Topical Science

Links to curriculum learning outcomes:

Topical Science – Third (SCN 3-20a):

- *I have collaborated with others to find and present information on how scientists in Scotland have been and are involved in innovative research and development leading to practical applications.*

Topical Science – Fourth (SCN 4-20b):

- *Having selected a scientific theme of topical interest, I can critically analyse the issues, and use relevant information to develop an informed argument.*

Teachers' Notes

Scientists in Scotland

These teachers' notes are designed to provide you with all the information you need for the slide show. They go into greater detail than the slides but they are designed to help you answer any questions pupils may have. There are also notes under each slide to help you explain them.

The learning outcomes of the slide show are for pupils to understand:

- There are lots of people around Scotland working in lots of different areas of science
- Broadly what a postgraduate student at the University of Edinburgh, such as Aimee, does in the lab
- The results of research, such as the Rett Syndrome work discussed, affect peoples' lives

- There are lots of people around Scotland working in lots of different areas in science

The slides introduce the two key themes of the PowerPoint: scientists and Scotland. Children may have a stereotypical idea of what they think scientists look like, the photos of six different scientists (slide 2) demonstrates that lots of different people work in science.

All over Scotland work in all areas of science is being carried out. The map of Scotland with lots of different places circled (slide 4) is aimed to convey this.

- What Aimee, a postgraduate student at the University of Edinburgh, does in her lab

In a short video clip Aimee, a postgraduate student from the University of Edinburgh, describes what she does in her lab (slide 7). Aimee works in a molecular biology lab at Edinburgh University run by Prof. Adrian Bird. This lab is part of the Institute of Cell Biology at the university. The lab is interested in the structure and function of the mammalian genome, with particular focus on the role of DNA methylation. Methylation refers to the attachment of a methyl group ($-CH_3$) to DNA and is associated with switching off genes. The lab has identified various proteins responsible for mediating this repression, which they are currently working on. Aimee gives a simplified description of the work carried out in her lab.

- The results of research, such as the Rett Syndrome work discussed, affect peoples' lives

One of the proteins Aimee's lab has identified, $MeCP_2$, is associated with Rett Syndrome. Rett Syndrome is a severe inherited neurological disorder affecting young girls. The lab is trying to piece together the link between this protein and Rett Syndrome.

Here are two links to Adrian Bird's lab web pages:

http://homepages.ed.ac.uk/dmac/Bird_Lab/birdlab.html

http://www.wcb.ed.ac.uk/bird

Pupils are then instructed to go and find out something about a scientist in Scotland and the work they do (slide 8). The instructions can be changed according to your requirements.

If you do ask pupils to go away and research, tell the pupils it is a chance for them to find out about a scientist working in an area of science that interests them. Once they have done the research get them to describe their findings to the class.

When you search 'scientists in Scotland' in Google, a wikipedia site comes up at the top of the list, which lists famous scientists from Scotland. This site focuses on scientists from the past rather than those still living and working. For more up to date scientists work encourage pupils to look at university websites, although they may find the description of scientists work difficult to understand.

The University of Edinburgh has a 'Biology for the Public' website, which would be a good place for them to start. There are links to an archive of research stories that have made it into the press and a history of some of the famous scientists (living and dead) and their discoveries. There are also podcasts and other resources.

Here is a link to 'Biology for the Public' website:

http://www.biology.ed.ac.uk/public/