

Genetics and the Genetics Kit

The information required to build real living systems is held in a molecule called DNA (*d*eoxyribonucleic *a*cid) – a long string of individual instructions, named genes. One of these strings of genes is called a chromosome, and a complete set of chromosomes (humans have 46, Norns have one) is called a genome. Creatures has a similar, albeit simpler, system that is comparable to DNA which we call Digital DNA (D-DNA). In nature, each cell carries a complete set of genes to build an entire organism. In Norns however only one D-DNA strand is kept for each creature. The genes in Creatures code for organism structure, with genes describing the chemical reactions, physical structure, brain layout, instincts and so on. The behaviour of your Norns is not specified by genes, instead, just as in real life, behaviour *emerges* from the structure. In the normal course of events, Norns breed, and a new creature is created from the D-DNA of the two parents with some random mutations to make it unique.

Intended Audience and Further Learning/Reading

The Genetics Kit is a complex piece of software, and requires patience and an investment of time in order to achieve the best results. This help file does not attempt to teach you the biological principles of genetics, but we do recommend some excellent books and papers should you wish to learn more:

- *The Cartoon Guide to Genetics (Revised)*, by Larry Gonick and Mark Wheelis. Harperperennial Library, 1991, ISBN 0-0627-3099-1.
- *Creatures – Strategies and Secrets*, by Toby Simpson. Sybex Inc., 1997. ISBN 0-7821-2202-7. See <http://www.sybex.com>.
- *Creatures 2 – Strategies and Secrets*, by Toby Simpson. Sybex Inc., 1998. ISBN 0-7821-2440-2. See <http://www.sybex.com>.
- The white paper “*Creatures: Artificial Life Autonomous Software Agents for Home Entertainment.*” by S. Grand, D. Cliff, A. Malhotra. This was presented at Agents 97, and is available from the CyberLife web site at <http://www.cyberlife.co.uk>. It contains a more detailed breakdown of how the brain model in Creatures works.