Lisa M. McEwen, PhD. **Curriculum Vitae**

Education

Doctor of Philosophy in Medical Genetics and Genomics (2014 - 2018)
The University of British Columbia, Vancouver, BC
Supervisor: Dr. Michael Kobor

Bachelor of Science in Microbiology/Biochemistry w/ 16-m Internship (2008 - 2013)
The University of Victoria, Victoria, BC
Supervisors: Drs. Jennifer Juengel & Michael Kobor

Experience

Clinical Analytics, Decision Support, Island Health (June 2018 – present)
Clinical Data Consultant (full-time, regular)

-Working primarily in SQL and R programming, roles include extracting, processing, and analyzing clinical data from electronic health record data as well as the Discharge Abstract Database to provide meaningful interpretations for organizational decision making purposes

-Developed a Physician Profile prototype in Microsoft Power BI to enable physicians to easily view information regarding their patient population. Presented the prototype at an international Health Information conference as well as a variety of internal groups within the health authority.

-Actively keeps coding scripts organized and well documented, provides summaries on all analytical projects, and presents findings to physicians and decision makers

Medical Genetics and Genomics, University of British Columbia (Sept 2014 - April 2018)
Ph.D. Candidate; Supervisor: Dr. Michael S Kobor

-Primary lead on multiple research projects investigating population epigenetic signatures of aging across the human life course.

-Had a major role is in performing all data processing and conducting analyses on high dimensional genomic data (Illumina arrays: DNA methylation, genotyping, and RNA sequencing)

-Responsibilities include management of several collaborations from Canada and the United States as well as international research groups from Singapore, France, Italy, Greece, and Costa Rica. This has led to over 25 peer-reviewed research publications (four first author), one other first-author under review at PNAS, and three other co-authored manuscripts currently submitted or under revisions.

-Received >$140,000 in scholarship funding and had a major role in contributing to a successful Canadian Institute of Health Research Project Grant ($1.1 million).

University of British Columbia (Sept 2016 - April 2017)
Teaching Assistant (3 terms)

-Experiential Data science for Undergraduate Cross-Disciplinary Education (EDUCE): assisted with teaching R programming workshops, marking assignments, and creating teaching material for cross-disciplinary data science students

-BIOL 200 Fundamentals of Cell Biology: individually instructed three 1-hour mandatory tutorials per week, graded assignments and exams, and held office hours (6hr/week)

-BIOL 337 Genetics Laboratory: assisted students with experiments and graded lab reports (6hr/week)

Additional Training

Data Science Specialization (May 2017 - 2018) (2017 - 2018)
Coursera - Johns Hopkins University

Supervised Methods for Statistical Machine Learning (July 2017)
Summer Institute in Statistics for Big Data - University of Washington

Instructional Skills Workshop (Oct 2016)
Centre for Teaching, Learning, and Technology - Vancouver, UBC

Publications

Selected Abstracts:

LM McEwen, JC O'Donnell, L Lifoawing, D Matias, B Wagar. Electronic Physician Profiles: Developing an Interactive Web-Based Report for Physicians at Island Health. (2019). *Stud Health Technol Inform.*

Peer-reviewed Major Contributions:

1. **LM McEwen**, KJ O'Donnell, MG McGill, RE Edgar, MJ Jones, JL MacIsaac, DTS Lin, KE Ramadori, AM Morin, N Gladish, E Garg, E Unternaehrer, I Pokhvisneva, N Karnani, MZL Kee, T Klengel, NE Adler, RG Barr, N Letourneau, GF Giesbrecht, JN Reynolds, D Czmara, JM Armstrong, MJ Essex, C de Weerth, R Beijers, MS Tollenaar, B Bradley, T Jovanovic, KJ Ressler, M Steiner, S Entringer, PD Wadhwa, C Buss, NR Bush, EB Binder, WT Boyce, MJ Meaney, S Horvath, MS Kobor. (2019). The PedBE Clock estimates DNA methylation age in pediatric buccal cells. *Proc Natl Acad Sci U S A.*
2. **LM McEwen,** MJ Jones, DTS Lin, RD Edgar, LT Husquin, JL MacIsaac, KE Ramadori, AM Morin, CF Rider, C Carlsten, L Quintana-Murci, S Horvath, MS Kobor. (2018). Systematic evaluation of DNA methylation age estimation with common preprocessing methods and the Infinium MethylationEPIC BeadChip array. *Clin Epigenetics.*10(1):123.
3. **LM McEwen**, AM Morin, RD Edgar, JL MacIsaac, MJ Jones, WH Dow, L Rosero-Bixby, MS Kobor, DH Rehkopf. (2017). Differential DNA methylation and lymphocyte proportions in a Costa Rican high longevity region. *Epigenetics and Chromatin.*10:21.
4. **LM McEwen**, EG Gatev, MJ Jones, JL MacIsaac, MM McAllister, R Goulding, KM Madden, MG Dawes, MS Kobor, MC Ashe. (2017). Epigenetic signatures from a lifestyle intervention for women at midlife: A Pilot RCT. *APMN.*43(3):233-239.
5. CP Verschoor, **LM McEwen**, MS Kobor, MB Loeb, DME Bowdish. (2018). DNA methylation patterns are related to co-morbidity status and circulating C-reactive protein levels in the nursing home elderly. *Exp Gerontol.*105:47-52.
6. SR Moore, **LM McEwen**, J Quirt, A Morin, SM Mah, RG Barr, WT Boyce, MS Kobor. Epigenetic correlates of neonatal contact in humans. (2017). *Dev Psychopathol.*
7. CP Verschoor, **LM McEwen**, V Kohli, C Wolfson C, DME Bowdish, P Raina, MS Kobor MS, C Balion. (2017). The relation between DNA methylation patterns and serum cytokine levels in community-dwelling adults: a preliminary study. *BMC Genetics*.18(1):57
8. CS Mang, **LM McEwen**, JL MacIsaac, NH Snow, KL Campbell, MS Kobor, CJD Ross, LA Boyd. Exploring genetic influences underlying acute aerobic exercise effects on motor learning. (2017). *Sci Rep.* (1):12123.
9. AK Beery, **LM McEwen**, JL MacIsaac, DD Francis, MS Kobor. (2015). Natural variation in maternal care and cross-tissue patterns of oxytocin receptor gene methylation in rats. *Hormones and Behavior.* 77:42-52.

Peer-reviewed Co-authored Contributions:

10. SA Hari Dass, K McCracken, I Pokhvisneva, LM Chen, E Garg, TTT Nguyen, Z Wang, B Barth, M Yaqubi, **LM McEwen**, JL MacIsaac, J Diorio, MS Kobor, KJ O'Donnell, MJ Meaney, PP Silveira. (2019). A biologically-informed polygenic score identifies endophenotypes and clinical conditions associated with the insulin receptor function on specific brain regions. *EBioMedicine.* 42:188-202.
11. LT Husquin, M Rotival, M Fagny, H Quach, N Zidane, **LM McEwen**, JL MacIsaac, MS Kobor, H Aschard, E Patin, L Quintana-Murci. (2018). Exploring the genetic basis of human population differences in DNA methylation and their causal impact on immune gene regulation. *Genome Biol.* 19(1):222.
12. NR Bush, RD Edgar, M Park, JL MacIsaac, **LM McEwen**, NE Adler, MJ Essex, MS Kobor, WT Boyce. (2018). The biological embedding of early-life socioeconomic status and family adversity in children's genome-wide DNA methylation*. Epigenomics.*(11):1445-1461.
13. LM Chen, N Yao, E Garg, Y Zhu, TTT Nguyen, I Pokhvisneva, SA Hari Dass, E Unternaehrer, H Gaudreau, M Forest, **LM McEwen**, JL MacIsaac, MS Kobor, CMT Greenwood, PP Silveira, MJ Meaney, KJ O'Donnell. (2018). PRS-on-Spark (PRSoS): a novel, efficient and flexible approach for generating polygenic risk scores. *BMC Bioinformatics.* 19(1):295.
14. E Garg, L Chen, TTT Nguyen, I Pokhvisneva, LM Chen, E Unternaehrer, JL MacIsaac, **LM McEwen**, SM Mah, H Gaudreau, R Levitan, E Moss, MB Sokolowski, JL Kennedy, MS Steiner, MJ Meaney, JD Holbrook, PP Silveira, N Karnani, MS Kobor, KJ O'Donnell; Mavan Study Team. (2018). The early care environment and DNA methylome variation in childhood. *Dev Psychopathol.* 30(3):891:903.
15. MK Austin, E Chen, KM Ross, **LM McEwen**, JL MacIsaac, MS Kobor, GE Miller. (2018). Early-life socioeconomic disadvantage, not current, predicts accelerated epigenetic aging of monocytes. *Psychoneuroendocrinology.*97:131-134.
16. RL Clifford, N Fishbane, J Patel, JL MacIsaac, **LM McEwen,** AJ Fisher, CA Brandsma, P Nair, MS Kobor, TL Hackett, AJ Knox. (2018). Altered DNA methylation is associated with aberrant gene expression in parenchymal but not airway fibroblasts isolated from individuals with COPD. *Clin Epigenetics.*10:32.
17. M Forest, KJ O'Donnell, G Voisin, H Gaudreau, JL MacIsaac, **LM McEwen**, PP Silveira, M Steiner, MS Kobor, MJ Meaney, CMT Greenwood. (2018). Agreement in DNA methylation levels from the Illumina 450K array across batches, tissues, and time. *Epigenetics*. 2018;13(1):19-32.
18. KJ O'Donnell, L Chen, JL MacIsaac, **LM McEwen**, T Nguyen, K Beckmann, Y Zhu, LM Chen, J Brooks-Gunn, D Goldman, EL Grigorenko, JF Leckman, J Diorio, N Karnani, DL Olds, JD Holbrook, MS Kobor, MJ Meaney. (2018). DNA methylome variation in a perinatal nurse-visitation program that reduces child maltreatment: a 27-year follow-up. *Transl Psychiatry.* 7(8):e1223.
19. M Morin, E Gatev, **LM McEwen**, JL MacIsaac, DTS Lin, N Koen, D Czamara, K Räikkönen, HJ Zar, K Koenen, DJ Stein, MS Kobor, M Jones. (2017). Maternal blood contamination of collected cord blood can be identified using DNA methylation at three CpGs. *Clinical Epigenetics.*9:75.
20. S Gopalan, O Carja, M Fagny, E Patin, JW Myrick, **LM McEwen**, SM Mah, MS Kobor, A Froment, MW Feldman, L Quintana-Murci, BM Henn. (2017). Trends in DNA methylation with age replicate across diverse human populations. *Genetics.* 206(3):1659-1674.
21. RA De Souza, S Islam, **LM McEwen**, A Matheliar, A Hill, S Mah, W Wasserman, MS Kobor, B Leavitt. (2016). DNA Methylation Profiling in Human Huntington's Disease Brain. Human Molecular Genetics. 25(10):2013-2030
22. RL Clifford, MJ Jones, JL MacIsaac, **LM McEwen**, SJ Goodman, S Mostafavi, MS Kobor, C Carlsten. (2016). Inhalation of diesel exhaust and allergen alters human bronchial epithelium DNA methylation. *Journal of Allergy and Clinical Immunology.* 139(1): 112-121.
23. Kaplow IM, MacIsaac JL, Mah SM, **McEwen LM**, Kobor MS, Fraser HB. (2015). A pooling-based approach to mapping genetic variants associated with DNA methylation. *Genome Research.* 25(6): 907-917.
24. M Fagny, E Patin , JL MacIsaac, KJ Siddl, T Flutre, MJ Jones, H Quach, C Harmant, **LM McEwen**, A Froment, E Heyer, A Gessain, JM Hombert, GH Perry, MS Kobor, LB Barreiro, L Quintana-Murci. (2015). Human epigenomic variation is driven by habitat and historical mode of subsistence. *Nature Communications.* 6: 10047.

21. AL Teh AL, H Pan H, L Chen L, ML Ong ML, S Dogra S, J Wong J, JL MacIsaac JL, SM Mah SM, **LM McEwen**, SM Saw, KM Godfrey, YS Chong, K Kwek, CK Kwoh, SE Soh, MF Chong, S Barton, N Karnani, CY Cheong, JP Buschdorf, W StÃ¼nkel, MS Kobor, MJ Meaney, PD Gluckman, JD Holbrook. (2014). The effect of genotype and in utero environment on interindividual variation in neonate DNA methylomes. *Genome Research*. 24(11)
22. L Chen, H Pan, TA Tuan, AL Teh, J MacIssac, SM Mah, **LM McEwen**, Y Li, H Chen, BFP Broekma, JP Buschdorf, YS Chong, K Kwek, SM Saw, PD Gluckman, MV Fortier, A Rifkin-Graboi, MS Kobor, A Qiu, MJ Meaney. (2014). Infant BDNF Val66Met influences the association of the DNA methylome with maternal anxiety and neonatal brain volumes. *Development and Psychopathology.* 27(1): 137-150.
23. MJ Jones, P Farre, **LM McEwen**, JL Macisaac JL, K Watt, SM Neuman, E Emberly, MS Cynader, N Virji-Babul, MS Kobor. (2013). Distinct DNA methylation patterns of cognitive impairment and trisomy 21 in down syndrome. *BMC Medical Genomics*. 6: 58-58.

Book Chapters:

McEwen LM, Goodman S, Kobor MS, Jones MJ. (2017). The DNA methylome: an interface between the environment, immunity, and aging. Valquiria Bueno, Thomas Jackson and Janet M. Lord. Ageing Immune System and Health.

Funding

Research Grant Awards

Agency	Award Name	Comp	Total Value ($)	Years	Role	Principal Investigator
CIHR	Grant	C	1,095,000	2016-2020	Co-A	Dr. Michael Kobor

Comp: Competitive (C) or Non-Competitive (NC); Co-A: Co-Applicant

Salary/Other Awards

Agency	Award Name	Comp	Total Value ($)	Years
CIHR	Frederick Banting and Charles Best Canada Graduate Doctoral Scholarship (ranked 12/723)	C	105,000	2016-2019
UBC	Medical Genetics Four Year Fellowship and Tuition Award	C	72,800* + tuition	2016-2020
CFRI	Healthy Starts Graduate Studentship	C	20,000	2016-2017
CIHR	Research Centre of Aging and CIHR Institute of Aging (IA) Travel Award -	C	800	2017
UBC	James Miller Award – Top Medical Genetics Graduate Student	C	500	2017
CEEHRC	Travel Award – 4th Canadian Conference on Epigenetics (Whistler, BC)	C	1,100	2017

*Accepted in name only, conflict in funding with CIHR; Comp: Competitive (C) or Non-Competitive (NC)

Teaching

Year	University/Dept.	Course Number	Class Size	Hours	Role
2017F	UBC/Statistics	EDUCE* (MICR 301, MICR 402)	80-125	96	Developed curriculum, assisted with programming workshops
2017W	UBC/Biology	BIOL 337	24	192	Assisted instruction of laboratory experiments, graded lab reports
2016F	UBC/Biology	BIOL 200	1500	192	Led mandatory tutorials (3hrs/week), graded assignments/exams

*Experiential Data Science for Undergraduate Cross-Disciplinary Education: a new initiative at UBC to introduce data science modules into undergraduate science curriculum

Scholarly and Professional Activities

Selected Oral Presentations:

1. "Electronic Physician Profiles: Developing an Interactive Web-Based Report for Physicians at Island Health". Information Technology & Communications in Health, Hosted by the School of Health Information Science, University of Victoria, BC. Abstract published in Stud Health Technol Inform. *February 16, 2018.*
2. "Genome-wide DNA methylation alterations across the life course". Douglas Mental Health Institute, McGill University, Montreal. Oct 17, 2016.
3. "DNA methylation in a Costa Rican longevity population". AllerGen Research Conference, Vancouver, BC. May 30, 2016. 3. "DNA methylation and healthy aging". UBC Centennial Emerging Research Workshops - Bridging Genes and Environment: How Epigenetics Remembers the Past to Shape Your Future. April 28th, 2016.

Selected Poster Presentations:

1. **LM McEwen,** MJ Jones, JL. MacIsaac, MS.Kobor, DH Rehkopf. DNA Methylation Differences in a Longevity Cohort in Costa Rica. Presented at Keystone Meeting: Epigenetic and Metabolic Regulation of Aging and Aging-Related Diseases. Yokohama, Japan, May 15-19, 2017.
2. **LM McEwen,** E Gatev, MJ Jones, JL MacIsaac, MM McAllister, R Goulding, KM Madden, HA McKay, MG Dawes, MC Ashe, MS Kobor. Genome-Wide DNA Methylation Analysis in a Physical Activity Intervention Cohort of Previously Sedentary Women. Wellcome Trust - Waddington Symposium, Edinburgh, Scotland, June 1-5, 2015.

Service to the Community

Peer Reviewer:

Bioinformatics	2019-present
Scientific Reports	2018-present
BMC Medical Genomics	2017-present
Epigenetics	2017-present

Volunteer Work:

Ladies Learning Code Vancouver Python Programming Workshop Volunteer	2016-2018
UBC-ECOSCOPE R Programming Workshop Beginner & Advanced Series Volunteer	2016-2018
UBC Medical Genetics Incoming Graduate Student Mentor	2015-2018
Let's Talk Science (Knowledge Translation Program) Science Experiment Facilitator at Science World	2014-2018
UBC Medical Genetics TA Award Committee	2014-2016
Healthy Starts Research Day Planning Committee	2016
UBC Medical Genetics Welcome Day Organizing Committee	2015
CIHR – 4th Annual Canadian Human and Statistical Genetics Meeting Conference Volunteer	2015 2014-2015
Scientific Methods and Research Techniques/UBC Let's Talk Science Undergraduate Pod Leader	
UBC Medical Genetics Research Day Planning/set-up Volunteer	2014
International Human Epigenetics Consortium Conference Volunteer	2014