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## SEB Main Meeting Glasgow 2007

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Saturday 31 March 2007

### 17.30–19.30 SEB Plenary Lectures

#### Woolhouse Lecture

Will be given by Prof. David Baulcombe of the Sainsbury Laboratory on Small Silencing RNA: Single Strands in the Web of Life.

David Baulcombe works on RNA-silencing systems that protect against viruses and mobile elements of DNA. His group have identified many components of the RNA silencing machinery and a key discovery was the short RNAs that are the specificity determinant. David Baulcombe's work in this area has emphasised the importance of plants as model systems for basic biology because his findings are relevant to RNA interference in animals. His recent interests have focussed on RNA-silencing and its effects on growth, development and evolution in addition to its roles in defense and his title relating to the "dark matter of genetics" alludes to the finding that silencing RNAs can be considered analogous to the invisible mass in outer space: they are abundant, ubiquitous and influence the behaviour of the genetic universe.

David's career started as an undergraduate in Harold Woolhouse's department at Leeds University and he is currently a senior research scientist in the Sainsbury Laboratory Norwich.

#### Bidder Lecture

Will be given by Prof. Alison Smith of the John Innes Centre on How Plants Survive the Night.

Alison Smith graduated in Natural Sciences at Cambridge in 1975, then completed a PhD in plant biochemistry with Professor Tom ap Rees in the Plant Sciences Department. After postdoctoral research in the Universities of Düsseldorf, Leeds and East Anglia, she took a post at the John Innes Centre where she's been ever since.

Alison's research is on primary carbohydrate metabolism in plants. Initially she and her colleagues used pea mutants and transgenic potatoes to understand how starch granules are synthesised, and produced some weird and wonderful starches in the process. In the late 1990s she succumbed to the lure of *Arabidopsis*, and together with close collaborators Steve Smith (no relation!) in the University of Perth and Sam Zeeman at the ETH in Zurich she has used forward and reverse genetics to study the pathway of starch metabolism in leaves. This has been a fruitful exercise, uncovering all sorts of new and surprising complexity and essentially re-writing the "textbook" view of this process. The focus is now on understanding the control of the process of starch breakdown in leaves at night, and how this is integrated with growth and carbon balance in the plant as a whole.

Now that models are emerging from her research on *Arabidopsis*, Alison is also returning to her "roots" in crop research. In collaboration with Kay Denyer at the John Innes Centre, her lab is applying information from *Arabidopsis* and forward and reverse genetic approaches to study starch synthesis and degradation in barley and wheat seeds.

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## A4. It's All a Matter of Taste

Organised by Phil Newland (Southampton University) and Federic Marion-Poll (INRA)

Chair: Frédéric Marion-Poll

09:00 Dr. Phil Newland (University of Southampton)

It's all a matter of taste [A4.1]

09:20 Dr. Sylwester Chyb (CSIRO Entomology, Canberra)

*Drosophila* Gr5a: expression pattern, ligand profile and transduction pathway [A4.2]

10:00 Dr. Kristin Scott (University of California, Berkeley)

From taste cell activity to behavior in *Drosophila* [A4.3]

10:40 Refreshment Break

11:20 Dr. Makoto Hiroi (University of California, Berkeley)

Gustatory neurons expressing olfactory receptors "taste" odors in *Drosophila* [A4.4]

12:00 Prof. Frédéric Marion-Poll (AgroParisTech)

Tasting toxicants as bitter: phytoecdysteroids [A4.5]

12:40 Lunch

Chair: Phil Newland

13:50 Dr. Teichi Tanimura (Kyushu University)

Central projections of tarsal gustatory receptor neurons in *Drosophila* [A4.6]

14:30 Refreshment Break

15:00 Dr. Joop J.A. van Loon (Wageningen University)

From simple to complex stimuli in insect taste: the need for improvement of analysis and interpretation of multi-neural electrophysiological recordings [A4.7]

15:40 Claude Everaerts (CNRS Bourgogne)

Taste discrimination of pheromones in *Drosophila* [A4.8]

16:20 Session Ends

## A6. General Biomechanics

Organised by Peter Aerts (Antwerp)

08:35 Introduction (Peter Aerts)

Chair: Peter Aerts

08:40 Miss Sabine Baussart (Museum National d Histoire Naturelle-MNHN)

Feeding mechanism in fruit-eating bird Toucan, *Ramphastos toco* [A6.1]

09:00 Dr. Sam Van Wassenbergh (University of Antwerp)

Evidence for mechanical power amplification in suction feeding pipefish [A6.2]

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- 09:20 Miss Vicky Schaerlaeken (University of Antwerp)**  
Kinematics of jaw and tongue displacements during feeding in the lizard *Gherrosaurus major* (Cordylidae); a comparison among scincomorphs [A6.3]
- 09:40 Dr. Anthony Herrel (University of Antwerp)**  
In sync?—asymmetrical activation of the jaw adductors in lizards [A6.4]
- 10:00 Refreshment Break**
- 10:30 Dr. William Sellers (The University of Manchester)**  
Modelling the energy costs of bipedal running: the importance of elastic energy storage [A6.5]
- 10:50 Dr. Jo Watson (University of Manchester)**  
The role of load carrying in the evolution of bipedal locomotion [A6.6]
- 11:10 Mr. Mark Bowtell (Royal Veterinary College)**  
Limitation to maximal speed human sprinting—insights from bend running and fatigue [A6.7]
- 11:30 Dr. Andrew Spence (Royal Veterinary College)**  
Effects of substrate properties on equine locomotion [A6.8]
- 11:50 Miss Marta Ferrari (Royal Veterinary College)**  
The range of stride lengths and stride frequencies used by galloping horses [A6.9]
- 12:10 Mr. Maarten Bobbert (Vrije Universiteit)**  
A new method to calculate peak vertical ground reaction forces on individual limbs from kinematics of trotting horses [A6.10]
- 12:30 Lunch**
- Chair: Johan Van Leeuwen**
- 13:30 Miss Sarah Williams (The Royal Veterinary College)**  
Acceleration in the racing greyhound [A6.11]
- 13:50 Dr. Lei Ren (The Royal Veterinary College, University of London)**  
Three-dimensional locomotor dynamics of African (*Loxodonta africana*) and Asian (*Elephas maximus*) elephants [A6.12]
- 14:10 Miss Sandrine Isnard (Harvard University)**  
Pulvinus-induced tightening plays an important role in the generation of squeezing forces in the monocotyledonous twiner, *Dioscorea bulbifera* [A6.13]
- 14:30 Ms. Cloé Paul-Victor (Institute of Environmental Sciences, University of Zürich, Switzerland)**  
Response of *Arabidopsis thaliana* and *Ipomoea tricolor* to mechanical perturbation, do different growth forms respond differently? [A6.14]
- 14:50 Mr. Nick Rowe (CNRS Montpellier)**  
Attachment organ and trellis diversity in tropical plant climbers [A6.15]
- 15:10 Refreshment Break**
- 15:40 Prof. Andrew Biewener (Harvard University)**  
Running stability is enhanced by a proximo-distal gradient in joint neuromechanical control [A6.16]
- 16:00 Dr. Monica Daley (University of Michigan)**  
Load dependent force-length performance of distal hindlimb muscles supports a proximo-distal gradient in limb neuromechanical control [A6.17]
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- 16:20 Ms. Melanie Scholz (Vrije Universiteit)**  
Energy storage in the tendon is more sensitive to muscle moment arm than to mechanical properties of the tendon [A6.18]
- 16:40 Mr. Simon Sponberg (University of California, Berkeley)**  
Effective fields for muscles in the neuromechanical control of running and station-keeping cockroaches [A6.19]
- 17:00 End of Session**

## **A11/C4. Cardiac Adaptations to Temperature Change**

**Organised by Craig Franklin (University of Queensland) and Holly Shiels (Manchester University)**

**Sponsored by the Physiological Society**

- 08:50 Welcome and Introduction—Holly Shiels and Craig Franklin**
- Chair: Craig Franklin**
- 09:00 Dr. Frank Melzner (Alfred-Wegener Institute)**  
Thermal sensitivity of the venous return system in the cephalopod *Sepia officinalis* [A11.1]
- 09:30 Dr. Jonathan Stecyk (University of British Columbia)**  
Control of Turtle (*Trachemys scripta*) cardiac activity during Anoxia: I. Effects of extracellular factors on spontaneous heart rate [A11.2]
- 09:55 Dr. Jonathan Stecyk (University of British Columbia)**  
Control of Turtle (*Trachemys scripta*) cardiac activity during Anoxia: II. Changes in myocardial bioenergetic status [A11.3]
- 10:20 Refreshment Break**
- Chair: Rikke Birkedal**
- 10:50 Prof. Craig Franklin (The University of Queensland)**  
Cardiovascular regulation during heating and cooling in reptiles [A11.4]
- 11:15 Dr. Gina Galli (The University of Manchester)**  
Cardiac temperature sensitivity influences depth distribution in pelagic fish species [A11.5]
- 11:40 Dr. Glenn Lurman (Alfred Wegener Institute for Polar and Marine Research)**  
Cardiac function in Atlantic cod (*Gadus morhua*): Influence of acclimation temperature and acute thermal challenges [A11.6]
- 12:05 Lunch**
- Chair: Holly Shiels**
- 13:30 Dr. Andrew Trafford (Manchester)**  
Cardiac adaptations in preparation for torpor in the Siberian hamster (*Phodopus sungorus*): A role for altered calcium homeostasis [A11.7]
- 14:00 Mr. Matti Vornanen (University of Joensuu)**  
Thermal modification of the delayed rectifier potassium current of the fish heart [A11.8]
- 14:25 Dr. Rikke Birkedal (The University of Manchester)**  
Acute temperature changes may affect the role of the Na<sup>+</sup>/Ca<sup>2+</sup>-exchanger in trout cardiomyocytes [A11.9]
- 14:55 Dr. Jonathan Stecyk (University of British Columbia)**  
Control of Turtle (*Trachemys scripta*) cardiac activity during Anoxia: III. Electrophysiological modification of ventricular tissue [A11.10]
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**15:20 Refreshment Break**

**Chair: Gina Galli**

**15:50 Prof. Ted Taylor (The University of Birmingham)**

Vagal tone determines the relative temperature dependency of heart rate in vertebrates [A11.11]

**16:15 Dr. Stuart Egginton (University of Birmingham)**

Seasonal acclimation in cardiac activity: mammals vs fish [A11.12]

**16:45 Dr. Matthew T. Andrews (University of Minnesota)**

Cardiac function at near freezing body temperature in hibernating mammals

**17:00 Session Ends**

## **A12. General Animal Biology**

Session organised by **David McKenzie (CNRS-Montpellier), Nic Bury (Kings College), Richard Handy (Plymouth)**

**Chair: David McKenzie**

**09:00 Dr. John Lighton (University of Nevada at Las Vegas and Sable Systems International)**

Metabolic signals accompanying insect gas exchange differ in dry vs. moist air [A12.1]

**09:20 Mr. Philip Matthews (University of Adelaide)**

Insect adaptations to the life aquatic—gas gills and SCUBA tanks [A12.2]

**09:40 Dr. Thomas Hesselberg (University of Ulm)**

Visuo-motor learning during orientation flight of the fruit fly *Drosophila* [A12.3]

**10:00 Mr. Christian Tudorache (University of Antwerp)**

Does ammonia exposure affect locomotor performance and predation behaviour in Brown Trout? [A12.4]

**10:20 Refreshment Break**

**Chair: Nic Bury**

**11:20 Prof. Ian Orchard (University of Toronto)**

Diuresis in the blood-gorging bug, *Rhodnius prolixus* (the vector of Chagas' disease) [A12.5]

**11:40 Dr. Carlos González-Haro (Physical Activity and Sports Professional Medicine School, University of Barcelona)**

Fat oxidation rate in high level endurance athletes [A12.7]

**12:00 Dr. Carol Sparling (University of St Andrews)**

Estimating Field Metabolic Rates of pinnipeds: DLW gets the seal of approval [A12.8]

**12:20 Dr. Robert Pope (IUSB)**

Bone absorption through specialised intestinal cells in juvenile Burmese pythons. [A12.9]

**12:40 Dr. Jean-hervé Lignot (Louis Pasteur University)**

Feeding-induced morphological and thermal changes in the gut of juvenile Burmese pythons [A12.10]

**13:00 Lunch**

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**Chair: David McKenzie**

**14:10 Dr. Jonathan Codd (University of Manchester)**

Uncinate processes in birds and other dinosaurs [A12.11]

**14:30 Mr. Peter Tickle (University of Manchester)**

Accessory breathing structures in birds with different locomotor modes [A12.12]

**14:50 Mr. Gerhard Krumschnabel (University of Innsbruck)**

Apoptosis in salmonid cell lines: the importance of apoptotic volume decrease, chloride fluxes and potassium fluxes in staurosporine-induced cell death [A12.13]

**15:10 Mrs. Claudia Manzl (Medical University Innsbruck)**

Role and function of the apoptosis-regulator PIDD [A12.14]

**15:30 Refreshment Break**

**Chair: Richard Handy**

**16:00 Prof. Angela Lange (University of Toronto)**

Dippu-allatostatin and proctolin are releasing factors in the locust, *Locusta migratoria* [A12.15]

**16:20 Dr. Deborah MacLatchy (University of New Brunswick)**

Ethinylestradiol depresses gonadal steroidogenesis downstream of the rate-limiting step in mummichog (*Fundulus heteroclitus*) [A12.16]

**16:40 Mr. Patrick Walsh (University of Glasgow)**

Plasticity of the duration of metamorphosis in *Xenopus laevis* [A12.17]

**17:00 End of Session**

## **P1. Symbiosis**

**Session organised by Julia Scholes (Sheffield), Bruce Osborne (Dublin), Angela Douglas (York), Tom Wilkinson (Dublin), and Derek Mitchell (Dublin)**

**Sponsored by the International Symbiosis Society**

**Chair: Bruce Osborne and Tom Wilkinson**

### **Evolutionary Aspects**

**09:15 Introduction: Bruce Osborne**

**09:30 Dr. Martin Embley (University of Newcastle)**

The importance of the mitochondrial symbiosis for eukaryotes [P1.1]

**10:00 Prof. Christopher Howe (University of Cambridge)**

The remarkable chloroplast genome of dinoflagellates [P1.2]

**10:30 Dr. Martin I. Bidartondo (Imperial College London and Royal Botanic Gardens, Kew)**

Evolutionary ecology of specificity in mycorrhizal symbioses. [P1.3]

**11:00 Refreshment Break**

**11:30 Prof. Janet Sprent (University of Dundee)**

60 Ma of legume nodulation? What's new? What's changing? [P1.4]

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**12:00 Prof. Bruce Osborne (University College Dublin)**  
The *Gunnera-Nostoc* symbiosis in context [P1.5]

**12:30 Lunch**

### Interactions and Signalling

**Chair: Julie Scholes**

**14:00 Dr. Uwe Nehls (Eberhard-Karls-Universität)**  
Mastering mycorrhizal symbiosis: Sugar as signal and nutrient in *Amanita muscaria*/poplar ectomycorrhizas [P1.6]

**14:30 Dr. Giles Oldroyd (John Innes Centre)**  
Signalling in symbiosis [P1.7]

**15:00 Prof. Elfriede Stocker-Wörgötter (University of Salzburg)**  
Polyketides and Pks genes in lichen-forming fungi: the impact of algal transfer metabolites (polyols and glucose) on the production of “lichen substances” [P1.8]

**15:30 Prof. Angela Douglas (York University)**  
Interactions between insects and their symbiotic microorganisms [P1.9]

**16:00 Refreshment Break**

**16:30 Prof. Andrew Johnston (University of East Anglia Norwich)**  
Signalling of gene expression in rhizosphere bacteria-iron in the soil and sulphur in the seas [P1.10]

**17:00 Dr. Birgitta Bergman (Stockholm University)**  
The cyanobacterium-*Azolla* symbiosis: interactions and cell differentiation [P1.11]

## P2. Photomorphogenesis

Session organised by Paul Devlin (Royal Holloway), Matthew Terry (Southampton) and John Christie (Glasgow)

Sponsored by Monsanto and Skye Instruments

**Chair: Dr. Paul Devlin (Royal Holloway, University of London)**

### Session One: Phytochrome

**09:00 Prof. Garry Whitelam (University of Leicester)**  
Phytochromes and shade avoidance [P2.1]

**09:40 Dr. Elena Monte (University of California, Berkeley and U.S. Department of Agriculture, Agricultural Research Service, Plant Gene Expression Center, Albany, California)**  
New insights into the role of the Phytochrome–Interacting Factors (PIFs) in the regulation of photomorphogenesis [P2.2]

**10:20 Refreshment Break**

**11:00 Dr. Ferenc Nagy (Biological Research Centre, Szeged, Hungary)**  
Novel mutants of the photoreceptor phytochrome B with altered light quantity sensing [P2.3]

**11:40 Dr. Karen Halliday (Edinburgh University)**  
Phytochrome coordination of shoot and root development [P2.4]

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**12:00 Dr. Jordi Bou-Torrent (Consorti CSIC-IRTA)**  
Spatial regulation of early phytochrome signalling components [P2.5]

**12:20 Lunch**

**Chair: Dr. Matthew Terry (University of Southampton)**

**Session Two: UV/Blue and Green Photoresponses**

**13:30 Prof. Alfred Batschauer (Philipps-University Marburg)**  
Early events in cryptochrome signalling [P2.6]

**14:10 Dr. John Christie (University of Glasgow)**  
Structure–function analysis of phototropin blue-light receptors [P2.7]

**14:30 Prof. J Kennis (Vrije Universiteit)**  
A base-catalyzed mechanism for dark state recovery in the *Avena sativa* phototropin-1 LOV2 domain [P2.8]

**14:50 Refreshment Break**

**15:30 Dr. Kevin Folta (University of Florida)**  
Green light control of plant form and function [P2.9]

**16:10 Mr. Jason Wargent (Lancaster University)**  
Mechanisms of response to ultraviolet-b radiation—a whole plant perspective [P2.10]

**16:30 Prof. Gareth Jenkins (University of Glasgow)**  
UVR8 defines a photomorphogenic UV–B-specific signalling pathway that regulates transcription [P2.11]

**16:50 Session Ends**

## **P6. Developments in Plant Biology**

**Chair: Christine Raines**

### **Session I**

**09:00 Welcome and Introduction**

**09:10 Mr. Prashant Singh (University of Essex)**  
The physiological role of *Arabidopsis* CP12 gene family [P6.1]

**09:30 Dr. Fatima Cvrckova (Charles University—Prague)**  
Towards *in vivo* characterization of selected *Arabidopsis* formins [P6.2]

**09:50 Miss Nichola Warner (Warwick HRI)**  
Unravelling the roles of two senescence enhanced MYB transcription factors [P6.3]

**10:10 Coffee**

**10:40 Dr. Simon Thain (Environmental Research Institute/UHI)**  
Cellular metabolomic chemical imaging for fingerprinting and targeted analysis: The application of Focal Plane Array Fourier-Transform Infrared Microscopy to study plant development [P6.4]

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- 11:00 Miss Carole Helfter (Heriot-Watt University)**  
Comparison of xylem flow velocities determined by MRI and a non-invasive heat pulse technique in Golden Alder and Silver Birch [P6.5]
- 11:20 Krishan Morker (Lancaster University)**  
Early signals in the wound response of *Arabidopsis thaliana* [P6.6]
- 12:00 Dr. Kris Vissenberg (Univ. Antwerp)**  
Functional characterization of a recombinant *Selaginella* xyloglucan endotransglucosylase/hydrolase and its effect on cell wall mechanics [P6.7]
- 12:20 Lunch**
- Chair:**
- Session II**
- 14:00 Mr. Martin Potocký (Academy of Sciences of the Czech Republic)**  
Reactive oxygen species produced by NADPH oxidase are involved in pollen tube growth [P6.8]
- 14:20 Dr. Margaret Pullen (University of Durham)**  
The targeted early differentiation of functional cells is required for pattern resolution in the *Arabidopsis* epidermis [P6.9]
- 14:40 Prof. Angus Murphy (Purdue University)**  
*Arabidopsis* APP1 is a rate limiting component of auxin signalling required for activation of DR5-like auxin response elements [P6.10]
- 15:00 Coffee**
- 15:40 Mr. Eroid Naomab (University of Nottingham)**  
The role of ARR22 and two-component systems during *Arabidopsis* pod development [P6.11]
- 16:00 Dr. Mark Hooks (University of Wales Bangor)**  
Acyl-activating enzyme 2: part of a developmental fail-safe mechanism? [P6.12]
- 16:20 Miss Harley Kemp (The University of Birmingham)**  
Investigating plant-aphid interactions in *Arabidopsis*—the use of functional genomics to investigate the role of plant amino acid transporters [P6.13]
- 16:40 Mrs. Rhona Bennett (University of Wales Bangor)**  
Functional analysis of candidate wind stress genes using gene silencing by RNA interference (RNAi) [P6.14]
- 17:00 Finish**

## CSS. Cross Sectional Session—Antioxidants and Aging

Session Organised by Christine Foyer (Newcastle) and Paul Thornalley (Warwick)

**Chair:** Paul Thornalley and Christine Foyer

**08:50 Introduction (Paul Thornalley)**

**09:00 Dr. Richard Faragher (University of Brighton)**  
Why aren't babies born old and why doesn't mutton taste like lamb? [CSS.1]

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- 09:45 Prof. Christine Foyer (University of Newcastle)**  
Redox metabolism in plants and its role in programmed cell death and senescence [CSS.2]
- 10:30 Refreshment Break**
- 11:00 Dr. Vicky Buchanan-Wollaston (Warwick HRI)**  
Elucidating signaling pathways that control *Arabidopsis* leaf senescence [CSS.3]
- 11:45 Dr. Andrew Brierley (University of St Andrews)**  
Negative linear correlation between human lifespan and exercise intensity [CSS.4]
- 12:15 Miss Vanja Pekovic (University of Durham, UK)**  
The functional involvement of lamin A and LAPa in human ageing: the role for lamina protein redox modifications in senescence signaling [CSS.5]
- 12:45 Miss Teresa Valencak (Research Institute of Wildlife Ecology, Veterinary University Vienna)**  
Membrane fatty acids and maximum lifespan in mammals—a reassessment [CSS.6]
- 13:00 Lunch**
- 14:00 Prof. Tom Kirkwood (Newcastle University)**  
The curiously complex role of mitochondria in ageing [CSS.7]
- 14:45 Dr. Joao Pedro de Magalhaes (Harvard Medical School)**  
The free radical theory of ageing in the genome era [CSS.8]
- 15:30 Refreshment Break**
- 16:00 Dr. MingZhan Xue (University of Warwick)**  
Sulforaphane suppresses reactive oxygen species and induces transcriptional activation of antioxidant response element related genes expression in human BJ-5ta fibroblasts [CSS.9]
- 16:30 Dr. Ulrike Bechtold (University of Essex)**  
Evidence of advanced glycation endproducts, oxidation and nitrosation damage in *Arabidopsis* leaves [CSS.10]
- 17:00 End of Session**
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Sunday 1 April 2007

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**A1/C6. *In vitro* Techniques for Invertebrate and Piscine Physiological and Ecotoxicological Studies****Organised by Richard Handy (Plymouth), Nic Bury (Kings College London) and David Evans (Oxford Brookes)****Chair: Nic Bury and Richard Handy****09:00 Introduction (Chairs)****09:10 Dr. Chris M. Wood (McMaster University)**

Cultured branchial epithelia from freshwater rainbow trout: tools for understanding gill function [A1.1]

**09:40 Miss Isabelle Leguen (INRA)**

Trout gill cells in primary culture on solid and permeable support [A1.2]

**10:00 Dr. Tommy Tsui (McMaster University)**

Evidence for sodium-linked ammonia transport in cultured gill epithelia from freshwater trout [A1.3]

**10:20 Prof. Christer Hogstrand (King's College London)**

Transcriptomic analysis of metal responses in cultured fish gill cells [A1.4]

**10:50 Refreshment Break****11:20 Dr. Nicolas Bury (King's College London)**The use of *Xenopus laevis* oocytes for characterising metal transport proteins [A1.5]**11:40 Miss Anne Bado-Nilles (CRELA UMR)***In vitro* and *in vivo* effects of Polycyclic Aromatic Hydrocarbons on Pacific Oyster, *Crassostrea gigas* (Thunberg), hemocyte parameters [A1.6]**12:00 Dr. Susanna Blackshaw (University of Oxford)**

3-Dimensional culture of invertebrate ganglia for studies of neural repair [A1.7]

**12:20 Lunch****Chair: Nic Bury and Richard Handy****13:50 Mr. Peter Pärt (European Commission, DG Joint Research Centre, Ispra, Italy)**

ECVAM Key Area Ecotoxicology: Summary of activities and future perspectives [A1.8]

**14:20 Dr. Kristin Schirmer (Helmholtz Centre for Environmental Research UFZ)**

Fish cell lines in physiology and ecotoxicology of fish [A1.9]

**14:40 Miss Lisa Bickley (University of Exeter)**Fish hepatocyte cultures as an alternative to *in vivo* tests for screening oestrogen receptor active chemicals [A1.10]**15:00 Refreshment Break****15:30 Dr. Richard Handy (University of Plymouth)**Organ perfusion methods for *in vitro* fish physiology and toxicology: an overview with example data from gill and intestine [A1.11]**15:50 Mr. Jonathan Whittamore (University of Exeter)**Measuring intestinal water transport *in vitro*: Gravimetric method vs. Non-absorbable marker [A1.12]**16:10 Dr. Alison Cook (NC3Rs)**

Overview of the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) [A1.13]

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16:40 **Discussion Forum: *In vitro* techniques as mimics for the real world**

17:00 **Session Ends**

## **A4. It's All a Matter of Taste**

**Organised by Phil Newland (Southampton University) and Federic Marion-Poll (INRA)**

**Chair: Phil Newland**

09:20 **Dr. Michael Pankratz (Institute for Genetics, Karlsruhe)**

Neuroanatomy and function of the hugin neuronal circuit in *Drosophila* [A4.9]

10:00 **Dr. Hansjürgen Schuppe (University of Southampton)**

Peripheral modulation of taste responses [A4.10]

10:40 **Refreshment Break**

11:20 **Prof. Mamiko Ozaki (Kyoto Institute of Technology)**

Roles of NO cascade and G proteins in transduction or adaptation of the sugar receptor cell in the blowfly [A4.11]

12:00 **Dr. Matthew Cobb (University of Manchester)**

What and how do maggots taste? [A4.12]

12:40 **Lunch**

**Chair: Frédéric Marion-Poll**

13:50 **Dr. Marta L. del Campo (Cornell University)**

Molecular and cellular components of host recognition in a facultative specialist feeder [A4.13]

14:30 **Refreshment Break**

15:00 **Dr. Geraldine Wright (Newcastle University)**

How honeybees learn to tell the sweet from the bitter [A4.14]

15:40 **Dr. Frederic Mery (Lab Evolution Genome and Speciation, CNRS)**

Experimental evolution of learning ability in *Drosophila melanogaster*: Benefits and fitness costs of learning [A4.15]

16:20 **Session Ends**

## **A6. General Biomechanics**

**Organised by Peter Aerts (Antwerp)**

**Chair: Eize Stamhuis**

08:40 **Mrs. Emma Tole (The Royal Veterinary College)**

Patterns of motor unit recruitment change through a running stride in the rat [A6.20]

09:00 **Dr. Rob James (Coventry University)**

Explosive jumping: extreme morphological and physiological specialisations of Australian Rocket frogs (*Litoria nasuta*) [A6.21]

09:20 **Mr. Christopher Richards (Harvard University)**

Modulation of *in vivo* muscle power output during swimming in the African clawed frog (*Xenopus laevis*) [A6.22]

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- 09:40 Miss Beth Symonds (University of Queensland)**  
Prolonged aestivation causes little change in skeletal muscle morphology or contractile performance in the anuran *Cyclorana aloboguttata* [A6.23]
- 10:00 Refreshment Break**
- 10:30 Mr. Simon Walker (Oxford University)**  
Kinematics and aerodynamics of tethered locust flight [A6.24]
- 10:50 Dr. Hao Wang (The University of Tokyo)**  
The steering control of free-flight maneuvers in *Agrius* [A6.25]
- 11:10 Mr. Jamie Gundry (University of Cambridge)**  
The kinematics of hoverfly flight [A6.26]
- 11:30 Dr. Robert Nudds (University of Leeds)**  
The wingtip fold of the bat *Miniopterus schreibersii* : a novel mechanism for thrust generation during slow-flight? [A6.27]
- 11:50 Dr. Bret Tobalske (University of Portland)**  
Hovering aerodynamics in hummingbirds: comparing a dynamically-scaled robot with live birds [A6.28]
- 12:10 Dr. Anna Carruthers (University of Oxford)**  
Aeroelastic control devices and wing kinematics of a Steppe Eagle *Aquila nipalensis* during perching manoeuvres [A6.29]
- 12:30 Lunch**
- Chair: Nick Rowe**
- 13:30 Mr. David Lentink (Wageningen University)**  
How swifts control their glide performance with morphing wings [A6.30]
- 13:50 Dr. Eize Stamhuis (University of Groningen)**  
Unsteady aerodynamics of a flapping artificial bird wing [A6.31]
- 14:10 Dr. Jim Usherwood (The Royal Veterinary College)**  
Aerodynamics, lift, drag and power of slow pigeon flight [A6.32]
- 14:30 Mr. Ivo Ros (University of Groningen)**  
Body kinematics during level, 90-degree turns in pigeons [A6.33]
- 14:50 Miss Laura Farran (University of Manchester)**  
The microstructure and mechanical properties of human fingernails [A6.34]
- 15:10 Coffee**
- 15:40 Mr. Carlos Moreno (Harvard University)**  
Variability in bone strain during non-steady vs. steady locomotion in goats [A6.35]
- 16:00 Dr. Adrian Goodman (University of Lincoln)**  
Flexural properties of the equine hoof wall [A6.36]
- 16:20 Ms. Emily Standen (Harvard University)**  
The advantage of being downstream: how fish fins influence each other [A6.37]
- 16:40 Prof. Johan L. van Leeuwen (Wageningen University)**  
A forward dynamics model of swimming in larval fish [A6.38]
- 17:00 End of Session**
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## A12. General Animal Biology

Session organised by David McKenzie (CNRS-Montpellier), Nic Bury (Kings College), Richard Handy (Plymouth)

Chair: David McKenzie

08:50 Dr. Guy Claireaux (CNRS Montpellier)

Energy budgeting, physiological trade-offs and growth in fish [A12.18]

09:10 Miss Erika Eliason (University of British Columbia)

Effect of postprandial hypoxia challenge on oxygen consumption and gut blood flow in rainbow trout (*Oncorhynchus mykiss*) [A12.19]

09:30 Mr. Henrik Seth (Department of Zoology, Göteborg University)

Effects of Gastric Distension on the Cardiovascular System in Rainbow Trout (*Oncorhynchus mykiss*) [A12.20]

09:50 Dr. Glenn Lurman (Alfred Wegener Institute for Polar and Marine Research)

Bioenergetics of critical swimming speed tests in Atlantic cod as monitored by <sup>31</sup>P NMR spectroscopy. [A12.21]

10:10 Prof. Goran Nilsson (University of Oslo)

Does size matter for hypoxia tolerance? [A12.22]

10:30 Refreshment Break

Chair: Guy Claireaux

11:00 Dr. Suzie Currie (Mount Allison University)

β-adrenergic stimulation enhances the heat shock response in fish [A12.23]

11:20 Mr. Wolfgang Waser (University of Turku/Finland)

Retinal oxygen delivery in teleosts: structures and processes [A12.24]

11:40 Dr. Timothy Clark (University of Adelaide, Adelaide, Australia)

Circulatory physiology and haematology of southern bluefin tuna (*Thunnus maccoyii*) [A12.25]

12:00 Miss Helene Jourdan (Institut des Sciences de l'Evolution)

Explaining the diversity of blood pressure among fishes of the world: a comparative phylogenetic approach. [A12.26]

12:20 Dr. David McKenzie (CNRS Montpellier)

An investigation of the autonomic control and functional significance of heart rate variability during air-breathing in the jeju *Hoplerythrinus unitaenitus* [A12.27]

12:40 Miss Nini Skovgaard (Zoophysiology, University of Aarhus, Denmark)

Histamine regulates heart rate during digestion in pythons [A12.28]

13:00 Respiration Group AGM

## C1. General Cell Biology

Organised by David Evans and Susan Brooks (Oxford Brookes) on behalf of the SEB and the RMS

Chair: Dr. Susan Brooks

14:00 Welcome and Introduction

14:10 Mr. Manus Biggs (University of Glasgow)

The influence of nanoscale structures on osteoblast adhesion [C1.1]

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- 14:30 Miss Hannah Lomax-Browne (Oxford Brookes University)**  
Interactions between cancer cell glycans and endothelial cells during adhesion and transmigration events in metastasis [C1.2]
- 14:50 Dr. Pamela Little (Napier University)**  
An investigation into the biological properties of spore surface component(s) from the opportunistic pathogen *Aspergillus fumigatus* [C1.3]
- 15:10 Miss Fahsai Kantawong (University of Glasgow)**  
Differential proteomics evaluation of osteoprogenitor growth on microgrooved surfaces using bioreactor culture [C1.4]
- 15:30 Mr. Panwong Kuntanawat (University of Glasgow)**  
Observation of durotaxis on a well-defined continuous gradient of stiffness [C1.5]
- 15:50 Refreshment Break**
- Chair: Dr. David Evans**
- 16:20 Mr. Daniel Macqueen (University of St Andrews)**  
Characterization and expression of *cee*, a highly conserved and novel gene of unknown function [C1.6]
- 16:40 Miss Katja Graumann (Oxford Brookes University)**  
Dynamics of the lamin B receptor in the plant nuclear envelope [C1.7]
- 17:00 Miss Sarah Usher (Rothamsted Research)**  
Nucleosome positioning in *Arabidopsis* [C1.8]
- 17:20 Dr. Sergei Sokolovski (Glasgow University)**  
SNARE-mediated regulation of plant K<sup>+</sup> channels [C1.9]

## P1. Symbiosis

Session organised by Julia Scholes (Sheffield), Bruce Osborne (Dublin), Angela Douglas (York), Tom Wilkinson (Dublin), and Derek Mitchell (Dublin)

Sponsored by the International Symbiosis Society

Chair: Angela Douglas

### Applications, Control and Protection

- 10:00 Prof. Thomas Miller (University of California, Riverside)**  
Symbiotic control applications in agriculture and medicine [P1.12]
- 10:30 Dr. Yulan Wang (Imperial College)**  
Metabonomics—a window for global systems biology [P1.13]
- 11:00 Refreshment Break**
- 11:30 Prof. Joern Piel (University of Bonn)**  
Exploring the biomedical potential of uncultivated bacterial symbionts by metagenomic techniques [P1.14]
- 12:00 Dr. Martin Kaltenpoth (University of Würzburg)**  
Life within insect antennae: Symbiotic bacteria protect wasp larvae against fungal infestation [P1.15]
- 12:30 Lunch**
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**Chair: Derek Mitchell**

**Functional Diversity and Ecology**

**14:00 Prof. Jouko Rikkinen (University of Helsinki)**

Photobiont-mediated lichen guilds [P1.16]

**14:30 Prof. Regina Redman (Montana State University)**

The population dynamics and symbiotic lifestyle of fungal endophytes in plant hosts is driven by environmental conditions [P1.17]

**15:00 Mr. Giles King-Salter (University College Dublin)**

Response of arbuscular mycorrhizal communities to seasonality and long-term phosphate application [P1.18]

**15:30 Prof. Roger Finlay (SLU)**

Ecological aspects of mycorrhizal symbiosis — with special emphasis on the functional diversity of interactions involving the extraradical mycelium [P1.19]

**16:00 Refreshment Break**

**16:30 Prof. Rusty Rodriguez (University of Washington)**

More than 400 million years of evolution and plants still can't make it on their own: plant stress tolerance and habitat expansion via fungal symbiosis [P1.20]

**17:00 Dr. Andrew Baker (University of Miami)**

Why do corals bleach? Testing evolutionary implications of flexibility in coral–algal symbiosis [P1.21]

**17:30 Dr. Dave Adams (University of Leeds)**

Cyanobacteria-bryophyte symbioses [P1.22]

**P2. Photomorphogenesis**

Session organised by Paul Devlin (Royal Holloway), Matthew Terry (Southampton) and John Christie (Glasgow)

Sponsored by Monsanto and Skye Instruments

**Chair: Dr. John Christie (University of Glasgow)**

**Session Three: Light Signalling Pathways**

**09:00 Prof. Ute Hoecker (University of Cologne)**

SPA proteins are key repressors in light signal transduction and photoperiodic flowering [P2.12]

**09:40 Prof. Andrew Millar (University of Edinburgh)**

Dissecting and reconstructing the multi-loop mechanism of the circadian clock [P2.13]

**10:00 Dr. Enrique Lopez-Juez (Royal Holloway, University of London)**

Insights into the mechanisms underlying the light control of leaf and chloroplast development [P2.14]

**10:20 Refreshment Break**

**11:00 Prof. Christian Fankhauser (University of Lausanne)**

Early nuclear and cytoplasmic events in phytochrome signaling [P2.15]

**11:40 Dr. Irma Roig-Villanova (Consorci CSIC-IRTA)**

PAR1 and PAR2, two novel and atypical bHLH transcription factors, connect shade avoidance and hormone pathways [P2.16]

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**12:00 Mr. Xuewen Wang (Royal Holloway, University of London)**Characterisation of *dracula* (no avoidance of shade) and *icarus* (extreme avoidance of shade) mutants in *Arabido* [P2.17]**12:20 Lunch****Chair: Prof Garry Whitelam (University of Leicester)****Session Four: Engineering Photomorphogenic Traits****13:30 Dr. Chris Bowler (Ecole Normale Superieure)**

The role of photomorphogenic regulatory pathways in the control of tomato architecture and fruit quality [P2.18]

**14:10 Dr. Andrea Massiah (University of Warwick)**Physiological and genetic control of the juvenile phase in *Antirrhinum* [P2.19]**14:30 Dr. Maria Eriksson (Umea University)**

Low levels of PHYTOCHROME A expression alters circadian rhythm and change levels of FLOWERING LOCUS T leading to early bud set in hybrid aspen [P2.20]

**14:50 Refreshment Break****15:30 Dr. Thomas Brutnell (Cornell University)**

Enhancing the agronomic performance of grasses through the manipulation of light signaling pathways [P2.21]

**16:10 Dr. Takeshi Izawa (National Institute of Agrobiological Sciences)**

Molecular diversity of photoperiodic flowering in plants [P2.22]

**16:50 Session Ends****P4. Nutritional Genomics****Session organised by Martin Parry (BBSRC), Martin Broadley (Nottingham) and Nigel Halford (BBSRC)****Chair: Nigel Halford****09:05 Welcome by Session Organisers****09:15 Prof. Greg Tucker (University of Nottingham)**

Phytonutrients [P4.1]

**09:55 Dr. Ruan Elliot (Institute of Food Research)**

The application of nutritional genomics for determining optimal micronutrient requirements [P4.2]

**10:25 Refreshment Break****11:00 Dr. Laura Jaakola (University of Oulu, Finland)**

Flavonoid biosynthesis [P4.3]

**11:30 Prof. Graham Seymour (University of Nottingham)**

Developmental regulation of ripening in fleshy fruits [P4.4]

**12:00 Lunch**

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**Chair: Greg Tucker**

**14:00 Prof. Johnathan Napier (Rothamsted Research)**

Rational metabolic engineering of transgenic plants for the synthesis of long chain polyunsaturated fatty acids [P4.5]

**14:40 Prof. Christine Foyer (University of Newcastle)**

Ascorbic acid homeostasis and its effects on plant growth and defense [P4.21]

**15:10 Dr. Marcos Alcocer (University of Nottingham)**

Food allergens [P4.6]

**15:40 Prof. Nigel Halford (Rothamsted Research)**

Acrylamide in food is a plant and agronomic science issue [P4.7]

**16:10 Refreshment Break and End of Session**

## **P6. Developments in Plant Biology**

**09:20 Mr. André Almeida (ITQB)**

Immunolocalization of trehalose-6-phosphate synthase in leaf segments of genetically engineered tobacco plants expressing the AtTPS1 gene [P6.15]

**09:40 Dr. Anna Kolasa (John Innes Centre)**

Glycogenins in plants? Starch granule and polymer initiation [P6.16]

**10:00 Dr. Thomas Howard (University of Essex)**

The *in vivo* activities of phosphoribulokinase and glyceraldehyde phosphate dehydrogenase can be rapidly altered through protein-protein interactions [P6.17]

**10:20 Miss Saher Mehdi (University of Durham)**

The *POLARIS* gene is essential for correct ethylene signalling in *Arabidopsis* [P6.18]

**10:40 Coffee**

**11:10 Prof. Roger Seymour (University of Adelaide)**

Hot plants: the physiology and behaviour of thermoregulatory flowers [P6.19]

**11:30 Dr. Zareen Khan (University of Washington)**

Endophyte assisted phytoremediation of Trichloroethylene(TCE)—An environmental contaminant [P6.20]

**11:50 Miss Jennifer Cunniff (University of Sheffield)**

Response of wild C<sub>4</sub> crop progenitors to subambient CO<sub>2</sub> highlights a possible role in the origin of agriculture [P6.21]

**12:10 Dr. Steven Penfield (University of York)**

Control of seed dormancy and germination by environmental signals [P6.22]

**12:30 Lunch**

## **CSS. Cross Sectional Session — Antioxidants and Aging**

**Session Organised by Christine Foyer (Newcastle) and Paul Thornalley (Warwick)**

**Chair: Linda Partridge and Stan Karpinski**

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**08:50 Introduction (Chairs)****09:00 Mr. Paul Bethke (USDA ARS University of Wisconsin Madison)**

Rebirth and death: nitric oxide and reactive oxygen species in seeds [CSS.11]

**09:45 Dr. Martin D. Brand (MRC Dunn Human Nutrition Unit)**

Mitochondrial ROS production [CSS.12]

**10:30 Refreshment Break****11:00 Prof. David Gems (University College London)**Is superoxide dismutase a determinant of longevity in the nematode *C. elegans*? [CSS.13]**11:45 Prof. Paul Thornalley (University of Warwick)**

Glycation and the enzymatic defence against glycation in the ageing process [CSS.14]

**12:30 Dr. Sudhir Sopory (International Center for Genetic Engineering and Biotechnology)**

Genetic manipulation of glyoxalase pathway delays plant senescence under stress conditions [CSS.15]

**13:15 Lunch****14:00 Prof. Thomas von Zglinicki (University of Newcastle)**

Mitochondria and telomeres: strange bedfellows in cell senescence [CSS.16]

**14:45 Dr. Ulrike Zentgraf (ZMBP, University of Tuebingen)**Roles of catalases during leaf senescence of *Arabidopsis thaliana* [CSS.17]**15:30 Refreshment Break****16:00 Prof. Michael Morcos (University of Heidelberg)**Life extension in *Caenorhabditis elegans* by overexpression of Glyoxalase I — a mechanistic integration of protein damage by glycation, oxidation and nitration [CSS.18]**16:30 Dr. Adaikalakoteswari Antonysunil (University of Warwick)**

Telomere shortening in subjects with impaired glucose tolerance and patients with diabetic macroangiopathy [CSS.19]

**E3. Preparing for Fellowship Applications****Lunchtime Workshop 12:00 – 14:00, Crowne Plaza Hotel (adjacent to conference centre)**

Speaker: Guntram Bauer (Human Frontier Science Programme)

This workshop will provide information on where, why and when to apply for postdoctoral fellowships available in Europe and elsewhere around the world, and will include tips and hints about making effective applications:

- Finding a host and selecting a host country
  - Timing of postdoc applications
  - Finding the right agency/organization or fellowship program
  - How to write/pitch your application
  - The interview process
  - Getting ready for the transition to scientific independence
  - Steps to consider and issues to be aware of
  - Overview of important funding programs
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## Sunday Poster Sessions

### A6. General Biomechanics

**Miss Sabine Baussart (Museum National Histoire Naturelle)**

Evolutionary analysis of feeding mechanism in hornbills [A6.43]

**Mrs. Emma Tole (The Royal Veterinary College)**

Recruiting motor units in a velocity-dependant fashion in the rat hindlimb [A6.44]

**Dr. Ulrike Muller (Wageningen University)**

Experimental and computational flow results on swimming fish larvae [A6.45]

**Mr. William Thielicke (University of Groningen)**

Unsteady aerodynamics on a flapping bird-like wing. Comparison of two wing types during flapping flight on a bird-like model [A6.46]

**Dr. Andrew Spence (Royal Veterinary College)**

Insects running on compliant surfaces [A6.47]

**Mr. Thomas Endlein (University of Cambridge)**

To stick and not getting stuck — detachment control in ants [A6.48]

**Mr. Stefan Jongerius (University of Technology Delft)**

Design and production of a bio-inspired lightweight wing for flapping micro air vehicles [A6.49]

**Miss Nina Schaller (University of Heidelberg)**

Phalangeal load and pressure distribution in walking and running ostriches (*Struthio camelus*) [A6.50]

**Mrs. Christine Couturier (Centre de Recherche sur les Ecosystèmes Littoraux Anthropisés)**

Intra-population variation in Shiner Perch (*Cymatogaster aggregata*) morphometrics and relationships with fast-start performances [A6.51]

**Miss Heather Bonney (University of Lincoln)**

Regional variation in the microhardness and mineral content of porcine long bones [A6.52]

**Ms. Julia Platter (Glasgow University)**

How do tree frogs adhere well to smooth surfaces and yet detach easily when necessary? [A6.53]

**Mr. Gijs de Rue (Wageningen University)**

Design of a laminar flow tank for studying the development of zebra fish swimming [A6.54]

**Ms. Nancy Lucinda Bradshaw (Wageningen University and Delft University of Technology)**

Aerodynamic performance of a bio-inspired flapping micro air vehicle with flexible wings [A6.55]

**Dr. Rob James (Coventry University)**

Sexual dimorphism of extensor carpi radialis muscle morphology, isometric stress, kinetics and fatigue resistance during the breeding season of the frog *Rana temporaria* [A6.56]

**Mr. James Gillies (University of Oxford)**

Identification of the flight control system of the Steppe Eagle *Aquila nipalensis* [A6.57]

**Mr. Krijn Michel (RuG)**

Is the Japanese skeleton shrimp *Caprella mutica* a filter feeder? I. Head morphology and kinematics [A6.58]

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**Dr. Roland Ennos (University of Manchester)**

A new M.Sc. course in biomechanics at Manchester [A6.59]

**Dr. Christel Lefrancois (CRELA, France-IAMC, Italy)**

Kinematics of fast-start swimming in a pelagic fish, the mackerel *Scomber scombrus* [A6.60]

**Mr. Christopher Richards (Harvard University)**

Measuring muscle power and modeling hydrodynamic power during anuran swimming [A6.61]

**Mr. Louis Flynn (University of Groningen)**

Aerodynamics of the bird wing: flow patterns surrounding rotating bird-like wings [A6.62]

**Dr. Sandra Nauwelaerts (RUG)**

Is the Japanese skeleton shrimp *Caprella mutica* a filter feeder? II. Mechanics [A6.63]

**Miss Yukie Ozawa (The University of Oxford)**

Onboard video in free-flight analysis of birds; use of head and eyes in vision-based flight control [A6.64]

## A11/C4. Cardiac Adaptations to Temperature Change

**Dr. David Hauton (University of Birmingham)**

Cold-induced cardiac hypertrophy does not preserve cardiac performance [A11.13]

**Mr. Jaakko Haverinen (University of Joensuu)**

Temperature acclimation modifies sinoatrial pacemaker mechanism of the trout heart [A11.14]

**Mrs. Priya Ethirajan (Manchester metropolitan university)**

Increased PRP<sup>C</sup> expression in human carotid artery lesions [A11.15]

## A12. General Animal Biology

**Dr. Francisco Sanchez (Ben-Gurion University of the Negev)**

Ethanol and sugars as complementary resources for Egyptian fruit bats (*Rousettus aegyptiacus*) [A12.6]

**Mr. Kim Lundgreen (Odense)**

Physiological adaptations of European flounder (*Platichthys flesus*) to variable salinity and oxygen conditions [A12.29]

**Ms Colette Mesher (University of Plymouth)**

Acute versus medium-term exposure to changing salinity in the amphipod *Corophium volutator* [A12.30]

**Dr. Anders Garm (Lund University)**

Visually guided obstacle avoidance in box jellyfish [A12.31]

**Miss Carina Gsottbauer (University of Salzburg, Austria)**

Mitochondrial density as a parameter of physiological fitness in young and old Queen Scallops (*Aequipecten opercularis*) [A12.32]

**Dr. Brian Bagatto (University of Akron)**

The role of cadherin2 in zebrafish cardiovascular development and cardiac regeneration [A12.33]

**Ms Shelby Steele (University of Ottawa)**

The role of the M2 muscarinic receptor in the development of hypoxic bradycardia in zebrafish (*Danio rerio*) larvae [A12.34]

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**Mr. Daniel Macqueen (School of Biology — University of St Andrews)**

The transcriptional networks regulating myogenesis in Atlantic salmon (*Salmo salar* L.) and the effect of embryonic temperature [A12.35]

**Mr. Albin Gräns (Department of Zoology, Göteborg University)**

Effects of exercise, feeding, hypoxia and hypercapnia on cardiac output and gut blood flow in white sturgeon (*Acipenser transmontanus*) using a fully implantable biotelemetry system [A12.36]

**Miss Anne Bado-Nilles (CRELA 6217 UMR/CEDRE)**

Use of a new experimental system to study the effects of oil spills on the health of aquatic organisms. [A12.37]

**Dr. Jennifer Sneddon (Liverpool John Moores University)**

The use of washed sheep wool as a bio-indicator for lead and copper concentrations in upland areas of the UK [A12.38]

**Miss Saskia Woehl (Institute of Zoology, University Erlangen-Nuernberg, Germany)**

The predictive start of hunting archer fish: a flexible and precise motor pattern performed with the kinematics of an escape C-start [A12.39]

**Mr. Pere Panisello (Universitat de Barcelona)**

Intermittent hypobaric hypoxia induces changes at a different extent in biochemical parameters depending on muscle activity degree [A12.40]

**Miss Helene Jourdan (Institut des Sciences de l'Evolution)**

Swim or eat? Swim and eat? The environment lays down the law. An investigation of metabolic prioritization in sea bass. [A12.41]

**Mrs. Aurélie Dupont-Prinet (ISEM)**

Effects of feeding and hypoxia upon blood allocation during aerobic exercise in sea bass (*Dicentrarchus labrax* L.) [A12.42]

**Mr. Saber Khodabandeh (Tarbiat Modarres University)**

The first report of *Liza aurata* fry contamination by *Myxobolus spp.* in the Caspian Sea [A12.43]

**Ms. Magdalena Gutowska (Alfred-Wegener-Institute)**

Compensation of hypercapnia induced acid-base disturbance by *Sepia officinalis* (Cephalopoda) [A12.44]

**Dr. Timothy Clark (University of Adelaide, Australia)**

Does air-breathing in the fish *Megalops cyprinoides* allow the maintenance of cardiac performance in the face of aquatic hypoxia? [A12.45]

**Prof. Vesna Poleksic (Faculty of Agriculture University of Belgrade)**

Fish gills morphology as indicator of water quality — study of two small aquatic ecosystems [A12.46]

**Mr. Stefano Marras (Universite Montpellier 2)**

Ranking of escape responses in schooling behaviour of mullet (*Mugil auratus*) [A12.47]

**Dr. Vera Vieira (Fish Muscle Research Group, Gatty Marine Laboratory, University of St Andrews, Scotland, UK.)**

Genetic variability and heritability of maximum fibre number in Atlantic salmon (*Salmo salar* L.) [A12.48]

**Mr. François Reichardt (Louis Pasteur University)**

Clay complementation in rat diet: chronic effect of kaolinite on the intestinal lining [A12.49]

**Miss Erika Eliason (University of British Columbia)**

Validation of the hepatic portal vein cannulation technique using Atlantic salmon (*Salmo salar* L.) [A12.50]

**Miss Candida Shinn (Estación Biológica de Doñana)**

Influence of water salinity and altitude on the tolerance of amphibian early life stages to nitrite [A12.51]

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**Dr. Ørjan Hagen (University of St Andrews)**Sexual dimorphism of muscle growth in a large flatfish, the Atlantic halibut (*Hippoglossus hippoglossus* L.). [A12.52]**A13. General Neurobiology Posters****Mr. Matthew Rowe (Queen Mary, University of London)**

Neuropeptide structure and function in sea urchins [A13.1]

**C1. General Cell Biology****Miss Simona Kogler (University of Salzburg)**Fatty degeneration and fibrosis in *M. supraspinatus* — Can this be seen as a diagnostic parameter for rotator cuff rupture in elderly people? [C1.10]**Miss Julia Marschallinger (University of Salzburg)**Patterns of angiogenic gene expression during embryonic muscle growth in the brown trout *Salmo trutta* [C1.11]**Miss Astrid Obermayer (University of Salzburg)**

Slow fibre heterogeneity in brown trout muscle: Immunostaining and fine structure morphometry are not the same difference [C1.12]

**Ms. Bernadette Gehl (Glasgow University)**Functional and molecular characterisation of stomatin-like proteins in *Arabidopsis thaliana* [C1.13]**Miss Annegret Honsbein (University of Glasgow)**Involvement of the *Arabidopsis* plasma membrane SNARE AtSyp121 in ion channel regulation [C1.14]**Dr. Bahareh Eftekhazadeh (Institute of Biochemistry and Biophysics)**Comparative evaluation of  $\alpha$ -amylase refolding through two different artificial chaperone systems [C1.15]**Miss Mahdiah Anoush (Tabriz University of Medical Sciences)**

The antabuse effect of hydrogen sulfide [C1.16]

**Mr. Farhan Khan (Kings College London)**Parallel analysis of deletion mutants in *Saccharomyces cerevisiae* under zinc deficiency [C1.17]**Dr. Jorge Fernandes (University of St Andrews)**Phylogeny and evolution of *cee*, an ancient gene of unknown function [C1.18]**P1. Symbiosis****Prof. Mike Burrell (University of Sheffield)**

The cellular distribution of metabolites in mycorrhizal Orchid roots measured by Imaging MALDI [P1.23]

**Mr. John Bermingham (University College Dublin)**Comparative analysis of gene expression in an aphid-*Buchnera* symbiosis: The role of *Buchnera* in the nutrition of aphid embryos [P1.24]**Miss Sarah Hodson (University of Kent)**Algae acquire Vitamin B<sub>12</sub> through a symbiotic relationship with bacteria [P1.25]**Miss Sophie Sanchez (UMR 7144 CNRS-UPMC)**Tissue-specific expression of different carbonic anhydrases in the chemoautotrophic symbiosis *Riftia pachyptila* [P1.26]

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## P2. Photomorphogenesis

**Miss Lauren Headland (University of Glasgow)**

Photomorphogenic UV-B signalling pathways regulating gene expression [P2.23]

**Miss Eirini Kaiserli (University of Glasgow)**

Structure–function and sub-cellular localisation studies of UVR8 — a UV–B-specific signalling component in *Arabidopsis* [P2.24]

**Dr. Paul Devlin (Royal Holloway, University of London)**

*Arabidopsis* FHY3 specifically gates phytochrome signalling to the circadian clock [P2.25]

**Mr. Markus Berns (Research Center Jülich)**

Diel leaf growth pattern in cry1cry2 mutants of *Arabidopsis thaliana* under different light conditions. [P2.26]

**Mr. Patrick Stephenson (University of Southampton)**

Light regulation of tetrapyrrole biosynthesis in *Arabidopsis* [P2.27]

## P6. Developments in Plant Biology

**Mr. Savic Sladjana (University of Belgrade)**

Biochemical regulation of tomato fruit growth [P6.23]

**Mrs. Amanda Mylett (University of Lincoln)**

Use of RAPD in assessing genetic variability in *Tilia cordata* to facilitate appropriate reestablishment of native trees [P6.24]

**Dr. Rajarshi Kumar Gaur (Mody Institute of Technology and Sciences)**

Bioinformatics: A tool to explain Gene diversity [P6.25]

**Mr. Anjanabha Bhattacharya (University of Nottingham)**

Genetic modification of plant stature by manipulation of gibberellin metabolism: An alternative to chemical growth regulators [P6.26]

**Dr. Alireza Dadkhah (Ferdowsi University)**

Sugar beet plant–water uptake and plant–water relationships under saline growth conditions [P6.27]

**Mr. Philip Sipeh (University of Nottingham)**

Optimisation of micropropagation media for Malaysian banana (*Musa* spp.) [P6.28]

**Prof. Martha Hawes (University of Arizona)**

Galactose from the legume root cap: structure, signal, toxin, trigger? [P6.29]

**Dr. Kris Vissenberg (Univ. Antwerp)**

Production, purification and characterization of 10 *Arabidopsis* xyloglucan endotransglycosylases/hydrolases (XTHs) [P6.30]

**Dr. Kris Vissenberg (Univ. Antwerp)**

Cytoskeleton and cell wall changes during the biphasic growth of dark-grown *Arabidopsis thaliana* Col-0 hypocotyls [P6.31]

**Miss Roshi Shrestha (University of Aberdeen)**

QTL mapping for partial resistance to root knot nematode in *Oryza sativa* [P6.32]

**Mr. Stefano Gattolin (University of Birmingham)**

Quantitative analysis of amino acids composition in the sap of individual sieve elements of wheat (*Triticum aestivum* L.) [P6.33]

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**Mr. Philip Matthews (Adelaide University)**

Pressurisation and gas flow within the sacred lotus, *Nelumbo nucifera* [P6.34]

**Dr. Aidan Farrell (Harper Adams University College)**

How do variable temperatures affect alpha-amylase in developing wheat grains? [P6.35]

**Mr. Thomas Wood (John Innes Centre)**

A genetic approach towards modulating pod-shattering in oilseed rape [P6.36]

**Dr. Lawrence Clark (Rothamsted Research)**

Towards understanding the physiological basis of root penetration QTLs in rice [P6.37]

**Ms. Ana Confraria (University of Porto and University of the West of England)**

Brassinosteroids protect plants against heat stress [P6.38]

**Dr. Annalisa Paradiso (Dep. Plant Biology and Pathology University of Bari Italy)**

Metabolism of fructans during the maturation of wheat kernels [P6.39]

**Dr. Simon Thain (Environmental Research Institute/UHI)**

Cellular metabolomic chemical imaging for fingerprinting and targeted analysis: The application of Focal Plane Array Fourier-Transform Infrared Microscopy to study plant development. [P6.40]

**Miss Katrin Mühlenbruch (University of Applied Sciences Bremen)**

Adhesion system of *Enteromorpha* spp.: Preventing zoospores from attaching [P6.41]

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Monday 2 April 2007

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## Young Scientist Award Session

Organised by **D. Evans (Oxford Brookes University)**

- 14:15 Dr. Adaikalakoteswari Antonysunil (University of Warwick)**  
Telomere shortening in subjects with impaired glucose tolerance and patients with diabetic macro-angiopathy [YSAS.1]
- 14:45 Mr. Manus Biggs (University of Glasgow)**  
The influence of nanoscale biomimetic structures on osteoblast adhesion [YSAS.2]
- 15:15 Miss Carole Helfter (Heriot-Watt University)**  
Comparison of xylem flow velocities determined by MRI and a non-invasive heat pulse technique in Golden Alder and Silver Birch [YSAS.3]
- 15:45 Dr. Martin Kaltenpoth (University of Würzburg)**  
Life within insect antennae: symbiotic bacteria protect wasp larvae against fungal infestation [YSAS.4]
- 16:15 Miss Vanja Pekovic (University of Durham)**  
The functional involvement of lamin A and LAP $\alpha$  in human ageing: the role for lamina protein redox modifications in senescence signalling [YSAS.5]

## A3. Drinking, Salt and Osmoregulation

Organised by **Nic Bury (Kings College London)** and **Richard Handy (Plymouth)**

Chair: **Richard Handy and Nic Bury**

- 08:35 Introduction (Chairs)**
- 08:45 Prof. F. Brian Eddy (University of Dundee)**  
Control of salt and water balance in fish [A3.1]
- 09:20 Dr. Neil Hazon (University of St Andrews)**  
Osmoregulation in elasmobranch fish — a review [A3.2]
- 09:40 Dr. Juan Fuentes (CCMar, CIMAR Laboratorio Asociado)**  
Making a living out of drinking [A3.3]
- 10:00 Dr. John Noble-Nesbitt (University of East Anglia)**  
Mouth or Mitochondrion — which the better to sip the water of life? [A3.4]
- 10:15 Refreshment Break**
- 10:40 Dr. Gordon Cramb (University of St Andrews)**  
Molecular and cellular aspects of ion and water transport in the osmoregulatory epithelia of teleost and elasmobranch fish [A3.5]
- 11:00 Mr. Sylvain Milla (INRA)**  
Implication of mineralocorticoid receptor in rainbow trout osmoregulation [A3.6]
- 11:20 Dr. Chris Cutler (Georgia Southern University)**  
Aquaporin channels in Teleost and Elasmobranch fish [A3.7]
- 11:40 Dr. Weiqun Lu (The University of Manchester)**  
Towards understanding the function and regulation of fish neuropeptide hormones: An Integrative approach to study osmoregulation [A3.8]
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**12:00 Dr. W. Gary Anderson (University of Manitoba)**

Endocrine regulation of blood flow and secretion rate in the salt gland of the estuarine crocodile, *Crocodylus porosus* [A3.9]

**12:20 Lunch****Osmoregulation Group AGM****Chair: Richard Handy and Nic Bury****13:20 Prof. Nader Salman (Basrah University)**

Some nutritional and osmoregulatory responses of fish to dietary salt [A3.10]

**13:50 Dr. Rod Wilson (University of Exeter)**

The importance of intestinal carbonate precipitation in osmoregulation of marine teleosts [A3.11]

**14:10 Ms. Josi Taylor (RSMAS, University of Miami)**

It all comes out the same in the end: drinking seawater demands intestinal  $\text{HCO}_3^-$  secretion [A3.12]

**14:40 Dr. Carol Bucking (McMaster University)**

Environmental adaptations: comparing the consequences of digestion in teleosts acclimated to freshwater and marine environments [A3.13]

**15:00 Mr. Martin Grosell (University of Miami)**

Intestinal water absorption, anion exchange, proton transport and epithelial metabolic rate in marine teleost fish [A3.14]

**15:20 Refreshment Break****15:40 Mr. Michael Greenwood (University of Manchester)**

Parathyroid hormone receptors in the euryhaline flounder: cloning, differential expression in osmoregulatory tissues and sensitivity to osmotic/calcium challenge [A3.15]

**16:00 Dr. Pedro Guerreiro (Centre of Marine Sciences, Universidade do Algarve; University of Connecticut and Mount Desert Island Biological Laboratory)**

Parathyroid Hormone-related protein alters *in vitro* and *in vivo* renal function and ion transport in fish [A3.16]

**16:20 Dr. Richard D. Handy (University of Plymouth)**

Absorption of solutes and toxicants onto epithelia: fundamental principles, new chemicals, and challenges for biotic ligand models. [A3.17]

**16:40 Dr. Nicolas Bury (King's College London)**

The toxicity of cyanobacteria (blue-green algae) to freshwater fish [A3.18]

**17:00 Prof. Patrick Walsh (University of Ottawa)**

Comparison of the mechanisms of ammonia tolerance in ureotelic (toadfish) versus ammoniotelic (midshipman) fish [A3.19]

**17:20 Session Ends****A5. Membrane Traffic at the Synapse in Health and Disease**

**Organised by Sean Sweeney (York), Phil Newland (Southampton) and Mike Thorndyke (Royal Swedish Academy of Sciences)**

**Sponsored by GE Healthcare**

**Chair: Jeremy Henley**

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- 09:30 Prof. Jeremy Henley (University of Bristol)**  
SUMOylation regulates kainate receptor endocytosis and synaptic transmission [A5.1]
- 10:00 Prof. Iain Robinson (Peninsula School of Medicine and Dentistry)**  
A novel function for Syndapin at *Drosophila* Neuromuscular junctions. [A5.2]
- 10:30 Refreshment Break**
- 11:00 Dr. Sean Sweeney (University of York)**  
Sphingolipid regulation of synapse structure and function [A5.3]
- 11:30 Dr. Giovanni Lesa (MRC Laboratory for Molecular Cell Biology)**  
The role of polyunsaturated fatty acids at presynaptic terminals [A5.4]
- 12:00 Lunch**
- Chair: Harvey McMahon**
- 14:00 Dr. Harvey McMahon (MRC Laboratory of Molecular Biology — Cambridge)**  
Sculpting Cell Membranes: Understanding pathways of endocytosis and exocytosis [A5.5]
- 14:30 Dr. Alessandra Granata (Cancer Research UK)**  
The dystonia-associated protein torsinA plays a role in the synaptic vesicle recycling [A5.6]
- 15:00 Refreshment Break**
- 15:45 Prof. Robert Burgoyne (University of Liverpool)**  
Role of Munc18 and Rab proteins in the dynamics of dense-core granule exocytosis [A5.7]
- 16:15 Dr. Bazbek Davletov (MRC LMB, Cambridge UK)**  
Conserved prefusion protein assembly in regulated exocytosis [A5.8]
- 17:00 Session Ends**

## A6. General Biomechanics

Organised by Peter Aerts (Antwerp)

- Chair: Anthony Herrel**
- 08:40 Prof. Elizabeth Brainerd (Brown University)**  
A method for accurate 3-D reconstruction of skeletal morphology and movement [A6.39]
- 09:00 Mr. Robert Holbrook (University of Oxford)**  
Swimming performance of a subcarangiform, the blind Mexican cave fish (*Astyanax fasciatus*) [A6.40]
- 09:20 Dr. Robbie Wilson (University of Queensland)**  
Honest and dishonest signals of strength in Australian slender crayfish (*Cherax dispar*): are male's liars and cheaters? [A6.41]
- 09:40 Dr. Jeff Walker (University of Southern Maine)**  
A general model of functional constraints on phenotypic evolution [A6.42]
- 10:00 Refreshment Break and End of Session**
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## A8. Biomechanics of Arboreal Locomotion: A Tribute to Jon Barnes

### Session Organised by Walter Federle (Cambridge)

- 10:30 Dr. Anthony Herrel (University of Antwerp)**  
Morphological and biomechanical correlates of differences in arboreal locomotor performance and substrate use in *Anolis* lizards [A8.1]
- 11:00 Mr. Greg Byrnes (University of California, Berkeley)**  
Locomotor behavior of a free-ranging gliding mammal (*Cynocephalus variegatus*) [A8.2]
- 11:30 Dr. Dagmar Voigt (Max Planck Institute Stuttgart)**  
Locomotion in a complex terrain: effects of plant trichomes on the attachment of the mirid bug *Dicyphus errans* [A8.3]
- 12:00 Ms. Anne Peattie (Univ. of California, Berkeley)**  
Sticky structures: fibrillar adhesive design in lizards and arthropods [A8.4]
- 12:30 Dr. Jon Barnes (Glasgow University)**  
Climbing and adhesion in tree frogs [A8.5]
- 13:00 Lunch**
- 14:00 Dr. Walter Federle (University of Cambridge, UK)**  
Locomotion and adhesion in arboreal ants [A8.6]
- 14:30 Dr. Stephen Yanoviak (University of Florida)**  
Directed aerial descent in tropical arboreal arthropods [A8.7]
- 15:00 Dr. Manuela Schmidt (Institut für Spezielle Zoologie und Evolutionsbiologie, Friedrich Schiller Universität Jena)**  
Walking and climbing on small branches: Convergent solutions in chameleons, marsupials, and primates [A8.8]
- 15:30 Refreshment Break**
- 16:00 Dr. Chris Clemente (The University of Western Australia)**  
Adaptation of biomechanics in Australian arboreal varanids [A8.9]
- 16:30 Prof. Peter Aerts (University Antwerp)**  
Biomechanical analysis of arboreal locomotion in bonobos: context, concepts and first results [A8.10]
- 17:00 End of Session**

## C2. Programmed Cell Death

### Session Organised by Hilary Rogers (Cardiff)

Chair: Hilary Rogers

- 13:55 Introduction (Hilary Rogers)**
- 14:00 Prof. Arunika Gunawardena (Dalhousie University)**  
Programmed cell death and leaf morphogenesis [C2.1]
- 14:40 Prof. Noni Franklin-Tong (University of Birmingham)**  
Self-incompatibility in *Papaver*: signalling cascades trigger PCD in incompatible pollen [C2.2]
- 15:20 Refreshment Break**
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**15:50 Dr. Anthony Stead (Royal Holloway)**  
Programmed Cell Death during floral development and senescence [C2.3]

**16:30 Dr. Geoff Robson (University of Manchester)**  
Programmed cell death in filamentous fungi? [C2.4]

**17:00 Session End**

### **P3. Transport of Plant Growth Regulators**

**Session Organised by Philip White (SCRI), Malcolm Bennett (Nottingham) and John Hammond (Warwick)**

**Chair: Malcolm Bennett**

**14:00 Introduction to Session: Malcolm Bennett**

**14:10 Prof. Malcolm Bennett (University of Nottingham)**  
Auxin transport in root tissues [P3.1]

**14:50 Prof. Wolfram Hartung (University of Würzburg)**  
Long-distance signalling of abscisic acid (ABA) and ABA-redistribution within the plant [P3.2]

**15:30 Refreshment Break**

**16:00 Dr. Hitoshi Sakakibara (RIKEN Plant Science Center)**  
Regulation of cytokinin metabolism and translocation [P3.3]

**16:40 Dr. Colin Turnbull (Imperial College London)**  
Systemic regulation of cytokinin transport and metabolism in branching mutants of *Arabidopsis* [P3.4]

**17:10 Prof. Bill Davies (Lancaster University)**  
Soil: plant signalling networks and the control of water use and plant productivity [P3.5]

**17:40 End of Session**

### **P4. Nutritional Genomics**

**Session Organised by Martin Parry (BBSRC), Martin Broadley (Nottingham), and Nigel Halford (BBSRC)**

**Sponsored by Yara (UK) Ltd**

**Chair: Mark Aarts**

**09:20 Prof. David Salt (Purdue University)**  
Progress in mapping the *Arabidopsis* ionome [P4.8]

**10:00 Dr. Fangjie Zhao (Rothamsted)**  
Selenium concentrations in UK wheat and biofortification strategies [P4.9]

**10:30 Refreshment Break**

**11:00 Prof. Philip White (SCRI)**  
Genetic aspects of mineral biofortification [P4.10]

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- 11:30 Dr. Martin Broadley (University of Nottingham)**  
Natural genetic variation in the mineral nutrient composition of *Brassica oleracea* [P4.11]
- 12:00 Ms. Riza Abilgos-Ramos (University of Nottingham)**  
Rice Biofortification [P4.12]
- 12:20 Dr. Jonathan Howarth (Rothamsted Research)**  
Wheat nutritional genomics: remobilisation of nitrogen and sulfur during grain-filling in wheat [P4.13]
- 12:50 Lunch**
- Chair: David Salt**
- 13:50 Prof. Mark Aarts (Wageningen University)**  
Increasing the iron and zinc contents of plants [P4.14]
- 14:30 Dr. Kathryn North (John Innes Centre)**  
Probing natural variation and nutrient use efficiency in *Arabidopsis* [P4.15]
- 14:55 Refreshment Break**
- 15:25 Dr. Stanislav Kopriva (John Innes Centre)**  
Plant sulfate assimilation — introduction to a smelly world [P4.16]
- 15:40 Dr. Stanislav Kopriva (John Innes Centre)**  
Sulfate assimilation in lower plants and algae: Surprising lessons from sequenced genomes [P4.17]
- 16:05 Dr. Sarah Garton (JIC)**  
Adenosine 5'-phosphosulphate kinase: the enzyme at the interface between primary and secondary sulphate metabolism [P4.18]
- 16:30 Prof. Ruediger Hell (University of Heidelberg)**  
Regulatory function of the cysteine synthase protein complex in transgenic tobacco [P4.19]
- 17:00 Session Ends**

## P5. Redox Signals and Plant Stress

Session Organised by Peter Dominy (Glasgow)

Chair: Ari Sadanandom

- 14:00 Prof. Marc Knight (Durham University)**  
ROS signals acting through calcium-and OXI1-mediated signalling pathways [P5.1]
- 14:40 Prof. Massimo Delledonne (University of Verona)**  
S-nitrosylation inhibits peroxiredoxin II E functions during the plant hypersensitive disease resistance response [P5.2]
- 15:20 Refreshment Break**
- 15:50 Dr. Gary Loake (University of Edinburgh)**  
Uncovering the roles of S-nitrosothiols in plant disease resistance [P5.3]
- 16:25 Dr. Luis Mur (University of Wales, Aberystwyth)**  
NO provides mainly avr-dependent inputs into cell death mechanisms associated with the hypersensitive response in tobacco [P5.4]
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## **CSS. Cross Sectional Session—Antioxidants and Aging**

**Session Organised by Christine Foyer (Newcastle) and Paul Thornalley (Warwick)**

**Chair: Tom Kirkwood and Ulrika Zentgraf**

**08:50 Introduction (Chairs)**

**09:00 Prof. Linda Partridge (University College London)**

Insulin signalling, oxidative stress and aging [CSS.20]

**09:45 Dr. John Hancock (UWE, Bristol)**

The perception of reactive oxygen species in plants: the road to signal transduction [CSS.21]

**10:30 Refreshment Break**

**11:00 Prof. Stanislaw Karpinski (Stockholm University/Polish Academy of Sciences)**

Genetic, molecular and physiological mechanisms controlling cell death, defenses, and antioxidant network in response to abiotic and biotic stresses in plants [CSS.22]

**11:45 Miss Caroline Quin (University of Glasgow)**

Synthesis of novel nitron spin-traps for the investigation of oxidative stress [CSS.23]

**12:00 Dr. Emilie Combet (Glasgow University)**

Diet, gastric nitrosation and stomach cancer [CSS.24]

**12:15 Miss Linsey Robertson (University of Glasgow)**

A novel hydroxylamine spin probe [CSS.25]

**12:30 Discussion**

**13:00 Lunch**

**14:00 Prof. Stephen Spindler (University of California)**

Conserved and tissue-specific genic and physiologic responses to aging and caloric restriction in mitotic and postmitotic tissues [CSS.26]

**14:45 Prof. John Hayes (University of Dundee)**

Enhancing the enzymatic defences: antioxidant response element linked gene expression in animals [CSS.27]

**15:30 Refreshment Break**

**16:00 General Discussion — Are there generic roles for antioxidants in plant and animal aging?**

**16:30 End of Session**

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## E2. Getting Science to the Wider Public

**Organised by Professor John Bryant (Exeter University) and Sarah Blackford (SEB)**

**09:00 – 12:30 (talks); 02:00 – 04:00 (workshop)**

*Getting science to the wider public, SECC*

Media professionals and scientists will give presentations on their own experiences as well as general information about ways in which scientists can get their science known to a wider audience.

**Chair: John Bryant (Professor, University of Exeter)**

### Speakers:

**09:05 Introduction from the Chair**

**09:05 Andy Miah (Reader in New Media and Bioethics, University of Paisley)**

*Popular science-rules of engagement*

This presentation offers an appeal to a scientific method for studies into public engagement with science, thus providing an evidence base for thinking through the value of such work. It describes differing models of public engagement that can inform a scientist's interactions with the public, government and the media. The second part draws on personal experiences of the speaker in relation to his published book *Genetically Modified Athletes* (2004). The case study explains the various narratives and expectations that can arise in the context of science, from the technical to the moral, and the value of remaining an integral contributor to the shaping of public understanding.

**09:35 Latha Menon (Commissioning Editor, Oxford University Press)**

*Writing popular science books*

Writing about science for a general audience is more than a skill. At its best, science writing is literature. This talk will consider the range of writing described as 'popular science' and what makes a good popular science book. It will also offer a science commissioning editor's view of the possibilities and challenges of writing for this very tough market.

**10:05 Myra Wilson (Centre for Intelligent Systems, University of Wales Aberystwyth)**

*A scientist's view of working in TV*

Through her research work in the area of intelligent robotics, Myra Wilson was invited to be a judge for two seasons of the popular BBC TV series, *Robot Wars*. She also took part as an expert in the robot olympics, *Technogames*. This talk will look at what this involved, and the resultant effect on her department, research and teaching.

**10:35 Tea/coffee**

**11:05 Tara Womersley (Science PR officer, Edinburgh University)**

*Bridging the gap between scientists and the media*

The talk will deal with the battle between 'dumbing down' and the need to make complicated research accessible for the average person on the street. In other words, how to make science media friendly. It will look at how scientists can get their research into the mainstream media and how they should handle mainstream media enquiries. I will also cover what makes a story and what doesn't and the ways in which stories can be pitched for both print and broadcast coverage.

**11:35 Tim Radford (Former Science correspondent, The Guardian)**

*It's the way you tell 'em*

Scientists have a democratic obligation to explain their science to the taxpayers. Alas, in a democracy, there is no corresponding obligation to listen. So researchers with something serious to say have to choose words that will make people listen. It isn't easy, especially when you study things that most people will never see, using terms most people have never heard. But it can be done.

**12:05 Panel Discussion**

**12:25 Final comments and thanks from the Chair**

**12:30 Lunch**

**14:00 – 16:00 Matt Goode (Head of Media, BBSRC) Hands-on Workshop "How to deal with the media"**

This provides participants with an opportunity to practice writing about their own science for the media; and to receive professional advice on how to do this. As well as covering what is likely to work and what probably won't, Matt will offer tips on preparation, timing, targeting and sources of help, as well as what to do when the media get back to you and ask you questions, and how to follow up any coverage.

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## Posters

David Robinson and Janet Sumner (Open University) Biology and TV - enhancing learning.

There is no doubt that television educates. In a recent survey a third of the people questioned claimed to have learnt directly from television in the previous three months. Television is an ephemeral medium, but potentially a very powerful one and its influence on education can be increased substantially. The Open University has been working in partnership with the BBC to produce events, materials and activities that both support and extend the broadcast content of some popular prime time television series. Evaluation of the response to three recent Open University co-produced series will be presented. The three series all had a substantial biological strand. The design of all the components that surround a television series – 360 degree support - will be illustrated, demonstrating the new opportunities that are now available for extended learning, triggered by television.

Ted Nield (Chair, Association of British Science Writers, ABSW) The ABSW exists to help those who write about science and technology and to improve the standard of science journalism in the UK. They produce a newsletter for members, run workshops and sponsor science communication awards. Ted will be on hand to give advice and support to scientists wishing to engage with the media or who are considering a career in science communication.

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## A2. Integrating Animal Physiology and Behaviour: Towards Ecological Relevance and Animal Welfare

Organised by **Kath Sloman (Plymouth)**, **Rod Wilson (Exeter)** and **Nic Bury (Kings College London)**

Sponsored by the **BVA and Universities Federation for Animal Welfare**

Chair: **Kath Sloman and Rod Wilson**

**09:00 Introduction**

**09:20 Prof. John Spicer (University of Plymouth)**

Just because they can, doesn't mean they do The importance of field-based ecophysiology [A2.1]

**09:50 Prof. Felicity Huntingford (University of Glasgow)**

Behavioural syndromes in fish: ecology, physiology and implications for welfare [A2.2]

**10:20 Refreshment Break**

**10:50 Dr. Iain McGaw (University of Nevada, Las Vegas)**

Interactive effects of low salinity and feeding on the physiology and behaviour of decapod crustaceans [A2.3]

**11:20 Mr. Awantha Dissanayake (University of Plymouth)**

A multidisciplinary approach to evaluating physiological condition and intra-specific behaviour in the shore crab *Carcinus maenas* (Crustacea: Decapoda) [A2.4]

**11:40 Dr. Felix Mark (University of Cambridge/Alfred Wegener Institute)**

Diurnal activity patterns and related changes in energy metabolism in the cephalopod *Sepia officinalis* [A2.5]

**12:00 Dr. Dawn Scott (University of Exeter)**

Pikeperch (*Sander lucioperca*) dispersion through brackish waters—can they and do they? [A2.6]

**12:20 Lunch**

Chair: **Rod Wilson and Kath Sloman**

**13:30 Prof. Svante Winberg (Norwegian School of Veterinary Medicine and Uppsala University)**

Stress and stress coping in fish, behavioural correlates and neuroendocrine mechanisms [A2.7]

**14:00 Mr. John Fitzpatrick (McMaster University)**

Social status, sperm and stress: Reproductive suppression in a cooperative fish [A2.8]

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- 14:20 Dr. Lynne Sneddon (University of Liverpool)**  
Assessing pain perception in fish from physiology to behaviour [A2.9]
- 14:50 Dr. Katherine Sloman (University of Plymouth)**  
Are there physiological correlates of dominance in natural trout populations? [A2.10]
- 15:10 Refreshment Break**
- 15:40 Prof. Jane Hurst (University of Liverpool)**  
Behaviour and physiology: more than common scents [A2.11]
- 16:10 Mr. Sylvain Giroud (CNRS)**  
Seasonal difference in energy-saving mechanisms during chronic food shortage in a malagasy primate [A2.12]
- 16:30 Dr. Glenn Tattersall (Brock University)**  
Behavioural thermoregulation: ecological and physiological relevance [A2.13]
- 17:00 End of Session**

## **A7. Biomimetics and Biomechanics — Smart Solutions from Nature**

**Session Organised by Thomas Speck (Freiburg), Johan van Leeuwen (Wageningen), Julian Vincent (Bath)**

**Chair: Thomas Speck**

- 08:30 Opening Remarks (Thomas Speck)**
- 08:40 Prof. Julian Vincent (University of Bath)**  
Towards a theory of biomimetics [A7.1]
- 09:10 Dr. Olga Bogatyreva (The University of Bath)**  
Contextual functionality: the way to intelligent biomimetic product design [A7.2]
- 09:40 Dr. Richard Bonser (University of Reading)**  
Biomimetics: what has it done and where is it going? [A7.3]
- 10:10 Dr. Deane Harder (Botanic Garden, University of Freiburg)**  
The process of doing biomimetics [A7.4]
- 10:40 Refreshment Break**
- 11:10 Prof. Christoph Neinhuis (Technische Universität Dresden)**  
Functional self-organizing surface structures in biology and engineering [A7.5]
- 11:40 Prof. Antonia Kesel (University of Applied Sciences Bremen)**  
Learning from nature: non-toxic biofouling control by shark skin effect [A7.6]
- 12:10 Dr. Anita Roth-Nebelsick (University of Tübingen)**  
Plant interactions with water — biomimetic potential and concepts [A7.7]
- 12:40 Lunch**
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**Chair: Jérôme Casas**

**14:10 Prof. George Jeronimidis (Reading University)**

Biomimetic functionality from fibres. [A7.8]

**14:40 Dr. Markus Milwich (Institut für Textil-und Verfahrenstechnik )**

Plant stems as role models for structurally optimized biomimetic composite profiles with gradient structure [A7.9]

**15:10 Prof. Peter Fratzl (Max Planck Institute of Colloids and Interfaces)**

Mechanical functionality by hierarchical structuring — lessons from biological materials [A7.10]

**15:40 Refreshment Break**

**16:10 Prof. Claus Mattheck (Forschungszentrum Karlsruhe)**

Hidden design rules in nature [A7.11]

**16:40 Mr. Markus Rueggeberg (Botanic Garden, University of Freiburg)**

Fibre-matrix interfaces in plants as model systems for technical composites [A7.12]

**17:00 Mr. Christian Toetzke (Hahn-Meitner-Institut Berlin)**

Tensile water technology — an effort to learn from trees [A7.13]

**17:20 End of day 1—session continues Wednesday 8:30**

**17:30 Poster Session**

## **A9. Adaptations to Cold and Desiccation in Ectothermic Animals and Plants**

**Session Organised by Mark Bayley (Aarhus), Johannes Overgaard (Aarhus), Martin Holmstrup (Aarhus) and Hans Ramlow (Roskilde)**

**08:45 Introduction**

**Chair: Mark Bayley**

**09:00 Dr. Vladimir Kostal (Biology Centre ASCR, Institute of Entomology, Czech Republic)**

Changes in composition and function of biological membranes in cold-acclimated and overwintering insects [A9.1]

**09:35 Dr. Richard Lee (Miami University)**

Rapid cold-hardening: ecological significance and underlying mechanisms [A9.2]

**10:10 Dr. Scott Hayward (Liverpool University)**

Acquired cold tolerance in *Caenorhabditis elegans*: an explicit test of the lipid hypothesis [A9.3]

**10:35 Prof. Andrew Cossins (University of Liverpool)**

Understanding the molecular basis of environmental tolerance through transcriptomic analysis of extreme phenotypic variants [A9.4]

**11:00 Refreshment Break**

**Chair: Martin Holmstrup**

**11:20 Mr. Karl Erik Zachariassen (IBI, NTNU, Trondheim, Norway)**

Ionic regulation of insects during cold exposure and dehydration stress [A9.5]

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- 11:55 Dr. Robert Siegel (UCSD)**  
Ca<sup>2+</sup> dependent protein kinases and reactive oxygen species modulation of ion channels in plant and animal cell signaling [A9.6]
- 12:30 Dr. Dirk Hinch (Max-Planck-Institute of Molecular Plant Physiology)**  
Plant freezing tolerance: from gene expression to functional adaptation [A9.7]
- 13:05 Lunch**
- Chair: Hans Ramløv**
- 14:00 Prof. David L. Denlinger (Ohio State University)**  
Heat shock proteins are critical for insect winter survival [A9.8]
- 14:35 Mr. John Duman (University of Notre Dame)**  
Control of ice nucleation and propagation in cold tolerant insects [A9.9]
- 15:10 Dr. D-T Luu (CNRS/INRA/AgroM/UMII)**  
Regulation of plant aquaporins in response to water stress [A9.10]
- 15:45 Refreshment Break**
- Chair: Johannes Overgaard**
- 16:00 Dr. Olivier Leprince (Université d'Angers, INH, INRA)**  
Proteomic profiling and structure-function analysis of late embryogenesis abundant (LEA) proteins associated with desiccation tolerance in the legume seed *Medicago truncatula* [A9.11]
- 16:20 Mr. Simon Bahrndorff (University of Aarhus)**  
Drought induced expression of putative LEA proteins in collembolans [A9.12]
- 16:40 Miss Marina Korn (Max Planck Institute for Molecular Plant Physiology)**  
Heterosis in the frost tolerance of crosses between different *Arabidopsis thaliana* accessions [A9.13]
- 17:00 End of Session**

## C2. Programmed Cell Death

Session Organised by Hilary Rogers (Cardiff)

**Chair: Paul McCabe**

- 09:00 Dr. Frank Van Breusegem (Ghent University)**  
Metacaspases are not caspases [C2.5]
- 09:40 Prof. Chris Lamb (JIC, Norwich)**  
NO and HR and Programmed Cell Death [C2.6]
- 10:20 Refreshment Break**
- Chair: Frank Van Breusegem**
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- 10:50 Dr. Alison Kingston-Smith (IGER, Aberystwyth)**  
Post-ingestion induction of plant cell death: regulation and implications [C2.7]
- 11:30 Dr. Paul McCabe (University College Dublin)**  
An *in vitro* model system to study PCD regulation in plants [C2.8]
- 12:10 Dr. Luis Mur (University of Wales Aberystwyth)**  
Throwing new light on the hypersensitive response [C2.9]
- 12:50 Lunch**
- Chair: Noni Franklin-Tong**
- 14:00 Dr. Patrick Gallois (University of Manchester)**  
Identification of caspase-like proteases regulating programmed cell death in *Arabidopsis* [C2.10]
- 14:40 Dr. Maurice Bosch (University of Birmingham)**  
Characterisation of a caspase-3-like/DEVDase activity induced in *Papaver* pollen by self-incompatibility [C2.11]
- 15:00 Refreshment Break**
- Chair: Luis Mur**
- 15:30 Miss Georgina Drury (University of Manchester)**  
Light-dependent programmed cell death in *Arabidopsis thaliana* [C2.12]
- 15:50 Ms. Siamsa Doyle (University College Dublin)**  
Can chloroplasts regulate plant programmed cell death? [C2.13]
- 16:10 Dr. Ari Sadanandom (University of Glasgow)**  
The U-box protein AtPUB17 is a functional ortholog of NtACRE276 and its E3 ubiquitin ligase activity is required for plant cell death and defence [C2.14]
- 16:30 Dr. Zoe Wilson (University of Nottingham)**  
*Arabidopsis* MALE STERILITY1 regulates programmed cell death in the anther tapetum and pollen wall development [C2.15]
- 16:50 Closing Remarks (Hilary Rogers)**
- 17:00 Session End**

### **P3. Transport of Plant Growth Regulators**

**Session Organised by Philip White (SCRI), Malcolm Bennett (Nottingham) and John Hammond (Warwick)**

- Chair: Eric Kramer**
- 09:00 Introduction to Session: Eric Kramer**
- 09:10 Dr. Eric Kramer (Simon's Rock College)**  
Computer simulations of auxin transport: from technique to discipline [P3.6]
- 09:50 Dr. Gregory Symons (University of Tasmania)**  
Do brassinosteroids undergo long-distance transport in plants? [P3.7]
- 10:30 Refreshment Break**
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- 11:00 Prof. Steven Neill (University of the West of England, Bristol)**  
Nitric oxide evolution and perception [P3.8]
- 11:40 Prof. Ton Bisseling (University of Wageningen)**  
[P3.9]
- 12:20 Lunch**
- Chair: Dominique Van Der Straeten**
- 14:00 Introduction to Session: Dominique Van Der Straeten**
- 14:10 Prof. Dominique Van Der Straeten (Ghent University)**  
“One for all and all for one”: integration of hormonal signals in plant growth [P3.10]
- 14:50 Dr. Veronica Ongaro (University of York)**  
Shoot branching in *Arabidopsis* [P3.11]
- 15:30 Refreshment Break**
- 16:00 Dr. Anthony J Miller (Rothamsted Research)**  
Amino acids and nitrate as signals for the regulation of nitrogen acquisition [P3.12]
- 16:40 Dr. Ludmila Novitskaya (Russian Academy of Sciences)**  
Regulation of woody plant cambial growth by sucrose level and C/N ratio [P3.13]
- 17:00 Dr. John Hammond (University of Warwick)**  
Phloem Sucrose: integrating mineral deficiency responses [P3.14]
- 17:40 End of Session**

#### **P4. Nutritional Genomics**

**Session Organised by Martin Parry (BBSRC), Martin Broadley (Nottingham), and Nigel Halford (BBSRC)**

- Chair: Richard Mithen**
- 09:20 Professor Judith Buttriss (British Nutrition Foundation)**  
Plants in the human diet [P4.20]
- 10:00 Discussion**
- 10:30 Refreshment Break**
- 11:20 Prof. Nicholas Smirnov (Exeter University)**  
The role of *VTC2* in vitamin C biosynthesis in *Arabidopsis thaliana* [P4.22]
- 11:50 Dr. Sandra Hey (Rothamsted Research)**  
Enhancing seed phytosterol accumulation by modifying the regulation of HMG-CoA reductase by SnRK1 [P4.23]
- 12:20 Lunch**
- Chair: Nick Smirnov**
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- 14:00 Prof. Richard Mithen (Institute of Food Research)**  
Nutritional genomics of broccoli-human interactions [P4.24]
- 14:40 Dr. Dave Barrett (Nottingham University)**  
Novel methods for folate detection [P4.25]
- 15:10 Mr. Payam Mehrshahi (University of Nottingham)**  
Characterising the functional importance of folate polyglutamylation in plants [P4.26]
- 15:30 Miss Sabrina Gonzalez-Jorge (University of Nottingham)**  
Dissecting the genetic control of folate homeostasis in plants [P4.27]
- 16:00 Refreshment Break and End of Session**

## P5. Redox Signals and Plant Stress

Session Organised by Peter Dominy (Glasgow)

Chair: Peter Dominy

- 09:00 Dr. Joerg Durner (National Research Center for Environment and Health, Germany)**  
Nitric oxide signalling in plants [P5.5]
- 09:45 Dr. Laurence Bindschedler (University of Reading)**  
Quantitative proteomics of *Arabidopsis* plants submitted to oxidative stress [P5.6]
- 10:15 Mr. Laurent Marty (Heidelberg Institute of Plant Sciences)**  
Sensing the glutathione redox potential in living cells [P5.7]
- 10:45 Refreshment Break**
- 11:15 Prof. Steven Neill (University of the West of England)**  
Nitric oxide, stomatal closure and abiotic stress [P5.8]
- 12:00 Miss Christina Ehlert (INRA-Montpellier)**  
Aquaporin gating in maize roots has large impacts on integrated physiological processes [P5.9]
- 12:30 Lunch**
- 14:00 Dr. Radhika Desikan (Imperial College London)**  
The interplay between redox and hormone signalling in *Arabidopsis* guard cells [P5.10]
- 14:30 Prof. Christine Foyer (University of Newcastle)**  
Relationships between mitochondrial respiratory pathways, redox metabolism, nitrate sensing and regulation of plant architecture in *Nicotiana glauca* [P5.11]
- 15:15 Miss Vittoria Locato (Rothamsted Research)**  
Coordinated decreases in cellular ascorbate and glutathione during the growth of *Arabidopsis* cell cultures [P5.12]
- 15:45 Refreshment Break**
- 16:15 Dr. Graham Noctor (Université de Paris Sud)**  
Functional analysis of H<sub>2</sub>O<sub>2</sub> signalling in photorespiratory *Arabidopsis* mutants deficient in catalase [P5.13]
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## E1. CV Workshop

### Lunchtime Workshop 12:00 – 14:00 (Crowne Plaza Hotel (adjacent to the conference centre))

**Speakers: Sarah Blackford (Society for Experimental Biology) and Peter Lumsden (University of Central Lancashire)**

Every career move represents a (usually quite major) transition in your life and it's important that you project yourself positively to your next employer. Whether you are making the move from being a PhD student to starting your first postdoctoral research post, applying for an academic position, or trying to forge a career outside of academia you will need to sell yourself on paper with the aim of getting an interview. This is your personal advertisement so it's important that you get it right. There is no 'one CV'—it's a dynamic document which will change according to whom you are pitching yourself and depends on the skills and experience they are seeking.

Aimed at postgraduates and postdoctorals this workshop will help you to identify your skills and present them effectively in a CV.

## Tuesday Poster Sessions

### A2. Integrating Animal Physiology and Behaviour: towards ecological relevance and animal welfare

**Dr. Lewis Halsey (University of Birmingham)**

Estimating pedestrian energetics in penguins [A2.21]

**Dr. Alexander Kabat (University of Birmingham)**

The metabolic costs of terrestrial locomotion in two closely related species of albatrosses and its relationship to nest site [A2.22]

**Miss Camilla Piggott (University of Plymouth)**

The effects of sublethal contaminant exposure on foraging behaviour in the shore crab *Carcinus maenas* (Crustacea: Decapoda) [A2.23]

**Ms. Xaymara Serrano (University of Miami, RSMAS)**

Ecophysiology of the gray snapper: Salinity effects on distribution, abundance and behavior [A2.24]

**Dr. Valsa Peter (University of Kerala)**

Changes in the thyroid status modify the metabolite pattern of air-breathing perch (*Anabas testudineus* Bloch) during monocrotophos (Nuvacron) exposure [A2.25]

**Miss Gilta Jaeckel (Alfred Wegener Institute)**

Analysis of diurnal activity patterns and related changes in metabolism in the cephalopod *Sepia officinalis* [A2.26]

**Dr. Penny Hawkins (RSPCA)**

Telemetry in the field: Practical refinements to improve animal welfare [A2.27]

**Dr. David Rosen (University of British Columbia)**

Laboratory studies in wildlife conservation: the case of the Steller sea lion [A2.28]

**Mr. Jefferson Murua (University of Exeter)**

Differential sodium uptake kinetics in freshwater Atlantic salmon with alternative life histories. [A2.29]

**Dr. Christel Lefrancois (CRELA-France; IAMC, IMC-Italy)**

The effect of oxygen and temperature on the energetics of swimming in *Mugil cephalus* [A2.30]

**Mrs. Marcella Cannas (IMC, Italy-CRELA, France)**

Behaviour and physiology of the startle response in common sole (*Solea solea*) exposed to hypoxia [A2.31]

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**Mr. Matthieu Bruneaux (CNRS/UPMC UMR 7144)**

Short term adaptive response and phenotypic plasticity of Crustacean hemocyanins: study of *Carcinus maenas* and *Segonzacia mesatlantica* [A2.32]

**Dr. Charles Bishop (University of Wales Bangor)**

Novel GPS tags reveal fine-scale foraging movements of marine predators over extended time periods [A2.33]

### A3. Drinking, Salt and Osmoregulation

**Dr. Lara Meischke (University of St Andrews)**

Cloning and expression of Aquaporin water channels in the euryhaline bull shark, *Carcharhinus leucas* [A3.20]

**Dr. Saber Khodabandeh (Tarbiat Modares University)**

Salinity tolerance capacity in Persian Sturgeon, *Acipenser persicus*, fry [A3.21]

**Dr. Svetlana Kalujnaia (University of St Andrews)**

Novel genes discovered by transcriptomic approach to the salinity study in European eel *Anguilla anguilla* [A3.22]

**Miss Ivone Giffard-Mena (Université Montpellier II)**

The role of the gut in salinity adaptation of the sea-bass *Dicentrarchus labrax* during larval development [A3.23]

**Miss Janet Genz (University of Miami, Rosenstiel School of Marine and Atmospheric Science)**

Branchial H<sup>+</sup> extrusion in the gulf toadfish compensates for increased intestinal HCO<sub>3</sub><sup>-</sup> secretion in elevated salinity [A3.24]

**Dr. Mbaye Tine (IRD/UMII Montpellier)**

Growth hormone and Prolactin-1 gene transcription in natural populations of the black-chinned tilapia *Sarotherodon melanotheron* acclimatised to different salinities [A3.25]

**Dr. Subhash Peter (University of Kerala)**

Prolonged air-breathing and recovery modify the thyroid and interrenal axes in climbing perch (*Anabas testudineus*) [A3.26]

**Mr. Ewan Campbell (University of Aberdeen)**

Earthworm osmoregulation : aquaporins in a non-model invertebrate [A3.27]

### A7. Biomimetics and Biomechanics — Smart Solutions from Nature

**Mr. Tobias Seidl (University of Zurich)**

Desert ants monitor substrate roughness while running [A7.29]

**Mr. Tobias Seidl (European Space Agency)**

Biomimetic studies for future space missions [A7.30]

**Dr. Nikolay Bogatyrev (The University of Bath)**

Biomimetic jumps: inventing of non-existing locomotions [A7.31]

**Miss Anja Glisovic (Georg-August-Universitaet Goettingen)**

Correlation between structure and mechanical properties of spider silk [A7.32]

**Miss Irina Gavrilova (TU Ilmenau)**

The human skin as paragon of mechanical sensitive and adaptive coating [A7.33]

**Miss Kathrin Carl (TU Ilmenau)**

Modelling of the stimulus leading apparatus considering periphery configuration of tactile sensors [A7.34]

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**Dr. Antonia Kesel (University of Applied Sciences Bremen)**

Does schooling reduce drag in submerged bodies? [A7.35]

**Mr. Michael Rosenthal (Technische Universität Dresden)**

Design and development of a bio-inspired, three-dimensional deformable veneer [A7.36]

**Dr. Richard Bonser (University of Reading)**

Towards biomimetic feathers for better insulation [A7.37]

**Mr. Andrew Conn (Bristol University)**

An insect-inspired micro air vehicle flapping mechanism [A7.38]

**Prof. John Videler (Groningen University)**Extreme drag reducing adaptations in the Swordfish *Xiphias gladius* [A7.39]**Mr. Sebastian Busch (Botanic Garden, University of Freiburg, Germany)**

New insights into self-repair processes in plants as models for self-repairing biomimetic materials [A7.40]

**Dr. Naoe Hosoda (Advanced Nano Materials Laboratory, National Institute for Materials Science)**

Substrate roughness at the nanoscale and the adhesive ability of the beetle tarsi [A7.41]

**Prof. Antonia Kesel (University of Applied Sciences Bremen)**

Learning from nature: aerofoil tuning by “dragonfly-flaps” [A7.42]

**A8. Biomechanics of Arboreal Locomotion: A Tribute to Jon Barnes****Mr. Daniel Zurek (Max Planck Institute Stuttgart)**The role of attachment organs in the larval locomotion of the beetle *Gastrophysa viridula* [A8.11]**Mr. Stephane Montuelle (Museum National d'Histoire Naturelle— MNHN)**Prey capture behavior in *Anolis* lizards: testing the effect of surface diameter (branches versus flat substratum) [A8.12]**A9. Adaptations to Cold and Desiccation in Ectothermic Animals and Plants****Miss Dorthe Jensen (National Environmental Research Institute, Denmark)**The influence of developmental stage on cold shock resistance and ability to cold-harden in *Drosophila melanogaster* [A9.14]**Dr. Rainer Kiko (Institut für Polarökologie, Kiel)**

Antarctic sea ice: habitat characteristics, metazoan fauna, and adaptations to low temperature [A9.15]

**Dr. Melody Clark (British Antarctic Survey)**

Molecular mechanisms of winter survival in Polar Arthropods [A9.16]

**Dr. Melody Clark (British Antarctic Survey)**

Revealing the secrets of dormancy and of survival during desiccation [A9.17]

**Miss Christina Ryge Petersen (DMU)**Slow dehydration increases desiccation tolerance in *Dendrobaena octaedra* cocoons [A9.18]**Mr. Johannes Overgaard (National Environmental Research Institute)**Temperature, humidity and inoculative freezing are all signals for glucose accumulation in the freeze tolerant earthworm *Dendrobaena octaedra* [A9.19]

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**Dr. Keiron Fraser (The British Antarctic Survey)**

Are the costs of synthesising proteins elevated or decreased at polar water temperatures? [A9.20]

**Dr. Natalia Li (Institute for Biological Problems of Cryolitozone SD RAS)**

Cold hardiness of insects distributed in the area of Siberian Cold Pole [A9.21]

**Mr. Jakob Frederiksen (University of Aarhus)**

The hygropreference of adult soil-living Collembolans investigated at realistic temperatures [A9.22]

## **A10. Integrative Red Blood Cell Functions: Oxygen Sensing and Regulation of Local Blood Flow**

**Dr. Pia Koldkjær (University of Liverpool)**

Physiological stimuli of NKCC in red blood cells of birds and reptiles [A10.13]

**Miss Karina Kristensen (University of Aarhus)**

Oxygen sensitive regulatory volume increase in red blood cells from cane toad, *Bufo marinus* [A10.14]

**Dr. Frank Jensen (University of Southern Denmark)**

Nitrite permeation of erythrocytes and its possible biological roles [A10.15]

**Mr. Santiago Esteva (Departament de Fisiologia — Biologia, Universitat de Barcelona, Spain)**

Blood rheological behaviour in rats after intermittent hypobaric hypoxia exposure to 5000m. [A10.16]

## **C2. Programmed Cell Death**

**Mr. Bennett Young (Manchester University)**

A novel peptide that regulates cell death in the Arabidopsis suspensor [C2.16]

## **C3. Beneficial Acclimation: How do Physiological Responses to Temperature Contribute to Fitness?**

**Ms. Katharina Bremer (Alfred-Wegener-Institute)**

Thermal acclimation of aerobic scope in a southern North Sea cod population [C3.9]

## **C5. General Thermobiology**

**Miss Katrin Deigweier (Alfred Wegener Institute)**

Adaptation of ion regulatory capacities in gills of cold and warm water fish under hypercapnic acidosis [C5.9]

**Dr. Melody Clark (British Antarctic Survey)**

Regeneration rates in the Antarctic Brittlestar: *Ophionotus victoriae* [C5.10]

**Dr. Jorge Fernandes (University of St Andrews)**

Differential expression of three *FoxK1* splice variants in relation to embryonic temperature in the tiger pufferfish [C5.11]

**Dr. Gisela Lannig (Alfred Wegener Institute for Polar & Marine Research)**

Reduced temperature tolerance in cadmium-exposed oysters: Early mismatch between O<sub>2</sub>-demand and O<sub>2</sub>-supply due to impaired aerobic capacities [C5.12]

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### P3. Transport of Plant Growth Regulators

**Mr. Dhaval Patel (University of Nottingham)**Quantitative genetic analysis of root auxin responses in *Arabidopsis* [P3.19]**Ms. Dragana Rancic (University of Belgrade)**

Transport of growth regulators to developing xylem tissues: plant ABA status impacts on hydraulic conductance by modifying xylem vessel development [P3.20]

**Miss Angharad Jones (University of Bristol)**

The role of auxin in root-hair initiation [P3.21]

**Dr. Julian Theobald (Lancaster Environment Centre)**

Delivering enhanced fruit quality to the UK tomato industry through implementation of partial root-zone drying [P3.22]

**Dr. Anthony Miller (Rothamsted Research)**

Expression and functional analysis of rice NRT2 nitrate transporters [P3.23]

**Dr. Sam Mugford (University of East Anglia)**The *Arabidopsis* transmissible wound signal [P3.24]**Mr. Nicholas Clark (University of Durham)**

Ethylene and Auxin interaction and the cytoskeleton [P3.25]

### P4. Nutritional Genomics

**Ms. Elizabeth Allen (University of Wales Bangor)**Metabolite regulation of gene expression during the heterotrophic to autotrophic transition in developing seedling of *Arabidopsis* [P4.28]**Mr. Seosamh Ó Lochlainn (University of Nottingham)**

Natural genetic variation in zinc (Zn) accumulation in Brassicaceae species [P4.29]

**Dr. Carol Wagstaff (University of Reading)**

Genetic variation associated with glucosinolate hydrolysis and postharvest performance in rocket (arugula) species [P4.30]

**Dr. Steve Quarrie (University of Newcastle)**

A QTL for grain yield on 7AL of wheat is activated by ABA and low nutrient treatments during flag leaf ontogeny [P4.31]

**Ms. Emmanuelle Cabannes (Rothamsted Research)**

Role of sulphate transporters in selenium uptake [P4.33]

### P5. Redox Signals and Plant Stress

**Prof. Laura DeGara (University of Bari)**

Changes in the ascorbate metabolism during programmed cell death and moderate oxidative stress in TBY-2 cells. [P5.19]

**Dr. Steve Quarrie (Newcastle University)**

QTLs governing ozone impacts on wheat yield [P5.20]

**Dr. Victor Odjegba (University of Lagos)**Studies on the effects of platinum group metals (PGMs) on *Lactuca sativa* L. [P5.21]**Mrs. Homa Mahmoodzadeh (Islamic Azad University of Mashad)**Effect of salinity stress on structural and ultrastructural features of apical meristems of two cultivars of canola (*Brassica napus* L.c.v.) [P5.22]

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**Miss Michaela Hundertmark (Max-Planck-Institute of Molecular Plant Physiology)**

Genome-wide analysis of LEA (late embryogenesis abundant) genes in the model plant *Arabidopsis thaliana* [P5.23]

**Dr. Gareth Norton (University of Aberdeen)**

Whole genome transcriptional analysis of arsenate stress in rice [P5.24]

**Miss Angélique Besson (CNRS/Université de Bourgogne)**

NO contributes to cadmium toxicity in *Arabidopsis thaliana* [P5.25]

**Mr. Nikolaos Tsakirpaloglou (University of Newcastle)**

Unusual expression patterns of SODs in rice [P5.26]

**Dr. Violeta Velikova (Institute of Plant Physiology-Sofia)**

Secondary metabolites: tools for stress protection in plants [P5.27]

**Dr. Cristian Cojocariu (Lancaster University)**

Isoprene-induced protection in tobacco plants exposed to elevated ozone concentration [P5.28]

**Miss Krishna Morker (Lancaster University)**

Early signals in the wound response of *Arabidopsis thaliana* [P5.29]

**Miss Tatiana Roslyakova (Institute of Agricultural Biotechnology)**

A new isoform of putative Na<sup>+</sup>/H<sup>+</sup> antiporter HvNHX3 in barley: expression and immunochemical localization under salt stress [P5.30]

**Dr. Andrew Love (Glasgow University)**

Mitochondrial electron transport mediates defence against cauliflower mosaic virus [P5.31]

**Miss Natallia Pshybytko (Intitute of Biophysics and Cell Engineering, NASB)**

Role of plastoquinone redox state in stress reaction of plants [P5.32]

**Dr. Marisol Castrillo-Issa (Universidad Simón Bolívar)**

Response to cadmium exposure in crop and weed plants [P5.33]

**Dr. Jo Bright (University of the West of England)**

Nitric oxide production and metabolism by pollen [P5.34]

**Dr. Spencer Maughan (Cambridge/University of Melbourne)**

A novel family of thiol transporters from plants [P5.35]

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## **A2. Integrating Animal Physiology and Behaviour: Towards Ecological Relevance and Animal Welfare**

**Organised by Kath Sloman (Plymouth), Rod Wilson (Exeter) and Nic Bury (Kings College London)**

**Sponsored by the BVA and the Universities Federation for Animal Welfare**

**Chair: Nic Bury and Kath Sloman**

**09:15 Prof. Anthony (Tony) Farrell (University of British Columbia)**

Assessing fish welfare during commercial live hauling [A2.14]

**09:45 Dr. Oyvind Overli (Norwegian University of Life Sciences)**

Serotonin as a welfare indicator in teleost fish [A2.15]

**10:05 Miss Ana Marçalo (INIAP/IPIMAR-CRIPSul)**

Physiological, physical and behavioural responses of sardine to purse seine fishing: implications for the survival of escapees [A2.16]

**10:25 Prof. Anne Brown (Aquatronics Ltd)**

Understanding the welfare of farmed cod under commercial conditions: integration of physiological, behavioural and physical approaches [A2.17]

**10:45 Refreshment Break**

**11:20 Prof. Pat Butler (Birmingham University)**

The trials and tribulations of migratory barnacle geese [A2.18]

**11:50 Dr. Lewis Halsey (University of Birmingham)**

King penguins as bio-indicators? Variations in the behaviours and energetic costs of foraging dives [A2.19]

**12:10 Dr. Peter Frappell (La Trobe University)**

Integrating physiology, behaviour and ecology: the diverse approach to a coherent blueprint for conservation [A2.20]

**12:40 Concluding Remarks**

**13:00 End of Session and Lunch**

## **A7. Biomimetics and Biomechanics—Smart Solutions from Nature**

**Session organised by Thomas Speck (Freiburg), Johan van Leeuwen (Wageningen), Julian Vincent (Bath)**

**Chair: Johan van Leeuwen**

**08:30 Dr. Rudolf Bannasch (Evologics Berlin)**

Bionics—Innovative structural solutions in fluid-dynamics and robotics [A7.14]

**09:00 Dr. Nicolas Franceschini (CNRS & University of the Mediterranean)**

Optic flow based autopilot: from insects to rotorcraft and back [A7.15]

**09:30 Mr. David Lentink (Wageningen University, Delft University of Technology)**

Novel micro aircraft inspired by insect flight [A7.16]

**10:00 Prof. Jérôme Casas (University Tours)**

Arthropod flow sensing: when MEMS design learns from physical ecology [A7.17]

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**10:30 Refreshment Break**

**11:00 Prof. Friedrich G. Barth (University of Vienna)**

Arthropod mechanoreceptors: from biology to engineering [A7.18]

**11:30 Dr. Helmut Schmitz (University of Bonn)**

A biomimetic IR sensor based on a mechanosensor [A7.19]

**12:00 Dr. Emma Johnson (University of Reading)**

The morphology and mechanics of *Orthopteroidea* mechanosensors [A7.20]

**12:20 Dr. Ardian Morina (University of Leeds)**

Opportunities and challenges for obtaining effective lubricated engineering systems inspired by the lubrication of synovial joints [A7.21]

**12:40 Lunch**

**Chair: Julian Vincent**

**14:10 Dr. Paul Breedveld (Delft University of Technology)**

Bio-inspired medical technology [A7.22]

**14:40 Dr. Rolf Luchsinger (Empa, Centre for Synergetic Structures)**

Biomimetic self-repairing membranes for pneumatic structures [A7.23]

**15:10 Mrs. Petra Gruber (Vienna University of Technology)**

The signs of life in architecture [A7.24]

**15:30 Mr. Alain Bujold (Mawashi Protective Clothing Inc. )**

Biomimetics / Biomechanics can be utilized to enhance protection and performance for soldiers and other personnel who work in high-performance/high-risk roles [A7.25]

**15:50 Refreshment Break**

**16:20 Mr. Lars Uno Larsson (Swedish Biomimetics 3000 AB)**

Funding and Fostering of translational research of Biomimetic concepts to the point where they are considered commercial candidates [A7.26]

**16:50 Dr. Phil Richardson (University of Bath)**

Biomimetics applied to running a business [A7.27]

**17:20 Dr. Olga Speck (Botanic Garden, University of Freiburg)**

Biomimetics and lifelong learning-concepts for the implementation of biomimetics in education [A7.28]

**17:50 Concluding remarks (Julian Vincent)**

**18:00 End of session**

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**A10. Integrative Red Blood Cell Functions: Oxygen Sensing and Regulation of Local Blood Flow****Organised on behalf of the SEB Animal Respiration Group by Frank B. Jensen (Odense, Denmark) and Michael Berenbrink (Liverpool)****Sponsored by the Biotechnology and Biological Sciences Research Council, UK (BBSRC)****Chair: F. B. Jensen****09:00 F. B. Jensen and M. Berenbrink: Introduction****09:05 Dr. Mark Gladwin (NIH, Bethesda)**

Unraveling the reactions of nitrite and hemoglobin in signaling, physiology and therapeutics [A10.1]

**09:35 Dr. Angela Fago (University of Aarhus)**

Unraveling the origin of the nitrite-mediated hypoxic vasodilation [A10.2]

**10:00 Mr. Rakesh Patel (University of Alabama at Birmingham)**

Molecular mechanisms regulating RBC dependent hypoxic vasodilation: Role of ATP, S-nitrosohemoglobin and nitrite reduction [A10.3]

**10:30 Refreshment Break****Chair: M. Berenbrink****11:00 Mr. Jose Gonzalez-Alonso (Centre for Sports Medicine and Human Performance, Brunel University, West London)**

Erythrocytes and the control of the human skeletal muscle circulation [A10.4]

**11:30 Dr. Frank Jensen (Odense)**Search for O<sub>2</sub> sensor and vasoactive roles of red blood cells in fish regulation of local blood flow [A10.5]**11:55 Mr. Roy Weber (Aarhus University, Denmark)**

Interactions between vertebrate hemoglobins and red cell proteins: Possible roles in regulating cellular metabolism and rheology [A10.6]

**12:20 Prof. Andy Cossins (Liverpool University)**

Non-muscle myoglobin expression and its respiratory consequences [A10.7]

**12:45 Lunch****Chair: F. B. Jensen****14:00 Dr. John Gibson (University of Cambridge)**

Oxygen dependence of membrane transport in normal and sickle human red blood cells [A10.8]

**14:25 Dr. Anna Bogdanova (Zürich)**

Oxygen-dependent ion transporters in erythrocytes [A10.9]

**14:50 Dr. Michael Berenbrink (Liverpool University)**Comparative physiology of O<sub>2</sub> sensitive ion transport in vertebrate red blood cells [A10.10]**15:15 Refreshment Break****Chair: M. Berenbrink**

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- 15:45 Dr. Peter Flatman (University of Edinburgh)**  
Activation of red cell Na-K-2Cl cotransport by deoxygenation [A10.11]
- 16:10 Dr. Pia Koldkjær (University of Liverpool)**  
O<sub>2</sub> dependent haemoglobin polymerisation in whiting red blood cells [A10.12]
- 16:35 General Discussion**
- 17:00 End of Session**

Social dinner in the evening organised by Session Organisers

### **C3. Beneficial Acclimation: How do Physiological Responses to Temperature Contribute to Fitness?**

Session Organised by Frank Seebacher (USYD) and Hans Otto Poertner (Bremerhaven)

**Chair: Frank Seebacher**

- 08:30 Dr. Robbie Wilson (University of Queensland)**  
Testing the benefits of acclimation to reproductive performance in male mosquitofish [C3.1]
- 09:00 Dr. John Terblanche (Stellenbosch University)**  
The relative contributions of developmental plasticity and adult acclimation to physiological variation in the tsetse fly, *Glossina pallidipes* (Diptera, Glossinidae) [C3.2]
- 09:30 Prof. Hans Pörtner (AWI Bremerhaven)**  
Constraints and trade-offs in climate dependent adaptation: energy budgets and growth in a latitudinal cline [C3.3]
- 10:00 Prof. Theunis Piersma (University of Groningen/Royal Netherlands Institute for Sea Research)**  
Acclimation in long-distance migrant birds that routinely move between contrasting temperature regimes: experimental studies on red knots [C3.4]
- 10:30 Refreshment Break**
- Chair: Hans Pörtner**
- 11:00 Dr. Bregje Wertheim (University College London)**  
Functional genomics of plastic and evolutionary responses to thermal stress [C3.5]
- 11:30 Prof. Lloyd Peck (British Antarctic Survey)**  
Oxygen limited thermal tolerance: the scale of individual variation, and the effects of size [C3.6]
- 12:00 Dr. Melody Clark (British Antarctic Survey)**  
The heat shock response in Antarctic marine organisms [C3.7]
- 12:30 Dr. Frank Seebacher (University of Sydney)**  
Developmental and sex-specific plasticity of metabolic function [C3.8]
- 13:00 End of Session and Lunch**
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Wednesday 4 April 2007

## C5. General Thermobiology

### Session Organised by Hans Otto Poertner (Bremerhaven)

Chair: Hans Pörtner

**14:15 Dr. Piero Calosi (University of Plymouth)**

What determines a species' geographic range? Thermal biology and geographical range size relationships in European diving beetles [C5.1]

**14:40 Dr. Simon Morley (British Antarctic Survey)**

Thermal niche, aerobic scope and temperature sensitivity: a latitudinal comparison [C5.2]

**15:05 Miss Mareike Schröer (Alfred Wegener Institute for Polar and Marine Research)**

Thermal tolerance in the lugworm *Arenicola marina*: measures of climate dependent organismal performance [C5.3]

**15:25 Miss Astrid Wittmann (Alfred-Wegener-Institute for Polar and Marine Research)**

Thermal tolerance in the lugworm *Arenicola marina*: burrow irrigation and respiration [C5.4]

**15:45 Refreshment Break**

**16:15 Dr. Andreas Mölich (Humboldt-Universität zu Berlin and Sable Systems International)**

Oxygen dependence of post-CT<sub>max</sub> CO<sub>2</sub> release in *Drosophila* [C5.5]

**16:40 Dr. Magnus Lucassen (Alfred Wegener Institute)**

Regulation of mitochondrial functioning with temperature in ectothermic animals [C5.6]

**17:05 Dr. Nomakwezi Mzilikazi (Philipps-Universität Marburg)**

The presence and function of uncoupling proteins in a phylogenetically ancient mammal, the rock elephant shrew, *Elephantulus myurus* [C5.7]

**17:30 Mr. Rainer Kiko (Institut für Polarökologie, Kiel)**

Antarctic sea ice: habitat characteristics, metazoan fauna, and adaptations to low temperature [C5.8]

**17:55 End of Session**

## P3. Transport of Plant Growth Regulators

### Session Organised by Philip White (SCRI), Malcolm Bennett (Nottingham) and John Hammond (Warwick)

Chair: Philip J. White

**09:30 Dr. Ian Dodd (Lancaster University)**

Transport of growth regulators from roots in drying soil during partial rootzone drying: the mechanics of a new deficit irrigation technique [P3.15]

**10:00 Dr. Karim Sorefan (John Innes Centre)**

Auxin homeostasis and Arabidopsis fruit development [P3.16]

**10:30 Refreshment Break**

**11:00 Prof. Jonathan Jones (Sainsbury Laboratory)**

Little and large pathogen effectors in plant resistance and susceptibility [P3.17]

**11:40 Dr. Julia Kehr (Max-Planck Institute)**

Long distance transport and movement of RNA through the phloem [P3.18]

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**12:20 Lunch and End of Session**

## **P5. Redox Signals and Plant Stress**

**Session Organised by Peter Dominy (Glasgow)**

**Chair: Peter Dominy**

**09:00 Mr. David Wendehenne (CNRS/Université de Bourgogne)**

Role of nitric oxide in plants challenged by elicitors or cadmium: another paradigm for double-edged role of nitric oxide [P5.14]

**09:45 Dr. Jillian Price (University of Glasgow)**

Mutation of the AtNOS1/AtNOR1 gene confers salt tolerance on *Arabidopsis* [P5.15]

**10:15 Dr. Lucio Conti (University of Glasgow)**

SUMO proteases regulate ROS production in *Arabidopsis* [P5.16]

**10:45 Refreshment Break**

**11:15 Prof. Phil Mullineaux (University of Essex)**

Spatial dependence for H<sub>2</sub>O<sub>2</sub>-directed signalling in *Arabidopsis* leaves [P5.17]

**12:00 Dr. Simon Hald (University of Manchester)**

Regulation of Cytochrome b6f complex in response to NADP(H)-redox poise [P5.18]

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