

FINAL PROGRAM

Sydney 2012 Joint AuPS/PSNZ/ASB Meeting

Dec 2- 5, UNSW Kensington Campus



Sunday 2nd December 2012

17:30 Opening Ceremony

Location: Mathews A

AuPS Invited Lecture - Prof Joe Lynch

17:45 **J.W. Lynch:** The glycine receptor - a new therapeutic target for chronic inflammatory pain 1P

Welcome reception

Location: Pavillion

Monday 3rd December 2012

Mathews A

New insights into cardiac Ca²⁺ handling and excitability

Chair: Yue-kun Ju
08:30 **M. Lei:** P²¹ activated kinase-1 as a key regulator of cardiac automaticity and excitability 2P
09:10 **D.G. Allen:** Involvement of calcium in pacemaker firing 3P
09:30 **M.S. Imtiaz:** Role of intracellular Ca²⁺ in sinoatrial node pacemaking 4P
09:50 **J.N. Edwards:** Effects of redox environment on calcium alternans in isolated rabbit cardiomyocytes 5P
10:10 **L.C. Hoel:** Plasma membrane Ca²⁺ channel handling and arrhythmogenesis 6P

Mathews B

Assessment in physiology - Changing philosophy and practice

Chair: Lesley Ulman
08:30 **D. Boud:** Changing assessment: shifting the emphasis to learning and use 7P
09:10 **Y.M. Hodgson:** Students assessing each other - why and how? 8P
09:30 **D.A. Saint:** Assessment - What, why and how? 9P
09:50 **P. Poronnik:** Developing assessment as a collaborative endeavour 10P

Mathews C

Advances in methods for intestinal motility

Chair: Marcello Costa
08:30 **M. Costa:** Introduction
08:34 **G. O'Grady:** Mapping and modelling human gastric slow wave activation in health and disease 11P
09:03 **P.G. Dinning:** Multimodal recordings of intestinal motor activity 12P
09:32 **J.C. Bornstein:** Computational modelling of enteric motor patterns 13P
10:01 **M. Costa:** Spatio-temporal maps of intestinal motor patterns 14P
10:30 End of session

Mathews D

Free Communications - Exercise Physiology

Chair: Glenn Wadley
08:30 **G.D. Lamb:** Calcium-dependent proteolysis of junctophilin-1 and junctophilin-2 in skeletal and cardiac muscle 15P
08:45 **S.C. Gandevia:** Interpolated twitches decline progressively during a tetanic contraction of human *abductor pollicis* 16P
09:00 **S.G. Wetten:** Effects of high intensity power resistance exercise and feeding on mechanosensing and stress-related gene expression in human skeletal muscle 17P
09:15 **S. Green:** Functional sympatholysis is a time- and intensity-dependent process in the contracting human calf muscle 18P
09:30 **C.R. Brandner:** Acute cardiac responses to blood flow restriction strength exercise 19P
09:45 **C.E. Taylor:** Neural control of blood flow to a contracting muscle: roles of central command and metaboreceptors 20P
10:00 **J. Yamauchi:** The effects of exercise duration on cerebral oxygenation in the human prefrontal cortex at moderate exercise intensity 21P
10:15 **G.D. Wadley:** Team Based Learning to undergraduates at Deakin University 22P

10:30 Morning tea

Mathews A

Molecular insight via advanced fluorescence microscopy

Chair: Till Böcking
11:00 **D.M. Hatters:** New flow cytometry tricks to view protein conformations in cells and their subcellular localization 23P
11:30 **Y. Gambin:** Microfluidic highways: speeding up on protein interaction networks 24P
12:00 **N. Plachta:** Imaging transcription factors in the living mouse embryo 25P
12:30 **D.M. Owen:** Evidence for, and function of, sub-resolution ordered membrane domains 26P

Mathews B

Cystic fibrosis: Today and tomorrow

Chair: Kirk Hamilton
11:00 **R.A. Frizzell:** Fluorogen activating proteins report corrector-mediated restoration of mutant CFTR trafficking to the cell surface and its regulated peripheral recycling 27P
11:45 **P.T.P. Bye:** Hypertonic saline nebulisation for pulmonary disease in people with cystic fibrosis 28P
12:10 **C.E. Wainwright:** Early lung disease in cystic fibrosis 29P
12:35 **D. Parsons:** Developing a gene therapy for cystic fibrosis airway disease 30P

Mathews C

Bridging the gap between molecular reductionism and physiology - the usefulness of 'omics'

Chair: Matthew Watt
11:00 **T.R. Koves:** Using targeted mass spectrometry-based metabolomics to dissect metabolic flux in health and disease 31P
11:35 **M.J. Watt:** Identification of factors secreted from the fatty liver: impact on metabolic function in other tissues 32P
12:00 **M.A. Febbraio:** Muscle secretory factors - where are we at a decade later? 33P
12:30 **K. Walder:** A gene expression signature for insulin resistance 34P

Mathews D

Free Communications - General Physiology

Chair: Andrew Moorhouse
11:00 **E. Kheradpezhoh:** The role of TRPM2 channels in paracetamol overdose-induced Ca²⁺ entry in hepatocytes 35P
11:15 **K. Karisnan:** Gestational age at time of the initial exposure to lipopolysaccharide determines the severity of diaphragmatic contractile dysfunction in preterm lambs 36P
11:30 **A.D. Hanna:** Anthracycline-induced dysfunction of cardiac SR Ca²⁺ handling: a potential pathway to anthracycline-induced cardiotoxicity 37P
11:45 **I.Y. Kuo:** Calcium binding to the EF hand motif regulates polyoystin 2 function 38P
12:00 **K.W. Stewart:** The role of a newly discovered pancreatic islet peptide in the control of insulin secretion 39P
12:15 **D.J. Keating:** Huntingtin-associated protein 1 (HAP1) regulates exocytosis, vesicle localization and interacts with multiple vesicle proteins 40P

13:00 Posters and Lunch

Location: Pavillion

Presenting authors of posters on odd numbered boards in attendance.

Monday 3rd December 2012

Mathews A

Spectral imaging in physiology - a highlight of techniques

Chair: Robyn Murphy
14:30 **V.G. Macefield:** Combining microelectrode recordings from human peripheral nerves with functional magnetic resonance imaging of the brain 94P
14:55 **P.R. Gooley:** AMP-activated protein kinase β subunit requires internal motion for optimal carbohydrate binding 95P
15:20 **D. Stapleton:** The how and why of glycogen ultrastructure - implications for physiology and disease 96P
15:45 **R.M. Murphy:** Single muscle fibre analysis reveals differential fibre type, localization and stimulation responses of enzymes important for glycogen metabolism: insights into muscle glycogen structure and function 97P

Mathews B

Free communications - Channels: Molecular Interactions

Chair: Boris Martinac
14:30 **A. Mechler:** Salt concentration effects on the viscoelasticity of supported bilayers 98P
14:45 **E. Deplazes:** Combining experiment and simulations to characterize the interactions of a sea-anemone toxin with the analgesic target acid-sensing ion channel 3 99P
15:00 **M.D. Perry:** The S4 domain is directly involved in determining the voltage sensitivity of Kv11.1 channel inactivation 100P
15:15 **B.A. Cromer:** Molecular mechanisms for agonist selectivity in inhibitory G-protein coupled ion channels 101P
15:30 **T. Nomura:** Orientation of the bacterial mechanosensitive channel MscS in liposomal membranes 102P
15:45 **B. Martinac:** Ion selectivity of the mechanosensitive channel MscS is determined by charged residues within the cytoplasmic vestibulum 103P

Mathews C

Free communications - Cardiac Physiology

Chair: Lea Delbridge
14:30 **T.F. Reardon:** Mechanisms contributing to angiotensin II induced increases in nerve-evoked contractions of mouse tail artery 104P
14:45 **D.A. Saint:** Asian immigrants to Australia show a lower sympathetic component to the baro-reflex than resident caucasians, as measured by heart rate variability analysis 105P
15:00 **A.W. Quail:** Propofol selectively modifies the arterial chemoreflex during severe hypoxia in the rabbit 106P
15:15 **D.O. Schwenke:** The serotonin pathway - a therapeutic target for pulmonary hypertension? Assessing vascular function using synchrotron radiation microangiography 107P
15:30 **J.R. Bell:** An augmented CaMKII response in the post-ischemic female heart is not proarrhythmic - towards understanding the sex-specificity of CaMKII pathophysiology 108P
15:45 **A. Li:** A cardiac troponin I mutation that causes familial dilated cardiomyopathy 109P

Mathews D

Free Communications - Neuro-signalling

Chair: John Power
14:30 **K.E. Froud:** Modulation of cochlear amplifier performance by contralateral suppression 110P
14:45 **R. Raghupathi:** Enterochromaffin cells release 5-HT with synaptic kinetics 111P
15:00 **J.M.E. Cederholm:** Transcriptional responses to noise stress in mice 112P
15:15 **A.E. Harasta:** Septal glucagon-like peptide 1 receptors (GLP-1Rs) mediate the behavioural effects of cocaine 113P
15:30 **L.G.T. van den Heuvel:** Human amniotic epithelial cell therapy for preterm perinatal asphyxia 114P
15:45 **C.J. Schwiening:** Pre-synaptic pH changes and vesicle fusion at the *Drosophila* neuromuscular junction 115P

16:00 Afternoon tea

Mathews A

Perinatal asphyxia: adaptation and consequences

Chair: Alistair Jan Gunn
16:30 **A.J. Gunn:** Making birth safer 116P
16:40 **S.B. Hooper:** Resuscitating the asphyxiated infant at birth 117P
17:05 **G.R. Polglase:** Brain inflammation and injury resulting from chorioamnionitis is exacerbated by resuscitation in preterm lambs 118P
17:30 **S.L. Miller:** New strategies to protect the newborn brain 119P
17:55 **L. Bennett:** Maternal glucocorticoids: timing is everything for the fetal brain 120P

Mathews B

A vignette of TRP ion channel physiology

Chair: Gary Housley
16:30 **L. Birnbaumer:** TRPC channels: An overview 121P
16:50 **G.J. Barritt:** Multiple roles for transient receptor potential (TRP) non-selective cation channels in liver function 125P
17:15 **G.Y. Rychkov:** TRPM2 channels in oxidative stress-induced cell death 126P
17:40 **N.W. Bunnett:** Proteolytic regulation of TRP channels: implications for pain and neurogenic inflammation 127P
18:05 **S.L. Sandow:** Myoendothelial microdomains and TRPC3: anatomical links to function 129P

Mathews C

Free Communications: ASB Young Investigator & Spectroscopy

Chair: Jamie Vandenberg
16:30 **D.R. Whelan:** Quantification and detection of DNA in eukaryotic cells using Fourier transform infrared spectroscopy 130P
16:45 **T.D.M. Bell:** Super-resolution imaging of cells using a home built dSTORM microscope costing less than A\$100k 131P
17:00 **T. Holm:** dSTORM super-resolution made cheap and easy 132P
17:15 **M.-A. Sani:** Antimicrobial peptide activity in a competitive lipid environment 133P
17:30 **C.G. Cranfield:** Tethered Bilayer Lipid Membranes (BLMs) to measure pore formation by antimicrobial peptide (AMP) insertion 134P
17:45 **P.S. Tan:** Voltage-sensing domain mode shift is coupled to the activation gate by the N-terminal tail of hERG channels 135P
18:00 **T.A. Hilder:** Characterizing various inward rectifier potassium channels 136P
18:15 **R.J. Clarke:** Kinetic comparisons of heart and kidney Na⁺,K⁺-ATPases 137P

Mathews D

Free Communications - Muscle Metabolism/Signalling

Chair: Matthew Watt
16:30 **A.J. Hoy:** Regulation of plasma ceramide levels with fatty acid oversupply - evidence that the liver detects and secretes *de novo* synthesized ceramide 138P
16:45 **S. Lamon:** Disruption of skeletal muscle mitochondrial network genes and miRNAs in amyotrophic lateral sclerosis 139P
17:00 **J.G. Ryall:** A switch in metabolism underlies the initiation of MyoD transcription in satellite cells 140P
17:15 **R. Koopman:** Glycine, a pharmacological nutrient that protects muscle cells from cachectic stimuli *in vitro* and *in vivo* 141P
17:30 **V.C. Foletta:** Suppression of NDRG2, a novel PGC-1 α and PGC-1 β target gene, contributes to the metabolic profile and protein synthesis rates of skeletal muscle cells 142P
17:45 **D.J. Ham:** Citrulline protects muscle cells from cachectic stimuli and preserves protein metabolism *in vitro* 143P
18:00 **S. Trajanovska:** Role of glycogen depletion in muscle fatigue 144P
18:15 **C.W. Gray:** Local sensitivity analysis of GLUT4 translocation in response to insulin 145P

19:30 Student Member Function - BBQ in the Whitehouse

Tuesday 4th December 2012		
Mathews A	Mathews B	Mathews C
<p>AuPS Plenary Lecture - Scandinavian Exchange Lecturer - Prof Håkan Westerblad 08:30 H. Westerblad: Muscle fatigue <i>146P</i></p>		
09:30 Morning tea		
<p>Calcium signalling in microdomains essential to normal cell function Chair: Bradley Launikonis 10:00 J.F. Smith: Imaging the motility of inositol trisphosphate receptors in intact mammalian cells using single particle tracking photoactivated localization microscopy (sptPALM) <i>147P</i> 10:30 I.D. Jayasinghe: Three-dimensional analysis of the tubular networks in mammalian and amphibian skeletal muscle fibres <i>148P</i> 11:00 B.S. Launikonis: Specialization of the skeletal muscle junctional membranes allow rapid activation of store-operated calcium entry, tightly controlled by $[Ca^{2+}]_{SR}$ <i>149P</i> 11:30 P. Thorn: Focal secretion of insulin within intact islets of langerhans <i>150P</i></p>	<p>Science at the high performance computing frontier Chair: Adam Hill 10:00 E. Alfargem: Genomics Virtual Laboratory <i>151P</i> 10:30 B. Cory: Long time scale molecular simulations for understanding ion channel function <i>153P</i> 11:00 P.M.F. Nielsen: Sharing physiological models <i>154P</i> 11:30 A. Sadrieh: Massive parallelization of cardiac simulations using unconventional processing architectures <i>155P</i></p>	<p>Free communications - Transporters Chair: Tim Murphy 10:00 R.J. Cater: Mapping the chloride permeation pathway of a human glutamate transporter <i>156P</i> 10:15 A.J. Scopelliti: Molecular determinants for functional differences between the neutral amino acid transporter ASCT1 and acidic amino acid transporters of the EAAT family <i>157P</i> 10:30 N.L. Absalom: γ-hydroxybutyrate activates specific GABA_A receptor subtypes <i>158P</i> 10:45 J.E. Carland: Oleoyle L-carnitine inhibits glycine transport by GLYT2 <i>159P</i> 11:00 R.M. Ryan: Using N-modified aspartate analogues to probe the 'open-to-inside' structure of the bacterial aspartate transporter, Glt_{ph} <i>160P</i> 11:15 B.C. McIlwain: Conformational dynamics of an archaeal aspartate transporter are determined by the lipid bilayer <i>161P</i> 11:30 K.E. Polglaze: Benzamil, but not triamterene, reduces mechanosensitive 5-HT release from EC cells of guinea pig intestine <i>162P</i> 11:45 S. Senadheera: Enhanced T-type calcium channel function, but not L-type or TRPC3 channels, augments uteroplacental arterial vascular tone in late pregnancy <i>163P</i></p>
12:00 Posters and Lunch - ASB AGM (Mathews 312) - PSNZ AGM (Mathews 125)		
Presenting authors of posters on even numbered boards in attendance.		

<p>Mathews A Muscular adaptations to exercise: mechanisms at play Chair: David Simar 13:30 R. Barres: Adaptations to exercise: the role of epigenetic changes <i>164P</i> 14:00 B.E. Kemp: AMPK signaling and exercise <i>165P</i> 14:30 J.A. Hawley: Sending the message: Training-nutrient interactions to stimulate mitochondrial biogenesis <i>166P</i> 15:00 J.E. Sharmam: Exercise central haemodynamics: mechanisms and relation to end organ damage <i>167P</i></p>	<p>Mathews B Integrative physiology of the heart Chair: Bruce Small 13:30 D.S. Loiselle: Multi-scale cardiac energetics <i>168P</i> 13:50 L.M.D. Delbridge: Cardiac ischemia - different contexts and different consequences <i>169P</i> 14:10 M.L. Trew: Cardiomyocyte group architecture and electrical activation pathways in the heart <i>170P</i> 14:30 A.P. Hill: Computational analysis of the contribution of ionic conductances to ECG parameters <i>171P</i></p>	<p>Mathews C Free communications - Molecular Dynamics Chair: Toby Allen 13:30 S. Kuyucak: Rational drug design from toxins - how rational can one get? <i>172P</i> 13:45 R. Chen: Binding of scorpion toxins to the voltage sensors of Na⁺ channels: molecular dynamics studies <i>173P</i> 14:00 D. Gordon: Brownian dynamics simulation of ion channel block by polypeptide toxins <i>174P</i> 14:15 M. Thomas: Biological channel mimics for use as desalination membranes <i>175P</i> 14:30 H. Yu: Catalysis <i>in silico</i> <i>176P</i> 14:45 M.L. O'Mara: The effect of ATP binding on the conformation of P-glycoprotein <i>177P</i> 15:00 Z. Jia: The effect of environment on the recognition and binding of vancomycin to native and resistance forms of lipid II <i>178P</i> 15:15 T.W. Allen: Long molecular dynamics simulations to explore ion channel function <i>179P</i></p>
15:30 Afternoon tea		
<p>Free communications - Gene for Speed Chair: Peter Houweling 16:00 N. Eynon: Overcoming the barrier of sample size: The ACTN3 R577X polymorphism across three groups of elite European athletes <i>180P</i> 16:15 F. Garton: Deficiency of a fast twitch muscle fibre protein alters muscle adaptation in response to denervation and immobilization <i>181P</i> 16:30 M.W. Hogarth: α-Actinin-3: a novel genetic modifier of Duchenne muscular dystrophy <i>182P</i> 16:45 S.I. Head: Alterations in Ca²⁺ transients and SR function in isolated fast fibres from α-actinin-3-deficient speed gene knockout mice <i>183P</i> 17:00 P.J. Houweling: Metabolic consequences of α-actinin-3 deficiency - more than a structural muscle protein! <i>184P</i> 17:15 M. Kreissl: Mutations in the α-tropomyosin-slow gene (TPM3) cause sarcomeric dysfunction in slow muscle fibres <i>185P</i></p>	<p>Free Communications - Cardiac Physiology Chair: Nicole Beard 16:00 A.F. Dulhunty: Functional analyses of a cluster of CCD mutations reveals a gating module within TM6 of RyR1 <i>186P</i> 16:15 K. Walweel: Regulation of human RYR2 by intracellular Ca²⁺ and Mg²⁺ <i>187P</i> 16:30 J. Li: Adrenergic stimulation increases RYR2 activity via intracellular Ca²⁺ and Mg²⁺ regulation <i>188P</i> 16:45 D. Mehra: Role of cardiac Na⁺ channel blockers and Mg²⁺ in inhibiting the cardiac calcium release channel <i>189P</i> 17:00 J. Liu: Store-operated calcium entry activity revealed by confocal live cell calcium imaging in isolated mouse pacemaker cells <i>190P</i> 17:15 A. Gogoi: Autonomic functions and serum leptin levels in normal and obese, a comparative study <i>191P</i></p>	<p>PSNZ - John Hubbard and Mary Bullivant Student Prize Competition 16:00 Peter Hunter: John Hubbard Prize 16:05 J.-C. Han: Does the heart really operate at 'isoefficiency'? <i>192P</i> 16:30 Kirk Hamilton: Mary Bullivant Prizes 16:35 H.P.A. Thuang: Sympathetic modulation of cardiac function in diabetes - <i>in vivo</i> and <i>ex vivo</i> study <i>193P</i> 17:00 S. Fan: Inflammation of the proximal colon of IL10^{-/-} mice induced by <i>Helicobacter typhlosus</i> infection reduces anion secretion and expression of the NaHCO₃ cotransporter, NBCe1 <i>194P</i></p>
18:00 Conference Dinner and Awards		

16:30 Afternoon tea and Drinks - Closing Reception and Awards		
<p>14 A.J. Craig: A phot thrombosis-induced ischaemic infarct model for study of hind brain stroke <i>54P</i> 15 S. El-Ajouz: Understanding the molecular gates of Kir3ac1.3 <i>55P</i> 16 T. Guo: Influence of cell morphology in computational models of on and off retinal ganglion cells <i>56P</i> 17 M.H. Rashid: Binding site of Scorpion toxin HsTx1 to the potassium channel Kv1.1 and Kv1.3 from Molecular Dynamics simulations <i>57P</i> 18 S. Talwar: Identification and characterization of novel synthetic variabilin analogues targeting the glycine receptor Cl⁻ channels <i>58P</i> 19 S. Mahdavi: Computational investigation of μ-conotoxin binding to voltage gated sodium channels <i>59P</i> 20 D. Robertson: Olivocochlear reflex strength and the auditory attentional filter <i>60P</i> 21 P.H. Barry: Further measurements of liquid junction potentials, and their implications, using a refined freshly-cut 3M KCl reference salt-bridge methodology <i>61P</i> 22 A. Bhaskaracharya: Probenecid, a gout treatment, blocks the human P2X7 receptor <i>62P</i> 23 J.R. Lawson: Agonist selectivity of neuronal glycine receptors <i>63P</i> 24 K.A. Jenkin: Cannabinoid receptor 2 expression in proximal tubule cells exposed to elevated glucose and albumin <i>64P</i> 25 H. Cury: Identifying key amino acid residues for α-conotoxin AulB inhibition of $\alpha 3/\beta 4$ nicotinic acetylcholine receptors <i>65P</i> 26 H.J. Lee: Pharmacological characterization of individual subtypes of $\alpha 4/\beta 2$ GABA_A receptor, include the novel description of $\beta 2$ GABA_A receptor subtype <i>66P</i> 27 T.K.H. Nguyen: Melittin-membrane interaction follows lipid-specific multi-step mechanism <i>67P</i> 28 C.L. Dixon: Using artificial synapses to investigate GABA_A receptor kinetics <i>68P</i> 29 H.-S. Tae: A salt-bridge network determines agonist size selectivity in $\rho 1$ GABA_A receptor <i>69P</i> 30 T.M. Lewis: Mixed antagonistic effects of the ginkgolides at recombinant human $\rho 1$ GABA_A receptors <i>70P</i> 31 L.W. Wong: Are the putative N-terminal α-helix and preceding residues important in GABA_{A/C} receptor function? <i>71P</i> 32 K.L. Hamilton: Membrane trafficking and localization, residence time and degradation of KCa3.1 in a polarized epithelium <i>72P</i> 33 J.E. Hare: Structural insight into the CLIC1 integral membrane structure by fluorescence resonance energy transfer and electron microscopy <i>74P</i> 34 A. Bode: Effects of new human startle disease mutations on glycine receptor function and structure <i>75P</i> 35 T. Stockner: The ATP-bound state of Pglycoprotein is closed towards the cell exterior <i>76P</i> 36 Y. Kim: TRPC3c (high activity) transient receptor potential channel expression in the mouse brain <i>77P</i> 37 E.L. Daniel: Determining a link between XLID and missense mutations in Chloride Intracellular Ion Channel Protein 2 (CLIC2): a biophysical approach <i>78P</i> 38 L. Han: Differential movement of M4 transmembrane segments during activation of $\alpha 1$ and $\alpha 3$ glycine receptors <i>79P</i> 39 C. Boiteux: Insights into voltage gated sodium channel NavAb function from multi-microsecond molecular dynamics simulations <i>80P</i> 40 J.L. Munro: Modulation of GlyT2 by endogenous lipid based compounds occurs through interactions with EL3 <i>81P</i> 41 G. Heinzelmann: Molecular Dynamics simulations on a bacterial homolog of the human glutamate transporters <i>82P</i> 42 A.P. Tosolini: Characterization of the muscle-motor neuron topography of the mouse forelimb <i>83P</i> 43 N. Subramanian: The binding of morphine and nicardipine to the multidrug transporter P-glycoprotein <i>84P</i> 44 R. Mohan: Characterization of the muscle-motor neuron topography of the mouse hindlimb <i>85P</i> 45 D. Robertson: Timecourse of development of hyperactivity in the auditory midbrain after cochlear trauma <i>86P</i> 46 J.L. Pinyon: Evaluation of auditory nerve fibre recruitment by eABR via cochlear implant stimulation in the guinea-pig model <i>87P</i> 47 A. Al Abed: Electrical restitution properties of rabbit atrial tissue <i>88P</i> 48 G. Ivanov: Acute effects of insulin on the endothelium-dependent dilation of rat cremaster muscle arteries <i>89P</i> 49 M.S. Intiaz: Three-dimensional modeling of Ca²⁺ dynamics in single cardiac cells <i>90P</i> 50 J.M. Power: Calcium waves alter dendritic spine morphology in basolateral amygdala projection neurons <i>91P</i> 51 S.A. Mann: The importance of cardiac ion channels on the electrocardiogram - partial least squares regression as a new tool in computational biology <i>92P</i> 52 X.H. Chan: Atorvastatin-induced changes in micro-vascular smooth muscle function <i>93P</i></p>		

Posters		
Presenting authors will be with their posters according to the poster board number. Odd posters: Monday; Even posters: Tuesday.		
1	V. Zaitsev: Anabolic effect of formoterol administration on skeletal muscle is not impaired by co-treatment with the $\beta 1$ -adrenoceptor antagonist CGP-20712A <i>41P</i>	
2	C.R. Lamboloy: Endogenous and maximal sarcolemmal reticulum calcium content in human <i>vastus lateralis</i> muscle fibres is decreased with ageing <i>42P</i>	
3	H. Willemse: Human aging and expression of proteins interacting with the ryanodine receptor in skeletal muscle <i>43P</i>	
4	C. van der Poel: The pathogenesis of inflammation in knee osteoarthritis and its effect on muscle function <i>44P</i>	
5	J.P. Mollica: Calpastatin and m-calpain have different cellular localizations in rat skeletal muscle: implications for function <i>45P</i>	
6	N.Y. Marden: Online feedback assessments in introductory physiology courses: effects on students' learning experience and outcomes <i>46P</i>	
7	R.G. Barker: Taurine improves <i>tibialis anterior</i> force production and muscle architecture in the 28 day old <i>mdx</i> mouse model of Duchenne muscular dystrophy <i>47P</i>	
8	S. Chan: SR pump function and fatigue characteristics of fast fibres from α -actinin-3-deficient speed gene knockout mice <i>48P</i>	
9	E.J. Stephenson: The oxidative profile of white adipose tissue is not related to intrinsic exercise capacity or whole-body metabolic health <i>49P</i>	
10	C.A. Lucas: Contraction induces a cyclic promoter hypomethylation in mouse skeletal muscle <i>50P</i>	
11	H. Xu: The effect of amylase treatment on the detection of glycogenin, glycogen debranching enzyme and glycogen phosphorylase proteins in rat fast-twitch skeletal muscle <i>51P</i>	
12	V. Nylander: The role of epigenetic modifications in the long term memory of cancer treatment <i>52P</i>	
13	C.R. Brandner: Acute neural responses to blood flow restriction strength exercise <i>53P</i>	

Wednesday 5th December 2012		
Mathews A	Mathews B	Mathews C
<p>Invited Lecture - Prof Lutz Birnbaumer 09:00 L. Birnbaumer: TRPC channels: on-going discovery of molecular physiological function in relation to store operated Ca²⁺ entry and Orai proteins <i>195P</i></p>		
10:00 Morning tea		
<p>Brain dysfunction and translational neurophysiology Chair: Andrew Moorhouse 10:35 A. Yamanaka: Optogenetical approach to reveal the regulatory mechanism of instinctive behaviors by the hypothalamic neurons <i>196P</i> 10:55 J. Nabekura: Gila and neuron interactions: their role in synapse remodeling <i>in vivo</i> <i>197P</i> 11:15 A.J. Moorhouse: Membrane transporters regulating inhibitory neurotransmitter signaling in health and disease <i>198P</i> 11:30 R. Rajan: Traumatic brain injury and sensory cortex: using barrel cortex to understand functional changes in the injured brain <i>199P</i> 11:45 D. Burke: Excitability and action potential in human axons <i>200P</i> 12:05 M.C. Kiernan: Central assessment of motor dysfunction using transcranial magnetic stimulation <i>201P</i></p>	<p>Autonomic physiology - nutrient sensing in the GI tract Chair: Paul Bertrand 10:30 H.E. Raybould: Nutrient-sensing in the GI tract: fat, the gut microbiota and obesity <i>202P</i> 11:15 R.L. Young: Dysregulation of intestinal glucose sensing and transport in critical illness <i>203P</i> 11:40 P.P. Bertrand: Iron sensing by the intestine: A new model for iron-induced changes to GI motility <i>204P</i> 12:05 C. Feinle-Bisset: Nutrient sensing in the human gastrointestinal lumen - role in appetite regulation and implications for obesity <i>205P</i></p>	<p>Skeletal muscle in health and disease Chair: Gordon Lynch 10:30 H. Westerblad: Mitochondrial myopathies <i>206P</i> 11:00 E. Hardeman: Insights into and therapies for nemaline myopathy <i>207P</i> 11:30 K.T. Murphy: Tackling muscle wasting in cancer <i>208P</i> 12:00 G. Ravenscroft: Uncovering the genetics of neuromuscular foetal akinesias using next generation sequencing <i>209P</i></p>
Lunch - AuPS AGM		

Wednesday 5th December 2012		
Mathews A	Mathews B	Mathews C
<p>Developments in auditory and vestibular physiology Chair: Ramesh Rajan 14:00 A.W. Gummer: Neurochemical mechanisms of cochlear amplification <i>210P</i> 14:20 G.D. Housley: Neurohumoral mechanisms for regulating sound transduction <i>211P</i> 14:40 R.B. Patuzzi: Spreadsheet analysis of ion transport in epithelia <i>212P</i> 14:55 P. J. Blamey: Factors affecting clinical outcomes in adult patients with cochlear implants <i>213P</i> 15:15 A.M. Brichta: The other part of the ear - a 'balanced' view <i>214P</i> 15:35 I.S. Curthoys: The sensitive response of irregular otolithic vestibular afferents to bone conducted vibration and air conducted sound underpins fast, simple, safe clinical testing of otolithic function <i>215P</i></p>	<p>Mathews B Ion Channels as drug targets Chair: Trevor Lewis 14:00 D. Julius: Exploiting toxins to probe pain pathways <i>216P</i> 14:40 G.F. King: Spider-venom peptides that target the human Na_v1.7 channel: potential analgesics for the treatment of chronic pain <i>217P</i> 15:00 R.S. Norton: Conotoxins targeting voltage-gated sodium channels: harnessing nature's analgesics <i>218P</i> 15:20 M. Chebib: Modulation of Cys-loop receptors to address CNS disorders <i>219P</i> 15:40 A. Keramidas: Correlating functional models of channel activation with subunit specific GABA_A receptors <i>220P</i></p>	<p>Mathews C Free Communications - Muscle Diseases Chair: Stewart Head 14:00 J.L. Chen: Targeting actin to counteract muscle wasting and cachexia <i>221P</i> 14:15 B.P. Frankish: Calpain-3 deficiency results in the perturbation of specific Ca²⁺-handling proteins in skeletal muscle of mice <i>222P</i> 14:30 T.R. Cully: Adeno-associated virus directed expression of Orai1 to examine store operated calcium entry in wild-type and dystrophic skeletal muscle <i>223P</i> 14:45 T.D. Colgan: Combinatorial gene therapy using AAV technology to treat Duchenne muscular dystrophy <i>224P</i> 15:00 T. Kennedy: Altered expression of heat shock proteins in Duchenne muscular dystrophy <i>225P</i> 15:15 A. Cheng: Time-course of decline in the size of neuromuscular synaptic contacts with sedentary aging in mice <i>226P</i> 15:30 P.W. Sheard: A new view of fibre type transformations in elderly skeletal muscles <i>227P</i> 15:45 M. Morsch: Patient autoantibodies reveal the role of muscle specific kinase in maintaining the mature neuromuscular junction <i>228P</i> 16:00 K. Swiderski: Endogenous phosphorylation of the dystrophin protein modulates protein function <i>229P</i></p>
16:30 Afternoon tea and Drinks - Closing Reception and Awards		

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<p>14 A.J. Craig: A phot thrombosis-induced ischaemic infarct model for study of hind brain stroke <i>54P</i> 15 S. El-Ajouz: Understanding the molecular gates of Kir3ac1.3 <i>55P</i> 16 T. Guo: Influence of cell morphology in computational models of on and off retinal ganglion cells <i>56P</i> 17 M.H. Rashid: Binding site of Scorpion toxin HsTx1 to the potassium channel Kv1.1 and Kv1.3 from Molecular Dynamics simulations <i>57P</i> 18 S. Talwar: Identification and characterization of novel synthetic variabilin analogues targeting the glycine receptor Cl⁻ channels <i>58P</i> 19 S. Mahdavi: Computational investigation of μ-conotoxin binding to voltage gated sodium channels <i>59P</i> 20 D. Robertson: Olivocochlear reflex strength and the auditory attentional filter <i>60P</i> 21 P.H. Barry: Further measurements of liquid junction potentials, and their implications, using a refined freshly-cut 3M KCl reference salt-bridge methodology <i>61P</i> 22 A. Bhaskaracharya: Probenecid, a gout treatment, blocks the human P2X7 receptor <i>62P</i> 23 J.R. Lawson: Agonist selectivity of neuronal glycine receptors <i>63P</i> 24 K.A. Jenkin: Cannabinoid receptor 2 expression in proximal tubule cells exposed to elevated glucose and albumin <i>64P</i> 25 H. Cury: Identifying key amino acid residues for α-conotoxin AulB inhibition of $\alpha 3/\beta 4$ nicotinic acetylcholine receptors <i>65P</i> 26 H.J. Lee: Pharmacological characterization of individual subtypes of $\alpha 4/\beta 2$ GABA_A receptor, include the novel description of $\beta 2$ GABA_A receptor subtype <i>66P</i> 27 T.K.H. Nguyen: Melittin-membrane interaction follows lipid-specific multi-step mechanism <i>67P</i> 28 C.L. Dixon: Using artificial synapses to investigate GABA_A receptor kinetics <i>68P</i> 29 H.-S. Tae: A salt-bridge network determines agonist size selectivity in $\rho 1$ GABA_A receptor <i>69P</i> 30 T.M. Lewis: Mixed antagonistic effects of the ginkgolides at recombinant human $\rho 1$ GABA_A receptors <i>70P</i> 31 L.W. Wong: Are the putative N-terminal α-helix and preceding residues important in GABA_{A/C} receptor function? <i>71P</i> 32 K.L. Hamilton: Membrane trafficking and localization, residence time and degradation of KCa3.1 in a polarized epithelium <i>72P</i> 33 J.E. Hare: Structural insight into the CLIC1 integral membrane structure by fluorescence resonance energy transfer and electron microscopy <i>74P</i> 34 A. Bode: Effects of new human startle disease mutations on glycine receptor function and structure <i>75P</i> 35 T. Stockner: The ATP-bound state of Pglycoprotein is closed towards the cell exterior <i>76P</i> 36 Y. Kim: TRPC3c (high activity) transient receptor potential channel expression in the mouse brain <i>77P</i> 37 E.L. Daniel: Determining a link between XLID and missense mutations in Chloride Intracellular Ion Channel Protein 2 (CLIC2): a biophysical approach <i>78P</i> 38 L. Han: Differential movement of M4 transmembrane segments during activation of $\alpha 1$ and $\alpha 3$ glycine receptors <i>79P</i> 39 C. Boiteux: Insights into voltage gated sodium channel NavAb function from multi-microsecond molecular dynamics simulations <i>80P</i> 40 J.L. Munro: Modulation of GlyT2 by endogenous lipid based compounds occurs through interactions with EL3 <i>81P</i> 41 G. Heinzelmann: Molecular Dynamics simulations on a bacterial homolog of the human glutamate transporters <i>82P</i> 42 A.P. Tosolini: Characterization of the muscle-motor neuron topography of the mouse forelimb <i>83P</i> 43 N. Subramanian: The binding of morphine and nicardipine to the multidrug transporter P-glycoprotein <i>84P</i> 44 R. Mohan: Characterization of the muscle-motor neuron topography of the mouse hindlimb <i>85P</i> 45 D. Robertson: Timecourse of development of hyperactivity in the auditory midbrain after cochlear trauma <i>86P</i> 46 J.L. Pinyon: Evaluation of auditory nerve fibre recruitment by eABR via cochlear implant stimulation in the guinea-pig model <i>87P</i> 47 A. Al Abed: Electrical restitution properties of rabbit atrial tissue <i>88P</i> 48 G. Ivanov: Acute effects of insulin on the endothelium-dependent dilation of rat cremaster muscle arteries <i>89P</i> 49 M.S. Intiaz: Three-dimensional modeling of Ca²⁺ dynamics in single cardiac cells <i>90P</i> 50 J.M. Power: Calcium waves alter dendritic spine morphology in basolateral amygdala projection neurons <i>91P</i> 51 S.A. Mann: The importance of cardiac ion channels on the electrocardiogram - partial least squares regression as a new tool in computational biology <i>92P</i> 52 X.H. Chan: Atorvastatin-induced changes in micro-vascular smooth muscle function <i>93P</i></p>		