



## Workshop Healthy Ageing

24 April 2018

at the German Primate Center – Leibniz Institute for Primate Research (DPZ)

### Focus groups

**Working sessions: Tuesday, 24 April 2018, 10:45 – 12:15 h**

#### **1\_ Alternative animal models of ageing**

Head [Prof. Dr. Thomas B. Hildebrandt \(IZW\)](#)  
by invitation only

Thematic focus To better understand the principles of ageing, the focus of this group is to elucidate genetic and biochemical factors which determine the ageing process across different species. This involves the use of non-model-species, e.g. ones with extremely short or long life expectancies. The knowledge of different solutions that have evolved in response to similar biochemical challenges - attenuating or enhancing life-expectancy - may be applicable to contribute to an extended health span in human societies in the future.

#### **2\_ Immunology and ageing**

Head [Prof. Dr. Radbruch \(DRFZ\)](#)  
by invitation only

Thematic focus Over the recent years it became clear that ageing of the immune system influences organismal ageing. Researchers from the participating Leibniz institutes teamed up with external partners to delineate molecular mechanisms, genetic factors, and cellular interactions that lead to functional impairments of the immune system in the context of ageing as well as its consequences for organismal ageing. We want to answer if ageing-associated impairments in immune function aggravate damage accumulation and biological ageing.

**Working sessions: Tuesday, 24 April 2018, 13:00 – 14:30 h**

### **3\_BIOAGE**

Head [Prof. Dr. Wolfgang Ahrens](#), [Dr. Manuela Marron \(BIPS\)](#)  
by invitation only

Thematic focus The interdisciplinary BIOAGE focus group (six Leibniz Institutes and one University Hospital) will investigate an association network, consisting of several modifiable extrinsic and depending intrinsic determinants of immunological, stem cell, bone and skin ageing. This project will advance our understanding of pathways by deploying innovative methods and assessing novel predictors of biological ageing in a real-life setting within a large population-based sample of the NAKO Health Study.

### **4\_Determinants of learning and neural plasticity in ageing: From mice to men**

Head [PD Dr. Stephan Getzmann \(IfADo\)](#)  
by invitation only

Thematic focus Human ageing is associated with deficits in goal-directed learning and reduced neural plasticity. Yet, the underlying neural mechanisms remain poorly understood as most age-comparative human studies rely on correlational designs. Our focus group develops a species-comparative paradigm to examine effects of external (e.g. environmental enrichment) and internal (e.g. epi-genetic) factors as well as interventions (cognitive, physical training) on learning strategies and neural plasticity in ageing.

### **5\_Biomarkers of ageing associated dysfunctions and diseases**

Head [Prof. Dr. Helmut E. Meyer \(ISAS\)](#)  
by invitation only

Thematic focus The identification of biomarkers e.g. proteins, metabolites and lipids is relevant for the health status of the human metabolic system and age-related diseases, e.g. Alzheimer's disease (AD), the most common cause of dementia in elderly (50–70%). These markers can be used for detecting the early onset of such diseases, as prognostic parameters as well as for monitoring the success of disease treatments. In order to investigate such markers we established a blood biobank (>2000 characterized blood donors) and investigated the composition of Platelet-derived extracellular vesicles (PI-EVs). Using differential centrifugation, nanoparticle tracking analysis, mass spectrometry and Western blot technology we identified PI-EVs subpopulations which contain high amounts of AD relevant molecules: i.e. APP, the AD hallmark protein and ApoE, the most prominent genetic risk factor for AD [1]. This indicates that PI-EVs can shuttle bioactive molecules (ApoE, APP) and nutrients (phospholipids, sphingolipids and cholesterol) between the blood compartment and neural cells. Expansion of microvesicles may negatively affect the structure and/or function of neurons under certain pathological circumstances. The focus of the research group is the molecular investigation of PI-EVs, which will provide the basis for an understanding of their role regarding the biogenesis of AD and other ageing associated dysfunctions. Therefore, we cooperate with highly qualified partners of the Leibniz Research Alliance, the Leibniz Institute on Ageing -

Fritz Lipmann Institute (FLI) and the German Institute of Human Nutrition (DIfE) and also external clinical partners (University of Regensburg and University of Göttingen). This gained knowledge will result in the identification of pre-symptomatic biomarkers which will allow for a therapy (elimination of neurotoxic PI-EVs subpopulation and components) preventing irreversible neuronal damage and in this way a proper treatment of this so far incurable disease.

[www.leibniz-healthy-ageing.de](http://www.leibniz-healthy-ageing.de)