Tool Development

Image based mesh generation of realistic subcellular geometries

[μm⁻¹]
>35
30
20
10
0
-10
-20
<-25

200 nm

2 μm
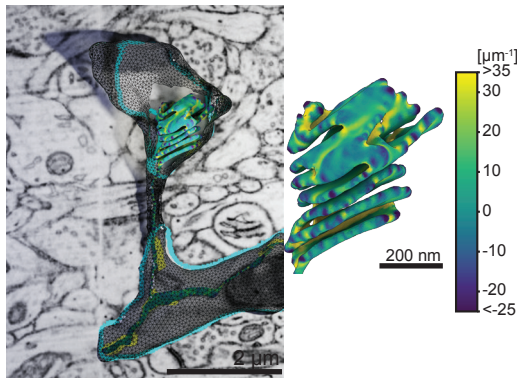
Membrane mechanics using discrete differential geometry

Time

Applications
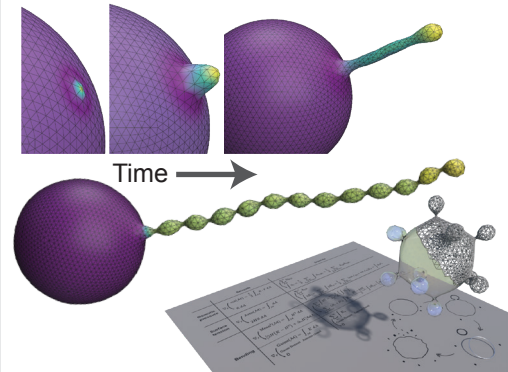
Effect of membrane composition on mitochondria shape

Normal Cristae

Lipid Saturation

"Onion" Cristae

SFA2 mitochondria

SFA4 mitochondria

50 nm

Mean Curvature (μm⁻¹)

<-40 -20 0 40 >80
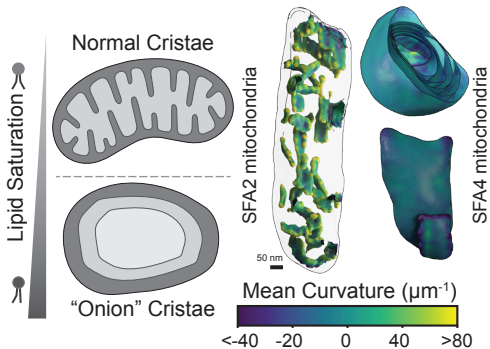
Membrane mechanics drives pearling of non-myelinated axons

non-synaptic boutons (NSBs)

length
width
connector

600 mOsm

600 mOsm

300 mOsm

300 mOsm

100 mOsm

150 mOsm

200 nm