Sara Mostafavi, PhD

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EMPLOYMENT

Sept 2020-present	Associate Professor, Paul G. Allen School of Computer Science and Engineering, University of Washington (UW), Seattle, USA
Sept 2020-present	Adjunct Faculty, Genome Sciences, University of UW, Seattle, USA
Sept 2020-present	Senior Data Science Fellow, eScience Institute, UW, Seattle, USA
Dec 2018-2020	Faculty member, Vector Institute, Toronto, Canada
Jan 2015-2020	Assistant Professor, University of British Columbia (UBC), Department of Statistics, Department of Medical Genetics, Vancouver, Canada
Jan 2015-2020	Scientist, Center for Molecular Medicine and Therapeutics at UBC

Honors

2018-present	Canada CIFAR AI Chair
2015-present	Canada Research Chair (CRC II) in Computational Biology
2015-present	Fellow, Canadian Institute for Advanced Research, Child and Brain Development

ACADEMIC AND TRAINING BACKGROUND

PDF	2014	Harvard Medical School (Dept. Immunology; mentor: Christophe Benoist)
PDF	2011-2014	Stanford University (Dept. Computer Science; mentor: Daphne Koller)
PhD	2006-2011	University of Toronto (Dept. Computer Science; advisor: Quaid Morris)
MS	2004-2006	Queen's University (Dept. Computing Sciences; advisor: Parvin Mousavi)
BSc	2001-2004	University of Toronto (Computer Science and Life Sciences)
	1999-2001	Queen's University (Life Sciences) – transferred to UofT in 2001

SELECTED PUBLICATIONS

Trainees: underlined, co-first or co-senior authorship: *
Complete list: https://scholar.google.ca/citations?user=nBL0J6kAAAAJ&hl=en
Google scholar: H-index: 38; citations (all): 16117

(Selected) Published:

1. Maslova, A., R. Ramirez, K. Ma, H. Schmutz, C. Wang, C. Fox, B. Ng, C. Benoist[$], and **Mostafavi S[$]** (2020). Learning immune cell differentiation. *(available on bioRxiv).* (**Co-corresponding author**)

2. Patrick E, Taga M, Ergun A, Ng B, Casazza W, Cimpean M, Yung C, Schneider JA, Bennett DA, Gaiteri C, De Jager PL[$], Bradshaw EM[$], **Mostafavi S[$].** (2020) Deconvolving the contributions of cell-type heterogeneity on cortical gene expression. *PLOS Computational Biology.*

3. Graham E, Richmond PA, Tarailo-Graovac M, Engelke U, Kluijtmans L, Coene K, Wevers RA, Wasserman WW, van Karnebeek C, **Mostafavi S**. (2020). metPropagate: network-guided propagation of metabolomic information for prioritization of metabolic disease genes. *npj Genomic Medicine*

4. Yoshida H, Lareau C, …, **Mostafavi S*,** Buenrostro J*, Benoist C*. The cis-Regulatory Atlas of the Mouse Immune System. (2019). *Cell.*

5. <u>Ng B</u>, <u>Casazza W</u>, Patrick E, Tasaki S, <u>Novakovsky G</u>, Felsky D, Ma Y, Bennett DA, Gaiteri C, De Jager PL, **Mostafavi S**. (2019) *Using transcriptomic hidden variables to infer context-specific genotype effects in the brain. American Journal of Human Genetics.*

6. **Mostafavi S***, Gaiteri C*, Sullivan SE, …, Young-Pearse TL, Bennett DA, De Jager PL. A molecular network of the aging human brain provides insights into the pathology and cognitive decline of Alzheimer's disease. (2018). *Nature Neuroscience.*

7. <u>Ng B</u>, White CC, Klein HU, Sieberts SK, McCabe C, Patrick E, Xu J, Yu L, Gaiteri C, Bennett DA, **Mostafavi S***, De Jager PL*(2017). An xQTL map integrates the genetic architecture of the human brain's transcriptome and epigenome. *Nature Neuroscience.*

8. **Mostafavi S***, Yoshida H*, Moodley D, …, Mathis D*, Benoist C* and the Immunological Genome Project Consortium. (2016). Parsing the interferon transcriptional network and its disease associations. *Cell.*

9. <u>Pierson E</u>, the GTEx Consortium, Koller D, Battle A*, **Mostafavi S*.** (2015) Sharing and specificity of co-expression networks across 35 human tissues. *PLOS Computational Biology.*

10. Raj T, Rothamel K, **Mostafavi S**, Ye C, Lee M, Replogle J, Von Korff A, Imboya S, McCabe C, Okada Y, Patsapolous N, Lee M, Wood I, Mathis D, Hafler D, Koller D, Regev A, Hacohen N, Benoist C*, Stranger BE*, De Jager PL*. (2014). Polarization of the effects of autoimmune and neurodegenerative risk alleles in leukocytes. *Science.*

11. Levinson DF, **Mostafavi S**, Milaneschi, Y, Rivera, M, Ripke S, Wray NR, Sullivan, PF. (2014) Genetics studies of major depressive disorder: Why are there no GWAS findings, and what can we do about it? *Biological Psychiatry.*

12. **Mostafavi S**, Battle A, Zhu X, …, , Levinson D. (2013). Type I interferon signaling genes in recurrent major depression: increased expression detected by whole-blood RNA sequencing. *Molecular Psychiatry*

13. Battle A, **Mostafavi S**, Zhu X, Potash JB, Weissman MW, Mc-Cormick C, Haudenschild CD, Beckman K, Shi J, Mei R, Urban AE, Montgomery SB, Levinson D, Koller D. (2013). Characterizing the genetic basis of transcriptome diversity through RNA-sequencing of 922 individuals. *Genome Research.*

14. **Mostafavi S**, Battle A, Zhu X, Urban AE, Levinson D, Montgomery SB, Koller D. (2013). Normalizing RNA-sequencing data by modeling hidden covariates with prior knowledge. *PLOS ONE.*

15. **Mostafavi S**, Goldenberg A, Morris Q. (2012). Labeling nodes using three degrees of propagation. *PLOS ONE*

16. **Mostafavi S**, Ray D, Warde-Farley D, Grouios C, Morris Q. (2008) GeneMANIA: A real-time multiple association network integration algorithm for predicting gene function. *Genome Biology*.

ACTIVE RESEARCH FUNDING

NIH, R24 (sub-contract PI: Sara Mostafavi). *ImmGen: Gene expression in immune cells.* 2017-2022.

NIH, R01 (sub-contract PI: Sara Mostafavi). *Identifying the molecular systems networks, and key molecules that underlie cognitive resilience.* 2018-2022.

Canada Research Chair (Tier II) (PI). Chair in Computational Biology. 2015-2020.

**Genome Canada, Large-Scale Applied Science Project (LSARP*)* (co-Investigator). *Childhood asthma and the microbiome—precision health for life: The Canadian Healthy Infant Longitudinal Development (CHILD) study.* 2018-2023.

Genome Canada, LSARP (co-Investigator). *Care4Rare-Solve: Multi-omic based diagnosis of rare disease.* 2018-2023.

Jacob Foundation, Catalyst Grant (co-PI). *Developing epigenetic measurements to forecast long-term benefits of early-life interventions.* 2018-2020.

Natural Sciences and Engineering Research of Canada (NSERC), Discovery Grant (PI). *Integrating multiple types of genomics data to identify meaningful associations.* 2016-2021.

Canadian Institute for Advanced Research (CIFAR) (PI). Child and Brain Development program. Research Fellow Funds. 2019-2024.

Canadian Institute for Advanced Research (CIFAR) (PI). Child and Brain Development program. *Cell type deconvolution algorithms.* 2015-2020.

Canadian Institute for Advanced Research (CIFAR) (PI). Catalyst Grant. *Construction of epigenetic growth chart.* 2016-2019.

Biogen Inc, SRA (PI). *Identifying cell-type specific eQTLs in the brain.* 2016-2019.

SELECTED INVITED PRESENTATIONS

2020   Keynote, RegSys COSI, Intelligence Systems for Molecular Biology (ISMB)
2020   Department of Systems Biology, Harvard Medical School, Boston, MA.
2020   School of Computer Science and Engineering, University of Washington, Seattle
2020   Department of Neurology, Columbia University, NY.
2019   Gladstone Institute, University of California, San Francisco (UCSF), CA.
2019   Nature Next Generation Genomics Conference at NYU, NY.
2019   Ludmir Center for Neuroinformatics, McGill University, Montreal.
2019   Center for Artificial Intelligence and Medicine, University of Montreal, Montreal.
2019   Department of Biostatistics, University of Washington, Seattle.
2019   Invited speaker, EMBL-EBI Industry and Academia Partnership: Neuroinformatics.
2019   Department of Computer Science, Boston University. Boston.
2018   Princess Margaret Hospital Research Center, Toronto, Canada
2018   Department of Human Genetics, University of California Los Angeles (UCLA), USA
2018   Women's Brain Initiative Symposium at Brigham Women's Hospital , Boston, USA
2018   CIFAR and Jacobs Foundation Meeting, Marbach Castle, Germany
2018   Invited speaker, Biogen Inc, Boston, MA, USA
2018   Statistical Seminar Series, McGill University, Montreal, Canada
2017   Invited speaker, Canadian Human & Statistical Genetics Meeting, Quebec City, Canada
2015   Mount Sinai School of Medicine, NY, USA

2015   Invited speaker, CIFAR meeting on Brain development, Vancouver, Canada
2015   Broad Institute, Population Genetics Meeting, Boston, MA

SELECTED PROFESSIONAL ACTIVITIES

Conference Chairing and Organization:
- Organizer: Machine Learning in Computational Biology (MLCB) Conference 2020
- Session Chair: Communities of Special Interest (COSI) at ISMB 2020
- Co-organizer: BIRS meeting on Statistical and Computational Challenges Arising from Ubiquitous Molecular Measurements 2020.
- Track co-chair: ISMB 2019
- Co-organizer: Machine Learning in Computational Biology (MLCB) workshop at NeurIPS 2013-2017, 2019
- Co-organizer: Immunological Genome Project Computational Biology Meeting 2019;

Conference Program Committee: ISMB 2013-2018; NIPS 2015-2020; PSB 2011-2016; RECOMB 2015-2019;

Grant Review Panels:
- Grant panel member for Canadian Institute for Health Research (CIHR) 2018, 2019, 2020
- External reader for Natural Sciences and Engineering Research Council of Canada (NSERC) 2016, 2018, 2019
- External reader for Research Council of UK 2017
- Grant panel member for National Science Foundation (NSF) 2012
- Ad-hoc reviewer for National Institute on Aging (NIA) 2017, 2018, 2019.

Education/Career Panels:
- Bioinformatics Training Program at UBC, Women in STEM 2018
- Keynote for BC Children's Hospital Trainee Omics Group 2019
- Medical Genetics Graduate Student Welcome Day, Career panel member 2019
- Invited speaker for Invent The Future AI Scholar Program for high school girls 2019, 2020.

Journal Reviewing: Science, Nature Methods, Nature Communications, Genome Research, Genome Biology, Molecular Systems Biology, PLOS Genetics, PLOS Computational Biology, PLOS ONE, Annals of Applied Statistics, American Journal of Human Genetics, Biological Psychiatry, JAMA Neurology, Nucleic Acids Research, Bioinformatics, BMC Bioinformatics, Scientific Reports.