

The basics concepts of DNA: Part II. Genetic Properties

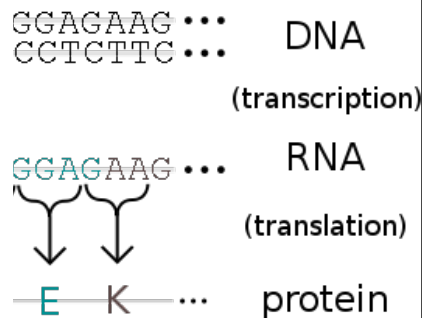
US275 Scientific Ethics
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The genetic message is coded in the nucleotide sequence.

- DNA
 - stored information
- RNA
 - temporary copy used for directions on making proteins
- protein
 - molecular work



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Diagram of the central dogma, DNA to RNA to protein, illustrating the genetic code.
Wikimedia Commons

Genes are specific sequences of DNA with a unique function.

- portion of a DNA molecule that codes for an RNA
 - may code for a protein

+GO - **THE - BIG - CAT - ATE - THE - RED - DOG** - END

3

Alleles are copies of a gene with different “message”

- first allele

+GO - **THE - BIG - CAT - ATE - THE - RED - DOG** - END

- second allele

+GO - **THE - FAT - CAT - ATE - THE - RED - DOG** - END

- third allele

+GO - **THE - BIG - RAT - ATE - THE - RED - DOG** - END

4

Mutations cause changes in the DNA message.

- Original allele

+GO - **THE - BIG - CAT - ATE - THE - RED - DOG** - END

- Point Mutation - change of a single nucleotide
 - may cause change in message or be silent.

+GO - **THE - BIG - RAT - ATE - THE - RED - DOG** - END

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Mutations cause changes in the DNA message.

- Original allele

+GO - **THE - BIG - CAT - ATE - THE - RED - DOG** - END

- Nonsense mutation - message prematurely ends

+GO - **THE - FAT - CAT - ATE - END**

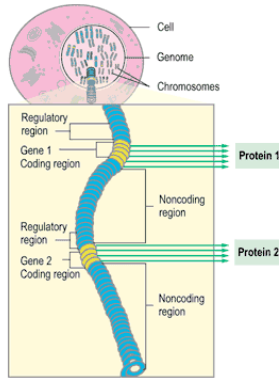
- Frame shift mutation

+GO - **TH* - EBI - GRA - TAT - ETH - ERE - DDO - GEN - D**

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In addition to the messages of the genes, there are non-coding regions of DNA.

- regulatory sequences
 - switches
 - promoters/enhancers
- repeated sequences
- structural

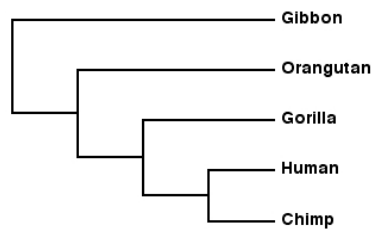


Human Genome and Coding Regions
National Cancer Institute

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Genes are similar in different species.

- more closely related individuals have more similarities in their DNA



http://biology.unm.edu/ccouncil/Biology_203/Summaries/Phylogeny.htm

TO BE CONTINUED

- in Basic Concepts of DNA:
Part III Heredity

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Any Questions?

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<http://www.vippitbullkennels.com/images/animated-question-mark.gif>