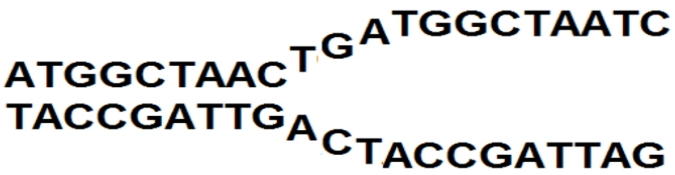
Transcription and Translation Practice Exercise

1. Define:
DNA Transcription –

DNA Translation –

2. Below is a picture of DNA splitting and going through **transcription**. Show how it is duplicated by writing in the appropriate complementary base pairs within the replication bubble depicted



3. You will now practice translating DNA code into chains of amino acids (proteins). Use the tables on the next page to translate each codon to the appropriate amino acid.

Example - Translate the following DNA sequence:
GAAAATTGGCTTCTGTGTAGGTATACCTATGATTAG

Answer - Divide the sequence into triplets:
GAA-AAT-TGG-CTT-CTG-TGT-AGG-TAT-ACC-TAT-GAT-TAG
And assign the correct amino acid for each triplet based on the table below:
Glu-Asn-Trp-Leu-Leu-Cys-Arg-Tyr-Thr-Tyr-Asp-End

When you reach a terminator triplet, you need to end the amino acid chain and start a new one.

Try translating the following sequences yourself:
a. GAT/AGT/TGT/CCT/CTG/CAT/CGA/TCG/GGG/TGA

b. GACGTATAGACAGGTAGCTGAGGGATTTATCGATAG

4. Now let's make translation fun and delicious. On the next page is the Standard Genetic Code Table that I have modified. You will again be translating genetic code, but instead of building proteins, you will be building graham cracker sandwiches. Translate the DNA sequence below :

a. *If your last name starts with a letter A – M, translate this segment of DNA*:
GGGCCTCTTAGGTCCCAATAG
List your "amino acid" (marshmallow sandwich) ingredients in order: _____ _____ _____ _____ _____ _____ _____.

b. *If your last name starts with N – Z, translate this segment of DNA*:
ACACGTAGTGCTTGTGAATGA
List your "amino acid" (marshmallow sandwich) ingredients in order: _____ _____ _____ _____ _____ _____ _____.