

During my medicine master I got intrigued by the neonatal gastrointestinal disease necrotizing enterocolitis, a disease with high morbidity and mortality that is characterized by severe intestinal inflammation and damage often resulting in necrosis. Currently, surgery is the key intervention to give a child with necrotizing enterocolitis a change of survival. However, to date no therapy is available that addresses the course of this disease and is able to prevent the onset or treat the disease symptoms in a non-invasive manner. Since the lack of breastfeeding is an essential risk factor for NEC and many breast milk components are known to have immunomodulatory properties, nutritional interventions using breast milk components are a promising therapy. Thanks to the NUTRIM NWO Graduate Programme I got the opportunity to design my own research project to look into the promising effect of breast milk components as nutritional therapeutics. Besides choosing my own topic, I got the opportunity to work with supervisors and collaborators, both within and outside NUTRIM with a clinical and fundamental background, that can support my project and guide me from different research perspectives. Taken together, this is a unique change to design my own research that fits with my interests and qualifications.


Ilse de Lange

2017



During my medical tract I enjoyed working on projects, especially when I had the opportunity to choose a topic myself. The NURIM NWO Graduate Programme provided this opportunity. In addition, I could choose my own supervision team. This allowed me to design a project that combines the state-of-the-art NUTRIM infrastructure for nutrition and exercise with the patient population of the hemodialysis department.

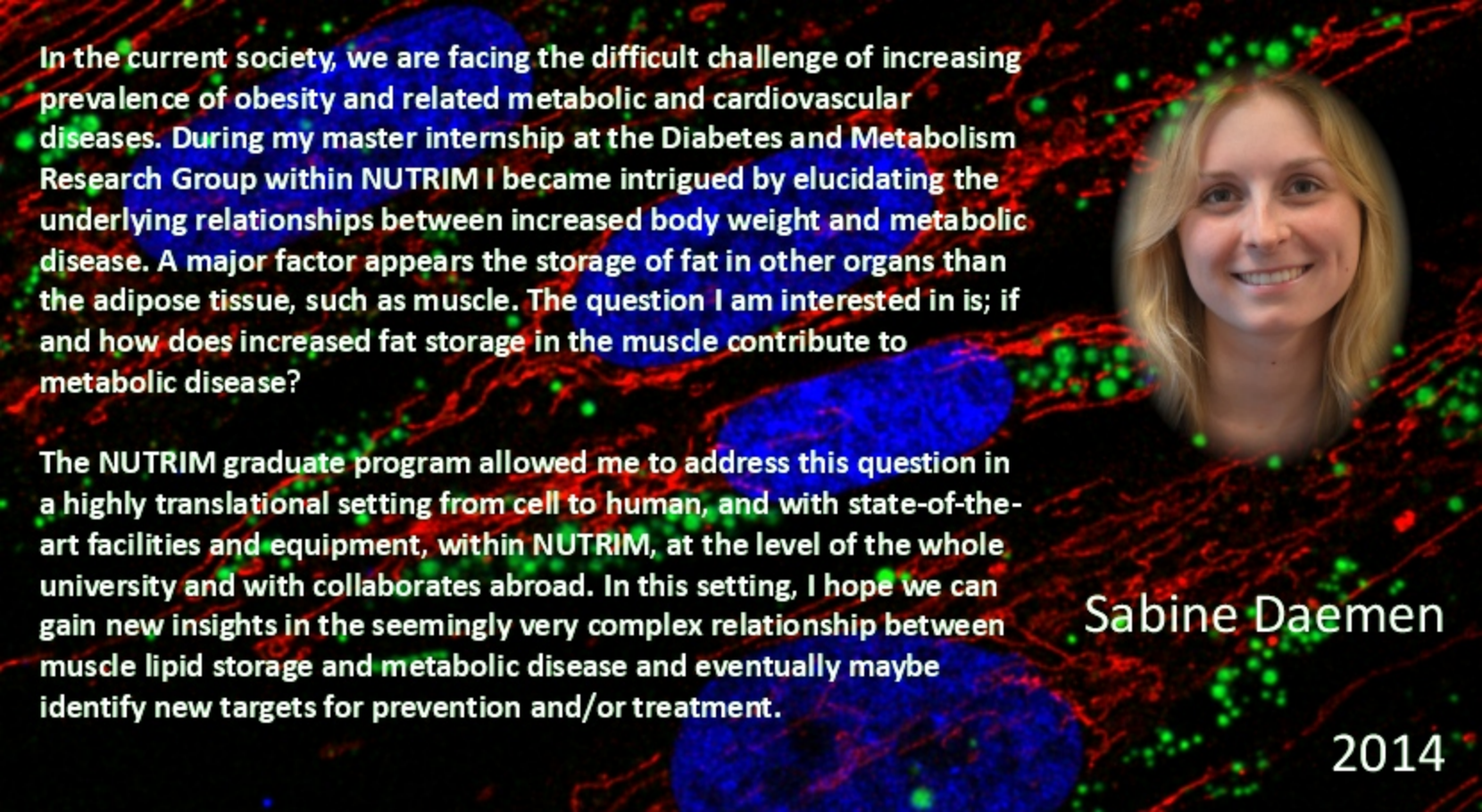
Chronic hemodialysis patients show signs of muscle wasting. Though hemodialysis is the only way to keep patients with renal failure alive, the procedure removes a substantial amount of amino acids from the body. My project will assess the extent of amino acid deprivation during hemodialysis as well as the effects of nutritional and exercise interventions. I am excited to combine fundamental and clinical research in studying interventions potentially counteracting amino acid loss and muscle wasting in chronic hemodialysis patients.

A portrait of Floris Hendriks, a young man with dark, curly hair, smiling. He is wearing a white lab coat with a teal logo on the chest. The background is a blurred clinical setting with red and blue equipment.

**Floris
Hendriks**

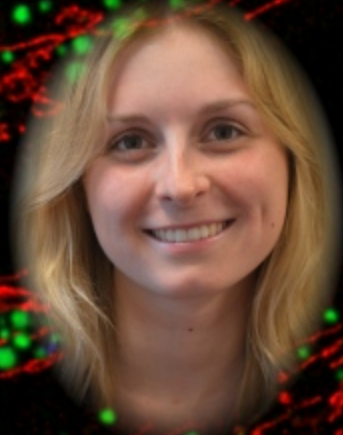
2017

A close-up view of a hemodialysis machine. A clear plastic chamber is filled with bright red blood. The machine has various tubes, a white control knob, and a blue handle. The background is a blurred clinical environment.

The background of the slide is a microscopic image showing cells with red and green fluorescence. The red fluorescence highlights the cell membranes and internal structures, while the green fluorescence appears as small, bright spots. The overall image has a dark, almost black background, making the fluorescent colors stand out.

In the current society, we are facing the difficult challenge of increasing prevalence of obesity and related metabolic and cardiovascular diseases. During my master internship at the Diabetes and Metabolism Research Group within NUTRIM I became intrigued by elucidating the underlying relationships between increased body weight and metabolic disease. A major factor appears the storage of fat in other organs than the adipose tissue, such as muscle. The question I am interested in is; if and how does increased fat storage in the muscle contribute to metabolic disease?

The NUTRIM graduate program allowed me to address this question in a highly translational setting from cell to human, and with state-of-the-art facilities and equipment, within NUTRIM, at the level of the whole university and with collaborates abroad. In this setting, I hope we can gain new insights in the seemingly very complex relationship between muscle lipid storage and metabolic disease and eventually maybe identify new targets for prevention and/or treatment.



Sabine Daemen

2014

Chris
McCrum

2015


Why do older people fall? How can we predict and prevent falls? How can we help people optimise their walking in order to reduce falls risk? These are important questions that are relevant for our ageing society that I became interested in researching during my master's internship and thesis. Falls can be caused by many different pathologies, whether that is muscle weakness, motor control problems, vestibular dysfunction or even psychological influences. As a result, I began searching for possibilities for a multidisciplinary PhD project.

The NUTRIM NWO Graduate Programme was an opportunity for me to bring these topics together, and choose my own supervisors who were experts in these fields. As a result, we now perform coordinated research studies looking into the combined effects of muscle strength, tendon stiffness, vestibular function and fear of falling on the ability to walk in unstable conditions and on real life falls incidence. The flexibility and individuality that the programme allows has been great, as not only am I researching exactly what interests me, but the project bridges gaps between existing fields of research.



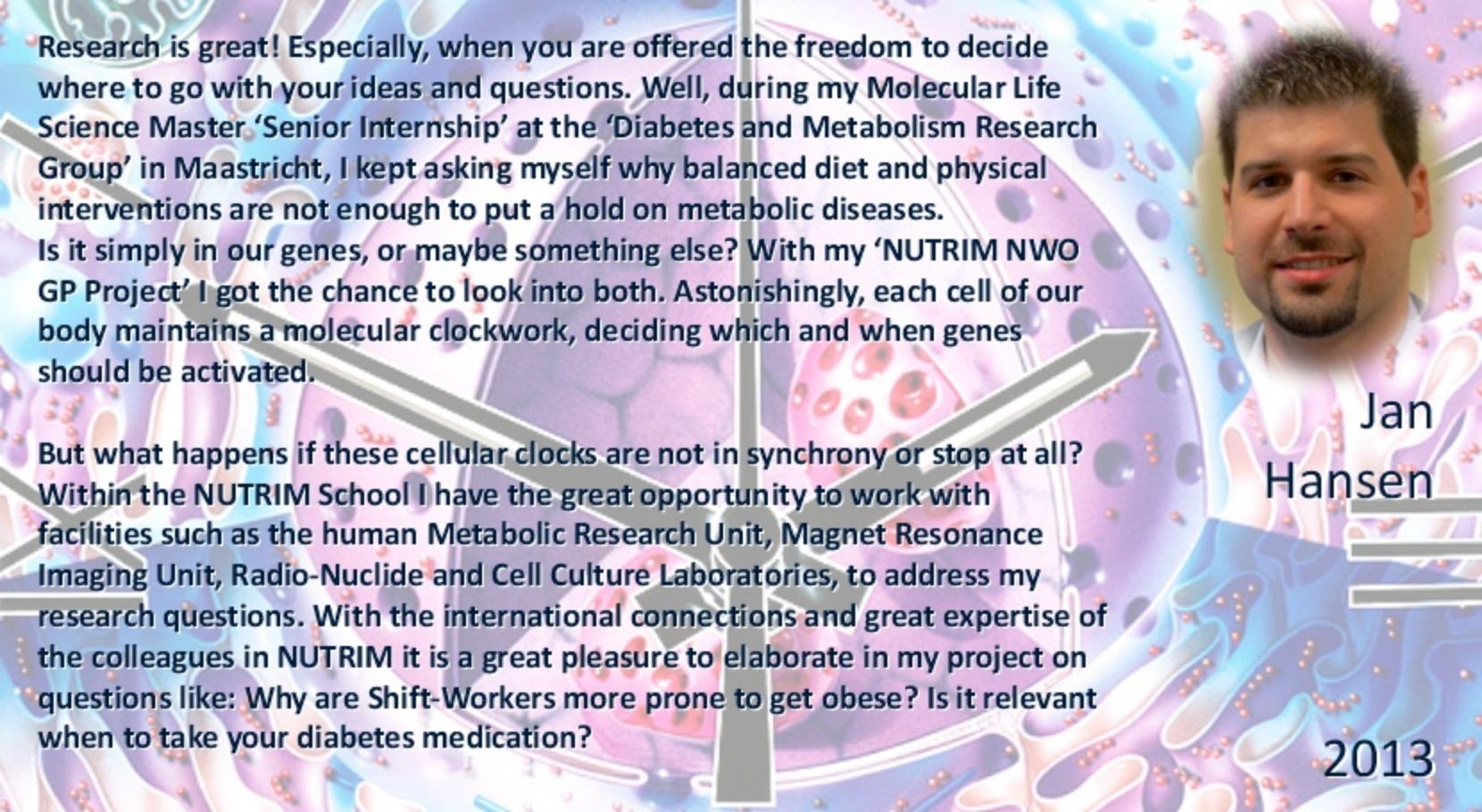
Finding the answer to a research question is exciting. Even more so if you also made a major contribution in shaping the research question itself! For my Master thesis in Biomedical Sciences, I worked with so-called extracellular vesicles. The more I came to know about these vesicles, the more intriguing I found them: Small membrane-bounded packages full of messenger molecules that transfer complex signals between the different cell types of our body. Extracellular vesicles have been attributed important functions in maintaining normal body function, but also in many disease processes, including a number of inflammatory disorders. Chronic obstructive pulmonary disease (COPD) is such an inflammatory disorder, and is primarily caused by long term cigarette smoking.

Thanks to the NUTRIM NWO Graduate Programme grant, I got the unique opportunity to work on my own project with a self-chosen supervision team of fundamental researchers and clinicians. With the guidance of this interdisciplinary team, I am addressing a number of exciting research questions: Does exposure to cigarette smoke influence the release of extracellular vesicles by cultured lung cells? Are there differences in vesicles isolated from the lungs or blood of non-smokers, smokers and COPD patients? Do these differences contribute to the persistent inflammation observed in COPD patients even after they stop smoking?

A portrait of a young woman with blonde hair, smiling. The background is a soft-focus image of a laboratory setting with various pieces of equipment and a large circular structure.

Birke
Benedikter

2013



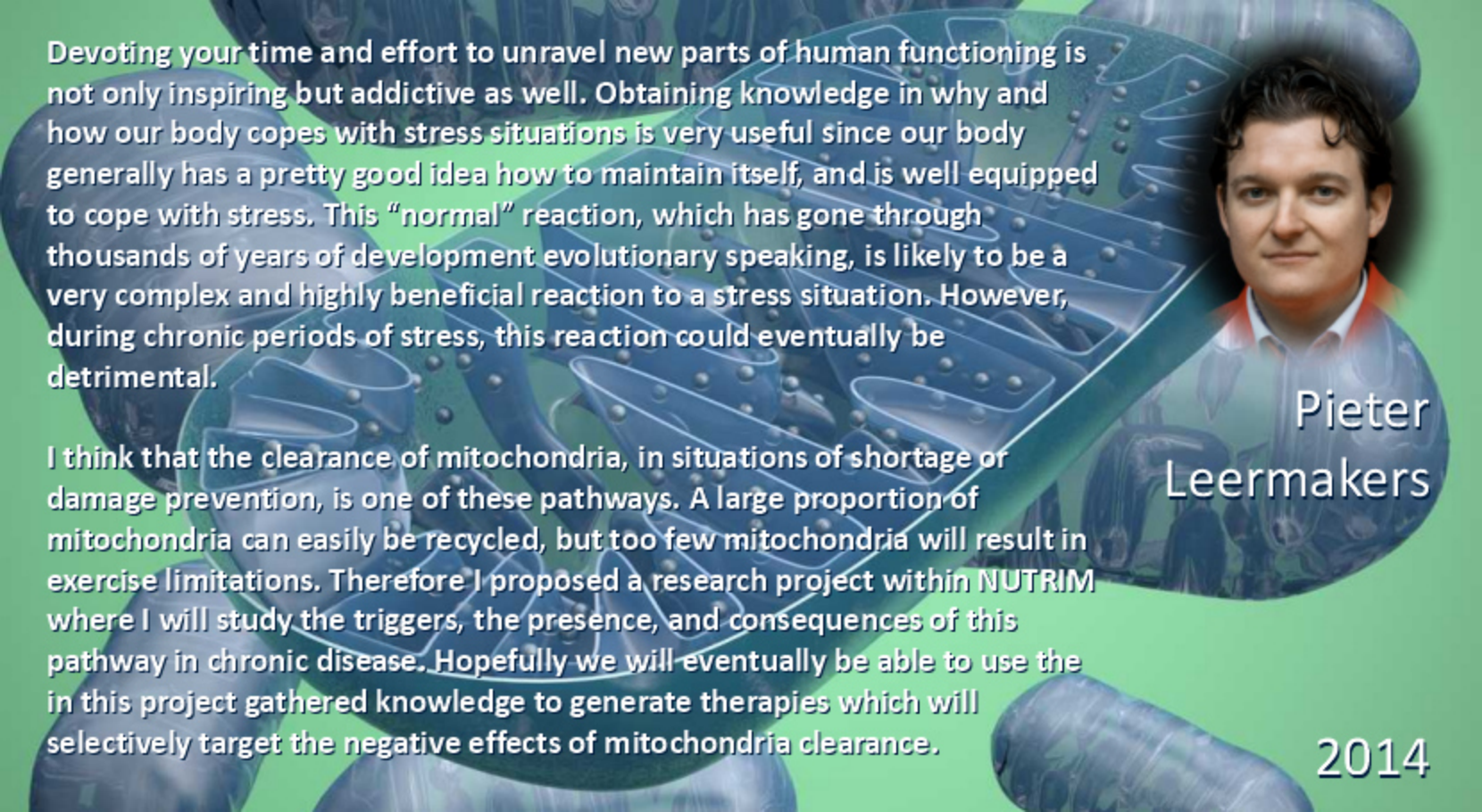
Research is great! Especially, when you are offered the freedom to decide where to go with your ideas and questions. Well, during my Molecular Life Science Master 'Senior Internship' at the 'Diabetes and Metabolism Research Group' in Maastricht, I kept asking myself why balanced diet and physical interventions are not enough to put a hold on metabolic diseases. Is it simply in our genes, or maybe something else? With my 'NUTRIM NWO GP Project' I got the chance to look into both. Astonishingly, each cell of our body maintains a molecular clockwork, deciding which and when genes should be activated.

But what happens if these cellular clocks are not in synchrony or stop at all? Within the NUTRIM School I have the great opportunity to work with facilities such as the human Metabolic Research Unit, Magnet Resonance Imaging Unit, Radio-Nuclide and Cell Culture Laboratories, to address my research questions. With the international connections and great expertise of the colleagues in NUTRIM it is a great pleasure to elaborate in my project on questions like: Why are Shift-Workers more prone to get obese? Is it relevant when to take your diabetes medication?



Jan
Hansen

2013

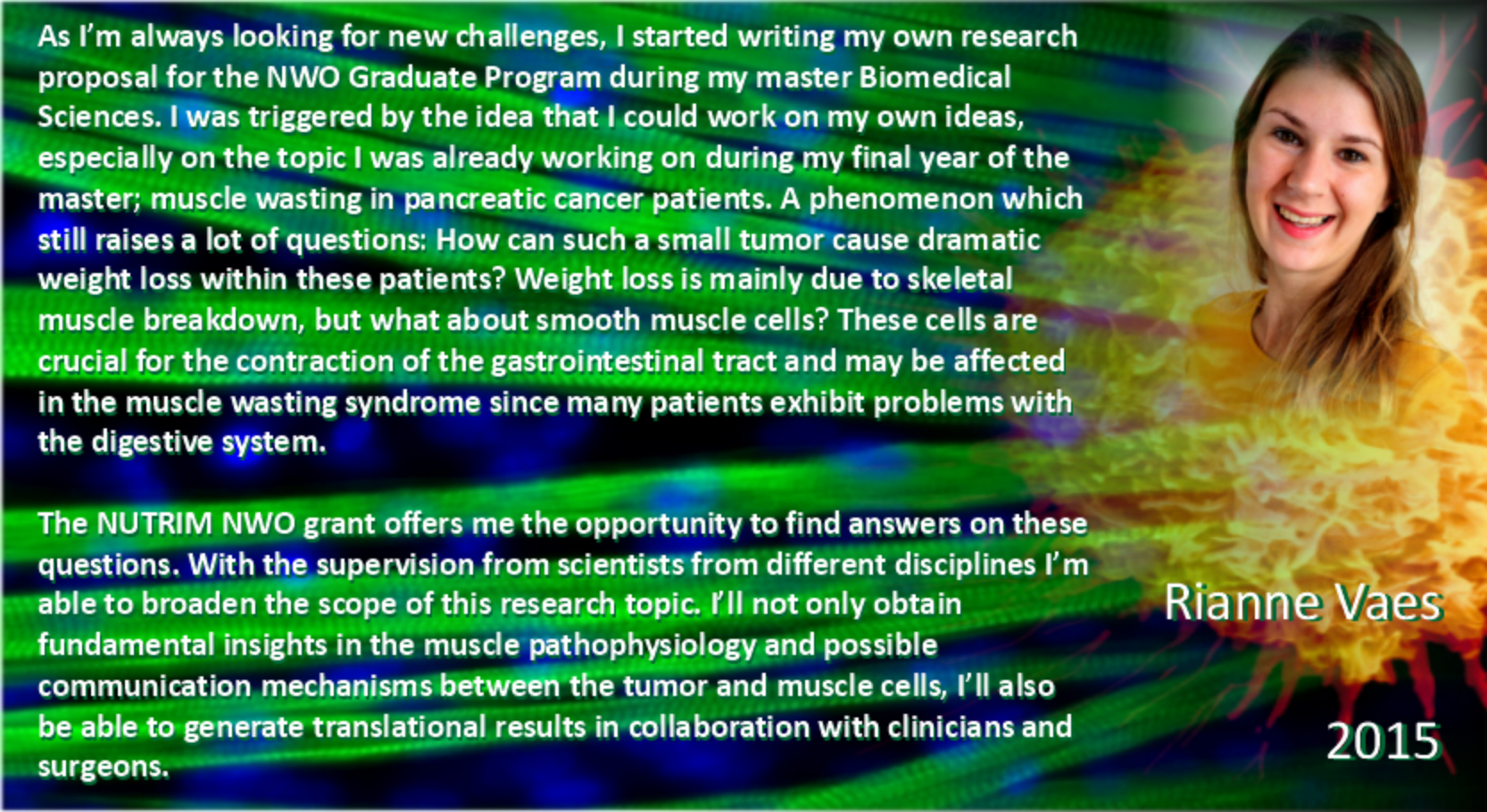


Devoting your time and effort to unravel new parts of human functioning is not only inspiring but addictive as well. Obtaining knowledge in why and how our body copes with stress situations is very useful since our body generally has a pretty good idea how to maintain itself, and is well equipped to cope with stress. This “normal” reaction, which has gone through thousands of years of development evolutionary speaking, is likely to be a very complex and highly beneficial reaction to a stress situation. However, during chronic periods of stress, this reaction could eventually be detrimental.

I think that the clearance of mitochondria, in situations of shortage or damage prevention, is one of these pathways. A large proportion of mitochondria can easily be recycled, but too few mitochondria will result in exercise limitations. Therefore I proposed a research project within NUTRIM where I will study the triggers, the presence, and consequences of this pathway in chronic disease. Hopefully we will eventually be able to use the in this project gathered knowledge to generate therapies which will selectively target the negative effects of mitochondria clearance.

Pieter
Leermakers

2014



As I'm always looking for new challenges, I started writing my own research proposal for the NWO Graduate Program during my master Biomedical Sciences. I was triggered by the idea that I could work on my own ideas, especially on the topic I was already working on during my final year of the master; muscle wasting in pancreatic cancer patients. A phenomenon which still raises a lot of questions: How can such a small tumor cause dramatic weight loss within these patients? Weight loss is mainly due to skeletal muscle breakdown, but what about smooth muscle cells? These cells are crucial for the contraction of the gastrointestinal tract and may be affected in the muscle wasting syndrome since many patients exhibit problems with the digestive system.

The NUTRIM NWO grant offers me the opportunity to find answers on these questions. With the supervision from scientists from different disciplines I'm able to broaden the scope of this research topic. I'll not only obtain fundamental insights in the muscle pathophysiology and possible communication mechanisms between the tumor and muscle cells, I'll also be able to generate translational results in collaboration with clinicians and surgeons.

Rianne Vaes

2015