DNA BASICS

- DNA and RNA there are lots (we discussed at least 4 differences)
- ✓ DNA has one more OH (deoxy vs ribose)
- \checkmark 1 vs 2 strand, one type of DNA but at least 3 types RNA
- ✓ DNA is only in the nucleus but RNA is in cytoplasm
- ✓ DNA is complete instructions (with Introns)

• 3 basic types RNA

✓ mRNA, tRNA, rRNA - messenger, transfer, ribosomal

Codons

- \checkmark groups of three nucleotides, each is an amino acid each amino acid = protein
- \checkmark important beginning, code for start and stop
- transcription factors and RNA polymerase controlling rate of transcription
- ✓ 5+ types operator (on/off switch) activator (stimulator), GTFs (bind to promoters) enhancer, promoter (locate), both increase activity <u>and</u> repressor, silencer, inducer, mediators are helpers, reversible different parts of a committee
- ✓ histone tails are accessible cause reactions
- structure of tRNA and the *Wobble Hypothesis*
- the tRNA has three fold clover structure operates like a key better most leaf is the anti-codon and the portion at the top can shuffle it's base pairs so that it can a very other ie wobble
- CAMP or CAP proliferates when glucose is requered and mess that can penetrate the membrane)
- different cell same genome THORT ANSWER GENE EXPRESSION
- all cells have the same stuir they just are different in the way they express ANALOGIES INCLUDE: different way to play the piano, hale to ooks + recipes

• 6 stages expression

✓ TRANSCRIPTION, splicing, exporting, breakdown of proteins, protein quality control, protein switches

• 6 hallmarks of cancer

- ✓ self-sufficient growth
- ✓ evading apoptosis
- ✓ invasive to surrounding tissue and metastasis
- ✓ ignore signals, rapid proliferation
- ✓ sustainable angiogenesis
- Carcinoma in situ In situ: In place or cancer that has not spread to nearby tissue, also called non-invasive cancer
- ✓ cell to hyperplasia to mild dysplasia to IN SITU to invasion

• Terminology

- Stroma (blood vessels) Parenchyme (special cells of each organ) Mesenchyme (embryonic origin of neural crest) Carcinoma (malignant epithelial) Sarcoma (malignant of mesenchyme)
- STEM cells
- ✓ capable of dividing and renewing themselves over long periods