

Patterns of Gene Expression in Animal Development and Evolution

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Regulation of gene expression is one of the hallmarks of development of multicellular organisms. My group has been collecting data on patterns of gene expression in *Drosophila* on a genome wide scale. We developed genome editing technologies to label arbitrary *Drosophila* proteins in vivo and imaging technologies to visualize them in living animal in various physiological and developmental contexts. We also invested a lot of effort in developing extensible, scalable and generalizable image analysis tools for big microscopy data relevant in particular for light sheet microscopy. All datasets, reagents, hardware and software are disseminated using open access principles. We use these technologies to study the interplay between gene regulatory networks and morphogenesis in developing embryos employing a comparative approach. I will give an overview of the technologies and their applications for developmental biology research.