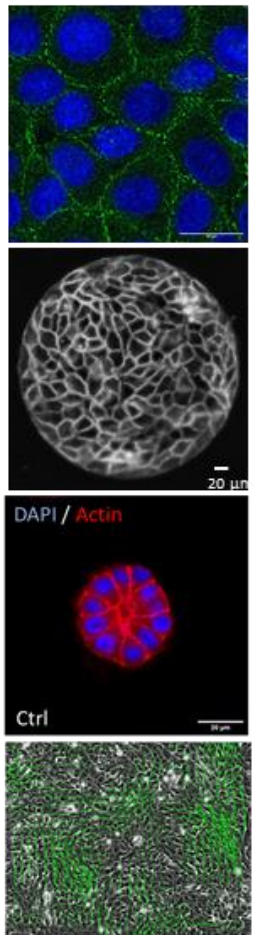
2-year contract for Engineer position- Institute for Advanced Biosciences- Grenoble

Contribution of integrins in cell sorting, cell competition and tissue fluidization



While most of models of cancer metastasis focus on how individual cells extravasate, migrate, and invade adjacent tissues, other studies show that groups of cells dissociate from the primary site and migrate collectively. These observations support a cell sorting mechanism leading to the segregation of distinct cellular populations relying on self-organization principles. Cell sorting is one the three outcomes of cell competition. Cell sorting should be considered as a prerequisite for collective migration in the context of tumoral tissue fluidization. Indeed, during the neoplastic transformation, a solid-to-liquid transition referred to as unjamming transition can overcome the motility arrest of healthy, confluent epithelial cells, and promote tissue fluidization through large-scale collective cell migration. How cells control such transitions needs to be explored. Whether dynamics of integrins in response to tumoral microenvironment contributes to tissue fluidization in invasive cancer cells remains unclear. We will explore whether and how integrins contribute to tumor cell heterogeneity and participate in intercellular communications to support cell competition, cell sorting and collective cell migration.

Approaches: cell culture, micropattern, 2D (monolayer) and 3D (acini) cultures, immunofluorescence, monitoring of fluorescent proteins, microscopy (confocal, TIRF, videomicroscopy, expansion microscopy), fluorescence image analysis, cell morphometry and polarity analysis, Particle Image Velocimetry (PIV).

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