



China Scholarship Council – University Maastricht

PhD Programme Application form 2024

Basic information

- To be filled in by the prospective UM supervisors -

1. Information on prospective UM supervisors and Promotor

1a. First Supervisor/copromoter:

- Title(s), initial(s), first name, surname: Prof. Frederik-Jan van Schooten
- Research group: Pharmacology and Toxicology
- Address for correspondence: Universiteitssingel 50, 6229 ER Maastricht
- Telephone:
- E-mail: f.vanschooten@maastrichtuniversity.nl

1b. Second Supervisor/copromoter:

- Title(s), initial(s), first name, surname: Dr. Agnieszka Smolinska
- Research group: Pharmacology and Toxicology
- Address for correspondence: Universiteitssingel 50, 6229 ER Maastricht
- Telephone:
- E-mail: a.smolinska@maastrichtuniversity.nl

2. Information on UM Faculty/ Department/ Institute/ School contact person:

When the application is granted by both the CSC and UM, the contact person is responsible for the practical arrangements of the integration of the PhD candidate:

- Initial(s), first name, surname: Prof. Frederik-Jan van Schooten
- Research group: Pharmacology and Toxicology
- Address for correspondence: Universiteitssingel 50, 6229 ER Maastricht
- Telephone:
- E-mail: a.smolinska@maastrichtuniversity.nl

- To be filled in by the applicant if already known -

1. Information on the applicant

- Initial(s), first name, surname:
- Male/female:
- Current work/study address:

- E-mail:
- Private address:

2. Details of applicant's home university

Note! A separate letter of recommendation by the supervisor or faculty dean of the home university is required.

- Name of home university:
- Address:
- E-mail:
- Website (if available):

3. Applicant's home university Master Thesis supervisor:

- Title(s), initial(s), first name, surname:
- Address for correspondence:
- E-mail:

4. Research field(s)

前沿技术 / Frontier Technologies

基础研究 / Basic Research

人类健康与疾病的生物学基础 / Biological Foundations of Human Health and Diseases

5. Title of research plan for CSC-UM PhD Programme

Profiling Volatile Metabolites and Gut Microbiome in Inflammatory Bowel Diseases

6. Short summary of research plan

Background:

Chronic inflammatory bowel diseases (IBD), encompassing conditions like Crohn's disease and ulcerative colitis, subject individuals to a relentless cycle of intestinal inflammation followed by periods of symptom relief. Effective monitoring of this inflammation is pivotal for prompt treatment and the long-term management of the disease. Unfortunately, conventional diagnostic methods, notably colonoscopy, are associated with invasiveness, high costs, and inherent risks.

Complicating this already intricate landscape is the fact that approximately 40% of IBD patients experience abdominal symptoms even in the absence of active inflammation, leading to unwarranted diagnostic testing and treatment. Consequently, there exists a compelling need to objectively monitor (sub)clinical inflammation. This not only promises to enhance patient outcomes but also to alleviate the financial and emotional burdens entailed by invasive diagnostic procedures and potential over-treatment. The advancement of our monitoring capabilities is, therefore, crucial for the efficient management of IBD.

Study Objective and Expected Results:

The primary aim of our study is to identify volatile metabolites—substances found in the exhaled breath and stool of IBD patients—along with an assessment of the gut microbiota. We intend to compare these findings with colonoscopy results, employing cutting-edge mass spectrometry technologies and next-generation sequencing.

Our hypothesis is based on the belief that the distinctive intestinal inflammation characteristic of IBD produces specific compounds measurable in breath and stool samples. Given the multifaceted nature of IBD, our research activities will encompass both in-vitro and in-vivo analyses, employing an animal model of IBD. The synergy of pre-clinical and clinical findings is anticipated to yield specific non-invasive markers for IBD, advancing the diagnostic landscape in the field and ultimately benefitting patients' well-being.

Group's performance:

Prof. FJ van Schooten → Publications: 304; H-index: 75; number of citations: 17222
Dr. A. Smolinska → Publications: 72; H-index: 31; number of citations: 3482
but also statements of recognition of the team or the team members.

7. Motivation for CSC-UM PhD application (max. 250 words)

Two separate letters are required, one from the student and one from the promotion team.

Professor van Schooten has 35+ years of senior management experience spanning life sciences research, academic education, faculty administration, public health policy, and science valorization. He has published 300+ papers in peer-reviewed journals and secured €10m+ in research grants from various sources, including governmental bodies, the European Union, and the food industry.

As a mentor, he has overseen 35 completed PhD theses and is actively engaged in undergraduate programs covering molecular biology, genetics, environmental chemistry, pharmacology, and toxicology. His dedication to teaching is a testament to his commitment to nurturing the next generation of scientists.

Furthermore, Professor van Schooten has made significant contributions to breath research and the field of volatile metabolites, pioneering diagnostic breath profiles for non-invasive monitoring of inflammatory diseases in the lungs, liver, and colon. His work advances medical science, particularly in disease diagnosis and management.

Dr. Smolinska have a multidisciplinary profile with chemical, biological and machine-learning, and clinical knowledge and expertise. She has extended knowledge towards volatile organic compounds in exhaled air and other biofluids (blood, BAL and faeces) upon the start of my work at UM in 2012. This work has included broader clinical and preclinical studies within various disease areas, such as lung diseases, chronic liver diseases, Inflammatory Bowel Disease and Irritable Bowel Syndrome. During her work, she was co-investigator of several projects covering research areas in non-invasive diagnostic and monitoring tools via analysis of breath and other biofluids.

Relevant publications:

1. KFH Hintzen, **A. Smolinska**, AGR Mommers, ND Bouvy, **FJ van Schooten**, T. Lubbers; (2022) Non-invasive breath collection in murine models using a newly developed sampling device; Journal of Breath Research 16(2).
2. **A.Smolinska**, D. Tedjo, L. Blanchet, A. Bodelier, MJ.Pierik, AAM.Masclee, J. Dallinga, PHM Savelkoul, DMAE.Jonkers, J. Penders, **FJ van Schooten**. (2018) Volatile metabolites in breath strongly correlate with gut microbiome in CD patients
3. **A. Smolinska** , A.G. Bodelier, J.W. Dallinga, A.A. Masclee, D.M. Jonkers, **FJ van Schooten**, M.J. Pierik.(2017) The potential of volatile organic compounds for the detection of active disease in patients with ulcerative colitis. Aliment Pharmacol Ther. 45(9):1244-1254,

4. D.I. Tedjo, **A. Smolinska**, P.H. Savelkoul, A.A. Masclee, **FJ van Schooten**, M.J. Pierik MJ, J. Penders, D.M. Jonkers.(**2016**) The fecal microbiota as a biomarker for disease activity in Crohn's disease. Scientific Reports. 13;6:35216.

5. **A. Smolinska**, AG. Bodelier, A. Baranska, JW. Dallinga, Z. Mujagic, K. Vanhees, T. van den Heuvel, AA. Masclee, D. Jonkers, MJ. Pierik, **FJ. van Schooten** (2015) Volatile Organic Compounds in Exhaled Air as Novel Marker for Disease Activity in Crohn's Disease: A Metabolomic Approach. Inflammatory Bowel Disease. 21(8):1776-85.

Applicant's Curriculum Vitae

8. Personal details

Applicant

- Title(s), initial(s), first name, surname:

CSC-UM PhD programme start 1-9-2024

- Surname:

- Nationality: **Chinese**

- Date of Birth:

- Country and place of birth:

9. Master's degree (if applicable)

Note! Add a copy of your Master's degree to your application

University:

Faculty/discipline:

City and country:

Date:

Grade average:

Title Master's thesis (if applicable):

Thesis grade: