F.M.R.E.
G.S.K.E.

Séance académique

Academische zitting

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19 avril/april 2023

Projets de recherche/Onderzoeksprojecten 2023–2025

→ Projets interuniversitaires/Interuniversitaire projecten

- **Prof. dr. Geert Van Loo (UGent)**
- **Prof. dr. Kiavash Movahedi (VUB)**
  OTULIN in neuroinflammation and Alzheimer pathology

- **Prof. dr. Sarah Weckhuysen (UAntwerpen)**
- **Prof. dr. Bjorn Menten (UGent)**
  Detection of somatic mutations and disease-defining methylation patterns in brain tissue and cerebrospinal fluid of patients with non-acquired focal epilepsy

- **Prof. dr. Renzo Manusco (UAntwerpen)**
- **Prof. dr. Joris De Wit (KU Leuven)**
  Dissecting the molecular basis of microglia-synapse communication in AD

- **Prof. dr. Ann Massie (VUB)**
- **Prof. dr. Lutgarde Arckens (KU Leuven)**
  The xCT-/- killifish to validate the potential of system xc- as therapeutic target in Parkinson's disease

- **Prof. Karelle Leroy (ULB)**
- **Prof. Laurence Ris (UMONS)**
- **Prof. dr. Kristel Sleegers (UAntwerpen)**
  Involvement of diabetes and antidiabetic treatment on tau pathology propagation

→ Projets universitaires/Universitaire projecten

KU Leuven

- **Prof. dr. Bart De Strooper (VIB)**
  A vicious Aβ oligomers-dependent neuron-microglia cycle fuels Alzheimer's Disease

- **Prof. Veerle Baekelandt**
  The role of LRRK2 in the peripheral immune system and gut-to-brain spreading of alpha-synuclein pathology in Parkinson's disease

- **Prof. dr. Pierre Vanderhaeghen (VIB)**
  Deciphering the mechanisms underlying neurogenesis defects in mitochondrial diseases

- **Prof. Thomas Voets**
  Unraveling the etiology of TRPM3-dependent neurodevelopmental disorders

Uliège

- **Prof. dr. Pierre Maquet**
  Quantitative MRI at 7 Tesla addresses ten questions about brain small vessel diseases

→ Projets de jeunes chercheurs/Projecten jonge onderzoekers

UGent

- Prof. dr. Lars Emil Larsen, PhD
  The role of the locus coeruleus noradrenergic system in seizures and epilepsy

- Dr. Delfien Syx
  Zebrafish as a model to study pain in Ehlers-Danlos syndromes

UAntwerpen

- Dr. Marijne Vandebergh
  World-wide systematic characterization of TMEM106B and ATXN2 genetic status Towards implementation of genetic testing of modifiers in clinical practice

- Dr. Barbara M.P. Willekens
  Unravelling the role of antigen-specific T cells in NMOSD and MOGAD

KU Leuven

- Dr. Wouter Peelaerts
  Peripheral infections as a trigger of multiple system atrophy

- Dr. Sarah van Veen
  The impact of ATP13A4-mediated polyamine transport in astrocytes on synaptogenesis and neurodevelopmental disorders

UCLouvain

- Prof. Giulia Liberati
  STIM-WAVES: Identifying pain biomarkers with invasive and non-invasive brain stimulation targeting ongoing neural oscillations

UHasselt

- Prof. dr. Jeroen Bogie
  Getting a grip on slippery protein modifications in multiple sclerosis

- Prof. dr. Bieke Broux
  High salt diet causes blood-brain barrier disturbances in multiple sclerosis: involvement of the renin-angiotensin- aldosterone system

Uliège

- Dr. Sophie Laguesse
  Unveiling the alcohol-dependent alterations in mRNA local translation and its consequences on adolescent prefrontal cortex maturation and function

Baron et Baronne/Barones Delruelle

Baronne/Barones de Barsy

Programme/Programma

15:00

→ **Introduction/Inleiding**
Monsieur/de Heer Hein Deprez, président du conseil d'administration/voorzitter van de raad van bestuur

→ **Hommage au/Eerbetoon aan**
- Baron et Baronne/Barones Delruelle
- Baronne/Barones de Barsy
S.A.R. la Princesse Astrid/H.K.H. Prinses Astrid

→ **Présentation des équipes de recherche 2023–2025 par/ Voorstelling van de onderzoeksploegen 2023–2025 door**
Prof. ém. dr. Jean-Marie Maloteaux, directeur scientifique/wetenschappelijk directeur

→ **Remise des crédits à la recherche/Uitreiking van de onderzoekskredieten**
S.A.R. la Princesse Astrid/H.K.H. Prinses Astrid & monsieur/de heer Hein Deprez, président du conseil d'administration/voorzitter van de raad van bestuur

→ **Présentation et remise des prix scientifiques de la F.M.R.E. 2023/ Voorstelling en uitreiking van de wetenschappelijke prijzen G.S.K.E. 2023**
- Prix/Prijs UCB-Award
  - Présentation & remise/Voorstelling & overhandiging
  - S.A.R. la Princesse Astrid/H.K.H Prinses Astrid, monsieur/de heer Martin Citron & monsieur/de heer Hein Deprez
- Prix/Prijs Ernest Solvay
  - Présentation & remise/Voorstelling & overhandiging
  - S.A.R. la Princesse Astrid/H.K.H Prinses Astrid, madame/mevrouw Savina de Limon & monsieur/de heer Hein Deprez
- Prix/Prijs CBC Banque
  - Présentation & remise/Voorstelling & overhandiging
  - S.A.R. la Princesse Astrid/H.K.H Prinses Astrid, monsieur/de heer Denis Knaepen & monsieur/de heer Hein Deprez
- Prix/Prijs Janine & Jacques Delruelle
  - Présentation & remise/Voorstelling & overhandiging
  - S.A.R. la Princesse Astrid/H.K.H Prinses Astrid, madame/mevrouw Julie Delruelle & monsieur/de heer Hein Deprez

→ **Conclusion/Slotwoord**
Prof. ém. dr. Jean-Marie Maloteaux, directeur scientifique/wetenschappelijk directeur

→ **Réception/Receptie**

Prix scientifiques 2023 de la F.M.R.E.
Wetenschappelijke prijzen 2023 van de G.S.K.E.

→ Prix/Prijs UCB-award 2023 – € 100.0000

- **Lauréat/Laureate: prof. dr. Sarah Weckhuysen (UAntwerpen)**

Natural History Study of STXBP1-Developmental and Epileptic Encephalopathy Into Adulthood

Genetics is known to play a major role in patients with non-acquired epilepsy, and a genetic diagnosis enables more targeted treatment choices. However, two thirds of patients remain without a definitive genetic diagnosis. Studies of resected brain tissue of individuals with focal epilepsy point towards an important role of pathogenic somatic variants and methylation abnormalities. Most epilepsy patients however do not undergo brain surgery, and the lack of brain tissue precludes a genetic and histopathological diagnosis. In this project, we aim to prove that cell-free DNA circulating in cerebrospinal fluid and serum of patients with focal epilepsy can be used to bridge this diagnostic gap. This project will establish and validate novel sequencing methods that in turn pave the way for better diagnosis, classification, and treatment for the large group of focal epilepsy patients who do not undergo epilepsy surgery.

→ Prix/Prijs Fonds Ernest Solvay 2023 – € 25.000

- **Lauréat/Laureaat: prof. dr. Ludo Van Den Bosch (KU Leuven)**

FUS-ALS hiPSC-derived astrocytes impair human motor units through both gain-of-toxicity and loss-of-support mechanisms

The loss of contact between motor neurons and muscles causes amyotrophic lateral sclerosis (ALS), a dramatic and fatal neuro-degenerative disease. In this study, we investigated the role of non-neuronal cells, in particular the astrocytes, by adding these cells to a co-culture system in which human motor neurons interact with cultured muscle. Astrocytes from ALS patients have a negative effect on this, while control astrocytes are able to counteract the negative ALS-related effects on the motor neuron-muscle contact. This research provides new insights into the role of astrocytes in the pathogenesis of ALS.

→ **Prix/Prijs CBC Banque 2023 – € 15.000**

- **Lauréat/Laureaat: prof. dr. Philip Van Damme (KU Leuven)**

HDAC6 inhibition restores TDP-43 pathology and axonal transport defects in human motor neurons with TARDBP mutations

Amyotrophic lateral sclerosis (ALS) is an untreatable motor neuron disease, leading to progressive muscle weakness limiting survival to on average of three years after onset. Aggregation of the protein TDP-43 is the hallmark of the disease, but how it arises and causes motor neuron death is unclear. In a rare hereditary form of the disease, the cause of the disease lies precisely in the genetic code of TDP-43. In motor neurons, derived from stem cells of patients, the effects mutations in the TDP-43 gene were examined. This gave rise to aggregation of TDP-43 and disruption of axonal transport in motor neurons. Both pharmacological and genetic therapy were able to correct this problem. This study illustrates the added value of human stem cell models to study the complex disease ALS.

→ **Prix/Prijs Janine & Jacques Delruelle 2023 – € 12.500**

- **Lauréat/Laureate: Hannah Bertels, PhD student (KU Leuven)**

Neurotransmitter phenotype switching by spinal excitatory interneurons regulates locomotor recovery after spinal cord injury

Severe spinal cord injury in adults leads to irreversible paralysis. In contrast, a similar injury at a young age gives rise to impressive walking ability without establishing communication with the brain. We found that spinal neurons flexibly adapting excitation-inhibition input to motor neurons are a key regulator of the age of injury-dependent locomotor recovery. On the one hand, adult spinal cord injury prompts neurotransmitter switching of excitatory neurons to an inhibitory phenotype, promoting inhibition. On the other hand, young spinal cord injury maintains the excitatory phenotype and causes synaptic sprouting to facilitate excitation. Furthermore, genetic manipulation to flexibly adjust neurotransmitter phenotype altered locomotor recovery outcome. Together, these data demonstrate that the neurotransmitter phenotype of defined excitatory neurons regulates locomotor recovery after spinal cord injury.

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