SAMANTHA L. WILSON

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CURRENT ACADEMIC APPOINTMENT

Assistant Professor, Department of Obstetrics and Gynecology, McMaster University **July 2022 -**

EDUCATION AND TRAINING

Postdoctoral Fellow, Princess Margaret Cancer Centre **February 2018 - June 2022**
Supervisor: Dr. Michael Hoffman

Doctor of Philosophy, Medical Genetics, University of British Columbia **January 2013-February 2018**
Supervisor: Dr. Wendy Robinson

Dissertation: Genetic and epigenetic profiling of placental insufficiency: Identifying biomarkers of preeclampsia and intrauterine growth restriction

Bachelor of Science, The University of Western Ontario **September 2008-June 2012**
Honours Specialization in Genetics

PUBLICATIONS, N=20

underline = I supervised student

Original Research

1. **Brockway, H.B., Wilson, SL., Kallapur, S.K., Buhimschi, C.S., Muglia, L.J., Jones, H.N. Characterization of methylation profiles in spontaneous preterm birth placental villous tissue. *PLOS One.* 18(3), e0279991. 2023.**
2. **Wilson, SL., Shen, S.Y., Harmon, L.M., Burgener, J., Triche, T., Bratman, S.V., De Carvalho, D.D., Hoffman, M.M. Synthetic spike-in controls enable sensitive and reproducible cell-free methylome interrogation. *Cell Reports Methods.* 2(9), 100294. 2022.**
3. **Lee, Y., Choufani, S., Weksberg, R., Wilson, SL., Yuan, V., Robinson, WP., Burt, A., Marsit C., Lu, A., Binder, A., Ritz, B., Bohlin, J., Gjessing, H., Harris, J., Magnus,P., Jugessur,A. Horvath,S. Placental epigenetic clocks: estimating gestational age using placental DNA methylation levels. *Aging.* 11 (12), 4238. 2019.**
4. **Konwar, C., Price, EM., Wang, L., Wilson, SL., Terry, J., Robinson, WP. DNA methylation profiling of acute chorioamnionitis-associated placentas and fetal membranes: insights into epigenetic variation in spontaneous preterm births. *Epigenetics and Chromatin.* 11 (1), 63. 2018.**
5. **Leavey, K., Wilson, SL., Robinson, WP., Cox, B. Epigenetic Regulation of Placental Gene Expression in Transcriptional Subclasses of Preeclampsia. *Clinical Epigenetics.* 10 (1), 28. 2018.**
6. **Magee, LA., Synnes A., von Dadelszaen, P., Hutfield A., Chainoine, JP., Cote, AM., Devlin, A., Dorling, J., Gafni, A., Ganzevoort, W., Gruslin, A., Helewa, M., Hutton, E., Koren, G., Lee, SK., McArthur, D., Rey, E., Robinson, WP., Roseboom, T., Singer, J., Wilson SL., Moutquin, JM., and CHIPS-Child Study consortium. CHIPS-Child: Testing the developmental programming hypothesis in the offspring of the CHIPS Trial. *Pregnancy and Hypertension.* 14, 15-22. 2017.**
7. **Wilson, SL., Leavey, K., Cox, B., Robinson, WP. Mining DNA methylation alteration towards classification of placental pathologies. *Human Molecular Genetics.* 27 (1), 135-146. 2017.**
    - **This work won the Elsevier Trophoblast Research New Investigator Award at the 2016 International Federation of Placenta Association meeting.**

8. **Barha, CK., Salvante, K., Hanna, CW., Wilson, SL., Robinson, WP., Altman, RM., Nepromnaschy, P. Hypothalamic-pituitary-adrenal axis activity and cellular aging in mothers. *PLOS One.* 12 (5), e0177869. 2016.**

9. **Wilson, SL., Liu, Y., Robinson, WP. Placental telomere length decline with gestational age differs by sex and TERT, DNMT1, and DNMT3A DNA methylation. *Placenta.* 48, 26-33. 2016**

    - **This work was selected as part of the inaugural *poster walks* session at the American Society of Human Genetics 2015 meeting.**

10. **Barha, C., Hanna, CW., Salvante, K., Wilson, SL., Robinson, WP., Nepromnaschy,P. Number of Children and Telomere Length in Women: A Prospective, Longitudinal Evaluation. *PLOS One.* 11 (1), e0146424. 2016.**

11. **Wilson, SL., Blair, JD., Hogg, K., Langlois, S., von Dadelszen, P., Robinson, WP. Placental DNA methylation at term reflects maternal serum levels of INHA, but not PAPPA or FN1, early in pregnancy. *BMC Medical Genetics.* 16 (1), 111. 2015.**

Review articles, proceedings, and letters

1. **Wilson, S.L. and Wallingford, M. Epigenetic regulation of molecular reproduction in human and animal models. Molecular Human Reproduction. 27 (7), gaab041. 2021.**

2. **Wilson, S.L., Way, G.P., Bittremieux, W., Armache, J-P., Haendel, M., Hoffman, M.M. Sharing biological data: Why, when and how. Federation of European Biochemical Societies Letters. 595 (7), 847-863. 2021.**

3. **Wilson, SL., Robinson, WP. Utility of DNA methylation to assess placental health. *Trophoblast Research.* 64, S23-S28. 2017.**

4. **Manokhina, I., Konwar, C., Del Gobbo, GF., Wilson, SL., Robinson, WP. Placental biomarkers for assessing fetal health. *Human Molecular Genetics.* 26 (R2), R237-R245. 2017.**

5. **Albrecht, C., Baker, JC., Blundell, C., Chavez, SL., Carbone, L., Chamley, L. Hannibal, RL., Illsley, N., Kurre, P., Laurent, LC., McKenzie, C., Morales-Prieto, D., Pantham, P., Paquette, A., Powell, K., Price, N., Rao, BM., Sadovsky, Y., Salomon, C., Tuteja, G., Wilson, S., O'Tierney-Ginn, PF. IFPA meeting 2016 workshop report 1: Genomic communication, bioinformatics, trophoblast biology and transport systems. *Placenta.* 60, S5-S9. 2017.**

6. **Manokhina, I., Wilson, SL., Robinson, WP. Non-invasive nucleic-acid based approaches to monitor placental health in pregnancy. *AJOG.* 213 (4), S197-S206. 2015.**

7. **Cohen, ASA., Wilson, SL., Trinh, J., Ye, XC. Detecting Somatic Mosaicism: Considerations and Clinical Implications. *Clin Genet.* 87 (6), 554-562. 2014.**

Book Chapters

1. **Robinson, WP., Penaherrera, MS., Konwar, C., Yuen, V., Wilson, SL.. Epigenetic Modifications in the Human Placenta. Human Reproductive and Prenatal Genetics. *Elsevier.* 293-311. 2019.**

Theses

1. **Wilson, SL. Genetic and epigenetic profiling of placental insufficiency: identifying biomarkers of preeclampsia and intrauterine growth restriction. *University of British Columbia.* 2017.**

PATENTS

Patent Applications

1. **International Patent Application No. PCT/CA2020/051507 SYNTHETIC SPIKE-IN CONTROLS FOR CELLFREE MEDIP SEQUENCING AND METHODS OF USING SAME. November 6, 2020.**

INFORMATICS

R package: Spiky **2020**
Contributor

Spiky is a package designed to use synthetic spike-in control data for cfMeDIP-seq to absolutely quantify molar amount of experimental cell-free DNA. I created the code and worked with programmers, Dr. Tim Triche and Lauren Harmon to create spiky and make it accessible to everyone. Spiky is available on GitHub, and Bioconductor.
https://github.com/trichelab/spiky
https://bioconductor.org/packages/spiky

FUNDING, N=9

Research Grants, N=3

1. **Preeclampsia Foundation Vision Grant ($20,000.00USD)** **2023**
   Preeclampsia Foundation Canada
   Non-invasively assessing placental aging and oxidative stress as markers for preeclampsia
   Role: Principal Investigator
2. **Accelerator grant in genome medicine ($80,000.00CAD)** **2019-2020**
   McLaughlin Centre, University of Toronto
   Genome-wide cell-free DNA methylation enrichment and sequencing for preeclampsia diagnosis
   Role: Co-investigator
3. **CIHR project grant ($1,212,525.00CAD)** **2019-2024**
   Canadian Institute of Health Research
   DNA methylation profiling in cell-free DNA: a non-invasive method to screen for pre-term birth
   Role: Co-investigator

Salary Awards, N=6

1. **CIHR Fellowship ($135,000.00CAD)** **2020-2023**
   Canadian Institute of Health Research
2. **Molly Towell Perinatal Research Foundation Fellowship (National) ($60,000.00CAD)** **2019-2021**
   Molly Towell Perinatal Research Foundation
   Declined in 2020 to hold CIHR fellowship
3. **Princess Margaret Postdoctoral Fellowship ($50,000.00CAD)** **2018-2019**
   Princess Margaret Cancer Research Centre
4. **UBC Four Year Doctoral Fellowship ($92,800.00CAD)** **2015-2019**
   University of British Columbia
   Declined in 2018 as PhD was completed
5. **BC Children's Hospital Research Institute Graduate Studentship ($40,000.00CAD)** **2014-2016**
   BC Children's Hospital Research Institute
   Declined in 2015 to hold the UBC 4 Year Doctoral Fellowship
6. **NSERC Undergraduate Research Student Award ($4500.00CAD)** **2011**
   National Sciences of Engineering Research Council

AWARDS AND RECOGNITION, N=18

Presentation awards, N=8

1. **Elsevier Placenta New Investigator Award (International)($1000.00USD)** **2021**
   International Federation of Placenta Association
   Awarded to top oral presentation.
2. **JW Knox Ritchie Research Award: best poster presentation by a postdoc** **2019**
   University of Toronto, Dept. of Obstetrics and Gynecology
3. **Medical Genetics Research Day Poster Prize** **2017**
   University of British Columbia, Department of Medical Genetics
4. **BC Children's Hospital Research Institute Poster Presentation Award** **2017**
   BC Children's Hospital Research Institute
5. **CIHR Poster Presentation Award Silver** **2017**
   Canadian Student Health Research Forum
   Canadian Institute of Health Research
6. **Elsevier Trophoblast Research New Investigator Award (International) ($1500.00USD)** **2016**
   International Federation of Placenta Association
   Awarded to the top poster presentation (>200 presenters). Along with the award, was invited as a plenary speaker to IFPA 2017 meeting in Manchester, UK, and invited to write a review article on my work in placental DNA methylation in the Trophoblast Research Journal.
7. **Academic Day Best Oral Presentation** **2016**
   University of British Columbia, Department of Obstetrics and Gynecology
8. **Medical Genetics Research Day Poster Prize** **2015**
   University of British Columbia, Department of Medical Genetics

Teaching awards, N=2

1. **Teaching Assistant Award** **2017**
   University of British Columbia, Department of Medical Genetics
2. **Teaching Assistant Award** **2014**
   University of British Columbia, Department of Medical Genetics

Travel awards, N=9

1. **IFPA Burroughs Wellcome Fund Travel Award($1000.00USD)** **2023**
   International Federation of Placenta Association
2. **Elsevier New Investigator Travel Award (€120.00)** **2021**
   International Federation of Placenta Association
3. **CIHR, Institute Community Support Travel Award ($1000.00CAD)** **2019**
   Institute of Human Development, Child and Youth Health
   Canadian Institute of Health Research
4. **CIHR Travel Award ($1000.00CAD)** **2017**
   Canadian Institute of Health Research
   Nominated as being within the top 5% of doctoral students
5. **Loke Travel Award ($500.00USD)** **2016**
   International Federation of Placenta Association
6. **BC Children's Hospital Research Methodology Grant ($1200.00CAD)** **2016**
   BC Children's Hospital Research Institute

7. **CEEHRC Travel Award ($1000.00CAD)** **2016**
   Canadian Epigenetics, Environment and Health Research Consortium Network

8. **BC Children's Hospital Research Institute Travel Grant ($1200.00CAD)** **2015**
   BC Children's Hospital Research Institute

9. **Wellcome Trust Epigenomics of Common Diseases Travel Bursary (£100.00)** **2014**
   Wellcome Trust

PRESENTATIONS, N=37

Invited talks, N=13

1. **Canadian Epigenetics, Environment Health Research Consortium Meeting** **November 2023**
   Title: Characterizing cell-free DNA signatures in pregnancy: What do we know, and what can they tell us?
   Banff, Alberta, Canada

2. **The Society for Birth Defects Research and Prevention** **June 2023**
   Title: Epigenomic Techniques and Machine Learning Approaches to Predict Pregnancy Complications
   Charleston, South Carolina, USA

3. **McMaster OBGYN Grand Rounds** **March 2023**
   Title: Epigenomic Techniques to Predict Pregnancy Complications
   Hamilton, ON,CA

4. **McMaster Biochemistry Seminar Series** **February 2023**
   Title: Epigenomic Techniques to Predict Pregnancy Complications
   Hamilton, ON,CA

5. **University of Ottawa: Ottawa Data Champions** **September 2022**
   Title: Practicalities of preparing data for sharing and reproducibility
   Virtual Seminar

6. **Colorado Center for Personalized Medicine** **March 2022**
   Title: Towards non-invasive prediction of pregnancy complications using epigenomics
   Virtual Seminar

7. **Columbia University, Department of Obstetrics and Gynecology** **December 2021**
   Title: Towards non-invasive prediction of pregnancy complications using epigenomics
   Virtual Seminar

8. **University of Florida, Department of Physiology and Functional genomics** **September 2021**
   Title: Towards non-invasive prediction of pregnancy complications using epigenomics
   Virtual Seminar

9. **PACE consortium annual meeting** **April, 2021**
   Title: A new method to enrich and amplify the DNA methylation signature of cell-free placental DNA from maternal plasma
   Virtual meeting

10. **Tufts Medical Center, Mother and Infant Research Institute** **January, 2021**
    Title: Towards non-invasive prediction for screening of pregnancy complications
    Virtual Seminar

11. **R ladies Toronto** **September, 2019**
    Title: Machine learning approaches to predict preterm birth in R
    Toronto, ON, Canada

12. **International Federation of Placental Association 2017 Annual Meeting** **September, 2017**
Title: Placental molecular profiling in preeclampsia: Utility, reproducibility and biological meaning
Manchester, UK

13. **International Federation of Placental Association 2016 Annual Meeting** **September, 2016**
Title: Epigenomics and the Placenta
Portland, OR, USA

Selected talks, N=12

1. **International Federation of Placenta Association** **September 2023**
Title: Second trimester cell-free placental DNA methylation profiles in preterm birth subtypes
Roturua, New Zealand

2. **International Federation of Placenta Association 2021 meeting: Oral presentation** **September 2021**
Title: A new method to absolutely quantify and enrich for circulating placenta DNA from maternal blood
Virtual meeting

3. **American Society of Human Genetics 2020 meeting: Platform oral presentation** **October, 2020**
Title: Enrichment, sequencing, and absolute quantification of circulating placental DNA in maternal blood, using DNA methylation
Virtual meeting
Top 9% of abstracts of 2186 abstracts that were submitted were chosen for an oral presentation.

4. **Placental-Interface Virtual Seminar Series** **May, 2020**
Title: A new method to absolutely quantify and enrich for circulating placenta DNA from maternal blood, using DNA methylation
Virtual seminar

5. **Princess Margaret Cancer Enlightening Day** **October, 2019**
Title: Synthetic spike-in controls to account for biological and technical bias in cfMeDIP-seq
Toronto, ON, Canada

6. **UBC Faculty of Medicine Student Research Day** **May, 2017**
Title: DNA methylation: Reproducibility, utility and biological meaning
Vancouver, BC, Canada

7. **UBC Dept. of Medical Genetics Research Day** **November, 2016**
Title: DNA methylation gives insight into different etiologies in early-onset and late-onset preeclampsia and intrauterine growth restriction
Vancouver, BC, Canada

8. **UBC Dept. of OBGYN Academic Day** **May, 2016**
Title: DNA methylation profiling gives insight into the relationship between early-onset and late-onset Preeclampsia, Intrauterine growth restriction and healthy placentas
Vancouver, BC, Canada

9. **Canadian National Perinatal Research Meeting** **February, 2016**
Title: DNA methylation profiling gives insight into the relationship between early-onset and late-onset Preeclampsia, Intrauterine growth restriction and healthy placentas
Banff, AB, Canada

10. **American Society of Human Genetics 65th Annual Meeting** **October, 2015**
Title: Sexual dimorphism in placental telomere length over gestational age
Baltimore, MD, USA
Selected for featured poster talk in the prenatal,perinatal and reproductive genetics category.

11. **Pacific Northwest Genetics exchange** **September 2015**
Title: Assessing biomarkers of pregnancy complications through placental DNA methylation profiles
Vancouver, BC, Canada

12. **The Tree of Life: Placenta Workshop** **September 2014**
Title: Identifying biomarkers though placenta DNA methylation profiles: Preliminary Data
Vancouver, BC, Canada

Other seminars, N = 2

1. **Western University, Schulich School of Medicine seminar** **September 2021**
Title: Towards non-invasive prediction of pregnancy complications using epigenomics

2. **McMaster University, Department of OBGYN seminar** **August 2021**
Title: Towards non-invasive prediction of pregnancy complications using epigenomics

Poster presentations, N=12

1. **Society of Reproductive Investigation** **July 2021**
Title: Enrichment and Absolute Quantification of Cell-Free Placenta DNA in Maternal Blood
Virtual Meeting

2. **Canadian National Perinatal Research Meeting** **February 2021**
Title: Enrichment, sequencing, and absolute quantification of circulating placental DNA in maternal blood, using DNA methylation
Virtual Meeting

3. **Epigenomics of Common Diseases Meeting** **November, 2019**
Title: Synthetic spike-in controls to account for biological and technical bias in cfMeDIP-seq
Cambridge, UK

4. **University of Toronto OBGYN Research day** **May, 2019**
Title: Developing predictive models of preterm birth using DNA methylation profiling in cell-free DNA: A study design
Toronto, ON, Canada

5. **Canadian Student Research Forum** **June, 2017**
Title: DNA methylation: Reproducibility, utility and biological meaning
Winnipeg, MB, Canada

6. **GenomeBC 15th Annual Genomics Forum** **May, 2017**
Title: DNA methylation: Reproducibility, utility and biological meaning
Vancouver, BC, Canada

7. **American Society of Human Genetics 66th Annual Meeting** **October, 2016**
Title: DNA methylation gives insight into different etiologies in early-onset and late-onset preeclampsia and intrauterine growth restriction
Vancouver, BC, Canada

8. **International Federation Placenta Association Annual Meeting** **September, 2016**
Title: Unravelling the relationship between early and late-onset preeclampsia. What does the placental DNA methylation profile reveal?
Portland, OR, USA

9. **BC Children's Hospital Research Institute Research Forum** **September, 2016**
Title: Sexual dimorphism in placental telomere length over gestational age
Vancouver, BC, Canada

10. **UBC Medical Genetics Research Day** **November, 2016**
Title: Sexual dimorphism in placental telomere length over gestational age
Vancouver, BC, Canada

11. **American Society of Human Genetics 63rd Annual Meeting** **October, 2013**
Title: DNA methylation profiling reveals distinct subgroups
Boston, MA, USA

TEACHING

McMaster University, Department of Biology **Guest Lecturer**
BIO3ZZ3 ***December 2022 2021***

- **Class size: 30**
- **Gave 1 lecture to undergraduate students**

University of Toronto, Department of Molecular Genetics **Guest Lecturer**
MMG3003Y: Genomic Methodologies ***April and June 2018-June 2021***

- **Class size: 30**
- **Gave 2 lectures to graduate students**
  i) DNA methylation microarrays: Everything to consider in an experiment
  ii) Analyzing DNA methylation experiments and data visualization using ggplot2 in R

University of Toronto, Department of Molecular Genetics **Guest Lecturer**
MMG3001Y: Advanced Human Genetics ***November 2018-November 2021***

- **Class size: 30**
- **Gave 2 lectures to graduate students**
  i) Fundamentals of epigenetics
  ii) Epigenetics and development

University of British Columbia, Department of Medical Genetics **Teaching Assistant**
MEDG419: Developmental Origins of Human Disorders ***January 2017-April 2017***

- **Class size: 20**
- **Marked student participation, presentations, midterm and final exams**
- **Lead the biweekly tutorial sessions reviewing class lectures**
- **Won the Department of Medical Genetics Teaching Assistant Award 2017 for work in this class**

University of British Columbia, Department of Medical Genetics **Teaching Assistant**
MEDG420: Human Genomics and Medical Genetics ***September 2015-December 2015***

- **Class size: 20**
- **Marked student participation, presentations, midterm and final exams**

University of British Columbia, Department of Medical Genetics **Teaching Assistant**
MEDG419:Developmental Origins of Human Disorders ***January 2014-April 2014***

- **Class size: 20**
- **Marked student participation, presentations, midterm and final exams**
- **Lead the biweekly tutorial sessions reviewing class lectures in more detail and focusing of material student's were struggling with**
- **Won the Department of Medical Genetics Teaching Assistant Award 2014 for work in this class**

University of British Columbia, Medical School **Problem Based Learning Facilitator**
Topics in Genetics ***April 2013-April 2016***

- **Class size: 10-50**
- **Facilitated group discussions on first and second year medical school genetics curriculum. Class sizes ranged from 10-50 students**
- **Lead discussions on: Principles of Human Genetics, Calculating Genetic Risks, Chromosomal Abnormalities, and Prenatal Diagnosis**

WORK EXPERIENCE

McMaster University, Department of Obstetrics and Gynecology
Assistant Professor **July 2022 -**

My lab focuses on understanding pregnancy complications pertaining to placental dysfunction. We use multi-omics data such as, epigenomics, transcriptomics, genomics, and proteomics, along with bioinformatics to understand disease etiology. We also focus on developing non-invasive methods to assess placental health and use machine learning approaches to predict pregnancies at risk of complications prior to the onset of clinical symptoms.

Princess Margaret Cancer Centre
Postdoctoral Research Fellow **February 2018 - June 2022**

Developing machine learning approaches to predict disease in the context of both cancer and preterm birth. Both these projects have goals to develop non-invasive biomarkers using DNA methylation profiles in circulating cell free nucleic acids. In cancer, circulating tumour DNA is being studied and in preterm birth, cell free placental DNA is being studied. We are using cell free meDIP-seq approaches to measure DNA methylation at low levels.

London Health Science Centre, Medical Genetics Clinic
Research Assistant (0.8FTE) **September 2011-August 2012**

- Developed and maintained database of BRCA1 and BRCA2 variants in local patient population
- Reviewed family histories, made pedigrees, and performed cancer risk assessments on patients
- Observed genetic counselling sessions in cancer genetics, prenatal genetics, and paediatric genetics
- Participated in Medical Genetics rounds and patient review

London Health Science Centre, Medical Diagnostic Laboratory
Research Assistant (0.2FTE) **May 2012-August 2012**

- Designed PCR tests for identifying mutations diagnostic of Charcot-Marie-Tooth Syndrome and Hemochromatosis

Norgen Biotek Corp.
Research Assistant **May 2011-August 2011**

- Performed DNA and RNA extractions on multiple organisms (plant, bacteria, blood, saliva, and tissue)
- Investigated RNA degradation in plants with different extraction methods and different processing time

CREDENTIALS

CIHR Institute of Gender and Health Core Competency Module for Sex and Gender Biomedical Research **April 2022**
Canadian Institutes of Health Research
SciNet summer school: Introduction to machine learning, Introduction to python, and Python in high performance computing **July 2019**
SciNet
Scientific computing: Introduction to machine learning and Machine learning in python **May 2019**
Krembil Centre for Neuroinformatics
Compute Ontario Summer School on High Performance Computing **June 2018**
SciNet and Compute Ontario
Data Analysis with Python **October 2016**
Carpentry Software Workshops
Epigenomic Data Analysis **June 2016**
Canadian Bioinformatics Workshops
Instructional Skills Workshop **July 2015**
University of British Columbia

SUPERVISION AND MENTORSHIP

Table 1: Supervised Undergraduate Students

Student	Program	Role	Years	Current position
Spring Wang	Biopharmocology	Thesis	2023	Undergraduate
Ananya RajKumar	Biochemistry	Thesis	2023 - 2024	Undergraduate
Simon Hendriks	Biotechnology	Coop	2023	Undergraduate
Keaton Smith	Biopharmacology	Coop/Thesis, co-supervised	2023	Undergraduate
Natalie Yuen	Biochemistry	Volunteer/Coop	2022 - 2024	Undergraduate
Ahmed Berih	Biochemistry	Thesis	2022 - 2023	Undergraduate
Mehroop Randhawa	Biology	Thesis	2022 - 2023	Undergraduate
Veronica Alba	Amgen Scholars	Summer student, co-supervised	2021 - 2022	Undergraduate - University of Alberta
Esther Yoo	Engineering	Summer student, co-supervised	2020 - 2022	PhD student - EBI
Sidharth Reed	Biochemistry	Summer student, co-supervised	2019	PhD student - Carnegie Mellon
Li Qing Wang	Integrated Science	Summer student, co-supervised	2016 - 2017	MD/PhD - UBC
Yao Liu	Integrated Science	Directed studies, co-supervised	2014 - 2015	Software Developer PayByPhone

Table 2: Supervised Graduate Students

Student	Program	Role	Years	Current position
Laiba Jamshed	Medical Science	MS799 independent study	2023	PhD student - Holloway lab
Jasrita Singh	Biochemistry	MSc student, faculty mentor	2022 - 2023	Deloitte internship

Table 3: Project consultation and mentorship

Student	Program	Role	Years	Current position
Shiva Murali	McMaster University	Consultation of analysis	2023 -	MSc student - Bhatia lab
Baylea Davenport	University of Florida	Consultation of analysis	2023 -	PhD student - Jones Lab

Table 4: Trainee Awards

Student	Program	Granting Agency	Award	Year (Value)
Mehroop Randhawa	Biology	Biology Undergraduate Student Research Day	Best Thesis Presentation	2023

REVIEW SERVICE

Table 5: Thesis committees served

Student	Program	Degree	Years	Supervisor
Zainab Hamoodi	Medical Science	MSc	2023 -	Dr. Alison Holloway
Mateusz Wlodarski	Biochemistry	MSc	2023 -	Dr. Andrew McArthur

Table 6: Grant review committees

Funder	Program	Committee	Year
CIHR	Spring Project Grants	Genetics Committee	2023
Swiss National Science Foundation	-	Life Sciences	2023
CIHR	Doctoral Research Awards	-	2022

Table 7: Examination committees

Institute	Role	Student	Supervisor	Year
University of Adelaide, SA, Australia	PhD thesis external examiner	Qianhui Wan	Dr. Claire Roberts	2020

Journal Service **February 2018-Present**
Peer review articles submitted to:

- **Placenta (N=8)**
- **Clinical Epigenetics (N=8)**
- **Molecular Autism (N=1)**
- **Scientific Reports (N=3)**
- **Bioinformatics (N=1)**
- **Gynecological Endocrinology (N=1)**
- **European Journal of Neuroscience (N=1)**
- **Epigenetics (N=1)**
- **Journal of Developmental Origins of Health and Disease (N=1)**
- **Communication Biology (N=1)**

INSTITUTIONAL LEADERSHIP AND COMMITTEES

Women in Media Fellowship **May 2023 - September 2023**
Enterprise Canada and Women Who Lead

- **Completed the Women in Media Fellowship consisting of training on how to answer scientific questions to a general public audience.**

McMaster Dept. of OBGYN Research Council Committee **December 2022 - present**

- **Member of the OBGYN research counsil that meets quarterly to discuss ongoing research goals in the department.**

Canadian Placental Research Seminar Series **December 2022 - present**

- **Co-organize the Canadian Placental Research Seminar Series**
- **Manage a team of co-organizers and hold monthly meetings featuring Canadian placental researchers across all career stages.**
- **Target audience: pregnancy and reproduction research of all levels.**

Placenta central slack organizer **May 2020 - present**
312 members

- **Set up a slack work space for pregnancy and reproduction researchers to converse, meet people with similar interests, set up collaborations, share new research and ideas, and form collaborations.**
- **Manage a team of co-organizers and hold biannual meetings on how to improve the slack work space.**
- **Target audience: pregnancy and reproduction research of all levels.**

EVENT ORGANIZER

Comittee Member, RT Weaver Research Day **April 2023 - Present**
McMaster University, OBGYN

- **Co-organized the logistics of the event including: setting up online registration, abstract submitting, inviting individuals to the event and moderating.**
- **Target audience: pregnancy and reproduction researchers and clinicians of all levels.**

Virtual Canadian Placenta Meeting Co-organizer **December 2022**

- **Co-organized the logistics of the event including: setting up online registration, abstract submitting, inviting individuals to the event and moderating.**
- **Target audience: pregnancy and reproduction researchers and clinicians of all levels.**

Event Lead, Annual Placenta Workshop **2015 & 2016**
BC Children's Hospital Research Institute

- **Recruited and organized volunteers**

- **Organized the logistics of the event, including: schedules, catering, hotels, speaker invitations, airport pickups, registration and set-up, obtaining funding from institutional and private vendors**
- **Target audience: scientists, clinicians and trainees specializing in the research and management of pregnancy complications**

Committee Member, Maternal Fetal Medicine Symposium **July 2015-November 2015**
BC Women's Hospital

- **Obtained funding for this inaugural symposium to highlight new research in reproductive mental health**
- **Target audience: clinicians, trainees and basic scientists interested in mental illness pathogenesis and management during pregnancy.**

KNOWLEDGE TRANSLATION

MEDIA

Article written about ASHG 2020 presentation **November 2020**
GenomeWeb

- **Article written about my work using the cell-free methylated DNA immunoprecipitation technique to enrich for cell-free placental DNA. Shows widespread interest in this work and communicates the broad implications to non-scientists.**

Science Expert **February 2020**
The Science Pawdcast

- ***The Science Pawdcast* is an online podcast run by high school chemistry teacher, Jason Zackowski, featuring his twitter science dog, Bunsen the Bernese mountain dog. The podcast aims to make science accessible and engaging to the public. I was interviewed as a science expert in episode 3 of season 2.**

OUTREACH

Scientist Volunteer **June 2018-June 2020**
Letters to Pre-Scientists

- **This program assigns young students, interested in science, to a current scientist. Students and scientists exchange letters for the duration of the school year.**
- **Target audience: elementary and high school students aged 5-18**

Scientist Speaker **March 2018- June 2020**
Skype a Scientist

- **Used skype to video call high school classes worldwide to talk about my research and discuss careers in research.**
- **Target audience: high school students aged 14-18**

ACADEMIC MEMBERSHIPS

Canadian Fertility and Andrology Society **2023**
Society of Reproductive Investigation **2022-2023**
American Society of Human Genetics **2013, 2015, 2021**

ABSTRACTS, N=28

1. **Wilson, SL., Yuen, N, Shen, SY, Harmon, L., Triche, T., Bratman, SV., De Carvalho, DD, Hoffman, MM. Second trimester cell-free placental DNA methylation profiles in preterm birth subtypes. IFPA Meeting. September 5 - 8, 2023.**
2. **Wilson, SL., Shen, SY, Harmon, L., Burgener, JB., Triche, T., Bratman, SV., De Carvalho, DD, Hoffman, MM. Sensitive and reproducible cell-free methylome quantification with synthetic spike-in controls. Joint Statistical Meetings, Toronto, Canada. August 5 -10, 2023.**
3. **Wilson, SL., Shen, SY., Yuen, N., Agopian, M., Girard, S., Triche, T., De Carvalho, DD., Bratman, SV., Hoffman, MM. Second trimester cell-free placental DNA methylation profiles in preterm birth subtypes. International Federation of Placenta Association Annual Meeting, Rotorua, New Zealand. September 5 - 8, 2023.**
4. **Cheng, N., Singhawansa, A., Main, S., Han, M., Triche, T., Hoffman, MM., Wilson, SL., De Carvalho, DD., Bell, E. Standardization of cell-free methylated DNA immunoprecipitation (cfMeDIP) results for population-scale inference. BioC 2023 conference. Boston, MA, USA. August 2 - 4, 2023.**
5. **Wilson, SL.. Epigenomic Techniques and Machine Learning Approaches to Predict Pregnancy Complications. Society for Birth Defects Research and Prevention Meeting. Charleston, SC, USA. June 24 - 28, 2023.**
6. **Wilson, SL., Shen, SY., Triche, T., De Carvalho, DD., Hoffman, MM. A new method to absolutely quantify and enrich for circulating placenta DNA from maternal blood. International Federation of Placenta Association, Virtual. August 30 - September 2, 2021.**
7. **Wilson, SL., Shen, SY., Triche, T., De Carvalho, DD., Hoffman, MM. Enrichment and Absolute Quantification of Cell-Free Placenta DNA in Maternal Blood. Society of Reproductive Investigation, Virtual. July 5 - 9, 2021.**
8. **Harmon, L., Wilson, SL., Shen, SY., Burgener, J.M., Bratman, S.v., De Carvalho, D.D., Hoffman, M.M.,Triche, T. Spiky: standardizing cfMeDIP-seq data with spike-in controls. BioC 2021 conference. August 4, 2021.**
9. **Wilson, SL., Shen, SY., Triche, T., De Carvalho, DD., Hoffman, MM. Enrichment, sequencing, and absolute quantification of circulating placental DNA in maternal blood, using DNA methylation. Canadian National Perinatal Research Meeting. Virtual. February 8 - 12, 2021.**
10. **Wilson, SL., Shen, SY., Triche, T., De Carvalho, DD., Hoffman, MM. Enrichment, sequencing, and absolute quantification of circulating placental DNA in maternal blood, using DNA methylation. American Society of Human Genetics, Virtual. October 27-31, 2020.**
11. **Wilson, SL.,Shen, SY., De Carvalho, DD., Hoffman, MM. Synthetic spike-in controls to account for biological and technical bias in MeDIP-seq experiments. Epigenomics of common diseases, Cambridge, UK. November 6-8, 2019.**
12. **Konwar, C., Price, EM., Del Gobbo, GF., Wilson,SL., Manokhina, I., Terry,J., Robinson,WP.Insights into epigenetic, genetic and miRNA variation associated with acute chorioamnionitis placentas.Internat Federation of Placenta Associations Annual Meeting, Tokyo, Japan. September 21-24,2018.**
13. **Wilson, SL., Leavey, K.,Cox, BJ., Robinson, WP. Placental molecular profiling in preeclampsia: Utility, reproducibility and biological meaning. International Federation of Placenta Associations Annual Meeting, Manchester,UK. August 30-September 2,2017.**
14. **Konwar, C.,Price, EM., Del Gobbo GF.,Wilson, SL., Jefferson T., Robinson, WP. Genetic and epigenetic profiling of acute chorioamnionitis associated placentas. International Federation of Placenta Associations Annual Meeting, Manchester,UK. August 30-September 2,2017.**
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24. Wilson,SL., Liu,Y., Robinson,WP. Sexual dimorphism in placental telomere length over gestational age. American Society of Human Genetics 65th Annual Meeting. Baltimore,USA. October 6-10, 2015.

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