Glomerulus-on-a-Chip

A kidney organ culture comprised of human amniotic fluid-derived podocytes and glomerular endothelial cells

IP Status

Patent application submitted, Provisional patent

Seeking

Development partner, Licensing
Background

An *in vitro* system that mimics the complex architecture of the glomerular filtration barrier and that can be used to better study pathophysiology is urgently needed.

Tech Overview

A kidney organ culture comprised of human amniotic fluid-derived podocytes and glomerular endothelial cells to mimic properties of the intact glomerulus both in terms of structure and filtration function. Inventors have worked out details on cell constraints and conditions to make this functional glomerulus-on-a-chip (GOAC) ([Figure 1](#), [Figure 2](#), [Figure 3](#) and [Figure 4](#)).

Further Details

- A glomerulus-on-a-chip to recapitulate the human glomerular filtration barrier, [https://www.nature.com/articles/s41467-019-11577-z](https://www.nature.com/articles/s41467-019-11577-z)

Benefits

- Able to reproduce and predict kidney diseases with high fidelity
- Capable of producing a glomerular membrane with correct assembly of collagen IV and laminin

Applications

- Drug screening
- Basic kidney biology research
- Disease modeling
- Personalized medicine

CHLA Case No. 2019-003
Appendix 1

Figure 1
Appendix 3

Figure 3