

Bottom-up approaches for the investigation of $\text{Ca}_v1.3$ ion channel clusters

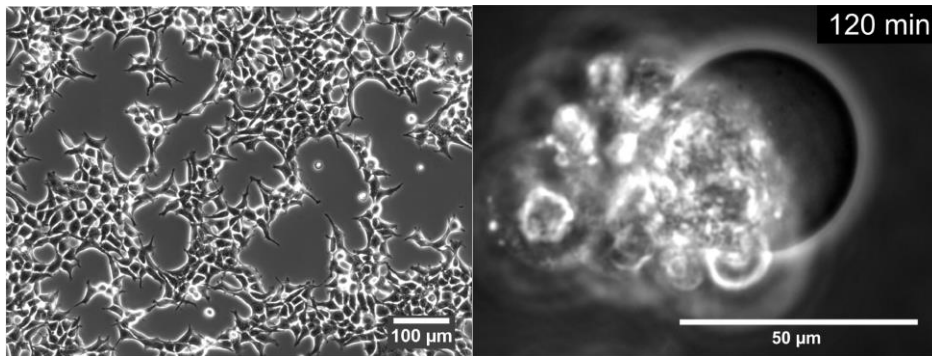


$\text{Ca}_v1.3$ ion channels

- Voltage-dependent Ca^{2+} ion channel
- Found in heart and inner hair cells
- Natural formation of ion channel clusters
- Pacemaking activity and signal transduction

Model system

- Giant plasma membrane vesicles (GPMVs) derived from HEK-293 cells
- Spreading of GPMVs on different substrates to create SPMBs and PSPMS

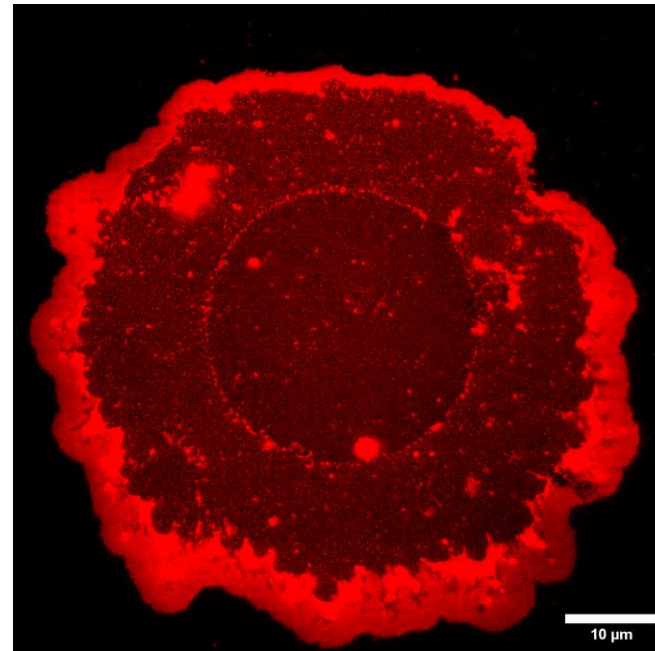


Left: Phase contrast microscopy of HEK-293 cells

Right: Single HEK-293 cell after 120 minutes vesiculation

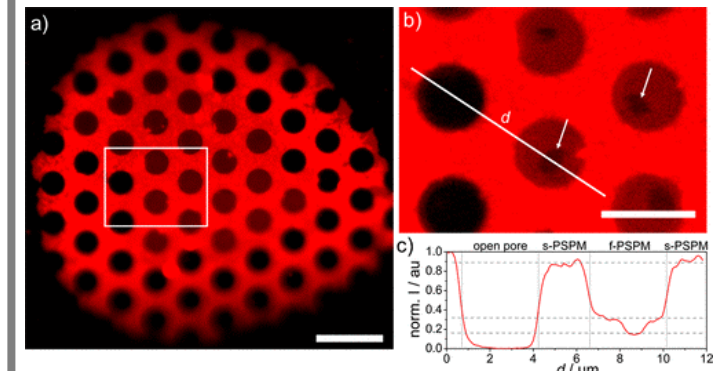
SPMB

- Supported Plasma Membrane Bilayer (SPMB)



PSPM

- Pore Spanning Plasma Membrane (PSPM)
- Examination of dynamic processes



a) PSPMs; b) Zoom of a) with liquid ordered domains; c) Intensity profile of a line scan from b)