# Position Details

## Research Scientist/Engineer- CSOF5

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| The following information is for applicants |
| Advertised Job Title | Data Scientist – Bioinformatics / Machine Learning |
| Job Reference | 91115 |
| Tenure | Specified Term of 3 years  |
| Salary Range | AU$105,806 - AU$114,500 per annum (pro-rata for part-time)plus up to 15.4% superannuation |
| Location(s) | Geelong, Victoria |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | * All Candidates
 |
| Position reports to the | Research Team Leader – Host Response |
| Client Focus – Internal | 70% |
| Client Focus – External | 30% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Dr. Ryan Farr via email at ryan.farr@csiro.au or phone +61 3 52275376 |
| How to apply | Apply online at <https://jobs.csiro.au/> Internal applicants please apply via **Jobs Central**If you experience difficulties when applying, please email careers.online@csiro.au or call 1300 984 220. |

**Acknowledgement of Country**

CSIRO acknowledges the Traditional Owners of the land, sea and waters, of the areas that we live and work on across Australia. We acknowledge their continuing connection to their culture and pay our respects to their Elders past and present. View our [vision towards reconciliation](https://www.csiro.au/en/about/Indigenous-engagement/Reconciliation-Action-Plan).

### Role Overview

The role of Research Scientist staff is to conduct innovative research leading to scientific achievements that are aligned with CSIRO’s strategies. The Research Scientist may be engaged in scientific activity ranging from fundamental research to the investigation of specific industry or community problems. The Research Scientist will have the opportunity to build and maintain networks, play a lead role in securing project funds, provide scientific leadership and pursue new ideas and approaches that create new concepts.

The candidate will join a multidisciplinary team to develop technologies for improved detection of biosecurity diseases based on measuring the host response to infection. As part of the Host Response Team the successful candidate will be central in developing a semi-automated data analysis pipeline for the identification of biomarkers for biosecurity diseases. They will expand and refine existing tools, as well as levering their creativity to develop additional analysis modules to address scientific questions. There will be a specific focus on the use of machine learning for feature selection, pattern-recognition, and classification prediction. This role will work closely with wet-lab scientists in our multi-disciplinary team to validate *in silico* outputs, and feed biologically relevant information back into the analysis pipeline.

The project’s overarching goal is to develop a robust, explainable machine learning pipeline to conduct biologically-informed biomarker discovery for infectious diseases of biosecurity importance.

### Duties and Key Result Areas

* Constructing a semi-automated pipeline to analyse next-generation sequencing (NGS) data to identify RNA biomarkers of infectious disease, with a particular emphasis on host-encoded microRNAs
* Evaluate and implement feature selection algorithms appropriate for biological data
* Construction, optimisation, and benchmarking of supervised machine learning models for classification of disease states
* Develop tools for the automation of bioinformatic data analysis, interpretation, and visualisation
* Provide and receive constructive feedback with wet-lab colleagues to strengthen analysis tools and aid the translation of outputs to molecular diagnostic tests
* Build a portfolio of data for publication/patents
* Under the supervision of more senior researchers, assist in the planning and preparation of research proposals and carry out research investigations, requiring originality, creativity and innovation.
* Present results in a meaningful format, prepare reports for clients and/or write scientific papers for publication.
* Communicate openly, effectively and respectfully with all staff, clients and suppliers in the interests of good business practice, collaboration and enhancement of CSIRO’s reputation.
* Work collaboratively as part of a multi-disciplinary research team to carry out tasks in support of CSIRO’s scientific objectives.
* Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Zero Harm goals.

## **Selection Criteria**

#### Essential

*Under CSIRO policy only those who meet all essential criteria can be appointed.*

1. A PhD (or an equivalent combination of qualifications and research experience) in a relevant field such as bioinformatics, machine learning, molecular biology, or microbiology.
2. Extensive experience in one or more coding languages (e.g. Python or R)
3. Demonstrated experience in building, testing, and optimising feature selection and machine learning algorithms.
4. Experience constructing data analysis pipelines
5. Demonstrated ability to undertake original, creative and innovative research by generating and pursuing novel ideas and solutions to scientific research problems.
6. A demonstrated publication history of authorship on scientific papers in peer reviewed journals and/or reports, grant applications or inventorship on patent applications.

## **Desirable**

1. Experience analysing next-generation sequencing data
2. Familiarity with Linux command line tools and / or high-performance computing systems
3. Experience in research involving microRNAs or infectious disease diagnostics

## **Required Competencies**

* **Teamwork and Collaboration:** Cooperates with others to achieve organisational objectives and may share team resources in order to do this. Collaborates with other teams as well as industry colleagues.
* **Influence and Communication:** Uses knowledge of other party's priorities and adapts presentations or discussions to appeal to the interests and level of the audience. Anticipates and prepares for others’ reactions.
* **Resource Management/Leadership:** Allocates activities, directs tasks and manages resources to meet objectives. Provides coaching and on the job training, recognises and supports staff achievements and fosters open communication in the team.
* **Judgement and Problem Solving:** Investigates underlying issues of complex and ill-defined problems and develops appropriate responses by adapting/creating and testing alternative solutions.
* **Independence:** Plans, sets and works to meet challenging standards and goals for self and/or others. Recognises where endeavours will make the most impact or difference, decides on desired outcome and sets realistic goals to reach this target.
* **Adaptability:**Copes with ambiguity or situations that lack clarity. Adapts readily to changing circumstances and new responsibilities (which may include activities outside own preferences) in the interests of achieving team objectives. Recognises the need for and undertakes personal development as a result of change.

Special Requirements

* The successful candidate will be asked to obtain and provide evidence of a National Police Clearance or equivalent. Please note that individuals with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* If the successful candidate is not an Australian Citizen or Permanent Resident, they may be required to undergo additional security clearances, which may include medical examinations and an international standardised test of English language proficiency (i.e. IELTS test- https://ielts.com.au/)
* ACDP - Security Assessment and Microbiological Security Requirements for Personnel Working on the Australian Centre for Disease Preparedness (ACDP) Site.

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/), [Health and Biosecurity](https://www.csiro.au/en/about/people/business-units/health-and-biosecurity), and [Host [Response](https://research.csiro.au/hostresponse/) Team](https://research.csiro.au/hostresponse/team/) websites for more information.

CSIRO is a values-based organisation.  In your application and at interview you will need to demonstrate behaviours aligned to our values of:

* People First
* Further Together
* Making it Real
* Trusted