

Arjun Baghela

Vancouver, Canada

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EDUCATION

Doctor of Philosophy, Bioinformatics, University of British Columbia (UBC)

September 2016 - Present

- Supervisors: Drs REW Hancock (Department of Microbiology and Immunology) and G. Cohen Freue (Department of Statistics).
- Applying various statistical methods such as differential expression, pathway enrichment, and unsupervised and supervised learning methods for biomarker discovery in sepsis research.

Bachelor of Science (with Distinction), General Science, Simon Fraser University (SFU)

September 2011 - December 2015

- Graduated with minors in Biology and Biochemistry.
- 85% average

WORK EXPERIENCE

Graduate Teaching Assistant, Masters of Data Science Program, UBC

August 2018 - Present

- TAships (& Material Taught)
 - DSCI 554 Experimentation and Causal Inference
 - Experiment design, randomization, A/B testing, and multiple test correction.
 - DSCI 574 Spatial and Temporal Models
 - Time series analysis (smoothing, decomposition, autocorrelation function), ARMA models, variogram models, and classical Kriging
 - DSCI 562 Regression II
 - GLMs, mixed effects, robust regression, and missing data imputation.
 - DSCI 561 Regression I
 - Design matrices, simple regression models with R lm(), interpreting coefficients, regression diagnostics, and prediction.
 - BAIT 507 Data Management for Business Analytics
 - SQL commands, database management, user-centric access and queries.
 - BAIT 509 Business Applications of Machine Learning
 - Applying supervised and unsupervised learning models (logistic regression, SVMs, random forest), bias-variance tradeoff, R caret, and Python Sci-kit learn.
- Created autogradable assignments using nbgrader, a tool that facilitates creating and grading assignments in the Jupyter notebook, for DSCI 520 (Intro to Programming in R and Python) and DSCI 530 (Probability for Data Science) courses.

Client Service Representative, TD Canada Trust, Vancouver

August 2015 - July 2018

- Assisting clients with everyday banking needs and selling various credit products. Also responsible for opening and closing the bank and book reconciliation.

Learning and Writing Peer Educator, SFU

September 2015 - August 2016

- Worked with fellow university students to improve their writing, study, and note taking strategies, primarily through one-on-one advising sessions.

Research Assistant, David Baillie Laboratory, SFU

January 2015 - September 2015

- Led a mutational screen of *Caenorhabditis elegans* to identify essential genes.
- Collaborated with a graduate student to determine the differential mutation rates in *C. elegans* sperm and egg.

PUBLICATIONS

D Pletzer, T Blimkie, H Wolfmeier, Y Li, A Baghela ... REW Hancock. The stringent stress response controls proteases and global regulators under optimal growth conditions in *Pseudomonas aeruginosa*. mSystems. August 2020.

BK Dhillon, A Baghela ... REW Hancock. Systems Biology Approaches to Understanding the Human Immune System. Frontiers in Immunology. July 2020.

M Alford, A Baghela ... REW Hancock. NtrBC regulates invasiveness and virulence of *Pseudomonas aeruginosa* during high-density infection. Frontiers in Microbiology: Cellular and Infection Microbiology. Jan 2020

B Grande, A Baghela ... Y Zhen. Hackathon-driven tutorial development. F1000 Research. December 2018.

MENTORSHIP

Undergraduate Student Researcher Supervisor

January 2019 - Present

- Mentored two undergraduate student researchers, one for two semesters and the other for four months. Taught R programming, applying machine learning to various biological problems to derive translatable biomarkers, data curation and database assembly, and R Shiny App development.

TALKS & POSTER PRESENTATIONS

A Baghela ... G Cohen Freue, REW Hancock. Using Gene Expression and Clinical Data Profiles to Predict Sepsis at ER Admission. Intelligent Systems for Molecular Biology (ISMB)/European Conference on Computational Biology (ECCB). Basel, Switzerland. July 2019. (Poster).

A Baghela ... G Cohen Freue, REW Hancock. Machine learning approaches for classifying emergency room patients progressing to sepsis. Banff International Research Station- Casa

Matemática Oaxaca (BIRS-CMO) Workshop on Statistical and Computational Challenges in High-Throughput Genomics. Oaxaca, Mexico. November 2018. (Talk).

A Baghela ... REW Hancock. Applying biclustering to uncover disease endotypes within the sepsis syndrome. ECCB. Athens, Greece. September 2018. (Poster).

A Baghela ... REW Hancock. Mechanistic insights into human diseases, e.g. sepsis, from large omics datasets. UBC's Centre for Blood Research Summer Series. August 2018. (Talk).

A Baghela ... REW Hancock. Using ER patient transcriptomic and clinical data profiles to predict the onset of sepsis. UBC, Vancouver. International Sepsis Research Meeting. June 2017. (Talk).

PROGRAMMING EXPERIENCE

R (Expert)

- Tidyverse, Caret

Python (Proficient)

- Pandas, Sci-kit Learn

SCHOLARSHIPS & AWARDS

UBC Centre for Blood Research (CBR) Travel Award, December 2019

UBC CBR Graduate Award Program, September 2017

NSERC-CREATE ECOSCOPE Trainee (2-year funding), September 2017

Golden Key Society Inductee, December 2015

Undergraduate Student Research Award, May 2015

EXTRA-CURRICULAR ACTIVITIES

UBC R Study Group Workshop Coordinator, September 2016 - Present

TD Tree Days Community Organizer, August 2015 - Present