ANNUAL MEETING PROGRAMME

SEB GOTHENBURG 2017
3–6 JULY 2017
SWEDISH EXHIBITION
AND CONGRESS CENTRE

SEBIOLOGY.ORG
#SEBAMM

SCIENTIFIC SMÖRGÅSBORD

SOCIETY FOR EXPERIMENTAL BIOLOGY

CONTENTS

Image © Kjell Holmner/Göteborg & Co

PRESIDENT'S WELCOME

It is my pleasure to welcome you to the SEB's 2017 Annual Meeting in the city of Gothenburg. After a very successful Annual Meeting last year in Brighton, I can assure you that there is an exciting four days ahead of you!

PROF PATRICK HUSSEY
PRESIDENT, SOCIETY FOR EXPERIMENTAL BIOLOGY

It is my pleasure to welcome you to the SEB's 2017 Annual Meeting in the city of Gothenburg. After a very successful Annual Meeting last year in Brighton, I can assure you that there is an exciting four days ahead of you!

Gothenburg is located on the beautiful west coast of Sweden and as a destination of choice not only for seafood lovers, but everyone who enjoys good food; Gothenburg promises to suit a wide variety of tastes. With local teaching and research activities stretching from the alpine ecosystem all the way into the marine environment, this will give you a taste of the science which will be on offer this year. I would like to take the opportunity to thank Michael Axellson and the host institution, University of Gothenburg, for their support of our Annual Meeting.

This year's Scientific Smörgåsbord will allow you to dip into a wide range of topics from all areas of experimental biology including sessions on 'Climate change and aquatic life: effects of multiple drivers, from molecules to populations', 'Molecular control of plant growth during abiotic stress' and 'Palaeogenomics and Ancient DNA'. There is also a number of 'Science across Boundaries' sessions within the programme which will help cross disciplinary working, and the sharing of ideas and research techniques.

An overwhelming number of posters will also be on display for the duration at the Annual Meeting so make sure you discover the research on offer.

Alongside the thought provoking scienitific sessions, we have plenary lectures from three leading researchers within their fields. The Woolhouse Lecture on 'Roots of the second green revolution' will be delivered by Jonathan Lynch (Pennsylvania State University). Steve Perry (University of Ottawa) will deliver the Bidder Lecture on 'The control of breathing in fish – why and how' and Anthony Tuner (Linköping University) will speak on 'Biosensors: how to achieve the ultimate in performance with the simplest of devices' for the Cell Biology Plenary Lecture.

We are also delighted to be awarding this year's President's Medals to the following young scientists for their outstanding merit and I look forward to hearing their presentations: Shaun Killen (Animal), Markus Schwarzländer (Cell), Bert De Rybel (Plant) and Katharine Hubbard (SEB+).

Connecting socially as well as professionally is very important so make sure you don't miss out on the numerous networking events we have taking place. From our Welcome evening reception to our famous conference dinner in Kajskjul 8 located on the docks of Gothenburg, there is something for everyone.

I wish you a productive and enjoyable meeting over the next four days and don't forget to follow us on Twitter to keep up to date on what's happening. Please follow us on **@SEBiology** and use the conference hashtag **#SEBAMM** to get involved. Please make sure you save the dates for next year's Annual Meeting in Florence, 3-6 July 2018, to 'get a pizza the action'. More information will be available at the SEB stand so come and see us.

> THIS YEAR'S SCIENTIFIC SMÖRGÅSBORD WILL ALLOW YOU TO DIP INTO A WIDE RANGE OF TOPICS

DELEGATE INFORMATION

VENUE

Swedish Exhibition and Congress Centre
Mässans Gata/Korsvägen
SE-41294, Gothenburg, Sweden
www.svenskamassan.se/en

INTERNET ACCESS

There is free Wi-Fi is available throughout the Swedish Exhibition and Congress Centre. No login details are required.

BADGES

Name badges will contain a barcode which will be scanned each day to record attendance at meeting for SEB administrative purposes only.

The exhibitors will have the opportunity to hire scanners for data capture and will only have access to your email and institution name. If you do not want the exhibitor to scan your badge you can decline their offer.

Badges must be worn for the duration of the conference, both for security purposes and for entry into the scientific sessions and networking events.

REFRESHMENTS

Lunch and refreshments will be provided for the duration of the conference and will be served in the exhibition and poster area in Hall H and Congress Foyer on the First Floor.

PARKING

There is parking available at Gothia Towers in the Focus car park and it has direct access to the conference centre from the car park. The cost for parking is SEK 145 for daytime parking and SEK 195 per night. The opening hours of the car park are **06:30–24:00** and can be booked by contacting Guest Services on guestservice@gothiatowers.com or +46 (0)31 750 89 40. You can also book car parking at the hotel reception on the Ground Floor.

CERTIFICATES OF ATTENDANCE

If you require a certificate of attendance, please visit the SEB registration desk on your last day of attendance.

SEB Gothenburg 2017 has been approved by the Royal Society of Biology for purposes of CPD. Attendees at the Annual Meeting can claim up to 84 CPD credits and are only valid if you are registered on the Royal Society of Biology CPD Scheme.

MEETING APP

This year's App will allow you to create your own bespoke schedule, network with other attendees and share your experience through social media (to name but a few of its functions!). You should have received an email with details on how to download the app and login but if you have any questions, please visit the SEB registration desk for information. The app is available for iPhone, iPad, Android and Blackberry users.

Please download the App through your relevant app store or scan the QR code below:

EXHIBITION

The exhibition area is the place to meet with our many scientific exhibitors – whether you are looking for a publisher for your next paper or an essential piece of scientific equipment. We will also be using the exhibition area for refreshment and lunch breaks throughout the conference.

Two dedicated poster evenings will take place on **4 and 5 July** in the exhibition area. The exhibition will be open daily from **08:00 on 3 July and 08:30 on 4-6 July until 17:00**, with extended opening on **3 July** for the welcome evening reception.

Please note that the exhibition will close at **17:00 on 6 July 2017.*

ORAL PRESENTATIONS

If you are giving a talk at the Annual Meeting, you will need to upload your presentation in the speaker preview room which is located in Room R12 on the First Floor. The room will be clearly signposted during the conference.

POSTER PRESENTATIONS

At this year's Annual Meeting, posters for both poster sessions will be hung for the duration of the conference. Presenters will be able to hang their posters from **08:00 on Monday 3 July.** Posters must be in place for the relevant poster session and can only be removed once the session has taken place. All posters must be removed by **17:00 on Thursday 6 July**. The Society for Experimental Biology will supply velcro fastenings for your poster – please do not use any other method of fastening for your poster.

Posters entered into the Irene Manton Poster Prize will be judged during the poster sessions on the **4 and 5 July 2017**. Winners will be announced at the Medal and Prizes session at **12:45-13:00 on 6 July**.

PHOTOGRAPHY

Please note that photographs taken at this event may be used for promotional purposes by inclusion on our website and/or marketing materials. If you have any concerns or queries regarding this, please visit the SEB registration desk.

LIABILITY

Neither the Society for Experimental Biology nor the Swedish Exhibition and Congress Centre will accept responsibility for damage or injury to persons or property during the conference.

PROGRAMME AT A GLANCE

	ROOM TIME	K1	K2+3	H1	H2	G1	G2	G3	J1	J2
SUNDAY 2 JULY 2017	10:30–15:30	PRE-CONFERENCE CAREERS DAY (ROOM: J2)								
	16:00–18:00	REGISTRATION (J LOUNGE, FIRST FLOOR)								
	17:00–19:00	SCIENCE WITH IMPACT – COMMUNICATING SCIENCE IN A POST-TRUTH ERA (ROOM: G3)								
	19:00–21:00	PRE-CONFERENCE NETWORKING (BRYGGAN, FIRST FLOOR)								
MONDAY 3 JULY 2017	08:00–09:00	REGISTRATION & OPENING OF EXHIBITION								
	09:00–10:55	**A11**	**A8**	**A1**	**A5**	**PC6**	**PC1**	**P1**	**PC3**	**SEB+1**
	10:55–11:30	REFRESHMENT BREAK / EXHIBITION								
	11:30–13:00	ANIMAL PRESIDENT'S MEDALLIST AND YSAS TALKS (ROOMS: K2 +K3) PLANT PRESIDENT'S MEDALLIST AND YSAS TALKS (ROOM: K1)								
	13:00–14:00	LUNCH / EXHIBITION								
	14:00–15:40	**PC9**	**A8**	**A1**	**A5**	**PC6**	**PC1**	**P1**	**PC3**	**SEB+1**
	15:40–16:10	REFRESHMENT BREAK / EXHIBITION								
	16:10–17:25	**PC9**	**A8**	**A1**	**A5**	**PC6**	**PC1**	**P1**	**PC3**	**SEB+1**
	18:00–19:00	WOOLHOUSE LECTURE (ROOMS: K2 + K3)								
	19:00–21:00	WELCOME EVENING RECEPTION (EXHIBITION HALL)								
TUESDAY 4 JULY 2017	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–10:00	CELL AND SEB+ PRESIDENT'S MEDALLIST TALKS (ROOMS: K2 + K3)								
	10:00–10:30	REFRESHMENT BREAK / EXHIBITION								
	10:30–12:40	**A6**	**A3**	**PC9**	**SEB+2**	**A2**	**PC10**	**P1**	**PC1**	PC6
	12:40–13:40	LUNCH / EXHIBITION / MEET THE ACADEMIC PUBLISHERS (12:50-13:30, ROOM: H2)								
	13:40–15:25	**A6**	**A3**	**PC8**	**A11**	**A2**	**PC2**	**P1**	**PC1**	PC6
	15:25–16:00	REFRESHMENT BREAK / EXHIBITION								
	16:00–17:00	**A6**	**A3**	**PC8**	**A11**	**A2**	**PC2**	**P1**	**PC1**	PC6
	17:00–19:30	POSTER SESSION 1 (EXHIBITION HALL)								
	19:30–22:00	DIVERSITY DINNER (BRYGGAN, GOTHIA TOWERS). SEE PAGE 8 FOR MORE DETAILS								
WEDNESDAY 5 JULY 2017	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–10:30	**A12**	**A13**	**PC7**	**A11**	**C1**	**PC4**	**PC10**	**PC2**	**PC8**
	10:30–11:00	REFRESHMENT BREAK / EXHIBITION								
	11:00–11:45	**A12**	**A13**	**PC7**	**A11**	**C1**	**PC4**	**PC10**	**PC2**	**PC8**
	11:50–12:50	BIDDER LECTURE (ROOMS: K2 + K3)								
	12:50–13:50	LUNCH / EXHIBITION								
	13:50–15:15	**A12**	**A13**	**PC7**	**A11**	**C1**	**PC4**	**PC10**	**PC2**	**PC8**
	15:15–15:45	REFRESHMENT BREAK / EXHIBITION								
	15:45–17:00	**A12**	**A13**	**PC7**	**A11**	**C1**	**PC4**	**PC10**	**PC2**	**PC8**
	17:00–19:30	POSTER SESSION 2 (EXHIBITION HALL)								
THURSDAY 6 JULY 2017	08:30–09:00	REGISTRATION & EXHIBITION								
	09:00–10:25	**C1**	**A5**	**A9**	**A10**	**A4**	**A7**	**P2**	**PC7**	PC4
	10:25–10:55	REFRESHMENT BREAK / EXHIBITION								
	10:55–11:40	**C1**	**A5**	**A9**	**A10**	**A4**	**A7**	**P2**	**PC7**	PC4
	11:45–12:45	CELL BIOLOGY PLENARY LECTURE (ROOMS: K2 + K3)								
	12:45–13:00	MEDALS AND PRIZES (ROOMS: K2 + K3)								
	13:00–13:50	LUNCH / EXHIBITION								
	13:50–15:15	**A8**	**A5**	**A9**	**A10**	**A4**	**A7**	**P2**	**PC7**	PC4
	15:15–15:45	REFRESHMENT BREAK / EXHIBITION								
	15:45–17:00	**A8**	**A5**	**A9**	**A10**	**A4**	**A7**	**P2**	**PC7**	PC4
	18:30–LATE	CONFERENCE DINNER (KAJSKJUL 8). SEE PAGE 9 FOR MORE DETAILS								

KEY	
A1	PHYSIOLOGICAL MECHANISMS OF AQUATIC TOXICOLOGY
A2	EFFECTS OF PHARMACEUTICALS ON WILDLIFE - BRIDGING THE GAP BETWEEN ECOTOXICOLOGY AND ECOLOGY
A3	CLIMATE CHANGE AND AQUATIC LIFE: EFFECTS OF MULTIPLE DRIVERS, FROM MOLECULES TO POPULATIONS
A4	CHALLENGES IN THE ANTHROPOCENE: ACID-BASE/ION REGULATION AND CALCIFICATION IN AQUATIC INVERTEBRATES
A5	OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS
A6	THE OBLIGATION OF ACTIVITY - HOW DO ANIMALS GET FIT, AND WHAT TAKES THEM OVER THE HILL?
A7	NATURALLY OCCURRING EXPERIMENTS: USING LIFE HISTORY EVENTS TO UNDERSTAND LOCOMOTOR PERFORMANCE
A8	CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS
A9	INTEGRATIVE MODELLING APPROACHES TO THE FISH CARDIO-RESPIRATORY SYSTEM UNDER ENVIRONMENTAL CHANGE - IS IT TIME FOR A FISH PHYSIOME INITIATIVE?
A10	BIOLOGICAL ADHESIVES: FROM BIOLOGY TO BIOMIMETICS
A11	OPEN BIOMECHANICS
A12	OPEN ANIMAL BIOLOGY
A13	OPEN ANIMAL BIOLOGY

KEY	
PC1	PLANT CELL BIOLOGY
PC2	PLANT CELL CYCLE AND THE CYTOSKELETON
PC3	MEMBRANE DYNAMICS: SIGNALLING AND POLARITY
PC4	LIFE AT THE INTERFACE: PLANT MEMBRANE-PROTEIN DYNAMICS/INTERACTIONS DURING ENVIRONMENTAL CHANGE
PC6	MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS
PC7	PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE ENERGY PRODUCTION
PC8	CROP MODELS IMPROVEMENT WITH BIOLOGICAL KNOWLEDGE: WHICH, WHY, AND HOW?
PC9	IMAGING PLANT PATHOGENESIS
PC10	GENERAL CELL AND PLANT BIOLOGY
C1	PALAEOGENOMICS AND ANCIENT DNA
P1	FROM GENOTYPE TO PHENOTYPE
P2	CARNIVOROUS PLANTS - PHYSIOLOGY, ECOLOGY AND EVOLUTION
SEB+1	THE TEACHING-RESEARCH NEXUS
SEB+2	IS THERE LIFE OUTSIDE OF ACADEMIA?

PROGRAMME HIGHLIGHTS

SUNDAY 2 JULY

16:00–18:00
Registration desk open
J Lounge, First Floor

17:00–19:00
Science with Impact
Communicating science in a post-truth era
Room: G3

ORGANISERS
Anne Osterrieder
Science Communication Convenor, SEB+

Jenny Sneddon
Committee Member, SEB+

Esther Odekunle
Committee Member, SEB+

Science with Impact is an interdisciplinary plenary session which starts the SEB Annual Meeting on Day 0. Science with Impact brings together high profile scientists to speak on topics of relevance to our SEB membership, providing insightful perspectives of their significance to societal challenges such as the cost of health care, food security, biodiversity and climate change.

In this interactive session, our interdisciplinary panel will reflect on successful and not so successful approaches to communicating science in a new post-truth era. Our speakers will talk about their own research and experiences of engaging with different audiences. We will explore how policy, social science and the media add to the complexity of scientific debates.

With plenty of opportunities for delegates to contribute, we envisage key outcomes of the session to be the promotion of new ideas for designing an engaging discussion with students or community groups, as well as consideration of new approaches that could enhance grant application impact statements.

SPEAKERS
Tom Wakeford
People's Knowledge, Centre for Agroecology, Water and Resilience, Coventry University, United Kingdom

Kristin Schirmer
Department of Environmental Toxicology, University of Waterloo, Canada

Alexandre Antonelli
Department of Biological and Environmental Sciences, University of Gothenburg, Sweden

19:00–21:00
Pre-Conference Networking Event
Venue: Bryggan, Gothia Towers

After the Science with Impact session, there will be a networking event with drinks and canapés. The event is open to all delegates and is the perfect opportunity for you to make a few more contacts prior to the conference, meet our honorary SEB officers and share ideas in a casual and sociable setting with your colleagues.

Tickets: SEB Member - £27, Non Member - £35. If you would like to book, please visit the SEB registration desk.

MONDAY 3 JULY

08:00–18:00
Registration desk open
J Lounge, First Floor

09:00–10:55
Scientific sessions

11:30–13:00
Animal and Plant Section President's Medallist talks and Young Scientist Award Session (YSAS)
Animal Section – Rooms K2+K3, First Floor
Plant Section – Rooms K1, First Floor

The young researchers of today will be tomorrow's senior scientists guiding and leading cutting edge scientific research for the future. The SEB believes the encouragement of these young researchers is an essential part of supporting scientific endeavour.

The sessions for Animal and Plant Sections will run concurrently and will be opened with talks from the sections respective President's Medallists. The talks are then followed by 3 young scientists who were shortlisted by the relevant section committees.

The President's Medals will be presented during the Medals and Prizes session on Thursday 6 July at 12:45–13:00. The winners of the Young Scientist Award and the Irene Manton Poster Prize will also be announced during this session, and we ask that all entrants in the respective competitions are present during the award ceremony.

ROOMS: K2+K3, FIRST FLOOR

ANIMAL SECTION

PRESIDENT'S MEDALLIST TALK

11:30
Shaun Killen
University of Glasgow, United Kingdom
Fuel, fear, and fitting in: Interplay among metabolism, behaviour, and the environment in individual animals
PM17.1

YSAS – YOUNG SCIENTIST AWARD SESSION FINALISTS

12:00
Anna Stöckl
Aalto University, Finland and Lund University, Sweden
Spatial summation in hawkmoth lamina monopolar cells
YSAS.1

12:20
Christian Damsgaard
Aarhus University, Denmark
Oxygen dictated the evolution of the vertebrate eye
YSAS.2

12:40
Rasmus Ern
University of Texas at Austin, United States
Cardiorespiratory thermal tolerance in marine ectotherms and the effect of hypoxia on their upper thermal niche boundaries
YSAS.3

ROOM: K1, FIRST FLOOR

PLANT SECTION

PRESIDENT'S MEDALLIST TALK

11:30
Bert De Rybel
Ghent University, Belgium
Genetic and hormonal control of vascular cell proliferation
PM17.2

YSAS – YOUNG SCIENTIST AWARD SESSION FINALISTS

12:00
Charlotte H Hurst
University of Dundee, United Kingdom
S-acylation: What the FLS2 is going on?
YSAS.4

12:20
Marjorie R Lundgren
University of Sheffield, United Kingdom
Despite phylogenetic effects, C_3-C_4 lineages bridge the ecological gap to C_4 photosynthesis
YSAS.5

12:40
Sébastjen Schoenaers
University of Antwerp, Belgium
The auxin-regulated CrRLK1L kinase ERULUS controls cell wall composition during root hair tip growth
YSAS.6

14:00–17:25
Scientific Sessions

18:00–19:00
Plenary - Woolhouse Lecture
Rooms K2+3, First Floor

Jonathan Lynch
Pennsylvania State University, United States
Roots of the second green revolution
WOOL.1

19:00–21:00
Welcome evening reception
Exhibition Hall, First Floor

The Welcome Evening Reception is open to all delegates to attend and is included in the registration fee for the Annual Meeting. Network with fellow colleagues, old and new, and exhibitors in a relaxed atmosphere. Canapés will be provided during the reception. Attendance at this event is optional, although we would encourage you to attend what is sure to be a fun-filled evening!

Kindly sponsored by: City of Gothenburg

City of Gothenburg

PROGRAMME HIGHLIGHTS

TUESDAY 4 JULY

08:30–18:00
Registration desk open
J Lounge, First Floor

09:00–10:00
Cell and SEB+ President's Medallist Talks
Rooms K2+3, First Floor

ROOMS: K2+3, FIRST FLOOR

CELL BIOLOGY SECTION

09:00
Markus Schwarzländer
University of Bonn, Germany
Monitoring cellular energy physiology and regulation in plants
PM17.3

ROOMS: K2+3, FIRST FLOOR

SEB+ SECTION

09:30
Katharine Hubbard
University of Hull, United Kingdom
Driving teachingexcellence through supporting excellent teachers
PM17 .4

10:30 – 17:00
Scientific sessions

12:50–13:30
Meet the academic publishers
Room: H2, First Floor

CHAIR
Sarah Blackford, Head of Education & Public Affairs, SEB

In this lunchtime session, our panel will offer advice to PhD students and early career researchers on peer review and how they can get involved in this important aspect of research communication. There will be an opportunity to ask questions during the session as well as being able to visit the publishers'stands during the remainder of the conference.

SPEAKERS
Christine Foyer
University of Leeds, UK / Reviews Editor, JXB

Lee Sweetlove
University of Oxford, UK / Editor-in Chief, The Plant Journal

Adam Wheeler
Senior Publisher, Wiley

17:00-19:30
Poster Session 1
Please see page 42 for further details. You will receive two tickets in your name badge for drinks at this event, after which a cash bar will be available.

19:30–22:00
Diversity Dinner
Venue: Bryggan, Gothia Towers

SPEAKER
Åsa Nilsson Billme
Diversity and Inclusion Strategies, Lectia

Pick and Mix! The power of working in diverse and inclusive groups

Åsa Nilsson Billme is an expert in diversity and inclusion strategies (Lectia) will be the speaker for the second Diversity Dinner. Åsa focuses on strategic operational, organizational, and business development through D&I and is the founder and board member of the Diversity Charter Sweden. She has produced a number of tools and materials, training and workshops, traditional as well as e-learning and her experience ranges from advisory and consultant services, to analysis and strategic planning, project management, training and implementation.

This popular networking event is open to all delegates. With a three course menu and an inspiring speaker, the event provides a platform to discuss perspectives on topical subjects around equality and diversity, with plenty of opportunity for questions and discussion.

Tickets: SEB student/early career members – £30, SEB members – £40, Non Members -£50. If you would like to book, please visit the SEB registration desk.

WEDNESDAY 5 JULY

08:30–18:00
Registration desk open
J Lounge, First Floor

09:30 – 17:00
Scientific sessions

11:50–12:50
Bidder Lecture
Rooms: K2+K3, First Floor

Steve Perry
University of Ottawa, Canada
The control of breathing in fish – why and how
BIDD.1

17:15-19:30
Poster Session 2
Please see page 58 for further details. You will receive two tickets in your name badge for drinks at this event, after which a cash bar will be available.

THURSDAY 6 JULY

08:30–17:00
Registration desk open
J Lounge, First Floor
**Please note the registration and exhibition area will close at 17:00*

09:00 – 17:00
Scientific sessions

11:45–12:45
Cell Biology Plenary Lecture
Rooms: K2+K3, First Floor

Prof Anthony Turner
Linköping University, Sweden
Biosensors: how to achieve the ultimate in performance with the simplest of devices
CELL.1

12:45-13:00
Medals and prizes
Presentations of President's Medals, Young Scientist Award and Irene Manton Poster Prizes

17:00
Meeting closes

18:30–01:00
Conference Dinner
Venue: Kajskjul 8, Packhusplatsen 11, 411 13, Gothenburg.
**Please note: The dinner venue has been marked with a blue spot on the map.*

The SEB conference dinner is being held at Kajskjul 8 which is located along the docks in Gothenburg.

There will be a Swedish buffet with drinks followed by entertainment where you will be able to dance the night away until the early hours. It is a great opportunity for you to meet fellow colleagues, sample delicious local food and drink, and unwind after 4 days of learning.

Tickets: £55 per person. If you would like to book, please visit the SEB registration desk.

YOUNG SCIENTIST AWARD SESSION (YSAS) ABSTRACTS

YSAS.1 SPATIAL SUMMATION IN HAWKMOTH LAMINA MONOPOLAR CELLS

3 JULY 2017 **12:00**

ANNA STÖCKL (AALTO UNIVERSITY, FINLAND; LUND UNIVERSITY, SWEDEN), DAVID O'CARROLL (LUND UNIVERSITY, SWEDEN), ERIC WARRANT (LUND UNIVERSITY, SWEDEN)

@ ANNA.STOCKL@AALTO.FI

Many nocturnal animals rely on vision as their primary sense. The challenging conditions at night - low signal and a high noise background - are met by adaptations in the eyes and retina. In insects, neural processing in the brain further increases sensitivity by summing visual signals in space and time, thus boosting the correlated signal while reducing the uncorrelated noise, yet at the expense of spatial and temporal resolution. The neurons responsible for this summation remain unknown, although clues exist that lamina monopolar cells (LMCs) - found in the first visual processing area of the insect brain - have the necessary morphology to perform spatial summation. Here we give the first physiological evidence to support this hypothesis. We recorded from LMCs intracellularly and characterised their spatial responses at a range of intensities in the hawkmoth *Macroglossum stellatarum*. The LMCs responded to 100 times dimmer light levels than the photoreceptors they receive information from, and their spatial resolution decreased with light intensity, strongly suggesting that they carry out spatial summation. Moreover, the spatial responses of the LMCs at different light intensities closely matched the extent of spatial summation previously measured in the motion vision system of this hawkmoth species. Finally, the spatial receptive fields of LMCs closely matched the lateral extents of their dendrites, suggesting that the lateral dendrites of LMC are responsible for integrating information in space. Our work not only answered a decade-old question in dim light vision, but also provides new insights into spatial information processing in insects.

YSAS.2 OXYGEN DICTATED THE EVOLUTION OF THE VERTEBRATE EYE

3 JULY 2017 **12:20**

CHRISTIAN DAMSGAARD (AARHUS UNIVERSITY, DENMARK), HENRIK LAURIDSEN (AARHUS UNIVERSITY, DENMARK), ANETTE M D FUNDER (AARHUS UNIVERSITY, DENMARK), JESPER S THOMSEN (AARHUS UNIVERSITY, DENMARK), THOMAS DESVIGNES (UNIVERSITY OF OREGON, UNITED STATES), DANE CROSSLEY (UNIVERSITY OF NORTH TEXAS, UNITED STATES), DO T T HUONG (CAN THO UNIVERSITY, VIETNAM), WILLIAM DETRICH (NORTHEASTERN, UNITED STATES), ANNEMARIE BRÜHL (AARHUS UNIVERSITY, DENMARK), JENS R NYENGAARD (AARHUS UNIVERSITY, DENMARK), MICHAEL BERENBRINK (UNIVERSITY OF LIVERPOOL, UNITED KINGDOM), TOBIAS WANG (AARHUS UNIVERSITY, DENMARK), MARK BAYLEY (AARHUS UNIVERSITY, DENMARK)

@ CDAMSG@GMAIL.COM

The high metabolic demands of the vertebrate eye require efficient oxygen supply, yet most non-mammalian retinae are avascular. Hence, evolution of improved visual performance by virtue of thicker retinae and larger eyes requires a parallel augmentation for retinal oxygenation. To overcome the large diffusive barrier for oxygen, three morphological and physiological mechanisms have allowed the evolution of larger eyes and retinal thickness: i) oxygen secretion by the combination of Root effect haemoglobins and a choroid rete, ii) intraretinal- or iii) vitreous capillarization. By reconstructing the evolution of retinal oxygen supply and retinal- and eye morphologies across an 87-species vertebrate phylogeny, we show that the three distinct pathways for retinal oxygenation evolved multiple times among vertebrates, and we show parallel evolution of the capacity for retinal oxygenation and eye/retinal morphology. Oxygen secretion seems to be the most efficient mechanism for retinal oxygenation allowing avascular fish retinae thickness to vastly exceed that of tetrapods. We show that Root effect was lost seven times independently, and the conservation of retinal oxygenation after such losses, required compensations by the two alternative routes. This reflects the same phylogenetic constraints experienced by stem tetrapods, where evolution of larger eyes was achieved by either intraretinal- or vitreous capillarization. Our analysis illustrates the limit in solutions available for increasing visual performance, and that the phylogenetic context determines which physiological pathways that enable sufficient oxygen delivery to evolve eye- and retinal complexity, and hence provides novel insight into on the evolution of the vertebrate eye.

YSAS.3 CARDIORESPIRATORY THERMAL TOLERANCE IN MARINE ECTOTHERMS AND THE EFFECT OF HYPOXIA ON THEIR UPPER THERMAL NICHE BOUNDARIES

3 JULY 2017 **12:40**

RASMUS ERN (UNIVERSITY OF TEXAS AT AUSTIN, UNITED STATES), ANDREW J ESBAUGH (UNIVERSITY OF TEXAS AT AUSTIN, UNITED STATES)

@ RASMUS@ERN.DK

Marine ecosystems are facing a rise in the frequency and severity of transient heat weaves and aquatic hypoxia. The critical thermal maximum (CT_{max}) defines the upper boundary of a species' fundamental thermal niche. Marine ectotherms largely occupy the extent of latitudes tolerable within their thermal niche boundaries. Following the 'oxygen limitation hypothesis', CT_{max} of marine ectotherms decline with declining water oxygen tension ($P_w O_2$) because CT_{max} is cause by a temperature-induced collapse of the cardiorespiratory system. Aquatic hypoxia is therefore projected to impact marine ecosystems by reducing latitudinal distribution ranges and resilience to transient heat weaves across species. However, the 'oxygen limitation hypothesis' was recently proven not universally applicable to marine ectotherms. Knowledge on the extent to which hypoxia reduces the CT_{max} of species from different marine ecosystems is therefore essential to forecasts of climate-induced distribution changes. The oxygen limit for thermal tolerance (PCT_{max}) is the $P_w O_2$ where an organism's CT_{max} starts to decline. The PCTmax can be used to assess the thermal tolerance of the cardiorespiratory system, and determine the effects of hypoxia on upper thermal niche boundaries. We determined PCT_{max} in 8 tropical, temperate, and polar species. The thermal tolerance of the cardiorespiratory system (determined via PCT_{max}) increased with habitat temperature. Only Antarctic krill conformed to the 'oxygen limitation hypothesis'. Interestingly, the 'oxygen limitation hypothesis' was founded primarily on data from polar, stenothermal species. We conclude that aquatic hypoxia is unlikely to impact the distribution of tropical and temperate species via direct limitations on the upper thermal niche boundaries.

YSAS.4 S-acylation: WHAT THE FLS2 IS GOING ON?

3 JULY 2017 **12:00**

CHARLOTTE H HURST (UNIVERSITY OF DUNDEE AT THE JAMES HUTTON INSTITUTE, UNITED KINGDOM), PIERS A HEMSLEY (UNIVERSITY OF DUNDEE AT THE JAMES HUTTON INSTITUTE, UNITED KINGDOM)

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Receptor-Like Kinases (RLK) are single pass transmembrane proteins required to transmit extracellular signals into cells, allowing cells to respond and adapt to environmental changes. FLS2, the most widely-studied plant RLK, is the receptor for the bacterial protein flagellin and we have shown that FLS2 is S-acylated. S-acylation is a reversible and dynamic post-translational protein modification whereby fatty acids are added to cysteine residues but the effects of S-acylation on protein function are largely unknown. Here, using FLS2 as a model, we describe the effects of S-acylation on RLK function.

In plants treated with bacterial flagellin the amount of S-acylated FLS2 rapidly increases. To identify where and when S-acylation is occurring various mutants in the FLS2 signalling pathway were tested for flagellin-mediated increases in FLS2 S-acylation. Loss of components required for activation (co-receptor BAK1) or attenuation (E3 ubiquitin ligases PUB12/13) prevented the flagellin-mediated increase in FLS2 S-acylation. However, loss of components required for endocytosis (DYNAMIN-RELATED PROTEIN B) did not prevent flagellin-mediated increases in FLS2 S-acylation. Furthermore, it appears that S-acylated FLS2 accumulates in drp2B mutants. This suggests that S-acylation occurs after ubiquitination but before endocytosis of activated FLS2 and we hypothesise that S-acylation is required for efficient endocytosis.

We have identified the sites of S-acylation within FLS2 and found that they are conserved throughout the RLK superfamily. Based on these data, we currently hypothesise that S-acylation is an entirely novel means to regulate RLK function.

YOUNG SCIENTIST AWARD SESSION (YSAS) ABSTRACTS

YSAS.5 DESPITE PHYLOGENETIC EFFECTS, C_3-C_4 LINEAGES BRIDGE THE ECOLOGICAL GAP TO C_4 PHOTOSYNTHESIS

3 JULY 2017 **12:20**

MARJORIE R LUNDGREN (UNIVERSITY OF SHEFFIELD, UNITED KINGDOM), PASCAL-ANTOINE CHRISTIN (UNIVERSITY OF SHEFFIELD, UNITED KINGDOM)

MARJORIE.LUNDGREN@SHEFFIELD.AC.UK

C_4 photosynthesis is a physiological innovation involving several anatomical and biochemical components that emerged recurrently in flowering plants. This complex trait evolved via a series of physiological intermediates, broadly termed "C_3-C_4", which have been widely studied to understand C_4 origins. While this research program focused on biochemistry, physiology, and anatomy, the ecology of these intermediates remains largely unexplored. Here, we use global occurrence data and local habitat descriptions to characterize the niche of multiple C_3-C_4 lineages, as well as their close C_3 and C_4 relatives. While C_3-C_4 taxa tend to occur in warm climates, their abiotic niches are spread along other dimensions, making it impossible to define a universal C_3-C_4 niche. Phylogeny-based comparisons suggest that, despite shifts associated with photosynthetic types, the precipitation component of the C_3-C_4 niche is particularly lineage specific, being highly correlated with that of closely related C_3 and C_4 taxa. Our large-scale analyses suggest that C_3-C_4 lineages converged toward warm habitats, which may have facilitated the transition to C_4 photosynthesis, effectively bridging the ecological gap between C_3 and C_4 plants. The intermediates retained some precipitation aspects of their C_3 ancestor's habitat, and likely transmitted them to their C_4 descendants, contributing to the diversity among C_4 lineages seen today.

YSAS.6 THE AUXIN-REGULATED CRRLK1L KINASE ERULUS CONTROLS CELL WALL COMPOSITION DURING ROOT HAIR TIP GROWTH

3 JULY 2017 **12:40**

SÉBASTJEN SCHOENAERS (UNIVERSITY OF ANTWERP, BELGIUM), DARIA BALCEROWICZ (UNIVERSITY OF ANTWERP, BELGIUM), GORDON BREEN (UNIVERSITY OF BRISTOL, UNITED KINGDOM), KRISTINE HILL (UNIVERSITY OF TÜBINGEN, GERMANY), MALGORZATA ZDANIO (UNIVERSITY OF ANTWERP, BELGIUM), GRÉGORY MOUILLE (INRA, FRANCE), TARA J HOLMAN (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM), JAESUNG OH (NATIONAL FUSION RESEARCH INSTITUTE, KOREA (SOUTH)), MICHAEL H WILSON (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM), RANJAN SWARUP (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM), WINNOK DE VOS (UNIVERSITY OF ANTWERP, BELGIUM), ISABEL PINTELON (UNIVERSITY OF ANTWERP, BELGIUM), DIRK ADRIAENSEN (UNIVERSITY OF ANTWERP, BELGIUM), CLAIRE GRIERSON (UNIVERSITY OF BRISTOL, UNITED KINGDOM), MALCOLM J BENNETT (UNIVERSITY OF NOTTINGHAM, UNITED KINGDOM), KRIS VISSENBERG (UNIVERSITY OF ANTWERP, BELGIUM)

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Root hair (RH) morphogenesis is an auxin-regulated process ultimately dependent on synthesis, secretion and modification of the apical cell wall (CW). However, the link between auxin and CW dynamics remains elusive.

We characterized ERULUS (ERU), an auxin-regulated *Arabidopsis* receptor-like kinase from the *Catharanthus roseus* RECEPTOR-LIKE KINASE1-LIKE (CrRLK1L) subfamily of putative CW sensor proteins. *Eru*(-/-) RHs are short, swollen, and show irregular and slower growth. *ERU* transcription is confined to trichoblasts and commences before bulge formation. The *ERU* promoter contains AUXIN RESPONSE FACTOR (ARF) binding sites, suggesting auxin-dependent transcription. qPCR and micro-array data of control and *arf7/arf19* mutant roots treated with auxin confirmed the latter. ChIP-qPCR showed that the *ERU* promoter is a direct target of ARF7 and ARF19.

During RH growth, CW turnover is focused at the tip. Functional ERU-GFP localizes to the secretory pathway and the apical plasma membrane throughout RH development. Micro-Fourier Transform-Infrared (FT-IR) spectroscopy revealed compositional CW changes in *eru* mutant RHs. Immunolocalization of CW components, in vivo visualization of pectin Ca^{2+} egg-box oscillations and determination of pectin methylesterase (PME) activity lead to the conclusion that ERU regulates tip-growth through modulation of CW pectin dynamics by negatively regulating PME activity. In addition, *ERU* transcription was altered specifically in pectin-perturbed mutants, suggesting an ERU/CW feedback mechanism. We conclude that ERU, as a first, provides a direct link between ARF7/ARF19-mediated auxin signaling and cell wall dynamics during RH morphogenesis.

PLENARY LECTURERS

Each year at the SEB Annual Meeting, the work of George Parker Bidder (Animal) and Harold Woolhouse (Plant) is honoured with two plenary lectures. These lectures, along with the Cell Biology Plenary Lecture, are given by scientists prominent in their field and are nominated by the committees of their respective sections.

At this year's SEB Annual Meeting, these prestigious lectures will be presented by:

***Bidder Lecture - Steve Perry,** University of Ottawa, Canada*

***Woolhouse Lecture - Jonathan Lynch** Pennsylvania State University, United States*

***Cell Biology Plenary Lecture – Anthony Turner** Linköping University, Sweden*

BIDDER LECTURE – STEVE PERRY

5 JULY 2017 **11:50**

Steve Perry joined the Faculty of Science at the University of Ottawa in 1983 as an NSERC University Research Fellow after receiving his PhD in 1981 from the University of British Columbia (Zoology) under the supervision of David Randall and subsequent postdoctoral training at McMaster University (Biology) with Chris Wood. Having served as Chair of the Biology Department (2005-2008), he held the position of Vice-Dean Research of the Faculty of Science (2009-2011) while maintaining a University Research Chair since 2003. After receipt of a Killam Research Fellowship (2000-2002), Dr. Perry received the Award for Excellence in Research from the University of Ottawa in 2003. Perry, an Editor since 2003 of the Journal of Experimental Biology, the flagship journal representing integrative comparative physiology, was elected as a Fellow of the Royal Society of Canada in 2008. In 2009, he received the American Fisheries Society Award of Excellence for Fish Physiology (lifetime achievement award) and in 2012 was awarded the Fry Medal from the Canadian Society of Zoologists.

Perry's research focuses on the interactions among gas transfer, acid-base balance and ionic regulation in fish. His basic approach is to integrate techniques from molecular biology, cell physiology and classical whole animal physiology to appreciate the intricate mechanisms that allow fish to inhabit diverse and labile environments. Dr. Perry has published over 350 scholarly articles, book chapters and books since 1978. His work has been cited (Google Scholar) more than 13,000 times. During his career, he has supervised more than 50 graduate students and postdoctoral fellows.

PLENARY LECTURERS

WOOLHOUSE LECTURE – JONATHAN LYNCH

3 JULY 2017 **18:00**

Jonathan Lynch is a Professor at Penn State University and the University of Nottingham. His research focuses on understanding the adaptation of crops to limited water and nutrient availability, in order to guide the development of more resilient, stress-tolerant crops. The development of crops with reduced requirement for water and nutrients would improve food security in developing nations, would improve agricultural sustainability in developed nations, and would improve climate resilience. In this talk he will present progress in identifying and deploying root phenes for improved growth of maize and bean under drought and low soil fertility, including root architectural and anatomical phenes for improved capture of N, P, and water.

“HIS RESEARCH FOCUSES ON UNDERSTANDING THE ADAPTATION OF CROPS TO LIMITED WATER AND NUTRIENT AVAILABILITY”

CELL BIOLOGY PLENARY LECTURE – ANTHONY TURNER

6 JULY 2017 **11:45**

Professor Anthony (Tony) Turner's name is synonymous with the field of Biosensors. He joined Linköping University in 2010, to create a new Centre for Biosensors and Bioelectronics, following a 35-year academic career in the UK culminating as Principal of Cranfield University at Silsoe. In 2016, he was awarded the Ukraine's highest academic honour, the Vernadsky Gold Medal and the Datta Medal by FEBS. He is a member of the Royal Swedish Academy of Engineering Sciences, a Fellow of the UK Royal Society of Chemistry and a Foreign Associate of the USA National Academy of Engineering. He has Higher Doctorates (DSc) from the University of Kent and the University of Bedfordshire, is a Visiting Professor in the UK, Italy, Korea, Japan and China, and has >750 publications and patents (>350 refereed journal papers and reviews) in the field of biosensors and biomimetic sensors with an h-index of 71. He is probably best known for his role in the development of commercial glucose sensors for home-use by people with diabetes, publishing the first textbook on Biosensors in 1987, as Editor-In-Chief of the principal journal in his field, Biosensors & Bioelectronics (Elsevier) and for chairing the World Congress on Biosensors, which he founded in 1990.

“BEST KNOWN FOR HIS ROLE IN THE DEVELOPMENT OF COMMERCIAL GLUCOSE SENSORS FOR HOME-USE BY PEOPLE WITH DIABETES”

PLENARY LECTURE ABSTRACTS

BIDD.1 THE CONTROL OF BREATHING IN FISH – WHY AND HOW

5 JULY 2017 **11:50**

STEVE PERRY (UNIVERSITY OF OTTAWA, CANADA)

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The control of breathing in fish ensures that the volume of water flowing over the gills (ventilation) is appropriately matched to metabolic rate and/or environmental conditions. Changes in ventilation, mediated either by adjustments in breathing frequency or amplitude, predictably modify the rates of respiratory gas transfer but also can profoundly alter arterial blood gas levels and acid-base status.

Ventilatory changes arise from reflex pathways initiated by peripheral chemoreceptors termed neuroepithelial cells (NECs). The NECs, most extensively studied in zebrafish, are tri-modal sensors of O_2, CO_2 and ammonia. Prior to maturation of the gill, the NECs in zebrafish larvae are confined largely to the integument of the eye, yolk sac and tail. Despite the lack of any obvious role for the larval gill in respiratory gas transfer, the activation of the skin NECs promotes branchial hyperventilation. The benefit of such a hyperventilatory response in larvae lacking developed gills is questionable.

The signalling pathways linking NEC activation to downstream respiratory responses are complex, multi-layered and may vary according to the nature of the stimulus (O_2 *versus* CO_2 *versus* ammonia) and developmental age. A common element, however, is membrane depolarization accompanied by an elevation of intracellular Ca^{2+} levels. Although definitive evidence is lacking, it is thought that the elevation of intracellular [Ca^{2+}] promotes neuro-secretion of serotonin (5-HT). Research in our lab is currently addressing several factors that can influence the ventilatory responses associated with NEC activation including the gasotransmitters carbon monoxide, hydrogen sulphide and nitric oxide, and the transcription factor hypoxia inducible factor (HIF).

WOOL.1 ROOTS OF THE SECOND GREEN REVOLUTION

3 JULY 2017 **18:00**

JONATHAN LYNCH (PENNSYLVANIA STATE UNIVERSITY, UNITED STATES)

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The historic Green Revolution consisted of fertilizer application combined with dwarf varieties of wheat and rice that could respond to fertilizer without lodging. We now need a Second Green Revolution to sustain a growing human population with limited inputs of water and fertilizer. This is because drought and low soil fertility strongly limit yields in developing nations, while intensive fertilization and irrigation are increasingly unsustainable in rich nations. In recent years, significant progress has been achieved in breeding crops with improved production in marginal soils. This has been achieved by selection for superior root phenotypes capable of acquiring soil resources more effectively than traditional cultivars. Root architectural traits are critically important in synchronizing root foraging with soil resource availability in time and space. Root anatomical traits are important by regulating the metabolic cost of soil exploration. The need to select crops with improved root phenotypes is driving advances in root phenotyping, multiscale modeling, and linking the genome to the phenome. The Second Green Revolution, consisting of more resilient, resource-efficient crops and cropping systems, will be a key element of our ability to sustain 10B people in a degrading global environment.

PLENARY LECTURE ABSTRACTS

CELL.1 BIOSENSORS: HOW TO ACHIEVE THE ULTIMATE IN PERFORMANCE WITH THE SIMPLEST OF DEVICES

6 JULY 2017 **11:45**

ANTHONY TURNER (LINKÖPING UNIVERSITY, SWEDEN)

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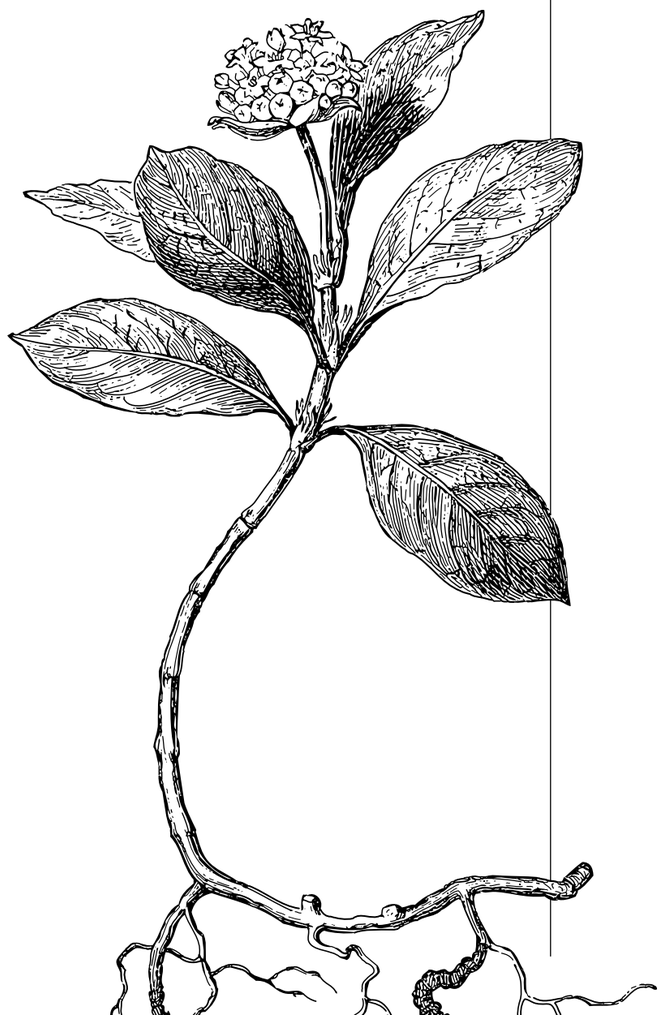
The exquisite sensitivity and specificity of biological systems, combined with the transduction and processing capability of microelectronics, has led to both the successful exploitation of biological recognition and the delivery of new tools for the study of living organisms. These two aspects will be considered in turn, with examples focussed on the design and application of optical and electrochemical biosensors. Rapidly evolving interests in information technology and telecommunications are promising a new paradigm in device design where electronics are evermore integrated with biomolecular or biologically inspired elements. These trends will be exemplified by complete electroanalytical instruments that can be printed on paper cartons or wearable patches. The use of smart polymers to create hybrid interfaces that facilitate of on/off switching and readily reversible affinity sensors will be detailed and approaches to developing more effective alternatives to conventional analytical biochemicals will be explored. The second half of the presentation will focus on single molecule detection as a research tool and briefly review progress to date, followed by a discussion of our first report of single molecule bioelectrocatalysis. Single-molecule sensors enable molecular counting, thus heralding an entirely new quantitative approach that is calibration free and where the limit of detection is no longer concentration dependent. They reveal the stochastic processes and heterogeneities that are fundamental to living systems and allow rare and unusual events to be distinguished from the noise associated with ensemble studies. Individual inter- and intra-molecular events can be studied in detail and receptor design can focus on the nature of the interaction rather than absolute specificity.



PRESIDENT'S MEDALLISTS

The SEB President's Medals are awarded annually to young scientists of outstanding merit. There is one award per section of the SEB (Animal, Cell, Plant, SEB+) and the medallists are invited to give a talk during the Annual Meeting.

Many congratulations to our very worthy winners of the 2017 SEB President's Medals.

ANIMAL BIOLOGY SECTION – SHAUN KILLEN

Shaun Killen is a Senior Research Fellow at the University of Glasgow where he studies the physiological ecology of fishes and responses to environmental stress. Shaun's interest in these areas began during his MSc on the physiological effects of catch-and-release angling at Queen's University under the supervision of Bruce Tufts. There he began to appreciate the effects of environmental stressors on fish physiology in a conservation context. During his PhD at Memorial University with Joe Brown and Kurt Gamperl, he gained experience studying behavioural ecology by examining how physiology and behaviour interact throughout early development in larval marine fishes. Since then he has focused on intraspecific variation in traits, including postdoctoral fellowships with David McKenzie at the University of Montpellier and Neil Metcalfe at the University of Glasgow. His work has contributed toward understanding how environmental stress alters links between physiology and behaviour with evolutionary implications. His current research examines the role of physiology in social behaviours, including group foraging, dominance hierarchies, group locomotion, and animal social networks. This work has helped shape perspectives on the mechanisms underpinning trade-offs associated with social group membership. Findings in these areas have also lead directly into his other major research theme studying how physiological variation within fish species can make certain individuals more vulnerable to capture by commercial fishing gears, thus contributing to fisheries-induced evolutionary change. Shaun is thankful to his mentors, colleagues, and students for their inspiration and support and for demonstrating the value of an integrative approach to research.

“HIS CURRENT RESEARCH EXAMINES THE ROLE OF PHYSIOLOGY IN SOCIAL BEHAVIOURS, INCLUDING GROUP FORAGING, DOMINANCE HIERARCHIES, GROUP LOCOMOTION, AND ANIMAL SOCIAL NETWORKS”

PRESIDENT'S MEDALLISTS

CELL BIOLOGY SECTION— MARKUS SCHWARZLÄNDER

Markus' research aims at generating a mechanistic understanding of how energy flexibility is regulated at the subcellular level. Using the plant cell as a model for plastic energy handling he develops and uses fluorescent *in vivo* sensing approaches to investigate dynamics in the physiology of cell compartments.

Markus gained a PhD in plant mitochondrial redox signalling in the lab of Lee Sweetlove (University of Oxford), where questions about organelle biology, cellular compartmentation and bioenergetics became a source of his fascination. He got particularly interested in the upstream basis for mitochondrial signalling, which turned out difficult to capture with any specificity.

A Junior Research Fellowship at New College, Oxford allowed Markus to dig deeper into the mechanisms of subcellular energy dynamics and to develop imaging tools aiding their dissection. Moving to the University of Bonn he joined the institute of Andreas Meyer, where he has built a junior research group (DFG Emmy-Noether programme). Markus' lab has been bridging cell biology, physiology and biochemistry using functional live cell monitoring, predominantly in plant, but also in fungal and animal cells. The group tries to uncover principles of energy regulation that underpin the ability of cells to acclimate to changing environments.

MARKUS' RESEARCH AIMS AT GENERATING A MECHANISTIC UNDERSTANDING OF HOW ENERGY FLEXIBILITY IS REGULATED AT THE SUBCELLULAR LEVEL

PLANT BIOLOGY SECTION— BERT DE RYBEL

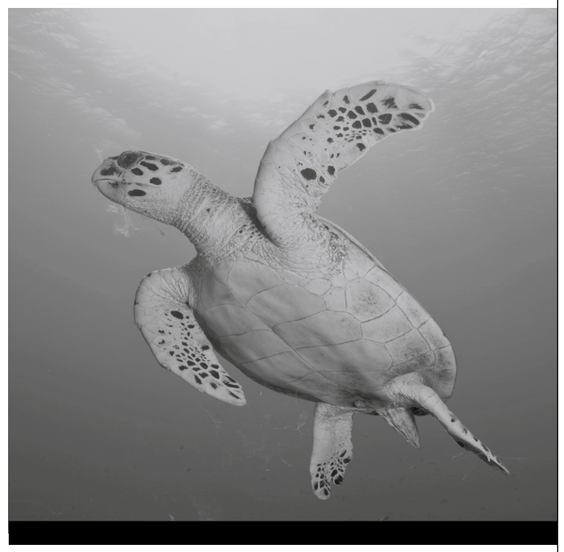
Bert graduated from the faculty of Bioscience Engineering of Ghent University in 2005 before starting his PhD research in the group of Prof Tom Beeckman focusing on early lateral root development. For his post-doc, he moved to the lab of Prof Dolf Weijers at Wageningen University in early 2010 funded by Marie-Curie and FEBS post-doc grants. Here he initiated work on early vascular development. He received a prestigious NWO VIDI grant to continue this line of research in an independent manner. Early 2015, Bert moved back to the Department of Plant Systems Biology of VIB/Ghent University funded by an FWO Odysseus II grant to work as a project leader on vascular development. Very recently, Bert De Rybel was awarded an ERC Starting Grant and from 2017 onwards he is group leader of the 'Vascular Development' lab within VIB and will be appointed associate professor at Ghent University.

HE IS GROUP LEADER OF THE 'VASCULAR DEVELOPMENT' LAB WITHIN VIB AND WILL BE APPOINTED ASSOCIATE PROFESSOR AT GHENT UNIVERSITY

SEB+ KATHARINE HUBBARD

Dr Katharine Hubbard is a Lecturer in the School of Environmental Sciences at the University of Hull, and was the Royal Society of Biology Higher Education BioScience Teacher of the Year 2016. Her scientific background is in plant signal transduction, where she worked in the laboratories of Prof Alex Webb and Prof Julian Schroeder on the role of calcium signals in circadian and drought signalling. She has subsequently developed an education-focussed career, bringing her passion for plant and cell biology to a wide audience of undergraduates. She was a Teaching Associate in the Department of Plant Sciences at the University of Cambridge, where she developed novel digital teaching strategies, led the first 'Students as Partners' project at the University and received a Student-Led teaching award from the Cambridge University Student Union. Katharine is also developing novel approaches to skills teaching within science degrees, including novel uses of online teaching environments. She is a Fellow of the Higher Education Academy and is involved in several pedagogical research projects, including investigations into how students engage with scientific literature, and how authentic research dissemination opportunities can promote engagement with undergraduate research opportunities.

KATHARINE IS ALSO DEVELOPING NOVEL APPROACHES TO SKILLS TEACHING WITHIN SCIENCE DEGREES



PRESIDENT'S MEDALLISTS ABSTRACTS

PM17.1 FUEL, FEAR, AND FITTING IN: INTERPLAY AMONG METABOLISM, BEHAVIOUR, AND THE ENVIRONMENT IN INDIVIDUAL ANIMALS

3 JULY 2017 **11:30**

SHAUN KILLEN (UNIVERSITY OF GLASGOW, UNITED KINGDOM)

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Individuals within species show tremendous variation in physiological and behavioural traits. Although correlations have frequently been observed between specific physiological and behavioural traits in a range of animal taxa, the nature of these associations has been shown to vary. My work suggests that a source of this inconsistency is the influence of environmental stressors, which seem capable of revealing, masking, or modulating relationships between physiological and behavioural traits. Considering that wild animals routinely face a range of biotic and abiotic stressors, increased knowledge of these effects is required for understanding the mechanisms of a range of ecological phenomena and responses to environmental change. I will also review work by my group examining how social factors further affect links among individual physiology, behaviour, and responses to environmental stress. Social influences may override links between traits that exist in solitary animals. Conversely, an individual's social standing can be an important factor generating intraspecific variation. Finally, I discuss ongoing work examining how interactions among metabolic traits, behaviour, and sociality may combine to be relevant in determining which individual fish are most vulnerable to capture by fisheries and thus play a role in fisheries-induced evolution. Traits related to energy balance and locomotor performance are important for avoiding non-human predators, and likely also influence vulnerability to fisheries through a variety of mechanisms. Selection by fisheries could produce major shifts in the fundamental physiological makeup of wild fish populations that are yet to be considered but which could influence population resilience and responses to environmental change.

PM17.2 GENETIC AND HORMONAL CONTROL OF VASCULAR CELL PROLIFERATION

3 JULY 2017 **11:30**

BERT DE RYBEL (GHENT UNIVERSITY, BELGIUM)

BERYB@PSB.UGENT.BE

The plant vascular system develops from a handful of provascular initial cells in the early embryo into a whole range of different cell types in the mature plant. In order to account for such proliferation and to generate this kind of diversity, vascular tissue development relies on a large number of highly oriented cell divisions. Control of these divisions occurs in part through the TARGET OF MONOPTEROS 5/LONESONE HIGHWAY (TMO5/LHW) dimers of bHLH transcription factors and their homologs. The cytokinin (CK) biosynthetic gene *LONELY GUY4 (LOG4)* and its close homolog *LOG3* were identified as direct targets of the TMO5/LHW dimer complex, indicating that CK biosynthesis plays a crucial role in this developmental process. Here, I will highlight our current progress in understanding how cell division orientation is controlled during vascular development.

PM17.3 MONITORING CELLULAR ENERGY PHYSIOLOGY AND REGULATION IN PLANTS

4 JULY 2017 **09:00**

MARKUS SCHWARZLÄNDER (UNIVERSITY OF BONN, GERMANY)

MARKUS.SCHWARZLANDER@UNI-BONN.DE

The energy conversion that occurs in cells requires tight surveillance and dynamic adjustment to meet demands, maintain efficiency and avoid dysfunction. Plant cells are exposed to pronounced changes in the environment particularly frequently, including day-night transitions, changes in oxygen availability or seed germination, which makes tailored control mechanisms essential. Nevertheless our understanding of the dynamics in energy physiology and their regulation at the subcellular level in plants remains limited. We have been using quantitative confocal microscopy and fluorimetry to assess transitions in energy physiology *in vivo* using genetically-encoded fluorescent protein sensors. In this talk I would like to highlight recent progress that we have made in dissecting subcellular calcium transport, ATP dynamics and thiol redox regulation.

PM17.4 DRIVING TEACHING EXCELLENCE THROUGH SUPPORTING EXCELLENT TEACHERS

4 JULY 2017 **09:30**

KATHARINE HUBBARD (UNIVERSITY OF HULL, UNITED KINGDOM)

K.HUBBARD@HULL.AC.UK

We all recognise the need for high quality undergraduate science education, and universities are under increasing pressure to demonstrate 'Teaching Excellence'. However, early career academics are told all too often that teaching is not a good use of time, and that getting research papers published is the only way to succeed in academia. In this talk, I aim to challenge these assumptions by exploring the value that education-focussed academics can bring to university departments, and demonstrate that it is possible to build a career based on teaching excellence. Using examples from my own teaching practice, I will demonstrate how evidence-based approaches to education can benefit both students and staff, increase engagement and make more educational impact with limited resources. I will give advice to early-career academics using examples from my own career path, and explore how universities can better support, recognise and reward those delivering teaching excellence.

THANK YOU: SPONSORS

The Society for Experimental Biology would like to thank the following sponsors for their generous support of this year's Annual Meeting:

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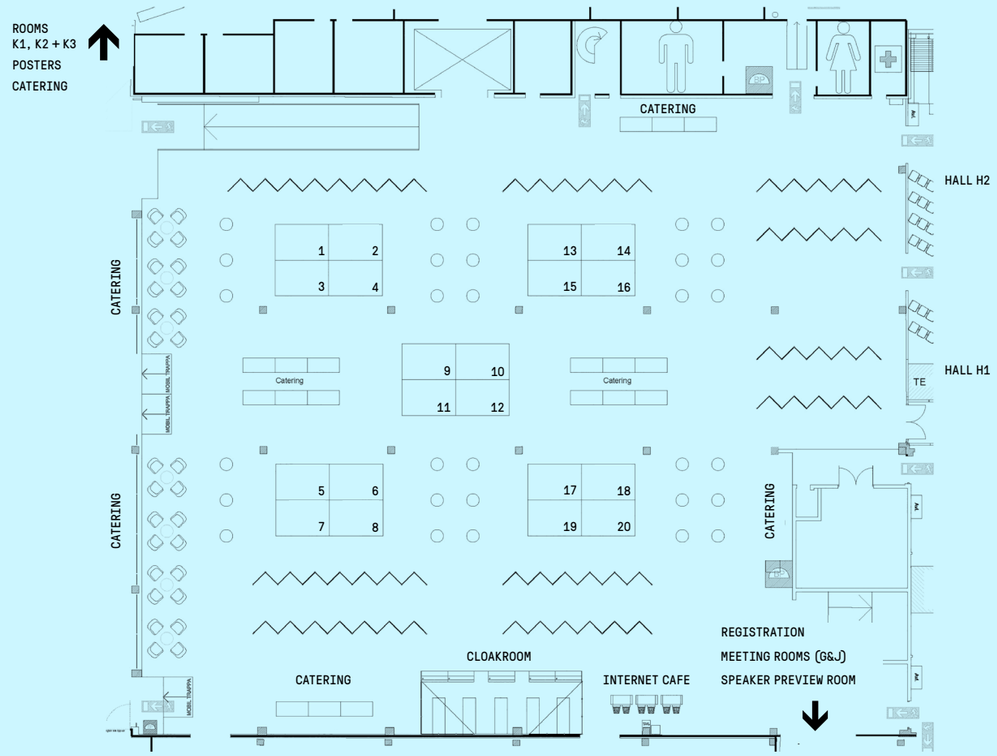

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PROGRAMME DAY BY DAY

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**A11 - OPEN BIOMECHANICS**	**A8 - CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS**	**A1 - PHYSIOLOGICAL MECHANISMS OF AQUATIC TOXICOLOGY**	**A5 - OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS** SPONSORED BY: LOLIGO SYSTEMS
08:00	REGISTRATION & OPENING OF EXHIBITION			
CHAIR	CHAIR: ROB JAMES	CHAIR: SHAUN KILLEN	CHAIR: TAMZIN BLEWETT	CHAIR: KEVIN BRIX
09:00	**Michael Günther** ***Universität Stuttgart, Germany*** The muscle as a wobbling mass: Impact responses in a single formula A11.1	**Prof Frank Seebacher** ***University of Sydney, Australia*** Plasticity of locomotor function and its effect on behaviour A8.1	**Prof Dietmar Kültz** ***UC Davis, United States*** Quantitation and causality of proteome dynamics in fish exposed to environmental stress A1.1	**Dr Kathleen Gilmour** ***University of Ottawa, Canada*** Carbonic anhydrase in the ionocytes of the fish gill: responses to acid-base challenges A5.1
09:15	**Kasper B Christensen** ***Universität Stuttgart, Germany*** The muscle as a wobbling mass: Impact responses in key experiments A11.2			
09:30	**Miss Amber J Collings** ***Royal Veterinary College, United Kingdom*** A functional analyses of anuran pelvic anatomy using musculoskeletal modelling of *Kassina maculata* A11.3			
09:40		**Tommy Norin** ***University of Glasgow, United Kingdom*** Plasticity, performance, and pace of life: individual differences in physiological and behavioural flexibility in response to daily changes in temperature and oxygen availability A8.2	**Dr Nicolas Bury** ***University of Suffolk, United Kingdom*** Polystyrene nanobeads enhance polycylic aromatic hydrocarbon genotoxicity in an *in vitro* fish model A1.2	**Olivia McMillan** ***University of British Columbia, Canada*** Extending the dogfish model of CO_2 excretion to the gills and blood of other chondrichthyan fishes A5.2
09:45	**Jim Usherwood** ***The Royal Veterinary College, United Kingdom*** Work minimization accounts for footfall phasing in slow quadrupedal gaits, and phases used by primates allow more controlled forefoot placement A11.4			
09:55		**Dr Sandra A Binning** ***University of Neuchatel, Switzerland*** Parasites and host performance: incorporating infection into our understanding of animal movement A8.3	**Prof Deborah MacLatchyWilfrid** ***Laurier University, Canada*** Mechanisms of response to estrogenic endocrine disruptors differ in the model fish, the estuarine killifish *Fundulus heteroclitus* A1.3	**Prof Colin J Brauner** ***University of British Columbia, Canada*** Preferential intracellular pH regulation in vertebrates A5.3
10:00	**Dr Tom Weihmann** ***University of Cologne, Germany*** Modelling the impact of the number of walking legs on body dynamics and gait choice in poly-pedal animals A11.5			
10:10				
10:15	**Dr Jana Goyens** ***University of Antwerp, Belgium*** Whole body dynamics and head stabilisation in perturbed *Acanthodactylus boskianus* lizards A11.6			
10:25		**Mr Felipe R Blasco** ***UFScar, Brazil*** Aerobic swimming reveals a sub-lethal threshold for tolerance of acute warming in fishes A8.4	**Mr Dimitri Theuerkauff** ***University of Montpellier, France*** Mangroves as biofilters: the other side of the coin with mangrove crabs being differentially affected by wastewater release A1.4	**Mr Ryan B Shartau** ***University of British Columbia, Canada*** A paradigm shift in vertebrate acid-base regulatory strategy: Preferential intracellular pH regulation as a broadly used strategy of pH regulation amongst vertebrates A5.4
10:30	**Sophie Regnault** ***Royal Veterinary College, United Kingdom*** Evolution and function of the double patellar sesamoids in ostriches *(Struthio camelus)* A11.7			
10:40		**Sarah A Ohrnberger** ***University of Veterinary Medicine Vienna, Austria*** Constraints on raising young imposed by physiology in golden hamsters A8.5	**David Thompson** ***Northern Kentucky University, United States*** Examining the effects of short-term atrazine exposure on a non-target species, the rainbow darter (Etheostoma caeruleum) A1.5	**Dr Christian Damsgaard** ***Aarhus University, Denmark*** Air-breathing changes the pattern for temperature induced pH regulation in a bimodal breathing teleost A5.5
10:45	**Marie Schwaner** ***University of Idaho, United States*** Dynamics of jumping in kangaroo rats: mechanical work and biarticularity A11.8 10:45-11:00			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
PC6 - MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS SPONSORED BY: CLF PLANTCLIMATICS GMBH AND JOURNAL OF EXPERIMENTAL BOTANY	**PC1 - PLANT CELL BIOLOGY** SPONSORED BY: SWETREE TECHNOLOGIES	**P1 - FROM GENOTYPE TO PHENOTYPE**	**PC3 - MEMBRANE DYNAMICS: SIGNALLING AND POLARITY**	**SEB+1 - THE TEACHING-RESEARCH NEXUS**
REGISTRATION & OPENING OF EXHIBITION				
CHAIR: BEN FIELD	CHAIR: PANAGIOTIS MOSCHOU	CHAIR: CHRIS TOPP	CHAIR: NICK MONK	CHAIR: GEORGE LITTLEJOHN
Prof Paul Jarvis ***University of Oxford, United Kingdom*** Protein import into chloroplasts and its regulation by the ubiquitin-proteasome system PC6.1	**Prof Takashi Ueda** ***National Institute for Basic Biology, Japan*** Diversification of membrane trafficking pathways during land plant evolution PC1.1	**Dr Miltos Tsiantis** ***Max Planck Institute for Plant Breeding Research, Germany*** From genotype to phenotype in leaf development and evolution P1.1	**Dr Martin Baron** ***University of Manchester, United Kingdom*** Tuning Notch signalling through and an endocytic regulatory network:- revisiting old genetic problems with new insights PC3.1	**Assoc Prof Susan Rowland** ***Institute for Teaching and Learning Innovation, Australia*** Do we need to design Undergraduate Research Experiences for authenticity? SEB+.1
Mr Seddik Harchouni ***Aix-Marseille University, France*** Investigating the role of the bacterial alarmone (p)ppGpp in the chloroplast of plants PC6.2	**Maritza Van Dop** ***Wageningen University and Research, Netherlands*** Dissection of a novel plant cell polarity pathway PC1.2	**Xinyou Yin** ***Wageningen University, Netherlands*** Linking ecophysiological modelling with GWAS to design improved water deficit stress resilient rice (Oryza sativa L.) P1.27	**Dr Linda Nemetschke** ***MPI-CBG, Germany*** Crumbs prevents ectopic Notch activation in Drosophila by inhibiting ligand-independent endocytosis PC3.2	**Dr Katharine E Hubbard** ***University of Hull, United Kingdom*** Can we design degrees that effectively enable students to join the research community? SEB+.2
Prof Åsa Strand ***Umeå University, Sweden*** The role of retrograde signals during plant stress response PC6.3	**Prof Daniel Van Damme** ***VIB-UGent Center for Plant Systems Biology, Belgium*** Towards structural insight into the endocytic TPLATE Adaptor Complex PC1.3	**Wolfgang Busch** ***Gregor Mendel Institute of Molecular Plant Biology, Austria*** Approaching the genetic and molecular bases of environmental root growth regulation P1.3	**Tina Bedekovic** ***University of Aberdeen, United Kingdom*** Role of the Rsr1 GTPase in Candida albicans hyphal guidance - and beyond PC3.3	**Dr Sara Burton** ***University of Exeter, United Kingdom*** Current challenges, opportunities and next steps for research-led education within experimental biology SEB+.3
Miss Dora L. Cano Ramirez ***University of Bristol, United Kingdom*** Adaptation of plants to cold temperatures by a chloroplast-based signalling circuit PC6.4	**Dr Anne Osterrieder** ***Oxford Brookes University, United Kingdom*** Investigating the role of the Arabidopsis thaliana golgin AtGolgin-84B in Golgi body structure and function PC1.4	**Dr Nathalie Gonzalez** ***INRA, France*** Arabidopsis leaf growth analysis for the search of growth-regulating genes and gene networks P1.4	**Mr Philipp Denninger** ***COS Heidelberg, Germany*** Coordination is key - RhoGTPase recruitment and protein complex assembly at the root hair initiation domain PC3.4	**Dr Sara Marsham** ***Newcastle University, United Kingdom*** Embedding links between teaching and research at a research-intensive UK university SEB+.4
Dr Olivier Van Aken ***Molecular Cell Biology Unit Department of Biology Lund University, Sweden*** Mitochondrial and chloroplast stress responses are regulated by distinct touch- and organelle dyfunction-dependent pathways PC6.5	**Miss Charlotte H Hurst** ***University of Dundee at the James Hutton Institute, United Kingdom*** S-acylation: What the FLS2 is going on? PC1.5			**Prof Graham Scott** ***University of Hull, United Kingdom*** Why should we think beyond skills and knowledge when we design research based learning activities? SEB+.5

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
10:55	REFRESHMENT BREAK/EXHIBITION			
11:30	**ANIMAL AND PLANT PRESIDENTS MEDALLISTS TALKS FOLLOWED BY YOUNG SCIENTIST AWARD SESSION ROOMS: ANIMAL SECTION – K2+3; PLANT SECTION – K1, SEE PAGES 6 & 7 FOR PROGRAMME OF TALKS**			
13:00	LUNCH/EXHIBITION			
SESSION	**PC9 - IMAGING PLANT PATHOGENESIS**	**A8 - CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS**	**A1 - PHYSIOLOGICAL MECHANISMS OF AQUATIC TOXICOLOGY**	**A5 - OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS**
CHAIR	CHAIR: MIKE DEEKS	CHAIR: CAROL BUCKING	CHAIR: GREG GOSS	CHAIR: MARTIN TREGUERRES
14:00	**Prof Murray Grant** ***University of Warwick, United Kingdom*** Exploring defence and disease dynamics during plant pathogen interactions, from the whole plant to sub-cellular responses PC9.1	**Dr Graham R Scott** ***McMaster University, Canada*** Evolution, plasticity, and the integrative physiology of performance in high-altitude environments A8.6	**Dr Kristin Schirmer** ***EAWAG, Switzerland*** Building the fish intestine in vitro - studies on barrier function with the rainbow trout cell line, RTgutGC A1.6	**Prof Seth L. Alper** ***Beth Israel Deaconess Medical Center, United States*** Acid-base balance in the mammalian kidney A5.6
14:40	**Dr Petra C Boevink** ***The James Hutton Institute, United Kingdom*** How does Phytophthora deliver effectors to host plant cells? PC9.2	**Mr Oliver H Wearing** ***McMaster University, Canada*** Cardiovascular control and high-altitude adaptation in deer mice *(Peromyscus maniculatus)* A8.7	**Martin Grosell** ***RSMAS University of Miami, United States*** Effects of crude oil exposure on the pelagic mahi-mahi *(Coryphaena hippurus)*, from molecular endpoints through habitat utilization of wild fish A1.7	**Jinae N Roa** ***Scripps Institution of Oceanography, United States*** Moving around: a novel mechanism of glycogen translocation in elasmobranch acid-and base-secreting gill cells A5.7
14:55		**Dr Karine Salin** ***University of Glasgow, United Kingdom*** Inadequate food intake at high temperature is related to depressed mitochondrial respiratory capacity A8.8	**Mr Erik J Folkerts** ***University of Alberta, Canada*** Cardiorespiratory and metabolic performance impairments in zebrafish *(Danio rerio)* following acute hydraulic fracturing flowback and produced water exposure A1.8	**Dr Chris M. Wood** ***University of British Columbia, Canada*** The Physiology of the Tambaqui (Colossoma macropomum) at pH 8.0 A5.8
15:10	**Stefan Sassmann** ***University of Exeter, United Kingdom*** Role of molecular pattern in Actin mediated vesicle trafficking of *Arabidopsis thaliana* hypocotyl cells PC9.3	**Lauren E Nadler** ***Scripps Institution of Oceanography, United States*** The effect of elevated CO_2 on swimming performance and schooling in a coral reef fish species A8.9	**Ms Christina Pasparakis** ***Rosenstiel School of Marine and Atmospheric Science, United States*** Impacts of oil exposure on Mahi-Mahi *(Coryphaena hippurus)* embryos - metabolic costs and buoyancy control A1.9	**Mr Joshua K Lonthair** ***The University of Texas at Austin, United States*** The Development and Plasticity of Two Key Mechanisms in Acid Excretion in a Marine Teleost A5.9
15:25	**Elysa Overdijk** ***Wageningen University, Netherlands*** RXLR-effector AVR1 of *Phytophthora infestans* targets plant exocyst complex subunit Sec5 to suppress immunity PC9.4	**Dr Heidi J MacLean** Aarhus University, Denmark Validating the use of laboratory maintained animals for macro-physiological and macro-ecological studies A8.10	**Pecha Kucha** Dr Tamzin Blewett A.10 Andrew J Esbaugh A.11 Dr Ebrahim Lari A.12 Dr Lena Jakob A.13	**Pecha Kucha** Dr Jia-Jiun Yan A5.10 Mrs Sílvia Gregório A5.11 Mr Charles R Hewitt A5.12 Dr Cristina Salmeron A5.13 Mr Dylan M Cole A5.14
15:40	REFRESHMENT BREAK/EXHIBITION			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
REFRESHMENT BREAK/EXHIBITION				
ANIMAL AND PLANT PRESIDENTS MEDALLISTS TALKS FOLLOWED BY YOUNG SCIENTIST AWARD SESSION ROOMS: ANIMAL SECTION – K2+3; PLANT SECTION – K1, SEE PAGES 6 & 7 FOR PROGRAMME OF TALKS				
LUNCH/EXHIBITION				
PC6 - MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS	**PC1 - PLANT CELL BIOLOGY**	**P1 - FROM GENOTYPE TO PHENOTYPE**	**PC3 - MEMBRANE DYNAMICS: SIGNALLING AND POLARITY**	**SEB+1 - THE TEACHING-RESEARCH NEXUS**
CHAIR: CHRISTINE MEYER	CHAIR: STEPHANIE ROBERT	CHAIR: WOLFGANG BUSCH	CHAIR: MARTIN BARON	CHAIR: GRAHAM SCOTT
Mr Olivier Loudet ***INRA Versailles, France*** High-throughput phenotyping to decode the complexity of natural variation for response to the environment in Arabidopsis PC6.6	**Prof Karin Schumacher** ***Centre for Organismal Studies (COS) Heidelberg University, Germany*** Vacuole biogenesis - pumping up the volume PC1.6	**Dr David Houle** ***Florida State University, United States*** The blessings of dimensionality P1.5	**Dr Natasha S Savage** ***University of Liverpool, United Kingdom*** The complex relationship between polarized growth and cell polarity PC3.5	**Dr Sara E Brownell** ***Arizona State University, United States*** Opportunities and tension points associated with course-based undergraduate research experiences from student and faculty perspectives SEB+.6
Chioma U Okpara ***The University of Manchester, United Kingdom*** Genetic adaptation of prehistoric barley to osmotic stress PC6.7	**Mistianne Feeney** ***Warwick University, United Kingdom*** Protein storage vacuoles originate by remodelling of pre-existing vacuoles in Arabidopsis thaliana PC1.7	**Prof Joost J.B. Keurentjes** ***Wageningen University Research, Netherlands*** The added value of natural variation in the elucidation of quantitative trait regulation P1.6	**Dr Katherine H Fisher** ***University of Sheffield, United Kingdom*** Molecular mechanisms of coordinated cell polarisation in the *Drosophila* wing PC3.6	**Anne M Tierney** ***Edinburgh Napier University, United Kingdom*** Brokering activities between teaching-and research-focused Life Science Academics SEB+.7
Dr Zainab A Abubakar ***Gombe State University, Nigeria*** Comparative interaction analysis between Arbuscular Mycorrhiza Fungi (AMF) (Rhizophagus irregularis), NPK and drought tolerance to growth and yield of NERICA PC6.8	**Dr Verena Ibl** ***University of Vienna, Austria*** Cell-layer specific analyses of the endomembrane system and ESCRT-III in barley endosperm PC1.8			**Dr David P Smith** ***Sheffield Hallam University, United Kingdom*** Who goes where? The importance of friendship groups in the lecture theatre SEB+.8
Dr Yusuke Saijo ***Nara Institute of Science and Technology, Japan*** Phosphate status-dependent control of interactions with root-infecting fungi in plants PC6.9	**Dr Annalisa Rizza** ***Sainsbury Laboratory University of Cambridge, United Kingdom*** Cellular GA distribution gradients in Arabidopsis hypocotyls and roots PC1.9	**Stig U. Andersen** ***Aarhus University, Denmark*** The genetic basis for *Lotus japonicus* cold adaptation and colonization of Japan P1.7	**Prof Nick Monk** ***University of Sheffield, United Kingdom*** Modelling basic mechanisms of planar cell polarity generation and coordination in epithelia PC3.7	**Dr Lucy Tallents** ***University of Oxford, United Kingdom*** Diving in to the teaching-research nexus: A crowd-sourcing workshop SEB+.9
Pecha Kucha Dr Piotr Gawronski PC6.10 Dr Marie Hronková PC6.11 Prashanth Ramachandran PC6.12 Dr Manuela Jurca PC6.13 Mrs Sara Buti PC6.14 Mr Mohammed Alqurashi PC6.15	**Pecha Kucha** Mr Liam Elliott PC1.10 Dr Daria M Balcerowicz PC1.11 Miss Masoumeh Safari PC1.12 Miss Hannah Sewell PC1.13	**Pecha Kucha** Miss Malgorzata Zdanio P1.8 Dr Swati Puranik P1.9 Dr Erik Alexandersson P1.10 Miss Malgorzata Zdanio P1.11 Dr Guillaume Lobet P1.12 Hugo Tavares P1.13 Johanna Axling P1.14 Catja Selga P1.15 Miss Sarah Carroll P1.16 Dr Dimitra Loka P1.17		
REFRESHMENT BREAK/EXHIBITION				

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
CHAIR	CHAIR: GEORGE LITTLEJOHN	CHAIR: SHAUN KILLEN	CHAIR: GREG GOSS	CHAIR: ANDREW ESBAUGH
16:10	**Prof Katherine Denby** ***University of York, United Kingdom*** The impact of environment on plant defence PC9.5	**Dr Heath A MacMillan** ***Carleton University, Canada*** Struggling against entropy: how ion and water homeostasis determine insect chilling tolerance A8.11	**Prof Bryan W. Brooks** ***Baylor University, United States*** How can studies of pharmaceuticals in the environment support basic and applied physiology and toxicology research? A1.14	**Dr Sylvie Tambutte** ***Centre Scientifique de Monaco, Monaco*** Role of pH regulation in coral calcification A5.15
16:25				
16:40		**Johannes Overgaard** ***Aarhus University, Denmark*** The physiology of insect chill injury: Cold-induced depolarization of cell potential causes chill injury through loss of intracellular Ca^{++} regulation in locust muscle cells A8.12	**Mrs Parastoo Razmara** ***University of Lethbridge, Canada*** The effect of copper nanoparticles on olfaction in rainbow trout *(Oncorhynchus mykiss)* A1.15	**Martin Tresguerres** ***Scripps Institution of Oceanography, United States*** Coral cell physiology: discovering novel mechanisms in the laboratory and testing their relevance in the field A5.16
16:55	**Tijs Ketelaar** ***Wageningen University, The Netherlands*** Live cell imaging of the cytoskeleton in Phytophthora reveals novel actin and tubulin configurations PC9.6	**Cassandre Aimon** ***Université de Bretagne Occidentale, France*** Effect of dispersant-treated oil on the behaviour of the European sea bass, *Dicentrarchus labrax* A8.16	**Dr Anneli Strobel** ***Man-Society-Environment University of Basel, Switzerland*** Induction capability and functionality of the Aryl Hydrocarbon Receptor 2 (AhR2) in High-Antarctic notothenioid fish A1.16	**Marian Y Hu** ***Institute of Physiology University of Kiel, Germany*** Bicarbonate transport regulates intracellular pH critical for biomineralization in the sea urchin larva A5.17
17:10		**Gary Burness** ***Trent University, Canada*** Maternal antigen exposure enhances immunity and increases metabolic rate in nestling tree swallows A8.22	**Dr Sarah L. Alderman** ***University of Guelph, Canada*** Physiological effects and biomarkers of diluted bitumen exposure in early life stage sockeye salmon A1.17	**Miss Kirti Ramesh** ***Geomar Helmholtz Centre for Ocean Research, Germany*** Elevated extracellular pH facilitates early shell formation under ocean acidification in mussel larvae A5.18
17:25	End of Session	**Pawel Brzek** ***University of Bialystok, Poland*** Effect of ambient temperature on spontaneous locomotor activity and daily energy expenditure in mice divergently selected for high and low basal metabolic rate A8.19	End of Session	
17:40		End of Session		
18:00 - 19:00	**WOOLHOUSE LECTURE** ROOMS: K2+3 JONATHAN LYNCH; PENNSYLVANIA STATE UNIVERSITY, UNITED STATES - ROOTS OF THE SECOND GREEN REVOLUTION			
19:00 - 21:00	**WELCOME DRINKS RECEPTION** EXHIBITION HALL, FIRST FLOOR			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
CHAIR: PHIL MULLINEAUX	CHAIR: STEPHANIE ROBERT	CHAIR: CHRISTOPHER TOPP		
Prof Ari Sadanandom ***University of Durham, United Kingdom*** SUMO mediated cell signalling pathways reveal hormone bypass mechanisms in plants that affect growth and defence PC6.16	**Prof Jürgen Kleine-Vehn** ***University of Natural Resources and Life Sciences Vienna, Austria*** Cell size determination and differential growth regulation PC1.14	**Prof Jonathan Wendel** ***Jonathan Wendel, United States*** The wondrous cycles of polyploidy in plants P1.18		**Dr Dominic C Henri** ***University of Hull, United Kingdom*** Student perceptions of their autonomy at University: The Moving Goal-Post Model SEB+.10
				Dr Irina Strizh ***Faculty of Biology M.V. Lomonosov Moscow State University, Russia*** Teaching: work beyond the job SEB+.11
Prof Andreas J Meyer ***University of Bonn, Germany*** Glutathione homeostasis and control of root growth in Arabidopsis PC6.17	**Dr Christopher Grefen** ***University of Tübingen, Germany*** GETting to the Root (Hair) of it - Insertion of SNARE Proteins in Arabidopsis PC1.15	**Dr Kirsten Bomblies** ***John Innes Centre, United Kingdom*** Adaptation of meiotic recombination after whole genome duplication P1.19		**Prof Ros Gleadow** ***Monash University, Australia*** Work integrated learning: that's what academics do, right? SEB+.12
Mr Thierry Desnos ***CEA, France*** Low phosphate activates STOP1-ALMT1 to rapidly inhibit root cell elongation PC6.18	**Mr Sébastjen Schoenaers** ***University of Antwerp, Belgium*** The auxin-regulated CrRLK1L kinase ERULUS controls cell wall composition during root hair tip growth PC1.16			**Graham Scott** ***University of Hull, United Kingdom*** **Katherine Hubbard** ***University of Hull, United Kingdom*** SEB+ Education: Gothenburg and beyond
Dr Mohamad Abbas ***University of Nottingham, United Kingdom*** Reduction of IAA Methyltransferase activity compensates for high-temperature male sterility in Arabidopsis PC6.19	**Prof Alison Baker** ***University of Leeds, United Kingdom*** Designer organelles: subverting the peroxisomal import pathway PC1.17			
End of Session				
WOOLHOUSE LECTURE ROOMS: K2+3 JONATHAN LYNCH; PENNSYLVANIA STATE UNIVERSITY, UNITED STATES - ROOTS OF THE SECOND GREEN REVOLUTION				
WELCOME DRINKS RECEPTION EXHIBITION HALL, FIRST FLOOR				

ROOM	K2+3 FIRST FLOOR	K1 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**A3 - CLIMATE CHANGE AND AQUATIC LIFE: EFFECTS OF MULTIPLE DRIVERS, FROM MOLECULES TO POPULATIONS**	**A6 - THE OBLIGATION OF ACTIVITY - HOW DO ANIMALS GET FIT, AND WHAT TAKES THEM OVER THE HILL?**	**PC9 - IMAGING PLANT PATHOGENESIS**	**SEB+2 - IS THERE LIFE OUTSIDE OF ACADEMIA?**
08:30	REGISTRATION/EXHIBITION			
09:00	**CELL AND SEB+ PRESIDENTS MEDALLISTS TALKS** **SEE PAGE 8 FOR PROGRAMME TALKS - ROOMS: K2+3**			
10:00	REFRESHMENT BREAK/EXHIBITION			
CHAIR	CHAIR: LUCY TURNER	CHAIR: SHAUN KILLEN	CHAIR: MIKE DEEKS	CHAIR: JOHN BOTHWELL AND ALISON KINGSTON-SMITH
10:30	**Prof Patricia M Schulte** ***University of British Columbia, Canada*** Intraspecific variation in thermal tolerance, hypoxia tolerance, and metabolic rate: implications for organismal responses to climate change A3.1	**Dr Lewis Halsey** ***University of Roehampton, United Kingdom*** 'Fit for purpose'? raising the question of whether and how wild animals maintain optimal physical fitness A6.1	**Silke Robatzek** ***The Sainsbury Laboratory, United Kingdom*** How membrane trafficking regulates immunity PC9.7	**Sarah Blackford** ***Society for Experimental Biology*** Introduction to effective career planning
10:45				**Prof Outi Vaarala** ***Astrazeneca*** Public and Private: Transferring from the public sector into industry **Dr Bennett Young** ***Journal of Experimental Botany*** The write job? A career in journal publishing **Dr Erik Alexandersson** ***Swedish University of Agricultural Sciences/PlantLink*** There and back again: Transferring between academia and non-academic careers **Dr Tina Persson** ***My HeadHunter & CareerCoach*** Multi talented: How to find your dream job
11:10	**Richelle L Tanner** ***University of California Berkeley, United States*** The role of reversible plasticity under temperature and pH stress in locally adapted *Phyllaplysia taylori* populations A3.2	**Dr Lucy A Hawkes** ***University of Exeter, United Kingdom*** Do bar-headed geese train for high altitude flights? A6.2	**Dr Dionne Turnbull** ***University of Dundee, United Kingdom*** What 'R' you doing here? Investigating the role of S-acylation in plant disease resistance protein signalling PC9.8	
11:25	**Prof Craig E Franklin** ***The University of Queensland, Australia*** Temperature and UV-B radiation: Interactive effects on survival, growth and DNA repair mechanisms A3.3		**Dr Cecilia Cheval** ***John Innes Centre, United Kingdom*** Mechanisms that control chitin-triggered changes to cell-to-cell connectivity via plasmodesmata PC9.9	
11:40	**Prof Anne E Todgham** ***University of California Davis, United States*** Importance of framing climate change biology in an ecologically relevant context: Insights from the rocky intertidal A3.4	**Dr Simon Babayan** ***University of Glasgow, United Kingdom*** Outrunning infection: interactions and trade-offs between immunity and physical performance A6.3	**Dr Miriam Oses-Ruiz** ***University of Exeter, United Kingdom*** Investigating appressorium-mediated plant infection by the rice blast fungus *Magnaporthe oryzae* PC9.10	
11:45				
11:55				**Discussion and Q&A**
12:10	**Dr Anna-Sara Krång** ***IVL Swedish Environmental Research Institute, Sweden*** Consequences of ocean acidification combined with hypoxia or manganese on different life stages and organisation levels of the Norway lobster A3.5	**Dr Kevin D Matson** ***Wageningen University, Netherlands*** Animals, activity, and immunology A6.4	**Discussion** - Impact of abiotic stress and the 'observer effect' on imaging phytopathgenesis	

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
A2 - EFFECTS OF PHARMACEUTICALS ON WILDLIFE - BRIDGING THE GAP BETWEEN ECOTOXICOLOGY AND ECOLOGY SPONSORED BY: THE COMPANY OF BIOLOGISTS	**PC10 - GENERAL CELL AND PLANT BIOLOGY**	**P1 - FROM GENOTYPE TO PHENOTYPE**	**PC1 - PLANT CELL BIOLOGY** SPONSORED BY: SWETREE TECHNOLOGIES	**PC6 - MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS** SPONSORED BY: CLF PLANTCLIMATICS GMBH AND JOURNAL OF EXPERIMENTAL BOTANY
REGISTRATION/EXHIBITION				
CELL AND SEB+ PRESIDENTS MEDALLISTS TALKS **SEE PAGE 8 FOR PROGRAMME TALKS - ROOMS: K2+3**				
REFRESHMENT BREAK/EXHIBITION				
CHAIR: JOSEFIN SUNDIN	CHAIR: JOHN LOVE	CHAIR: WOLFGANG BUSCH	CHAIR: ALYONA MININA	CHAIR: ULRIKE BECHTOLD
Prof Judit E. G. Smits ***Faculty of Veterinary Medicine University of Calgary, Canada*** Pharmaceuticals in wildlife - What we know, what we don't know, and should we worry? A2.1	**Dr Judith E Sleeman** ***University of St Andrews, United Kingdom*** Links between sub-cellular bodies, RNA biology and human disease PC10.1	**Prof Michelle Watt** ***Forschungszentrum Jülich, Germany*** How today's phenotyping technologies can speed up gains in agricultural productivity P1.20	**Prof Savithramma Dinesh-Kumar** ***UC Davis, United States*** Inter-organellar communication and autophagy during innate immunity PC1.18	**Elena Baena-González** ***Instituto Gulbenkian de Ciência, Portugal*** How do plants manage their energy? PC6.20
Dr Erik Höglund ***Norwegian Institute of Water Research (NIVA), Norway*** Detecting ecotoxicological effects of psychiatric drugs by predator avoidance in three-spined stickleback A2.2	**Ms Priyanka Ghorai** ***National Institute of Plant Genome Research, India*** Dynamics of protein Phosphorylation during filamentation in Candida albicans PC10.2	**Dr Christopher N Topp** ***Donald Danforth Plant Science Center, United States*** What's going on in there? Imaging technologies and analysis frameworks to investigate the hidden parts of plants P1.21	**Dr Daniel V. Savatin** ***VIB-UGent Center for Plant Systems Biology, Belgium*** Orchestration of the oxidative burst in elicitor-induced immunity requires the multiple organelle-targeted Arabidopsis NPK1-related protein kinases (ANPs) PC1.19	**Dr Cara A Griffiths** ***Rothamsted Research, United Kingdom*** Increasing wheat yield and resilience using a novel trehalose-6-phosphate (T6P) precursor PC6.21
Mrs Laura Vossen ***Uppsala University, Sweden*** Intraspecific variation in tolerance to psychoactive pharmaceuticals in zebrafish *(Danio rerio)* A2.3	**Dr Max Roberts** ***University of Surrey, United Kingdom*** TRPV4 receptor expression and function in the guinea-pig urinary bladder - a role in ATP release PC10.3		**Dr Victoria Sanchez-Vera** ***Swedish University of Agricultural Sciences, Sweden*** Autophagy is required for gamete differentiation in the moss *Physcomitrella patens* PC1.20	**Dr Eva-Theresa Pyl** ***Max Planck Institute of Molecular Plant Physiology, Germany*** Temperature compensation of starch degradation in *Arabidopsis thaliana*: Are tetratricopeptide repeat (TPR)-like superfamily proteins involved? PC6.22
Dr Tomas Brodin ***Umeå University, Sweden*** Ecological effects of pharmaceuticals in the environment - from lab experiments to field studies A2.4	**Mr Daniel P Yee** ***Scripps Institution of Oceanography, United States*** Vacuolar hydrogen ATPase plays an essential role in biomineral cell wall synthesis of marine diatoms PC10.4	**Dr Christine Granier** ***INRA Montpellier, France*** Building a leaf with cells or vice versa - Analysing and modelling the relationships between traits P1.22	**Prof Diane C Bassham** ***(Iowa State University, United States)*** Degradation of cellular components by autophagy: From molecules to organelles PC1.21	**Dr Christian Meyer** ***IJPB INRA Versailles, France*** The role of the TOR kinase in the regulation of plant nutrient and stress signalling PC6.23
	Paige E Panter ***University of Durham, United Kingdom*** Cell wall pectin cross-linking implicated in protecting against freezing stress PC10.5			
Ms Elisabeth D Chang ***King's College London, United Kingdom*** The use of an in vitro fish gill model to better understand the factors that influence freshwater pharmaceutical uptake A2.5	**Dr Mirza Hasanuzzaman** ***Center of Molecular Bioscience University of the Ryukyus, Japan*** Regulation of growth, ion homeostasis, photosynthesis and mitigation of salt-induced oxidative stress in mangrove species, Kandelia obovata: Insight into the role of nitric oxide PC10.6	**Astrid Junker** ***Leibniz Institute of Plant Genetics and Crop Plant Research (IPK) Gatersleben, Germany*** Assessment of plant performance traits in controlled environments and translation to the field P1.23	**Prof Erika Isono** ***University of Konstanz, Germany*** Regulation of ubiquitin-dependent transport and degradation of membrane proteins in plants PC1.22	**Dr Angela Roman-Fernandez** ***Department of Biology University of York, United Kingdom*** Light-independent sugar signalling in Arabidopsis PC6.24

ROOM	K2+3 FIRST FLOOR	K1 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
12:25	**Dr Nann A Fangue** ***University of California Davis, United States*** Linking physiological effects of climate change stressors with effective conservation: lessons from an endangered fish A3.6			
12:40	LUNCH/EXHIBITION/MEET THE ACADEMIC PUBLISHERS 12:50 - 13:30, ROOM: H2			
SESSION	**A3 - CLIMATE CHANGE AND AQUATIC LIFE: EFFECTS OF MULTIPLE DRIVERS, FROM MOLECULES TO POPULATIONS**	**A6 - THE OBLIGATION OF ACTIVITY - HOW DO ANIMALS GET FIT, AND WHAT TAKES THEM OVER THE HILL?**	**PC8 - CROP MODELS IMPROVEMENT WITH BIOLOGICAL KNOWLEDGE: WHICH, WHY, AND HOW?**	**A11 - OPEN BIOMECHANICS**
CHAIR	CHAIR: MANUELA TREUBANO GARCIA	CHAIR: LEWIS HASLEY	CHAIR: BERTRAND MULLER	CHAIR: SAM VAN WASSENBERGH
13:40	**Prof Philip Munday** ***James Cook University, Australia*** Predicting evolutionary responses of reef fishes to climate change: progress and challenges A3.7	**Dr Carl Soulsbury** ***University of Lincoln, United Kingdom*** Exercising at the edge: when is exercise costly? A6.5	**Prof Frank Ewert** ***Leibniz Centre for Agricultural Landscape Research (ZALF), Germany*** Integrating and accounting for multiple stresses and extreme events PC8.1	**Dr Beth Mortimer** ***University of Bristol, United Kingdom*** Tuning the instrument: spider influence over orb web vibration A11.9
13:55				**Simon Chen** ***Department of Zoology University of Cambridge, United Kingdom*** Production of attachment silk carpets is essential for herbivory in Bicyclus anynana caterpillars A11.10
14:10				**Ms Katharina Bunk** ***Plant Biomechanics Group Botanic Garden University of Freiburg, Germany*** Ontogeny, biomechanics and different growth habits of 'finger-like' stem-branch-attachment regions in the Araliaceae family A11.11
14:20	**Dr Celia Schunter** ***King Abdullah University of Science and Technology, Saudi Arabia*** An interplay between plasticity, epigenetics, and parental phenotype determines impacts of ocean acidification on a reef fish A3.8	**Mr James A. Swanson** ***Hartpury College University Centre, United Kingdom*** The effect of water depth on canine heart rate during underwater treadmill (UWTM) exercise A6.6	**Dr Heidi Webber** ***University of Bonn, Germany*** Canopy temperature model robustness for heat stress simulation PC8.2	
14:25				**Mr Nicholas P Burnett** ***University of California - Berkeley, United States*** Knots and tangles weaken kelp fronds while increasing drag forces and herbivore loads on the kelp A11.12
14:35	**Dr Felix C Mark** ***Alfred Wegener Institute, Germany*** Fish on Acid - the eco physiological consequences of Ocean Acidification and Warming on fish A3.9	**Dr Sarah L Alderman** ***University of Guelph, Canada*** New insights into exercise induced cardiac remodeling in trout revealed by proteomic analysis A6.7	**Dr Eva Rosenqvist** ***Department of Plant and Environmental Sciences University of Copenhagen, Denmark*** Interactive effects of elevated CO_2, drought and high temperature on photosynthesis, water relation and grain yield in wheat PC8.3	**Prof Stanislav Gorb** ***Zoological Institute Kiel University, Germany*** Structural, material, and functional gradients in biological attachment systems A11.13
14:40				
14:50		**Dr Tony D Williams** ***Simon Fraser University, Canada*** Tracking females 24/7: Individual variation in foraging effort during parental care and response to experimentally-manipulated workload A6.8 14:50-15:20	**Prof Carl-Otto Ottosen** ***Department of Food Science Aarhus University, Denmark*** Improving models and plant phenotyping pipelines for a smart agriculture under abiotic stress combination and elevated CO_2 PC8.4	**Miss Menelia Vasilopoulou-Kampitsi** ***University of Antwerp, Belgium*** Allometry and the lizard ear: A morphological and biomechanical approach A11.14
14:55				

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
Mr Johan Fahlman ***Deparment of Ecology and Environmental Science UmU, Sweden*** Not only fish - invertebrates in pharmaceutical ecotoxicology A2.6	**Pecha Kucha** Jamie Males PC10.7 Dr Agnieszka Kreitschitz PC10.8 Dr Federica Brunoni PC10.9 Beata I. Czajkowska PC10.10 Hana Sevcikova PC10.11 Ms Daniela Weber PC10.12 Mrs Anna K Barczak-Brzyżek PC10.13			**Dr Anne Pfeiffer** ***COS University Heidelberg, Germany*** Influence of light on shoot stem cell regulation and development PC6.25
LUNCH/EXHIBITION/MEET THE ACADEMIC PUBLISHERS 12:50 - 13:30, ROOM: H2				
A2 - EFFECTS OF PHARMACEUTICALS ON WILDLIFE - BRIDGING THE GAP BETWEEN ECOTOXICOLOGY AND ECOLOGY	**PC2 - PLANT CELL CYCLE AND THE CYTOSKELETON**	**P1 - FROM GENOTYPE TO PHENOTYPE**	**PC1 - PLANT CELL BIOLOGY**	**PC6 - MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS**
CHAIR: MIRJAM AMCOFF	CHAIR: WALTER DEWITTE	CHAIR: CHRISTOPHER TOPP	CHAIR: PANAGIOTIS MOSCHOU	CHAIR: CHRISTINE FOYER
Prof Rafael Mateo ***University of Castilla-La Mancha, Spain*** Learned lessons from wildlife toxicology to improve the risk assessment of pharmaceuticals A2.7	**Prof Sergio Moreno** ***Instituto de Biología Funcional y Genómica, Spain*** Nutritional control of cell size by the great wall-endosulfine-PP2A•B55 pathway PC2.1	**Dr Örjan Carlborg** ***Uppsala University, Sweden*** Complex trait genetics beyond additivity P1.24	**Dr Erik Schäffer** ***University of Tübingen, Germany*** Molecular machines under tension: how kinesins get to the microtubule end and position the plant cell division plane PC1.23	**Prof Philip M. Mullineaux** ***University of Essex, United Kingdom*** Master regulator HSFs in Arabidopsis: Are they molecular switches between growth and defence? PC6.26
Dr Judith C Madden ***Liverpool John Moores University, United Kingdom*** *In silico* approaches to predicting the effects of pharmaceuticals on environmental species A2.8	**Henrik Buschmann** ***Osnabrück University, Germany*** The evolution of plant cell division PC2.13	**Miss Carolina Cíntora** ***LANGEBIO-CINVESTAV, Mexico*** Pubescence in Mexican highland maize is driven by gene flow from wild relatives P1.25	**Miss Lucie Riglet** ***ENS de Lyon, France*** Role of microtubules in *Arabidopsis thaliana* pollen tube growth PC1.24	**Dr Daniela Dietrich** ***University of Nottingham, United Kingdom*** Root hydrotropism is controlled via a cortex-specific growth mechanism PC6.27
		Dario Constantinescu ***INRA, France*** Model-assisted estimation of the genetic variability of tomato growth physiological parameters under contrasted water conditions P1.26	**Dr Chen Liu** ***Swedish University of Agricultural Sciences, Sweden*** Control of plant development by the kinesin-separase complex in coordination with ubiquitin-proteasome System in Arabidopsis PC1.25	**Dr Guido Grossmann** ***Centre for Organismal Studies Heidelberg University, Germany*** An organ-on-a-chip approach for investigating root-environment interactions in heterogeneous conditions PC6.28
Dr Josefin Sundin ***Uppsala University, Sweden*** Reversible behavioural alterations in burbot, *Lota lota*, from exposure to the anxiolytic drug oxazepam A2.9	**Prof James Murray** ***Cardiff University, United Kingdom*** Cell-size dependent progression of the cell cycle creates both homeostasis and flexibility of plant cell size PC2.3	**Uriel Urquiza-García** ***The University of Edinburgh, United Kingdom*** Linking the Arabidopsis biological clock model to the 1001 genomes project P1.2	**Dr Emilio Gutierrez Beltran** ***Institute of Plant Biochemistry and Photosynthesis (IBVF)-National Research Council (CSIC), Spain*** Deciphering molecular composition of stress granules in Arabidopsis thaliana through isolation of TSN-interacting proteins PC1.26	**Dr Bijayalaxmi Mohanty** ***National University of Singapore, Singapore*** Plant systems biology: application to rice for understanding metabolic and regulatory characteristics under different light conditions for crop improvement PC6.29

ROOM	K2+3 FIRST FLOOR	K1 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
15:05	**Pecha Kucha** Ms Ellen H Jung A3.10 Dr Sue-Ann Watson A3.11 Amanda A. Wiesenthal A3.12 Dr Gloria Massamba N'Siala A3.13 Mr Luca Peruzza A3.14		**Pecha Kucha** Dr Ian J. Tetlow PC8.5 Mr Thirulogachandar Venkatasubbu PC8.6 Fiona Corke PC8.7 Prof Carl-Otto Ottosen PC8.10 Dr Marcus David Bellett-Travers PC8.11 Dr Bijayalaxmi Mohanty PC8.9	
15:10				**Prof Bruce A. Young** ***A.T. Still University, United States*** Dynamic audition: biophysics of the tympanic membrane of the Asiatic water monitor lizard *(Varanus salvator)* A11.15
15:25	REFRESHMENT BREAK/EXHIBITION			
CHAIR	CHAIR: MANUELA TRUEBANO GARCIA	CHAIR: LEWIS HALSEY	CHAIR: XAVIER DRAYE	CHAIR: ROB JAMES
16:00	**Dr Melody S Clark** ***British Antarctic Survey, United Kingdom*** Multi-omics approaches to understanding responses to change A3.15	**Dr Hannah Froy** ***University of Edinburgh, United Kingdom*** Exploring ageing in wild vertebrate populations using longitudinal field data A6.9	**Dr Pierre Martre** ***INRA, France*** Errors and uncertainties in crop models - where biological mechanisms could help? PC8.12	**Maja Mielke** ***AG Morphologie und Formengeschichte Institut für Biologie Humboldt-Universität zu Berlin, Germany*** Femoral head trabecular architecture in sciuromorph rodents (Mammalia): Effects of body size and locomotor type A11.16
16:15				**Mr Falk Mielke** ***AG Morphologie und Formengeschichte Institut für Biologie Humboldt-Universität zu Berlin, Germany*** A new procedure of Procrustes Superimposition - a case study with the humerus of xenarthrans *(Mammalia)* A11.17
16:30	**Dr Oliver Tills** ***Plymouth University, United Kingdom*** Phenomic responses of aquatic embryos to environmental change: application of a novel technology A3.16	**Mr Jeff Kang Nian Yap** ***Simon Fraser University, Canada*** Phylogenetic comparative analysis of the relationship between haematocrit, life-history variables and energy metabolism in birds A6.10	**Maeva Baumont** ***INRA Montpellier, France*** Should thermal acclimation of photosynthesis be considered in crop models? PC8.13	**Mr Dawei Han** ***Truman State University, United States*** Ther hinoceros among serpentes: Comparative anatomy and experimental biophysics of *Calabaria reinhardtii* skin A11.18
16:45	**Prof Göran E Nilsson** ***University of Oslo, Norway*** Will fishes be smaller in a warmer future? A3.17		**Dr Xinyou Yin** ***Wageningen University, Netherlands*** Solving the optimum nitrogen partitioning among photosynthetic compounds: towards modelling plant acclimation to growth environment PC8.14	**Pecha Kucha** Miss Amy L Barstow A11.19 Ms Emily M Abbott A11.20 Dr Laura B Porro A11.21 Mr Enrico A Eberhard A11.22 Dr Zoe T Self Davies A11.23 Ms Julia E Samson A11.24
17:00	End of Session			
17:15				
17:00 - 19:30	**POSTER SESSION 1 (EXHIBITION HALL, FIRST FLOOR)**			
19:30 - 22:00	**DIVERSITY DINNER (BRYGGAN, GOTHIA TOWERS)**			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
			Pecha Kucha Askim H Sekmen PC1.27 Olga Sztatelman PC1.28 Zuzana Poborilova PC1.29 Rengin Ozgur Uzilday PC1.30	**Pecha Kucha** Miss Helena A Herrmann PC6.30 Irabonosi Obomighie PC6.31 Miss Amy G R Jacobsen PC6.32 Miss Johanna V Lethin PC6.33 Miss Mengshu Hao PC6.34 Dr Adel M Elmaghrabi PC6.35
REFRESHMENT BREAK/EXHIBITION				
CHAIR: MIRJAM AMCOFF	CHAIR: WALTER DEWITTE	CHAIR: WOLFGANG BUSCH	CHAIR: PANAGIOTIS MOSCHOU	CHAIR: PAUL JARVIS
Dr Kathryn Arnold ***University of York,*** Sex, stress and food: impacts of antidepressants in the environment on birds A2.10	**Katerina Bisova** ***Institute of Microbiology AS CR, Czech Republic*** Growth and cell cycle - new insights on mechanisms of mutual coordination as revealed by different temperature treatment in green algae dividing by multiple fission [PC2.2]	**Dr Magdalena M. Julkowska** ***King Abdullah University of Science and Technology, Saudi Arabia*** Shape up - study of natural variation in root-shoot ratio under salt stress reveals genes involved in early salt stress responses P1.29	**Prof Magnus Berggren** ***Linköping University, Sweden*** Oranic electronics to record and regulate plant physiology PC1.31	**Prof Christine H Foyer** ***University of Leeds, United Kingdom*** Redox cycling during the cell cycle in the embryonic root meristem and its disruption by mild oxidation PC6.36
Dr Jonatan Klaminder ***Umeå University, Sweden*** Predicting the persistence of pharmaceuticals in complex aquatic ecosystems A2.11	**Ms Camille M Blakebrough-Fairbairn** ***Cardiff University, United Kingdom*** The Interplay Between Gibberellin Signaling and Cell Cycle Control PC2.4	**Miss Alice L Baillie** ***University of Sheffield, United Kingdom*** Making space to breathe: the role of the cell wall in determining stomatal and mesophyll conductance P1.30	**Michal Karady** ***Umeå Plant Science Centre (UPSC) Department of Forest Genetics and Plant Physiology SLU, Sweden*** Modulating auxin gradients in *Arabidopsis* with organic electronics PC1.32	**Dr Irina Strizh** ***Faculty of Biology M.V. Lomonosov Moscow State University, Russia*** Photoreceptors are involved in *Arabidopsis* growth under salt stress conditions *in vitro* PC6.37
	Dr Simon Scofield ***Cardiff University, United Kingdom*** The Arabidopsis homeobox gene SHOOT MERISTEMLESS has cellular and meristem-organisational roles with differential requirements for cytokinin and CYCD^3 activity PC2.5	**Mariam Awlia** ***King Abdullah University of Science and Technology, Saudi Arabia*** Mapping the early responses to salt stress in *Arabidopsis thaliana* P1.31	**Kirstin Casdorff** ***ETH Zurich Empa Dübendorf, Switzerland*** Multichannel AFM characterization of plant cell walls at the nanoscale PC1.33	**Elaine Yeung** ***Utrecht University, Netherlands*** Improving post-submergence recovery in Arabidopsis through ROS mediation PC6.38
End of Session	**Walter Dewitte** ***Cardiff School of Biosciences, United Kingdom*** CYCD enhanced cytokinin sensitivity: a link between morphogenesis and cell division in higher plants? PC2.6	End of Session		
	End of Session			
POSTER SESSION 1 (EXHIBITION HALL, FIRST FLOOR)				
DIVERSITY DINNER (BRYGGAN, GOTHIA TOWERS)				

POSTER SESSION 1: TUESDAY 4 JULY

A1

PHYSIOLOGICAL MECHANISMS OF AQUATIC TOXICOLOGY

Dr Tamzin Blewett
University of Alberta, Canada
The ultimate toxicological mixture: effects of hydraulic fracturing fluid on model freshwater species
A1.10

Andrew J Esbaugh
University of Texas at Austin, United States
Emerging insights in oil toxicity: evidence of non-canonical impairment in fish
A1.11

Dr Ebrahim Lari
University of Lethbridge, Canada
Toxicity of oil sands process-affected water on feeding, respiratory and circulatory systems of Daphnia magna and organism level manifestations
A1.12

Dr Lena Jakob
Alfred Wegener Institute Helmholtz Centre for Polar and Marine Research, Germany
Uptake kinetics and subcellular compartmentalisation explain lethal but not sublethal effects of cadmium in two closely related amphipod species
A1.13

Prof Thomas Sorger
Roger Williams University, United States
Evolution and expression of the metal response in the Asian lancelet
A1.18

Dr Kafilat A Bawa-Allah
University of Lagos, Nigeria
Primarily cultured gill epithelia as prototypes for assessing fish response to heavy metal exposure
A1.19

Miss Pei-Chi Chung
National Taiwan Ocean University, Taiwan
The physiological effects of polyethylene microbeads ingestion in juvenile orange-spotted grouper *(Epinephelus coioides)*
A1.20

Mr Ali Pilehvar
University Of Antwerp, Belgium
The effect of thermal prehistory and exposure regime on metal toxicity tolerance in zebrafish *(Danio rerio)*
A1.22

Mr Simon Pouil
University of La Rochelle, France
Zinc trophic transfer in fish: An integrative assessment of the role of food quality, feeding frequency and environmental conditions.
A1.23

Dr Anneli Strobel
Man-Society-Environment University of Basel, Switzerland
Persistent organic pollutants in Low- vs. High-Antarctic notothenioids
A1.24

Dr Rachael M Heuer
University of Miami-RSMAS, United States
Impacts of crude oil on cardiomyocyte function in the mahi-mahi *(Coryphaena hippurus)*
A1.25

Dr Peter C Hubbard
Centro de Ciências do Mar, Portugal
Differential effects of sub-lethal copper and nickel concentrations on olfactory sensitivity in the Mozambique tilapia *(Oreochromis mossambicus)*
A1.26

Chris Glover
Athabasca University, Canada
Stream-lining the adoption of environmental regulations across biomes: the importance of fundamental physiological knowledge
A1.27

Miss Alexis J Khursigara
University of Texas at Austin, United States
The influence of oil exposure on social interactions and competition in a marine teleost
A1.28

Dr Armin Sturm
University of Stirling, United Kingdom
Insights into the genetic basis of drug resistance of the salmon louse *(Lepeophtheirus salmonis)*
A1.30

Miss Adison K Adams
University of North Texas, United States
Red and Blue, What will you do?
A1.31

Miss Marina M Bonomo
Federal University of São Carlos, Brazil
Ecotoxicological assessment of novel potential formicide: comparing in vitro and in vivo cytotoxic and genotoxic effects in fish hepatocytes
A1.33

Alexander M Clifford
University of Alberta, Canada
Mitigation of chemical flocculation toxicity with a proprietary mitigation agents
A1.34

A2

EFFECTS OF PHARMACEUTICALS ON WILDLIFE – BRIDGING THE GAP BETWEEN ECOTOXICOLOGY AND ECOLOGY

Dr Stewart Owen
AstraZeneca, United Kingdom
Environmental risk assessment of active pharmaceutical ingredients used in human medicinal products: Europe-wide variation in risk quotient
A2.12

Miss Annelie Lagesson
Department of Ecology and Environmental science Umeå University, Sweden
Fish on steroids: How does 17b-trenbolone affect non-reproductive behavior in mosquitofish?
A2.13

A3

CLIMATE CHANGE AND AQUATIC LIFE: EFFECTS OF MULTIPLE DRIVERS FROM MOLECULES TO POPULATIONS

Ms Ellen H Jung
University of British Columbia, Canada
Relationship between thermal tolerance and hypoxia tolerance in amazonian fishes
A3.10

Dr Sue-Ann Watson
James Cook University, Australia
Ocean acidification alters predator and prey behaviour in invertebrates: jumping snails, trophic interactions and neurotransmitters
A3.11

Amanda A. Wiesenthal
Ernst Moritz Arndt- University Greifswald, Germany
Survival and salinity tolerance limits in the snail *Theodoxus fluviatilis*: freshwater vs. brackish water lineages
A3.12

Dr Gloria Massamba N'Siala
Université du Québec à Rimouski, Canada
Physiological and life history challenges in a changing ocean: what multigenerational experiments can reveal for marine metazoans
A3.13

Mr Luca Peruzza
National Oceanography Centre Southampton, United Kingdom
Daily cyclic hypoxia improves Palaemon varians' survival when exposed to acute copper toxicity and when exposed to thermal stress
A3.14

Dr Cosima S Porteus
University of Exeter, United Kingdom
Near-future carbon dioxide levels impair the olfactory system of European sea bass
A3.18

Mr Michael H Collins
Plymouth University, United Kingdom
Different levels of reduced oxygen elicit different physiological and transcriptomic mechanisms in the brackishwater amphipod, Gammarus chevreuxi
A3.19

Rachael Morgan
Norwegian University of Science and Technology, Norway
Individual repeatability of thermal tolerance in zebrafish at optimal and warm acclimated temperatures: a foundation for evolution
A3.20

Mr Tristan J McArley
The University of Auckland, New Zealand
Chronic warm exposure impairs growth performance and reduces thermal safety margins in the New Zealand common triplefin fish *(Forsterygion lapillum)*
A3.21

Mr Alessandro Cavallo
British Antarctic Survey, United Kingdom
Does development affect the heat shock response of the green sea urchin Psammechinus miliaris?
A3.22

Prof Timothy Ravasi
King Abdullah University of Science and Technology, Saudi Arabia
The epigenetic landscape of transgenerational acclimation to ocean warming
A3.23

Dr Andreas Ekström
University of Gothenburg, Sweden
Influence of cholinergic inhibition of heart rate on thermal tolerance in the roach, *Rutilus rutilus*
A3.24

Miss Louise Cominassi
Hamburg University, Germany
Combined effects of ocean acidification and temperature on the swimming capacity of European sea bass larvae
A3.25

Tommy Norin
University of Glasgow, United Kingdom
Heat-induced anemone bleaching increases the oxygen demands of symbiont anemonefish
A3.26

Mr Bastien Thomas
University of Poitiers, France
Thermal sensitivity of mitochondrial electron transport chain enzymes in wild and captive bred brown trout, *Salmo trutta*
A3.27

Jennifer C Nascimento Schulze
GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
Effects of temperature and salinity on the survival and physiology of Baltic Mytilus sp. early life-stages
A3.28

Dr Katja Anttila
University of Turku, Finland
oxygen transport system from molecular to functional level; differences between thermally high and low tolerant european seabass
A3.29

Mrs Sarah Howald
Alfred-Wegener-Institute Bremerhaven, Germany
Changes in metabolome and mitochondrial respiration in European sea bass hearts under OAW
A3.30

POSTER SESSION 1: TUESDAY 4 JULY

Mrs Stéphanie Auzoux-Bordenave
University Paris 6, France
Impact of ocean acidification on the early development and shell mineralization of the European abalone *(Haliotis tuberculata)*
A3.31

Mr Elliot Scanes
The University of Sydney, Australia
Intertidal oysters reach their physiological limit in a future high CO_2 world
A3.32

Prof Rod W Wilson
University of Exeter, United Kingdom
Lessons from two high CO_2 worlds: future oceans and intensive aquaculture
A3.33

Mrs Laura E Vossen
Uppsala University, Sweden
No evidence that elevated CO_2 affects behavioural lateralization, activity, aggression or monoamine neurotransmitter levels in the three-spined stickleback *(Gasterosteus aculeatus)*
A3.34

Dr Hannah Wood
University of Gothenburg, Sweden
Towards understanding sub lethal effects of climate change on marine crustaceans
A3.35

Dr Katie E Marshall
University of Oklahoma, United States
Thermal sensitivity at constant temperatures does not predict responses under varying temperatures
A3.36

Dr Christel Lefrançois
University of La Rochelle- LIENSs UMR 7266, France
From the mitochondria to the individual: how temperature influences performances in juvenile sea bass
A3.37

Dr Fanny Noisette
Université du Québec ? Rimouski, Canada
Larvae vs juveniles: understanding implications of global change throughout the early life stages of the American lobster *Homarus americanus*
A3.38

Matthew A. Birk
University of South Florida, United States
Hypoxia tolerance unaffected by increased environmental CO_2 in active squids
A3.39

Dr Thomas Milinkovitch
Istituto per l'Ambiente Marino Costiero del Consiglio Nazionale delle Ricerche (IAMC-CNR) Oristano, Italy
Effect of hypoxia following exposure to hydrocarbons on the escape performance and polycyclic aromatic hydrocarbons bioconcentrations in a teleost fish
A3.40

A5
OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS

Dr Jia-Jiun Yan
Institute of Cellular and Organismic Biolgy (ICOB) Academia Sinica, Taiwan
Functional development of pathogen defense by gastric alkalization in a basal deuterostome
A5.10

Mrs Sílvia F. Gregerio
CCMAR-Centre of Marine Science, Portugal
Regulation of bicarbonate secretion in marine fish intestine via the calcium sensing receptor
A5.11

Mr Charles R Hewitt
University of Aarhus, Denmark
The effect of fresh water ion strength on extracellular acid-base regulation in the air-breathing Pangasianodon hypophthalmus
A5.12

Dr Cristina Salmeron
Scripps Institution of Oceanography University of California San Diego, United States
Soluble adenylyl cyclase in trout red blood cells: cloning, characterization, and potential physiological roles in CO_2/pH/HCO_3^- sensing and oxygen transport
A5.13

Mr Dylan M Cole
University of Alberta, Canada
Temporal changes in the kidney transcriptome of Pacific spiny dogfish following low salinity exposure
A5.14

Ms Julia Gauberg
The University of Queensland, Australia
Effects of Chytrid fungus Batrachochytrium dendrobatidis on tight junctions in amphibian skin
A5.37

Miss Alexandra Alves
CCMar-Center of Marine Sciences, Portugal
Intestinal response to high CO_2 in the European seabass
A5.38

Bastian Maus
Alfred-Wegener-Institute Helmholtz Centre for Polar and Marine Research, Germany
Seawater alkalinity modulates the response of the shore crab Carcinus maenas to ocean acidification
A5.39

Lara Schmittmann
GEOMAR Helmholtz Centre for Ocean Research Kiel, Germany
Local adaptation of the common sea star Asterias rubens to different salinities
A5.40

Ms Marlene Wall
GEOMAR, Germany
The tropical corals' pH microenvironment examined under changing seawater pCO_2 conditions
A5.41

Mr Garfield T Kwan
Scripps Institution of Oceanography University of California San Diego, United States
Cellular mechanism for biomineralization in the otholith sac epithelium of California yellowtail (Seriola dorsalis)
A5.42

Patrícia G Ferreira
CIIMAR - Interdisciplinary Centre of Marine and Environmental Research, Portugal
Is the osmorespiratory compromise limiting invasive species?
A5.43

A6
THE OBLIGATION OF ACTIVITY – HOW DO ANIMALS GET FIT AND WHAT TAKES THEM OVER THE HILL?

Mr Yuki Oiwa
Hokkaido University, Japan
Functional analysis of brown adipose tissues of a non-homeothermal rodent, Naked mole-rat
A6.11

Dr Andrej Fabrizius
Institute of Zoology Biocenter Grindel, Germany
Molecular mechanisms of hypoxia tolerance of the brain of diving mammals
A6.13

A8
CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS

Mette H. Finnoen
Norwegian University of Science and Technology, Norway
Temperature dependent between- and within-individual variation in behaviour in wild zebrafish *(Danio rerio)*
A8.26

Miss Kuan-Wei Hung
National Sun Yet-Sen University, Taiwan
Response of evaporative water loss rate and thermal preference to dehydration in two lizards from different habitats at high altitudes
A8.27

Dr Nicholas Carey
Hopkins Marine Station Stanford University, United States
Schooling of Pacific sardines *(Sardinops sagax)* under experimental hypoxia
A8.28

Prof Bernd Pelster
Institute of Zoology University of Innsbruck, Austria
Nematode infection, swimbladder function and the spawning migration of the eel
A8.29

Mr Mads K Andersen
Aarhus University, Denmark
Slow and steady secures survival: How differences in epithelial K^+ transport underlie interspecific differences in Drosophila cold tolerance
A8.30

Anna S Przybylska
Nicolaus Copernicus University, Poland
The specialist-generalist model of body temperature regulation does not depend on sex differences in heterothermy use
A8.31

Michał S. Wojciechowski
Nicolaus Copernicus University, Poland
Non-shivering thermogenesis does not increase plasma reactive oxygen metabolites level but augments antioxidant potential in winter-acclimated Siberian hamsters
A8.33

Dr Clinton J Moran
Fairfield University, United States
Locomotor physiology of a hibernating fish in the family Labridae
A8.34

A11
OPEN BIOMECHANICS

Dr Alison P Wills
Hartpury University Centre, United Kingdom
How does muscle activity change with water depth in dogs walking on an underwater treadmill?
A11.53

Dr Petra Ditsche
University of Alaska Anchorage, United States
Spoiler-legs help stream mayfly larvae to stay on the ground
A11.77

PC1
PLANT CELL BIOLOGY

Mr Liam Elliott
University of Oxford, United Kingdom
Probing the edge proteome: Investigating the mechanism of RAB-A5c action in Arabidopsis
PC1.10

Dr Daria M Balcerowicz
University of Antwerp, Belgium
Receptor-like cytoplasmic kinase PERSEUS is an important regulator of tip growth in Arabidopsis thaliana
PC1.11

POSTER SESSION 1: TUESDAY 4 JULY

Miss Masoumeh Safari
Tarbiat Modares University, Iran
Pectin modification and promotion of root elongation by aluminum in Camellia Sinensis L.Seedlings
PC1.12

Miss Hannah Sewell
University of Sheffield, United Kingdom
MAGIC Arabidopsis and search for genetic regulation of stomatal responses to rising CO_2
PC1.13

Dr Askim H SEKMEN
Ege University Faculty of Sceince, Turkey
The role of hydrogen peroxide in elongation dynamics of the first internode of deep-sown wheat, Triticum aestivum Tir
PC1.27

Olga Sztatelman
Institute of Biochemistry and Biophysics Polish Academy of Sciences, Poland
Stress activated kinases in the regulation of light induced chloroplast movements
PC1.28

Zuzana Poborilova
Institute of Experimental Botany AS CR, Czech Republic
The optimization of antibody expression in tobacco BY-2 cells using transient assay
PC1.29

Rengin Ozgur Uzilday
Ege University, Turkey
Role for Phospholipase D (PLD) in the ER-stress response in Arabidopsis
PC1.30

Dr Claude Simo
Department of Plant Biology Faculty of Science P.O. Box 24 157 Douala, Cameroon
Electrophoretic profile and heritability of peroxidasic activities in the tolerance of Theobroma cacaoa gainst Phytophthora megakarya, the most agressive agent of black pod disease
PC1.34

Ms Rachel C Denley Bowers
University of Sheffield, United Kingdom
The economics of stomatal development
PC1.35

Mr Anaxi Houbaert
VIB-UGent Center for Plant Systems Biology, Belgium
An EMS-mutagenesis screen to identify molecular components of brassinosteroid signaling pathway at the level of GSK3 like kinases
PC1.36

Mr Francesco Valente
Department of Biosciences University of Exeter, United Kingdom
Sub-cellular responses of the wheat immune system to pathogenic fungi
PC1.37

André Vidal-Meireles
Biological Research Centre of the Hungarian Academy of Sciences, Hungary
Ascorbate biosynthesis and its regulation by VTC2 in the green alga Chlamydomonas reinhardtii
PC1.38

Prof Matthew A Escobar
California State University San Marcos, United States
Defining the expression domains of the Arabidopsis glutaredoxin genes AtGRXS5, AtGRXS6, and AtGRXS8
PC1.39

Miss Mitra Jamshidi
Sehat Industrial and Commercial CO, Iran
Cell culture of Acanthophyllum glandulosum L.as an alternative source of Saponin
PC1.40

Miss Farnoosh Nemati
Tarbiat Modares University, Iran
Crucial role of Fructan in the maintenance of membranes of wheat seedlings during severe drought stress
PC1.41

Prof Yunan Chen
National Sun Yet-sen University, Taiwan
Mercury-induced biochemical and ROS change in two species rice
PC1.42

Prof Jianhua Zhang
Chinese University of Hong Kong, Hong Kong
Regulation of gene expressions in the remobilization of carbon reserve in straws of rice at grain filling
PC1.43

Dr Alejandra Moenne
University of Santiago of Chile, Chile
Early events induced by copper involves the activation of mosaic TRP channels, release of aminoacids, serotonine and adrenalin, and activation of glutamate-, serotonin- and adrenalin-like receptors in the marine alga Ulva compressa
PC1.44

Dr Alberto González
University of Santiago of Chile, Chile
Calcium-induced calcium release induced by copper involves the activation of functional TRPs and VDCC in the marine alga Ectocarpus siliculosus
PC1.45

Dr Baris Uzilday
Ege University, Turkey
Changes in redox regulation and antioxidant system during transition from C_3 to single cell C_4 photosynthesis in Bienertia sinuspersici
PC1.46

Mr Sahand Amini
University of Liege, Belgium
Comparative Proteomics Analysis Provides New Candidates for Zinc Homeostasis Regulation in Arabidopsis
PC1.47

Mrs Julia Rachowka
Institute of Biochemistry and Biophysics PAS, Poland
A new player in plant redox homeostasis
PC1.48

Dr Rosemary G White
CSIRO Agriculture and Food, Australia
Evolutionary implications of plasmodesmata densities for C_3 vs. C_4 photosynthesis
PC1.50

PC6
MOLECULAR CONTROL OF PLANT GROWTH DURING ABIOTIC STRESS

Dr Piotr Gawronski
WULS, Poland
CIA_2 and CIL transcription factors are required for optimal photosynthesis in Arabidopsis thaliana
PC6.10

Dr Marie Hronková
University of South bohemia in České Budějovice and Biology Centre CAS, Czech Republic
Light regulation of stomatal development in Arabidopsis thaliana, integration of hormonal and transcriptional control
PC6.11

Prashanth Ramachandran
Physiological Botany Department of Organismal Biology Uppsala University, Sweden
Development of the root vasculature depends on ABA and is affected by abiotic stress
PC6.12

Dr Manuela Jurca
Umeå University, Sweden
ZEITLUPE interacts with OPEN STOMATA 1 and reveals a clock-regulated stomatal aperture control
PC6.13

Mrs Sara Buti
Utrecht University, Netherlands
Novel regulators of light-driven shoot architecture: a comparative approach
PC6.14

Mr Mohammed Alqurashi
University of Essex, United Kingdom
Investigating the role of chloroplast GAPDH in determining regulation Calvin Cycle in drought and non-drought conditions
PC6.15

Miss Helena A Herrmann
The University of Manchester, United Kingdom
Temperature sensing and signalling in Arabidopsis metabolism
PC6.30

Irabonosi Obomighie
University of Essex, United Kingdom
Arabidopsis growth and development: the role of heat shock factor A1b (HSFA1b)
PC6.31

Miss Amy G R Jacobsen
Durham University, United Kingdom
Hormonal interactions in root responses to mechanical impedance
PC6.32

Miss Johanna V Lethin
Göteborg University Biological and environmental science, Sweden
Molecular breeding of salt tolerant wheat
PC6.33

Miss Mengshu Hao
Lund University, Sweden
$Ca2^+$-dependent external NADPH oxidation is an ancient process compare to external NADH oxidation in plants
PC6.34

Dr Adel M Elmaghrabi
Biotechnology research center, Libya
Cytological and biochemical assessment of somatic embryogenesis and cell suspensions of potato after long-term exposure to salt stress
PC6.35

Dr Ranjita Sinha
National Institute of Plant Genome Research, India
Simultaneous drought stress and Ralstonia solanacearum infection induces distinct and common transcriptomic response in Chickpea
PC6.39

Prof Yang Do Choi
Seoul National University, Korea (South)
Segregation of homozygous JAZ9 mutants from CRISPR/Cas9-transformed rice
PC6.41

Dr In Sun Yoon
National Institute of Agricultural Sciences, Korea (South)
Transcriptomic analysis of dormancy break of rice seeds by heat stress
PC6.42

Mr Muhammad Qudrat Ullah Farooqi
Kangwon National University, Korea (South)
Bulk segregant analysis (BSA) for the improvement of drought resistance in maize (Zea mays L.) inbred lines revealed by SSR molecular markers
PC6.43

Dr Ane V Vollsnes
University of Oslo, Norway
Heat stress tolerance limit in Norway spruce *(Picea abies)* seedlings
PC6.44

Celine Forzani
INRA Versailles, France
Deciphering the TOR signalling pathway controlling plant growth
PC6.45

POSTER SESSION 1: TUESDAY 4 JULY

PC8

CROP MODELS IMPROVEMENT WITH BIOLOGICAL KNOWLEDGE: WHICH WHY AND HOW?

Dr Ian J Tetlow
University of Guelph, Canada
Modification of source leaf starch metabolism in transgenic Arabidopsis thaliana increases plant biomass and doubles oilseed production
PC8.5

Mr Thirulogachandar Venkatasubbu
Leibniz Institute of Plant Genetics and Crop Plant Research, Germany
LUSH SPIKE - towards the genetics and mechanism of spikelet survival in barley
PC8.6

Fiona Corke
National Plant Phenomics Centre IBERS Aberystwyth University, United Kingdom
Assessing multiple stress effects on wheat spike morphology and grain production using microCT scanning
PC8.7

Bruno A. Alves
Escola Superior de Agricultura Luiz de Queiroz - ESALQUSP, Brazil
Evaluation of the CROPGRO model to simulate the growth and development of the peanut crop
PC8.8

Dr Bijayalaxmi Mohanty
National University of Singapore, Singapore
Modeling cereal metabolisms for elucidating stress responses and guiding crop improvement
PC8.9

Prof Carl-Otto Ottosen
Aarhus University, Denmark
Phenotyping from climate chambers to field. Tomato genotypes phenotyped for high Fv/Fm during heat stress in controlled environment maintain high fruit yield during heat stress in the field
PC8.10

Dr Marcus David Bellett-Travers
IM Geospatial, United Kingdom
Can physiological maps guide genetic selection for improved responses to environmental stresses
PC8.11

PC9

IMAGING PLANT PATHOGENESIS

Miss Elspeth Ransom
University of Warwick, United Kingdom
Elucidating mechanisms of plant and necrotrophic fungal interactions
PC9.10

SEB+

THE TEACHING-RESEARCH NEXUS

Dr Jenny Sneddon
Liverpool John Moores University, United Kingdom
The UK Universities Nuffield research placement - the luxury of learning by inquiry
SEB+.13

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**A12 - OPEN ANIMAL BIOLOGY**	**A13 - OPEN ANIMAL BIOLOGY**	**PC7 - PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE ENERGY PRODUCTION** SPONSORED BY: ISPR AND GoCAS	**A11 - OPEN BIOMECHANICS**
08:30	REGISTRATION/EXHIBITION			
CHAIR	**COMPARATIVE ENDOCRINOLOGY AND NEUROBIOLOGY** CHAIRS: NIC BURY AND ESTHER ODEKUNLE	**ANIMAL ECOPHYSIOLOGY - CONSERVATION PHYSIOLOGY** CHAIR: CRAIG FRANKLIN	**PHOTOSYNTHESIS 1: ASSEMBLY AND MAINTENANCE OF THE PHOTOSYNTHETIC APPARATUS** CHAIR: CORNELIA SPETEA WIKLUND	CHAIR: PETER AERTS
09:00	**Miss Esther A Odekunle** ***Queen Mary University of London School of Biological and Chemical Sciences, United Kingdom*** Pharmacological characterization of a vasopressin/oxytocin-type receptor in an echinoderm A12.1	**Dr Timothy D Clark** ***University of Tasmania and CSIRO Hobart, Australia*** Reassessing the effects of ocean acidification on fishes using robust and transparent approaches A13.1	**Prof Eva-Mari Aro** ***University of Turku, Finland*** Maintenance of the photosynthetic apparatus in changing environments PC7.1	**Dr Hiroto Tanaka** ***Tokyo Institute of Technology, Japan*** Three-dimensional motion analysis of penguin swimming and estimation of the hydrodynamic force A11.25
09:15	**Dr Edward M Dzialowski** ***University of North Texas, United States*** Influence of thyroid hormones on development of endothermy and ventilation in altricial and precocial birds A12.2	**Dr Christophe M.R. LeMoine** ***Brandon University, Canada*** Transcriptional effects of microplastics exposure in developing zebrafish A13.2		**Dr Gen Li** ***Chiba University, Japan*** Swimming hydrodynamics of synchronization and collective swimming patterns in fish A11.26
09:30	**Miss Jennifer Roche** ***University of Lorraine UR AFPA, France*** Evaluation of D1 and D2 dopamine receptors involvement in the final stages of reproductive cycle in pikeperch, a teleost fish A12.3	**Miss Julie J.H. Nati** ***University of Glasgow Institute of Biodiversity Animal Health and Comparative Medicine, United Kingdom*** Is there a trade-off between peak performance and performance breadth across temperatures for aerobic scope in teleost fishes? A13.3		**Dr Jay Willis** ***Oxford University, United Kingdom*** The pattern of thrust on the body of a small swimming fish (a hillstream loach) A11.27
09:40			**Dr Mark Aurel Schöttler** ***Max Planck Institute of Molecular Plant Physiology, Germany*** Systems biology of leaf ontogenesis in tobacco PC7.2	
09:45	**Ms Arianna Cocco** ***Uppsala University, Sweden*** GABAA receptors and beyond: from mammals to zebrafish A12.4	**Mr Syafiq M Musa** ***University of Manchester, United Kingdom*** Effects of temperature and hypoxia on small-spotted catshark, *Scyliorhinus canicula* metabolism during early development A13.4		**Mr Masahiro Aizawa** ***Tokyo Institute of Technology, Japan*** Aerodynamic effect of the distributed flexural stiffness of hummingbird's wing A11.28
09:55			**Henrik Aronsson** ***Institution of Biological and Environemental Sciences University of Gothenburg, Sweden*** Vesicles are persistent features of different plastids PC7.3	
10:00	**Mrs Molly HB Amador** ***University of Miami, United States*** Molecular characterization and functional analysis of the Gulf toadfish serotonin transporter (SERT) A12.5	**Dr Joanna J Miest** ***University of Greenwich, United Kingdom*** Temperature impacts ontogeny of the immune system in European eel, *Anguilla anguilla* larvae A13.6		Dr Marco KleinHeerenbrink ***University of Oxford, United Kingdom*** Aerodynamically optimised wingbeat kinematics compared to empirical observations A11.29
10:10			**Pecha Kucha** Dainius Jakubauskas PC7.4 Miss Sonja V Bergner PC7.5 Miss Mariela P. Aguilera PC7.6 Peter T Braun PC7.7 Monika Suchoszek PC7.8 Dr Nuran Çiçek PC7.9	

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
C1 - PALAEOGENOMICS AND ANCIENT DNA	**PC4 - LIFE AT THE INTERFACE: PLANT MEMBRANE-PROTEIN DYNAMICS/ INTERACTIONS DURING ENVIRONMENTAL CHANGE** SPONSORED BY: FRONTIERS	**PC10 - GENERAL CELL AND PLANT BIOLOGY**	**PC2 - PLANT CELL CYCLE AND THE CYTOSKELETON**	**PC8 - CROP MODELS IMPROVEMENT WITH BIOLOGICAL KNOWLEDGE: WHICH, WHY, AND HOW?**
REGISTRATION/EXHIBITION				
CHAIR: JOHN LOVE	CHAIR: PIERS HEMSLEY	CHAIR: KATHERINE DENBY	CHAIR: JIM MURRAY	CHAIR: XINYOU YIN
Prof Michael Hofreiter ***Universität Potsdam, Germany*** Sequencing and computational challenges in the analysis of ancient DNA C1.1	**Dr Pedro L. Rodriguez** ***Instituto de Biologia Molecular y Celular de Plantas, Spain*** ABA receptors transiently interact with membranes through C_2-domain CAR proteins PC4.1	**Dr Dana R MacGregor** ***Durham University, United Kingdom*** We seed weed seeds PC10.15	**Dominique Bergmann** ***Stanford University, United States*** Control over divisions and transitions in the stomatal lineage PC2.7	**Prof Xavier Draye** ***Université catholique de Louvain, Belgium*** New tools to account for root water uptake in crop models : scaling up from 2D cell water flow to 4D soil-plant water dynamics and simplifying complex biological models down to crop model-compatible solutions PC8.14
		Dr Madeline Mitchell ***CSIRO, Australia*** Growth and carbon partitioning in a leaf oil crop PC10.16		
Torsten Günther ***Uppsala University, Sweden*** Investigating adaptation to northern latitude by comparing ancient and modern Northern Europeans C1.2	**Prof Angus Murphy** ***University of Maryland, United States*** Bulk internalization, sorting, and turnover of transporters associated with ordered lipid domains in response to salt sress in Arabidopsis is distinct from ABA dependent processes PC4.2	**Mr Thirulogachandar Venkatasubbu** ***Leibniz Institute of Plant Genetics and Crop Plant Research, Germany*** Dosage of duplicated and antifunctionalized homeobox proteins influences leaf and spikelet development in barley PC10.17	**John Doonan** ***National Plant Phenomics Centre IBERS Aberystwyth University, United Kingdom*** The CDKG1 protein kinase is essential for male meiosis at high ambient temperature PC2.8	**Ms Malin C Broberg** ***University of Gothenburg, Sweden*** No further stimulation of wheat yield by CO_2 above 600 ppm? PC8.15
Dr David Díez del Molino ***Swedish Museum of Natural History, Sweden*** A palaeogenomic perspective of near-extinction population dynamics C1.3		**Dr Humera Razzaq** ***Plant Breeding and Genetics University of Agriculture Faisalabad Pakistan, Pakistan*** Genetics of achene yield and drought stress tolerance related traits in sunflower (Helianthus annuusL.) PC10.18	**Prof Ive De Smet** ***VIB-UGent Center for Plant Systems Biology, Belgium*** Molecular control of formative cell divisions in the Arabidopsis root PC2.9	**Miss Bethany Holland** ***University of Sheffield, United Kingdom*** Modelling plant growth: what are the limitations to carbon allocation? PC8.16
		Max Cowan ***Monash University, Australia*** Crop wild relatives as a resource for generating low-cyanide, drought-tolerant Sorghum PC10.19		
Miss Ammielle A Kerudin ***University of Manchester, United Kingdom*** Ancient DNA in tracing the spread of leprosy in the past C1.4	**Pecha Kucha** Miss Britt M.E. Merlaen PC4.3 Miss Maiju A Laurila PC4.4 Mrs Pratiwi Prananingrum PC4.5			**Moritz Kupisch** ***University of Bonn Institute of Crop Science and Resource Conservation, Germany*** Limitations of carbon source driven crop models under water stress conditions PC8.18

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
10:15	**Prof Ian Orchard** ***University of Toronto*** Mississauga, Canada The involvement of Rhopr-CRF/DH in feeding and reproduction in the kissing bug, Rhodnius prolixus A12.6			**Ms Inés L Dawson** ***University of Oxford, United Kingdom*** Comparative kinematics of flapping flight in three dipteran species A11.30
10:30	REFRESHMENT BREAK/EXHIBITION			
CHAIR		**ANIMAL ECOPHYSIOLOGY-HYPOXIA** CHAIR: MICHAEL BERENBRINK		
11:00	**Svante Winberg** ***Uppsala University, Sweden*** Stress coping styles in fish - behavioural correlates, neuroendocrine and molecular mechanisms A12.7	**Jules B. L. Devaux** ***University of Auckland, New Zealand*** Mitochondrial adaptations of intertidal fish to survive hypoxia: a multidirectional approach A13.7	**Roman Sobotka** ***Institute of Microbiology Czech Academy of Sciences, Czech Republic*** Remodelling of a cyanobacterial chlorophyll-synthase complex by High-light inducible proteins PC7.10	**Lydia A France** ***University of Oxford, United Kingdom*** Mechanics and energetics of perching flight in a Steppe Eagle (Aquila nipalensis) A11.31
11:15	**Prof M C Subhash** ***University of Kerala, India*** Melatonin regulates Na^+ homeostasis during stress response in fish A12.8	**Miss Camille L E Ridde** ***School of Allied Health Sciences Griffith University Southport Qld, Australia*** Hypoxic preconditioning protects brain mitochondria from re-oxygenation injury A13.8	**Mr Shengxi Shao** ***Imperial College London, United Kingdom*** Repair and the evolution of photosystem II PC7.11	**Dr Florian T Muijres** ***Wageningen University, Netherlands*** ***Take-off dynam***ics of blood-fed malaria mosquitoes A11.32
11:30	**Dr Pedro M Guerreiro** ***Centre for Marine Sciences, Portugal*** Making a home away from home - plastic physiology, behaviour and hormonal profiles of the invasive chameleon cichlid Australoheros facetus in Southern Portugal A12.9	**Mr Luca Peruzza** ***National Oceanography Centre Southampton, United Kingdom*** Daily cyclic hypoxia accelerates the moult cycle in the shrimp Palaemon varians and induces morphologic changes in the gills A13.9		**Mr Antoine Cribellier** ***Wageningen University Research, Netherlands*** Flight dynamics and behaviours of malaria mosquitoes around odour-baited traps A11.33
11:45	MOVE TO PLENARY HALL			
11:50	**BIDDER LECTURE** ROOMS: K2+3 STEVE PERRY (UNIVERSITY OF OTTAWA, CANADA) THE CONTROL OF BREATHING IN FISH – WHY AND HOW			
12:50	LUNCH/EXHIBITION			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
		Dr Yuto Hatakeyama ***National Agriculture and Food Research Organization, Japan*** Nitrogen application reverses heat-induced rice chalkiness: Evidence for organelle rearrangement due to the recovery of protein synthesis in endosperm cells PC10.20		
REFRESHMENT BREAK/EXHIBITION				
	CHAIR: ANA FOX			CHAIR: GRAEME HAMMER
Dr Helena Malmström ***Uppsala University, Sweden*** Population genomics of hunter-gatherers and farmers in Scandinavia C1.5	**Dr Wendy Peer** ***University of Maryland, United States*** The Arabidopsis ASPARTLY PROTEASE 2 functions in the trans-Golgi Network PC4.6	**Dr Juliana Janet M. Puzon** ***Institute of Biology College of Science University of the Philippines Diliman, Philippines*** Secondary metabolite profiles, free-radical scavenging activity and antimicrobial potential of ethanol extracts from leaves, stems, and roots of vetiver grass [Chrysopogon *zizanioides*(L.) Roberty] PC10.21	**Prof Arp Schnittger** ***University of Hamburg, Germany*** Retinoblastoma - a central regulator of DNA damage response PC2.10	**Prof Christian Körner** ***University of Basel, Switzerland*** The alpha and omega of plant growth PC8.19
		Dr Anna Kärkönen ***Dept of Agricultural Sciences University of Helsinki Natural Resources Institute Finland (Luke), Finland*** A Key Role for Apoplastic H_2O_2 in Norway Spruce Phenolic Metabolism Revealed by Transcript and Metabolite Profiling PC10.22		
Ryan W Schmidt ***University College Dublin, Ireland*** Ukrainian Eneolithic (3500 BCE) Trypillian agropastoralists and their genetic association with Neolithic farmers from Southern Europe and the Near East C1.6	**Dr Xiaojuan Li** ***Beijing Forestry University, China*** Endocytic mechanisms of membrane proteins in plants--a single-molecule perspective PC4.7	**Dr Hiroshi Wada** ***National Agriculture and Food Research Organization, Japan*** Development of the on-site live cell metabolomics performable in controlled environment PC10.23		**Dr Nick Pullen** ***John Innes Centre, United Kingdom*** Growth repressors reveal plant growth is sink- not source-limited PC8.20
MOVE TO PLENARY HALL				
BIDDER LECTURE ROOMS: K2+3 STEVE PERRY (UNIVERSITY OF OTTAWA, CANADA) THE CONTROL OF BREATHING IN FISH – WHY AND HOW				
LUNCH/EXHIBITION				

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**A12 - OPEN ANIMAL BIOLOGY**	**A13 - OPEN ANIMAL BIOLOGY**	**PC7 - PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE** SPONSORED BY: ISPR AND GoCAS	**A11 - OPEN BIOMECHANICS**
CHAIR	**CARDIO-RESPIRATORY PHYSIOLOGY** CHAIR: MICHAEL BERENBRINK	**ANIMAL ECOPHYSIOLOGY - THERMOBIOLOGY** CHAIR: HOLLY SHEILS	**PHOTOSYNTHESIS 2: LIGHT HARVESTING AND PHOTO PROTECTIVE MECHANISMS** CHAIR: WOLFGANG SCHRÖDER	CHAIR: JIM USHERWOOD
13:50	**Prof Rod W Wilson** ***University of Exeter, United Kingdom*** Regulation of red blood cell pH and haemoglobin-O_2 affinity during the post-feeding alkaline tide A12.10	**Mr Dillon J Chung** ***University of British Columbia, Canada*** Intraspecific variation and thermal acclimation effects on mitochondrial function in a eurythermal teleost *(Fundulus heteroclitus)* A13.10	**Roberta Croce** ***VU University Amsterdam, Netherlands*** Molecular switches in the thylakoid membrane PC7.12	**Prof Yoshinobu Inada** ***Tokai University, Japan*** Quantitative analysis of energy balance in the dynamic soaring of streaked shearwater A11.34
14:05	Lars Hvass ***Department of Bioscience Aarhus University, Denmark*** Pancreatic base secretion compensates the alkaline tide in pythons A12.11	**Miss Isabella Loughland** ***University of Sydney, Australia*** Does oxidative stress limit cold acclimation in mosquitofish *(Gambusia holbrooki)*? A13.11		**Mr Yoshinari Yonehara** ***Atmosphere and Ocean Research Institute The University of Tokyo, Japan*** Wind shear estimation based on dynamic soaring of seabirds A11.35
14:20	**Mr Justin L Conner** ***University of North Texas, United States*** Does the left aortain crocodilians provide proton-rich blood to the gut during digestion? A12.12	**Miss Amélie Le Roy** ***The University of Sydney, Australia*** Developmental and reversible thermal plasticity affect dispersal in guppies *(Poecilia reticulata)* A13.12		**Mr James A Walker** ***University of Oxford, United Kingdom*** Gaze direction during pursuit in peregrine falcons A11.36
14:30			**Dr Anurag Sharma** ***University of Copenhagen, Denmark*** Functional characterization of CURT1A-a major player in thylakoid membrane plasticity PC7.13	
14:35	**Miss Angelina M. Dichiera** ***University of Texas at Austin Marine Science Institute, United States*** Class matters: Evolution of carbonic anhydrase in marine fish A12.13	**Dr Peter Steinbacher** ***University of Salzburg, Austria*** Temperature effects on body and muscle growth in two ecotypes of whitefish *Coregonus lavaretus* A13.13		**Mr Simon V. Reichel** ***University of Applied Sciences Bremen, Germany*** What goes up must come down - Biomechanics of landing in insects A11.37
14:45			**Dr Andrei Herdean** ***University of Gothenburg, Sweden*** Ion fluxes with role in regulation of pmf and photosynthesis PC7.14	
14:50	**Dr Agnieszka Jendroszek** ***Aarhus University, Denmark*** Functional characterization of hemoglobin isoforms from high and low altitude geese species A12.14	**Dr Pawel Koteja** ***Institute of Environmental Sciences Jagiellonian University, Poland*** The effect of stress on immunocompetence of bank voles from a multidirectional selection experiment A13.14		**Dr Laura A McFarlane** ***University of Leeds, United Kingdom*** The mechanical function of the biceps brachii and scapulotriceps muscles of the pigeon (Columba livia) during flight A11.38
15:00			**Prof Avihai Danon** ***Weizmann Institute of Science, Israel*** Oxidative regulation in photosynthetic homeostatic mechanisms PC7.15	
15:05	**Cardio-respiratory: Pecha Kucha** Miss Catherine J Williams A12.15 Mr Vlad S Kuzmin A12.16 Dr Denis V Abramochkin A12.17 Miss Anne B. Robertson A12.18	**Open animal biology: Pecha Kucha** Amélie Crespel A13.15 Miss Birgitte Jensen A13.16 Dr Albin Gräns A13.17 Miss Anna S M Persson A13.18		**Mr Jonathan W Page** ***University of Oxford, United Kingdom*** The biomechanics of dipteran flight muscles A11.39
15:15	REFRESHMENT BREAK/EXHIBITION			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
C1 - PALAEOGENOMICS AND ANCIENT DNA	**PC4 - LIFE AT THE INTERFACE: PLANT MEMBRANE-PROTEIN DYNAMICS/ INTERACTIONS DURING ENVIRONMENTAL CHANGE** SPONSORED BY: FRONTIERS	**PC10 - GENERAL CELL AND PLANT BIOLOGY**	**PC2 - PLANT CELL CYCLE AND THE CYTOSKELETON**	**PC8 - CROP MODELS IMPROVEMENT WITH BIOLOGICAL KNOWLEDGE: WHICH, WHY, AND HOW?**
CHAIR: LAURA PARDUCCI	CHAIR: ANGUS MURPHY	CHAIR: JOHN LOVE	CHAIR: PATRICK HUSSEY	CHAIR: FRANK EWERT
Prof Terry Brown ***University of Manchester, United Kingdom*** Using palaeogenomic approaches with plant remains C1.7	**Prof Rainer Hedrich** ***University of Würzburg, Germany*** Molecular mechanisms of touch sensing and signalling PC4.8	**Regina Oliva** ***University of Innsbruck, Austria*** Effect of nuclear magnetic resonance on the circadian clock and the hypoxia signalling pathway PC10.24	**Dr Sabine Muller** ***University of Tuebingen, Germany*** Spatial control of cytokinesis in Arabidopsis thaliana PC2.11	**Prof Graeme Hammer** ***University of Queensland, Australia*** Biological reality and parsimony in crop models? why we need both in crop improvement! PC8.21
		Dr Antony N Dodd ***University of Bristol, United Kingdom*** Circadian regulation of plant responses to herbicides PC10.25		
Stefanie Wagner ***BIOGECO INRA Univ. Bordeaux, Denmark*** Fuel for evolutionary and archeological studies on temperate tree species - aDNA from wood C1.8	**Dr Ines Kreuzer** ***University of Würzburg Molecular Plant Physiology and Biophysics, Germany*** The anion channel SLAH3 and its multiple modes of regulation PC4.9	**Mr Devang Mehta** ***Institute of Molecular Plant Biology ETH Zurich, Switzerland*** CIDER-Seq: An unbiased long-read enrichment sequencing approach for accurate deep sequencing of circular DNA viruses PC10.26	**Dr Tijs Ketelaar** ***Wageningen University, Netherlands*** Kinesin-4-mediated shortening of microtubule overlap regions as a mechanism to control polarity in microtubule arrays PC2.12 14:30-15:10	**Dr Tom De Swaef** ***The Institute for Agricultural and Fisheries Research (ILVO), Belgium*** Optimizing the phenotyping protocols of perennial ryegrass through practical identifiability analysis - case study with the Pasture Simulation model PC8.22
Dr Richard K Tennant ***University of Exeter, United Kingdom*** Unearthing past environments using algal paleogenomics C1.9		**Dr Claude Simo** ***University of Douala, Cameroon*** Electrophoretic profile and heritability of peroxidasic activities in the tolerance of Theobroma cacao against Phytophthora megakarya, the most agressive agent of black pod disease PC10.27		**Dr Mikhail A. Semenov** ***Rothamsted Research, United Kingdom*** Sensitivity to drought during reproductive development will limit increase in wheat yield potential in Europe under climate change PC8.23
Dr Roselyn L Ware ***University of Warwick, United Kingdom*** Studying aDNA damage in marine sediments C1.10	**Dr Ioanna Kostaki** ***University of Bristol, United Kingdom*** How do higher plants sense temperature? PC4.10	**Dr Magdalena Maria Julkowska** ***King Abdullah University for Science and Technology, Saudi Arabia*** To grow or not to grow - transcriptional responses underlying reduced lateral root development under salt stress conditions PC10.28		**Dr Pierre Casadebaig** ***INRA, France*** Using numerical plant models and phenotypic correlation space to design achievable ideotypes PC8.24
		Dr Erik Alexandersson ***Department of Plant Protection Swedish University of Agricultural Sciences, Sweden*** PlantLink - a plant science network for education, research and innovation PC10.29		
REFRESHMENT BREAK/EXHIBITION				

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
CHAIR	**OSMOREGULATION** CHAIR: JONATHAN WILSON	**ANIMAL ECOPHYSIOLOGY** CHAIR: SHAUN KILLEN		CHAIR: PROF ROB JAMES
15:45	**Mr Michael A Sackville** ***University of British Columbia, Canada*** Ions before oxygen: larval lampreys and protochordate representatives question the origins of chordate gill function A12.19	**Dr Nicholas Carey** ***Hopkins Marine Station Stanford University, United States*** How to catch an anchovy: characteristics of humpback whale lunges and the timing of anchovy escape A13.19	**Prof Stefan Jansson** ***UPSC Dept of Plant Physiology Umeå University, Sweden*** How can spruce needles be green in the winter? PC7.16	**Dr Chris Tijs** ***Concord Field Station - Harvard University, United States*** Functional implications of architectural gear ratio within a compartmentalized muscle A11.40
16:00	**Dr Amit Kumar Sinha** ***University of Antwerp, Belgium*** ***Interactive effects of salinity*** and ammonia stress on marine fish: insights from genome-wide transcriptional analysis A12.20	**Dr Valentina Di Santo** ***Harvard University, United States*** A non-linear relationship between swimming metabolism and speed in a negatively buoyant fish A13.20		**Dr Nicolai Konow** ***UMass. Lowell, United States*** Integration of jaw and tongue movements, and tongue control of food during Axolotl chewing A11.41
16:15	**Mr Nicholas C. Wu** ***The University of Queensland, Australia*** Epidermal epidemic: effects of chytridiomycosis on amphibian epithelial transport during sloughing A12.21	**Miss Tessa A Van Walsum** ***University of Roehampton, United Kingdom*** Vertical flight - a tractable method for studying energy-accelerometry relationships in birds A13.21	**Dr Yagut Allahverdiyeva** ***University of Turku, Finland*** A new protocol for improved H_2 photoproduction yields in C. reinhardtii PC7.17	**Mr Sam Van Wassenbergh** ***Muséum National D'Histoire Naturelle, France*** How does pharyngeal streamlining affect suction feeding dynamics in fishes? A11.42
16:30	**Dr Dennis Kolosov** ***McMaster University, Canada*** Gap junctions play a role in coupling ion flow through the principal and secondary cells in the Malpighian tubules of lepidopterans A12.22	**Dr Catharina Olsson** ***Department of biological and environmental sciences University of Gothenburg, Sweden*** Gut motility - an essential but underappreciated aspect of a multifunctional organ A13.22	**Dr Alessandro Alboresi** ***Università di Padova, Italy*** Light remodels the photosynthetic apparatus and carbon partitioning between organelles in *Nannochloropsis gaditana* leading to sustained lipid accumulation PC7.18	**Egon Heiss** ***Friedrich-Schiller-University of Jena, Germany*** Intraoral food processing in the newt Triturus carnifex: how do they chew? A11.43
16:45	**Osmoregulation: Pecha Kucha** Mr Trystan Sanders A12.23 Jyotsna Shrivastava A12.24 Yadong Wang A12.25 Dr Lucie Gerber A12.26 Maria C. Cartolano A12.27	**Open animal biology Pecha Kucha** Mr Alec I M Simmonds - A13.23 Ms Ma-gorzata M Lipowska A13.24 Dr Valsa S Peter A13.25 Enrique Caviedes-Vidal A13.26 Miss Tessa A Van Walsum A13.27	**Mrs Marija Stamenkovic** ***Institute for Biological Research Siniša Stanković, Serbia and Montenegro*** Species- and strain-specific strategies of microalgal strains (desmids, genus *Cosmarium*, Zygnematophyceae, Streptophyta) as protection against excessive photosynthetically active radiation PC7.19	**Pecha Kucha** Dr Ariel L Camp A11.44 Dr Shannon P Gerry A11.45 Dr Petra Ditsche A11.46 Dr Jorn A Cheney A11.47 Dr Huai-Ti Lin A11.48 Miss Lucy A. Taylor A11.49 Dr Ardian Jusufi A11.50
17:00	END OF SESSION			
17:00 - 19:30	**POSTER SESSION 2 (EXHIBITION HALL, FIRST FLOOR)**			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
	CHAIR: EMMANUELLE BAYER			CHAIR: CHRISTIAN KÖRNER
	Dr Emmanuelle Bayer ***CNRS University of Bordeaux Laboratory of Membrane Biogenesis, France*** Staying-tight: shaping plasmodesmata membrane contact sites PC4.11	**Dr Rubén Casanova-Sáez** ***Umeå Plant Science Centre-SLU, Sweden*** Assessing the role of IAA inactivation on auxin homeostasis in plants PC10.30	**Prof Patrick J Hussey** ***Durham University, United Kingdom*** Interactions of the plant cytoskeleton with membranes PC2.14	**Prof Andrew J. Millar** ***SynthSys and School of Biological Sciences University of Edinburgh, United Kingdom*** Applying the Arabidopsis Framework Model to link SNPs to clines PC8.24
		Tereza Dobisova ***Masaryk University CEITEC, Czech Republic*** Light controls cytokinin-related development via activity of CKI1 PC10.31		
	Prof Lawrence R. Griffing ***Texas A&M University, United States*** Calcium release from the plant endoplasmic reticulum occurs during blue-light retrograde signaling from the ER-chloroplast junction PC4.12	**Mr Jonathan M Cocker** ***John Innes Centre, United Kingdom*** Floral heteromorphy in Primula: new insights for an old model PC10.32	**Discussion**	**Dr Tsu-Wei Chen** ***LEPSE INRA Montpellier, France*** Dissecting the genetic variability of light interception and light use efficiency in complex maize canopies via high-throughput phenotyping and modelling PC8.25
		Mrs Rita Sarah Borna ***University of Nottingham, United Kingdom*** Unravelling the function of the rice orthologues of the F-box gene HAWAIIAN SKIRT (HWS) in plant development PC10.33		**Discussion**
	Chrysoula K. Pantazopoulou ***Utrecht University, Netherlands*** Neighbor detection at the leaf tip adaptively regulates upward leaf movement through spatial auxin dynamics PC4.13	**Chiakai Kang** ***Plant Ecophysiology Institute of Environmental Biology Utrecht University, Netherlands*** Phytochrome-mediated red:Far-red light signaling in the shoot controls root development in Arabidopsis PC10.34		
END OF SESSION				
POSTER SESSION 2 (EXHIBITION HALL, FIRST FLOOR)				

POSTER SESSION 2: WEDNESDAY 5 JULY

A1

PHYSIOLOGICAL MECHANISMS OF AQUATIC TOXICOLOGY

Dr Armin Sturm
University of Stirling, United Kingdom
The cytochrome P450 superfamily of the salmon louse *(Lepeophtheirus salmonis)*
A1.32

Dr Georgina K Cox
University of Miami, United States
All oiled up: the effects of crude oil on cardiovascular function
A1.35

A4

CHALLENGES IN THE ANTHROPOCENE: ACID-BASE ION REGULATION AND CALCIFICATION IN AQUATIC INVERTEBRATES

Mr Alexander Ventura
University of Gothenburg, Sweden
Adaptation potential to ocean acidification in the blue mussel *Mytilus edulis*
A4.15

Dr Dirk Weihrauch
University of Manitoba, Canada
AMTs in invertebrates: new players in ammonia transport and acid-base regulation
A4.16

Mr David LJ Vendrami
University of Bielefeld, Germany
RAD sequencing resolves fine-scale population structure in a benthic invertebrate: implications for understanding phenotypic plasticity
A4.17

Nadege Zaghdoudi-Allan
Center of Marine Sciences Univeristy of the Algarve, Portugal
Insights into how biomineralization is regulated in the Mediterranean and Blue mussel
A4.18

Miss Pei-Hsuan Chou
Department of Life Science National Taiwan Normal University, Taiwan
Transformation and transportation of sulfur compounds in gills of hydrothermal Vent Crab Xenograpsus testudinatus near Kuishan Island, Taiwan
A4.19

Mr Luca Telesca
University of Cambridge, United Kingdom
Blue mussel shell shape plasticity and natural environments: a quantitative approach
A4.20

Dr Yan Wang-Duffort
Royal Belgian Institute of Natural Sciences, Belgium
Crossed-lamellar microstructure of mollusk shells, new inspiration of biomimetic material
A4.21

Miss Ashley Tripp
University of Manitoba, Canada
The effect of climate change on the physiology of the Louisiana red swamp crayfish *(Procambarus clarkii)*
A4.22

Mr Michele De Noia
University of Bielefeld, Germany
Population genetic structure of the soft shell clam, *Mya arenaria*, along a European latitudinal gradient
A4.23

Dr James Peter Morris
Royal Belgian Institute of Natural Sciences, Belgium
Mollusc shells are a valuable biomaterial, not a nuisance waste product of the aquaculture industry
A4.24

Kirsikka Sillanpää
Department of Biological and Environmental Sciences University of Gothenburg, Sweden
Calcium transport in the outer mantle epithelium of the Pacific oyster, *Crassostrea gigas*
A4.25

A7

NATURALLY OCCURRING EXPERIMENTS: USING LIFE HISTORY EVENTS TO UNDERSTAND LOCOMOTOR PERFORMANCE

Daphne Cortese
CRIOBE USR 3278 EPHE, France
Parental and environmental determinants of swim performance in larval anemonefish
A7.13

A9

INTEGRATIVE MODELLING APPROACHES TO THE FISH CARDIO-RESPIRATORY SYSTEM UNDER ENVIRONMENTAL CHANGE - IS IT TIME FOR A FISH PHYSIOME INITIATIVE?

Mr Yangfan Zhang
The University of British Columbia, Canada
Integrative respiratory assessment paradigm (IRAP) as an index of a fish's metabolic capacity
A9.16

Derek Nelson
University of North Texas, United States
Cardiovascular and cardiorespiratory responses of the red drum (Sciaenops ocellatus) to the combine environmental stressors of hypoxia and crude oil
A9.17

Miss Lauren E James
Aarhus University, Denmark
Modelling intracardiac shunt patterns in non-crocodilian reptiles
A9.18

Prof Stuart Egginton
University of Leeds, United Kingdom
Fibre size modulates the effect of temperature acclimation on capillary supply and intracellular diffusion
A9.19

Prof Stuart Egginton
University of Leeds, United Kingdom
Variation in muscle fine structure supports adequate peripheral oxygen transport in both locomotor and postural muscles of notothenioid fishes
A9.20

Ilan Ruhr
The University of Manchester, United Kingdom
Comparative control of Ca_2^+ homeostasis in snapping turtle and rainbow trout cardiomyocytes subjected to anoxia/reoxygenation
A9.21

A10

BIOLOGICAL ADHESIVES: FROM BIOLOGY TO BIOMIMETICS

Dr Janek Von Byern
Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Austria
The Arachnocampa fishing lines
A10.17

Mr Charchit Kumar
University of Strasbourg, France
Investigations of adhesion in bio-replicated microstructure surfaces: Effects of shape, size, and complexity of patterns
A10.18

Dr Patrick Flammang
University of Mons, Belgium
Identification and localization of various tyrosinase isoforms in the foot of the blue mussel *Mytilus edulis*
A10.20

Dr Yan Wang-Duffort
Royal Belgian Institute of Natural Sciences, Belgium
From bivalve cement to biomimetic mineral adhesive
A10.21

Dr Sheelagh Conlan
Liverpool John Moores University, United Kingdom
The impact of naupliar feeding levels on cyprid adhesive production in the barnacle *Balanus amphitrite*
A10.23

Judith L. Geils
City University of Applied Sciences Bremen, Germany
Lotus and pitcher plant:Role models for slippery surfaces in air and under water
A10.24

Prof Claire Hellio
Université de Brest, France
Enzymes involved in bioadhesives production in invertebrates (mussels and oysters) and macroalgae
A10.25

A11

OPEN BIOMECHANICS

Miss Amy L Barstow
Royal Veterinary College, United Kingdom
Can modifying the solar surface of horses' hooves improve distal limb impact vibration damping?
A11.19

Ms Emily M Abbott
University of California Irvine, United States
A tendon-cy towards speed: how loading affects the velocity of tendon recoil
A11.20

Dr Laura B Porro
Royal Veterinary College, United Kingdom
Reconstruction and musculoskeletal modelling of the pelvic and hindlimb musculature of the fossil salientian Triadobatrachus
A11.21

Mr Enrico A Eberhard
Royal Veterinary College, United Kingdom
Jump optimisation of a morphable musculoskeletal model: probing performance against changing hind-limb proportions
A11.22

Dr Zoe T Self Davies
The Royal Veterinary College, United Kingdom
Are crawling humans more like horses or hippos?
A11.23

Ms Julia E Samson
University of North Carolina at Chapel Hill, United States
Coral vs. computer: validating a pulsing polyp simulation using flow velocity fields, vorticity, and Lagrangian coherent structures
A11.24

Dr Ariel L Camp
Brown University, United States
How head and body muscles meet the power demands of suction feeding in bluegill sunfish
A11.44

Dr Shannon P Gerry
Fairfield University, United States
Lab versus Field: Feeding Kinematics of Polyphenic Bluegills *(Lepomis macrochirus)*
A11.45

Dr Petra Ditsche
Univeristy of Alaska Anchorage, United States
Biomechanical parameters of the jaw cartilage of the Big Skate *(Raja binoculata)*- A matter of shape?
A11.46

POSTER SESSION 2: WEDNESDAY 5 JULY

Dr Jorn A Cheney
Royal Veterinary College, United Kingdom
Avian wing configurations in and out of ground effect
A11.47

Dr Huai-Ti Lin
Imperial College London, United Kingdom
A way to aerial behaviors: wireless neural telemetry in freely flying dragonflies
A1.48

Miss Lucy A. Taylor
University of Oxford, United Kingdom
The fellowship of the wing: Homing pigeons *(Columba livia)* significantly increase their wingbeat frequency when flying in pairs
A11.49

Dr Ardian Jusufi
Harvard University and University of Technology Sydney, Australia
How does body stiffness modulation affect undulatory swimming?
Soft sensors capture fin curvature for a closed loop soft robotic fish
A11.50

Dr Ikuko Tanaka
Kobe University The Japan Society for the Promotion of Science Research Fellow, Japan
Variability among footprints of Ciconia boyciana (Aves: Ciconiidae) in homogeneous sediment
A11.51

Madeleine R Inglis
Royal Veterinary College, United Kingdom
Pronation and Supination: the importance of wing rotation to insect flight
A11.52

Dr Simon Poppinga
Plant Biomechanics Group Freiburg, Germany
Pine cone seed scales as role models for adaptive flaps in architecture
A11.54

Frederik Pueffel
Bremen University of Applied Sciences, Germany
Scaling of cutting forces in leaf-cutter ants
A11.55

Dr Benjamin J. H. Smith
Royal Veterinary College, United Kingdom
Power minimizing strategies for changing speed in mice
A11.56

Mr Dan Sykes
University of Manchester, United Kingdom
Effect of sample preparation on the mechanical properties of arthropod cuticle
A11.57

Prof Yoshinobu Inada
Tokai University, Japan
Effect of the tail wing arrangement of Ribbon Halfbeak on its flight performance
A11.58

Dr Hidetoshi Takahashi
The University of Tokyo, Japan
Is there oscillation of ground reaction force during walk of small ants?
A11.59

Miss Pernille V Troelsen
Liverpool John Moores University, United Kingdom
Hydrodynamic implications of the long-neck in plesiosaurs tested using computational fluid dynamics
A11.60

Miss Hilla Davidovich
Tel Aviv University, Israel
Biomechanics and mate selection in the copulatory flight of the blue-tailed damselfly *(Ischnura elegans)*
A11.61

Mr Ryan D Marek
University of Liverpool, United Kingdom
Grabbing evolution by the throat: functional regionalisation of the avian cervical column
A11.62

Dr Alison P Wills
Hartpury University Centre, United Kingdom
The effect of a buoyancy jacket on the heart rate of swimming dogs
A11.63

Miss Eleanor C Strickson
Liverpool John Moores University, United Kingdom
Can foot surface area in vivo predict skeletal surface area?
A11.64

Dr David Labonte
University of Cambridge, United Kingdom
On the relationship between indentation hardness and modulus, and the damage resistance of biological materials
A11.65

Dr Michael Bennemann
Westphalian Institute for Biomimetics, Germany
Compiling three-dimensional geometries of large as well as tiny objects using photogrammetry
A11.66

Prof Albert J Baars
City University of Applied Sciences, Germany
Geometry of dragonfly wing sections - Influence on lift and drag
A11.67

Dr Peter L Falkingham
Liverpool John Moores University, United Kingdom
Reconstructing moving morphology using RaspberryPi (PiROMM): Range of motion in ostrich cervical vertebrae at progressive stages of dissection
A11.68

Florian Hoffmann
Biomimetics-Innovation-Centre, Germany
Aquatic righting performance of Chinese mitten crabs
A11.69

Mr Vincent E. Focke
Biomimetics-Innovation-Centre (B-I-C) City University of Applied Sciences Bremen, Germany
Do flying fish hold biomimetic potential for wing in ground effect crafts?
A11.70

Dr Per Henningsson
Lund University, Sweden
Aerodynamics of manoeuvring flight in bats
A11.71

Dr L. Christoffer Johansson
Lund University, Sweden
Mechanical power of bird flight: Can body angle explain a flat power curve?
A11.72

Mr Nicholas W. Gladman
University of Leeds, United Kingdom
Jet-set molluscs: The structure and hydrodynamics of cuttlefish *(Sepia officinalis)* jet propulsion swimming
A11.73

Fernanda Bribiesca Contreras
University of Manchester, United Kingdom
A quantitative and comparative analysis of the wing muscle architecture of birds of prey
A11.74

Prof Antonia B. Kesel
Biomimetics-Innovation-Center University of Applied Sciences Bremen, Germany
Do bony tubercle inside the falcon nostril effect breathing during high speed diving?
A11.75

Dr Sandy M. Kawano
Royal Veterinary College, United Kingdom
Three-dimensional musculoskeletal model of the tiger salamander *(Ambystoma tigrinum)* forelimb during terrestrial locomotion
A11.76

Dr Petra Ditsche
University of Alaska Anchorage, United States
Spoiler-legs help stream mayfly larvae to stay on the ground
A11.77

Aljoscha Sander
City University of Applied Sciences Bremen, Germany
Trout swimming: thrust and efficiency from a numerical perspective
A11.78

A12
OPEN ANIMAL BIOLOGY

Miss Catherine J Williams
Aarhus University, Denmark
The effects of anaesthesia and surgery on cardiorespiratory physiology and physiological stress markers in the terrapin *Trachemys scripta*
A12.15

Mr Vlad S Kuzmin
Department of human and animals physiology Biological faculty MV Lomonosov Moscow State University, Russia
Terrestrial anuran Rana temporaria avoids thermally induced heart failure due to maintenance of atrioventricular and ventricular conduction
A12.16

Dr Denis V Abramochkin
Lomonosov Moscow State University, Russia
New mechanism of action potential waveform modulation by adrenergic compounds in fish heart
A12.17

Miss Anne B. Robertson
University of British Columbia, Canada
Fluorescent implantable elastomer tags for the measurement of oxygen within insects
A12.18

Mr Trystan Sanders
GEOMAR, Germany
High cost of calcification and unexpected intracellular adaptations in marine mussels living at extremely low salinity in the Baltic Sea
A12.23

Jyotsna Shrivastava
University of Antwerp, Belgium
Temporal assessment of metabolic rate, ammonia dynamics and ion-status in common carp during fasting: optimizing fasting period prior to transport
A12.24

Yadong Wang
University of Miami, United States
Ontogony of urea and ammonia transporters in mahi-mahi (Coryphaena hippurus) early life stages
A12.25

Dr Lucie Gerber
Aarhus University, Denmark
Nitric oxide inhibits NaCl secretion across the opercular epithelium of the seawater killifish by dual mechanisms: cGMP signalling and S-nitrosation
A12.26

Maria C. Cartolano
University of Miami Rosenstiel School of Marine and Atmospheric Science, United States
The use of pulsatile urea excretion to chemically communicate reproductive status in Gulf toadfish, *Opsanus beta*
A12.27

Miss Sofie Moyson
University of Antwerp, Belgium
Mixtures of zinc, copper and cadmium cause different responses in Caenorhabditis elegans
A12.28

Dr Anna Stöckl
Aalto University, Finland; Lund University Sweden
Spatial summation in hawkmoth lamina monopolar cells
A12.29

POSTER SESSION 2: WEDNESDAY 5 JULY

Dr Darryl G Kitney
University of Bristol, United Kingdom
Cholesterol-rich membrane rafts regulate basal ATP release and alter contractility of the bladder
A12.30

Dr Darryl G Kitney
University of Bristol, United Kingdom
The generation of bladder wall spontaneous contractions is influenced by diffusible substance(s) from the mucosa
A12.31

Dr Christian Damsgaard
Aarhus University, Denmark
Oxygen dictated the evolution of the vertebrate eye
A12.32

Patrícia G Ferreira
CIIMAR - Interdisciplinary Centre for Marine and Environmental Research, Portugal
A multi-tasking stomach: Defence through inflation and digestion through acid-pepsinogen production. The case of the Sargassum fish, *Histrio histrio*
A12.33

Mr Emil AF Christensen
University of Cophenhagen, Denmark
Preferred temperature is size dependent in European perch *Perca fluviatilis*
A12.36

Mrs Wren A Busby
University of North Texas, United States
Using A multi-strain probiotic to measure theeffects on growth, mortality, food conversion ratios (FCRs), and behavior in Red drum *(Sciaenops ocellatus)*
A12.37

Maud Kent
University of Sydney, Australia
Dealing with danger: investigating how prey respond to changes in threat
A12.38

Dr Max Roberts
University of Surrey, United Kingdom
NADPH oxidase subtype expression and ROS generation in the mouse urinary bladder
A12.39

Mr Malthe Hvas
Institute of Marine Research, Norway
The gill parasite Paramoeba perurans compromises aerobic scope and swimming capacity in Atlantic salmon *Salmo salar*
A12.40

Martin Grosell
Rosenstiel School of Marine and Atmospheric Science University of Miami, United States
Interrogation of the Gulf toadfish intestinal proteome response to hypersalinity exposure using mass spectrometry
A12.41

Noraly MME Van Meer
Wageningen University and Research, Netherlands
High resolution 3D imaging of a parasitic wasp ovipositor base shows its role in probing
A12.42

Dr Yi Ta Shao
Institute of Marine Biology National Taiwan Ocean University, Taiwan
Comparison of multiple acid compounds impacts on the ontogenesis of Purple Sea Urchin *(Anthocidaris crassispina)*
A12.44

Baptiste Houyvet
University of Caen-Normandy, France
Pteroicidins: antimicrobial peptides related to piscidins in the venomous fish Pterois volitans
A12.47

Dr Dominique G Roche
University of Neuchâtel, Switzerland
Demystifying animal 'personality' (or not): why individual variationmatters to experimental biologists
A12.48

Dr Frank B. Jensen
University of Southern Denmark, Denmark
Interspecific variation and plasticity in hemoglobin nitrite reductase activity and its correlation with oxygen affinity in vertebrates
A12.49

Mr Stav Talal
Tel Aviv University, Israel
Novel insights into locust discontinuous gas exchange
A12.50

Victoria Drechsel
University of Innsbruck, Austria
Molecular stress response in Lumbricus terrestris
A12.51

Ms Pazit Con
The Hebrew University, Israel
Characterization of peptide transporter systems in the intestine of mozambique tilapia *(oreochromis mossambicus)*
A12.52

Ms Pazit Con
The Hebrew University, Israel
Expression and localization of peptide transporters (PepTs) during Mozambique tilapia *(Oreochromis mossambicus)* larval development
A12.53

Naim Bautista
University Of North Texas, United States
epigenetic inheritance of pah resistance in the zebrafish *(danio rerio)*
A12.54

Ms Tejaswi Yarra
University of Edinburgh, United Kingdom
RNA-Seq analysis of shell repair in Mytilus edulis identifiescritical role of transporter proteins in biomineralization
A12.55

Ms Amanda Bundgård
Aarhus University, Denmark
Mitochondrial regulation protects the anoxic turtle heart from oxidative damage after reoxygenation
A12.56

Julia K Luedemann
University of Hamburg, Germany
Do bony tubercle inside the falcon nostril effect breathing during high speed diving?
A12.57

Dr Andreas Ekström
University of Gothenburg, Sweden
Effects of coronary ligation on heart rate and aerobic metabolic scope in rainbow trout, *Onchorhynchus mykiss*
A12.58

Dr Ebrahim Lari
University of Lethbridge, Canada
Parasites and a host?s sense of smell: effects of a new species of trematode Dactylogyrus olfactorius (Monogenea, Dactylogyridae) on olfactory performance of fathead minnows
A12.59

Tim Shaw
The Doherty Institute NucleopharmGT, Australia
The Innate Natural Gen(e)ius of the Acytota: An Obverse C-Value Paradox
A12.60

Dr Peter C Hubbard
Centro de Ciências do Mar, Portugal
Chemical communication during spawning in the sea cucumber *Holothuria arguinensis*
A12.61

Kathrin Helfenrath
University Hamburg, Germany
Globin expression profile in different tissues of zebrafish exposed to hypoxia
A12.62

Ms Alena Krüger
University of Hamburg Institute of Zoology, Germany
Hypoxia tolerance in Whales: A transcriptome analysis of the diving brain
A12.63

Miss Sarah A Ohrnberger
University of Veterinary Medicine Vienna, Austria
Joint custody and its effects on juvenile development in Mongolian gerbil families
A12.64

Lucie Gerber
Aarhus University, Denmark
Losing homeostasis at low temperature: Low temperature impairs osmoregulatory function in the hindgut of the chill-susceptible locust, *Locusta migratoria*
A12.65

Dr Darryl McLennan
University of Glasgow, United Kingdom
The effect of nutrient levels on growth and telomere dynamics in wild Atlantic salmon
A12.66

Dr Barbora Konopova
University of Göttingen, Germany
Deciphering the function of the pleuropodia in insect embryos
A12.67

Miss Mariia V. Stanovova
Lomonosov Moscow State University, Russia
Invertebrate immunity: Arenicola marina (Annelida, Polychaeta) as an experimental object
A12.68

Ms Viktoriia M. Karimova
Lomonosov Moscow State University, Russia
Cardiac tissue of amphibian and reptilian caval veins demonstrates electrical excitability and automaticity and may contribute to pacemaking
A12.69

Dr Nina N. Nemova
Institute of Biology Karelian Research Centre of the Russian Academy of Sciences, Russia
Ecologically-related variation in growth rate and muscle protein degradation in Atlantic salmon of nursery brooks and natal rivers
A12.70

Dr Edward M Blumenthal
Marquette University, United States
Knockdown of multicopper oxidase 4 eliminates the peritrophic matrix and alters larval growth and adult microbiome in Drosophila
A12.71

Miss Clarisse Dupin
University of Poitiers Faculty of Fundamental and Applied Sciences, France
3D ultrastructure study of Ca release pathways in avian cardiomyocytes
A12.72

POSTER SESSION 2: WEDNESDAY 5 JULY

Ms Erika Sundell
University of Gothenburg, Sweden
Adrenergic control of blood pressure and vascular resistance in rainbow trout *(Oncorhynchus mykiss)* acclimating to seawater
A12.73

Mr Nicholas C. Wu
The University of Queensland, Australia
Role of the cloaca in salt and water balance in estuarine crocodiles
A12.75

Miss Richelle M Acreman
University of the Fraser Valley, Canada
Thyroid Histology of the Pacific Tree Frog, *Pseudacris regilla*
A12.76

Dr Josefin Sundin
Uppsala University, Sweden
Scientific misconduct - Advice on being a whistleblower
A12.77

Irene Steves
Ben-Gurion University of the Negev, Israel
Trapdoors apparently modulate the physical environment of spider burrows
A12.78

Vinicius A Armelin
Federal University of São Carlos (UFSCar), Brazil
Baroreflex function in fish with unimodal and bimodal respiration
A12.79

Dr Mariacristina Filice
University of Calabria, Italy
Long-term cardiac influences of AngII in the eel A. anguilla: role of the NOS/NO system
A12.80

Mariana T Teixeira
São Paulo State University (UNESP), Brazil
Baroreceptor location in fish with unimodal and bimodal respiration
A12.81

Dr Holly A Shiels
Holly Shiels, United Kingdom
Ventricular Ca_2^+ cycling and contractility in hypoxia-acclimated Alaska blackfish *(Dallia pectoralis)*
A12.82

Dr Joacim Näslund
University of South Bohemia in České Budějovice, Czech Republic
Dragonfly larvae as models for investigating behaviour-physiology syndromes in changing environments
A12.83

Dr Fredrik Jutfelt
Norwegian University of Science and Technology, Norway
Two-current choice flumes for testing avoidance and preference in aquatic animals
A12.84

Amy Courtney
University College Dublin, Ireland
Analysis of the effect of body growth on the structural plasticity in the epithelial nerve net of the ctenophore Pleurobrachia pileus
A12.85

Dr Jenny Landin
University of Gothenburg Dept of Pharmacology, Sweden
An oxytocin receptor antagonist inhibits social preference in zebrafish
A12.86

Mr Davide Thambithurai
University of Glasgow, United Kingdom
Shoal size influences capture vulnerability in a simulated passive gear fishery
A12.87

Kim T Hellgren
University of Manchester, United Kingdom
Prenatal hypoxia causes sex-dependent alterations to mitochondrial function in the adult heart
A12.88

Marie Vagner
UMR LIENSs, France
Cardiac plasticity of the golden grey mullet in response to lowered omega 3 level in food source in a warming seawater context
A12.89

Maja Fuhlendorff
Zoophysiology Department of Bioscience Aarhus University, Denmark
Endothelin-1 induces both systemic and pulmonary vasoconstriction in Python regius
A12.90

Giovanna Mottola
University of Turku, Finland
Effects of acute heat stress on hsp70 mRNA and protein expression in adult zebrafish *(Danio rerio)*.
A12.91

Miss Lauren E James
Aarhus University, Denmark
Anaesthesia in ball pythons: location matters when injecting alfaxalone
A12.92

Ms Tatiana S. Filatova
Lomonosov Moscow State University, Russia
The effects of natural seasonal acclimatization and artificial acclimation on cardiac electrical activity in European sculpin *(Myoxocephalus scorpius)*
A12.93

Miss Mar D Yerli Pineda
University of Manchester, United Kingdom
The effect of temperature on metabolic traits and within-school positional preference of European minnows *(Phoxinus phoxinus)*
A12.94

Dr Shaun S Killen
University of Glasgow, United Kingdom
The effect metabolic rate on choice of group size in a Gregarious Coral Reef fish
A12.95

Dr Jonathan A. W. Stecyk
University of Alaska Anchorage, United States
Na^+/K^+-ATPase activity in the anoxic turtle (Trachemys scripta) brain at different acclimation temperature
A12.96

Mrs Svetlana N. Pekkoeva
Institute of Biology of Karelian Research Centre of the Russian Academy of Sciences, Russia
Effect of ecological factors on growth and development of the daubed shanny Leptoclinus maculatus postlarvae from Kongsfjord and Billefjord (Svalbard)
A12.97

Mr Victor H S Braga
São Paulo State University (UNESP), Brazil
Lateralization of parasympathetic cardiac control in a teleost fish *(Colossoma macropomum)*
A12.98

Dr Christine S Couturier
University of Alaska Anchorage, United States
Trachemys scripta HCN isoforms display differential affinity for the secondary messenger cAMP
A12.100

Dr Joanna J Miest
University of Greenwich, United Kingdom
Changes in chemical profile predict infection status in marine fish
A12.101

Tiffany A Armstrong
University of Glasgow, United Kingdom
Effect of oil exposure on social behaviour
A12.102

Dr Svetlana A. Murzina
Institute of Biology Karelian Research Centre of the Russian Academy of Sciences, Russia
Lipid and fatty acids changes associated with the smoltification of salmonid fishes
A12.103

Prof John I Spicer
Plymouth University, United Kingdom
Testing the oxygen hypothesis of polar gigantism: cue the amphipods
A12.104

Dr Lilian Franco-Belussi
Sao Paulo State University, Brazil
Functions of internal melanin coloration in anurans and fishes
A12.105

Keira Turner
School of Medicine University College Dublin, Ireland
Localisation and characterisation of dorsal horn spinal neurons in the Wistar rat and their response to Sacral Neuromodulation
A12.106

Mr Mouad Mkamel
Faculty of sciences Ben msik Hassan II university, Morocco
The automatic device of scorpion venom milking VES4
A12.107

Miss Ida Hedén
University of Gothenburg Department of Biological and Environmental Sciences, Sweden
Physiological mechanisms behind intestinal L-lysine absorption in Rainbow trout (Oncorhynchus mykiss)
A12.108

A13 OPEN ANIMAL BIOLOGY

Amélie Crespel
University of Glasgow, United Kingdom
Transgenerational epigenetic response of zebrafish *(Danio rerio)* exposed to PAHs: molecular, maternal and paternal effects
A13.15

Miss Birgitte Jensen
Department of Bioscience Aarhus University, Denmark
Reactivity studies of ferric haemoglobin reveal a potential role in hydrogen sulfide (H2S) signalling
A13.16

Dr Albin Gräns
Department of Animal Environment and Health Swedish University of Agricultural Sciences, Sweden
Can bio-loggers be used to assess stress and welfare of fish in aquaculture?
A13.17

Miss Anna S M Persson
University of Glasgow, United Kingdom
Do fish prefer to associate with conspecifics with similar metabolic rates?
A13.18

Mr Alec IM Simmonds
University of Sydney, Australia
Histone (de)acetylation modulates exercise-induced skeletal muscle plasticity in zebrafish *(Danio rerio)*
A13.23

Ms Małgorzata M Lipowska
Institute of Environmental Sciences Jagiellonian University, Poland
Stress response and recovery in bank voles from a multidirectional selection experiment
A13.24

Dr Valsa S Peter
University of Kerala, India
Differential response of ion transporters to nitric oxide in stressed fish brain
A13.25

Enrique Caviedes-Vidal
Universidad Nacional de San Luis-Consejo Nacional de Ciencia y Técnica, Argentina
Time course and mechanism of phenotypic flexibility of intestinal enzymes during ontogeny in House sparrow
A13.26

POSTER SESSION 2: WEDNESDAY 5 JULY

Miss Tessa A Van Walsum
University of Roehampton, United Kingdom
Sleep development and sound recognition in king penguins
A13.27

PC2

PLANT CELL CYCLE AND THE CYTOSKELETON

Dr Emily Sornay
Cardiff University, United Kingdom
Genome-wide chromatin mapping with size resolution reveals a dynamic sub-nucleosomal landscape in Arabidopsis
PC2.15

Luis Sanz
Spanish-Portuguese Agricultural Research Institute (CIALE), Spain
Mitochondrial-dependent NO homeostasis drives root development
PC2.16

PC4

LIFE AT THE INTERFACE: PLANT MEMBRANE–PROTEIN DYNAMICS INTERACTIONS DURING ENVIRONMENTAL CHANGE

Miss Britt M.E. Merlaen
Universiteit Gent, Belgium
Effect of GA, SA and JA on PIP Aquaporin Expression in Fragaria x ananassa Leaves
PC4.3

Miss Maiju A Laurila
University of Dundee, United Kingdom
Discovering de-S-acylating enzymes in Arabidopsis
PC4.4

Mrs Pratiwi Prananingrum
TU Kaiserslautern, Germany
The characterization of the plastidic homolog of the Vacuolar Glucose Transporter1 (VGT1)
PC4.5

PC7

PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT – TOWARDS SUSTAINABLE ENERGY PRODUCTION

Dainius Jakubauskas
Niels Bohr Institute University of Copenhagen, Denmark
Applying small-angle scattering methods to investigate thylakoid membranes
PC7.4

Miss Sonja V Bergner
Max Planck Institute of Molecular Plant Physiology, Germany
Photosynthetic complex adjustments in tobacco PSI mutants
PC7.5

Miss Mariela P. Aguilera
University of Manchester, United Kingdom
Role of Plastid Terninal Oxidase (PTOX) in heat temperature
PC7.6

Peter T Braun
California State University San Bernardino, United States
Physiological integration and inducible CAM as possible drought tolerance mechanisms in the clonal invasive plant, Carpobrotus edulis(Ice Plant)
PC7.7

Monika Suchoszek
Max Planck Institute of Molecular Plant Physiology, Germany
Inducible RNAi repression of galactolipid biosynthesis in tobacco reveals a strict coordination of thylakoid membrane constituent accumulation
PC7.8

Dr Nuran Çiçek
Hacettepe University, Turkey
Assessing drought tolerance of Sunflower inbred lines by PSII photochemical efficiency
PC7.9

Otilia Cheregi
University of Gothenburg, Sweden
Year round biodiesel production in microalgae on the Swedish west coast
PC7.33

PC10

GENERAL CELL AND PLANT BIOLOGY

Jamie Males
University of Cambridge, United Kingdom
Leaf physiology and the distribution of CAM tank-epiphyte bromeliads at multiple spatial scales
PC10.7

Dr Agnieszka Kreitschitz
Zoological Institute: Functional Morphology and Biomechanics Kiel University, Germany
Sticky net-work: the spatial structure of the seed mucilage envelope
PC10.8

Dr Federica Brunoni
Umeå Plant Science Centre Dept of Plant Physiology Umeå University, Sweden
Is an auxin signaling module regulating the root system architecture in Picea abies (Norway spruce) seedlings?
PC10.9

Beata I. Czajkowska
University of Manchester, United Kingdom
Comparative molecular analysis of genes underlying domestication traits in barley
PC10.10

Hana Sevcikova
Department of Experimental Plant Biology Faculty of Sciences Charles University, Czech Republic
Potato tuberization - untangling the relationships within multicomponent signalization network
PC10.11

Ms Daniela Weber
Swedish University of Agricultural Sciences, Sweden
Plant resistance ecology: influence of plant resistance on biocontrol of herbivores
PC10.12

Mrs Anna K Barczak-Brzyżek
Warsaw University of Life Sciences, Poland
High light induces miRNAs expression changes in photosynthetic tissues and roots
PC10.13

Dr Mi Jeong Jeong
Rural Development Administration (RDA), Korea (South)
Sound wave affects the expression of ethylene biosynthesis-related genes through control of transcription factors RIN and HB-1
PC10.14

Mr Anirban Jyoti Debnath
Bose Institute, India
Optimization of regeneration and transformation in Sesamum indicum L. cultivar JK-1 for studying tissue specific promoters
PC10.35

Mr Navdeep Singh Jamwal
CSK Himachal Pradesh Agricultural University, India
Molecular cytogenetic identification of a novel triticale-wheat 2R substitution line with two translocations (1BL.1RS and 6BS.6RL) possessing resistance to yellow rust and drought tolerance
PC10.36

Dr Toshio Shibuya
Osaka Prefecture University, Japan
Effects of interaction between red to far-red ratio of light and atmospheric humidity on extension growth of Cucumis sativus seedlings
PC10.37

Dr Soo-In Sohn
National Institute of Agricultural Sciences, Korea (South)
The crossability and characteristics analysis of F1 hybrid between Transgenic Brassica napus and B. rapa
PC10.38

Miss Noriane M. L. Simon
University of Bristol, United Kingdom
How do circadian rhythms increase plant water use efficiency?
PC10.39

Miss Rena T Schott
State Museum of Natural History Stuttgart, Germany
Distribution of ice during subzero conditions within the horsetail Equisetum hyemale L.
PC10.40

Charles G. Ologidi
Niger Delta University, Nigeria
Genomic survey of ATP-binding cassette (ABC) transporters in Sorghum bicolor
PC10.41

Mr SangHoon Ma
Chonnam National University, Korea (South)
Accumulation and subcellular localization of foreign protein using transit peptides in transgenic plant tobacco
PC10.42

Miss Mi Jin Jeon
Chonnam National University, Korea (South)
Isolation and Functional analysis of the cytochrome P450-27(SlP450-27) gene from Tomato
PC10.43

Ms Seo Young Park
Chonnam National University, Korea (South)
Functional study of NADPH-Cytochrome P450 reductase 2 (CaCPR2) gene isolated from Hot pepper
PC10.44

Mr Hyun Min Kim
Chonnam National University, Korea (South)
Functional study of CYP707A family genes (ABA 8'-hydroxylases) from Hot Pepper(Capsicum annuum)
PC10.45

Dr Anna Kołton
University of Agriculture in Krakow, Poland
Root hypoxia induced changes in leaves of tomato and cucumber seedlings
PC10.46

Dr Ah Young Kim
Chonnam National University, Korea (South)
Increasing of transformation efficiency to the phosphinothricin using several expression systems in Solanaceae
PC10.47

Miss Elizabeth Pinneh
University of Durham, United Kingdom
Screening for inhibitors of inositol phosphorylceramide synthase: A new herbicide mode of action?
PC10.48

Miss Maura Di Martino
University of Warwick, United Kingdom
Combinatorial transcriptional regulation of the plant defence response
PC10.49

Mrs Nathalie Dauphinais
Agriculture and Agri-Food Canada, Canada
Worldwide genetic comparison of potato cyst nematodes using genotyping by sequencing
PC10.50

Mr Mahdi Yousofinia
Tarbiat Modares University, Iran
Investigation of arsenite uptake kinetic in rice (Oryza sativa) cultivars
PC10.51

Dr Mohammad Irfan
National Institute of Plant Genome Research, India
Overexpression of β-D-N-acetylhexosaminidase gene in tomato results in higher flowering and fruit set with reduction in fruit size
PC10.52

POSTER SESSION 2: WEDNESDAY 5 JULY

Dr Nathalie Beaudoin
University of Sherbrooke, Canada
Potato somaclones regenerated from cells adapted to thaxtomin A are more resistant to common scab
PC10.53

Mr Tolga Yalcinkaya
EGE University, Turkey
Signal roles of reactive carbonyl species (RCS) during induction of RCS detoxification enzymes and antioxidant defence system in Arabidopsis thaliana and Eutrema parvulum under salinity
PC10.54

Ms Anna-Lovisa Nynäs
Swedish University of Agricultural Sciences Department of Plant Breeding, Sweden
Proteins from green leaf waste in food structures - a study focused on leaf protein based freeze-dried foams
PC10.55

Iulia Gherman
University of Warwick, United Kingdom
Re-wiring plant regulatory networks to enhance stress tolerance
PC10.56

Mr Alejandro Domínguez-López
Colegio de Postgraduados, Mexico
Nicosulfuron resistance in Ixophorus unisetus (J. PRESL) schltdl. by point mutation in the ALS (Acetolactate synthase) gene
PC10.57

Dr Víctor Conde-Martínez
Colegio de Postgraduados, Mexico
Solute accumulation and protein expression in maize (Zea mays L.) PLANTS under water deficit
PC10.58

Estefany S Sánchez Martínez
Centro de Investigación y de Estudios Avanzados del IPN Langebio, Mexico
Functional characterization of Zea mays xipotl family genes
PC10.59

Mr Ross Dennis
CSIRO ANU, Australia
The time is ripe: sugar and hormone signals in wheat grain germination
PC10.60

Miss Helena Herrmann
The University of Manchester, United Kingdom
Temperature sensing and signalling in Arabidopsis metabolism
PC10.61

Mr Ademola Aina
University of California Davis, United States
Next Generation sequencing of Africa yam bean accessions
PC10.62

Dr Rodrigo A Gutiérrez
University of California Davis, United States
Phylogenomics and systems biology approaches reveals conserved adaptive processes in Atacama Desert plants
PC10.63

C1

PALAEOGENOMICS AND ANCIENT DNA

Fredrik Olajos
Umeå University, Sweden
Timing species colonizations using DNA in lake sediment
C1.16

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**C1 - PALAEOGENOMICS AND ANCIENT DNA**	**A5 - OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS** SPONSORED BY: LOLIGO SYSTEMS	**A9 - INTEGRATIVE MODELLING APPROACHES TO THE FISH CARDIO-RESPIRATORY SYSTEM UNDER ENVIRONMENTAL CHANGE - IS IT TIME FOR A FISH PHYSIOME INITIATIVE?**	**A10 - BIOLOGICAL ADHESIVES: FROM BIOLOGY TO BIOMIMETICS**
08:30	REGISTRATION/EXHIBITION			
CHAIR	CHAIR: DR RICHARD TENNANT	CHAIR: MARTIN TREGUERRES	CHAIR: MICHAEL BERENBRINK	CHAIR: JANEK VON BYERN
08:55			**SESSION INTRODUCTION** MICHAEL BERENBRINK	**SESSION WELCOME** JANEK VON BYERN
09:00	**Prof Ludovic Orlando** ***Natural History Museum of Denmark, Denmark*** Novel bioinformatic techniques in palaeogenomics C1.11	**Dr Frank Melzner** ***GEOMAR, Germany*** Extreme extracellular ammonium accumulation in tropical diapausing copepods: transcriptomic and metabolomic insights into tolerance mechanisms A5.19	**Prof Peter J Hunter** ***University of Auckland, New Zealand*** Multiscale systems biology and the Physiome Project A9.1	**Dr Andrew M. Smith** ***Ithaca College, United States*** Double networks and slug glue: Integrating mechanics and sequence data to characterize an unusually tough hydrogel adhesive A10.1
09:30		**Michael P Wilkie** ***Wilfrid Laurier University, Canada*** Relationship between oxidative stress, ammonia tolerance and brain swelling in the goldfish *(Carassius auratus)* A5.20		**Dr Jonas O Wolff** ***Department of Biological Sciences Macquarie University Sydney, Australia*** Innate 'printing' of glue affects robustness of spider silk thread anchorages and helps to explain the evolution of aerial webs A10.2
09:40	**Dr Laura Parducci** ***Ecology and Genetics Uppsala University, Sweden*** Shotgun ancient DNA analysis in Late glacial lake sediments from Sweden C1.12		**Hans Malte** ***Aarhus University, Denmark*** Modelling gas exchange in the fish gill A9.2	
09:45		**Mr Junho Eom** ***University of British Columbia, Canada*** Is ammonia excretion affected by gill ventilation in rainbow trout *Oncorhynchus mykiss*? A5.21		**Dr W. Jon. P Barnes** ***University of Glasgow, United Kingdom*** Investigating the relative roles of adduction and adhesion in tree frog climbing A10.3
09:55	**Peter D Heintzman** ***Tromsø University Museum UiT - The Arctic University of Norway, Norway*** Determining the timing of extinction for a late-surviving island mammoth population using sedimentary ancient DNA C1.13		**Prof Tobias Wang** ***Aarhus University, Denmark*** Modelling maximal oxygen consumption rates in fishes A9.3	
10:00		**Dr Alex M Zimmer** ***University of Ottawa, Canada*** The effects of rhcgb knockout on Na+ uptake by larval zebrafish (Danio rerio) A5.22		**Prof Päivi Laaksonen** ***Aalto University, Finland*** Modular resilin fusion proteins - from molecules to materials A10.4
10:10			**Dr Warren W Burggren** ***University of North Texas, United States*** Heart performance determination in larval fish using heart shape and volume modeling A9.4	
10:15		**Dr Pung-Pung Hwang** ***Institute of Cellular and Organismic Biology Academia Sinica, Taiwan*** Prolactin is a regulator controlling acid secretion function in zebrafish A5.23		**Mr Candido Diaz** ***University of Akron, United States*** Sticking to the dirtiest surfaces: the moth-specialist spider *Cyrtarachne Akirai* uses prey scales to increase adhesion of aggregate silk glue A10.5
10:25	REFRESHMENT BREAK/EXHIBITION			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
A4 - CHALLENGES IN THE ANTHROPOCENE: ACID-BASE/ION REGULATION AND CALCIFICATION IN AQUATIC INVERTEBRATES	**A7 - NATURALLY OCCURRING EXPERIMENTS: USING LIFE HISTORY EVENTS TO UNDERSTAND LOCOMOTOR PERFORMANCE** SPONSORED BY: SABLE SYSTEMS INTERNATIONAL AND THE COMPANY OF BIOLOGISTS	**P2 - CARNIVOROUS PLANTS - PHYSIOLOGY, ECOLOGY AND EVOLUTION**	**PC7 - PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE ENERGY PRODUCTION** SPONSORED BY: ISPR AND GoCAS	**PC4 - LIFE AT THE INTERFACE: PLANT MEMBRANE-PROTEIN DYNAMICS/ INTERACTIONS DURING ENVIRONMENTAL CHANGE** SPONSORED BY: FRONTIERS
REGISTRATION/EXHIBITION				
CHAIR: DIRK WEIHRAUCH	CHAIR: NATALIE HOLT	CHAIR: SIMON POPPINGA	**PHOTOSYNTHESIS 3: ALTERNATIVE ELECTRON TRANSFER PATHWAYS** CHAIR: PETER NIXON	CHAIR: WENDY PEER
Dr Meike Stumpp ***Christian-Albrechts University Kiel, Germany*** Digestion at pH 10: Eco-Devo of alkaline digestive systems in marine larvae A4.1	**Dr Marguerite A Butler** ***University of Hawai'i at Mānoa, United States*** Physical effects of reproduction on locomotion in lizards A7.1	**Dr Andreas Fleischmann** ***Botanische Staatssammlung München, Germany*** Trap diversity and evolution in carnivorous plants P2.1	**Prof Toshiharu Shikanai** ***Kyoto University, Japan*** Regulation of proton motive force by alternative electron transport PC7.20	**Prof Roger W Innes** ***Indiana University, United States*** The role of extracellular vesicles in plant-microbe interactions PC4.14
		SESSION INTRODUCTION SIMON POPPINGA		
Mr Alex R Quijada-Rodriguez ***University of Manitoba, Canada*** The imminent threat of freshwater acidification to juvenile life stages of crustaceans A4.2	**Dr Angela M Horner** ***Cal State University San Bernardino, United States*** Does musculoskeletal aging differ from disuse atrophy? Muscle contractility and isoform expression in extremely athletic aged mice A7.2	**Dr Sebastian Kruppert** ***Ruhr-Universität Bochum, Germany*** Facing the green threat: morphological reactions of daphniids on bladderwort presence P2.2	**Peter J Gollan** ***University of Turku, Finland*** The interaction between photosynthetic electron transport and chloroplast electron consumption; protection and signalling for plant health and productivity PC7.21	**Dr Piers A Hemsley** ***University of Dundee, United Kingdom*** S-acylation in plants? greasing membrane protein function? PC4.15
Dr Yung-Che Tseng ***Marine Research Station Institute of Cellular and Organismic Biology Academia Sinica, Taiwan*** Comparative studies of ammonia regulation in gills of cephalopods A4.3	**Ms Crystal M Reynaga** ***University of California Irvine, United States*** Hindlimb mechanics and response of jumping from compliant substrates in tree frogs A7.3	**Mr Martin Horstmann** ***Ruhr-University Bochum, Germany*** Facing the green threat: Unravelling the complex morphological reactions of daphniids to Utricularia P2.3	**Caterina Gerotto** ***Dept. of Biochemistry Molecular Plant Biology University of Turku, Finland*** Evolution of photosynthesis regulation: lessons from the moss Physcomitrella patens PC7.22	
Mr Garett J P Allen ***University of Manitoba, Canada*** Venting off stress: Whole animal and branchial acid-base regulatory capacity of the Shallow Hydrothermal Vent Crab, Xenograpsus testudinatus A4.4	**Dr Lewis G Halsey** ***University of Roehampton, United Kingdom*** Practise makes perfect: optimisation of locomotor performance in 'arboreal' parkour athletes illuminates the evolutionary ecology of great ape anatomy A7.4	**Prof Ulrike K Muller** ***California State University Fresno, United States*** Bladderwort prey capture: lessons from the smallest suction feeders P2.4	**Dr Xinyou Yin** ***Wageningen University, Netherlands*** The energy budget in C_4 photosynthesis: Quantitative insights from an analytical model of cell-type specific linear and cyclic electron transport PC7.23	**Dr Ana R Fox** ***Institut des Sciences de la Vie Université catholique de Louvain, Belgium*** Subcellular regulation of PIP2;5 plasma membrane aquaporin by lipid environments and interacting proteins PC4.16
REFRESHMENT BREAK/EXHIBITION				

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
CHAIR				CHAIR: ANDREW SMITH
10:45				
10:55	**Dr Mikkel Winther Pedersen** ***Department of Zoology University of Cambridge, United Kingdom*** Paleo-environment reconstruction using ancient DNA from lake sediments C1.14	**Dr Rachael M Heuer** ***University of Miami-RSMAS, United States*** Compensation for ocean acidification relevant CO2 exposure causes broad downstream consequences in marine fish A5.24	**Dr Paolo Domenici** ***CNR-IAMC, Italy*** Fish physiology, behaviour and ecology under environmental challenges A9.5	**Peter Ladurner** ***Unversity of Innsbruck, Austria*** Biological adhesion of Flatworms A10.6
11:10		**Miss Tzu-Yen Liu** ***Institute of Life Science National Taiwan Normal University, Taiwan*** Responsiveness of acid-base regulators and epigenetic regulation in teleost under seawater acidification A5.25		
11:25	**Mrs Heike H. Zimmermann** ***Alfred-Wegener-Institute for Polar and Marine Research, Germany*** Vegetation dynamics at Bol'shoy Lyakhovsky Island (New Siberian Islands) since the last interglacial C1.15	**Dr Nia M Whiteley** ***Bangor University, United Kingdom*** Osmoregulation and acid-base balance in two species of marine crabs in response to elevated CO_2 and reduced salinity A5.26	**Miss Laura Cadiz** ***IFREMER, France*** Early exposure to chronic hypoxia induces short and long-term regulation of hemoglobin gene expression in European seabass (Dicentrarchus labrax) A9.6	**Mr Dennis S. Petersen** ***Zoological Department Functional Morphology and Biomechanics CAU Kiel, Germany*** Competing with barnacle cement: Microstructures that reduce permanent underwater adhesion of barnacles A10.7
11:40	MOVE TO PLENARY HALL			
11:45	**CELL BIOLOGY PLENARY LECTURE** ROOMS: K2+3 BIOSENSORS:HOW TO ACHIEVE THE ULTIMATE IN PERFORMANCE WITH THE SIMPLEST OF DEVICES ANTHONY TURNER, LINKÖPING UNIVERSITY, SWEDEN			
12:45	**MEDALS AND PRIZES**			
13:00	LUNCH/EXHIBITION			
SESSION	**A8 - CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS**	**A5 - OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS** SPONSORED BY: LOLIGO SYSTEMS	**A9 - INTEGRATIVE MODELLING APPROACHES TO THE FISH CARDIO-RESPIRATORY SYSTEM UNDER ENVIRONMENTAL CHANGE - IS IT TIME FOR A FISH PHYSIOME INITIATIVE?**	**A10 - BIOLOGICAL ADHESIVES: FROM BIOLOGY TO BIOMIMETICS**
CHAIR	CHAIR: CAROL BUCKING	CHAIR: ANDREW ESBAUGH	CHAIR: GINA GALLI	CHAIR: PATRICK FLAMMANG
13:50	**Prof Jörgen I Johnsson** ***University of Gothenburg, Sweden*** Co-existence with non-native brook trout disrupts the integration of phenotypic traits in brown trout A8.15	**Martin Grosell** ***RSMAS University of Miami, United States*** Energetic cost of intestinal ion transport pathways in marine teleosts A5.27	**Prof Tony Farrell** ***University of British Columbia, Canada*** Capacities and limits to convectional respiratory gas transport in fishes A9.7	**Dr Bo Persson** ***Forschungszentrum Jülich, Germany*** Adhesion with applications to biological systems A10.8
14:05	**Paul Craig** ***University of Waterloo, Canada*** From beyond the grave: Does the necrobiome impact metabolic performance of rainbow darters (Etheostoma caeruleum) downstream of wastewater effluent outlets? A8.13			
14:20	**Dr Stefano Marras** ***National Research Council - CNR, Italy*** The sailfish hunting strategy: the advantages of being gregarious predators A8.17	**Dr Alexander G Little** ***Rosenstiel School of Marine and Atmospheric Science, Canada*** Metabolic costs of osmoregulation using isolated tissue respirometry in the Gulf toadfish *(Opsanus beta)* A5.28		**Dr Romana Santos** ***Centro de Ciências do Mar e do Ambiente Faculdade de Ciências da Universidade de Lisboa, Portugal*** Biomimetic adhesive proteins inspired on sea urchin adhesives A10.9

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
CHAIR: MARIAN HU				CHAIR: IOANNA KOSTAKI
		Prof Aaron M Ellison ***Harvard University, United States*** Carnivorous plants are ideal model systems for experimental research P2.5		
Dr Sandra Fehsenfeld ***University of British Columbia, Canada*** It's all about balance: Acid-base regulation in marine crabs A4.5	**Dr Jesse W Young** ***Northeast Ohio Medical University, United States*** Ontogenetic determinants of escape performance in Eastern cottontail rabbits *(Sylvilagus floridanus)* A7.5		**Dr Anja Krieger** ***CEA Saclay, France*** Biochemical characterization and physiological role of the plastid terminal oxidase PTOX PC7.24	**Prof Thomas Ott** ***University of Freiburg, Germany*** Dynamics of membrane-resident cell surface receptors & partners PC4.17
Dr Philip G. D. Matthews ***University of British Columbia, Canada*** Haemolymph PCO_2 and TCO_2 in the aquatic and terrestrial life stages of aeshnid dragonflies A4.6	**Ms Mako Miyake** ***Tokai university, Japan*** Effect of Head Shape Change with Growth on the Dolphin Drafting of Bottlenose Dolphin A7.6	**Dr Anneke Prins** ***Middlesex University, United Kingdom*** The teasel (Dipsacus fullonum) as a candidate for proto-carnivory P2.6	**Prof Eevi Rintamäki** ***University of Turku, Finland*** Chloroplast thioredoxin systems in the regulation of light and carbon assimilation reactions - Prospects for improving photosynthesis PC7.25	**Dr Michaela Kopischke** ***The Sainsbury Laboratory Norwich, United Kingdom*** Stomatal immunity requires sustaining of flg22 responses through RabG3b-mediated trafficking PC4.18
MOVE TO PLENARY HALL				
CELL BIOLOGY PLENARY LECTURE ROOMS: K2+3 BIOSENSORS:HOW TO ACHIEVE THE ULTIMATE IN PERFORMANCE WITH THE SIMPLEST OF DEVICES ANTHONY TURNER, LINKÖPING UNIVERSITY, SWEDEN				
MEDALS AND PRIZES				
LUNCH/EXHIBITION				
A4 - CHALLENGES IN THE ANTHROPOCENE: ACID-BASE/ION REGULATION AND CALCIFICATION IN AQUATIC INVERTEBRATES	**A7 - NATURALLY OCCURRING EXPERIMENTS: USING LIFE HISTORY EVENTS TO UNDERSTAND LOCOMOTOR PERFORMANCE**	**P2 - CARNIVOROUS PLANTS - PHYSIOLOGY, ECOLOGY AND EVOLUTION**	**PC7 - PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE ENERGY PRODUCTION** SPONSORED BY: ISPR AND GoCAS	**PC4 - LIFE AT THE INTERFACE: PLANT MEMBRANE-PROTEIN DYNAMICS/ INTERACTIONS DURING ENVIRONMENTAL CHANGE**
CHAIR: KATI MICHALEK	CHAIR: ANGELA HORNER	CHAIR: SIMON POPPINGA	**PHOTOSYNTHESIS 4: RESPONSE TO ABIOTIC STRESS** CHAIR: CORNELIA SPETEA WIKLUND	CHAIR: INES KREUZER
Prof Lia Addadi ***Weizmann Institute of Science, Israel*** Biomineralization in the sea urchin larva: From assembly and deposition in soft tissues to formation of the crystalline skeletal material A4.7	**Dr Rudolf Schilder** ***Pennsylvania State University, United States*** Mechanisms mediating naturally occurring variation in insect flight performance A7.7	**Dr Ulrike Bauer** ***University of Bristol, United Kingdom*** Slip, trip and trap: the biomechanics of pitcher traps, and what we can learn from them P2.7	**David M. Kramer** ***Michigan State University, United States*** The triple-edged sword of the thylakoid proton motive force: Energy, photoprotection and photodamage PC7.26	**Prof John Runions** ***Oxford Brookes University, United Kingdom*** Molecular interactions at the plant cell surface continuum PC4.19

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
14:30			**Erika J Eliason** ***University of California Santa Barbara, United States*** Pros and cons of the cardiorespiratory system in sockeye salmon as a model A9.8	
14:35	**Dr Dominique Roche** ***University of Neuchâtel, Switzerland*** Conflict in mutualistic interactions maintains high escape performance in the cleaner fish Labroides dimidiatus A8.18	**Mr Andre Barany** ***University of Cádiz, Spain*** Osmoregulatory role of the gut in the sea lamprey *(Petromyzon marinus)* A5.29		**Dr Nick Aldred** ***Newcastle University, United Kingdom*** Characterising and quantifying the adhesion-related behaviours of barnacle larvae A10.10
14:45			**Mr Matthew J H Gilbert** ***Department of Zoology University of British Columbia, Canada*** Autonomic regulation facilitates acute thermal tolerance in rainbow trout: whole animal and perfused heart perspectives A9.9	
14:50	**Dr Milica Mandic** ***University of Ottawa, Canada*** Deleterious impact of HIF1? knockout on hypoxia performance in larval zebrafish (Danio rerio) A8.20	**Dr Jeroen Brijs** ***University of Gothenburg Swedish University of*** Agricultural Sciences, Sweden Do changes in gut motility represent an osmoregulatory strategy for salmonids migrating to sea? A5.30		**Dr Vincent Le Houerou** ***Institut Charles Sadron Strasbourg, France*** Technical patterning inspired from nature induces scale invariant behaviours in wetting and adhesion A10.11
15:00			**Dr Todd E Gillis** ***University of Guelph, Canada*** Temperature induced cardiac remodeling in fish A9.10	
15:05		**Erik Sandblom** ***University of Gothenburg, Sweden*** Cardiovascular consequences of osmoregulation in fish A5.31 15:05-15:20		**Mr Julian K.A. Langowski** ***Experimental Zoology Group Wageningen University Research, Netherlands*** Exploring the role of mechanical interlocking and hydrodynamic friction in tree frog attachment A10.22 15:05-15:20
15:15	REFRESHMENT BREAK/EXHIBITION			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
Dr Alexander A Venn ***Centre Scientifique de Monaco, Monaco*** Coral calcifying fluid pH is modulated by seawater carbonate chemistry not solely seawater pH A4.8	**Dr John J Lees** ***Linköping University, Sweden*** Locomotor preferences in terrestrial vertebrates: An online crowdsourcing approach to data collection A7.8	**Anna S. Westermeier** ***Plant Biomechanics Group Botanic Garden Freiburg University of Freiburg, Germany*** Kinematics, biomechanics and functional morphology of the snap-traps of Aldrovanda vesiculosa P2.8	**Dr Moualeu Ngangue Dany Pascal** ***Leibniz Universität Hannover, Germany*** Effect of growth irradiance and leaf age on photosynthetic parameters PC7.27	**Prof José A Feijó** ***University of Maryland, United States*** Glutamate Receptor-Like (GLR) channels in plants: evolution and function on Ca^{2+} homeostasis in sperm and male reproduction PC4.20
Miss Megan E Barron ***Scripps Institution of Oceanography University of California San Diego, United States*** Sodium Calcium Exchanger (NCX) in coral: a potential role in calcification A4.9	**Miss Maeve O'Neill** ***Trinity College Dublin, Ireland*** Biomechanics of insect injury repair A7.9		**Dr Mikko Tikkanen** ***Molecular Plant Biology Department of Biochemistry University of Turku, Finland*** Comparative analysis of mutant plants impaired in the main regulatory mechanisms of photosynthetic light reactions - from biophysical measurements to molecular mechanisms PC7.28	
Eric J Armstrong ***University of California Berkeley, United States*** Symbiont photosynthesis in giant clams is strongly promoted by Host H^+-Transport A4.10	**Prof Anders Hedenström** ***Lund University, Sweden*** Adaptive airspeed adjustment and compensation for wind drift in the common swift: differences between day and night A7.10	**Dr Simon Poppinga** ***University of Freiburg, Germany*** How the Venus flytrap snaps revisited P2.9	**Dr Anna Kulik** ***Institute of Biochemistry and Biophysics Polish Academy of Sciences, Poland*** The role SnRK2 kinases in regulation of plant response to long term salt stress PC7.29	**Mark K Jenness** ***University of Maryland, United States*** ABCB transporters and their function on the plasma membrane: excluders, effluxers and channels? PC4.21
REFRESHMENT BREAK/EXHIBITION				

ROOM	K1 FIRST FLOOR	K2+3 FIRST FLOOR	H1 FIRST FLOOR	H2 FIRST FLOOR
SESSION	**A8 - CONSTRAINTS ON ADAPTATION AND PERFORMANCE: FROM INDIVIDUALS TO POPULATIONS**	**A5 - OSMOREGULATION AND ACID-BASE BALANCE IN AQUATIC ORGANISMS**	**A9 - INTEGRATIVE MODELLING APPROACHES TO THE FISH CARDIO-RESPIRATORY SYSTEM UNDER ENVIRONMENTAL CHANGE - IS IT TIME FOR A FISH PHYSIOME INITIATIVE?**	**A10 - BIOLOGICAL ADHESIVES: FROM BIOLOGY TO BIOMIMETICS**
CHAIR	CHAIR: SHAUN KILLEN	CHAIR: KEVIN BRIX		CHAIR: LARS HEPPE
15:45	**Daniel Sanchez-Lacalle** ***University of the West of Scotland, United Kingdom*** Effects of Carotenoids on the Cost of Reproduction to a Live-Bearing Fish A8.21	**Miss Natalie M D'Silva** ***McMaster University, Canada*** 5-Hydroxytryptamine stimulates transepithelial ion transport across the gastric caecum of mosquito larvae: effects of rearing in fresh water versus brackish water A5.32	**Rasmus Ern** ***University of Texas at Austin, United States*** Cardiorespiratory thermal tolerance in marine ectotherms and the effect of hypoxia on their upper thermal niche boundaries A9.11	**Prof Alfred J Crosby** ***University of Massachusetts Amherst, United States*** Scaling Principles for Understanding and Exploiting Bio-Inspired Adhesion A10.13
16:00	**Carol Bucking** ***York University, Canada*** The environment induces complex and dynamic alterations of the intestine and other tissues during digestion A8.14	**Miss Marina Giacomin** ***The University of British Columbia, Canada*** Exercise, temperature, and the osmorespiratory compromise in the dogfish shark Squalus acanthias suckleyi A5.33	**Phillip R. Morrison** ***University of British Columbia, Canada*** The structural and functional factors determining VO_2max in rainbow trout (Oncorhynchus mykiss) and yellowfin tuna (Thunnus albacares) A9.12	
16:15	**Dr Malin Rosengren** ***University of Gothenburg, Sweden*** Defense is costly - Immune stimulation increases the metabolism of fish A8.23	**Prof Jehan-Herve Lignot** ***University of Montpellier, France*** Are Mediterranean three-spined sticklebacks *(Gasterosteus aculeatus L.)* of the Camargue wetlands with contrasted salinity conditions morphologically and physiologically different? A5.34	**Prof Stuart Egginton** ***University of Leeds, United Kingdom*** Microvascular adaptability to environmental challenges and the modelling of peripheral oxygen delivery to skeletal muscle A9.13	**Dr Agnieszka Kreitschitz** ***Zoological Institute: Functional Morphology and Biomechanics Kiel University, Germany*** Bioadhesion of mucilaginous seeds A10.14
16:30	**Dr Fotini Kokou** ***Ben Gurion University of the Negev, Israel*** Tilapia gut microbiome in response to temperature and cold adaptation A8.24	**Alyssa Weinrauch** ***University of Alberta, Canada*** Characterization of intestinal oleic acid uptake strategies in the Pacific hagfish *(Eptatretus stoutii)* A5.35	**Prof Anthony (Tony) J R Hickey** ***Auckland University, New Zealand*** The role of mitochondria in hyperthermic death A9.14	**Prof Seda Kizilel** ***Seda Kizilel, Turkey*** Bioadhesive PEG-Chitosan nanoparticles as gene delivery vehicle A10.15
16:45	**Mr Mads Andersen** ***Aarhus University, Denmark*** Chill susceptibility of the insect central nervous system: A comparative study of temperate and tropical Drosophila A8.25	**Prof William S Marshall** ***St Francis Xavier University, Canada*** Euryhaline mummichogs exposed to seawater and hypersaline conditions augment the cation-permeable paracellular pathway by differentially regulating claudin 10 isoforms A5.36	**Michael Berenbrink** ***University of Liverpool, United Kingdom*** Integrative modelling approaches to the fish cardio-respiratory system under environmental change - is it time for a fish physiome initiative? A9.15	**Dr Petra Ditsche** ***University of Alaska Anchorage, United States*** Learning from Northern clingfish: New bio-inspired suction cups attach to rough surfaces A10.16
17:00	END OF CONFERENCE			
18:30 - 01:00	**CONFERENCE DINNER** VENUE: KAJSKJUL 8			

G1 FIRST FLOOR	G2 FIRST FLOOR	G3 FIRST FLOOR	J1 FIRST FLOOR	J2 FIRST FLOOR
A4 - CHALLENGES IN THE ANTHROPOCENE: ACID-BASE/ION REGULATION AND CALCIFICATION IN AQUATIC INVERTEBRATES	**A7 - NATURALLY OCCURRING EXPERIMENTS: USING LIFE HISTORY EVENTS TO UNDERSTAND LOCOMOTOR PERFORMANCE**	**P2 - CARNIVOROUS PLANTS - PHYSIOLOGY, ECOLOGY AND EVOLUTION**	**PC7 - PHOTOSYNTHETIC RESPONSE TO A CHANGING ENVIRONMENT - TOWARDS SUSTAINABLE ENERGY PRODUCTION**	
CHAIR: JAMES MORRIS				
Dr Susan Fitzer ***University of Glasgow, United Kingdom*** Mechanisms of biomineralisation in the mussel: what we know and what we still need to find out A4.11	**Jennifer R. A. Taylor** ***Scripps Institution of Oceanography UC San Diego, United States*** Mobility during moulting in Crustacea A7.11	**Dr Dagmara Sirova** ***University of South Bohemia Faculty of Science Department of Ecosystem Biology, Czech Republic*** No guts, no glory - Plant-microbe interactions in the traps of the rootless carnivorous Utricularia P2.10	**Prof Christiane Funk** ***Umeå University, Sweden*** Deg proteases - survival at abiotic stress PC7.30	
Dr Melody S Clark ***British Antarctic Survey, United Kingdom*** Building shells in a changing world A4.12	**Dr Natalie C Holt** ***Northern Arizona University, United States*** An ageing model to explore the role of contractile and connective tissue interactions in skeletal muscle performance A7.12	**Meeting summary and discussion**	**Miss Ge Gao** ***King Abdullah University of Science and Technology, Saudi Arabia*** How to deal with heat-protective mechanisms of heat acclimation in Arabidopsis revealed through transcriptome analysis PC7.31	
Kati Michalek ***Scottish Association For Marine Science, United Kingdom*** CACHE-Calcium in a changing environment A4.13	**Discussion**			
Miss Kati Michalek ***Scottish Association For Marine Science, United Kingdom*** Scottish Blue Mussels - Evidence for change down the cultivation rope A4.14			**Dr Marjorie R. Lundgren** ***University of Sheffield, United Kingdom*** Despite phylogenetic effects, C_3-C_4 lineages bridge the ecological gap to C_4 photosynthesis PC7.33	
END OF CONFERENCE				
CONFERENCE DINNER VENUE: KAJSKJUL 8				

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3–6 JULY 2018
FIRENZA FIERA CONGRESS
AND EXHIBITION CENTRE

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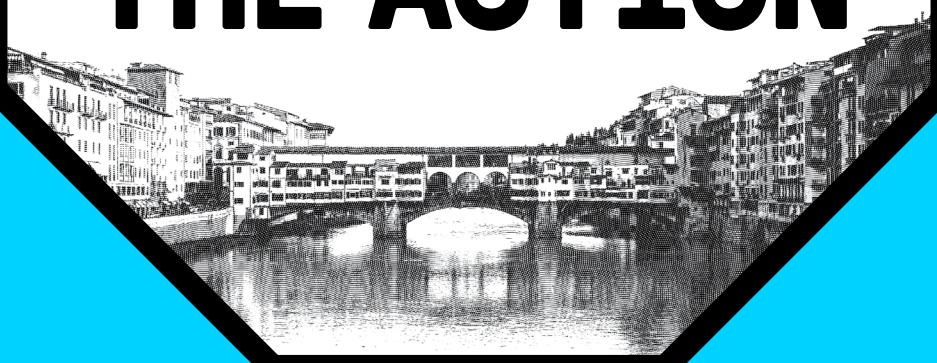

SESSION TOPICS WILL INCLUDE:

SCIENCE ACROSS BOUNDARIES – ANIMAL, PLANT AND CELL BIOLOGY

METABOLIC DIVERSITY
(ANIMAL, PLANT AND CELL BIOLOGY)

STRESS: FROM CELLULAR MECHANISMS TO ORGANISMAL RESPONSES AND CONSERVATION
(ANIMAL AND CELL BIOLOGY)

- PUMPING IONS AS A RESPONSE TO STRESS FROM AQUATIC HABITAT TRANSITIONS: CELLULAR AND MOLECULAR MECHANISMS RELATED TO EVOLUTIONARY CHANGES
- THE ROLE OF THE MITOCHONDRIA IN ENVIRONMENTAL ADAPTATION AND DISEASE
- ADVANCES IN NON-INVASIVE MONITORING OF STRESS IN THE FIELD AND LABORATORY: APPLICATIONS FOR CONSERVATION

GENERAL CELL AND PLANT BIOLOGY
(CELL AND PLANT BIOLOGY)

ANIMAL BIOLOGY

BIOMECHANICS
- BIOMECHANICS AND CLIMATE CHANGE
- OPEN BIOMECHANICS

PROXIMATE AND ULTIMATE DRIVERS OF BEHAVIOUR
- GENERALITY OF THE 'PACE-OF-LIFE SYNDROME'
- INTRASPECIFIC VARIATION IN RESPONSES TO STRESS: WHY INDIVIDUALS MATTER?
- THE ROLE OF INDIVIDUAL VARIATION IN THE BEHAVIOUR OF ANIMAL GROUPS

THERMOBIOLOGY
- CARDIO-RESPIRATORY ADAPTATIONS TO ENVIRONMENTAL CHANGE
- MITOCHONDRIA IN CHANGING CLIMATES: BIOSENSORS AND MEDIATORS OF ANIMAL RESILIENCE
- OCEAN WARMING AND ACIDIFICATION: WHAT UNDERLYING MECHANISMS CAN REVEAL ABOUT IMPACTS OF MULTIPLE STRESSORS

OTHER ANIMAL BIOLOGY SESSIONS
- OPEN ANIMAL BIOLOGY

PLANT BIOLOGY

- CLIMATE CHANGE IMPACT ON URBAN AND NATURAL FORESTS
- ENHANCING PLANT PHOTOSYNTHESIS WITH BIOPHYSICAL CO_2 CONCENTRATING MECHANISMS
- EPIGENETIC MEMORY AND ENVIRONMENTAL ADAPTATION
- FROM GENOME TO GENOMES
- MORPHOGENESIS IN NON-FLOWERING PLANTS
- PLANT BIOTECHNOLOGY FOR HEALTH AND NUTRITION
- PLANT TEMPERATURE PERCEPTION AND RESPONSES
- SHAPING ROOT ARCHITECTURE - FROM NUTRIENT SENSING AND TROPISMS TO SYSTEMIC SIGNALS AND DECISION MAKING

CELL BIOLOGY

- FUNCTIONAL ORGANISATION OF THE NUCLEAR PERIPHERY
- GREEN MICROBES
- SEQUENCING FROM LAB TO FIELD AND THE POST GENOMIC ERA
- SYSTEMS ANALYSES OF MULTICELLULARITY COMPLEXITY
- QUANTITATIVE SYNTHETIC BIOLOGY

SEB+

- BIOLOGY EDUCATION AND CLASS SIZE: CHALLENGES, OPPORTUNITIES AND STRATEGIES FOR SCALING TEACHING
- CAREER DEVELOPMENT WORKSHOPS FOR YOUNG RESEARCHERS
- DIVERSITY DINNER
- EMBRACING YOUR ETHICAL REVIEW BODY - A WIN-WIN SITUATION
- MEET THE ACADEMICS