

Gene reference chart

Creatures has 16 separate gene types divided amongst four separate groups. These groups are: Brain Genes, Biochemistry Genes, Creature Genes and Organ Genes. All gene types share some basic header information:

The screenshot shows a 'Gene Header' window with the following controls: a dropdown menu set to 'Embryo', checkboxes for 'Dup' (unchecked), 'Mut' (checked), and 'Cut' (unchecked), a 'Degree' input field with the value '128', and radio buttons for sex selection with 'M' selected. There is also a checkbox for 'Do not express (carry)' which is unchecked.

- **Sex.** Norn D-DNA carries both male and female genes. Some genes can be active for one particular sex only (i.e., the reproductive system), and others are for both (such as the digestive system, immune system, etc.)
- **Mutability.** Most genes can be mutated, deleted or duplicated during the breeding process. Some critical genes may not be manipulated in some ways, specified in the mutability box. Those that can be mutated can be mutated to varying degrees.
- **Switch-on time.** This dictates which of the seven life stages switches on this gene. To be on at birth, it should be set to “Embryo”.
- **Do not express.** A gene can be ‘silent’, or carried. This means that it does not contribute to the creature’s phenotype at all, but is potentially available for future generations through mutation of the ‘do not express’ option.

The gene types and their descriptions are shown in the table below. Type and sub-type numbers are shown in parentheses after the name:

<u>Gene Type</u>	<u>Gene Sub-Type</u>	<u>Gene Description</u>
Brain Genes (0)	Lobe (0)	Defines a brain lobe. (10 in generation 1 creature) The Brain Lobe is the most complex gene type. Click here for further information.
	Organ (1)	The brain organ. (1 in generation 1 creature) Only one of these is allowed per creature. This organ is similar to the body organs, but contains the brain lobes. When this organ’s life force reaches zero the creature dies.
Bio-chemistry Genes (1)	Receptor (0)	Chemical receptor. (183 in generation 1 creature) This binds to a named location and “fires” that location according to the concentration of the chemical it monitors. Receptors are used throughout a creature’s systems.
	Emitter (1)	Chemical emitter. (63 in generation 1 creature) Binds to a named location and emits an amount of a specified chemical—the concentration depending on the value of the locus to which it is attached.
	Reaction (2)	Chemical reaction. (117 in generation 1 creature) Specifies a chemical reaction and the amounts involved. Chemical reactions are in the form $IA + JB \Rightarrow KC + LD$, where A, B, C and D are chemical numbers and I, J, K and L are the concentrations involved. All reactions are allowed except nothing \Rightarrow something. The reaction rate can also be specified, the approximate half-life of which is shown in the status bar.

Creature Genes (2)	Half Lives (3)	<p>Chemical Half-lives. (1 in generation 1 creature)</p> <p>There is normally only one of these genes, and it specifies the approximate half-life (the time in which it takes for a chemical to decay to half its initial concentration) for each chemical.</p>
	Initial Concentration (4)	<p>Chemical initial concentration. (22 in generation 1 creature)</p> <p>This gene allows a fixed dose of a chemical to be present when the gene switches on. It is these genes that allow us to give newborn Norns energy (glucose and glycogen) and natural immunity (a low dose of antibodies).</p>
	Stimulus (0)	<p>Stimulus. (39 in generation 1 creature)</p> <p>Emit variable amounts of up to four chemicals when a given stimulus occurs. This allows a creature to feel pain when it bumps into a wall, for example.</p>
	Genus (1)	<p>Species. (1 in generation 1 creature)</p> <p>The only compulsory gene (although many others are required to make a viable life-form). This gene specifies the species of creature and the mother and father's genetic moniker.</p>
	Appearance (2)	<p>Graphic appearance ID. (5 in generation 1 creature)</p> <p>Describes which of the possible graphic sets are used to make up any given area of the body. Initially, five are specified: Head, arms, body, legs and tail.</p>
	Pose (3)	<p>Creature Pose. (242 in generation 1 creature)</p> <p>Describes the graphic location information for a Norn to get into any given "pose". There are four walking poses, for example, which are cycled in an animation specified with a "gait" gene (see below).</p>
	Gait (4)	<p>Specify pose sequence. (15 in generation 1 creature)</p> <p>Specifies the poses required to move through a given sequence. For example, there is a gait for normal walking. Different poses switch on at different times to replace these with "older looking" walking sequences as the creature ages.</p>
	<u>Instinct</u> (5)	<p>Creature instinct. (44 in generation 1 creature)</p> <p>Instincts encourage creatures to perform a certain action at a certain time. An example instinct is the one that helps creatures to avoid overcrowding. Instincts are "taught" to creatures whilst they sleep. Click here for a detailed explanation.</p>
	Pigment (6)	<p>Pigmentation. (12 in generation 1 creature)</p> <p>Refers to a colour and the concentration of that colour. Colours can be red, green or blue.</p>
	Pigment bleed (7)	<p>Pigmentation modification. (12 in generation 1 creature)</p> <p>Allows the colours of a newborn Norn to differ slightly from its parents, while still being based on inherited characteristics.</p>
Organ Genes (3)	Organ (0)	<p>Organ. (20 in generation 1 creature)</p> <p>Organs house the chemistry genes – reactions, receptors and emitters. They regulate the rate at which these chemical functions run.</p>

TOTALS: 16 separate
types

787 genes total in generation 1 creature

Female specific genes: 30

Male specific genes: 12

In most cases, existing Norns use the sex specific genes for reproductive systems.