

# CYTOLOGY 2

## EXAM 2

### **Note from SI:**

We're still on Cytology, round 2! You are going to crush this second exam. You're making an effort to study and get ahead of the game! #gettingthesegrades #collegethings

### **Vocab:**

- Transcription: The process of copying DNA into mRNA by RNA polymerase, consisting of initiation, elongation, and termination phases.
  - Initiation: RNA polymerase separates DNA strands
  - Elongation: RNA polymerase adds complementary nucleotides to mRNA based on the sequence in the DNA template strand
  - Termination: transcription stops when RNA polymerase reaches the termination code

**\*remember DNA base T = mRNA base A, BUT DNA base A = mRNA base U\***

- Translation: The process of decoding mRNA into a specific sequence of amino acids to form a protein, involving tRNA, ribosomes, and specific codons.
- Codons: genetic codes in mRNA in a three-base sequence that consists of 4 bases: A, U, C, G
- Ribosomes: small particles that serve as the site of protein synthesis, includes 3 binding sites for tRNA: Aminoacyl site (A site), Peptidyl site (P site), Exit site

### **Questions:**

**IMPORTANT: \*I would recommend running through these questions repeatedly and practicing fast recall, making flashcards, quiz yourself, etc.**

- 1) True or false: nucleotides sequences are always written from the 5' end to the 3' end:

True

- 2) The 4 nucleotide bases are used to produce the 3 base codons... how many different combinations of bases are there? **(four to the third power)**

64

- 3) The codon 5' - AUG - 3' codes for what amino acid? Hint: this is the start codon
- Methionine

- 4) What are the nucleotide bases?

Adenine (A), Guanine (G), Cytosine (C), Uracil (U), Thymine (T)

\*A=U C=G (in DNA T=A)

- 5) What is the mRNA language?

Codons (AUGC)

- 6) When is a copy of the gene base sequence made?

Transcription

- 7) What does transcription produce?

mRNA

- 8) What happens during mRNA?

Copying DNA, goes out of nucleus into cytoplasm

9) Where does transcription take place?

Nucleus / genes base sequence

10) What is it called when enzymatic processes correct DNA / sequence of a DNA molecule?

DNA repair

11) What does 1 codon code for?

1 amino acid

12) What does the sequence of nucleotides code for?

1 polypeptide (protein)

13) DNA is translated into mRNA which is translated into \_\_\_\_\_

tRNA

14) DNA AAA = \_\_\_\_\_ mRNA

UUU

15) DNA TTT = \_\_\_\_\_ mRNA

AAA

16) TRANSCRIPTION / TRANSLATION (processes):

Transcription = DNA to mRNA translation = mRNA to tRNA

\*rRNA is the final step, that results in a fully formed protein, ready to be sent out