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2022-2023

*Innovation in
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technologies:
emerging strategies
for human life*

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Tropoelastin and Enhanced Wound Repair

Speaker:

Prof. **Anthony Weiss**,
The Sydney University,
Sydney, Australia

June 27th, 2023

h. 2.30 pm CEST

Seminar Room DII (Povo 2) and Zoom
Platform

Abstract

Elastic tissue does not typically regenerate in adults, so there is demand for ways to restore these tissues following damage. This relies on the exogenous supply of elastin's primary building block, tropoelastin. We have developed ways to use tropoelastin to 3D print and build a range of elastic repair materials. To our surprise, tropoelastin also promotes broader tissue repair. Powerfully, the use of tropoelastin promotes healing following surgery, including the recovery of full thickness wounds.

An emerging model for tropoelastin is that it delivers this potency by emulating extracellular matrix interactions including those through development and repair. This paradigm for enhanced tissue repair encompasses a novel, pure, synthetic material that promotes the repair and fixation of soft tissues. Tropoelastin-based materials leverage the ability to promote new blood vessel formation and cell recruiting properties to accelerate healing on applied tissues. Understanding these mechanisms has led to the realisation of a diverse range of promising biomaterials with tuneable mechanical and self-assembly properties.

Professor ANTHONY S. WEISS

Professor Tony Weiss is the McCaughey Chair in Biochemistry, Professor of Biochemistry & Molecular Biotechnology, Director of the Charles Perkins Centre's Tissue Engineering & Regenerative Medicine Laboratory and NHMRC Leadership Fellow at the University of Sydney, Chair of the Expert Panel NSW Biosciences Fund, and President of TERMIS. His research on the elastic protein tropoelastin underpins novel applications in wound repair. He is a serial inventor on 171 granted patents in 23 families, and founded Elastagen which was sold to AbbVie in one of the largest national healthcare transactions. He is FTERM and FBSE and a Fellow of the Australian Academy of Technology & Engineering, Royal Society of Chemistry, Royal Australian Chemical Institute, Royal Society of NSW, American Institute for Medical & Biological Engineering, and the US National Academy of Inventors. He is a highly decorated innovator, with multiple innovation medals from the RACI, ATSE's Clunies Ross Medal, the Eureka Prize for Innovation in Medical Research, NSW Premier's Prize for Science & Engineering Leadership in Innovation, and the top innovation prize in Australia: the Prime Minister's Prize for Innovation.