WEHI
brighter together

Research Computing Platform

Discovery Internship Program
Annual Report 2024

Table of Contents

Introduction

The Research Computing Platform (RCP) is a collaborative, multi-disciplinary lab that supports and advocates for researchers and their computational research needs at WEHI.

RCP has established the **Discovery Internship Program**, a 100% remote, unpaid internship program. We did this to leverage the experience we have in the RCP of working with student software interns by collaborating with labs.

To ensure interns receive course credit, we prioritise recruiting them through official programs at the University of Melbourne, as this is an unpaid opportunity.

Sometimes, students who are unable to receive course credit express strong interest in volunteering as open-source software contributors. In these cases, we focus on ensuring a mutually beneficial experience.

There are three intakes during the year, Semester 1, Semester 2, and Summer.

We aim to share the information from our current interns to our future interns. This is why we ask our interns to provide a summary report at the end of the intake.

We are constantly trying to improve the experience for our interns and always appreciate feedback.

While our most consistent feedback is to have an in-person work environment, we are only providing 100% online work environments.

Interns at RSE Parkville lunch that happens on the second Thursday of each month.

Philosophy

Proactive

Documentation is Key

Interns need to recognise the limited time they have and what they can achieve. This is why documentation is key to ensure information is passed to future interns.

Proactive

Collaboration is vital

There are multiple internships running at the same time. We encourage interns to collaborate within projects and across sister projects (similar projects) via co-working meetings.

Concept-first approach

It is important for interns to understand the high-level concepts of the domain the intern is working in. This increases the independence of the intern to work through complexity.

Proactive

Test your limits

The ability to learn quickly by doing your own research is important. Finding out how fast you learn and where your limits are, in a safe space, can help you to know yourself better.

Proactive

Numbers behind the program
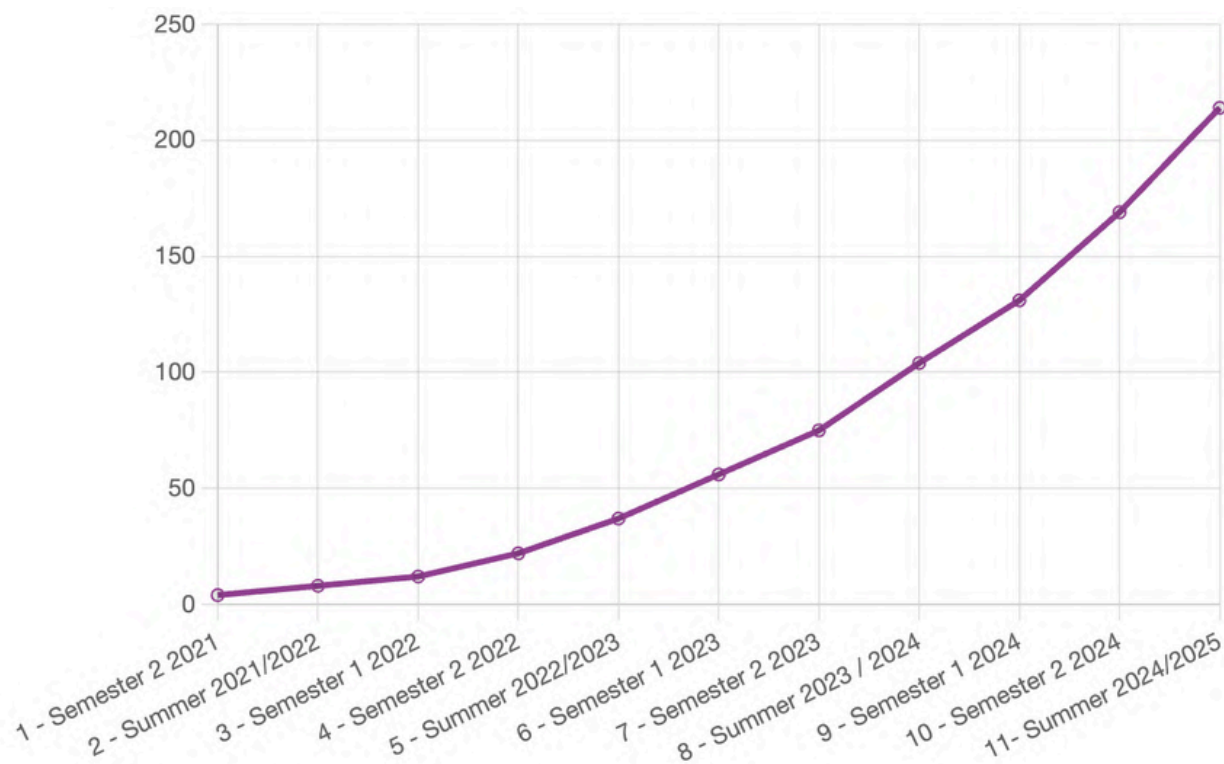
80+
project teams

200+
interns

4.7 / 5
rating by interns

31
different projects

0.5%
intern failure rate

52.34%
female & non-binary

Cumulative Finished Interns

(X-axis: 1 - Semester 2 2021, 2 - Summer 2021/2022, 3 - Semester 1 2022, 4 - Semester 2 2022, 5 - Summer 2022/2023, 6 - Semester 1 2023, 7 - Semester 2 2023, 8 - Summer 2023 / 2024, 9 - Semester 1 2024, 10 - Semester 2 2024, 11- Summer 2024/2025)

Types of Projects

Proactive

Research Applications

We've worked on many web-based research applications that assist both researchers and platforms, helping to scale and streamline processes for better support.

Proactive

Future technologies

We're also looking to the future with our quantum computing project, creating mini-courses for biologists to understand quantum computing using publicly available resources.

Artificial Intelligence

We have worked on a few AI projects, including large language models like ChatGPT for chatbots and AI-assisted 3D model creation. We are also looking at federated / swarm learning options.

Proactive

Research Data Management

We are developing research data management tools that go beyond compliance, helping researchers manage and streamline their data on a daily basis for greater efficiency.

Proactive

Benefits for Interns

There are many benefits for interns in this program to help them progress in their careers by giving them opportunities to grow and learn in a safe environment and achieve their potential, which builds confidence.

Many interns start the program having some level of technical skills, but very little understanding of how important it is to know the nuances and concepts of the work environment and domain knowledge.

This is why we give them the time to research the concepts and give them feedback on how to refine those concepts.

Interns are provided with honest feedback to show where their skills and abilities place them, what kind of organisation they might be a good fit with, and how they can improve during and after the internship.

Interns also get the opportunity to learn real-world skills such as keeping meeting notes, documentation, learning how to communicate, and giving presentations.

Interns also get the opportunity to deal with realistic data and real world problems, where the answers and the technical solution is not so clear as in their coursework.

Interns are encouraged to self-direct during the internship. Balancing what the intern wants to do and benefiting WEHI is a great example of a fantastic project.

All in all, interns have the opportunity to leave the internship with an improved sense of confidence that they have the ability to handle new environments and domains, even if they haven't worked in that area before. This is the best outcome we can hope for as supervisors.

Top L-R: Youran Zhou, Marika Benetti-Hille. Bottom L-R: Rowland Mosbergen, Gilbert Putra.

Intern Feedback and Awards

We are delighted when we get feedback from our interns, we are even more delighted when that feedback helps us improve the program or tells us how much they have enjoyed it.

Here are some examples of the anonymous feedback we have received:

The best part of the internship was being in a real consultant position, where it was not straightforward to grasp the concepts and needs of our client/stakeholder. This experience challenged my ability to think critically and take initiative with actions.

The autonomy to find the areas we want to focus on but having the guidance needed to achieve success.

As one of the earlier participants, I've had countless people reach out to ask me about my experience with the program, and after completing it, they always share how much they've benefited from it. To this day, I still find the lessons I learned during the program immensely valuable.

The success of the program resulted in Rowland Mosbergen winning the Kellaway Excellence Education Award for 2024.

We also ensure we ask interns for constructive criticism both in their final presentation and anonymously.

Thanks to student feedback we have:
- added a graduation ceremony,
- created a self-assessed skills matrix of all interns to help share intern skills,
- linked projects to ensure more connection across groups, and
- provided certificates of completion.

Rowland Mosbergen won the Kellaway Excellence Education Award in 2024.

Benefits for Researchers

Gain Knowledge

Uncover Complexity

The internship program helps researchers explore technical solutions, experiment with designs, and tackle interesting challenges like visualising diverse research data.

Test Documentation

Testing and documentation keep research software reliable and usable. Interns add value by spotting gaps experienced users may miss, improving clarity and functionality.

Catalyse great science

Increase Grant Success

Create a Proof-of-Concept

Interns help create proof of concepts, demonstrating to grant bodies that you've explored the problem and challenges, increasing the chances of success if funded.

Find future PhD candidates

This program runs like a micro-PhD, fostering independence, critical thinking, and proactive problem-solving. We have had 2 interns pursue PhDs after this internship.

Attract, develop, flourish
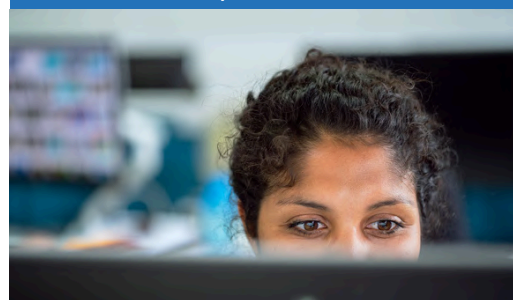
Supervisor Feedback

We are also delighted to get feedback from our supervisors who range from postdocs to lab heads.

Here are some examples of the feedback we have received:

The RCP Student Internship Program was an invaluable resource for my work. With the dedication of three talented students, my R package, schex, was brought up to full Bioconductor compliance, saving me significant time and effort. Their contributions not only improved the package's functionality but also ensured its robustness for the broader community

Dr Saskia Freytag, Lab Head

The students undertaking the Genomics Metadata Multiplexing project for the Genomics lab greatly helped us improve the usability of our spreadsheet merging app. We provided the students with our rough albeit working prototype, and they were able to create a fully functional R shiny front-end that streamlined and improved the usability of our tool, saving us time and effort in creating and consolidating sample sheets.

Dr Marek Cmero, Senior Research Officer

It's been great to have been part of the Clinical Dashboards project. It's an important initiative that allows students to apply their data science skills to develop tools to address real-world healthcare challenges. I think students can gain valuable insights by working in project teams, and applying design thinking, and learning health system approaches to the challenges of real-world data. These skills are becoming increasingly required in an increasingly data-driven world.

This initiative is really a first for WEHI and can form an important part of the institute's program to increase engagement in clinical research.

Dr Ashley Ng, Senior Research Officer

Working with the internship students on the AIVE project has been a fantastic opportunity for our lab. The students have engaged amazingly well with the project's complexity and the development goals for the software and resources. Having a wide range of student backgrounds and skills has allowed us to explore different goals both in terms of feasibility and accessibility of the project to new comers and non-experts in image analysis. This input has also had a crucial impact on the direction of the AIVE project as we plan and adapt our scope into the near future.

Importantly, being able to work with the internship students has also helped me learn and grow as postdoctoral researcher. I have really appreciated the opportunity to improve my own skills in research software development and planning.

Dr Runa Lindblom, Post-Doctoral Researcher

The students who engaged with the BioNix project have demonstrated excellent enthusiasm and ability to learn new concepts. Their experience onboarding onto the project and efforts towards contributing software to the upstream nixpkgs project has resulted in significant improvements to documentation and processes at WEHI.

Dr Justin Bedo, Senior Research Officer

Project Example - Genomics

Initial process diagram

Ian, Junwei, and Jiayuan helped to interview the subject matter experts and create a workflow diagram that showed the entire process.

Intake 7

Testing and reviewing

Zilan, Nandi and James looked at testing and reviewing the proof-of-concept more thoroughly and adding more functionality.

Intake 9

Baseline

Luke, Yujean, Christopher, and Nandi worked on understanding the basics of sequencing and curation options under challenging circumstances.

Intake 6

Initial proof-of-concept

Rui, Nguyen, Yutong, and Guoguo did an initial proof of concept tjat Marek from WEHI to use as a benchmark for his web app that went into production.

Intake 8

Merging staff and students

Sunchuangyu, Jude, and Sijia took Marek's code and merged it with previous student works to help enhance the web app.