



# Position Description

<b>JOB TITLE:</b>	Senior Bioinformatics Research Officer
<b>GROUP:</b>	Computational Biology Group
<b>THEME:</b>	Personalised Medicine
<b>REPORTS TO (TITLE):</b>	Computational Biology Group Leader
<b>LAST DATE REVIEWED:</b>	April 2022

---

## JOB SUMMARY

The Children's Cancer Institute's sole mission is to put an end to the devastating impact of childhood cancer. To achieve this, CCI in conjunction with the Kids Cancer Centre lead the ZERO Childhood Cancer National Personalised Medicine Program (ZERO), which is Australia's first and most comprehensive personalised medicine program for children and adolescents with cancer. ZERO is a unique, multidisciplinary program bringing together cutting-edge science, the latest technology, and the brightest minds in research and clinical care, it is on a path to change the model of care for children with cancer today. Having already demonstrated significant impact in improving the lives of children faced with the most challenging prognosis, the program is now in preparation to expand and grow to include all children with cancer by 2023.

In 2019 we established The ACRF Child Cancer Liquid Biopsy Centre. This cutting-edge research centre will establish the technological capability to analyse circulating tumour DNA and circulating tumour cells (CTCs) with exquisite sensitivity. From this technological base, we aim to study how tumours evolve over time and in response to treatment, initially focussing on paediatric brain tumours, sarcoma's, neuroblastoma's and leukaemia, leveraging numerous prospective trials including ZERO with matched solid tumour WGS and RNA-seq and regular plasma samples. We anticipate that liquid biopsy approaches will become a new paradigm for molecular monitoring of children with cancer, and be used to guide patient care far more proactively.

The Computational Biology group at the Children's Cancer Institute is a multi-disciplinary team of scientists, engineers and students, all motivated to improve health outcomes in children with cancer. We develop computational approaches that leverage cutting-edge advances in genomics to enable precision medicine, in part through supporting the Zero Childhood Cancer Program, the Luminesce Alliance for Precision Medicine, and the ACRF Childhood Cancer Liquid Biopsy Program.

We are seeking a Senior Bioinformatics Research Officer, who will be responsible for developing computational approaches focussed on liquid biopsy assays. This will include the development of modular analysis pipelines (eg deep targeted sequencing or low-pass WGS plus various single cell RNA/ DNA and protein analysis techniques), algorithms to develop highly personalised assays, and a keen interest in using these technologies to better understand the biology of childhood cancer. The successful candidate will be an independent, highly motivated and talented researcher, capable of driving change and implementing novel approaches. The ideal candidate will have expertise in precision cancer genomic medicine, circulating tumour DNA analysis and single-cell DNA and RNA sequencing approaches. The successful candidate will be



# Position Description

motivated to drive innovative research and publications in this area, in part through collaboration with researchers and clinician-scientists at the institute, but ultimately independently.

The successful applicant will also work closely with other members of the Computational Biology and Liquid Biopsy groups to support the development, and delivery of a training program aimed at building capacity, knowledge, and expertise across institute research staff in bioinformatics, computational biology, genomics and study design.

## PRIMARY TASKS / RESPONSIBILITIES

***In fulfilling the core strategic objectives of the group, the role will be engaged in the following duties and responsibilities:***

- Developing analytical approaches to study circulating tumour DNA, including:
  - Developing optimal targeted sequencing panels based on in house databases and from mutations identified in matched tumour WGS data
  - Algorithms for distinguishing signal-from-noise
  - Algorithms for longitudinal analysis integrated with our existing solid tumour biopsy analysis pipelines
- Develop analytical approaches to study circulating tumour cells (CTCs), including:
  - Off-the shelf analysis pipelines for analysing single-cell RNA-seq data from 10x Chromium and BD Rhapsody pipelines, and single-cell DNA-seq data from MissionBio Tapestry platforms for rapid delivery of research outcomes
  - Development of bespoke algorithms for characterising cellular phenotypes, including Cite-Seq, single-cell RNA and DNA sequencing, and high dimensional cytometry.
- Drive innovative computational research into tumour evolution and cellular heterogeneity
- Develop new and improved models of disease stratification and risk prediction on the basis of longitudinal liquid biopsy data
- Be motivated to seek academic career progression opportunities through driving manuscript writing, grant writing and presenting research and conferences.
- Support the computational biology and liquid biopsy groups and collaborations with paper writing, and grant writing
- Interact with members of the precision medicine curation team to translate this research into clinical practice.
- Day-to-day support and occasional training of students and junior staff as required.
- Staying abreast on advances in genomics and next generation sequencing technology in general, maintaining knowledge about clinical genomic testing and personalised medicine
- Promote CCI on the local, national, and international stages
- Other duties as assigned.

***Key Interactions:***



# Position Description

- Internal: Computational Biology Group Leader, Leadership of the ACRF Childhood Cancer Liquid Biopsy Program, Personalised Medicine Program Leader, and others as required
- External: Key external collaborators where research is or will be undertaken, presentations at local and international conferences

## MINIMUM REQUIREMENTS

### Qualifications

- PhD in computational biology, genomics, or related field

### Experience and requirements

- Highly developed skills in bioinformatics and genomics, with a minimum of 8 years experience
- High-level of proficiency in bash, R, and python
- Strong demonstrated expertise working with multiple next generation sequencing methods, including single cell analysis
- Experience developing modularised analysis pipelines (eg Docker) which operate in a commercial or academic cloud environments are desirable
- Ability to develop, manage and maintain internal and external relationships, including collaborations
- Expertise in developing diagnostic assays, and assessing their analytical performance is desirable but not essential
- Experience working with clinical pathology services is desirable but not essential
- Experience in clinical interpretation of genomic data is highly desirable
- Highly motivated to produce high quality outcomes in pursuit of translational and clinical excellence

## KEY SKILLS

- Strong analytical, critical thinking, and problem-solving skills
- Creativity, flexibility and independence as a researcher
- Capacity to manage multiple priorities and projects with excellent organisational and time management skills
- Able supervision of staff and students
- Capacity to work under minimal supervision
- Exceptional written and oral presentation skills
- Exceptional project management skills
- Exceptional interpersonal skills and ability to work cooperatively, openly, and transparently

## EXPECTED OUTPUTS

- Perform high quality bioinformatics research, resulting in the development of novel methods, biological insights, and a combination of methods-led, and disease-led research papers
- The development of several analysis pipelines for analysing liquid biopsy data
- Contribution towards grant writing, paper writing, and scientific communication, including preparing and delivering internal and external presentations
- Assist with the design, implementation, and maintenance, and actively contribute to an ongoing training program for non-bioinformaticians



# Position Description

- Development and maintenance of strong collaborative links to leverage and contribute to international data sets

## Children's Cancer Institute policies applicable

- Code of Conduct/Ethics
- Whistle-blowing
- Use of Electronic Resources
- Workplace Health & Safety
- Appropriate Workplace Behaviour
- Privacy
- Any other policies not listed here but are available on the Children's Cancer Institute Intranet Policies pages
- FlexBEST

## FLEXIBLE WORKING ARRANGEMENTS

Children's Cancer Institute is committed to flexible working arrangements, through their FlexBEST policy. FlexBEST is our way of thinking about workplace flexibility, ensuring all roles are considered for flexible working. You take responsibility for how, where and when you work optimising your own and your team's performance. FlexBEST includes:

1. FlexTIME: change in start and finish times, compressed working week/fortnight, time off in lieu
2. FlexPLACE: choose where you work, eg at home, or at the office
3. FlexREST: the use of leave or unpaid leave to temporarily reduce the days or hours of work

FlexPLACE means that the successful applicant may reside in other parts of Australia, pending agreement with your manager on a suitable frequency of visiting Sydney.

## SERVICE STANDARDS AND GENERAL EXPECTATIONS

- Respond to phone calls and emails within 48 hours
- Read internal communications within 48 hours
- Maintain up to date personal information in the HRIS (ConnX - Self Service) at all times

## OUR VALUES

**A** is for **Accountability** and **Integrity**

**C** is for **Camaraderie, teamwork** and **Sharing**

**E** is for **Excellence** and **Success**



# Position Description

**S** is for **Satisfaction**. The result of living our values everyday

## COMPLIANCE AND CODE OF ETHICS AND CONDUCT

Staff members are responsible for ensuring that they are familiar with and comply with their conditions of employment as stated in their individual contract, all Children's Cancer Institute Policies and Procedures and relevant ethical and regulatory guidelines. Staff must be aware that breaches by individuals will not be tolerated or condoned and may be subject to the Disciplinary Action Policy.

Your knowledge and awareness of Children's Cancer Institute Policies and Procedures (including the Code of Ethics and Conduct), will be monitored from time to time to ensure that our compliance program is effective. Part of compliance adherence involves the use of standardised forms, checklists, and other aids (as appropriate) to ensure that important compliance issues are not overlooked. All forms must be used in accordance with instructions and the procedures as outlined in the relevant policies and procedures to ensure that compliance to the laws and regulations occurs.

## WORK HEALTH & SAFETY

- Must adhere to all WHS policies and procedures including reporting incidents within 24 hours
- Take reasonable care for their own health and safety and the health and safety of other people who may be affected by their conduct in the workplace
- Actively participating in health and safety meeting, training and induction programs
- Complying with all safe work procedures and instructions
- Use equipment in compliance with relevant procedures, without wilful interference or misuse
- Ensure that any hazardous conditions, near misses and injuries are reported immediately to the supervisor and in the WHS reporting system (Myosh)
- Must not wilfully or recklessly interfere with or misuse anything provided in the interest of environment health and safety or welfare
- 

## REPORTING STRUCTURE

Position reports direct to: *Computational Biology Group Leader*.

Departmental Structure: *See Organisation Chart*

**Note:** Reporting structure may change subject to management decisions and business requirements.