The sixth issue of IARU News reports on exciting developments and initiatives within the IARU ALH project. Please find updates in this edition of IARU News on: Three IARU conferences in Copenhagen, June 2014, and a newly-formed IARU ALH Steering Committee; the future of the University of Copenhagen Center for Healthy Aging; the IARU ALH project and iHan activities; the 2013 and 2014 IARU Summer School programs.

Please plan to participate in IARU-related Conferences in June 2014. We look forward to seeing you in Copenhagen!

With best regards,

Ulla Wewer, Professor, DM.Sci
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Empowerment of the ALH network

In the future, the University of Copenhagen and CEHA intend to work to strengthen the ALH network among IARU researchers and students. For example, at the IARU Presidents meeting in 2013, member universities endorsed the idea of greater engagement across IARU campuses, and more joint workshops, exchange programs and funding opportunities. It was also decided that an IARU ALH Steering Committee would be formed to implement this proposal. To date, member universities NUS, ANU, PKU, Tokyo, Berkeley, Oxford, Cambridge and UCPH have appointed representatives to the Steering Committee.

The current members of the IARU ALH Steering Committee are:

- NUS: Prof. Barry Halliwell
- ANU: Prof. Kaarin Anstey
- PKU: Prof. Xiaoying Zheng
- Univ. of Tokyo: Prof. Junichiro Okata
- Berkeley: Prof. Guy Micco
- Oxford: Dr. Louise Lafortuna
- Cambridge: Prof. Sarah Harper
- UCPH: Prof. Lene Juel Rasmussen (Chair)

The first meeting of the IARU ALH Steering Committee will take place on 20 June, 2014, in Copenhagen, in connection with the concurrent IARU Congresses described below.

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Invitation: Three IARU Conferences in 2014

With the endorsement of IARU to enhance the ALH network, the University of Copenhagen will host three concurrent IARU Congresses from 17-22 June, 2014. Approximately 250 IARU and non-IARU scientists working on aging are expected to attend. The conferences are entitled:

1. “Genome Dynamics in Neuroscience and Aging”, targeted at scientists and clinicians interested in genomic stability, mitochondrial function and neuronal development and degeneration.

2. “Cultures of Health and Aging”, for researchers in the humanities, and the social and behavioral sciences.
   Time: 20-21 June 2014, Copenhagen

3. 2nd Interdisciplinary Graduate Student Conference: “Aging Research and Scientific Careers” (IGC), targeted at PhD students from various research fields with interests in health and aging.
   Time: 21-22 June 2014, Copenhagen,

We hereby invite all interested IARU researchers to participate in these events and request that IARU universities encourage PhD students to attend the 2nd Interdisciplinary Graduate Student Conference: “Aging Research and Scientific Careers” (IGC).

More information on the conference subthemes, speakers, programs, registration and practicalities is available at www.iaru-conferences-2014.dk.

The University of Copenhagen supports these IARU activities with 235,000 USD.
In 2009, the University of Copenhagen launched the Center for Healthy Aging (CEHA), which grew out of and was inspired by the IARU Aging, Longevity and Health (ALH) project. For its first five years, CEHA was funded by the Danish Nordea-fonden, which committed $26 million USD to support CEHAs multi-disciplinary research activities through 2013. In June 2013, Nordea-fonden extended its support of CEHA, providing $26 million USD to support CEHA from 2014-2018.

CEHA is now an established research program, with a reputation for quality research, novel insight into the mechanisms of aging, and outreach activities in greater Copenhagen and Denmark. Looking forward, CEHA will build on its past achievements and continue to promote inter-disciplinary collaborations focused on healthy aging. CEHA will also focus in future on the unifying theme of “energy” in aging, at the level of the cell, the individual and society. Energy, in this context, is understood to have physical, biological psychological, social, psychosocial and economic dimensions. To solidify this unifying vision, CEHA will be re-structured around three research themes and a new communication platform, as follows:

**Theme 1: Community innovation for healthy aging**
Research on health-promoting activities among older people and interventions in three distinct Danish municipalities. How do different local communities “energize” individuals and groups for active, healthy aging?

**Theme 2: Life course aging processes: Lifespan exposures and healthy aging**
Aging processes throughout the life course; an intervention project will be conducted in collaboration with the City of Copenhagen. The intervention will explore whether physical activity protects against age-related frailty, lack of vitality, and deterioration in muscle and brain function.

**Theme 3: Energy levels in humans: What are the mechanisms underlying reduced energy levels?**
Does unrepaired DNA damage and mitochondrial dysfunction contribute to defects in ATP production or utilization in older individuals, leading to reduced vitality? Does mitochondrial dysfunction alter cognition and muscle function? Cohort studies, qualitative social research, molecular biology, physiology experiments and surveys conducted during CEHA phase I provided insights into healthy aging; for example, data suggested that physical exercise in late life promotes longevity and reduces aging-related disease and dysfunction. In future, CEHA will design and perform intervention studies to determine how physical activity might promote healthy aging. Ultimately, these studies will help medical professionals advice Danish citizens on how to ensure longevity with lower risk of disease and disability in late life.

**Health promotion, communication and outreach**
CEHAs goal is to promote healthy aging and to reduce aging-associated decline and dysfunction in Denmark and beyond. To achieve this goal, basic knowledge about healthy aging needs to be communicated broadly within the academic community and to other government and social leaders, thereby promoting vigorous public discourse on how to achieve healthy aging. In CEHAs next phase, a new communication team will help implement this vision, using dissemination in traditional mass media, dialogue-based communication between researchers and the public, and public event programming.

More information on CEHA: healthyaging.ku.dk.
Activities in the Aging Longevity and Health Project

Neurodegeneration and Life Course Issues
In the subproject Neurodegeneration and Life Course Issues, several interdisciplinary research projects on life course issues have been established in CEHA, as well as the International Healthy Aging Network (iHAN), led by Professor Albert Gjedde from CEHA. iHAN is a group of researchers affiliated with IARU who study molecular and cognitive markers of healthy and unhealthy brain aging. These scientists are collecting and analyzing PET images from brains of individuals with and without Alzheimer’s disease, searching for molecular markers of disease. Researchers working on this project are from Monash and Queensland Universities in Australia, Yale, Johns Hopkins, and University of California, Berkeley in the US, Aarhus and Copenhagen Universities in Denmark, and Oslo University in Norway.

iHan sponsored a series of seminars by Albert Gjedde in November and December 2013, entitled Beyond the Amyloid Cascade. The seminars were, given at three locations: 1) the Lawrence Berkeley Laboratory in Berkeley, California, where iHAN-trainee Adjmal Nahimi MD was hosted by Director William Jagust MD; 2) the Center of Advanced Imaging at the University of Queensland in Brisbane, where iHAN-analyst Anders Rodell PhD and iHAN-trainee Michael Gejl MD currently are hosted by Director David Reutens MD; and 3) the BRAINlab at the Panum Institute’s Department of Neuroscience and Pharmacology of the University of Copenhagen. Also in November 2013, the BRAINlab of the Department of Neuroscience and Pharmacology and CEHA hosted Professor Fahmeed Hyder PhD of Yale University, who spoke on Changes of Brain Energy Metabolism with Aging.

Publications of the Danish arm of iHAN in 2013

Image of brain maps of amyloid-beta accumulation in brain of patients with Alzheimer’s disease, analyzed by three different methods (WARM, SRTM, SUVR).
Left panels: Patients. Right panels: Healthy age-matched volunteers. Note the greater differentiation observed with WARM (from Rodell et al. 2013, see list of references).
The third IARU Summer School on healthy aging took place from 3 - 22 July, 2013. Investigators representing all CEHA programs lectured at the summer school, which was coordinated by CEHA Associate Professor Ying Liu. Students from the Peking University, University of Tokyo, Australian National University, National University of Singapore, ETH Zurich and University of Copenhagen attended the course, which received an excellent evaluation.

The CEHA Summer School is aimed at students who are interested in aging research. The lectures provide instruction in basic research concepts and principles in aging research, covering multiple disciplines, including humanities, social sciences, epidemiology, neurology, physiology, and molecular biology. Students also conduct supervised research projects during the summer school term. For more information on CEHA summer school including the summer school of 2014, please visit healthyaging.ku.dk/education/iaru-summer-school.

IARU Summer School on Healthy Aging

KIC

Professor George Leeson (OIA) participated in a half-day networking workshop on 23 August, 2013, for Scandinavian aging centers. The purpose of the workshop, organized by CEHA, was to exchange ideas and promote ongoing initiatives within the aging research community. Workshop participants also discussed grant writing and applications for funding to EU Knowledge and Innovation Communities (KICs), managed by the European Institute of Innovation and Technology (EIT). The EIT based in Budapest, Hungary, has recently launched a call for KICs to provide innovative solutions to societal problems as part of Horizon 2020, the European Union’s framework programme. A KIC is a highly integrated, creative and excellence-driven partnership which brings together the fields of education, technology, research, business and entrepreneurship. The KIC tackles grand-challenges of the European Community to ensure economic growth along with sustainable solutions in the 21st century.

Evolutionary Medicine

Evolutionary Medicine is an established research and education program of the Centre for Social Evolution (CSE) in the Department of Biology, University of Copenhagen, coordinated by Professor Jacobus J. Boomsma. Marie Curie postdoctoral fellow Sean Byars conducted evolutionary analyses of mental disease using the Danish National Hospital Register and the Danish Civil Registration System. This study provided an explicit test of the Badcock & Crespi hypothesis that autistic and schizophrenic diseases may in part have a deep evolutionary background related to imbalances in genomic imprinting, and found strong correlative evidence for this hypothesis. The study was initiated when Professor Steve Stearns (Yale) was on sabbatical in Copenhagen in 2008. PhD student Birgitte Hollegaard is studying pregnancy-induced hypertension and preeclampsia using the same data sets. CSE scientists will hold the MSc course in Evolutionary Medicine for the sixth time in spring 2014, expecting an enrollment of more than 30 students from the biology, biochemistry and molecular biomedicine curricula.