Pressure testing tiny cell samples

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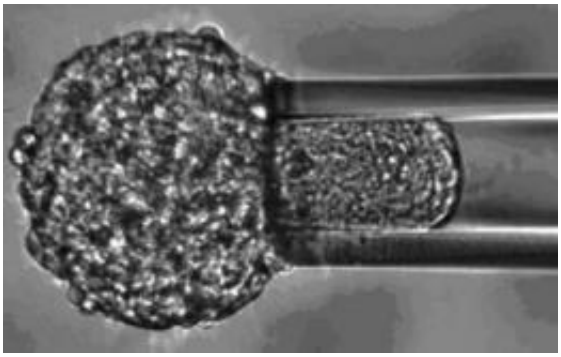

Sucking a small sample into a pipette is a simple technique to discover the mechanical properties of tissue. Credit: Karine Guevorkian, Marie-Josee Colbert, Melanie Durth, Sylvie Dufour, and Francoise Brochard-Wyart

A collaboration of French and Canadian researchers have found that sucking a portion of a spherical globule of cells into a tiny pipette provides information about the adhesion between cells and the elastic properties of the tissue. The method is a novel approach for the study of the structural properties of tissues, and should offer insights into processes such as embryonic development, tissue growth and cancer.

A paper describing the research appears online in Physical Review Letters on May 24.

Conventional techniques for measuring the structural properties of tissues typically involved placing a sample between a pair of plates and observing how the tissue responds to compression. The new pipette

technique complements the parallel plate method, as well as allowing researchers to obtain a wider range of measurements. In addition, the pipette approach could potentially allow for measurements to be performed on living tissue in its natural environment.

In a Viewpoint article in the current issue of *APS Physics* Gabor Forgacs and Ioan Kosztin of the University of Missouri note that interpretations of pipette-based cell measurements are somewhat unclear, in part because relatively few cells from a sample are sucked into the pipette. The technique is also limited to cells that bind together strongly. Nevertheless, pipette measurements offer a novel tool for studying cell development and diseases, as well as potentially aiding researchers involved in tissue engineering for growing artificial organs.

More information: Aspiration of Biological Viscoelastic Drops, Karine Guevorkian, Marie-Josée Colbert, Mélanie Durth, Sylvie Dufour, and Françoise Brochard-Wyart, Phys. Rev. Lett. 104, 218101 (2010) - Published May 24, 2010, Download PDF (free)

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