Extracellular Vesicles from Human Amniotic Fluid Stem Cells for Treatment of Kidney Diseases

Background:
More than 31M people suffer from Chronic Kidney Disease in the US, and the cost borne by the healthcare system is around $70K per patient annually.

Description:
A subset of amniotic fluid stem cells (AFSCs) secrete extracellular vesicles (EVs) that can modulate glomerular signaling. Specific proteins and micro-RNAs (miRs) within EVs have been identified that modulate signaling (e.g., via VEGF), and may have a protective role in various diseases. Such proteins and miRs have shown therapeutic effect in slowing renal disease in an Alport disease mouse model.

Benefits:
- EVs are non-immunogenic permitting allogeneic use
- EVs are stable in vivo
- EVs (and/or their constituents) can be packaged in an off-the-shelf product, unlike stem cells
- Certain EV constituents may also be used as biomarkers in kidney disease

Applications:
- Targeted therapy designed to preserve renal function
- Wide applicability across an array of renal diseases