

Wetting transition of living drops

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We study the spreading of spheroidal aggregates of cells, expressing a tunable level of cadherins, on glass substrates decorated with fibronectin. We observe the contact area by optical interferometry and the profile by side-view microscopy. At short times, the aggregate contact area increases as $t^{2/3}$. We interpret these results by modeling the aggregate as a viscoelastic droplet. At long times, we observe a precursor film with two possible states: in strongly cohesive aggregates this film is in liquid state, while in weakly cohesive aggregates the constitutive cells escape from the aggregate forming a 2D gas. The progression of a non-invasive tumor into a metastatic malignant carcinoma, known as the epithelial-mesenchymal transition, can be interpreted as a wetting (liquid-gas) transition.