

1) Would you expect the chimpanzee or human version of the huntingtin gene to be larger?

If we use the puffer fish-human comparison combined with the general sense that humans have more transposons than chimpanzees, we could surmise that the human huntingtin gene should have more transposons.

2) Do B-cells have more or less DNA than other cells in your body? How is this related to the function of B-cells?

Less, the rearrangement and splicing out of certain DNA allows each B-cell to make a unique antibody protein.

3) By looking at the DNA sequence, how would you identify a hox pseudogene?

It will have some sequence similarity to active hox genes, but will lack some critical component, like a functional promoter, that keeps it from being expressed.

4) What different information can be gleaned from comparing transposons between humans and chimps or different people? Why is this information partially dependent on knowing the time since the last common ancestor?

Between chimps and people we see how active transposons have been in the last 6 million years.

Between different people, we can see how active transposons have been since the people shared a common ancestor. The time of the last common ancestor will allow an estimation of transposon movement per given time.

5) You identify the cause of a disease as a mutation in a gene from a transposon disrupting the gene.

Without genetic information about the patient's parents, how could you determine if this transposition occurred in the affected person, or if they inherited the disrupted gene from their parents?

If the transposon lacks some part needed to move, it is unlikely for it to have moved recently.

6) What might cause the DNA from two people to give the same pattern in RFLP analysis?

If the difference in their DNA is not in the sequence of the restriction enzyme used, or if they are identical twins.

7) What are the four "ingredients" for doing PCR, and how does each "ingredient" allow DNA to be amplified?

Template DNA- will be copied. DNA polymerase- will do the copying. Nucleotides- raw material for making DNA. Primers- will direct the DNA polymerase where to begin copying.

8) What is one advantage to modifying an organism by genetic engineering versus artificial selection?

Genetic engineering can occur rapidly while artificial selection takes several generations. Artificial selection cannot introduce traits that do not already exist in the population.