The 9th International Congress of Comparative Physiology and Biochemistry

FROM MOLECULES TO MACROPHYSIOLOGY

23-28 August 2015

ICCPB 2015

KRAKÓW - POLAND

Program

>>KRK>2B Kraków to business

KRAKÓW krakow.pl

www.iccpb2015.confer.uj.edu.pl

JAGIELLONIAN UNIVERSITY IN KRAKOW

ACCURACY. EXPERTISE. EXTREME SUPPORT. SABLE SYSTEMS.

Agility and stability. Wherever your research takes you. One thing is certain - if you are measuring metabolic or behavioral trade-offs and costs, our expertise is your survival advantage.

By Scientists, for Scientists.

Tools for Understanding, Collaboration and Discovery.

SABLE SYSTEMS INTERNATIONAL

SABLE SYSTEMS EUROPE GmbH

WWW.SABLESYS.COM

The 9th International Congress of Comparative Physiology and Biochemistry

FROM MOLECULES TO MACROPHYSIOLOGY

23-28 August 2015

SPONSORS & EXHIBITORS

SABLE SYSTEMS INTERNATIONAL

The Company of Biologists

The Journal of Experimental Biology
jeb.biologists.org

Physiological and Biochemical Zoology

ELSEVIER
JOURNAL OF THERMAL BIOLOGY

OXFORD UNIVERSITY PRESS

Journal of Neuroendocrinology

DSI™

ANIMA LAB
animal facility and laboratory equipment • animal research models

ibidi®
cells in focus

Loligo® Systems

SEB
Society for Experimental Biology

KRAKÓW
krakow.pl

KRK2B
Krakow to business

Climate Change Responses

JAGIELLONIAN UNIVERSITY IN KRAKOW

Ministry of Science and Higher Education
Republic of Poland

WELCOME

It is our pleasure to welcome you to Kraków, Poland for the 2015 International Congress of Comparative Physiology and Biochemistry (ICCPB2015). Congress meetings have been successfully organized every 4 years since 1983. ICCPB2015 in Kraków is already our 9th meeting. We are happy to inform you that you are amongst over 350 fellow biologists who have contributed to building the program of the Congress under the headline 'From Molecules to Macrophysiology'.

We hope that the atmosphere of the Congress in Kraków will be especially stimulating. Kraków with its medieval architecture offers endless opportunities for inspiration and unconventional thinking. It is exactly here, at the Jagiellonian University in Kraków, that Nicolaus Copernicus started his scientific education which finally led him to his revolutionary ideas that challenged old models of the universe.

We wish you an inspiring and pleasant stay in Kraków,

Paweł Koteja, Ph.D.
Institute of Environmental Sciences, Jagiellonian University, Kraków, Poland
Chair of the ICCPB2015 Local Organizing Committee

Marek Konarzewski, Ph.D.
Institute of Biology, University of Białystok, Białystok, Poland
Chair of the ICCPB2015 Local Program Committee

CONTENTS

General Information	7
Organising Committees	10
Conference Schedule	11
Poster Information	14
Invited Plenary Speakers	15
Awards	18
Exhibitors Profiles	20
Symposia Program	24
Posters	95
Practical Information and City Map	115

DTP & Print: EURO GRAPHIC
www.egn.pl

Registration Desk

The Registration Desk is located at the entrance lobby of the Auditorium Maximum UJ, phone number: +48 12 663 41 44.

The Registration Desk will be open:	Sunday, August 23, 2015:	16.00 - 19.00
	Monday, August 24, 2015:	08.00 - 18.30
	Tuesday, August 25, 2015:	08.00 - 18.30
	Wednesday, August 26, 2015:	08.00 - 16.30
	Thursday, August 27, 2015:	08.00 - 18.30
	Friday, August 28, 2015:	08.00 - 15.30

Apart from matters of the Congress that are dealt with by the Registration Desk, you can also obtain information about the city of Cracow there, ask any questions, seek assistance, etc.

Internet Access

Wireless internet access is available in the entire Auditorium Maximum UJ building.

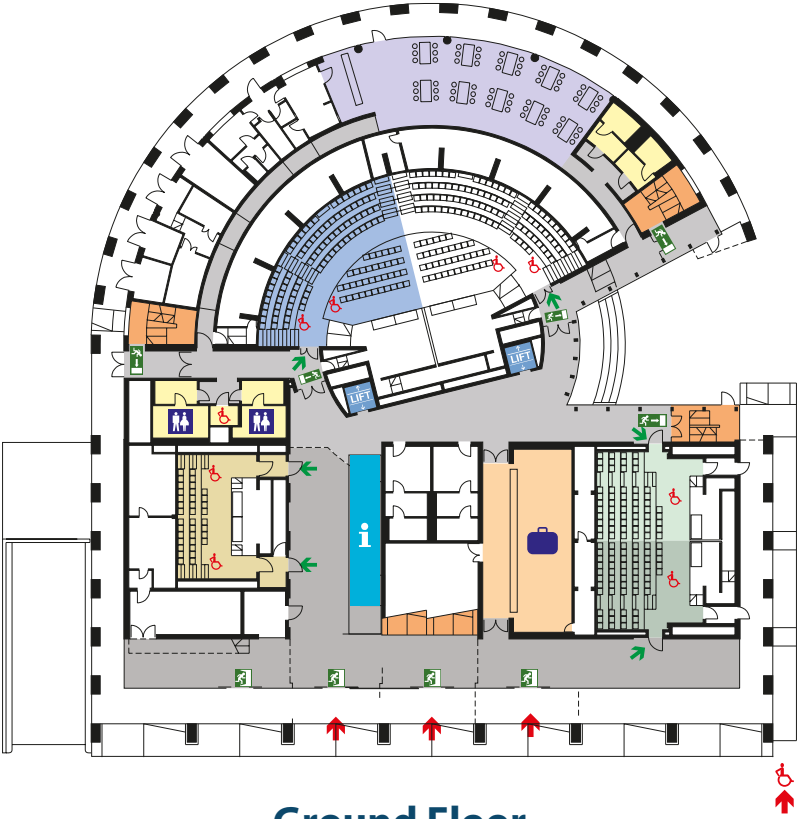
Login: **maximum**

Password: **iccpb2015**

Emergency

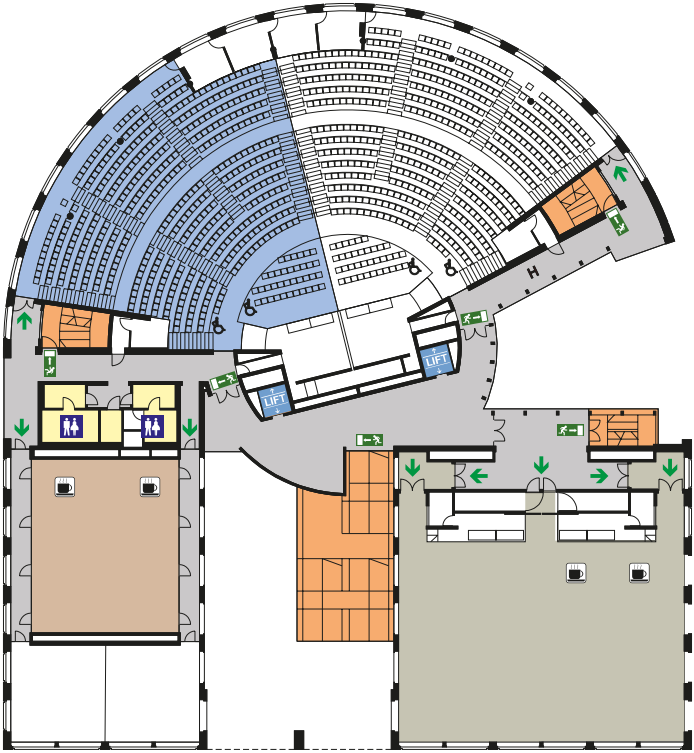
Dial 112 for general emergency (medical, police, fire) and dial 999 to call paramedics - free of charge from any phone. This will connect you to an operator who will put you through to the police, ambulance service, or fire brigade. The Organizing Committee or its agents, will not be responsible for any medical expenses, loss or accidents incurred during the conference. Delegates are strongly advised to arrange their own personal insurance to cover medical and other expenses including accident or loss. Having an EHIC card is recommended for citizens from EU countries.

AUDITORIUM MAXIMUM UJ



Ground Floor

- Large Hall A
- Medium Hall A
- Medium Hall B
- Small Hall
- Registration Desk
- Cafeteria
- Entrance / Exit
- Entrance to Room
- Emergency Exit
- Lift
- Cloakroom
- Toilets



Floor 2

- Large Hall A
- Seminar Room (posters)
- Exhibition Room (posters and exhibitors)
- Entrance to Room
- Lift
- Toilets
- Catering

International Association of Comparative Physiology and Biochemistry

Dr. Peter Frappell *(Australia & New Zealand Society for CPB)*
Dr. Berry Pinshow *(American Physiological Society, Comparative and Evolutionary Physiology Section)*
Dr. Greg Goss *(Canadian Society of Zoologists)*
Dr. Thorsten Burmester *(Deutsche Zoologische Gesellschaft)*
Dr. Reinhard Dallinger *(European Society for CPB)*
Dr. Yoshitaka Fukada *(Japanese Society for CPB)*
Dr. Eduardo Bicudo *(South American Society for CPB)*
Dr. Marc Zelter *(Societe de Physiologie)*
Dr. Craig Franklin *(Society for Experimental Biology)*
Dr. Theodore Garland, Jr. *(Society for Integrative & Comparative Biology, Division of CPB)*
Dr. Pawel Koteja *(Polish Physiological Society)*

Local Program Committee

Chairperson

Dr. Marek Konarzewski *(University of Białystok)*

Members:

Dr. Paweł Brzęk *(University of Białystok)*
Dr. Magdalena Chadzińska *(Jagiellonian University)*
Dr. Marcin Czarnołęski *(Jagiellonian University)*
Dr. Andrzej Gębczyński *(University of Białystok)*
Dr. Grażyna Jasieńska *(Jagiellonian University)*
Dr. Jolanta Jaworek *(Jagiellonian University)*
Dr. Małgorzata Jefimow *(Nicolaus Copernicus University)*
Dr. Paweł Koteja *(Jagiellonian University)*
Dr. Paulina Kramarz *(Jagiellonian University)*
Dr. Elżbieta Król *(University of Aberdeen)*
Dr. Ewa Kulczykowska *(Institute of Oceanology PAS)*
Dr. Marian Lewandowski *(Jagiellonian University)*
Dr. Elżbieta Pyza *(Jagiellonian University)*
Dr. Paulina Szafrańska *(Mammal Research University, PAS)*
Dr. Jan Taylor *(University of Białystok)*
Dr. Michał S. Wojciechowski *(Nicolaus Copernicus University)*

ORGANISING COMMITTEES

Honorary Patronage

Professor Wojciech Nowak
Rector of the Jagiellonian University

Professor Lena Kolarska-Bobińska
Minister of Science and Higher Education, Republic of Poland

Local Organizing Committee

Chairperson

Dr. Paweł Koteja *(Jagiellonian University)*
pawel.koteja@uj.edu.pl

V-Chairs

Dr. Marek Konarzewski *(University of Białystok)*
marekk@uwb.edu.pl

Dr. Paulina Kramarz *(Jagiellonian University)*
paulina.kramarz@uj.edu.pl

Members

Dr. Marcin Czarnołęski *(Jagiellonian University)*
marcin.czarnoleski@uj.edu.pl

Dr. Hajnalka Szentgyörgyi *(Agricultural University in Kraków)*
hajnalka.szentgyorgyi@ogr.ur.krakow.pl

Dr. Marian Lewandowski *(Jagiellonian University)*
marian.lewandowski@uj.edu.pl

Dr. Edyta Sadowska *(Jagiellonian University)*
edyta.sadowska@uj.edu.pl

Secretary

Ms. Natalia Derus *(Jagiellonian University)*
natalia.derus@uj.edu.pl

Logistics and Administration

Jagiellonian University Conferences unit
www.konferencje.uj.edu.pl

CONFERENCE SCHEDULE

From:	Sunday August 23, 2015	Monday August 24, 2015	Tuesday August 25, 2015	Wednesday August 26, 2015
08:00	INSTALLATION OF EXHIBITIONS	REGISTRATION	REGISTRATION	REGISTRATION
08:30				
09:00		**Plenary lecture: Michael Angilletta**	**Plenary lecture: Theodore Garland**	**Plenary lecture: Elżbieta Pyza**
09:30				
10:00		Coffee break	Coffee break	Coffee break
10:30		**Parallel symposia: 7,12, 20, 25**	**Parallel symposia: 1, 2, 8, 16**	**Parallel symposia: 9, 11, 23**
11:00				
11:30				
12:00				
12:30				
13:00		Lunch break	Lunch break	Lunch break
13:30				
14:00		OPENING CEREMONY	Poster session	Poster session
14:30		**KEYNOTE lecture: Kevin Gaston**		
15:00				
15:30		Coffee break	Coffee break	Coffee break
16:00	REGISTRATION	**Parallel symposia: 4, 6, 19, 21**	**Parallel symposia: 5, 20 cont., 22, 29, 30**	**Plenary lecture: John Speakman**
16:30				
17:00				Transfer to conference dinner
17:30				
18:00	**WELCOME PARTY** Location: Auditorium Maximum UJ			**CONFERENCE DINNER** Location: Folwark Zalesie
18:30				
19:00				
19:30				
20:00				
To 23:30				

CONFERENCE SCHEDULE

Thursday August 27, 2015	Friday August 28, 2015		Saturday - Sunday August 29-30, 2015
REGISTRATION	REGISTRATION		
Plenary lecture: Marek Konarzewski	**Parallel symposia: 3, 27, 28**		**Accompanying workshop** Course on respirometric methods organized by Sable Systems Location: Campus III of the University
Coffee break	Coffee break		
Parallel symposia: 10, 13, 17, 24	**3 cont., 27 cont.**		
Lunch break	Poster session	**Accompanying workshop** Course on respirometric methods organized by Sable Systems Location: Campus III of the University	
Poster session	**CLOSING CEREMONY**		
Coffee break			
Parallel symposia: 10 cont., 18, 26			

POSTER INFORMATION

Printing poster in Kraków:

contact: Dorota Kwiecień, dorota@egn.pl, mobile: +48 502 113 616

All posters will be exposed throughout the entire Congress.

We encourage cross-disciplinary interaction and want every delegate to have the opportunity to look at as many posters as feasible and interact with their authors.

Please hang your poster on Monday, August 24, and remove on Friday, August 28, at 14:00.

Posters are located according to the numbers in *POSTERS* section.

Poster sessions

Poster presenters are requested to stand alongside their posters during their session, as follows:

Tuesday, August 25, 14:00 – 15:30
Symposia: 1, 2, 4, 5, 6, 7, 8, 12, 16, 19, 20, 21, 22, 25, 29

Wednesday, August 26, 14:00 – 15:30
Symposia: 9, 11, 23, 27, 30

Thursday, August 27, 14:00 – 15:30
Symposia: 3, 10, 13, 17, 18, 24, 26, 27, 28

One minute oral presentations of posters

Presenters of posters in symposia 3, 11, 18, 19, 20, 22 are invited to give a one minute, one slide presentation about their posters. The slide should summarize the key points of your poster. This is your chance to increase exposure of your work, so please keep the message clear and simple, saving details for discussion by your poster. The session will be strictly chaired – the one slide rule will be strictly enforced!

Tuesday, August 25, 14:00
Symposia: 19 (Medium Hall B), 20 (Medium Hall A) and 22 (Large Hall)

Wednesday, August 26, 14:00
Symposia: 11 (Medium Hall A)

Thursday, August 27, 14:00
Symposia: 3 (Medium Hall A) and 18 (Medium Hall B)

Dr. Kevin Gaston

Professor of Biodiversity & Conservation and the Founding Director of the Environment & Sustainability Institute at the University of Exeter.

Kevin Gaston is an ardent proponent of studying the implications of physiological variation over large spatial and temporal scales and one of the founders of both macroecology and macrophysiology. He has authored over 450 papers and is an ISI Web of Knowledge Highly Cited Researcher. He has been a Leverhulme Research Fellow, recipient of a Royal Society-Wolfson Research Merit Award (2006-11), and in 2011 was elected to Academia Europaea.

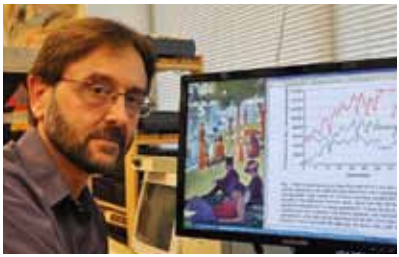
As an invited speaker, Kevin will talk about macrophysiology, which investigates variation in physiological traits over large geographical and temporal scales, and it studies ecological implications of this variation. Macrophysiology strives for identification of patterns and understanding their origin. In doing so it attempts to address pressing global issues such as climate change, habitat destruction, invasive species, overexploitation and pollution.

Dr. John R. Speakman

Professor of Zoology in the School of Biological Sciences, University of Aberdeen and a '1000 Talents' professor in the Institute of Genetics and Developmental Biology, Chinese Academy of Sciences in Beijing.

John Speakman did his PhD at the University of Stirling, Scotland. He was given the special expert status by the Chinese government, the highest honorary status for a foreign national in China. He was awarded several international prizes including the Zoological Society of London scientific medal, the Royal Society of Edinburgh/Saltire Society Scottish Science Medal, the Kwarazmi International festival Guest of Honor, the Chinese Academy of Sciences Bing Zhi Forum International Professorship, the CAS-Novo-Nordisk Foundation 'Great Wall' professorship. John Speakman was elected the Fellow of the Royal Society of Edinburgh and the Fellow of the Academy of Medical Sciences. He was also elected to the European Academy of Sciences (Academia europaea). John Speakman studies the causes and consequences of inter-individual variation in energy expenditure, especially the consequences of variation in energy demands for fat storage and the linkage between energy demands and ageing. His work provided a background to understanding the physiological basis of animal and human responses to energy imbalance including obesity and diabetes. He is a recognised international authority in the use of stable isotope methodologies to study energy expenditure (in particular the doubly-labelled water method). He has published over 400 peer reviewed scientific papers, including twice on the cover of Nature. He is on the editorial boards of Science and Biology Letters and several other journals and was a director on the board of the Company of biologists between 2005 and 2011.

INVITED PLENARY SPEAKERS



Dr. Theodore Garland, Jr.

Professor of Biology at the Department of Biology, University of California, Riverside, Editor in Chief of the journal Physiological and Biochemical Zoology.

Ted Garland did his PhD at the University of California, Irvine. His main research interests concern the evolution of complex behavioral and physiological adaptations, especially related to locomotor performance of terrestrial vertebrates. He has become a renowned proponent of two major approaches in modern evolutionary physiology: quantitative genetics combined with experimental evolution, and phylogenetically informed comparative analyses. The former approach has led him to develop a unique study system – mice selectively bred for increased voluntary exercise on wheels. The experiment started in 1993 and has so far resulted in more than 120 research papers. His co-edited book, Experimental Evolution (2009), is a benchmark in the field. Methods and statistical software developed by Ted to consider phylogenetic perspectives in data analysis are now popular tools in a wide range of research areas. He has published almost 260 papers that have been cited a total of nearly 23,000 times. As an invited speaker, Ted will talk about his two approaches as complementary tools for resolving questions in comparative, ecological, and evolutionary physiology.

Dr. Michael Angilletta, Jr.

Professor and the Associate Director of Undergraduate Programs in the School of Life Sciences at Arizona State University.

Mike Angilletta studies the impacts of temperature on organisms and their consequences for ecological and evolutionary processes. His research on thermal biology has generated more than 70 scientific papers, but he is best known for his award-winning book, Thermal Adaptation. Mike has a passion for teaching biology at the introductory level, combining a love for thinking broadly with a flair for telling funny stories. He was recently voted ASU's Funniest Teacher, an honor that he cherishes more than any academic achievement.

As an invited speaker, Mike will talk about that ways that physiologists can contribute to the emerging discipline of macrosystems ecology, a computationally intensive approach to scaling from organismal processes to regional patterns. His talk will focus on theory and experiments that address the impacts of climate change on the distributions of species.

Dr. Elżbieta Pyza

Professor of Cell Biology and Neurobiology, Head of the Department of Cell Biology and Imaging, Institute of Zoology, and Scanning Electron Microscopy of the Faculty of Biology and Earth Sciences, Jagiellonian University, Kraków, Poland.

Elżbieta Pyza studies circadian neuroplasticity - a new type plasticity in the nervous system. She received the Canadian NSERC and Polish Academy of Sciences Awards and a scholarship of the Howard Hughes Medical Institute. She was also awarded with the President of Poland Silver Cross for scientific achievements. She is a corresponding member of the Polish Academy of Arts and Sciences and the Chairwoman of the Commission on Embryology and Morphology of the Academy.

Elżbieta Pyza was first, in collaboration with Dr. Ian Meinertzhagen from Dalhousie University, Halifax, Canada, to detect cyclic oscillations in synaptic contacts and morphology of neurons in the visual system of Drosophila melanogaster and other fly species. This phenomenon is called circadian neuroplasticity and recently it was also observed in mice. Now she and her collaborators are studying the regulation of circadian neuroplasticity by circadian clocks and mechanisms of this process.

As an invited speaker, Elżbieta will talk about circadian rhythms in the visual system of Drosophila and in the somatosensory cortex of mice.

Dr. Marek Konarzewski

Professor of Biology at the Institute of Biology, University of Białystok, Poland and the Corresponding Member of Polish Academy of Sciences.

Marek Konarzewski pursued his PhD and D.Sc. degrees at the Polish Academy of Sciences Institute of Ecology and then returned to the University of Białystok, after postdoctoral work in Dr. Jared Diamond's laboratory at the University of California, Los Angeles.

Marek's research interests interface evolutionary ecology, eco-physiology and quantitative genetics of vertebrates. He uses both laboratory and natural settings to study physiological traits (mostly related to metabolism) from molecular to whole-animal levels. He is a member of Editorial Board of Physiological and Biochemical Zoology and serves as an Associate Editor of Functional Ecology.

As an invited speaker, Marek will address implications of the cell size for the key organismal traits - body size and metabolic rates and their links to major molecular traits - genome size and pathways such as mTOR. His presentation will be co-authored by Dr. Jan Kozłowski, Professor of Biology at the Institute of Environmental Sciences, Jagiellonian University.

Student Fee-Waiver Awards

sponsored by

Physiological and Biochemical Zoology

The PBZ Awards were given to:

Emily Cornelius – *University of Wisconsin-Madison, USA:* oral presentation O.20.9 (page 54)

Olga Fedoruk – *Ternopil National Pedagogical University, Ukraine:* poster P.5.1 (page 98)

Olga Kushniryk – *Yuriy Fedkovych Chernivtsi National University, Ukraine:* poster P.27.1 (page 110)

Nastashya Wall – *McMaster University, Canada:* poster P.20.2 (page 105)

Young Scientist Awards

sponsored by

SABLE SYSTEMS INTERNATIONAL

The Journal of Experimental Biology
jeb.biologists.org

ELSEVIER

JOURNAL OF THERMAL BIOLOGY

for outstanding oral presentations of early career researchers

Poster Awards

sponsored by
The International Association of Comparative Physiology and Biochemistry
and the ICCPB Local Organizing Committee

for outstanding poster presentations of early career researchers

Rules of the competitions:
http://www.iccpb2015.confer.uj.edu.pl/financial_support

SAVE THE DATE!

SEB Brighton 2016

4th – 7th July 2016

See you there!

SEB
Society for Experimental Biology

WWW.SEBIOLOGY.ORG

Sable Systems

Progress in science is driven by scientists. But even the best scientists can be limited by low resolution tools. Made by Scientists, for Scientists, Sable Systems eliminates the disconnect between scientists and the people who develop their instruments. We merge authoritative expertise in metabolic physiology and biophysics with an inventive spark to create precision tools that you can use with confidence.

Sable Systems is the world's most trusted provider of tools and expertise for research in the metabolic sciences. From comparative studies to model animals, microbes to human room calorimetry, we can maximize your productive research!

www.sablesys.com

Loligo® Systems

Founded in 2002, Loligo® Systems is a privately owned spin-off company from the University of Copenhagen and Aalborg University in Denmark.

Based on a background in science and in cooperation with leading universities around the world, Loligo® Systems develop new innovative products for aquatic biology, animal physiology, behavioural research and teaching.

We provide animal chambers, flumes, sensors, instruments and software for automated oxygen consumption measurements and equipment for video-based tracking and analysis of animal behaviour.

Our goal is global leadership in equipment for physiological, behavioural and kinematic measurements in fish and other aquatic breathers.

www.loligosystems.com

ibidi – cells in focus

ibidi develops, produces, and distributes innovative labware products, instruments, and reagents for live cell analysis and cell-based assays specifically for high end microscopy. An extensive line of cell-culture biochips—µ-Slides, µ-Dishes, and µ-Plates—offers solutions for immunofluorescence and basic cell culture, plus complex assays, such as angiogenesis, chemotaxis, wound healing, shear stress, and flow.

The instrument line includes stage top incubators, a unique perfusion system that provides continuous flow for the simulation of blood vessels, and a new system for monitoring, measuring, and controlling the O2 concentration in biological samples.

Finally, ibidi's newest innovation, Fuse-It reagents, allow for the fast and efficient transport of peptides and proteins into cells.

www.ibidi.com

AnimaLab

Since 2004 AnimaLab is the leading supplier in the field of biomedical research, equipment, animal facilities and laboratories for Poland, Czech Republic and Slovakia.

We offer a comprehensive service for scientific institutions, pharmaceutical and biotech companies. We supply research laboratory animal models, animal housing equipment, and wide portfolio of research equipment for behavioural, metabolic, inhalation and physiology studies.

Our services contain conducting surveillance of animal health in accordance with the guidelines Felasa, rederivation and IVF projects, behavioural and oncology research, designing animal facilities. We offer certified laboratory animals transportation according to all veterinary guidelines.

www.animalab.pl

Data Sciences International (DSI)

DSI is a pioneering biomedical research company focused on preclinical systems physiology and pharmacology. The recognized global leader in physiologic monitoring, DSI offers telemetry, instrumentation, software and services that facilitate accelerated, well-informed, drug therapy and development decisions. DSI serves many industries including: Pharmaceuticals, Academia, Contract Research Organizations, Biological and Chemical defense, the Medical Device Industry, Government, and Biotechnology companies. We offer solutions that are tailored specifically to meet the unique research needs of our customers.

www.datasci.com

Journal of Experimental Biology

Journal of Experimental Biology (JEB) is the leading journal in comparative animal physiology. The journal focuses on the form and function of living organisms at all levels of biological organisation – from the molecular and subcellular to the integrated whole animal. Authors and readers reflect a broad interdisciplinary group of scientists who study molecular, cellular and organismal physiology in an evolutionary and environmental context.

JEB is published by The Company of Biologists, a not for profit publishing organisation dedicated to supporting and inspiring the biological community through scientific journals, meetings and grants.

jeb.biologists.org
www.biologists.com

Conservation Physiology

conphys.oxfordjournals.org

Editor in Chief: Steven Cooke, Carleton University, Canada

Launched in 2013, *Conservation Physiology* is an exciting born-digital Open Access journal.

The journal is published on behalf of the Society for Experimental Biology and is edited by a prestigious team of experts who helped to define the discipline.

Biodiversity across the globe faces a growing number of threats associated with human activities. *Conservation Physiology* publishes research on all taxa (microbes, plants and animals) focused on understanding and predicting how organisms, populations and ecosystems respond to environmental change and stressors. Physiology is considered in the broadest possible terms to include functional and mechanistic responses at all scales. We also welcome research towards developing and refining strategies to rebuild populations, restore ecosystems, inform conservation policy, and manage living resources.

SEB
Society for Experimental Biology

OXFORD
UNIVERSITY PRESS

Monday, August 24, 2015

From:				
08:00	REGISTRATION			
09:00	**Plenary lecture: Michael Angilletta**			
10:00	Coffee break			
10:30	**Symp. 20** *Large Hall* Phenotypic Flexibility of Energetics in a Seasonal World	**Symp. 12** *Medium Hall A* Molecular Level Approaches to Circadian Rhythm and Photoperiodism in Vertebrates	**Symp. 25** *Medium Hall B* Climate Change and Associated Challenges: How Fish Will Cope	**Symp. 7** *Small Hall* Chemical World Sensing: A Joining Scope of Chemical Ecology and Neuroscience
13:00	Lunch break			
14:00	OPENING CEREMONY			
14:30	**Keynote lecture: Kevin Gaston**			
15:30	Coffee break			
16:00 To 18:30	**Symp. 19** *Large Hall* From Molecular Machines to Performance and Life History of Ectotherms: Temperature, Oxygen, Cell and Body Size	**Symp. 21** *Medium Hall A* Seasonal Control of Mammalian Energy Balance	**Symp. 4** *Medium Hall B* Telomeres and Life Histories	**Symp. 6** *Small Hall* Neural Basis of Olfaction: Insight into How the Olfactory System Can Evolve

Plenary lecture: 9:00 – 10:00, Large Hall

sponsored by

Michael J. Angilletta, Jr.
(Arizona State University, USA)

From Thermal Physiology to Macrosystems Ecology: Building a Predictive Theory for Real World Problems

Coauthors: Ofir Levy (Arizona State University, USA), Lauren Buckley (University of Washington, USA), Tim Keitt (University of Texas at Austin, USA), and Michael W. Sears (Clemson University, USA)

Opening Ceremony: 14:00 – 14:30, Large Hall

Keynote Lecture: 14:30 – 15:30, Large Hall

sponsored by

Kevin Gaston
(University of Exeter, UK)

Macrophysiology - progress and prospects

7 Morning, Small Hall

Chemical World Sensing: A Joining Scope of Chemical Ecology and Neuroscience

Ryohei Kanzaki and Mamiko Ozaki

10:30 ***Mamiko Ozaki***, *Toru Maeda, Miwako Tamotsu, Satoshi Tamotsu:*
Dietary preference by food flavor: Cross-modal pathway of the gustatory and olfactory inputs [O.7.1]

10:55 ***Jean-Francois Ferveur***, *François Bousquet, Isabelle Chauvel, Justin Flaven-Pouchon, Jean-Pierre Farine:*
Dietary rescue of altered metabolism gene reveals unexpected *Drosophila* mating cues [O.7.2]

11:20 ***Shannon Olsson***:
Naturalist-inspired chemical ecology: targeting decision making in nature [O.7.3]

11:45 ***Bente Gunnveig Berg***, *Xincheng Zhao:*
Mapping behaviourally relevant odour signals from the periphery to higher order centres in the helithine moth brain [O.7.4]

12:10 ***Marianna Zhukovskaya***, *Ekaterina Novikova:*
Pheromone and non-pheromone odor cleanup from an insect antenna: the role of grooming [O.7.5]

12:35 ***Ryohei Kanzaki***:
Neural basis of pheromone orientation in the silkmoth: from genes, neural networks, and behavior to robots [O.7.6]

13:00 End of session

12 Morning, Medium Hall A

Molecular Level Approaches to Circadian Rhythm and Photoperiodism in Vertebrates

Yoshitaka Fukada and Steven Brown

10:30 ***David Whitmore**, William Letton, Ricardo Laranjeiro, Takako Tamai:*
The zebrafish circadian clock: its regulation of the cell cycle in cell culture and during embryo development [O.12.1]

11:00 ***Kazuhiro Yagita:***
Cellular differentiation and circadian clock development in mammals [O.12.2]

11:25 ***Maria Nathalia Moraes**, Nathana Mezzalira, Michael Menaker, Ali Guler, Ana Maria Castrucci:*
TRPA1 transcription is altered in the absence of TRPV1: Clock molecular machinery regulation in *Mus* musculus liver [O.12.3]

11:40 ***Yoshitaka Fukada:***
Circadian clock-regulated physiologies in mouse SCN/hippocampus and chicken pineal gland [O.12.4]

12:05 ***Steven Brown:***
Genetic and epigenetic mechanisms of circadian plasticity [O.12.5]

12:30 ***Takashi Yoshimura:***
Understanding the mechanism of vertebrate photoperiodism by comparative approach [O.12.6]

12:55 General discussion

13:00 End of session

20 Morning, Large Hall

Sponsored by the Division of Comparative Physiology and Biochemistry of the Society for Integrative and Comparative Biology

Phenotypic Flexibility of Energetics in a Seasonal World

Michał S. Wojciechowski and Małgorzata Jefimow

10:35 ***Daniel Naya:***
The effect of seasonal variation in climate on phenotypic flexibility: an assessment of the climatic variability hypothesis in different biological systems [O.20.1]

10:55 ***David Swanson:***
Mechanistic underpinnings of seasonal metabolic flexibility in birds [O.20.2]

11:15 ***Andrew McKechnie****, Matthew Noakes, Blair Wolf, Ben Smit:*
Intraspecific variation in the thermal physiology of a southern African passerine bird [O.20.3]

11:35 ***Francois Vezina****, Gonzalo Barceló:*
Testing the uncoupling of physiological maintenance costs and maximal thermogenic capacity in birds facing different thermal regimes [O.20.4]

11:55 ***Magali Petit****, Sabrina Clavijo-Baquet, Francois Vezina:*
Increasing maximal metabolic rate improves intra-winter survival in small endotherms [O.20.5]

12:15 ***Jan S. Boratyński****, Małgorzata Jefimow, Michał S. Wojciechowski:*
Flexibility of basal metabolic rate in response to short-term thermal acclimations and its within- and between-seasonal repeatability in Siberian hamster [O.20.6]

12:35 ***Michał S. Wojciechowski**, Jan S. Boratyński, Małgorzata Jefimow:*
Seasonal changes of the phenotypic flexibility of energetics in small mammals and a putative mechanism of its control [O.20.7]

12:55 End of session

25 Morning, Medium Hall B

Climate Change and Associated Challenges: How Fish Will Cope

Adalberto Luis Val and Vera Almeida-Val

10:30 ***Adalberto Luis Val***, *Daniel Barros Fagundes, Vera Maria F. de Almeida-Val:*
The lips of tambaqui: adaptation or limitation under climate change scenarios [O.25.1]

10:55 ***Gillian Renshaw***, *Julex Devaux, Anthony Hickey:*
Mitochondrial plasticity as a determinant of surviving climate change [O.25.2]

11:15 ***Roberta Klein***, *Carlos Eduardo Rosa, Elton Pinto Colares, Ricardo Robaldo, Pablo Martinez, Adalto Bianchini:*
Effects of increasing temperature on the activity of key metabolic enzymes in liver of the Antarctic fish *Notothenia coriiceps* [O.25.3]

11:35 ***Sonya Auer***, *Karine Salin, Graeme Anderson, Agata Rudolf, Neil Metcalfe:*
Greater flexibility in metabolic rate confers a growth advantage under changing food availability [O.25.4]

11:55 ***Vera Almeida-Val***, *Valeria Sobral, Adalberto Val:*
Long-term overnight hypoxia is compensated for by similar growth rates in tambaqui (*Colossoma macropomum*, Cuvier 1818) [O.25.5]

12:15 ***Gisela Lannig***, *Laura Stapp:*
Thermal sensitivity of cell metabolism of different Antarctic fish species mirrors organism temperature tolerance [O.25.6]

12:35 ***Bernd Pelster***, *Chris M. Wood, Marina Giacomin, Helen Sadauskas-Henrique, Vera Almeida-Val, Adalberto Val:* Ionoregulation in two Amazonian erythrinid teleosts: air-breathing compromises branchial ion uptake [O.25.7]

13:00 End of session

4 Afternoon, Medium Hall B

Telomeres and Life Histories
Pat Monaghan and Francois Criscuolo

16:00 ***Francois Criscuolo**, Pat Monaghan:*
Telomeres and life history, an introduction [O.4.1]

16:10 ***Steve Smith**, Franz Hölzl, Christopher Turbill, Thomas Ruf:*
Telomere dynamics in hibernating mammals: effects of prolonged hypometabolism and interbout arousals [O.4.2]

16:30 ***Emma Vitikainen**, Michelle Hares, Michael Cant, Jonathan Blount:*
Telomere dynamics and life-history allocation in a wild mammal [O.4.3]

16:50 ***Muhammad Asghar**:*
Hidden cost of infection: Chronic malaria erodes telomeres and lifespan [O.4.4]

17:10 ***Joanna Sudyka**, Edyta Podmokła, Mariusz Cichoń:*
Do infected wild passerines get shorter telomeres? [O.4.5]

17:30 ***Jose C. Noguera**, Neil B. Metcalfe, Pat Monaghan:*
Early life nutrition, telomere dynamics and life history plasticity in birds [O.4.6]

17:50 ***Franz Hoelzl**, Steve Smith, Jessica S. Cornils, Claudia Bieber, Thomas Ruf:*
Eat, celibate and elongate your telomeres: Influence of supplemental feeding on telomere dynamics in a small arboreal rodent [O.4.7]

18:10 ***Mats Olsson**, Nicky Rollings, Chris Friesen, Mathieau Giraudeau:*
Morph-specific telomere dynamics and responses to TA65 treatment in an Australian lizard [O.4.8]

18:30 End of session

6 Afternoon, Small Hall

Neural Basis of Olfaction: Insight into How the Olfactory System Can Evolve

Yoichi Seki and Hany Dweck

16:00 ***Yoichi Seki**, Hany Dweck, Jürgen Rybak, Dieter Wicher, Silke Sachse, Bill Hansson:*
Olfactory representation from the periphery to higher brain centers in *Drosophila* melanogaster [O.6.1]

16:25 ***Julie Carcaud**, Martin Giurfa, Jean-Christophe Sandoz:*
Olfactory coding in the dual olfactory pathway of the honeybee [O.6.2]

16:50 ***Xincheng Zhao**, Bente Berg:*
The antennal lobe organization and function in the related species of heliothine moths [O.6.3]

17:15 ***Zsolt Kárpáti**, Bill S. Hansson, Teun Dekker:*
Glomerular size matters in pheromone preference of the European corn borer central nervous system [O.6.4]

17:40 ***Hany Dweck**, Shimaa Ebrahim, Michael Thoma, Ahmed Mohamed, Ian Keesey, Federica Trona, Sofia Lavista-Llanos, Ales Svatos, Silke Sachse, Markus Knaden, Bill Hansson:*
Pheromones mediating copulation and attraction in *Drosophila* [O.6.5]

18:05 ***Martin Andersson**, Muhammad Binyameen, Fredrik Schlyter:*
The ecological and physiological significance of olfactory sensory neuron co-localization [O.6.6]

18:30 End of session

19 Afternoon, Large Hall

From Molecular Machines to Performance and Life History of Ectotherms: Temperature, Oxygen, Cell and Body Size

Marcin Czarnoleski and Roberto Nespolo

16:00 ***Marcin Czarnoleski**:*
Physiological performance and life history of ectotherms – a cell size perspective [O.19.1]

16:20 ***Hans Poertner**:*
Oxygen and capacity limited thermal tolerance in animals: connecting to ecology and evolution [O.19.2]

16:40 ***Wilco Verberk**:*
Struggling to balance oxygen uptake and consumption when breathing under water: implications for thermal tolerance and growth [O.19.3]

17:00 ***Edwin Price**, Tushar Sirsat, Sarah Sirsat, Gurdeep Kang, Jantana Keereetaweep, Kent Chapman, Edward Dzialowski:*
Mitochondrial function and membrane composition during temperature acclimation in alligators [O.19.4]

17:15 ***Roberto F. Nespolo**, José Luis Bartheld, Juan Diego Gaitan-Espitia, Paulina Artacho, Cristian Salgado-Luarte, Ernesto Gianoli:*
Energy expenditure and thermal adaptation in a terrestrial ectotherm: natural selection and reciprocal transplants [O.19.5]

17:35 ***Luis E. Castañeda**, Enrico Rezende, Mauro Santos:*
High temperature tolerance in *Drosophila subobscura*: geographic variation, phenotypic plasticity and global warming [O.19.6]

17:55 ***Juan Diego Gaitan Espitia**, Leonardo Bacigalupe, Marco Lardies, Levente Bodrossi, Alistair Hobaday, Roberto Nespolo:*
Local thermal adaptation or countergradient variation across geographic ranges: Is there a latitudinal compensation in ectotherms? [O.19.7]

18:10 ***Vincent Careau**, Pete Biro, Matt Gifford, Hugh Winwood-Smith, Craig White:*
Thermal reaction norms of metabolic rates, performance, and behavior: plasticity integration or modularity? [O.19.8]

18:30 End of session

21 Afternoon, Medium Hall A

Sponsored by the Journal of Neuroendocrinology

Seasonal Control of Mammalian Energy Balance Temperature, oxygen, Cell and Body Size

Annika Herwig and Martin Jastroch

16:00 ***Gerhard Heldmaier***:
Hibernation and torpor – control and plasticity of metabolic depression in mammals [O.21.1]

16:25 ***Sylvain Giroud***, *Stéphane Blanc, Thomas Ruf:*
Energetics of torpor and hibernation: mechanisms and beyond [O.21.2]

16:50 ***Fritz Geiser***, *Shannon Currie, Sara Hiebert, Martin Klingenspor, Bronwyn McAllan:*
Photoperiod, season, torpor and fat [O.21.3]

17:15 ***Perry Barrett***, *Rebecca Dumbell, Frank Scherbarth, Victoria Diedrich, Herbert Schmid, Stephan Steinlechner:*
The Somatostatin agonist pasireotide reveals a pivotal role for the pituitary in seasonal body weight change and energy metabolism [O.21.4]

17:40 ***James Turner***, *Lisa Warnecke, Stephanie Reher, Kathrin Dausmann:*
The metabolic response to season of Eurasian red squirrels (*Sciurus vulgaris*) in semi-urban habitat [O.21.5]

17:55 ***Bianca Wist***, *Janina Bethge, Kathrin Dausmann:*
Energy budgets of *Lepilemur leucopus*: Physiological adaptation to extreme seasonality [O.21.6]

18:10 ***Lida Marcela Franco Pérez***, *Carolina Contreras, Roberto Nespolo:*
Seasonal regulation of physiological, biochemical and hormonal parameters in a Neotropical marsupial, *Dromiciops gliroides* [O.21.7]

18:25 ***Abdelouafi Benmouloud**, Jean-Marie Exbrayat, Osborne Almeida, Farida Khammar, Zaina Amirat:*
Influence of gonadal hormones on adrenocortical function in the sand rat *Psammomys obesus* [O.21.8]

18:40 End of session

Tuesday, August 25, 2015

From:				
08:00	REGISTRATION			
09:00	**Plenary lecture: Theodore Garland**			
10:00	Coffee break			
10:30	**Symp. 16** *Large Hall* The Evolution of Endothermy	**Symp. 8** *Medium Hall A* Photoreception Regulating Animal Physiology and Behavior	**Symp. 2** *Medium Hall B* Insect Molecular Biology - the Postgenomic Era	**Symp. 1** *Small Hall* Ion Homeostasis and Functional Regulation in Aquatic Animals: Molecular and Integrative Studies
13:00	Lunch break			
14:00	Poster session			
15:30	Coffee break			
16:00 To 18:30	**Symp. 22** *Large Hall* Cellular Stress Tolerance, Longevity, and Nutrition	**Symp. 29 + 20 cont.** *Medium Hall A* 29: Statistical Approaches to Physiological Data Processing (to 17:40); 20 cont.: Phenotypic Flexibility of Energetics in a Seasonal World	**Symp. 30** *Medium Hall B* Open Session: Ideas and Discoveries in Comparative Physiology and Biochemistry	**Symp. 5** *Small Hall* Thyroid Hormones as Master Regulators: Comparative and Developmental Perspectives

Plenary lecture: 9:00 – 10:00, Large Hall

sponsored by

Theodore Garland, Jr.
(University of California, Riverside, USA)

Born to Run: replicated selective breeding for high levels of voluntary exercise in house mice

Poster sessions: 14:00 – 15:30

Symposia: 1, 2, 4, 5, 6, 7, 8, 12, 16, 19, 20, 21, 22, 25, 29.

Mini oral presentations: 19 (Medium Hall B), 20 (Medium Hall A) and 22 (Large Hall)

1 Morning, Small Hall

Ion Homeostasis and Functional Regulation in Aquatic Animals: Molecular and Integrative Studies

Greg Goss, Toyoji Kaneko and Pung-Pung Hwang

10:30 ***Soichi Watanabe**, Toyoji Kaneko:*
Prolactin and cortisol mediate the maintenance of the ionocytes expressing Na+, Cl- cotransporter in Mozambique tilapia: Exploring with a newly-developed gill filament incubation system [O.1.1]

10:55 ***Yung-Che Tseng**, Marian Y. Hu:*
A convergent model representing proton and ammonia transport through epithelium in cephalopods [O.1.2]

11:20 ***Chris M. Wood**:*
The osmorespiratory compromise: regulation of paracellular and transcellular permeabilities of the gills [O.1.3]

11:40 ***Li-Yih Lin**, Sian-Tai Liu, Po-Yen Chen, Jiun-Lin Horng, Pung-Pung Hwang:*
Acid-base regulation is linked to salt excretion of ionocytes in seawater-acclimated medaka (*Oxyzias latipes*) [O.1.4]

12:00 ***Weiqun Lu**, Yingying Ji, Michael Greenwood, Richard Balment:*
A study of calcium homeostasis regulation in the euryhaline flounder [O.1.5]

12:20 ***Mayu Inokuchi**, Masahiro Nakamura, Hiroshi Miyanishi, Toyoji Kaneko:*
Distributional changes in gill ionocytes in Japanese sea bass after transfer from seawater to freshwater [O.1.6]

12:40 ***Agnieszka Dymowska**, Yusuke Kumai, Raymond Kwong, Steve Perry, Greg Goss:*
ASIC4.2 is involved in Na+ uptake in zebrafish (*Danio rerio*) larvae [O.1.7]

13:00 End of session

2 Morning, Medium Hall B

Insect Molecular Biology - the Postgenomic Era
Klaus H. Hoffmann

10:30 ***Klaus Hoffmann***, *Intisar T. E. Hassanien, Laura Vannini, Franziska Wende, Mohadmed Abdel-latief:*
RNA-interference- a tool for evaluating hormonal functions in insects [O.2.1]

10:50 ***Shin Goto***:
Molecular dissection of insect seasonality using RNAi: roles of the circadian clock genes [O.2.2]

11:15 ***Kenneth Storey***:
Frontiers in cold hardiness: an "omics" world [O.2.3]

11:40 ***Martin Neuenfeldt***:
Silks from insects – from natural diversities to technical applications [O.2.4]

12:05 ***Antje Burse***, *Peter Rahfeld, Anja Strauss, Wilhelm Boland:*
Molecular mechanisms behind the evolution of a plant-derived chemical defense in the model system *Chrysomelina* leaf beetles [O.2.5]

12:30 ***Wilhelm Boland***, *Gerhard Pauls, Tobias Becker, Stephan H. von Reuss, Antje Burse, Jacques Pasteels:*
3-Nitropropionic esters of isoxazoline glycosides protect leaf beetle larvae: a new defensive concept [O.2.6]

12:55 *József Fodor,* ***Gabriella Köblös****, Zsolt Kárpáti, Béla Molnár, Tamás Dankó, Gábor Bozsik, Gábor Szőcs, Adrien Fónagy:*
Identification, transcriptional analysis and functional assays of Pheromone Biosynthesis Activating Neuropeptide (PBAN) in the European corn borer, *Ostrinia nubilalis* [O.2.7]

13:05 ***Michael Baum**, Paulina Kowalski, Susanne Dobler:*
The path of the toxin: investigating transport mechanisms of secondary host plant compounds in a leaf beetle [O.2.8]

13:15 End of session

8 Morning, Medium Hall A

Photoreception Regulating Animal Physiology and Behavior

Daisuke Kojima and Florian Raible

10:30 ***Daisuke Kojima**:*
Retinal photoreceptors for body color change in zebrafish [O.8.1]

11:00 ***Timothy Brown**:*
Colour regulates mammalian biological timing [O.8.2]

11:30 ***Akihisa Terakita**:*
Wavelength discrimination in the pineal photoreception of lower vertebrates [O.8.3]

12:00 ***Bruno Fontinha**, Ruth M. Fischer, Stephanie Bannister, Alison J. Barker, Miguel Gallach, Herwig Baier, Arndt von Haeseler, Kristin Tessmar-Raible:*
A deep brain photoreceptor involvement in innate perceptual discriminatory behaviour in medaka fish larvae [O.8.4]

12:30 *Roger Revilla-i-Domingo, Moritz Smolka, Matthias Farlik, Vinoth Veedin Rajan, Kristin Tessmar-Raible, Christoph Bock, Arndt von Haeseler, **Florian Raible**:*
Dissecting the nature of non-cephalic putative photoreceptors in the marine bristleworm *Platynereis dumerilii* [O.8.5]

13:00 End of session

16 Morning, Large Hall

The Evolution of Endothermy
Barry Lovegrove, Roberto Nespolo and Paweł Koteja

10:30 ***Roberto Nespolo***, *Derek Roff:*
Testing the aerobic capacity model using quantitative genetics in present-day species [O.16.1]

11:00 ***Julia Wyszkowska***, *Edyta T. Sadowska, Paweł Koteja:*
Relationship between selection for high aerobic metabolism and reproductive traits in bank voles *Myodes glareolus* [O.16.2]

11:20 ***Danielle Levesque***, *Andrew Alek Tuen, Barry Lovegrove:*
Basoendothermy: Schrëwdinger's legacy [O.16.3]

11:40 ***Menno Gerkema***, *Marieke Van de Loosdrecht, Vincent Van der Vinne, Roelof Hut:*
Nocturnalism in mammals and the evolution of endothermy [O.16.4]

12:00 ***Andrew Clarke***:
Hotter really is better: body temperature and the evolution of endothermy [O.16.5]

12:20 ***Roger Seymour***:
The antiquity of endothermy in archosaurs and the metabolic consequences of abandoning endothermy in the crocodilian lineage [O.16.6]

12:40 ***Barry Lovegrove***:
The Cenozoic Endotherm Pulses: the macrophysiology of mammalian endothermy [O.16.7]

13:00 End of session

5 Afternoon, Small Hall

Sponsored by the Journal of Neuroendocrinology

Thyroid Hormones as Master Regulators: Comparative and Developmental Perspectives

Edward Dzialowski

16:00 ***Alexander Little***, *Frank Seebacher:*
hyroid hormones regulate thermal acclimation in fish (*Danio rerio*) [O.5.1]

16:30 ***Tushar Sirsat***, *Sarah Goy Sirsat, Janna Crossley, Edward Dzialowski:*
Effects of thyroid hormone manipulations on growth & metabolism of american alligator hatchlings [O.5.2]

17:00 ***Claude Duchamp***, *Benjamin Rey:*
Thyroid modulation of oxidative balance in birds [O.5.3]

17:30 ***Sarah Goy Sirsat***, *Tushar Sirsat, Megan Pineda, Janna Crossley, Edward Dzialowski:*
How to build a furnace: The role of T3 in development of endothermy in altricial birds, including the red-winged blackbird (Agelaius phoeniceus) [O.5.4]

18:00 ***Frank Seebacher***, *Alexander G. Little:*
The evolution of endothermy is explained by thyroid hormone mediated responses to cold in early vertebrates [O.5.5]

18:30 End of session

20 cont. Afternoon, Medium Hall A

Sponsored by the Division of Comparative Physiology and Biochemistry of the Society for Integrative and Comparative Biology

Phenotypic Flexibility of Energetics in a Seasonal World (continued)

Michał S. Wojciechowski, David Swanson and Ulf Bauchinger

(after symposium 29)

17:45 ***Agata Rozik***, *Jowita Niedojadło, Mariusz Cichoń, Edyta T. Sadowska, Ulf Bauchinger:*
Changes in blood parameters in response to short intense exercise in zebra finches [O.20.8]

Sponsored by Physiological and Biochemical Zoology

18:00 ***Emily Cornelius***, *Lyette Regimbald, Fanny Hallot, Magali Petit, Oliver Love, François Vézina, William Karasov:*
Immune function and physiology of a wild bird faced with food unpredictability [O.20.9]

18:15 ***Nina I. Becker***, *Jorge A. Encarnação:*
Repeatability of resting metabolic rate in *Myotis daubentonii* [O.20.10]

18:30 End of session

22 Afternoon, Large Hall

Cellular Stress Tolerance, Longevity and Nutrition

Rüdiger J. Paul and Thomas Roeder

16:00 ***Ralph Menzel**:*
Endogenous functions of cytochromes P450 and stress response in the nematode *C. elegans* [O.22.1]

16:25 ***Doris Abele**, Eva Philipp:*
Age-dependent response to environmental change in the long-lived Antarctic clam *Laternula elliptica*: a bivalve model of cellular aging [O.22.2]

16:50 ***Ronald Kuehnlein**, Martina Gáliková, Peter Klepsatel, Philip Hehlert, Yanjun Yu, Iris Bickmeyer:*
Role of Adipokinetic hormone in the stress response of *Drosophila melanogaster* [O.22.3]

17:15 ***Bojan Hamer**, Dijana Pavičić Hamer, Ana Baričević, Renato Batel:*
Iron homeostasis in Mediterranean mussel *Mytilus galloprovincialis* (Lamarck, 1819) [O.22.4]

17:30 ***Oksana Stoliar**, Inna Sokolova, Halina Falfushynska, Lesya Gnatyshyna, Iryna Yurchak:*
Transplanted to the cooling pond of power plant mussels as a model organisms for the study of climate changing [O.22.5]

17:45 ***Sarah A. Winter**, Martha Mendelski, Ramona Dölling, Alex Keshet, Rüdiger J. Paul:*
The variable roles of PMK-1/SKN-1 and DAF-2/DAF-16 signaling in *Caenorhabditis elegans* in protecting against heat and heavy metal stress [O.22.6]

18:00 ***Nadine Hoffschroeer**, Eva Klumpen, Bettina Zeis, Ruediger J. Paul:*
The heat shock protein 90 (HSP90) stress response of the microcrustacean *Daphnia pulex* [O.22.7]

18:15 ***Vishwajit Chowdhury***, *Mitsuhiro Furuse:*
Acute heat-stress induces diencephalic neuropeptide Y mRNA expression and alters brain concentrations of free amino acids in chicks [O.22.8]

18:30 End of session

29 Afternoon, Medium Hall A

Statistical Approaches to Physiological Data Processing

Teresa G. Valencak and John R. Speakman

16:00 ***Daniel Promislow***, *Jessica Hoffman:*
Comparative metabolomics: mapping physiology to phylogeny [O.29.1]

16:25 ***Bernard Wone***:
Covariates, random effects, false discovery rates and beyond [O.29.2]

16:50 ***Douglas Glazier***:
Diverse body-size scaling of the pace of life complicates body-size adjusted comparisons of rates of metabolism and other biological processes [O.29.3]

17:15 ***Brian McNab***:
An analysis of variation of continuous, quantitative characters in a phylogenetic, behavioral, and environmental context [O.29.4]

17:40 End of session (Symp. 20 cont. begins)

30 Afternoon, Medium Hall B

Open Session: Ideas and Discoveries in Comparative Physiology and Biochemistry

Berry Pinshow and Harvey Lillywhite

16:00 ***Harvey Lillywhite***:
Is cooling and freezing an appropriate euthanasia method for ectothermic vertebrates? [O.30.1]

16:25 ***Berry Pinshow***, *Amanda M. Adams, J. Scott Turner, Pedro Berliner:*
Animal burrow ventilation – new ideas about ancient phenomena [O.30.2]

16:50 ***Eran Gefen***, *Stav Talal, Amir Ayali:*
Energy metabolism and hydration state affect discontinuous gas exchange cycle properties in desert locusts under combined dehydration and starvation stress [O.30.3]

17:10 ***Clare Stawski***, *Gerhard Körtner, Julia Nowack, Fritz Geiser:*
Physiological and behavioural strategies for survival of fire by small mammals [O.30.4]

17:30 ***Manette Marais***, *David Gray:*
Febrile birds die at high ambient temperatures because the magnitude of the febrile response is unregulated [O.30.5]

17:50 ***Martin Jastroch***, *Yiming Cheng, Peter Giere, Fabiana Perocchi, Susanne Keipert:*
Evolution of thermogenic adipose tissue in mammals [O.30.6]

18:10 *Kai Dang, Ya-Zhao Li, Ling-Chen Gong, Wei Xue, Hui-Ping Wang,* ***Yunfang Gao***:
Constant protein degradation protects skeletal muscles from disuse atrophy in hibernating Daurian ground squirrels [O.30.7]

18:30 End of session

Wednesday, August 26, 2015

From:			
08:00	REGISTRATION		
09:00	**Plenary lecture: Elżbieta Pyza**		
10:00	Coffee break		
10:30	**Symp. 23** *Large Hall* Links between Oxidative Stress and Life Histories	**Symp. 11** *Medium Hall A* Biological Timing System Using Circadian Clocks in Invertebrates	**Symp. 9** *Medium Hall B* Comparative Physiology of Gastrointestinal Tract and Enteric Nervous System
13:00	Lunch break		
14:00	Poster session		
15:30	Coffee break		
16:00	**Plenary lecture: John Speakman**		
17:00	Transfer to conference dinner		
18:30 To: 23:30	**CONFERENCE DINNER** **Location: Folwark Zalesie**		

Plenary lecture: 9:00 – 10:00, Large Hall

Elżbieta Pyza
(Jagiellonian University, Poland)

Circadian plasticity in the brain of insects and mammals

Poster sessions: 14:00 – 15:30

Symposia: 9, 11, 23, 27, 30, Mini oral presentations: 11 (Medium Hall A)

Plenary lecture: 16:00 – 17:00 sponsored by

John R. Speakman
(University of Aberdeen, UK; Institute of Genetics and Developmental Biology, Chinese Academy of Sciences, Beijing, People's Republic of China)

The physiological basis of life history trade-offs: is there a role for oxidative stress?

Conference dinner sponsored partly by

Coaches to Folwark Zalesie will leave between 17:00 and 17:30 from the main entrance of Auditorium Maximum. Please ensure you are ready and waiting outside the venue. Return transfers back to the conference center will be provided at staggered times after dinner, starting from 20:30 with the last coach leaving Folwark Zalesie at 23:30.

A taxi to or from the city center would take 60 minutes and cost approximately 100PLN.

9 Morning, Medium Hall B

Comparative Physiology of Gastrointestinal Tract and Enteric Nervous System

Makoto Kurokawa, Hiroshi Shimizu and Jozef Vanden Broeck

10:30 ***Aida Sanchez Bretaño***, *Ayelén Melisa Blanco, Marie-Madeleine Gueguen, Olivier Kah, Ángel Luis Alonso-Gómez, María Jesús Delgado, Esther Isorna:*
Anatomical distribution of ghrelin peptide and preproghrelin and ghrelin receptor ghs-r1a genes expression in forebrain and gastrointestinal tract of goldfish (*Carassius auratus*) [O.9.1]

10:55 ***Makoto Kurokawa***:
Comparative physiology of rhythmic movements of the gastrointestinal tract regulated by the enteric nervous system in gastropods (*Mollusca*) [O.9.2]

11:20 ***Kosuke Tanaka***, *Shin Ito:*
Neural control of the hindgut in a penaeid shrimp, *Marsupenaeus japonicus* [O.9.3]

11:45 ***Amir Ayali***:
Neuromodulation for behavior in the insect stomatogastric nervous system [O.9.4]

12:10 ***Jozef Vanden Broeck***, *Senne Dillen, Sven Zels, Ronald J. Nachman, Pieter Van Wielendaele:*
Peptides and peptide receptors controlling food intake and digestion in locusts [O.9.5]

12:35 ***Hiroshi Shimizu***:
Digestive movements in *Hydra*: Regional distribution of the capacity of esophageal reflex and peristaltic reflex movements [O.9.6]

13:00 End of session

11 Morning, Medium Hall A

Biological Timing System Using Circadian Clocks in Invertebrates
Elzbieta Pyza and Sakiko Shiga

10:30 ***Aleksandra Skawina***, *Piotr Bernatowicz, Magdalena Markowska, Maciej Winiarski, Piotr Bębas:*
Daily and seasonal patterns in serotonin levels in haemolymph and tissues of the freshwater mussels *Unio tumidus* [O.11.1]

10:55 ***Jolanta Górska-Andrzejak***, *Alicja Görlich, Elżbieta Chwastek, Elżbieta Pyza:*
Glia-related circadian modulation of neuronal circuits in the visual system of *Diptera* [O.11.2]

11:20 ***Christian Wegener***, *Franziska Ruf, Mareike Selcho:*
Timing of eclosion behaviour in *Drosophila* [O.11.3]

11:45 ***Sakiko Shiga***, *Yuta Kawasaki:*
Circabidian rhythm in the large black chafer *Holotrichia parallela* [O.11.4]

12:10 ***Anthony Zera***, *Jennifer Brisson, Neetha Nanoth Vellichirammal:*
Morph-specific daily rhythms in global gene expression and the juvenile hormone titer in the wing-polymorphic cricket, *Gryllus firmus* [O.11.5]

12:35 ***Kenji Tomioka***, *Saori Tamaki, Haruki Ueda, Wataru Yoshiga, Taiki Miki:*
An approach to the photoperiodic time-measurement mechanism in the cricket, *Modicogryllus siamensis* [O.11.6]

13:00 End of session

23 Morning, Large Hall

Links between Oxidative Stress and Life Histories

Neil B. Metcalfe and Jan R.E. Taylor

10:30 ***Caroline Isaksson**, Alan Cohen, Roberto Salguero-Gómez:*
Oxidative stress and life-history trade-offs: Is it evolutionary stable to have single physiological currencies? [O.23.1]

10:50 ***Jason Treberg**, Sheena Banh, Kathryn Kroeker, Lilian Wiens, Daniel Munro:*
The interacting consequences of ATP turnover, bioenergetics and mitochondrial ROS metabolism: Should increasing ATP demand increase mitochondrial ROS production? [O.23.2]

11:10 ***Wendy Hood**, Annelise Mowry, Andreas Kavazis:*
Mitochondrial function and life history variation in the house mouse [O.23.3]

11:30 ***Łukasz Ołdakowski**, Jan R. E. Taylor, Edyta T. Sadowska, Paweł Koteja:*
Reproduction is not costly in terms of oxidative stress [O.23.4]

11:50 ***Anna Ziomkiewicz**, Amelia Sancilio, Andrzej Galbarczyk, Magdalena Klimek, Grażyna Jasieńska, Richard Bribiescas:*
Evidence for cost of reproduction in humans: women with high lifetime reproductive effort have increased level of oxidative stress in postmenopausal period [O.23.5]

12:10 ***Benjamin Rey**, Pelisson Pierre, Marie-Claude Venner, Yann Voituron, Samuel Venner:*
To deal or not to deal with oxidative stress: a key component for the coexistence of competing species? [O.23.6]

12:30 ***Jon Blount**, Emma I. K. Vitikainen, Iain Stott, Michael A. Cant:*
Oxidative shielding and the cost of reproduction [O.23.7]

12:50	***Antoine Stier**, Quentin Schull, Vincent Viblanc, Damien Roussel, Jean-Patrice Robin, Pierre Bize, François Criscuolo:* Thermogenesis, fasting and oxidative stress: new insights from model and non-model animals [O.23.8]
13:10	Conclusions
13:15	End of session

Thursday, August 27, 2015

From:				
08:00	REGISTRATION			
09:00	**Plenary lecture: Marek Konarzewski**			
10:00	Coffee break			
10:30	**Symp. 17** *Large Hall* Interspecific Scaling of Metabolic Rate: Time for Synthesis?	**Symp. 13** *Medium Hall A* Biological Rhythms in Non-mammalian Vertebrates	**Symp. 24** *Medium Hall B* Role of Free Radicals in the Survival Machinery of Animals that Endure the Hardships of the Environment	**Symp. 10** *Small Hall* The Role of Monoamines in Modulating Behavior
13:00	Lunch break			
14:00	Poster session			
15:30	Coffee break			
16:00 To 18:30	**Symp. 18** *Large Hall* From Molecular Background to Phenotypic Variation in Metabolic Rate	**Symp. 26** *Medium Hall A* The Evolution of Innate and Acquired Immunity		**Symp. 10 cont.** *Small Hall* The Role of Monoamines in Modulating Behavior

Plenary lecture: 9:00 – 10:00, Large Hall

sponsored by

Marek Konarzewski
(University of Białystok, Poland)

Macrophysiology from the cell size perspective

Poster Session: 14:00 – 15:30

Symposia: 3, 10, 13, 17, 18, 24, 26, 27, 28
Mini oral presentations: 3 (Medium Hall A) and 18 (Medium Hall B)

10 Morning, Small Hall

The Role of Monoamines in Modulating Behavior
John Swallow, Jaime Grace and Andrew Bubak

10:30 ***Andrew Bubak**, Nathaniel Rieger, Michael Watt, Kenneth Renner, Jaime Grace, John Swallow:*
Serotonergic mediation of aggression and opponent assessment in stalk-eyed flies [O.10.1]

10:55 ***Michael Greene**, Andrew Bubak, Kenneth Renner, John Swallow:*
The self-organization of pavement ant wars: Individual decision making and brain monoamines [O.10.2]

11:20 ***Paul A. Stevenson**, Jan Rillich:*
Controlling the decision to fight or flee – the roles of octopamine and nitric oxide in cricket aggression [O.10.3]

11:45 ***Heleen Verlinden**, Swidbert Ott, Rut Vleugels, Jozef Vanden Broeck:*
Monoamine receptors and swarming behaviour in locusts [O.10.4]

12:10 ***Stefania Panaitof**, Jarod Speer, Joshua Yaeger, Kenneth Renner:*
Biparental behavior in the burying beetle, *Nicrophorus orbicollis*: a role for dopamine? [O.10.5]

12:35 ***Wolfgang Blenau**, Claudia Röser, Arnd Baumann, Bernd Walz, Otto Baumann:*
The salivary glands of Calliphora vicina as a model system for analysing the cellular actions of serotonin and crosstalk between intracellular signalling pathways [O.10.6]

13:00 End of session

13 Morning, Medium Hall A

Biological Rhythms in Non-mammalian Vertebrates

Ewa Kulczykowska and F. Javier Sánchez Vázquez

10:30 ***Weronika Rupik**:*
The circadian system in reptilian species - what do we know? [O.13.1]

10:55 ***Cristiano Bertolucci**:*
Biological clock evolution in the darkness: the cavefish model [O.13.2]

11:20 ***Jose Lopez-Olmeda**:*
Non-photic entrainment in fish [O.13.3]

11:45 ***Krystyna Skwarlo-Sonta**, Elzbieta Turkowska, Pawel Majewski:*
Cross-talk between the pineal circadian oscillator, melatonin and inflammation in the chicken exposed to the different photoperiodic conditions [O.13.4]

12:10 ***Leonardo V. M. de Assis**, Rodrigo Jeronimo, Bruno C R Ramos , Maria Nathalia Moraes, Ana Maria Castrucci:*
Ectotherm and endotherm peripheral clocks: a machinery for light and temperature reception based on opsins and TRP channels? [O.13.5]

12:35 ***Agnieszka Kleszczyńska**, Magdalena Gozdowska, Ewa Kulczykowska:*
Timezyme, arylalkylamine N-acetyltransferase: activity and coding genes expression in the three-spined stickleback [O.13.6]

12:50 End of session

17 Morning, Large Hall

Interspecific Scaling of Metabolic Rate: Time for Synthesis?

Jan Kozlowski and Marek Konarzewski

10:30 ***Roger Seymour:***
Scaling of activity metabolic rate in endothermic mammals, birds and dinosaurs [O.17.1]

10:55 ***Andrew Clarke:***
What is the role of temperature in the scaling of metabolic rate? [O.17.2]

11:20 ***Charles-A Darveau:***
Allometric scaling of active metabolic rate: biomechanical causes and cellular consequences in flying insects [O.17.3]

11:45 ***Bas Kooijman:***
The scaling of metabolism in the perspective of DEB theory [O.17.4]

12:10 ***Douglas Glazier:***
Ecological mechanisms affecting the body-mass scaling of metabolic rate: toward a synthesis [O.17.5]

12:35 ***Jan Kozłowski:***
Metabolic scaling from ecophysiological and life-history perspective [O.17.6]

13:00 End of session

24 Morning, Medium Hall B

Role of Free Radicals in the Survival Machinery of Animals that Endure the Hardships of the Environment

Marcelo Hermes-Lima

10:30 ***Kenneth Storey***:
Decoding the molecular machinery controlling metabolic rate depression [O.24.1]

10:55 ***Doris Abele***:
Understanding how marine invertebrates handle the redox stress of hypoxia and reoxygenation [O.24.2]

11:15 ***Marcelo Hermes-Lima***, *Daniel C. Moreira:*
Revisiting the concept of preparation for oxidative stress in hypoxia and post-hypoxic stress [O.24.3]

11:35 ***Eduardo Alves de Almeida***, *Juliane Silberschmidt Freitas, Lílian Nogueira:*
Temperature and hypoxia influence on oxidative stress markers of aquatic animals exposed to environmental pollutants [O.24.4]

11:55 ***Volodymyr Lushchak***:
Adaptive response to oxidative stress: from bacteria to human [O.24.5]

12:10 ***Georgina A. Rivera-Ingraham***, *Iara Rocchetta, Emilie Farcy, Ulf Bickmeyer, Doris Abele:*
Determination of free radical formation under environmental stress in aquatic invertebrates [O.24.6]

12:25 ***Daniel C. Moreira***, *Marcelo Hermes-Lima:*
Redox balance, endogenous antioxidants and metabolic adjustments during tropical diapause in the sunflower caterpillar *Chlosyne lacinia* (*Lepidoptera: Nymphalidae*) [O.24.7]

12:40	***Bettina Zeis**, Dörthe Becker, Franziska Erbe, Rüdiger Paul:* Temperature affects oxidative stress, resulting damage and its defense in *Daphnia* [O.24.8]
12:55	***Alexis Welker**, Daniel Moreira, Elida Campos, Marcelo Hermes-Lima:* Role of catalase in the redox control of hypoxic stress in tilapia and land gastropods [O.24.9]
13:10	End of session

10 Afternoon, Small Hall

cont.

The Role of Monoamines in Modulating Behavior (continued)

John Swallow, Jaime Grace and Andrew Bubak

16:00 ***Brian H. Smith**:*
Biogenic amines modulate opposite forms of learning and synaptic plasticity in the honey bee (*Apis mellifera*) [O.10.7]

16:25 ***Markus Thamm**, Ricarda Scheiner, Wolfgang Blenau, Arnd Baumann:*
Monamine receptors and honey bee behavior [O.10.8]

16:50 ***Dorothea Eisenhardt**:*
Octopamine underlies the honeybee's physiological response to hunger stress [O.10.9]

17:15 ***Svante Winberg**, Per-Ove Thörnqvist:*
Role of monoamines in modulating fish behaviour [O.10.10]

17:40 ***Benjamin Greenwood**:*
Monoamines are critical for the ability of exercise to modulate brain function and behaviour [O.10.11]

18:05 ***Ewa Prawdzik**, Edyta Teresa Sadowska, Paweł Koteja:*
The effect of dopamine and noradrenaline reuptake inhibitor on swim-induced aerobic metabolism in bank voles from a selection experiment [O.10.12]

18:30 End of session

18 Afternoon, Large Hall

From Molecular Background to Phenotypic Variation in Metabolic Rate

Paweł Brzęk, Aneta Książek and Paulina Szafrańska

16:00 ***Jan Nedergaard***, *Barbara Cannon:*
Uncoupling protein(s) and uncoupling as determinants of metabolic rates [O.18.1]

16:30 ***Agnieszka Dobrzyń***:
Lipid signaling in the control of metabolic homeostasis [O.18.2]

17:00 ***Sebastian Maciak***, *Aneta Książek, Paweł Brzęk, Elżbieta Bonda-Ostaszewska, Marcin Czarnołęski, Jan Kozłowski, Marek Konarzewski:*
The influence of cell size on the variation in metabolic rate [O.18.3]

17:15 ***Karine Salin***, *Sonya K. Auer, Agata M. Rudolf, Graeme J. Anderson, Colin Selman, Neil B. Metcalfe:*
Tissue-specific differences in mitochondrial properties underlie inter-individual variation in metabolic rate [O.18.4]

17:30 ***Teresa G. Valencak***, *Johannes Raith:*
Lactation-induced changes in mitochondrial metabolism and fatty acid composition [O.18.5]

17:45 *Mateusz Konczal, Wiesław Babik, Patrycja Orlowska-Feuer, Edyta Sadowska,* ***Paweł Koteja***:
Molecular-level response to selection in a mammalian model of behavioural and physiological adaptation [O.18.6]

18:00 ***Thorsten Burmester***, *Mariana L. M. Hoff, Nicole U. Czech-Damal, Lars Folkow, Andrej Fabrizius:*
A comparative transcriptome approach to the hypoxia tolerance of the brain of the hooded seal (*Cystophora cristata*) [O.18.7]

18:15 *Yao-Long Shi, Qing-Sheng Chi, Wei Liu,* ***De-Hua Wang****:* Environmental metabolomics reveal geographic variation in aerobic metabolism and metabolic substrates in Mongolian gerbils (*Meriones unguiculatus*) [O.18.8]

18:30 End of session

26 Afternoon, Medium Hall A

The Evolution of Innate and Acquired Immunity
Magdalena Chadzińska

16:00 ***Wieslaw Babik***, *Anna Fijarczyk:*
Constraint and adaptation in salamander immune genes [O.26.1]

16:25 ***Lidy Van Kemenade***, *Magdalena Chadzinska:*
Immune and neuroendocrine regulation of inflammation in teleost fish [O.26.2]

16:55 ***Ewa Szwejser***, *Ayako Casanova-Nakayama, Magdalena Kepka, Magdalena Maciuszek, Lidy Verburg-van Kemenade, Helmut Segner, Magdalena Chadzińska:*
Expression of estrogen receptors in/on carp leukocytes: indications for neuroendocrine-immune interaction via estrogens [O.26.3]

17:10 ***Elzbieta Kolaczkowska***, *Joanna Homa, Lukasz Pijanowski, Magdalena Chadzinska, Paul Kubes:*
Extracellular traps as a conservative mechanism of phagocyte defense towards pathogens [O.26.4]

17:35 ***Magdalena Markowska***, *Pawel Majewski, Iwona Adamska, Krystyna Skwarlo-Sonta:*
Does the local inflammation can be still defined as local? [O.26.5]

18:00 ***Iwona Wojda***, *Paulina Taszłow, Lidiia Vertyporokh:*
Galleria mellonella as an insect model to study host-pathogen interactions [O.26.6]

18:30 End of session

Friday, August 28, 2015

From:			
08:00	REGISTRATION		
09:00	**Symp. 3** *Large Hall* Early Life Experience and its Consequences for Adult Life and Future Generations	**Symp. 27** *Medium Hall B* Open Session	**Symp. 28** *Small Hall* Actin and actin binding proteins: a dynamic framework in different organisms from bacteria to human
11:30	Coffee break		
12:00	**Symp. 3 cont.**	**Symp. 27 cont.**	
12:30	Poster session		
14:00 To: 15:30	CLOSING CEREMONY		

Accompanying workshop
Course on respirometric methods organized by Sable Systems

Location: Campus III of the University

Poster Session: 12:30 – 14:00

Please remove the posters before 14:00 hours

Accompanying event: 13:30 – 18:00

Course on respirometry organized by *Sable Systems*
Location: Institute of Environmental Sciences,
III Campus of the Jagiellonian University

Closing Ceremony: 14:00 – 15:30, Large Hall

Announcing the Young Scientist Awards sponsored by

SABLE SYSTEMS INTERNATIONAL

The Journal of Experimental Biology
jeb.biologists.org

ELSEVIER
JOURNAL OF THERMAL BIOLOGY

Announcing the Poster Awards sponsored by the *International Association of Comparative Physiology and Biochemistry*

3 Morning, Large Hall

Early Life Experience and its Consequences for Adult Life and Future Generations

Ela Król and David Hazlerigg

09:00 ***Pat Monaghan**, Neil Metcalfe:*
Early life effects on later life performance: mechanisms and time scales [O.3.1]

09:30 ***Cristina Saenz De Miera**, Béatrice Bothorel, Michael Birnie, Valérie Simonneaux, David Hazlerigg:*
Maternal photoperiodic programming of reproductive development [O.3.2]

10:00 ***Susan E. Ozanne**:*
Nutrition during pregnancy: consequences for the next generation [O.3.3]

10:30 ***Jonathan Seckl**:*
Prenatal glucocorticoids and the programming of adult disease [O.3.4]

11:00 ***John Speakman**, Yanchao Xu, Dengbao Yang:*
Effects of early life exposure to high fat diet on brain development [O.3.5]

11:30 Coffee break

12:00 ***Vengamanaidu Modepalli**, Amit Kumar, Lyn A. Hinds, Julie A. Sharp, Kevin R. Nicholas, Christophe Lefevre:*
Differential expression of milk miRNA during the lactation cycle of the marsupial tammar wallaby (*Macropus eugenii*) [O.3.6]

12:30 End of session

27 Morning, Medium Hall B

Open Session
Martin Lindley

09:00 ***Stine Slotsbo***, *Mads F. Schou, Torsten N. Kristensen, Volker Loeschcke, Jesper G. Sørensen:*
Reversibility of developmental acclimation in *Drosophila melanogaster* [O.27.1]

09:20 ***Viviana Cadena***, *Kathleen Smith, John Endler, Devi Stuart-Fox:*
Phenotypic plasticity and local adaptation of colour contribute to bearded dragons' ability to camouflage, a function which is prioritised over thermoregulation in the wild [O.27.2]

09:40 ***Julia Nowack***, *A. Daniella Rojas, Gerhard Körtner, Fritz Geiser:*
Staying put: Torpor use during a severe storm [O.27.3]

10:00 ***Jessica Cornils***, *Franz Hölzl, Franz Schwarzenberger, Claudia Bieber, Thomas Ruf:*
Relax, there will be better times: sexual hormones in a small arboreal hibernator [O.27.4]

10:20 ***Cyril Degletagne***, *Christoph Held, Doris Abele:*
Occurrence of aberrant mitochondrial DNA in long-lived *Arctica islandica*: possible impact on fitness and longevity [O.27.5]

10:40 ***Paweł Brzęk***, *Andrzej Gębczyński, Aneta Książek, Marek Konarzewski:*
Effect of reduced food intake on spontaneous locomotor activity in laboratory mice selected for high and low level of basal metabolic rate (BMR) [O.27.6]

11:00 ***Jowita Niedojadlo***, *Agata Rozik, Mariusz Cichoń, Edyta T. Sadowska, Ulf Bauchinger:*
Mean corpuscular volume is not correlated to erythrocyte size and does not predict metabolic rate [O.27.7]

11:20	Coffee break
12:00	***Martin Lindley***, *Alex Wadley, Lynsey Wilson, Sarabjit Mastana:* The physiology and biochemistry of omega-3 polyunsaturated fatty acids and their bioactive derivatives [O.27.8]
12:20	***Alex J Wadley***, *Lynsey Wilson, Sarabjit S. Mastana, Martin R. Lindley:* The potential of omega-3 polyunsaturated fatty acids to suppress post-exercise oxidative stress and inflammation [O.27.9]
12:40	End of session

28 Morning, Small Hall

Actin and actin binding proteins: a dynamic framework in different organisms from bacteria to human

Hitoshi Tatsumi, Kimihide Hayakawa, Shoichiro Ono and Pekka Lappalainen

09:00 ***Kimihide Hayakawa***, *Masahiro Sokabe, Hitoshi Tatsumi:*
Mechano-sensing by actin filament [O.28.1]

09:30 ***Hitoshi Tatsumi***, *Kinihide Hayakawa, Masahiro Sokabe:*
Single molecule imaging and analysis of cooperative binding of cofilin to actin filaments [O.28.2]

10:00 ***Shoichiro Ono***, *Shohei Iwase, Kanako Ono:*
Regulation of actin filament turnover by cyclase-associated protein and ADF/cofilin [O.28.3]

10:30 *Sari Tojkander, Gergana Gateva, Amjad Husain, Ramaswamy Krishnan,* ***Pekka Lappalainen****:*
Generation of contractile stress fibers depends on mechano-sensitive actin filament assembly and disassembly [O.28.4]

11:00 ***Thomas Roesch***, *Christian Reimold, Simon Dersch, Mingle Cao, Andreas Klingl, Hervé Joël Defeu Soufo, Peter L. Graumann:*
MreB forms curved sheets of filaments that nucleate on membranes in vitro [O.28.5]

11:30 End of session

Symposium 1. Ion Homeostasis and Functional Regulation in Aquatic Animals: Molecular and Integrative Studies

P.1.1 ***Jiun Lin Horng***, *Ya-Hsin Yeh, Li-Yih Lin:*
Plasma membrane Ca2+ ATPase in stereocilia is required for the functioning of mechanotransducer channels in lateral-line hair cells of zebrafish.

P.1.2 ***Pung-Pung Hwang***:
Hormone control of fish ion regulation: zebrafish as a model.

P.1.3 ***Fumiya Furukawa***, *Yung-Che Tseng, Sian-Tai Liu, Yi-Ling Chou, Ching-Chun Lin, Po-Hsuan Sung, Katsuhisa Uchida, Li-Yih Lin, Pung-Pung Hwang:*
Phosphoenolpyruvate carboxykinase (PEPCK)-mediated gluconeogenesis accelerates acid secretion by H+-ATPase-expressing ionocytes during acidosis.

P.1.4 ***Helen Sadauskas-Henrique***, *Rafael Mendonça Duarte, Luciana R. de Souza-Bastos, Scott Smith, Adalberto Luis Val, Chris Wood:*
Effect of dissolved organic carbon from different sources in the Amazon basin (Brazil) on the osmoregulatory compromise of tambaqui (*Colossoma macropomum*) challenged by acid water.

P.1.5 ***Ewa Łuszczek-Trojnar***, *Dawid Grosicki, Ewa Drąg-Kozak, Włodzimierz Popek:*
Hematological changes during elimination of copper in Prussian carp after short-term exposure to sublethal concentration of this metal in water.

P.1.6 ***Fu-I Lu***, *Tsung-Yu Han, Chi-Hwa Young, Yu-Hua Huang, Pung-Pung Hwang:*
Comparison of strategies in calcium balance for hypothermic acclimation between tilapia (*Oreochromis mossambicus*) and goldfish (*Carassius auratus*).

P.1.7 ***Jason Bystriansky***, *Ciaran Shaughnessy:*
Kinetics and pH optima of gill Na/K-ATPase from white sturgeon (*Acipenser transmontanus*) following exposure to elevated salinity and aquatic hypercarbia.

P.1.8 ***Magdalena Socha***, *Socha, Magdalena Góra, Paweł Szczerbik, Ewa Drąg-Kozak, Ewa Łuszczek-Trojnar, Mirosława Sokołowska-Mikołajczyk:*
The effect of cooper intoxication moment for embryonic development, hatching and early life stages of Prussian carp (*Carassius gibelio* Bloch) larvae.

P.1.9 ***Mauricio A. Urbina***, *Rod Wilson:*
Freshwater chloride levels dramatically influences post feeding acid-base recovery and SDA in rainbow trout.

Symposium 2. Insect Molecular Biology - the Postgenomic Era

P.2.1 *Tamás Lukácsovich,* ***Adrien Fónagy****, Ildikó Hajdú, Éva Bálint, Kornélia Szabó, István Török, Bernard Mehler, Orsolya Méhi, Brigitta Kiss, Tamás Szlanka, Erika Virágh, István Kiss:*
Dominant suppressors of p53-induced apoptosis in *Drosophila melanogaster*.

P.2.2 ***Anna Płachetka***, *Alina Kafel, Agnieszka Zawisza-Raszka, Agnieszka Babczyńska, Maria Augustyniak:*
Vitellogenin expression in *Spodoptera exigua* from the line selected towards cadmium resistance.

Symposium 3. Early Life Experience and its Consequences for Adult Life and Future Generations

P.3.1 ***Małgorzata Grzesiak***, *Katarzyna Knapczyk-Stwora, Maria Słomczyńska:*
Changes in luteal DICER1 mRNA and protein expression during pregnancy in pigs: effect of antiandrogen treatment.

P.3.2 ***Tetsuya Matsuura***, *Takuya Urushihata:*
Augmentation of salt chemotaxis learning due to chronic nicotine exposure is modulated by dopamine signaling in the nematode *Caenorhabditis elegans*.

P.3.3 ***Takuya Urushihata***, *Tetsuya Matsuura:*
Effects of nicotine exposure period during larval stages on salt chemotaxis learning in the nematode *Caenorhabditis elegans*.

P.3.4 ***Zuzana Kankova***, *Monika Okuliarova, Daniela Blahutova, Michal Zeman:*
Maternal testosterone influences the acute-phase immune response in Japanese quail offspring.

P.3.5 ***Lara Amaral-Silva***, *Fernando José Zara, Wilfried Klein, Luciane Gargaglioni, Kenia Bicego:*
Incubation in hypoxia affects lung morphology in chicks.

P.3.6 ***Ahamad Razi Norhisham***, *Mark A. Jervis, T. Hefin Jones, Steve J. Ormerod:*
Female reproduction and resource investment into major life history in Indian mealmoth (Lepidoptera: Pyralidae).

P.3.7 ***Sergio Alfonso***, *Jaime Muriel, Lorenzo Pérez, Raquel Monclús, Diego Gil:*
Brood size manipulation effects on nestling growth, ageing markers (telomeres) and oxidative stress parameters in a wild passerine.

P.3.8 ***Liang Ma***, *Bao-jun Sun, Peng Cao, Xing-han Li, Wei-guo Du:*
Maternal and offspring responses to increased variability in ambient temperature experienced by gravid lizards (*Eremias multiocellata*).

P.3.9 ***Grisel Cavieres***, *Nadia Medina, Jose Manuel Alruiz, Jose Miguel Bogdanovich, Francisco Bozinovic:*
Transgenerational effects of mean of temperature and thermal variability on performance curve in *Drosophila melanogaster*.

Symposium 5. Thyroid Hormones as Master Regulators: Comparative and Developmental Perspectives

P.5.1 *Sponsored by Physiological and Biochemical Zoology*

Physiological and Biochemical Zoology

***Olga Fedoruk**, Halina Falfushynska, Lesya Gnatyshyna, Inna Sokolova, Oksana Stoliar:*
Endocrine disruption in the marsh frogs exposed to organic nanoscale complexes of cobalt and zinc.

P.5.2 ***Edyta Molik**, Michał Błasiak, Wiktor Góralczyk, Tomasz Misztal, Katarzyna Romanowicz, Dorota Zięba:*
Effect of TRH factor on prolactin secretion in lambs – in vitro study.

Symposium 6. Neural Basis of Olfaction: Insight into How the Olfactory System Can Evolve

P.6.1 ***Irina Sinakevitch**, Brian Smith:*
The distribution of octopamine and tyramine and their receptors in the honey bee brain.

P.6.2 *Young Jae Choi, Na Na Kim, **Ji Yong Choi**, Cheol Young Choi:*
Expression levels of N-methyl-D-aspartate receptors in the chum salmon *Oncorhynchus keta*: Effect of seawater acclimation during the parr-smolt transformation.

Symposium 7. Chemical World Sensing: A Joining Scope of Chemical Ecology and Neuroscience

P.7.1 ***Takako Nishi**:*
Carbon dioxide sensitivity and its role in multifunctional neurons in the mollusk *Onchidium*.

P.7.2 ***Xing Li**, Wendurige, Masaru Hojo, Mamiko Ozaki, Tatsuo Iwasa:*
The structural change of the perireceptor proteins, OBP and CSP, upon ligand binding.

Symposium 8. Photoreception Regulating Animal Physiology and Behavior

P.8.1 ***Jin Ah Song***, *Ji Yong Choi, Young Jae Choi, Na Na Kim, Cheol Young Choi:*
Effects of LED spectra on the expression of vertebrate ancient long opsin and maturation-related hormones in goldfish *Carassius auratus*: Profiles following exogenous gonadotropin hormone.

P.8.2 ***Cristiano Bertolucci***, *Alberto Biscontin, Elena Frigato, Gabriella Mazzotta, Cristiano De Pittà, Gabriele Sales, Mathias Teschke, So Kawaguchi, Bettina Meyer, Rodolfo Costa:*
Identification and localization of opsin transcripts in the Antarctic krill *Euphausia superba*.

Symposium 10. The Role of Monoamines in Modulating Behavior

P.10.1 ***Roman Tashev***, *Margarita Ivanova, Stiliana Belcheva, Iren Belcheva:*
Central administration of cannabinoid ligands modulates passive avoidance learning in olfactory bulbectomized rats.

P.10.2 ***Clara de Castro***, *Robin Cooper, Josh Titlow, Zana Majeed MS, Kayla King:*
Maintaining the *Drosophila* larval heart in situ: Modulators and stretch activated channels.

P.10.3 *John Swallow,* ***Andrew Bubak***, *Jaime Grace:*
Using genomics to address the role of serotonin in modulating aggression.

P.10.4 *Jaime Grace, Andrew Bubak, Michael Watt, Kenneth Renner,* ***John Swallow****:*
Sex-specific effects of serotonin on aggression in a sexually dimorphic stalk-eyed fly.

Symposium 11. Biological Timing System Using Circadian Clocks in Invertebrates

P.11.1 ***Keiji Matsumoto**, Sakiko Shiga:*
Characterization and distribution of allatostatic factors in the brown-winged green bug *Plautia stali*.

P.11.2 ***Hiroki Takekata**, Hideharu Numata, Sakiko Shiga:*
Effects of the pars intercerebralis-removal on the circatidal rhythm in the mangrove cricket *Apteronemobius asahinai*.

P.11.3 ***Franziska Ruf**, Oliver Mitesser, Thomas Hovestadt, Konrad Öchsner, Hans Kaderschabek, Martin Fraunholz, Christian Wegener:*
How clock and environment influence eclosion rhythms of *Drosophila* under natural conditions.

P.11.4 ***Marta Polanska**, Agnieszka Suszczynska, Joanna Kotwica-Rolinska, Piotr Bebas:*
Is the biological clock engaged in fat body growth and metabolism regulation during larval development of the Egyptian cotton leafworm, *Spodoptera littoralis* (Lepidoptera: Noctuidae)?

Symposium 12. Molecular Level Approaches to Circadian Rhythm and Photoperiodism in Vertebrates

P.12.1 ***Naser Farhadi**, Majid Gharghani, Zahra Farhadi:*
Effects of orally melatonin and long term exposure to light on serum indices and gene expression of insulin and glucagon in male Wistar rats.

P.12.2 ***Viktor Ilyukha**, Svetlana Sergina, Evgeniy Khizhkin, Irina Vinogradova, Lyudmila Uzenbaeva, Tatyana Ilyina, Ekaterina Antonova, Irina Baishnikova, Alexandra Kizhina, Artem Morozov, Stanisław Łapiński, Marcin W. Lis, Yongping Xu:*
Phase shifting the seasonal rhythmicity via melatonin in mammals originating from different geographic regions.

P.12.3 ***Małgorzata Szczęsna***, *Katarzyna Kirsz, Natalia Struzik, Dorota Zięba:*
Effects of interaction between leptin and prolactin on SOCS-3 mRNA expression in ovine pituitary.

P.12.4 ***Mikhail Firsov***, *Nastja Knyazeva, Luba Astakhova:*
Dopamine produces multiple effects on phototransduction cascade in frog rod photoreceptors.

P.12.5 ***Elżbieta Bonda-Ostaszewska***, *Tadeusz Włostowski:*
Seasonal changes in liver weight and size of hepatocytes in bank voles are accompanied by changes in glycogen and fat content.

Symposium 13. Biological Rhythms in Non-mammalian Vertebrates

P.13.1 *Viviana Di Rosa, Jose F. López-Olmeda, Ana Burguillo, Francesc Piferrer,* ***Francisco Javier Snchez Vazquez****:*
Daily rhythms of expression of genes involved in sex differentiation in zebrafish.

Symposium 16. The Evolution of Endothermy

P.16.1 ***Christian Hof***, *Imran Khalią:*
Macrophysiology of endotherms: the global variation in thermal traits of birds and mammals.

Symposium 17. Interspecific Scaling of Metabolic Rate: Time for Synthesis?

P.17.1 ***Bartosz W. Schramm***, *Agnieszka Gudowska, Marcin Czarnoleski, Anna Maria Labecka, Ulf Bauchinger, Jan Kozlowski:*
Cell size changes contributed to the evolution of body size in Carabidae beetles: An optimal cell size theory perspective.

P.17.2 ***Agnieszka Gudowska***, *Bartosz Schramm, Marcin Czarnoleski, Ulf Bauchinger, Jan Kozłowski:*
Mass-scaling of standard metabolic rate in Carabidae beetles: sex, season and breathing patterns.

Symposium 18. From Molecular Background to Phenotypic Variation in Metabolic Rate

P.18.1 ***Pierre-Axel Monternier***, *Loïc Teulier, Jocelyne Drai, Delphine Collin, Frédéric Hervant, Anaïs Fongy, Jean-Louis Rouanet, Damien Roussel:*
Mitochondrial efficiency as a regulator of energy trade-offs in birds fasting in the cold.

P.18.2 ***Miyuki Mekuchi***, *Akira Nagae, Yukihiko Matsuyama:*
Gene profiling of glycogen storage in the Pacific oyster using next-generation sequencing.

P.18.3 ***Mariana Leivas Müller Hoff***, *Andrej Fabrizius, Lars P. Folkow, Thorsten Burmester:*
Lactate dehydrogenase distribution and localization in the brain of the hooded seal (*Cystophora cristata*) as biochemical adaptations to dive.

P.18.4 ***Małgorzata M. Lipowska***, *Edyta T. Sadowska, Paweł Koteja:*
The effect of artificial selection towards high aerobic metabolism on erythrocyte parameters in bank vole.

P.18.5 ***Julita Sadowska***, *Andrzej K. Gębczyński, Marek Konarzewski:*
Metabolic risk factors in mice divergently selected for BMR fed high fat high carb diets.

P.18.6 *Julita Sadowska,* ***Andrzej K. Gębczyński***, *Marek Konarzewski:*
Selection for high aerobic capacity during swimming has no protective effect against obesity.

P.18.7 ***Edyta T. Sadowska***, *Elżbieta Król, Katarzyna M. Chrzascik, Agata Rudolf, John R. Speakman, Paweł Koteja:*
Does heat dissipation capacity limit energy budgets of lactating bank vole.

P.18.8 ***Kenneth Storey***, *Samantha Logan:*
Turn down gene expression for WAT: anti-apoptotic signaling protects white adipose tissue in hibernating 13-lined ground squirrels.

Symposium 19. From Molecular Machines to Performance and Life History of Ectotherms: Temperature, Oxygen, Cell and Body Size

P.19.1 ***Andreaz Dupoue***, *François Brischoux, Frederic Angelier, Christian Wright, Dale DeNardo, Zachary Stahlschmidt:*
Water-based tradeoffs over pregnancy in a reptile, the Aspic viper (*Vipera aspis*).

P.19.2 ***Weiguo Du***, *Baojun Sun, Jin Gao:*
Physiological adjustments of reptile embryos in response to temperature variation.

P.19.3 ***Ole Theisinger***, *Wiebke Berg, Kathrin Dausmann:*
Maximal performance versus energy savaholics - different thermal strategies in two sympatric lizards.

P.19.4 ***Adam Hermaniuk***, *Jan R. E. Taylor, Mariusz Rybacki:*
Genome size and low temperature lead to larger cell and body size in the edible frog (*Pelophylax esculentus*).

P.19.5 ***Aleksandra Walczyńska***, *Mateusz Sobczyk, Marcin Czarnoleski, Jan Kozłowski:*
When to switch between being small or large? – temperature-size rule in a rotifer.

P.19.6 ***Anamarija Zagar***, *Tatjana Simčič, Al Vrezec, Diana Marguč, Miguel A. Carretero:*
An altitudinal metabolic syndrome in ectotherms? A transversal analysis with ground beetles, amphibians and reptiles.

P.19.7 ***Wiebke Berg***, *Ole Theisinger, Kathrin Dausmann:*
Cold in the tropics: Metabolic compensation in tropical lizards.

P.19.8 ***Zuzana Starostová***, *Michael J. Angilletta, Lukáš Kubička, Lukáš Kratochvíl:*
Thermal dependence of developmental rate and energy use by embryonic geckos (*Paroedura picta*).

P.19.9 ***Karolina Naumiec***, *Szymon Drobniak, Paulina Kramarz, Elżbieta Szulińska, Grażyna Wilczek, Jesus M. Txurruka:*
Nutrient and temperature effects on growth rate and body composition of the slug *Arion vulgaris*.

P.19.10 *Paulina Kramarz,* ***Dariusz Małek****, Marcin Czarnołęski, Szymon Drobniak:*
Quantitative genetics of thermal reaction norms for development time and body mass of *Tribolium castaneum*.

P.19.11 ***Paulina Kramarz****, Dariusz Małek, Szymon Drobniak:*
Genetic correlations between development time and body mass at different temperatures and sexes in *Tribolium castaneum*.

P.19.12 ***Terézia Horváthová***, *Andrzej Antol, Ulf Bauchinger, Marcin Czarnoleski, Jan Kozłowski:*
Does female control over the Temperature-size rule during early ontogeny in terrestrial isopod *Porcellio scaber*?

P.19.13 ***Andrzej Antol***, *Anna Maria Labecka, Terézia Horváthová, Natalia Derus, Ulf Bauchinger, Paulina Kramarz, Marcin Czarnoleski, Jan Kozlowski:*
Does high temperature and low oxygen lead to smaller cells? The case of common rough woodlouse (*Porcellio scaber*).

P.19.14 ***Brian Stogsdill***, *Jim Frisbie, Pon Ti Tsou, David Goldstein:*
Aquaporin 9 in the freeze tolerance mechanism of Cope's gray treefrogs.

P.19.15 ***Andrea Silva***, *Cristian Molina, Juan Diego Gaitan-Espitia, Catalina Manzi, Jonatthan Vergara, Roberto Nespolo:*
Understanding adaptive gene-expression during estivation in a terrestrial snail.

P.19.16 ***Anna Maria Labecka***, *Marcin Czarnoleski, Zuzana Starostová, Anna Sikorska, Elżbieta Bonda-Ostaszewska, Lukáš Kubička, Lukáš Kratochvíl, Jan Kozlowski:*
Effect of developmental temperature on the cells size in the Madagascar ground gecko (*Paroedura picta*).

P.19.17 *Marcin Czarnoleski, Anna Maria Labecka,* ***Natalia Derus****, Katarzyna Pawlik, Michael J. Angilletta Jr.:*
Longitudinal and latitudinal size variation of erythrocytes in the North American lizard *Sceloporus undulatus*.

Symposium 20. Phenotypic Flexibility of Energetics in a Seasonal World

P.20.1 ***Anna Doty***, *Clare Stawski, Gerhard Körtner, Fritz Geiser:*
Black or white, that is the question: roost selection and the expression of heterothermy in microbats.

P.20.2 *Sponsored by Physiological and Biochemical Zoology*

Nastashya Wall, *Grant McClelland:*
Adult phenotypic plasticity in thermogenesis: A comparative study using high and low altitude deer mice.

P.20.3 ***Agnès Lewden***, *Tessa van Walsum, Caroline Bost, Thibaut Hestin, Yves Handrich:*
King penguins rewarm their skin temperature to normothermia during the night at sea: a descriptive study in condition of captivity.

P.20.4 ***Sylvain Giroud***, *Britta Mahler, Thomas Ruf:*
Differences in growth, fattening and energetic strategies between early and late-born juvenile garden dormice (*Eliomys quercinus*).

P.20.5 ***Lisa Warnecke**, James M. Turner, Anju Abel, Sandra Fischer, Annalena Stuhlmann, Kathrin H. Dausmann:*
Torpid in the city: hibernation ecology of the European hedgehog in urban habitat.

P.20.6 ***Paulina Szafrańska**, Fredrik Andreason, Jan-Åke Nilsson:*
How are birds dealing with hot environments.

P.20.7 ***Janina Bethge**, Kathrin Dausmann, Bianca Wist:*
Energy budgets across a climatic gradient in two sportive lemur species (*L. leucopus* and *L. ruficaudatus*).

P.20.8 ***Grant B. McClelland**, Nastashya Wall, Cayleih Robertson, Sajeni Mahalingam:*
The importance of phenotypic plasticity for locomotion and thermogenesis in high altitude deer mice.

P.20.9 ***Natalia López-Morgado**, Karin Maldonado, Josefina Cruz-Pattillo, Gabriela Piriz, Pablo Sabat:*
Phenotypic flexibility and thermal tolerance in the chilean rodent *Phyllotis darwini* from populations inhabiting the species the geographic range boundaries.

Symposium 21. Seasonal Control of Mammalian Energy Balance

P.21.1 ***Ceyda Cubuk**, Andrej Fabrizius, Annika Herwig:*
Transcriptome analysis of hypothalamic gene expression during torpor entrance in *Djungarian hamsters*.

P.21.2 ***Stephanie Reher**:*
The spatial ecology of Eurasian red squirrels is adjusted in relation to food type and abundance.

P.21.3 ***Sanni Kinnunen**, Satu Mänttäri, Karl-Heinz Herzig, Petteri Nieminen, Anne-Mari Mustonen, Seppo Saarela:*
Effects of wintertime fasting and seasonal adaptation on AMPK and ACC in hypothalamus, adipose tissue and liver of the raccoon dog (*Nyctereutes procyonoides*).

P.21.4 ***Katarzyna Kirsz**, Małgorzata Szczęsna, Dorota A. Zięba-Przybylska:*
Role of the 5-HT2B/2C serotonin receptor agonist in the cross-talk between ghrelin and serotonin in sheep: altering effects of photoperiod and nutritional status.

P.21.5 ***Jorge A. Encarnação**, Nina I. Becker:*
The advantage of gluttony: Digestive efficiency in insectivorous bats.

Symposium 22. Cellular Stress Tolerance, Longevity and Nutrition

P.22.1 ***Ramona Doelling**, Sarah A. Winter, Burkhard Knopf, Christoph Schäfers, Rüdiger J. Paul:*
Quantification of cadmium clearance by different detoxification mechanisms in the nematode *Caenorhabditis elegans*.

P.22.2 ***Eva Klumpen**, Nadine Hoffschroeer, Ulrike Giegengack, Bettina Zeis, Ruediger J. Paul:*
HIF, HSF, and the cellular stress response (CSR) of *Daphnia pulex*.

P.22.3 ***Martha N. Mendelski**, Nadine Hoffschroeer, Alex Keshet, Sarah A. Winter, Ruediger J. Paul:*
A novel approach to quantify transcription factor activity in *Caenorhabditis elegans* in a time-resolved manner.

P.22.4 ***Maiara Marques**, Ayane Machado, Ana Paula Votto:*
Comparative analysis of quercetin effects in human erythroleukemia cell lines.

P.22.5 ***Dorota Katarzyńska**, Anna Hrabia, Andrzej Sechman:*
Effect of TCDD, PCB 126 and PCB 153 on granulosa layer proliferation in chicken ovarian follicles.

P.22.6 ***Alex Keshet**, Ruediger J. Paul:*
Specific tasks and interactions of the PMK-1 and DAF-2 pathways and ABC transporters in C. elegans during cadmium stress.

P.22.7 ***Alina Kafel***, *Agnieszka Zawisza-Raszka, Anna Płachetka, Agnieszka Babczyńska, Katarzyna Rozpędek, Maria Augustyniak:*
Protein, lipid and sugar content in larvae and pupae of *Spodoptera exigua* from control and cadmium line after cadmium exposure.

P.22.8 ***Mathilde Tissier***, *Jean-Patrice Robin, Yves Handrich, Caroline Habold:*
Infanticide and siblicide in maize-fed common hamsters (*Cricetus cricetus*): independently of diets' protein and energy contents, maize impairs maternal investment in reproduction.

P.22.9 ***Mauricio Urbina***, *Natasha Schvezov, Rod Wilson:*
Effect of feeding and digestion on oxidative stress in rainbow trout.

Symposium 23. Links between Oxidative Stress and Life Histories

P.23.1 ***Roger Colominas-Ciuró***, *Andrés Barbosa, Eliana Carabajal, Verónica L. D'Amico, Marcelo Bertellotti:*
Oxidative status during reproduction in Magellanic penguins (*Spheniscus magellanicus*): incubation versus chick rearing.

P.23.2 ***Gabriel Schneebauer***, *Bernd Pelster:*
The effects of silvering and infection with *Anguillicola crassus* on the capability to deal with radical oxygen species in swimbladder tissue of the European eel (*Anguilla anguilla*).

P.23.3 *Anna Loba, Anna Płachetka, Alina Kafel,* ***Agnieszka Zawisza-Raszka****, Agnieszka Babczyńska, Maria Augustyniak:*
DNA damage in the beet armyworm (*Spodoptera exigua*) after 14 years of selection to cadmium resistance.

Symposium 24. Role of Free Radicals in the Survival Machinery of Animals that Endure the Hardships of the Environment

P.24.1 ***Tabata Lima***, *Marcio Geihs, Fabio Maciel, Luiz Nery:*
Air exposure behavior of the semiterrestrial crab *Neohelice granulata* allows tolerance to severe hypoxia but not prevent oxidative damage due to hypoxia-reoxygenation cycle.

P.24.2 ***Georgina A Rivera-Ingraham***, *Kiam Barri, Mélanie Boël, Emilie Farcy, Anne-Laure Charles, Bernard Geny, Jehan-Hervé Lignot:*
How do osmoregulating tissues cope with oxidative stress? A Mediterranean crab as a study model.

P.24.3 ***Roberta Socoowski Britto***, *Clascídia Furtado, Juliane Lima, José Monserrat:*
Effects on total antioxidant capacity and lipid peroxidation in vivo exposure of golden mussel (*Limnoperna fortuneii*) to graphene oxide carbon nanomateiral.

Symposium 26. The Evolution of Innate and Acquired Immunity

P.26.1 ***Magdalena Kepka***, *Ewa Szwejser, Lidy Verburg van Kemenade, Magdalena Chadzinska:*
Melatonin regulates chemotaxis of carp phagocytes.

P.26.2 ***Zahra Farhadi***, *Naser Farhadi, Majid Gharghani:*
Is there any association between interferon-β and procalcitonin in patients with multiple sclerosis.

P.26.3 ***Katherina Brokordt***, *Roxana Gonzalez, William Farías, Federico Winkler:*
Potential response to selection of HSP70 as a component of innate immunity of the abalone *Haliotis rufescens*.

P.26.4 ***Eduardo Moretti**, Jesús Ortega, Pedro Fernandes, Fernando Gomes:*
Preferential temperature and metabolic rates of toads (*Rhinella icterica*) challenged with lipopolysaccharides of gram-negative bacteria (LPS).

P.26.5 *Viktoria Takacs, **Laszlo Molnar**, Adrianna Gałuszka, Beata Klimek, Andrew John Morgan, Barbara Plytycz:*
Cadmium accumulation in *Eisenia andrei* earthworms inhibits maturation, reproduction and growth with little effects on regeneration of depleted coelomocytes and amputated posterior segments.

P.26.6 ***Kamila Zając**, Szymon Drobniak, Joanna Homa, Daniel Kübler, Paulina Kramarz:*
The influence of food composition and temperature on the immunological response of the slug *Arion vulgaris*.

P.26.7 ***Maciej Ejsmond**, Jacek Radwan:*
Red Queen processes drive positive selection on Major Histocompatibility Complex (MHC) genes.

Symposium 27. Open session 2

P.27.1 *Sponsored by Physiological and Biochemical Zoology*

Physiological and Biochemical Zoology

***Olga Kushniryk**, Maja Prusinska, Oleksii Khudyi, Lidiia Khuda, Ryszard Kolman, Arkadiusz Duda, Grzegorz Wiszniewski, Mykhailo Marchenko:*
Effect of *Artemia* nauplii bioencapsulation with PUFA on fatty acids profile of *Acipenser oxyrinchus* larvae.

P.27.2 ***Kathrin Dausmann**, Marina Blanco:* Possible causes and consequences of different hibernation patterns in dwarf lemur species (*Cheirogaleus*) – Mitovy fatsy sahala.

P.27.3 ***John Lighton**, Jennifer A. Teske:*
Water vapor should be measured, not removed, for metabolic measurement.

Symposium 29. Statistical Approaches to Physiological Data Processing

P.29.1 ***Asuka Nishino***, *Hiroyuki Takuwa, Kazumi Sakata, Yosuke Tajima, Tetsuya Matsuura:*
In vivo oxygen metabolism and hemodynamic changes measured in awake mouse brain with an optical imaging system.

Symposium 30. Open Session: Ideas and Discoveries in Comparative Physiology and Biochemistry

P.30.1 ***Kannikar Wongdee***, *Jarinthorn Teerapornpuntakit, Nateetip Krishnamra, Narattaphol Charoenphandhu:*
Fibroblast growth factor-23 (FGF-23) upregulates the expression of osteoclastogenic factors in osteoblast-like UMR106 cells.

P.30.2 ***Narattaphol Charoenphandhu***, *Jarinthorn Teerapornpuntakit, Panan Suntornsaratoon, Nateetip Krishnamra, Kannikar Wongdee:*
A suckling-induced prolactin surge helps lactating mammals supply calcium for bone growth in neonates.

P.30.3 ***Jose Eduardo*** *Carvalho, Fernando Bagnariolli Oliveira:*
Effects of fasting and prey ingestion on the hormonal levels and metabolism of carbohydrates, lipids and ketone bodies in the South American rattlesnake *Crotalus durissus* (Serpentes, Viperidae).

P.30.4 ***Simone Costa***, *Mauricio Monteiro, Flavio Júnior, Juliana Sandrini:*
Methylene blue cytotoxicity in a zebrafish cell line: a comparative study of its toxicity and phototoxicity.

P.30.5 ***Kenia Bicego***, *Bruno Mangili, Valter Dantonio, Tiago Carabolante, Luis Guilherme Branco, Luciane Gargaglioni:*
The effect of ghrelin on body temperature during LPS-induced systemic inflammation in five-day-old chicks.

P.30.6 ***Gen Kobayashi***, *Norihito Nishiyama, Yuki Endo, Toru Mizuguchi, Jotaro Igarashi, Ariki Matsuoka:*
Stability properties of myoglobin in the Argentinian hoki (*Macruronus magellanicus*).

P.30.7 ***Agnieszka Leśniak-Walentyn**, Anna Hrabia:*
Matrix metalloproteinase-2 and -9 participate in regression and recrudescence of the chicken oviduct.

P.30.8 ***Arleta Krystyna Skrzyńska**, Gonzalo Martínez-Rodríguez, Juan Miguel Mancera, Juan Antonio Martos-Sitcha:*
High stocking density and food deprivation affect AVT, IT and stress pathways in the gilthead sea bream (*Sparus aurata*).

P.30.9 ***Panan Suntornsaratoon**, Narattaphol Charoenphandhu, Nateetip Krishnamra:*
Determination of minerals and amino acids in fish scale and chicken eggshell and the potential of amino acid-enhanced intestinal calcium absorption.

P.30.10 ***Mansouria Belhocine**, Ramadhan Hatti, Thérèse Gernigon-Spychalowicz, Jean-Marie Exbrayat:*
Immunoexpression of MMP-9 in the seminal vesicle of the Libyan jird (*Meriones libycus*) during the seasonal reproductive cycle and after castration.

P.30.11 ***Naifei Hu**, Bei Du, Hui Chang, Yun-Fang Gao:*
Tetramethylpyazine suppresses disuse-induced cytoplasm calcium overloading in skeletal muscle fibers, by a modified measuring approach.

P.30.12 ***Natalia Zhukova**, Marina Eliseikina, Evgeniy Balakirev, Francisco Ayala:*
Evolutionary novelty: symbiosis of nudibranch mollusk with denitrifying and diazotrophic bacteria.

P.30.13 ***Henrika Honkanen**, Salla Kangas, Anthony Heape:*
Mouse Schwann cell culture and the expression of L-MAG in Schwann cells and in myelinating cocultures.

P.30.14 ***Biyun Ching**, Kum Chew Hiong, Celine Y. L. Choo, Mel Veen Boo, Wai Peng Wong, Shit Fun Chew, Yuen Kwong Ip:*
The effect of light exposure on the activities of certain transporters and enzymes involved in light-enhanced calcification in the giant clam, *Tridacna squamosa*.

P.30.15 *Edna Teich,* ***Lea Sophie Thomas****, Kathrin H. Dausmann, Stephanie Reher, James M. Turner:*
Space use and behaviour of Eurasian red squirrels inhabiting semi-natural and urban environments.

P.30.16 ***Katleen Crabbé****, Jornt Spit, Jozef Vanden Broeck:*
The possible role of SGPP-5 in reproduction in the locust *Schistocerca gregaria*.

P.30.17 ***Michał Filipiak****, January Weiner:*
Energy budget is not enough: stoichiometry helps to explain the life history evolution.

P.30.18 ***Jordi Altimiras****:*
Cardiac physiological hypertrophy in response to cold in Red Junglefowl.

P.30.19 ***María Botella Cruz****, Susana Pallarés Párraga, Andrés Millán Sánchez, Josefa Velasco García:*
Salinity acclimation enhances desiccation tolerance in the aquatic beetle *Nebrioporus baeticus* (Dytiscidae), but not vice versa.

P.30.20 ***Robert De Bruijn****, L. Michael Romero, Michaela Hau:*
Using the reaction norm approach to study individual variation in glucocorticoid responses to temperature.

P.30.21 ***Susana Pallarés Párraga****, Paula Arribas Blázquez, Andrés Millán Sánchez, Josefa Velasco García:*
Intra and interspecific patterns of desiccation resistance across congeneric saline water beetles with different habitat preferences.

P.30.22 ***Yi Mu****:*
Temperature-dependent sex determination ruled out in the Chinese soft-shelled turtle (*Pelodiscus sinensis*) via molecular cytogenetics and incubation experiments across populations.

P.30.23 ***Vivian Maria Zeraik****, Felipe Blasco, Nathan Martins, Thiago Belao, Cleo Leite, Ana Kalinin, Luciane Gargaglioni, Tadeu Rantin:*
Identification of Fos expression in medulla oblongata areas of the African catfish, *Clarias gariepinus* submitted to hypoxia.

P.30.24 ***Sayaka Kotaka**, Naoaki Tsutsui, Tsuyoshi Ohira:*
cDNA cloning of two crustacean female sex hormones from the kuruma prawn *Marsupenaeus japonicus*.

P.30.25 ***Caroline Lindholm**, John Joseph Lees, Jordi Altimiras:*
Intermittent feeding during broiler breeder rearing affects tibia strength and rigidity by altering the morphology of cortical bone.

P.30.26 ***Rafael Rissoli**, Eliton Vasconcelos, Raquel Salla , Ana Kalinin:*
Impact of extensive low intensity aerobic exercise on heart force contraction of the migratory Neotropical teleost fish, *Brycon amazonicus* (Characidae).

P.30.27 *Magdalena Kowalska, **Weronika Rupik**:*
Early differentiation of the pancreatic islets in grass snake *Natrix natrix* L. (Lepidosauria, serpentes) embryos.

P.30.28 ***Francisca Boher**, Tomas Abbott, Fabian Jaksic, Francisco Bozinovic:*
Effect of thermal physiology on differential success of invasive and native coccinelids in a climate change scenario.

P.30.29 ***Toru Moriyama**, Haruna Kawai, Chie Yamada:*
Personality and collective behavior in the soldier crab.

P.30.30 ***Viktor Gasso**, Victor Nedzvetsky, Anna Gagut, Irina Prischepa:*
Cytoskeletal molecular biomarkers of chemical pollution impact in fish and snake brain.

P.30.31 ***Lucas Zena**, Glauber da Silva, Luciane Gargaglione, Kênia Bícego:*
Temperature effects on baroreflex and cardiorespiratory interactions in the toad *Rhinella schneideri*.

P.30.32 ***Teng Li**, Bo Zhao, Yongkang Zhou, Rui Hu, Weiguo Du:*
Thermoregulatory behavior is widespread in the embryos of reptiles and birds.

Money Advice

Bank hours are: Monday - Friday 8:00 - 18:00. The Polish currency is the Polish *złoty* (abbreviation - *zł*). Its international code is PLN. 1 złoty = 100 *groszy* (abbreviation - *gr*). There are the following denominations: 1, 2, 5, 10, 20, 50 gr and 1, 2, 5 zł (coins), and 10, 20, 50, 100 and 200 zł (notes). Foreign currency can be exchanged at the airports, hotel receptions, banks and in small exchange offices called "kantor". International credit cards (VISA, Mastercard, Eurocard) are accepted in most hotels, and in many shops and restaurants. They can be also used in most ATMs, called "bankomat" in Polish.

Public Transport

Krakow has a dense network of public transport with trams and buses. Tickets can be bought in some newspaper kiosks or in machines located on main stops and in trams and buses. The typical fare is 2,80 PLN (20 min) or 3,80 PLN (40 min or unlimited on one way). Machines in vehicles may accept only coins or credit cards. All tickets have to be validated in an orange box after boarding.

Taxi

In Krakow taxis are usually ordered by phone. You can also try to get them directly from a taxi rank (there is one opposite the Auditorium Maximum) or hail a taxi from the street, but in such instances you should be prepared to pay more. There are many taxi companies; below we have listed several of the moderately priced ones (about 2 PLN per kilometer) along with ones which accept credit cards and employ English speaking drivers.: Radio Taxi (phone 196 33), iCAR Taxi (phone + 48 12 653 5555), Taxi Barbakan (phone 196 61).

Toilet

Please note that Poland adopted its own system of signs for toilets: it's a circle (○) for women (Polish: „Dla kobiet", „Dla Pań") and a triangle (▽) for men (Polish: „Dla mężczyzn", „Dla Panów").

Explore KRAKÓW and surroundings to…

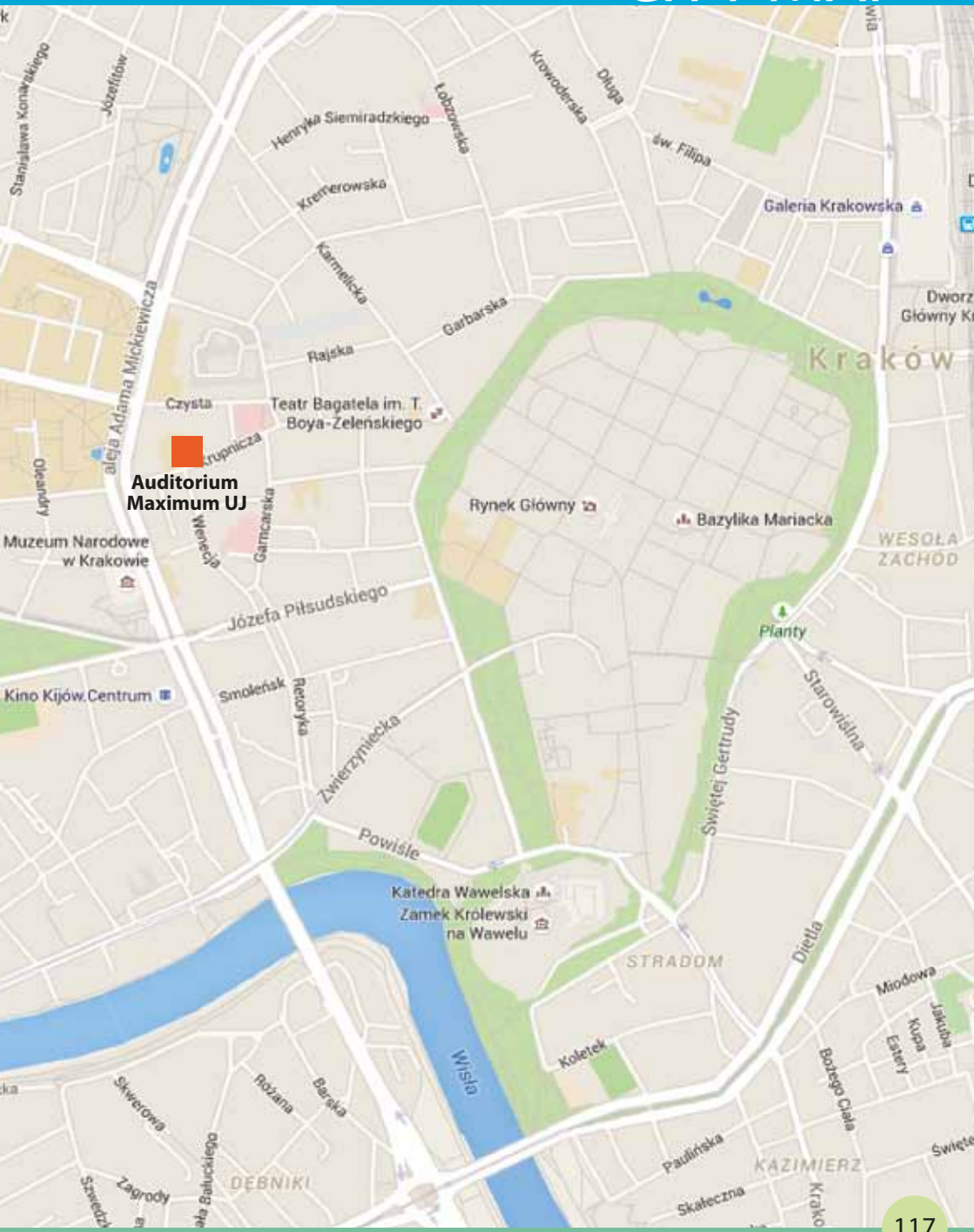
photo: A. Wojnar

- see **medieval, renaissance, and baroque architecture**
- visit *Collegium Maius of the Jagiellonian University* - the place where **Nicolaus Copernicus** studied
- admire **Leonardo da Vinci's** Lady with an Ermine
- see wooden medieval altar of **Wit Stwosz in St. Mary's Church**

photo: M. Wilson

- visit the **old city center** with its unique Market Square for esthetical enrichment
- enjoy the **tastes of Poland** in hundreds of restaurants and pubs
- take a walk through the renewed **Jewish district Kazimierz**
- take a tour to **Wieliczka Salt Mine**, one of the twelve objects on UNESCO's First World List of Cultural and Natural Heritage

more: ***www.iccpb2015.confer.uj.edu.pl/beyond-congress***
http://www.krakow.pl/english/


Stanisława Konarskiego
Józefitów
Henryka Siemiradzkiego
Łobzowska
Krowoderska
Długa
św. Filipa
Kremerowska
Galeria Krakowska
Karmelicka
Garbarska
Rajska
Kraków
Czysta
Teatr Bagatela im. T. Boya-Żeleńskiego
aleja Adama Mickiewicza
Krupnicza
Auditorium Maximum UJ
Oleandry
Rynek Główny
Bazylika Mariacka
Muzeum Narodowe w Krakowie
Wenecja
Garncarska
WESOŁA ZACHÓD
Józefa Piłsudskiego
Planty
Kino Kijów.Centrum
Smoleńsk
Retorykа
Starowiślna
Zwierzyniecka
Świętej Gertrudy
Powiśle
Katedra Wawelska
Zamek Królewski na Wawelu
STRADOM
Dietla
Miodowa
Jakuba
Kupa
Estery
Koletek
Wisła
Bożego Ciała
Różana
Barska
Skwerowa
Pauliańska
KAZIMIERZ
Zagrody
DĘBNIKI
Skałeczna

EcoEvo: Master Programme in Ecology and Evolution at the Jagiellonian University

The EcoEvo is a two-year research-oriented master programme for talented and motivated students interested in functioning and evolution of biosphere.

The EcoEvo allows students to investigate the mechanisms that underlie ecological processes and the driving forces and history of biological evolution. It also encourages students to develop practical skills related to scientific research, nature conservation, and environmental management.

www.ecoevo.uj.edu.pl

The Company of Biologists

The Company of Biologists is a UK based charity and not-for-profit publisher run by biologists for biologists. The Company aims to promote research and study across all branches of biology through the publication of its five journals.

Development
Advances in developmental biology and stem cells
dev.biologists.org

Journal of Cell Science
The science of cells
jcs.biologists.org

The Journal of Experimental Biology
At the forefront of comparative physiology and integrative biology
jeb.biologists.org

OPEN ACCESS

Disease Models & Mechanisms
Basic research with translational impact
dmm.biologists.org

Biology Open
Facilitating rapid peer review for accessible research
bio.biologists.org

In addition to publishing, The Company makes an important contribution to the scientific community, providing grants, travelling fellowships and sponsorship to noteworthy scientists, meetings, societies and collaborative projects around the world. The Company also runs a series of transdisciplinary workshops.

For subscriptions and consortia sales email **sales@biologists.com**

Recommend a subscription by completing our library recommendation form
http://biologists.com/downloads/Library.pdf

For more information please visit our website **biologists.com**

Development | Journal of Cell Science | The Journal of Experimental Biology | DMM Disease Models & Mechanisms | Bio Biology Open

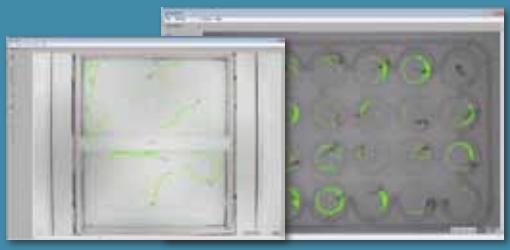
Loligo® Systems

LoliTrack

Video behavior analysis made easy

LoliTrack ver. 4 for Windows offers unique features like tracking identical looking animals in micro plates, groups, schools og swarms and analyzing the indivisual behavior. Tracking is based on contrast - no markers are needed. The software analyzes any .avi file and export data to Excel. Use your own PC and video camera.

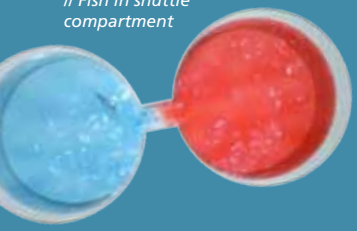
// 24-well micro plate analysis



// Multiple free swimming zebrafish larvae

Shuttle box

// Fish in shuttle compartment



Jump-start preference/avoidance measurements in zebrafish

This shuttle box for aquatic organisms is designed for preference/avoidance assays. Counter-current water flow enables the division into two separate water conditions, e.g., +/- your chemical of interest. The organisms can freely shuttle between the two conditions, letting you assess preference/avoidance behavior in a simple and reproducible way. We offer complete systems combining video and software solutions which can be used for automated behavioral analysis of a range of parameter, such as temperature, salinity, tubidity, pH/pCO_2 and dissolved oxygen.

Respirometers for active and resting fish

// Zebrafish in swim tunnel

Complete swim tunnel and chamber systems give you the best start to oxygen consumption studies

Measure metabolic rates, swimming performance, phenotype disease models, investigate exercise physiology and swimming behavior using swim tunnels and chambers for respirometry from Loligo® Systems.

Loligo® Systems has a +10 years history of making swim tunnels and chambers for measuring the respiration, performance, energetics, physiology, behavior and kinematics of fish. Loligo® Systems swim tunnels and chambers for respirometry are now installed in more than 100 labs around the world and their applications are documented by numerous scientific publications.

// Zebrafish in resting chamber

www.loligosystems.com

Niels Pedersens Allé 2 · 8830 Tjele · Denmark
Phone: +45 8999 2545 · Fax: +45 8899 2599
mail@loligosystems.com