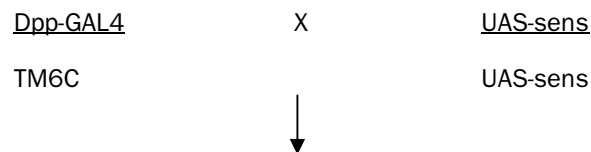


Misexpression in Drosophila Homework

1. Diagram a specific transgene from one of the fly strains we are using in the lab. Label the promoter, coding sequence and white mini gene (w^m , the protein product from this gene produces the red pigment in the eyes). Indicate when, where and what will be expressed in your specific example and the predicted phenotype of the fly receiving that transgene.

2. What is the purpose of the white mini gene?

3. The *sens* gene is known to be involved with bristles while *stubble* is a gene on the TM6C balancer chromosome that produces short bristles in place of the long ones on the back of the thorax. (A) In a GAL4-UAS cross using the *dpp-GAL4/TM6C* strain and *UAS-sens* strain, draw out the genotype of the progeny and indicate their expected phenotype. (B) Are all the phenotypes present in this cross visible in the adults? (C) Will the *stubble* phenotype be found in the same progeny showing the phenotype due to the misexpression of *senseless*? Why or why not?



4. If you would like to change when *senseless* was being misexpressed, say to only in an adult fly, what would you need to change in the cross above?

5. You have found a pure breeding fly strain that has a defect in the eye. You believe it may be caused by a mutation in the *eyeless* (*ey*) gene. You decide you would like to try to rescue the mutation with a wild-type copy of the *ey* gene. What would be a direct way and an indirect way of doing this using techniques related to this lab? What type of control experiment would allow you to “see” that the expression of the w.t. *ey* gene is occurring where and when you expect it to be? (Be as specific as possible.)