

WHAT YOU NEED TO KNOW ABOUT ANIMAL RESEARCH TODAY



Barbara Davies
Communications Director, Understanding Animal Research

When the FGF20 gene was 'knocked out' of mice, the animals appeared perfectly healthy but had absolutely no ability to hear. This single gene may provide important clues to the causes of some types of deafness. In humans, the gene has already been associated with inherited deafness in otherwise healthy families.

This research was reported recently in an online scientific journal¹ and picked up by the national media.

Three-quarters of animal research taking place in the UK today uses mice, more than half of them genetically modified. A precise and targeted mutation can lead to better understanding of a human condition, in this case deafness, and ultimately to improved treatments.

Research involving animals is essential for scientific progress. It helps us to understand the body in health and disease, and to develop and test medical treatments. Medicines for serious conditions such as diabetes and asthma mean that patients can now live with them, where once prognosis was poor. Remarkable progress in stem cell technology and monoclonal antibody treatments (eg for cancers and arthritis) has depended on mouse research. Animals may also be used to test chemicals for safety, and in wildlife research.

Over the last decade, the total numbers of animals used in UK research have risen,

mainly because of the increased use of GM mice². The number of normal (ie not genetically modified) animals has declined. Following decoding of both human and mouse genomes, GM mice can provide valuable insights into human biology and medicine.

Numbers of animals used in research are rising in virtually all modern economies across the world. The UK is particularly successful in biomedical research, and attracts considerable investment in this area, even in difficult economic times. Although the number of animal procedures has increased by one million (over one third) since the late 1990s, UK expenditure on biomedical research rose considerably more; it has doubled in real terms over the same period. This reflects the commitment within bioscience to developing and using non-animal replacement and reduction techniques and the use of alternative resources such as human cell lines.

Several international initiatives ensure that maximum knowledge is gained from these animals, whilst minimising animal use by avoiding duplication. Examples include the European Mouse Mutant Archive, providing open access to mutant mouse lines, and the International Mouse Phenotyping Consortium (IMPC), which aims to explain and share the functions of genes in mice. Such projects

mean that all scientists will have comparable models, procedures and data.

Animal research which may cause pain, suffering, distress or lasting harm is regulated in the UK under the Animals (Scientific Procedures) Act 1986³. This Act requires every research project involving a vertebrate animal to be thoroughly assessed by the Home Office before a licence is granted. The legislation strikes a balance between the legitimate needs of science and medical progress, and genuine concerns about animal welfare.

The application process for a licence is very detailed, involving considerable scrutiny; each application is subject to a 'cost-benefit assessment' which weighs up the potential harms to the animals against the intended benefits of the research. Proposed research projects are also normally peer-reviewed.

In October 2010 a new European Directive 2010/63/EU concerning the use of animals in research was published⁴. Member states are now in a period of transposition; all must incorporate the Directive into national legislation by January 2013.

The incorporation of new European regulations into UK law will define how animal research is regulated in the UK for years to come. Because animal welfare is vitally important in science and medicine, the UK bioscience

sector wants to be sure that the new legislation has high animal welfare standards at its core⁵, at the same time as enabling real patient benefits.

The bioscience sector wishes to see a continuing emphasis on reduction, refinement and replacement of animals in research, while encouraging high quality science. Controls should also be harmonised across Europe so that the UK does not work under significantly different rules from those of other member states.

Understanding Animal Research is currently co-ordinating a programme of visits for MPs to animal research facilities so that you can find out how and why animal research is conducted in the UK and what the new Directive means for UK bioscience. To arrange a visit please contact info@uar.org.uk.

References

1. Huh S-H, Jones J, Warchol ME, Ormitz DM (2012) 'Differentiation of the Lateral Compartment of the Cochlea Requires a Temporally Restricted FGF20 Signal'. *PLoS Biology* 10(1): <http://www.plosbiology.org/article/info:doi/10.1371/journal.pbio.1001231>
2. http://www.understandinganimalresearch.org.uk/about_research/number_s_of_animals
3. <http://www.homeoffice.gov.uk/science-research/animal-research/> Accessed 4 January 2012
4. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2010:276:0033:0079:En:PDF> Accessed 4 January 2012
5. UK Bioscience Sector Coalition MP briefing (2011) *UK science and medicines: the welfare of animals in research*.

