# 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 Experimental eDNA |
| Job Reference | 100926 |
| Tenure and Work Schedule | Specified Term of 3 yearsFull-time |
| Salary Range | AU$96,811 - AU$109,527 per annum (pro-rata for part-time) plus 15.4% superannuation (plus any applicable allowances) |
| Location(s) and Office Arrangements | Perth/Boorloo (Crawley)Hybrid working available. Flexible work options available. |
| Relocation Assistance | Will be provided to the successful candidate if required |
| Applications are open to | All Candidates (visa sponsorship may be offered) |
| Position reports to the | Project Leader, National Collections & Marine Infrastructure (NCMI) |
| Client Focus – Internal | 100% |
| Client Focus – External | 0% |
| Number of Direct Reports | 0 |
| Enquire about this job | Katrina West, Research Scientist via email at katrina.west@csiro.au |
| Support and Workplace Adjustments | We offer a range of reasonable supports and workplace adjustments. Please let Laura Mason know via Careers.Online@csiro.au if we can help you to equitably participate in our recruitment process or the role itself. |
| 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. |

**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).

**About CSIRO**

As Australia's national science agency, CSIRO is solving the greatest challenges through innovative science and technology. Many of our iconic innovations were once considered impossible until someone, just like you, joined us and took on the challenge.

As one of the world’s largest multidisciplinary mission-driven research organisations, we are focused on the issues that matter the most: for our quality of life, for the economy and for our environment. We believe diverse teams are more effective and deliver more innovative outcomes. When we all focus on the big things that really matter, and work in partnership with our communities and [Indigenous Australia](https://www.csiro.au/research/indigenous-science), Australian science and technology can solve seemingly impossible problems and create new value for all Australians. Visit [CSIRO.au](https://www.csiro.au/) for more information.

### 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 equivalent.**

**The Role:** Environmental DNA (eDNA) is rapidly transforming how we detect and measure marine biodiversity, but its use as a reliable tool for quantifying species abundance or biomass remains limited by unresolved challenges in sampling design, DNA recovery, and signal variability. Towards this end, CSIRO has recently formed a multidisciplinary team, in collaboration with the Minderoo Foundation, dedicated to pushing the boundaries of eDNA science through exploring eDNA enrichment, quantification and modelling/software methods.

We are seeking a creative and motivated Postdoctoral Research Fellow to join this team. This is a unique opportunity to take a lead role in eDNA enrichment and quantification R&D, designing and testing novel field and laboratory methods that will expand what eDNA science can achieve.

The role is ideal for a candidate who thrives at the interface of disciplines, enjoys hands-on work in both laboratory and field settings, and is eager to draw on techniques and ideas from across the life sciences to solve challenging methodological questions. We anticipate the candidate will conduct experimental research to maximise capture of eDNA and single cells (i.e. through tested and/or designed sampling methods, extraction protocols) for reliable, downstream quantification estimates. Additionally, using enriched eDNA (targeted metazoan DNA/single cells) in conjunction with new sequencing technologies to expand insights that can be drawn from eDNA metabarcoding workflows, i.e. moving beyond community composition based on presence-absence of taxa towards population or individual-level biological insights.

As part of a collaborative team, the Postdoctoral Fellow will work closely with research scientists, technicians, and other postdocs who are addressing many of the same core eDNA research questions via different experimental pathways and at different stages of the eDNA workflow (i.e., field sampling, laboratory, bioinformatics, statistics and software development). This close integration across projects provides a dynamic and intellectually rich environment, where ideas, methods, and findings are continuously shared, tested, and refined.

The Postdoctoral Fellow is expected to enjoy and actively contribute to a team culture of open collaboration, innovation, and adaptive problem-solving. The ability to adapt and pivot in response to emerging data and insights in the team is essential. The Postdoctoral Fellow will be expected to work within a fit for purpose, multi-institutional, trace-DNA laboratory with uni-directional flow and adhere to strict, cross-contamination protocols.

Given the experimental and exploratory nature of the position, the Postdoctoral Fellow is expected to have strong foundational knowledge in eDNA and thorough experience in trace DNA field and laboratory workflows. Candidates with this foundational knowledge, but with unique skill sets and ideas are encouraged to apply. Additionally, the Postdoctoral Fellow will have demonstrated adequate bioinformatic and strong statistical skills to support analysis of their own eDNA metabarcoding data.

### Duties and Key Result Areas

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

* Design and experimentally test eDNA sampling methods, that consider variables such as volume, filtration, and replication strategies, and others to maximise eDNA/single cell recovery. Alternatively, re-imagine high-throughput eDNA sampling strategies that are not reliant on a filtration approach.
* Develop field sampling and extraction protocols that minimise between-sample variability and optimise the reliability of downstream quantification estimates from eDNA data.
* Establish sampling, laboratory, or bioinformatic methods, in conjunction with new sequencing technologies, that enrich the insights that can be drawn from eDNA metabarcoding data. For example, moving beyond community composition based on presence-absence of taxa towards population or individual-level biological insights.
* Lead the analysis and publication of data in high quality publications.
	+ 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). The doctorate must be in a relevant discipline area, such as eDNA, molecular ecology or other trace DNA-based genetics (e.g. ancient DNA).

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

1. Experience in sampling, extracting and handling trace-level DNA, including sound knowledge and experience in trace DNA contamination measures.
2. Strong hands-on experience in molecular techniques, including DNA extraction, qPCR, and library preparation for high-throughput sequencing.
3. Experience conducting or supporting field-based sample collection, especially involving water sampling, filtration, or other forms of environmental sample capture.
4. Experience working with next-generation (e.g. Illumina) sequencing output, especially in the context of environmental or degraded DNA.
5. Demonstrated ability to design and execute experiments, including troubleshooting, iterative method development, and data-informed protocol refinement.
6. Familiarity with eDNA applications, especially in biodiversity monitoring or population-level analyses (e.g. haplotype reconstruction, connectivity).
7. 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.
8. A sound history of publication in peer reviewed journals and/or authorship of scientific papers, reports, grant applications or patents.
9. A record of science innovation and creativity, including the ability & willingness to incorporate novel ideas and approaches into scientific investigations.
10. **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.**

## **Desirable**

1. Experience working with third generation sequencing output (e.g. PacBio, Oxford Nanopore), especially in the context of environmental or degraded DNA.
2. Knowledge of population genetic analysis, including genetic diversity metrics.
3. Experience integrating lab and field workflows, and contributing to the development of standard operating procedures or best-practice guidelines.

## **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 (AU$96,811). 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.

**Setting You Up for Success**

We understand that not everyone works in the same way and sometimes people may require reasonable support and adjustments to perform at their best. Whether related to the recruitment process and or the role itself, this may include options such as providing different methods of communication, flexible hours or physical adjustments to work methods. If you feel comfortable, we encourage you to share any support and adjustments you may need to carry out the inherent requirements of the role. Please let us know via the contact details on Page 1 if we can help you to equitably participate in our recruitment process or the role itself.

**Life at CSIRO and Flexible Working Arrangements**

We [work flexibly at CSIRO](https://www.csiro.au/en/careers/life-at-csiro/Flexible-work), offering a range of options for how, when and where you work.  We can discuss flexible work arrangements with you during the recruitment process. CSIRO also offers a range of leave entitlements, [benefits](https://www.csiro.au/en/careers/life-at-csiro/Benefits) and [career development](https://www.csiro.au/en/careers/life-at-csiro/Career-development) opportunities. To learn more, visit [Careers at CSIRO](https://www.csiro.au/en/careers).

We celebrate the uniqueness of our workforce and are committed to creating [diverse and inclusive teams](https://www.csiro.au/en/careers/life-at-csiro/Diversity-inclusion-belonging) where everyone feels they belong. CSIRO is an equal employment opportunity organisation dedicated to recruiting people based on merit, and reflecting the diversity of the community we serve. We recognise true diversity encompasses all ages, nationalities, abilities, cultures, genders, sexualities, faiths, levels of education, diversity of thought and many more aspects of identity. By empowering diverse teams, our community is reflected in the solutions we create.

**CSIRO Values**

CSIRO is a values-based organisation committed to values-based leadership.

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| **Value** | **Descriptor** | **Behaviour** |
| **People First** | Our priority is the safety and wellbeing of our people. We believe in, and respect, the power of diverse perspectives. We seek out and learn from our differences.  | * Respectful
* Caring
* Inclusive
 |
| **Further Together** | We achieve more together than we ever could alone. We listen and collaborate, in teams, across disciplines, across boundaries. We embrace ambiguity and use discussion and persistence to generate unique solutions to complex problems. | * Accountable
* Authentic
* Courageous
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| **Making it Real** | We do science with real impact. We thrive when taking on the big challenges facing the world. We take educated risks and defy convention. We celebrate successes and failures and leverage them to learn as we strive to be the force for positive change. | * Partnering
* Cooperative
* Humble
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| **Trusted** | We’re driven by purpose but remain objective. We fight misinformation with facts. We earn trust everywhere through everything we do. We trust each other and we hold each other accountable. Together our actions drive Australia’s trust in CSIRO. | * Curious
* Adaptive
* Entrepreneurial
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**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).

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/