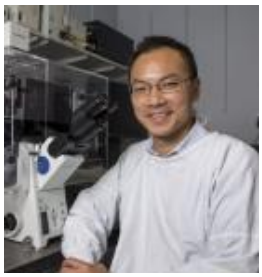
ADATE 2014 – INVITED SPEAKERS

Professor Gail Naughton

Dr. Gail Naughton founded Histogen, Inc. in 2007, and currently serves as CEO and Chairman of the Board for the Company. She has spent more than 25 years extensively researching the tissue engineering process, holds more than 95 U.S. and foreign patents, and has been extensively published in the field.

Dr James Chong

Dr James Chong MBBS, FRACP, PhD is a Consultant Cardiologist at Westmead hospital and leads a research group at the University of Sydney School of Medicine/Westmead Millennium Institute. His research aims to translate findings from the field of Cardiac Regeneration into viable clinical therapies for patients with heart failure.



Dr Chong trained in cardiology at Westmead Hospital before completing a PhD at the Victor Chang Cardiac Research Institute under the mentorship of Prof Richard Harvey. This doctoral training in cardiac development and stem cell biology focused on a previously unidentified population of cardiac stem cells. Post-doctoral training was then performed at the University of Washington, Seattle, USA with Prof Charles (Chuck) Murry. During this period he extended his interests in translational cardiac regeneration to include the use of pluripotent stem cells in small and large animal models of myocardial infarction.

Professor Teruo Okano

Teruo Okano is currently the Professor at Tokyo Women's medical University (TWMU) in Tokyo Japan. He received his Ph.D. from Waseda University in 1979. After several years as an Assistant Professor at TWMU, he joined the University of Utah (1984-1988) and later is an Adjunct Professor in the Department of Pharmaceutics since 1994. He returned to TWMU in 1988 as an Associate Professor and became a Full Professor in 1994. He then became Director of the Institute of Biomedical Engineering in 1999 and initiated the present institute, Advanced Biomedical Engineering and Science (ABMES), in 2001. He was the Vice President of TWMU and the Director of ABMES up to March 2014.

He developed temperature-responsive polymeric surfaces for harvesting cultured two-dimensional cell layers. Based on this technology, he has proposed the new concept of "cell sheet engineering" which introduces an alternative path for tissue and organ regeneration.

He received numerous awards including the Clemson Award for Basic Research (1997) given by the Society for Biomaterials (U.S.A.) and Emperor's Medal with Purple Ribbon (National Achievement Award) (2009) from His Majesty of the Emperor of Japan.

Professor Vicki Rosen

Dr. Vicki Rosen arrived at HSDM by way of industry, having spent the majority of her research career as a scientist at Genetics Institute, a biotechnology company, where she was part of a research team that identified the bone morphogenetic protein (BMP) genes in 1988. She became a professor in the Faculty of Medicine in 2001, and chair of the Department of Developmental Biology at HSDM in 2005.

Dr. Rosen's lab studies the physiological roles that bone morphogenetic proteins (BMPs) play in the development, maintenance, and repair of musculoskeletal tissues (bone, cartilage, tendon, ligament, meniscus, muscle). The researchers use molecular, cellular, and genetic approaches in a variety of model systems (Xenopus, chick, and mouse) to investigate BMP activities. The investigators believe that enhancing current understanding of BMP biology will lead to the development of novel strategies for repair and regeneration of individual components of the musculoskeletal system, as well as provide new models for examining complex tissue interactions that are required for its function.

Assistant Professor Lin Han

Dr. Lin Han's research interests focus on exploring the nanoscale structure-property relationships of biomaterials, which holds great potential for biomedical and biomimetic engineering applications. He's research areas mainly include: genetic and molecular origins of soft joint tissue diseases, molecular mechanisms of bone metastasis and biomaterials under extreme conditions.

Professor Jason Burdick

Jason A. Burdick, PhD is a Professor of Bioengineering at the University of Pennsylvania. Dr. Burdick's research involves the development of hydrogels for various biological applications and his laboratory is specifically interested in understanding and controlling polymers on a molecular level to control overall macroscopic properties. These hydrogels include photocrosslinkable systems based on natural polymers that exhibit spatially and temporally distinct properties and can be processed into fibrous structures, as well as self-assembled materials designed from non-covalent chemical interactions that are useful as injectable hydrogels.

The applications of his research range from controlling stem cell differentiation through material cues to fabricating scaffolding for regenerative medicine and tissue repair. Jason currently has over 140 peer-reviewed publications and has been awarded a K22 Scholar Development and Career Transition Award through the National Institutes of Health, an Early Career Award through the Coulter Foundation, a National Science Foundation CAREER award, a Packard Fellowship in Science and Engineering, and an American Heart Association Established Investigator Award. He is on the editorial boards of *Tissue Engineering*, *Biomedical Materials*, *Biomacromolecules*, *Journal of Biomedical Materials Research A*, and *ACS Applied Materials and Interfaces*.

Associate Professor Sarah Heilshorn

Sarah Heilshorn is Associate Professor with Tenure in the Department of Materials Science and Engineering and, by courtesy, the Departments of Bioengineering and Chemical Engineering at Stanford University. Prior to joining Stanford in 2006, Prof. Heilshorn was a postdoctoral scholar in the Department of Molecular and Cell Biology at the University of California, Berkeley. She completed her Ph.D. and M.S. studies in Chemical Engineering at Caltech in 2004 and 2000, respectively. She earned a B.S. in Chemical Engineering at Georgia Tech in 1998.

She combines these diverse fields to design new materials that mimic those found in our bodies for applications in tissue engineering and regenerative medicine. Recent recognitions include the NSF Career Award and the NIH New Innovator Award.

Dr Aaron Schindeler

Dr Schindeler completed his PhD at the Victor Chang Cardiac Research Institute in 1998. His research examined the role of a novel muscle protein in heart and skeletal muscle. As part of this project, he pioneered several new techniques including a method for quantifying actin turnover in cultured cells. His PhD research has been published in the Journal of Cell Biology and Experimental Cell Research. In 2001 he was awarded the St Vincent's Hospital Junior Researcher Award for Excellence. In 2004 his research took a shift in focus from muscle to bone as he took on a postdoctoral position at the Orthopaedic Research & Biotechnology Unit.

Dr Schindeler has been a lead figure in developing a new research project focused on the cellular determinants of bone repair. This began with examining the role of muscle stem cells in bone repair using both cell culture and tissue-specific transgenic mice. Data from this project has been presented at local and national meetings and resulted in a successful NHMRC Project Grant for 2007-8. Dr Schindeler has been successful at attracting grant funding for his research. In the five years since submitting his PhD, he has helped attract over a million dollars of competitive grant funding to his unit.

Dr Schindeler currently holds dual roles as a Research Scientist at the Kids Research Institute and a Lecturer at the University of Sydney. He supervises several postgraduate students and has completed Supervisor Training via the Institute for Teaching and Learning (ITL) at USyd. Dr Schindeler is a productive author, having written numerous invited and unsolicited reviews on diverse subjects including bone cell signalling, anabolic and catabolic processes in orthopaedics, and bisphosphonate pharmacology. These have been accepted by some of the most prestigious journals in the fields of bone biology, orthopaedics, and pharmacology. In 2008 he was a guest editor for the thematic journal Seminars in Cell and Developmental Biology for an issue focussed on bone remodelling.

Professor Justin Gooding

Scientia Professor Justin Gooding graduated with a B.Sc. (Hons) from Melbourne University before spending two years working for ICI Research on explosives. He then returned to University obtaining a D.Phil. from the University of Oxford and received post-doctoral training at the Institute of Biotechnology in Cambridge University.

He returned to Australia in 1997 as a Vice-Chancellor's Post-Doctoral Research Fellow at the University of New South Wales (UNSW. He was promoted to full professor in 2006. He was one of the recipients of a 2004 NSW Young Tall Poppy award, a 2005 Alexander von Humboldt Fellowship, the 2007 RACI Lloyd Smythe Medal for Analytical Chemistry, the 2009 Eureka Prize for Scientific Research, the RACI 2011 H.G. Smith Medal for contributions to chemistry, the 2012 RACI R.H. Stokes Medal for electrochemical research, the 2012 Royal Society of Chemistry Australasian

Lecturer and the 2013 NSW Science and Engineering Award for Emerging Research. He is currently an ARC Professorial Fellow and a co-director of the Australian Centre for NanoMedicine.

Between 2006 and 2011 he was Chair of the Electrochemistry Division of the Royal Australian Chemical Institute, between 2011 and 2013 he was the inaugral Australian representative of the International Society of Electrochemistry, a position he relinquished to become one of the Vice Presidents of the ISE. He leads a research team of 35 people interested in surface modification and nanotechnology for biosensors, biomaterials, electron transfer and medical applications.

Professor Hala Zreiqat

Professor Hala Zreiqat is a National Health and Medical Research Fellow, Head of the Biomaterials and Tissue Engineering Research Unit in the Faculty of Engineering, University of Sydney. Her group consists of multidisciplinary team of researchers including engineers, cell and molecular biologists and clinicians. She specializes in developing engineered biomaterials and scaffolds for skeletal tissue applications, and investigating their effect on in vitro and in vivo osteogenesis.

Her team conducts research to gain greater understanding of bone/cartilage and endothelial cells biology when in contact with engineered biomaterials. She has over 80 peer-reviewed publications; 4 review papers; 12 book chapters; and over 120 abstracts in national and international meetings. She is regularly invited to give keynote and plenary presentations at major international and national conferences.

She has organized / chaired a number of major international conferences/ symposia / workshops. She is the immediate past president of the Australian and New Zealand Orthopaedic research Society (2010-2012). Founder & Chair, Alliance for Design and Application in Tissue Engineering (formerly known as Sydney University Tissue Engineering Network - SuTEN, 2006 to present). Amongst her awards are: Leopold Dintenfass Memorial Award, for Excellence in Research (2012); University of Sydney Engineering Deans Research Award (2009).

Associate Professor Geraldine O'Neill

Geraldine O'Neill is Group Leader of the Focal Adhesion Biology (FAB) group at the Kids Research Institute and Conjoint Associate Professor with the University of Sydney. The central theme of her research is to understand how cancer cell interaction with the surrounding matrix leads to the progression to metastatic disease, one of the major causes of cancer patient mortality. Her team investigates the cell biology of cancer cell invasion, with a particular focus on brain tumours and neuroblastoma.

Professor Pamela Yelic

Pamela C. Yelick, Ph.D. is a Tenured Full Professor in the Department of Oral and Maxillofacial Pathology, Tufts University School of Dental Medicine, where she is the Director of the Division of Craniofacial and Molecular Genetics. Dr. Yelick also holds adjunct appointments in the Cell, Molecular and Developmental Biology, Genetics, and Pharmacology Programs in the Sackler School of Graduate Biomedical Sciences, Tufts Medical School, Boston, MA, and in the Department of Biomedical Engineering, School of Arts and Sciences, Tufts University, Medford, MA.

Dr. Yelick's research focuses on elucidating and understanding molecular

signaling cascades regulating the processes of mineralized tissue development, homeostasis, disease and regeneration. Dr. Yelick holds extensive published expertise in basic research pertaining to craniofacial development and regeneration using the zebrafish and mouse models, and in clinically relevant dental tissue engineering research models, using three dimensional dental cell seeded scaffolds implanted into rat and pig models, for eventual applications in dental tissue and whole tooth regeneration. Dr. Yelick has received NIH funding since 1990 and recently received an AFIRM II R01 award.

Dr. Yelick is an internationally recognized leader in dental tissue engineering and craniofacial development, with over 70 peer-reviewed basic research publications, more than a dozen reviews, and over 100 abstracts since the year 2000. She has received national and international acclaim for her research on dental tissue and whole tooth tissue engineering, and has participated in more than 150 Invited Speaker Lectureships.

Assistant Professor Kara Spiller

Kara Spiller is currently an Assistant Professor in Drexel University's School of Biomedical Engineering, Science, and Health Systems. A member of the first class of Drexel's accelerated BS/PhD program, Dr. Spiller received bachelor's and master's degrees in biomedical engineering from Drexel University in 2007. As an NSF Graduate Research Fellow, she conducted her doctoral research in the design of semi-degradable hydrogels for the repair of articular cartilage in the Biomaterials and Drug Delivery Laboratory at Drexel (PI: A. Lowman) and in the Shanghai Key Tissue Engineering Laboratory of Shanghai Jiao Tong University (PI: W. Liu), with support from the NSF Doctoral Dissertation Enhancement Program (DDEP).

After completing her PhD in 2010, she conducted research in the design of scaffolds for bone tissue engineering on a Fulbright fellowship in the Biomaterials, Biodegradables, and Biomimetics (the 3Bs) Research Group at the University of Minho in Guimaraes, Portugal (PI: R.L Reis). She then conducted postdoctoral studies towards the development of immunomodulatory biomaterials for bone regeneration in the Laboratory for Stem Cells and Tissue Engineering at Columbia University (PI: G. Vunjak-Novakovic), before returning to Drexel in 2013. Her current research interests include cell-biomaterial interactions, the design of immunomodulatory biomaterials, and international engineering education.

Associate Toby Coates

The Centre for Clinical and Experimental Transplantation is part of the School of Medicine in the Central Northern Adelaide Renal and Transplantation Service on the 9th Floor of the Royal Adelaide Hospital (East Wing). The group is run by Assoc Prof Toby Coates and our labs are situated in the Hanson Centre Laboratories on Frome Road.

Toby's research focuses on the isolation and transplantation of healthy pancreatic islets as an innovative treatment and potential cure for type 1 diabetes. As part of the Australian Islet Transplantation Consortium, the laboratory prepares and performs assays on purified islets that are ultimately transplanted into patients. To date, the Consortium has transplanted 15 patients across Australia. Factors limiting the success of islet transplantation include suboptimal engraftment, immune reaction and rapid cell death post-transplant. Our laboratory is interested in identifying and combating the causes of islet cell death. We are also interested in basic islet biology, and how function can be protected/quickly restored following transplantation. The laboratory is based in the Hanson Institute and are part of the Basil Hetzel Institute at the Queen Elizabeth Hospital site and the Robinson Institute. We reside within the Central Northern Adelaide Renal and Transplantation Service, where scientists regularly attend departmental meetings and many of the clinicians are heavily involved with research projects. We recently won a

NHMRC project grant beginning in 2009 and we have active collaborations with groups bringing expertise in vascular biology including Dr Claudine Bonder, Centre for Cancer Biology and Cellular Neuroscience Dr Damien Keating, Flinders University.

Professor Justin Cooper White

Professor Justin Cooper-White is a global leader in using engineering to solve problems in biology. In addition to holding the position of AIBN Group Leader, Professor Cooper-White is Director of the Australian National Fabrication Facility-Queensland Node and the Associate Dean (Research) Faculty of Engineering, Architecture and Information Technology at UQ. He is a past President of both the Australasian Society for Biomaterials and Tissue Engineering and the Australian Society of Rheology.

Dr Jerome Werkmesiter

Dr Jerome Werkmeister's research focuses on the development and evaluation of biomaterial scaffolds, particularly of biological origin, for cell-based tissue engineering constructs. Dr Werkmeister is a Chief Research Scientist in the Biomaterials and Regenerative Medicine Theme. He is Stream Leader of the cell and tissue therapies group.

Dr Werkmeister's team is currently interested in: developing natural matrix scaffolds for amplification of stem cells for improved cattle breeding with the Food Futures Flagship developing an arthroscopic-friendly polymer-matrix system for cell-based repair of cartilage with PolyNovo Biomaterials developing a platform technology for human stem cell amplification and biotherapeutic/protein applications with the Cooperative Research Centre-Polymers designing complex scaffolds for neural regeneration with Bionics Technology Australia designing next generation recombinant chimeric matrix scaffolds for wound repair with a commercial partner.

Professor John McAvoy

In the 'Lens Research Group' the overarching goal of our research program is to elucidate key developmental mechanisms that govern normal lens development. This information is fundamental for successful recapitulation of the processes required for regeneration of normal lens structure and function after cataract surgery. In particular, the regulation of fibre differentiation has been a major research focus. Our laboratory has over 35 years experience in lens developmental biology research. Whilst both in vitro and in vivo systems have been developed and employed by our lens group to identify key molecular regulators of the fiber differentiation process, of particular note is the development of a lens epithelial explant system. This has proven to be a reliable system for identifying key regulators of lens cell behaviour in the whole animal. Development of this system was initiated during my postdoctoral period in the Nuffield Laboratory of Ophthalmology, University of Oxford (1975-79) where I also received a solid grounding in lens research.

After moving to The University of Sydney in 1979 and establishing the 'Lens Research Laboratory', the explant system was instrumental in 1987 in identifying members of the FGF growth factor family as key inducers of fibre differentiation. This was followed in 1994 by identifying TGFßs as inducers of fibrotic cataracts. Most recently we have shown that during FGF-induced differentiation, Wnt/Frizzled signalling through the planar cell polarity (Wnt-

Fz/PCP) pathway has a critical role in promoting the precise alignment/orientation of fibres. Current research aims to exploit these findings with the ultimate aim of being able to promote the coordinated cell behaviour that is required to generate the exquisite three-dimensional organization of fibres (and epithelial cells) and regenerate lens structure and function after cataract surgery.