



Home Office

# Annual Statistics of Scientific Procedures on Living Animals Great Britain 2013

Speaking of Research



# Annual Statistics of Scientific Procedures on Living Animals

GREAT BRITAIN  
2013

Presented to Parliament pursuant to section 21(7) of  
the Animals (Scientific Procedures) Act 1986

*Ordered by the House of Commons  
to be printed 10 July 2014*



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**Note:** The **Supplementary Tables** and **Time Series Tables** and the **User Guide to Home Office Statistics of Scientific Procedures on Living Animals** can be found online at:  
<https://www.gov.uk/government/publications/statistics-of-scientific-procedures-on-living-animals-great-britain-2013>.

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# Introductory Notes

The statistics in this publication relate to scientific procedures performed using living animals subject to the provisions of the Animals (Scientific Procedures) Act 1986, during the year 2013. The purpose of the publication is to meet the requirements of the Animals (Scientific Procedures) Act 1986 section 21(7) “The Secretary of State shall in each year publish and lay before Parliament such information as he considers appropriate with respect to the use of protected animals in the previous year for experimental or other scientific purposes”. The system of control under the 1986 Act is explained in detail in Appendix A.

## Confidentiality and data quality

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Detailed information on the work of individual project licence holders is not readily identifiable in this publication. Where a further breakdown of the ‘other’ species categories is not given in the commentary this is to safeguard the confidentiality of the establishment and the licence holder. The data are subject to revision in accordance with the Home Office’s revisions policy. For more information, please see the User Guide to Home Office Statistics of Scientific Procedures on Living Animals, hereafter referred to as the User Guide.

## Symbols used in tables

..	not available
-	nil
N/A	not applicable
r	revised

## Acknowledgements

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This publication and the accompanying web tables have been prepared by staff in the Home Office Statistics unit of the Home Office Science Group. They are grateful for the contribution of licensees who provided the returns on which this report is based. They are also grateful for the support of colleagues in the Policing Data Collection Section and the Animals in Science Regulation Unit for their assistance with the collection, processing and quality assurance processes involved in preparing this report; and colleagues in the Communications Development Section who assisted in preparing the report for publication.

## Uses of the statistics

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The statistics are used to inform the development of policies on animal use in scientific work, and provide information for the scientific community, animal welfare organisations and the general public.

## Further information available

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This publication is available online at: <https://www.gov.uk/government/publications/statistics-of-scientific-procedures-on-living-animals-great-britain-2013>. The website also includes:

- the User Guide to Home Office Statistics of Scientific Procedures on Living Animals (a useful online reference guide that includes explanatory notes as well as key classifications for the production and presentation of the statistics);
- the Supplementary Tables and the Time Series Tables.

The dates of forthcoming publications are pre-announced and listed on the UK National Statistics Publication Hub: <http://www.statistics.gov.uk/hub/index.html>.

## **Home Office Responsible Statistician**

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David Blunt, Chief Statistician and Head of Profession for Statistics.

Information on how Home Office Statistics outputs are published independently as part of the Code of Practice for Official Statistics is available at: <https://www.gov.uk/government/organisations/home-office/about/statistics>.

### **Enquiries**

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Home Office Statistics, 1<sup>st</sup> Floor, Peel Building, 2 Marsham Street, London, SW1P 4DF.

The United Kingdom Statistics Authority has designated these statistics as National Statistics, in accordance with the Statistics and Registration Service Act 2007 and signifying compliance with the Code of Practice for Official Statistics.

Designation can be broadly interpreted to mean that the statistics:

- meet identified user needs;
- are well explained and readily accessible;
- are produced according to sound methods; and
- are managed impartially and objectively in the public interest.

Once statistics have been designated as National Statistics it is a statutory requirement that the Code of Practice shall continue to be observed.

This statistical release is a National Statistics output produced to the highest professional standards and free from political interference. It has been produced by statisticians working in Home Office Statistics in accordance with the Home Office's Statement of Compliance with the Code of Practice for Official Statistics, which covers our policy on revisions and other matters. The governance arrangements in the Home Office for statistics were strengthened on 1 April 2008 to place the statistical teams under the direct line management of a Chief Statistician, who reports to the National Statistician with respect to all professional statistical matters.

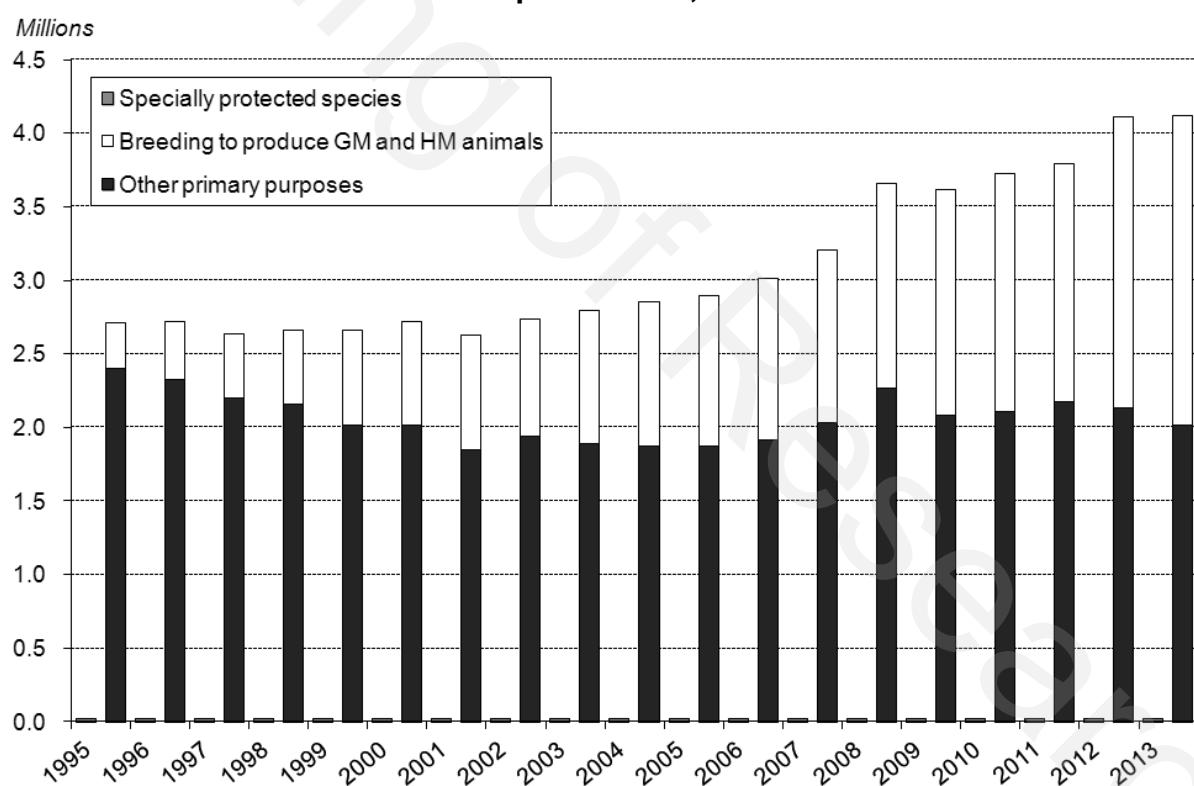
**Definition** – for the compilation of these statistics the number of procedures reported generally corresponds to the number of animals. A procedure, as regulated by law, is an experiment (or other scientific procedure) that may have the effect of causing an animal pain, suffering, distress or lasting harm. For the purpose of these statistics, the birth of an animal with a genetic modification or harmful mutation, that may cause the animal pain, suffering, distress or lasting harm, is counted as a procedure. Please see the User Guide for the legal definition. Where an animal that has recovered fully from a completed procedure is used again for a further procedure it is counted as a separate procedure.

**Presentation** – the figures given refer to the numbers of procedures that were started in 2013 (rather than the numbers of animals), compared with 2012, unless indicated otherwise. Some figures have been rounded depending on the size of the figures in a particular section of commentary.

## Summary

1. In 2013, 4.12 million scientific procedures were started in Great Britain, an increase of 0.3 per cent (+11,600 procedures) compared with 2012. Of these procedures, 2.02 million (49%) were performed for purposes other than to breed genetically modified (GM) animals<sup>1</sup> and animals with a harmful genetic mutation (HM)<sup>2</sup>, a decrease of 5 per cent (-111,600 procedures) compared with 2012. The remaining 2.10 million procedures (51%) were undertaken to breed GM and HM animals, an increase of 6 per cent (+123,200 procedures).

**Number of procedures, 1995–2013**



<sup>1</sup> Genetically modified animals are animals with genetic characteristics that have been altered using genetic engineering. For a more detailed description, please see the User Guide.

<sup>2</sup> Harmful mutants are animals possessing one or more genes that have undergone mutation either naturally or deliberately induced. For a more detailed description, please see the User Guide.

2. Between 1995 and 2013, the number of procedures increased by 52 per cent (+1.41 million). Of these procedures, the number undertaken for purposes other than to breed GM and HM animals decreased by 16 per cent (-379,500 procedures). In contrast, breeding to produce GM and HM animals rose by 573 per cent (+1.79 million procedures). The proportion of procedures accounted for by GM and HM animal breeding rose from 12 per cent in 1995 to 51 per cent in 2013. Procedures involving dogs, non-human primates, cats and horses (i.e. specially protected species) decreased by 23 per cent (-5,000) over the same period to 16,800 and accounted for 0.4 per cent of all procedures in 2013.

3. Mice, fish and rats were the most commonly used species in 2013, with 3.08 million procedures (75%) undertaken on mice (+18,294 compared with the previous year), 507,373 (12%) on fish (+6,543) and 266,265 (6%) on rats (-12,121). For the remaining species, there were increases for guinea pigs (+13,602); sheep (+2,919); rabbits (+1,233); pigs (+350); gerbils (+279); non-human primates (+216) and reptiles (+183). There were falls for the following species: birds (-13,259); amphibians (-3,338); cattle (-1,167); goats (-969) and hamsters (-354).

4. The numbers of procedures for safety testing (toxicology<sup>3</sup>) decreased by 0.5 per cent (-2,000) to 375,000. A similar proportion to 2012 were undertaken to meet at least one legislative/regulatory requirement (92% compared with 94%).

5. The number of non-toxicology procedures increased by 0.4 per cent (+13,600) to 3.75 million and included rises, largely driven by an increase in the breeding of GM/HM animals, for the following fields of research: genetics<sup>4</sup> (+58,200); physiology<sup>5</sup> (+41,300); pharmaceutical research and development (+35,900); psychology (+8,400); therapeutics<sup>6</sup> (+6,400) and alcohol (+2,000). There were falls in the fields of nutrition (-76,700); parasitology<sup>7</sup> (-16,200); biochemistry<sup>8</sup> (-14,600); pharmacology<sup>9</sup> (-12,200); ecology<sup>10</sup> (-12,100) and animal science (-3,000).

(Source: Tables 1, 6, 9, 10; and online Time Series Tables 20, 26)

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<sup>3</sup> For the purposes of these statistics, toxicology means the safety evaluation of the effects of substances on man, animals or the environment, mainly medical treatments.

<sup>4</sup> The study of genes, heredity, and variation in living organisms.

<sup>5</sup> The study of the functions of the individual structures and systems within an organism.

<sup>6</sup> The study of the remedial treatment of disease.

<sup>7</sup> The study of parasites.

<sup>8</sup> The study of chemical processes within, and relating to, living organisms.

<sup>9</sup> The study of drugs.

<sup>10</sup> The study of interactions among organisms and their environment.

**Definition** – for the compilation of these statistics the number of procedures reported generally corresponds to the number of animals. A procedure, as regulated by law, is an experiment (or other scientific procedure) that may have the effect of causing an animal pain, suffering, distress or lasting harm. For the purpose of these statistics, the birth of an animal with a genetic modification or harmful mutation, that may cause the animal pain, suffering, distress or lasting harm, is counted as a procedure. Please see the User Guide for the legal definition. Where an animal that has recovered fully from a completed procedure is used again for a further procedure it is counted as a separate procedure.

**Presentation** – the figures given refer to the numbers of procedures that were started in 2013 (rather than the numbers of animals), compared with 2012, unless indicated otherwise. Some figures have been rounded depending on the size of the figures in a particular section of commentary. For given sections, all figures are presented in an unrounded form where some figures are less than 1,000 and all figures are presented to the nearest 100 where all figures are in their thousands. All figures in millions are presented as millions to two decimal places (for example, 4.12 million). This practice is taken in order to simplify the explanation/presentation; therefore the figures shown will not be identical to the figures in the tables. However, percentage changes given are calculated using the unrounded data available in the tables.

## Commentary

### Procedures started in 2013

(Tables 1, 1a; and online Time Series Tables 20, 26)

There were 4.12 million scientific procedures started in 2013, an increase of 11,600 (+0.3%) compared with 2012. Of these procedures, 2.02 million (49%) were performed for purposes other than to breed genetically modified (GM) animals<sup>11</sup> and animals with a harmful genetic mutation (HM)<sup>12</sup>, a decrease of 5 per cent (-111,600 procedures) compared with 2012. The remaining 2.1 million procedures (51%) were undertaken to breed GM and HM animals, an increase of 6 per cent (+123,200 procedures). There were 4.02 million animals used for the first time in procedures started in 2013, a small decrease of 15,600 (-0.4%).

Figure 1 shows that the number of experiments increased considerably between 1945 and 1971, rising from 1.18 million to 5.61 million (+4.43 million or +377%), and from that period on to 1986 the number decreased to 3.11 million (-2.50 million or -45%). The implementation of the Animals (Scientific Procedures) Act 1986 changed the methodology of the collection from experiments to procedures<sup>13</sup> and in 1987 data were collected based on both measures, the combined figure being 3.63 million experiments/procedures.

From 1988 onwards data for procedures alone were collected and in the following years the number decreased to 2.62 million in 2001 (-882,600 or -25%), mainly due to a reduction in the use of rats, mice, all other rodents,<sup>14</sup> rabbits and birds (although there was an increase in the number of procedures performed on fish). Since then, the number of procedures has risen to 4.12 million in 2013 (+1.50 million or +57%), primarily due to an increase in breeding to produce GM or HM animals (+1.33 million or +171%), with mice mainly accounting for the rise.

<sup>11</sup> Genetically modified animals are animals with genetic characteristics that have been altered using genetic engineering. For a more detailed description, please see the User Guide.

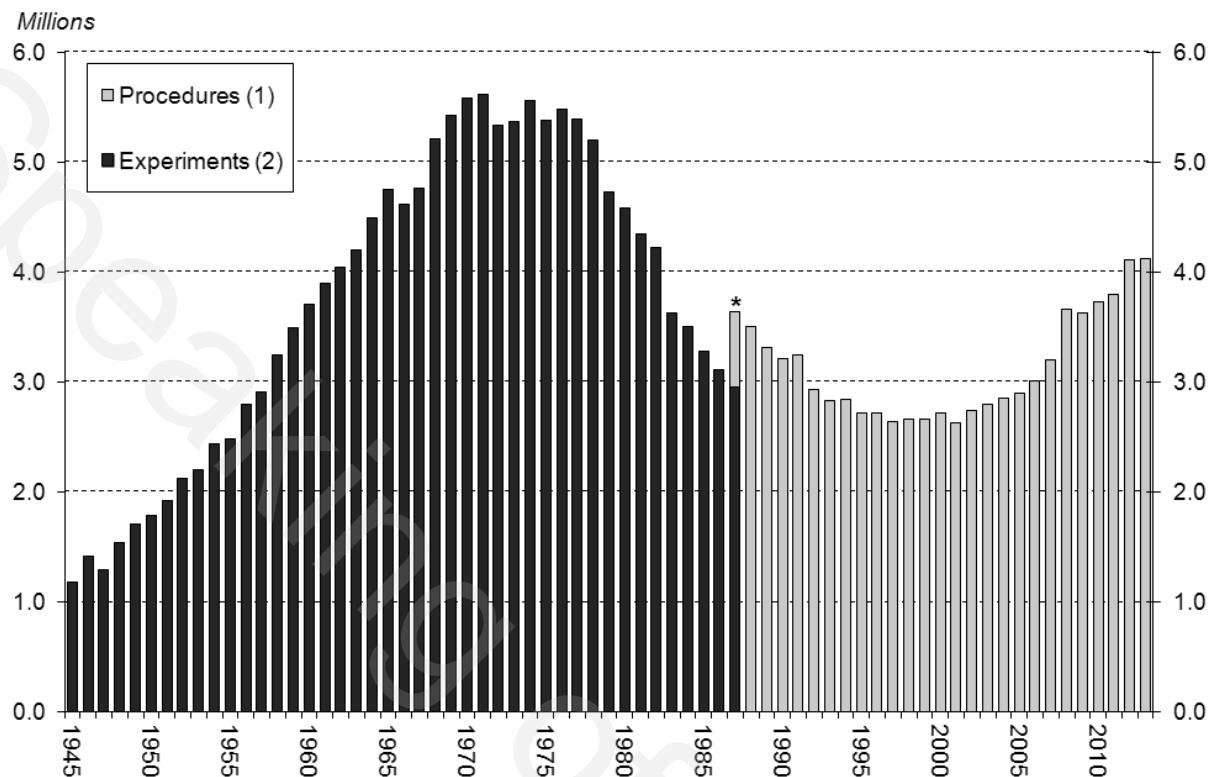
<sup>12</sup> Harmful mutants are animals possessing one or more genes that have undergone mutation either naturally or deliberately induced. For a more detailed description, please see the User Guide.

<sup>13</sup> The Cruelty to Animals Act 1876 covered all animals that were used in experiments, i.e. a procedure of unknown outcome. The Animals (Scientific Procedures) Act 1986 has a broader definition as it includes all scientific procedures that may cause pain, suffering, distress or lasting harm. Therefore, the change in methodology accounted for the increase in figures from 1987 onwards.

<sup>14</sup> Guinea pigs, hamsters, gerbils and other rodent species.

The overall level of scientific procedures is determined by a number of factors, including the economic climate and global trends in scientific endeavour. In recent years, while many types of research have declined or even ended, the advent of modern scientific techniques has opened up new research areas, with genetically modified animals, mainly mice, often being required to support these areas.

**Figure 1: Experiments or procedures commenced each year, 1945–2013**



(1) Scientific Procedures under the 1986 Act.

(2) Experiments under the 1876 Act.

\* The 1987 total includes experiments under the 1876 Act as well as procedures under the 1986 Act.

## Primary purpose

(Tables 1 and 1a; and online Times Series Table 26)

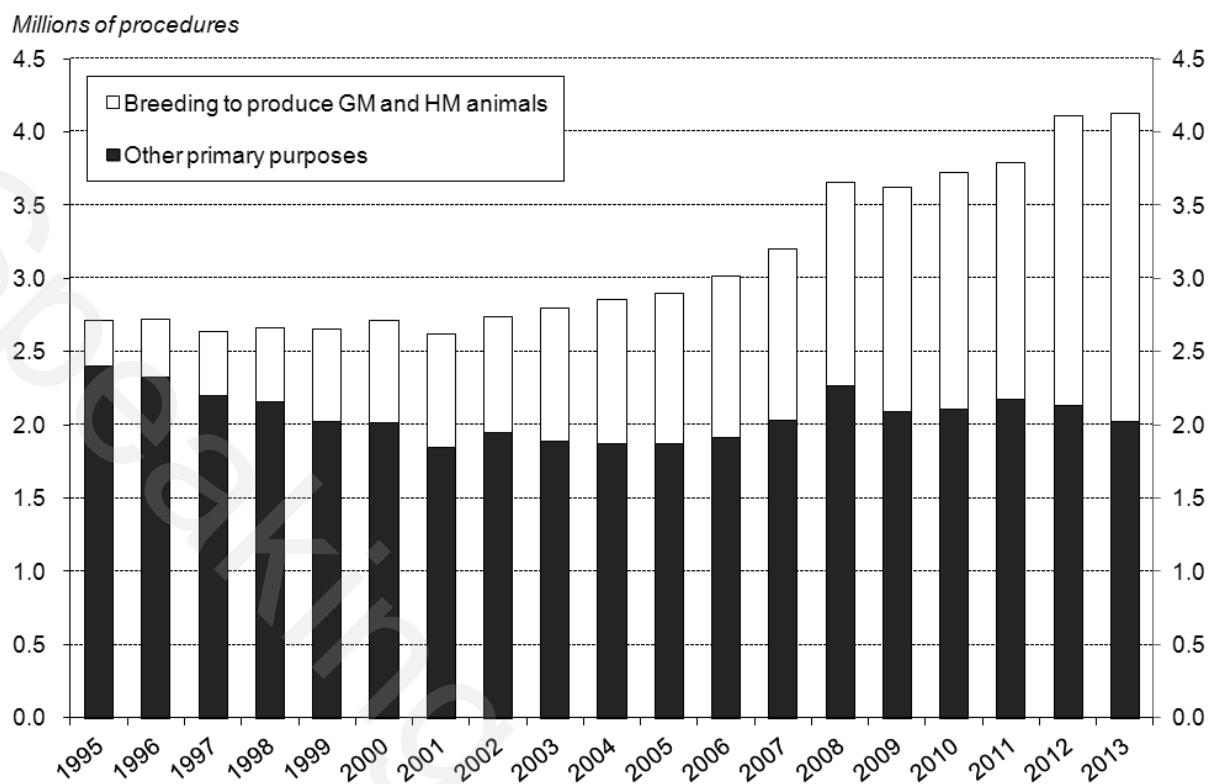
Figure 2 below compares breeding to produce GM and HM animals with other primary purposes. It shows that breeding to produce GM or HM animals increased from 312,700 in 1995 to 2.10 million in 2013 (+1.79 million or 573%). The proportion of procedures accounted for by GM and HM animal breeding rose from 12 per cent in 1995 to 51 per cent in 2013.

The number of procedures undertaken for other primary purposes generally declined between 1995 and 2005, decreasing from 2.40 million to 1.87 million (-528,000 or -22%). The figure then rose to 2.27 million in 2008 and, overall, fell to 2.02 million in 2013.

The most common primary purposes throughout the period, other than breeding to produce GM or HM animals, were fundamental biological research and applied studies<sup>15</sup> in human medicine or dentistry.

<sup>15</sup> Consists of research into the development of and quality control of drugs or devices. See User Guide for more information.

**Figure 2: Comparison of breeding to produce genetically modified animals/ animals with a harmful genetic mutation with other primary purposes, 1995-2013**



#### Increases

There were increases in the numbers of procedures between 2012 and 2013 for the following primary purposes:

- breeding of GM or HM animals (+123,200 or +6%);
- applied studies in human medicine or dentistry (+37,300 or +8%).

#### Decreases

There were decreases in the numbers of procedures between 2012 and 2013 for the following primary purposes:

- fundamental biological research (-139,100 or -11%);
- applied studies in veterinary medicine (-10,300 or -6%).

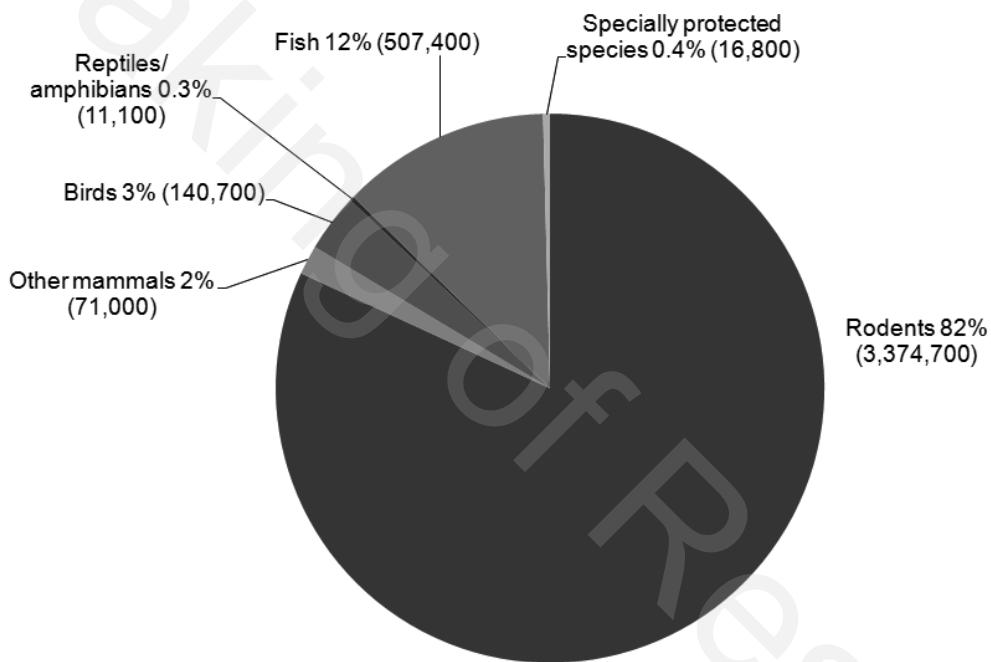
## Species used

(Tables 1, 1a; and online Time Series Table 20)

Figure 3 below shows that:

- rodents<sup>16</sup> were the most commonly used species, accounting for 82 per cent of all procedures;
- fish<sup>17</sup> (12%) and birds<sup>18</sup> (3%) were the next most frequently used species, with zebra fish comprising 65 per cent of all procedures involving fish and domestic fowl comprising 92 per cent of all procedures involving birds;
- other mammals<sup>19</sup> and reptiles/amphibians<sup>20</sup> accounted for 2 per cent and 0.3 per cent of all procedures respectively;
- dogs<sup>21</sup>, non-human primates<sup>22</sup>, cats and horses<sup>23</sup> (i.e. specially protected species) were used in 0.4 per cent of all procedures, with a combined total of 16,800 procedures.

**Figure 3: Procedures by species of animal, 2013**



<sup>16</sup> Mice, rats, guinea pigs, hamsters, gerbils and other rodent species. These species are grouped together for the purposes of the pie chart but data are collected and published on them separately.

<sup>17</sup> Zebra fish and other fish species. These species are grouped together for the purposes of the pie chart but data are collected and published on them separately.

<sup>18</sup> Domestic fowl (*Gallus domesticus*), turkeys, quails and other bird species. These species are grouped together for the purposes of the pie chart but data are collected and published on them separately.

<sup>19</sup> Rabbits, ferrets, other carnivores, pigs, goats, sheep, cattle, deer, camelids and other mammal species. These species are grouped together for the purposes of the pie chart but data are collected and published on them separately.

<sup>20</sup> Any reptile species, common frog (*Rana temporaria*), African clawed frog (*Xenopus laevis*), Western clawed frog (*Xenopus tropicalis*), and other amphibian species. These species are grouped together for the purposes of the pie chart but data are collected and published on them separately.

<sup>21</sup> Beagles and other dog species.

<sup>22</sup> Marmosets and tamarins, cynomolgus monkeys (*Macaca fascicularis*) and rhesus monkeys (*Macaca mulatta*).

<sup>23</sup> Includes other equids.

## Use of mice, rats, and fish

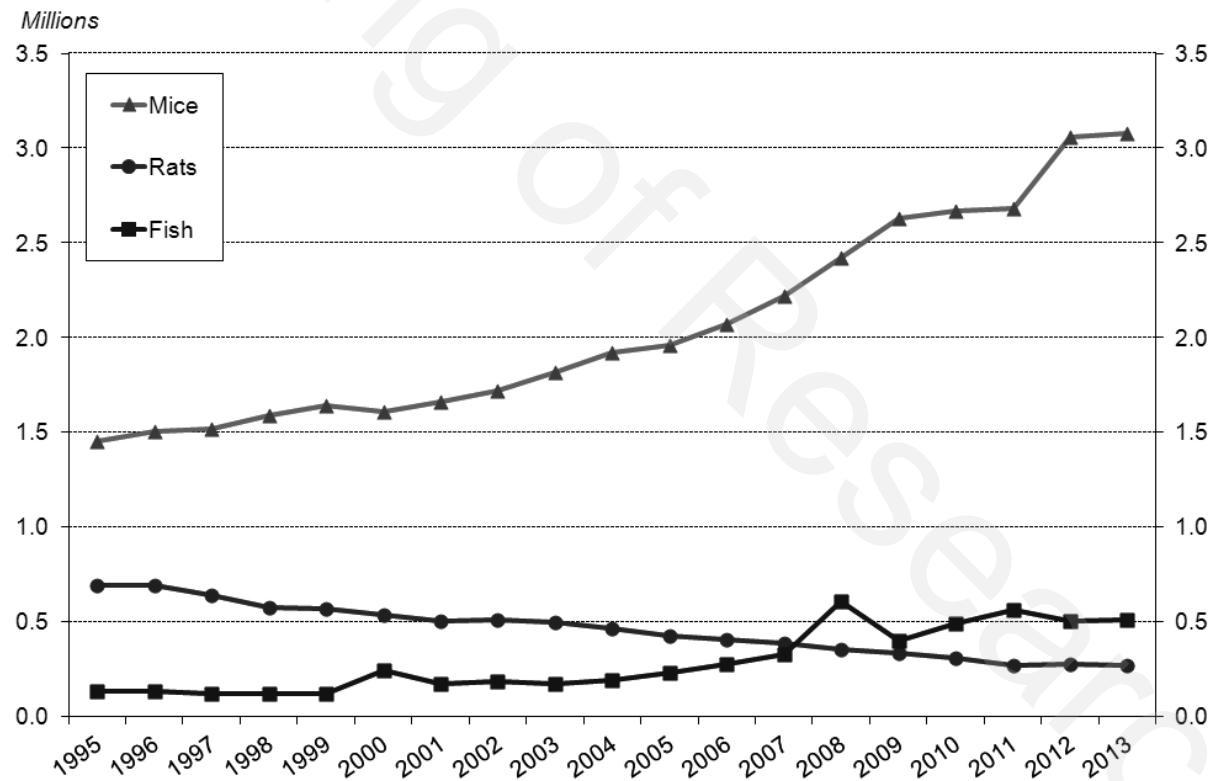
Figure 4 below details the numbers of procedures on the most common species used (mice, rats and fish). The number of procedures using mice, the most frequently used species of the three throughout the series, rose from 1.45 million in 1995 to 2.63 million in 2009 (+81% or +1.17 million). The figure remained relatively stable for a couple of years then rose to 3.08 million in 2013. There has been a decline in the use of rats, falling from 694,400 in 1995 to 266,300 in 2013 (-62% or -428,100). The overall trend for fish has seen their numbers gradually grow from 131,100 to 507,400 over the same period (+287% or 376,300).

In total, the number of procedures involving mice, rats and fish increased from 2.28 million in 1995 to 3.85 million in 2013 (+69% or +1.57 million), with the breeding of GM/HM animals driving the rise. The proportion of total procedures accounted for by mice, rats and fish has steadily increased from 84 per cent in 1995 to 93 per cent in 2013.

Comparing the changes between 2012 and 2013 the number of procedures involving:

- mice rose by 18,300 (+1%);
- rats fell by -12,100 (-4%);
- fish increased by 6,500 (+1%).

**Figure 4: Procedures using mice, rats and fish, 1995–2013**



### Increases

Compared with 2012, there were higher numbers of procedures using some species in 2013, as follows:

- guinea pigs (+13,602 or +107%);
- sheep (+2,919 or +7%);
- rabbits (+1,233 or +9%);
- pigs (+350 or +10%);
- gerbils (+279 or +82%);
- non-human primates (+216 or +7%);
- reptiles (+183 or +36%).

### Decreases

Compared with 2012, there were lower numbers of procedures using some species in 2013, as follows:

- birds (-13,259 or -9%);
- amphibians (-3,338 or -24%);
- cattle (-1,167 or -21%);
- goats (-969 or -58%);
- hamsters (-354 or -16%).

### Primate use

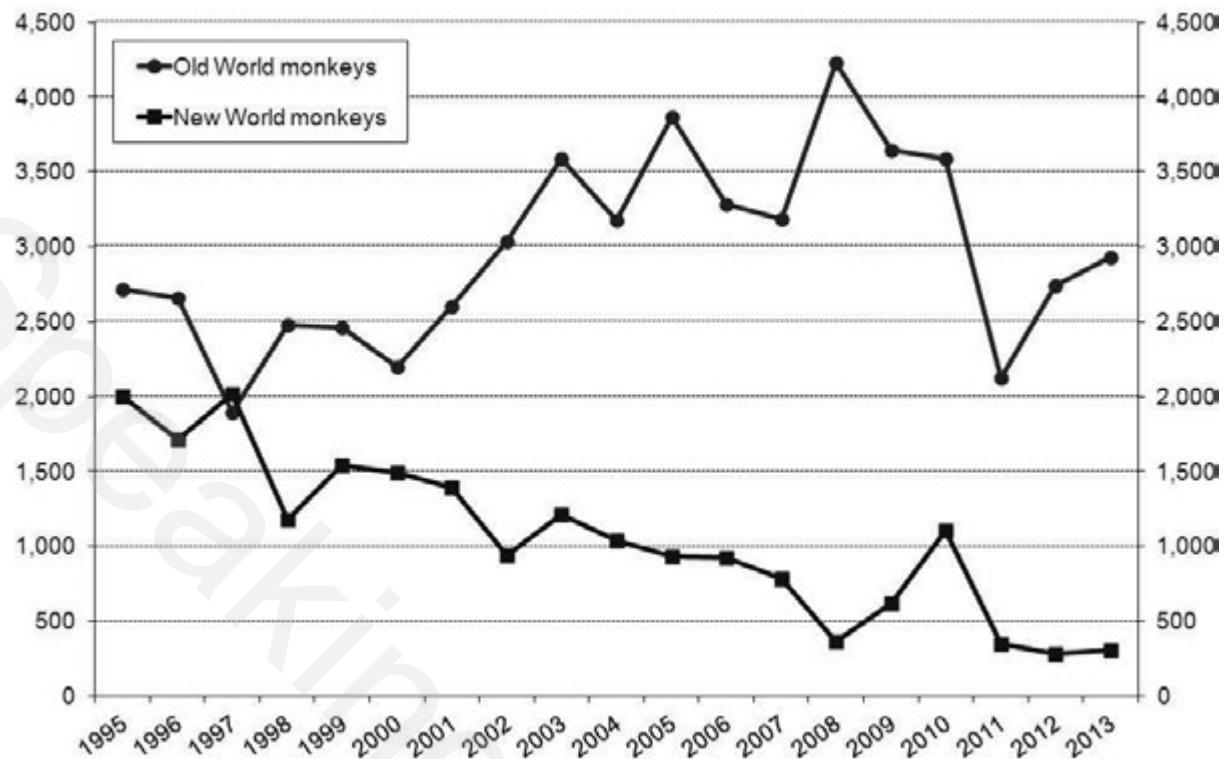
Figure 5 below shows the change in the numbers of procedures using Old World<sup>24</sup> and New World<sup>25</sup> monkeys from 1995 to 2013. The use of the former was more common than that of the latter throughout the series, apart from in 1997. From that year until 2008 the overall trend was that the number of procedures on Old World monkeys increased (+56% or +1,510), as they have been required for more regulatory testing to meet legal requirements, whilst for New World monkeys (specifically marmosets) the number of procedures decreased (-82% or -1,633), as changing patterns of research have led to a decline in their use. Between 2008 and 2011 there was a fall in the use of Old World monkeys but the numbers have since increased again to 2,928 in 2013; however, the figure was still lower than in the majority of years in the previous decade. There was a rise in the use of New World monkeys between 2008 and 2010, decreasing overall from then on to 308 in 2013.

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<sup>24</sup> For 2013, includes cynomolgus monkeys (*macaca fascicularis*) and rhesus monkeys (*macaca mulatta*).

<sup>25</sup> For 2013, includes marmosets and tamarins.

**Figure 5: Procedures using Old World and New World monkeys, 1995–2013**



Comparing the changes between 2012 and 2013:

- the number of procedures using Old World monkeys (cynomolgus monkeys and rhesus monkeys) rose by 191 (+7%) to 2,928, but the number of animals used decreased by 32 to 1,922;
- the number of procedures using New World monkeys (marmosets and tamarins) rose by 25 (9%) to 308, and the number of animals used also increased by 48 to 280;
- some primates were used more than once since some of the procedures they were involved in had only a minimal effect;
- overall, the total number of procedures using non-human primates increased by 216 (+7%) to 3,236 and the number of animals used also rose by 16 to 2,202.

#### Species on which no procedures were started in 2013

No procedures were performed on the following Schedule 2 species:

- greyhounds;
- a number of primate species;
- northern leopard frogs (*Rana pipiens*);
- quail (*Coturnix coturnix*).<sup>26</sup>

No procedures were performed using cephalopods<sup>27</sup>. No great apes have been used since the current legislation (the 1986 Act) was implemented in 1987.

<sup>26</sup> *Coturnix coturnix* is the common quail. Quail (not *Coturnix coturnix*) refers to all other quail species.

<sup>27</sup> An animal such as an octopus or squid.

## Source

(Table 2; and online Supplementary Tables 2.1, 2.2)

The majority (91% or 3.74 million) of the 4.12 million procedures started in 2013 were performed using animals listed in Schedule 2 to the Act. These animals must be purpose bred for use in scientific procedures. Animals listed in Schedule 2 are: mice; rats; guinea pigs; hamsters; gerbils; rabbits; cats; dogs; ferrets; non-human primates; pigs (if genetically modified); sheep (if genetically modified); common quail (*Coturnix coturnix*); amphibians (of the species *Xenopus laevis*,<sup>28</sup> *Xenopus tropicalis*,<sup>29</sup> *Rana temporaria*<sup>30</sup> and *Rana pipiens*<sup>31</sup>); and zebra fish. The procedures involving animals listed in Schedule 2 and acquired from non-designated sources<sup>32</sup> are authorised under Section 10(3) of the Act. The following were sources for Schedule 2 listed animals in 2013:

- licensed establishments in the UK were the source for 3.70 million procedures (90% of all procedures);
- non-licensed premises in the UK were the source for 699 procedures (0.02%);
- other EU countries were the source for 12,600 procedures (0.3%);
- other sources, including Council of Europe countries that are signatories to ETS123<sup>33</sup> and the rest of the world, were the source for 20,300 procedures (0.5%).

In addition, 385,600 procedures were undertaken on non-schedule 2 listed species (9%).

## Genetic status

(Table 3; online Supplementary Tables 3 (full), 3.1, 3.2, 3.3) ; and online Time Series Table 27)

Figure 6 below shows the number of procedures performed by the genetic status of the animal between 1995 and 2013. It shows that the use of GM animals increased considerably over the period from 215,300 in 1995 to 2.03 million animals in 2013 (+1.82 million or +845%), with the breeding of GM animals and fundamental biological research being the main primary purposes accounting for the rise. In 2012, for the first time in the series, the number of procedures involving GM animals was greater than the number involving normal<sup>34</sup> animals.

Between 1995 and 2013, the number of procedures involving animals with a harmful genetic mutation also rose overall, but to a lesser extent, from 226,600 in 1995 to 478,100 in 2013 (+251,500 or +111%), with the breeding of HM animals driving the increase.

Over the same period, the use of normal animals decreased from 2.27 million in 1995 to 1.61 million in 2013 (-658,000 or -29%), mainly due to a reduction in procedures undertaken for applied studies, although there was an increase in the use of normal animals for the breeding of GM or HM animals.

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<sup>28</sup> African clawed frog.

<sup>29</sup> Western clawed frog.

<sup>30</sup> Common frog.

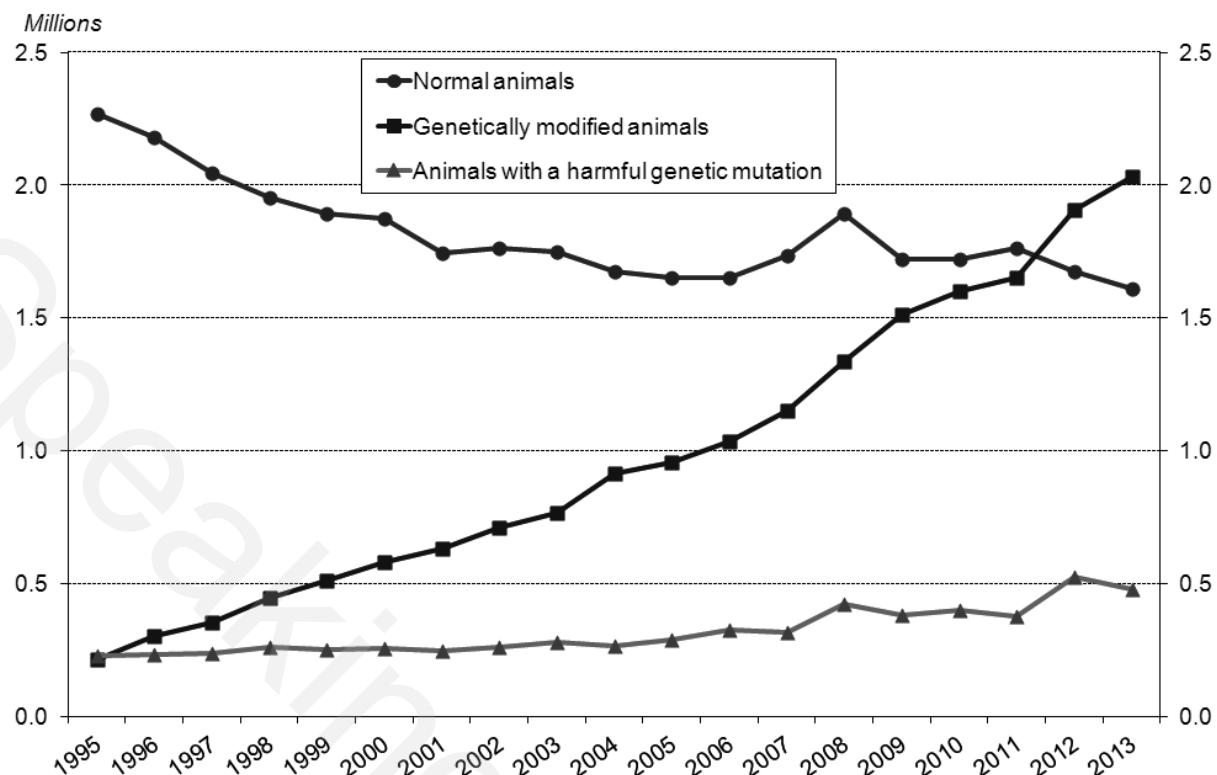
<sup>31</sup> Northern leopard frog.

<sup>32</sup> Non-designated sources include any unlicensed source of animals in the UK, as well as any source of animals outside of the UK.

<sup>33</sup> European Convention for the Protection of Vertebrate Animals used for Experimental and Other Scientific Purposes.

<sup>34</sup> Non-GM or HM.

**Figure 6: Procedures by genetic status of animal, 1995–2013**



#### Genetically normal animals

There were 1.61 million procedures involving normal animals in 2013 (39% of the overall total), with mice, fish and rats accounting for the majority (55%, 14%, and 14% of normal animals respectively), and fundamental biological research, applied studies and the breeding of GM or HM animals being the main primary purposes for these species. Compared with 2012, there was a decrease in procedures using normal animals (-66,900 or -4%), mainly due to a decline in the use of fish (-65,300 or -23%).

#### Animals with a harmful genetic mutation

There were 478,100 procedures involving animals with a harmful genetic mutation in 2013 (12% of the overall total), with mice accounting for the majority (77% of animals with a harmful genetic mutation), and the breeding of HM animals being the main primary purpose for this species. Compared with 2012, there was a decrease in procedures using animals with a harmful genetic mutation (-46,900 or -9%), which was also mainly attributable to mice (-74,400 or -17%).

#### Genetically modified animals

There were 2.03 million procedures involving GM animals in 2013 (49% of the overall total), with mice accounting for the majority (90% of GM animals), and breeding of GM animals and fundamental biological research being the main primary purposes for this species. Compared with 2012, there was an increase in procedures using GM animals (+125,400 or +7%), with mice (+81,600 or +5%) and fish (+45,400 or +29%) driving the rise.

It should be noted that the figures for the breeding of GM/HM animals include animals in breeding colonies which supply those used in further studies, whereas the breeding animals used to supply genetically normal animals are not accounted for in these statistics.

## **Primary target body system for the procedure**

(Table 4)

In 2013, 2.01 million, just under one-half (49%) of all procedures, were directed towards one particular body system.

- The immune system was the largest single category, accounting for 555,400 procedures (13% of all procedures), of which the main species used was mice (490,800 or 88% of this category).
- The nervous and reproductive systems were the next largest single categories with 434,500 (11%) and 319,500 (8%) procedures respectively. Mice, rats and fish were the most common species used for these systems accounting for 433,100 (99.7%) of procedures for the former and 305,600 (96%) of procedures for the latter.
- Of the single body system categories, skin (+13,500 or +25%) and special senses (+12,300 or +25%) had the largest proportional increases. The largest decreases were in the alimentary<sup>35</sup> (-106,300 or -62%) and reproductive (-37,200 or -10%) body systems.

Procedures conducted where the target body system was not relevant accounted for 1.09 million (26% of all procedures), rising by 254,600 (or +30%) compared with 2012. The category for multiple target body systems accounted for 1.02 million procedures (25% of all procedures), falling by 132,500 (-11%).

## **Use of anaesthesia**

(Table 5; and online Time Series Table 22)

Procedures that cause pain, suffering, distress, or lasting harm to the animal are only permitted without anaesthesia<sup>36</sup> or analgesic<sup>37</sup> when such administration is judged more traumatic than the procedure itself, or when it is incompatible with the object of the procedure.

- In 2013, 29 per cent of procedures (1.18 million) had some form of anaesthesia to alleviate the severity of the interventions, a similar proportion to 2012 (28%). For many of the remaining procedures the use of anaesthesia would have potentially increased the adverse effects of the procedure.
- The use of neuromuscular blocking agents (NMBA)<sup>38</sup> was recorded in 2,223 procedures, an increase from 1,675 procedures (+33%) in 2012. Of the procedures involving NMBA, 100 per cent used simultaneous general anaesthesia.

## **Fundamental and applied studies other than toxicology, regulatory or safety purposes**

(Tables 6, 6a, 7; online Supplementary Tables 6.1, 6.2, 8; and online Time Series Table 24)

Non-toxicology<sup>39</sup> accounted for 3.75 million procedures in 2013 (91% of the total number of procedures), an increase of 13,600 (+0.4%) compared with the previous year.

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<sup>35</sup> Includes the gastrointestinal tract and liver.

<sup>36</sup> Local or general anaesthesia, with the latter rendering an animal unconscious.

<sup>37</sup> An analgesic is a drug used to relieve pain.

<sup>38</sup> Neuromuscular blocking agents relax skeletal muscles and induce paralysis.

<sup>39</sup> For the purposes of these statistics, toxicology means the safety evaluation of the effects of substances on man, animals or the environment, mainly medical treatments.

The main fields of research were: immunology<sup>40</sup> (578,400 procedures or 15% of the total number of non-toxicological procedures); cancer research (501,400 or 13%); physiology<sup>41</sup> (472,200 or 13%); anatomy<sup>42</sup> (458,000 or 12%); and genetics<sup>43</sup> (449,900 or 12%).

Compared with 2012, there were increases for:

- genetics (+58,200 or +15%);
- physiology (+41,300 or +10%);
- pharmaceutical research and development (+35,900 or +18%);
- psychology (+8,400 or +21%);
- therapeutics<sup>44</sup> (+6,400 or +30%);
- alcohol (+2,000 or +97%).

Compared with 2012, there were falls for:

- nutrition (-76,700 or -78%);
- parasitology<sup>45</sup> (-16,200 or -11%);
- biochemistry<sup>46</sup> (-14,600 or -32%);
- pharmacology<sup>47</sup> (-12,200 or -19%);
- ecology<sup>48</sup> (-12,100 or -17%);
- animal science (-3,000 or -27%).

## Production of biological materials

(Table 7)

In 2013, 392,400 procedures were carried out to produce biological materials, 34,600 more (+10%) than in 2012. Biological materials were produced for the following purposes:

- 118,200 procedures (30% of the procedures undertaken to produce biological materials) were for the production of infectious agents, of which the most common species used were birds (76%);
- vectors,<sup>49</sup> neoplasms<sup>50</sup> and antibody production<sup>51</sup> accounted for 25,900 procedures (7%) undertaken to produce biological materials, with mice predominantly used (79%);
- the remaining 248,300 biological procedures (63%) were undertaken to produce other biological material such as tissues or blood products, with mice (55%) and pigs, sheep, and all other ungulates (15%) used;

<sup>40</sup> The study of the immune system.

<sup>41</sup> The study of the functions of the individual structures and systems within an organism.

<sup>42</sup> The study of a physical structure of an organism.

<sup>43</sup> The study of genes, heredity, and variation in living organisms.

<sup>44</sup> The study of the remedial treatment of disease.

<sup>45</sup> The study of parasites.

<sup>46</sup> The study of chemical processes within, and relating to, living organisms.

<sup>47</sup> The study of drugs.

<sup>48</sup> The study of interactions among organisms and their environment.

<sup>49</sup> A vector is an organism, often an invertebrate arthropod, that transmits a pathogen from reservoir to host (such as a mosquito that transmits the malaria organism from one animal to another).

<sup>50</sup> A neoplasm is an abnormal growth of tissue in animals.

<sup>51</sup> Antibodies are produced by the body to fight disease.

- the numbers of procedures using immunisation to produce monoclonal antibodies<sup>52</sup> by in vitro<sup>53</sup> methods fell by 8 per cent (-100) to 1,400 procedures in 2013, less than one-half the level of 4,000 procedures in 2008.

## Toxicology, other safety or efficacy evaluation

(Tables 9, 9a, 10, 11; online Supplementary Table 10 (full); and online Time Series Tables 21, 25)

In 2013, 375,000 procedures were undertaken for toxicological or other safety/efficacy<sup>54</sup> evaluation purposes, 9 per cent of the total 4.12 million procedures. This represents a decrease of 2,000 (-0.5%) compared with 2012, which continues the overall trend of a fall in toxicological procedures in recent years. The decrease in 2013 was mainly attributable to a decline in the use of rats (-12,400 or -11%) but there was also a rise in the use of fish (+7,800 or +22%) and mice (+4,900 or +3%).

In 2013, 295,900 (79%) of toxicological procedures were for pharmaceutical safety/efficacy evaluation, with 234,800 involving mice or rats (79% of all pharmaceutical safety/efficacy evaluation procedures) and just 2,100 (less than 1%) involving non-human primates. Following a Government ban, no toxicological procedures involving cosmetics have been undertaken on animals since 1998.

Figure 7 shows the toxicological procedures undertaken by species of animal in 2013. Mice were the main species used with 189,000 procedures (50% of the toxicological total). Rats and fish<sup>55</sup> were the next most common species, accounting for 99,200 (26%) and 42,500 (11%) of toxicological procedures respectively. Other species used included birds<sup>56</sup> (16,700 or 4% of the toxicology total), rabbits (10,100 or 3%), other animals<sup>57</sup> (9,300 or 2%) and all other rodents<sup>58</sup> (8,200 or 2%).

<sup>52</sup> A particular type of antibody.

<sup>53</sup> Occurs in the laboratory (for example, test tube) rather than within an living organism or natural setting.

<sup>54</sup> Safety testing is generally carried out to meet regulatory requirements for the safety of pharmaceuticals, chemicals, etc. Efficacy testing is to demonstrate the effectiveness of drugs, which may or may not be carried out for regulatory purposes.

<sup>55</sup> Zebra fish and other fish species. The species are grouped together for the purposes of the pie chart but data on them are collected and published separately.

<sup>56</sup> Domestic fowl (*Gallus domesticus*), turkeys, quail, and other bird species. The species are grouped together for the purposes of the pie chart but data on them are collected and published separately.

<sup>57</sup> Dogs, cats, other carnivores, horses and other equids, pigs, goats, sheep, cattle, marmosets/tamarins, cynomolgus monkeys (*Macaca fascicularis*) and rhesus monkeys (*Macaca mulatta*). The species are grouped together for the purposes of the pie chart but data on them are collected and published separately.

<sup>58</sup> Guinea pigs, hamsters and other rodent species. The species are grouped together for the purposes of the pie chart but data on them are collected and published separately.

**Figure 7: Procedures (toxicology) by species of animal, 2013**

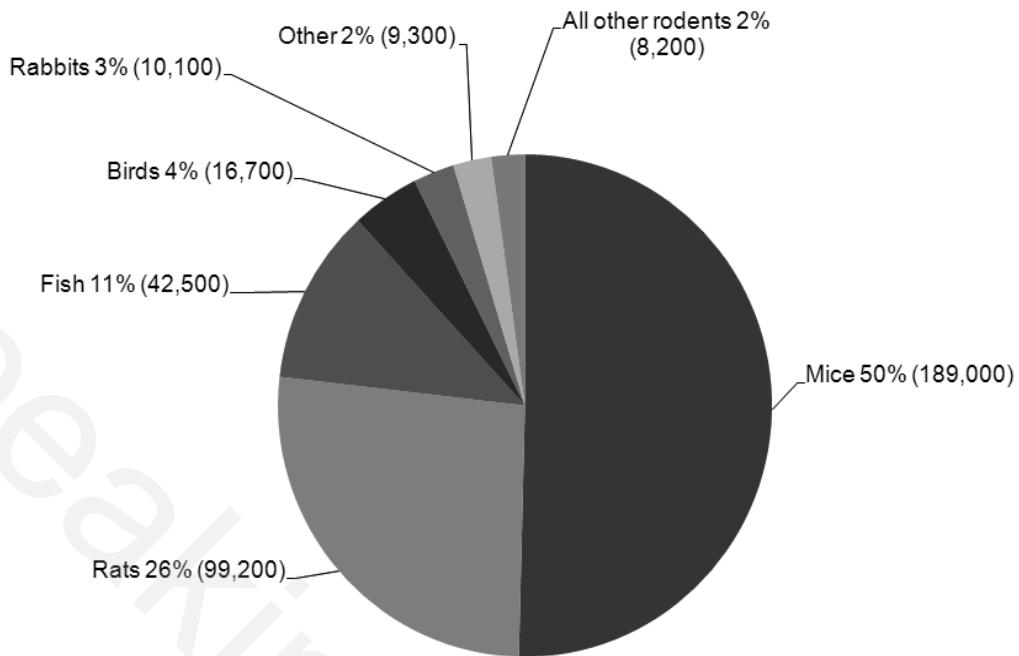
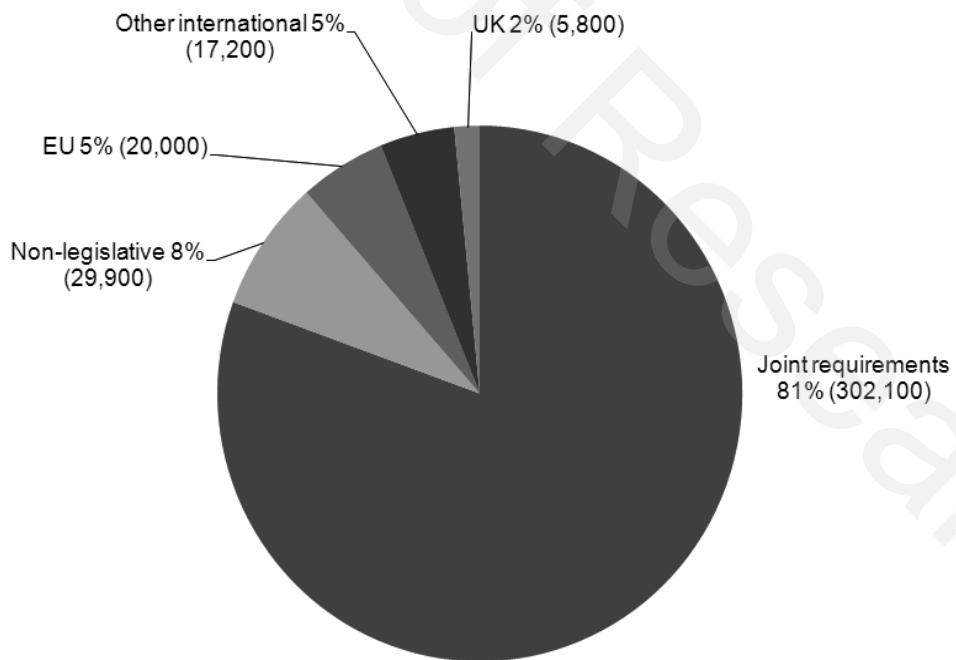


Figure 8 shows that the majority of toxicological procedures (345,300 or 92%) conformed to legal or regulatory requirements with most (302,100 or 81%) meeting a combination of requirements. In 2013, 29,900 (8%) procedures did not conform to any legislative requirements.

**Figure 8: Procedures by legislative requirement (toxicology), 2013**



## Rodenticide trials

It is impracticable to collect accurate figures on the number of animals used in field trials of rodenticide<sup>59</sup> substances. Nonetheless, just one return indicated that such field trials occurred in 2013.

## Use of animals on the Convention on International Trade in Endangered Species list

Returns were required on the use of animals listed in Appendix 1 of the Convention on International Trade in Endangered Species of Flora and Fauna (CITES)<sup>60</sup> or in Annex C.1 to the Council Regulation (EEC) 3626/82 (see form notes section in the User Guide). There were 61 procedures performed using animals in this category in 2013; these involved wild birds in research relevant to those species.

## Type of establishment

(Table 19; and Online Time Series Table 23)

Universities accounted for the majority of procedures in 2013, undertaking 49 per cent (2.02 million) of the 4.12 million procedures. In addition, universities held 77 per cent (2,547) of the 3,303 project licences for which returns were received. Other types of establishment that undertook procedures were commercial organisations (accounting for 26% or 1.09 million procedures), other public bodies (accounting for 14% or 594,200 procedures) and non-profit organisations (accounting for 8% or 323,000 procedures). These organisations respectively held eight per cent, seven per cent and four per cent of the licences for which returns were received.

Figure 9 shows the procedures undertaken in universities/medical schools and commercial organisations between 1995 and 2013. The number of procedures accounted for by the commercial sector decreased between 1995 and 2005 from 1.33 million to 908,200 (-421,200 or -32%). The figure then rose from then on to 1.33 million in 2008, the same figure as 1995, and then fell in the following year to 1.03 million. The number remained relatively stable between 2009 and 2011 and then increased in 2012 to 1.13 million, decreasing again in 2013 to 1.09 million. Between 1995 and 2013, the number of procedures carried out in the university sector rose by 1.20 million (+146%) to 2.02 million, with the figure overtaking the commercial sector from 2002 onwards.

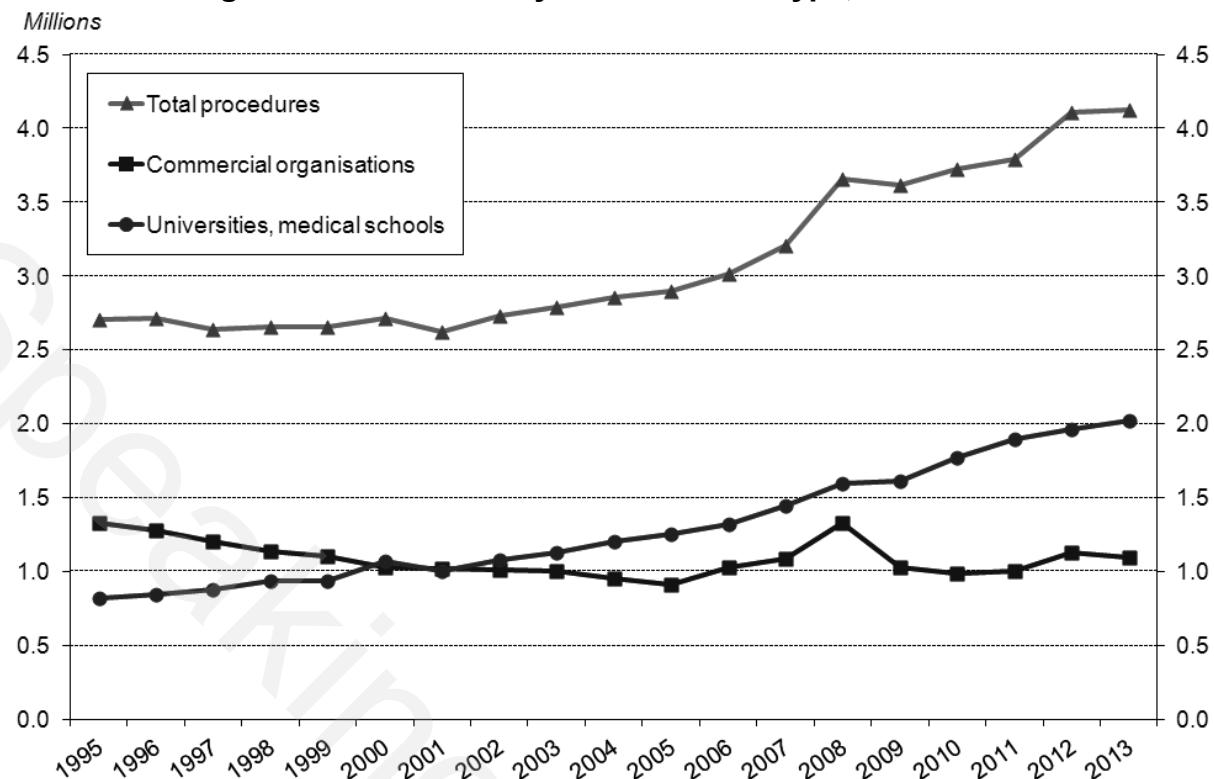
The difference in trends between the commercial sector and the university sector is likely to reflect the increase in fundamental research using GM animals within universities, as well as the decline in procedures undertaken for toxicological purposes.

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<sup>59</sup> Rodenticides are a category of pest control chemicals intended to kill rodents. Rodenticide trials are field trials of such chemicals and are occasionally undertaken by commercial companies that produce them to assess safety and efficacy aspects of their use.

<sup>60</sup> CITES is an international agreement between governments with the aim of ensuring that international trade in specimens of wild animals and plants does not threaten their survival.

**Figure 9: Procedures by establishment type, 1995–2013**



## International comparisons

Northern Ireland collects figures on the same basis as Great Britain. These are published separately by the Department of Health, Social Services and Public Safety, Northern Ireland.<sup>61</sup>

Data compiled by EU countries and submitted to the European Commission use a narrower, but common, definition of animal experiments. The main differences between these figures and the statistics in this publication are that the EU data are based on numbers of animals, not procedures, and excludes breeding to produce GM or HM animals. However, for 2014 onwards, following the new EC directive,<sup>62</sup> other EU countries will begin including the breeding of GM or HM animals in their figures. The latest EU-wide data,<sup>63</sup> published by the European Commission, are for 2011 and some of the key points are as follows.

- The total number of animals used for experimental and other scientific purposes in 2011 (with one Member State reporting for 2010) decreased to just below 11.5 million. This is a reduction of over one-half a million animals used in the EU from the number reported in 2008.
- Rodents together with rabbits represent more than 80 per cent of the total number of animals used in the EU. Mice are the most commonly used animal, accounting for 61 per cent of the total use, followed by rats, at 14 per cent.
- No great apes have been used in the EU since 1999. Furthermore, there was a substantial decrease in the use of non-human primates.

<sup>61</sup> See: <http://www.dhsspsni.gov.uk/healthprotection-animalscience>.

<sup>62</sup> See: [http://ec.europa.eu/environment/chemicals/lab\\_animals/legislation\\_en.htm](http://ec.europa.eu/environment/chemicals/lab_animals/legislation_en.htm).

<sup>63</sup> Seventh report from the Commission to the Council and the European Parliament on the statistics on the number of animals used for experimental and other scientific purposes in the Member States of the European Union COM(2013)859/final, available at: [http://ec.europa.eu/environment/chemicals/lab\\_animals/reports\\_en.htm](http://ec.europa.eu/environment/chemicals/lab_animals/reports_en.htm).

## Returns, project licensees and designated places

(Table 19)

Statistical returns are required each year for every project licence in force for part or all of the year. For 2013, 3,303 licensees provided returns that reported either that procedures were started (2,582 licensees, of which 12 reported only non-countable procedures<sup>64</sup>) or that none were started (721 licensees).

There were 2,672 project licences in force at the end of 2013 compared with 2,717 at the end of 2012, a slight decrease. The number of certificates of designation in force authorising places where work was carried out was 174 at the end of 2013, remaining fairly stable compared with the 176 certificates in force at the end of 2012. The number of personal licences in force increased to 16,112 at the end of 2013, compared with 14,875 at the end of 2012.

### Further information

Information about research and testing using animals can be found at:

<https://www.gov.uk/research-and-testing-using-animals>.

Information about the Animals in Science Committee can be found at:

<https://www.gov.uk/government/organisations/animals-in-science-committee>.

Information about the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) can be found at:

<http://www.nc3rs.org.uk/>.

Information relating to Northern Ireland is published by the Department of Health, Social Services and Public Safety and can be found at:

<http://www.dhsspsni.gov.uk/healthprotection-animalscience>.

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<sup>64</sup> It is not possible to collect accurate figures on the numbers of procedures started using immature forms (for example, larvae, embryos). Information is collected indicating when procedures using such forms are carried out, which are classified as non-countable procedures.

# Tables

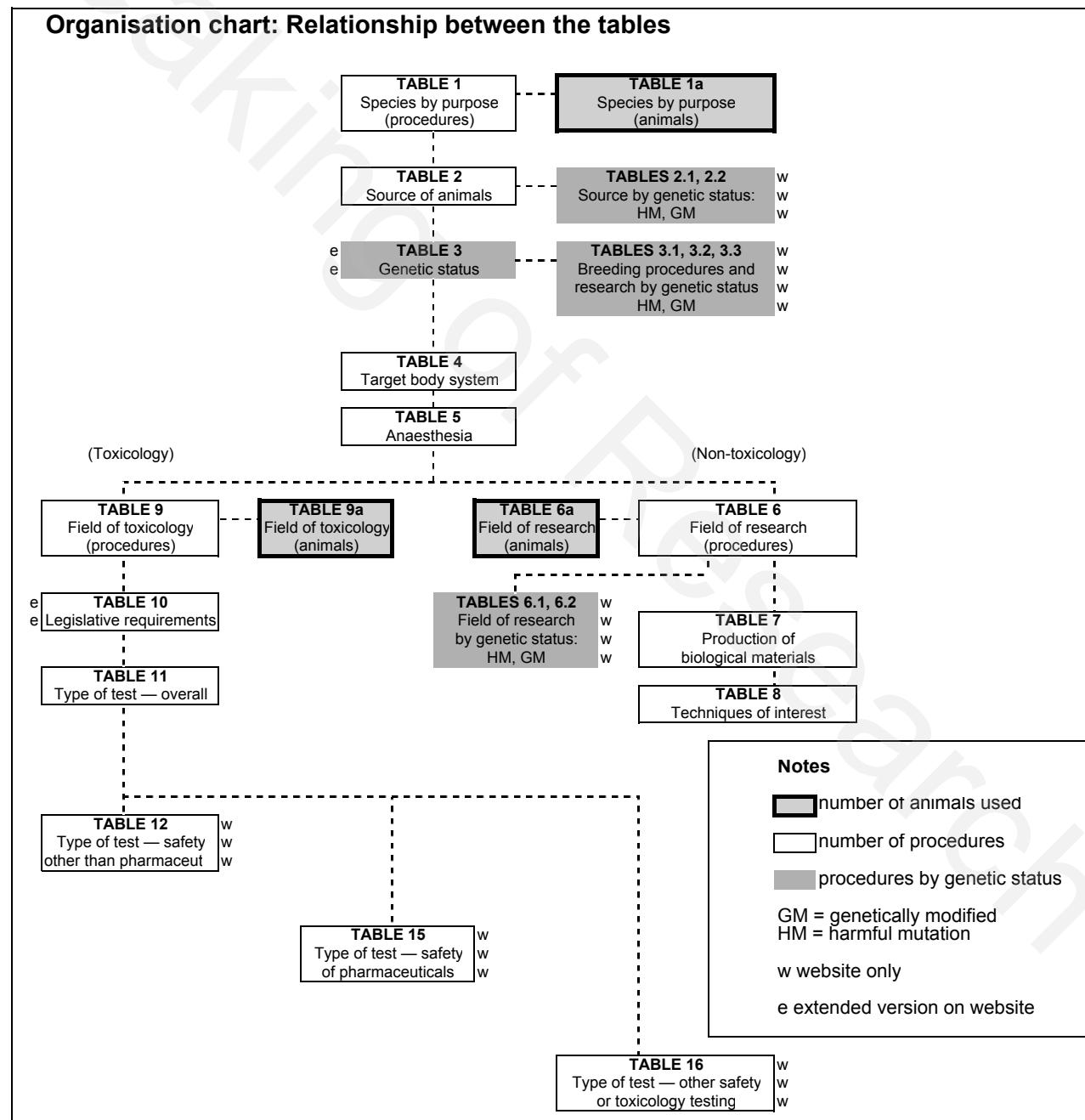
Notes providing details of the terms and classifications used (User Guide to Home Office Statistics of Scientific Procedures on Living Animals), the Supplementary Tables and the Time Series Tables can be found at: <https://www.gov.uk/government/publications/statistics-of-scientific-procedures-on-living-animals-great-britain-2013>.

## Definitions

All tables refer to the numbers of scientific procedures started on adult animals in 2013, unless indicated otherwise. Tables suffixed with an 'a' (i.e. Tables 1a, 6a, 9a) relate to the numbers of animals used.

## Symbols used in tables

..	not available	-	nil
N/A	not applicable	r	revised



Great Britain 2013

Table 1 Scientific procedures by species of animal and primary purpose of the procedure, page 1 of 2

Species of animal	Fundamental biological research	Applied studies — human medicine or dentistry	Applied studies — veterinary medicine	Protection of man, animals or environment	Primary purpose of the procedure				Number of procedures
					Education	Training	Forensic enquiries	Direct diagnosis	
<b>Mammal</b>									
Mouse	864,311	358,575	15,192	13,160	831	-	-	2,782	1,822,264
Rat	67,665	127,036	134	40,162	456	510	-	-	30,302
Guinea pig	1,493	23,312	1,396	-	95	-	-	-	46
Syrian Hamster ( <i>Mesocricetus auratus</i> )	351	1,387	-	75	-	-	-	-	-
Chinese Hamster ( <i>Cricetulus griseus</i> )	69	-	-	-	-	-	-	-	-
Gerbil	439	180	-	-	-	-	-	-	-
Other rodent	2,152	98	-	240	-	-	-	-	-
Rabbit	1,235	8,909	2,283	1,544	14	-	3	1,111	-
Cat	176	-	94	-	-	-	-	-	270
Dog	313	3,642	138	430	-	-	-	-	-
Beagle	185	-	69	-	-	-	-	-	-
Other including cross-bred dogs	156	250	2	-	13	-	-	-	-
Ferret	329	-	112	119	-	-	-	-	9
Other carnivore	35	-	462	-	-	-	-	-	-
Horse and other equids	1,033	845	1,805	10	-	1	-	8,007	-
Pig	652	-	19	17	-	-	-	-	-
Goat	6,208	534	874	-	-	-	-	-	-
Sheep	2,321	28	1,893	73	-	-	-	-	-
Cattle	94	-	-	-	-	-	-	-	-
Deer	-	-	2	-	-	-	-	-	4
Camelid	-	-	-	-	-	-	-	-	6
Other ungulate	-	-	-	-	-	-	-	-	-

**Table 1 Scientific procedures by species of animal and primary purpose of the procedure, page 2 of 2**

Great Britain 2013

Species of animal	Fundamental biological research	Applied studies — human medicine or dentistry	Applied studies — veterinary medicine	Primary purpose of the procedure				Breeding of GM or HM animals	Total
				Protection of man, animals or environment	Education	Training	Forensic enquiries		
<b>Primate</b>									
New World monkey	251	57	-	-	-	-	-	-	308
Marmoset and tamarin									
Old World monkey	11	2,480	-	148	-	-	-	-	2,639
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	163	126	-	-	-	-	-	-	289
Rhesus monkey ( <i>Macaca mulatta</i> )	266	-	-	-	-	-	-	-	266
Other mammal									
<b>Bird</b>									
Domestic fowl ( <i>Gallus domesticus</i> )	10,752	282	116,660	60	-	-	-	904	880
Turkey	60	186	662	10	-	-	-	192	-
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	675	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	675
Other bird	6,634	-	367	1,517	-	-	-	833	-
<b>Reptile — any reptilian species</b>								-	
<b>Amphibian</b>									
Common frog ( <i>Rana temporaria</i> )	450	-	-	-	-	-	-	-	450
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	6,006	-	-	-	-	-	-	-	373
Western clawed frog ( <i>Xenopus tropicalis</i> )	1,945	-	-	-	-	-	-	-	980
Other amphibian	605	-	-	-	-	-	-	-	605
<b>Fish</b>									
Zebra fish	66,915	5,021	10,039	-	-	-	-	-	248,186
Other fish	120,992	57	23,935	30,755	-	-	-	406	1,067
<b>Cephalopod</b>	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>1,164,963</b>	<b>533,005</b>	<b>166,099</b>	<b>99,034</b>	<b>1,409</b>	<b>511</b>	<b>3</b>	<b>52,444</b>	<b>2,104,114</b>
Increase on 2012	-139,129	37,311	-10,271	-747	-104	-192	3	1,530	123,153
Percentage change from 2012	-11%	8%	-6%	-1%	-7%	-27%	N/A	3%	6%
Percentage of total for 2013	28%	13%	4%	2%	0.03%	0.01%	0.0001%	1%	51%
2012 Totals	1,304,092	495,694	176,370	99,781	1,513	703	-	50,914	1,980,961
									4,110,028

N/A = Not applicable

Great Britain 2013

Table 1a Animals used by species of animal and primary purpose of the procedure, page 1 of 2

Species of animal	Fundamental biological research	Applied studies — human medicine or dentistry	Applied studies — veterinary medicine	Primary purpose of the procedure				Forensic enquiries	Direct diagnosis	Breeding of GM or HM animals	Total	Number of animals
				Protection of man, animals or environment	Education	Training	Enquiries					
<b>Mammal</b>												
Mouse	847,189	346,110	15,192	13,136	831	-	-	2,782	1,820,450	3,045,690		
Rat	65,716	125,678	134	39,863	456	510	-	-	30,284	26,641		
Guinea pig	1,493	23,312	1,396	-	95	-	-	46	-	26,342		
Syrian Hamster ( <i>Mesocricetus auratus</i> )	351	1,387	-	75	-	-	-	-	-	-		
Chinese Hamster ( <i>Cricetulus griseus</i> )	69	-	-	-	-	-	-	-	-	69		
Gerbil	364	180	-	-	-	-	-	-	-	544		
Other rodent	1,384	98	-	240	-	-	-	-	-	1,722		
Rabbit	882	6,695	1,721	1,540	4	-	3	1,050	-	11,895		
Cat	30	-	79	-	-	-	-	-	-	109		
Dog	29	2,873	138	402	-	-	-	-	-	3,442		
Beagle	41	-	69	-	-	-	-	-	-	2	112	
Other including cross-bred dogs	156	250	2	-	13	-	-	-	-	430		
Ferret	266	-	64	111	-	-	-	9	-	441		
Other carnivore	20	-	258	-	-	-	-	52	-	330		
Horse and other equids	1,017	804	1,669	4	-	1	-	-	33	3,528		
Pig	652	-	19	17	-	-	-	1	-	689		
Goat	4,594	448	834	-	-	-	-	982	25	6,883		
Sheep	1,592	28	1,707	73	-	-	-	-	-	3,400		
Cattle	94	-	-	-	-	-	-	-	-	94		
Deer	-	-	2	-	-	-	-	4	-	6		
Camelid	-	-	-	-	-	-	-	-	-	-		
Other ungulate	-	-	-	-	-	-	-	-	-	-		

**Table 1a Animals used by species of animal and primary purpose of the procedure, page 2 of 2**

Species of animal	Fundamental biological research	Applied studies — human medicine or dentistry	Applied studies — veterinary medicine	Primary purpose of the procedure				Number of animals
				Protection of man, animals or environment	Education	Training	Forensic enquiries	
<b>Primate</b>								
New World monkey	223	57	-	-	-	-	-	280
Marmoset and tamarin								
Old World monkey								
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	8	1,674	-	119	-	-	-	1,801
Rhesus monkey ( <i>Macaca mulatta</i> )	37	84	-	-	-	-	-	121
Other mammal	266	-	-	-	-	-	-	266
<b>Bird</b>								
Domestic fowl ( <i>Gallus domesticus</i> )	10,752	194	116,660	58	-	-	904	129,448
Turkey	60	15	662	10	-	-	76	823
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	675	-	-	-	675
Other bird	5,044	-	367	1,517	-	-	413	7,341
<b>Reptile — any reptilian species</b>								
<b>Amphibian</b>	696	-	-	-	-	-	-	696
Common frog ( <i>Rana temporaria</i> )	450	-	-	-	-	-	-	450
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	1,447	-	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	918	-	-	-	-	-	-	-
Other amphibian	360	-	-	-	-	-	-	360
<b>Fish</b>								
Zebra fish	66,684	5,021	-	10,007	-	-	-	263
Other fish	120,319	57	23,124	27,338	-	-	406	848
<b>Cephalopod</b>	-	-	-	-	-	-	-	1,766
<b>Total</b>	1,133,203	514,965	164,097	95,185	1,399	511	3	6,725
Increase on 2012	-152,504	27,599	-10,973	-4,221	-114	-192	3	4,017,758
Percentage change from 2012	-12%	6%	-6%	-4%	-8%	-27%	N/A	-15,552
Percentage of total for 2013	28%	13%	4%	2%	0.03%	0.01%	0.0001%	0.2%
2012 Totals	1,285,707	487,366	175,070	99,406	1,513	703	-	1,976,881
N/A = Not applicable								

**Table 2 Scientific procedures by Schedule 2 listed species and source of animals**

Species of animal	Source				Total
	Animals acquired from within own designated establishment	Animals acquired from another designated breeding or supplying establishment in the UK	Animals acquired from non-designated sources in the UK	Animals acquired from sources within the EU (outside the UK)	
<b>Mouse</b>	2,500,332	562,007	-	6,205	1,314
<b>Rat</b>	69,846	193,866	22	1,138	237
<b>Guinea pig</b>	12,172	12,732	-	1,438	-
<b>Hamster</b>	310	207	-	838	-
<b>Gerbil</b>	249	-	-	369	1
<b>Rabbit</b>	5,505	7,563	37	1,041	-
<b>Cat</b>	70	-	69	131	-
<b>Dog</b>	755	2,947	121	126	-
<b>Ferret</b>	6	408	-	-	16
<b>Pig (genetically modified)</b>	36	-	-	-	-
<b>Sheep (genetically modified)</b>	6	-	-	-	-
<b>Primate</b>	518	212	-	129	-
<b>Quail (<i>Coturnix coturnix</i>)</b>	-	-	-	-	-
<b>Amphibian</b> ( <i>Rana temporaria/pipiens &amp; Xenopus laevis/tropicalis</i> )	3,363	1,953	450	75	-
<b>Zebra fish</b>	324,346	2,911	-	1,148	147
Animals not listed in Schedule 2	-	-	-	-	-
<b>Total</b>	<b>2,917,514</b>	<b>784,806</b>	<b>699</b>	<b>12,638</b>	<b>1,698</b>
Increase on 2012	380,563	-24,884	317	764	1,314
Percentage change from 2012	15%	-3%	83%	6%	342%
Percentage of total for 2013	71%	19%	0.02%	0.3%	0.04%
<b>2012 Totals</b>	<b>2,536,951</b>	<b>809,690</b>	<b>382</b>	<b>11,874</b>	<b>384</b>

Note: The total number of procedures using animals listed in Schedule 2 was 3,735,994

**Table 3 Scientific procedures by species of animal and genetic status****Summary Version**

Note: For numbers of procedures by purpose, see full table available on the website

**Great Britain 2013**

Species of animal	Genetic status			Number of procedures Total
	Normal animal	Animal with harmful genetic mutation	Genetically modified animal	
<b>Mammal</b>				
Mouse	886,373	367,202	1,823,540	<b>3,077,115</b>
Rat	231,301	28,743	6,221	<b>266,265</b>
Guinea pig	26,342	-	-	<b>26,342</b>
Syrian Hamster ( <i>Mesocricetus auratus</i> )	1,813	-	-	<b>1,813</b>
Chinese Hamster ( <i>Cricetulus griseus</i> )	69	-	-	<b>69</b>
Gerbil	619	-	-	<b>619</b>
Other rodent	2,490	-	-	<b>2,490</b>
Rabbit	15,099	-	-	<b>15,099</b>
Cat	270	-	-	<b>270</b>
Dog				
Beagle	4,523	-	-	<b>4,523</b>
Other including cross-bred dogs	254	2	-	<b>256</b>
Ferret	430	-	-	<b>430</b>
Other carnivore	560	-	-	<b>560</b>
Horse and other equids	8,504	-	-	<b>8,504</b>
Pig	3,693	-	36	<b>3,729</b>
Goat	689	-	-	<b>689</b>
Sheep	45,784	-	6	<b>45,790</b>
Cattle	4,315	-	-	<b>4,315</b>
Deer	94	-	-	<b>94</b>
Camelid	6	-	-	<b>6</b>
Other ungulate	-	-	-	-
<b>Primate</b>				
New World monkey				
Marmoset and tamarin	308	-	-	<b>308</b>
Old World monkey				
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	2,639	-	-	<b>2,639</b>
Rhesus monkey ( <i>Macaca mulatta</i> )	289	-	-	<b>289</b>
Other mammal	266	-	-	<b>266</b>
<b>Bird</b>				
Domestic fowl ( <i>Gallus domesticus</i> )	128,507	306	725	<b>129,538</b>
Turkey	1,110	-	-	<b>1,110</b>
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	675	-	-	<b>675</b>
Other bird	9,351	-	-	<b>9,351</b>
<b>Reptile — any reptilian species</b>	696	-	-	<b>696</b>
<b>Amphibian</b>				
Common frog ( <i>Rana temporaria</i> )	450	-	-	<b>450</b>
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	5,719	-	660	<b>6,379</b>
Western clawed frog ( <i>Xenopus tropicalis</i> )	1,958	341	626	<b>2,925</b>
Other amphibian	605	-	-	<b>605</b>
<b>Fish</b>				
Zebra fish	47,707	80,952	201,502	<b>330,161</b>
Other fish	176,145	506	561	<b>177,212</b>
<b>Cephalopod</b>				
<b>Total</b>	<b>1,609,653</b>	<b>478,052</b>	<b>2,033,877</b>	<b>4,121,582</b>
Percentage of total for 2013	39%	12%	49%	100%

**Table 4 Scientific procedures by species of animal and target body system**

Species of animal	Number of procedures							Total					
	Respiratory	Cardiovascular	Nervous	Special senses	Alimentary	Skin	Musculo-skeletal	Reproductive	Immune and reticulo-endothelial	Other system	Multiple systems	System not relevant	
<b>Mammal</b>													
<b>Mouse</b>	49,949	98,491	309,895	43,467	50,569	41,529	43,529	209,514	490,819	72,581	805,714	861,058	<b>3,077,115</b>
<b>Rat</b>	19,913	13,758	54,331	2,973	3,646	661	1,175	26,463	5,694	3,832	43,406	90,413	<b>266,265</b>
<b>All other rodents</b>	5,734	2,485	31	385	382	137	38	26	4,549	5	3,379	14,182	<b>31,333</b>
<b>Rabbit</b>	18	605	-	293	248	570	59	2,517	3,255	454	4,481	2,599	<b>15,099</b>
<b>Cat</b>	-	55	2	-	-	-	-	-	-	3	174	36	<b>270</b>
<b>Dog</b>	112	281	-	-	16	32	2	12	33	20	1,854	2,417	<b>4,779</b>
<b>Ferret</b>	227	13	4	43	-	-	-	-	14	-	30	99	<b>430</b>
<b>Other carnivore</b>	-	-	-	-	-	-	-	76	-	-	112	372	<b>560</b>
<b>Horse and other equids</b>	130	64	-	-	-	-	17	12	146	6,175	73	1,887	<b>8,504</b>
<b>Pig</b>	202	162	103	-	549	28	6	76	1,143	44	1,019	397	<b>3,729</b>
<b>Sheep</b>	41	283	23	-	925	116	272	825	889	34,564	3,721	4,131	<b>45,790</b>
<b>All other ungulates</b>	121	2	15	27	394	-	-	152	1,137	275	2,819	162	<b>5,104</b>
<b>New World monkey</b>	-	2	19	-	-	-	-	-	-	2	210	75	<b>308</b>
<b>Old World monkey</b>	97	77	91	-	-	-	-	-	104	52	905	1,602	<b>2,928</b>
<b>All other mammals</b>	-	-	2	-	112	-	-	106	-	-	-	46	<b>266</b>
<b>Bird</b>	90	2,601	982	411	7,998	-	550	2,154	5,243	97,149	7,646	15,850	<b>140,674</b>
<b>Reptile</b>	-	-	-	-	-	-	-	-	696	-	-	-	<b>696</b>
<b>Amphibian</b>	-	-	112	-	81	240	101	7,907	-	1,256	662	662	<b>10,359</b>
<b>Fish</b>	2,783	16,449	68,911	13,753	1,451	24,456	10,600	69,636	42,337	16,438	145,681	94,878	<b>507,373</b>
<b>Total</b>	<b>79,417</b>	<b>135,328</b>	<b>434,519</b>	<b>61,354</b>	<b>66,259</b>	<b>67,881</b>	<b>56,349</b>	<b>319,476</b>	<b>555,363</b>	<b>232,290</b>	<b>1,022,480</b>	<b>1,090,866</b>	<b>4,121,582</b>
Increase on 2012	-8,234	-1,349	16,665	12,338	-106,295	13,496	-4,778	-37,226	-2,079	6,970	-132,525	254,571	11,554
Percentage change from 2012	-9%	-1%	4%	25%	-62%	25%	-8%	-10%	-0.4%	3%	-11%	30%	0.3%
Percentage of total for 2013	2%	3%	11%	1%	2%	2%	1%	8%	13%	6%	25%	26%	100%
2012 Totals	87,651	136,677	417,854	49,016	172,554	54,385	61,127	356,702	557,442	225,320	1,155,005	836,295	4,110,028

**Table 5** Scientific procedures by species of animal and level of anaesthesia

Species of animal	No anaesthesia	Type of anaesthesia			Total
		General anaesthesia, with recovery	Local anaesthesia	General anaesthesia at end of procedure, without recovery	
<b>Great Britain 2013</b>					
<b>Mammal</b>					
<b>Mouse</b>	2,337,498	449,459	123,166	98,248	<b>3,077,115</b>
<b>Rat</b>	135,221	67,344	633	25,439	<b>266,265</b>
<b>All other rodents</b>	10,400	6,429	374	991	<b>31,333</b>
<b>Rabbit</b>	8,498	707	382	1,512	<b>15,099</b>
<b>Cat</b>	135	133	-	-	<b>270</b>
<b>Dog</b>	3,957	412	172	155	<b>4,779</b>
<b>Ferret</b>	3	387	-	17	<b>430</b>
<b>Other carnivore</b>	113	447	-	-	<b>560</b>
<b>Horse and other equids</b>	341	10	8,153	-	<b>8,504</b>
<b>Pig</b>	3,055	308	-	4	<b>3,729</b>
<b>Sheep</b>	44,941	755	52	33	<b>45,790</b>
<b>All other ungulates</b>	5,041	39	19	1	<b>5,104</b>
<b>Primate</b>					
New World monkey	130	171	-	-	<b>7</b>
Old World monkey	2,179	680	24	15	<b>2,928</b>
<b>All other mammals</b>					
<b>Bird</b>	218	48	-	-	<b>266</b>
<b>Reptile</b>	50,438	171	-	89,863	<b>140,674</b>
<b>Amphibian</b>	696	-	-	-	<b>696</b>
<b>Fish</b>	9,176	1,138	-	-	<b>10,359</b>
	325,268	161,653	97	18,283	<b>507,373</b>
<b>Total</b>	<b>2,937,308</b>	<b>690,291</b>	<b>133,072</b>	<b>234,561</b>	<b>4,121,582</b>
Increase on 2012	-15,484	290	-8,886	-15,759	11,554
Percentage change from 2012	-0.5%	0.04%	-6%	-6%	0.3%
Percentage of total for 2013	71%	17%	3%	6%	100%
2012 Totals	2,952,792	690,001	141,958	250,320	74,957
					4,110,028

Note: Neuromuscular blocking agents (NMBA) were used in 2,223 procedures in 2013, and all involved the use of general anaesthesia.

**Table 6 Scientific procedures (non-toxicology) by species of animal and field of research, page 1 of 4**

Species of animal	Field of research										Number of procedures	
	Anatomy	Physiology	Biochemistry	Psychology	Pathology	Immunology	Microbiology	Parasitology	Pharmacology	Pharmaceutical R&D	Therapeutics	
<b>Mammal</b>												
Mouse	255,830	380,010	28,725	32,966	64,005	550,819	29,089	25,923	35,134	134,821	21,764	15,946
Rat	3,003	32,371	477	8,242	2,450	8	1,964	1,361	435	12,582	3,902	3,172
Guinea pig	-	470	-	-	-	309	377	-	815	67,489	413	765
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	-	66	229	219	-	16,770	50	981
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	69	-	-	-	-	-	-	-	376	-	-
Gerbil	-	-	-	-	-	1	-	-	-	-	-	-
Other rodent	-	99	-	-	-	-	-	398	-	-	180	39
Rabbit	-	417	354	-	31	1,120	197	3	34	1,979	-	98
Cat	-	2	-	-	-	21	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-	-	20	2,484	161
Beagle	-	-	-	-	-	-	-	-	-	653	-	118
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	2	-	-
Ferret	8	23	-	16	-	24	327	-	28	4	-	-
Other carnivore	-	2	-	76	-	10	-	-	-	-	-	-
Horse and other equids	12	17	-	-	-	108	8,034	-	43	-	-	64
Pig	24	332	-	34	41	373	190	85	48	42	68	103
Goat	-	-	2	120	5	25	1	6	-	-	-	-
Sheep	42	611	161	194	234	693	38,281	615	-	127	70	332
Cattle	-	483	-	-	-	10	681	94	83	8	236	-
Deer	-	-	-	-	-	-	-	-	-	-	-	-
Camelid	-	-	-	-	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	6	-	-	-	-	-

Table 6 Scientific procedures (non-toxicology) by species of animal and field of research, page 2 of 4

Species of animal	Field of research										Number of procedures	
	Anatomy	Physiology	Biochemistry	Psychology	Pathology	Immunology	Microbiology	Parasitology	Pharmacology	Pharmaceutical R&D	Therapeutics	
<b>Primate</b>												
New World monkey	2	48	-	40	98	15	-	-	8	8	40	-
Marmoset and tamarin												
Old World monkey	-	2	-	-	-	75	81	-	-	270	-	-
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	2	6	52	81	-	26	26	-	16	-	-	-
Rhesus monkey ( <i>Macaca mulatta</i> )												
Other mammal	2	-	-	-	-	-	-	-	-	-	-	-
<b>Bird</b>												
Domestic fowl ( <i>Gallus domesticus</i> )	699	258	4	3,500	-	1,073	3,183	90,914	-	1,279	413	-
Turkey	-	-	-	-	-	-	302	110	-	136	-	-
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	16	-	-	2,008	-	884	291	5	192	-	-	-
<b>Reptile — any reptilian species</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Amphibian</b>												
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-	-	450	-	-	-
Common leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Northern leopard frog ( <i>Rana pipiens</i> )	5,269	284	769	-	-	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	2,584	-	-	-	-	-	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	245	-	-	-	-	-	120	240	-	-	-	-
Other amphibian												
<b>Fish</b>												
Zebra fish	188,848	4,890	-	110	1,650	12,645	-	-	3,063	14,160	876	2,022
Other fish	1,427	51,819	-	1,090	470	7,437	3,624	6,765	-	595	-	-
<b>Cephalopod</b>	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>458,013</b>	<b>472,213</b>	<b>30,544</b>	<b>48,477</b>	<b>69,002</b>	<b>578,375</b>	<b>85,807</b>	<b>128,230</b>	<b>52,003</b>	<b>239,730</b>	<b>27,798</b>	<b>21,757</b>
Increase on 2012	27,594	41,304	-14,537	8,387	-5,905	2,613	-8,606	-16,241	-12,193	35,943	6,361	-1,515
Percentage change from 2012	6%	10%	-32%	21%	-8%	0.5%	-9%	-11%	-19%	18%	30%	-30%
Percentage of total for 2013	12%	13%	0.8%	1%	2%	15%	2%	3%	1%	6%	0.7%	0.6%
2012 Totals	430,419	430,909	45,141	40,090	74,907	575,762	94,413	144,471	64,196	203,787	21,437	23,272
												2,788

**Table 6 Scientific procedures (non-toxicology) by species of animal and field of research, page 3 of 4**

Species of animal	Field of research								Number of procedures
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	
<b>Mammal</b>									
Mouse	40	400,911	181,360	466,288	1,739	69	-	91	314
Rat	32	506	1,565	4,581	753	-	4	82	344
Guinea pig	-	-	-	-	-	21	-	-	16
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	-	-	-	-	-
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	-	-	-	-	-	-	-	-
Gerbil	-	1	-	-	-	-	-	-	-
Other rodent	-	-	30	-	-	-	-	65	17
Rabbit	-	-	28	2	-	2	-	-	10
Cat	-	-	-	-	163	-	-	11	-
Dog	-	-	-	-	-	-	3	-	90
Beagle	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	5	185	-	-	-	-	42
Ferret	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	107	-	-	253	-
Horse and other equids	-	-	-	-	20	-	-	-	-
Pig	-	-	5	293	-	-	158	-	120
Goat	-	513	-	-	-	-	-	-	44
Sheep	-	371	-	1	1,742	-	-	1,866	-
Cattle	-	-	-	-	288	-	-	1,569	-
Deer	-	94	-	-	-	-	-	-	-
Camelid	-	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	-	-

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

Table 6 Scientific procedures (non-toxicology) by species of animal and field of research, page 4 of 4

Species of animal	Field of research							Animal welfare	Other	Tobacco (1)	Alcohol	Total	
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany						
<b>Primate</b>													
New World monkey	-	-	-	-	-	-	-	-	-	-	-	-	
Marmoset and tamarin	-	-	-	-	-	-	-	-	-	-	-	259	
Old World monkey	-	-	-	-	-	-	-	-	-	-	-	-	
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	-	-	-	-	-	-	-	-	-	-	-	428	
Rhesus monkey ( <i>Macaca mulatta</i> )	-	-	-	-	-	-	-	-	-	-	-	209	
Other mammal	218	-	-	-	-	46	-	-	-	-	-	266	
<b>Bird</b>												-	
Domestic fowl ( <i>Gallus domesticus</i> )	-	306	167	-	8,580	-	4,551	-	80	-	-	115,007	
Turkey	-	-	-	-	-	-	-	-	-	-	-	548	
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-	
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-	
Other bird	-	-	-	-	-	2,286	-	2,759	-	-	-	8,441	
<b>Reptile</b> — any reptilian species	-	-	-	-	-	696	-	-	-	-	-	696	
<b>Amphibian</b>												-	
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-	-	-	-	-	450	
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	22	6	-	-	-	-	-	-	-	-	
African clawed frog ( <i>Xenopus laevis</i> )	-	341	-	-	-	-	17	-	-	-	-	6,379	
Western clawed frog ( <i>Xenopus tropicalis</i> )	-	-	-	-	-	-	-	-	-	-	-	2,925	
Other amphibian	-	-	-	-	-	-	-	-	-	-	-	605	
<b>Fish</b>												-	
Zebra fish	-	38,418	13,806	30,446	-	-	-	140	364	89	-	3,715	
Other fish	-	8,232	116	-	7,493	1,766	-	-	56,655	2,133	-	-	
<b>Cephalopod</b>	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total</b>	72	<b>449,911</b>	<b>197,094</b>	<b>501,355</b>	<b>21,256</b>	<b>4,970</b>	<b>23</b>	<b>8,147</b>	<b>60,056</b>	<b>3,502</b>	<b>282,212</b>	<b>-</b>	<b>4,076</b>
Increase on 2012	-111	58,245	16,414	676	-76,654	-988	-15	-3,016	-12,053	574	-33,790	0	2,005
Percentage change from 2012	-61%	15%	9%	0.1%	-78%	-17%	-39%	-27%	-17%	20%	-11%	N/A	97%
Percentage of total for 2013	0.002%	12%	5%	13%	0.6%	0.1%	0.001%	0.2%	2%	0.1%	8%	0%	0.1%
2012 Totals	183	391,666	180,680	500,679	97,910	5,958	38	11,163	72,109	316,002	2,928	0	2,071
													3,732,979

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

N/A = Not applicable

Table 6a Animals used (non-toxicology) by species of animal and field of research, page 1 of 4

Species of animal		Field of research										Number of animals															
		Anatomy		Physiology		Biochemistry		Psychology		Pathology		Immunology		Microbiology		Parasitology		Pharmacology		Pharmaceutical R&D		Therapeutics		Clinical medicine		Clinical surgery	
<b>Mammal</b>																											
Mouse	254,860	378,826	28,705	29,469	63,591	540,155	28,973	25,923	408	35,018	131,735	20,313	15,941	765													
Rat	3,003	32,322	477	7,694	2,404	1,964	8	309	377	815	11,800	66,860	3,884	2,644	981												
Guinea pig	-	470	-	-	-	-	-	66	229	219	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	69	-	-	-	-	-	1	-	323	-	-	180	39	-	-	-	-	-	-	-	-	-	-	-		
Gerbil	-	-	-	-	-	-	-	-	-	1,211	-	-	98	-	-	-	-	-	-	-	-	-	-	-	-		
Other rodent	-	99	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Rabbit	-	413	125	-	31	1,119	136	3	34	-	2,484	-	161	2	3	-	-	-	-	-	-	-	-	-	-		
Cat	-	2	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Dog	-	-	-	-	-	-	-	-	-	-	-	-	18	102	-	-	-	-	-	-	-	-	-	-	-		
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Ferret	8	23	-	16	-	24	327	-	-	28	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other carnivore	-	2	-	13	-	10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Horse and other equids	-	6	-	-	-	54	52	-	-	5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Pig	24	330	-	24	41	237	189	85	48	19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Goat	-	-	2	120	5	25	1	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Sheep	42	611	161	194	234	362	859	580	-	51	-	70	-	263	139	-	-	-	-	-	-	-	-	-	-		
Cattle	-	370	-	-	-	10	604	94	83	8	-	205	-	-	-	-	-	-	-	-	-	-	-	-	-		
Deer	-	-	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Camelid	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other ungulate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		

Table 6a Animals used (non-toxicology) by species of animal and field of research, page 2 of 4

Great Britain 2013  
Number of animals

Species of animal	Field of research										Clinical medicine	Clinical surgery	
	Anatomy	Physiology	Biochemistry	Psychology	Pathology	Immunology	Microbiology	Parasitology	Pharmacology	Pharmaceutical R&D			
<b>Primate</b>													
New World monkey	2	32	-	40	98	15	-	-	8	8	28	-	
Marmoset and tamarin													
Old World monkey	-	2	-	-	60	70	-	-	39	-	-	-	
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	2	6	3	12	-	24	26	-	8	-	-	-	
Rhesus monkey ( <i>Macaca mulatta</i> )	2	-	-	-	-	-	-	-	-	-	-	-	
Other mammal	2	-	-	-	-	-	-	-	-	-	-	-	
<b>Bird</b>													
Domestic fowl ( <i>Gallus domesticus</i> )	699	258	4	3,500	-	1,073	3,183	90,914	-	1,191	413	-	
Turkey	-	-	-	-	-	-	146	110	-	5	-	-	
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-	
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-	-	-	-	-	-	
Other bird	16	-	-	1,958	-	414	290	5	192	-	-	-	
<b>Reptile — any reptilian species</b>	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Amphibian</b>													
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-	450	-	-	-	-	
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-	-	-	-	-	-	
African clawed frog ( <i>Xenopus laevis</i> )	1,531	36	97	-	-	-	-	-	-	12	-	-	
Western clawed frog ( <i>Xenopus tropicalis</i> )	1,425	-	-	-	-	-	-	-	-	-	-	-	
Other amphibian	240	-	-	-	-	-	120	-	-	-	-	-	
<b>Fish</b>													
Zebra fish	188,437	4,890	-	105	1,650	12,462	-	3,063	14,160	876	2,022	-	
Other fish	1,067	51,819	-	1,090	470	7,437	3,624	5,954	-	595	-	-	
<b>Cephalopod</b>	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Total</b>	<b>451,358</b>	<b>470,586</b>	<b>29,574</b>	<b>44,235</b>	<b>68,542</b>	<b>566,427</b>	<b>40,057</b>	<b>126,274</b>	<b>51,057</b>	<b>234,884</b>	<b>26,317</b>	<b>20,982</b>	<b>1,934</b>

Table 6a Animals used (non-toxicology) by species of animal and field of research, page 3 of 4

Species of animal	Field of research						Animal welfare	Ecology	Other	Tobacco(1)	Alcohol	Total
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology						
<b>Great Britain 2013</b>												
<b>Mammal</b>												
Mouse	40	400,343	180,911	457,564	1,739	69	-	-	91	314	261,030	-
Rat	-	506	1,565	4,581	753	-	4	-	62	344	20,802	-
Guinea pig	-	-	-	-	-	-	-	-	-	16	-	-
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	21	-	-	-	-	-	-	-
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	-	-	-	-	-	-	-	-	-	-	-
Gerbil	-	1	-	-	-	-	-	-	-	-	-	-
Other rodent	-	30	-	-	-	-	-	-	65	17	-	-
Rabbit	-	-	25	2	-	2	-	-	-	10	2	-
Cat	-	-	-	-	17	-	-	11	-	58	-	-
Dog	-	-	-	-	-	-	-	-	-	-	-	-
Beagle	-	-	-	-	-	-	-	-	-	90	-	-
Other including cross-bred dogs	-	-	-	5	41	-	-	-	-	-	42	-
Ferret	-	-	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	99	-	-	253	-	-	-
Horse and other equids	-	-	-	-	-	20	-	-	-	-	-	-
Pig	-	-	-	5	293	-	-	158	-	-	120	44
Goat	-	-	513	-	-	-	-	-	-	-	-	672
Sheep	-	371	-	-	1	784	-	-	1,860	-	-	6,596
Cattle	-	-	-	-	-	284	-	-	884	-	-	2,542
Deer	-	-	94	-	-	-	-	-	-	-	-	94
Camelid	-	-	-	-	-	-	-	-	-	-	-	6
Other ungulate	-	-	-	-	-	-	-	-	-	-	-	-

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

Table 6a Animals used (non-toxicology) by species of animal and field of research, page 4 of 4

Species of animal		Field of research						Number of animals						
		Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	Ecology	Other	Tobacco(1)	Alcohol	Total
<b>Primate</b>														
New World monkey		-	-	-	-	-	-	-	-	-	-	-	-	-
Marmoset and tamarin		-	-	-	-	-	-	-	-	-	-	-	-	231
Old World monkey		-	-	-	-	-	-	-	-	-	-	-	-	-
Cynomolgus monkey ( <i>Macaca fascicularis</i> )		-	-	-	-	-	-	-	-	-	-	-	-	171
Rhesus monkey ( <i>Macaca mulatta</i> )		-	-	-	-	-	-	-	-	-	-	-	-	81
Other mammal		218	-	-	-	46	-	-	-	-	-	-	-	266
<b>Bird</b>		-	-	-	-	-	-	-	-	-	-	-	-	-
Domestic fowl ( <i>Gallus domesticus</i> )		306	167	-	8,580	-	-	-	4,551	-	-	-	-	114,919
Turkey		-	-	-	-	-	-	-	-	-	-	-	-	261
Common quail ( <i>Coturnix coturnix</i> )		-	-	-	-	-	-	-	-	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )		-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird		-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Reptile — any reptilian species</b>		-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Amphibian</b>		-	-	-	-	-	-	-	-	-	-	-	-	-
Common frog ( <i>Rana temporaria</i> )		-	-	-	-	-	-	-	-	-	-	-	-	450
Northern leopard frog ( <i>Rana pipiens</i> )		-	-	-	-	-	-	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )		-	22	-	-	-	-	12	-	-	-	-	-	1,710
Western clawed frog ( <i>Xenopus tropicalis</i> )		341	-	-	-	-	-	-	-	-	-	-	-	1,766
Other amphibian		-	-	-	-	-	-	-	-	-	-	-	-	360
<b>Fish</b>		-	-	-	-	-	-	-	-	-	-	-	-	-
Zebra fish		38,418	13,806	30,446	-	-	7,188	1,766	-	-	140	364	89	3,715
Other fish		8,224	116	-	-	-	-	-	-	-	56,655	2,133	-	148,138
<b>Cephalopod</b>		-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total</b>	<b>40</b>	<b>449,335</b>	<b>196,642</b>	<b>492,625</b>	<b>19,699</b>	<b>3,507</b>	<b>18</b>	<b>7,453</b>	<b>60,002</b>	<b>3,502</b>	<b>282,067</b>	<b>-</b>	<b>4,076</b>	<b>3,651,193</b>

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

**Table 7 Scientific procedures (non-toxicology) by species of animal and production of biological materials**

Species of animal	Production					Other <sup>(1)</sup>	Total	Number of procedures
	Infectious agents	Vectors	Neoplasms	Monoclonal antibodies (ascites model)	Monoclonal antibodies (initial immunisation)			
<b>Mammal</b>								
<b>Mouse</b>	20,843	2,722	11,105	-	1,230	5,482	136,862	2,709,891
<b>Rat</b>	279	668	122	-	90	56	29,112	136,771
<b>All other rodents</b>	488	-	19	-	2	66	12,323	10,217
<b>Rabbit</b>	-	-	-	-	59	1,492	2,273	1,160
<b>Cat</b>	-	-	-	-	-	-	-	255
<b>Dog</b>	-	-	-	-	-	-	564	438
<b>Ferret</b>	-	-	-	-	-	124	-	306
<b>Other carnivore</b>	-	-	-	-	-	-	-	448
<b>Horse and other equids</b>	-	-	-	-	-	-	6,217	2,091
<b>Pigs, sheep &amp; all other ungulates</b>	466	6	-	52	675	36,514	14,007	51,720
<b>Primate</b>								
<b>New World monkey</b>	-	-	-	-	-	-	23	236
<b>Old World monkey</b>	-	-	-	-	-	37	317	283
<b>All other mammals</b>	-	-	-	-	-	-	-	637
<b>Bird</b>	90,226	-	-	-	-	157	3,607	30,006
<b>Reptile, Amphibian</b>	-	-	-	-	-	-	5,587	5,468
<b>Fish</b>	5,899	-	1,708	-	-	-	14,947	442,310
<b>Total</b>	<b>118,201</b>	<b>3,396</b>	<b>12,954</b>	<b>-</b>	<b>1,433</b>	<b>8,089</b>	<b>248,346</b>	<b>3,354,153</b>
Increase on 2012	-16,262	-419	-1,248	0	-129	-2,924	55,603	-21,028
Percentage change from 2012	-12%	-11%	-9%	N/A	-8%	-27%	29%	-0.6%
Percentage of total for 2013	3%	0.1%	0.3%	0%	0.04%	0.29%	7%	90%
2012 Totals	134,463	3,815	14,202	0	1,562	11,013	192,743	3,375,181
								3,732,979

(1) Includes breeding procedures which are now detailed in Tables 3.1 - 3.3

N/A = Not applicable

**Table 9 Scientific procedures (toxicology) by species of animal and toxicological purpose, page 1 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Number of procedures	
	General safety/efficacy evaluation		Household	Industry	Food additives	Other foodstuffs		
	Pollution	Agriculture						
<b>Mammal</b>								
Mouse	-	3,665	5,971	-	-	-	-	
Rat	-	13,485	21,051	-	-	-	46	
Guinea pig	-	-	-	-	-	-	-	
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	-	-	-	
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	-	-	-	-	-	-	
Gerbil	-	-	-	-	-	-	-	
Other rodent	-	152	-	-	-	-	-	
Rabbit	-	824	702	-	-	-	-	
Cat	-	-	-	-	-	-	-	
Dog	-	411	-	-	-	-	-	
Beagle	-	-	-	-	-	-	-	
Other including cross-bred dogs	-	-	-	-	-	-	-	
Ferret	-	-	-	-	-	-	-	
Other carnivore	-	-	-	-	-	-	-	
Horse and other equids	-	-	-	-	-	-	-	
Pig	-	-	-	-	-	-	-	
Goat	-	11	-	-	-	-	-	
Sheep	-	-	-	-	-	-	-	
Cattle	-	73	-	-	-	-	-	
Deer	-	-	-	-	-	-	-	
Camelid	-	-	-	-	-	-	-	
Other ungulate	-	-	-	-	-	-	-	

(2) Following a Government decision in 1998, procedures using animals in research on finished cosmetics and on cosmetic ingredients have not been allowed.

**Table 9 Scientific procedures (toxicology) by species of animal and toxicological purpose, page 2 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Number of procedures
	Pollution	Agriculture	Industry	Household	Food additives	Other foodstuffs	
<b>Primate</b>							
New World monkey	-	-	-	-	-	-	-
Marmoset and tamarin	-	-	-	-	-	-	-
Old World monkey	-	-	-	-	-	-	-
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	-	-	-	-	-	-	-
Rhesus monkey ( <i>Macaca mulatta</i> )	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-
<b>Bird</b>							
Domestic fowl ( <i>Gallus domesticus</i> )	30	-	-	-	-	-	229
Turkey	-	-	-	-	-	-	-
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	675	-	-	-	-	-	-
Other bird	-	910	-	-	-	-	-
<b>Reptile</b> — any reptilian species	-	-	-	-	-	-	-
<b>Amphibian</b>							
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	-	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	-	-	-	-	-	-	-
Other amphibian	-	-	-	-	-	-	-
<b>Fish</b>							
Zebra fish	275	-	-	-	-	-	-
Other fish	7,533	5,556	2,226	-	39	-	-
<b>Total</b>	<b>7,808</b>	<b>25,792</b>	<b>29,950</b>	<b>-</b>	<b>1,395</b>	<b>275</b>	<b>-</b>
Increase on 2012	-742	5,093	-14,837	0	726	-57	0
Percentage change from 2012	-9%	25%	-33%	N/A	109%	-17%	N/A
Percentage of total for 2013	2%	7%	8%	0%	0.4%	0.1%	0%
2012 Totals	8,550	20,699	44,787	0	669	332	0

N/A = Not applicable

(2) Following a Government decision in 1998, procedures using animals in research on finished cosmetics and on cosmetic ingredients have not been allowed.

**Table 9 Scientific procedures (toxicology) by species of animal and toxicological purpose, page 3 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Other purposes	Medical device safety	Method development	Other	Total
	Safety testing	Efficacy testing	Pharmaceutical safety/efficacy evaluation	ADME and residue	Toxicology research	Tobacco safety(1)					
<b>Mammal</b>											
Mouse	32,189	5,589	128,273	10,410	413	-	940	961	569	188,980	
Rat	48,488	500	1,894	7,485	355	-	312	2,614	1,581	99,167	
Guinea pig	1,413	2,736	2,997	14	-	-	-	4	-	7,164	
Syrian Hamster ( <i>Mesocricetus auratus</i> )	760	-	18	-	-	-	-	38	36	852	
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	-	-	-	-	-	-	-	-	-	
Gerbil	-	-	-	-	-	-	-	-	-	-	
Other rodent	-	-	-	-	-	-	-	-	50	202	
Rabbit	5,433	5	2,820	77	-	-	175	79	-	10,115	
Cat	15	-	-	-	-	-	-	-	-	15	
Dog	2,825	-	3	390	-	-	95	33	3,757		
Beagle	-	20	-	-	-	-	-	-	-	20	
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	
Ferret	-	-	-	-	-	-	-	-	-	-	
Other carnivore	-	61	-	-	-	-	-	51	-	112	
Horse and other equids	73	123	-	-	-	-	-	-	-	196	
Pig	378	1,170	-	58	20	-	3	97	-	1,726	
Goat	-	-	-	6	-	-	-	-	-	17	
Sheep	-	80	95	72	-	-	46	2	2	297	
Cattle	86	590	4	70	-	-	1	39	-	863	
Deer	-	-	-	-	-	-	-	-	-	-	
Camelid	-	-	-	-	-	-	-	-	-	-	
Other ungulate	-	-	-	-	-	-	-	-	-	-	

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

**Table 9 Scientific procedures (toxicology) by species of animal and toxicological purpose, page 4 of 4**

Species of animal	Number of procedures					
	Toxicology or other safety/efficacy evaluation			Other purposes		
	Pharmaceutical safety/efficacy evaluation		Quality control	ADME and residue	Toxicology research	Tobacco safety(1)
<b>Primate</b>						
New World monkey	49	-	-	-	-	-
Marmoset and tamarin						
Old World monkey	1,560	8	-	414	-	2
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	40	-	-	-	-	224
Rhesus monkey ( <i>Macaca mulatta</i> )	-	-	-	-	-	40
Other mammal	-	-	-	-	-	-
<b>Bird</b>						
Domestic fowl ( <i>Gallus domesticus</i> )	2,253	11,218	703	78	-	20
Turkey	176	376	-	-	-	10
Common quail ( <i>Coturnix coturnix</i> )	-	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	-	-	-	-	-	-
Other bird	-	-	-	-	-	-
<b>Reptile — any reptilian species</b>	-	-	-	-	-	-
<b>Amphibian</b>						
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	-	-	-	-	-	-
Other amphibian	-	-	-	-	-	-
<b>Fish</b>						
Zebra fish	9,764	-	-	4,477	-	403
Other fish	3,792	7,729	-	475	204	36
<b>Total</b>	<b>109,294</b>	<b>30,205</b>	<b>136,807</b>	<b>19,549</b>	<b>5,469</b>	<b>1,479</b>
Increase on 2012	1,004	4,292	10,902	-2,069	4,504	0
Percentage change from 2012	0.9%	17%	9%	-10%	467%	N/A
Percentage of total for 2013	29%	8%	36%	5%	1%	0.4%
2012 Totals	108,290	25,913	125,905	21,618	965	0
					1,282	14,835
						3,204
						377,049

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

N/A = Not applicable

**Table 9a Animals used (toxicology) by species of animal and toxicological purpose, page 1 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Number of animals	
	General safety/efficacy evaluation			Food additives	Other foodstuffs	Finished cosmetics(2)		
	Pollution	Agriculture	Industry					
<b>Mammal</b>								
Mouse	-	3,665	5,971	-	-	-	-	
Rat	-	13,485	21,051	-	-	46	-	
Guinea pig	-	-	-	-	-	-	-	
Syrian Hamster ( <i>Mesocricetus auratus</i> )	-	-	-	-	-	-	-	
Chinese Hamster ( <i>Cricetulus griseus</i> )	-	-	-	-	-	-	-	
Gerbil	-	-	-	-	-	-	-	
Other rodent	-	152	-	-	-	-	-	
Rabbit	-	824	702	-	-	-	-	
Cat	-	-	-	-	-	-	-	
Dog	-	402	-	-	-	-	-	
Beagle	-	-	-	-	-	-	-	
Other including cross-bred dogs	-	-	-	-	-	-	-	
Ferret	-	-	-	-	-	-	-	
Other carnivore	-	-	-	-	-	-	-	
Horse and other equids	-	-	-	-	-	-	-	
Pig	-	-	-	-	-	-	-	
Goat	-	-	11	-	-	-	-	
Sheep	-	-	-	-	-	-	-	
Cattle	-	-	73	-	-	-	-	
Deer	-	-	-	-	-	-	-	
Camelid	-	-	-	-	-	-	-	
Other ungulate	-	-	-	-	-	-	-	

(2) Following a Government decision in 1998, procedures using animals in research on finished cosmetics and on cosmetic ingredients have not been allowed.

**Table 9a Animals used (toxicology) by species of animal and toxicological purpose, page 2 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Number of animals
	Pollution	Agriculture	Industry	Household	Food additives	Other foodstuffs	
<b>Primate</b>							
New World monkey	-	-	-	-	-	-	-
Marmoset and tamarin	-	-	-	-	-	-	-
Old World monkey	-	-	-	-	-	-	-
Cynomolgus monkey ( <i>Macaca fascicularis</i> )	-	-	-	-	-	-	-
Rhesus monkey ( <i>Macaca mulatta</i> )	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-
<b>Bird</b>							
Domestic fowl ( <i>Gallus domesticus</i> )	-	30	-	-	-	-	229
Turkey	-	-	-	-	-	-	-
Common quail ( <i>Coturnix coturnix</i> )	-	675	-	-	-	-	-
Other quail (not <i>Coturnix coturnix</i> )	-	910	-	-	-	-	-
Other bird	-	-	-	-	-	-	-
<b>Reptile</b> — any reptilian species	-	-	-	-	-	-	-
<b>Amphibian</b>							
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	-	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	-	-	-	-	-	-	-
Other amphibian	-	-	-	-	-	-	-
<b>Fish</b>							
Zebra fish	275	-	-	-	-	-	-
Other fish	7,533	3,498	2,226	-	-	-	-
<b>Cephalopod</b>	-	-	-	-	-	-	-
<b>Total</b>	<b>7,808</b>	<b>23,725</b>	<b>29,950</b>	<b>-</b>	<b>1,356</b>	<b>275</b>	<b>-</b>

(2)Following a Government decision in 1998, procedures using animals in research on finished cosmetics and on cosmetic ingredients have not been allowed.

**Table 9a Animals used (toxicology) by species of animal and toxicological purpose, page 3 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Number of animals		
	Pharmaceutical safety/efficacy evaluation		Other purposes		Method development	Other			
	Safety testing	Efficacy testing	Quality control	ADME and residue	Toxicology research	Tobacco safety (1)	Medical device safety	Method development	Other
<b>Mammal</b>									
Mouse	32,189	5,589	128,273	10,410	413	-	940	935	569
Rat	48,162	425	1,863	7,455	355	-	144	2,299	1,581
Guinea pig	1,413	2,736	2,997	14	-	-	-	4	98,222
Syrian Hamster ( <i>Mesocricetus auratus</i> )	760	-	18	-	-	-	-	38	7,164
Chinese Hamster ( <i>Crictetus griseus</i> )	-	-	-	-	-	-	-	-	852
Gerbil	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	50
Rabbit	3,732	5	1,828	77	-	169	6	-	202
Cat	15	-	-	-	-	-	-	-	7,343
Dog	2,647	-	-	108	-	-	-	-	15
Beagle	2,647	-	-	-	-	-	-	-	32
Other including cross-bred dogs	-	20	-	-	-	-	-	-	3,232
Ferret	-	-	-	-	-	-	-	-	20
Other carnivore	-	53	-	-	-	-	-	-	-
Horse and other equids	55	123	-	-	-	-	-	-	64
Pig	378	1,168	-	49	20	3	84	-	1,702
Goat	-	-	-	6	-	-	-	-	17
Sheep	-	80	93	72	-	-	40	2	287
Cattle	86	590	4	70	-	1	34	-	858
Deer	-	-	-	-	-	-	-	-	-
Camelid	-	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	-	0

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

**Table 9a Animals used (toxicology) by species of animal and toxicological purpose, page 4 of 4**

Species of animal	Toxicology or other safety/efficacy evaluation						Method development	Other	Total
	Pharmaceutical safety/efficacy evaluation		Other purposes		Tobacco safety (1)	Medical device safety			
	Safety testing	Efficacy testing	Quality control	ADME and residue					
<b>Primate</b>									
New World monkey	49	-	-	-	-	-	-	-	49
Marmoset and tamarin									
Old World monkey	1,391	8	-	66	-	-	2	160	3
Cynomolgus monkey ( <i>Macaca fascicularis</i> )		-	-	-	-	-	-	40	1,630
Rhesus monkey ( <i>Macaca mulatta</i> )		-	-	-	-	-	-	-	40
Other mammal									
<b>Bird</b>									
Domestic fowl ( <i>Gallus domesticus</i> )	2,253	11,218	703	78	-	-	18	-	14,529
Turkey	176	376	-	-	-	-	10	-	562
Common quail ( <i>Coturnix coturnix</i> )		-	-	-	-	-	-	-	
Other quail (not <i>Coturnix coturnix</i> )		-	-	-	-	-	-	-	675
Other bird									
<b>Reptile</b> — any reptilian species									
<b>Amphibian</b>									
Common frog ( <i>Rana temporaria</i> )	-	-	-	-	-	-	-	-	-
Northern leopard frog ( <i>Rana pipiens</i> )	-	-	-	-	-	-	-	-	-
African clawed frog ( <i>Xenopus laevis</i> )	-	-	-	-	-	-	-	-	-
Western clawed frog ( <i>Xenopus tropicalis</i> )	-	-	-	-	-	-	-	-	-
Other amphibian	-	-	-	-	-	-	-	-	-
<b>Fish</b>									
Zebra fish	9,732	-	-	-	4,477	-	403	-	14,887
Other fish	2,472	7,729	-	475	204	-	36	-	24,173
<b>Cephalopod</b>					-	-	-	-	-
<b>Total</b>	<b>105,510</b>	<b>30,120</b>	<b>135,779</b>	<b>18,880</b>	<b>5,469</b>	<b>-</b>	<b>1,299</b>	<b>4,123</b>	<b>2,271</b>
									<b>366,565</b>

(1) Following a Government decision in 1997, procedures using animals in research on tobacco have not been allowed.

**Table 10 Scientific procedures (toxicology) by species of animal and type of legislation**

**Summary version**

Note: For numbers of procedures by purpose, see full table available on the website

**Great Britain 2013**

Species of animal	UK requirements only	One EU country only (not UK)	EU requirements, incl. European Pharmacopoeia	Requirements of (non-EU) Council of Europe	Requirements of other countries	Any combination of legislative requirements	Non-legislative purposes	Number of procedures Total
<b>Mammal</b>								
<b>Mouse</b>	3,288	64	5,720	-	13,678	164,808	1,422	<b>188,980</b>
<b>Rat</b>	607	-	2,082	-	228	92,763	3,487	<b>99,167</b>
<b>All other rodents</b>	45	-	620	-	819	6,630	104	<b>8,218</b>
<b>Rabbit</b>	86	-	3,002	-	35	6,837	155	<b>10,115</b>
<b>Cat</b>	-	-	15	-	-	-	-	<b>15</b>
<b>Dog</b>	-	-	68	-	-	3,608	101	<b>3,777</b>
<b>Ferret</b>	-	-	-	-	-	-	-	-
<b>Other carnivore</b>	112	-	-	-	-	-	-	<b>112</b>
<b>Horse and other equids</b>	-	-	158	-	-	38	-	<b>196</b>
<b>Pigs, sheep &amp; all other ungulates</b>	-	-	-	-	-	-	-	-
<b>Primate</b>	3	-	1,307	-	-	1,305	288	<b>2,903</b>
New World monkey	-	-	-	-	-	49	-	<b>49</b>
Old World monkey	-	-	-	-	-	2,250	41	<b>2,291</b>
<b>All other mammals</b>	-	-	-	-	-	-	-	-
<b>Bird</b>	296	-	4,656	-	2,100	9,397	229	<b>16,678</b>
<b>Reptile / Amphibian</b>	-	-	-	-	-	-	-	-
<b>Fish</b>	1,399	-	2,267	-	355	14,412	24,076	<b>42,509</b>
<b>Total</b>	<b>5,836</b>	<b>64</b>	<b>19,895</b>	-	<b>17,215</b>	<b>302,097</b>	<b>29,903</b>	<b>375,010</b>
Increase on 2012	3,653	64	-5,154	0	5,377	-12,016	6,037	-2,039
Percentage change from 2012	167%	N/A	-21%	N/A	45%	-4%	25%	-0.5%
Percentage of total for 2013	2%	0.0%	5%	0%	5%	81%	8%	100%
2012 Totals	2,183	0	25,049	0	11,838	314,113	23,866	377,049

N/A = Not applicable

**Table 11 Scientific procedures (toxicology) by species of animal and type of toxicological test: all purposes, page 1 of 2**

Great Britain 2013		Type of toxicological test or procedure						Number of procedures			
Species of animal		Acute lethal toxicity	Acute lethal concentration	Acute limit setting	Acute non-lethal clinical sign	Subacute limit-setting or dose ranging	Subacute toxicity	Subchronic and chronic	Carcinogenicity	Genetic toxicology (includes mutagenicity)	Teratogenicity
<b>Mammal</b>											
<b>Mouse</b>	104,512	364	756	11,723	2,024	2,446	2,003	7,705	2,852	330	
<b>Rat</b>	118	1,068	2,014	3,785	7,702	10,786	11,572	8,659	2,996	4,281	
<b>All other rodents</b>	-	50	-	30	-	175	144	-	-	-	
<b>Rabbit</b>	-	-	20	104	124	98	96	-	-	2,296	
<b>Cat</b>	-	-	-	-	-	-	-	-	-	-	
<b>Dog</b>	-	-	-	33	447	984	1,501	-	-	-	
<b>Ferret</b>	-	-	-	-	-	-	-	-	-	-	
<b>Other carnivore</b>	-	-	-	-	-	-	-	-	-	-	
<b>Horse and other equids</b>	-	-	-	-	-	-	-	-	-	-	
<b>Pigs, sheep &amp; all other ungulates</b>	-	-	-	8	30	126	72	-	-	-	
<b>Primate</b>	-	-	-	-	-	-	-	40	-	-	
<b>New World monkey</b>	-	-	-	6	338	843	320	-	-	-	
<b>Old World monkey</b>	-	-	-	-	-	-	-	-	-	-	
<b>All other mammals</b>	-	-	-	300	50	60	1,099	520	-	-	
<b>Bird</b>	179	300	50	-	-	-	-	-	-	-	
<b>Reptile, amphibian</b>	-	-	-	4,190	3,423	900	5,484	2,220	-	-	
<b>Fish</b>	525	-	-	-	-	-	-	-	-	-	
<b>Total</b>	<b>105,334</b>	<b>5,972</b>	<b>6,263</b>	<b>15,749</b>	<b>12,664</b>	<b>21,462</b>	<b>17,968</b>	<b>16,364</b>	<b>5,848</b>	<b>6,907</b>	
Increase on 2012	7,371	-2,079	-834	492	1,135	-2,972	3,958	7,757	214	2,569	
Percentage change from 2012	8%	-26%	-12%	3%	10%	-12%	28%	90%	4%	59%	
Percentage of total for 2013	28%	2%	2%	4%	3%	6%	5%	4%	2%	2%	
2012 Totals	97,963	8,051	7,097	15,257	11,529	24,434	14,010	8,607	5,634	4,338	

**Table 11 Scientific procedures (toxicology) by species of animal and type of toxicological test: all purposes, page 2 of 2**

Species of animal	Other reproductive toxicity	Type of toxicological test or procedure						Other toxicology	Total
		In eyes	For skin irritation	Toxicokinetics	Pyrogenicity	Biocompatibility	Enzyme induction for in vitro tests		
<b>Great Britain 2013</b>									
<b>Mammal</b>									
<b>Mouse</b>	735	-	907	5,498	-	470	156	5,520	40,979
<b>Rat</b>	23,706	-	18	10	8,866	-	330	212	171
<b>All other rodents</b>	-	-	-	175	-	-	-	-	99,167
<b>Rabbit</b>	16	439	459	-	34	4,166	209	-	8,218
<b>Cat</b>	-	-	-	-	-	-	-	48	2,006
<b>Dog</b>	-	-	-	202	-	-	-	-	10,115
<b>Ferret</b>	-	-	-	-	-	-	-	-	15
<b>Other carnivore</b>	-	-	-	-	-	-	-	-	15
<b>Horse and other equids</b>	-	-	-	-	-	-	-	-	3,777
<b>Pigs, sheep &amp; all other ungulates</b>	-	-	-	155	-	45	-	-	-
<b>Primate</b>	-	-	-	7	-	-	-	-	2,903
<b>New World monkey</b>	-	-	-	167	-	-	-	-	-
<b>Old World monkey</b>	-	-	-	-	-	-	-	-	49
<b>All other mammals</b>	-	-	-	-	-	-	-	-	2,291
<b>Bird</b>	494	-	-	50	-	-	-	-	617
<b>Reptile, amphibian</b>	-	-	-	-	-	-	-	-	-
<b>Fish</b>	2,008	-	-	-	-	-	-	-	13,926
<b>Total</b>	<b>26,959</b>	<b>439</b>	<b>477</b>	<b>917</b>	<b>15,154</b>	<b>4,166</b>	<b>1,054</b>	<b>368</b>	<b>5,739</b>
Increase on 2012	-15,756	-273	-233	-65	-809	-489	55	220	-2,192
Percentage change from 2012	-37%	-38%	-33%	-7%	-5%	-11%	6%	149%	-28%
Percentage of total for 2013	7%	0.1%	0.1%	0.2%	4%	1%	0.3%	0.1%	2%
2012 Totals	42,715	712	710	982	15,963	4,655	999	148	7,931
Number of procedures									

# Appendix A

## General system of control under the Animals (Scientific Procedures) Act 1986

### Introduction

1. The Animals (Scientific Procedures) Act 1986 puts into effect a rigorous system of controls on scientific work on living animals, including the need for:
  - a. both the researcher and the project to be separately licensed;
  - b. stringent safeguards on animal pain and suffering; and
  - c. general requirements to ensure the care and welfare of animals.

The Act implements the requirements of EU Directive 2010/63/EU.

2. Operation of the Act is a reserved issue in Great Britain, the Home Office administering the legislation in England, Scotland and Wales. The Act is separately administered in Northern Ireland.

### Scope of the Act

3. The 1986 Act controls any experimental or other scientific procedure applied to a 'protected animal' that may have the effect of causing that animal pain, suffering, distress or lasting harm. Such work is referred to in the Act as a 'regulated procedure'.
4. 'Protected animals' are defined as all living vertebrate animals, except man, plus cephalopods. The definition extends to fetal, larval or embryonic forms that have reached specified stages in their development.
5. Under the Act an animal is regarded as 'living' until 'the permanent cessation of circulation or complete destruction of its brain'. Procedures carried out on decerebrate animals are also subject to the controls of the Act.
6. The definition of a regulated procedure encompasses:
  - a. most breeding of animals with genetic defects;
  - b. production of antisera and other blood products;
  - c. the maintenance and passage of tumours and parasites;
  - d. the administration for a scientific purpose of an anaesthetic, analgesic, tranquilliser or other drug to dull perception.

Killing an animal requires licence authority in certain circumstances.

7. The controls of the 1986 Act do not extend to procedures applied to animals in the course of:
  - a. non-experimental clinical veterinary practice, non-experimental agricultural practice or practices undertaken for the purposes of recognised animal husbandry;
  - b. the administration of any substance or article to an animal for research purposes in accordance with an animal test certificate granted under the Veterinary Medicines Regulations 2011;<sup>65</sup>
  - c. the ringing, tagging or marking of an animal, or the application of any other

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<sup>65</sup> S.I. 2011/2159.

humane procedure for the primary purpose of enabling an animal to be identified, provided that it causes only momentary pain or distress (or none at all) and no lasting harm.

8. Three kinds of licence are required for all work controlled by the Act. The procedures must be part of a programme of work authorised by a project licence and the person applying the regulated procedures must hold a personal licence. In addition, the place where the work is carried out must be licensed to do so. No work may be done unless the procedure, the animals used and the place where the work is to be done are specifically authorised in both project and personal licences.

### **Personal licences**

9. A personal licence is the Home Secretary's endorsement that the holder is a suitable and competent person to carry out specified procedures on specified animals, under supervision where necessary. Applicants must be over 18 and are required to give details of their qualifications, training and experience. Those who have not previously held a Home Office licence need the endorsement of the named training and competency officer. Satisfactory completion of an accredited training course is also required before a personal licence is issued.
10. On 31 December 2013 there were 16,112 active personal licences. Personal licences continue to be in force until revoked but they must be reviewed at least every five years.

### **Project licences**

11. A project licence is granted when the Home Secretary considers that the use of living animals in a programme of work, for a purpose permitted by the Act, is justified and the methods proposed appropriate.
12. In deciding whether and on what terms to authorise the project, the likely adverse effects on the animals used must be weighed against the potential benefits (to humans, other animals or the environment) that are expected to accrue from the work. Adequate consideration must also have been given to the feasibility of using alternative methods not involving living animals.
13. The holder of a project licence undertakes overall responsibility for the scientific direction and control of the work. New project licence applicants are required to complete an accredited training course before the licence is granted.
14. Previous editions of this publication included a table on the number of project licenses in each severity banding (mild, moderate, substantial, unclassified). From January 2013 severity bands were not allocated to project licences, therefore this information is no longer available. However, from next year onwards, following the implementation of the new EC directive, more detailed information will be collected and published on the actual severity of individual procedures undertaken.

### **Designation of premises**

15. Except where otherwise authorised in a project licence (for example, for field work at a specified place and time), any place where work is carried out under the Act must be licensed as a scientific procedure establishment. Establishments that breed certain types of animal listed in Schedule 2 to the Act for use in scientific procedures ('breeding establishments'), and establishments that obtain such animals from elsewhere and supply

them to laboratories ('supplying establishments') must hold an appropriate licence to do so. Animals listed in Schedule 2 are: mice; rats; guinea pigs; hamsters; gerbils; rabbits; cats; dogs; ferrets; non-human primates; pigs (if genetically modified); sheep (if genetically modified); common quail (*Coturnix coturnix*); amphibians (of the species *Xenopus laevis*, *Xenopus tropicalis*, *Rana temporaria* and *Rana pipiens*); and zebra fish.

16. Licensed establishments are required to nominate a person to be responsible for the day-to-day care of animals and a veterinary surgeon to advise on their health and welfare.
17. There were 174 certificates of designation in force on 31 December 2013. Of these, 173 were registered as user establishments, 113 as breeding establishments and 65 as supplying establishments. These figures add up to more than the total number of establishments because a single establishment may fall into more than one of the categories. For example, an establishment may be registered as both a breeder and user of animals.

Great Britain 2013

**Table 19 Project licences and scientific procedures by type of designated establishment**

Type of designated establishment	Number of licence holders <sup>(1)</sup> reporting countable <sup>(2)</sup> procedures by number of procedures reported						Licensees reporting non-countable(2) procedures only	Number of licence holders(1) reporting no procedures	Total licensees	Total	Percentage
	1 to 50	51 to 100	101 to 200	201 to 400	401 to 600	601 to 800	801 to 1,000	More than 1,000			
Public health laboratories	5	1	4	2	0	0	1	3	16	1	10
Universities, medical schools	403	185	267	292	165	103	80	477	1,972	9	566
NHS hospitals	2	2	3	1	3	1	2	4	18	-	5
Government departments	17	6	5	8	9	1	2	11	59	-	31
Other public bodies	29	14	17	19	13	10	6	78	186	1	49
Non-profit-making organisations	20	6	6	12	2	6	3	46	101	-	23
Commercial organisations	28	14	20	30	14	17	9	86	218	1	37
<b>Total</b>	<b>504</b>	<b>228</b>	<b>322</b>	<b>364</b>	<b>206</b>	<b>138</b>	<b>103</b>	<b>705</b>	<b>2,570</b>	<b>12</b>	<b>721</b>
											<b>100%</b>

(1) Some licence holders hold more than one licence; these figures are compiled by **numbers of project licences**, not by numbers of actual licence holders.

(2) Only procedures on adult or free-living animals (including neonatal and juvenile mammals, and newly hatched birds) are counted.

Details of procedures on immature forms (e.g. larvae, embryos, fish fry) are collected but not counted.

Animals in the wild involved in rodenticide trials are also not counted. Details (if applicable) are given in the Commentary.

# Speaking of Research

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