Universiteit Leiden

Word of thanks by Honorary Doctor Professor Melissa Little

8 February 2019

Rector Magnificus, Professor Rabelink, ladies and gentlemen; it is indeed a great honor to receive this degree from Leiden University. As you have heard, I have spent the last 30 years working on how the kidney forms, at the level of the genes and the cells, and the way in which the many cell types of the kidney are arranged to give this organ its vital function. I feel enormously privileged to have been able to work in science, where I can follow my curiosity, think laterally, determine my own direction and make fascinating discoveries. This type of fundamental science can seem quite esoteric and, to the bricklayer or even the architect, terribly slow at producing an outcome. Early in my scientific career, particularly as a young mother juggling my science and my kids, I was more focused on simply doing great science. However, the need to have my discoveries leading to outcomes became something of a passion for me. In 2001, my contemporary and colleague, Dr. Toshiya Yamada, died suddenly, leaving behind 3 young children and a promising research future. This made me wonder about my own purpose and what I would leave behind. How would an understanding of how a kidney forms help anyone? Around this time, researchers made the first human pluripotent stem cells from human embryos, raising the prospect of rebuilding human tissues. In addition, it was discovered that stem cells were present in many organs, even the brain. For me, such discoveries were a revelation. Perhaps there were stem cells in the adult kidney that could repair damage? Perhaps we could repair the kidney with stem cells from other organs? Perhaps we could rebuild a kidney by following the blueprint of the developing organ? Indeed, it was this approach that succeeded and that success was based on our fundamental understanding of the cell and molecular biology of the kidney.

Our seminal Nature paper was published in 2015. In that year, I was fortunate enough to spend time in Leiden as the Boerhaave Professor. Since then, with Professor Rabelink's team, we have shown that kidney organoids can be transplanted, allowing them to draw in blood vessels and further mature. This leap forward is still a long way from building a new kidney, but what was impossible is now tangibly possible.

As Victor Hamburger is quoted as saying, 'our real teacher has been and still is the embryo.' It is this walking hand in hand – learning how the embryo can create the many cell types of the kidney and arrange them properly – that has guided this quest to recreate a kidney. And it is the role of Universities such as Leiden University to enshrine such fundamental science and train the next generation to value it.

In closing, I would again thank Leiden University for bestowing this award on me. As the University that trained the fathers of modern medicine and physiology, Herman Boerhaave

and Albrecht von Haller, this is a great honor and I am truly humbled to be listed alongside such giants. I would also
thank my husband, Mahlon, who is with me today, and our beautiful children, Celeste and Nathaniel, for walking along this journey with me. Let's see where we can go from here.