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EDUCATION

2009 Master of Science in Biochemistry and Biotechnology: molecular and cellular gene-biotechnology, Faculty of Pharmaceutical, Biomedical and Veterinary Sciences, University of Antwerp

CURRENT POSITION

2013 – PhD student
Reference Center for Biological Markers of Dementia (BIODEM), Laboratory of Neurochemistry and Behavior, Institute Born-Bunge, University of Antwerp

KEYWORDS

Dementia – frontotemporal lobar degeneration – biomarkers – cerebrospinal fluid – immunoassay – electroencephalography

SUMMARY BIOSKETCH

Joery Goossens became a master of science in 2013 and subsequently started a PhD at the Reference Center for Biological Markers of Dementia at the Institute Born-Bunge of the University of Antwerp. Under promotorship of Prof. Dr. Sebastiaan Engelborghs and Prof. Dr. Julie van der Zee, his main research topic is the biomarker-based diagnosis of frontotemporal lobar degeneration (FTLD).
FTLD is one of the most common causes of dementia after Alzheimer's disease (AD), especially in young patients. However, the clinical, genetic and pathological heterogeneity that characterizes FTLD represents a major diagnostic challenge. Reliable biochemical markers that can be analyzed in cerebrospinal fluid (CSF) and/or blood and correlate to specific disease processes in the brain, would significantly improve diagnosis of FTLD. In AD, such biomarkers already exist and are part of research diagnostic criteria. A high-ranking candidate to become a new diagnostic marker for FTLD is the brain inclusion protein TDP-43. The current project aims to develop a novel immunoassay to quantify TDP-43 in CSF and blood. This immunoassay will also have applications in pathology studies of FTLD and other TDP-43 related diseases (e.g. amyotrophic lateral sclerosis, ALS). Next to TDP-43, other interesting biochemical markers that may improve FTLD diagnosis, such as the brain inclusion protein tau, will also be evaluated by immunoassays. To complement these biochemical markers, the potential of electroencephalography (EEG) as a non-invasive functional marker of FTLD will be investigated. Changes in brain activity of FTLD patients will be recorded by EEG, and analyzed with innovative mathematical analyses. All these tests will then be combined in a biomarker-based model for the detection of FTLD, which will improve early and differential dementia diagnosis.