Invited Speakers – EPSM 2013

We have identified a number of visiting and regional researchers who are making inroads into new and emerging areas of research. We are pleased to include these researchers in our list of Invited Speakers who shall be giving presentations reviewing their specific research areas. We also include a number of notable Western Australian researchers from allied areas.

**Invited speaker – Dr Brad Oborn, Illawarra Cancer Care Centre, Wollongong, NSW**

Dr Brad Oborn is a research physicist at the Illawarra Cancer Care Centre at Wollongong Hospital. His research interests include Monte Carlo simulations of radiotherapy treatments and radiotherapy research projects. Clinically his work is used for independent IMRT plan verification while research topics include simulations of novel 2D diode detectors and the impact of magnetic fields on their operation. Dr Oborn is also a key steering board member of the Australian MRI-linac Program at the Liverpool Hospital. His work in Monte Carlo and Magnetic modelling work has played an important role in guiding the direction of the MRI-linac program which is now in the construction phase. Dr Oborn is a fellow of the Centre for Medical Radiation Physics at the University of Wollongong, and is currently an associate investigator on NHMRC grants totaling over $6.2M with both the University of Wollongong and the University of Sydney.

**Invited speaker – Dr Jason Dowling, CSIRO Brisbane, QLD**

Dr Jason Dowling is a research scientist and project leader at the Commonwealth Scientific and Industrial Organisation (CSIRO) Australian e-Health Research Centre (based at the Royal Brisbane and Women's Hospital, Australia). Over the last 6 years, he has been working in the areas of image registration and segmentation, medical physics, radiotherapy planning, human and computer vision; being specifically applied to a variety of problems in prostate, breast, and cervical cancers. The main aim of his current work with clinical partners at the Calvary Mater Newcastle Hospital and the Liverpool and Macarthur Cancer Centres is to develop methods for MRI-alone radiation therapy treatment planning. This has involved the development of methods to automatically detect and segment organs of interest from MRI scans and the development and clinical validation of methods to automatically assign electron density information from MRI (generating pseudo-CTs) for dose calculations (currently this is not possible as MRI scans lack the electron density information required to calculate radiation dose). Dr Dowling holds BAppSc(Comp/Psych) and BComp(Hons I) degrees from Monash University and a PhD from Queensland University of Technology.
Invited speaker – Dr Gary Liney, Ingham Institute for Applied Medical Research, Liverpool NSW

Dr Liney is the senior MRI physicist at the Ingham Institute for Applied Medical Research, Liverpool hospital, NSW. He took up this post in November 2012 having left the UK with over 16 years experience in the clinical and academic fields of MRI. Previously he was lead imaging physicist for the Hull & East Yorkshire NHS Trust. The focus of Dr Liney’s research is the utilization of MRI for radiotherapy simulation and the hybrid MRI-linac system to be installed at Liverpool hospital. He holds honorary positions with the Universities of Hull, New South Wales and Wollongong. Dr Liney has given numerous invited lectures and presented over 145 conference papers internationally. His publications include 37 journal articles and 3 textbooks. He is currently a member of the advanced imaging teaching faculty for ESTRO. Dr Liney has held the title of state registered clinical scientist (UK Health Professions Council) since 2000.

Invited speaker – Dr Jonathon Sykes, Nepean Cancer Centre, NSW

Jonathan Sykes studied physics at the University of Oxford and trained as a Medical Physicist at the Christie Hospital in Manchester, UK, where he completed his MSc at the University of Manchester. He worked at the Christie Hospital for 11 years as a clinical physicist in radiotherapy as well as contributing to research in areas such as film and gel dosimetry, intensity modulated radiotherapy, pharmacokinetic modeling of dynamic contrast enhanced magnetic resonance images for cervix cancer and auto-detection of gold markers in electronic portal images. In 2002 – 2004 Jonathan commissioned the first Elekta research platform for cone beam CT based image guidance and contributed to a number of research articles in this exciting early stage of developments in image guided radiotherapy. Since 2004, Jonathan has been working as a radiation oncology physicist at the St James’s Institute of Oncology in Leeds, UK, where he leads a team of radiotherapy physicists providing clinical support and performing research and development in applications of imaging in radiotherapy. Between 2005 and 2010 he completed a PhD with the University of Leeds, under the supervision of Professor David Thwaites, investigating geometric uncertainties in image guided radiotherapy. In 2009-2010, Jonathan led a national evaluation of IGRT equipment on behalf of the UK governments department of health. As a member of the Institute of Physics In Medicine’s radiotherapy special interest group, he organized two scientific meetings on IGRT and motion management in radiotherapy. He is author or co-author of over 20 peer reviewed publications, has been invited to speak at several international meetings such as ESTRO, EP12k12 and IC3DDOSE and has contributed to approaching 100 abstracts at national or international conferences. Jonathan is now enjoying a sabbatical year employed by the University of Sydney with a remit to support, facilitate, coordinate and encourage physics and multi-disciplinary research activities in the radiation oncology departments at the Crown Princess Mary Cancer Centre and Nepean Cancer Centre in Western Sydney.
**Invited speaker – Dr Pejman Rowshanfarzad, University of Western Australia, WA**

Pejman Rowshanfarzad received an MSc in Medical Physics in 2001 followed by seven years research at a medical cyclotron. He received a PhD in Medical Physics from the University of Newcastle, Australia in 2012. The main focus of his PhD research was on improvement of EPID-based techniques for dosimetry and investigation of linac mechanical performance in advanced radiotherapy. He has published more than 50 peer reviewed papers in international journals. His latest 11 publications were based on his three-year PhD project on improving EPID dosimetry and novel linac QA methods for SRS, IMRT, and VMAT. He was awarded five scholarships from the University of Newcastle between 2009-2012, and in 2011 he was awarded for outstanding postgraduate student research achievements. Part of his PhD outcome is in the process of becoming licensed by Standard Imaging Company. He is now working as a research fellow at the School of Physics at the University of Western Australia.

**Invited speaker – Dr Yuanyuan Ge, University of Sydney, NSW**

Dr. Yuanyuan Ge is a Postdoctoral Research Fellow at the Radiation Physics Laboratory in Sydney Medical School. Her research interests lie in real-time image-guided adaptive radiotherapy and optimal delivery of intensity-modulated radiotherapy. Dr. Ge received her B.Sc in Applied Physics in 2002 from the University of Science and Technology of China and her D.Sc in Particle Physics in 2007 from Swiss Federal Institute of Technology (ETH), Zurich. She then made the transition to Medical Physics, first as a treatment planning software engineer at Prowess Inc. and then a postdoctoral scholar at University of California, San Francisco, working on reducing radiation dose to healthy tissue by mixing X-ray and electron in radiotherapy. Dr. Ge’s current work focuses on developing an adaptive radiotherapy system that can adjust the radiation beam in real time to follow the changing tumour shape.

**Invited speaker – Ms Anna Hayton, ARPANSA, VIC**

Anna Hayton obtained a Bachelor of Science (Physics) with Honours at the University of Melbourne. While completing a Masters of Applied Science through RMIT and the Peter MacCallum Cancer Centre, she began working at the Australian Radiation Protection and Nuclear Safety Agency as a MedicalPhysicist within the Diagnostic Imaging and Nuclear Medicine Section. Over the last five years she has been heavily involved with the design and running of the Australian Diagnostic Reference Level (DRL) Service, from which collected data was used to establish the first Australian DRLs for Multi Detector Computed Tomography in 2012.
Invited speaker – Dr Hamish Meffin, University of Melbourne, VIC

Dr. Meffin is leading the development of a High-Acuity retinal prosthesis with Bionic Vision Australia: a multidisciplinary project spanning microelectronics, materials, pre-clinical testing and surgery. He is also actively involved in research to devise strategies for communicating information on visual scenes to the brain using electrical neural stimulation. Trained in mathematics, physics and neuroscience, for more than ten years he has worked in theoretic and experimental neuroscience in cross-disciplinary institutions such as the Bionic Ear Institute, Australia, and the Bernstein Center for Computational Neuroscience, Germany. Currently he is a Senior Researcher at the Victorian Research Laboratory of National Information and Communication Technology Australia (NICTA). His work has contributed to our understanding of how the brain processes information.

Invited speaker – Dr Mike House, University of Western Australia, WA

Research Associate Professor Michael House is a biophysicist in the School of Physics at the University of Western Australia and is the coordinator of the Master of Medical Physics program. His research is multidisciplinary and one key focus is biomedical imaging projects involving human patient cohorts, post-mortem tissue, preclinical and non-animal studies. He has extensive experience in quantitative magnetic resonance imaging (MRI) techniques to non-invasively assess human diseases including Alzheimer’s disease, liver fibrosis and steatosis, and iron overload in the brain, heart, kidneys, liver and bone marrow. The other focus of his research is understanding the magnetic resonance characteristics of magnetic nanoparticles to assist in the development of new contrast agents for MRI. The aim is to develop and characterise new particles that are more efficient than current agents and that can potentially be used to target, detect and quantify specific cells in the body.

Invited speaker – A/Prof Robert McLaughlin, University of Western Australia, WA

After receiving his PhD in Electronic Engineering from the University of Western Australia, A/Prof. McLaughlin worked for several years as a post-doctoral researcher at the University of Oxford. He then spent five years in the medical imaging industry, working both for start-up companies, and as a Product Manager with Siemens Medical Solutions, specializing in PET and SPECT imaging. He has been responsible for the development of several new FDA-approved medical products. In 2007, he returned to Australia, and is currently an Associate Professor with the Optical + Biomedical Engineering Laboratory, University of Western Australia, where he leads research into new imaging technologies using optical coherence tomography and confocal microscopy for both cancer and pulmonary imaging. Much of his work has focused on developing extremely miniaturized optical imaging probes for imaging deep within the body. In 2012, he received the National Breast Cancer Foundation Patron’s Award for Innovation and Vision in Research.
Invited speaker – Prof Karen Reynolds, Flinders University, SA
Professor Karen Reynolds is Director of the Medical Device Research Institute (MDRI) and the Medical Device Partnering Program (MDPP) at Flinders University. Her research interests lie in the fields of biomechanical modelling, simulation for medical training, and smart instrumentation for medicine and surgery. Recognised for her contributions to her discipline, and to improving collaboration between research and industry, Karen was named South Australian Scientist of the Year 2012, elected a Fellow of the Australian Academy of Technological Sciences in 2011, and awarded Australian Professional Engineer of the Year in 2010. She was listed by Engineers Australia as one of Australia’s ‘Top 100 Most Influential Engineers’ in both 2012 and 2013. In 2012 Karen was awarded the Flinders University inaugural title of Matthew Flinders Distinguished Professor for her achievements across the fields of teaching, research and leadership.

Invited speaker – Dr Xiao Zhi Hu, University of Western Australia, WA
XZ Hu was awarded a PhD at the University of Sydney, Mechanical Engineering, in 1989, in the field of fracture of brittle solids. He was awarded BE from Northeastern University, China in 1982, in the field of Engineering Mechanics. He then went to the Swiss Federal Institute of Technology, Zurich, for a year as a postdoc in 1989, working on brittle fracture and size effects. After two more years at the University of Sydney as a National Research Fellow, he came to the University of Western Australia in 1992, and is now a Winthrop Professor in Applied Mechanics and Advanced Materials, School of Mechanical Engineering. He has been working extensively on mechanical testing and characterisation of dental composites for the past 20 years, and has been actively working on bio-ceramic coatings on load-bearing zirconia and titanium implants in the past 5 years.

Invited speaker – Dr Ming Hao Zheng, University of Western Australia, WA
Prof. Ming-Hao Zheng is the Winthrop Professor and Director of Research at the Translational Orthopaedic Research Centre, Sir Charles Gairdner Hospital, Perth and the Associate Dean (International) of the Faculty of Medicine, Dentistry and Health Sciences, the University of Western Australia. He is also the Chung Kong Scholar Lecturing Professor and the Deputy Director of Australia-China Cooperative Research Centre for Biotherapeutics and Regenerative Medicine at the Zhejiang University, China, Director for UWA-Nanjing Bone and Joint Research Centre at Nanjing University. He has served on the editorial board member for numbers of Orthopaedics, stem cell and Pathology journals. Professor Zheng completed his Bachelor of Medicine in 1983, Master of Medicine (Pathology) in 1987 in China, PhD in 1993 and Doctor of Medicine in 2000 at the University of Western Australia. Professor Zheng is a fellow of the Royal College of Pathologists and the Royal College of Pathologists of Australasia. He has focused on the development of an academic career in bone and joint research and regenerative medicine. His productivity is evidenced by the quality of publications and patents, and his ability to transform laboratory research into
clinical practice. He has published over 140 peer-reviewed papers in journals including Nature Medicine, Annals of Internal Medicine, Journal of Clinical Investigation, Molecular Cellular Biology, Journal of Biological Chemistry, American Journal of Pathology and Journal of Bone and Mineral Research. His major achievements include studies in the molecular and cellular biology of the osteoclast, clinical and laboratory evaluation of cellular therapies, human bone allograft, development of cell-scaffold technology for cartilage, tendon and bone regeneration and regulatory framework in human tissue and cellular products. His work on Giant Cell Tumour of bone (GCT) has been used by WHO for classification of bone tumours and has been recorded in the textbook “Ackermans Surgical Pathology”. He has 7 patents in the field of Orthopaedics and has introduced the concept and technology of autologous biotherapy in orthopaedics. His research results in the development of autologous stem cell and progenitor cell therapy in bone, cartilage and tendon. He has transformed the benchwork of Matrix-induced Autologous Chondrocyte Implantation (MACI) and Autologous Tencoyte Therapy (ATT) into clinical practices. In 2009, he was specially awarded by Genzyme in Boston for his leadership, commitment and dedication to the advancement of MACI. To date, more than 120 hospitals across Australia and over 8000 patients in the world have used MACI for the treatment of cartilage defects. Prof. Zheng is actively involved in the organisation of national and international societies in bone and cartilage research, and has held positions such as Councillor of the Australia & New Zealand Bone & Mineral Research Society (1999 - 2001), Treasurer/Secretary of the Australia & New Zealand Orthopaedic Research Society (ANZBMS; 2000 – 2003), member of the scientific committee of the International Bone and Mineral Society (2003), Chair of the Organising Committee of the Australian Biotherapeutics & Tissue Regeneration Forum (2003), the International Cartilage Repair Society (2004), Australia & New Zealand Bone & Mineral Research Society (2012), Session Chair of the 6th Combined Orthopaedic Meeting (2007) in Hawaii and the BIO 2008 in San Diego. Professor Zheng is also the Conveyor of the last four Australian Biotherapeutic & Regenerative Medicine Forums.

**Invited speaker – Dr Michael Taylor, Australian Federal Police, Canberra, ACT**

Dr Michael Taylor is a technical intelligence expert for the Australian Federal Police, whose interests cover counter-terrorism, nuclear physics and radiation oncology. Recent research foci include photonuclear effects in medical physics and 4D dosimetry. In the past few years, Dr Taylor has published over 30 publications in peer reviewed international journals, over 70 international conference presentations and numerous invited seminars. Radiation interaction software developed by Dr Taylor is in use by national laboratories, universities and hospitals around the world. Dr Taylor is also an expert reviewer for 14 international scientific journals and an examiner for competitive granting bodies such as the NHMRC in Australia and MRC in the UK. Dr Taylor is an adjunct at RMIT University and holds honorary appointments with the Peter MacCallum Cancer Centre and Alfred Hospital in Melbourne. Dr Taylor is the 2013 recipient of the Boyce Worthley Young Achiever Award from the ACPSEM.
Allied invited speaker – Prof Ralph Martins, University of Western Australia/Edith Cowan University, WA

Ralph Martins is a leading expert in Alzheimer's disease (AD), whose career spanning 30+ years, has resulted in 200+ publications in mid to high impact journals. He has established a research unit currently comprising 30 research staff and 12 postgraduate students, who are working to understand the cause(s) of AD. His research has led to the identification of 3 novel drug candidates, attracting Federal funding and the interest of key commercial partners. He established the McCusker Foundation for Alzheimer’s Disease Research in 2000 and in 2004 was appointed to the inaugural Chair in Ageing & Alzheimer’s at ECU. He is the winner of a number of awards, including 2010 WA Australian of the Year, 2011 WA Citizen of the Year Professions Award and was awarded an Australia Day honour Officer of the Order of Australia (OA) in the General Division 2013. Martins is the board member of 3 research foundations, and several committees for national research organisations. He holds Adj. Professorships at the Thomas Jefferson University, UWA, Curtin and the National University of Singapore. His research is world renowned and is considered an international expert in his field.

Allied invited speaker – Clin Prof David Joske, Sir Charles Gairdner Hospital, WA

Professor David Joske has been Head of Haematology at Sir Charles Gairdner Hospital since 1994. His clinical and research interests include the treatment of lymphomas; palliative care in Haematology; and supportive care in cancer. He has held two NHMRC Grants, one examining models of palliative care in Haematology and also a randomised controlled trial of his own shared cancer model. He is a UWA Clinical Professor of Medicine; and was the Haematology sub-editor for the Internal Medicine Journal 2002-2009. He has over 50 peer-reviewed publications in the medical literature and three book chapters. He launched the SolarisCare Foundation (originally the Peters & Brownes Cancer Support Centre) in September 2001, and is currently its Chairman. The Foundation has administered over 35,000 complementary therapy treatments and now treats 7000 Western Australians annually with cancer in four centres in Perth and regional W.A. He was awarded the John Curtin Medal in 2005. He plays guitar in a blues band.

Allied invited speaker – Prof Lin Fritschi, Western Australian Institute for Medical Research, WA

Professor Lin Fritschi is a cancer epidemiologist with a particular interest in occupational causes of cancer. She has a medical degree from the University of Queensland, a PhD in epidemiology from the Australian National University and is a Public Health Physician with the Royal Australasian College of Physicians. She heads the Epidemiology Group at the Western Australian Institute for Medical Research within the University of Western Australia. Lin has led many large case-control and cohort studies on occupation and cancer. She is particularly interested in improving the way we assess historical exposure to chemicals at work and has developed a web-based application (OccIDEAS) to assist in this task (www.occideas.org). She has published
nearly 200 peer-reviewed publications in national and international journals and holds an NHMRC Senior Research Fellowship.

**Allied invited speaker – Dr Georgia Halkett, Curtin University, WA**

Dr Georgia Halkett is a Senior Research Fellow at Curtin University. Georgia’s program of research focuses on cancer patient’s psychosocial and information needs, communication between health professionals and cancer patients and research in radiation therapy. She is also conducting research addressing the needs of carers of patients diagnosed with terminal cancer. Georgia completed her PhD in 2005 at the University of South Australia. She is a qualified radiation therapist and practiced as a radiation therapist at the Royal Adelaide Hospital until 2005 when she moved to Perth. In 2007, Georgia received her Fellowship of the Institute of Radiography. Georgia commenced as a new researcher in 2006 and has already received grants worth $2.5 million. She has been successful in attracting NHMRC and Cancer Australia funding. She is also a lead CI on an international project funded by the EORTC. She previously held a National Breast Cancer Foundation Postdoctoral Research Fellowship. In 2008, Georgia received the early career researcher award from the Faculty of Health Sciences and Curtin University of Technology. Georgia has published more than 50 peer reviewed articles in International Journals and presented 25 papers and six posters at National and International Conferences. Georgia received the Doreen Akkerman award for her presentation on her research at the Clinical Oncological Society of Australia conference in November 2011.

**Allied invited speaker – A/Prof Roslyn Francis, Sir Charles Gairdner Hospital and University of Western Australia**

A/Prof Roslyn Francis is a Nuclear Medicine Physician at Sir Charles Gairdner Hospital/WA PET Service and holds an academic position as A/Prof of Molecular Imaging with University of Western Australia. She has a research interest in molecular imaging with novel NM/PET tracers, including hypoxia imaging, apoptosis, proliferation, amino acid and choline metabolism. Recent clinical trials of novel tracers include in mesothelioma, glioma, hepatocellular carcinoma, pancreatic cancer, prostate cancer and in infection imaging. A/Prof Francis is also currently involved in the ACRF Cancer Imaging Facility (CIF), a multimodality preclinical imaging collaborative in WA, which should provide researchers with unprecedented opportunities in translational imaging.