China Scholarship Council – University Maastricht

PhD Programme Application form

Basic information

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1. Information on prospective UM supervisors and Promotor

1a. First Supervisor:

- Title(s), initial(s), first name, surname:	Dr. J.P.J.M Jill Hikspoors
- Research group:	NUTRIM
- Address for correspondence:	Universiteitssingel 50 6229ER Maastricht
- Telephone:	+31(0)43 388 1189
- E-mail:	jill.hikspoors@maastrichtuniversity.nl

1b. Second Supervisor:

- Title(s), initial(s), first name, surname:	Prof. Dr. W.H. Wouter Lamers
- Research group:	Emeritus
- Address for correspondence:	Universiteitssingel 50 6229ER Maastricht
- Telephone:	+31(0)43 388 1060
- E-mail:	wh.lamers@maastrichtuniversity.nl

1c. Promotor:

- Title(s), initial(s), first name, surname:	Prof. Dr. S. Eleonore Koehler
- Research group:	NUTRIM/SHE
- Address for correspondence:	Universiteitssingel 50 6229ER Maastricht
- Telephone:	+31(0)43 388 1191
- E-mail:	leo.koehler@maastrichtuniversity.nl

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

- Initial(s), first name, surname:	Dr. J.P.J.M Jill Hikspoors
- Research group:	NUTRIM
- Address for correspondence:	Universiteitssingel 50 6229ER Maastricht
- Telephone:	+31(0)43 388 1189
- E-mail:	jill.hikspoors@maastrichtuniversity.nl

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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)

Basic research / Biological Foundations of Human Health and Diseases

Keywords: mesentery, colorectal carcinoma, 3D-reconstruction, developmental anatomy

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

The developmental anatomy of the mesenteries in human embryos and fetuses

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

Colorectal carcinoma (CRC) is the 3rd most common world-wide tumor. CRCs in the ascending right colon differ from that in the descending left colon in type and response to chemotherapy (1), with a right-sided tumor having a worse prognosis than a left-sided CRC (2). In these studies, the splenic flexure is often taken as dividing line between right and left (3). The mesenteric or antimesenteric location of the tumors also matters, with a mesenteric localization being associated with more spread to lymph nodes, but a longer survival (4). The reduced spread to lymph nodes may cause earlier spread via the peritoneal cavity.

The absence of a mesorectum-like adipose cuff around the colon and the poorly understood effect of the secondarily retroperitoneal status of large parts of the colon on lymph drainage have been cited as causes for the relatively poor prognosis of CRCs (5). In this respect our recent preliminary finding that the junction between the mid- and hindgut is located at the recto-sigmoidal junction in fetuses and coincides with a major change in the architecture of the mesentery appear to be relevant feature for the behavior of CRCs. A better insight into the developmental anatomy of the mesenteries of colon and rectum seems essential therefore to develop more mechanistic and effective approach to CRC surgery. Because the secondary adhesion of the mesentery of the ascending and descending colon to the posterior body wall is seen in primates only, a study in standard laboratory mammals is not informative. The aims of the present project are therefore to establish:

- the structural differences between the human mesenteries of the colon and rectum;
- the colorectal junction to be located at the rectosigmoidal junction;
- any regional differences in the mesenteric lymph drainage of colon and rectum;
- the effects of the secondary adhesion of ascending and descending colon on the architecture of the colon

1. Baran B, Ozupek NM, Tetik NY, et al. Difference between left-sided and right-sided colorectal cancer: a focused review of literature. Gastroenterol Res. 2018;11(4):264-273
2. Warschlow R, Sulz MC, Marti L, Better survival in right-sided versus left-sided stage I - III colon cancer patients. BMC Cancer 2016 16:554
3. Lee MS, Menter DG, Kopetz S. Right Versus Left Colon Cancer Biology: Integrating the Consensus Molecular Subtypes. Natl Compr Canc Netw 2017;15(3):411–419
4. L Bonia, F Cantore, E Colombo, et al. The mesenteric and antimesenteric site of the tumor as prognostic factor in colorectal cancer: 5-year survival analysis Surg Oncol 2007 16, S79–S82
5. Coffey JC, O'Leary DP. The mesentery: structure, function, and role in disease. Lancet Gastroenterol Hepatol 2016; 1: 238-247

Requirements:

Highly motivated and proactive student with great interest in embryology. Having affection for 3D-modeling is a plus.

Group's performance:

Jill P.J.M. Hikspoors: Thesis *cum laude*; publications 21; citations 251, H-index 10

Wouter H. Lamers: publications: 449, citations:17048; H-index 69

Selected publications:

JHM Soffers, JPJM Hikspoors, HK Mekonen, SE Köhler, WH Lamers (2015) The growth pattern of the human intestine and its mesentery. BMC Dev Biol (22) 15-31; https://doi.org/10.1186/s12861-015-0081-x

JPJM Hikspoors, N Kruepunga, GMC Mommen, JPWU Peeters, CJM Hülsman, SE Köhler, WH Lamers (2019) The development of the dorsal mesentery in human embryos and fetuses. Semin Cell Dev Biol 92 (18-26); https://doi.org/10.1016/j.semcdb.2018.08.009

KG Byrnes, D Walsh, LG Walsh, DM Coffey, MF Ullah, R Mirapeix, J Hikspoors, W Lamers, Y Wu, XQ Zhang, SX Zhang, P Brama, CP Dunne, IS O'Brien, CB Peirce, MJ Shelly, TG Scanlon, ME Luther, HD Brady, P Dockery, KW McDermott, JC Coffey (2021) The development and structure of the mesentery. Commun Biol. 4(1): 982; https://doi.org/10.1038/s42003-021-02496-1

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

Our department has generated a large database with digitized sections of human embryos and fetuses, and has implemented state-of-the-art reconstruction techniques. We have further developed a unique expertise to identify regions of differential growth in development. This CSC-UM grant allows the PhD candidate to use this database to generate a thus far unavailable interactive topographic atlas of mesenteric development.

With our earlier experience of four Chinese graduate students, we are confident that we can successfully generate novel mesenteric models of colon and rectum to develop a more mechanistic and effective approach to CRC surgery.

Applicant's Curriculum Vitae (if available)

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8. Personal details

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

CSC-UM PhD programme start 1-9-2023

- 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: