Matthew C. McFee

The University of Toronto
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Personal

Date of Birth: January 11, 1994

Citizenship: Canadian

Languages: English (Fluent), Spanish (Basic)

Education

PhD Molecular Genetics (Computational Biology Track), The University of Toronto,
January 2021 - January 2025 (Expected)

MASc Biomedical Engineering, The University of Toronto,
September 2018 - November 2020

BASc Chemical and Biological Engineering, The University of British Columbia,
September 2012 - April 2017

Fellowships & Awards

NSERC CREATE Training Program in Organ-on-a-Chip Engineering and Entrepreneurship (TOeP) Fellowship, September 2018 - Present

NSERC CREATE Training Program in Organ-on-a-Chip Engineering and Entrepreneurship (TOeP) Scholarship Award, October 2020

Barbara & Frank Milligan Graduate Fellowship Award, November 2018

Governor General's Bronze Medal, June 2012

Additional Education & Certifications

SciNet Data Science Certificate, June 2019 - August 2020
The University of Toronto
Toronto, ON
Selected Courses: Neural Network Programming, Linux Shell Scripting, Machine Learning with Python, Introduction to Relational Databases

Research Interests

The applications of machine learning in biology and healthcare, computational biology, modelling of biological processes/systems, bioengineering, biophysics

Research Experience

Graduate Theses

TBD (Supervisor: Dr. Philip Kim), January 2021 - January 2025 (Expected)

Adapting Muscle Endogenous Repair Assay (MEndR) for Industry and Academic Adoption (Supervisor: Dr. Penney Gilbert), September 2018 - November 2020

Committee: Drs. Molly Shoichet, Sunita Mathur
External examiner: Dr. Rodrigo Fernandez-Gonzalez

Undergraduate Thesis

Derivation of Blood-Brain Barrier Cells from Induced Pluripotent Stem Cells and Blood Brain Barrier Formation Kinetics for the Testing of Penetrability of Anti-neurodegenerative Drugs (Supervisor: Dr. Vikramaditya G. Yadav), September 2015 - April 2017

Research Exchanges

Visiting Researcher, Laboratory of Quantitative Exercise Biology (Collaborator/Supervisor: Dr. David C. Clarke), Simon Fraser University, December 2020

Capstone Design Project

Anaerobic Digestion of Brewery Spent Grain for the Production of Bio-methane, September 2016 - April 2017
Industry Advisors: Postmark Brewing, Quadrogen Power Systems Inc.

Teaching Experience

BME1479 - Biostatistics, Winter 2020
Institute of Biomaterials & Biomedical Engineering
The University of Toronto
Toronto, ON
Instructor: Dr. Julie Audet PhD, P. Eng.
Position: Teaching Assistant

Bachelor of Education Practicum (Physics), Summer 2015
The University of British Columbia, Vancouver School Board
Vancouver, BC
Instructor/Supervisor: Mr. Adam Klaassen
Position: Teaching Assistant

Professional Experience

Boston Scientific, March 2018 - June 2018
Vancouver, BC
Position: Manufacturing Associate (track to Manufacturing Engineer)

Journal Articles

In Progress:

1. E. Jacques*, **M. McFee***, A. Fard, S. Davoudi, B. Xu, A.P. McGuigan & P.M. Gilbert, "Muscle endogenous repair assay adaptions for industry and academic adoption", in preparation for submission

In Review:

1. B. Xu*, S. Davoudi*, J.L. Cardenas, **M. McFee**, E. Jacques, C.Y. Chin, A. Fard, M. Ebrahimi, M.A. Bakooshli, R. Marcellus, K. Tung, H. Ahn, H.J. Ginsberg, A.P. McGuigan & P.M. Gilbert, "An in vitro functional assay to predict in vivo muscle stem cell mediated repair", Accepted by Cell Stem Cell (October 2020)

Published:

1. R. Vaez Ghaemi, I. L. Co, **M. McFee** & V. G. Yadav, "Brain Organoids: A New, Transformative Investigational Tool for Neuroscience Research", published by Advanced Biosystems (October 2018)

Note: * indicates equal contribution to authorship.

Conferences & Seminars

November 2020 **Oral Presentation.** "MEndR: A System For Screening and Validating Muscle Repair Enhancing Drugs" Centre for Research and Applications in Fluidic Technologies (CRAFT) Symposium. Toronto, ON (Placed 3rd)

June 2020 **Oral Presentation.** "Making muscle! How we build miniature muscles to test repair enhancing drugs" The University of Toronto Engineering Research Conference (UTERC). Toronto, ON

May 2020 **Abstract Presentation.** "Adaping a Novel Muscle Endogenous Repair Assay For Industry and Academic Adoption" Muscle Health Awareness Day (YorkU). Toronto, ON

December 2019 **Student Seminar.** "MEndR Adaptions to Facilitate Industry and Academic Adoption" Institute of Biomaterials & Biomedical Engineering Student Seminar Series. Toronto, ON

May 2018 **Poster Presentation.** "Brain organoids: A transformative, new research tool for neuroscience research" BCRegMed Symposium. Vancouver, BC

May 2017 **Poster Presentation.** "Towards Layer-by-layer Manufacturing of Engineered Tissues" Canadian Biomaterials Society Conference. Winnipeg, MB

March 2017 **Poster Presentation.** "Engineering Cerebroids for the Testing of Anti-neurodegeneration Drugs" AICHe Pacific Northwest Regional Conference. Corvalis, OR

Volunteering & Mentorship

Engineering Mentoring Program, October 2020 - Present
The University of British Columbia
Vancouver, BC
Position: Mentor
Students: Justin Kuan (BASc Biomedical Engineering and Bioinformatics), Josh Goguen (BASc Biomedical Engineering)

Graduate & Life Sciences Education Shadowing Program, February 2019 - July 2019
The University of Toronto
Toronto, ON
Position: Graduate Mentor

The University of Toronto Skule Alumni Mentorship Program, 2019
Toronto, ON
Position: Student Mentee
Mentor: Dr. Adam Grossman, PhD (Data Scientist)
Company: Praedicat

Entrepreneurial & Additional Professional Experience

H. Lorenzo, August 2015 - December 2017
Los Angeles, CA
Position: Seasonal Model and Stylist
Highlights: Raf Simons FW16, JULIUS SS17, N/A x Selfridges "Lamyland"

BAD BOY, January 2017 - March 2017
Vancouver, BC
Position: Co-founder, Model, and Sales

Notes: (1) Name change to "Stranger Showroom." (2) Closed as of March 2019 (3) Currently operating as of May 2020

Programming Languages & Software

Primary Languages: **Python**, R, Scheme

Secondary Languages: C

Software: LaTeX, Emacs, Bash, Git, ImageJ, JMP, Inkscape, Aspen Plus

Libraries: Pandas, NumPy, scikit-learn, TensorFlow, Keras, Seaborn, ggplot2, tidyverse, org-mode

Operating Systems: Fedora, CentOS GNU/Linux, FreeBSD

Note: Bolded languages are those with which I have the most experience

Recreational Interests

Academic: Graph theory, functional programming

Non-Academic: Powerlifting, heavy metal music, fashion design, horror cinema

References

Dr. Penney Gilbert, PhD
Relationship: Thesis Advisor
416-978-2501
penney.gilbert@utoronto.ca

Dr. Alison McGuigan, PhD
Relationship: Research collaborator, Co-author
416-978-7552
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Dr. Julie Audet, PhD, P. Eng.
Relationship: Course Instructor
416-978-1713
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