DEPARTMENT OF BIOMEDICINE
HEALTH
AARHUS UNIVERISTY

MEMBRANES Lunch Seminar with Prof. Victor Puelles

Thursday, Nov. 24, 2022 | 12.15-13.15 | Lille anatomisk auditorium (build. 1231, room 424)

Prof. Victor Puelles

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Talk title
Decoding Tissues Across Biological Scales

Host
Robert A. Fenton

Abstract

Pathophysiological changes can be studied from multiple perspectives and at different biological scales, including whole organs, intact functional structures, single cells, and subcellular compartments. The kidney represents a perfect example to highlight the importance of a multi-scale view of health and disease due to heterogeneous injury patterns.

The seminar will provide an overview of different tissue-based technologies that have been applied in the characterization of kidney injury due to viral, immune, ischemic, and idiopathic disorders. Some of the methods include: (1) 3D profiling using optical clearing and light microscopy for the analysis of intact organs and functional structures, (2) multiplex imaging with over 60 markers in the same piece of tissue for integrative molecular and molecular probing, (3) nanoscale imaging using expansion microscopy and computational image enhancement, reaching 25 nm resolution using LED-based systems, and (4) computational image analysis such as pixel-based cluster analysis) for disease state identification and pharmacological targeting, and deep learning-based cell segmentation for morphometrics and patient stratification. Importantly, these technologies are easily transferable to other systems and conditions, providing a unique context for active multidisciplinary collaborations.

Best wishes,
Søren Brandt Poulsen
Administrative Research Theme Coordinator
MEMBRANES

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