# 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 Economics of Bioengineering |
| Job Reference | 95725 |
| Tenure | Specified Term of 3 years  Full-time |
| Salary Range | AU$92,624 to AU$101,459 pa + up to 15.4% superannuation |
| Location(s) | Dutton Park, QLD or Black Mountain, ACT |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All candidates |
| Position reports to the | Team Leader, Bioeconomy Transitions & Resilience |
| Client Focus – Internal | 90% |
| Client Focus – External | 10% |
| Number of Direct Reports | 0 |
| Enquire about this job | Contact Aditi Mankad via email at [aditi.mankad@csiro.au](mailto:aditi.mankad@csiro.au) or phone +61 7 3833 5721 |
| 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 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).

**Child Safety**

CSIRO is committed to the safety and wellbeing of all children and young people involved in our activities and programs. View our [Child Safe Policy](https://www.csiro.au/en/about/policies/child-safe-policy).

### 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 or part time equivalent.**

This Fellowship is funded by the Advanced Engineering Biology Future Science Platform (AEB FSP), where we’re working to catalyse a step change in biotechnology development in Australia. We are also working to ensure engineering biology makes a positive difference in the lives of all Australians.

Engineering biology creates solutions from nature’s building blocks, to solve our greatest challenges. It can underpin transformative innovations across health, agriculture, energy, and other key sectors. But to harness its full potential, we need to make it faster, more affordable and scalable.

Our research is working to overcome the obstacles that are holding engineering biology back from delivering benefits for society, industry and the environment. We take an interdisciplinary, collaborative approach, partnering with government, research institutions and industry to foster innovation and build capabilities.

**Role:**

Sustainability transition from fossil-fuels to a bio-enabled economy (use of biological resources) calls for a deep transformation of the economy, the society, and the technological systems. However, the economic drivers for the sustainability transition in a bio-enabled economy remain unstudied. The CERC Fellow will be part of the Advanced Engineering Biology (AEB) Future Science Platform ([Interdisciplinary Decision Making Theme](https://research.csiro.au/aeb/tag/interdisciplinary-decision-making/)) and contribute to the understanding of the techno-institutional complexities associated with sustainability transitions in circular bioeconomy.

Broadly, the goal is to contribute to the larger research agenda by improving tools for modelling future feedstocks to help de-risk investments and better incorporate circularity of reusing waste products as inputs into the creation of high value products and materials. The overarching research question underpinning this CERC Fellow project is: How can we explore the future of techno-economics and build a new science area of 'economic analyses of biotechnologies' that captures and predicts broader disruptions on the economy?

New methods explored by the CERC Fellow could include the integration of big data (e.g. climate data, AI modelling) to develop new methods of analysis for high uncertainty contexts such as future oriented AEB-enabled biomanufacturing. This could be explored through the lens of understanding the economic implications and viability of utilising renewable feedstocks for biomanufacturing, such as biorefining waste biomass (e.g. cropping and agricultural residues, algae, food waste) to promote a future circular bioeconomy; how we compare alternative feedstocks for greater sustainability and what is the role of big data; and exploring the economies of scale required to make use of biowaste economically viable in a region.

### Duties and Key Result Areas

The CERC Fellow will be core to delivering a Horizon 3 research agenda supporting decision making and uptake of advanced engineering biology technologies, by incorporating a focus on technoeconomics, life cycle analysis, frameworks and policy, and engagement with key industry stakeholders. There will be a focus on the identification of appropriate feedstocks (e.g. agricultural byproducts, biowastes) (existing or new) for biotechnologies, and benefits associated with waste removal and utilisation to accelerate biomanufacturing.

**Key responsibilities:**

* Identifying appropriate biowaste (new or existing) that can be used by novel biotechnologies; developing novel approaches for assessing potential benefit and impacts of removing and utilising biowaste (e.g. agricultural byproducts or food waste) for AEB technologies as part of a circular bioeconomy, (e.g. life cycle, social and economic assessments, true cost accounting etc.); assessment of regulatory restrictions or protocols for using some biowastes as feedstocks.
* Identifying opportunities for integration of AEB processes within existing industries or potentially new industries; considering logistics, feedstock availability, barriers; and prior examples of how sustainability has been approached by AEB startups/companies.
* Conducting AEB case studies to examine the major economic and environmental outcomes of future-oriented technologies.
* Identifying and outlining linkages between AEB, circular bioeconomy, and net zero pathways.

**Key duties:**

* Perform cutting-edge science to position CSIRO as a scientific thought leader in the emergent bioeconomy context within Australia, and extend research in both environmental-social assessments and technoeconomics.
* Develop new theoretical approaches to measure economic and or environmental factors related to biomanufacturing transitions.
* Explore key aspects of the problem, incorporating engineering biology, circular economy, food waste, agricultural waste/byproducts, sustainability, food security, and bioeconomy principles from a social and economic sciences perspective.
* Build strategic relationships with relevant scientific, industrial, and government stakeholders.
* Produce scientific publications in leading peer-reviewed journals, and present at reputable domestic and international conferences.

Under the direction of senior research scientists and engineers, this CERC Fellow will:

* + 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 Values, Code of Conduct, Health, Safety and Environment procedures and policy and diversity initiatives.
* 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

## **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) in a relevant discipline, such as economics, applied mathematics, engineering or sustainability science/circular economy.

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

1. A current driver’s licence or the willingness and ability to obtain one.
2. 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.
3. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
4. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.

## **Desirable**

1. Undergraduate qualifications in one of psychology, economics, environmental management, chemical process engineering.
2. Remain productive, positive and resilient in complex, ambiguous and/or uncertain environments.
3. **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.**

## **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.

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 ($89,680). 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 is subject to provision of a pre-employment background check and may be subject to other security/medical/character clearance requirements.

* The successful candidate will undertake a pre-employment background check. 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/

**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/postdoctoral-fellowships).

## **About CSIRO**

We solve the greatest challenges through innovative science and technology. Visit [CSIRO Online](http://www.csiro.au/) for more information, as well as the [Environment Business Unit](https://www.csiro.au/en/about/people/business-units/environment) and the [Advanced Engineering Biology Future Science Platform](https://research.csiro.au/aeb/).

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