

E1.A genetic cross is a mating between two different individuals.

- E2. This would be used primarily by molecular geneticists. The sequence of DNA is a molecular characteristic of DNA. In addition, as we will learn throughout this textbook, the sequence of DNA is interesting to transmission and population geneticists as well.
- E3. We would see 47 chromosomes instead of 46. There would be three copies of chromosome 21 instead of two copies.
- E4. A. Transmission geneticists. Dog breeders are interested in how genetic crosses affect the traits of dogs.  
B. Molecular geneticists. This is a good model organism to study genetics at the molecular level.  
C. Both transmission geneticists and molecular geneticists. Fruit flies are easy to cross and study the transmission of genes and traits from parents to offspring. Molecular geneticists have also studied many genes in fruit flies to see how they function at the molecular level.  
D. Population geneticists. Most wild animals and plants would be the subject of population geneticists. In the wild, you cannot make controlled crosses. But you can study genetic variation within populations and try to understand its relationship to the environment.  
E. Transmission geneticists. Agricultural breeders are interested in how genetic crosses affect the outcome of traits.
- E5. You need to follow the scientific method. You can take a look at the experiment of Figure 25.14 to see how Kettlewell followed the scientific method to determine why the color of moth wings varies within a population of moths in England.