



Australasian Wound & Tissue Repair Society

2022 AWTRS EMCR Award

Dr Rachael Moses

The AWTRS is proud to honour Dr Rae Moses with the 2022 EMCR Award, recognising the value of her research to the Australian wound management and health care system. Rae is a post-doctoral researcher in the Faculty of Medicine, Dentistry & Health Science, University of Melbourne, and aims to produce a viable 3D organotypic chronic wound model to replace rodent wound healing models, with the additional aim of replacing animal-derived products within the model.

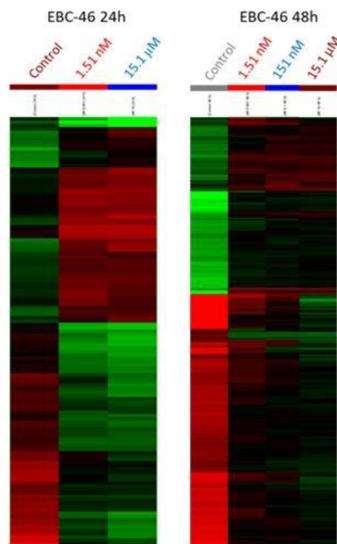
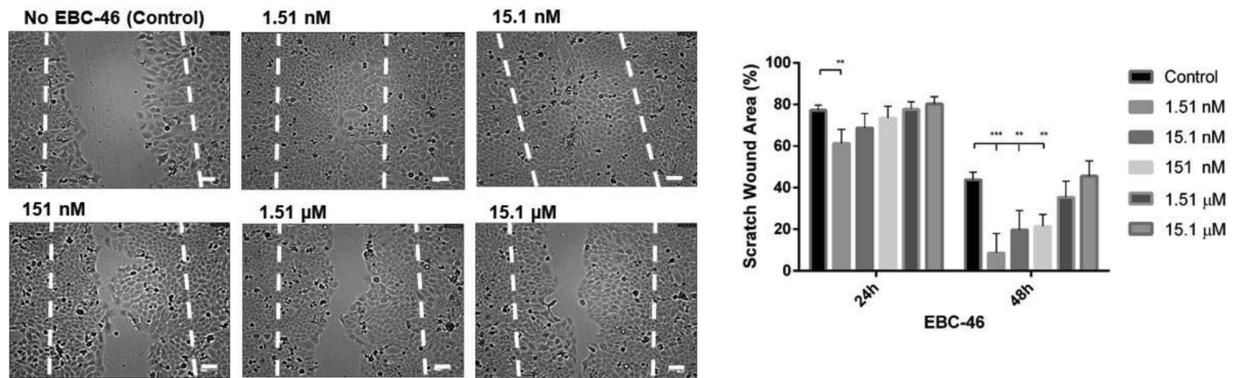


Rae obtained her BSc (Hons) in Biomedical Science in 2011, her MSc in Tissue Engineering in 2012 and her PhD in Tissue Engineering in 2016, all were obtained from Cardiff University. Continuing from her PhD studies, Rae undertook postdoctoral research in the field of Tissue Engineering, focusing on the elucidation of the underlying mechanisms of action by which novel epoxy-tigliane pharmaceuticals promote preferential wound healing responses, in collaboration with QBiotics Group and QIMR Berghofer, based in Australia.

This research resulted in being included as an inventor on a worldwide patent for 'Methods and Compositions for Wound Healing', relating to the application of epoxy-tigliane compounds in the promotion of dermal wound healing and reduced scarring. She has published ten journal articles in this field, three of which are first author, with the majority of her journal articles in Q1 journals.

During her postdoctoral role at Cardiff University, Rae also collaborated with Royal Botanic Gardens Kew, UK, evaluating the modulatory effects of plant-derived saps on inflammatory, fibroblast and keratinocyte responses associated with impaired healing tropical ulcers. Rae's interests lie in natural compound pharmaceuticals for wound healing, in particular for chronic, non-healing wounds. Additionally, she has an interest in the 3Rs (reduction, replacement, refinement), focusing on developing 3D wound models.

Rae took up the position of Research Associate at the University of Melbourne in July 2021, moving across the world during the Covid-19 pandemic. This appointment will allow this 3D chronic wound model work to progress, in line with NC3Rs guidelines driving research to minimise use of animal models, while providing crucial information on cellular cross-talk.



Novel epoxy-tiglanes were demonstrated to induce a significant wound closure response through use of *in vitro* scratch wound assays on human skin keratinocytes (HaCaTs) (above).

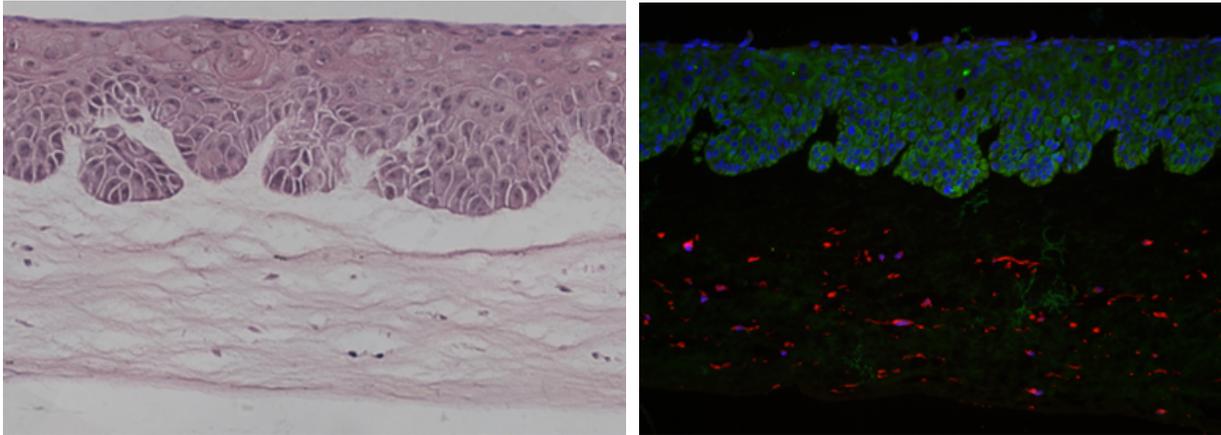
Transcriptomic analysis by Illumina BeadChip Microarrays and heatmap visualisation of genes differentially expressed ≥ 2 -fold by HaCaTs, following treatment with 1.51 nM, 151 nM or 15.1 μ M EBC-46, for 24 h & 48 h, versus untreated HaCaTs (left).

This work was conducted following a travel bursary to visit the QIMR Berghofer Medical Research Institute, Queensland, Australia, funded by the Cardiff Institute of Tissue Engineering and Repair (CITER), Cardiff University. (Moses et al. 2020).

Rae has brought in over \$600k in grants between her positions at Cardiff University and the University of Melbourne, across several interdisciplinary projects. This includes a research grant from Medical Advances Without Animals (MAWA) on her arrival to the University of Melbourne to fund the pilot project on the development of the 3D chronic wound organotypic model.

Prior to taking up the position at the University of Melbourne, Rae was an active member of the European Tissue Repair Society, and attended AWTRS events when she was undertaking laboratory visits to QIMR Berghofer, in Brisbane. Rae has presented at several ETRS annual meetings and won the runner-up place for her poster presentation at ETRS in Edinburgh, 2014. Additionally, Rae was also selected by the University of Melbourne to submit an application, which was subsequently successful, to participate in the Global Young Scientists Summit, virtually held from Singapore.

Within her school, Rae is responsible for re-instigating the regular seminar series, providing opportunities for PhD students and ECRs to present to their wider school. Rae is a member of her faculty ECR committee and was recently involved in the organising of the Faculty of Medicine, Dentistry and Health Sciences, Early Career Academic Symposium. In addition, she was on the organising committee and scientific advisory committee for the International Association of Dental Research annual conference (2022), held recently in Melbourne.



Demonstrating 3D model using animal-origin products. Dermal fibroblasts and epidermal keratinocytes in a 3D organotypic model with H+E staining (left) and vimentin, a marker for fibroblasts (right). This work was conducted following a European Skin Science Travel Award (ESSTA) to visit the Blizard Institute within Queen Mary University of London (QMUL), funded by European Society of Dermatological Research (ESDR).

Rae has moderated and chaired at a number of conferences, including at the International Conference on Wound Care, Tissue Repair and Regeneration, London, UK (2018), Cardiff Institute of Tissue Engineering & Repair (CITER) Annual Scientific Meeting, Cardiff, UK (2018), Australasian Society for Biomaterials and Tissue Engineering Annual Meeting (2022), and Australasian Wound & Tissue Society Annual Meeting (2022).

Rae has been involved in the supervision of a number of students, including co-supervising a PhD student to completion, along with multiple MSc, MRes and BSc (Hons) students. Rae has also been the primary supervisor for a number of students, including those undertaking their MSc Tissue Engineering course, BSc final year project and Cardiff Institute of Tissue Engineering and Repair Summer students. In addition, Rae has contributed to teaching within her Faculty in the field on tissue engineering, which along with the research supervision led to her being awarded the qualification of Associate Fellowship of Higher Education Academy (AF-HEA) in 2020.

Rae currently has a PhD project available to join the Sloan/Moses research laboratory, please click [here](#) or contact rachael.moses@unimelb.edu.au for more information.

You can follow Rae on [LinkedIn](#) and [Twitter](#) (@rae_moses) to keep an eye on where her exciting research in Wound and Tissue Repair goes next.