Knowing the DNA sequence (genome) of plants allows us to do many amazing things that have the potential to impact on everyday life for example crops and other plants that are bred to be particularly suited to their environments, so that chemical and other inputs can be reduced, and environmental damage is minimised.

DNA technology can help:
- In faster and more precise conventional breeding
- In genetic modification, either within species as in conventional breeding, or for introducing novel genes not possible through conventional breeding.

Thinking further…..

You are a journalist and you are writing an article for a Sunday supplement about wheat and bread.

You have interviewed a scientist who has used conventional, selective breeding to breed a new wheat plant with a gene that gives the wheat resistance to an insect pest.

You have then interviewed a second scientist who has used genetic modification technology to transfer the same gene to a wheat plant so that it has the same resistance to the insect pest.

You want to write a fair unbiased article for your readers. Think about the questions that your readers may ask!

In this case the benefits are the same from both conventional breeding and GM. One question in the GM debate is whether we should be assessing the traits, in this case insect resistance, or the technology, i.e. how it has been made.

This is just one type of example. Are there some things that we should not allow.

Judge and Jury – can you debate these two cases?

**Case 1:** A gene has been identified that produces a protein in animals that has valuable medicinal properties for humans. Should we allow this gene to be inserted into plants using GM technology so that the plants can produce this protein in “bio-factories” or should we use animals to produce the protein?. Who is responsible for overseeing GM procedures? What do you think?

You may like to discuss the insulin case history as well when you are discussing this issue.

*Within the last 20 years, advances in molecular biology and gene technology have enabled scientists to make “human insulins” which are less likely to cause allergic reactions. Such insulins can be made by either converting the pig insulin into the human form, or by using genetic modification to insert a synthetic copy of the human gene for insulin into bacteria or yeast cells. In the latter case the yeast and bacteria cells are clones and used as “mini-factories” to produce large amounts of human insulin.*

**Case 2:** Genomics may be a useful way to identify useful new compounds in plants and microbes (bio-prospecting). Can you think of any issues that may arise? What would happen if a compound was found in a plant that grew naturally wild in a different country. Who should be involved in any decisions?