



Introducing....Dr. Jennifer Hollywood, Postdoctoral Research Fellow, University of Auckland, NZ



I completed my PhD under the supervision of Dr Patrick Harrison and Dr Martina Scallan at the University College Cork (UCC). During my 4 years I was focused on the use of gene editing tools such as zinc finger nucleases (ZFNs), TALENs and most recently CRISPR. The ability to change the genetic code in order to correct mutations and cure diseases is an exciting idea and is quickly becoming a reality. Gene editing tools allow scientists to replace sequences of DNA that cause genetic disease with correct sequences thus restoring normal function of the downstream protein. They also allow scientists to introduce known genetic mutations to create models of disease that can be studied in the laboratory. My PhD project involved correcting the genetic mutations that cause cystic fibrosis in patient specific cells grown in the laboratory.

A year ago I moved to New Zealand to undertake 3-years of Post-Doctoral training in Associate Professor Alan Davidson's laboratory at the University of Auckland. I am using the gene techniques I learned at UCC to generate a human cell-based model of Cystinosis. To do this, I am using 'induced pluripotent stem (iPS) cells'—an embryonic-like cell that is generated by artificially 'reprogramming' adult cells. iPS cells are capable of being coaxed to mature into any of the 200 cell types in the body. My project is to use gene editing to introduce a mutation in the Cystinosin gene, thereby generating Cystinotic iPS cells, and then induce these cells to become kidney tissue. These cells will give us a new tool to better understand why Cystinosis leads to progressive kidney damage and hopefully this will lead to a new therapy in the future.