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Understanding pattern formation in interacting cell populations

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Tissue development requires cells of different types to organise themselves into the appropriate patterns and structures to produce viable, functional tissue. Similar processes occur in tissue repair (e.g. wound healing) or when tissues are grown in vitro (tissue engineering). Understanding how this organisation is coordinated is therefore an important basic problem in biology and medicine.

I will present results from agent-based modelling of interacting cell populations, and illustrate how different interactions between the cells affect the patterns of cell organisation observed in tissues. I will explain how these patterns can be quantified using pair-correlation functions, and discuss the extent to which we can infer cell interactions from observed tissue-scale patterns.

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