

## **Modelling and Approximation of Cell Blebbing with Surface Finite Element Methods**

Cell blebbing refers to the detachment of a cell's membrane from its main structural body and the formation of a protrusion. The process involves mechanical and biochemical aspects that are only partially understood. We here focus on the initiation and the role of the cell geometry in triggering the process. A continuum approach leads to fourth order partial differential equation for the membrane on a surface that describes its initial position. We present and analyse a finite element approximation that involves triangulated surfaces and a mixed approach involving operator splitting. A high-level language allow for a convenient implementation whilst using efficient software backends. We then discuss some recent extensions that account for membrane-bound biochemistry. Moreover, we look into some preliminary results for an intrinsic approach where the computations are performed on an evolving triangulated surface.