

# Fred Sunstrum

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## EDUCATION

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### Bachelor of Computer Science (BCS)

*University of British Columbia*

Sep. 2023 – Aug. 2025

*Vancouver, BC*

### MSc. Genome Science and Technology

*University of British Columbia*

May. 2019 – Nov 2021

*Vancouver, BC*

### BSc. Biology, Minor in Statistics

*University of Ottawa*

Aug. 2014 – Dec 2018

*Ottawa, ON*

## SKILLS

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**Languages:** C/C++, Java, R, GDScript

**Frameworks/Tools:** ggplot2, Tidyverse, JUnit, Git, RStudio, IntelliJ, VS Code

## EXPERIENCE

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### Research Methodologist II

*University of Ottawa Heart Institute - Cardiovascular Research Methods Center*

Feb. 2021 – Aug 2023

*Ottawa, ON*

- 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.

### Graduate Research Assistant

*University of British Columbia - Michael Smith Laboratories*

May. 2019 – Dec 2021

*Vancouver, BC*

- 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.

## PROJECTS

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### The Last Laugh | Godot Game Engine, GDScript

- 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

- 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

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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](#))