

The Department of Internal Medicine plans to appoint a

PhD candidate

to work on the development of an in vitro model of vascular aging

36 hours per week

Job description

Vascular aging is pivotal in age-related morbidity and mortality, and a major health care problem in urgent need of optimized therapies. Our recent work in novel vascular aging (animal) models for links irreversible local vascular cell DNA damage to vascular aging, and revealed potential drug targets. To improve clinical translation of this principle, and decrease use of animals, we will develop a 3D human in vitro model of vascular aging. With this model we will investigate the interaction between the aging vasculature and circulating factors in plasma from healthy subject and patients with age-related cardiovascular and renal disease.

The PhD candidate will set up an in vitro human microfluidic 3D vascular aging model. Strongly accelerated vascular aging will be accomplished by pharmacological DNA damage and/or CRISPR/Cas induced ablation of DNA repair genes in human vascular cells, either freshly isolated or differentiated from iPSC. The 3D model allows monitoring of functional variables of vascular aging, including permeability, inflammation, signalling dysregulation and senescence. Once optimized, the model will be used to test effects of aforementioned healthy and diseased human plasma samples. Thus, the PhD candidate will also develop a tool for improved discovery of human molecular makers, drug target discovery, and drug testing.

Work environment

A healthy population and excellence in healthcare through research and education. This is what Erasmus MC stands for. Conducting groundbreaking work, pushing boundaries and leading the way. In research, education, and healthcare. We are practical people with a high level of expertise, working hard to improve and renew the healthcare of today and the public health of tomorrow.

The PhD candidate will work on a project which is a close collaboration of three departments: The department of Pharmacology, The department of Molecular Genetics and the department of Experimental Cardiology. In the group of dr. Anton Roks at the department of internal Medicine, lab of Pharmacology, the focus is on experimental treatments of vascular aging. Applying models of vascular specific accelerated aging Roks is analyzing signaling processes to discover drug targets. Being connected to the COEUR research school, ample opportunity to follow courses and lectures in cardiovascular disciplines is present. In the group of dr. Ingrid van der Pluijm, at the department of Molecular Genetics, research focus lies on innovative fundamental and applied research on the effect of genome instability on cardiovascular aging. The group uses a multidisciplinary approach to advance understanding of the molecular mechanisms that underlie the cardiovascular aging process, working from the molecular genetic, biochemical and cell biological level to the level of intact eukaryotic organisms and patients. The Molecular Genetics laboratory offers an excellent training and supervision platform through a dedicated teaching program of our Graduate school 'Biomedical Sciences (www.erasmusmc.nl/biomedicalsciences/education/PhD). The group of dr. Caroline Cheng at the department of Experimental Cardiology is focussed on vascular biology in health and disease, including diastolic heart failure, cardiorenal disease and atherosclerosis. Current research lines also include regenerative projects that aim to further develop an in house created vasculature on a chip device towards bioreactor applications in order to generate vascularized ex vivo bioengineered grafts for transplantation.

Qualifications and skills

We are looking for a highly motivated and talented candidate that holds a MSc degree in biomedical science, molecular/cellular biology, biochemistry or related field with a basic knowledge of DNA repair pathways. Experience with standard molecular biology techniques, RNA sequencing, iPS cell culture and Crispr/Cas, and will be a strong advantage. The ideal candidate also has a strong interest in current bioengineering techniques (microfluidics and bioreactor operation) and has an affinity for cardiovascular research. Excellent writing and presentation skills in English are recommended. As you will work in a dynamic international research environment we need a team-player who is able to combine independent thinking with a collaborative attitude.

Being able to present a certificate of good conduct is a condition for the appointment.

Terms of employment

You will receive a temporary position for 4 years. The gross monthly salary is € 2279,- in the 1st year and increases to € 2919,- in the 4th year (scale OIO). The terms of employment are according to the Collective Bargaining Agreement for Dutch University Medical Centers (CAO UMC).

Information and application

For more information about this position, please contact dr. Anton Roks, dept. of Pharmacology, phone number: 010-7043754 or e-mail: a.roks@erasmusmc.nl, or

In case of multiple contacts for information about the vacancy:

dr. Ingrid van der Pluijm, dept. of Molecular Biology, phone number 010-7043724, e-mail:

i.vanderpluijm@erasmusmc.nl. dr. Caroline Cheng, Dept. of Nephrology and Hypertension, UMC Utrecht; K.L.Cheng-2@umcutrecht.nl. Tel. 06-23014061