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Endothelial glycocalyx hyaluronan biosynthesis and function in microcirculation

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Stellingen behorend bij het proefschrift getiteld

Endothelial Glycocalyx Hyaluronan Biosynthesis

and Function in Microcirculation

1. The glomerular endothelial hyaluronan is a key extracellular matrix component required for glomerular structure and function. *This thesis*
2. Loss of endothelial glycocalyx hyaluronan leads to cell-cell contact destabilization, which can result in either endothelial rarefaction or angiogenesis. *This thesis*
3. Endothelial glycocalyx hyaluronan biosynthesis is determined by the cellular metabolic state. *This thesis*
4. Restoration of endothelial glycocalyx function by manipulating glycolysis is a potential target to achieve vessel normalization. *This thesis*
5. The endothelial glycocalyx works as the endothelial gatekeeper, mechanotransducer and control center for the microenvironment. *Reitsma et al, Pflugers Arch – Eur J Physiol, 2007*
6. “Evidence suggests that glycocalyx dysfunction is reversible, suggesting that these mechanisms could be considered as therapeutic targets to prevent the progression of renal and cardiovascular disease.” *Rabelink et al., Nature Reviews Nephrol, 2015*
7. “An understanding of metabolic pathways based solely on biochemistry textbooks would underestimate the pervasive role of metabolism in essentially every aspect of biology.” *DeBerardinis et al., Cell, 2012*
8. “Metabolic pathways, such as glycolysis, fatty acid oxidation, and amino acid metabolism, determine vasculature formation.” *Li et al., Annual Review of Physiology, 2019*
9. Cellular metabolism is not only an engine but also a processor.
10. Progress is made of 8 failures and 2 successes; one success is from your own failures and one is from the others’ success.
11. Research is a process of learning, thinking, discussing and doing, then repeating.