

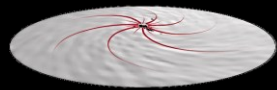
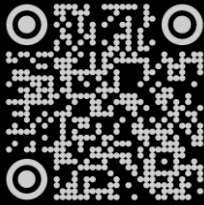
# 3D CELLULAR NEMATICS

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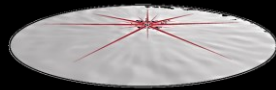
1. University of Geneva, Switzerland
2. Institute for Bioengineering of Catalonia
3. Institut Curie, France



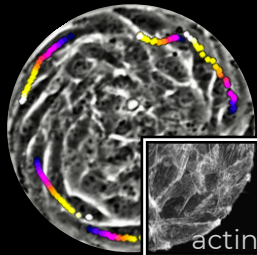
Tissues composed of elongated cells feature orientational (nematic) order and topological defects. Under strong confinement, spirals and aster defects originate. Due to these orientational arrangements, subcellular contractility is organized into multicellular force patterns able to guide tissue remodeling into 3D cellular nematic protrusions.



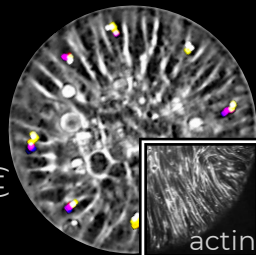
**SPIRAL**



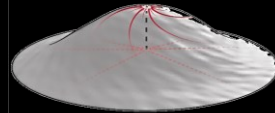
**ASTER**



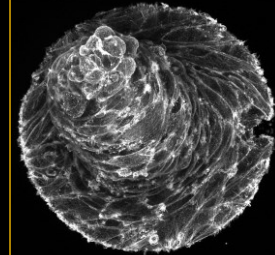
actin  
time (h)  
0 2



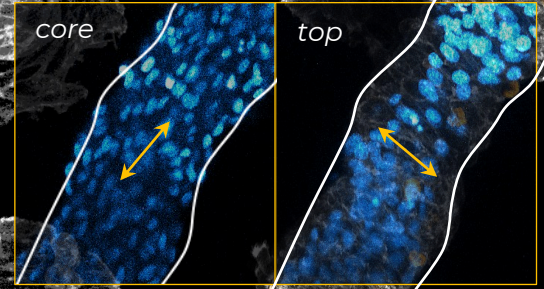
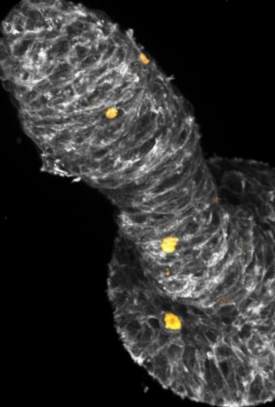
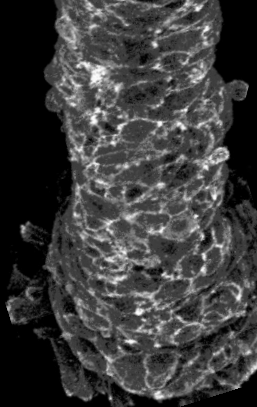
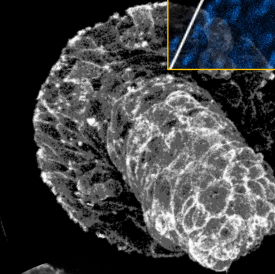
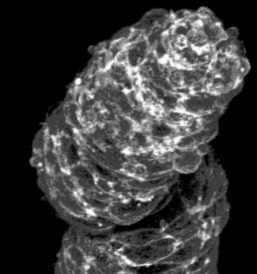
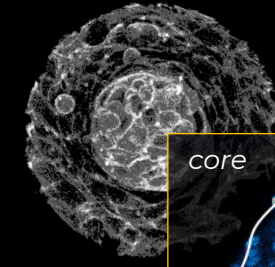
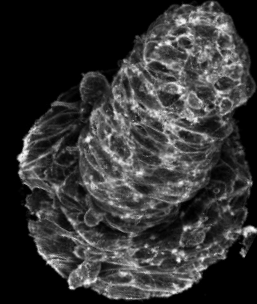
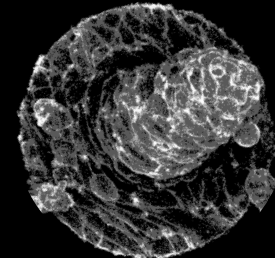
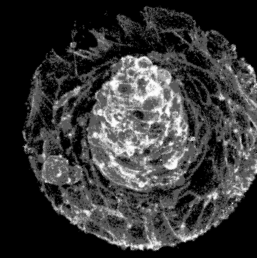
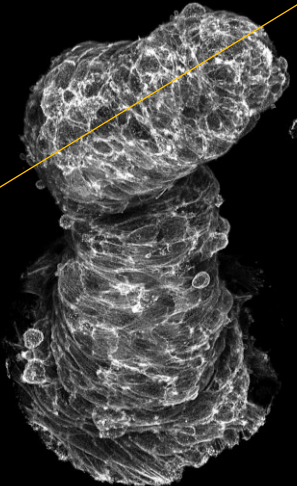
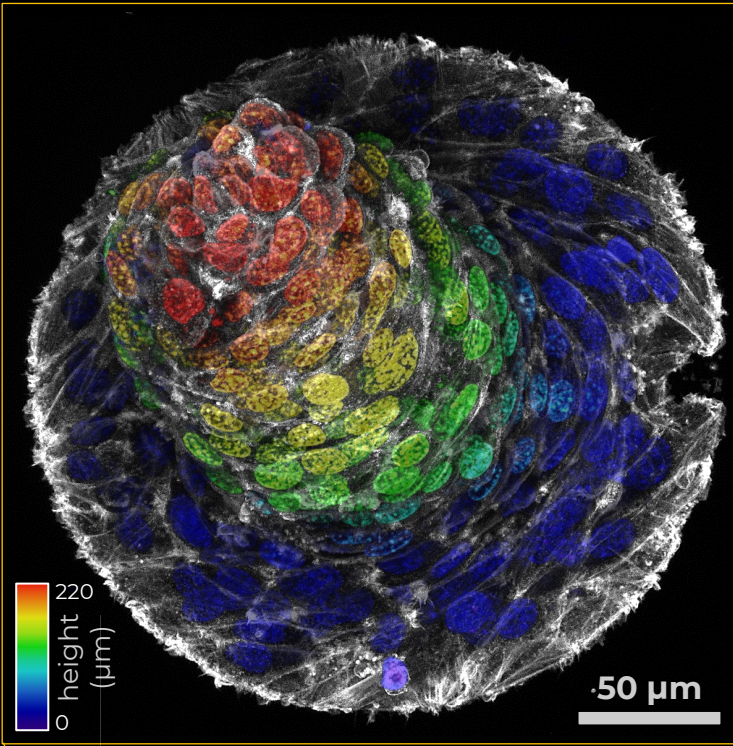
actin



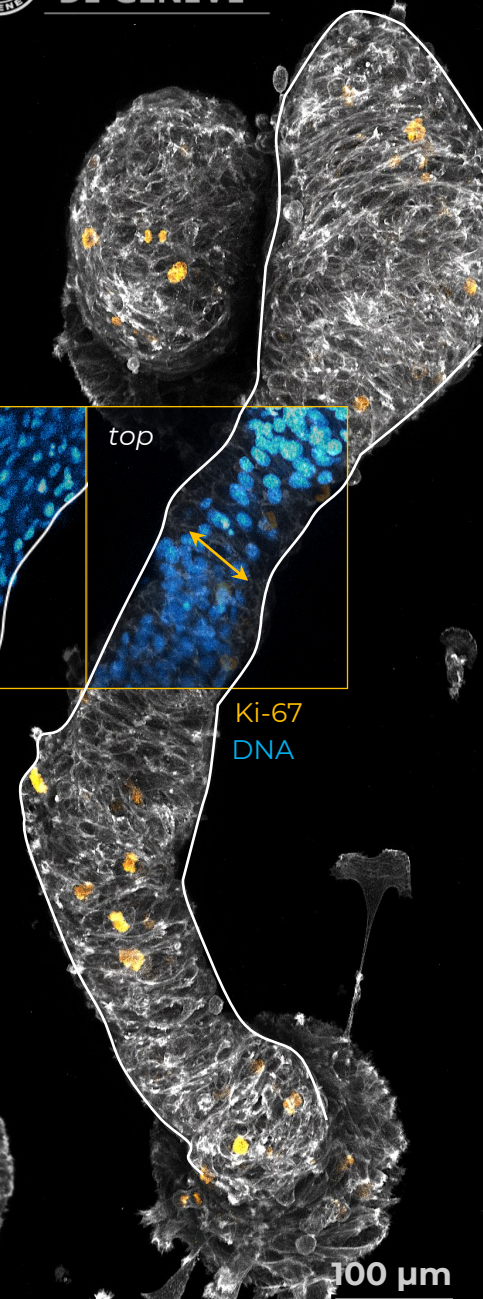
**PROTRUSION**



height (μm)  
0 220



Ki-67  
DNA



100 μm