



GTR Seminar

Growing membranes for synthetic cells: Building an in vitro phospholipid biosynthesis pathway

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A major challenge in biology is to build a synthetic cell from the bottom-up, which is the most fundamental approach towards understanding life. Such cells need to grow and divide, requiring the formation and expansion of a phospholipid boundary layer. A phospholipid biosynthesis pathway was developed based on a cascade of purified (membrane) proteins that were collectively reconstituted into liposomes. Through a feed with simple building blocks like fatty acids, glycerol-3-phosphate, cofactors and nucleotides, a variety of phospholipid species can be generated allowing bulk membrane growth of preexisting liposomes. A critical element is recycling of nucleotides to ensure continuous growth. Further, membranes serve as a matrix for membrane proteins involved in energy transduction and transport, which are other critical functions of a synthetic cell. For this purpose, the translocon, responsible for protein secretion and insertion, is introduced in growing membranes as a first step towards synthetic cells with integrated functions. It is the ultimate goal to develop a synthetic cell encoded by a minimal genome that can carry out basic cellular functions autonomously.

Nov. 8, 2022 (Tue) 16:00–17:30

@ Room A637 in Agriculture-building A / Online with Zoom (hybrid)

For online participation, please register via <https://forms.gle/yDYyExTPpMV3vLGL8> or the QR code below until 17:00 on Nov. 7 (Mon).



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