How processes inside the cell result in tissue reorganisation at the scale of the organism is a crucial question to understand embryonic development. Epithelial tissues in particular are dynamically remodelled due to forces generated in cells, cellular rearrangements, and cell division and apoptosis. In this talk, I will discuss a physical description of the mechanics of an epithelium during embryonic morphogenesis. I will first describe how the dynamics of cell and tissue shape changes during the development of the Drosophila pupal wing can be understood by analyzing tissue stresses and topological rearrangements in the tissue. I will then discuss a three-dimensional vertex model allowing to simulate tissue mechanics in three dimensions. Using this model, we have analysed the formation of two tissue folds in the Drosophila wing imaginal disc, which arise from differential tension generated laterally and basally in the epithelial cells.

Host: Dr. Josh Milstein

(Refreshments and pizza will be provided)