



## BELGIAN CHARCOT FOUNDATION

FIGHTING MULTIPLE SCLEROSIS

Number 43

May 2018

## A holistic approach to disease

In 2018, thanks to the generosity and unfailing support of its donors, the Belgian Charcot Foundation has been able to increase the amount of its support to multiple sclerosis research from € 200,000 to € 300,000. Seven research teams have been awarded funding for their fundamental research. Their research focuses not only on the immune system and its initial dysfunction, but also on the biomarkers which enable disease activity to be monitored and on the cells responsible for the destruction of the myelin sheath and its ability to regenerate. In this issue, we shall be presenting the winning teams and a brief summary of their research projects; further details are available on our website.

Also, the second Charcot Fellowship (a doctoral grant) will be awarded to a young scientist wishing to perform research in the area of inflammatory disease as part of a doctorate. Our Foundation is keen to support not only teams of experienced researchers but also to give young scientists an opportunity to advance the state of knowledge by undertaking a 4-year research project.

We also intend to remain close to people currently suffering from the disease and struggling with it on a daily basis. Physical activities and sport can play an essential part in this, as described in a well-documented article by Dr Olivier Bouquiaux, who rightly emphasises the risks encountered by physical deconditioning and muscular atrophy resulting from under-use. Dr Bouquiaux demonstrates that it is essential that physical activity be maintained from the onset of MS, supplies specific information concerning the type of training to be undertaken depending on the level of disability, even when the patient is no longer able to walk without assistance. MS patients must be able to engage in maintaining their physical activity, which is also extremely important if comorbidities such as excess weight, type 2 diabetes and cardio-vascular complications are to be avoided.

Our Foundation therefore supports a holistic approach, from the most basic laboratory research to the most specific practical clinical applications. However, all of this needs to remain based on rigorous methodology and a scientific approach.

In this context of solidarity, we invite all our friends and donors to take part in the Brussels 20-km race on 27 May with the Foundation's team and to generously sponsor participants.

Prof. Christian Sindic  
President



NEWSLETTER

Belgian Charcot Foundation  
Public interest foundation

Under the Patronage of Her  
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Huart Hamoir Avenue 48  
B- 1030 Brussels  
Tél.: +32 2 426 49 30  
Fax: +32 2 426 00 70  
info@fondation-charcot.org  
NN 468 831 484

www.fondation-charcot.org  
IBAN : BE34 6760 9000 9090  
BIC : DEGRBEBB

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# CHARCOT FUND 2018

## A panel of experts and innovative projects

For many years now, Belgium has been a leader in MS research.

This excellence is partly due to the continued support of the Fondation Charcot Stichting (since 1987) and also to the expertise of its scientific jury. This jury has selected projects, the results of which seek to yield substantial and concrete improvements.

### The Jury

This neutral and independent jury was composed of: **Prof. Dr. Christian Sindic**, President Belgian Charcot Foundation, **Dr. Pierrette Seeldrayers**, President Belgian Study Group for MS, **Prof. Dr. Alex Michotte**, Professor of Neuroanatomy at the Faculty of Medicine of the VUB and Head of Clinic Department of Neurology and Anatomic-Pathology of UZ Brussel, **Prof. Dr. Alain Maertens de Noordhout**, Head of Department of Neurology of CHR Citadelle Liège.

The international experts were: **Prof. Dr. Gilles Defer**, Head of Department of Neurology, CHU de la Côte de Nacre, Caen, France and **Prof. Juan Antonio Garcia Merino**, Professor of Neurology Universidad Autonoma, Madrid, Spain.

The jury emphasised the fact that the Fondation Charcot Stichting is more than a source of financial support to researchers. It also sets standards in the area of MS research in Belgium. How does it achieve this? By also investing in promising young researchers by means of Charcot Fellowships, raising awareness among neurologists and doctors, supplying patients with unbiased information and supporting the BELTRIMS register (the Belgian register of MS patients).

### The Laureates

**A**

**Prof. Dr. Geert van Loo – Prof. Dr. Mohamed Lamkanfi**  
VIB/UGent – Inflammation Research Center (IRC)  
€ 60 000 / 2 years

#### Neuroinflammation

The Study of inflammasome activation locally in microglia.

Our research aims to better understand the role of microglia, a particular brain cell type, in CNS inflammation and the pathology of MS.

**B**

**Prof. Dr. Peter Ponsaerts – Dr. Debbie Le Blon**  
UAntwerpen – Laboratory of Experimental Hematology  
Vaccine and Infectious Disease Institute  
€ 30 000 / 2 years

#### Neuroinflammation

Application of a new methodology to evaluate the potency of interleukin 13 for modulation of detrimental microglia and macrophage immune responses in MS.

The goal of our research is to determine the potency of Interleukin 13 on human brain tissue grown from stem cells in the laboratory.



**C**

**Prof. Dr. Niels Hellings – Prof. Dr. Anitha Ethirajan  
Prof. Dr. Tanja Junkers**  
UHasselt – BIOMED & Imo-Imomec  
€ 25 000

### Imaging and Nanoparticles

The use of Smart Nanoparticles in progressive MS.

More insights into the disease mechanisms of progressive MS are needed to provide solutions. In this project, smart nanoparticles are developed that specifically penetrate the inflamed brain during the progressive disease phase and enable us to visualize the disease process.

**D**

**Prof. Dr. Jerome Hendriks – Dr. Jeroen Bogie**  
UHasselt – BIOMED  
€ 39 000 / 2 years

### Neuroinflammation

Lipid metabolism is key in driving the detrimental properties of macrophages in demyelination.

In this study, we unravel whether MS patients at different disease stages show changes in lipids of macrophages in the brain.

**E**

**Dr. Bieke Broux** et **Prof. Dr. Georges Leclercq**  
UHasselt – BIOMED Universiteit Gent  
€ 30 000 € 30 000

### Immunogenetics

Innate lymphoid cells in multiple sclerosis: implications of genetic risk variants

One type of immune cells, the innate lymphoid cells have been described to play a role in other illnesses such as inflammatory bowel disease and skin inflammation. In this project, we elucidate the role of these cells in MS, as a novel and potentially therapeutically relevant project.

**F**

**Prof. Dr. Vincent van Pesch et son équipe**  
UCL – Unit of Neurochemistry Institute of Neuroscience  
Cliniques Universitaires Saint-Luc  
€ 30 000 / 2 years

### Neuroimmunology

The neuroinflammatory role of micro-RNAs

Our research aims to study recently discovered biological regulators, microRNAs, which circulate in bodily fluids in spherical lipidic structures called exosomes. We aim to determine their cellular source and study how they regulate the inflammatory response, during the relapsing and progressive phase of the disease.

**D****E****F**

“ Only research will give us a better understanding of MS and improvements in treatment. – Prof. Dr. Christian Sindic

G

**Prof. Dr. Nathalie Cools**

UAntwerpen - VAXINFECTIO

Laboratorium voor Experimentele Hematologie

€ 59 005

### Immunotherapy

Can we regulate the immune system damaged during MS by means of the Regulatory T cells?

Using cells to cure patients is an attractive and innovative therapy currently gaining momentum. Regulatory T cells (also called Tregs) are T cells which have a role in regulating or suppressing other cells in the immune system. In this project, we aim to foster the clinical application of Tregs in autoimmunity.

H

**Dr. Tim Vanmierlo**

UHasselt - BIOMED

€ 40 000 / 2 years

Project granted by the Ligue Nationale Belge de la Sclérose en Plaques, asbl- Nationale Belgische MS Liga, vzw

### Neurochemistry

A novel approach to stimulate remyelination in MS

We investigate novel targets, the second messengers, to induce repair in progressive MS. In this project, we define exactly which cleaving proteins are responsible for repair processes.

► References are available upon request to the Belgian Charcot Foundation

► More information on [www.fondation-charcot.org](http://www.fondation-charcot.org)

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### WHAT YOUR GIFT CAN BRING:

€84 1 day fundamental research

€250 1 day clinical research

Since 1987, thanks to its donors, the Belgian Charcot Foundation has been able to finance a large number of research projects into multiple sclerosis. It aims to bring about significant improvements in existing treatments and to give MS-patients a better future.

*Join us; your support is vital.*

Send your gift to :

IBAN BE34 6760 9000 9090 – BIC DEGRBEBB



G



H

► The grants were awarded by Prof. Dr. Christian Sindic during an academic session at the University Foundation on 17 January, 2018.

With the support of:

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# REVALIDATION

## Physical and sport activities for multiple sclerosis patients

“ Disease is not an abnormality but another way of being alive (Canguilhem)

The benefits of physical activity have been demonstrated for some time in the case of many diseases (pulmonary, cardiac, cancerous, rheumatic, etc.). Its relevance to neurological diseases has been discovered more recently but is well-documented in the case of Alzheimer's and Parkinson's diseases (preventive and therapeutic effect) as well as multiple sclerosis (therapeutic effect).

Intensive training is the best stimulant for our brains, which are constantly reorganising themselves, due to its vasculogenic and neurogenic effects, as well as its effect on dendritic multiplication.

Physical activity can also break the vicious circle of physical deconditioning which arises due to the commonest symptoms of multiple sclerosis (weakness and fatigue) and leads to an inability to work, social impairment and ultimately psychological decompensation. Physical activity can increase muscular strength and mobility, and prevent fatigue and depression and, more generally, improve quality of life.

“ *Ideally, physical activity needs to begin at the time of diagnosis and continue without interruption*

Ideally, physical activity needs to begin at the time of diagnosis and continue without interruption. The exercises suggested (aerobic and anaerobic) must be done several times a week. They need to be customised, varied, regularly updated, preventive and significant. Collective sessions led by professionals should be organised to increase motivation and centred on the pleasure of taking back control over one's body. Above all, however, the exercises need to be chosen by the patients themselves, so that each patient is able to design his or her own treatment. Sport (i.e. a competitive approach) is by no means excluded, but requires specific information.

The key to the success of this therapeutic approach, which is effective at all stages of MS and without side effects if undertaken properly, is to begin early and keep it up. This, in turn, depends on the professionalism of the host institutions as well as the motivation of the professionals supporting the patients.

### In practice

Further to a general and cardiac health review, the patient's ability to walk, balance, muscular strength and EDSS (Expanded Disability Status Scale) must all be assessed. The patient should be informed of the importance of hydration (prior to and after exercise), nutrition (slow carbohydrates two hours before exercise) and reassured should be reassured if a negative symptom arise during warm-up (Uthoff phenomenon). He or she should also have a heart rate monitor and be given a logbook.

After a relapse, patients should be advised not to undertake any significant physical activity and gradually resume training at a later date.

### The current recommendations are

- **EDSS score 0 to 3.5 (no disability to moderate disability):**

**Aerobic training (endurance):** walking, Nordic walking, running, cycling, cross-trainer, stepper, rowing machine, gymnastics, swimming, etc.

**Average heart rate during exercise:** 65-75% of maximum theoretical heart rate (210 – age in men, 220 – age in women).

**Goal:** 30 minutes without interruption, three sessions a week.

**Anaerobic training (resistance):** general but also specific, with or without equipment (weights, elastic, machines), static, concentric, eccentric and with emphasis on the weakest muscles.

– Muscles > 3/5 when tested: 80 to 90% of maximum strength, 5 to 10 repeats for 3 to 5 series of exercises, resting time between series at least 3 minutes

– Muscles < 3/5 when tested: 60 to 65% of maximum strength, 15 to 20 repeats for 3 to 5 series of exercises, resting time between series twice the exertion time.

**Goal:** 2 sessions per week as 2-day rest required between sessions. Traditional stretching after each session. Yoga and tai chi are potential alternatives.

- **EDSS score 4 to 6.5 (initial limitation to walking to permanent need for walking aids):**

**Aerobic training (endurance):** same but in the form of interval



training (exercise alternating with relative rest).  
**Anaerobic training (resistance):** same.  
**Stretching:** same.

- **EDSS score > 6.5 (unable to walk):**

**Aerobic training (endurance):** archery, horse riding, cyclodance, etc.  
 Maximum intensity 5/10 on the modified Borg scale (i.e. maximum moderate exertion perceived as difficult).

**Goal:** 3 sessions a week.

**Anaerobic training (resistance):** same but concentrating on upper-limb work and with a limit of 60% of maximum strength.

**Stretching:** same.

**Dr. Olivier Bouquiaux**

*Neurological and Functional*

*Rehabilitation Centre (CNRF), Fraiture-en-Condroz*

## SETTING UP A STANDING ORDER

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"Sport gives me an opportunity to get away from illness and its consequences. If I don't exercise for a week, it affects me both physically and mentally."

*Sabine (MS patient)*

"Exercising with a group enables me to push out my boundaries and gives me a new goal. When you practice a sport under supervision, you can compensate for what you are no longer able to do. I used to cycle a lot and I loved it. Now, I go on group walks, and I enjoy going on for miles and having company."

*Michel (MS patient)*

## A tribute to the late Mr Philippe Maystadt



It was with great sadness that the Board of Directors of the Belgian Charcot Foundation learned of the death of Mr Philippe Maystadt, Minister of State, who died on 7 December 2017. He was an active and dedicated founder of the Foundation, member of the Board and chaired our Management Committee until the beginning of 2017.

He resigned from the Board at that time, after working with us for over 30 years.

We are very grateful for his major role in creating the Foundation, as well as for his involvement and faithful and attentive presence at the heart of the Board throughout those years.

**Isabelle Bloem-Gonsette**

*Managing Director Belgian Charcot Foundation*

*The Belgian Charcot Foundation complies with the law on the protection of privacy. You will find more information on how we manage personal data at [www.fondation-charcot.org](http://www.fondation-charcot.org)*