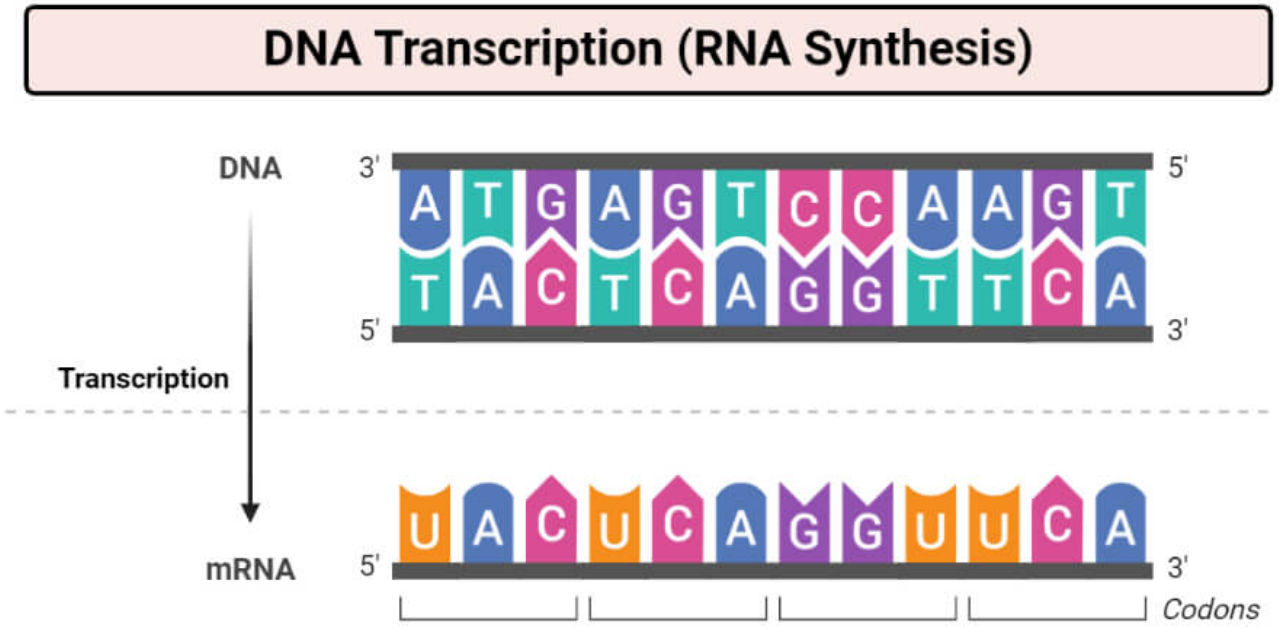
Lesson 11
DNA transcription



DNA transcription

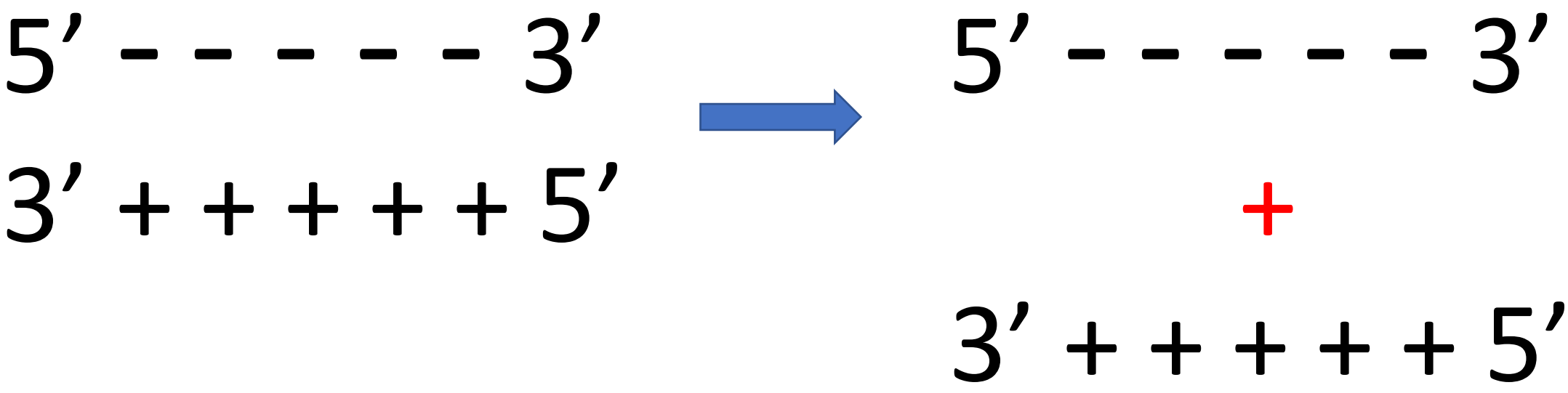
- **DNA (gene) transcription** is a process that produces an **mRNA** from a DNA template
- The process takes place in the cell nucleus
- Two major difference with DNA replication
  - RNA uses U instead of T
  - Only 1 DNA template strand is used: **the BOTTOM strand**

5’ - - - - - 3’→ non-template strand

3’ + + + + + 5’→ **template strand**

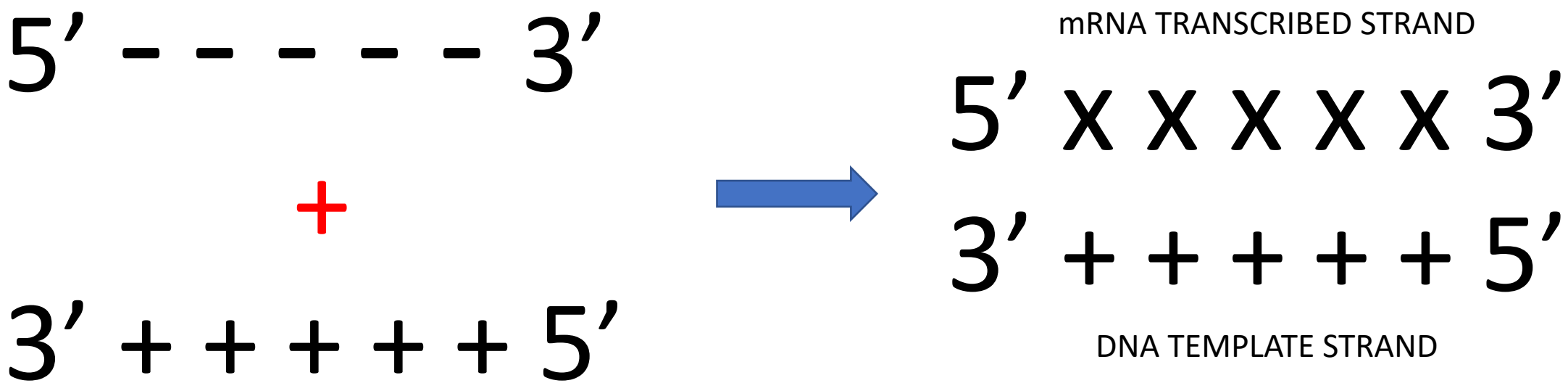
DNA transcription

1. DNA strands separate



DNA transcription

2. mRNA is transcribed (copied) from the DNA template strand



DNA transcription

3. mRNA transcribed strand leaves the DNA template strand
4. DNA template and non-template strands base-pair again

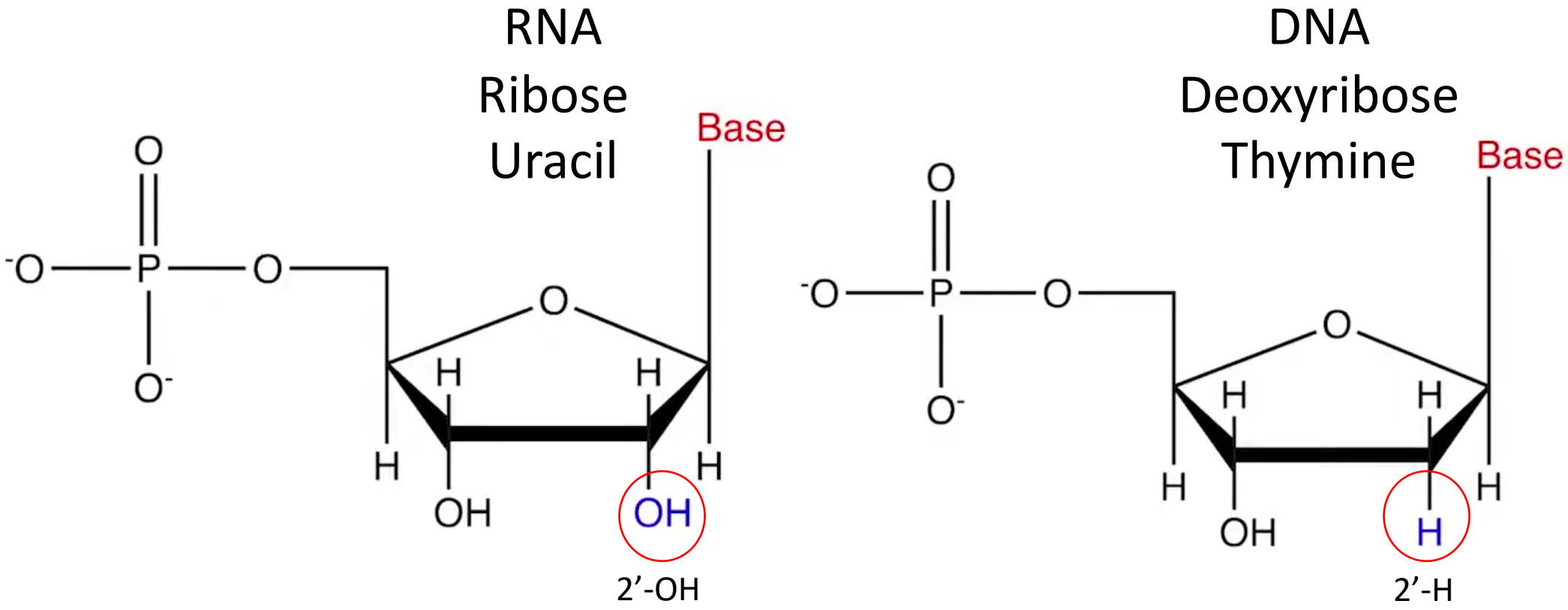
5’ x x x x x 3’ 5’ – – – – – 3’

+

3’ + + + + + 5’

DNA transcription

- The transcribed 5’xxxxx3’ mRNA strand = same as DNA non-template strand (with U in place of T)

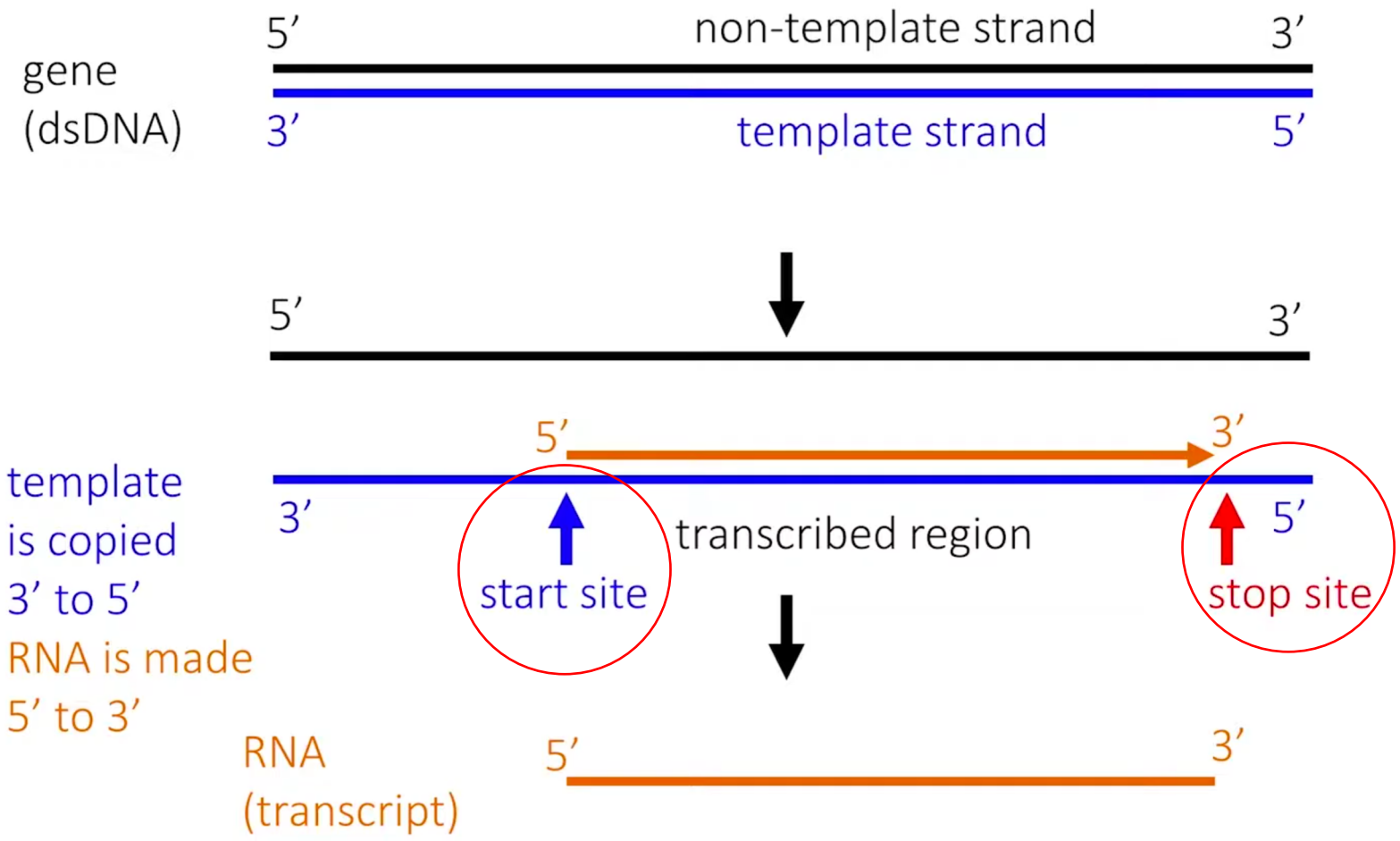


DNA transcription

- The transcribed 5’xxxxx3’ mRNA strand = same as DNA non-template strand (with U in place of T)
- The 2’-OH on ribose is a reactive group
  - Makes RNA substantially more reactive (hydrolysis) = less stable than DNA
- This is why DNA (a double stranded nucleic acid) is a better genetic storage material than RNA (usually a single stranded nucleic acid)

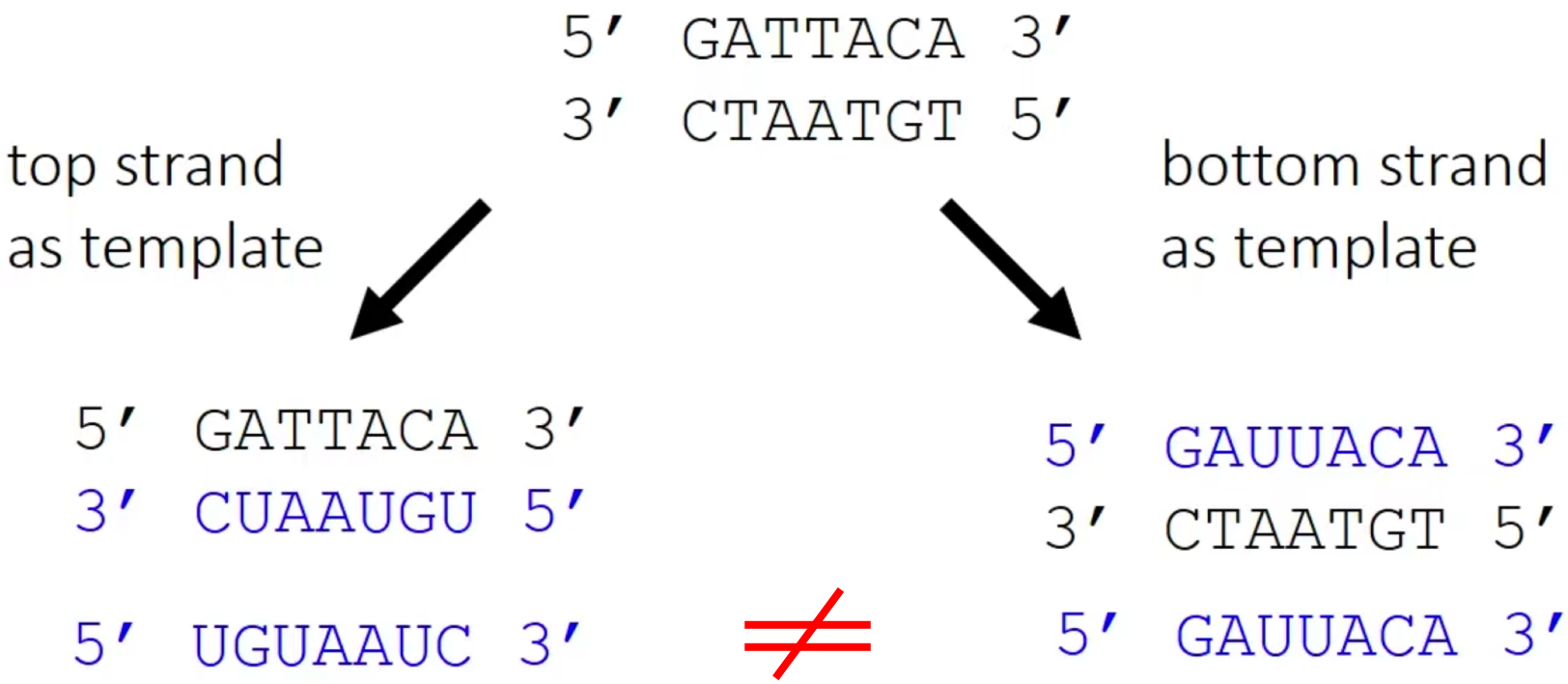
DNA transcription

Transcription from specific strand/position



DNA transcription

- Complementary DNA strands are transcribed into different mRNAs



DNA transcription

- Take assignment 11: DNA transcription