China Scholarship Council – University Maastricht

PhD Programme Application form

Basic information ----------

- To be filled in by the prospective UM supervisors -

1. Information on prospective UM supervisors and Promotor

1a. First Supervisor/promoter:

- Title(s), initial(s), first name, surname:	Dr. Mathie PG Leers
- Research group:	Intensive Care Unit, MUMC+, NUTRIM School of Nutrition and Translational Research in Metabolism, Zuyderland MC.Dept of Clinical Chemistry, Sittard-Geleen
- Address for correspondence:	POBox 5800, 6202 AZ Maastricht
- Telephone:	+31884597503
- E-mail:	mathie.leers@mumc.nl

1b. Second Supervisor/copromoter:

- Title(s), initial(s), first name, surname:	Dr. NCJ (Bart) de Wit
- Research group:	Dept. of Clinical chemistry, MUMC+
- Address for correspondence:	POBox 5800, 6202 AZ Maastricht
- Telephone:	+31433874781
- E-mail:	b.de.wit@mumc.nl

1c. Promotor (if applicable): **– see above**

- Title(s), initial(s), first name, surname:	Prof. dr. ir. Yvonne MC Henskens
- Research group:	Dept. of Clinical Chemistry, MUMC+ **CARIM Cardiovascular Research Institute Maastricht**

- Address for correspondence: P. Debyelaan 25, 6229 HX, POBox 5800, 6202 AZ Maastricht
- Telephone: +31433874781
- E-mail: Yvonne.henskens@mumc.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 (i.e. assistance in obtaining a visa, finding accommodation, etc.) of the visit of the PhD candidate:

- Initial(s), first name, surname: Rachelle Sluijsmans
- Research group: Dept. of Clinical Chemistry, MUMC+
- Address for correspondence:P. Debyelaan 25, 6229 HX; pobox 616, 6200 MD Maastricht
- Telephone: +31433874781
- E-mail:rachelle.sluijsmans.wiche@mumc.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 address:

- Telephone:
- E-mail: WeChat:
- 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:
- Telephone:
- E-mail:
- Website (if available):

3. Applicant's home university Master Thesis supervisor:

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

- Telephone:
- E-mail: WeChat:

4. Research field(s)

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

Key-words: Flowcytometry, immunochemistry, data-science, leukemia, lymphoma, myelodysplasia

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

Proliferation and apoptosis as biomarkers for faster and more accurate diagnosis of hematological malignancies

6. Short summary of research plan (max. 250 words) (A full plan has to be submitted later)

Background: Standardization of the detection and quantification of leukocyte differentiation markers by the EuroFlow Consortium has led to a major step forward in the integration of flow cytometry into classification of leukemia and lymphoma. In our opinion, this now enables introduction of markers for more dynamic parameters, such as proliferative and (anti)apoptotic markers, which have proven their value in the field of histopathology in the diagnostic process of solid tumors and lymphoma. Although use of proliferative and (anti)apoptotic markers as objective parameters in the diagnostic process of hematological malignancies was studied in the past decades, this did not result in the incorporation of these biomarkers into clinical diagnosis. This project addresses the potential of these markers for implementation in the current, state-of-the-art multiparameter analysis of hematological malignancies. Recent developments in multiparameter flow cytometry as well as in the often complex data-analysis now allow quantification of proliferative and (anti)apoptotic indicators in myeloid and lymphoid cells during their different maturation stages of separate hematopoietic cell lineages. This will lead to a better understanding of the biology and pathogenesis of these malignancies.

Study objective:

1. To investigate the expression of proliferation- and apoptosis markers **during maturation** of the different hematopoietic cell lineages in different hematological malignancies.
2. Development of automatic analysis-tools of the complex flowcytometric data of hematological malignancies
3. To investigate the role of proliferation- and apoptosis markers in the **diagnosis** of hematological malignancies
4. To investigate the role of proliferation- and apoptosis markers in **predicting the outcome** of patients with a hematological malignancy

Expected Results: We will assess the clinical significance of dynamic tumor markers in the diagnosis of patients with hematological malignancies, and get more insight in the pathobiology of these malignancies. This should help clinicians in tailor-made treatment and follow-up of these patients.

Requirements: background in medicine, biomedical sciences, laboratory medicine or clinical chemistry is preferred.

Group's performance:

Dr. MPG Leers; publications: 86; H-index: 25; number of citations 3209

Dr. NJC de Wit: publications: 18: H-index: 8 ; number of citations 296 (web of science)

Prof.dr. YMC Henskens;

- publications: 117 (Pubmed), 155 (Web of Science)
- H-index 37 (Google Scholar), 33 (Research Gate) 28 (Web of Science)
- Number of citations 4704 (Google Scholar), 3348 (Research Gate), 2384 (web of Science)
- 12 % first, 26 % last

7. Motivation for CSC-UM PhD application (max. 250 words)
Two letters are required, one from the student and one from the promotion team.

Applicant's Curriculum Vitae (if available) ---------- ---------- 8. Personal details

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

CSC-UM PhD programme start 1-9-2022

- 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:

Five most relevant articles on this topic of the past five years

1. Weeda V, Mestrum SGC, **Leers MPG**. Flow cytometric identification of hematopoietic and leukemic blast cells for tailored clinical follow-up of acute myeloid leukemia. Int J Mol Sci 2022; 23(18): 10529. DOI: 10.3390/ijms231810529
2. Mestrum SGC, Vanblarcum R, Drent RJM, Boonen BT, van Hemert WLW, Ramaekers FCS, Hopman AH**, Leers MPG**. Proliferative and anti-apoptotic fractions in maturing hematopoietic cell lineages and their role in homeostasis of normal bone marrow. Cytometry A 2022; 101(7): 552-563; DOI: 10.1002/cyto.a.24558

3. Mestrum SGC, Cremers EMP, **de Wit NJC**, Drent RJM, Hopman AH, Ramaekers FCS**, Leers MPG**. Integration of the Ki-67 proliferation index into the Ogata score improves its diagnostic sensitivity for low-grade myelodysplastic syndromes. Leuk Res 2022; 113: 106789
4. Mestrum SGC, Hopman AHN, Ramaekers FCS, **Leers MPG**. Proliferative and apoptotic parameters in bone marrow malignancies: impact on understanding the biological behavior of different myeloid cell lineages: a review. Blood Advances 2021; 5(7): 2040-2052.doi:10.1182/bloodadvances.2020004094
5. Mestrum SGC, **de Wit NJC**, Drent RJM, Hopman AH, Ramaekers FCS, **Leers MPG**. Ki-67 as a marker for determining the proliferative fraction of differentiating hematopoietic cell lineages in bone marrow of myeloproliferative neoplasm and myelodysplastic syndrome /myeloproliferative neoplasm patients. Cytometry part B (Clinical Cytometry) 2020: 10.1002/cyto.b.21946