MPGPCR Symposium 1 - ISN Symposium: GPCRs as CNS drug target

Prof Bart De Strooper, University of Leuven, Belgium

Bart De Strooper is a professor of molecular medicine at the University of Leuven, KU Leuven. He is also department director of the VIB Center for the Biology of Disease at VIB, the Flemish Institute for Biotechnology. His scientific work is focused on the understanding of the fundamental mechanisms that underlie Alzheimer's and Parkinson's disease. His major findings are the role of presenilin in the proteolysis of the amyloid precursor protein and Notch, the role of PARL in mitochondrial apoptosis, and the cell biology of gamma-secretase and intramembrane proteolysis. Bart received his M.D. in 1985 and Ph.D. in 1991 from KU Leuven. He did a postdoc in the European Molecular Biology Laboratory (EMBL) in Heidelberg, Germany, in the laboratory of Carlos Dotti. Together with Christian Haass, Bart De Strooper received the Potamkin Award of the American Academy of Neurology in 2002. Other awards include the 2003 Alois Alzheimer Award of the Deutscher Gesellschaft für Gerontopsychiatrie und psychotherapie, the Joseph Maisin Prize in 2005 for fundamental biomedical sciences, awarded by the FWO Flanders every 5 years, and the 2008 Metlife Foundation Award for medical research.

Prof Andrew Lawrence, Florey Institute of Neuroscience & Mental Health

Professor Andrew Lawrence is an NHMRC Principal Research Fellow & Associate Director at the Florey Institute of Neuroscience & Mental Health where he is Head of the Division of Behavioural Neuroscience and runs the Addiction Neuroscience laboratory. Andrew has published over 200 original articles & reviews, and been cited over 5000 times. Andrew was Treasurer of the Australian Neuroscience Society (2002-2008) and is a Fellow of the British Pharmacological Society. He is currently Senior Editor of The British Journal of Pharmacology. He is also Associate Editor of Neurochemical Research and the Journal of Pharmacological Sciences. He sits on the editorial board of Addiction Biology. In his spare time, Andrew is a keen cyclist and a surf life guard.

Dr Stephen Ferguson, University of Western Ontario

Dr. Ferguson received his Ph. D. in Pharmacology & Therapeutics in 1994 from McGill University. He is currently a Scientist at the Robarts Research Institute and a Professor in the Department of Physiology and Pharmacology at the University of Western Ontario. He currently holds a Tier I Canada Research Chair in Molecular Neurobiology and is a Career Investigator of the Heart and Stroke Foundation of Ontario. He has received numerous awards including the Senior Investigator Awards from the Pharmacological Society of Canada (2005). His research focuses on characterizing the trafficking and signaling of G Protein-coupled Receptors and these processes are regulated by intracellular binding proteins. His work also focuses on understanding the contribution of GPCR signaling in hypertension and neurodegenerative diseases.

Dr John Traynor, University of Michigan

John Traynor is Professor of Pharmacology and chair of the pharmacology graduate program at the University of Michigan Medical School. His research is focused on methods of modulating opioid receptors for potential therapeutic benefit, especially in relationship to pain, addiction and depression. His laboratory employs a wide range of techniques from molecular biology to behavioral pharmacology. Dr. Traynor has just completed a 4 year term as Director of the University of Michigan Substance Abuse Research Centre. He is Principal Investigator of a NIDA-funded training grant on the "Biology of Drug Abuse", and President of the International Narcotics Research Conference.

MPGPCR SYMPOSIUM 2 – GPCRs in Cardio-Metabolic Disorders

Dr Debbie Hay, University of Auckland

Debbie Hay is Associate Professor at the School of Biological Sciences (University of Auckland, New Zealand). Debbie obtained her PhD in Molecular Pharmacology from Imperial College, London in 2002 and then moved to Auckland. Debbie is investigating new approaches to treating several diseases, including migraine (CGRP), cancer, cardiovascular disease, lymphatic insufficiency (adrenomedullin), and obesity/diabetes (amylin). The core focus of her research is G protein-coupled receptors for peptide hormones. She has ~100 publications in this area.

Prof Walter Thomas, The University of Queensland

Walter is the Chair of General Physiology and Head of the School of Biomedical Sciences at the University of Queensland. His research focuses on the molecular pharmacology and cellular physiology of G protein-coupled receptors (GPCRs) – the largest receptor superfamily in our genome. Walter's group has a strong international reputation for studying the processes that activate and deactivate the type 1 angiotensin receptor, with important contributions in the area of delineating multiple, functional receptor states and the capacity of GPCRs to transactivate growth factor receptors.

Assoc Prof Chrishan S. Samuel, Monash University

Chrishan Samuel is a NHMRC Senior Research Fellow and Head of the Fibrosis Laboratory, Department of Pharmacology, Monash University, Melbourne, Australia. He is also an Honorary Senior Research Fellow at the Florey Institute of Neuroscience and Mental Health and the Department of Biochemistry and Molecular Biology, University of Melbourne. He has over 100 career publications and his research interests are focused on establishing novel therapeutic strategies for fibrosis particularly associated with cardiovascular and renal disease. Since 2002, he has had continuous support of his work from various funding bodies including the NHMRC, ARC, NHFA and a number of commercial and philanthropic sources.

MPGPCR Symposium 3 - GPCRs in pain and inflammation

Prof Kathryn DeFea, UC Riverside

Kathryn DeFea is associate professor at the University of California, Riverside, where her laboratory has done some of the pioneering studies on β-arrestin-dependent signaling and its role in GPCR-mediated actin reorganization and chemotaxis. She obtained her PhD at UCSF in 1994, working on protein topology and trafficking, moving into signal transduction as a post-doc with Richard Roth at Stanford and later with Nigel Bunnet at UCSF, and starting her laboratory at UCR in 2000. Research in Kathryn's laboratory has focused on GPCR in particular, protease-activated-receptor-2 (PAR2), and they have delineated the pathway from receptor activation to β arrestin-dependent regulation of actin assembly proteins, being the first lab to identify cofilin as a target of β-arrestin-dependent signaling. Recently, the lab has moved into whole animal models of inflammation, where they have shown that β-arrestins mediate the pro-inflammatory effects of PAR2. Kathryn and her team are currently interested in examining the role of the PAR2/ β -arrestin signaling pathway in human disease and developing biased antagonists to the receptor.

Dr Chris Evans, UCLA

Christopher Evans received his Ph.D. from Imperial College London, conducting his thesis research on endorphins and enkephalins, at the Medical Research Council Institute in Mill Hill. After a postdoctoral fellowship at Stanford University, Dr. Evans joined the UCLA faculty. His research accomplishments have included identification of novel endogenous opioid peptides and the cloning of the first opioid receptor. Dr. Evans is currently Director of the UCLA Brain Research Institute and director of a NIDA-funded center with the broad aim of understanding the action of opioid drugs such as morphine and heroin at the molecular, cellular and behavioral levels.

Prof Macdonald Christie, The University of Sydney

Macdonald Christie is the Professor of Pharmacology and Associate Dean, Research in the Sydney Medical School, University of Sydney where he has been a continuing academic since 1990. He has been a Senior Principal Research Fellow of the National Health and Medical Research Council (NHMRC) since 2003. He has served on numerous NHMRC grant committees and NHMRC Academy since the mid-1990s. He has published over 200 peer reviewed research papers that have received more than 12,000 citations. His interests span cellular, molecular and behavioural neuropharmacology, the biological basis of adaptations producing chronic pain and drug dependence, and preclinical development of novel pain therapeutics.

MPGPCR Symposium 4 - Early career research forum

Asst Prof Andrew Kruse, Department of Biological Chemistry and Molecular Pharmacology, Harvard Medical School

Andrew studied biochemistry, chemistry, and mathematics as an undergraduate at the University of Minnesota. He then moved to Stanford University to complete a Ph.D. in Structural Biology. There, Andrew joined the laboratory of Brian Kobilka, where he studied the structural basis of GPCR activation and allostery. Following completion of his Ph.D., Andrew joined the faculty of Harvard Medical School as an Assistant Professor of Biological Chemistry and Molecular Pharmacology. Research in the recently established Kruse lab aims to elucidate the molecular mechanisms underlying signal transduction by transmembrane receptors with important roles in human health and disease.

Dr Cassandra Koole, The Rockefeller University, New York

Cassandra completed her PhD in Molecular Pharmacology of GPCRs at Monash University in Melbourne under the mentor of Prof. Patrick Sexton, Dr. John Simms and Dr. Denise Wootten, with major research interests including structural and functional characteristics of the Class B GPCR, the glucagon-like peptide-1 receptor. Cassandra is pursuing this work further as a current recipient of a NHMRC CJ Martin Overseas Biomedical Fellowship under the mentor of Dr. Thomas Sakmar at the Rockefeller University in New York. Cassandra has key publications in Molecular Pharmacology, Journal of Biological Chemistry, Journal of Pharmacology and Experimental Therapeutics and PNAS.

Dr Sophie Bradley, MRC Toxicology Unit, University of Leicester

Sophie was awarded a BBSRC CASE PhD studentship (with GlaxoSmithKline) commencing October 2007 to work under the supervision of Prof. John Challiss at the University of Leicester. She was awarded her PhD in 2011, receiving the College of Medicine, Biological Sciences & Psychology PhD prize and inaugural lecture. Sophie currently works as a Career Development Fellow in Prof. Andrew Tobin's laboratory at the MRC Toxicology Unit in Leicester, UK. Recently, she has been awarded a Royal Society International Exchanges grant, allowing her to spend up to 3 months in Dr. Chris Langmead's laboratory at Monash University.

Dr Nicholas Veldhuis, Monash Institute of Pharmaceutical Sciences, Monash University

Following a PhD investigating the importance of cell signalling and protein trafficking in human metal homeostasis (Department of Genetics, University of Melbourne), Nik joined Prof Peter McIntyre (Department of Pharmacology, University of Melbourne) as research fellow, to characterise thermo-sensing TRP channels in pain. He joined Nigel Bunnett's group at the Monash Institute of Pharmaceutical Sciences in 2012 and continues to work on the cellular/biochemical characterisation of ion channels and GPCRs in sensory/pain pathways. In conjunction with the ARC Centre of Excellence in Convergent Bio-Nano Science and Technology, Nik is also currently investigating novel tools for intracellular delivery of analgesic compounds.

MPGPCR SYMPOSIUM 6 - Structure-Function of GPCRs

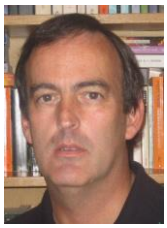
Prof Roger Sunahara, University of Michigan

Roger received his graduate and postdoctoral training with two superb and eminent pharmacologists: Dr. Philip Seeman (University of Toronto) with Dr. Alfred G. Gilman (University of Texas Southwestern), respectively. These experiences and opportunities have provided a strong appreciation for the application of pharmacology, biochemistry and structural biology to delineate mechanisms of drug action. The Sunahara lab's primary interests reside in the molecular pharmacology of the G protein-coupled receptor (GPCR) field. We utilize biochemical and biophysical tools to assess the mechanism by which hormones and therapeutics elicit their pharmacological effects upon binding to these cell surface receptors. Through the use of protein engineering, fluorescence spectroscopy, radioligand binding and various structural biological appraoches we have been able to identify and stabilize several conformational states of the b_2AR bound to various ligands and G proteins, and culminated in the first and to date only structure of a GPCR•G protein complex. These and more recent data have provided a rational mechanism for G protein activation by hormone-receptor binding. By understanding the molecular mechanism and structural bases for ligand efficacy we endeavor to identify and engineer ligands that specifically target downstream signaling pathways, including signaling-specific or biased ligands. In addition to identifying reagents that will be useful in dissecting GPCR-mediated signal transduction pathways it is our hope that these ligands may provide health professionals with more selective, more efficacious and safer therapeutics.

Dr R Scott Prosser, University of Toronto

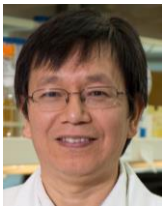
Scott Prosser, is a full professor with the Department of Chemistry at the University of Toronto. Scott is cross-appointed to the Department of Biochemistry and he is also the director of the Master of Biotechnology Program at the University of Toronto. His undergraduate education focused on mathematics and physics where he obtained a BSc from the University of New Brunswick, and later, a doctorate in Biophysics at the University of Guelph. His postdoctoral research fellowships brought him to the University of Stuttgart and the University of California at San Diego, where he worked under Gerd Kothe and the late Regitze Vold, on spectroscopic and biophysical studies of membranes, membrane peptides, and liquid crystals. His current research interests focus on the use of MRI in the study of proteins and drug delivery systems and the use of NMR in the study of protein folding, amyloidosis, and conformational dynamics of GPCRs.

Dr Rob Cooke, Heptares Therapeutics



Rob Cooke is Head of the Biomolecular Structure Department at Heptares Therapeutics, where he is leading research in structural biology and biophysics, computational chemistry and informatics, and protein expression. He is also responsible for the management of alliances with Pharma partners. Prior to this, Rob was at Glaxo, then GlaxoWellcome, then GlaxoSmithKline. Starting as a structural biologist, Rob eventually led Departments covering research in several disciplines including structural biology, computational chemistry and analytical sciences. Rob also initiated and led the proceedings that produced the Structural Genomics Consortium. Rob received his BSc. and PhD in Inorganic Chemistry from the University of Sydney, and was a post-doctoral researcher in the Department of Biochemistry at the University of Oxford.

Prof H. Eric Xu, PhD, Center for Cancer and Cell Biology, Innovation and Integration Program, Head, Laboratory of Structural Sciences, Van Andel Research Institute (VARI), Primary Investigator and Distinguished Director, VARI/SIMM Research Center



Dr. Xu went to Duke University and the University of Texas Southwestern Medical Center, where he earned his Ph.D. in molecular biology and biochemistry in 1994. Following a postdoctoral fellowship with Carl Pabo at MIT, he moved to GlaxoWellcome in 1996 as a research investigator of nuclear receptor drug discovery. Dr. Xu joined VARI as a Senior Scientific Investigator in July 2002 and was promoted to Distinguished Scientific Investigator in March 2007. Dr. Xu is also the Primary Investigator and Distinguished Director of the VARI/SIMM Research Center at Shanghai Institute of Materia Medica (SIMM) in Shanghai, China.

MPGPCR SYMPOSIUM 7 – Signalling in space and time

Prof Mark von Zastrow, UCSF

Mark von Zastrow holds MD and PhD degrees from Yale, trained in clinical medicine and psychiatry at Stanford Medical Center, and was a postdoctoral research fellow at Stanford. He is presently a professor in the Departments of Psychiatry and of Cellular & Molecular Pharmacology at UCSF. His laboratory studies GPCR membrane trafficking in relation to molecular pharmacology, cell signaling and neuromodulation.

Dr Michelle Halls, Monash Institute of Pharmaceutical Sciences, Monash University

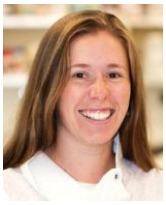
Dr Michelle L Halls is a NHMRC RD Wright Career Development Fellow. She obtained her PhD in Molecular Pharmacology from Monash University in 2007, and received a NHMRC CJ Martin Overseas Biomedical Fellowship for post-doctoral studies at the University of Cambridge, UK. In 2011, she returned to Australia to the Monash Institute of Pharmaceutical Sciences (MIPS) where she leads her own research group within the Drug Discovery Biology (DDB) Theme, supported by NHMRC, DDB and MIPS funding. Awards include 2012 *MIPS Young Investigator Award,* 2010 *ASCEPT Denis Wade Johnson & Johnson New Investigator Award* and 2008 *Relaxin Young Investigator Award*.

Martin J. Lohse, MD, *Professor of Pharmacology and Chairman, Rudolf Virchow Center,* University Of Würzburg, Germany

Martin Lohse studied medicine and philosophy in Göttingen, London and Paris. He did his doctoral thesis in neurobiology at the Max-Planck-Institute for Biophysical Chemistry. He was a post-doc with Ulrich Schwabe at the University of Heidelberg and then joined the group of Robert Lefkowitz at Duke University as an assistant professor. From 1990 to 1993 he was a group leader at the GeneCenter Munich/ Martinsried, and in 1993 he moved to his current position as Chairman of the Institute of Pharmacology and Toxicology at the University of Würzburg. In 2001 he also became the Founding Chairman of the Rudolf-Virchow-Center/DFG-Research Center for Experimental Biomedicine. Since 2009 he is also Vice President for Research of the University of Würzburg, and Vice President of the National Academy of Sciences Leopoldina.

MPGPCR Symposium 8 - Chemical Biology and Mechanistic Pharmacology

Dr Lauren May, Monash University



Lauren May is an ARC DECRA fellow who gained her PhD (2007) at The University of Melbourne. In 2008, Dr May obtained an NHMRC CJ Martin Fellowship for postdoctoral research with Prof. Stephen Hill, The University of Nottingham. Currently, Dr May co-directs a research group at MIPS, Monash University, investigating emerging paradigms in relation to adenosine receptor pharmacology, such as allosterism, biased agonism and dimerization, and their role in (patho)physiology. These emergent paradigms have considerable clinical potential as they present an opportunity to develop therapeutics that promote desired, whilst minimising unwanted, on-target signal transduction.

Prof Klaus Mohr, University of Bonn, Germany

Klaus Mohr. Graduation in human medicine; Dr. med. thesis and postdoctoral training in Pharmacology at the University of Kiel, Germany. Since 1992 Chair of Pharmacology and Toxicology, Faculty of Mathematics and Natural Sciences, University of Bonn, Germany. Main research interest: Molecular principles of drug/receptor-interactions with a focus on G protein-coupled receptors and orthosteric/allosteric mechanisms.

Prof Steven Charlton, The University of Nottingham, UK

Steven Charlton has recently joined the University of Nottingham where he is Professor of Molecular Pharmacology and Drug Discovery. Prior to that he spent 16 years in the pharmaceutical industry, largely at Novartis where he was Director of Molecular Pharmacology in Respiratory Diseases. Steven has broad drug discovery experience, ranging from target validation through to leading full lead optimisation programmes to successful clinical proof of concept. He is interested in all aspects of the quantitative assessment of ligand-receptor interactions, with a particular interest in the kinetics of ligand binding and signalling. Dr Charlton serves as an editor of the British Journal of Pharmacology and is actively engaged in training new pharmacologists, working with the British Pharmacological Society to organise scientific symposia and teaching workshops. Dr Charlton was awarded Novartis Leading Scientist in 2007.