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Skeletal muscle in a dish: towards making skeletal muscle in vitro

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Stellingen behorende bij het proefschrift getiteld

Skeletal Muscle in a Dish Towards Making Skeletal Muscle in Vitro

1. "Non-coding RNAs (ncRNAs) play an essential yet underappreciated role in early germ layer differentiation, suggesting that further research into ncRNA regulation will enhance our understanding of early developmental processes." (*this thesis*)
2. "Magnetically responsive microfiber scaffolds open new avenues for replicating the dynamic environment of skeletal muscle, where external magnetic fields can simulate mechanical strain similar to muscle contraction and relaxation cycles." (*this thesis*)
3. "Human immortalized myoblasts may offer advantages for general muscle research and 3D in vitro model development due to their relatively mature phenotype, while patient-specific iPSC-derived myoblasts are potentially better suited for personalized approaches in modeling genetic muscle diseases" (*this thesis*)
4. "Though 3D models might be a promising tool to bridge the gap between fundamental and clinical research, reproducibility remains a challenge. Detailed reporting on reproducibility will improve the reliability of results and promote the wider adoption of 3D models in various research studies." (*this thesis*)
5. "It's an RNA world we live in. We've come through an era where RNA was the disease and RNA is the cure." (*adapted from Matthew Disney, Ph.D*)
6. "Biomaterials designed for myogenic cell culture should prioritize purpose-specific properties rather than increasing complexity, ensuring they more closely mimic the three-dimensional, flexible environment that muscle stem cells experience in vivo." (Nguyen, Jo, and Penney M. Gilbert. "Decoding the forces that shape muscle stem cell function." *Current Topics in Developmental Biology* 158 (2024))
7. "Vascularization of organoids with tissue-specific endothelial cells remains a significant challenge for creating fully integrated, functional models." (Zhao, Yimu, et al. "Integrating organoids and organ-on-a-chip devices." *Nature Reviews Bioengineering* 2.7 (2024))

8. "Distinct geometrical arrangements for different cell types within a multicellular skeletal muscle-on-chip model have been proven to be important and should be taken into account when developing new models." (Nguyen, M-L., et al. *"Studying the impact of geometrical and cellular cues on myogenesis with a skeletal muscle-on-chip."* *Lab on a Chip* 24.17 (2024))
9. Reproducibility, not novelty, should be the cornerstone of scientific credibility.
10. Big data in biology is only as valuable as the hypotheses we design to interpret it.
11. Scientific progress depends as much on asking the right questions as on finding the right answers.
12. In science, the absence of evidence is not evidence of absence, especially in developmental processes.