# Position Details

## CSIRO Early Research Career (CERC) Postdoctoral Fellowship– CSOF4

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| The following information is for applicants | |
| Advertised Job Title | CSIRO Postdoctoral Fellowship in Infectious Animal Diseases |
| Job Reference | 83130 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$89,926 to AU$98,504 pa + up to 15.4% superannuation |
| Location(s) | Geelong, VIC |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | Australian/New Zealand Citizens and Australian Permanent Residents Only |
| Position reports to the | Team Leader |
| Client Focus – Internal | 70% |
| Client Focus – External | 30% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Kathy Avent via email at Kathy.Avent@csiro.au or phone +61 3 5227 5555 |
| 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](mailto: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 area 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

**CSIRO Early Research Career (CERC) Fellowships** provide opportunities to scientists and engineers who have completed their doctorate and have less than three years relevant research experience. These Fellowships aim to develop the next generation of future leaders of the innovation system through:

* A differentiated career development program to deliver capability excellence and breadth across all facets of the national innovation system;
* Research training via strategic research and development projects with a clear focus that will deliver real impact through science and engineering excellence;
* An innovative culture supporting the development and demonstration of original thinking and expertise leading to peer-recognition; and
* Opportunities to develop skills and experience in collaborative research teams to effectively work within national and global multi/transdisciplinary and multi-stakeholder environments.

CERC Fellows **are appointed for three years full-time or equivalent.**

**There are several CERC Postdoctoral Fellow positions available at ACDP.** ACDP’s purpose, in preparedness, prevention, detection and response to exotic disease threats affecting animals and people, is primarily delivered through the science it conceives and performs, along with managing the unique facility that is the Australian Centre for Disease Preparedness (ACDP). This delivers directly to three of CSIROschallenges - a Secure Australia and Region, Food Security & Quality and Health & Wellbeing.

Our strategy aims to combine both an extension of our capacity and capability, through development of new relationships with government, academia and industry, along with consolidation of activity in animal and zoonotic diseases, to increase critical mass and maximise the value of our combined resource.  The CERC Postdoctoral Fellows will aim to increase our research capability in Animal Infectious Diseases Research. The CERC Fellows will have key capabilities in one or more of the following animal infectious diseases research areas:

* Virology
* Molecular Biology
* Bioinformatics
* Phylogenetics and Virus Evolution
* *In vivo* animal models of disease
* *Ex vivo* models
* Pathogenesis
* Electron Microscopy
* Immunology
* Vaccine Development
* Diagnostic Test Validation Science
* Programming
* Biostatistics

**Specific Project Opportunities**

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| 1 | Protecting Australia’s biosecurity: Preventing and rapidly responding to incursions of **African swine fever** (ASF) virus through improved vaccination strategies | In this project, the ASF virus-host- interactions will be studied to (i) further understand ASF virus pathogenesis and (ii) provide information for the development of novel antiviral and vaccine approaches. This integrated state-of-the-art screening approach, combined with our expertise in immunology, bioinformatics and virology, and our access to high containment facilities (allowing the study of ASF) provides a unique opportunity to develop this cutting-edge area of research to advance novel control strategies against this emerging viral threat. |
| 2 | Identifying new ways to assess post vaccination antibody titres in **Hendra virus** (HeV) vaccinated horses | Research has showed that the HeV vaccine is very effective at inducing neutralising antibody titres in horses, but it has also shown how difficult it is to compare these titres. In order to allow the ongoing assessment of the HeV vaccine in the field, we need better diagnostic tools. This project will explore new ways to assess post vaccination responses. |
| 3 | Cross-species (amphibians and finfish) pathogenicity trials with **Bohle iridovirus** (BIV) and **Mahafee road virus** (MHRV) and **epizootic haematopoietic necrosis virus** (EHNV) | ACDP hosts the OIE reference Laboratories for Infection with epizootic haematopoietic necrosis virus, EHNV (finfish) and Ranaviruses (amphibians). EHNV and ranaviruses of amphibians are members of the *Ranavirus* genus of the Family *Iridoviridae*. EHNV was first identified in Australia, as the causative agent of epizootics in redfin perch. Two ranaviruses of amphibians, Bohle iridovirus (BIV) and Mahafee road virus (MHRV) have been isolated and identified as the causative agents of amphibian mortalities in Australia. Work done in Australia in the late 1980’s found that EHNV was not pathogenic to barramundi and EHNV was not pathogenic to frogs, and BIV was highly pathogenic to barramundi. There is a need to undertake additional cross-class pathogenicity work, planned in such a way as to generate validation data for molecular tests for publication and updating of the relevant OIE Aquatic Manual chapters, and will provide the international community with an updated assessment of the risk ranavirus isolates from amphibians pose to finfish, and vice versa. The successful applicant will also collaborate to complete whole genome sequencing and annotation and comparison of frog and finfish ranavirus isolates in the ACDP collection to clarify the taxonomic relationships between these viruses. |
| 4 | Development of a vaccine for **African swine fever** (ASF) | ASF is the cause of one of the most devastating livestock pandemics in history. This project will aim to address the critical need for the development of an effective and safe ASF vaccine through the development of novel ASF vaccine candidates that can induce robust and protective immune responses in pigs. The project will involve advanced molecular techniques to explore novel ASF vaccine platforms such as mRNA cocktail formulations, disabled-infectious-single-cycle (DISC) or viral-vectors. |
| 5 | Online test validation and result interpretation | The ability to make a quantitative interpretation of the meaning of a test result in the absence of a strong, defensible estimation of the sensitivity (Se) and specificity (Sp) of diagnostic tests in a target population is very limited. The main outcome of this project is to make effective use of Sample Manager (SM; a laboratory information management system) to accurately estimate, in real time, Se and Sp of diagnostic tests in a target population using Frequentist and Bayesian Latent Class Analysis (BLCA) approaches. This information can also be used to generate likelihood ratios (LRs) for test results that can allow quantitative interpretation of a diagnostic test result. |
| 6 | Virus evolution and genome-scale phylodynamics of potentially zoonotic **avian influenza** and other emerging infectious disease viruses | ACDP has access to a large and expanding repository of animal influenza viruses and other viral emerging infectious disease (EID) samples, along with their sequenced virus genomes, collected nationally and through its regional projects in Southeast Asia and the Indo-Pacific. As an OIE and FAO international Reference Centre for Avian Influenza and New & Emerging Infectious Diseases, ACDP responds rapidly to EID outbreaks to deliver confirmatory disease diagnostics, pathogen characterisation, and disease impact and zoonotic risk assessments. Phylodynamics is an increasingly important field in viral disease research, that integrates sample metadata (time, location and other epidemiological links, and host and ecological interactions) with evolutionary genomics and phylogenetics, to infer the potential origins of EIDs and inform on the virus ecology. Our project aims to gain epidemiological insights by identifying potential virus and host genetic factors that may be associated with disease and zoonotic risks, including host specificities, virus pathogenicity and tropism, virus distribution fitness and the ecological drivers of host species or population spill overs. Through a combination of targeted phylodynamic data analysis and big data mining, this project will explore and compare the epidemiological drivers of evolution and genomic diversity of zoonotic avian influenza viruses that circulate or emerge in poultry and wild birds in selected host environments and in wild bird and domestic poultry populations in Australia and overseas. The ACDP international and Australian national animal influenza preparedness and virus surveillance programs will be the model used to explore concepts and develop pipelines for virus phylodynamic risk assessments. However, we aim that these concepts can be transferred to other EIDs and zoonotic viral diseases that currently impact regional and global animal and one-health, such as animal coronaviruses and paramyxoviruses. |
| 7 | Vector competency of Australian species of Culicoides for **African Horse Sickness** (AHS) | Identification of horse feeding species of Culicoides and assessment of competency as vectors for AHS through transmission trials. Subsequent identification of genetic and microbiome contributors to competency through transcriptomics and microbiome studies |
| 8 | Pathogenesis and transmission of genotype 4 Japanese encephalitis virus in the amplifier vertebrate host | A novel strain of Japanese encephalitis virus that emerged in southeast Australia in 2022 is causing widespread outbreaks in humans and animals. This project will investigate the pathogenesis and transmission of this virus in the domestic amplifier host: pigs. Specific research objectives will include: (i) investigating the pathobiology of infection via artificial insemination; (ii) experimental infection of grower pigs to study the pathogenesis of the outbreak strain and assess suitable diagnostic specimens; and (iii) evaluate the efficacy of current genotype 3-based JE vaccine to protect animals against infection by the G4 outbreak strain. |

### Duties and Key Result Areas:

Under the direction of senior research scientists and engineers, CERC Fellows:

* + Carry out innovative, impactful research of strategic importance to CSIRO that will, where possible, lead to novel and important scientific outcomes.
  + Recognise and exploit opportunities for innovation and the generation of new theoretical perspectives, and progress opportunities for the further development or creation of new lines of research
  + Utilise design thinking methodology to plan and prepare research proposals, and apply non-academic impact methodology to research projects
  + Carry out research investigations requiring originality, creativity and innovation
  + Record, manage, and analyse data/information using relevant domain data science techniques.
  + Proactively undertake development to grow effective researcher capabilities to support career goals.
  + Adhere to the spirit and practice of CSIRO’s Code of Conduct, Health, Safety and Environment procedures and policy, Diversity initiatives and Making Safety Personal goals.
* Other duties as directed.

The CERC Fellow learning, development and training programis developed between the CERC Fellow and their CSIRO supervisor. The program will focus on enhancing the Fellow’s capabilities to the level expected of an independent researcher and will include on-the-job and course-based development encompassing:

* Discipline-specific techniques and protocols
* Professional growth
* Project management
* Communication and influencing skills
* Working and collaborating with others

## **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 response by adapting/creating and testing alternative solutions.
* **Independence:** Recognise and makes immediate changes to improve performance (faster, better, lower cost, more efficiently, better quality, improved client satisfaction).
* **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 changes.

## **Selection Criteria**

#### Essential

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

1. A doctorate (or will shortly satisfy the requirements of a PhD). The doctorate must be in a relevant discipline area, such as Virology, Molecular Biology, Bioinformatics, Ex Vivo Models, Electron Microscopy, Immunology, Vaccine Development, Diagnostic Test Validation Science.

Please note: To be eligible for this role you must have **no more than 3 years** (full-time equivalent) of relevant research experience.

1. High level written and oral communication skills with the ability to represent the research team effectively internally and externally, including the presentation of research outcomes at national and international conferences.
2. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
3. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable:**

1. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
2. **The ability to work effectively as part of a multi-disciplinary, potentially regionally dispersed research team, plus the motivation and discipline to carry out autonomous research.**

To be appointed as a CERC Fellow within CSIRO, candidates are required to have **submitted** their doctoral thesis at the time of commencement, as a minimum requirement, if PhD conferment has not been obtained. If a candidate has submitted, but their PhD has not yet been formally attained, the starting salary will be CSOF4-1 (AU$87,068). Upon CSIRO receiving written confirmation that the PhD has been awarded (within a six month period from commencement date), the salary will be increased to the negotiated level and the difference will be back-paid to the Officer’s start date.

Special Requirements

Appointment to this role may be subject to conditions including provision of a national police check as well as other security/medical/character clearance requirements.

* The successful candidate will be asked to obtain and provide evidence of a National Police Check or equivalent. Please note that people with criminal records are not automatically deemed ineligible. Each application will be considered on its merits.
* The successful candidate will be required to obtain and maintain a National Health Security (NHS) security clearance.

**Security Assessment and Microbiological Security Requirements for Personnel Working on the Australian Centre for Disease Preparedness (ACDP) Site**

The nature of our work requires that each person working on site must comply with the conditions described below:

* Certain positions including those working in the ACDP microbiological secure area will require security clearance at a level appropriate to duties of the position. Confirmation of the appointment is subject to obtaining that clearance.
* It is essential that all work on exotic or emerging diseases carried out at ACDP is conducted in a safe manner to prevent the escape of the disease agents used, and to this end, all activities and personnel will be subject to appropriate microbiological security measures. Consequently, while working at ACDP, you may not reside on a property on which are kept any of the following animals: sheep, cattle, pigs, goats, horses, asses, mules and camelids, any other cloven-hoofed animal, fowls, turkeys, geese, domestic ducks, caged birds, emus or ostriches. Personnel working with diseases of aquatic animals may not keep aquarium fish at their place of residence and at times specific species may be excluded depending on the nature of the work conducted.
* In addition, for a period of seven days after working in the microbiologically secure area of ACDP, personnel may not have close contact with any of the above animals, amphibians or birds or the actual places where these animals are held, or visit any aquatic animal farm or aquatic animal hatchery.
* Working in the barrier maintained Small Animal Facility or the Werribee Animal Health Farm requires avoidance of additional animals such as mice, rats, guinea pigs, rabbits, ferrets and poultry of a minimum of 3 days prior to arrival.Certain positions will require medical assessment and vaccinations against various agents.
* Positions working at PC4 will also require a pre-employment psychological assessment.
* Given ACDP’s role in the International Regional Program, there may be a requirement for some personnel to travel internationally and if required for this work, suitable staff should be able to obtain a valid passport and obtain applicable vaccinations.
* Should an emergency response situation arise, ACDP may be required to implement the Emergency Animal Disease Response Plan and personnel may need to contribute to response requirements, including after hours work.
* Personnel must abide by Occupational Health, Safety and Environment regulations. Safety signs and directives issued by CSIRO personnel must be complied with at all times.
* Access restrictions apply to the Werribee Animal Health Facility (WAHF) site that is associated with, but remote from, the ACDP site.

**Our value proposition**

We want CERC Fellows to join our world class science, engineering and digital teams to solve big, complex problems that make a real difference to the future of Australia and the world.

You'll get to work with some of the most talented minds in their fields, not just in Australia, but in the world. At CSIRO, we spark off each other, learn from each other, trust each other and collaborate closely to achieve more than we could individually.

Find out more about our CSIRO Early Research Career (CERC) Fellow Experience Employee Value Proposition (EVP) [here](https://www.csiro.au/en/careers/postdoctoral-fellowships).

## **About CSIRO:**

We solve the greatest challenges through innovative science and technology. To find out more visit us [online](http://www.csiro.au/)!

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

* 1. People First
  2. Further Together
  3. Making it Real
  4. Trusted

Find out more about the CSIRO [Australian Centre for Disease Preparedness](https://www.csiro.au/en/Research/Facilities/AAHL)