

Paper for Thursday February 5th 2009

Pelaz S. et.al. 2000 (*Nature*) B and C floral organ identity functions require *SEPALLATA* MADS-box genes

Questions for Thought

Before you start reading this paper, review the ABC model as discussed on Tuesday. Recall the phenotypes that the model could explain and the phenomena that it could not explain.

As before, **write down questions** you have about the logic or rationale for each experiment, the method employed, and the conclusions drawn. Come up with at least three questions. Turn in your questions as homework at the beginning of class. During class we will discuss your questions along with the QfT below. We will emphasize the questions in bold; the other questions are meant to help you think about each issue.

- 1) Nine years have passed since the ABC model was first proposed. **Given this new paper's introduction, how has the original model been revised or updated?** What is a MADS-box?
- 2) The authors conduct a reverse genetic screen. **How does this approach differ from a forward genetic screen?** What do you need to conduct a reverse genetics screen? Why has this approach soared in popularity recently? What are the advantages? What are the disadvantages?
- 3) The authors create triple mutants without explicitly describing how they proceed. **How do you think this might be accomplished?** What would complicate this approach?
- 4) **What does the triple mutant phenotype imply?** How does it compare to single and double mutant phenotypes of the previously identified ABC genes? Do these new genes act up-or downstream of the B and C genes?
- 5.) How come that the B genes *AP3* and *PI* were not redundant in function but the D genes *SEP1-3* are? **What could this observation imply about their molecular mode of action?**
- 6.) Given our Tuesday discussion with regard to the multiple hypothesized *AP2* functions and the expression of carpeloid leaves versus true leaves in strong versus weak *AP2* mutants, do you think that the expression of ABCD genes would be enough to produce flowers?