineering, McMaster
University

Dr. Quenneville received her Bachelor of Applied Science from Queen's University in 2003 and her Masters and PhD degrees from the University of Western in 2005 and 2009, respectively. Dr. Quenneville's research interests are in human biomechanics and biomedical engineering, with a focus on definition of bone fracture limits and injury tolerances, surrogates for biomechanical research, including synthetic bones, finite element modelling of bone's response to loading, and design of artificial joint replacement and fracture fixation systems.

Academic Panel Discussion: Life After Your Ph.D.

Friday, March 7th: 1:30pm – 2:45pm, Celebration Hall

So you're done your Ph.D. – now what? Learn more about teaching and research faculty positions and how to successfully 'sell' your research, knowledge, and skills to land a job in academia. This panel discussion will present four different perspectives and provide insight on how to establish a successful career in an academic setting. Come prepared with questions!

Dr. Nickett Donaldson-Kabwe (Ph.D.)
Sessional Lecturer, Biology, McMaster University
cGMP Manager, Sunnybrook Research Institute

Dr. Donaldson-Kabwe received a diploma in Biotechnology from St. Lawrence College, followed by four years as a research technician in NPS Pharmaceuticals. She returned to school, completed her undergraduate degree in Biotechnology at Brock University, her Ph.D. in Cell & Molecular Biology at McMaster University followed by a year of post-doctoral work. Dr. Donaldson-Kabwe is currently a Biology sessional lecturer at McMaster and Manager at the current Goods Manufacturing Practices (cGMP) facility at Sunnybrook Research Institute.

Dr. Ayesha Khan (Ph.D.)
Assistant Professor, Psychology, Neuroscience & Behaviour,
and Life Sciences Program, McMaster University

Dr. Ayesha Khan completed her Ph.D. in behavioural endocrinology in the Department of Psychology, Neuroscience & Behaviour at McMaster. Following her Ph.D. she completed several terms as a sessional lecturer at both the University of Toronto (Mississauga) and Ryerson University (Toronto). Dr. Khan is now an Assistant Professor at McMaster, cross-listed between the Department of Psychology, Neuroscience & Behaviour and the Life Sciences Program.

Dr. Laura Melnyk (Ph.D.)
Associate Professor, Psychology, King's University College at
the University of Western Ontario

Dr. Melnyk received an honours B.A. from McMaster University in Hamilton in 1995 followed by a Ph.D. in experimental psychology from McGill in 2002. She was hired as an Assistant Professor at King's University College directly upon completing her Ph.D. and was promoted to Associate Professor with tenure in 2007. Dr. Melnyk's research interests are in forensic developmental psychology.

Dr. Cherrie Small (Ph.D.)

Postdoctoral Fellow, Biology, McMaster University

Dr. Cherrie Small, completed her Honours undergraduate degree and Master's degree in Biological Sciences with specialization in Microbial Pathogenesis at Brock University followed by a PhD degree in Pathology and Medicine at McMaster University. Dr. Small currently works in Dr. Brian Coombes lab at McMaster University, as a postdoctoral fellow. Her research involves investigations into the biology and immunological significance of adherent – invasive *E.coli* in animal models of inflammatory bowel diseases.

Industry Panel Discussion: Outside the Ivory Tower

Saturday, March 8th: 1:45pm – 3:00pm, PC 237

A faculty position at a college or a university is not the only career option for Master's and Ph.D. graduates. Three panellists from diverse backgrounds will discuss non-academic career options. They are eager to share their knowledge and experiences with us, come ready with questions!

Laura Krick, (M.A.Sc.) Senior Analyst, AMEC NSS

Laura Krick received her B.A.Sc. in Engineering Science from the University of Toronto in 2005, and an M.A.Sc. in Electrical Engineering in 2007. Since 2007 she has worked for AMEC NSS, a Toronto based company that provides engineering consulting, safety assessment and risk assessment services to electrical utilities in Canada. She is currently working towards completing her P.Eng. and hopes to receive it in 2014.

Dr. Karen Moffat (Ph.D.) Manager, Analytical Services and Characterization at Xerox Research Centre of Canada

Dr. Karen Moffat completed her Ph.D. in synthetic polymer chemistry at McMaster University in 1998. In her career, Karen has published 10 papers and over 75 patents. In addition to her role as the manager of Analytical Services and Characterization and an EA toner technology project leader, Karen is also the XRCC Intellectual Property Champion and the liaison manager for industry-university contracts.

Lynn Perry (B.Eng. Society, M.A.Sc.) Structural EIT, Hallex Engineering Ltd.

After graduated from McMaster's Civil Engineering & Society program in 2004, Lynn Perry worked for a local manufacturing company, starting an in-house engineering department. She returned to McMaster to complete her

M.A.Sc. in Civil Engineering in 2011. Since then, she has been working as a Structural Engineering Intern with Hallex Engineering Ltd. in Niagara Falls, ON. Other work experience includes work for consulting firms in building science and municipal engineering.

Dr. Kyla Sask (Ph.D.)

Engineering Enrichment and Outreach Coordinator, Ryerson University

Kyla completed her undergraduate degree in Chemical Engineering at Queen's University and her Ph.D. in Biomedical Engineering at McMaster University. She worked as a research engineer for 2 years at Interface Biologics Inc., a medical device company located in the MaRS Centre in Toronto. She is currently the Engineering Enrichment and Outreach Coordinator at Ryerson University. In this role she manages activities related to women in engineering including a Hydro One funded partnership between Western University, University of Waterloo and UOIT to improve outreach, support and networking for women in engineering.

Poster Presentations

Friday, March 7th: 4:00pm – 5:30pm, Celebration Hall

#	POSTER TITLE:	PRESENTER:
1	The Roles of Noun Type, Grammaticality and Speech Perception on Subject Verb Agreement Comprehension within School-Aged Children	Katheen Oliver <i>Psychology, Neuroscience & Behaviour</i>
2	TRF1 Phosphorylation at T371 is Important for Alternative Lengthening of Telomeres	Florence Wilson <i>Biology</i>
3	The Structural Disjoining Potential of Grain Boundary Premelting via Monte Carlo Simulation	Tara Power <i>Physics & Astronomy</i>
4	Self-Organisation of White Light in a Photopolymer: A Method of All Optical Information Transfer	Matthew Ponte <i>Chemistry & Chemical Biology</i>
5	Strategies for Perceiving Facial Expressions in Adults with Autism Spectrum Disorder	Jennifer Walsh <i>Psychology, Neuroscience & Behaviour</i>
6	Anaerobic Conditions Induce a Change in Metabolism in the Streptococcus Milleri Group	Michelle Mendonca <i>Biochemistry</i>
7	Sox10 and S100 in the Diagnosis of Meningiomas	Judith Ng <i>Biology</i>
8	An Examination of Retrieval Enhanced Learning as a Function of Review Strategy and Student Note Taking Behaviour	Silvio Ndoja <i>Psychology, Neuroscience & Behaviour</i>
9	Mapping the Interactions between the Alzheimer's A β -Peptide and Human Serum Albumin beyond Domain Resolution	Naeimeh Jafari <i>Chemistry & Chemical Biology</i>
10	Nanostructural Characterization of Catalyst Layers in Fuel Cells: Sample Preparation Considerations	Lis Melo <i>Materials Science and Engineering</i>
11	Multidirectional Waveguide Lattices (MWGLs) for Wide-Angle Light Capture	Hao Lin <i>Chemistry & Chemical Biology</i>
12	Investigation of Pseudorandom Sparse Sampling for MRI Reconstruction	Micaela Estabillo <i>Computing and Software</i>

- | | | |
|----|---------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------|
| 13 | Audiovisual Congruency Effects on Recognition Memory | Nadia Wong
<i>Psychology, Neuroscience & Behaviour</i> |
| 14 | Allosteric Networks in the Regulatory Subunit of PKA as Revealed by NMR | Madoka Akimoto
<i>Chemistry & Chemical Biology</i> |
| 15 | Maturation of Bacterial Communities in the Upper Respiratory Tract | Jennifer Stearns
Farncombe Family Digestive Health Research Institute |
| 16 | Voice Pitch Enhances Assessments of Human Body Size | Kasia Pisanski
<i>Psychology, Neuroscience & Behaviour</i> |
| 17 | Microstructural Characterization of Oxide Scales Grown on Austenitic Fe-Cr-Ni Alloys Exposed to Supercritical Water (SCW) | Shooka Mahboubi
<i>Materials Science and Engineering</i> |
| 18 | Optochemical Organisation in Epoxides: a Single-Step Route to Thermomechanically Stable Optical Waveguides | Dinesh Basker
<i>Chemistry & Chemical Biology</i> |
| 19 | Triclosan Exacerbates Exposure to Bisphenol A | Brandon Tang
<i>Psychology, Neuroscience & Behaviour</i> |
| 20 | Controlling Relative Rates of the Piers Rubinsztajn Reaction in Synthesizing Phenyl Integrated Polydimethylsiloxane | Alyssa Schneider
<i>Chemistry & Chemical Biology</i> |

Oral Presentation Schedule

Saturday, March 8th: 10:00am – 11:00am

PC 204	MICROBIAL SESSION:	PRESENTER:
10:00	Replenishing the Drug Pipeline: Rewiring Streptomyces Bacteria to Produce Novel Antibiotics	Emma Sherwood <i>Biology</i>
10:15	Ribonucleases and Their Roles as Global Regulators: Linking RNA Cleavage and Antibiotic Production in Streptomyces Bacteria	Stephanie Jones <i>Biology</i>
10:30	Maturation of Bacterial Communities in the Upper Respiratory Tract	Jennifer Stearns <i>Medicine</i>
10:45	Understanding Microbial Response to an Oil Sands Wetland Reclamation Project Using Lipid and Carbon Isotope Analyses	Lauren Bradford <i>Geography & Earth Sciences</i>
PC 311	ENVIRO SESSION:	PRESENTER:
10:00	Cap-and-trade versus Intensity Targets: Emissions Trading Markets with Stochastic Demand	Stephanie Thomas <i>Economics</i>
10:15	Evaluating the Influence of Vegetation on Evapotranspiration from Various Coal Spoil Surfaces in the Elk Valley, British Columbia	Stephanie Fraser <i>Geography & Earth Sciences</i>
10:30	Frostquakes in Central Canada and Neighbouring Regions in United States Identified Through Social Media	Andrew Leung <i>Physical & Environmental Sciences</i>
10:45	Hydrogeological Controls on Peat Burn Severity in the Western Boreal Plain	Kelly Hokanson <i>Geography & Earth Sciences</i>
PC 316	ORIGINS & ANCIENT TIMES SESSION:	PRESENTER:
10:00	Measuring the Mass of the Milky Way Galaxy	Gwendolyn Eadie <i>Physics and Astronomy</i>
10:15	The Adaptive Value of the Febrile Response and its Immunological Consequences	Aadil Bharwani <i>Psychology, Neuroscience & Behaviour</i>
10:30	Searching for Life in Deep Terrestrial Subsurface Environments and Applications in Astrobiology	Margot Smith <i>Geography & Earth Sciences</i>

10:45 Sedimentary Evidence of Pink Salmon Decline 3500 years BP from Namu Lake, British Columbia Alyson Brown
Geography & Earth Sciences

Saturday, March 8th: 11:30am – 12:15pm

PC 311	ELEMENTAL SESSION:	PRESENTER:
11:30	A Single-Step, Room Temperature, Nonlinear Route to 3-D Metallodielectric Microstructures	Dinesh Basker <i>Chemistry & Chemical Biology</i>
11:45	Examination of Carbon Sources Stimulating Microbially Mediated Arsenic Release in Bangladesh Aquifers	Kelly Martin <i>Geography & Earth Sciences</i>
12:00	Low Voltage High Efficiency Bacterial Cell Lysis Using Novel Benchtop Fabricated Hierarchically Structured Electrodes	Christine Gabardo <i>Biomedical Engineering</i>

PC 316	CHILDREN SESSION:	PRESENTER:
11:30	Video Games as a Pedagogical Tool for Teaching Computer Programming	Samantha Chan <i>Computing and Software</i>
11:45	Face Processing Deficits in Autism Spectrum Disorder are Driven by Emotion Perception Deficits, Not Social Complexity	Jennifer Walsh <i>Psychology, Neuroscience & Behaviour</i>
12:00	Managing Children's Preoperative Anxiety: A Descriptive and Feasibility Pilot Study	Cheryl Chow <i>Neuroscience (MiNDS)</i>

Saturday, March 8th: 3:00pm – 4:00pm

PC 204	CHANGE THE WORLD SESSION:	PRESENTER:
3:00	It's All About Me: A Neuro-Cognitive Account of Utility-Mediated Attentional Engagement and the LC/NE System in Depression	Aadil Bharwani <i>Psychology, Neuroscience & Behaviour</i>
3:15	Understanding the Role of Kaiso in Triple Negative Breast Cancer	Blessing Bassey <i>Biology</i>

3:30	Constrained I-DM Algorithm with Fractional Occupations	Matthew Chan <i>Chemistry & Chemical Biology</i>
3:45	Understanding Chemistry with Constrained-DFT: a "Theoretical" Game of Electrons	Cristina Elizabeth Gonzalez Espinoza <i>Chemistry & Chemical Biology</i>

PC 311 HEALING SESSION:

PRESENTER:

3:00	Modular and Injectable Poly(Oligoethylene Glycol Methacrylate)-Based Hydrogels	Emilia Bakaic <i>Chemical Engineering</i>
3:15	Seasonal And Reproductive Effects of Flight Membrane Wound Healing in Captive Big Brown Bats (<i>Eptesicus Fuscus</i>)	Alejandra Ceballos Vasquez <i>Psychology, Neuroscience & Behaviour</i>
3:30	Engineering the Innate Immune Response: Designing Biomaterials to Alter Macrophage Phenotype to Promote Healing	Supriya Verma <i>Biomedical Engineering</i>
3:45	Exposure to Endocrine Disrupting Chemicals: Implications for Human Health	Brandon Tang <i>Psychology, Neuroscience & Behaviour</i>

PC 316 SIGNS & REPAIR SESSION:

PRESENTER:

3:00	Intestinal-Specific Overexpression of Kaiso enhances intestinal inflammation	Roopali Chaudhary <i>Biology</i>
3:15	Digesting the Function of the Transcription Factor Kaiso in Colorectal Cancer	Christina Pierre <i>Biology</i>
3:30	Classification Images Characterize Age-Related Deficits in Face Discrimination	Sarah Creighton <i>Psychology, Neuroscience & Behaviour</i>
3:45	Infiltration in Water Repellent Soils	Sarah Beatty <i>Geography & Earth Sciences</i>

Current State of Women in Science and Engineering

As we celebrate the 103rd annual Women's Day on March 8th, 2014, we reminisce on countless successes in terms of gender equality and female liberation. This is highly notable when reflecting upon the state of women in Science and Engineering; however a state of full gender equality has yet to be achieved in Canada and indeed worldwide. Numerically there still exists a wage gap and also a larger percentage of men in the Science, Technology, Engineering and Mathematics (STEM) sectors, especially at positions of higher power¹.

Canadian female undergraduate students outnumber men by approximately 40% and this trend has been slowly increasing over the past 10 years. Nonetheless, women are still outnumbered by men in fields of natural science and engineering (NSE) and the ratio of women to men has remained stagnant in these fields for the past 6 years. From this, it is suggested that women are still more apt to enter fields that are seen as traditionally *feminine* such as the arts, social sciences, and education¹.

On a positive note, the number of Canadian women in NSE at the master's level has seen a 55% increase over the past decade. Even more promising is a 102% increase in the number of women pursuing doctoral degrees in NSE. Last year women received 32.9% of the doctoral degrees in Canada, up 10% from 1998¹. Despite these monumental increases, women continue to be the minority in STEM fields, particular in the fields of engineering and computer sciences.

Such trends are also apparent at McMaster. Despite McMaster University being top-ranked globally for its research, there are fewer female than male researchers on campus, with only 13% of engineering faculty and 25% of science faculty being female. McMaster provides an example of how gender-biased social norms can affect decisions at an individual level. Hiring committees might not be intentionally opposed to women scientists, but unintended bias aggregates, resulting in significantly fewer women being hired for tenure-track positions².

Many universities, including McMaster, are becoming more aware of gender issues like the wage gap and tenure gap and are working to make a real difference. For example, The Dean of Science at McMaster, Dr. Robert Baker, recently sent a delegation of 15 female undergraduate, graduate, and faculty members to the 2014 Womensphere Emerging Global Leaders Summit and will soon be releasing a report on Women at the University. Confronting the gender gaps in academia is the only way to effect change. Efforts such as these to promote women within academia and more specifically, the scientific community, are the best way to create a more representative academic community.

Beyond academia, and into the workplace, women are also making strides towards gender equality in STEM. Yet overall, there remains to be higher male participation in the NSE labor force in Canada with women representing only 22%. This is in stark contrast

with the 40% of undergraduate degrees in NSE belonging to women¹. A much greater proportion of women with such degrees seek employment in the social sciences, education, government services, health industry, business, finance and administration sectors. In contrast, men are more likely to hold management positions. These trends are apparent in agricultural and biological science, math, physical sciences, engineering, and applied sciences¹.

From these statistics two overarching trends can be observed. First, women are making significant strides towards gender equality in STEM, at both the academic and career levels. Second, there is not yet gender equality. Systemic and institutional hindrances are preventing women from becoming equals in these fields. Stereotypes instill within girls a dissuasion to STEM at a young age and the acceptance of discriminatory thoughts and actions contribute to these biases.

Efforts to encourage both young girls that have the potential to enter science, and older women who are currently breaking barriers within various scientific disciplines exist, and in fact are on the rise, and are vital to achieving our ultimate goal of a scientific community that is void of gender inequality, bias, and discrimination.

Mary Kate MacDonald & Christina Vietinghoff

¹ NSERC Women in Science and Engineering Report, 2010
² McMaster Fact Book

Cover Art – Biographies of Famous Female Scientists



Dr. Patricia Bath (1942 –)

Dr. Bath was the first African American to complete a residency in ophthalmology, and later became the first female faculty member in the Department of Ophthalmology at UCLA's Jules Stein Eye Institute. In 1976 she co-founded the American Institute for the Prevention of Blindness, which established that "eyesight is a basic human right". She was the first African-American female doctor to receive a medical patent, for her invention of the Laserphaco Probe, a treatment for cataracts. Dr. Bath retired in 1993 and is an honorary staff member at the UCLA Medical Centre.



Ada Byron, Countess Lovelace (1815 – 1852)

Commonly known as Ada Lovelace, she was a female mathematician at a time when such pursuits by women were discouraged. She worked with Charles Babbage on his Analytical Engine, an early mechanical general-purpose computer. Between 1842 and 1843, while translating a French article on the engine, she wrote a series of notes, more elaborate and longer than the paper itself, containing an algorithm designed to be carried out by a machine—what many consider to be the first computer program. She passed away from cancer at the age of 36.



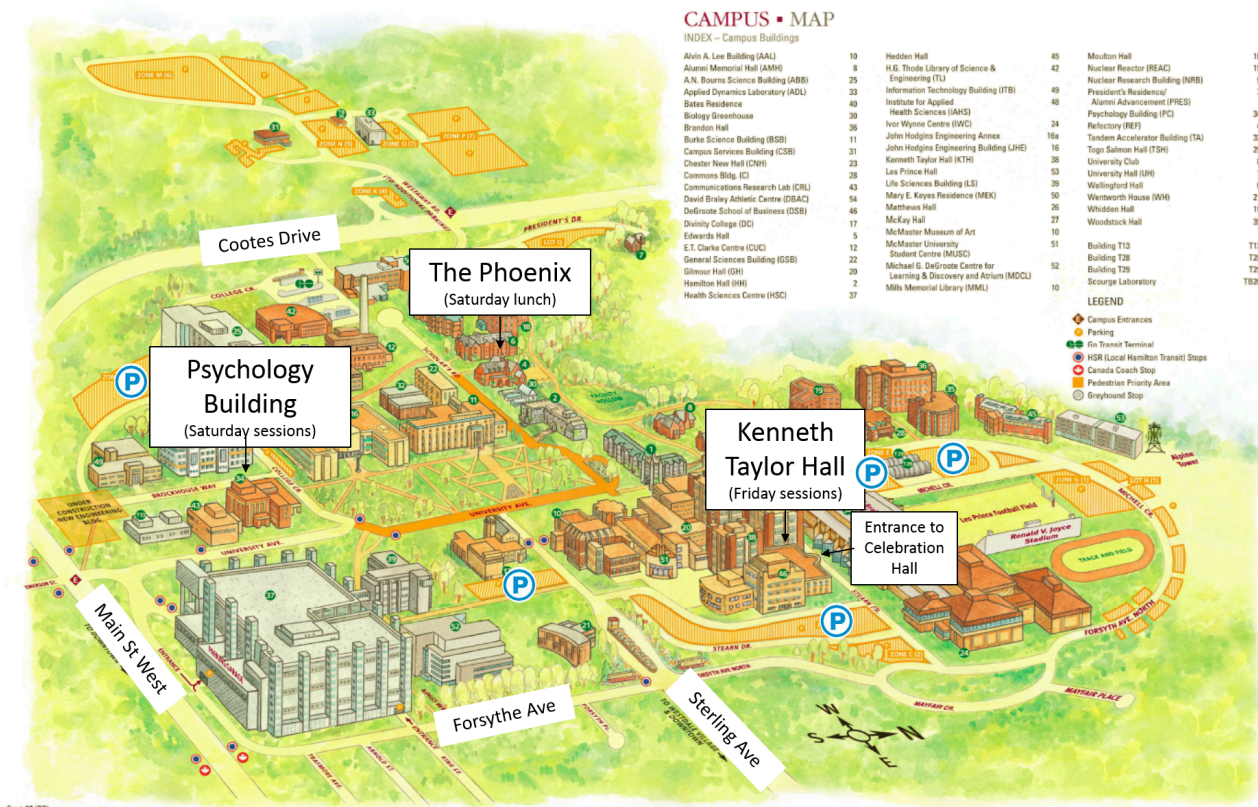
Rosalind Franklin (1920 – 1958)

Dr. Franklin was an x-ray crystallographer whose work was essential to the discovery of the double helix structure of DNA, as well as the structures of RNA, viruses, coal and graphite. Her images of DNA diffraction patterns were shared without her permission, and she passed away four years before a Nobel prize was awarded to Watson, Crick, and Maurice Wilkins for the discovery of the double helix shape of DNA. Although she is largely known for her work on DNA, Dr. Franklin published an additional 40 articles on viruses, coals and carbons, in her 16-year research career.

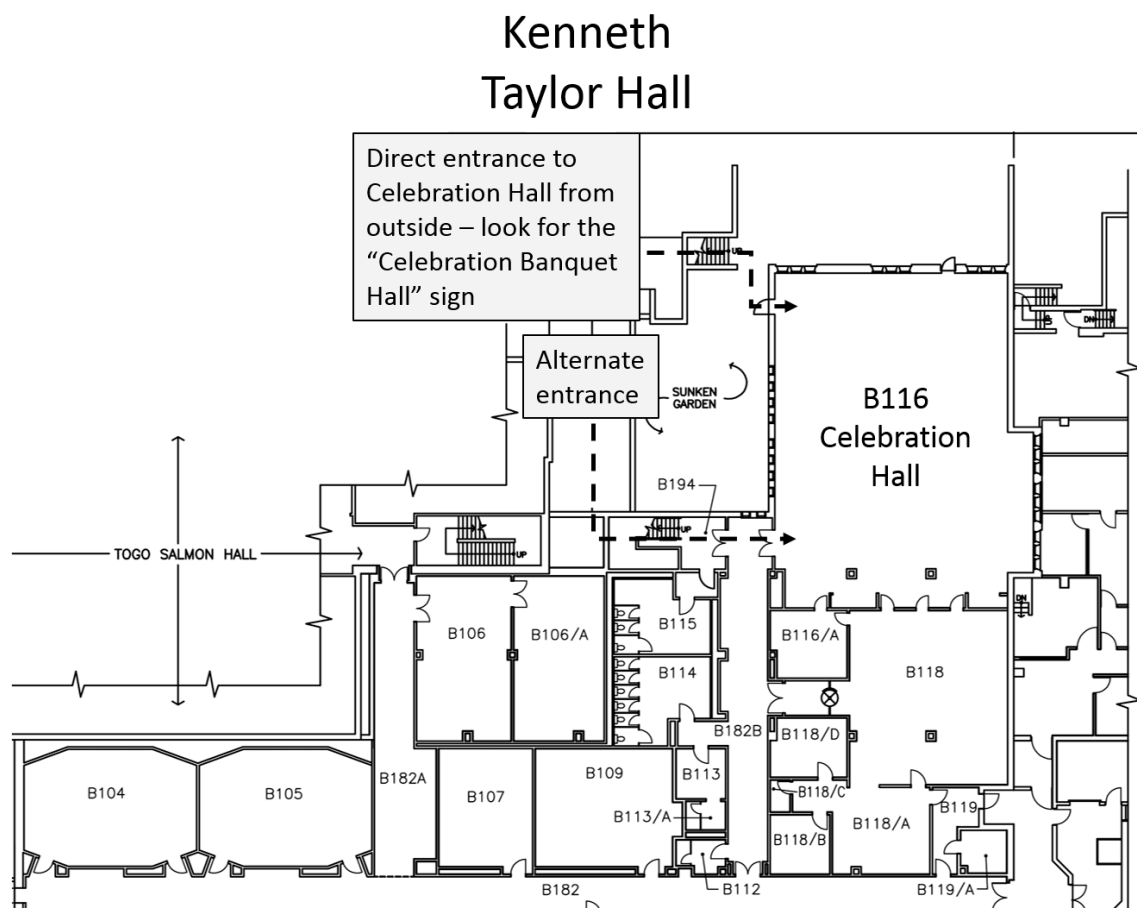
WISE Mentors

Name	Department
Dr. Sigal Balshine	Psychology, Neuroscience, & Behaviour
Dr. Suzanna Becker	Psychology, Neuroscience, & Behaviour
Dr. Robin Cameron	Biology
Dr. Rosa da Silva	Biology
Dr. Juliet Daniel	Biology
Dr. Kim Dej	Biology
Dr. Sarah Dickson	Civil Engineering
Dr. Carolyn Eyles	Geography & Earth Sciences
Dr. Cecile Fradin	Physics & Astronomy
Dr. Deda C Gillespie	Psychology, Neuroscience, & Behaviour
Dr. Gillian Goward	Chemistry & Chemical Biology
Dr. Katheryn Grandfield	Materials Science & Engineering
Dr. Karin R. Humphreys	Psychology, Neuroscience, & Behaviour
Dr. Kim Jones	Chemical Engineering
Dr. Lovaye Kajiura	Biology
Dr. Gail Krantzberg	Civil Engineering
Dr. Laura Parker	Physics & Astronomy
Dr. Mel Rutherford	Psychology, Neuroscience & Behaviour
Dr. Kalai Saravanamuttu	Chemistry and Chemical Biology
Dr. Allison Sekuler	Psychology, Neuroscience, & Behaviour
Dr. Heather Sheardown	Chemical Engineering
Dr. Alison Sills	Physics & Astronomy
Dr. Sarah Symons	Physics & Astronomy
Dr. Valerie Taylor	Psychiatry and Behavioural Neuroscience
Dr. Ayse Turak	Engineering Physics
Dr. Elizabeth Weretilnyk	Biology
Dr. Christine Wilson	Physics & Astronomy
Dr. Xu-Dong Zhu	Biology

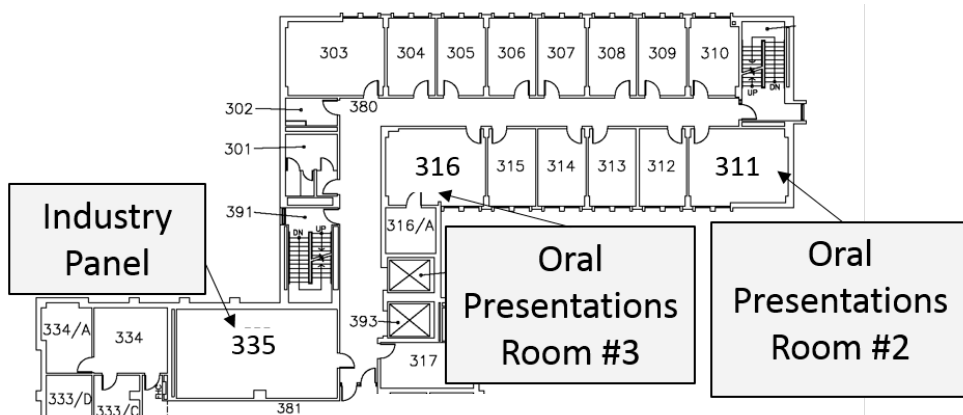
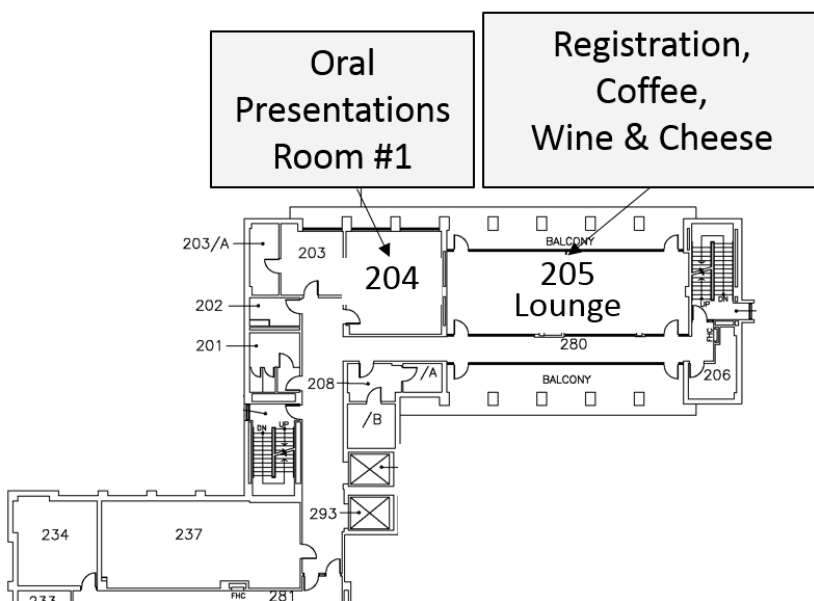
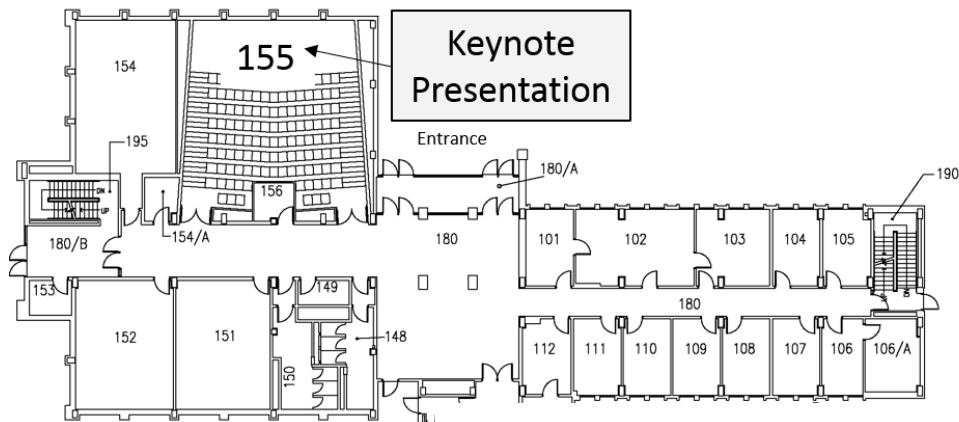
Campus Map



Map - Celebration Hall



Maps – Psychology Building



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