# Case Study: GENOMICS 2

## Research Question

Targeting the interaction between the TGFβ signalling pathway and the polycomb repressive complex for therapeutic benefit in diabetic kidney disease.

## Our Approach

The Crean group are exploring novel ways to initiate repair of the fibrotic kidney. Progression of diabetic kidney disease occurs even in patients who maintain strict glycemic control. This suggests the existence of a 'memory' of the prior glucose exposure in target cells, which leads to persistence of its damaging effects. It is now evident that epigenetic changes that occur within the diabetic kidney contribute to chronic fibrosis in a phenomenon known as 'metabolic memory'. Interestingly, pro-fibrotic mediators, such as TGFβ1, interact with chromatin modifying enzymes to shape the epigenetic landscape in both development and disease. Inhibition of EZH2, the enzymatic unit of the polycomb repressive complex 2, leads to the resolution of fibrosis in multiple animal and cell models. Importantly, the pro-fibrotic effect of TGFβ1 is also dampened in the presence of EZH2 inhibitors. This data supports the hypothesis that targeting the interaction between the TGFβ signalling pathway and EZH2 could lead to the resolution of fibrosis.

## Expertise:

Offering genomics solutions to academic and commercial clients in a customisable range of services at each stage of the research pathway; from experimental design to final publication.


Contact details:

***Professor Geraldine Butler***

*Director, Genomics Core*

*T: (+353-1) 716 6718 / E: conway.genomics@ucd.ie / gbutler@ucd.ie*


## Testimonial

"Our group are regular users of the Genomics Core Technology facility at UCD. We routinely perform single cell RNA-seq and ATAC-seq, chromatin shearing, DNA quality analysis, sequencing, and qPCR using the available technologies. The support and expertise provided by staff such as training and in-depth guidance on all aspects of our genomic experiments are essential for completion of our research projects".


***Associate Professor John Crean***

*Principal investigator*

***Dr Jessica Davis***

*Postdoctoral researcher*

*UCD School of Biomolecular and Biomedical Science &*
*UCD Conway Institute*


CORE TECHNOLOGIES
at UCD Conway Institute

UCD DUBLIN