Modeling vascular disease using self-assembling human induced pluripotent stem cell derivatives in 3D vessels-on-chip

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Stellingen behorende bij het proefschrift getiteld

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1. MPS are clearly poised to contribute to biomedical research, but in order to take the technology to the next level and realize end-user and regulatory acceptance, it is essential to understand their predictive value. *This thesis*

2. We distinguish the quantification of 'designed features' that can be controlled in MPS design from 'emergent features' that describe cellular function within the device. *This thesis*

3. Organs-on-Chip thus revealed features of HHT in hiPSC-derived blood vessels that were not evident in conventional 2D assays. *This thesis*

4. hiPSC-Astros and human primary astrocytes behaved very similarly in VoC triple cultures with no apparent differences in the morphology or expression of contractile- and reactive markers in either HBVPs or astrocytes. *This thesis*

5. An emerging role of brain vasculature in the pathogenesis of human neurodegenerative diseases, particularly AD, has led to increasingly recognized importance of healthy blood vessels for normal brain functioning. *Sweeney et al. (2018). Nature Neuroscience.*

6. It has been demonstrated that BBB traits are not intrinsic to brain specific ECs, but rather the result of a dynamic interplay with their microenvironment including multiple cell types such as astrocytes and pericytes. *Lu et al. (2021). Frontiers in Physiology*

7. A major advantage of the self-organizing approach is its similarity to the *in vivo* processes to grow and develop vasculature, thus leading to spontaneous formation of vessels by ECs in hydrogel mimicking *in vivo* counterparts in both function and morphology. *Zhang et al. (2021) Lab on a Chip.*

8. Replace this batch with a different lot number from the manufacturer. *Hajal et al. (2022). Nature Protocols*

9. We are not performing magic, we are just measuring. *Christine Mummery (2023).*
   Je moet resultaten accepteren zoals ze zijn, niet zoals jij wil dat ze zijn.

10. You must learn from the mistakes of others—you will never live long enough to make them all yourself. *Harry Myers*. *(1932)*
    Meer aandacht voor fouten en onsuccesvolle experimenten, zou de wetenschap een stuk efficiënter maken.

11. The saddest aspect of life right now is that science gathers knowledge faster than society gathers wisdom. *Isaac Asimov (1988)*.
    Wetenschappelijk progressie moet hand in hand gaan met maatschappelijke discussie.

12. Relaxing brings weakness, when done by a muscle; but brings strength, when done by a person.— Mokokoma Mokhonoana
    Meer werken, levert niet altijd meer resultaat op.