

## PLSC 731: Paper Review, Association Mapping

*Tommasini et al(2007) Association mapping of Stagnospora nodorum blotch resistance in modern European winter wheat varieties. Theor Appl Genet 115:697*

1. What are the drawbacks to the traditional biparental QTL mapping approach? How can association mapping (AM) address some of these concerns? (697-698)
2. What are the differences in mapping resolution between biparental and AM populations? What effect does population size have upon resolution? (698)
3. Why is linkage disequilibrium (LD) shorter in an AM population than a biparental population of equivalent size? (698)
4. What pleiotropic effects are associated with SNG resistance? (698)
5. What have previous SNG studies revealed about the genetic factors controlling resistance? (698)
6. Describe the genetic material used in this study? Is it appropriate? (699)
7. Are you satisfied with the SNG phenotyping description? (699)
8. What type of QTL analysis was performed? (699)
9. What molecular markers were used in this study? (699)
10. What is the basis of defining subpopulation structure by the STRUCTURE software? (701)
11. How was the marker-trait association test significance level set? (701)
12. Describe the QTL mapping results. (702)
13. Describe the population structure. What criterion was used to assign cultivar to a subpopulation? What geographic feature was observed for the subpopulation? (702)
14. Describe the results of the AM analysis. How does the result correlate with the QTL analysis? (703)
15. Compare LD in the AM and RIL populations. (704)
16. How does the diversity within the AM population compare to the elite European winter wheat germplasm? (704)
17. Relative to the marker number and distribution, how might this experiment be improved? Why might a SNG resistant cultivar not have a sun2-3B Arina allele? (705)
18. What are the limitations of RIL mapping relative to AM? (706)
19. How does the LD testing suggest the AM population was appropriate? (706)
20. What is required to better estimate LD in wheat? (706)