

Plant Biomechanics

- Biomechanical Tools
- Genetics
- Mathematical Modelling
- Microscopy

How biomechanics drives plant growth, structure and movement

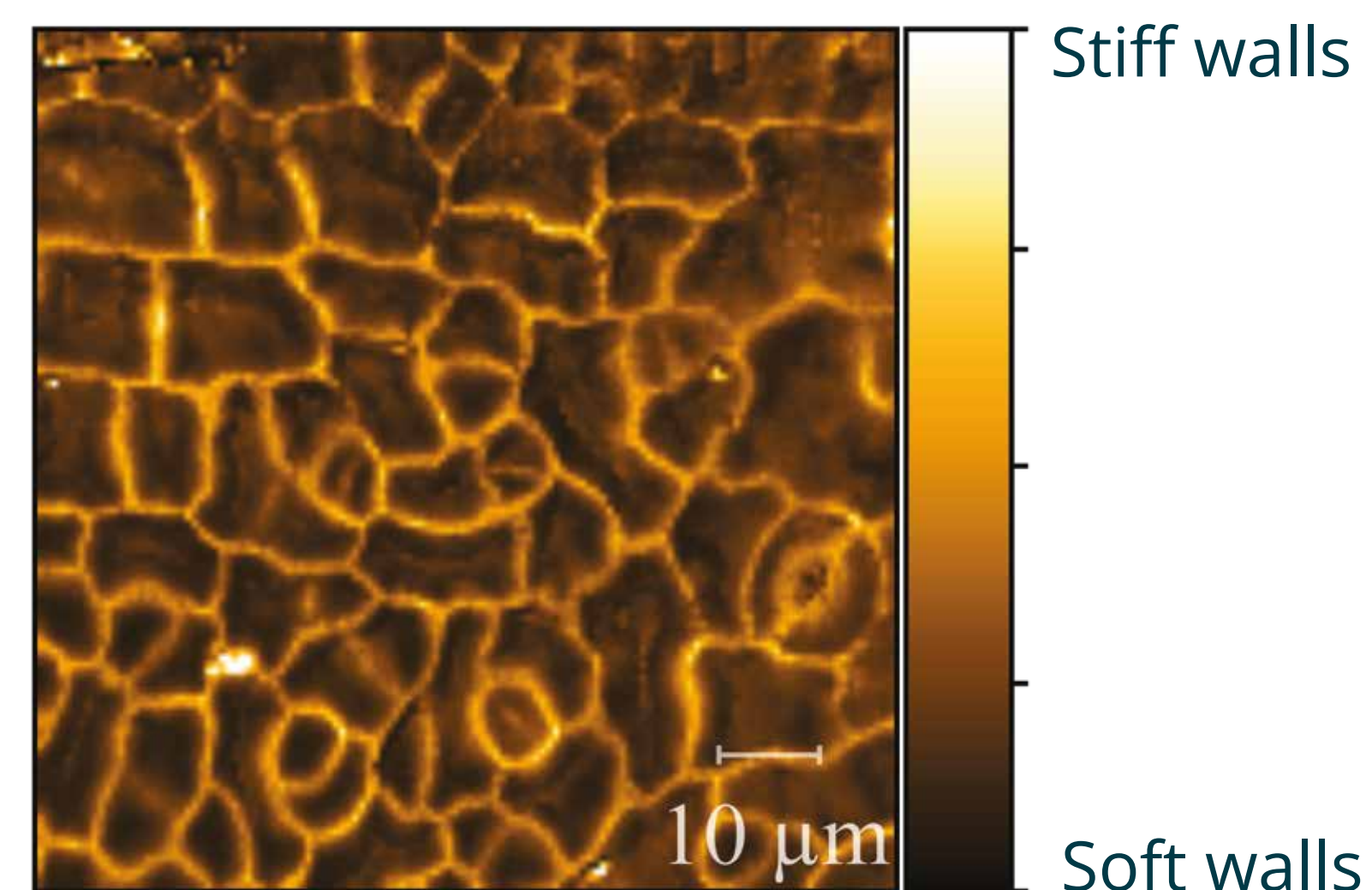
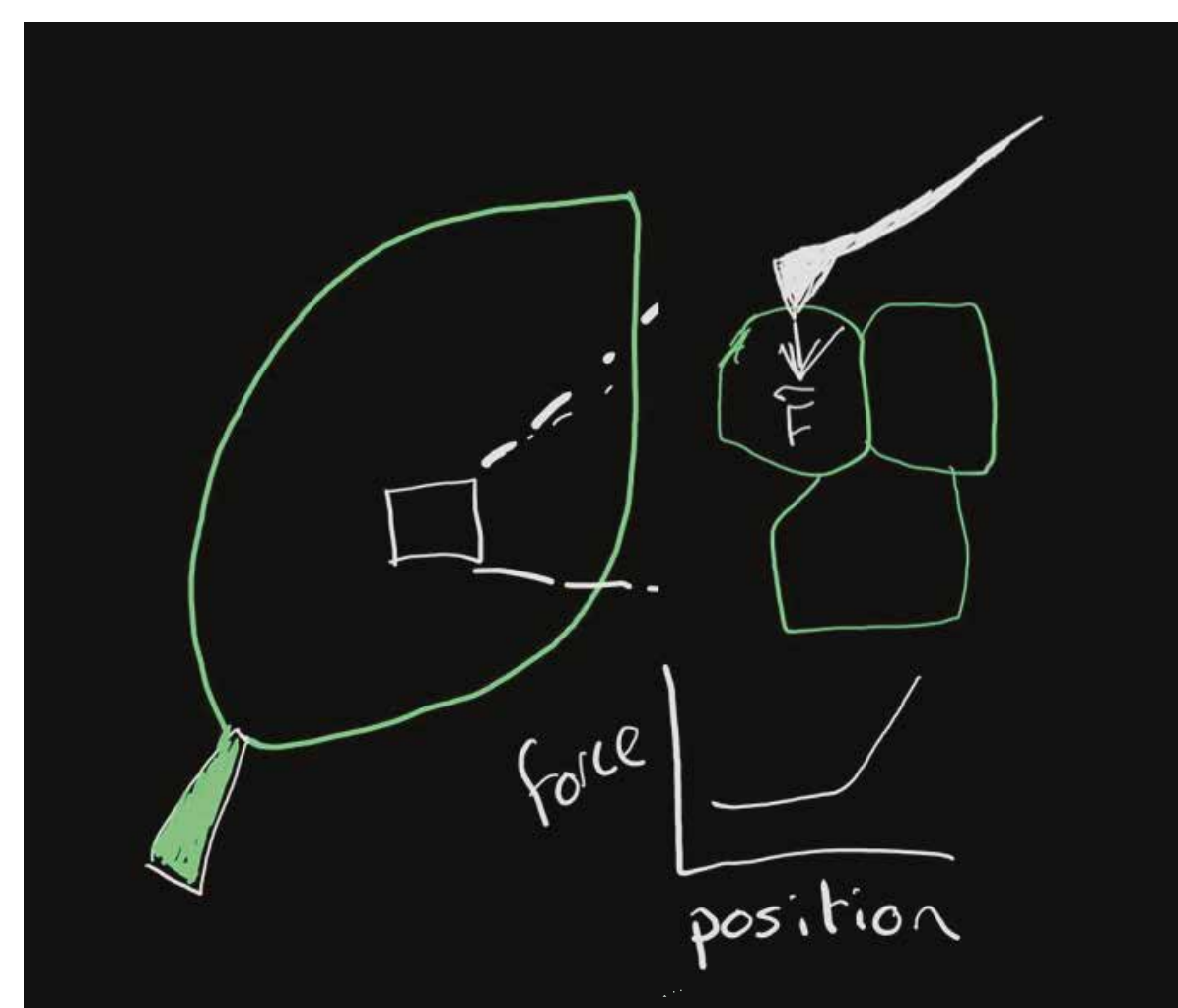
Understanding mechanical properties

Biomechanics refers to the study of the mechanical principles of living organisms, particularly their movement and structure. We use a combination of novel biophysical tools, genetic manipulation and mathematical modelling to investigate how plant development (cell division and cell expansion) is controlled.

How do we measure mechanical properties of plants?

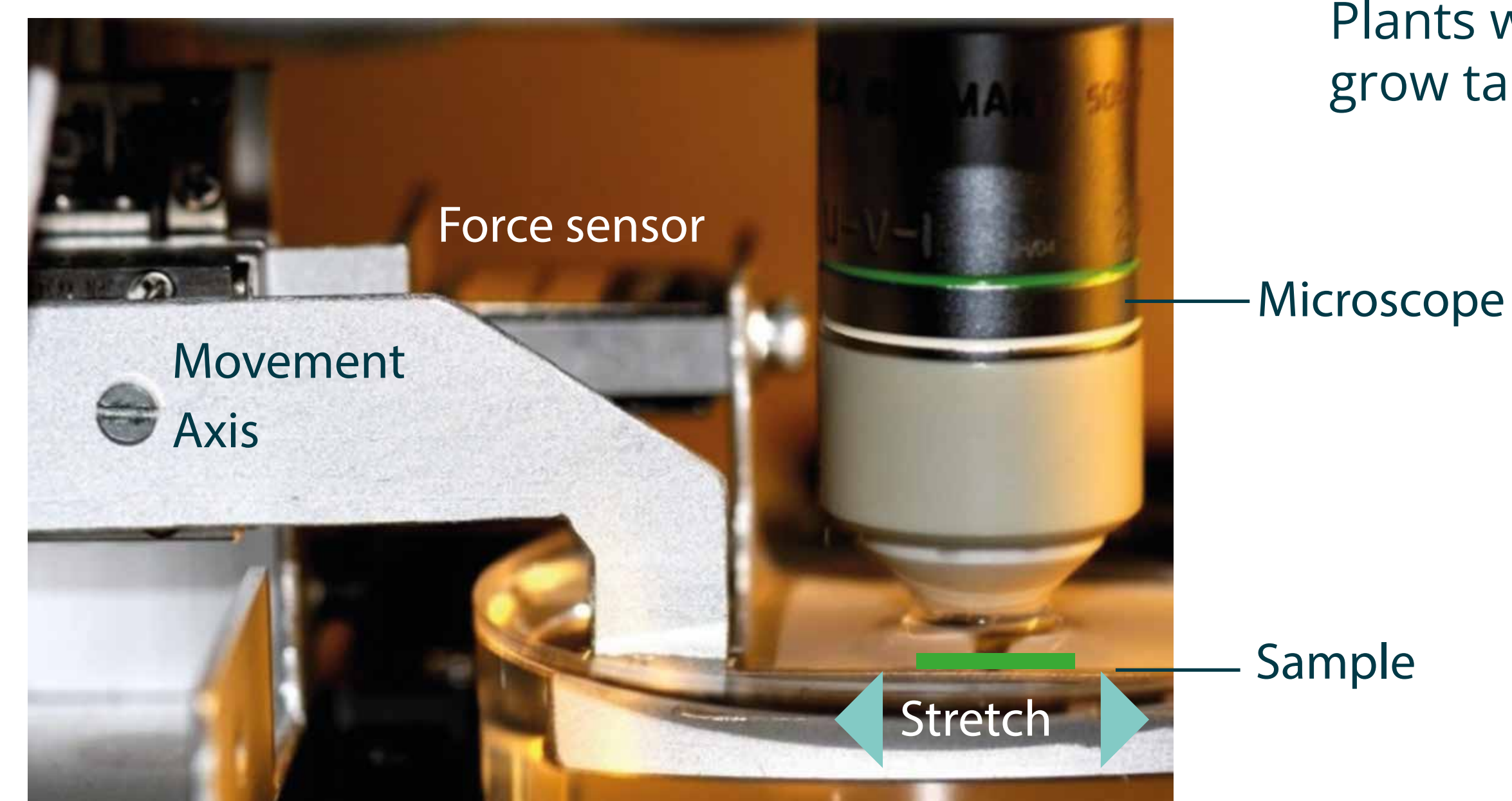
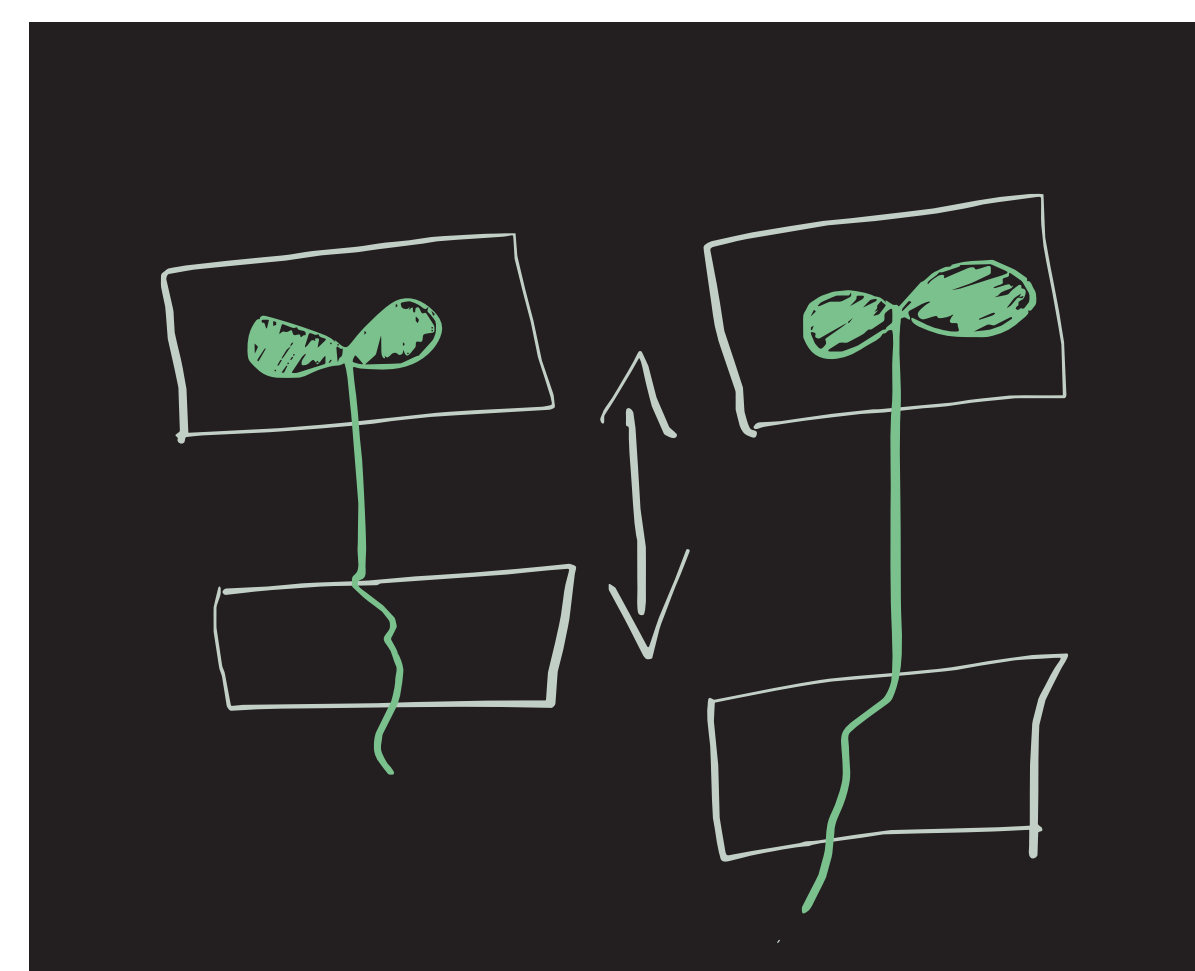
Pressing

We indent with Atomic Force Microscopes (AFM) to measure local differences in cell wall stiffness.



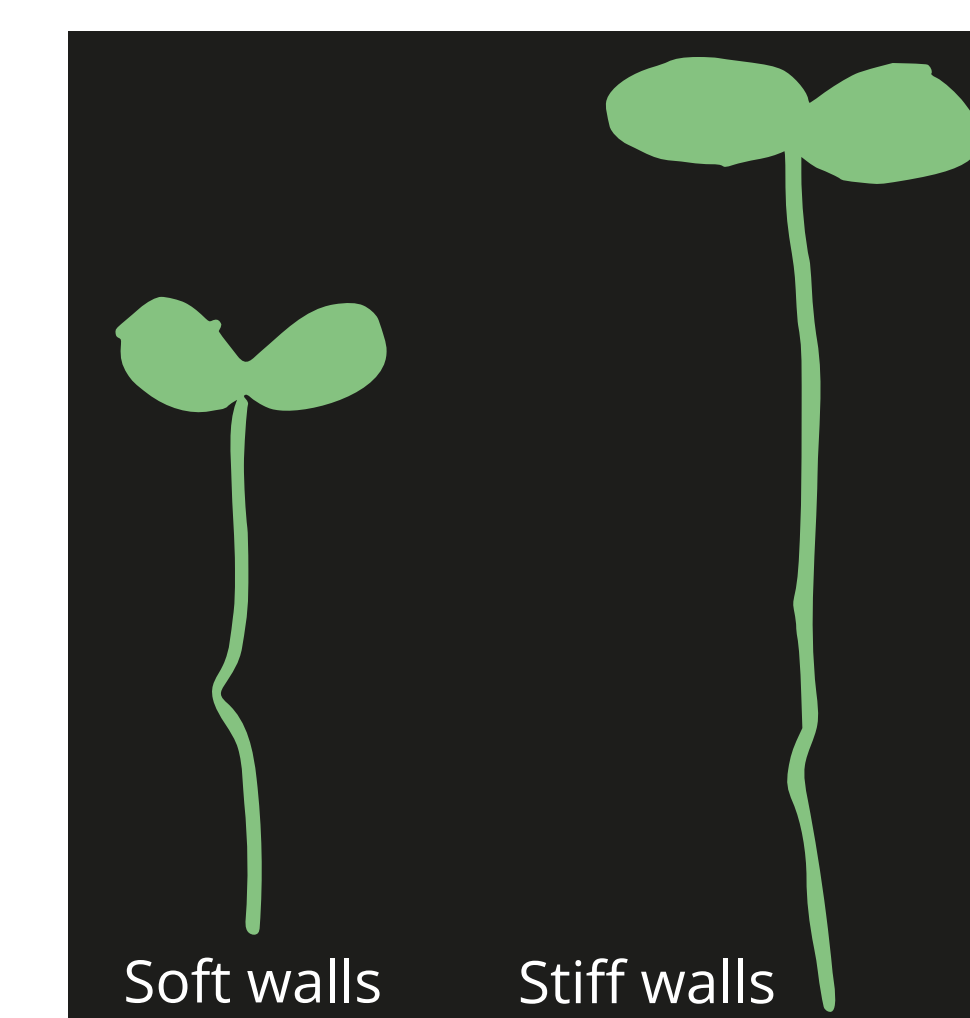
Stretching

With extensometers we stretch samples to measure properties at a larger scale.

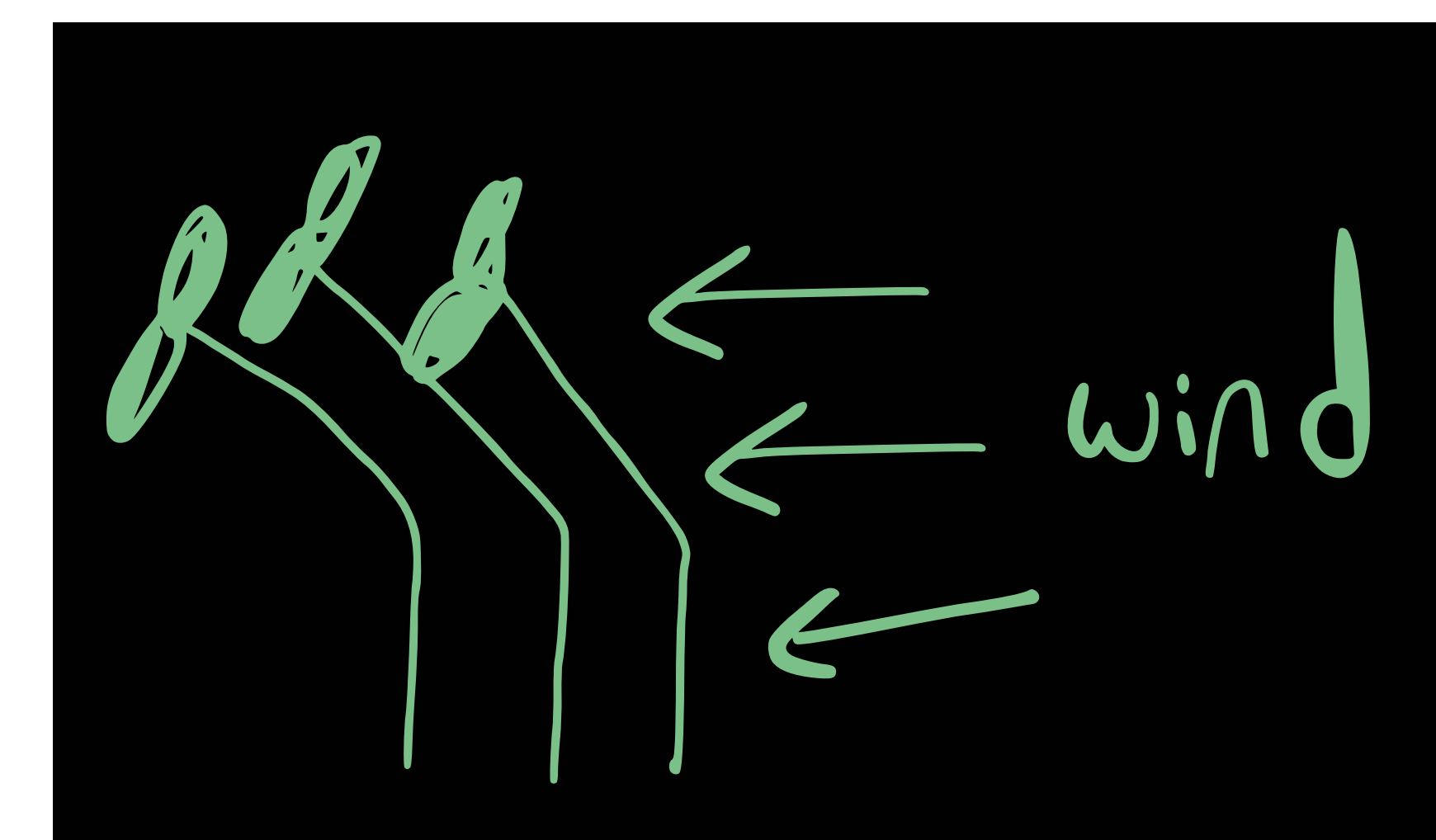


A robotic micro-extensometer system was developed to measure the mechanical properties of plants.

The mechanical properties of plants change how they grow and respond to the environment



Plants with stiff cell walls grow taller.



Biomechanics impacts how resistant plants are to wind.

How do plants move without muscles?

The mechanical properties of plants can even enable plants to move!

[Watch the video](#)

