

Submission No. : CKD3-0002

Session Title : Chronic Kidney Disease 3 (Diabetic Kidney Disease)

Session Topic : What's New in DKD?

Date & Time, Place : June 14 (Fri) / 17:00-18:30 / Room 3 (GBR 104-105)

New Pathogenesis of DKD: Mechanosensitive Injury Signaling

Tobias Huber

*III. Department of Medicine, University Medical Center Hamburg-Eppendorf,
Hamburg, Germany, Germany*

In our recent research, we focused on understanding the initial cellular and molecular events of Diabetic Nephropathy (DN), a principal cause of end-stage renal disease. By utilizing single-cell and bulk RNA sequencing on renal cells from type 2 diabetes mice in the early stages of DN, we identified a significant, glucose-independent activation of the mechanosensitive MRTF-SRF transcriptional pathway in mesangial cells. This pathway's activation, confirmed across different patient datasets, suggests a key role in early DN alterations and presents a novel target for therapeutic intervention. Building on these findings, we also explored novel treatment options. Our team has developed AAV2-GEC, an innovative adeno-associated virus vector, showing targeted efficiency in kidney cells, particularly glomerular endothelial cells. This approach has potential implications for DN treatment.

Keywords: Diabetic nephropathy, Glomerulus, Mechanosensation, Mesangial cell, Podocyte