

# Summer Studentship 2024

## Bioinformatics - Expression Viewer



### WHO IS THE CHILDREN'S CANCER INSTITUTE?

The Children's Cancer Institute is the only independent medical research in Australia dedicated to research into the causes, prevention, better treatments and ultimately a cure for childhood cancer. More than 40 years on, our vision remains unchanged – to save the lives of all children with cancer and improve their long-term health, through research. The Institute has now grown to employ nearly 350 researchers, operational staff and students, and has established a national and international reputation for scientific excellence. Our focus is on translational research, whereby we have an integrated team of laboratory researchers and clinician scientists who work together in partnership to discover new treatments which can be progressed from the lab bench to the beds of children on wards in our hospitals as quickly as possible.

The Institute has recently embarked on a remarkable adventure towards joining with our clinical colleagues at the Kids Cancer Centre, Sydney Children's Hospital, in a brand-new purpose built home, Australia's first Children's Comprehensive Cancer Centre, which when completed, will house up to 900 child cancer clinicians and scientists.

### OUR SHARED VISION

Our shared vision for the Children's Comprehensive Cancer Centre is to be the leading children's comprehensive cancer centre world-wide, providing for the seamless integration of child cancer research, clinical care and education, with the goal of putting an end to childhood cancer.

### WE BELIEVE THAT

- No child should die from cancer or suffer life-long side effects from their treatment.
- Medical research is fundamental to curing childhood cancer.
- It is the critical iterative relationship between translational research, research that moves laboratory findings into the clinic; and discovery research, bench to bedside and back again, that is bringing us closer to one day curing childhood cancer.
- It's not if. It's when.

### OUR PURPOSE

Children's Cancer Institute exists solely to put an end to the devastating impact of childhood cancer. Every week in Australia, three children and adolescents die of cancer. Only when that three becomes zero, and when all the survivors can live a normal life, will our work be done.

Our purpose as the only independent medical research institute in Australia focused exclusively on childhood cancer, is to Translate and Discover, through world class research, new treatments that will cure cancer and reduce side effects in children and adolescents.

### OUR STRATEGIC OBJECTIVES

**Translate**—Accelerate the integration of our translational research into clinical care, including delivery of the flagship Zero Childhood Cancer program.

**Discover**—To pursue world class discovery research, and to feed the translational pipeline through the depth, breadth and impact of our science.



### OUR STRATEGIC ENABLERS

**Empower**—Attracting and developing the brightest minds in a vibrant collaborative high-performance culture that fosters diversity, innovation, and success.

**Innovate**—By providing our researchers and support teams with access to advanced technologies, infrastructure, and facilities, we will create a dynamic and cutting-edge environment for innovation.

**Connect and engage**—Partnering and collaborating with UNSW and Sydney Children's Hospitals Network together with national and international clinical and research leaders and organisations, governments, and industry to leverage and maximise the outputs and impact of our research.

**Promote and fund**—Sharing our beliefs, vision, and purpose with others to drive awareness, engagement and support for our cause that ensures we deliver our strategic objectives in a financially sustainable way.

## YOUR ROLE

<b>Team:</b>	Bioinformatics/ZERO/Computational Biology	<b>Reports To:</b>	Chelsea Mayoh
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## YOUR PURPOSE

The Bioinformatics student will have the ability to work with already established code in the R programming environment to develop a new and improved RNA-seq based expression viewer application that can be widely used across scientists at the institute. The student will work closely with the leader of the Bioinformatics team as well as software engineers and bioinformaticians to develop the application. In addition, they will be confident to communication with curation scientists and research clinicians to understand their specific needs associated with the application. The application will create a visually appealing and easy to use graphical user interface for clinicians and researchers to further explore and visualise RNA-seq expression data for each patient enrolled on the ZERO Childhood Cancer Program. The ideal candidate will have experience working in R or Python.

The bioinformatics team and the computational biology team are a diverse team of scientists, engineers and students with a common goal of improving health outcomes for children with cancer. They create innovative computational tools, pipelines and software that utilise genomics and transcriptomics data to facilitate precision medicine, underpinning programs such as the ZERO Childhood Cancer Program. They also work with wet-lab scientists throughout the institute to develop user-friendly interfaces to complex bioinformatic pipelines.

## YOUR KEY OUTPUTS AND ACTIVITIES

<b>1. Connection to the Cause</b>	<ul style="list-style-type: none"> <li>Deliver agreed outcomes in a self-motivated manner with minimal direct supervision.</li> <li>Exercise excellent judgement and problem solving</li> <li>You undertake other activities as directed to support the Institute’s vision and purpose.</li> </ul>
<b>2. Systems &amp; Processes</b>	<ul style="list-style-type: none"> <li>Be involved in the design and establishment of a high-quality biological resource for clinical and research use.</li> <li>Ability to work with currently developed code.</li> <li>Maintain high rigor code testing and debugging for optimal computational efficiency.</li> </ul>
<b>3. People &amp; Teams</b>	<ul style="list-style-type: none"> <li>Work with a team of curation scientists to ensure clinically relevant development of software program</li> <li>Positively contribute to the team dynamic</li> <li>You foster a harmonious and collaborative team culture and support the REDI vision – respect, equity, diversity, and inclusion.</li> <li>You maintain and enhance your skills and knowledge through participation in education and the Institute’s Personal BEST performance and development program</li> </ul>
<b>4. Conduct &amp; Safety</b>	<ul style="list-style-type: none"> <li>You role model behaviours that positively reflect the Institute’s Code of Conduct, Research Code of Conduct and all relevant WHS policies and procedures.</li> <li>You comply with all relevant Institute WHS policies and procedures.</li> <li>You take reasonable care to maintain your own health and safety and that of others.</li> <li>You actively participate in making the Institute a safe and healthy workplace through communication and consultation processes.</li> </ul>

## YOUR PROFILE

Skills/Qualifications	Capabilities
Essential: <ul style="list-style-type: none"> <li>Undergraduate student with a major in either software engineering, computational science or biology</li> </ul>	Capabilities are the knowledge, skills and abilities required to succeed in this role. <ul style="list-style-type: none"> <li>Resilience – persist despite challenges, obstacles, and interruptions</li> <li>Creativity – innovative and apply resources in new ways</li> </ul>

<ul style="list-style-type: none"><li>• R programming experience</li><li>• R Shiny experience is desirable but not essential</li><li>• Python experience is desirable but not essential</li></ul>	<ul style="list-style-type: none"><li>• Empathy – understand and consider other’s feelings, thoughts, and experiences</li><li>• Imagination – see through variety of lenses and challenge present assumptions</li><li>• Emotional intelligence – understand other’s emotions and experiences</li><li>• Teaming – collaborate effectively across organisational boundaries</li><li>• Critical thinking – analyse, evaluate, and reconstruct information</li><li>• Adaptive thinking – recognise new patterns and apply patterns in new contexts</li></ul>
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*To submit your application, please send your CV to [cmayoh@ccia.org.au](mailto:cmayoh@ccia.org.au)  
subject: summer studentship*