



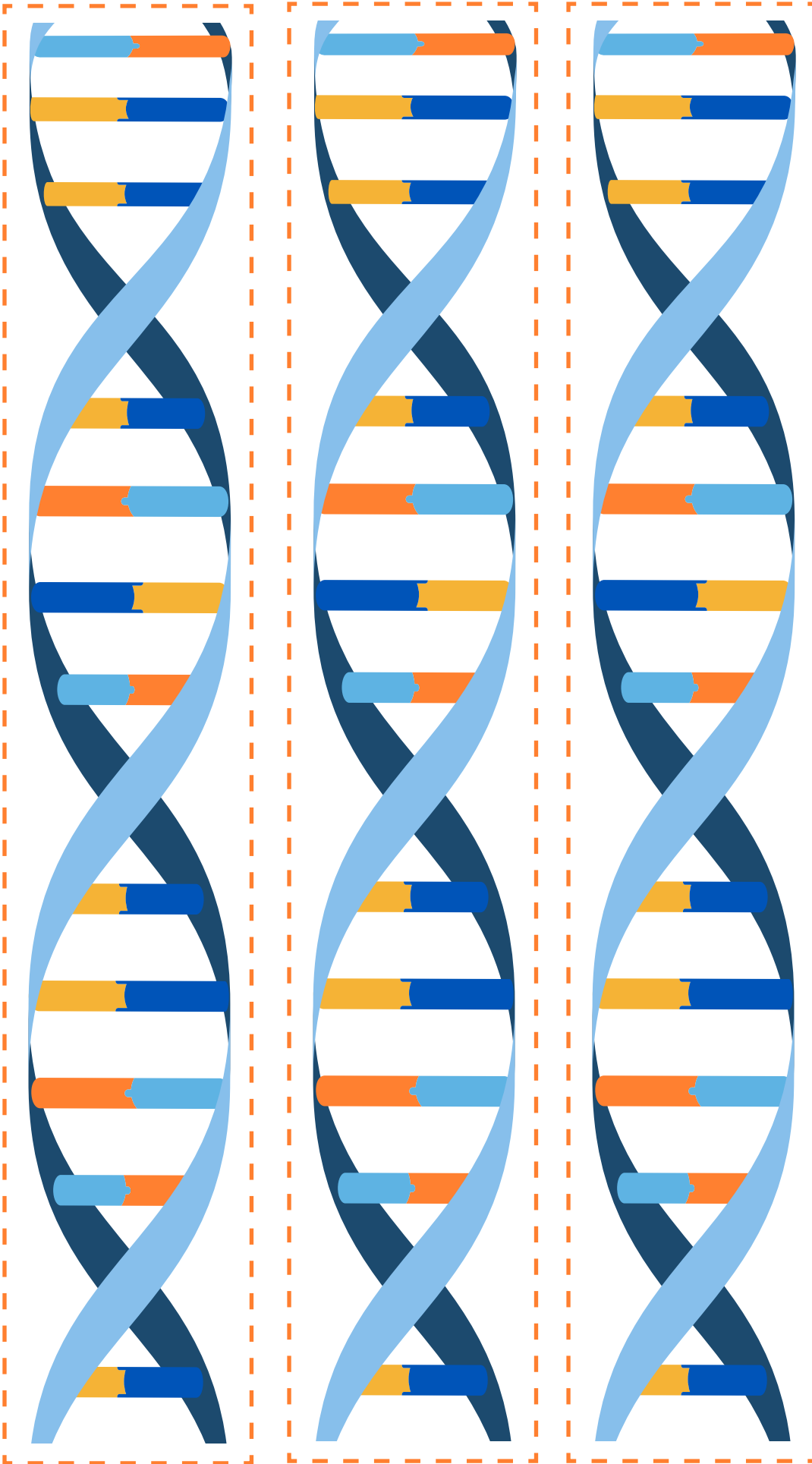
BUILD A HISTONE

Materials Needed:

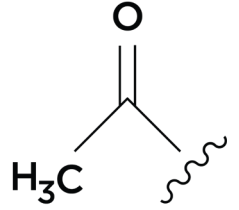
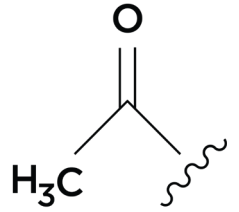
- Scissors
- Paper Clips
- Tape



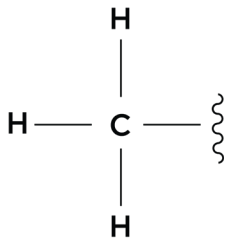
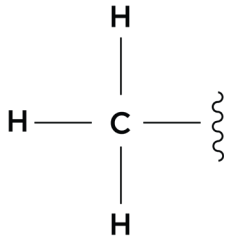
1. Cut on the dotted lines to separate all pieces on the following pages (DNA strands, histones, acetyl groups, methyl groups, RNA polymerase)
2. Fold the histone along the vertical solid lines and then tape the ends of the histone together. Histones help condense DNA into even smaller units. Histones have an overall positive charge and DNA has an overall negative charge. Note that histones are made of eight subunits (2 of each H2A, H2B, H4 and H3) called an octomer.
3. Tape the DNA strands together to create one, long strand.
4. Wind the DNA strand around the histones, securing part of the DNA with a paperclip. The regions of DNA that are wound around the histone are called heterochromatin, which is inactive DNA. The section of DNA between the two histones is called euchromatin and is transcribed.
5. Place the RNA polymerase on the exposed DNA strand. RNA polymerase in the cell is accompanied by many other helper proteins.
6. First, add a acetyl group onto a histone tail. Using what you learned in the epigenetics lesson, demonstrate what would happen. Next, remove the acetyl group and add a methyl group. How would this change how the DNA is packaged? Demonstrate both to your neighbor.



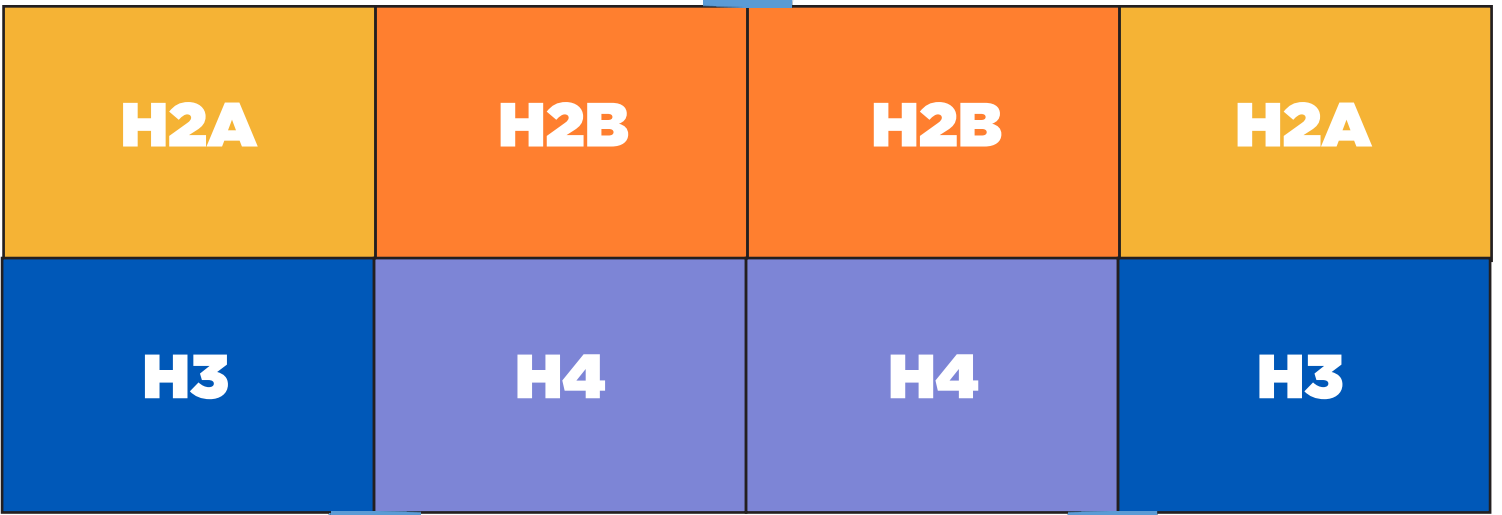
ACETYL GROUPS



METHYL GROUPS



HISTONE 1



HISTONE 2

