CV (Eric P van der Veer)

I grew up in Ajax, Ontario, Canada. At the age of 21 I moved to the Netherlands to study Chemistry at the University of Amsterdam, where I specialized in bio-inorganic chemistry. My internship in the research group of Dr. Siem P.J. Albracht opened my eyes to the beauty of biochemistry, leading to my M.Sc. thesis entitled 'On the role of the second flavin mononucleotide in NADH:Ubiquinone Oxidoreductase'.

In 2001, I commenced my Ph.D. studies in the laboratory of Prof. dr. J. Geoffrey Pickering at the University of Western Ontario (2008) in London, Ontario, Canada. Here, I developed considerable expertise regarding the role of vascular smooth muscle cells in healthy and diseased settings. These studies focused on the NAD^+ salvage pathway protein Nicotinamide Phosphoribosyltransferase (Nampt). In particular, I studied how modulating intracellular NAD^+ levels (by altering Nampt expression) could influence cellular function and lifespan. This work led to publications in Circulation Research, Journal of Biological Chemistry and Journal of Cell Science, along with several patents regarding the generation of formulations that enhance the fitness (lifespan) of cells in response to damaging agents (acquired by Sirtris Pharmaceuticals, now a GlaxoSmithKline company). Collectively, these studies formed the basis of my Ph.D. thesis entitled "Regulation of vascular smooth muscle cell behaviour by nicotinamide phosphoribosyltransferase", which was successfully defended in March 2008.

I returned to the Netherlands and commenced with a 8-month post-doctoral fellowship in the research group of Prof. Erik A.L. Biessen at the Leiden/Amsterdam Center for Drug Research (LACDR). Promising initial studies into the RNA-binding protein Quaking in vascular smooth muscle cells and monocytes/macrophages triggered a transition to the research group of Prof. Anton Jan van Zonneveld at the Leiden University Medical Center (LUMC) in 2008, under whose guidance and post-transcriptional expertise I launched a research platform focusing on the RNA-binding protein Quaking in numerous vascular cells.

While Quaking was widely considered to be exclusively expressed in the central and peripheral nervous system as a post-transcriptional guide for myelination, our pioneering work in vascular cells led QKI to also be regarded as a critical regulator of cardiovascular health and disease. This body of work has recently been published in high impact journals such as Nature Communications, Circulation Research, Scientific Reports and Nucleic Acids Research.

This extensive experience in field of RNA-binding proteins (in particular regarding the protein Quaking) in cardiovascular disease, culminated in my recent review into the role of RNA-binding proteins as effectors and regulators of RNA fate in cardiovascular disease (preliminary acceptance – link to follow). This expertise has been developed and stimulated by insightful collaborations with leading researchers in the RNA- and cardiovascular field, including Prof. Stephane Richard (McGill University, Montreal, Canada), Prof. Manny Ares Jr. (University of Santa Cruz, Santa Cruz, California, U.S.A.), Prof. Muredach Reilly (Columbia University, New York City, New York, U.S.A.) and Dr. Hilal Kazan (Antalya International University, Antalya, Turkey).

Recently, I was awarded the prestigious Irvine H. Page Young Investigator Award by the Atherosclerosis Thrombosis and Vascular Biology Society (an American Heart Association Council) for our study detailing the role of this protein in regulating monocyte and macrophage function in the setting of atherosclerosis (2016).

In July 2016, my interest in guiding splicing events using RNA therapeutic approaches received a boost in the form of a Dutch Kidney Foundation Innovation Grant. This investment in my research is designed to enable our team to develop RNA-based tools to reduce levels of disease-advancing splice variants and enhance the formation of regenerative transcripts in the setting of kidney disease.

These studies are nicely embedded within ongoing studies in my research group designed to pinpoint the role of QKI in mediating phenotype changes, the consequences of alternative splicing events in vascular cells, and the modulation of QKI-mediated splicing to reduce the risk of cardiovascular disease.

Key publications

1. de Bruin, R.G., et al. Quaking promotes monocyte differentiation into pro-atherogenic macrophages by controlling pre-mRNA splicing and gene expression. **Nature Communications**, 2016.
2. van der Veer, E.P., et al. The RNA-binding protein Quaking is a critical regulator of vascular smooth muscle cell phenotype. **Circulation Research,** 2013.
3. de Bruin, R.G et al. Emerging roles for RNA-binding proteins as effectors and regulators of cardiovascular disease (Review). **European Heart Journal**, 2016.
4. de Bruin, R.G. et al. The RNA-binding protein Quaking maintains endothelial barrier function and affects VE-cadherin and β-catenin function. **Scientific Reports,** 2016.
5. Hafez, S.Q. et al. Modeling the combined effect of RNA-binding proteins and microRNAs in post-transcriptional regulation. **Nucleic Acids Research**, 2016.
6. van der Veer, E.P. et al. Intrinsic directionality of migrating vascular smooth muscle cells is regulated by NAD^+ biosynthesis. **Journal of Cell Science**, 2012.
7. van der Veer, E.P. et al. Extension of human cellular lifespan by nicotinamide phosphoribosyltransferase. **Journal of Biological Chemistry,** *Accelerated Publication*, 2007.
8. van der Veer, E.P., et al. Pre-B-cell colony-enhancing factor regulates NAD^+-dependent protein deacetylase activity and promotes vascular smooth muscle cell maturation. **Circulation Research,** 2005.