YOUR SCHOOL/DEBATING SOCIETY IS GOING TO RESEARCH

**Gene Editing Animals for Human Food**

and speak **for and against** animals having their genes edited in order to provide food for humans

**This brief has been produced as part of the RSPCA’s Generation Kind programme for secondary schools and sixth form and is a starting point for the research you will need to do, into the subject, in order to ensure a successful debate. The points for or against a subject may not be RSPCA policy and represent some of the wider thinking around the public debate.**

* Gene editing involves introducing deliberate changes into the DNA of an animal (e.g. by deleting or inserting new genes) in order to give the animal a specific characteristic
* Due to recent developments in science and technology, changing the DNA of an animal can now be done faster, more easily and cheaply, with more precision, and on a greater number of species than ever before
* Producing an animal with edited genes involves carrying out procedures (such as injections and surgery) that can cause animals pain, suffering, distress or lasting harm. Large numbers of animals are used to obtain the necessary sperm, eggs and embryos, and to carry and give birth to the desired animal

**FOR**

Here are some points **in favour of gene** editing animals **-** what other points can you find?

* The DNA of animals has been manipulated by humans for centuries through ‘selective breeding’ - gene editing is just a more precise way of doing this
* Gene editing animals could help address problems such as food sustainability - by creating animals that grow faster or need less food, and climate change by creating animals than can cope with a warming environment and/or produce less pollution
* Gene editing could help improve the welfare of animals on farms e.g. creating cattle that don’t need to have their horns removed, and pigs that don’t need to be castrated.

**AGAINST**

Here are some reasons why editing animals’ genes **should not be done** - can you find any more?

* Gene editing is not just another form of breeding and its effects are not yet fully understood. It is inappropriate to manipulate animals in this way
* Food sustainability and climate change should be addressed using alternative approaches to change human behaviour, e.g. solving food waste, eating less meat, making greater conservation efforts, planting more trees
* Selective breeding of animals for human benefit has already pushed animals’ bodies to/past their limits. Animals shouldn’t be altered to better cope with the conditions humans impose on them - farm conditions should be improved to better meet their needs instead.

**Information you may want to find out**

* Which farmed animals are currently being used in gene editing research?
* Are genetically modified plants and animals available as food in the UK or Europe?
* What problems are scientists trying to solve using gene editing, and how?
* Is gene editing as safe and precise as some scientists say?
* Do the public want to eat products derived from genetically edited animals?

**Potential sources of information**

[Genome editing in brief: what, why and how?](http://nuffieldbioethics.org/report/genome-editing-ethical-review/genome-editing)

[UK public 'cautiously optimistic' about genetic technologies](https://royalsociety.org/news/2018/03/genetic-technologies/)

[GM salmon approved for food in USA](https://www.bbc.co.uk/news/science-environment-34869556)

[Stopping male killing: Pre-hatch sex determination in chicken eggs](https://www.csiro.au/en/Research/Farming-food/Innovation-and-technology-for-the-future/Gene-technology/Chicken-sex-selection)   
[Unexpected Antibiotic Resistance Genes in ‘Gene-Edited’ Dehorned Cattle](https://www.independentsciencenews.org/news/fda-finds-unexpected-antibiotic-resistance-genes-in-gene-edited-dehorned-cattle/)

[No-puberty pigs](https://allianceforscience.cornell.edu/blog/2019/07/activists-slow-embrace-gene-editing-benefits-animal-welfare/)

[Boys Only Cows](http://www.genethique.org/en/boys-only-crispr-research-project-produce-only-male-cattle-69027.html#.XVQOlflKjcs)

[EnviroPig](https://www.nationalgeographic.com/news/2010/3/100330-bacon-pigs-enviropig-dead-zones/)

[CRISPR Zoo](https://www.nature.com/news/welcome-to-the-crispr-zoo-1.19537)

[CRISPR gene-editing creates wave of exotic ‘model’ organisms](https://www.nature.com/articles/d41586-019-01300-9)