

Genes

A Very Short Introduction

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Questions for Thought and Discussion

- Why did the theory of natural selection not make sense before the discovery of genes?
- Before 1944, why did most scientists think that genes could not be made of DNA?
- To what were Watson and Crick referring when they wrote: "It has not escaped our notice that the specific pairing we have postulated immediately suggests a possible copying mechanism for the genetic material."
- What might you expect to find in a gene in addition to the DNA sequence encoding protein?
- How much did it cost to sequence the first human genome, and how much does it cost now?
- How many genes are there in the human genome?
- How do genes control the formation of an animal during early embryonic development?
- What is a mutation?
- How come some male patients with cystic fibrosis have severe respiratory and digestive problems while others suffer only from infertility?
- Why is haemophilia much more common in men than women?
- If a person carries a cancer-predisposing mutation, why doesn't every cell in their body become cancerous?
- Would you convict an individual of a crime based on DNA evidence alone?
- Why does mitochondrial DNA enable the tracing of the female line of descent, and the Y-chromosome of the male line of descent?
- Did the mating of Y-chromosome Adam and mitochondrial Eve give rise to all of humanity?
- Do human races exist?
- How does heritability differ from the genetic determination of a character?
- Who are the tallest people in the world, and why?
- Is the difference of IQ between racial groups due to genetic differences?
- Why was J. B. S. Haldane willing to "lay down his life for two brothers or eight cousins"?
- How does genetic data enable us to deduce our own relationship to mice, bananas or bacteria?
- Is there such a thing as a "selfish gene"?
- Why is sex a problem for evolutionary biologists?
- Do "modern humans have stone age genes"?

Other books by the Author

- Slack, J.M.W, *From Egg to Embryo : Regional specification in early development*, (Cambridge University Press 1991)
- Slack, J.M.W, *Egg and Ego. An almost true story of life in the biology lab*, (Springer NY 1999)
- Slack, J.M.W, *Stem Cells. A Very Short Introduction* (Oxford University Press 2012)
- Slack, J.M.W, *Essential Developmental Biology*, (Wiley-Blackwell 2013)

Further reading

- J.D. Watson, *The Double Helix* (Weidenfeld and Nicholson 1968)
- R. Dawkins, *The Selfish Gene* (Oxford University Press 2006)
- S. Rose, R.C. Lewontin, and L.J. Kamin, *Not in our Genes: Biology, Ideology and Human Nature* (Penguin 1984)
- A.M. LeROI, *Mutants: On the Form, Varieties and Errors of the Human Body* (Harper Collins 2003)