



UNSW PhD Candidate Project

Location: Redfern, NSW

Propel your research career with a high-impact, commercially focused PhD project! SpeedX, an innovative molecular diagnostics company, offers a unique opportunity for a **UNSW PhD candidate** to work full-time in our state-of-the-art Redfern laboratories on a project with significant potential to improve patient outcomes.

Project title: A RNA based assay for differentiation of susceptible and resistant strains of *Neisseria gonorrhoeae*: application in revolutionizing molecular-phenotypic diagnostics

Background and purpose: *Neisseria gonorrhoeae* (NG) is the bacterial pathogen responsible for gonorrhoea, a major sexually transmissible infection (STI) which can cause significant symptoms and complications at sites of infection. Antimicrobial resistance (AMR) in NG is rising rapidly in Australia & globally. Current algorithms for NG diagnosis and treatment guidance are proving ineffective to tackle the challenge AMR presents. Creating molecular tools that enable the assessment of AMR in patients before initiating treatment would be the best way to move forward. This transition towards "guided therapy" seeks to guarantee that patients receive the appropriate antibiotic at the time of presentation or diagnosis, thereby promoting antimicrobial stewardship.

Scientists at SpeedX have invented and patented *InSignia*[®], a versatile tool bringing together diagnostic and surveillance outputs in one molecular test, to guide antibiotic use and monitor emergence of resistance in a pan-antibiotic manner. *InSignia*[®] is a culture-free, molecular-phenotypic NAAT, that can discern viability status, as well as measure the perturbation of transcription by antibiotics. When applied to analysis of antibiotic susceptibility, RNA markers are identified which exhibit differential responses when challenged by antibiotics if infections are sensitive or resistant. This allows for the assessment of NG susceptibility profile without knowledge of underlying genotypic mechanisms. Feasibility of the technology has been demonstrated on cultured organisms and clinical samples, with the ability to differentiate between ciprofloxacin susceptible and resistant strains after a brief 5-minute exposure.

Goal: Within this project, the main aim is to expand the pan-antibiotic abilities of the technology to enable antibiotic susceptibility testing for more clinically relevant antibiotics, namely ceftriaxone and cefixime.

Discovery of pan-antibiotic RNA transcript(s) is required, along with their incorporation into the existing RT- qPCR assay for NG and demonstrating feasibility in a clinical setting.

**Highlights:**

- Project with high scientific impact and commercialisation potential
- Candidature through University of New South Wales with industry led project,
- Candidate based full-time in Redfern, at SpeedX offices and laboratories
- Working under quality standards, using state-of-the-art equipment and novel technologies

Who are we looking for:

- Highly motivated candidates with a demonstrated record of academic excellence and a background in molecular biology, including PCR experience and bioinformatic analysis of large datasets.
- Preferred candidates will be a recipient of a Higher Degree Research Scholarships (HDR) and would receive additional financial support from SpeedX.

How to apply:

- Submit your CV and cover letter to: HR@speedx.com.au
- Application submission **deadline 22nd August 2025**
- Predicted project start date: January 2026