

MOUSEBOOK GLOSSARY

Generation definitions:

N = Indicates backcross number.

F = Filial or inbreeding (sister x brother) generations.

F0 = Indicates the generation number of chimaeras produced by ES cell injection.

G = Used ordinarily to denote generation number in mutagenesis schemes (G0 is the mutagenized generation; G1 is the first generation after mutagenesis).

Genetic nomenclature:

Gene: The basic unit of heredity; a portion of DNA that (usually) codes for a protein product.

Gene symbol: Gene names are written in italics with the first letter capitalised

e.g. *Apc*, *Ucp1* and *Nespas*

Allele: One of the variant forms of a gene, differing from other forms in its nucleotide sequence.

Allele symbol: Allele names are also written in italics and are superscripted (the first letter indicates how the mutation is inherited):

e.g. *Apc*^{Min} Inherited in dominant fashion (begins with capital letter)

Ucp1^{m1H} Inherited in recessive fashion

Nomenclature evolution: Moonwalker – an ENU induced mutation given an informative name which helps describe the phenotype

Initially the causative gene and allele are designated as *Mwk*

Once the causative gene is identified (*Trpc3*) the original gene name is retained as an allele symbol e.g. *Trpc3*^{Mwk}

Genotypes:

+/+ indicates wild-type

gene<mut>/+ denotes heterozygote

+/gene<mut> denotes heterozygous recessive mutation

gene<mut>/gene<mut> denotes homozygote

gene<mut>/0 denotes hemizygote (transgenic)

Mutation types:

Targeted:	Mutations/deletions/disruptions that occur by homologous recombination at specifically targeted loci.
Transgenic:	DNA that is stably introduced into the germline of a mouse by random insertion into the genome.
Chemically/Radiation induced:	Mutation induced by chemical (e.g. ENU) or radiation treatment.
Spontaneous:	A mutation that has occurred spontaneously.
Gene-trap:	Type of DNA construct containing a reporter gene sequence downstream of a splice acceptor site that is capable of integrating into random chromosomal locations in mouse.

Chromosomal rearrangements:

Robertsonian translocation	Type of translocation in which the breakpoints in the two chromosomes occur at or near the centromere, followed by centric fusion such that the long arms form a metacentric chromosome with a single centromere. Any small fragments generated in the exchange are often lost.
Reciprocal translocation	Type of chromosome rearrangement in which two non homologous chromosomes are broken and repaired in such a way that the resulting chromosomes each contain material from the other chromosome.
Inversion	A length of DNA which has been broken in two positions and repaired in such a way that the medial segment is now present in reverse order.
Insertion	One or more nucleotides has been inserted into a DNA sequence
Deletion	The loss of one or more nucleotides from a DNA segment has occurred.
Duplication	An additional copy of a DNA segment is present in the genome.

Other: Other types of mutation not included in the categories above.

Strain types:

Inbred strain:	Animals resulting from at least 20 generations of brother x sister breeding (or youngest parent x offspring) are considered to be inbred.
Sub-strain:	Genetically diverged inbred strains due to: <ol style="list-style-type: none">1) Genetic differences detected between branches2) Separation of strains for 20+ generations
Coisogenic strain:	Inbred strains that differ at only a single locus, through a mutation occurring in that strain.
Congenic strain:	Produced by repeated backcrosses to an inbred background strain with selection for a particular marker from the donor strain (minimum of 10 backcross

generations are required). Note partial congenic strains (5-9 backcrosses) and congenic strains have the same nomenclature. A backcross number (N) should be supplied.

Consonic strain:

Produced by repeated backcrossing of a whole chromosome onto an inbred strain (minimum of 10 backcross generations are required).

Segregating inbred strain:

Inbred strains in which an allele or mutation is maintained in a heterozygous state.

Recombinant inbred

Produced by intercrossing of multiple inbred lines followed by repeated brother x sister mating for a minimum 20 generations.