

The Monash-Warwick Alliance AMR Program in Emerging Superbug Threats

Resistance of microbes to antimicrobial drugs (i.e. AMR) has led to a rise of infections that cannot be treated effectively with currently available therapeutics. To address this major threat to human health, we need new thinking that relies on interdisciplinary approaches to the problem of AMR, combined with strategies aimed at building capacity into the workforce by training of early career researchers (ECR) with an interdisciplinary set of skills and ability to interact with industry and clinical partners.

The Monash-Warwick Alliance has established an interdisciplinary *AMR Training Program in Emerging Superbug Threats*. The Program will integrate collaborative projects between the two Universities, bringing together research leaders across Faculties. The overarching goals are to train a future-ready AMR workforce and deliver promising approaches for the treatment of infections.

These goals will be achieved by combining infection biology, chemical and synthetic biology, materials science, biophysics and pre-clinical testing. Program leaders will collaborate to:

- (i) Develop and characterise new antimicrobial drug leads to treat the most devastating bacterial and fungal infections and tackle emerging superbugs for which there are few or no solutions;
- (ii) Develop innovative alternatives to antibiotics for combatting AMR infections, using material engineering, chemical biology, biophysics and host-directed approaches;
- (iii) Provide ECRs with the interdisciplinary training needed to effectively tackle AMR, including translational skills for engagement with industry and clinical partners.

To enact such a program focused on emerging superbug threats: (i) a cross-institutional interdisciplinary Research Leadership Team will be established; (ii) the Research Leadership Team will select and appoint three Monash and three Warwick postdoctoral research fellows to work collaboratively with the program leaders on joint Monash-Warwick projects. Alliance-funded fellows will be appointed for a duration of three years and will be embedded into research activities across the Program. It is expected that members of the Research Leadership Team will fund research consumables and travel costs in the main, with some modest support available at each institution. Each Research Fellow is anticipated to have the laboratory of one member of the Research Leadership Team as their “main home” but will work in the laboratories of other members of the Research Leadership Team, as their training needs and the scientific requirements of the project dictate.

The Research Leadership Team will be responsible for establishing project priorities and recruitment/appointment of the Research Fellows to the program. Co-supervision and project-determined embedding of Research Fellows in multiple labs across the two institutions will provide integration and communication within the overall team. We further envisage regular videoconferences involving the Research Leadership Team and the Research Fellows at both institutions and an annual Monash-Warwick AMR mini-symposium. Providing the international travel situation permits it, we envisage that the Monash Research Fellows will spend time conducting research at Warwick and *vice versa*, to build their interdisciplinary skills and international collaborations.