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## **Periodic patterning across heterogeneous fields: insights from embryonic feather development**

Vertebrate skin is characterized by its patterned array of pigments and structural appendages such as feathers, hairs and scales. A number of lines of evidence point to the action of a Turing type mechanism in laying out the periodic pattern of feathers and hairs in the developing skin. Several candidate Activator and Inhibitor pathways which act during this process have been identified, though the full set of interactions between them remains to be defined. Bone morphogenetic proteins (BMPs) act as key Inhibitors during feather formation, and we have uncovered different sensitivities to this Inhibitor in different regions of the skin. We then focused on combining mathematical modeling and experimental approaches to explore the pattern outcomes and propensity for pattern change arising from the operation of a Turing type system across a field with unequal Inhibitor sensitivities.