Mouse Models of Human Disease

**Target Audience**
A2 Biology students who wish to develop their knowledge of how scientists investigate human disease conditions using ‘models’ of disease in the humble mouse.

**Key Concepts**
Model organisms, genes, genetics, disease.

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<th>The Activity</th>
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<td>Humans share many of their functional genes with other organisms, in fact 99% of their genes with the mouse.</td>
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<td>Many human genetic diseases can be modelled in the mouse, why is this useful?</td>
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<td>How are these mouse models that show single genetic changes, created?</td>
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<td>What is the benefit of using a model to study a disease? as opposed to investigating what is going wrong in a human with the disease.</td>
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**Background Knowledge**
You should have a developing knowledge of basic genetics, genes and their function.

**Resources**
You will be using two websites for this activity. MRC Harwell: An international centre for mouse genetics [http://www.har.mrc.ac.uk/](http://www.har.mrc.ac.uk/) to find the basic information you will need to carry out this activity. The Jackson Laboratory is a leading research facility in mouse genetics and this website also contains information on the available mice with human disease conditions [http://www.jax.org/](http://www.jax.org/).

**Outcomes**
Discuss with your teacher your findings from your research during this activity. It would be useful for you to write a newspaper style article on the ‘pros’ of using mouse models of human disease instead of investigating the disease in a human with the disease.

**Helpful hints**
The following prompts may be helpful:-
What do genes actually do?
How can small changes in genes make big differences in the health status of humans, leading to disease?
What is a mouse model?
Why are mouse models good for studying human disease? Hint-Think about gestation period, genetic manipulation, mutations, cost, number, ageing.

**Going further**
Can we make a mouse model for every genetic human disease? Can we make mouse models for complex disorders e.g. Schizophrenia, manic depression?
Start here:-