On 25 November 2008, the Nordea Foundation donated 26 million US$ to establishing a multi-disciplinary center for healthy ageing during the next five years and with the possibility for an additional 26 million US$ for the following five years. It is expected that this new Copenhagen Center for Healthy Ageing at the Faculty of Health Science, University of Copenhagen will contribute significantly to the research efforts within the IARU “Ageing, Longevity and Health” project. The Center will open primo January 2009.

The Faculty of Health Sciences, University of Copenhagen together with Peking University, coordinates the IARU research programme “Ageing, Longevity and Health”, which embraces three sub-programmes:

- Health Policy Challenges of Ageing Populations,
- Neurodegeneration and Life Course Issues and
- Evolutionary Medicine.

The vision for the new center is to promote healthy ageing and general health in the ageing population. The center will be in a unique position to conduct research of a high international standard and will also provide educational programmes for postgraduate students and scientists involved in research on ageing. Thus the new center also presents strong outreach to IARU researchers and students.
The research in Center for Healthy Ageing is focused on five specific research programmes, each of which will contribute new knowledge on how more people can live healthy lives and enjoy a better life in old age. The research programmes span a broad spectrum, from the molecular and cellular level to the levels of individuals and society.

The research programmes include:

**Molecular and Cellular: Neurobiology**
The primary goal within the neurobiology programme is to investigate how the brain is affected by ageing processes. The activity of the brain and the response of the brains to environmental demands require energy, and minor errors in the energy metabolism of the brain, working either alone or in combination with unstable genetic factors, may cause nerve damage and disrupt oxygen delivery to the cells (oxidative stress). Researchers will identify the biomarkers that affect the ageing processes and changes in the nerve cells (neurodegeneration), illuminating how reduced oxygen and sugar cause early onset of ageing and impaired brain function. Additionally, changes in the brains of people showing signs and symptoms of mild senile dementia will be investigated with modern brain imaging methods. Finally, the research will show how these changes to the brain affect sleep patterns and salivary gland function.

**Molecular and Cellular: Skeletal muscle metabolism**
The goal with this programme is to investigate the causes of age-related loss of muscle function, together with the consequences of inactivity and the ability to rebuild tissue afterwards. The main focus of this research is on the significance of reduced oxygen delivery in combination with the function of the cells’ own energy centres, the mitochondria. Researchers will also strive to understand how both socio-economic factors and cognitive characteristics affect muscle function throughout the ageing process.

**Body and Life: Individual ageing through the life course**
This programme focuses on identifying the biological, physiological, and mental factors (markers) of early ageing, and on studying the ageing process over the life course. The approach is to investigate how biological, physiological, and social factors in childhood and early adulthood affect early ageing in the middle-aged as well as loss of abilities and function in the elderly. The studies will be carried out using the Copenhagen Ageing and Midlife Biobank (CAMB), which will be established from 2009-2011.

**Society and Culture: Healthcare policy and prevention for the elderly**
The analyses of the significance of health policies, the organisation of the health care system, and the medical technologies available for use in preventive medication form the basis of this programme. Additionally, this programme will focus on the role played by social and ethnic factors in forming attitudes about, reactions to, and use of preventive medicines.

**Health users and innovation: Health promotion, communication and user-driven innovation**
The goal of the programme is to illuminate how the users of the health care system handle their health over the course of a lifetime and to develop methods to promote health as a user-driven process. Innovation is an essential element of creating user-centred health promotion. The programme will translate ideas arising from basic and field work based research into the development of new innovative approaches to the promotion of health, addressing the needs of an ageing population.

**Cross-disciplinary research within and among the programmes: The effects of synergy**
Cross-disciplinary collaborations are central to the work of the Center for Healthy Ageing. A series of common themes have been established. For example:

**Consequences of changes in the oxygenation processes**
Age-related changes in the oxygenation processes seen have significant impact on both brain and muscle function. The goal here is to investigate how different life-long patterns as well as mental and motor dysfunction affect the different signs of early ageing (markers), cellular metabolism, and the oxygenation processes.

**Mental dysfunction and reduction of muscle function**
The goal is to investigate whether or not there is a connection between mental dysfunction, reduced muscle function, and a general impairment of abilities. In addition, researchers will investigate how biological, sociological, and psychological factors in early life affect later weakening of muscle and mental functions.

**Course of life, medication, medical intervention, and survival analyses**
These studies investigate how biological, mental, and psychological factors throughout the life course affect the use of medicine and attitudes towards medication. Another aspect will be focus on how medication and medical interventions affect both the ability to function and quality of life among the ageing population. Analyses of the many factors related to both ageing and survival throughout the entire life course will form the third facet of this research.

**Researchers and location**
The five research programmes are lead by Professor Martin Lauritzen, Professor Michael Kjar, Professor Kirsten Avlund, Professor Allan Krasnik and Associate Professor Lene Otto from the University of Copenhagen respectively. In addition, Professor Vilhelm Bohr from the National Institutes of Health (USA) will be closely involved with the research activities and scientific progress of the Center.

A website for the Center in English will also be set up at the address http://healthyageing.ku.dk during early 2009.
On 12-14 May 2008, the IARU research group for the sub-project “Neurodegeneration and Life Course Issues” at the University of Copenhagen hosted a successful workshop on the topic “Ageing – From Molecules to Population”. The workshop was attended by 40 participants representing a number of IARU universities (ANU, NUS, Yale, University of Tokyo, University of Copenhagen) as well as other universities and institutions such as the University of Washington, the Buck Institute, University of Jyväskylä, University College London, MRC Unit for Lifelong Health and Ageing, London, and a number of Nordic universities. A report covering the topics of the more than 20 presentations from the workshop delegates was published in the American journal “Mechanisms of Ageing and Development” (2008 Oct;129(10):614-23).

The workshop also covered a breakout session for IARU representatives with focus on future funding strategies. In order to strengthen the development of new funding proposals, a taskforce was formed by Hiroko Akiyama (Tokyo) Kaarin Anstey (ANU), Barry Halliwell (NUS), Martin Lauritzen, Kirsten Avlund and Vilhelm Bohr (Copenhagen). The plan is to expand the taskforce further. As a starting point, the taskforce agreed to explore the availability and content of existing cohorts in the IARU member countries as well as to propose biomarkers for oxidation and neurodegeneration. The idea is to base the first joint grant proposal on these questions.

Connected to the sub-project Evolutionary Medicine, the Copenhagen Centre for Social Evolution (CSE) hosted professor Stephen C. Stearns from Yale for a 3 months sabbatical (mid August – mid November 2008). Stephen Stearns taught the first MSc course in Evolutionary Medicine in Copenhagen, and he also gave a Biology Departmental seminar on “Evolutionary Medicine” on 24 October 2008. Furthermore, on 10-13 November 2008 in Copenhagen, professor Stearns and CSE Director Professor Jacobus J. Boomsma hosted an IARU workshop of 13 participants from Cambridge, Copenhagen, ETH, Oxford, Berkeley and Yale. During this workshop, the first draft of a grant proposal on “The Evolution and Ecology of Disease” was produced.

With best regards,

Ulla Wewer, Professor, DM.Sc
Dean of the Faculty of Health Sciences
University of Copenhagen, Denmark