

What is transcription?

DNA is a template for RNA:

DNA nucleotides

A = adenine

T = thymine

G = guanine

C = cytosine

RNA nucleotides

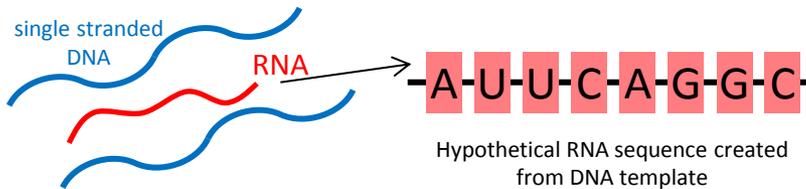
A = adenine

U = uracil

G = guanine

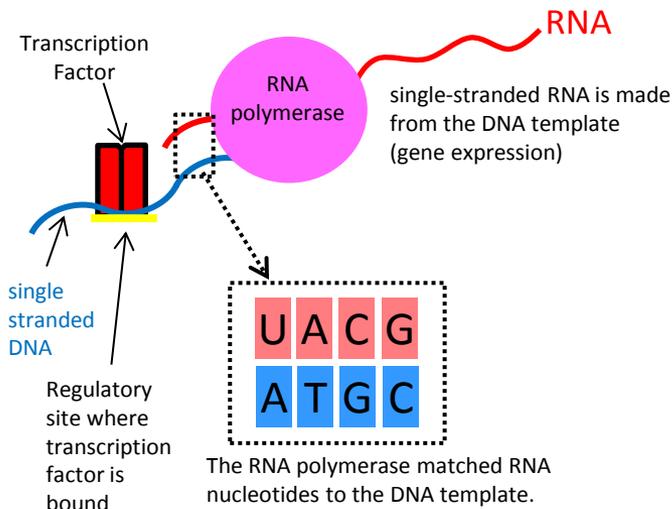
C = cytosine

RNA nucleotides (or building blocks) are structurally very similar to DNA and go by similar names. The only exception is that RNA has uracil (U) instead of thymine (T).



When DNA is being transcribed, the DNA becomes single stranded (the DNA strands come apart) so RNA can be created. The DNA acts as a template. A hypothetical RNA nucleotide sequence is shown.

Transcription takes place in the nucleus:



An enzyme called RNA polymerase (pink circle) is needed for transcription. RNA polymerase is simply a protein in the cell, and its job is to match RNA nucleotides to the DNA nucleotides.

The inset of this diagram shows that the rules of matching RNA and DNA building blocks are similar to double-stranded DNA, except that U (RNA) will pair with A (DNA). The RNA polymerase moves along a single stranded DNA and produces RNA.

The end product for this step is that a single-stranded RNA is produced, completing a step of gene expression. Many copies of the RNA can be produced from a single DNA gene.