

Exercise to Show Retroviral Integration into Cell Chromosomes

- (1) Make a chain representing the cell chromosome with the nucleotide components represented by colored paper clips. The chains should be about 10 nucleotides long. You can work in pairs.

A = green
T = blue
G = pink
C = purple

- (2) Tag each of the colored paper clips with the appropriate label (A, T, G, or C).
- (3) Make a second chain that maintains correct base pairing as occurs in double-stranded DNA. Remember that A pairs with T (green will be opposite blue) and G pairs with C (pink will be opposite purple).
- (4) Make a break in each chain and insert several links with the gray paper clips. In this case, gray paper clips represent DNA from the retrovirus (like HIV). Gray paper clips will be opposite each other on both chains. (Viral DNA is also made of A, T, G, and C but we want to be able to easily visualize the viral DNA).
- (5) What do the two chains together represent? How many chains would be present inside a normal cell?
- (6) What happens to the host DNA when the viral DNA becomes attached?
- (7) Why would insertion of viral DNA into host chromosomes cause cancer?