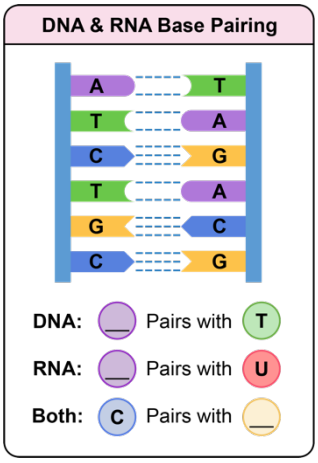
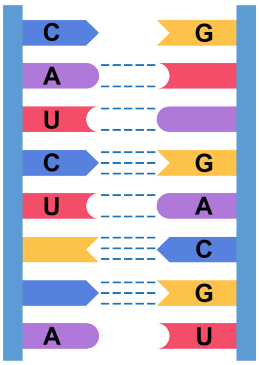
CONCEPT: BASE PAIRING

DNA/RNA Base Pairing

- Hydrogen bonding between the bases produces a stabilizing effect towards the _____ integrity of the structure.
  - □ Individually H-bonds are _____, but collectively are _____.
- **Complementary Base Pairing:** The bonding preference of (A with ___/___) and (G with ___).
  - □ A with ___/___ = ___ H-bonds.
  - □ G with ___ = ___ H-bonds.



EXAMPLE: Write in the missing bases and hydrogen bonds from the given image.



PRACTICE: Four species shown below give the percentages of A–T pairings vs G–C pairings. Based on only the information given, which species would have the most significant strength in their base interactions?

a) **Drosophila melanogaster** (fruit fly) (55% **:** 45%)

b) **Zea mays** (corn) (51% **:** 49%)

c) **Neurospora crassa** (fungus) (46% **:** 54%)

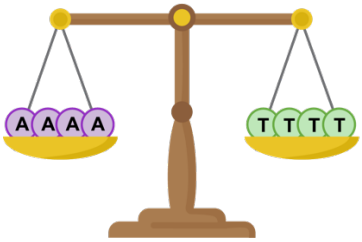
d) **Escherichia coli** (bacteria) (49% **:** 51%)

CONCEPT: BASE PAIRING

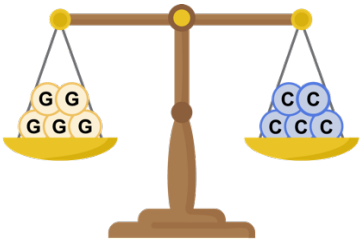
Chargaff's Rule

●In the early 1950's, Erwin Chargaff made an important discovery related to double-stranded DNA:

□ **Chargaff's Rule:** For each species, the % of **A** & **T** bases are roughly *equal*, as are the % of **G** & **C** bases.



Adenine % = Thymine %



Guanine % = Cytosine %

EXAMPLE: Human DNA is comprised of approximately 20% adenine (**A**). Approximately what percentage of the nucleotides in a human DNA sample will be guanine (**G**)?

a) 30% b) 25% c) 60% d) 80%

PRACTICE: Cytosine (**C**) makes up 42% of the nucleotides in a sample of DNA from an organism. Approximately what percentage of the nucleotides in this sample will be thymine (**T**)?

a) 8% b) 16% c) 21% d) 60%