



Fred Sunstrum

fredsunstrum@gmail.com | linkedin.com/in/fredsunstrum/

EDUCATION

Bachelor of Computer Science (BCS) <i>University of British Columbia</i>	Sep. 2023 – Aug. 2025 <i>Vancouver, BC</i>
MSc. Genome Science and Technology <i>University of British Columbia</i>	May. 2019 – Nov 2021 <i>Vancouver, BC</i>
BSc. Biology, Minor in Statistics <i>University of Ottawa</i>	Aug. 2014 – Dec 2018 <i>Ottawa, ON</i>

SKILLS

Languages: R, C/C++, Java, HTML/CSS
Frameworks/Tools: Git, ggplot2, Tidyverse, RStudio, VS Code

EXPERIENCE

Research Methodologist II <i>University of Ottawa Heart Institute - Cardiovascular Research Methods Center</i> <ul style="list-style-type: none">Led statistical analysis and writing of systematic literature reviews on stem cell treatments for COVID-19 and autoimmune disorders.Developed a web scraper in R to retrieve clinical trial data.Performed reference screening, data extraction, risk-of-bias analysis, drafted protocol registrations, and manuscripts for peer-reviewed publication.	Feb. 2021 – Aug 2023 <i>Ottawa, ON</i>
Graduate Research Assistant <i>University of British Columbia - Michael Smith Laboratories</i> <ul style="list-style-type: none">Discovered genes involved in biosynthesis of an anti-diabetic plant compound (MbA) and used metabolic engineering to produce MbA in wild tobacco.Mined a time-series transcriptomic dataset to identify candidate genes.Improved MbA yields 10x in engineered wild tobacco by expressing genes involved in precursor biosynthesis.Improved precursor availability 20x through metabolic engineering.Published thesis findings in peer-reviewed journals.	May. 2019 – Dec 2021 <i>Vancouver, BC</i>

PROJECTS

Image Processing Algorithm C++ <ul style="list-style-type: none">Implemented a doubly-linked list to manipulate PNG image pixel data, and BFS/DFS flood fill algorithms.Represented PNG pixels in a tree data structure allowing fast calculation of color information from rectangular image regions.
The Last Laugh Godot Game Engine, GDScript <ul style="list-style-type: none">Worked as a team to create a 2D platformer game using the Godot game engine.Implemented projectile flight and collision mechanics triggering animations.
WORDLE clone Java, JUnit, Java Swing, IntelliJ, JSON <ul style="list-style-type: none">Developed a WORDLE clone in Java, including word selection, comparison, and robust input handling.Created a GUI using Java Swing and used JSON for saving user progress.Applied Object Oriented Programming principles and test-driven development.

SELECTED PUBLICATIONS

Improved production of the antidiabetic metabolite montbretin a in nicotiana benthamiana: Discovery, characterization, and use of crocosmia shikimate shunt genes. (2024) - **Second Author** ([link](#))

4-coumaroyl-coa ligases in the biosynthesis of the anti-diabetic metabolite montbretin A. (2021) - **First Author** ([link](#))

A genetic linkage map in southern-by-spring oat identifies multiple quantitative trait loci for adaptation and rust resistance. (2019) - **First Author** ([link](#))