



Position Description

Position Title:	Senior Computational Biologist
Job level:	L5
Reporting Manager:	Katie de Lange (Population Analysis Lead)
Direct Reports:	Individual contributor role, with the possibility of direct reports in the short- to medium-term
Home Group:	Centre for Population Genomics (CPG)

Introduction

This position is based in the Centre for Population Genomics, a joint initiative of the Murdoch Children's Research Institute (MCRI) in Melbourne and the Garvan Institute of Medical Research (Garvan) in Sydney.

The Centre is an impact-focused, highly collaborative team that includes data analysts, software engineers, project managers, and communities specialists. Together, we focus on realising the potential of genomic data to improve disease diagnosis and treatment for *all* Australians, through the establishment of respectful partnerships with diverse communities, the collection and analysis of genomic data at a transformative scale, and the development of cutting-edge tools and resources.

The Role

We are seeking a **Senior Computational Biologist** to join the **Population Analysis team** at the Centre for Population Genomics.

This team is focused on projects across two core domains: Genetic Diversity and Gene Function. Our work in the Genetic Diversity space aims to increase the inclusion of under-represented communities in genomic research, handling data generated through new sequencing projects as well as the aggregation of public resources to create a novel resource of genetic variation that reflects the remarkable population diversity of Australia. Meanwhile, the Gene Function domain focuses on using naturally occurring genetic variation, including that uncovered by the Genetic Diversity efforts, to better understand the function of human genes.

The Senior Computational Biologist would be involved in core aspects of project delivery across both these domains, including contributing to the development of cloud-based analysis pipelines, analysing diverse genomic datasets to produce core data resources, leading the development of user-facing products to maximise accessibility of these resources, and leading novel research projects that leverage these resources to impact the prevention, diagnosis and treatment of disease.

Role Flexibility

The CPG is geographically distributed across Sydney, Melbourne and New Zealand, and operates under a fully-remote model. However, office space is available for use at both the MCRI in Melbourne and the Garvan Institute in Sydney, and all-staff in-person events are held regularly. This role is therefore suitable for flexible work, including:

- **Hours of work flexibility** (such as flexible start and finish times); and
 - **Location / remote working flexibility** (with regular in-person interaction opportunities)
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Culture & Values

Our work and culture at the Centre for Population Genomics are guided by the following core values:

- **We remember that our data come from people,**
- **We do things that matter even if they are hard,**
- **We share accountability,**
- **We support each other,** and
- **We celebrate our differences**

Similarly, while this position is focused on performing cutting-edge genomic science, this is a professional role, with performance evaluated based on team outcomes rather than traditional academic metrics such as publications.

Essential Duties & Responsibilities

The key responsibilities for the Senior Computational Biologist will include:

- Working closely with bioinformaticians and software engineers to build cloud-based data analysis pipelines suitable for large-scale genomic datasets, including the refinement of existing pipelines and the development of novel solutions.
 - Analysing diverse genomic datasets, including whole genome sequencing data paired with a wide variety of 'omic datasets, to produce shareable resources that have the potential for real-world impact on health outcomes. These resources include:
 - A **gnomAD-like catalog of genetic variation that reflects the remarkable population diversity of Australia;**
 - Novel and/or extended sets of **functional annotations that aid the interpretation of protein-coding variation,** including manually-curated loss-of-function variation and structurally-aware metrics of genetic constraint;
 - An **association map linking regulatory genetic variation to cell-type specific changes in gene expression.**
 - Leading the development of user-facing products, such as web browsers and novel data visualisations, that will maximise the accessibility and wide-spread usage of these data resources.
 - Leading or contributing to novel research projects, both internally and in collaboration with external partners, that leverage these data resources to impact the prevention, diagnosis and treatment of disease. Examples of research areas of interest include:
 - Enabling studies into the **causes of common disease in diverse populations, and increasing the accuracy of polygenic risk predictions** in these communities;
 - **Genotype-based recontact studies** that deeply characterize the effects of specific genetic variants;
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- Proposing **novel targets and mechanisms of action for therapeutic development**, including developing a deeper understanding of the safety and efficacy implications of genetic variation on these therapies.
 - Indirect mentorship and technical leadership of junior team members and peers, with the opportunity to take on direct reports in the short- to medium-term.
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Key Communications

Internal: The Senior Computational Biologist will report to Katie de Lange (Population Analysis Lead). They will work closely with the Analysis, Software, Inclusive Genomics and Project Management teams to refine data processing pipelines, build large data resources and user-facing products, and lead novel research projects. While this is initially an individual contributor role, there is the potential to take on direct reports in the short- to medium-term.

External: The Senior Computational Biologist will collaborate with other teams at the Garvan and the Murdoch Children's Research Institute as well as external partners on the execution of large-scale scientific projects.

Knowledge, Skills & Qualifications Required

The key skills and experience required include:

- Formal qualifications (PhD with 3+ years of related experience OR equivalent) in human genetics, computational biology, functional genomics, computer science or a related field.
 - Experience with large scale human genome studies- GWAS or QTL association studies
 - Fluent in at least one programming language (Python and/or R preferred) and the Linux command line interface. Experience working with high-performance and/or cloud computing environments preferred.
 - Experience wrangling large datasets and complex data types, ideally from the genomics field (such as WGS, WES, genotyping, bulk RNA-seq and/or scRNA-seq data).
 - Software development experience, including the use of git to manage code changes, leveraging pull requests to give and receive constructive feedback, and participating in peer programming sessions.
 - Skilled communicator, who is able to explain complex concepts relating to their work to both technical and non-technical audiences, through a mix of both verbal and written communication, and via the creation of effective data visualisations.
 - Highly engaged and team-orientated, focused on building novel solutions and addressing important biological and medical problems through tight collaboration with team members from a diverse range of backgrounds.
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Desirable Skills

The following skills and experience would be beneficial:

- Direct or indirect leadership experience, such as experience providing technical and strategic mentorship at a project level or experience in product management.
 - Experience building user-facing products, with direct UX design experience a plus.
 - A strong interest in science communication, training and education.
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Conditions of Employment

- Working with Children & National Police Clearance (if appointed) in compliance with the Victorian Government's Child Safety Standards
 - The right to reside and work in Australia and you meeting any applicable visa conditions
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Health, Safety & Wellbeing

- We are committed to providing and maintaining a working environment which protects the health, safety and wellbeing of our people, partners and the community
- Employees conducting duties on behalf of MCRI are expected to meet the environment, health and wellbeing requirements and responsibilities specifically required for the role
- We are committed to supporting children in their right to be safe and adhere to the responsibilities we have to ensure their protection and safety as per the Child Safety Standards Policy
- Specified positions may be subject to medical review to ensure that the inherent requirements of the role can be undertaken safely.

As MCRI evolves to meet its changing strategic and operational needs and objectives, so will the roles required of its employees. As such, this document is not intended to represent the position which the occupant will perform in perpetuity. This position description is intended to provide an overall view of the incumbent's role as at the date of this statement.