



SPORTS TECHNOLOGY & APPLIED RESEARCH SYMPOSIUM

27th April 2022



‘Lab on a Patch’

WEDNESDAY 27th APRIL 2022, 1:00PM–3:00PM AEDT

The technological capabilities to unobtrusively collect and analyse biomarkers in the field opens up opportunities to measure more performance-related information. The dream of collecting data in competition to deeply understand adaptive stress responses is made possible by these kinds of technologies.

In this presentation, we will hear from experts looking into these possibilities and discuss the implications for our national high performance sport system.

1:00pm-1:20pm – ‘Lab on a Patch’: Past, present, and future by Professor Christian Cook (UNE)

1:20pm-1:40pm – Emerging Technologies that Could Assist Us to Measure Stress in Competition by Gemma Whelan (UNE and AIS)

1:40pm-2:00pm – Expert Panel: Lab on a Patch Technology Roadmap

2:00pm-2:30pm – Discussion and audience questions



PRESENTED BY:



Professor
Christian
Cook

Professor Cook was awarded a PhD in Paediatrics from Auckland University School of Medicine for original work monitoring in utero brain development. Subsequently he worked on the physiology and neurobiology of stress and biomedical technology design. This migrated towards high performance environments and Professor Cook has worked across a number of Americas Cup Yachting campaigns, rugby world cups as well as both summer and winter Olympics. Most recently he had the pleasure of working with New Zealand Snowsports towards the 2022 Winter Olympics. He held, until 2016, academic positions at Bath University, Imperial College, and Bangor University. At Imperial College Professor Cook was part of the newly established Hamlyn Centre for Robotic Surgery, a centre that focuses on learning and technology in surgery and other fields of medicine, where he remains a Visiting Professor and undertakes research. Prior to coming to UNE, he was a Professor at University of Canberra continuing work on the physiology and neurobiology of high performance in sport and in medicine and on sensor design. Professor Cook publishes widely, holds several patents, including in immunosensor design and interstitial sampling, and is committed to research training, having supervised over 30 research theses and projects.



Gemma
Whelan

Gemma Whelan, MSc BSc, is a sport scientist and Postdoctoral Research Fellow with the School of Science and Technology at the University of New England. Gemma is tasked with exploring the validity of emerging biochemical sensors for the measurement of biological analytes, and their utility in sport to measure athlete stress in competition. Gemma has previously worked within the Australian High Performance National Institute Network within the Performance Services team at the Australian Institute of Sport and at the Tasmanian Institute of Sport as a Sports Performance officer. Gemma completed her Masters of Sports Performance in the UK whilst coaching within the England Hockey Development Pathways.

PRESENTED BY:



Dr Casey
Boutwell

Dr. Casey Boutwell is DermiSense's CEO. Dr. Boutwell earned a PhD in semiconductor optics from the University of Central Florida, and an MBA from NC State University while managing the university's commercial licensing strategy for intellectual property. Dr. Boutwell then led business development and industry partnerships for the National Science Foundation's ASSIST Engineering Research Center, where he met Professor Michael Daniele, DermiSense's Chief Science Officer and the technology's inventor.



Dr Jason
Hayes

Jason is the head of Research and Development at SCHOTT Minifab and is responsible for identifying new technologies required to support both development and manufacturing of microfluidic, lab-on-a-chip devices. Over the last 25 years Jason has been involved in establishing microfabrication capabilities used throughout SCHOTT Minifab, and on this journey has seen increasing levels of fluidic complexity and functional integration required to make the types of (wearable) diagnostic products that are making headlines today. Jason enjoys the challenge of translating early-stage concepts to mass produced product, and being able to use Physics, and general science and technology to solve problems on a daily basis. Jason graduated Hull University (UK) in 2006 after completing a PhD in Applied Physics using lasers to deposit and pattern novel mechanical strain sensors.



PRESENTED BY:



Dr Benny Lo

Dr. Benny Lo is a Senior Lecturer of the Hamlyn Centre, and the Department of Surgery and Cancer, Imperial College London. He also serves as an Associate Editor of the IEEE Journal on Biomedical and Health Informatics, and he was the Chair of IEEE EMBS Wearable Biomedical Sensors and Systems Technical Committee (2018-19). He is one of the pioneers in Body Sensor Networks (BSN) research and helped build the foundation of the BSN research through the development of the platform technologies, introduction of novel sensors, approaches, and theories for different pervasive applications, and organising conferences and tutorials. His current research focuses on pervasive sensing, computer vision, machine learning, Body Sensor Networks (BSN), Internet of Things (IoT) and Wearable Robots and their applications in healthcare, sports, and wellbeing. In collaboration with Coursera, Dr Lo has launched a MOOC specialisation on Advanced App Development on Android covering topics on computer graphics and virtual reality app developments.



Associate
Professor Ajay
Pandey

Ajay is an Associate Professor at the School of Electrical Engineering and Robotics at the Queensland University of Technology (QUT). His research interests have an interdisciplinary mix of Molecular Electronics, Photonics and Quantum Sensing. He particularly specialises in the design and development of a network of intelligent sensors for precision biosensing and neuroengineering applications.



PRESENTED BY:



Associate
Professor
Tony Parker

Tony Parker is an Associate Professor in the School of Biomedical Science (SoBMS), Faculty of Health, Queensland University of Technology. Tony teaches Cell and Molecular Biology, Anatomy and Physiology, Proteomics and Wound Science. Tony is also the school's Academic Lead in Indigenous Health; Deputy Program Leader of the Tissue Repair and Translational Physiology (TRTP) Group in the SoBMS; and Chief Scientific Officer of Surgical BioFix Ltd, a Brisbane based Biotechnology Company involved in the manufacture of Australia's first dehydrated amniotic membrane allografts for wound and surgical application. He has over 15 years of experience in tissue injury, wounds, and tissue engineering research with a major focus on the biochemical implications of skin and musculoskeletal tissue injury and recovery processes. In particular, his team is recognized for their cutaneous wound fluid analysis expertise and works closely with burn and trauma researchers at the Centre for Children's Health Research (CCHR) and the Queensland Children's Hospital as part of a broader collaboration with leading Australian burns researchers at Children's Hospital Westmead in Sydney and Fiona Stanley Hospital Perth. His team played a key role in the establishment of the world class proteomics and metabolomics capability at QUTs Central Analytical Research Facility (CARF) and also specialises in the utilisation of 2D and 3D in vitro experimental skin wound models and has an interest in the role of exercise in the systemic release of the neuroprotective / neurorepairative proteins which may have implications for stroke prevention and rehabilitation. Tony has additional active international collaborations with leading researchers at A*STAR Singapore, Tulane University, New Orleans, and University of Kentucky in the USA. He has published 41 peer reviewed journal articles in the international scientific literature, attracted over \$7 million in research funding and has trained 15 Honours and 24 higher degree research students.





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