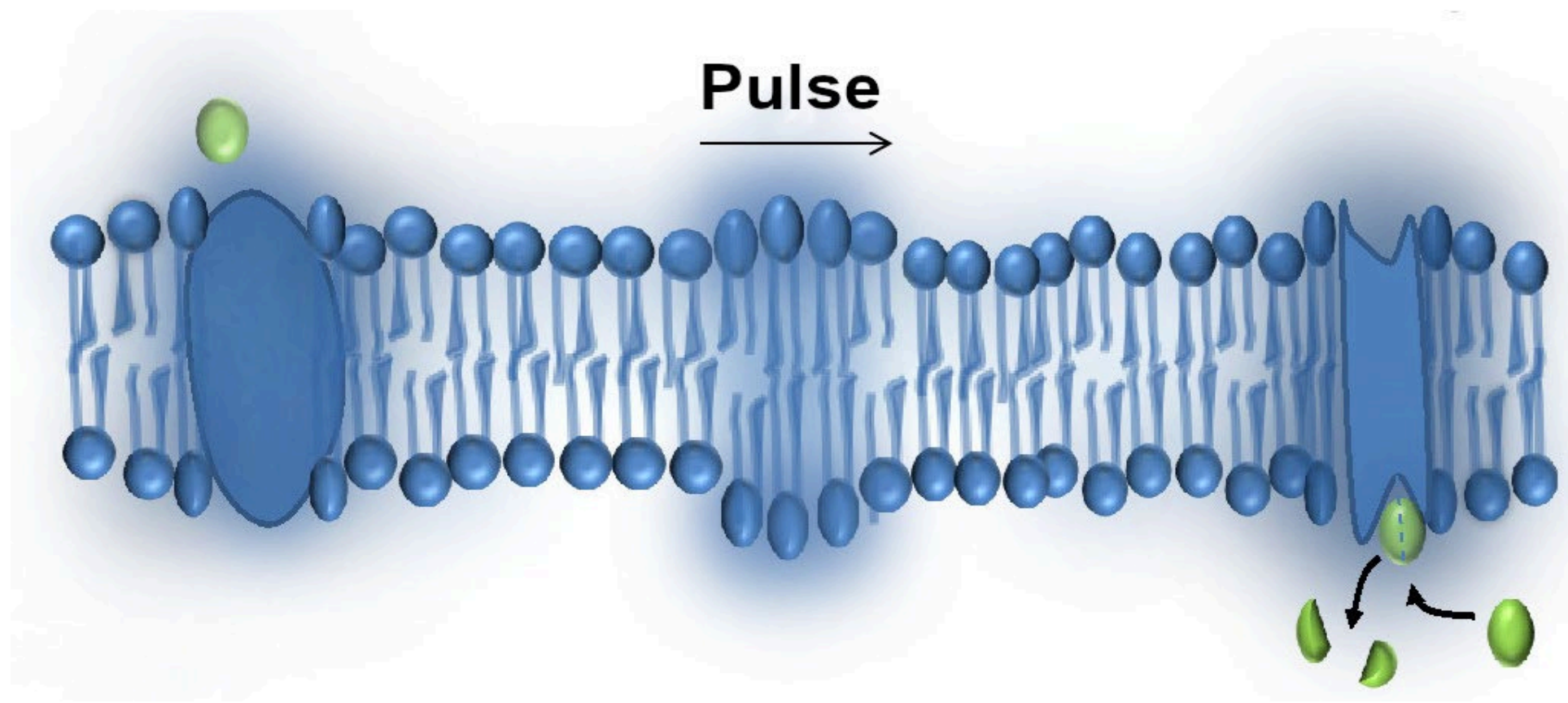


Medical and Biological Physics Group

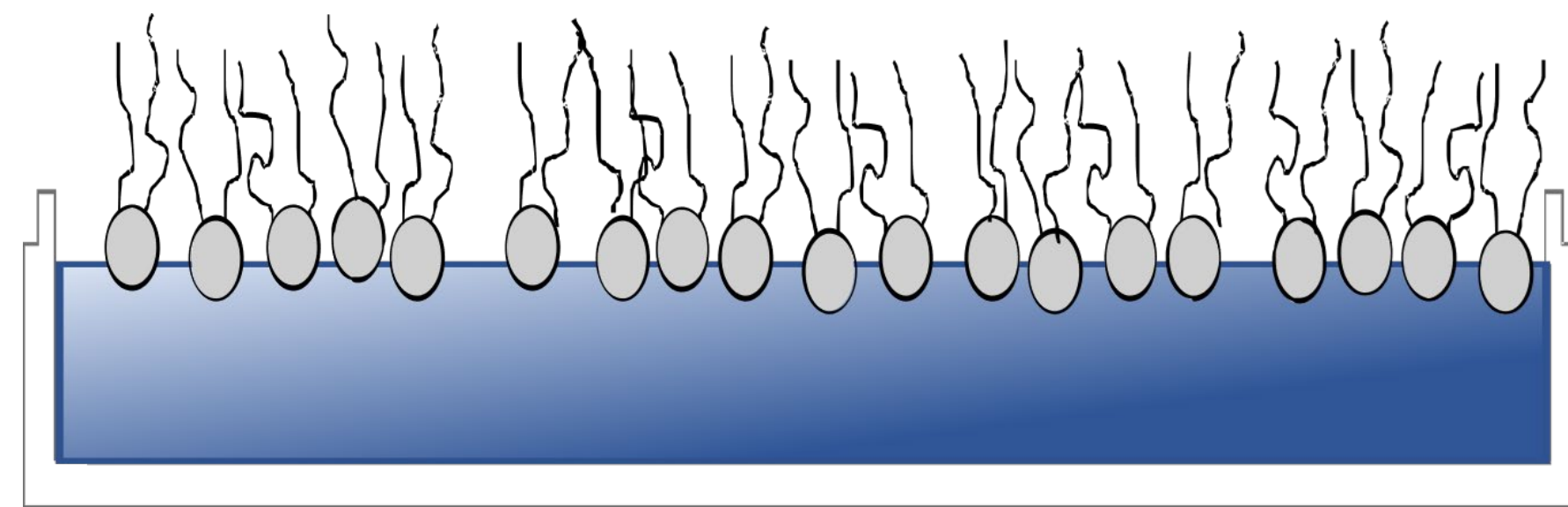
Physics of Life & Health

Ansatz: Physical principles determine biological function

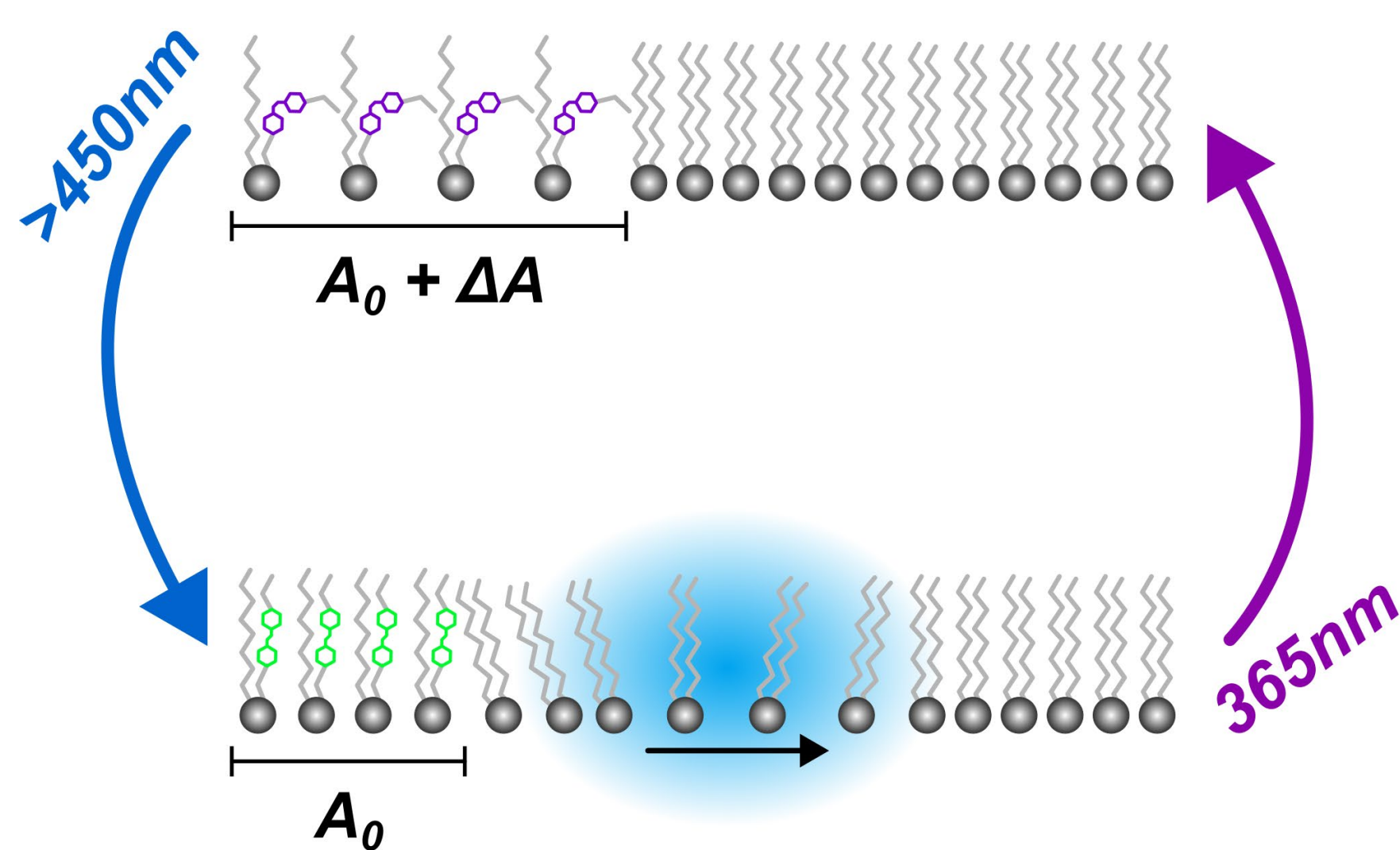


Momentum conservation → communication

Monolayer

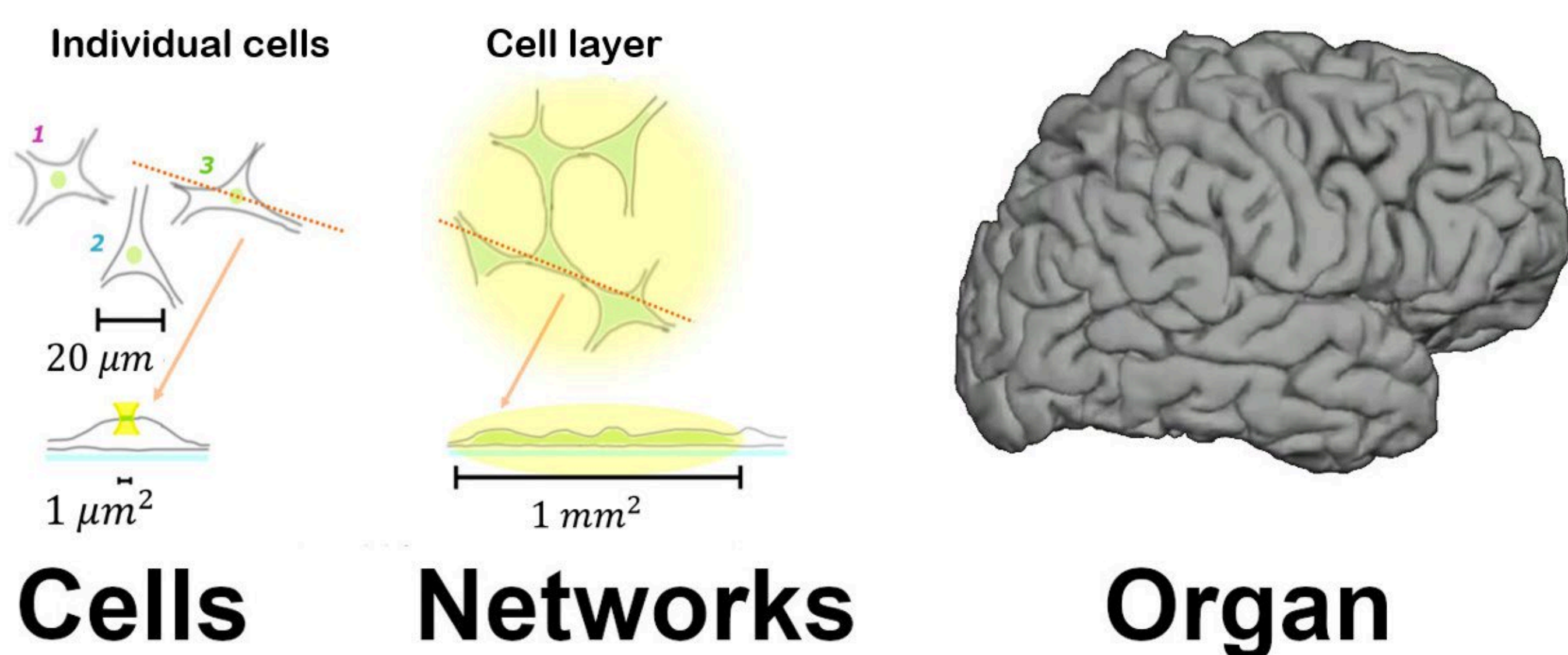


Pulses in monomolecular lipid films
 How can 2D mechanical pulses be excited?
 How do pulses propagate and influence enzymes?



Cells and Cell Networks

How do single cells form robust functional networks that work together as an "orchestrated" organ?



Cells Networks Organ

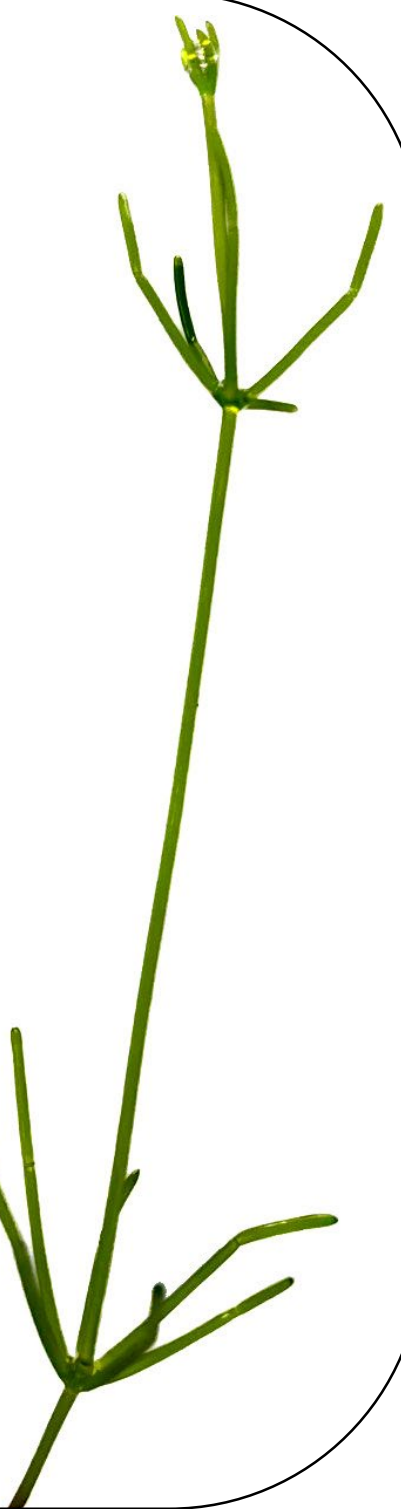
Paramecium (Pantoffeltierchen)

The „swimming neuron“ has a Phase Transition in its outer membranes
 “Drunken” Paramecia?
 How do anesthetics work?
 How does this relate to the swimming behavior of the Paramecia?



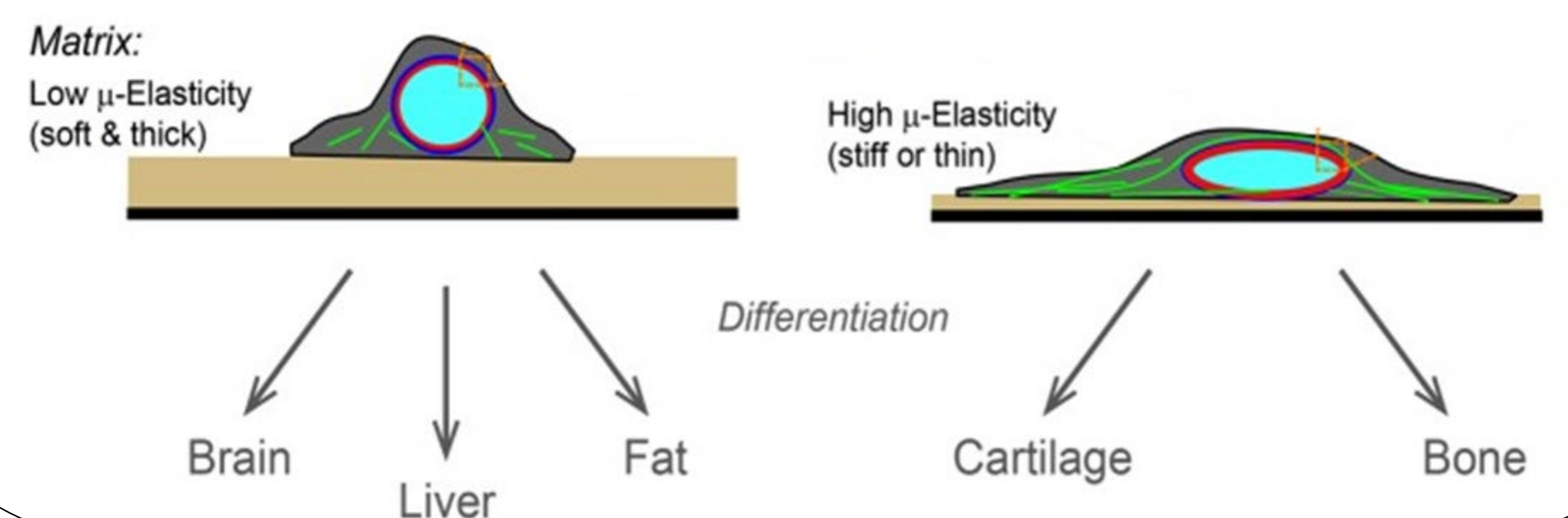
Algae: Pulses in Living Systems

Axon model: Are nerve pulses similar to sound pulses?
 What influences such pulses?
 What determines the excitation threshold?



Robustness/Adaptation

Cells are robust instead of fragile and adapt to their environment.
 Substrate stiffness determines whether brain or bone cells develop.
 Similar adaptation processes with regard to anti cancer drugs possible?



Interested in writing a thesis?
 Would you like a lab tour?

Feel free to contact us!
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