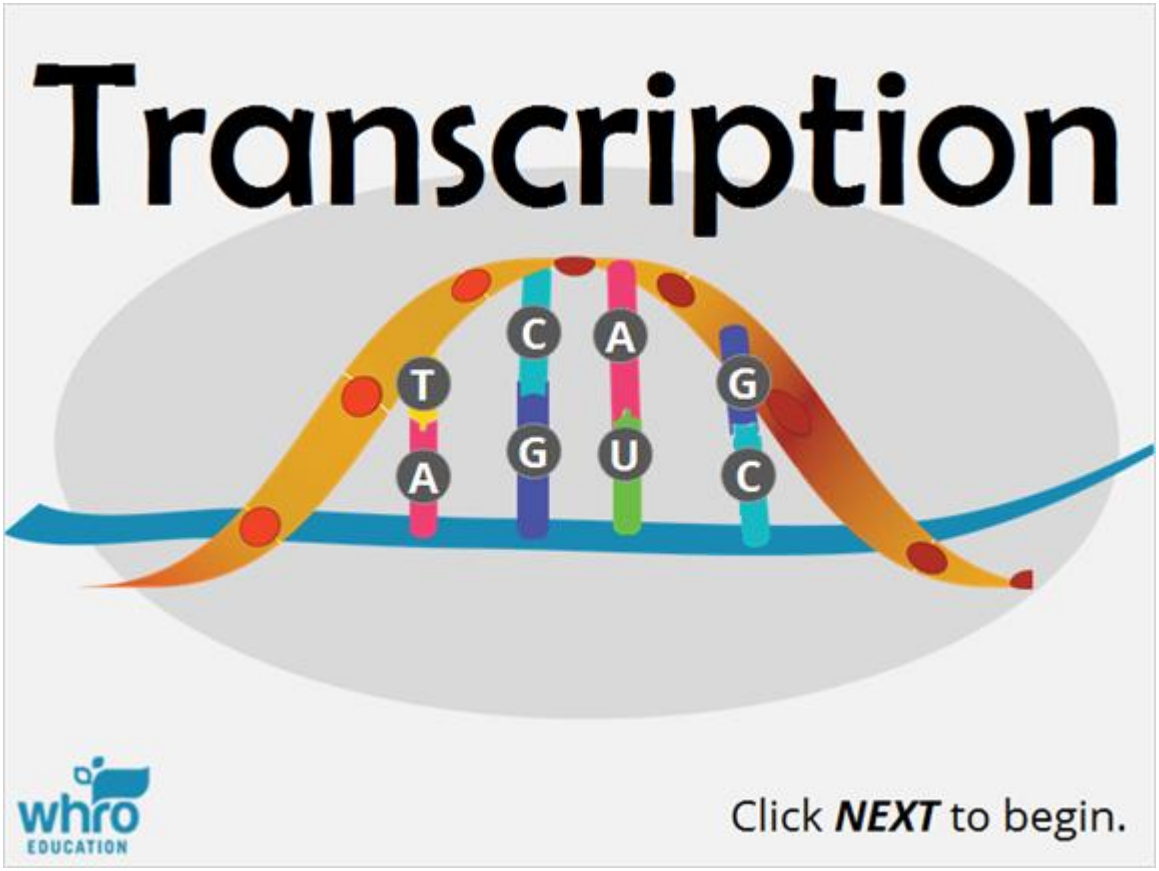
Module 6: DNA, RNA, and Molecular Genetics
Topic 3 Content: Transcription Notes



Transcription

Click ***NEXT*** to begin.

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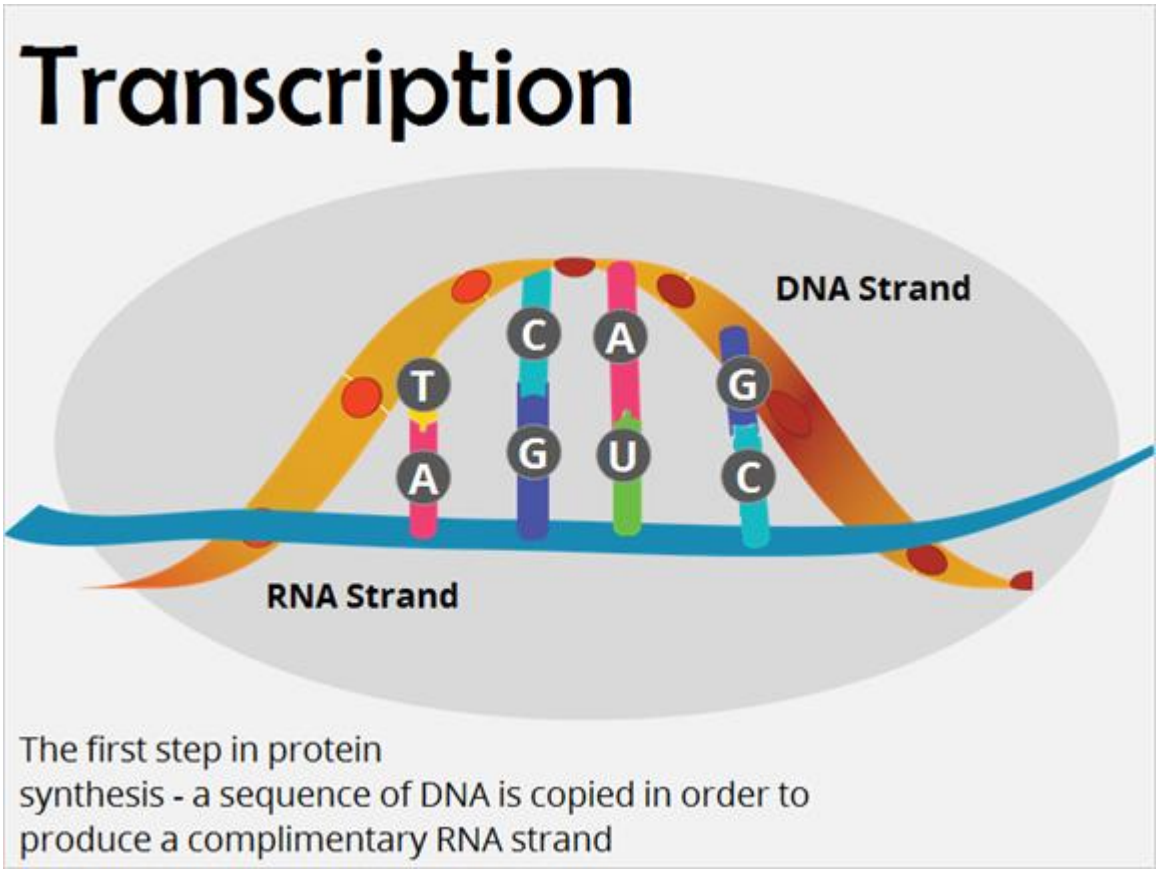
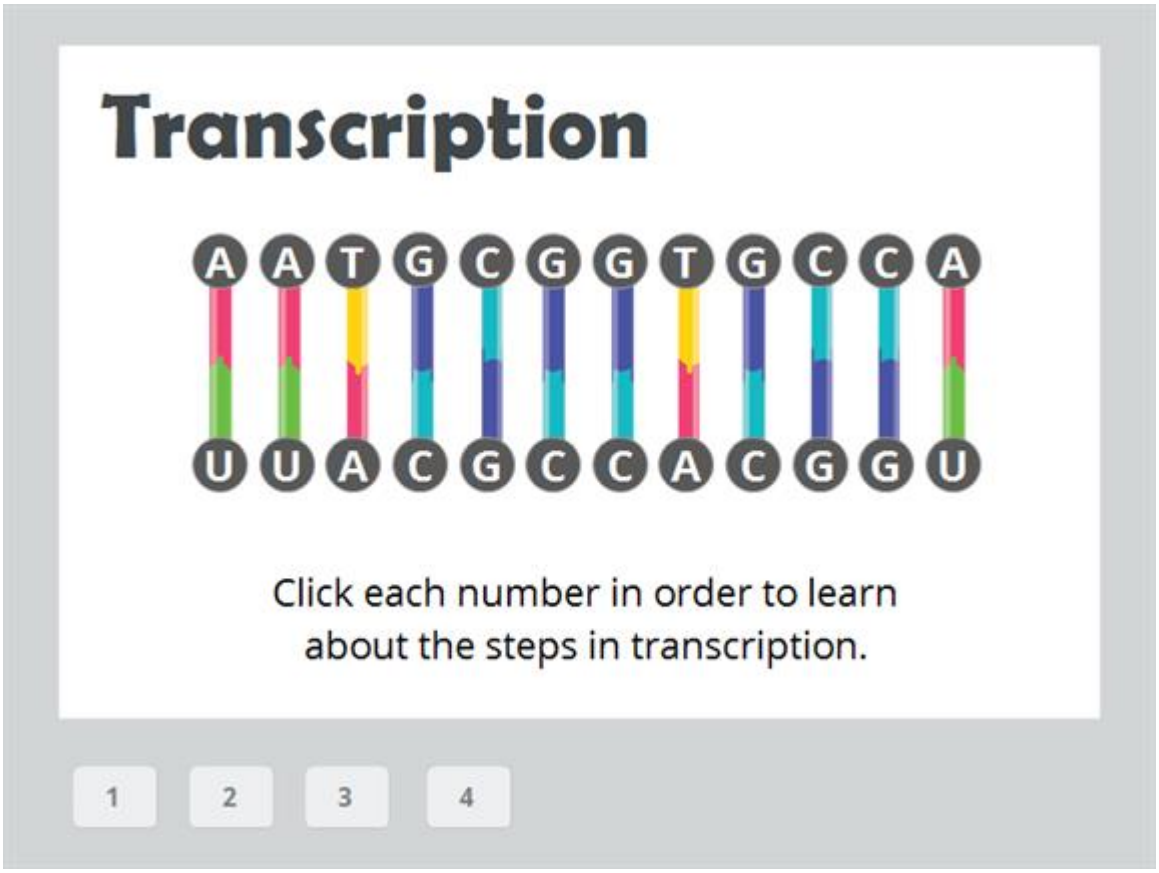


Transcription is the first step in protein synthesis. During transcription a sequence of DNA is copied in order to produce a complimentary RNA strand. Transcription occurs in the nucleus in eukaryotic cells and in the cytoplasm in prokaryotic cells.



Click each number in order to learn about the steps in transcription.

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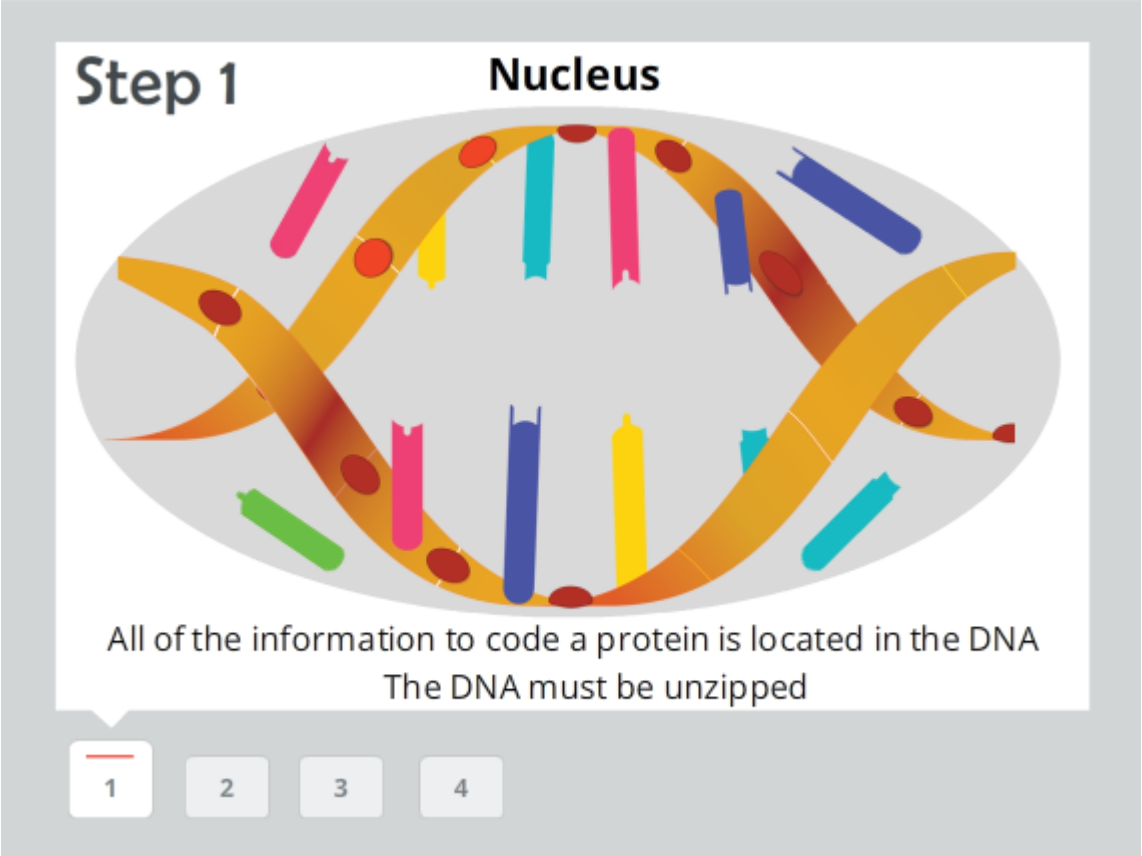

Step 1

The DNA molecule is located in the nucleus. DNA will never leave the nucleus because it is too large to move through the pores in the nuclear envelope. Because all of the information to code for a protein in located in the DNA, the DNA must first be unzipped.

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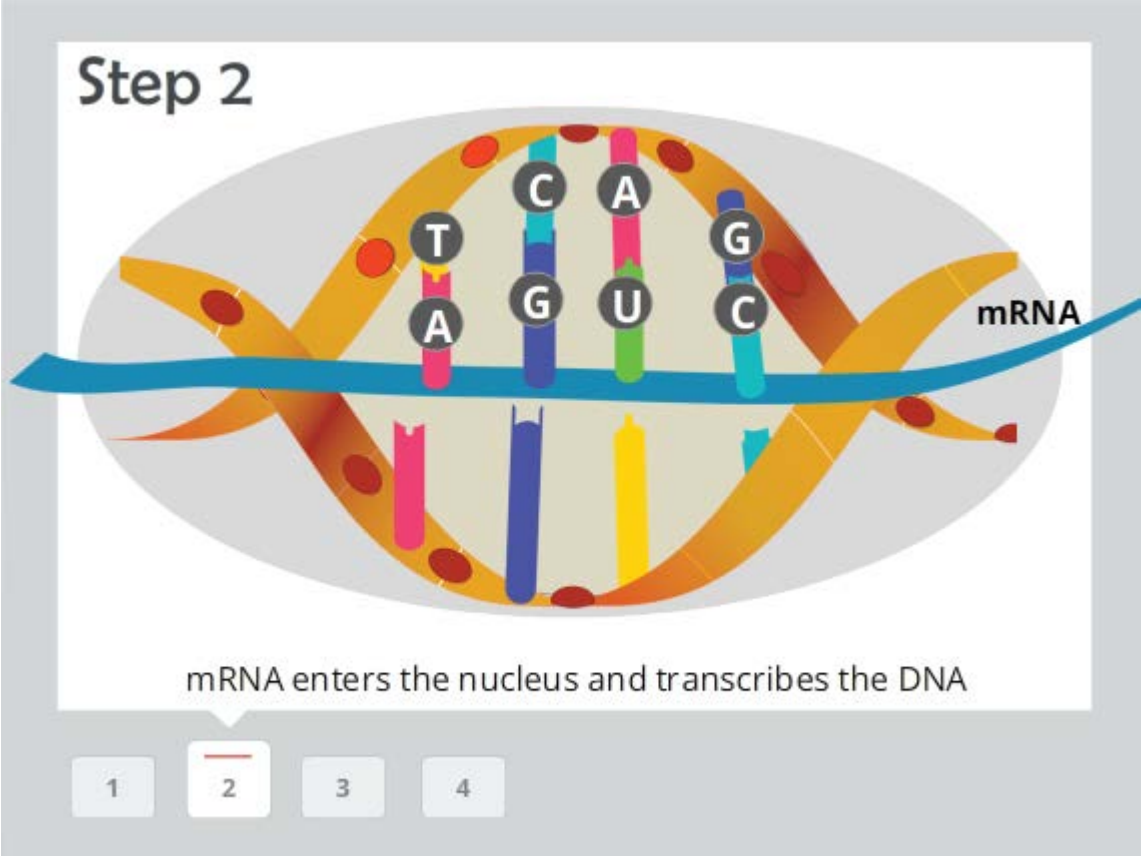

Step 2

RNA polymerase binds to the section of DNA that needs to be copied. The messenger RNA, or mRNA, enters the nucleus and free nucleotides are paired with the DNA nucleotides.

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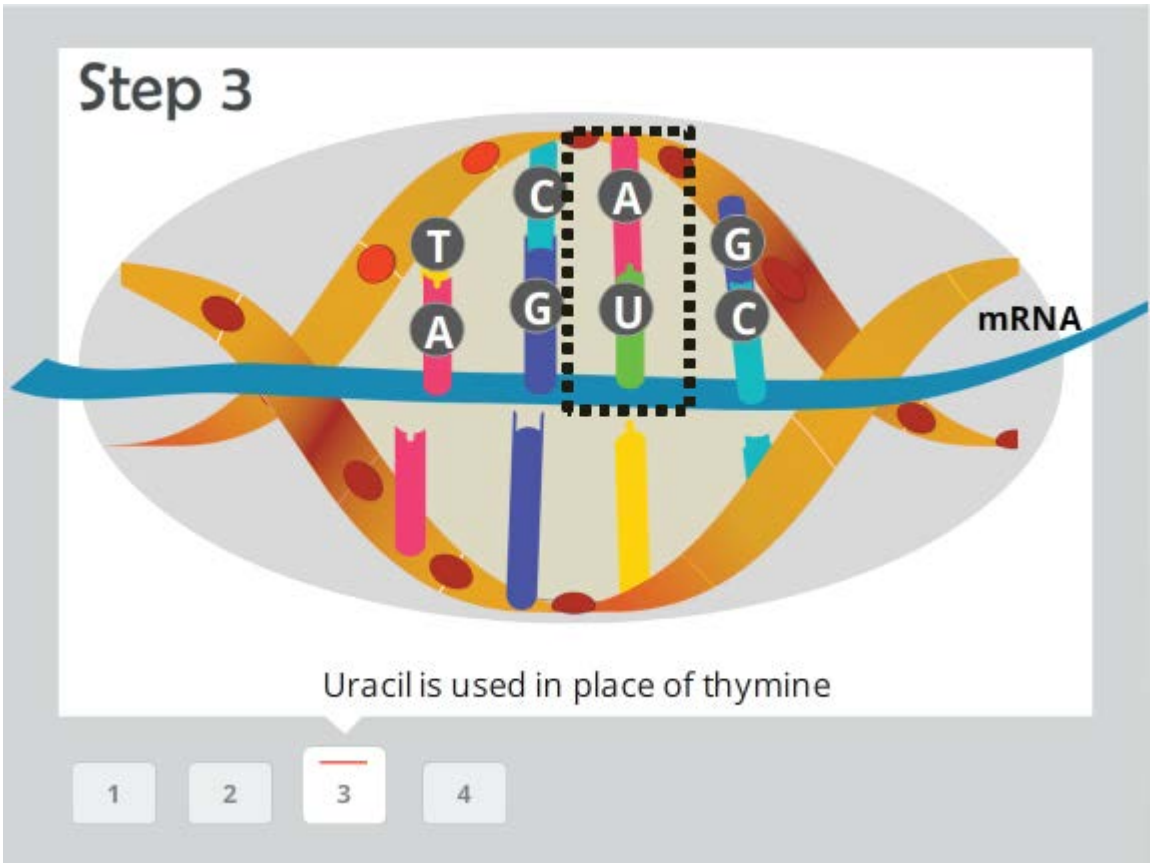
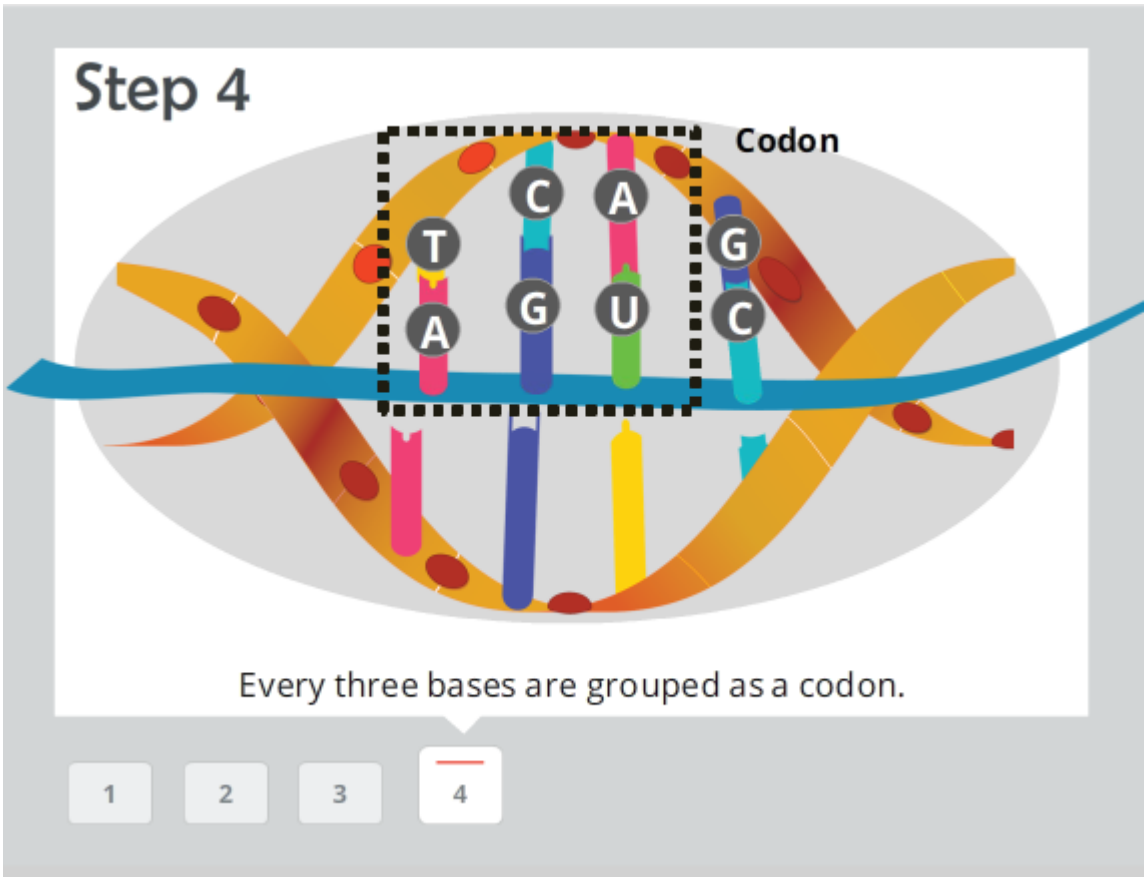


Step 3

Nucleotides are paired with the DNA following the same base-pairing rules as with DNA replication, except that in the place of thymine, uracil is used. That means, if the template strand of DNA reads AATGCGGTGCCA, then the complementary mRNA strand will read UUACGCCACGGU.



Step 4

The code that is contained in the DNA is a three base code. On a strand of DNA, or mRNA, every three bases are grouped as a codon. Every codon codes for a specific amino acid or marks the beginning or the end of the protein synthesis process. Once the RNA strand is completed, it separates from the DNA template and the transcription complex falls apart.