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First Murine Model for Testing Treament Options in Primary Membranous Nephropathy

Focus Indications
- Primary Membranous Nephropathy

Project Key Words
- Primary Membranous Nephropathy
- Knock-in Mouse
- Extracellular PLA_2R Function
- Murine Model
- Nephrotic Syndrome

Development Status
- POC
- In vivo mouse model at 6th back-crossing stage

Patent Procedure Status
- EP Patent Application filed
- PCT Patent Application filed

Chances for Cooperation
- R&D Cooperation
- Licensing
- Patent Sale

Innovation and Customer Benefit

Primary Membranous Nephropathy (Primary MN) is an autoimmune disease and the most frequent cause for the development of a nephrotic syndrome in adults.
An esteemed 30% of all patients become dependent on dialysis.

The necessity to explore the pathogenesis and pathophysiology of Primary MN leads to the evident benefit of a murine model on which to test treatment options.

Possible Indications

The knock-in mouse model can be used for the following pathology:

- Primary Membranous Nephropathy

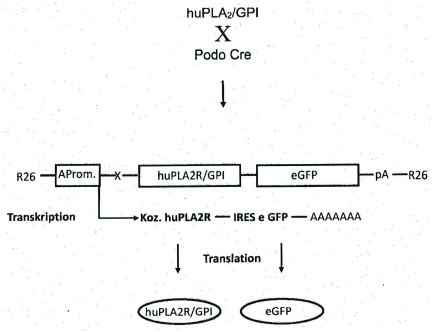

Fig. 1: Breeding Scheme for the Murine Model

Technical Description

The phospholipase A2 receptor (PLA_2R) which is exclusively expressed on glomerular podocytes only in human kidneys is probably the major auto-antigen for Primary MN. Recent clinical studies have shown the importance of the receptor in the genesis of the pathology.

The knock-in murine model was generated by cloning the extracellular part of the human PLA_2R cDNA fused with a GPI anchor into the targeting vector. PLA_2R positive ES-cells were injected in blastocysts and implanted in female mice. The F1 littermates were successfully tested for germ line transmission of the PLA_2R knock-in. The result were breedings with Podo-Cre mice that specifically express PLA_2R on podocytes.
This process enables a complete targeted integration of the external PLA_2R cDNA

The result is a murine model where the cellular expression of human PLA_2R enables the reproduction of the human pathology.

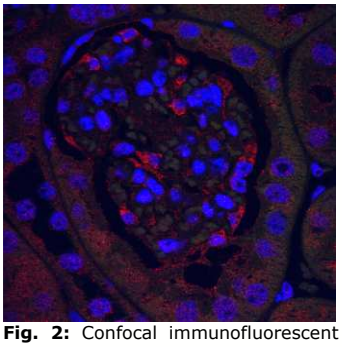

Fig. 2: Confocal immunofluorescent staining
Red: huPLA2; blue: cell nuclei

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