Mitra Mosslemi

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Education

Ph.D. in Epidemiology
University of Pittsburg, Sep 2020-present
M.Sc. in Epidemiology
University of California Irvine, Sep 2016- Sep 2018
    Thesis title: Comparison of cardiovascular risk factors between type 1 and type 2 diabetes in United States adults
    Thesis committee chair: Dr. Christine E. McLaren
M.Sc. in System Biology
University of Gothenburg, Sweden, Oct 2010-Dec 2012
    Thesis title: Development of a Multi-omics Integrated Tumor-genome Ranking Algorithm
    Thesis advisors: Dr. Wan L. Lam, Dr. Calum E. MacAulay & Dr. Markus J. Tamás

Research Experience

Researcher   June 2019- Aug. 2020
Harold Simmons Center for Kidney Disease Research, University of California, Irvine, CA
- Performed in-depth review on the epidemiology of diabetic kidney disease in the US and the associated mechanisms, detection biomarkers and prevention strategies for the disease
- Initiated and conducting research to study potential factors associated with the increased prevalence of normoalbuminuric diabetic kidney disease among US patients with diabetes in the past two decades (Conference Presentations #12, Forthcoming #13).
- Participate in the biweekly research team meetings and take part in the discussions regarding different ongoing projects in the group

Assistant Specialist   Feb. 2019- Aug. 2020
Heart Disease Prevention Program, Department of Medicine, University of California, Irvine, CA
- Prepared the initial and revised manuscript for the "Treatment-based Algorithm for Identification of Diabetes Type in the National Health and Nutrition Examination Survey" paper, and the response to reviewers (Journal Publication #3).
- Participated in the literature review, and table and manuscript design and preparation for "The Importance and Role of Multiple Risk Factor Control in Type 2 Diabetes" review article (Journal Publication #2).
- Mentored undergraduate student in data analysis (in SAS)
- Initiated and conducted research, providing evidence for the hypothesis that there is some female-specific association between glycemic control and blood pressure among patients with diagnosed diabetes using insulin. cardiometabolic risk factors (Conference Publication #3).
- Initiated and conducted research, providing evidence for the hypothesis that the difference in the performance of different diabetes diagnosis tests is associated with gradual progression of diabetes, where the feedback loop function in glucose homeostasis suggests that oral glucose tolerance test can assess diabetes at earlier stages compared with HbA1c and fasting plasma glucose test (Conference Publication #4).

Graduate Student Researcher   Sep. 2016- Sep. 2018
Department of Epidemiology, School of Medicine, University of California, Irvine, CA

Thesis   Summer 2018
- Designed a treatment-based algorithm for diabetes-type classification which is independent of diabetes diagnosis age and can classify type 1 and type 2 diabetes cases in public health surveillance more accurately than commonly used methods
- Compared classical and diabetes-related cardiovascular risk factors between type 1 and type 2 diabetes, classified by the treatment-based algorithm, in the National Health and Nutrition Examination Survey (NHANES) 1999-2016 (Conference Publication #2).

Chronic Disease Epidemiology Term Paper   Fall 2017
- Conducted research literature review on "How the effect of diabetes as a risk factor for cardiovascular disease differs between type 1 and type 2 diabetes?"
- Reviewed the cardiovascular disease (CVD) incidence and mortality rates, CVD risk factors and their relative importance and the CVD risk prediction models (ACC/AHA CVD assessment, UKPDS, EDC, Swedish NDR model, The Steno type 1 risk engine) for type 1 and type 2 diabetes.

Cancer Biology Term Paper   Spring 2017
- Reviewed the role of insulin/insulin-like growth factor (IGF) system in colorectal cancer.
- Summarized the carcinogens in the pathway and proposed rationales for potential adjuvant therapy methods related to the pathway

Genetic Epidemiology Term Paper   Spring 2017
- Prepared an NIH-style genetic epidemiology mock grant to compare the association between HLA variants combination and age of onset of type 1 diabetes among family member using Transmission Disequilibrium Test (TDT), on Type 1 Diabetes Genetics Consortium (T1DGC) database.

Biostatistics III Project   Spring 2017
- Developed a Cox regression model for survival analysis of patients diagnosed with colorectal cancer, to compare the correlation of demographic, tumor characteristics and treatment factors with survival time among patients diagnosed before and after the age of screening (50 years), using the California Cancer Registry database (in *SAS*).

Biostatistics II Project   Winter 2017
- Executed a stepwise model selection, selecting the best diabetes risk prediction model for postmenopausal women with prior Cardiovascular Heart Disease (CHD), using Heart and Estrogen/progestin Replacement Study (HERS) dataset (in Stata).

Biostatistics I Project   Fall 2016
- Developed an explanatory model for diabetes based on demographic factors to compare whether waist to hip ratio (WHR) or body mass index (BMI) is a better indicator for obesity as a risk factor for type 2 diabetes using Dr. John Schorling diabetes dataset (in Stata).

Research Intern   Mar. 2016- Sep. 2016
Center for Hydrometeorology and Remote Sensing (CHRS), University of California, Irvine, CA
- Prepared precipitation data, compatible with the Standardized Precipitation Index (SPI).
- Performed multiple case studies comparing the different draught prediction models (in Matlab)

Research Assistant   2013-2016
BC Cancer Research Center, Vancouver, Canada
- Investigated concepts for integrating genomic and epigenomic data to identify DNA alterations that drive aberrant gene expressions (Poster Presentation #11, #8)

- Developed a Multi-dimensional Integrative Tumor gene Ranking Algorithm (MITRA) for the identification of potential cancer driver genes in cancer tumors based on the number and magnitude of disruptions (in MATLAB)
- Trained and validated the algorithm using the expression, copy number and methylation data of breast and squamous cell lung cancers from The Cancer Genome Atlas (TCGA) (Poster Presentation #1, #4)
- Performed pathway analysis of DNA alterations observed in never-smokers and smokers to determine which pathways are preferentially disrupted in never-smoker lung tumors (in IPA and KEGG) (Poster Presentation #2, #5, Conference Publication #1)
- Applied the algorithm to the lung cancer tumors data in our lab, providing support for the hypothesis that microtubule affinity-regulating kinase 2 (MAPK2) could be a potential cancer driver gene.
- Performed statistical tests on control cells and different variants of MARK2 to assess the contribution of MARK2's contribution to the lung cancer phenotype (in R) (Journal Publication #1)
- Developed an algorithm for predicting cell type frequencies in whole blood using methylation profiles (in R). (collaboration with the Center for Molecular Medicine and Therapeutic).
- Assisted and mentored undergraduate students in data analysis.

Peer Reviewed Publications

Journal Publications
4. **Mosslemi M**, Wong ND. Importance of applying treatment data to ascertain type 1 diabetes cases in health registries. *BMJ Open Diabetes Research and Care 2021;* 9 (1), e002280. doi: 10.1136/bmjdrc-2020-001917
3. **Mosslemi M**, Park HL., McLaren CE., Wong ND. Treatment-based Algorithm for Identification of Diabetes Type in the National Health and Nutrition Examination Survey. *Cardiovascular Endocrinology & Metabolism* 2020;9(1):9–16. doi: 10.1097/XCE.0000000000000196
2. Nørgaard CH, **Mosslemi M**, Lee CJ, Torp-Pedersen C, Wong ND. The Importance and Role of Multiple Risk Factor Control in Type 2 Diabetes. *Current Cardiology Reports* 2019; 21: 35. doi.org/10.1007/s11886-019-1123-y
1. Hubaux R, Thu KL, Vucic E, Pikor L, Kung S, Martinez V, **Mosslemi M**, Becker-Santos D, Gazdar AF, Lam S, Lam WL. Microtubule affinity-regulating kinase 2 is associated with DNA damage response and cisplatin resistance in non-small cell lung cancer. *International Journal of Cancer* 2015;137(9):2072–82. https://doi.org/10.1002/ijc.29577

Conference Publications
9. **Mosslemi M**, Streja E, Tantisattamo E, Rhee CM, Norris K, Kovesdy C, Kalantar-Zadeh K. Association of Glomerular Hyperfiltration with Glycemic Control and Serum Uric Acid among NHANES Participants with Diagnosed Diabetes Mellitus. [Abstract] *Journal of the American Society of Nephrology* 2020; 31: PO0997. https://www.asn-online.org/abstracts/
8. **Mosslemi M**, Hanna RM, Rhee CM, Kalantar-Zadeh K, Streja E. Comparison of Chronic Kidney Disease Risk Factors between Normoalbuminuric and Albuminuric Patients with Diagnosed Diabetes and Reduced Kidney Function. [Abstract] *Diabetes* 2020; 69(Supplement 1): 519-P. https://doi.org/10.2337/db20-519-P

7. **Mosslemi M**, Wenziger C, Hsiung J-T, Kalantar-Zadeh K, Rhee C, Hanna R, Streja E. Association of glycemic control level with the clinical manifestation of kidney injury among patients with diagnosed diabetes.
   [Abstract #256] *American journal of kidney diseases*: 2020; 75 (Iss 4), S529.
   https://www.ajkd.org/article/S0272-6386(20)30044-5/pdf

6. **Mosslemi M**, Wong ND. Abstract P441: Oral Glucose Tolerance Test Detects Diabetes at Early Stages. [Abstract] *Circulation* 2020; 141(Suppl_1), AP441.
   https://doi.org/10.1161/circ.141.suppl_1.P441

5. **Mosslemi M**, Wong ND. Is there an association between glycemic control and blood pressure that depends on gender and diabetes treatment? [Abstract #125] *Clinical Cardiology* 2019; 42, S44-S44.
   https://onlinelibrary.wiley.com/doi/pdf/10.1002/clc.23281

4. **Mosslemi M**, Park HL, McLaren CE, Wong ND. Treatment-based approach for Diabetes Type Identification in the National Health and Nutrition Examination Survey. [Abstract #0070] Society for Epidemiologic Research 52nd Annual Meeting. Minneapolis, MN, USA; June 18-21, 2019.
   https://epiresearch.org/wp-content/uploads/2019/05/2019-Abstract-Book.pdf

3. **Mosslemi M**, Park HL., McLaren CE., Wong ND. Comparison of Cardiovascular Risk Factors between Type 1 and Type 2 Diabetes. [Abstract] *Diabetes* 2019; 68(Supplement 1):1476-P.
   https://doi.org/10.2337/db19-1476-P

2. **Mosslemi M**. Has the Skyrocketing Cost of Insulin Affected Glycemic Control in the US. [Abstract #0630] Society for Epidemiologic Research 51st Annual Meeting. Baltimore, MD, USA; June 19-22, 2018.
   https://epiresearch.org/wp-content/uploads/2018/06/SER-Abstract-Book-2018-1.pdf

1. Thu KL, **Mosslemi M**, Pikor LA, Vucic EA, Zhang W, Selamat SA, Laird-Offringa IA, Gozdar AF, Lam S, MacAulay CA, Lam WL. Development of an integrative genomics algorithm to investigate differences in the molecular mechanisms contributing to lung adenocarcinoma of smokers and never smokers. [Abstract] *American Journal of Respiratory and Critical Care Medicine* 2013;187:A1227.
   https://www.atsjournals.org/doi/abs/10.1164/ajrccm-conference.2013.187.1_MeetingAbstracts.A1227

Conference Presentations

14. **Mosslemi M**, Streja E, Tantisattamo E, Rhee CM, Norris K, Kovesdy C, Kalantar-Zadeh K. Association of Glomerular Hyperfiltration with Glycemic Control and Serum Uric Acid among NHANES Participants with Diagnosed Diabetes Mellitus. [Poster Presentation] American Society of Nephrology Annual Meeting. Online, October 19-25, 2020.

13. **Mosslemi M**, Hanna RM, Rhee CM, Kalantar-Zadeh K, Streja E. Comparison of chronic kidney disease risk factors between normoalbuminuric and albuminuric patients with diagnosed diabetes and reduced kidney function. [*Poster Presentation*] American Diabetes Association 80th Scientific Sessions. Online, June 12-16, 2020.

12. **Mosslemi M**, Kalantar-Zadeh K, Streja E. "Association of glycemic control level with the clinical manifestation of kidney injury among patients with diagnosed diabetes." [*Poster Presentation*] National Kidney Foundation (NKF) 2020 Spring Clinical Meetings. New Orleans, LA, USA; March 25-29, 2020.
    https://casehippo.com/apps/symposium/national-kidney-foundation-2020-spring-clinical-meetings/event/gallery/abstracts?abstractId=1406

11. **Mosslemi M**, Wong ND. "Oral Glucose Tolerance Test Detects Diabetes at Early Stages." [*Poster Presentation*] American Heart Association EPI|LIFESTYLE 2020 Scientific Sessions. Phoenix, AZ, USA; March 3-6, 2020.

10. **Mosslemi M**, Wong ND. "Is there an association between glycemic control and blood pressure that depends on gender and diabetes treatment?" [*Poster Presentation*] American Society for Preventive Cardiology Congress on CVD Prevention. San Antonio, TX, USA; July 19-21, 2019.

9. **Mosslemi M**, Park HL, McLaren CE, Wong ND. "Treatment-based approach for Diabetes Type Identification in the National Health and Nutrition Examination Survey." [*Poster Presentation*] Society for Epidemiologic Research 52nd Annual Meeting. Minneapolis, MN, USA; June 18-21, 2019.

8. **Mosslemi M**, Park HL, McLaren CE, Wong ND. "Comparison of cardiovascular risk factors between type 1 and type 2 diabetes in United States adults." [*Poster Presentation*] American Diabetes Association 79th Scientific Sessions. San Francisco, CA, USA; June 7-11, 2019.

7. **Mosslemi M**. "Has the Skyrocketing Cost of Insulin Affected Glycemic Control in the US." [*Poster Presentation*] Society for Epidemiologic Research 51st Annual Meeting. Baltimore, MD, USA; June 19-22, 2018.

6. Ramnarine VR, **Mosslemi M**, Martinez V, Lam S, Lam WL. "Genomic Rearrangements in Non-Small Cell Lung Cancer." [*Poster Presentation*] Bioinformatics and Oncology Research Day. Vancouver, BC, Canada; 2013.

5. **Mosslemi M**, Thu KL, Pikor LA, Vucic EA, Ramnarine VR, Zhang W, Selamat SA, Laird-Offringa IA, Gazdar AF, Lam S, MacAulay CM, Lam WL. "Comparison of driver pathway of lung adenocarcinoma between smokers and never smokers." [*Oral Presentation*] British Columbia Cancer Agency Annual Conference, Vancouver, BC, Canada; 2012.

4. **Mosslemi M**, Emily A. Vucic, Kelsie Thu, Larissa A. Pikor, Calum E. MacAulay, Wan L. Lam. "Identification of cancer driver genes using novel a Multi-omics Integrated Tumor-genome Ranking Algorithm (MITRA)." [*Poster Presentation*] British Columbia Cancer Agency Annual Conference, Vancouver, BC, Canada; 2012.

3. Hubaux R, **Mosslemi M**, Thu KL, Coe BP, Martinez VD, Becker-Santos DD, Ramnarine VR, Lam S, Lam WL. "Role of germline copy number variation in cancer risk, the case of breast cancer and lung adenocarcinoma." [*Poster Presentation*] British Columbia Cancer Agency Annual Conference, Vancouver, BC, Canada; 2012.

2. Thu KL, **Mosslemi M**, Pikor LA, Vucic EA, Zhang W, Selamat SA, Laird-Offringa IA, Gazdar AF, Lam S, MacAulay CA, Lam WL. "Pathway profiles of lung adenocarcinoma in smokers and never smokers." [*Oral Presentation*] Mechanisms & Models of Cancer, Cold Spring Harbor Laboratory Meetings, Cold Spring Harbor, NY, USA; 2012.

1. **Mosslemi M**, Vucic EA, Thu KL, Pikor LA, Lam WL. "Development of a Multi-omics Integrated Tumor-genome Ranking Algorithm (MITRA)." [*Poster Presentation*] Pathology Day, The University of British Columbia, Vancouver, BC, Canada; 2012.

Scholarships and Awards

- Society for Epidemiologic Research Student and Postdoc Travel Scholarship 2019 (February 2018)
- Mitacs Accelerate Grant for research-based internship, Vancouver, Canada (January 2015) Canadian Bioinformatics Workshop (CBW) Registration and Travel Award, Toronto, Canada (May 2013)
- Interdisciplinary Oncology Program Travel Award, University of British Columbia (April 2014)
- British Columbia Cancer Annual Conference Second Best Poster Award, Biology, Technology, and Bioinformatics, Vancouver, Canada (November 2012)

Professional Service

Member of the Communications Committee
Society for Epidemiologic Research, Sep. 2019- present
- Selecting content for the SER Twitter handle on a weekly basis

Member of the Award Committee
Society for Epidemiologic Research, June 2018- present
- Reviewed and scored application letters for 7 applicants for 2020 Noe Weiss and Tom Koepsell Excellence in Education award, February 2019
- Reviewed and scored 12 applications for 2020 Kenneth Rothman travel scholarship for participation in the 53rd Society for Epidemiologic Research annual meeting, December 2019
- Reviewed and ranked four finalist candidates' packages (5-7 letters of support) for the 2019 Noe Weiss and Tom Koepsell Excellence in Education award, February and March 2018

Manuscript/Abstract Review
Manuscripts:
- [Nature-Scientific Reports Journal](#), December 2020

Abstracts:
- Society for Epidemiologic Research (SER), January 2018-present
  - 35 abstracts for SER 53rd Annual Meeting, January 2020
  - 34 abstracts for SER 52nd Annual Meeting, February and March 2019
  - 25 abstracts for SER Digital, September 2018
  - 30 abstracts for SER 51st Annual Meeting, February and March 2018

Member of the Planning Committee
Cedars-Sinai 2017 Southern California Graduate Symposium
- Brainstormed and planned the schedule for the symposium with other committee members.
- Reached out to UCI graduate students and faculties with the news and updates of the symposium

Mentor for Undergraduate Research Opportunity (URO) program
University of British Columbia, 2014.

Media Coverage

Docwire News, Nephrology Times
- Glycemic Control and Clinical Features of Kidney Disease, July 22, 2020, https://www.docwirenews.com/nephtimes/nephtimes-diseases-and-conditions/diabetes-hypertension/glycemic-control-and-clinical-features-of-kidney-disease/
- Higher Glycemic Control Associated with Lower Albuminuria, July 02, 2020, https://www.docwirenews.com/nephtimes/higher-glycemic-control-associated-with-lower-albuminuria/

Renal and Urology News
- Glycemic Control Improves Albuminuria, But Not eGFR, Mar 28, 2020, https://www.renalandurologynews.com/home/conference-highlights/national-kidney-foundation-annual-meeting/nkf-2020-spring-meeting/glycemic-control-improves-albuminuria-but-not-egfr/

Professional Development

Workshops
- "Machine Learning and Artificial Intelligence for Causal Inference and Prediction: A Primer" workshop presented by Dr. Ashley Naimi, Society for Epidemiologic Research, 16 August 2021.
- "Confounding control for estimating causal effects: Looking under the hood" workshop presented by Dr. Nicolle Gatto and Dr. Ulka Campbell, Society for Epidemiologic Research 52nd annual meeting, 18 June 2019.
- "Deep learning for epidemiologists: An introduction to neural networks" workshop presented by Dr. Kathryn Rough, Society for Epidemiologic Research 52nd annual meeting, 18 June 2019.
- "A primer on electronic health record research design and analysis" workshop presented by Dr. Neal D. Goldstein, Society for Epidemiologic Research 52nd annual meeting, 18 June 2019.
- International Diabetes Federation (IDF) online course on Diabetes and Cardiovascular Disease by Pedro Matos (one credit Continuing Medical Education), IDF School of Diabetes, 28 March 2019.
- "Introduction to Parametric and Semi-parametric Estimators for Causal Inference" workshop presented by Dr. Jennifer Ahern and Dr. Laura Balzer, Society for Epidemiologic Research quarterly workshops, 28 September 2018.
- "Effectively communicating your research results using statistical graphics" workshop presented by Dr. Michael L. Jackson, Society for Epidemiologic Research 51st annual meeting, 19 June 2018.
- "An Introduction to Directed Acyclic Graphs" workshop presented by Dr. Ian Shrier, Society for Epidemiologic Research 51st annual meeting, 19 June 2018.
- "Grant Proposal Writing," by UCI Student of Medicine Graduate Council, March 2018.
- "Rethinking Psychiatry and Mental Illness in the Non-Western World," by UCI Medical Humanities Initiative, March 2018.
- "Course Design Certificate Program," by UCI Center for Engaged Instruction, Irvine, CA, Fall 2017.
- "An Introduction to Evidence-Based Undergraduate STEM Teaching," by Center for the Integration of Research, Teaching, and Learning (CIRTL) 6-week online course on edX platform, June-July 2017.

Professional Affiliations

- American Diabetes Association (ADA), 2019-present
- Society for Epidemiologic Research (SER), 2016-present
- American Association for the Advancement of Science (AAAS), 2013-2016