

PROBLEM FRIDAY 18th MAY 2021

Mechanics and cell biology

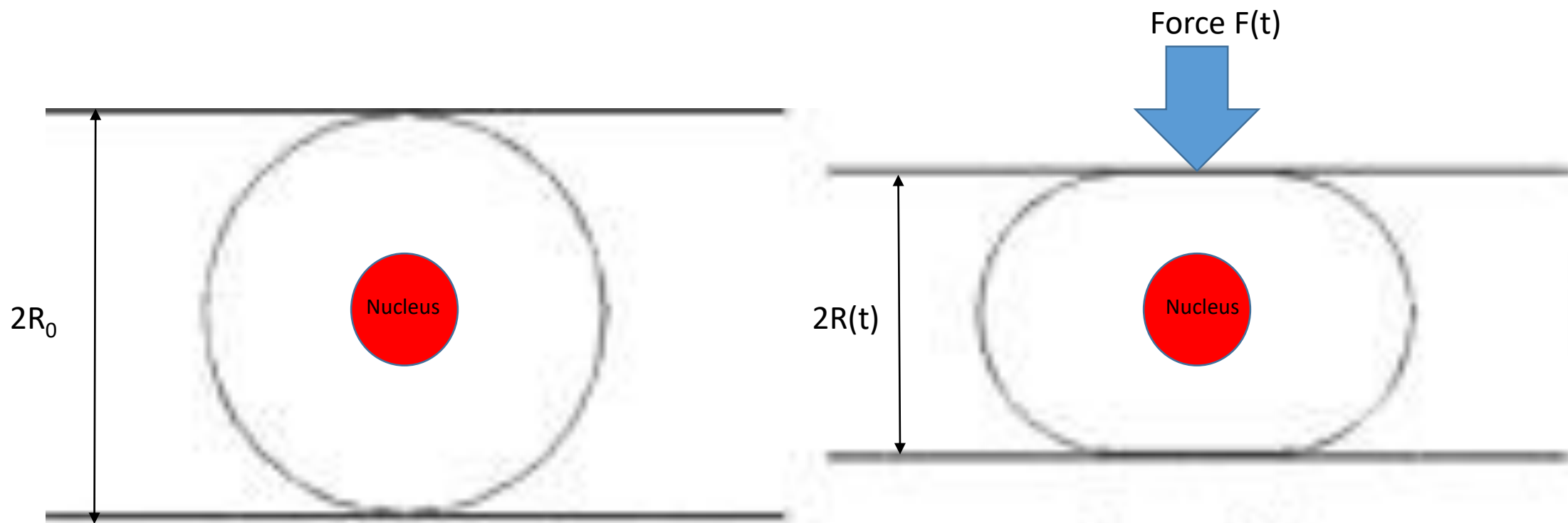
A cell has is compressed to fit in a narrow space (schematic below)

Your job is to propose a model relating F and λ .

Your model should include equations driving the deformation of the cell membrane and of the cytoskeleton.

Choose an appropriate model depending on the cell type you want to consider.

Make assumptions and find quantitative values permitting to solve your model.



$$\lambda(t) = R(t)/R_0$$

Tips:

1. Read the master thesis from Edimburg university to know more about cell mechanics (~1/2 h)
2. Use only simple models (like bars and membranes, see example below) to model the cell components and obtain equations that can be solved analytically

