# RESEARCH FELLOW (BIOINFORMATICS)

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| **DEPARTMENT/UNIT** | Central Clinical School - Department of Diabetes |
| **FACULTY/DIVISION** | Faculty of Medicine Nursing and Health Sciences |
| **CLASSIFICATION** | Level B |
| **WORK LOCATION** | The Alfred Hospital |

## ORGANISATIONAL CONTEXT

Everyone needs a platform to launch a satisfying career. At Monash, we give you the space and support to take your career in all kinds of exciting new directions. You'll have access to quality research, infrastructure and learning facilities, opportunities to collaborate internationally, as well as the grants you'll need to publish your work. We're a university full of energetic and enthusiastic minds, driven to challenge what's expected, expand what we know, and learn from other inspiring, empowering thinkers. Discover more at www.monash.edu.

The **Faculty of Medicine, Nursing and Health Sciences**, is the largest faculty at Monash University, and offers the most comprehensive suite of professional health training in Victoria. We consistently rank in the top 40 universities worldwide for clinical, pre-clinical and health sciences.

 We want to improve the human condition. That is our vision - it has no expiration date. Through academic health centres, other translational models and by educating the healthcare workforce of the future, our staff, students and alumni directly improve quality of life.

 Setting the global health care agenda, the Faculty aspires to lead in all areas of research activity and influence local, national and international policy to improve health and social outcomes and health inequalities. We've made a major impact in the world of medical research and become globally recognised for our quality education of over 41,000 doctors, nurses, and allied health professionals.

We are ambitious and aim to maintain our position as a leading international medical research university. We're recognised for the breadth and depth of our research, for our commitment to translational research, for the quality and scale of our research capability, and as a thriving biotechnology hub.

To learn more about the faculty, please visit monash.edu/medicine.

**Central Clinical School** encompasses the Departments of Clinical Sciences, Melbourne Sexual Health Clinic, Clinical Haematology, Immunology and Pathology, Infectious Diseases, Gastroenterology, Diabetes, Allergy and Respiratory Medicine and Psychiatry. It is located at the Alfred Hospital precinct in Melbourne, known as AMREP (Alfred Medical Research and Education Precinct). The school is involved in teaching students from both the Faculty of Medicine, Nursing and Health Sciences and the Faculty of Science and its teaching and research is conducted at Alfred Health, Cabrini, Epworth Richmond, Peninsula Health and also at Clayton.

For more information about us and the work we do, please visit http://www.med.monash.edu.au/cecs/.

The **Department of Diabetes** performs research and education in several areas of medical science including diabetes and its complications, molecular endocrinology, functional genomics and epigenetic regulation as they pertain to heart disease, blindness and kidney disease. It offers an excellent international research and working environment, including around 50 scientists, students, administrative and technical personnel. The Department and new laboratory reside in the new Central Clinical School in Melbourne.

This postdoctoral post is a collaborative project with the Epigenetics in Human Health and Disease Team. This work focuses on characterizing the functional roles of regulatory proteins critical in gene transcription and examine the link to human disease using genetic, epigenomic and molecular approaches. The group led by Professor El-Osta is interested in understanding the roles of specific transcriptional components in the regulation of metabolic memory and cardiac disease and further extend our understanding of gene silencing events associated with genomic methylation in pre-clinical models and human populations. The focus of the laboratory is to provide fundamental insights into the mechanisms by which epigenetic changes and associated chromatin modifications control genes implicated in human health and disease. This research will potentially provide tools for novel therapies.

This specific project is focused on the epigenetic analyses of large international cohorts. We have collected patient isolates and primary cell samples and processed them for ChIP-seq, RNA-seq and Methyl-seq. The project aims to characterize the epigenetic landscape and correlate specific epigenetic signatures with the progression and development of disease. This project offers unique possibilities to analyze a large patient cohort using novel state of the art methodologies. You will bridge the clinical and preclinical research in our department. You will build on current single-cell sequencing platforms to integrate RNA-seq in collaborative projects.

## POSITION PURPOSE

A Level B research-only academic will carry out independent and/or team research within the field in which they are appointed and to carry out activities to develop their research expertise relevant to the particular field of research.

Bioinformatics is central in our research and you will work close together with other postdocs and PhD students in the Department. The Research Fellow (Bioinformatics) will be involved in planning experiments, final analysis and visualisation of the results. The Research Fellow (Bioinformatics) will have the opportunity to participate in national and international collaborations. The incumbent will analyse data from multiple technology platforms that are obtained using techniques such as Chromatin Immune Precipitation (ChIP) -sequencing, RNA-seq, Methyl-seq and Whole Genome Bisulphite Sequencing. This position provides opportunity for growth and development as an independent investigator whilst providing support and mentorship, as there will be possibilities for initiating new research directions.

**Reporting Line:** The position reports to the group leader of the El-Osta Group

**Supervisory Responsibilities:** This position provides direct supervision to 5 staff working in close collaboration on a range of epigenomic projects

**Financial Delegation:** Not applicable

**Budget Responsibilities:** Not applicable

## KEY RESPONSIBILITIES

Specific duties required of a Level B research-only academic may include:

1. The conduct of research either as a member of a team or independently and the production of conference and seminar papers and publications from that research

2. Supervision of research-support staff involved in the staff member's research

3. Guidance in the research effort of junior members of research-only Academic staff in their research area

4. Contribution to the preparation or, where appropriate, individual preparation of research proposal submissions to external funding bodies

5. Involvement in professional activities including, subject to availability of funds, attendance at conferences and seminars in the field of expertise

6. Administrative functions primarily connected with their area of research

7. Occasional contributions to the teaching program within the field of the staff member's research

8. Co-supervision or, where appropriate, supervision of major honours or postgraduate research projects within the field of the staff member's area of research

9. Attendance at meetings associated with research or the work of the organisational unit to which the research is connected and/or at departmental, school and/or faculty meetings and/or membership of a limited number of committees

10. You will identify, define and plan new projects, which contribute to the overall aims of studies and supervise biostatistical students on a day-to-day basis. In addition, you will conduct detailed analysis of datasets and develop novel methodologies for analysis and data collection in collaboration with members of the team

11. Lead an interdisciplinary working group to develop and extend clinical data standards across multiple diabetes and diabetes related data sharing projects

12. Develop new tools and methods for mapping existing and legacy clinical data to new clinical data standards and oversee the epigenetic clinical data mapping process for the Human Diabetes Atlas Network (HDAN)

## KEY SELECTION CRITERIA

**Education/Qualifications**

1. The appointee will have:

   - A doctoral qualification in the relevant discipline area or equivalent qualifications or research experience in Bioinformatics, Computer Science, Biological Sciences, Mathematics, Biostatistics or related fields

**Knowledge and Skills**

2. Demonstrated statistical analysis and manuscript and research proposal preparation skills; including a solid track record of refereed research publications

3. Proven experience and technical expertise in the analysis and managing of large scale NGS genomic data (such as whole-genome sequencing, WGS) or epigenetic data (such as whole-genome bisulphite sequencing, WGBS, methylation capture sequencing, ChIP-seq and ATAC-seq)

4. Advanced skills using Microsoft Word, Excel and PowerPoint with specific experience working with a range of analytical software, proven skills in programming (Python, R, C/C++) and experience working with Linux/Unix environments. Additional experience working with clinical data mapping software and/or computational research involving clinical/epigenetic data and

5. Practical experience of high-throughput data analysis, data management, data mining/ integration as well as next-generation sequencing data analysis and skills in bioinformatic tools and databases

6. Prior experience working with clinical data mapping software and/or computational researchers involving clinical/epigenetic data as well as experience using Microsoft Word, Excel and PowerPoint

7. Assess, adopt, and extend existing data standards for representing and exchanging clinical data elements for sequencing studies and also integrating clinical data standards into multiple epigenomic data sharing projects including ENCODE and accessed from UCSC using broad peak bed files

8. Experience in successfully supervising, mentoring and coaching to support the development of research staff and/or a demonstrated trajectory of leadership capability

9. Experience in supervising and working with major honours or postgraduate students within the discipline

10. High level organisational skills, with a demonstrated capacity to establish and achieve goals and to work both independently and as part of an inter-disciplinary research team in a research environment

11. Excellent written and oral communication skills

12. A demonstrated capacity to work in a collegiate manner with other staff in the workplace while positively contributing to laboratory meetings and seminars

## OTHER JOB RELATED INFORMATION

- Travel to other campuses of the University may be required
- There may be a requirement to work additional hours from time to time
- There may be peak periods of work during which taking of leave may be restricted
- A current satisfactory Police Records Check may be required

## LEGAL COMPLIANCE

Ensure you are aware of and adhere to legislation and University policy relevant to the duties undertaken, including: Equal Employment Opportunity, supporting equity and fairness; Occupational Health and Safety, supporting a safe workplace; Conflict of Interest (including Conflict of Interest in Research); Paid Outside Work; Privacy; Research Conduct; and Staff/Student Relationships.