BE 159 Spring 2014

Talking points: Blankenship, et al., "Multicellular rosette formation links planar cell polarity to tissue morphogenesis"

1. What exactly is convergent extension?
2. In the Goehring paper and related homework, we studies how myosin and PAR proteins work together in one developmental context. Here, myosin and the PARs are working together again. Think about how to compare and contrast these two processes which utilize the same molecules.
3. The word "required" is often used in biological papers. For example, in this paper, the authors state, "To ask if AP and DV domains form independently or sequentially, we examined whether Bazooka localization is required for the distribution of other polarized proteins." What does "required" mean here? The meaning here is analogous to how the word "required" is typically used.
4. What is the difference between a maternal and a zygotic mutant?
5. What is the difference between the AP patterning system the author refer to and planar polarity?
6. Do you have any speculation on how the AP-patterning system serves to regulate the directionality of rosette formation and resolution?
7. What is an adherens junction?
8. Why is it so interesting that rosettes form, as opposed to other geometrical arrangements?
9. What physical forces could lead to rosette formation? How might we determine these forces experimentally?
10. What do you think about the methods section? What could you reproduce from the methods? What would you need more information to do?
11. What role might differential tension/adhesion play in rosette formation and resolution?
12. How might morphogen profiles as we have discussed throughout the term serve to regulate rosette formation/resolution geometry?
13. What sort of questions raised in this paper would be amenable to mathematical/physical modeling? How might you propose doing this modeling?