Assignment for November 3, 2009

Read the paper on eye loss in a cave fish: Protas, M., M. Conrad, J. Gross, C. Tabin and R. Borowsky. 2007. Regressive Evolution in the Mexican Cave Tetra, *Astyanax mexicanus*. Current Biology 17: 452-454. You can download the paper from EJC.

Answer the following questions:

- What are the three hypotheses for the evolution of vision loss (eye regression)?
- 2. What traits were influenced by QTL and were associated with hybridization between surface and cave populations?
- 3. What do you learn from Figure 1?
- 4. Why is it important that eye size and melanophores are linked?
- 5. Why do the authors conclude that selection drives eye reduction, but

melanophores loss is derived from mutation and genetic drift?

- 6. How are eye structure and feeding efficiency hypothetically linked? Did QTL mapping support this link?
- 7. What are the kinds of costs of having eyes that might provide selection for eye regression?