

# Classroom Activities

## 10 Big Questions - How did life evolve on Earth?\*

### DNA and Epigenetics: explaining complex life

- Epigenetics is a field of biology that looks at how proteins, DNA chemical changes, and other molecules, within a cell control DNA.
- Your DNA wraps around histone proteins, which help to control whether proteins should be made from a piece of DNA or not.
- Epigenetics helps explain the physical differences seen between mice and humans, and even identical twins.

#### Extension Activity:

What have you eaten today that can affect your epigenetics?

Food	Substance in food	Function in epigenetics	What it can cause
Broccoli	Sulphoraphane	Causes Histone changes	Gene activation
Garlic	Diallylsulphide	Causes Histone changes	Gene activation
Sesame Seeds	Methionine	Chemically changes DNA	Gene silencing
Strawberries	Folic Acid	Chemically changes DNA	Gene silencing
Leafy vegetables	Folic Acid & Methionine	Chemically changes DNA	Gene silencing
Beef	Vitamin B12	Chemically changes DNA	Gene silencing
Chicken	Choline	Chemically changes DNA	Gene silencing
Egg Yolk	Choline	Chemically changes DNA	Gene silencing
Fish	Methionine	Chemically changes DNA	Gene silencing

This classroom activity was suggested by Megan Lynn Wright – PhD student from Discipline of Genetics, School of Molecular & Biomedical Sciences, University of Adelaide.

\* To find out more about the 10 Big Questions, go to:

<http://www.sciences.adelaide.edu.au/learning-teaching/10bq/>

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