ZERNIKE INSTITUTE COLLOQUIUM

Thursday, April 6th, 2017

16:00h, Lecture Hall: 5111.0080 Coffee and cakes from 15:30h

Mechanobiology of extracellular matrix: from cells to tissues

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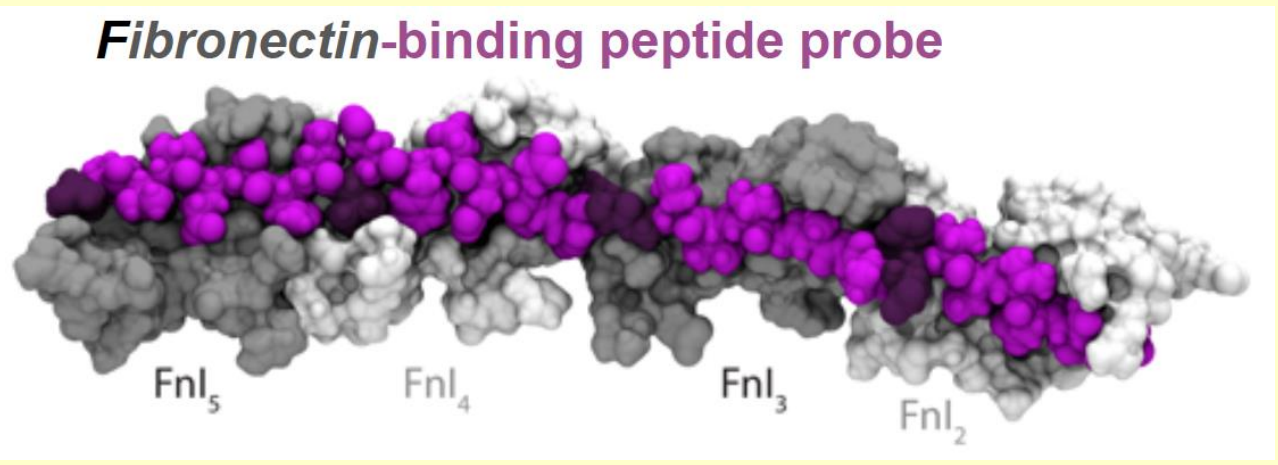
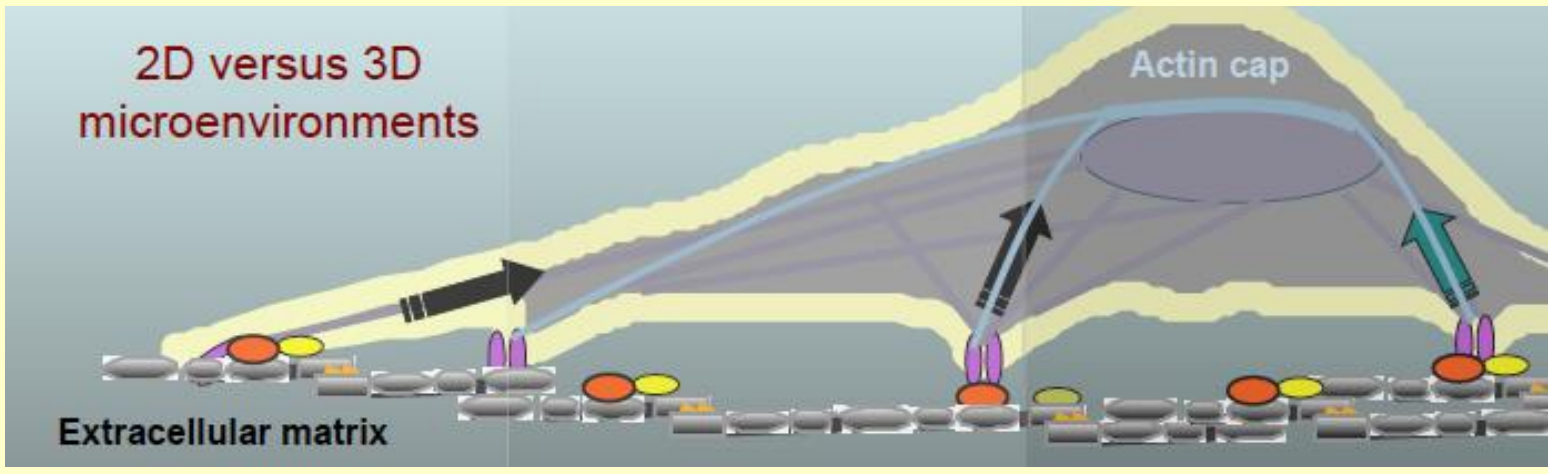
Extracellular matrix is far more than a scaffold to anchor cells. It controls and regulates regenerative healing processes and, if missregulated, causes fibrosis and scaring. Major transformations of extracellular matrix drive disease progression, including cancer, yet how the crosstalk between extracellular matrix and cells regulates these processes in tissues remains unknown. This crosstalk is fine-tuned by mechanical forces as cells pull on their microenvironments. While many (nano)technologies have been developed to probe how the stretching of proteins might switch their structure-function relationship, and to quantify the forces cells generate in cell culture, far less is known at the tissue level since no nanoscale force nor mechanical strain sensors are available to probe force-regulated processes in the complex 3D environments of organs. Gaining such insights at the tissue level is urgently needed since cells sense and respond not only to biochemical but also to physical factors in their microenvironments which co-regulate cell and tissue fate. Recent progress towards these goals will be discussed.





M. Chabria, S. Hertig, M. Smith, V. Vogel, Stretching fibronectin fibers disrupts the binding of bacterial adhesins by physically destroying the epitope, Nature Communication 1 (2010) 135.
S. Arnoldini, A. Moscaroli, M. Chabria, M. Hilbert, S. Hertig, R. Schibli, M. Béhé and V. Vogel, Novel peptide probes to assess the tensional state of fibronectin fibers in tissue, under review.

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