

**UNIVERSITY OF OTAGO**  
**Te Whare Wananga o Otago**

**INFORMATION FOR CANDIDATES**

for appointment as  
Assistant Research Fellow

**JOB TITLE:** Assistant Research Fellow  
**DEPARTMENT:** Sir John Walsh Research Institute (SJWRI), School of Dentistry  
**DIVISION:** Health Sciences

## **BACKGROUND**

Fungal infections can reduce agricultural productivity and threaten global food supply. The fungistatic triazoles are among the most widely-used agrochemicals. Their lack of fungicidal activity can lead to genetically-determined drug resistance involving the triazole target lanosterol 14 $\alpha$ -demethylase (Erg11p). We recently crystallized and structurally resolved Erg11p from the model yeast *Saccharomyces cerevisiae* and have been funded to undertake a 2 year research project that will use structural information to drive the discovery of novel inhibitors of the Erg11ps of fungal pathogens of plants.

Specific objectives of the project will be to:

1. Aid drug discovery by probing the enzymatic mechanism of *S. cerevisiae* Erg11p and the homologous enzyme of plant fungal pathogens.
2. Improve pharmacophore design by resolving crystal structures of Erg11p from key plant fungal pathogens.
3. Develop whole cell and *in vitro* screens to identify novel broad-spectrum inhibitors specific for fungal Erg11ps.
4. Identify broad-spectrum non-triazole fungicides using structure-directed drug design.

## **PRIME FUNCTION**

To provide quality research and technical expertise to the research team investigating lanosterol 14 $\alpha$ -demethylase structure and function and identifying novel antifungals. To assist the project principal investigator Dr Brian Monk achieve the objectives of the project.

## **MAIN OBJECTIVES**

- To undertake research according to the stated goals of the project, and to maintain a clearly written, well documented, and indexed laboratory notebook.
- To attend laboratory meetings and present experimental results in these meetings, where appropriate.
- To prepare results for analysis and publication in journals or at conferences.

- To regularly report to Dr Monk, at a frequency to be negotiated, on the progress of the assigned experiments.
- To ensure the laboratory facilities, research space and equipment required for the project are utilised correctly.
- To assist staff in the Molecular Biosciences Laboratory with the training of undergraduate students, as necessary.

## **KEY TASKS**

- To undertake experiments in order to clone genes of interest, to purify membrane proteins for structural and functional analysis and to use yeast strains to screen compound libraries for drug target inhibitors.
- To contribute to the general running of the Molecular Biosciences Laboratory and perform other tasks as requested.
- To keep appropriate records.

## **RELATIONSHIPS**

<b>Overall responsibility to:</b>	Head of The Sir John Walsh Research Institute, Professor Jules Kieser.
<b>Directly responsible to:</b>	Principal Investigator Dr Brian Monk, and project co-investigators.
<b>Functional relationships with:</b>	Staff of the Department of Oral Sciences, the SJWRI, the School of Dentistry and other researchers and students in the Molecular Biosciences Laboratory.

## **BUDGETARY RESPONSIBILITY**

N/A.

## **PERSON SPECIFICATION**

The appointee should have:

- BSc Honours or a masters degree in biochemistry, molecular biology or microbiology or practical laboratory experience in these disciplines.
- High motivation towards undertaking quality research.
- Good record keeping skills.
- Good oral and written communication skills.
- The ability to work as a member of a team.