

<b>Topic</b>	Genetic modification	<b>Level</b>	A Level
<b>Outcomes</b>	<ol style="list-style-type: none"> <li>1. To describe the steps needed to produce a genetically modified plant from mRNA</li> <li>2. To develop an understanding of the costs and time involved in scientific research</li> </ol>		



## Transgenic Plants: a grant application

### Background

You are a researcher in a biotechnology company based in Oxford. You are the leader of a laboratory with one technician, a PhD student and a Post Doc.

You have just been sent a sample of bacterial messenger RNA extracted from a soil bacterium that secretes an enzyme that is specifically toxic to insects. You hold a lab meeting with your members to discuss how you could get potato plants to express (make) this insect toxin.

At present you are running out of funding (money) and so need to write a research proposal to outline how you are going to carry out the research and convince someone to fund your research. This will be sent to the Biotechnology and Biological Sciences Research Council (BBSRC) who will then decide if they will give you a grant.

*You must write a mini grant application. In this grant application you must explain how you are going to do each of the following steps below and what equipment you would need. Give an approximate cost and time span of carrying out this research.*

1. Make a copy of the toxin gene from a sample of mRNA that was sent to you.
2. Put the gene into a plant.
3. Get the plant to express (produce) the toxin protein.
4. Produce thousands of copies of your transgenic plant. .
5. Demonstrate that your potato plants are safe – both to the environment and the consumer

**Progress:** further resources on genes and inheritance are available here: <http://thescienceteacher.co.uk/genes-and-inheritance/>