

***Deconstructing membrane associated cellular signaling protein complexes
through native mass spectrometry***

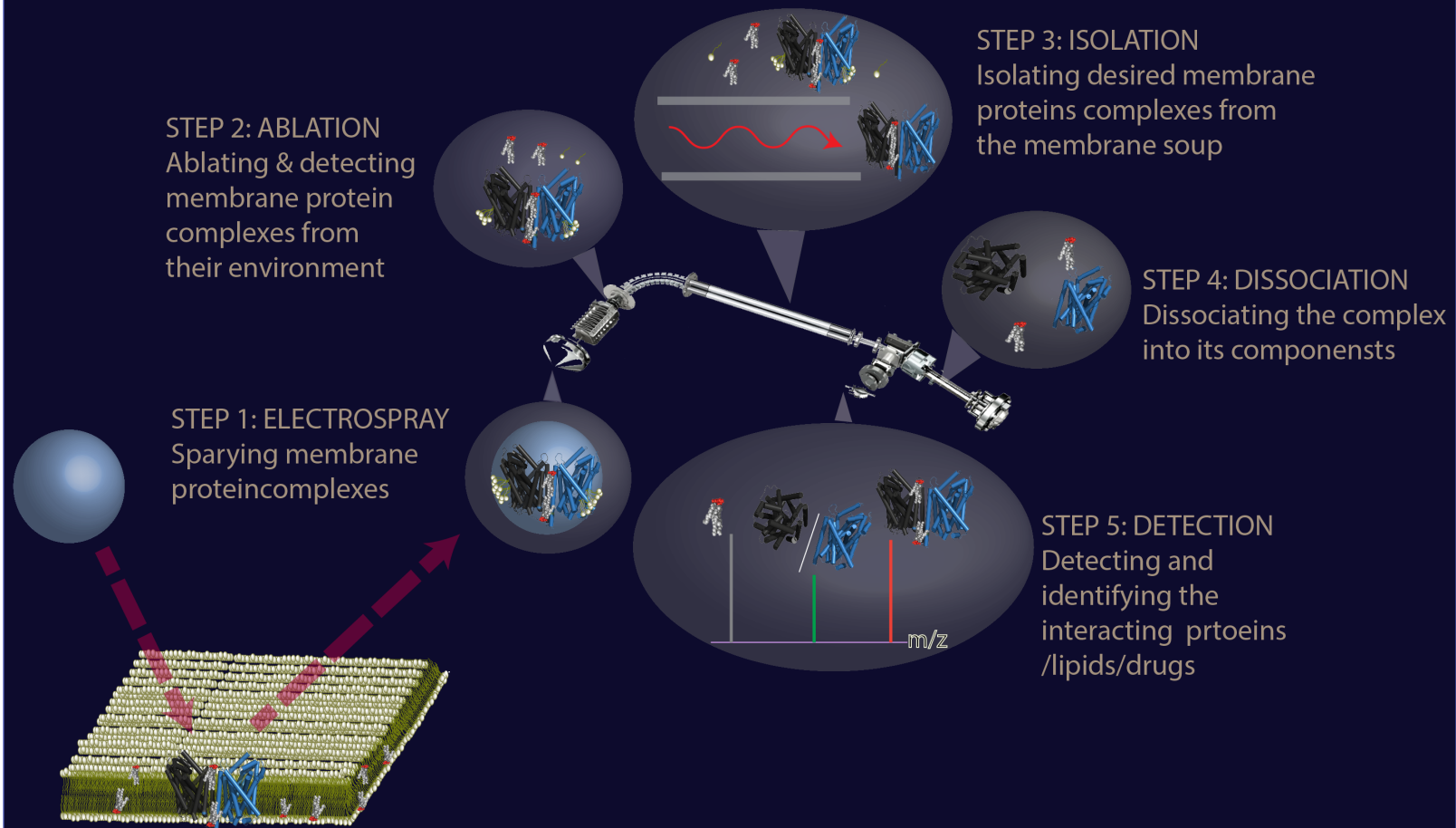
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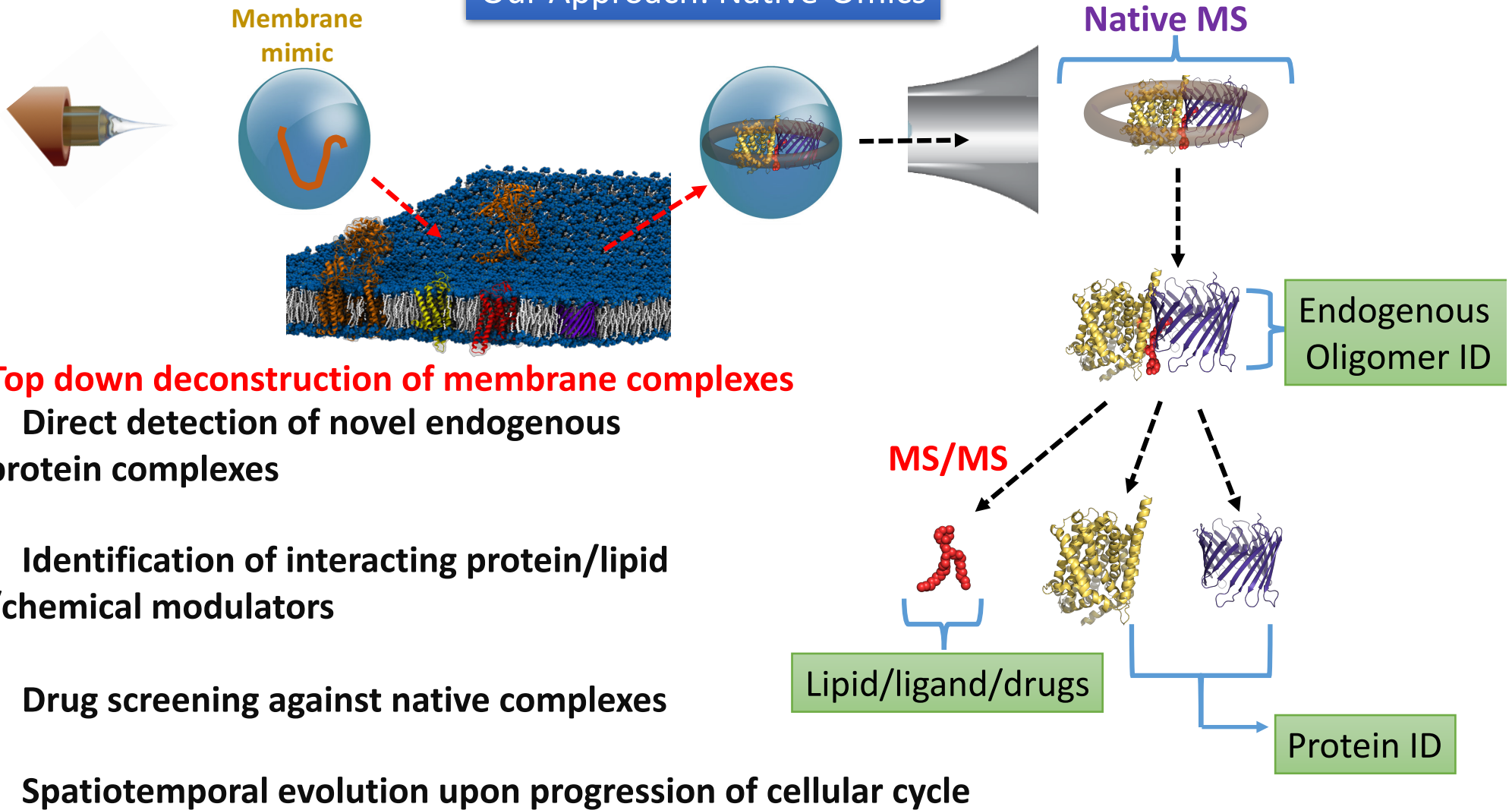
https://medicine.yale.edu/lab/gupta/kallol_gupta.profile

Native Mass Spectrometry (NativeMS)

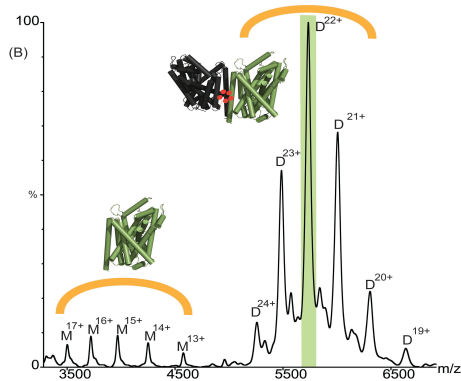
How we detect and Identify novel membrane associated protein complexes



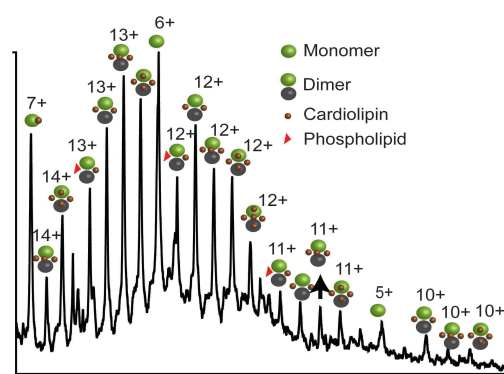
Our Approach: Native-Omics



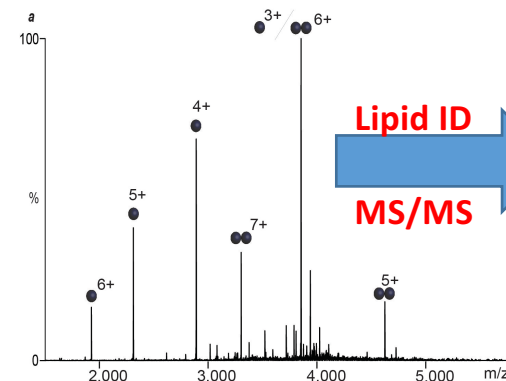
Leucine transporter 7.4 kDa lipid plug



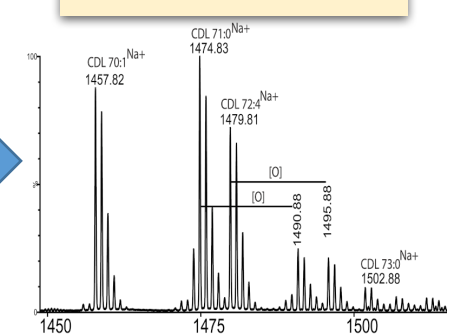
Na⁺/H⁺ transporter 8.4 kDa lipid plug



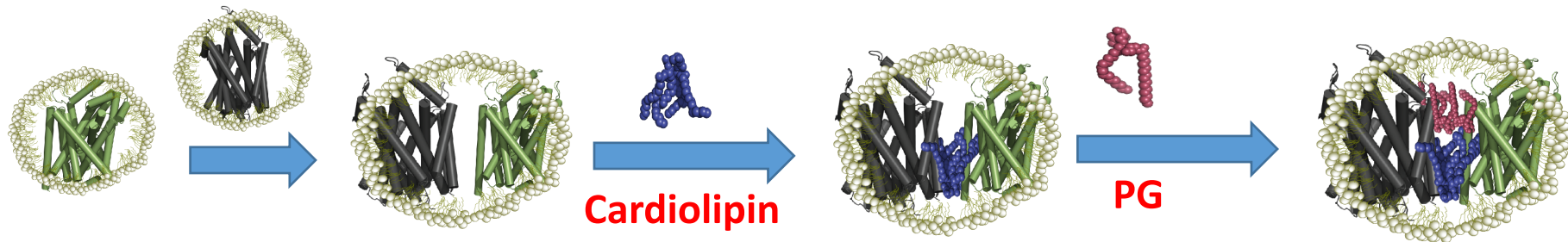
Sugar transporter 2.4 kDa lipid plug



Bound Cardiolipin Cluster-



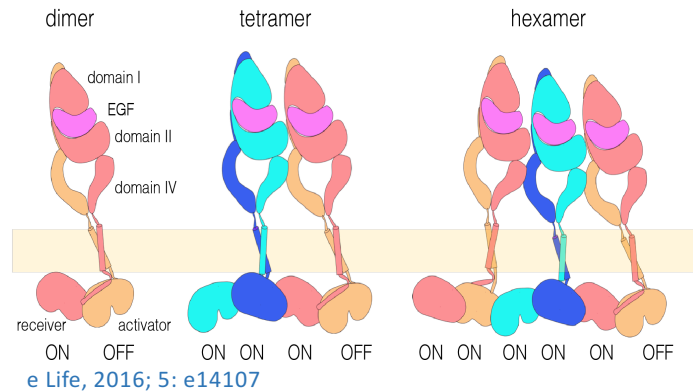
Mechanism of Lipid dependent oligomerisation: Lipids as “molecular glues”



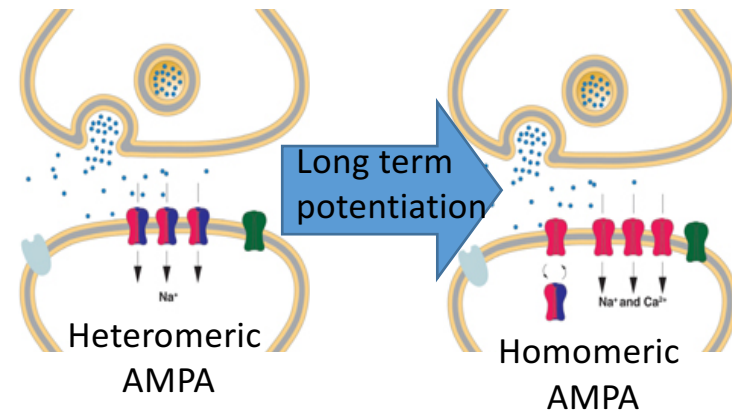
Nature, 2017, 541, 421
 Nature Protocol, 2018, 13, 1106
 Nature Comm., 2017, 8, 13993
 Nature Methods, 2016, 13,333

Why we care: Dynamic Membrane Protein Oligomerization

- RTK: Kinase signaling

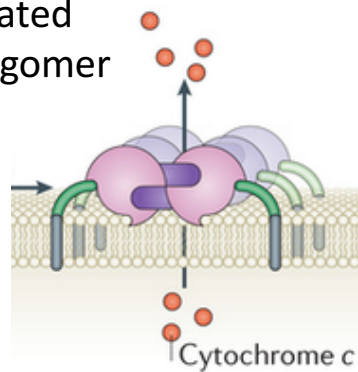


- Synaptic signaling



- BAK/BAX: Cell death

Activated BAX Oligomer



- Activators – Cancer
- Suppressors- Neurodegeneration

Nature Rev. Mol Cell Biol. 2014; 5: 1410