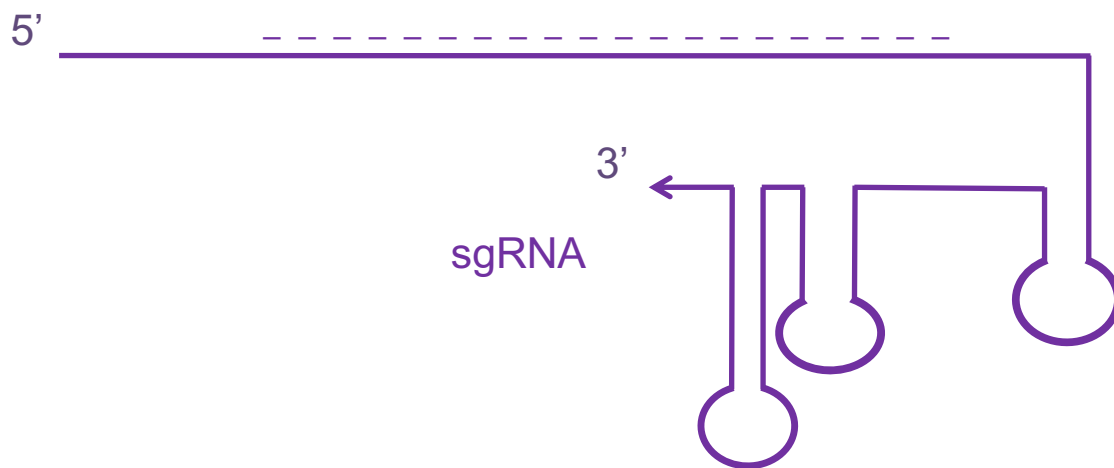


Genome Editing with CRISPR-Cas9

1. Design a 20 basepair guide RNA to knock out the *COOL* gene in mice using CRISPR-Cas9 technology. The target DNA of the *COOL* gene is below. The PAM site is in bold.

5' C G A G C A T G A T T C G A T C T G A C T A C G T C G G

3' G C T C G T A C T A A G C T A G A C T G A T G C A G C C



2. Explain the logic you used to design your guide RNA. Where do you expect Cas9 to cut the DNA?
3. If CRISPR-Cas9 is used to cut the *COOL* gene in a fertilized mouse egg, is this germline or somatic cell editing?
4. Considering the ethics of genome editing, brainstorm some pros and cons for knocking out the *COOL* gene in mice.