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### **Synthetic morphology: using synthetic biology modules to engineer model tissues**

The general objective of this research is to make a critical step forward in the foundation of a new anatomy-related research field, synthetic morphology. This term, introduced first in a 2008 review in *J. Anat*, refers to the construction of model tissues by the activation of synthetic gene 'circuits' rather than by conventional developmental programmes. The approach is significant for two reasons; first, it allows us rigorously to test existing understanding about how tissues form, and second, it makes a step towards extending tissue engineering to production of 'designer tissues'.

The specific objective of this PhD project is to take the synthetic genetic modules already being constructed in this laboratory (with BBSRC funding), and to apply them to real animal cells in a way that should cause those cells to undergo predictable morphogenetic events (eg adhering, making tissue layers etc).

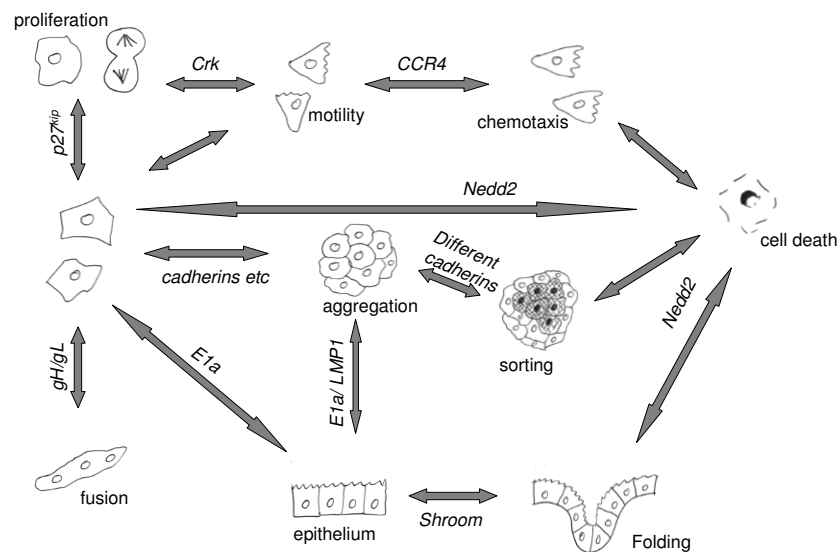


Figure: illustration of some of the morphogenetic transitions driven by our library of synthetic morphology effectors.

Key reference: Davies JA (2008) Synthetic Morphology: prospects for engineered, self-constructing anatomies. *J. Anat* 212:707-19