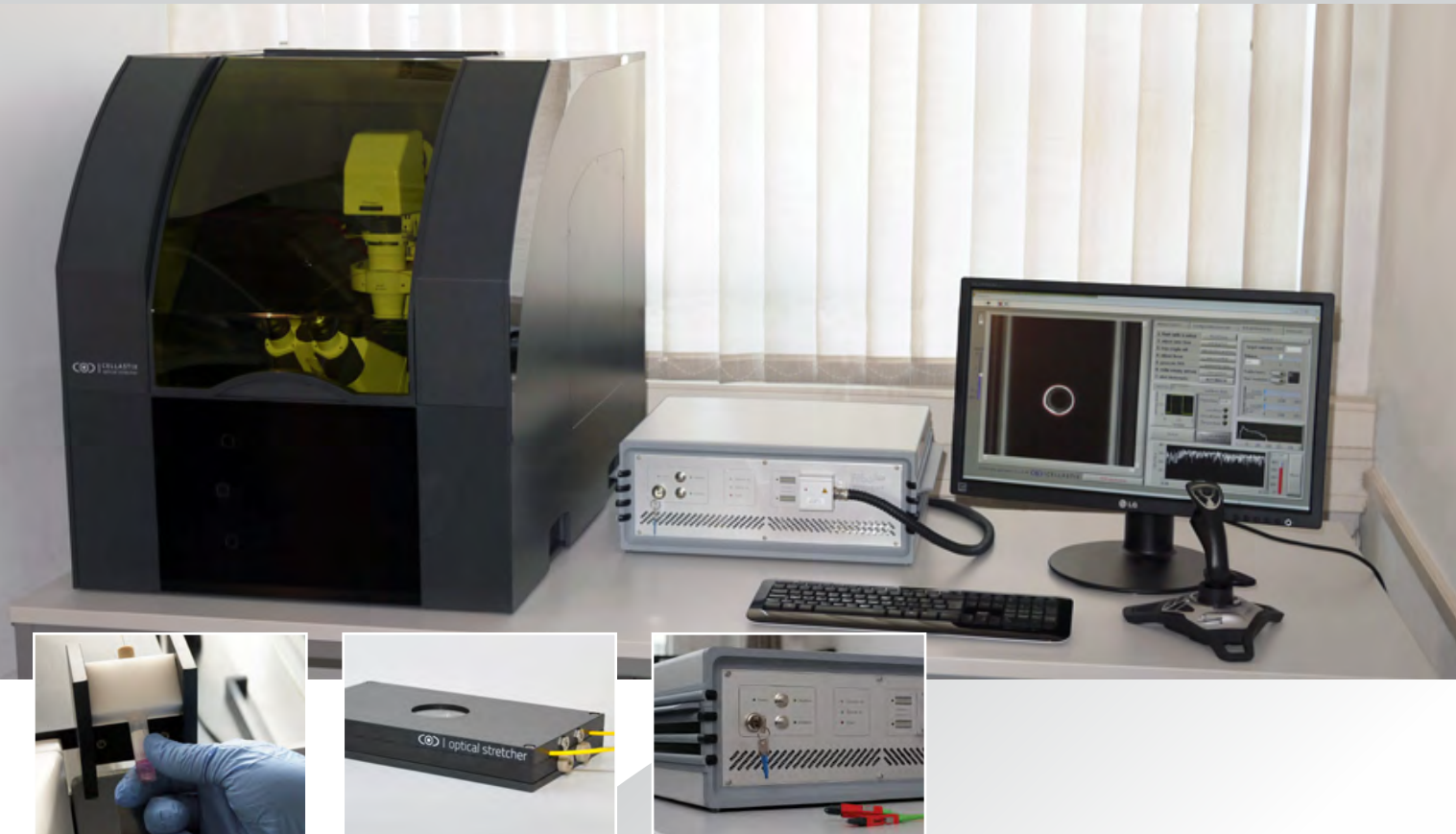


# The Optical Stretcher

Contact-free biomechanical flow cytometry



## Innovation in research

The Optical Stretcher is a novel laser tool to measure and analyse biomechanical properties, such as elasticity and relaxation, of single biological cells in suspension.

## Contact-free cell deformation

Suspended cells are deformed by optical forces, leading to absolutely contact-free measurements. This ensures homogeneous cell handling and avoids artefacts due to contact-induced cellular reactions.

## High-throughput single cell rheology

By integration of a microfluidic system about 350 cells/hour can be measured in a fully automated manner. This allows for the first time to collect significant statistical data from cell rheology.

## Timesaving, automated measurements

Cells are automatically delivered to the measurement region and deformed corresponding to the user-defined stretch pattern. While the Optical Stretcher runs the measurement you can focus on interpreting results.

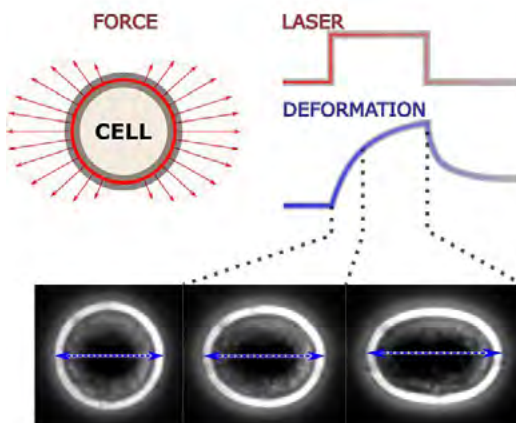
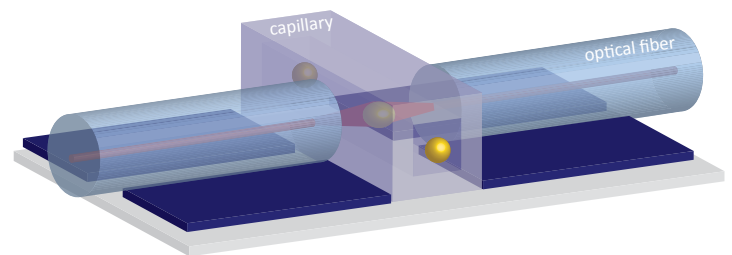
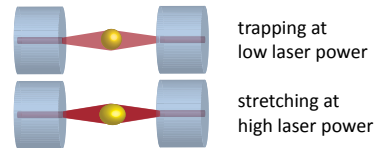


# The Optical Stretcher

## Single cell mechanical phenotyping

### Product specifications

- microfluidic system with two pressure controlled channels
- 1064 nm Ytterbium Fiber Laser with max. power of 2 W per fiber
- installation on inverted phase contrast microscope
- housing for laser safety and temperature controlled conditions
- refractive index measurements of the cells
- optional combination with fluorescence microscopy



### Optical Stretcher technology

- dual-beam optical trap with counterpropagating beams for trapping and deforming micrometer-sized objects
- microfluidic system for automated cell delivery to measurement region
- deformation analysis based on video microscopy
- standard parameters: ellipticity, size, refractive index, long and short axis deformation

### Software package

- control of all setup components and automated cell measurement by the CellStretcher module
- real-time data evaluation
- statistical analysis and visualization of the characteristic parameters with a browser-based data base tool
- access to raw data for your own data analysis routines

