

DNA

- Master Molecule
 - Contains information
 - Transmits information to ribosomes
 - Replicates (for new cells)
 - Makes mistakes(mutations)
- Basic Structure
 - Nucleotide
 - Deoxyribose sugar
 - Phosphate
 - Nitrogen base
 - Adenine
 - Guanine
 - Thymine
 - cytosine
 - Chargaff's Rule
 - A-T
 - C-G
 - Rosalind Franklin
 - Found Helical pattern
 - Backbone on outside
 - antiparallel
 - Watson and Crick
 - Made model
 - DNA
 - Two antiparallel chains of nucleotides that spiral
 - C bonds with G, A bonds with T
 - Sugars and Phosphates make backbone
- [DNA Replication](#)
 - Helicase enzyme unzips Hydrogen bonds between nitrogen bases.
 - DNA Polymerase makes complementary pairings of each new strand
 - End product = Two identical copies of DNA
 - Unless... Mutations Mistakes – 1 in 10,000 base pairs
- DNA Repair
 - Group of +50 enzymes that
 - Recognize, Remove it, and Repair it
 - Mutations can be harmful
 - Cancer
 - Mutations can be beneficial
 - Creates variation in a species which may be good
- RNA
 - 3 types
 - Messenger RNA – mRNA – copy of DNA
 - Transfer RNA – tRNA – taxi for a.a.
 - Ribosomal RNA – rRNA - ribosomes
 - DNA vs. RNA
 - DNA - Double stranded RNA - Single stranded
 - DNA - Deoxyribose sugar RNA - Ribose sugar

- DNA - Bases A, T, C, G RNA - Bases A, U, C, G U = uracil
- DNA - Found mainly in nucleus RNA - Found in nucleus and cytoplasm

- Transcription

- RNA polymerase attaches
- Unzips DNA
- Matches complementary RNA nucleotides
- RNA rips off
- DNA recombines

- Operon

- Switch to turn on/off transcription
- Promoter – DNA site that promotes RNA polymerase to bind
- Repressor – molecule that binds on to DNA to block transcription
- Inducer – molecule that takes repressor away

- RNA Splicing

- Before mRNA exits the nucleus,
- Introns (inhibitors) are cut out
- Exons(expressed) are put back together
- Caps are put on each end

- Codons

- Three bases that code for an a.a.
- tRNAs with an a.a. match with codon at ribosome

- Translation

- Ribosome attaches to a mRNA
- tRNA that matches codon is brought in
- Ribosome binds a.a.
- Ribosome advances and kicks out the first tRNA