

## **PhD Project: Understanding the virulence of a deadly amphibian fungal pathogen**

The greatest loss of vertebrate biodiversity from disease is due to the fatal amphibian chytrid fungus *Batrachochytrium dendrobatidis* (*Bd*). This pathogen causes the skin disease chytridiomycosis, which has resulted in over 90 species extinctions in the past 30 years. While *Bd* is known to cause chytridiomycosis, the mechanisms of chytrid fungal infection and virulence are not known. This PhD project aims to **1) understand how the fungus kills frogs by identifying and characterising the virulence factors (e.g. proteins, metabolites) produced by *Bd*; 2) investigate how the virulence of *Bd* is evolving as it adapts to new hosts**. This work has implications for pathogen control, protecting biodiversity and the discovery of drug targets.

You will be part of a world-leading interdisciplinary research team at James Cook University (Townsville, Australia) that studies chytridiomycosis, and will work closely with epidemiologists, ecologists, molecular biologists and zoologists. Through this project, you will gain experience in **cell culture, protein expression, enzymology, metabolite isolation, HPLC, field work, amphibian models, immunology, transcriptional analysis and genetic modification**.

If you are interested and would like to discuss this project or other research opportunities further, please contact Dr Alex Roberts (alex.roberts@jcu.edu.au).

### **Eligibility and Scholarships**

This project is open to Australian and International students. Applicants should have completed a First Class Honours or Masters by Research, or equivalent qualification in a relevant discipline, such as Microbiology, Biochemistry, or Veterinary Science. Ideal applicants will have a demonstrated publication record in high impact journals, and excellent interpersonal and communication skills.

Applicants will need to apply for scholarship funding, such as for an Australian Postgraduate Award (APA) or International PhD Scholarship program (e.g. IPRS).

### **Further reading:**

1. Cashins *et al.* (2013) Prior infection does not improve survival against the amphibian disease chytridiomycosis. *PLoS ONE* 8:e56747.
2. Voyles *et al.* (2009). Pathogenesis of chytridiomycosis, a cause of catastrophic amphibian declines. *Science* 326:582-5.
3. Berger *et al.* (1998) Chytridiomycosis causes amphibian mortality associated with population declines in the rainforests of Australia and Central America. *Proc. Natl. Acad. Sci. USA* 95:9031-6.