• Sex-linked (X-linked) Expression of red-green color-vision in

Femal	Female P	Male	Male
eG		G	pnenotype
			S
X _C X _C	Female,	X ^C Y	Male,
	normal		normal
	color		color
	vision		vision
XCXc	Female,	XcX	Male, color
	normal		blind
	color		
	vision		
XcXc	Female, color blind		

- There are more colorblind males than colorblind females because they only need 1 X^c to express colorblindness while females need 2.
- E.g. Hemophilia

MOLECULAR GENETICS

1. Chromosomes and DNA

- DNA contains the blueprint for the synthesis of all proteins
- proteins determine what char cess are expressed by the organism
- nitrogenous have determine the kinds of proteins our cells symmetize
- Chromatid each strand of a chromosome
 - made up of deoxyribonucleic acid (DNA) molecules tightly coiled around histones
- Nucleosome basic unit of a chromosome
- Chromosome made up of:
 - 1) histones basic proteins
 - 2) DNA nucleic acid
- Nucleic acids polynucleotides
 - 1) deoxyribose 5-C sugar
 - 2) phosphate group
 - 3) nitrogenous base
- Nitrogenous bases

Purine	Pyrimidine
Guanine	Cytosine
Adenine	Thymine

- 2. DNA and the Concept of a Gene
 - Gene portion of DNA molecule responsible for the transmission of a trait from parents to offspring
 - 3000 base pairs long on average
 - 30k-35k human genes
 - 46 chromosomes = 3.2 billion nitrogenous base pairs
- 3. DNA: The Genetic Material
 - store genetic information
 - express inherited traits
 - transmit genetic information
 - self-replication
 - stable to avoid mutations

4. The Central Dogma

DNA - replicated, copied to RNA to provide instructions in protein synthesis Proteins - express structural and functional characteristics

- building blocks of the body
- hemoglobin
- melanin 👝 🕻
- inde

functional enzymes

protein synthesis - basis of expression of hereditary characteristics in both structure and function

- 5. The Genetic Code
 - proteins linearly arranged amino acids
 - determined by codon of mRNA
 - mRNA linearly arranged nucleotides
 - tRNA has an attachment site for a particular type of amino acid
 - AUG (methionine) start
 - UAG stop
- 6. Mutation
 - mutation permanent, heritable change in a DNA
 - mutagens agents that cause mutation
 - 1) radiation
 - 2) chemicals
 - 3) extremes of temperatures
 - 4) microbial infections