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ESC Council of Basic Cardiovascular Science

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Subject: ESC First Contact Initiative Grant - Report

Dear Members of the ESC Council of Basic Cardiovascular Science,

I would like to gratefully thank the ESC and Council of Basic Cardiovascular Science for supporting my internship in the lab of prof. Elena Aikawa, at the Center for Interdisciplinary Cardiovascular Sciences, Brigham & Women's Hospital, Harvard Medical School, in Boston.

Prior to my internship in Boston, my PhD research in Amsterdam focused on lipidology and translational imaging modalities in patients with cardiovascular disease. In this context, I started investigating the relationship between calcific aortic valve disease and the risk conferred by elevated levels of lipoprotein(a). To further dive into this line of research, I joined the lab of prof. Elena Aikawa for 12 months. As a principal investigator at the Center for Interdisciplinary Cardiovascular Sciences, prof. Aikawa and her research group have played a pioneering role in discovering mechanisms of cardiovascular calcification, which is reflected in the quantity and quality of publications in high impact journals.

I set out to investigate the mechanisms by which lipoprotein(a) promotes valve calcification. To this end, I learned how to work with in vitro models of valvular calcification. In particular, I gained extensive experience in cell culture techniques, how to perform multiweek experiments and staining of calcium/phosphate pathology. After optimization of the cell culture model to investigate lipoprotein(a)-induced calcification, I learned numerous lab techniques to test our hypothesized mechanisms of calcification. This allowed me to get extensive experience with a wide range of lab techniques and different assays, including Western Blotting, gene expression profiling and silencing, and confocal microscopy. In addition, I performed proteomics studies to investigate disease pathways, which allowed me to learn the entire pipeline of proteomics approaches, from sample preparation to mass spectrometry and bioinformatics. At the time of this writing, a number of final experiments are planned and we are continuing to collaborate.

Furthermore, there were ample possibilities to visit lectures on cardiovascular topics in the Brigham. They are renowned for their world-class researchers and it was very inspiring to listen and be able to interact with the speakers. To conclude, I would like to state again that I am very grateful to ESC for the opportunity to go abroad and develop my academic skills, and I am hopeful these experiences will be of tremendous value in pursuing my scientific interests back in Amsterdam.

Sincerely,

Kang H. Zheng, MD
Department of Vascular Medicine