

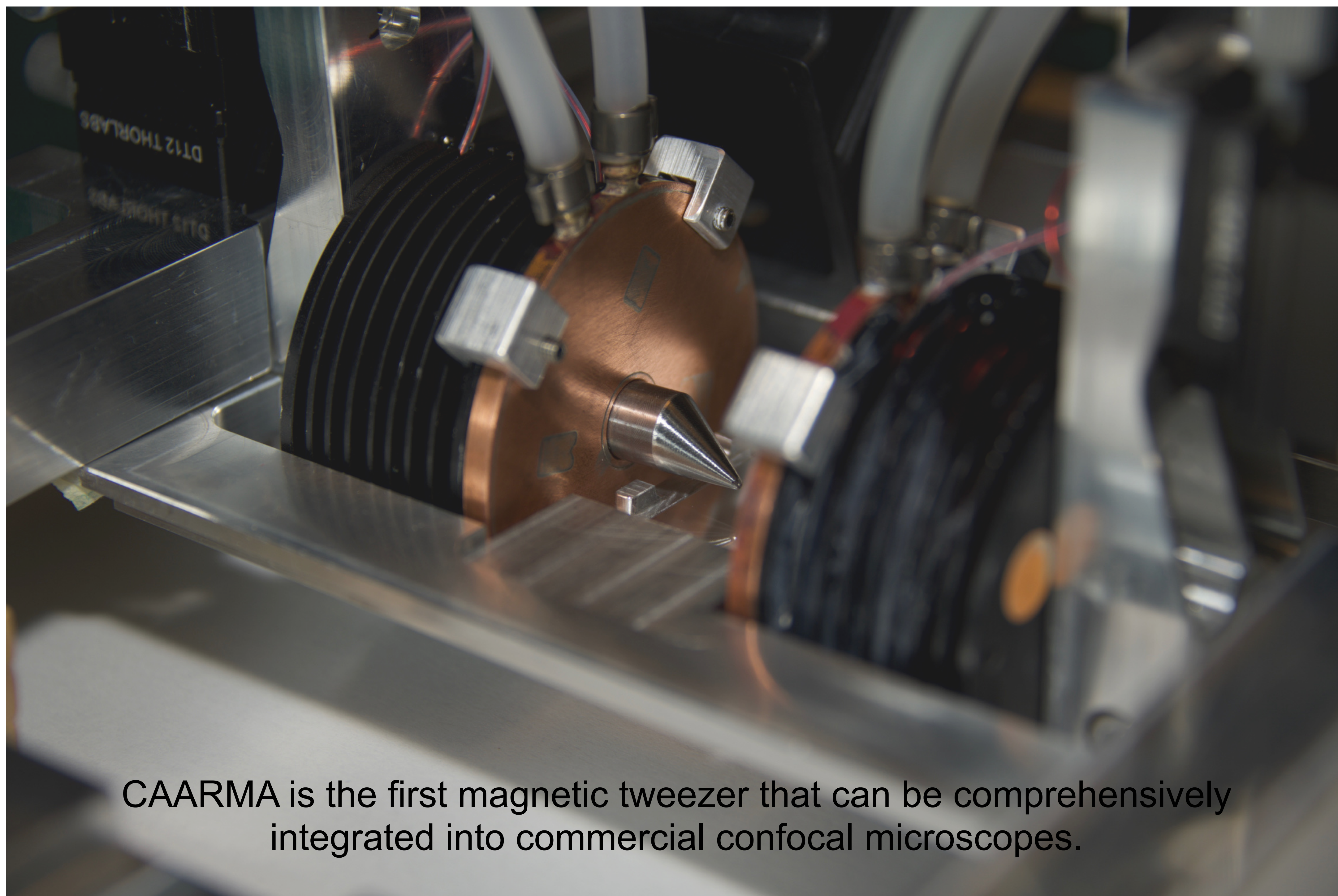
CAARMA: a magnetic tweezer for biological applications

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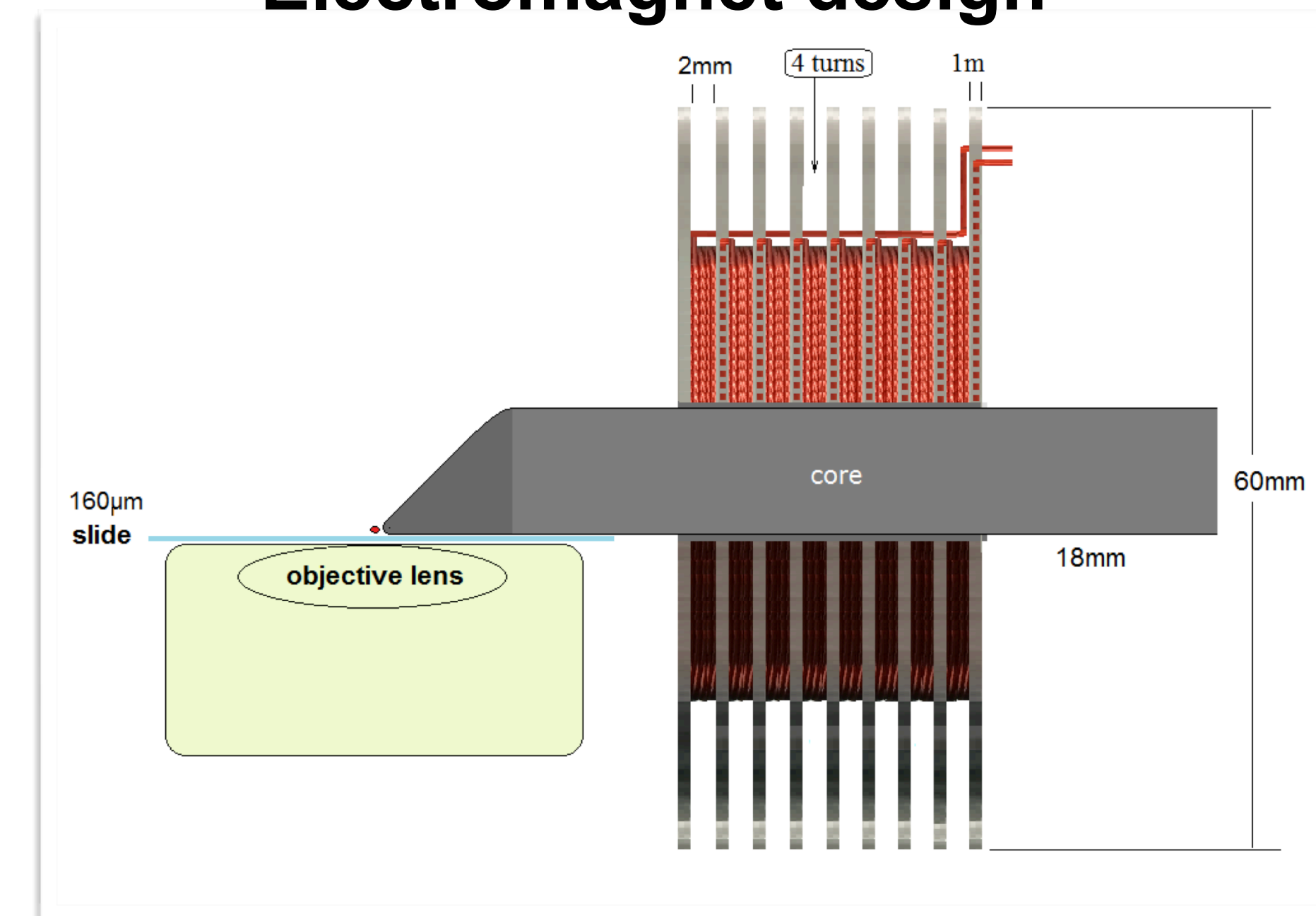
CAARMA is a perfect tool for studying the mechanical properties and the force-regulated processes in living organisms.



CAARMA is the first magnetic tweezer that can be comprehensively integrated into commercial confocal microscopes.

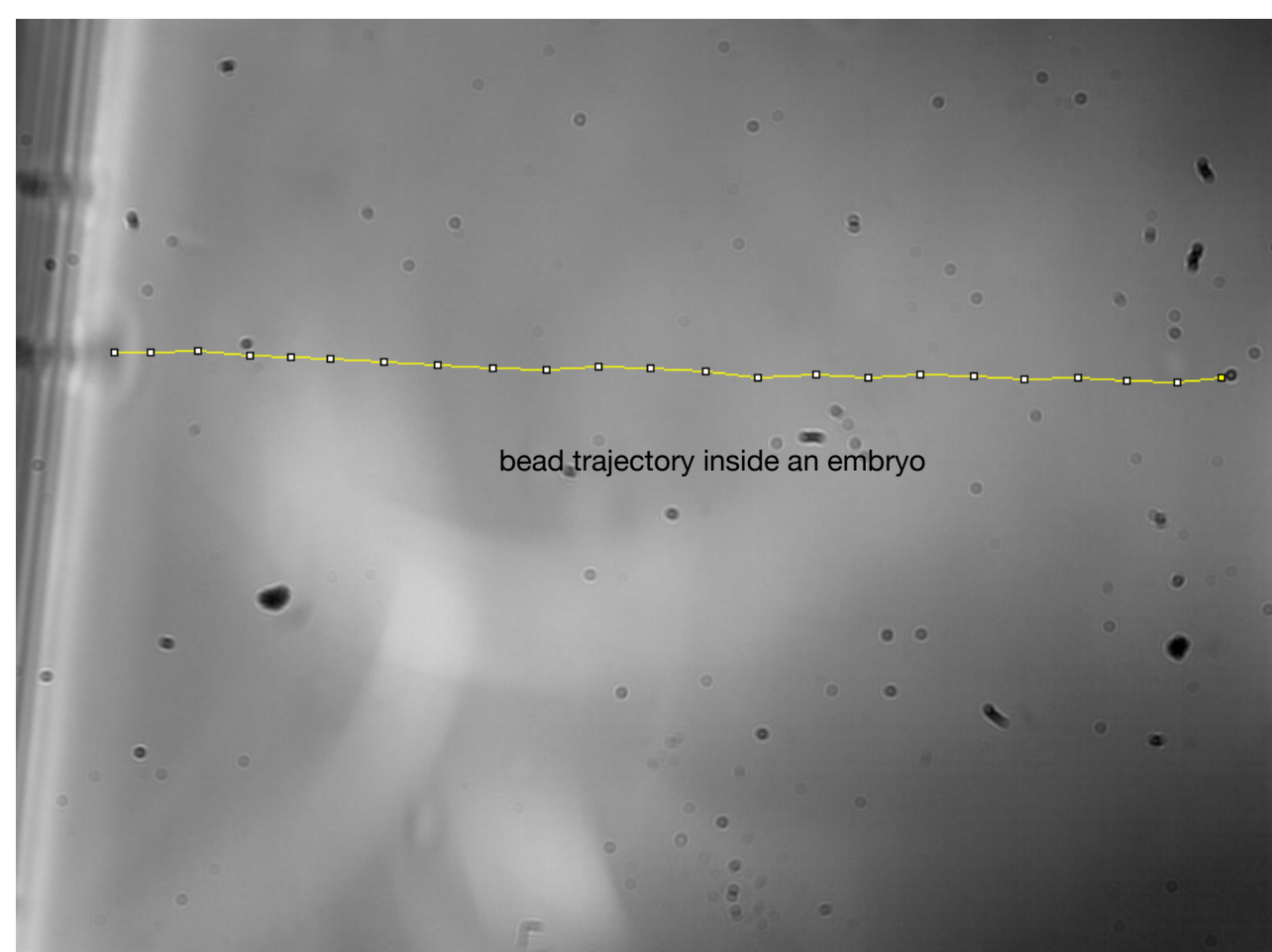
- Modular design;
- No specific skills for use;
- Easily integrated into home-built setups and commercial microscopes;
- Controlled application of force onto magnetic probes;
- Countless applications in life science, biophysics, polymer science and many other research fields.

Electromagnet design



CAARMA is employed to study:

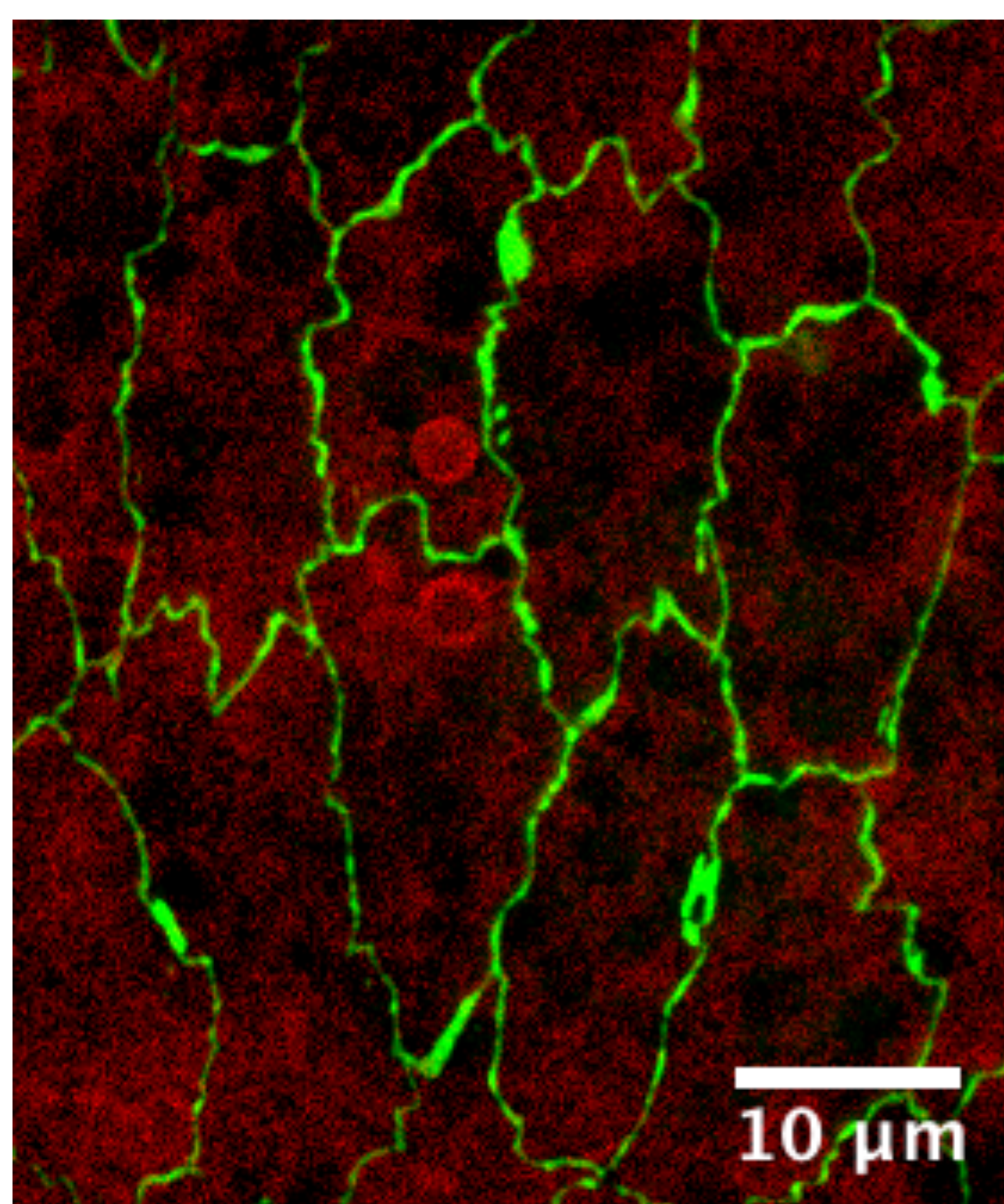
• Microrheology inside early-stage fruit fly embryos



The cytoplasm of the embryo is about three orders of magnitude more viscous than water with a mean viscosity of about 0.76 ± 0.12 Pa s.

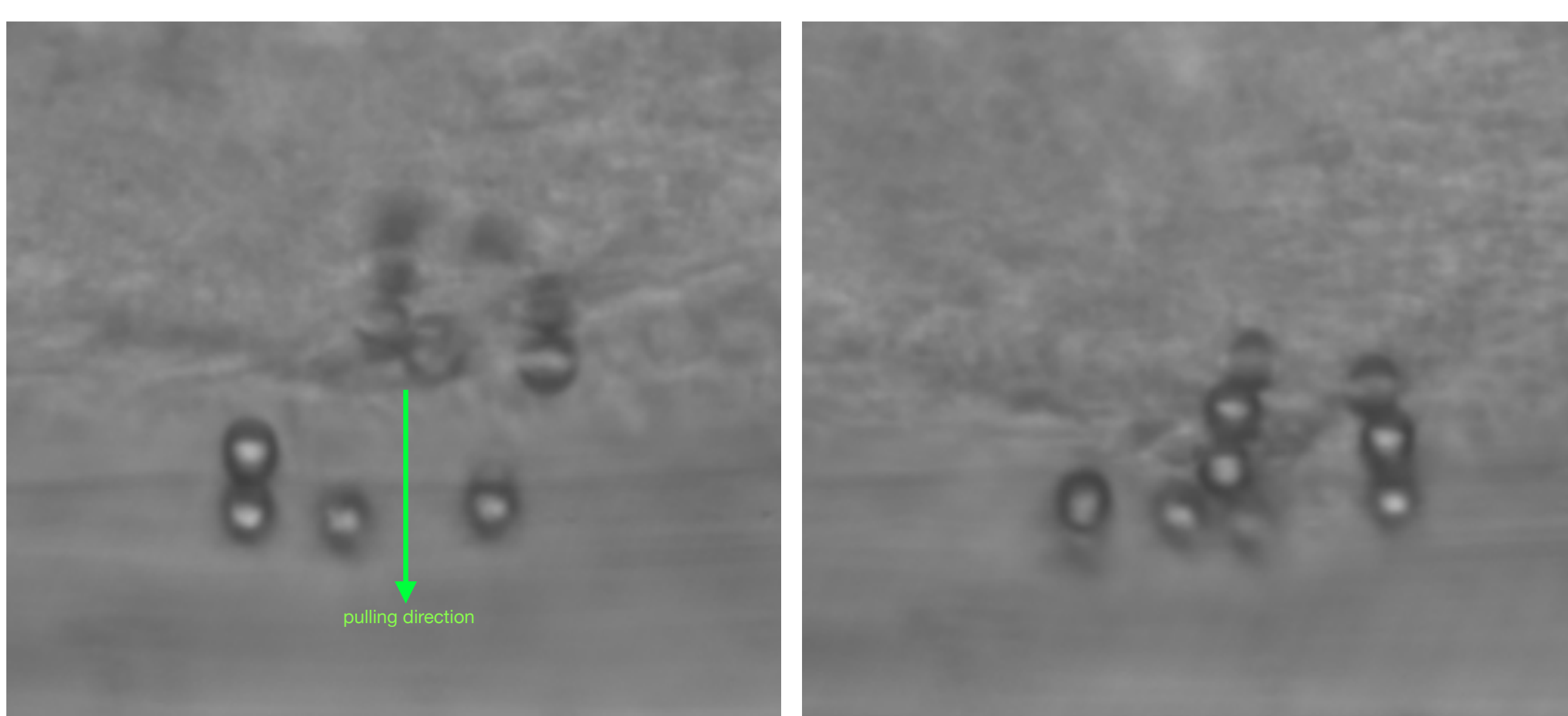
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• Forces involved in living tissue during dorsal closure (DC) in *Drosophila melanogaster*.



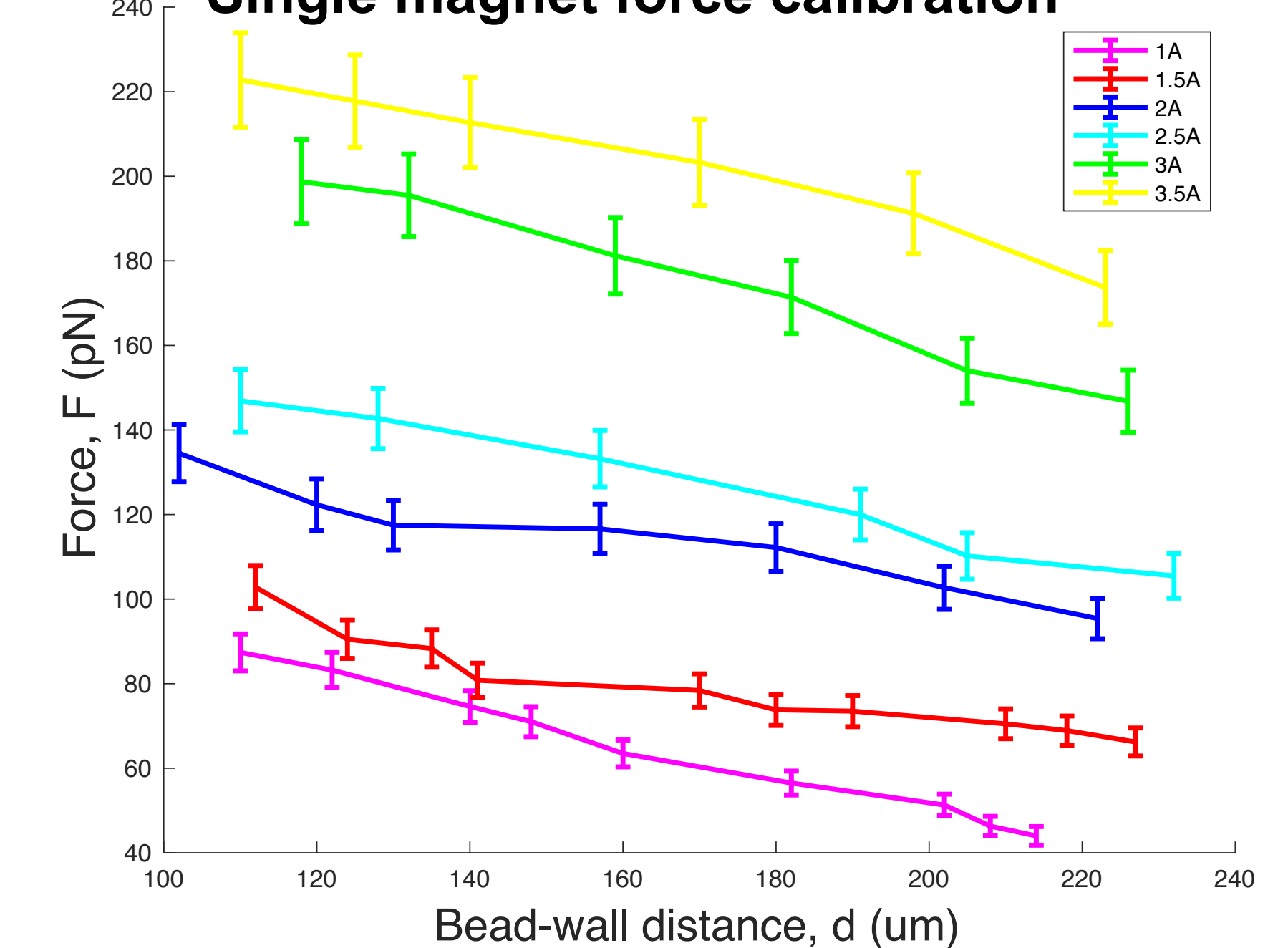
2.8 μ m Dynabeads injected inside amnioserosa (AS) cells and pulled against the cells membrane to measure the force produced by AS cells during DC.

• Forces involved in the yolk cell during endoderm closure (EC) in *Drosophila melanogaster*.



5.4 μ m Dynabeads injected inside the yolk cell and pulled against the cell membrane to measure the force produced by the myosin waves during the EC.

Single magnet force calibration



Acknowledgements

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