ESC First Contact Initiative Grant

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Subject: Report ESC First Contact Initiative Grant

Dear ESC Council on Basic Cardiovascular Science,

Firstly, I would like to sincerely thank the ESC Council on Basic Cardiovascular Science for awarding me the 2021 First Contact Initiative Grant. Through this grant, I was able to initiate a collaboration with the laboratory of Professor Rafael Kramann, at RWTH Aachen University, Germany.

Background

The main focus of my PhD was on macrophages and fibroblasts in the healthy and diseased vasculature. My PhD project demonstrated that communication between the two cell types is tremendously important in vascular disease characterized by fibrosis or inflammation (**van Kuijk et al. Cardiovascular Research 2021**). Hence, my application focused on macrophage and fibroblast communication in vascular aging. During my PhD, I established contact with Prof. Rafael Kramann, leading to the proposed project. In my application, I proposed to use an *in vitro* 3D-model mimicking vascular aging and target SPP1, a pro-fibrotic paracrine stimulus identified during my PhD, signaling therein. The model would consist of macrophages, fibroblasts and extracellular matrix. The expertise of the lab of Prof.

Kramann in developing 3D-models and vascular aging appeared a perfect fit for my proposal.

Hypothesis

The project aimed to set up a 3D-model of vascular aging, including macrophages, fibroblasts and extracellular matrix. In addition, I wanted to investigate the role of SPP1 signaling in this *in vitro* model of aging.

I hypothesized that this 3D-model would provide a novel tool to study cellular communication in aging.

Use of the grant and personal development

During my postdoc at the Pathology department at Maastricht University Medical Center, I proceeded to work on one of the main projects of my PhD, which I successfully defended on the 4th of June, 2021. With help of the ESC Firs Contact Initiative grant, I could expand this project from atherosclerosis to vascular aging. By making use of the expertise of Prof. Kramann, I was able to create a 3D model of macrophages, fibroblasts and extracellular matrix. Unfortunately, due to time and COVID-related restrictions, further implications of the 3D model are not yet explored. However, the created protocol can be of great use for further implementing in the group of Prof. Judith Sluimer, allowing *in vitro* assessment of vascular risk factors on cellular communication. The current grant further strengthened the collaboration between RWTH Aachen University and Maastricht University. I strongly believe that this opportunity boosted my personal career, and further allowed my to strengthen my scientific network.

As of January 2022, I have acquired a postdoctoral scientist position in the group of Prof. Mauro Giacca at King's College London. Here, I will continue my work in the cardiovascular field, working on the molecular processes regulating cardiomyocyte regeneration.

I would like to thank Prof. Kramann for providing the knowledge and protocol for setting up a 3D-model to study macrophage-fibroblast communication. In addition, I would like to express my gratitude towards the ESC council for granting me this opportunity.

Yours sincerely,

Kim van Kuijk, PhD