PROGRAMME AT A GLANCE

		PALAZZO CONGRESSI			PALAZZO AFFARI					
	TIME/ROOM	**AUDITORIUM**	**VERDE** 2ND FLOOR	**ONICE** GROUND FLOOR	**GROUND FLOOR**	**ROOM 1** 1ST FLOOR	**ROOM 2** 1ST FLOOR	**ADUA 1** 1ST FLOOR	**ADUA 2** 2ND FLOOR	**2ND FLOOR**
MONDAY 2 JULY 2018	16:00–18:00	PRE-CONFERENCE REGISTRATION (ENTRANCE FOYER)								
TUESDAY 3 JULY 2018	08:00–09:00	REGISTRATION & OPENING OF EXHIBITION								
	09:00–11:00	A1	A8	C5	AC3	SEB+1	P1	P4	P6	A5
	11:00–11:30	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	11:30–13:00	ANIMAL PRESIDENT'S MEDALLIST AND YSAS TALKS (ROOM: AUDITORIUM, PALAZZO CONGRESSI) PLANT PRESIDENT'S MEDALLIST AND YSAS TALKS (ROOM: GROUND FLOOR, PALLAZZO AFFARI)								
	13:00–14:00	LUNCH/EXHIBITION/EARLY CAREER SCIENTIST NETWORKING LUNCH (EXHIBITION HALL)								
	14:00–15:30	A1	A8	C5	AC3	SEB+1	P1	P4	P6	A5
	15:30–16:00	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	16:00–17:45	A1	A8	C5	AC3	SEB+1	P1	P4	P6	A5
	18:00–19:00	SCIENCE WITH IMPACT (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	19:00–21:00	WELCOME EVENING RECEPTION (EXHIBITION HALL)								
WEDNESDAY 4 JULY 2018	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–10:00	CELL AND SEB+ PRESIDENT'S MEDALLIST TALKS (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	10:00–10:30	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	10:30–12:45	A9	P3	C1	A2	SEB+2	AC1	P6	A8	A4
	12:45–13:45	LUNCH/EXHIBITION/POSTERS/MEET THE ACADEMICS (12:55-13:35, ROOM: 4TH FLOOR, PALAZZO AFFARI)								
	13:45–14:45	WOOLHOUSE LECTURE (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	15:00–16:40	A9	P3	C1	A2	C2	AC1	P2	A8	A4
	16:40–17:10	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	17:10–18:25	A9	P3	C1	A2	C2	AC1	P2	A8	A4
	18:30–19:30	POSTER SESSION 1 (EXHIBITION HALL)								
	19:30–22:00	DIVERSITY DINNER (ROOM: 4TH FLOOR, PALAZZO AFFARI) - SEE PAGE 8 FOR MORE DETAILS								
THURSDAY 5 JULY 2018	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–10:30	A9	A10	C2	A7	C4	A6	P7	PA1	P3
	10:30–11:00	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	11:00–12:00	A9	A10	C2	A7	C4	A6	P7	PA1	P3
	12:15–13:15	BIDDER LECTURE (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	13:15–14:15	LUNCH/EXHIBITION/POSTERS/SEB - THE FUTURE (13:35 - 14:05, AUDITORIUM, PALAZZO CONGRESSI)								
	14:15–16:10	A9	A10	C2	A7	CAREERS WORKSHOP 14:10 - 16:10	A4	P7	PA1	A2
	16:10–16:40	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	16:40–17:55	A9	A10	C2	A7	C4	A4	P7	PA1	A2
	18:00–19:00	POSTER SESSION 2 (EXHIBITION HALL)								
FRIDAY 6 JULY 2018	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–11:00	A10	A8	C3	A3	CAREERS WORKSHOP 09:00 - 11:00	P5	P7	A6	AC2
	11:00–11:30	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	11:30–12:30	A10	A8	C3	A3		P5	P7	A6	AC2
	12:45–13:45	CELL BIOLOGY PLENARY LECTURE (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	13:45–14:00	MEDALS AND PRIZES (ROOM: AUDITORIUM, PALAZZO CONGRESSI)								
	14:00–15:00	LUNCH/EXHIBITION/POSTERS								
	14:00–16:00	A10	A8	C3	A3		P5	P7	A6	AC2
	16:00–16:30	REFRESHMENT BREAK/EXHIBITION/POSTERS								
	16:00–18:00	A10	A8	C3	A3		P5	P7	A6	AC2
	20:00–LATE	CONFERENCE DINNER (VENUE: PALAZZO BORGHESE) SEE PAGE 9 FOR MORE DETAILS								

KEY	
A1	THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS
A2	INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER?
A3	GENERALITY OF THE 'PACE-OF-LIFE SYNDROME' CONCEPT: IS THE IDEA OF INTEGRATED SYNDROMES SUPPORTED BY EXPERIMENTAL DATA?
A4	CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE
A5	MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE
A6	OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS
A7	BIOMECHANICS AND CLIMATE CHANGE
A8	OPEN BIOMECHANICS
A9	OPEN ANIMAL BIOLOGY
A10	OPEN ANIMAL BIOLOGY
AC1	PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES
AC2	THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE
AC3	ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS TO CONSERVATION
PA1	ENVIRONMENTAL IMPACT ON EPIGENETIC MEMORY
PC1	GENERAL CELL AND PLANT BIOLOGY
C1	SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY
C2	FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY
C3	QUANTITATIVE SYNTHETIC BIOLOGY
C4	SEQUENCING FROM LAB TO FIELD AND THE POST GENOMIC ERA

KEY	
C5	GREEN MICROBES
P1	CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS
P2	MORPHOGENESIS IN NON-FLOWERING PLANTS
P3	PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL?
P4	FROM GENOME TO GENOMES
P5	ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS
P6	PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION
P7	SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING
SEB+1	TEACHING BIOLOGY AT DIFFERENT SCALES: CHALLENGES, OPPORTUNITIES AND STRATEGIES
SEB+2	EMBRACING YOUR ANIMAL CARE, WELFARE AND USE COMMITTEE - A WIN-WIN SITUATION
CAREERS WORKSHOP	GETTING THE MESSAGE ACROSS: COMMUNICATING YOUR SCIENCE TO DIFFERENT AUDIENCES

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS (A1)**	**OPEN BIOMECHANICS (A8)**	**GREEN MICROBES (C5)** SPONSORED BY: PHYCONET AND SHELL BIODOMAINS	**ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS TO CONSERVATION (AC3)**
08:00	REGISTRATION & OPENING OF EXHIBITION			
CHAIR	CHAIR: SHAUN KILLEN	CHAIR: JIM USHERWOOD	CHAIR: JOHN LOVE	CHAIR: NIC BURY
09:00	**Jens Krause** ***Humboldt University, Germany*** Interactions between robots and fish A1.1	**Nicholas E Durston** ***University of Bristol, United Kingdom*** Wing shape measurements of free-gliding birds of prey and implications for flight stability A8.1	**Marina Montresor** ***Stazione Zoologica Anton Dohrn, Italy*** Diversity of marine microalgae: challenges and opportunities C5.1	**Steven J Cooke** ***Carleton University, Canada*** Conservation relevance is enhanced by taking the lab to the field AC3.1
09:15		**Roi Gurka** ***Coastal Carolina University, United States*** Experimental study on the near wake flow characteristics of a freely flying southern Boobook owl A8.2		
09:30	**David Bierbach** ***Leibniz Institute of Freshwater Ecology and Inland Fisheries, Germany*** Using a biomimetic robot to investigate effective leadership strategies in guppies A1.2	**Jonathan P J Stevenson** ***University of Bristol, United Kingdom*** Fine-scale wing and tail movements for flight control in birds of prey A8.3	**Annika Guse** ***Centre for Organismal Studies Heidelberg, Germany*** Molecular mechanisms of intracellular coral-algal symbiosis (EMBO Young Investigator Lecture) C5.2	**Stephen D Simpson** ***University of Exeter, United Kingdom*** Assessing laboratory- and field-based responses of fish to anthropogenic noise to establish best practice for mitigation and management AC3.2
09:45	**Jonathan N Pruitt** ***University of California Santa Barbara, United States*** Keystone individuals in animal societies: some pros and cons A1.3	**Lydia A France** ***University of Oxford, United Kingdom*** Control and mechanics of perching in raptors A8.4		**Felix C Mark** ***Alfred Wegener Institute for Polar and Marine Research, Germany*** Advantages and limits of non-invasive methodology in conservation ecophysiology: insights from a laboratory physiologist AC3.3
10:00		**Yoshinari Yonehara** ***Atmosphere and Ocean Research Institute, The University of Tokyo, Japan*** Adjustment of flight pattern in response to wind of a seabird combining flapping and dynamic soaring A8.5	**Yusuf Chisti** ***Massey University, New Zealand*** Algae for green production C5.3	
10:15	**Jolle W Jolles** ***Department of Collective Behaviour Max Planck Institute of Ornithology, Germany*** Individual heterogeneity in animal collectives: potential mechanisms and consequences across social scales A1.4	**Cara J Williamson** ***University of Bristol, United Kingdom*** Flight Strategies of urban gulls A8.6		**Nicholas J Bernier** ***University of Guelph, Canada*** Evaluation of scale cortisol content dynamics following standardised stressors in goldfish AC3.4
10:30	**Andrew N Radford** ***University of Bristol, United Kingdom*** Individual variation in out-group conflict participation and consequences A1.5	**James Kempton** ***University of Oxford, United Kingdom*** Flight energetics of dynamic soaring A8.7	**Thomas P Howard** ***Newcastle University, United Kingdom*** Automation and data-driven modelling for microbial metabolic engineering C5.4	**Lynne U Sneddon** ***University of Liverpool, United Kingdom*** Monitoring stress non-invasively in zebrafish AC3.5

SECOND FLOOR PALAZZO AFFARI	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR
MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE (A5)	**CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS (P1)** SPONSORED BY: CONSERVATION PHYSIOLOGY	**FROM GENOME TO GENOMES (P4)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**TEACHING BIOLOGY AT DIFFERENT SCALES: CHALLENGES, OPPORTUNITIES AND STRATEGIES (SEB+1)**
REGISTRATION & OPENING OF EXHIBITION				
CHAIR: KARINE SALIN	CHAIR: CECILIA BRUNETTI	CHAIR: ANTHONY HALL	CHAIR: GEORGE LOMONOSOFF	CHAIR: KATHARINE HUBBARD
Tony J R Hickey ***University of Auckland, New Zealand*** The role of mitochondria in limiting complex life at high temperatures A5.1	**Introduction** Cecilia Brunetti and Antonella Gori	**Klaus F X Mayer** ***Helmholtz Zentrum München, Germany*** Charting the genome landscape of western civilisation P4.1	**Julian Ma** ***St. George's Hospital, University of London*** Monoclonal antibody manufacture in plants – progress and re-evaluation P6.1	**Sunita G Chowrira** ***University of British Colmbia, Canada*** The BioFlex approach - Supporting first-year student success in large-class Biology and more SEB+1.1
	Andrea Nardini ***University of Trieste, Italy*** Xylem embolism and hydraulic failure in trees: the road to death under drought P1.1			
		István Molnár ***Agricultural Institute ATK Hungarian Academy of Sciences, Hungary*** Molecular organization of U genome revealed by sequencing chromosomes flow-sorted from *Aegilops umbellulata*, a wild gene source for wheat improvement P4.2		**Chloe Singleton** ***University of Exeter, United Kingdom*** Small group teaching throughout the iGEM competition SEB+1.2
Martin Jastroch ***Stockholm University, Sweden*** The pleiotropic role of mitochondrial uncoupling in ecology and evolution A5.2	**Ros Gleadow** ***Monash University, Australia*** Global change turns trees into weeds P1.2	**Daniele Filiault** ***Gregor Mendel Institute of Molecular Plant Biology, Austria*** Field studies anchor an integrative approach to understanding the genomics of local adaptation in *Arabidopsis thaliana* P4.3	**Henry Daniell** ***University of Pennsylvania, United States*** Clinical advances of biopharmaceuticals expressed in plant chloroplasts P6.2	**Joanna M Smith and Daniel Thornham** ***Bangor University, United Kingdom*** Size matters, but what you do with it also counts: Strategies to break down the large class experience SEB+1.3
	Silvia Traversari ***Institute of Life Sciences Sant'Anna School of Advanced Studies Pisa, Italy*** The carbon sink reorganization in *Populus alba* L. during water deficit P1.3			
	Rakesh Tiwari ***University of Leeds, United Kingdom*** Coupled leaf gas-exchange measurement and spectral capture: a new method tested on soybean and tropical trees to detect temperature-induced spectral signatures P1.4	**Mariam S Awlia** ***King Abdullah University of Science and Technology, Saudi Arabia*** Mapping the early responses to salt stress in *Arabidopsis thaliana* P4.4		**Janet Genz** ***University of West Georgia, United States*** Do you like your TA? Student perceptions of instructor ability and authority influence their academic performance SEB+1.4
Julie J H Nati ***University of Glasgow Institute of Biodiversity Animal Health and Comparative Medicine, United Kingdom*** Intraspecific variation in reaction norms that link mitochondrial function to whole-animal aerobic performance across an environmental thermal gradient A5.3	**Timothy J Brodribb** ***University of Tasmania, Australia*** Optical vulnerability; viewing the death of trees in real-time P1.5	**Manu Kumar Gundappa** ***School of Biological Sciences University of Aberdeen, United Kingdom*** The danube salmon genome – testing the importance of whole genome duplication in salmonid life-history evolution P4.5	**Mark F Fisher** ***The University of Western Australia, Australia*** A family of small, cyclic peptides buried in preproalbumin since the Eocene epoch P6.3	**Susan M Howitt** ***Australian National University, Australia*** Thinking like a scientist: Structuring large class laboratory experiences to develop a questioning approach SEB+1.5

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS (A1)**	**OPEN BIOMECHANICS (A8)**	**GREEN MICROBES (C5)** SPONSORED BY: PHYCONET AND SHELL BIODOMAINS	**ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS TO CONSERVATION (AC3)**
10:45	**Sylvia Dimitriadou** ***University of Exeter, United Kingdom*** Isotocin receptor expression and cooperativeness in the Trinidadian guppy *Poecilia reticulata* A1.6	**James A Walker** ***University of Oxford, United Kingdom*** Visual gaze strategy in homing pigeons during familiar area navigation A8.8		**Simon G Lamarre** ***Université de Moncton, Canada*** Chronic social stress alters protein metabolism in juvenile rainbow trout, *Oncorhynchus mykiss* AC3.6
11:00	REFRESHMENT BREAK/EXHIBITION/POSTERS			
11:30	**ANIMAL PRESIDENT'S MEDALLIST AND YSAS TALKS** LOCATION: AUDITORIUM, PALAZZO CONGRESSI **PLANT PRESIDENT'S MEDALLIST AND YSAS TALKS** LOCATION: GROUND FLOOR, PALAZZO AFFARI **SEE PAGES 6 AND 7 FOR PROGRAMME OF TALKS**			
13:00	LUNCH/EXHIBITION/EARLY CAREER SCIENTIST NETWORKING LUNCH (EXHIBITION HALL)			
CHAIR	CHAIR: STEFANO MARRAS	CHAIR: PETER AERTS	CHAIR: JOHN BOTHWELL	CHAIR: LYNNE SNEDDON
14:00	**Lesley J Morrell** ***University of Hull, United Kingdom*** Swimming in a murky world: Individual and group responses to turbidity A1.7	**Di Chen** ***Chiba University, Japan*** Forewings hold the entire leading-edge vortices and maintain aerodynamic force production with hindwings removed in revolving insect wings A8.9	**Thomas B Brück** ***Technische Universität München, Germany*** Developing algae based biorefinery processes for production of aviation fuels and high performance lubricants C5.5	**Rupert Palme** ***Vetmeduni Vienna, Austria*** In the wild: How to measure stress in free-ranging animals AC3.7
14:15		**Gal Ribak** ***Tel Aviv University, Israel*** Flight control in a small parasitoid wasp *Eretmocerus mundus*: Controlling body pitch using clap-and-fling wing-flapping kinematics A8.10		
14:30	**Daniel W Montgomery** ***University of Exeter, United Kingdom*** Do bold fish flee first? The effect of personality on the escape response of schooling shiner perch, *Cymatogaster aggregata* A1.8	**Karen Stamm** ***Zoological Institute: Functional Morphology and Biomechanics Kiel University, Germany*** The structure and function of the nodus in libellulid wings A8.11	**Fred Beisson** ***CEA Cadarache, France*** Microbial production of hydrocarbons using a light-driven enzyme C5.6	**Tessa E Smith** ***University of Chester, United Kingdom*** Non-invasive monitoring of amphibian stress in the field: Trialling novel methods AC3.8
14:45	**Juliane Lukas** ***Humboldt University of Berlin Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Germany*** Adaptive value of repeated collective fright waves by sulfur-adapted livebearing fishes *genera Poecilia* and *Gambusia* as response to avian predation A1.9	**Wouter G Van Veen** ***Wageningen University Research, Netherlands*** Rotation axis offset enhances rotational lift production in insect wings: a numerical study A8.12		**Jehan-Hervé Lignot** ***Université de Montpellier, France*** Non-invasive monitoring of the effects of wastewater discharge using tropical mangrove crabs: a suitable tool compared to physiological biomonitoring? AC3.9
15:00	**Matthew J Hansen** ***University of California Davis, United States*** Motivations to move: the influence of social context, hormones and nutritional stress on the foraging behaviour of a model organism A1.10	**Stacey A Combes** ***University of California Davis, United States*** May the wind not always be at your back: Bumblebees prefer to fly upwind A8.13	**Mike Allen** ***Plymouth Marine Laboratory, United Kingdom*** Engineering solutions for algae C5.7	**Juan M Busso** ***National Scientific and Technical Research Council (CONICET), Argentina*** Sexual dimorphism and correlations in *Tamandua tetradactyla* adrenocortical and behavioural activities AC3.10

SECOND FLOOR PALAZZO AFFARI	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR
MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE (A5)	**CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS (P1)** SPONSORED BY: CONSERVATION PHYSIOLOGY	**FROM GENOME TO GENOMES (P4)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**TEACHING BIOLOGY AT DIFFERENT SCALES: CHALLENGES, OPPORTUNITIES AND STRATEGIES (SEB+1)**
Amelie Le Roy ***The University of Sydney, Australia*** Interaction between temperature and photoperiod in determining thyroid-dependent physiological capacities A5.4		**Bijayalaxmi Mohanty** ***National University of Singapore, Singapore*** Plant systems biology: application to rice suspension cells for understanding metabolic and transcriptional regulatory characteristics under sucrose starvation P4.6	**Mariam Gaid** ***Institute for Pharmaceutical Biology, Germany*** Hypericum: Toward tailored biofactory with bona-fide medicinal value P6.4	**Pam Scott** ***University of Glasgow, United Kingdom*** Using the traditional TAS2R38 student genotyping laboratory as an Introduction to Statistics and R SEB+1.6
REFRESHMENT BREAK/EXHIBITION/POSTERS				
ANIMAL PRESIDENT'S MEDALLIST AND YSAS TALKS LOCATION: AUDITORIUM, PALAZZO CONGRESSI **PLANT PRESIDENT'S MEDALLIST AND YSAS TALKS** LOCATION: GROUND FLOOR, PALAZZO AFFARI **SEE PAGES 6 AND 7 FOR PROGRAMME OF TALKS**				
LUNCH/EXHIBITION/EARLY CAREER SCIENTIST NETWORKING LUNCH (EXHIBITION HALL)				
CHAIR: FRANK SEEBACHER	CHAIR: ANTONELLA GORI	CHAIR: ANTHONY HALL	CHAIR: PAUL CHRISTOU	CHAIR: LUCY TALLENTS
Jason R Treberg ***University of Manitoba, Canada*** The importance of energetic state and temperature in how mitochondria may regulate reactive oxygen species A5.5	**Francesco Loreto** ***The National Research Council of Italy - Department of Biology Agriculture and Food Sciences, Italy*** Isoprenoids are prominent components of the armament defending urban and natural forest plants against stresses P1.6	**Neil Hall** ***Earlham Institute, United Kingdom*** The Earth Biogenome Project: Should we just sequence everything? P4.7	**Cathie Martin** ***John Innes Centre, United Kingdom*** Food is about healthcare; medicine is about sick-care. The importance of plants in our diets P6.5	**Katja Strohfeldt-Venables** ***University of Reading, United Kingdom*** Teaching large and diverse classes: A very practical approach SEB+1.7
	Andrea Ghirardo ***Helmholtz Zentrum München GmbH, Germany*** Monoterpenes support systemic acquired resistance within and between plants P1.7	**Mary O'Connell** ***University of Leeds, United Kingdom*** On the malleability of genomes and the evolution of novel function P4.8		**Katharine E Hubbard and Lucy Tallents** Practical strategies for teaching across scales: An interactive workshop SEB+1.8
Sarah Howald ***Alfred-Wegener-Institute, Germany*** Mitochondrial metabolism under prolonged ocean acidification and warming in European sea bass hearts A5.7	**Elizabeth H J Neilson** ***University of Copenhagen, Denmark*** Leaf and flower volatile emissions from Eucalyptus P1.8		CHAIR: CATHIE MARTIN **Paul Christou** ***University of Lleida, Spain*** Engineering cereal crops for better health and nutrition P6.6	
	Maria Manuela R Costa ***University of Minho, Portugal*** A molecular approach to study flower development in the monoecious *Quercus suber* L P1.9	**Paul C Bailey** ***Earlham Institute, United Kingdom*** Development of a gene family toolkit for exploring diversity in new sequence data P4.9		

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS (A1)**	**OPEN BIOMECHANICS (A8)**	**GREEN MICROBES (C5)** SPONSORED BY: PHYCONET AND SHELL BIODOMAINS	**ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS TO CONSERVATION (AC3)**
15:15	**Pecha Kucha**			
15:30	REFRESHMENT BREAK/EXHIBITION/POSTERS		**Pecha Kucha** **Lydia C Nurse** C5.8 **Yogesh Taparia** C5.9 **Joshua Loh** C5.10	REFRESHMENT BREAK/ EXHIBITION/POSTERS
15:36			REFRESHMENT BREAK/ EXHIBITION/POSTERS	
CHAIR	CHAIR: SHAUN KILLEN	CHAIR: PETER AERTS	CHAIR: MIKE ALLEN	CHAIR: TESSA SMITH
16:00	**Raphael Jeanson** ***CNRS - Université Paul Sabatier, France*** Individual variation and group behaviour in social insects A1.11	**David Leung** ***UCLA, United States*** A computational fluid dynamic investigation of hydrodynamic interactions between respiratory flows and circum-pectoral fin flows in Labriform swimming fishes A8.15	**Saul Purton** ***University College London, United Kingdom*** The algal chloroplast as a synbio platform for making recombinant proteins C5.11	**Dorothy E F McKeegan** ***University of Glasgow, United Kingdom*** Infrared thermography: a non-invasive tool to measure stress in birds AC3.11
16:15		**Yoshinobu Inada** ***Tokai University, Japan*** Eccentric flying behaviour of Ribbon Halfbeak A8.17		
16:30	**Lauren E Nadler** ***Scripps Institution of Oceanography, United States*** How a brain-infecting parasite alters energy metabolism in a shoaling fish: implications for conditioned fear responses and mechanisms of behaviour-modification A1.12	**Gil Iosilevskii** ***Technion, Israel*** Centre of mass and minimal speed limits of the Great hammerhead (*Sphyrna mokarran*) A8.18	**Daniel Barber** ***The University of Exeter, United Kingdom*** Kill switches as a method of bio-containment C5.12	**Elizabeth A Burgess** ***New England Aquarium, United States*** Quantifying hormones in exhaled breath: An emerging technology for physiological assessment of large whales AC3.12
16:45	**Ben Cooper** ***University of Leicester, United Kingdom*** HSP90 underpins individual behavioural differences in the desert locust A1.13	**Gen Li** ***Japan Agency For Marine-earth Science And Technology (JAMSTEC)*** Simulation-based swimming performance mapping: an effective way to explain and predict fish swimming strategies A8.19	**Leonardo M Casano** ***University of Alcalá, Spain*** Desiccation-rehydration driven cell wall remodelling in lichen-forming microalgae C5.13	**Creagh W Breuner** ***The University of Montana, United States*** Glucocorticoids and conservation physiology: developing tools to predict reproductive success in harlequin ducks AC3.13

SECOND FLOOR PALAZZO AFFARI	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR
MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE (A5)	**CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS (P1)** SPONSORED BY: CONSERVATION PHYSIOLOGY	**FROM GENOME TO GENOMES (P4)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**TEACHING BIOLOGY AT DIFFERENT SCALES: CHALLENGES, OPPORTUNITIES AND STRATEGIES (SEB+1)**
	Lahcen Benomar ***Université Laval, Canada*** Evidence of negative impact of warming on local white spruce seed sources: lessons from thermal acclimation of photosynthesis and respiration P1.10			**Pecha Kucha** **Anne M Tierney** SEB+1.9 **Lesley J Morrell** SEB+1.10 **Benjamin J H Smith** SEB+1.11 **Irina Strizh** SEB+1.12
REFRESHMENT BREAK/EXHIBITION/POSTERS				
CHAIR: FRANK SEEBACHER	CHAIR: ANTONELLA GORI	CHAIR: MARY O'CONNELL	CHAIR: CATHIE MARTIN	CHAIR: LUCY TALLENTS
Inna Sokolova ***University of Rostock, Germany*** Mitochondrial responses and tolerance to environmental stress in animal extremophiles A5.8	**Violeta Velikova** ***Institute of Plant Physiology and Genetics, Bulgaria*** Plant performance in future climate. What we can learn from native and transgenic tree species? P1.11	**Paul J Kersey** ***Royal Botanic Gardens Kew, United Kingdom*** Understanding plant biology through comprehensive genomic sequencing P4.10	**Johnathan A Napier** ***Rothamsted Research, United Kingdom*** Making fish oils in plants - metabolic engineering for the production of omega-3 long chain polyunsaturated fatty acids in transgenic plants P6.7	**Nicola Veitch** ***University of Glasgow, United Kingdom*** Effective e-learning strategies in a digital age SEB+1.13
	Gerry Gourlay ***University of Victoria, Canada*** Can condensed tannins act as *in vivo* antioxidants and protect poplar against oxidative stress? P1.12	**Bernardo J Clavijo** ***Earlham Institute, United Kingdom*** Assembling complex genomes: haplotype reconstruction P4.11		**Anne M Tierney** ***Edinburgh Napier University, United Kingdom*** Using online learning to support active learning in large groups SEB+1.14
Antoine Stier ***University of Glasgow, United Kingdom; University of Turku, Finland*** Pre-natal programming of mitochondrial function and oxidative stress by incubation temperature and stability in Japanese quails A5.9	**Tijana Blanusa** ***Royal Horticultural Society, United Kingdom*** Differences in plant structure and function lead to differences in rainfall mitigation by urban hedges P1.13		**Hanna R Manwaring** ***Aberystwyth University, United Kingdom*** Dissecting and accessing genomic regions for high grain iron and zinc content using GWAS in Pearl Millet P6.8	**Graham Scott** ***University of Hull, United Kingdom*** Doing less to achieve more: working with larger groups in the field SEB+1.15

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS (A1)**	**OPEN BIOMECHANICS (A8)**	**GREEN MICROBES (C5)** SPONSORED BY: PHYCONET AND SHELL BIODOMAINS	**ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS TO CONSERVATION (AC3)**
17:00	**Christos C Ioannou** ***University of Bristol, United Kingdom*** Regulation between personality traits: Individual social tendencies modulate whether boldness and leadership are correlated A1.14	**Pierluigi Carbonara** ***COISPA Tecnologia Ricerca - Stazione Sperimentale per lo Studio del Mare, Italy*** Swimming activity proves to be a viable indicator comprehensive of fish physiological condition and behaviour A8.20	**Noga Waissman-Levy** ***Ben Gurion University of the Negev, Israel*** Towards trophic conversion of *Haematococcus pluvialis* C5.14	**Oliver Love** ***University of Windsor, Canada*** The first decade of feather corticosterone: can a long-term integrated measure of stress be used as a conservation biomarker? AC3.14
17:15	**Flávio AG Oliveira** ***CESAM – Centre for Environmental and Marine Studies Faculty of Sciences University of Lisbon, Portugal*** Social thermoregulation in *Crocidura russula* A1.15		**Christopher C Azubuike** ***Newcastle University, United Kingdom*** Synthetic biology modular toolkit for *Cupriavidus necator* H16 C5.15	
17:30	**Lucy Cotgrove** ***Institution of Biodiversity Animal Health and Comparative Medicine University of Glasgow, United Kingdom*** The effect of temperature and group composition of metabolic phenotypes on collective behaviours in fish A1.16	**Pecha Kucha** **Nicholas C Wu** A8.21 **Germán Pequera** A8.22 **Jimmy Young** A8.23 **Patrick R Metcalfe** A8.24 **Nicholas Carey** A8.25	**John H Bothwell** ***Durham University, United Kingdom*** Algal cell wall modifications and manipulations C5.16	**Discussion**
17:45	END OF SESSIONS			
18:00	**SCIENCE WITH IMPACT – CROWD SOURCING AND CITIZEN SCIENCE** LOCATION: AUDITORIUM, PALAZZO CONGRESSI			
19:00 - 21:00	**WELCOME EVENING RECEPTION** LOCATION: EXHIBITION HALL			

SECOND FLOOR PALAZZO AFFARI	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR
MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE (A5)	**CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS (P1)** SPONSORED BY: CONSERVATION PHYSIOLOGY	**FROM GENOME TO GENOMES (P4)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**TEACHING BIOLOGY AT DIFFERENT SCALES: CHALLENGES, OPPORTUNITIES AND STRATEGIES (SEB+1)**
Gigi YC Lau ***University of Oslo, Norway*** Is there evidence of oxidative damage with anoxia-recovery in brain of crucian carp *Carassius carassius*? A5.10	**Axton C Aguiar** ***University of Wollongong, Australia*** Friends with benefits: effects of vegetative shading on plant survival in a green roof environment P1.14	**Discussion**	**Ian J Tetlow** ***University of Guelph, Canada*** Improving oilseed crops via modification of source leaf starch metabolism P6.9	**Sarah K Coleman** ***University of Westminster, United Kingdom*** Using virtual reality laboratories to improve engagement and understanding for wet laboratory practical sessions SEB+1.16
Gisela Lannig ***Alfred Wegener Institute Helmholtz Center for Polar Marine Science, Germany*** Cellular energy allocation in the Antarctic eelpout, *Pachycara brachycephalum* after long-term warm acclimation A5.11	**Francesco Ferrini** ***University of Florence Department of Agri-Food Production and Environmental Sciences, Italy*** Plant responses to drought stress: How traditional and innovative methods can help to maintain healthy green areas while limiting water consumption P1.15		**Discussion**	**Marina Minoli** ***National Biologists Order Royal Society of Biology, Italy*** Elements of innovation about neurobiology for High School: History and evolution of Patch Clamp Technique SEB+1.17
Discussion	**Discussion**			**Ros Gleadow** ***Monash University, Australia*** To flip or not to flip, that is the question SEB+1.18
END OF SESSIONS				
SCIENCE WITH IMPACT – CROWD SOURCING AND CITIZEN SCIENCE LOCATION: AUDITORIUM, PALAZZO CONGRESSI				
WELCOME EVENING RECEPTION LOCATION: EXHIBITION HALL				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST	**SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY (C1)**	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
08:30	REGISTRATION & OPENING OF EXHIBITION			
09:00	**CELL & SEB+ PRESIDENT'S MEDALLISTS TALKS** LOCATION: AUDITORIUM, PALAZZO CONGRESSI			
10:00	REFRESHMENT BREAK/EXHIBITION/POSTERS			
CHAIR	CHAIR: CRAIG FRANKLIN	CHAIR: KERRY FRANKLIN	CHAIR: GEORGE BASSEL	CHAIR: MARK BRIFFA
10:30	**Pawel Brzek** ***University of Bialystok, Poland*** Capacity of non-shivering thermogenesis in laboratory mice with genetic variation in maximum and basal metabolic rate A9.1	**Dirk K Hincha** ***Max Planck Institute of Molecular Plant Physiology, Germany*** Cold acclimation, deacclimation and memory in Arabidopsis P3.1	**Ricard Solé** ***Pompeu Fabra University, Spain*** The morphospace of synthetic mulicellularity C1.1	**Katherine Sloman** ***University of the West of Scotland, United Kingdom*** The role of parents and conspecifics in shaping behaviour and physiology A2.1
10:45	**Mads K Andersen** ***Aarhus University, Denmark*** Double trouble if one fails: How cold tolerance measures relate to different physiological mechanisms A9.2			
11:00	**Amanda D V MacCannell** ***Biology Western University, Canada*** Environmental temperature effects on adipose tissue in a mammalian hibernator, the 13-lined ground squirrel A9.3	**Rena T Schott** ***State Museum of Natural History Stuttgart, Germany*** How important is the distribution, number and size of intercellular spaces during freezing in frost hardy plants? P3.2	**Matt Gibson** ***Stowers Institute for Medical Research, United States*** Topology, geometry, clonality: the fundamental constraints on epithelial order C1.2	**Norman L C Ragg** ***Cawthron Institute, New Zealand*** Nature vs. Nurture: Acclimation and adaptation potential in the Greenshell mussel, *Perna canaliculus* A2.2
11:15	**Lisa B Jørgensen** ***Aarhus University, Denmark*** How to measure insect heat tolerance: unifying static and dynamic assays A9.4	**Paige E Panter** ***Durham University, United Kingdom*** Plant freezing and desiccation tolerance require cell wall rhamnogalacturonan-II pectin dimerisation P3.3		**Richelle L Tanner** ***University of California Berkeley, United States*** Parent-specific plasticity in reproduction and development limit population response to climate change in the eelgrass sea hare, *Phyllaplysia taylori* A2.3
11:30	**Elena O Gracheva** ***Yale University, United States*** Molecular prerequisites for diminished cold sensitivity in mammalian hibernators A9.5	**Julio Salinas** ***CIB-CSIC, Spain*** New molecular mechanisms regulating plant response to low temperature P3.4	**Salva Duran-Nebreda** ***University of Birmingham, United Kingdom*** Transport and communication in body plans: architectural constraints due to dimensionality C1.3	**Svante Winberg** ***Uppsala University, Sweden*** Shaping behavioural profiles and stress responses - genes and environment acting in concert A2.4
11:45	**Essie M Rodgers** ***University of Antwerp, Belgium*** Plastic responses to diel thermal variation in juvenile green sturgeon, *Acipenser medirostris* A9.6		**Mark Fricker** ***University of Oxford, United Kingdom*** Determining the rules for self-organised adaptive biological networks C1.4	

ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR	SECOND FLOOR PALAZZO AFFARI
OPEN BIOMECHANICS (A8)	**PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES (AC1)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**EMBRACING YOUR ANIMAL CARE, WELFARE AND USE COMMITTEE - A WIN-WIN SITUATION (SEB+2)**	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**
REGISTRATION & OPENING OF EXHIBITION				
CELL & SEB+ PRESIDENT'S MEDALLISTS TALKS LOCATION: AUDITORIUM, PALAZZO CONGRESSI				
REFRESHMENT BREAK/EXHIBITION/POSTERS				
CHAIR: SAM VAN WASSENBERGH	CHAIR: CATHERINE LORIN-NEBEL	CHAIR: JULIAN MA	CHAIR: PENNY HAWKINS	CHAIR: MICHAEL BERENBRINK
Pauline Provini ***Muséum National d'Histoire Naturelle Paris, France*** 3D X-ray particle tracking velocimetry of suction feeding A8.26	**Carol Eunmi Lee** ***University of Wisconsin, United States*** Rapid evolution of ion transporters during major salinity transitions AC1.1	**George P Lomonossoff** ***John Innes Centre, United Kingdom*** Transient expression of virus-like particles for use in biomedicine and bionanotechnology P6.11	**Susanna Louhimies** ***European Commission, Belgium*** The role that the EU Animal Welfare Body plays in facilitating better science, and how researchers can contribute SEB+2.1	**Lloyd S Peck** ***British Antarctic Survey Cambridge, United Kingdom*** A cold limit to adaptation in Antarctic marine species A4.1
Petra Ditsche ***University of Alaska Anchorage, United States*** How big skates (*Raja binoculata*) crush hard prey with cartilaginous jaws – Different levels of durophagy in Batoidea A8.27				
Amanda M Herbert ***University of Alaska Anchorage, United States*** Biomechanics of the feeding apparatus of spotted ratfish (*Hydrolagus colliei*) A8.28	**Pei-Hsuan Chou** ***Department of Life Sciences National Taiwan Normal University, Taiwan*** Adaptive features of hydrothermal vent crab *Xenograpsus testudinatus*: transformation and transportation of sulfur compounds AC1.2		**Teresa G Valencak** ***University of Veterinary Medicine Vienna, Austria*** Experimental biology and animal welfare: a misfit? SEB+2.2	**Cinzia Verde** ***National Research Council (CNR), Italy*** Structural protein constraints and evolution at low temperature A4.2
Daniel Schwarz ***Friedrich Schiller University Jena Institute of Evolutionary Biology, Germany*** Three-dimensional mandibular movements during chewing in a salamander A8.29	**Thibaut L'Honoré** ***University of Montpellier, France*** Are all European sea bass as euryhaline as expected? Phenotypic plasticity in fresh water AC1.3	**Shashi Kumar** ***International Center for Genetic Engineering and Biotechnology, India*** Metabolic engineering of plant for artemisinin biosynthesis and efficient malaria treatment by oral delivery of whole plant material P6.12	**Lauren E James** ***Aarhus University, Denmark*** Welfare in exotic animals: how can researchers advise legislation? SEB+2.3	
Gregory P Sutton ***University of Bristol, United Kingdom*** Biomechanics of the super high-power strike of the trap jaw ant A8.30	**Steffen S Madsen** ***University of Southern Denmark, Denmark*** Challenging the paradigm of intestinal water transport in euryhaline fishes AC1.4		**Luca Melotti** ***University of Münster, Germany*** The ethical review process in Bern - a case study highlighting the advantages and opportunities for improvement SEB+2.4	**Glen F Tibbits** ***Simon Fraser University, Canada*** Optically mapping the zebrafish heart to understand the interplay of temperature and rate on voltage and calcium dynamics A4.4
Alexander Köhnsen ***Department of Functional Morphology and Biomechanics Institute of Zoology, Kiel University, Germany*** Prey capturing in Odonata larvae (Insecta) – an experimental approach A8.31				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST	**SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY (C1)**	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
12:00	**Julia Nowack** ***University of Veterinary Medicine, Austria*** Wild boar compensate lack of uncoupling protein with muscle-based nonshivering thermogenesis A9.7	**Teera Watcharamongkol** ***University of Sheffield, United Kingdom*** Acclimation is not the first requirement for grasses to tolerate cold P3.5		**Brett M Culbert** ***McMaster University, Canada*** Social bonds influence stress in a group-living fish A2.5
12:15	**Anthony Peter Moreira** ***University of Aveiro, Portugal*** Comparative sensitivity of *Crassostrea angulata* and *Crassostrea gigas* embryo-larval development to As under varying salinity and temperature A9.8	**Natalia Repkina** ***Institute of Biology of Karelia Research Centre Russian Academy of Sciences, Russia*** Effect of exogenous methyl jasmonate on cold tolerance of wheat P3.6	**George Bassel** ***University of Birmingham, United Kingdom*** Higher-order organization of cells in the shoot apical meristem C1.5	**Sarah Dalesman** ***Aberystwyth University, United Kingdom*** Are smart snails more sensitive to social stress? A2.6
12:30	**Amélie Crespel** ***University of Glasgow, United Kingdom*** The effects of harvest-associated selection and population density on fish behaviour A9.9	**Astrid Wingler** ***University College Cork, Ireland*** Function of jasmonic acid signalling in the response to low temperature P3.7	**Charlotte E M Kirchhelle** ***University of Oxford, United Kingdom*** Two mechanisms for regulating directional growth of cells in lateral roots C1.6	**Jules Smith-Ferguson** ***University of Sydney, Australia*** Learning to deal with stress: pre-exposure affects future response in the acellular slime mould A2.7
12:45	LUNCH/EXHIBITION/POSTERS/MEET THE ACADEMICS (12:55-13:35), ROOM: 4TH FLOOR, PALAZZO AFFARI			
13:45	**WOOLHOUSE LECTURE** LOCATION: AUDITORIUM, PALAZZO CONGRESSI CAROLINE DEAN, JOHN INNES CENTRE, UNITED KINGDOM SENSING AND REMEMBERING WINTER			
14:45	MOVEMENT TO SESSIONS			
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST	**SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY (C1)**	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
CHAIR	CHAIR: ILAN RUHR	CHAIR: STEVE PENFIELD	CHAIR: LEAH BAND	CHAIR: LYNNE SNEDDON
15:00	**Nigel R Andrew** ***University of New England, Australia*** The independent and combined effects of climate, land cover and land use on the distribution and physiology of ant assemblages A9.10	**Junli Liu** ***Durham University, United Kingdom*** Using mathematical modelling to establish the link between temperature, calcium signatures and gene expression in plant cells P3.8	**Fabian Rost** ***Max Planck Institute for the Physics of Complex Systems, Germany*** Data-driven modelling: Identifying cellular behaviours driving regenerative growth C1.7	**Øyvind Øverli** ***Norwegian University of Life Sciences, Norway*** Tracking trout personality traits: Advantages and disadvantages of a high vs low cortisol response A2.8
15:15	**Claudia Bieber** ***Research Institute of Wildlife Ecology University of Veterinary Medicine Vienna, Austria*** Unexpected flexibility of hibernation timing and its relation to reproduction in ageing edible dormice (*Glis glis*) A9.11			

ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR	SECOND FLOOR PALAZZO AFFARI
OPEN BIOMECHANICS (A8)	**PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES (AC1)**	**PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION (P6)**	**EMBRACING YOUR ANIMAL CARE, WELFARE AND USE COMMITTEE - A WIN-WIN SITUATION (SEB+2)**	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**
Sebastian Büsse ***Department of Functional Morphology and Biomechanics Institute of Zoology, Kiel University, Germany*** The predatory strike of dragonfly larvae (Insecta: Odonata) – a biomechanical study A8.32	**Waliullah Masroor** ***MARBEC University of Montpellier, France*** How does European sea bass cope with salinity and temperature changes at the gill level? AC1.5	**Annabelle Damerum** ***University of California Davis, United States*** Improving the post-harvest and nutritional quality of leafy vegetables P6.13	**Tania Boden** ***UCB, United Kingdom*** Working with animal technologists - the foundation of your science SEB+2.5	**Rachel L Sutcliffe** ***University of British Columbia, Canada*** Different intrinsic heart rate resetting responses and the associated changes in cardiac mRNA expression with temperature acclimation in rainbow trout A4.5
Lu-Yi Wang ***Zoological Institute Kiel University, Germany*** Too hard to swallow: the secondary defence strategies of an aposematic insect and its underlying mechanisms A8.33	**Salman Malakpour Kolbadinezhad** ***University of Porto, Portugal*** Unique kidney of the Marine Catfish *Plotosus lineatus* AC1.6	**Beverly L Agesa** ***Bangor University, United Kingdom*** Phosphorus efficient cereals: Is genetic engineering of plant phosphorus the answer? P6.14		**Ilan M Ruhr** ***University of Manchester, United Kingdom*** Chronic developmental hypoxia programmes snapping turtle cardiomyocyte physiology and improves anoxia-tolerance later in life A4.6
Nicolai Konow ***UMass Lowell, United States*** Influence of recruitment level on in vivo operating lengths of craniofacial muscles during food processing A8.34	**Chris M Wood** ***University of British Columbia and Bamfield Marine Sciences Centre, Canada*** Is there an osmorespiratory compromise in an animal that does not osmoregulate- the Pacific hagfish (*Eptatretus stoutii*)? AC1.7	**Dorina Podar** ***Babes-Bolyai University, Romania*** Plant metal transporters at work at selected location P6.10	**Penny A J Hawkins** ***RSPCA, United Kingdom*** Communicating with committees - what do they really want to know? SEB+2.6 (12:30 - 12:50)	**Holly Shiels** ***University of Manchester, United Kingdom*** The Heart of the World's oldest vertebrate, the Greenland Shark A4.7
LUNCH/EXHIBITION/POSTERS/MEET THE ACADEMICS (12:55-13:35), ROOM: 4TH FLOOR, PALAZZO AFFARI				
WOOLHOUSE LECTURE LOCATION: AUDITORIUM, PALAZZO CONGRESSI CAROLINE DEAN, JOHN INNES CENTRE, UNITED KINGDOM SENSING AND REMEMBERING WINTER				
MOVEMENT TO SESSIONS				
OPEN BIOMECHANICS (A8)	**PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES (AC1)**	**MORPHOGENESIS IN NON-FLOWERING PLANTS (P2)** SPONSORED BY: JXB	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**
CHAIR: ROB JAMES	CHAIR: GREG GOSS	CHAIR: FATEMEH GHADERIARDAKANI	CHAIR: KATJA GRAUMANN	CHAIR: CINZIA VERDE
Taylor J M Dick ***University of Queensland, Australia*** Dynamic ultrasound imaging highlights the role of muscle-tendon interaction in recovery from perturbations A8.35	**Yung-Che Tseng** ***Institute of Cellular and Organismic Biology Academia Sinica, Taiwan*** A comprehensive study on acid and ammonium regulations in cephalopods that live in benthic and epipelagic zone AC1.8	**Dianne Edwards** ***Cardiff University, United Kingdom*** Morphogenesis in non-flowering plants : the beginnings P2.1	**Yuval Garini** ***Bar Ilan University, Israel*** Studying the genome organization in the nucleus by advanced live cell imaging methods C2.1	**H William Detrich III** ***Northeastern University Boston, United States*** Broad taxonomic phylogenomics of sub- and high-antarctic notothenioid fishes: patterns of gene loss and drift affecting blood and the cardiovascular system A4.8
Dominic J Farris ***University of Exeter, United Kingdom*** Blocking the activation of intrinsic foot muscles reduces push off power in running humans A8.36				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST	**SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY (C1)**	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
15:30	**Emily C Ruhs** ***Université du Quebéc á Rimouski, Canada*** Who pays the bill? The effects of altered brood size on parental and nestling physiology A9.12	**Jo Hepworth** ***John Innes Centre, United Kingdom*** Reading the seasons – adaptation and robustness in winter-sensing at a single gene P3.9	**Enrico Coen** ***John Innes Centre, United Kingdom*** Resolving conflicts: The genetic control of plant morphogenesis C1.8	**Sébastien Alfonso** ***Ifremer, France*** Stress coping style in European sea bass (*Dicentrarchus labrax*): from genes to physiology and behaviour A2.9
15:45	**Philip C Withers** ***University of Western Australia, Australia*** Why do mammals regulate their insensible evaporative water loss? A9.13	**Rachael J Oakenfull** ***Department of Biology, University of York, United Kingdom*** Phytochromes as low temperature sensors in Arabidopsis P3.10		**Christian Tudorache** ***Leiden University, Netherlands*** Coping with the clock - Biological clock function is linked to proactive and reactive personality types A2.10
16:00	**Hannah Watson** ***Lund University, Sweden*** Winter food supply and nocturnal hypothermia in a small bird A9.14	**Nikoleta A Tzioutziou** ***University of Dundee, United Kingdom*** Rapid cold-induced alternative splicing in Arabidopsis involves a complex network of regulators P3.11	**Guillaume Salbreux** ***The Francis Crick Institute, United Kingdom*** Physics of epithelial folding C1.9	**Mark Briffa** ***Plymouth University, United Kingdom*** Hunger status modifies the association between consistent variation in oxygen consumption and risk taking in sea anemones. A2.11
16:15	**Sergey Morozov** ***EGRU Department of Biosciences University of Helsinki, Finland*** Genetic and environmental contributions to physiological performance in sticklebacks under thermal stress A9.15	**Pecha Kucha** **Ligia T Bertolino** P3.12 **Eva Darko** P3.13 **Natalia Serrano** P3.14 **Irabonosi Obomighie** P3.16 **Rameez Arshad** P3.17 **Lia-Tânia Rosa Dinis** P3.18 **Ge Gao** P3.19 **Ana Luzio** P3.20		**Tamsin A Shepherd-Waring** ***Aberystwyth University, United Kingdom*** Predator induced plasticity in the rate of embryo respiration and rotation behaviour A2.12
16:30	**Marion Claireaux** ***Institute of Marine Research, Norway*** Group size effects on exploratory behaviour and correlations with metabolic rate in sticklebacks A9.16 (16:30 - 16:45)		**Leah R Band** ***University of Nottingham, United Kingdom*** Modelling GA dynamics within the Arabidopsis plant root C1.10 (16:30 - 16:45)	**Discussion**
16:40	REFRESHMENT BREAK/EXHIBITION/POSTERS			

ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR	SECOND FLOOR PALAZZO AFFARI
OPEN BIOMECHANICS (A8)	**PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES (AC1)**	**MORPHOGENESIS IN NON-FLOWERING PLANTS (P2)** SPONSORED BY: JXB	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**
Michael Günther ***University of Stuttgart, Germany*** A mechanistic explanation for maximum legged running speed in dependence of body size A8.37	**Mark Bayley** ***Zoophysiology Aarhus University, Denmark*** Acid base balance at the water-air interface. The effects of temperature on pH regulation in air-breathing teleosts AC1.9	**Ralf Reski** ***University of Freiburg, Germany*** Cuticle, sporophyte, stomata: three plant innovations that changed our planet P2.2		**William Joyce** ***Aarhus University, Denmark*** The cardiorespiratory effects of acute warming in antarctic fishes with and without haemoglobin A4.9
Christofer J Clemente ***University of the Sunshine Coast, Australia*** How body size and phylogeny and influence posture and speed among mammals A8.38	**Alyssa Weinrauch** ***University of Alberta, Canada*** Cellular mechanisms of post-prandial acidification: a 'cAMP'aign for stimulation of luminal acid excretion in the Pacific hagfish AC1.10		**Frederic Pontvianne** ***CNRSUPVD Perpignan, France*** Elucidating the role of the nucleolus in the global chromatin organization in *A. thaliana* C2.2	**Ben Speers-Roesch** ***University of New Brunswick Saint John, Canada*** The benefit of stillness: energy savings during winter dormancy in fish come from inactivity and the cold, not metabolic rate depression A4.10
Christopher Basu ***Royal Veterinary College, United Kingdom*** Height and effective mechanical advantage in giraffid species - is being tall so great? A8.39	**Bernd Pelster** ***University of Innsbruck, Austria*** Using a swimbladder for aerial respiration – consequences for ion and acid-base regulation AC1.11	**John H Bothwell** ***Durham University, United Kingdom*** Do algal genomes contain multicellular signatures? P2.3	**Maria Vartiainen** ***University of Helsinki, Finland*** Nuclear actin in gene expression and genome organization C2.3 (16:00 - 16:45)	**Albin Gräns** ***Swedish University of Agricultural Sciences, Sweden*** *In vivo* aerobic metabolism of the rainbow trout gut and the effects of an acute temperature increase and stress event A4.11
John EA Bertram ***University of Calgary, Canada*** Understanding the energetics of walking and running: explaining the converse effects of speed and gravity A8.40	**Pung-Pung Hwang** ***Institute of Cellular and Organismic Biology Academia Sinica, Taiwan*** Evolutionary point of view on acid secretion function: from fish to mammal AC1.12	**Thomas Wichard** ***Friedrich Schiller University Jena, Germany*** Bacteria-induced morphogenesis in macroalgae: The sea lettuce Ulva only gets into shape with the right bacteria P2.4 (16:15 - 16:45)		**Bastian Maus** ***Alfred-Wegener-Institute Helmholtz Center for Polar and Marine Research, Germany*** Non-invasive studies of cardiovascular performance in crustaceans under climate change A4.12
Delyle T Polet ***University of Calgary, Canada*** Energy recovery is not a key determiner of quadrupedal gait A8.41 (16:30 - 16:45)				**Discussion**
REFRESHMENT BREAK/EXHIBITION/POSTERS				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST	**SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY AND ORGAN BIOLOGY (C1)**	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
CHAIR	CHAIR: ILAN RUHR	CHAIR: ULI BECHTOLD	CHAIR: MARK FRICKER	CHAIR: SARAH DALESMAN
17:10	**Stéphanie Barnay-Verdier** ***Université Pierre et Marie Curie-UPMC, France*** Capacity of cnidarians to resist to hyperthermia and oxidative stress: a cellular approach A9.17	**Carolin Delker** ***Martin Luther University Halle Wittenberg, Germany*** Genetic dissection of plant thermomorphogenesis P3.21	**Roeland M H Merks** ***Centrum Wiskunde Informatica and Leiden University, Netherlands*** Multiscale modeling of mechanobiology: from focal adhesion dynamics to multicellular patterning C1.11	**Sandra A Binning** ***The University of Montreal, Canada*** Individual variation in sickness behaviour across social contexts in a damselfish A2.13
17:25	**Sébastien Alfonso** ***Ifremer, France*** Behavioural and physiological responses to hypoxia, hyperoxia and high Total Ammonia Nitrogen (TAN) concentration in European sea bass (Dicentrarchus labrax) A9.18			
17:40	**Kelly J Robinson** ***Sea Mammal Research Unit University of St Andrews, United Kingdom*** Closed system respirometry in explant culture using planar optodes; seal blubber oxygen consumption differs with tissue depth and nutritional state A9.19	**Robert S Caine** ***University of Sheffield, United Kingdom*** Feeling the burn: Heat stress and drought responses in reduced stomatal density IR64 rice P3.22	**Kirsten Ten Tusscher** ***Utrecht University, Netherlands*** Bootstrapping and taming new root meristems C1.12	**Maria I Reyes Contreras** ***Behavioural Ecology Institute of Ecology and Evolution University of Bern, Switzerland*** Phenotypic engineering alters stress axis programming and social competence A2.14
17:55	**Luca Peruzza** ***National Oceanography Centre Southampton, United Kingdom*** Daily cyclic hypoxic acclimation improves Palaemon varians' thermal tolerance and ameliorates its survival during acute copper exposure A9.20	**Sara Bernardo** ***University of Trás-os-Montes and Alto Douro, Portugal*** Assessing grapevine stress responses in the Douro region through kaolin application P3.23		**Robin N Abbey-Lee** ***Linkoping University, Sweden*** Experimental manipulation of monoamine levels alters personality in crickets A2.15
18:10	**Rasmus Ern** ***Aalborg University, Denmark*** Effects of water temperature on hypoxia avoidance behaviour in a eurythermal fish A9.21	**Plant temperature responses - Early career scientist networking session** Sponsored by: New Phytologist Trust	**Nathan L Mellor** ***The University of Nottingham, United Kingdom*** Modelling the effect of plasmodesmata on auxin dynamics in the Arabidopsis root tip C1.13	**Josefin Sundin** ***Norwegian University of Science and Technology, Norway*** Effects of long-term exposure to the antidepressant fluoxetine on behaviour and metabolism in the guppy A2.16
18:25	END OF SESSIONS			
18:30 - 19:30	**POSTER SESSION 1** LOCATION: EXHIBITION HALL			
19:30 - 22:00	**DIVERSITY DINNER** LOCATION: 4TH FLOOR, PALAZZO CONGRESSI			

ADUA 2 PALAZZO AFFARI 2ND FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ROOM 1 PALAZZO AFFARI 1ST FLOOR	SECOND FLOOR PALAZZO AFFARI
OPEN BIOMECHANICS (A8)	**PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES (AC1)**	**MORPHOGENESIS IN NON-FLOWERING PLANTS (P2)** SPONSORED BY: JXB	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**
CHAIR: ROB JAMES	CHAIR: PUNG-PUNG HWANG	CHAIR: ALEXANDROS PHOKAS	CHAIR: KATJA GRAUMANN	CHAIR: MICHAEL BERENBRINK
Ryan T Schroeder ***Biomedical Engineering Graduate Program University of Calgary Alberta Canada, Canada*** Native bamboo pole carriers employ locally optimal gait solutions A8.42	**Marian Y Hu** ***Institute of Physiology, Kiel University, Germany*** New insights from an old model organism: pH regulatory systems in the sea urchin larva AC1.13	**Liam Dolan** ***University of Oxford, United Kingdom*** Evolution and development of the earliest land plant rooting systems P2.5	**Philippe Collas** ***University of Oslo, Norway*** TAD cliques shape the 4-dimensional genome during terminal differentiation C2.4	**Todd E Gillis** ***University of Guelph, Canada*** Powering a zombie heart: metabolic fuel utilization in the excised hagfish heart during anoxia exposure A4.13
Christopher T Richards ***The Royal Veterinary College, United Kingdom*** Modelling the role of pelvic rotation during frog jumping A8.43				
Enrico A Eberhard ***Royal Veterinary College, United Kingdom*** Versatility or performance? An analysis of feasible force spaces in anuran jumping A8.44	**Duygu S Sevilgen** ***Centre Scientifique de Monaco, Monaco*** Corals elevate aragonite saturation state by increasing calcium and carbonate concentrations in the extracellular calcifying medium AC1.14	**Kevin J Yun** ***Durham University, United Kingdom*** Physical constraints as a driver of morphogenesis in the bloom-forming green alga *Ulva spp* P2.6		**Essie M Rodgers** ***University of Antwerp, Belgium*** Thermal phenotypic plasticity in physiological 'ceilings' but not 'floors' in estuarine crocodiles (*Crocodylus porosus*) A4.14
Thomas Speck ***Plant Biomechanics Group, Botanic Garden and FIT University of Freiburg, Germany*** Structural and mechanical properties of energy dissipating tree bark: a source of inspiration for impact protection in architecture A8.45	**Haonan Zhouyao** ***University of Manitoba, Canada*** MFSD14: A novel, ubiquitously expressed, highly conserved ammonia transporter AC1.15	**Marta Mariotti Lippi** ***University of Florence Department of Biology, Italy*** *Cupressus* from a palynological point of view P2.7	**Jana Link** ***Max F. Perutz Laboratories University of Vienna Vienna Biocenter, Austria*** Transient and partial nuclear lamina disruption promotes chromosome movement in early meiotic prophase C2.5	**Andreas Fahlman** ***Oceanográfic Foundation, Spain*** Lung function in marine mammals: a potential paradigm shift in our understanding how marine mammals manage gas during diving A4.15
Pecha Kucha **Aljoscha Sander** A8.46 **Frederik Püffel** A8.47 **Athia Haron** A8.48 **Mustafa Kemal Ozalp** A8.49	**Dirk Weihrauch** ***University of Manitoba, Canada*** AMTs (Ammonia Transporters) expressed in plants, invertebrates and fish AC1.16		**Christophe Tatout** ***Université Clermont Auvergne, France*** Functional analysis of KAKU4 and its potential impact on heterochromatin organization C2.6	**Saana Isojunno** ***Sea Mammal Research Unit University of St Andrews, United Kingdom*** Breathing patterns indicate exercise modulated diving costs and response to experimental sound exposures in long-finned pilot whales A4.16
END OF SESSIONS				
POSTER SESSION 1 LOCATION: EXHIBITION HALL				
DIVERSITY DINNER LOCATION: 4TH FLOOR, PALAZZO CONGRESSI				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**OPEN ANIMAL BIOLOGY (A10)**	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**BIOMECHANICS AND CLIMATE CHANGE (A7)**
08:30	REGISTRATION & OPENING OF EXHIBITION			
CHAIR	CHAIR: JONATHAN WILSON	CHAIR: ESTHER ODEKUNLE	CHAIR: DAVID EVANS	CHAIR: PAOLO DOMENICI
08:55				**INTRODUCTION:** PAOLO DOMENICI AND FRANK SEEBACHER
09:00	**Nicholas C Wu** ***The University of Queensland, Australia*** Cutaneous disruption of water balance in frogs infected with a lethal pathogen A9.22	**Antonia H Groneberg** ***Champalimaud Fundation, Portugal*** Early life social experience is required for fine-tuning social avoidance kinematics in larval zebrafish A10.1	**Dennis E Discher** ***University of Pennsylvania, United States*** Mechanosensing of matrix stiffness by lamin-A, C protects against nuclear rupture and loss of DNA repair factors C2.7	**Mark Denny** ***Stanford University, United States*** Can the mechanics of small-scale thermal variation help predict the consequences of climate change? A7.1
09:15	**Victoria Drechsel** ***University of Innsbruck Institute of Zoology, Austria*** **Activation of Earthworm Metallothionein in a cell culture system** **A9.23**	**Vera Voznessenskaya** ***A.N.Severtsov Institute of Ecology Evolution, Russia*** Early olfactory experience affects perception of predator odours in the house mouse A10.2		
09:30	**Enrique Caviedes-Vidal** ***Universidad Nacional de San Luis, Argentina*** Proteomics of the hydrolases of the vertebrate intestinal brush border membrane A9.24	**Laura E Vossen** ***Uppsala University, Sweden*** Relative expression of GABAA receptor subunits in zebrafish (Danio rerio) exposed to oxazepam for 7 or 28 days A10.3		**Frank Seebacher** ***University of Sydney, Australia*** The effect of wave action and temperature on muscle function and plasticity of an intertidal gastropod (*Nerita atramentosa*) A7.2
09:45	**Katherina Brokordt** ***Centro de Estudios Avanzados en Zonas Áridas (CEAZA) and Universidad Católica del Norte (UCN), Chile*** Reproduction immunity trade-off in a mollusc: haemocyte metabolic and immune capacities decrease after spawning in the scallop *Argopecten purpuratus* A9.25	**Chloe H Stevens** ***University of Exeter, United Kingdom*** The effect of a simple handler training regime on stress experienced by handled fish A10.4	**Myriam Charpentier** ***John Innes Centre, United Kingdom*** Nuclear calcium signalling in symbioses and beyond C2.8	**Brian Helmuth** ***Northeastern University, United States*** Biomechanics, bumpiness and behaviour: what drives vulnerability of intertidal organisms to climate change? A7.3
10:00	**Christine E Cooper** ***Curtin University, Australia*** Insensible evaporative water loss is regulated by desert birds and mammals - can birds from mesic habitats do it too? A9.26	**Emma Weschke** ***University of Exeter, United Kingdom*** A noisy neighbourhood: Do motorboats alter coral reef fish communities? A10.5		
10:15	**William H Karasov** ***University of Wisconsin-Madison, United States*** Intestinal hydrolase transcriptional responses during rapid diet adjustment in nestling house sparrows (*Passer domesticus*) A9.27	**Carolina Doran** ***Leibniz Institute of Freshwater Ecology Inland Fisheries, Germany*** Attack position of two aerial fish predators: Can a generalist outcompete a specialist? A10.6		**Sebastian Kruppert** ***Scripps Institution of Oceanography, United States*** Shells in a changing ocean: the impact of ocean acidification on mollusk vulnerability A7.4
10:30	REFRESHMENT BREAK/EXHIBITION/POSTERS			

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	SECOND FLOOR PALAZZO AFFARI
SEQUENCING FROM LAB TO FIELD AND THE POST GENOMIC ERA (C4)	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)** SPONSORED BY: PLANT, CELL AND ENVIRONMENT	**ENVIRONMENTAL IMPACT ON EPIGENETIC MEMORY (PA1)** SPONSORED BY: QMUL LIFE SCIENCES INSTITUTE AND THE PLANT JOURNAL	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST
REGISTRATION & OPENING OF EXHIBITION				
CHAIR: RICHARD TENNANT	CHAIR: ALEXANDER LITTLE	CHAIR: STEFAN KEPINSKI	CHAIR: JOSE GUTIERREZ-MARCOS	CHAIR: DIRK HINCHA
Clive Brown ***Oxford Nanopore Technologies Ltd, United Kingdom*** The Oxford Nanopore sequencing platforms C4.1	**Frank Melzner** ***GEOMAR, Germany*** Simulating a year in the future of a coastal keystone predator: towards more realistic experimental designs in climate change biology A6.1	**José R Dinneny** ***Stanford University, United States*** Stressed! How plants cope through dynamic responses P7.1	**Anne Ferguson-Smith** ***University of Cambridge, United Kingdom*** Variable silencing of the repeat genome - implications for non-genetic inheritance PA1.1	**Isabel Bäurle** ***University of Potsdam, Germany*** Chromatin regulation of heat stress memory in plants P3.24
	Alexander G Little ***University of California Santa Barbara, United States*** Starlet Anemones (Nematostella vectensis) as a model to explore mechanisms and costs of plasticity and stressor interactions A6.2	**Kara R Lind** ***Iowa State University, United States*** Finding water – Controlled water availability using wax printed paper as a method to study root hydrotropism P7.2	**Stephane Maury** ***University Orléans INRA, France*** Role of epigenetic in tree phenotypic plasticity in a context of climate changes PA1.2	**Kashif Nawaz** ***Centre of Plant Structural and Functional Genomics, Czech Republic*** Analysing genome-wide nucleosome dynamics after heat stress in *Arabidopsis thaliana* P3.25
John Love ***The University of Exeter, United Kingdom*** Sequencing environmental DNA in the field C4.2	**Astrid C Wittmann** ***Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Germany*** Moult-cycle dependent ion regulation in juvenile Dungeness crabs across their thermal habitat A6.3	**Ludovico Cademartiri** ***Iowa State University, United States*** Hydrogel-based transparent soils for root phenotyping *in vivo* P7.3	**Pranav Pankaj Sahu** ***Institute of Experimental Botany AS CR, Czech Republic*** Understanding the phenotypic and epigenetic response to simulated climate change in plants PA1.3	**Ulrike Bechtold** ***University of Essex, United Kingdom*** *HSFA1b* orchestrates a complex hierarchical gene regulatory network to coordinate plant growth and heat stress responses P3.26
	Coralie Bernardet ***Centre Scientifique de Monaco, Monaco*** The impact of temperature on transcellular transport of ions for coral calcification A6.4	**Sixtine Passot** ***Université catholique de Louvain, Belgium*** From structure to function: using modelling to better value root phenotyping data P7.4	**Amanda Bretman** ***University of Leeds, United Kingdom*** The role of the epigenome in male responses to rapidly changing sperm competition environments PA1.4	**Sachihiro Matsunaga** ***Tokyo University of Science, Japan*** Live cell imaging of histone modification in plant cells P3.27
Daniella Allevato ***Cornell University, United States*** Population structure and genetic diversity of three Pilocarpus species in Brazil C4.3	**Saskia Jurriaans** ***James Cook University, Australia*** A comparison of the thermal performance between tropical and temperate symbiotic corals A6.5	**Pecha Kucha**	**Joseph F Nelson** ***University of Durham, United Kingdom*** Linking light perception and chromatin reorganisation in *Arabidopsis thaliana* PA1.5	**Delphine L Fleury** ***University of Adelaide, Australia*** A Seven in Absentia gene underlies increases in biomass and yield in wheat in hot climates P3.28
REFRESHMENT BREAK/EXHIBITION/POSTERS				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**OPEN ANIMAL BIOLOGY (A10)**	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**BIOMECHANICS AND CLIMATE CHANGE (A7)**
CHAIR	CHAIR: JONATHAN WILSON	CHAIR: JACK THOMSON	CHAIR: DAVID EVANS	CHAIR: MARK DENNY
11:00	**Lisandrina Mari** ***INRA, France*** Investigating the combined effects of temperature and sediments in freshwaters: life history trade-offs in a cold-water salmonid A9.28	**Dominique G Roche** ***University of Neuchâtel, Switzerland*** Simple decision rules underlie collaborative hunting in yellow saddle goatfish A10.7	**Sara A Wickström** ***Helsinki Institute of Life Science, Finland*** Stem cell fate regulation through mechanical forces C2.9	**Emily Carrington** ***University of Washington, United States*** Only as strong as the weakest link: ocean warming and acidification compromise the material properties of coastal organisms A7.5
11:15	**Daphne Cortese** ***CRIOBE, French Polynesia*** Dispersal-associated traits in anemonefish: the effect of maternal body size on larval growth and swimming performance A9.29	**Naim Bautista** ***University of North Texas, United States*** Parental transgenerational epigenetic effects in the zebrafish: from organismal to molecular responses A10.8		
11:30	**Gudrun De Boeck** ***University of Antwerp, Belgium*** Effect of swimming on growth, physiological performance and expression of growth and stress marker genes in common carp A9.30	**Sviatoslav Bagriantsev** ***Yale University, United States*** Cellular and molecular adaptations to acute mechanosensitivity in tactile specialist birds A10.9		**Valentina Di Santo** ***Harvard University, United States*** Ocean acidification and warming affect cartilage mineralization in a benthic batoid A7.6
11:45	**Makoto A Yoshida** ***National Institute of Environmental Science Lake Biwa Branch Office, Japan*** Free-ranging channel catfish adopt cost-efficient neutral buoyancy in flowing condition A9.31	**Thomas Endlein** ***Max Planck Institute for Intelligent Systems Stuttgart, Germany*** Innate turning preference of leaf-cutting ants in the absence of external orientation cues A10.10	**Roland Foisner** ***Medical University Vienna, Austria*** Progerin expression in nuclei of endothelial cells causes cardiovascular pathology through an impaired mechanoresponse C2.10	**Nick Rowe** ***Botany and Plant Architecture - CNRS, France*** Why are climbing plants increasing in ecological dominance? The functional roles of light, adaptive mechanical traits A7.7
12:00	MOVEMENT TO PLENARY HALL			
12:05				
12:15	**BIDDER LECTURE** LOCATION: AUDITORIUM, PALAZZO CONGRESSI HANS-OTTO PÖRTNER (ALFRED WEGENER INSTITUTE, GERMANY) WHAT ROLE FOR EXPERIMENTAL BIOLOGY IN CLIMATE-RELATED ASSESSMENT REPORTS?			
13:15	LUNCH/EXHIBITION/POSTERS/SEB – THE FUTURE (13:35-14:05), ROOM: AUDITORIUM, PALAZZO CONGRESSI			

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	SECOND FLOOR PALAZZO AFFARI
SEQUENCING FROM LAB TO FIELD AND THE POST GENOMIC ERA (C4)	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)** SPONSORED BY: PLANT, CELL AND ENVIRONMENT	**ENVIRONMENTAL IMPACT ON EPIGENETIC MEMORY (PA1)** SPONSORED BY: QMUL LIFE SCIENCES INSTITUTE AND THE PLANT JOURNAL	**PLANT TEMPERATURE RESPONSES: SHAPING DEVELOPMENT AND ENHANCING SURVIVAL? (P3)** SPONSORED BY: NEW PHYTOLOGIST TRUST
CHAIR: BEN TEMPERTON	CHAIR: RACHAEL HEUER	CHAIR: JULIA DAVIES	CHAIR: VAARDMAN RAKYAN	CHAIR: HEATHER KNIGHT
Joshua Quick ***University of Birmingham, United Kingdom*** Deploying a portable lab for the genomic surveillance of emerging infectious diseases C4.4	**Aaron K Klymasz- Swartz** ***University of Manitoba, Canada*** The impact of climate change (pCO_2 and temperature) on the acid-base physiology of the American Lobster (*Homarus ammericanus*) A6.6	**Malcolm J Bennett** ***University of Nottingham, United Kingdom*** New angles on root growth and development P7.5	**Daniel Zilberman** ***John Innes Centre, United Kingdom*** Stable epigenetic inheritance of DNA methylation through pathway integration PA1.6	**Steven Penfield** ***John Innes Centre, United Kingdom*** Control of plant seasonal behaviour by feedback regulation P3.29
	Rosa Freitas ***University of Aveiro, Portugal*** Does pre-exposure to warming conditions affect mercury accumulation and impacts in *Mytilus galloprovincialis*? A6.7			
	Chris M Wood ***University of British Columbia, Canada*** The internal PCO_2 threat to fish A6.8	**Martha Thellmann** ***Department of Plant and Microbial Biology University of Zurich, Switzerland*** Towards understanding cellular communication in lateral root formation P7.6	**Eric Miska** ***University of Cambridge, United Kingdom*** GxE in worm and fish PA1.7	**Hao Xu** ***University of Birmingham, United Kingdom*** Identification of gene regulatory networks driving changes in the biomechanical properties of embryo cells and the seed-to-seedling transition P3.30
Geraldo S Magalhaes ***Butantan Institute, Brazil*** Transcriptome analysis of the centipede Cryptops iheringi´s venom gland C4.5	**Pecha Kucha** **Daniela Amelio** A6.9 **José Ricardo Paula** A6.10 **Thomas Sorger** A6.11 **Hanna Scheuffele** A6.12 **Joanna J Miest** A6.13	**Stephanie M Swarbreck** ***Department of Plant Sciences University of Cambridge, United Kingdom*** Exploring the role of the karrikin-sensing protein KAI2 in regulating root growth patterns in Arabidopsis thaliana P7.7		**Allan B James** ***University of Glasgow, United Kingdom*** How does temperature affect splicing events? Isoform switching of splicing factors regulates splicing of *LATE ELONGATED HYPOCOTYL (LHY)* P3.31
MOVEMENT TO PLENARY HALL				**Plant temperature responses: Early career scientist prize-giving**
				MOVEMENT TO PLENARY HALL
BIDDER LECTURE LOCATION: AUDITORIUM, PALAZZO CONGRESSI HANS-OTTO PÖRTNER (ALFRED WEGENER INSTITUTE, GERMANY) WHAT ROLE FOR EXPERIMENTAL BIOLOGY IN CLIMATE-RELATED ASSESSMENT REPORTS?				
LUNCH/EXHIBITION/POSTERS/SEB – THE FUTURE (13:35-14:05), ROOM: AUDITORIUM, PALAZZO CONGRESSI				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**OPEN ANIMAL BIOLOGY (A10)**	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**BIOMECHANICS AND CLIMATE CHANGE (A7)**
CHAIR	CHAIR: NIC BURY	CHAIR: FELIX MARK	CHAIR: ROLAND FOISNER	CHAIR: FRANK SEEBACHER
14:15	**Janet E Genz** ***University of West Georgia, United States*** Low temperature reduces physiological impacts of accumulated oxygen debt for a hypoxia-tolerant cyprinid fish A9.32	**Timothy A C Gordon** ***University of Exeter, United Kingdom*** Degraded Great Barrier Reef no longer sounds like home A10.31	**Kentaro Tamura** ***University of Shizuoka, Japan*** Diverse functions of plant nuclear envelope proteins C2.11	**Ran Nathan** ***Hebrew University, Israel*** Plant spread and animal invasion in a changing world: examples of two complementary research approaches A7.8
14:30	**Jacinta D Kong** ***The University of Melbourne, Australia*** Microclimate-driven mechanistic models to examine clinal adaptation at the egg stage in a parthenogenetic grasshopper A9.33	**Dennis Kolosov** ***McMaster University, Canada*** Molecular mechanisms of reversal from ion secretion to ion reabsorption in the Malpighian tubules of a lepidopteran crop pest *Trichoplusia ni* A10.12		
14:45	**Eduardo Sampaio** ***Marine and Environmental Sciences Centre, Portugal*** Ocean deoxygenation supersedes ocean warming and ocean acidification impacts in marine biota A9.34	**Lauren E James** ***Aarhus University, Denmark*** Cardiovascular control under anaesthesia in the ball python (*Python regius*) A10.13		**Zak Mitchell** ***University of Leeds, United Kingdom*** Linking macroecology and biomechanics in Odonata (Dragonflies): How flight ability shapes species' ranges A7.9
15:00	**Tristan John McArley** ***The University of Auckland, New Zealand*** Physiological mechanisms of hypoxia tolerance in intertidal and subtidal New Zealand triplefin fishes A9.35	**Rachael M Heuer** ***University of Miami-RSMAS, United States*** Impacts of crude oil on cardiomyocyte function in the mahi-mahi (*Coryphaena hippurus*) A10.14	**Hank W Bass** ***Florida State University, United States*** Identification and characterisation of maize LINC complex proteins: new tools for old questions C2.12	**Anthony Herrel** ***Museum National d'Histoire Naturelle, France*** Climate change and dispersal in amphibians A7.10
15:15	**Francois Vezina** ***Universite du Quebec a Rimouski, Canada*** Post-migration transition in the high Arctic: lean shorebirds are in a hurry to recover A9.36	**Mikkel T Thomsen** **Aarhus University, Denmark** Lactate and the hypoxic ventilatory response – an ancestral mechanism? A10.15		
15:30	**Luca Morelli** ***Università di Pisa, Italy*** Kleptoplasts photoacclimation state modulates the photobehaviour of the solar-powered sea slug *Elysia viridis* A9.37	**Ida B Johansen** ***Norwegian University of Life Sciences, Norway*** Bigger is not better: Cortisol-induced cardiac growth and dysfunction in salmonids A10.16		**Paolo Domenici** ***CNR IAMC, Italy*** The effect of climate change on fish anti-predator behaviour and escape kinematics A7.11
15:45	**Luis E Castañeda** ***Universidad Austral de Chile, Chile*** Evolutionary responses to artificial selection on heat thermal resistance in Drosophila subobscura: how does heating rate influence the evolution of thermal-related traits? A9.38	**Kathryn Dickson** ***California State University Fullerton, United States*** Hatching gland cells in embryos of the California grunion, *Leuresthes tenuis* A10.17	**Daniel Brayson** ***King's College London, United Kingdom*** The nuclear response to heart disease C2.13	**Kaitlyn Lowder** ***Scripps Institution of Oceanography UC San Diego, United States*** Fight and flight: spiny lobster predator defences under reduced pH conditions A7.12

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	SECOND FLOOR PALAZZO AFFARI
	CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)** SPONSORED BY: PLANT, CELL AND ENVIRONMENT	**ENVIRONMENTAL IMPACT ON EPIGENETIC MEMORY (PA1)** SPONSORED BY: QMUL LIFE SCIENCES INSTITUTE AND THE PLANT JOURNAL	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
	CHAIR: MICHAEL BERENBRINK	CHAIR: JULIA DAVIES	CHAIR: VAARDMAN RAKYAN	CHAIR: SARAH DALESMAN
Careers workshop – Getting the message across: communicating your science to different audiences **14:10-16:10**	**Timothy D Clark** ***Deakin University, Australia*** The role of body mass in the cardio-respiratory responses of fishes to environmental change A4.17	**Stefan Kepinski** ***University of Leeds , United Kingdom*** Gravity and the shaping of plant form: root growth angle control P7.8	**Paul J Hurd** ***Queen Mary University of London, United Kingdom*** Epigenetic determination of social insect castes PA1.8	**Harry R Harding** ***University of Bristol, United Kingdom*** Intraspecific variation in response to motorboat noise: the importance of previous acoustic experience A2.17
	Emil A F Christensen ***University of Copenhagen, Denmark*** Optimal aerobic scope and temperature preference is size dependent in European perch (*Perca fluviatilis*) A4.18			**Chris K Elvidge** ***University of Eastern Finland, Finland*** Predation risk mediates cognitive impairment following physical exertion in a subtropical intertidal fish A2.18
	Graham D Raby ***Great Lakes Institute for Environmental Research U. Windsor, Canada*** Allometry of thermal tolerance and metabolic performance in Chinook salmon A4.19	**Amy G R Jacobsen** ***Durham University, United Kingdom*** Hormonal interactions in root responses to mechanical impedance P7.9	**Diogo F Antunes** ***Institute of Ecology and Evolution University of Bern, Switzerland*** Are early-life effects on social behaviour non-genetically inherited to the next generation? PA1.9	**Darryl McLennan** ***University of Glasgow, United Kingdom*** Juvenile Atlantic salmon telomere length varies with environmental quality A2.20
	Davide Thambithurai ***University of Glasgow, United Kingdom*** The effect of hypoxia on swimming performance and vulnerability to capture by simulated trawling in zebrafish A4.20	**Kirsten Ten Tusscher** ***Utrecht University, Netherlands*** Signal integration and decision making: Computing in plants P7.10	**Zinnia H Gonzalez Carranza** ***The University of Nottingham, United Kingdom*** *HAWAIIAN SKIRT*, and *F- box* gene from Arabidopsis, is a new player in the microRNA pathway PA1.10	**Fouzia Haider** ***University of Rostock, Germany*** Bioenergetic mechanisms of the combined impacts of salinity and disturbance on bioturbation capacity of a soft shell clam *Mya arenaria* A2.21
	Sjannie Lefevre ***University of Oslo, Norway*** Long-term hypoxia acclimation has minor effects on respiratory physiology of Alaska blackfish A4.21		**Daniel J Gibbs** ***University of Birmingham, United Kingdom*** The N-end rule pathway couples polycomb repressive complex 2 to environment sensing in angiosperms PA1.11	**Francisco OMC Borges** ***MARE - Marine and Environmental Sciences Centre Laboratório Marítimo da Guia Cascais, Portugal*** Transgenerational exposure to ocean acidification impacts the reproductive success of a keystone crustacean species (*Gammarus locusta*) A2.22
	Daniel F Gomez Isaza ***The University of Queensland, Australia*** Living in polluted waters: metabolic costs of exposure to nitrate and low pH in two Australian fishes A4.22	**Annalisa Rizza** ***Sainsbury Laboratory University of Cambridge, United Kingdom*** Biochemical regulation of GA gradients in Arabidopsis roots P7.11	**Surinder Chopra** ***Penn State University, United States*** The Unstable factor for orange1 mutation alters epigenetic regulation and alternate splicing in maize genome PA1.12	**Cassandre Aimon** ***CEDRE, France*** Behavioural and physiological response to ocean acidification makes juvenile European seabass more relaxed A2.23
	Michael G Jonz ***University of Ottawa, Canada*** Respiratory epithelia in water-breathing fish: adaptations for surviving hypoxia A4.23	**Pitchapa Nimwatanakul** ***Department of Biology, Faculty of Science, Mahidol University, Thailand*** Effects of plant growth promoting rhizobacteria on tobacco (*Nicotiana tabacum* L.) root system P7.24		

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A9)**	**OPEN ANIMAL BIOLOGY (A10)**	**FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY (C2)**	**BIOMECHANICS AND CLIMATE CHANGE (A7)**
16:00	**Lena Schwertmann** ***Hochschule Bremen, Germany*** Mussel-hugging: How the skeletal morphology of starfish enables ray movement A9.39 (16:00 - 16:15)	**Yulia V Lyupina** ***N.K. Koltzov Institute of Developmental biology, Russia*** Molecular mechanisms of cell re-aggregation of sea cold-water sponge *Halichondria panicea* A10.18 (16:00 - 16:15)	**David E Evans** ***Oxford Brookes University, United Kingdom*** Introducing COST_INDEPTH-Impact of nuclear domains in gene expression and plant traits C2.14 (16:00 - 16:15)	
16:10	REFRESHMENT BREAK/EXHIBITION/POSTERS			
CHAIR	CHAIR: JENNI PROKKOLA	CHAIR: FELIX MARK	CHAIR: ROLAND FOISNER	CHAIR: RAN NATHAN
16:40	**Nicholas Carey** ***Scottish Association of Marine Science, United Kingdom*** Promoting open science in experimental physiology: respR, an R package for analysis and reporting of respirometry data A9.40	**Hilary M Lease** ***University of Arizona, United States*** Differences in habitat selection in co-occurring blue (*Connochaetes taurinus*) and black wildebeest (C. gnou) A10.19	**Ohad Medalia** ***University of Zürich, Germany; Ben Gurion University, Israel*** The molecular organization of lamins at the nuclear lamina C2.15	**Lewis Halsey** ***University of Roehampton, United Kingdom*** Climate change effects on locomotion and energetics A7.13
16:55	**Emma C Chapman** ***University of Hull, United Kingdom*** Influence of light and temperature cycles on the molecular clock of the blue mussel *Mytilus edulis* A9.41	**Kimberley A Bennett** ***Abertay University, United Kingdom*** Explant experiments show metabolic characteristics of blubber from grey seal pups differ by tissue depth, nutritional state and pollutant exposure A10.20		
17:10	**Yuval Cinnamon** ***Agricultural Research Organization The Volcani Center, Israel*** Cellular and morphological characterization of chick blastoderm during diapause phenomenon A9.42	**Holly Armstrong** ***Plymouth University, United Kingdom*** Pollutant exposure affects expression of cellular defence, not metabolic, genes in seal blubber explants, despite altered tissue metabolic properties A10.21		**Nedim Tüzün** ***KU Leuven Biology - Section Ecology Evolution and Biodiversity Conservation, Belgium*** Warming under seminatural outdoor conditions in the larval stage negatively affects insect flight performance A7.14
17:25	**Olga Genin** ***Agricultural Research Organization The Volcani Center, Israel*** Generating 3D morphology atlas of the chick embryo using high resolution episcopic microscopy A9.43	**Valerio Sbragaglia** ***Institute for Environmental Protection and Research, Italy*** Size-selective harvesting modulates circadian rhythms at molecular level without evident differences in the behavioural phenotypes A10.22	**Gwenaelle Detourne** ***Oxford Brookes University, United Kingdom*** The NEAP family- a novel family of Nuclear Envelope Associated Proteins C2.16	**Jonathan R Codd** ***University of Manchester, United Kingdom*** How comparable are field and laboratory locomotor biomechanics? A7.15
17:40	**Katherine A Short** ***British Antarctic Survey and University of Bristol, United Kingdom*** A new comprehensive phylogeny of the Tardigrada may alter the hypotheses for their colonisation of Antarctica A9.44	**Wren A Busby** ***University of North Texas, United States*** The nitty-gritty about changes seen over time using a multi-strain probiotic and red drum *Sciaenops ocellatus* A10.23	**Frida Forsberg** ***University of Oslo, Norway*** Exploring the dynamics of chromatin-nuclear lamin interactions: not just a peripheral matter C2.17	**Florian T Muijres** ***Wageningen University, Netherlands*** How wing molt affects flight performance and breeding success in a changing world A7.16
17:55	END OF SESSIONS			
18:00 - 19:00	**POSTER SESSION 2** LOCATION: EXHIBITION HALL			

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	SECOND FLOOR PALAZZO AFFARI
SEQUENCING FROM LAB TO FIELD AND THE POST GENOMIC ERA (C4)	**CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE (A4)**	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)** SPONSORED BY: PLANT, CELL AND ENVIRONMENT	**ENVIRONMENTAL IMPACT ON EPIGENETIC MEMORY (PA1)** SPONSORED BY: QMUL LIFE SCIENCES INSTITUTE AND THE PLANT JOURNAL	**INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER? (A2)**
		Pecha Kucha		
REFRESHMENT BREAK/EXHIBITION/POSTERS				
CHAIR: RICHARD TENNANT	CHAIR: CINZIA VERDE	CHAIR: STEFAN KEPINSKI	CHAIR: JOSE GUTIERREZ-MARCOS	CHAIR: LYNNE SNEDDON
Karen Moore ***University of Exeter, United Kingdom*** Cross platform adaptation of DNA sequencing, for non-traditional samples C4.6	**Amanda C Reynolds Kirby** ***University of North Texas, United States*** Effects of thermal acclimation on swim performance in the eurythermal sheepshead minnow (*Cyprindon variegatus*) A4.24	**Alex Costa** ***University of Milan, Italy*** Light sheet fluorescence microscopy for calcium dynamics in root and root hair cells of *Arabidopsis thaliana* P7.12	**Anita Öst** ***Linkoping University Department of Clinical and Experimental Medicine, Sweden*** SmallRNAs transmit big epigenetic message: Intergenerational reprogramming of metabolism PA1.13	**Miho Sakao** ***The Atmosphere and Ocean Research Institute, Japan*** Male streaked shearwaters adjust their trip duration based on presence or absence of paired females A2.24
	Eran Gefen ***University of Haifa- Oranim, Israel*** Direct and interrelated effects of carbon dioxide and oxygen on ventilatory central pattern generation in locusts A4.25			**Aleksandra Walczynska** ***Institute of Environmental Sciences Jagiellonian University, Poland*** Why may ectotherms differ in their stress response to temperature/oxygen conditions? – The mother, the cell and the unknown A2.25
	Michael Berenbrink ***University of Liverpool, United Kingdom*** Diving physiology of the extinct Great Auk, *Pinguinus impennis* A4.26	**Kris Vissenberg** ***University of Antwerp, Belgium*** The auxin-regulated CrRLK1L kinase ERULUS controls cell wall composition during root hair tip growth P7.13	**Svenja Mager** ***Nutritional Crop Physiology University of Hohenheim, Germany*** Nutritional regulation of the maize root methylome and transcriptome PA1.14	**Sebastian Boltana** ***University of Concepcion, Chile*** Influences of thermal environment on fish stress and welfare A2.26
Ben Temperton ***University of Exeter, United Kingdom*** VirION: Towards long read marine viromics with the MinION sequencer C4.7	**Discussion**		**Jasmine M Saban** ***Biological Sciences University of Southampton, United Kingdom*** Mechanisms of plant plastic and adaptive responses to elevated CO_2 PA1.15	**Discussion**
		Jenny Goodman ***University of Warwick, United Kingdom*** Characterising ligand induced complex formation and signalling using the peptide RALF1 and the receptor-like kinase FERONIA in *Arabidopsis thaliana* roots P7.14	**Discussion**	
END OF SESSIONS				
POSTER SESSION 2 LOCATION: EXHIBITION HALL				

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A10)**	**OPEN BIOMECHANICS (A8)**	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**GENERALITY OF THE 'PACE-OF-LIFE SYNDROME' CONCEPT: IS THE IDEA OF INTEGRATED SYNDROMES SUPPORTED BY EXPERIMENTAL DATA? (A3)**
08:30	REGISTRATION & OPENING OF EXHIBITION			
CHAIR	CHAIR: LAUREN NADLER	CHAIR: NICOLAI KONOW	CHAIR: RACHAEL HEUER	CHAIRS: JENNI PROKKOLA, TOMMY NORIN
09:00	**Elia Beniash** ***University of Pittsburgh, United States*** Effects of Vascular Endothelial Growth Factor (VEGF) signalling on biomineralization of the pacific oyster *Crassostrea gigas* A10.24	**Jan-Henning Dirks** ***Hochschule Bremen - City University of Applied Sciences, Germany*** If it ain't broke, don't fix it?! - Repair of biological materials and structures A8.51	**Hans-Otto Pörtner** ***Alfred Wegner Institute, Germany*** Climate change impacts on ocean life: from mechanism to ecosystem A6.14	**Denis Reale** ***UQAM, Canada*** The Pace-Of-Life Syndrome hypothesis: life-history roots, mixed support, and future directions A3.1
09:15	**Claire L Riggs** ***Saint Louis University, United States*** Small noncoding RNA expression and vertebrate anoxia tolerance A10.25	**David Taylor** ***Trinity College Dublin, Ireland*** Strength and fracture of limpet shells A8.52		
09:30	**Martin Horstmann** ***Ruhr-University Bochum, Germany*** More than meets the eye - unravelling the morphology of Daphnia's inducible defences in 3D A10.26	**Maeve O'Neill** ***Trinity College Dublin, Ireland*** Impact repair in limpet shells A8.53	**Julie J H Nati** ***University of Glasgow Institute of Biodiversity Animal Health and Comparative Medicine, United Kingdom*** The effect of latitude and thermal variability on intraspecific variation in thermal tolerance in fishes A6.15	**Niels J Dingemanse** ***Ludwig-Maximilians University of Munich, Germany*** Fast exploring great tits live fast but senesce young A3.2
09:45	**Nathan T Katlein** ***University of South Alabama, United States*** Investigating the role of colour in picture perception in geckos A10.27	**Bruce A Young** ***Kirksville College of Osteopathic Medicine, United States*** The Peculiar eustachian valve of crocodilians A8.54	**Gisela Lannig** ***Alfred Wegener Institute Helmholtz Center for Polar Marine Science, Germany*** Impact of ocean acidification at the borders of the thermal tolerance window – population and tissue specific response in *Pecten maximus* A6.16	**Andrea Campos-Candela** ***Mediterranean Institute for Advanced Studies (IMEDEA-CSIC), Spain*** A unifying theory to test the generality and adaptive value of Pace-of-Life-Syndromes based on dynamic energy budgets A3.3
10:00	**Emma L Bradford** ***University of Aberdeen, United Kingdom*** Using an *in vitro* system to investigate deformed wing virus transmission by the parasitic mite, *Varroa destructor* A10.28	**Linnea Hesse** ***Plant Biomechanics Group Botanic Garden Freiburg, Germany*** Gaining insights into the functional morphology, biomechanics and development of the branch-stem-attachment of *Dracaena marginata* using high-resolution MRI A8.55	**Daniela Storch** ***Alfred-Wegener-Institut Helmholtz-Zentrum für Polar- und Meeresforschung, Germany*** Arctic fish face loss of spawning habitat due to increased embryo sensitivity during early development to ocean warming and acidification A6.17	**Petri T Niemela** ***Ludwig-Maximilians University, Germany*** Meta-analysis reveals weak associations between intrinsic state and personality A3.4
10:15	**Philippe Ganot** ***Centre Scientifique de Monaco, Monaco*** Calcifying tissue specific expression in the red coral shows conserved pathways between coral and vertebrate biomineralization A10.29	**Ulrike Bauer** ***University of Bristol, United Kingdom*** Fine-tuning of epicuticular wax crystals to adjust trap surface slipperiness in a carnivorous pitcher plant A8.56	**Louise Cominassi** ***Institute of Hydrobiology and Fischeries Science University of Hamburg, Germany*** Combined effects of ocean acidification, warming and food availability on the growth and digestion of juvenile European seabass (*Dicentrarchus labrax*) A6.18	**Kristien I Brans** ***KU Leuven, Belgium*** City life on fast lanes: urbanization induces an evolutionary shift towards a faster pace-of-life in the water flea *Daphnia* – an exploration of the physiology/life-history nexus A3.5
10:30	**Hayfa Chammem** ***University of Tunis El Manar, Tunisia*** The echinoderm fauna of northern Tunisia with new records (Central Mediterranean Sea) A10.30	**Simon Chen** ***University of Cambridge, United Kingdom*** The world isn't flat: substrate geometry and insect attachment A8.57	**Daniel W Montgomery** ***University of Exeter, United Kingdom*** Multi-stressor impacts of the 'deadly trio' on hypoxia tolerance and aerobic performance of the European seabass, *Dicentrarchus labrax* A6.19	**Robby Stoks** ***University of Leuven, Belgium*** The pace-of-life syndrome under warming and pollution: integrating life history, behaviour and physiology across latitudes A3.6

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	SECOND FLOOR PALAZZO AFFARI
	ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS (P5)	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)**	**QUANTITATIVE SYNTHETIC BIOLOGY (C3)**	**THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE (AC2)**
REGISTRATION & OPENING OF EXHIBITION				
	CHAIR: ALISTAIR MCCORMICK	CHAIR: STEFAN KEPINSKI	CHAIR: CHRISTIAN FLECK	CHAIR: ANGELA FAGO
Careers workshop – Getting the message across: communicating your science to different audiences	**Martin C Jonikas** ***Princeton University, United States*** Structure and biogenesis of the eukaryotic CO_2 concentrating organelle, the pyrenoid P5.1	**Anna Amtmann** ***University of Glasgow, United Kingdom*** EZ-Root-VIS facilitates gene discovery and modelling of plant root system architecture P7.15	**Julio R Banga** ***Spanish Council for Scientific Research, Spain*** Dynamics and optimal control of biosystems C3.1	**James F Staples** ***University of Western Ontario, Canada*** Multiple modes of regulating mitochondrial metabolism in a mammalian hibernator AC2.1
	Myriam M M Goudet ***University of Cambridge, United Kingdom*** Role of the small subunit of RuBisCO in Green Algal Phylogeny and CCM expression P5.2	**Zaigham Shahzad** ***Institute of Molecular Cell and Systems Biology, University of Glasgow, United Kingdom*** Quantitative genetics of arabidopsis root system responses to multiple nutrient deficiencies P7.16	**Robert Smith** ***Wageningen University Research, Netherlands*** Designing synthetic networks in silico: a generalised evolutionary algorithm approach C3.2	**Leah I Hayward** ***Western University, Canada*** Hibernation protects mitochondria from in vitro anoxic exposure AC2.2
	Yi Zhang ***University of Cambridge, United Kingdom*** Rubisco small subunit mutants reveal Post Translational Modifications during Rubisco aggregation and pyrenoid formation in *Chlamydomonas reinhardtii* P5.3	**Peter Doerner** ***School of Biological Sciences, University of Edinburgh, United Kingdom*** The RGF1-PLT2 regulatory network maintains primary root meristem activity in low phosphate environments P7.17	**Joshua Rees** ***University of Bristol, United Kingdom*** Smart minimal gene sets using whole cell models C3.3	**Leslie Buck** ***University of Toronto, Canada*** Role of the mitochondrion in low oxygen signalling in the painted turtle AC2.3
	Indu Santhanagopalan ***University of Cambridge, United Kingdom*** Sychronized cells as a model for the diel regulation of Rubisco-EPYC1 interactions in the Chlamydomonas CCM P5.4		**Paul B C James** ***University of Exeter, United Kingdom*** Domestication of an industrially relevant bacterial chassis for fuels and platform chemicals C3.4	**Amanda M Bundgaard** ***Aarhus University, Denmark*** How mitochondrial regulation during anoxia prevents oxidative damage in freshwater turtles AC2.4
	Nicky J Atkinson ***University of Edinburgh, United Kingdom*** Building a CCM in higher plants: EPYC1 interacts with the Rubisco small subunit in Arabidopsis P5.5	**Uwe Ludewig** ***Nutritional Crop Physiology University of Hohenheim, Germany*** Regulation of cluster roots of white lupin by small peptides P7.18	**James Gilman** ***University of Exeter, United Kingdom*** A statistical learning approach to promoter sequence-activity modelling C3.5	**Kim T Hellgren** ***University of Manchester, United Kingdom)*** Prenatal hypoxia leads to sex dependent alterations in metabolism in the murine heart AC2.5
	Discussion - Topics: 1. Major hurdles facing the engineering of a biophysical CCM into plants 2. How will CCM engineering compliment recent advances in plant photosynthesis engineering	**Christin Naumann** ***Leibniz Institute of Plant Biochemistry, Germany*** Phosphate limitation activates ER stress-dependent autophagy in root tips P7.19	**Barbara Di Ventura** ***University of Freiburg, Germany*** A matter of dynamics C3.6	**Jules B L Devaux** ***The University of Auckland, New Zealand*** Mitochondrial plasticity in response to anoxia-reoxygenation: contrasted responses in two anoxia-tolerant sharks *Hemiscyllium ocellatum* and *Chiloscyllium punctatum* AC2.6

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A10)**	**OPEN BIOMECHANICS (A8)**	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**GENERALITY OF THE 'PACE-OF-LIFE SYNDROME' CONCEPT: IS THE IDEA OF INTEGRATED SYNDROMES SUPPORTED BY EXPERIMENTAL DATA? (A3)**
10:45		**Jana Goyens** ***University of Antwerp, Belgium*** Endolymph flow and cupula deformation during head rotation A8.58	**Björn Illing** ***ARC Centre of Excellence for Coral Reef Studies, Australia*** Global warming in 3,2,1 - what acute tolerance tests can tell us about thermal resilience in early life stages of tropical fishes A6.20	**Tuul Sepp** ***University of Tartu, Estonia*** The slow pace of seabird life A3.7
11:00	REFRESHMENT BREAK/EXHIBITION/POSTERS			
CHAIR	CHAIR: IDA JOHANSEN	CHAIR: NICOLAI KONOW	CHAIR: ALEXANDER LITTLE	CHAIRS: TOMMY NORIN, NEIL METCALFE
11:30	**Linda C Weiss** ***Ruhr University Bochjum, Germany*** Rising pCO_2 in freshwater ecosystems has the potential to negatively affect predator-induced defenses in Daphnia A10.32	**Letizia Zullo** ***Istituto Italiano di Tecnologia NSYN, Italy*** The octopus arm muscular hydrostat: example of an efficient link between morphology and biomechanics A8.59	**Göran E Nilsson** ***University of Oslo, Norway*** Will fishes be small and stupid in the warm and acidified future? A6.21	**Anne M Bronikowski** ***Iowa State University, United States*** Evaluation of the pace-of-life syndrome at life-history, physiology, and behavioural levels of organization in garter snakes (*Thamnophis elegans*) with disparate life-histories A3.8
11:45	**Hans Malte** ***Aarhus University Dept of Bioscience, Denmark*** The Bohr/Haldane effect: Assessing its full significance for gas exchange in the tissues A10.33	**Ryan D Marek** ***University of Liverpool, United Kingdom*** The surrogate arm: analysing the role of regionalisation in the variation of the avian neck A8.60		
12:00	**Cornelia E Fanter** ***Saint Louis University, United States*** The effects of pH and Pi on tension and Ca^{2+} sensitivity of ventricular myofilaments from the anoxia-tolerant painted turtle A10.34	**Christine Böhmer** ***UMR 7179 CNRSMNHN Muséum National d'Histoire Naturelle Paris, France*** Ripper vs gulper: biomechanical adaptations in the neck of sympatric vultures A8.61	**José Ricardo Paula** ***MARE - Marine and Environmental Sciences Centre, Portugal*** Neurobiological disruption of cleaning mutualisms under ocean warming and acidification A6.22	**Kelly E Ross** ***University of Liverpool, United Kingdom*** Of mice and elephants – Mammalian blood oxygen affinity and the Pace-of-Life-Syndrome A3.9
12:15		**Cheryl Wilga** ***University of Alaska Anchorage, United States*** The function of tessellated cartilage in shark jaws A8.62	**Rachael M Heuer** ***University of Miami-RSMAS, United States*** Investigating the link between CO_2-induced behavioural disruptions and acid-base regulatory ability in marine organisms A6.23	**Wilco C E P Verberk** ***Radboud University Nijmegen, Netherlands*** A faster pace of life in a warmer world: Can an oxygen perspective explain the temperature-size rule? A3.10
12:30	MOVE TO PLENARY HALL			
12:45	**CELL BIOLOGY PLENARY LECTURE** ROOM: AUDITORIUM, PALAZZO CONGRESSI MALCOLM BENNETT (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM BRANCHING OUT: LINKING LATERAL ROOT DEVELOPMENT WITH ENVIRONMENTAL SIGNALS			
13:45	**MEDALS AND PRIZES - PRESENTATION OF PRESIDENT'S MEDALS,YOUNG SCIENTIST AWARDS AND IRENE MANTON POSTER PRIZES** ROOM: AUDITORIUM, PALAZZO CONGRESSI			
14:00	LUNCH/EXHIBITION/POSTERS			
CHAIR	CHAIR: LYNNE SNEDDON	CHAIR: ROB JAMES	CHAIR: RACHAEL HEUER	CHAIRS: PETRI NIEMELÄ, JENNI PROKKOLA
15:00	**Joanna J Miest** ***University of Greenwich, United Kingdom*** This fish smells sick: changes in odour profile predict infection status in marine fish A10.35	**Uros Cerkvenik** ***Wageningen University and Research, Netherlands*** Stiffness gradients facilitate bending of parasitic wasp ovipositors A8.63	**Erika Eliason** ***University of California Santa Barbara, United States*** Using intraspecific variability to examine the mechanisms of thermal tolerance A6.24	**Kate L Laskowski** ***Leibniz-Institute of Freshwater Ecology Inland Fisheries, Germany*** Individual behaviour, foraging specializations and life-history strategies as integrated phenotypes in a wild pike population A3.11

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	SECOND FLOOR PALAZZO AFFARI
	ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS (P5)	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)**	**QUANTITATIVE SYNTHETIC BIOLOGY (C3)**	**THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE (AC2)**
Careers workshop – Getting the message across: communicating your science to different audiences				**Enrique Rodríguez** ***Université du Québec à Rimouski, Canada*** The architecture of the mitochondrial electron transport system in very long-lived marine bivalves: are supercomplex assemblies present? AC2.7
REFRESHMENT BREAK/EXHIBITION/POSTERS				
	CHAIR: DOUGLAS ORR	CHAIR: JULIA DAVIES		CHAIR: ANGELA FAGO
	Dean Price ***Australian National University, Australia*** Strategies and progress on fitting parts of cyanobacterial CO_2 concentrating mechanisms into C_3 chloroplasts P5.6	**Miriam Gifford** ***The University of Warwick, United Kingdom*** Timing and coordination of cell type response mechanisms that regulate root development and nodulation P7.20		**Steven C Hand** ***Louisiana State University, United States*** Mitochondrial function during energy limited states AC2.8
	David Savage ***UC Berkeley, United States*** Biochemical and cellular reconstitution of the bacterial CO_2 concentrating mechanism P5.7	**Marco Giovannetti** ***Gregor Mendel Institute, Austria*** A genome wide association study to disentangle legume-specific root responses to phosphate P7.21		**Nicolas Pichaud** ***Université de Moncton, Canada*** The mitochondrial pyruvate carrier: a key determinant of mitochondrial inflexibility? AC2.9
		Matthew J Teft ***University of Warwick, United Kingdom*** Investigating conservation of function for GRAS/SCARECROW-LIKE transcription factors in root architecture and nodulation P7.22		**Carly E Tward** ***Wilfrid Laurier University, Canada*** Temperature fluctuations and the expression of alternative oxidase in the copepod *Tigriopus californicus* AC2.10
MOVE TO PLENARY HALL				
CELL BIOLOGY PLENARY LECTURE ROOM: AUDITORIUM, PALAZZO CONGRESSI MALCOLM BENNETT (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM BRANCHING OUT: LINKING LATERAL ROOT DEVELOPMENT WITH ENVIRONMENTAL SIGNALS				
MEDALS AND PRIZES - PRESENTATION OF PRESIDENT'S MEDALS,YOUNG SCIENTIST AWARDS AND IRENE MANTON POSTER PRIZES ROOM: AUDITORIUM, PALAZZO CONGRESSI				
LUNCH/EXHIBITION/POSTERS				
	CHAIR: LUKE MACKINDER	CHAIR: JULIA DAVIES	CHAIR: MUSTAFA KHAMMASH	CHAIR: KIM HELLGREN
	Stefan Timm ***University of Rostock Plant Physiology Department, Germany*** On the road to optimized photorespiration – defining pathway bottlenecks and regulatory mechanisms on central carbon metabolism P5.8	**Amanda Rasmussen** ***The University of Nottingham, United Kingdom*** Obtaining a roots-eye view of rhizosphere nutrient zones P7.23	**Jeff Tabor** ***Rice University, United States*** Engineering bacterial two-component systems as sensors for synthetic biology applications C3.7	**Raquel Moreno Loshuertos** ***Universidad de Zaragoza, Spain*** Mitochondrial and nuclear DNA matching shapes metabolism and healthy ageing AC2.11

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A10)**	**OPEN BIOMECHANICS (A8)**	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**GENERALITY OF THE 'PACE-OF-LIFE SYNDROME' CONCEPT: IS THE IDEA OF INTEGRATED SYNDROMES SUPPORTED BY EXPERIMENTAL DATA? (A3)**
15:15	**Mariacristina Filice** ***University of Calabria, Italy*** Cardiac morpho-functional remodelling in teleost: humoral influences A10.36	**Thies H Büscher** ***Functional Morphology and Biomechanics Kiel University, Germany*** Buckling prevention strategies in the hindleg tibia of the stick insect *Carausius morosus* (Sinéty, 1901) during the postembryonic development A8.64		
15:30	**Arshi Mustafa** ***Uppsala University, Sweden*** Interstrain differences in behaviour of zebrafish A10.37	**Julian K A Langowski** ***Wageningen University Research, Netherlands*** Functional interpretation of the force-transmitting structures in a tree frog's toe pad A8.65	**Jodie L Rummer** ***Australian Research Council (ARC), Centre Of Excellence For Coral Reef Studies, James Cook University, Australia),*** Fish under high CO_2 conditions: Maintaining oxygen transport and physiological performance A6.25	**Sophie Von Merten** ***CESAM Faculty of Sciences University of Lisbon, Portugal*** The relationship between personality differences and life-history strategy in European shrew species A3.12
15:45	**Mar Yerli Pineda** ***The University of Manchester, United Kingdom*** Climate change impacts reveal age-dependent effects on lateralisation in sharks A10.38	**Tim E Higham** ***University of California Riverside, United States*** The ecomechanics of gecko adhesion: Comparative morphology and adhesive capacity of day geckos (*Phelsuma*) A8.66	**Ian A Bouyoucos** ***Australian Research Council Centre of Excellence for Coral Reef Studies, Australia*** Reef shark performance under ocean warming in the 21st century A6.26	**Mónika Jablonszky** ***Behavioural Ecology Group Department of Systematic Zoology and Ecology Eötvös Loránd University, Hungary*** Year-dependent relationship between risk-taking, survival to the next year and current reproductive investment in the collared flycatcher (*Ficedula albicollis*) A3.13
16:00	REFRESHMENT BREAK/EXHIBITION/POSTERS			
16:30	**Cheng Fu** ***Chongqing Normal University, China*** Predation experience underlies the relationship between locomotion capability and survival A10.39	**Jennifer R A Taylor** ***Scripps Institution of Oceanography University of California San Diego, United States*** Aquatic versus terrestrial crab skeletal support A8.67	**Matthew Guzzo** ***University of Guelph, Canada*** Why do fish get smaller with warming? A case study using long-term monitoring data from the Experimental Lakes Area, Canada A6.27	**Joacim Näslund** ***Stockholm University, Sweden*** The complex pace-of-life syndrome of trout: state-dependence, behavioural types, and territoriality A3.14
16:45	**Sarah E Child** ***University of Manchester, United Kingdom*** The influence of changing climate conditions on personality in *Scyliorhinus canicular* A10.40	**Alana C Sharp** ***University College London, United Kingdom*** The role of soft tissues in a biomechanical model of the rat skull A8.68	**Eduardo Sampaio** ***Marine and Environmental Sciences Centre, Portugal*** Ocean acidification dampens physiological stress response elicited by ocean warming (and MeHg contamination) in the teleost fish *Argyrosomus regius* A6.28	
17:00	**Emem P Udoh** ***University of Aberdeen, United Kingdom*** Post restriction hyperphagia and metabolic responses to short-term calorie restriction A10.41	**Ethan D Clotfelter** ***Amherst College, United States*** Force production in crayfish claws: morphometric predictors and performance constraints A8.69	**Rachael Morgan** ***Norwegian University of Science and Technology, Norway*** Thermal tolerance in wild zebrafish: a comparison between natural and laboratory populations A6.29	**Louise C Archer** ***University College Cork, Ireland*** The effects of food and temperature on aspects of life history and physiology in brown trout A3.15
17:15	**Emily K Lam** ***UC Berkeley, United States*** Variation in thermoregulation and linking whole organism behaviour to thermosensory neurophysiology in the porcelain crab, *Petrolisthes cinctipes* A10.42	**Víctor Sellés de Lucas** ***University of Hull, United Kingdom*** An assessment of the role of the falx cerebri and tentorium cerebelli in carnivorans A8.70	**Maria L Mardones** ***National Oceanography Centre (NOCS) University of Southampton, United Kingdom*** Effects of temperature on oxygen availability and metabolic response throughout early development of the European sting winkle, *Ocenebra erinaceus* Linnaeus, 1785 (Neogastropoda, Muricidae) A6.30	**Jenni M Prokkola** ***University of Liverpool, United Kingdom*** The effects of angling selection on the integration of personality, metabolism and stress sensitivity in brown trout A3.16

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	SECOND FLOOR PALAZZO AFFARI
	ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS (P5)	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)**	**QUANTITATIVE SYNTHETIC BIOLOGY (C3)**	**THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE (AC2)**
	Baris Uzilday ***Ege University, Turkey*** Changes in alternative electron sinks in dimorphic chloroplasts of single cell C_4 plant *Bienertia sinuspersici* under salinity P5.9	**Tom Bennett** ***University of Leeds, United Kingdom*** Root restriction and the limitations on plant growth P7.25	**Jack Mitchell** ***University of Birmingham, United Kingdom*** Quantitative analysis of gene expression within *Arabidopsis thaliana* seeds using a real-time luciferase reporter system C3.8	**Caroline M Williams** ***University of California Berkeley, United States*** Divergence in mitochondrial function underpins life history specialization in wing polymorphic *Gryllus* crickets AC2.12
			Oskar J Siemianowski ***Iowa State University, United States*** Model ecosystems for plants and microbes, a phenotyping approach with quantitative control of signalling between organisms and their environmental conditions C3.9	
REFRESHMENT BREAK/EXHIBITION/POSTERS				
	Cheryl Kerfeld ***MSU-LBNL, United States*** Structure, function, assembly and engineering of the carboxysome and other bacterial microcompartments P5.10	**Hagai Shemesh** ***Tel-Hai College, Israel*** Beyond average: complex behaviour of plant roots P7.26	**Guy-Bart Stan** ***Imperial College London, United Kingdom*** Improved performance and robustness in living cells through design and realisation of *de novo* biomolecular feedbacks C3.10	**Edward Chouchani** ***Harvard Medical School, United States*** Mitochondrial redox control over health and disease AC2.13
	Douglas J Orr ***Lancaster University, United Kingdom*** Towards a β-carboxysome in higher plants P5.11	**Antoine Gautier** ***EGFV - INRA, France*** How do grapevine rootstocks modify phosphorus concentration in scion? P7.27	**Emma M Keizer** ***Wageningen University Research, Netherlands*** *In silico* design of gene regulatory networks in fluctuating environments C3.11	**Pierre U Blier** ***Université du Québec à Rimouski, Canada*** Fatty acid profiles, ROS production and mitochondrial integrity of the heart in temperature tolerance of salmonids AC2.14
	Yusuke Matsuda ***Department of Biology Kwansei Gakuin University, Japan*** Structures and functions of new pyrenoidal components in marine diatoms P5.12	**Yoshikatsu Matsubayashi** ***Nagoya University, Japan*** Root-to-shoot and shoot-to-root long-distance mobile peptides mediate systemic regulation of nitrogen acquisition P7.28	**Mustafa Khammash** ***ETH Zurich, Switzerland*** Cybergenetic circuits for robust adaptation C3.12	**France Dufresne** ***Université du Québec à Rimouski, Canada*** Phenotypic consequences of mutation accumulations on Daphnia mitochondria AC2.15

ROOM	AUDITORIUM PALAZZO CONGRESSI	VERDE PALAZZO CONGRESSI 2ND FLOOR	ADUA 2 PALAZZO AFFARI 2ND FLOOR	GROUND FLOOR PALAZZO AFFARI
SESSION	**OPEN ANIMAL BIOLOGY (A10)**	**OPEN BIOMECHANICS (A8)**	**OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS (A6)**	**GENERALITY OF THE 'PACE-OF-LIFE SYNDROME' CONCEPT: IS THE IDEA OF INTEGRATED SYNDROMES SUPPORTED BY EXPERIMENTAL DATA? (A3)**
17:30	**Daniel Sanchez Lacalle** ***University of the West of Scotland, United Kingdom*** Influence of parental carotenoid diets on survival and brood size of guppies A10.43	**Katherine A Galloway** ***Florida Atlantic University, United States*** Mechanical properties and puncture performance of the venomous spines of the red lionfish, *Pterois volitans* A8.71	**Folco Giomi** ***King Abdullah University of Science and Technology, Saudi Arabia*** Coastal oxygen supersaturation sets thermal refugia for the associated invertebrate community A6.31	**Chris K Elvidge** ***University of Eastern Finland, Finland*** Capture methods select for fish on different points of behaviour and physiological spectra, but the relationships between behaviour and physiology run counter to POLS predictions A3.17
17:45	END OF SESSION	**Falk J Esser** ***Plant Biomechanics Group Botanic Garden University Freiburg FMF-Freiburg Material Research Center, Germany*** New type of biomimetic peristaltic pumping system based on flexible silicone soft robotic actuators as an alternative for technical pumps A8.72	**Francesca Coppola** ***University of Aveiro, Portugal*** Biochemical responses and accumulation patterns of *Mytilus galloprovincialis* exposed to Arsenic contamination and warming conditions A6.32	**Jack P W Hollins** ***University of Glasgow, United Kingdom*** Does thermal plasticity affect susceptibility to capture? Insights from a simulated trap and trawl fishery A3.18
18:00		END OF SESSIONS		
20:00 - 01:00	**CONFERENCE DINNER** VENUE: PALAZZO BORGHESE			

ROOM 1 PALAZZO AFFARI 1ST FLOOR	ROOM 2 PALAZZO AFFARI 1ST FLOOR	ADUA 1 PALAZZO AFFARI 1ST FLOOR	ONICE PALAZZO CONGRESSI GROUND FLOOR	SECOND FLOOR PALAZZO AFFARI
	ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS (P5)	**SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING (P7)**	**QUANTITATIVE SYNTHETIC BIOLOGY (C3)**	**THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE (AC2)**
	Gitanjali Yadav ***University of Cambridge, United Kingdom*** Construction and analysis of a gene regulatory network for the algal biophysical CCM P5.13		**Discussion**	**Marion Pillet** ***University of Antwerp, Belgium*** Oxidative stress in common carp (*Cyprinus carpio*) exposed to a mixture of metal pollutants AC2.16
	Discussion	**Discussion**		**Tim Shaw** ***Peter Doherty Institute, Australia*** The enigma variations: Genesis and evolution of a primordial stress response AC2.17
END OF SESSIONS				
CONFERENCE DINNER VENUE: PALAZZO BORGHESE				