



# ZIHPNews

Zurich Center for Integrative Human Physiology

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## Aging research: promises and realities

Jerry Hartanto Fuady

**Year after year we're aging and it seems like there is nothing we can do about it. Why do we age? Is there a way to stop it? Aging is a topic of great interest because of the aging society and its association with numerous diseases, including cancer and Alzheimer's disease. In → last semesters seminars of Vision 2020 five renowned speakers from science and industry presented their research in aging.**

The first speaker of the Vision 2020 series, Yves Barral from the Institute of Biochemistry, ETH Zurich, showed that, if the so-called «aging factors» are prevented from passing into daughter cells in the process of cell-division during aging in yeast, this results in younger daughter cells. This is a first approach to slow the process of aging.

The second speaker was Stephen. J. Matlin, the CEO of Life Length, a company that aims to define aging by developing the Telomere Analysis Technology (TAT). This technology allows scientists to accurately measure the percentage of critically short telomeres individually cell-by-cell with the goal to compare the biologi-

cal age with the chronological age of an individual.

The fans of dieting were looking forward to the presentation of Jamie Barger, the COO of LifeGen Technologies. LifeGen investigates how to slow down the process of aging by caloric restriction. Barger showed that for example Resveratrol, a component of red wine, has the potential to induce expression of genes known to be associated with anti-aging properties.

The next speaker, Raul Mostoslavsky from Harvard Medical School, presented hints for an interplay between aging and cancer. He investigates this in sirtuins, a family of enzymes important in glucose metabolism. Overexpression of one of these sirtuins in mice has been shown to prolong their lifespan, however interestingly knockout of the same gene in mice has been shown to reduce the aggressiveness of cancer cells by reducing metastasis.

Last but not least, Adam Antebi from the Max Planck Institute for Biology of Ageing in Cologne, Germany, pre-

sented his work in protein quality control systems. He showed that by stressing a site for protein quality control in the cells of *C. elegans*, a worm frequently used as model organism, mutants developed which show prolonged life span. Therefore he believes that the maintenance of protein quality control systems is essential for the aging processes.

With the advent of the aging society, understanding the process of aging becomes more and more important. From these five speakers, we have had a glimpse of how far we have come in understanding aging up to now and how much more we still have to learn.

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Jerry Hartanto Fuady is a member of the organizing team of Vision 2020.

The series is organized by a committee of PhD students of the → **PhD Program in Integrative Molecular Medicine (imMed)** and supported by the SUK Program «Doktoratsprogramme».

**VISION 2020 - A PERSONAL PERSPECTIVE  
REGENERATIVE MEDICINE**

Spring semester 2014 - detailed program to be announced.

## imMed PhD Program: Retreat 2014

The → 9<sup>th</sup> retreat of the PhD Program in Integrative Molecular Medicine on June 11/12, 2014 will take the PhD students to Magglingen, high above the Lake of Biel, to the Swiss Federal Sports College where Swiss top athletes as well as schools and hobby sports clubs hold training camps.

As usual some of the imMed PhD students will present their projects in talks or on posters on the first day. In the evening a barbecue in the Jura forest will get the participants in the right mood for the team sports events of the second day.

## imMed PhD Program: Finished PhD theses 2013

Abegg K (2013): Effects of Roux-en-Y Gastric Bypass Surgery on Energy Expenditure and Bone Metabolism in Rats. Institute of Veterinary Physiology, UZH

Bounoure L (2013): The role of the ammonia transporter RhCG in systemic acid-base homeostasis. Institute of Physiology, UZH

Caprara C (2013): Role of Hypoxia-inducible Factor 1A and Erythropoietin in Retinal Physiology and Development. Lab for Retinal Cell Biology, Department of Ophthalmology, USZ

Egger S (2013): → Functional implications of the regulation of PASKIN mRNA. Institute of Physiology, UZH

Ernst D (2013): → Regulation of deoxy-sphingolipids and their role in disease. Institute of Clinical Chemistry, USZ

Herová M (2013): → Role of ChemR23 signaling in inflammation. Division of Clinical Chemistry and Biochemistry, University Children's Hospital Zurich

Holst S (2013): → Glutamatergic and Dopaminergic Mechanisms of Sleep-Wake Regulation in Healthy Humans. Institute of Pharmacology and Toxicology, UZH

Jacobs R (2013): → Analysis of mitochondrial function in mouse and men. Institute of Veterinary Physiology, UZH

Jordi J (2013): → Individual amino acids - hungry brain and mobile gut. Institute of Physiology, UZH

Metz A (2013): → Cerebral oxygen metabolism in sleep measured with near-infrared spectroscopy. Division of Neonatology, USZ

## imMed PhD Program Graduate courses

June 4/5, 2014

→ Introduction to human physiology: Cardiovascular regulation

Registration deadline: May 16, 2014

June 16/17, 2014

→ Introduction to human physiology: Sensory systems : How we hear and see

Registration deadline: May 23, 2014

July 10/11, 2014

→ Mouse physiology and pathophysiology

Registration deadline: June 27, 2014

Sluka S (2013): Tissue Factor in Development and Hemostasis: Role of Alternative Splicing Isoform and Allosteric Disulfide Bond. Clinic for Cardiology, USZ and Institute of Physiology, UZH

Trompf K (2013): → Regulation of Kidney Distal Convoluted Tubule (DCT) Cell Function. Institute of Anatomy, UZH

Weiss A (2013): → Protective action of maternal milk in gastrointestinal physiology. Institute of Physiology, UZH

Welti M (2013): → Congenital and Ethanol-induced Disorders of N-linked Protein Glycosylation. Institute of Physiology, UZH

## imMed PhD Program: New students

Since the last recruitment round 14 new PhD students who were accepted to the PhD Program in Integrative Molecular Medicine (imMed) started their work here in Zurich. Welcome!

Cantó Martorell Belén, Institute of Veterinary Physiology, UZH  
Gottwald Esther, Institute of Anatomy, UZH

Haider Thomas, Institute of Veterinary Physiology, UZH

Haunerding Veronika, Division of Rheumatology, USZ

Kehl Debora, Division of Cardiovascular Surgery Research, USZ

Lang Christopher, Tissue Biology Research Unit, University Children's Hospital

Mondal Mrityunjoy, Division of Psychiatry Research, UZH

Müller Melanie, Division of Cardiovascular Surgery Research, USZ

Opariita Lalita, Institute of Physiology, UZH

Pachera Elena, Division of Rheumatology, USZ

Restin Tanja, Institute of Physiology, UZH

Ruoss Severin, Orthopaedic Research, Balgrist University Hospital

Schori Christian, Division of Ophthalmology, USZ

Zimoch Jakub, Tissue Biology Research Unit, University Children's Hospital

## «Meh Dräck»



Allergien werden immer häufiger. Was sich tun lässt, damit sie nicht zur Epidemie der Zukunft werden, hat Georg Schäppi, Geschäftsleiter des Allergiezentrums Schweiz (aha!), im Rahmen der ZIHP-Veranstaltungsreihe «Wissen-schaf(f)t Wissen» erläutert.

[→ Zum UZH News-Artikel](#)

## Events

March 17, 2014

→ [Caloric restriction and atherosclerosis – a role for sirtuins?](#)  
PD Dr. Christian Matter, Institute of Physiology, UZH

March 17, 2014 - Antrittsvorlesung

→ [Common molecular pathways involved in aging, and age-dependent vascular dysfunction](#)  
PD Dr. Giovanni Camici, Center for Molecular Cardiology, UZH

March 18, 2014

→ [New methods for a functional and anatomical map of the mouse kidney](#)  
Dr. Anastasios Marmaras, Institute of Physiology, UZH

20. März 2014

→ [5. Zürcher Adipositasymposium](#)

20. März 2014

→ [9. Symposium Demenz und Neurodegeneration](#)

March 24, 2014

→ [Deoxysphingolipids, a novel biomarker for type 2 diabetes, are cytotoxic for insulin-producing cells](#)  
Dr. Richard Züllig, Clinic for Endocrinology, USZ

March 24, 2014 - Antrittsvorlesung

→ [Stem cells and bone loss: what's the link?](#)

PD Dr. Peter J. Richards, Center for Applied Biotechnology & Molecular Medicine, UZH

## WISSEN-SCHAFT WISSEN

### Nächste Veranstaltungen

7. April 2014

→ [Sichere Lebensmittel: Vom Stall bis auf den Teller](#)

Prof. Roger Stephan, Direktor des Instituts für Lebensmittelsicherheit und -hygiene der Universität Zürich

5. Mai 2014

→ [Krank werden im Spital: ein paradoxes Risiko](#)

PD Dr. Hugo Sax, Leiter der Abteilung für Spitalhygiene am Universitätsspital Zürich

## Call for applications: ZIHP Award

The Zurich Center for Integrative Human Physiology calls for applications for the →[ZIHP Award](#). With this award, outstanding single publications that evolved from ZIHP-funded cooperative projects will be honored.

Apart from the scientific excellence in the field of human physiology, the balanced representation of basic and clinical research and the «added value» of the cooperative research approach will be evaluated.

Application deadline: April 28, 2014

[→ Information and application form](#)

April 7, 2014

→ [Grainyhead transcription factors in collecting duct morphogenesis and differentiation](#)

Prof. Kai M. Schmidt-Ott, Max Delbrück-Center for Molecular Medicine, Berlin

April 8, 2014

→ [Nephrology at the half-century mark: much progress but miles to go before we sleep](#)

April 9, 2014

→ [Fetal origins of hypertension and kidney disease](#)

Prof. Dr. Barry M. Brenner, Harvard Medical School, Boston, MA, USA

April 8, 2014 - ZIHP Lunch Seminar

→ [Blood pressure genomics - how to make use of new methods to investigate cardiovascular risk](#)

Dr. Georg B. Ehret, Cardiology, Geneva University Hospitals, Geneva

April 14, 2014

→ [Clinical presentation and treatment options in primary neurotransmitter deficiencies](#)

PD Dr. Thomas Opladen, Metabolic Laboratory University Hospital of Heidelberg

May 19/20, 2014

→ [Psychiatry under the lens of algorithms: First Zurich Computational Psychiatry Meeting](#)

Registration and abstract submission deadline is March 30, 2014.

## Press review

### → Stents, die sich in Wohlgefallen auflösen

1977 gelang es in Zürich zum ersten Mal, ein Gefäß am Herzen per Ballonkatheter zu öffnen. Seither jagen sich die Innovationen - vom Metall-Stent über den medikamentenbeschichteten Stent, und jetzt neu: zum sich selbst abbauenden Stent. ZIHP-Forscher Thomas Lüscher nimmt Stellung.

Puls, Schweizer Radio und Fernsehen, 3. März 2014

### → Schlafforschung unter einem Dach vereint

Die Universität Zürich stärkt die Schlafforschung in Zürich, um sich im internationalen Wettbewerb besser zu positionieren. 15 Forschungsgruppen - unter ihnen einige ZIHP-Mitglieder - sind im neu gegründeten universitären Kompetenzzentrum für interdisziplinäre Schlafforschung vereint.

Medienmitteilung der UZH, 27. Februar 2014

### → Mikrobiologisches Pompeji im Zahnstein

Forscher des Zentrums für Evolutionäre Medizin der Universität Zürich um ZIHP-Mitglied Frank Rühli und Fachkollegen entdeckten im Zahnstein von eintausend Jahre alten Skeletten ein «mikrobiologisches Pompeji». Sie fanden eine hohe Konzentration von Erbsubstanz und zahlreiche Krankheitserreger. Dabei stellte sich heraus, dass im Mittelalter Parodontitis wohl von den gleichen Erregern wie heute verursacht wurde.

Medienmitteilung der UZH, 23. Februar 2014

### → «Lenins Hirn war ruiniert»

Die Grenzen unserer Intelligenz legen die Gene fest. Was wir daraus machen, hängt von uns, der Erziehung und von der Schule ab. Da liegt noch Potenzial brach, sagt ZIHP-Forscher Martin Meyer.

magazin. Die Zeitschrift der Universität Zürich, 20. Februar 2014

## 10<sup>th</sup> ZIHP Symposium August 29, 2014

Basic researchers and clinical scientists will get together to present and discuss their research in fields related to human physiology. Young researchers will present their cutting-edge results in oral and poster presentations. The ceremony of the → ZIHP Award will take place at the symposium.

Keynote speakers:

### → Prof. Friedo Dekker

Department of Clinical Epidemiology, Leiden University Medical Center, Netherlands

### → Prof. Heribert Schunkert

German Heart Center, Munich, Germany

### → Prof. Bengt Kayser

Institute of Sports Sciences, University of Lausanne, Switzerland

### → Website of the symposium

Save the date! The submission of abstracts for oral presentations and posters is already possible.

## Recent publications

Recent publications of ZIHP members mentioning the ZIHP in the affiliation section or acknowledging the financial support of the University Research Priority Program «Integrative Human Physiology» are listed here.

Adrian A, Schoppmann K, Sromicki J, Brungs S, von der Wiesche M, Hock B, Kolanus W, Hemmersbach R, Ullrich O: → **The oxidative burst reaction in mammalian cells depends on gravity.** Cell Commun Signa 11: 98, 2013

Albers J, Rajski M, Schönenberger D, Harlander S, Schraml S, von Teichman A, Georgiev S, Wild PJ, Moch H, Krek W and Frew IJ: → **Combined mutation of Vhl and Trp53 causes renal cysts and tumours in mice.** EMBO Mol Med 5: 949-64, 2013

Albrecht B, Brandeis D, Uebel H, Valko L, Heinrich H, Drechsler R, Heise A, Müller UC, Steinhausen HC, Rothenberger A, Banaschewski T: → **Familiality of neural preparation and response control in childhood attention deficit-hyperactivity disorder.** Psychol Med 43(9): 1997-2011, 2013

Albuquerque B, Häussler A, Vannoni E, Wolfer DP, Tegeder I: → **Learning and memory with neuropathic pain: impact of old age and progranulin deficiency.** Front Behav Neurosci 7: 174, 2013

Annema W, von Eckardstein A.: → **High-density lipoproteins. Multifunctional but vulnerable protections from atherosclerosis.** Circ J 77(10): 2432-48, 2013

Asarian L, Geary N: → **Sex differences in the physiology of eating.** Am J Physiol Regul Integr Comp Physiol 305(11): R1215-67, 2013

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- Chen X, Boesiger P, Henning A: → **J-refocused 1H PRESS DEPT for localized 13C MR spectroscopy.** *NMR Biomed* 26(9): 1113-24, 2013
- Cippà PE, Gabriel SS, Chen J, Bardwell PD, Bushell A, Guimezanes A, Kraus AK, Wekerle T, Wüthrich RP, Fehr T: → **Targeting apoptosis to induce stable mixed hematopoietic chimerism and long-term allograft survival without myelosuppressive conditioning in mice.** *Blood* 122(9): 1669-77, 2013
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