

Incompressible limit of a continuum model of tissue growth with segregation for two cell populations

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In developmental biology, the mechanisms by which an organ knows when it has reached its adult size and shape and stops growing are still poorly understood. Among a lot of explanations, the role of mechanical feedback has emerged. In some tissue, mechanical forces such as stretching and compression may arise during the development due to segregation of different type of cell. We propose a model for two interacting populations of cells which avoid mixing. The dynamics is driven by pressure and cohesion forces on the one hand and proliferation on the other hand. Following earlier works on the single population case [1, 2], we show that the model approximates a free boundary Hele Shaw type model that we characterise using both analytical and numerical arguments.

Références

- [1] S. HECHT, N. VAUCHELET, *Incompressible limit of a mechanical model for tissue growth with non-overlapping constraint*, Commun. Math. Sci. (2017).
- [2] B. PERTHAME, N. VAUCHELET, *Incompressible limit of mechanical model of tumor growth with viscosity*, Phil. Trans. R. Soc. (2015).