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Sarah A Gagliano Taliun

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Research Plan

My research involves identifying and better understanding genetic contributors for complex traits, particularly disorders of the brain, by making use of rich sets of "big data" *in silico*. My goal is to increase knowledge on the genetic aetiology of complex diseases to allow for earlier/better diagnoses and personalized treatment.

Education and Training

- **Postdoctoral Research Fellow**, School of Public Health, University of Michigan, Ann Arbor, USA — *July 2016 – present*
  Supervisors: Gonçalo Abecasis and Michael Boehnke
- **PhD**-Medical Science, Institute of Medical Science, University of Toronto, Toronto, Canada — *June 2016*
  Supervisors: James Kennedy and Jo Knight
  Research conducted at: Centre for Addiction and Mental Health (CAMH)
- **Honours BSc** (Biochemistry & Human Biology) with high distinction (cGPA: 3.86/4.0) — *June 2012*
  University of Toronto, Toronto, Canada

Funding and Awards

- **Michigan Precision Health Scholars Award**, University of Michigan — *2019–20*
- **Stellar Abstract Award** Program in Quantitative Genomics (PQG) — *November 2018*
- **Postdoctoral Fellowship Award**, Stanley Center for Psychiatric Research at the Broad Institute — *2017–18*
- **Weston Brain Institute International Fellowship in Neuroscience** — *December 2015 – May 2016*
  Supervisor: Michael Weale, King's College London
  Project: *In silico* identification of genetic risk variants for Parkinson's disease
- **"3 Minute Thesis"** competition, Univiersity of Toronto finalist — *April 2015*
- **McLaughlin Early Career Investigator Award** — *October 2015*
- **Younger Family Foundation Award** — *Fall 2015*
- **CIHR STAGE (Strategic Training for Advanced Genetic Epidemiology) trainee** — *2015–16*
- **Institute of Medical Science Open Fellowship Award** — *Fall 2014*
- **University of Toronto McLaughlin Centre Training Award** — *Fall 2014*
- **Peterborough K.M. Hunter Graduate Studentship** — *Fall 2014*
- **Institute of Medical Science Open Fellowship Award** — *Fall 2013*
- **School of Graduate Studies Conference Grant** — *Fall 2013*
- **School of Graduate Studies Conference Grant** — *Fall 2012*
- **University of Toronto McLaughlin Centre Training Award** — *September 2012*
- **Canadian Bioinformatics Workshop Registration Award** — *September 2012*
- **U. of T. Fellowship – MSc** — *September 2012*

Peer-reviewed Publications

* Equal contribution † Co-senior author

1. Regina H. Reynolds, John Hardy, Mina Ryten†, **Sarah A. Gagliano Taliun**†. Informing disease modelling with brain-relevant functional genomic annotations. *Brain*. [In press]
2. Diptavo Dutta, **Sarah A. Gagliano Taliun**, Joshua Weinstock, Matthew Zawistowski, Carlo Sidore, Francesco Cucca, David Schlessinger, Goncalo Abecasis, Chad Brummett, Seunggeun Lee. Meta-MultiSKAT: Multiple phenotype meta-analysis for region-based association test. *Genetic Epidemiology*. [In press]
3. Sebastian Guelfi, Karishma D'Sa, Juan Botía, Jana Vandrovoca, Regina H. Reynolds, David Zhang,

Daniah Trabzuni, Leonardo Collado-Torres, Andrew Thomason, Pedro Quijada Leyton, **Sarah A. Gagliano**, Mike A. Nalls, UK Brain Expression Consortium, Kerrin S. Small, Colin Smith, Adaikalavan Ramasamy, John Hardy, Michael E. Weale, Mina Ryten. Regulatory sites for known and novel splicing in human basal ganglia are enriched for disease-relevant information. *Nature Communications*. [In press]

4. Lars G. Fritsche, Lauren J. Beesley, Peter VandeHaar, Robert B. Peng, Maxwell Salvatore, Matthew Zawistowski, **Sarah A. Gagliano Taliun**, Sayantan Das, Jonathon LeFaive, Erin O. Kaleba, Thomas T. Klumpner, Stephanie E. Moser, Victoria M. Blanc, Chad M. Brummett, Sachin Kheterpal, Gonçalo R. Abecasis, Stephen B. Gruber, Bhramar Mukherjee. Exploring Various Polygenic Risk Scores for Skin Cancer in the Phenomes of the Michigan Genomics Initiative and the UK Biobank with a Visual Catalog: PRSWeb. *PLOS Genetics*. PMID: 31194742
5. **Sarah A. Gagliano Taliun** (2019). Genetic determinants of low vitamin B12 levels in Alzheimer's disease risk. *Alzheimer's & Dementia: Diagnosis, Assessment & Disease Monitoring*. PMID: 31206009
6. Regina H. Reynolds, Juan A. Botía, Mike A. Nalls, International Parkinson's Disease Genomics Consortium (IPDGC), John Hardy, **Sarah A. Gagliano Taliun**[†], Mina Ryten[†] (2019) Moving beyond neurons: the role of cell type-specific gene regulation in Parkinson's disease heritability. *NPJ Parkinsons Disease*. PMID: 31016231
7. **Sarah A. Gagliano**, Sebanti Sengupta, Carlo Sidore, Andrea Maschio, Francesco Cucca, David Schlessinger, Gonçalo R Abecasis (2018) Relative impact of indels versus SNPs on complex disease. *Genetic Epidemiology*. PMID: 30565766
8. Craig D. Hughes, Minee L. Choi, Mina Ryten, Lee Hopkins, Anna Drews, Juan A. Botía, Marija Iljina, Margarida Rodrigues, **Sarah A. Gagliano**, Sonia Gandhi, Clare Bryant, David Klenerman (2018) Picomolar concentrations of oligomeric alpha synuclein sensitizes TLR4 to play an initiating role in PD pathogenesis. *Acta Neuropathologica*. PMID: 30225556
9. Wei Zhou, Jonas B. Nielsen, Lars G. Fritsche, Rounak Dey, Maiken B. Elvestad, Brooke N. Wolford, Jonathon LeFaive, Peter VandeHaar, **Sarah A. Gagliano**, Aliya Gifford, Lisa A. Bastarache, Wei-Qi Wei, Joshua C. Denny, Maoxuan Lin, Kristian Hveem, Hyun Min Kang, Gonçalo R. Abecasis, Cristen J. Willer, Seunggeun Lee (2018) Efficiently controlling for case-control imbalance and sample relatedness in large-scale genetic association studies. *Nature Genetics*. PMID: 30104761
10. Maria Hernandez-Fuentes, Christopher Franklin, Irene Rebollo-Mesa, Jennifer Mollon, Florence Delaney, Esperanza Perucha, Caragh Stapleton, Richard Borrows, Catherine Byrne, Gianpiero Cavalleri, Brendan Clarke, Menna Clatworthy, John Feehally, Susan Fuggle, **Sarah A. Gagliano**, Sian Griffin, Abdul Hammad, Robert Higgins, Alan Jardine, Mary Keogan, Timothy Leach, Iain MacPhee, Patrick B. Mark, James Marsh, Peter Maxwell, William McKane, Adam McLean, Charles Newstead, Titus Augustine, Paul Phelan, Steve Powis, Peter Rowe, Neil Sheerin, Ellen Solomon, Henry Stephens, Raj Thuraisingham, Richard Trembath, Peter Topham, Robert Vaughan, Steven H. Sacks, Peter Conlon, Gerhard Opelz, Nicole Soranzo, Michael E. Weale, Graham M. Lord, United Kingdom and Ireland Renal Transplant Consortium (UKIRTC), Wellcome Trust Case Control Consortium (WTCCC)-3 (2018) Long and short term outcomes in renal cadaveric allografts: a large recipient and donor genome-wide association study. *American Journal of Transplantation*. PMID: 29392897
11. **Sarah A. Gagliano** (2017) It's all in the brain: a review of available functional genomic annotations. *Biological Psychiatry*. PMID: 27788914
12. **Sarah A. Gagliano**, Jennie G. Pouget, John Hardy, Jo Knight, Michael R. Barnes, Mina Ryten, Michael E. Weale (2016) Genomics implicates adaptive and innate immunity in Alzheimer's and Parkinson's. *Annals of Clinical and Translational Neurology*. PMID: 28097204
13. Gwyneth Zai, […] **Sarah A. Gagliano** […], ~40 alphabetized middle authors […], James L. Kennedy (2016) Rapporteur Summaries of Plenary, Symposia, and Oral sessions from the XXIIIrd World Congress of Psychiatric Genetics Meeting in Toronto, Canada, October 16-20, 2015. *Psychiatric Genetics*. PMID: 27606929
14. **Sarah A. Gagliano**, Carolyn Ptak, Denise YF Mak, Mehrdad Shamsi, Gabriel Oh, Jo Knight, Paul C. Boutros, Arturas Petronis (2016) Allele-skewed DNA modification in the brain: relevance to schizophrenia GWAS. *American Journal of Human Genetics.* PMID: 27087318

15. **Sarah A. Gagliano**, Reena Ravji, Michael R. Barnes, Michael E. Weale, Jo Knight (2015) Smoking gun or circumstantial evidence? comparison of statistical learning methods using functional annotations for prioritizing risk variants. *Scientific Reports*. PMID: 26300220
16. **Sarah A. Gagliano**, Andrew D. Paterson, Michael E. Weale, Jo Knight (2015) Assessing models for genetic prediction of complex traits: a comparison of visualization and quantitative methods. *BMC Genomics*. PMID: 25997848
17. Clement C. Zai, Vanessa Gonçalves, Arun K. Tiwari, **Sarah A. Gagliano**, Georgina Hosang, Vincenzo de Luca, Sajid A. Shaikh, Nicole King, Qian Chen, Wei Xu, John Strauss, Gerome Breen, Cathryn M. Lewis, Anne E. Farmer, Peter McGuffin, Jo Knight, John B. Vincent, James L. Kennedy (2014) A genome-wide association study of suicide severity scores in bipolar disorder. *Journal of Psychiatric Research*. PMID: 25917933
18. **Sarah A. Gagliano**, Arun K. Tiwari, Natalie Freeman, Jeffrey A. Lieberman, Herbert Y. Meltzer, James L. Kennedy, Jo Knight, Daniel J. Müller (2014) Protein kinase cAMP-dependent regulatory type II beta (PRKAR2B) gene variants in antipsychotic-induced weight gain. *Human Psychopharmacolgy*. PMID: 24737441
19. **Sarah A. Gagliano**, Michael R. Barnes, Michael E. Weale, Jo Knight (2014) A Bayesian method to incorporate hundreds of functional characteristics with association evidence to improve variant prioritization. *PLoS ONE*. PMID: 24844982

Manuscripts under review

* Equal contribution † Co-senior author

1. **Sarah A. Gagliano Taliun***, Peter VandeHaar*, Andrew P. Boughton, Ryan P. Welch, Daniel Taliun, Ellen M. Schmidt, Wei Zhou, Jonas B. Nielsen, Cristen J. Willer, Seunggeun Lee, Lars G Fritsche, Michael Boehnke, Gonçalo R. Abecasis. PheWeb: browsing and visualization of large-scale genetic association studies. [Under review]
2. Wei Zhou, Jonas B. Nielsen, Lars G. Fritsche, Jonathon LeFaive, **Sarah A. Gagliano Taliun**, Wenjian Bi, Mark J. Daly, Benjamin M. Neale, Kristian Hveem, Goncalo R. Abecasis, Cristen J. Willer, Seunggeun Lee. Scalable generalized linear mixed model for region-based association tests in large biobanks and cohorts. [Under review]
3. Jonas B. Nielsen, Oren Rom, Wei Zhou, Ida Surakka, Lars G. Fritsche, **Sarah A Gagliano Taliun**, Carlo Sidore, Yuhao Liu, Maiken E. Gabrielsen, Sarah E. Graham, Whitney E. Hornsby, Brooke Wolford, […] ~100 middle authors […] David Schlessinger, Seunggeun Lee, Hyun Min Kang, Francesco Cuuca, Gonçalo R. Abecasis, Y. Eugene Chen, Cristen J. Willer, Kristian Hveem. Imputation from TOPMed deep sequencing panel identifies protein-altering genetic variants with impact on liver-related blood traits highlighting potential therapeutic targets. [Under review]
4. Daniel Taliun*, Daniel N. Harris*, Michael D. Kessler*, Jedidiah Carlson*, Zachary A. Szpiech*, Raul Torres*, **Sarah A. Gagliano Taliun***, André Corvelo*, […] ~100 middle authors […], Cathy C. Laurie, Cashell E. Jaquish, Ryan D. Hernandez, Timothy D. O'Connor, Gonçalo R. Abecasis. Sequencing of 53,831 diverse genomes from the NHLBI TOPMed Program. [Under review]
5. Zhongbo Chen, David Zhang, Regina H. Reynolds, John Hardy, Juan Botía, **Sarah A. Gagliano Taliun**, Mina Ryten. Human-lineage-specific genomic elements are present at high density within genes implicated in neurodegenerative diseases and are enriched for heritability of intelligence. [Under review]
6. Karishma D'Sa, Regina H. Reynolds, Sebastian Guelfi, David Zhang, Sonia Garcia Ruiz, International Parkinson's Disease Genomics Consortium (IPDGC), System Genomics of Parkinson's Disease (SGPD), John Hardy, **Sarah A. Gagliano Taliun**, Kerrin S. Small, Mina Ryten, Juan Botía. ERASE: Extended Randomization for assessment of annotation enrichment in ASE datasets. [Under review]

Oral Presentations as an Invited Speaker

- Trans-omics for Precision Medicine (TOPMed) All-hand Call "TOPMed imputed UK Biobank genetic data reveals disease-associated rare loss of function variation" (Conference call; December 13, 2018)

- Hosted by James Kennedy at CAMH. "Using regulatory elements to prioritize genetic risk variants for neurodegeneration" (Toronto, Ontario; August 22, 2018)
- Hosted by Mark Reimers at Michigan State University. "Prioritizing risk variants for neurodegeneration using functional genomics" (East Lansing, Michigan; June 15, 2018)
- Annual Canadian Human and Statistical Genetics meeting. "Understanding brain disorders through functional genomics" (Harrison Hot Springs, British Columbia; June 11, 2018)
- Genomics of Brain Disorders. "Neurodegeneration: Beyond the brain" (Hinxton, UK; April 24, 2018)

Oral Presentations

- Whole Genome Sequencing of Psychiatric Disorders (WGSPD) meeting. "InPSYght case-control and leveraging controls from TOPMed" (Cambridge, Massachusetts; January 24, 2019)
- Trans-omics for Precision Medicine (TOPMed) meeting "TOPMed imputed UK Biobank genetic data reveals disease-associated rare loss of function variation" (Tysons, Virginia; December 5, 2018)
- Program in Quantitative Genomics (PQG) Conference. "Dense imputation of the UK Biobank genetic data reveals disease-associated rare loss of function variation" (Boston, Massachusetts; November 1, 2018)
- Whole Genome Sequencing of Psychiatric Disorders (WGSPD) meeting. "InPSYght case-control and controls from other sources" (Bethesda, Maryland; January 10, 2018)
- University of Michigan Biostatistics Grand Rounds "PheWAS of >100 traits in the SardiNIA study: Insights" (Ann Arbor, Michigan; November 2, 2017)
- Whole Genome Sequencing of Psychiatric Disorders (WGSPD) meeting. "Joint analysis of sequenced InPSYght African American schizophrenia and bipolar cases and controls with TOPMed external controls" (Cambridge, Massachusetts; June 5, 2017)
- Center for Biomedicine, European Academy of Bolzano (EURAC). "PheWAS of >100 traits in SardiNIA" (Bolzano, Italy; Nov 22, 2016)
- European Mathematical Genetics Meeting (EMGM). "*In silico* identification of genetic risk variants for Parkinson's disease" (Newcastle, UK; May 12, 2016)
- World Congress of Psychiatric Genetics (WCPG) 2015 annual meeting. "*In silico* prioritization of genetic risk variants for psychiatric disorders using functional genomic information" (Toronto, Ontario; October 20, 2015)
- Harvey Stancer Research Day 2014. "Assessing models for genetic prediction of complex traits: visualization and quantitative methods" (Toronto, Ontario; June 19, 2014)
- Statistical Society of Canada annual meeting. "Investigation of Predictive Accuracy Measures for Genetic Models" (Toronto, Ontario; May 26, 2014)
- Toronto Bioinformatics User Group. "A method to incorporate hundreds of functional characteristics with association evidence to improve SNP prioritization" (Toronto, Ontario; November 27, 2013) https://www.youtube.com/watch?v=xpDYFfAfPZE
- Harvey Stancer Research Day 2013. "Protein kinase cAMP-dependent regulatory type II beta (PRKAR2B) gene variants in antipsychotic-induced weight gain" (Toronto, Ontario; June 13, 2013)
- Neuroscience Research Exchange Day. "Distribution of epiSNPs in sub-threshold variants from genome-wide association studies for psychiatric disorders" (Toronto, Ontario; April 12, 2013)
- Genetic Analysis Workshop 18 Conference. "GAW18: Gene-based tests" (Stevenson, Washington; October 16, 2012); Co-presenters: Heather Cordell and Indranil Mukhopadhyay

Poster presentations as first author

- **Sarah A. Gagliano Taliun**, Yatong Li, Debashree Ray, Pranav Yajnik, NIMH InPSYght Consortium and NHLBI TOPMed Program, Seunggeun Lee, Laura J Scott, Steven A McCarroll, Carlos N Pato, Gonçcalo R Abecasis, Michael Boehnke, Hyun Min Kang. "High-specificity variant filter enables

joint analysis of whole genome sequence data from multiple studies and sequencing centres" American Society of Human Genetics (ASHG) Meeting. (Houston, Texas; October 17, 2019)

- **Sarah A. Gagliano**, Wei Zhou, Jonas B. Nielson, Jonathon LeFaive, Sayantan Das, Daniel Taliun, Rounak Dey, Gonççalo R. Abecasis. "Analysis of densely imputed UK Biobank genetic data reveals disease-associated rare loss of function variation" American Society of Human Genetics (ASHG) Meeting. (San Diego, California; October 17, 2018) *Top 10% of submissions.*
- **Sarah A. Gagliano**, Wei Zhou, Jonas B Nielson, Jonathon LeFaive, Sayantan Das, Daniel Taliun, Rounak Dey, Gonçalo R. Abecasis. "Analysis of densely imputed UK Biobank genetic data reveals disease-associated rare loss of function variation previously only implicated in family studies" UK Biobank Conference Early-Career Researcher of the Year (London, UK; June 21, 2018) *Top 20% of submissions.*
- **Sarah A. Gagliano**, Sebanti Sengupta, Carlo Sidore, Andrea Maschio, Francesco Cucca, David Schlessinger, Gonçalo R. Abecasis. "Pinpointing GWAS signals: Indels vs. SNPs" American Society of Human Genetics (ASHG) Meeting. (Orlando, Florida; October 19, 2017)
- **Sarah A. Gagliano**, Jennie G. Pouget, John Hardy, Jo Knight, Michael R. Barnes, Mina Ryten, Michael E. Weale. "Genetic variability in both the adaptive and innate immune systems contribute to Alzheimer's and Parkinson's disease risk" International Genetic Epidemiology Society (IGES) Meeting (Toronto, Ontario; October 25, 2016)
- **Sarah A. Gagliano**, Carolyn Ptak, Denise Y.F. Mak, Mehrdad Shamsi, Gabriel Oh, Jo Knight, Paul C. Boutros, Arturas Petronis. "Allele-specific DNA modification: relevance to GWAS of complex traits" World Congress of Psychiatric Genetics (WCPG). (Toronto, Ontario; October 17, 2015)
- **Sarah A. Gagliano**, Andrew D. Paterson, Michael E. Weale, Jo Knight. "Assessing models for genetic prediction of complex traits: a comparison of visualization and quantitative methods" American Society of Human Genetics (ASHG) Meeting. (Baltimore, Maryland; October 7, 2015)
- **Sarah A. Gagliano**, Reena Ravji, Michael R. Barnes, Michael E. Weale, Jo Knight. "Comparing statistical learning methods for genetic variant prioritization" International Genetic Epidemiology Society (IGES) Meeting. (Baltimore, Maryland; October 4, 2015)
- **Sarah A. Gagliano**, Reena Ravji, Michael R. Barnes, Michael E. Weale, Jo Knight. "Comparison of machine-learning methodologies to prioritize genetic variants based on functional data" American Society of Human Genetics (ASHG) Meeting (San Diego, California; October 21, 2014)
- **Sarah A. Gagliano**, Michael R. Barnes, Michael E. Weale, Jo Knight. "A Bayesian method to incorporate hundreds of functional characteristics with association evidence to improve variant prioritization" Institute of Medical Science Scientific Day (Toronto, Ontario; May 22, 2014)
- **Sarah A. Gagliano**, Michael R. Barnes, Michael E. Weale, Jo Knight. "Enrichment of functional information (543 annotation tracks) in GWAS hits" American Society of Human Genetics (ASHG) Meeting (Boston, Massachusetts; October 24, 2013)
- **Sarah A. Gagliano**, Denise Y.F. Mak, Carolyn Ptak, Paul C. Boutros, Arturas Petronis, Jo Knight. "Distribution of epiSNPs in Sub-threshold Variants from Genome-wide Association Studies for Psychiatric Disorders" World Congress of Psychiatric Genetics (Boston, Massachusetts; October 18, 2013)
- **Sarah A. Gagliano**, Arun K Tiwari, Natalie Freeman, Jeffrey A Lieberman, Herbert Y Meltzer, Daniel J Mueller, James L Kennedy, Jo Knight "Protein kinase cAMP-dependent regulatory type II beta (PRKAR2B) gene variants in antipsychotic-induced weight gain" Canadian College of Neuropsychopharmacology annual meeting (Toronto, Ontario; May 30, 2013)
- **Sarah A. Gagliano**, Denise Y.F. Mak, Carolyn Ptak, Paul C. Boutros, Arturas Petronis, Jo Knight. "Distribution of epiSNPs in sub-threshold variants from genome-wide association studies for psychiatric disorders" Institute of Medical Science Scientific Day (Toronto, Ontario; May 28, 2013)
- **Sarah A. Gagliano**, Kelly Benke, Jo Knight. Genetic Analysis Workshop 18 Conference, "Functional Annotation of Rare Variants in GAW18 Data" (Stevenson, Washington; October 16, 2012)

Teaching and Mentoring

Graduate level

- **Co-instructor**, Human Genetics 542: Molecular Basis of Human Genetic Disease, University of Michigan *Winter 2019, 2020*
  Prepared and delivered three lectures and one discussion session on complex traits and gene-environment interactions for this graduate-level course of ~30 students. Created and graded assignments and exam.
- **Honorary Senior Research Associate**, **UCL Institute of Neurology, Neurodegenerative Diseases** *Nov 2018 – present*
  Affiliation for my role as mentor for Regina H. Reynolds (supervisor: Mina Ryten)
- **Guest lecturer**, Epidemiology 516: Genomics in Epidemiology *Spring 2018, 2019*
  Co-prepared and co-taught a lecture and a hands-on practical on Biobanks and Electronic Health Records in Genetics for this graduate-level course of ~24 students.
- **Co-instructor**, Human Genetics 544: Basic Concepts in Population and Statistical Genetics, University of Michigan *Fall 2017*
  Prepared and led four 1.5h white-board-format lectures and two in-class discussions for ~20 graduate students. Met regularly with the co-instructors for planning and grading.
- **Co-mentor** (with one of my PhD supervisors) for an undergraduate research student from Vellore Institute of Technology, India *December 2014 – April 2015*
- **Co-mentor** (with one of my PhD supervisors) for an undergraduate exchange student from University of College London, UK *Summer 2014*
  Supervised methods comparison of statistical learning models for genetic risk prediction.
- **Practical Sessions Assistant** at a five-day Advanced GWAS Course *June 2013*
  Tested tutorials provided by the lecturers, and aided students with computer issues.
- At CAMH I co-led an on-going statistical genetics **hands-on tutorial series** *2013-15*
  Topics included methods for genome-wide association and sequencing studies.

Undergraduate level

- **Faculty mentor**, Genomics, Big Data Summer Institute, University of Michigan *Summer 2019*
  Prepared Mendelian randomization (MR) practical for ~15 students and supervised four of the students on a project using MR on real data from large-scale cohorts
- **Guest lecturer**, Biostatistics 666: Statistical Methods in Human Genetics, University of Michigan *Fall 2016, 2017*
  Prepared and gave Functional Genomics lecture for this graduate-level course of ~30 students.
- **Mentor** for high school summer student June – August 2015
  Supervised the student through the completion of a genome-wide association study

Secondary School level

- **Mentor** for students for the Ontario On-Line Research Co-op" program *Winter 2015, Fall 2016, Winter 2017, Fall 2017, Winter 2019*
  Created/graded assignments, met regularly with student/group of students, assisted with writing a final research paper, and provided feedback to the co-op teacher.
- **DNA Day Ambassador**, Skyline High School, Michigan *April 2018*
  Co-led a lesson on genetics and inheritance for Grade 9 students.
- **Teaching Assistant**, HMB265H- General and Human Genetics, University of Toronto *May – June 2015*
  Prepared and led weekly tutorials, graded, helped with exam invigilation.

Certifications

- Training for Diversity & Inclusive Teaching (University of Michigan) *Winter 2018*
- THE500H: Teaching in Higher Education (University of Toronto) *Fall 2015*
- Scientific Computing & High Performance Computing (SciNet) *September 2015*
- Advanced University Teaching Preparation (University of Toronto) *May 2014*

Professional Service

- **Co-Moderator for ASHG platform session** *October 17, 2019*
  "A Deep Dive into Deep Learning" (Session #60)
- **ASHG abstract reviewer**, Statistical Genetics and Genetic Epidemiology *2019*
- **Co-Moderator for ASHG platform session** *October 20, 2018*
  "Biases of Polygenic Risk Scores" (Session #91)
- **Writer, ASHG newsletter**, *The Nascent Transcript* *2017–18*
- **Proposer/Moderator for ASHG invited session**, *October 20, 2017*
  "Using controls from external studies: issues, methods & successes" (Session #83)
- **IGES Webmaster** (Communications Committee) *July 2016 – present*
  Post announcements to the website, updated to new website
- **IGES Young Investigators Committee member** *2015–18*
  Co-organized Young Investigators Mixer at the 2016 Meeting in Toronto
- **ASHG Genetics Education Outreach Network member** *January 2015 – present*
- Poster **co-judge at the Summer Undergraduate Research Day** *August 2014*
  for the Institute of Medical Science, University of Toronto
- **DNA Day Essay Contest Judge** for ASHG *2014–17*
- **Reviewer** for *Neurobiology of Aging*, *Annals of Oncology, Annals of Medicine, BMC Psychiatry*, *Current Drug Targets, Frontiers in Immunology, International Journal of Psychiatry in Clinical Practice PeerJ, PLoS Genetics, PLoS ONE, Psychiatric Genetics, Psychiatry Research*, *Scientific Reports*