

Inheritance Patterns**READ RETRIEVE CONNECT & USE****Next Generation Sunshine State Standard**

SC.912.L.16.2: Discuss observed inheritance patterns caused by various modes of inheritance, including dominant, recessive, codominant, sex-linked, polygenic, and multiple alleles.

Common Core Scientific Literacy Standard

Compare and contrast findings presented in a text to those from other sources (including their own experiments), noting when the findings support or contradict previous explanations or accounts.

No Single Gene For Eye Color, Researchers Prove

ScienceDaily (Feb. 22, 2007) — A study by researchers from The University of Queensland's Institute for Molecular Bioscience (IMB) and the Queensland Institute of Medical Research is the first to prove conclusively that there is no single gene for eye colour.

Instead, it found that several genes determine the colour of an individual's eyes, although some have more influence than others. "Each individual has two versions of a gene, inheriting one from each parent, and these versions can be the same as each other or different," Dr Rick Sturm, the IMB researcher who led the study, said.

"It used to be thought that eye colour was what we call a simple Mendelian recessive trait - in other words, brown eye colour was dominant over blue, so a person with two brown versions of the gene or a brown and a blue would have brown eyes, and only two blues with no brown could produce blue eyes.

"But the model of eye colour inheritance using a single gene is insufficient to explain the range of eye colours that appear in humans. We believe instead that there are two major genes - one that controls for brown or blue, and one that controls for green or hazel - and others that modify this trait.

"So contrary to what used to be thought, it is possible for two blue-eyed parents to have a brown-eyed child, although this is not common."

Dr Sturm likens the system to a light bulb. "The mechanism that determines whether an eye is brown or blue is like switching on a light, whereas an eye becoming green or hazel is more like someone unscrewing the light bulb and putting in a different one."

The study was carried out to clarify the role of the OCA2 gene in the inheritance of eye colour and other pigimentary traits associated with skin cancer risk in white populations, and examined nearly 4000 adolescent twins, their siblings and their parents over five years.

The findings are published in this month's edition of the American Journal of Human Genetics, and were supported with grants from Australia's National Health and Medical Research Council and the United States of America's National Cancer Institute.

University of Queensland (2007, February 22). No Single Gene For Eye Color, Researchers Prove. *ScienceDaily*. Retrieved November 6, 2011, from <http://www.sciencedaily.com/releases/2007/02/070722180729.htm>

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NAME: _____ DATE: _____ PER: _____

1. Read the article, "No single gene for eye colour, researchers prove." After reading the article (5-10 minutes), write down everything you can remember in the box below. The process of recalling the information is important, so do not return to the article at this point.

2. Return to the article if necessary and answer the following questions. You may also need to draw from your knowledge of biology and you should feel free to use your text or other resource.

a) What is meant by a dominant/recessive inheritance pattern?

b) What is polygenic inheritance?

c) Based on this article, would you say that eye colour is a dominant/recessive or polygenic pattern of inheritance? Provide support for your claim.

d) How does this article support or not support your previous knowledge about how eye colour is inherited?
