



UNSW
SYDNEY

Fabio Zanini
Lowy Cancer Research Centre, Level 2, Room 211
School of Clinical Medicine, University of New South Wales
NSW 2052
Australia

Title: Single cell omics in human disease

Supervisor: Dr. Fabio Zanini (<https://fabilab.org>)

Project timeline: Minimum 3 years.

Project description: Many medical conditions are caused by malfunctioning of specific cells within a tissue. For instance, leukemia is the result of immune cells expressing the wrong genes and thereby performing damaging functions as a consequence of genetic mutations. Disease during the first hours of life are especially challenging to treat as the dysregulated cells often perform functions related to the newborn's development, which can lead to lifelong medical conditions. Single cell omics have emerged in recent years as an incredibly powerful tool to advance our understanding of human disease with extreme granularity.

This project aims at using the latest single cell and machine learning algorithms to understand the cellular mechanisms underlying human disease. Local and international collaborations will provide an outstanding opportunity to explore and analyse complex biomedical data sets on pre-term birth complications, acute myeloid leukemia, dengue virus, type-1 diabetes, bacterial infections, and other types of human disease.

Team and skills: The candidate will join a well-resourced, internationally connected research team and develop advanced skills in biomedical research, either combining both wet-lab biochemistry and dry-lab computational analysis, or focusing on the computational side exclusively. Single cell analysis, bioinformatics, and biological interpretation will be integrated daily. The student will be mentored and guided towards scientific independence.

Requirements: A strong background in data science or computational biology is expected. Candidates with deep knowledge of computer science and an interested in biology or medicine will be considered as well. The student should be curious, motivated, fast-learning, and passionate about science. Knowledge of cell biology is a plus but not required.

Contacts: For inquiries write to fabio.zanini@unsw.edu.au