Board of examiners

Prof. dr. Bente Klarlund-Pedersen
University of Copenhagen (DK)
Centre of Inflammation and Metabolism &
Centre for Physical Activity Research

Prof. dr. Florence Chainiaux
Université de Namur (BE)
Unité de Recherche en Biologie Cellulaire

Prof. dr. Ron Kooijman
Vrije Universiteit Brussel
Department of Experimental Pharmacology &
Center for Neurosciences

Prof. dr. Christian Demanet
Vrije Universiteit Brussel
Department of HLA
Molecular Hematology Universitair Ziekenhuis Brussel

Dr. Cajsa Tonoli
Vrije Universiteit Brussel
Department of Human Physiology

Prof. dr. Christel Geerts, Chair
Vrije Universiteit Brussel
Department of Gerontology

Prof. dr. Ivan Bautmans, Promotor
Vrije Universiteit Brussel
Department of Gerontology
Prof. em. dr. Tony Mets, co-promotor
Vrije Universiteit Brussel
Department of Gerontology
Prof. dr. Rose Njemini, co-promotor
Vrije Universiteit Brussel
Department of Gerontology

Geneeskunde & Farmacie

GF

PhD in Gerontological Sciences
2015-2016

INVITATION to the Public defence of

Louis Nuvagah FORTI

To obtain the academic degree of **'DOCTOR IN GERONTOLOGICAL SCIENCES'**

Impact of Physical Exercise on Chronic Low-Grade Inflammatory Profile and Brain Derived-Neurotrophic Factor in Older Persons.

Tuesday 30 August 2016
Auditorium **Brouwer**, 17:00
Faculty of Medicine and Pharmacy, Laarbeeklaan 103, 1090 Brussel

How to reach the campus Jette:
http://www.vub.ac.be/english/infoabout/campuses

Vrije Universiteit Brussel

Summary of the dissertation

Ageing is associated with an increase in pro-inflammatory mediators in the circulation, corresponding to a chronic low-grade inflammatory profile (CLIP). One of the prominent risk factors for the development of CLIP is physical inactivity. Some studies have revealed the beneficial effects of physical exercise in suppressing CLIP but the exact mechanism is not known. Contracting skeletal muscle is reported to secrete myokines (among which Interleukin (IL)-6) which have beneficial effects and play a potential role in countering CLIP. In addition, physical exercise has been reported to increase peripheral BDNF levels. The aim of this thesis was to investigate the impact of resistance training on inflammatory cytokines and brain-derived neurotrophic factor (BDNF) in healthy young adults and community-dwelling older persons. As well, we explored the dose-response relationship and sex effects with regards to circulating inflammatory mediators and peripheral BDNF levels following resistance training at different external loads in older persons.

We reported the beneficial effects of resistance training in suppressing CLIP and increasing BDNF in older people. Furthermore, we showed that resistance training has anti-inflammatory effects already at young age and that the effects on the different inflammatory mediators depends on the magnitude of the external load. In older men, resistance exercise at high external load induces additional anti-inflammatory effects, but a mixed-low resistance training program was most effective in increasing BDNF concentrations. Continuous exercise adherence is necessary to maintain the long-term effects as the effects on BDNF disappear after 24 weeks of detraining.

Curriculum Vitae

Louis Nuvagah Forti graduated as a laboratory Scientist (MLS) in 2007 at the Faculty of Health Sciences (FHS) of the University of Buea-Cameroon. For his Bachelor's thesis, he investigated the prevalence of HIV and Hepatitis B virus (HBV) among prospective blood donors attending the Blood Transfusion Unit of the Yaoundé Central Hospital in Cameroon. He worked as a laboratory scientist at Laboratoire d'analyses Medicales du Centre in Yaounde-Cameroon for a year. In 2009 he obtained a scholarship for Master's study by the Research Council-Vrije Universiteit Brussel under the umbrella of the VLIR-OWN Initiative 2007 (Cameroon Diabetes Epidemiology and Registry project). "Contribution to diabetes epidemiology in Cameroon by risk analysis in patients and first degree relatives (Belgium-Cameroon collaboration)". He participated actively as a field-worker in Cameroon, collecting genetic data, presenting genetic data to stakeholders in Cameroon and Belgium, development of activity/financial reports. After obtaining his M.Sc. in molecular epidemiology with a dissertation entitled "HLA gene and -23HphI Single Nucleotide Polymorhisms and Type 1 Diabetes in the Cameroonian Population: Association Analyses and Genotype-Phenotype Correlation". He pursued a Ph.D. program at the same University in the department of gerontology with Prof. Dr. Ivan Bautmans, Prof. Dr. Tony Mets and Prof. Dr. Rose Njemini as his mentors. His research activities focus on investigating the effect of physical exercise on inflammation in older persons. He is author and co-author of six publications in the international scientific literature.