

## EDITORIAL

# The publication in *Homeopathy* of studies involving animal experimentation



This editorial introduces a revised set of publication requirements for papers, submitted to *Homeopathy*, that involve animal experimentation. Journals that publish studies involving animal experimentation have a major role to play in the maintenance of ethical standards because researchers are reliant upon them for publication of their findings. With an increasing global trend towards greater transparency and accountability in animal experimentation, many academic journals, such as the *British Journal of Pharmacology*,<sup>1,2</sup> are taking action to improve reporting standards. In recognition of this need, members of *Homeopathy's* Editorial Board have been working together to examine the scientific rationale and the most relevant ethical guidelines for the use of animals in research. In addition, they have examined existing published studies in homeopathy research and current practice within the broad domain of medical research. Each of these aspects has informed the revised publication policy, whose overarching objectives are to maximise the ethical standards and scientific quality of animal research in homeopathy, and thereby ultimately to avoid any unnecessary suffering of animals used in such research.

The following description details the background that was considered, the rationale for this development, and the steps that will be taken.

## The animals used in research

The number of animals used in research worldwide is impossible to specify exactly because many countries do not publish relevant data. In the United Kingdom, vertebrate animals, such as mammals, fish and birds, are protected by law; the numbers of these animals used for research purposes are counted by the UK government each year. Invertebrate animals, such as fruit flies or worms, are also used in large numbers for research purposes but are neither protected by the law nor counted.<sup>3</sup> The most recently published figures available relate to the year 2013, when there were over four million (4,121,582) scientific procedures using animals in the UK.<sup>4</sup> The number of animals used will be less than this because some animals are included in, or have been subjected to, more than one procedure. The figures show that the annual number of animal procedures increased by one million (over one third) in the twelve years from 1997 to 2009.<sup>4</sup>

The use of genetically modified mice is largely responsible for recent increases.<sup>5</sup> A known and consistent genetic profile of the animals used in a study is often of advantage,

as it can reduce variability in the experiments arising from genetic variation in the animal samples studied, and can also increase the reproducibility of the results.<sup>6</sup> More importantly, through gene knockout experiments, such models can reveal the impact of given molecular pathways in the normal specimen. In 2013 alone, genetically modified mice were used in 2,511,929 scientific procedures, representing 61% of the overall total in the UK.<sup>4</sup>

Whilst we cannot determine the exact number of animals used worldwide in research, the global figure has been estimated at between 50 and 60 million animal procedures per year.<sup>3</sup> Moreover, the number of animals used in research continues to rise in many countries<sup>7</sup> and, as in the UK, the recent rises in animal procedures are mainly attributed to the increased production and use of animals with genetic modifications or defects.

Most of the animals used in research in the UK are rodents, followed by fish and birds. Taken together, dogs, cats and monkeys represent 0.2% of animals used. The following figures relate to procedures on animals in the UK in 2013:

- Rats, mice and other rodents (all purpose-bred laboratory species): 82%
- Fish, amphibians, reptiles and birds: 15.3%
- Sheep, cows, pigs and other large mammals: 2%
- Dogs, cats, non-human primates and horses (all bred for research, no strays or unwanted pets can be used): 0.4%
- Others: 0.3%.<sup>4</sup>

## The animals used in homeopathy research

Whilst it is extremely difficult to establish the exact numbers of animals that have been subjects of experimentation in homeopathy research, it is possible to gain an indication of the number of studies in question through examination of the HomBRex (Homeopathic Basic Research experiments) database.<sup>8</sup> This database details studies that fall under the category of 'basic research' in the field of homeopathy and it currently lists 2180 published experiments, of which 1638 are original articles. Our search of the HomBRex database for studies involving animals in November 2015 showed that of the published papers, 1090 mentioned use of animals. Table 1 shows the breakdown of this number by species.

In addition to scrutiny of the HomBRex database, original research articles published in *Homeopathy* over the

**Table 1** Studies involving animals retrieved from HomBRex database, Nov 2015

Animal	Number of papers retrieved
Rats	361
Mice	366
Guinea pigs	48
Hamsters	1
Fish	8
Frogs	57
Toads	13
Birds	42
Sheep	2
Cows	21
Pigs	42
Other large animals	2
Dogs	20
Cats	5
Non-human primates	9
Horses	2
Rabbits	49
Unspecified	42
<b>Total</b>	<b>1090</b>

past 10 years (2006–2015) were analysed to establish the number that involved animal experimentation (Table 2) and the breakdown of this number by species (Figure 1).

These figures show that, over this 10-year period, 18.7% of studies published in *Homeopathy* concerned animal experimentation. The vast majority of these studies involved rats, mice and other rodents (74%), as was the case for studies listed on the HomBRex database (71%) and for the entire number of procedures on animals in the UK in 2013 (82%).

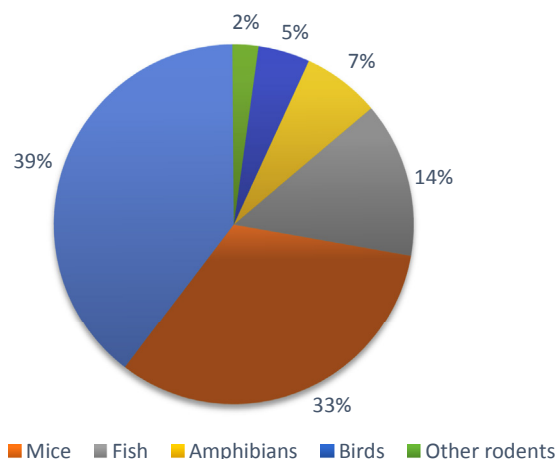
## Why animals are used in medical research

Animals are used for many different purposes in medical and pharmaceutical research. Most are used in the development and testing of medical and veterinary drugs, including vaccines.<sup>9</sup> As well as the intended benefits to humans, medicines and vaccines for companion animals and livestock also rely upon experimental animal research, and the majority of the medicines used for animals are derived from those used in humans. In addition, there are some treat-

**Table 2** Published studies involving animal experimentation\* over a 10-year time scale (*Homeopathy*, 2006–2015)

Year	Total number of original research articles	Total number of animal experimentation studies	Animal experimentation studies as % of total
2006	18	3	16.7
2007	18	0	0
2008	20	5	25
2009	20	5	25
2010	16	2	12.5
2011	15	4	26.7
2012	28	7	25
2013	26	6	23.1
2014	24	5	20.8
2015	45	6	13.3
<b>Total</b>	<b>230</b>	<b>43</b>	<b>18.7</b>

\* Excludes studies in veterinary medicine.



**Figure 1** Breakdown of published studies involving animal experimentation by species (2006–2015).

ments that are used exclusively in veterinary medicine. For example, Pasteurellosis, a severe respiratory disease, used to be common, and affected some 20% of cattle. Vaccine development involved research on about 450 calves, but it is estimated that the vaccine has prevented some 20 million cases of the disease worldwide.<sup>10</sup> The Royal Society for Prevention of Cruelty to Animals highlights the ethical dilemma this can generate:

*“The Society is opposed to all experiments causing pain, suffering or distress, yet advocates vaccination of companion animals to protect them from disease – and vaccines are currently developed and tested on animals.”<sup>9</sup>*

There are four commonly cited main reasons for using animal research:

- 1: *To advance the scientific understanding of how living creatures function.* The study of animals is viewed as a vital part of this process, as many normal biological processes, either at the cellular level or for a whole organ or physiological system, are the same in all animals or category of animals.
- 2: *As experimental models for the study of disease processes.* Humans and animals share many illnesses in common: for example, dogs are prone to cancer, diabetes, cataracts, ulcers, and bleeding disorders such as haemophilia, and rabbits often suffer from atherosclerosis, arthritis and obesity.
- 3: *In the development and testing of potential forms of treatment, especially pharmaceutical drugs.* Drugs are invariably tested on animals in preclinical studies, and data from animal studies are viewed as essential before new therapeutic drugs and procedures are tested on human patients.
- 4: *In assessment of safety.* New treatments are tested in suitable animals to reveal any potentially harmful effects.<sup>11</sup>

The categorisation of homeopathy research by these four reasons is a complex matter. It involves subjective judgment, since the author's stated aim may not fall precisely

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