

KEYSTONE REVIEW SESSION #4

DNA
RNA
Protein

DNA TO RNA TO PROTEIN

- Keystone Standards:
- BIO.B.1.2.1 Describe how the process of DNA replication results in the transmission and/ or conservation of genetic information.
- BIO.B.1.2.2 Explain the functional relationships between DNA, genes, alleles, and chromosomes and their roles in inheritance.
- BIO.B.2.2.1 Describe how the processes of transcription and translation are similar in all organisms.
- BIO.B.2.2.2 Describe the role of ribosomes, endoplasmic reticulum, Golgi apparatus, and the nucleus in the production of specific types of proteins.

DNA SUBUNITS ARE CALLED NUCLEOTIDES THEY CONTAIN

- Three parts:
- Sugar (deoxyribose)
- Phosphate
- One of 4 bases: ATCG

REPLICATION IS SEMI CONSERVATIVE

- ★ H bonds in the middle break and one side acts as a template ★
- Enzyme Helicase to open and straighten, enzyme polymerase to bring in new nucleotides
- Complementary base pairing- A on one side/ T on the other...
- Why semi conservative? Easier to read from the side rather than try to copy both sides at once. Fewer errors

RNA- RIBONUCLEIC ACID

Sugar is ribose
 Single stranded
 Uracil instead of thymine. (U-A)
 Brings the message outside the nucleus

Three types: m, r, t RNA

MRNA, TRNA, RRNA

mRNA- messenger RNA - Made during transcription
 Brings DNA out of the nucleus in one nice single strand

tRNA- Transfer RNA- used during translation. It carries an amino acid to the ribosome; when the code is right, it drops it off

rRNA- ribosomal RNA- this is what ribosomes are made of

TRANSCRIPTION & TRANSLATION NOTICE IT'S IN ALPHABETICAL ORDER

- Transcription- The making of mRNA using DNA as a pattern.
- Translation- the mRNA is read by a ribosome and then tRNA brings a ribosome.
- Highly recommend [Passel website](http://passel.unl.edu/pages/animation.php?a=Translation.swf)
- <http://passel.unl.edu/pages/animation.php?a=Translation.swf>

MUTATIONS

- A. Silent mutation- protein unaffected silent does not speak
- B. Missense mutation- wrong nucleotides lead to incorrect aa's being brought & wrong protein! Missense=mistake
- C. Nonsense mutation- translation stops too soon (that's nonsense to end your job)
- D. Real world : cancer

DNA TO RNA TO PROTEIN

- DNA-ATA. CAC. GGT
- RNA UAU GUG CCA
- NOW, GET THE CHART OUT, RNA IS THE LANGUAGE OF THE CHART
- PROTEIN- TYROSINE, VALINE, PROLINE



VIDEO REVIEW

- Amoeba sisters DNA
- Hank Green: DNA Structure and replication
- <http://passel.unl.edu/pages/animation.php?a=Translation.swf>

[Mr. W's DNA rap](#) (Mr. W's DNA Rap)

