ZIHP News

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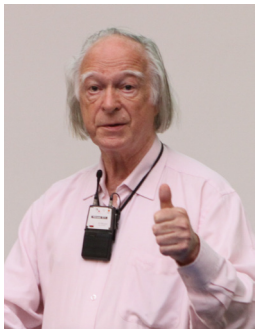
From genes to the organism and back again: Highlights from the 7th ZIHP Symposium

By Magdalena Seebauer

Despite some still sleepy faces early in the morning in the lecture room, Prof. Denis Noble took an impressively large audience of the ▶ **7th ZIHP Symposium** on a fascinating trip through systems biology. Noble is author of the best-selling book "Music of Life" and Emeritus Professor of Cardiovascular Physiology at the University of Oxford, UK. "The genome is not life itself", he stated. "Genes are prisoners of the organism. An organism is the only tool by which they can express functionality." In the past decades the reductionist approach has led to a vast knowledge in molecular biology. However, Noble claims that biomedical research must now move away from its obsession with genes alone. In his view, the organism itself is a complex system of many levels that interact in both ways, from the genes via proteins, cells and organs to the body and the environment - and vice versa!



Prof. Denis Noble

Nevertheless, genetic factors play undoubtedly an important role. Prof. Brenda Kwak Chanson, new member of the ZIHP Scientific Advisory Board from the University of Geneva, investigates which factors lead to the formation of an atherosclerotic plaque that ultimately can occlude a coronary artery and cause a heart attack. These are the well-known environmental factors as high blood pressure, smoking, obesity and physical inactivity. "But there are also genetic risk factors. Individuals with a certain form of a so-called connexin are at higher risk of developing atherosclerosis", Prof. Kwak reported. Connexins are involved in the communication between adjacent cells. They are responsible for the adhesion of cells to the inner layer of the vessels and the formation of an atherosclerotic plaque. For her it is clear: "In future, risk assessment will not only consist of blood biomarkers as cholesterol or HDL, but also of the profiling for a panel of gene polymorphisms."

Prof. Brenda Kwak Chanson

In the afternoon, Prof. Bente Klarlund Pederson from the Centre of Inflammation and Metabolism in Copenhagen, Denmark, caught the attention of the audience with her impressive findings on the skeletal muscle as an endocrine organ. "The exercising muscle relases substances to the blood that exert beneficial effects in other organs of the body", reported Prof. Pedersen. For these substances, she introduced the term "myokines". Myokines are cytokines – signalling molecules otherwise secreted by cells of the immune system - produced and released by the working muscle. "Exercise has an anti-inflammatory effect", stated Prof. Pedersen. These findings have great impact on the prevention and the treatment of many lifestyle diseases: Atherosclerosis, diabetes or obesity are clearly associated with chronic low-grade inflammation.

Prof. Bente Klarlund Pedersen

After the last coffee break, Prof. Richard Warth, new member of the ZIHP Scientific Advisory Board and physiologist from the University of Regensburg in Germany, illustrated the enormous challenge the kidney has to meet. Being on a trekking tour through the Sahara or attending the Oktoberfest in Munich requires quite a different regulation. Prof. Warth explained the mechanisms involved in the release of the hormone aldosterone. This hormone is responsible for the fine-tuning of the body's salt and water balance. Its release is controlled by potassium channels that form selective pores through the cell membrane. Using mice with genetically modified potassium channels, he reported on surprising results as for example on sex-dependent mechanisms.

Prof. Richard Warth

Beside these keynote lectures, junior researcher presented their cutting-edge results in oral presentations and during the poster session. Lively discussions evolved from controversial findings and were continued during the coffee breaks or at lunch - while enjoying delicious sandwiches. The ZIHP Symposium was again an excellent opportunity for an intensive scientific exchange between researchers exploring human physiology from the genes to the organism - and back again.

Photo gallery of the 7th ZIHP Symposium

More pictures of the 7th ZIHP Symposium can be found on our ▶ **photo gallery**.

Award for the best presentation

Lisa Bounoure, PhD student at the Institute of Physiology and member of the imMed PhD Program, was awarded the prize for the best presentation at the ZIHP Symposium. Congratulations!

Prof. Arnold von Eckardstein, member of the ZIHP Steering Committee, awards the prize for the best presentation to Lisa Bounoure.

ZIHP News: Lisa, please describe what your PhD project is about!

Lisa Bounoure: The kidneys play a very important role in maintaining a stable internal environment despite very variable dietary intakes.They are commonly described as the filters of the blood. They create the urine to eliminate the excess or waste products from our body. The kidneys' filtration work involves a lot of different mechanisms which can be impaired and lead to a large number of kidney diseases. My PhD project focuses on the study of one of these renal mechanisms that is crucial to maintain a normal level of acidity in the blood, ensuring a good function of the body organs. I work with genetically modified mice. I use them to characterize the pathology associated with their defective kidney function. The results I obtained so far could improve the diagnostics of patients presenting pathologic signs found in our mouse model. Hopefully, this will help to elaborate new therapies.

Award for the best posters

A poster jury, consisting of eight junior researchers, dedicated a considerable part of their time to studying and discussing the 80 posters. The decision whom to award the prizes for the best four posters was not easy: Congratulations to
Martin Peier, Research Unit Internal Medicine, USZ
Sabrina Engelhardt, Institute of Veterinary Physiology, UZH
Lori Asarian, Institute of Veterinary Physiology, UZH and Angelina Maric, University Children's Hospital Zurich!

ZIHP honorary membership to Prof. Heini Murer

At the ZIHP Symposium, honorary membership was awarded to Prof. Heini Murer "for his outstanding commitment and dedicated guidance of the Zurich Center for Integrative Human Physiology (ZIHP)". Prof. Murer was chairman of the ZIHP from its foundation until 2006. From 2006 to 2010 he was Vice President Medicine and Natural Sciences at the University of Zurich.

Events

September 23, 2011 – PhD Thesis Defense
▶ **Human gaze control during walking over obstacles**
Sandra Keller Chandra, Research Department of the Paraplegic Centre, Balgrist University Hospital Zurich

23. September 2011 bis 8. Januar 2012
▶ **Mumien, Mensch, Medizin, Magie**
Ausstellung des Zentrums für Evolutionäre Medizin der Universität Zürich.

September 27, 2011 – ZIHP Lunch Seminar
▶ **Cardiovascular magnetic resonance beyond three dimensions**
Prof. Dr. Sebastian Kozerke, Institute for Biomedical Engineering, University and ETH Zurich

September 27, 2011
▶ **The anti-metastatic activity of heparin – In vitro approaches to evaluate the mode of action and search for novel targets**
Prof. Dr. Gerd Bendas, Pharmaceutical Chemistry II, University of Bonn, Germany

October 4, 2011
▶ **Novel defects in intracellular vitamin B12 metabolism**
Prof. Dr. Matthias Baumgartner, Abteilung für Stoffwechselerkrankungen, Kinderspital Zürich

October 4, 2011
▶ **Multimodal regulation of the oxygen sensing pathway by presenilin membrane proteases**
Muriel Kaufmann, Institute of Physiology, UZH

3. Oktober 2011 WISSEN-SCHAFT WISSEN
▶ **Massgeschneiderte Medizin der Zukunft?**
Mit Prof. Ernst Hafen, Institut für Molekulare Systembiologie der ETH Zürich

6. Oktober 2011
▶ **Diuretikatherapie – trivial, oder doch nicht?**
Lunch-Symposium: Medizin kompakt

6. Oktober 2011
▶ **3. Zürcher Symposium für Sportkardiologie**

October 9 - 14, 2011
▶ **The impact of hypoxia on cells, mice and men**
Monte Veritá, Ascona, Switzerland

September-Oktober 2011
▶ **Neurologie-Fortbildung**

October 11, 2011 – ZIHP Lunch Seminar
► **Signals and mechanisms in the control of protein intake**
Prof. Dr. Daniel Tomé, AgroParisTech, Institute of Technology for Life, Food and Environmental Sciences, Paris, France

October 17, 2011
► **Signalling through NPH protein interactions**
Prof. Dr. Thomas Benzing, Department of Medicine and Centre for Molecular Medicine, University of Cologne, Germany

October 18, 2011
► **The renal distal convoluted tubule - key player in ion homeostasis**
Prof. Dr. Johannes Loffing, Institute of Anatomy, UZH

October 18, 2011
► **Mixed chimerism for tolerance induction - mechanisms and future avenues**
Dr. Pietro Cippà and Prof. Dr. Thomas Fehr, Institute of Physiology, UZH

Congratulations

Susanna Sluka, student of the imMed PhD program, received a ► **Young Investigators Award** at the XXIII Congress of the International Society on Thrombosis and Haemostasis in Kyoto in July 2011.

Andreas Metz, student of the imMed PhD program, received a ► **Duane F. Bruley Award** at the meeting of the International Society on Oxygen Transport to Tissue in Washington DC, USA in July 2011.

Prof. Max Gassmann, chairman of the ZIHP, has been selected ► **external principal investigator** of the renowned Peruvian University Cayetano Heredia.

imMed PhD Program - graduate courses

► **Flow Cytometry**
January 9 and 10, 2012
Deadline for registration: December 16, 2011

► **Mouse physiology and pathophysiology**
January 19 and 20, 2012
Deadline for registration: December 30, 2011

► **Electrophysiology**
February 14 and 15, 2012
Deadline for registration: December 30, 2011

imMed PhD Program – new students

Since the last recruitment round 12 new PhD students were accepted to the PhD Program in Integrative Molecular Medicine (imMed) and have started their work here in Zurich. Welcome!

Aimi Fabio, Department of Internal Medicine, USZ
Auberger Ines, Institute of Physiology, UZH
Bahrenberg Gregor, CABMM, UZH
Baumann Stephan, Institute of Physiology, UZH
Borner Tito, Institute of Veterinary Physiology, UZH
Georgiopoulu Stavroula, Department of Internal Medicine, USZ
Glanz Stephan, CABMM, UZH
Hänggi Pascal, Division of Haematology, USZ
Hasballa Reda, Institute of Clinical Chemistry, USZ
Miranda Melroy, Institute of Physiology, UZH
Saponara Enrica, Div. of Visceral & Transplantation Surgery, USZ
Wiegert Susanne, University Children's Hospital Zurich

Press review

► **Überzeugungsarbeit mit Hirn und Verstand**
Neuroökonomen untersuchen die neurobiologischen Grundlagen wirtschaftlichen Handelns. Bei Ökonomen alter Schule stösst die Zusammenarbeit von Wirtschaftswissenschaftlern und Hirnforschern immer wieder auf Skepsis. Philippe Tobler, ZIHP-Mitglied und Assistenzprofessor für Neuroeconomics and Social Neuroscience an der Universität Zürich, hält dagegen.
UZH News, 16. September 2011

► **Schweizer Forscher finden Ursache von Schlafkrankheit**
In zehn Prozent der Narkolepsie-Fälle wird die Krankheit von den Eltern auf ihre Kinder vererbt. Nun haben Forscher um das ZIHP-Beiratsmitglied Mehdi Tafti von der Universität Lausanne die genetische Mutation gefunden, die in diesem Fall weitergegeben wird.
Neue Zürcher Zeitung, 9. September 2011

► **Golfen ist gut fürs Gehirn**
Golftraining führt schon nach kurzer Zeit zu Veränderungen in der grauen Hirnsubstanz - auch in mittlerem Alter. Die Hirnsubstanz nimmt in Arealen zu, die für das Zusammenspiel von Auge und Motorik wichtig sind, wie eine Studie des Forschungsteams um ZIHP-Mitglied Lutz Jäncke zeigt.
Neue Zürcher Zeitung, 31. August 2011

► **Ausflug in die Eingeweide**
Kinderträume werden wahr: Protokoll einer Darmbegehung im Rahmen der Scientifica 2011 im Lichthof der Universität Zürich. „Reiseleiter“ war ZIHP-Mitglied Gerhard Rogler.
Tages-Anzeiger, 30. August 2011

► **«Gutes» Cholesterin ist nicht immer gut fürs Herz**
Um Herzinfarkten vorzubeugen, wird in Therapien das «gute» HDL-Cholesterin verwendet. Eine Studie des Teams um ZIHP-Mitglied Ulf Landmesser zeigt nun aber, dass dieses einen negativen Effekt auf die Gesundheit haben könnte.
Tages-Anzeiger, 16. August 2011

► **Übelkeit in Neigezügen muss nicht mehr sein**
Das Fahren in Neigezügen kann bei Passagieren Übelkeit und Erbrechen verursachen. Ein Team um den ZIHP-Forscher Dominik Straumann hat herausgefunden, warum das so ist – und präsentiert zugleich eine Lösung dagegen.
Neue Zürcher Zeitung, 29. Juli 2011

► **Traumatic brain injuries in the Asterix comic books**

ZIHP chairman Max Gassmann has evaluated a study that examined all 34 Asterix comic books for assault-based traumatic brain injury that occurred about 2000 years ago. A “must read” for every scientist seeking a more light-hearted view on research. Faculty of 1000, July 15, 2011

Recent publications

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