gene

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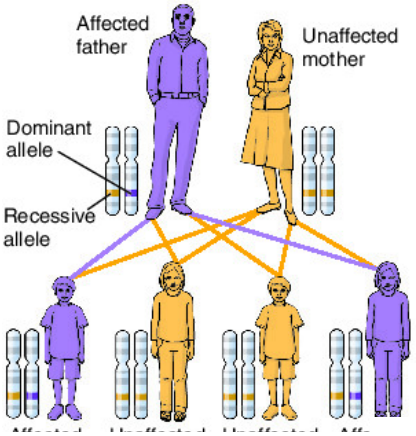
[Ger. *Gen*, ult. fr. Gr. *genos*, kind, race, descent]
The basic unit of heredity, made of DNA, the code for a specific protein. Each gene occupies a certain location on a chromosome. Genes are self-replicating sequences of DNA nucleotides, subject to mutations (random structural changes). Hereditary traits are controlled by alleles (pairs of genes in the same position on a pair of chromosomes). These alleles may be either *dominant* or *recessive*. When both pairs of an allele are either dominant or recessive, the individual is said to be *homozygous* for the traits coded by the gene. If the alleles differ (one dominant and one recessive), the individual is *heterozygous*.
SEE: chromosome; SEE: DNA; SEE: RNA

autosomal dominant gene

A dominant gene found on any chromosome other than the X or Y chromosome.



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-gen, -gene
BRCA1 gene
BRCA2 gene
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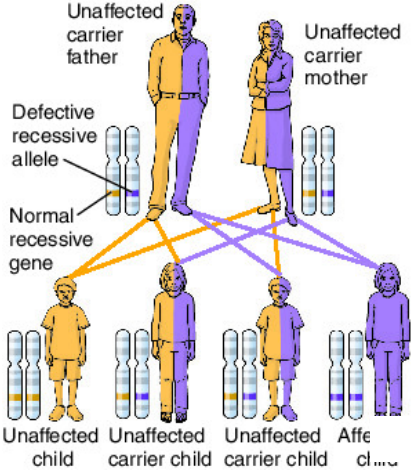
A recessive gene found on any chromosome other than the X or Y chromosome.



AUTOSOMAL RECESSIVE INHERITANCE

BRCA1 gene

A gene that codes for a protein that impacts how damaged DNA in cells is repaired. Mutations in this gene have been linked to an increased risk of several cancers, including breast, biliary, pancreatic, and stomach cancers.

PATIENT CARE
BRCA1 Gene Mutation: Patient care focuses on determining the family history of the patient and referral to a genetic counselor with expertise in this mutation when appropriate.

BRCA2 gene

A gene that codes for a protein that impacts how damaged DNA in cells is repaired. Mutations in this gene have been linked to an increased risk for several cancers, including breast, biliary, esophageal, ovarian, pancreatic, and prostate cancers.

complementary genes

Nonallelic, independently located genes, neither of which will be expressed in the absence of the other.

cystic fibrosis transmembrane conductance regulator gene

The gene that codes for a protein that regulates the movement of ions, esp. chloride, across cell membranes.

dominant gene

SEE: dominant

histocompatibility gene

One of the genes composing the HLA complex that determines the histocompatibility antigenic markers on all nucleated cells. These genes create the antigens by which the immune system recognizes *self* and determines the *nonself* nature of pathogens and other foreign antigens. These antigens are crucial determinants of the success or failure of organ transplantation.
SEE: histocompatibility locus antigen

holandric gene

A gene located in the nonhomologous portion of the Y chromosome.

homeobox gene

Any transcription factor that regulates the growth, differentiation, replication, and movement of cells in the body. These genes influence both normal and abnormal embryological development and the development or suppression of malignant tumors.

housekeeping gene

A gene expressed in nearly every cell and every tissue of an organism, i.e., one that encodes a protein fundamental to cellular activity throughout the organism.

immune response gene

Any of the many that control the ability of leukocytes to respond to specific antigens.
SEE: antigen; SEE: B cell; SEE: HLA complex; SEE: T cell

inhibiting gene

A gene that prevents the expression of another gene.

interleukin-28B gene

A genetic variant that increases the likelihood of having a favorable response to antiviral treatment for chronic hepatitis C, genotype 1 infection (traditionally the most resistant hepatitis C genotype).

lethal gene

A gene that creates a condition incompatible with life and usually results in the death of the fetus.

modifying gene

A gene that influences or alters the expression of other genes.

mutant gene

An altered gene that permanently functions differently than it did before its alteration.

operator gene

A gene that controls the expression of other genes.
SEE: operon

gene p53

A gene important in controlling the cell cycle, DNA repair and synthesis, and programmed cell death (apoptosis). Mutations of p53 have occurred in almost half of all types of cancer, arising from a variety of tissues. Mutant types may promote cancer. The normal, wild-type gene produces a protein important in tumor suppression.

pleiotropic gene

A gene that has multiple effects.

posttranscriptional gene silencing

SEE: RNA interference.

presenilin gene

Any of the rare traits responsible for early-onset Alzheimer disease.

RB gene

Tumor suppressor gene encoding for the retinoblastoma (RB) protein, mutations of which are associated with various human tumors, including retinoblastoma, osteosarcoma, some leukemias, and some adenocarcinomas.
SEE: tumor suppressor gene ; SEE: retinoblastoma

recessive gene

A trait that is not expressed unless it is present in the genes received from both parents. A recessive trait may be apparent in the phenotype only if both alleles are recessive.
SYN: *SEE: recessive characteristic*

regulator gene

A gene that can control some specific activity of another gene.

S gene

The coronavirus gene that codes for the spike protein on the outer surface of the virus. The spike protein attaches the virus to cells.

sex-linked gene

SEE: Sex-linked characteristic.

structural gene

A gene that determines the structure of polypeptide chains by controlling the sequence of amino acids.

susceptibility gene

A gene that increases a person's likelihood of contracting a heritable illness.

tumor suppressor gene

A gene that suppresses the growth of malignant cells.
SEE: cancer

variant gene

A mutation.

X-linked gene

A gene on the X chromosome for which there is no corresponding gene on the Y chromosome. X-linked genes, e.g., the gene for red-green color blindness, are expressed, but in males even these genes are recessive because there is no corresponding gene to dominate them.