

Applications of quantum technology in biosecurity challenges

Institution	The University of Queensland
Project details	This internship falls under the recently awarded Quantum-enabled detection of invasive pathogens for improved biosecurity grant funded by the Australian Government through the Critical Technologies Challenge Program. The grant aims to develop quantum-enabled detection of plant pathogens and is in response to the growing need for rapid biosecurity threat responses. This grant is a collaborative effort between QUBIC, Queensland Alliance for Agriculture and Food Innovation (QAAFI) and Data Effects Pty Ltd. The 4-week internship will focus on exploring physics and biology aspects of protein detection on a single-molecule level. The internship will introduce the student to current challenges in biosecurity and principles in quantum-enabled detection of biological threats. The intern will learn hands-on lab activities, become familiar with applications of quantum technology for biosecurity and perform a search for future targets and the potential of the technology for wider application. Expected aims and outcomes The intern will develop foundational understanding of how quantum technologies can be applied to biosecurity challenges. By the end of the internship, the student will learn the basics of experimental design through the lens of research and innovation. Further to that, the intern will meet with researchers from different disciplines building collaborative and communication skills. It is expected that the intern will prepare a short report summarising the approach and the findings of the 4-week internship and present the findings at a QUBIC seminar.
Who can apply	This internship is open to students in physics, quantum physics, biophysics or adjacent fields. The ideal intern will have interest in the application of quantum technology for biological challenges and interest in innovation and technology development. Valuable soft skills include a can-do attitude and teamwork. Understanding of and/or experience with optics and electronic test and measurement equipment is not necessary but will be regarded well. The intern will be primarily based in St Lucia, School of Mathematics and Physics with the possibility of travel to Ecosciences Precinct, Dutton Park for the implementation of the internship. The student may be required to sign a non-disclosure agreement due to potential access to commercially sensitive information. Women and underrepresented groups are strongly encouraged to apply.
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