Nov19

Bio 3

How genes work.

1. DNA to RNA

- Because nucleus has DNA. Your book calls this step transcription. The RNA is a single strand- compliment of the DNA strand with 1 change! T to U

DNA TO RNA

* 1. Unzip the DNA
* 2. Take the complement
* 3. Replace all of the T’s with U’s
* Very important- do this after the complement
* So now we have an RNA molecule with DNA information

Ribosome

* looking for a start instruction
* so it isn’t making proteins from junk
* once it finds the start, amino acids coded for are connected

DNA > RNA > PROTEIN

DNA replication

* when does it happen? -Cell division before the cell goes to mitosis. During interface
* Where does it happen? -In the nucleus
* How does it happen?
  + 1. DNA molecule unzips
  + 2. Bases are read
  + 3. Complementary bases are paired on each of the 2 strands
  + 4. Both strands are proofread
  + 5. Mistakes cut out and corrected
  + 6. Process resumes

Mutations

* Bad reputation
* Tend to be disruptive
* Very, very rare
* Causes and effects of mutation
  + Alteration of the sequence of bases in DNA

Types of mutations

* point mutation, one base pair is changed, whereas in chromosomal aberrations, entire sections of a chromosome are altered
* insertions and deletions can be much more harmful than substitutions because they can alter the reading frame for the rest of the gene.

What causes mutations?

* 1. Mistakes in copying DNA. Nothing you can do about this
* 2. Chemical exposures. Prop 65 posters in California
* 3. Radiation

when are mutations important? You get 1000 a minute.

Most are not harmful

1. occur in the non coding

sequences of DNA

2. occur in individual somatic cell

A. dies or divides!

However: mutations in gametes!

Take home message

* mutations are alterations in a single base or changes in large segments of DNA that include several genes.
* They are rare and when they occur in a gene usually disrupt normal physiological functionin

Pedigree charts

* using your genealogy to figure out genetic probation
* a pedigree is a useful tool to document a trait of interest across multi generations of family