



FBR: The case for animal testing

The need to find cures for currently incurable diseases is something that most people can agree on. But consensus about how those cures are arrived at is a different matter. **Matthew R Bailey**, president of the Foundation for Biomedical Research (FBR) met with *Research Features* to discuss why he believes animal testing is a vital stage in the process of developing new treatments.

Typhus, yellow fever, and polio. Without animal research, the world might never have seen the deployment of vaccines against these diseases. Zika, Ebola, Alzheimer's, Parkinson's, HIV/AIDS, and Malaria - all are as yet incurable, and without animal testing could remain so. Yet how do we reconcile the experiences of laboratory animals with actual and potential gains in medical research? *Research Features* spoke to Matthew R. Bailey, president of the Foundation for Biomedical Research (FBR) to hear his views on the subject.

Established in 1985, FBR supports ethical and essential animal research. Can you tell us more about the background and aims of the FBR?

The Foundation for Biomedical Research, (FBR) is America's most experienced, trusted and effective non-profit organisation dedicated to improving human and animal health by promoting public understanding and support for biomedical research. Through strategic communications and public education campaigns, FBR illuminates the essential role animal testing and research plays in changing health outcomes and defeating illnesses affecting both people and animals.

The FBR also works with its sister organisation the National Association for Biomedical Research whose mission is to promote sound public policy for the humane use of animals for biomedical research and testing.

What motivated you to become involved with FBR and to take on the role of president?

In 2005, I originally came to NABR when the organisation was in the midst of advocating for a piece of federal legislation that would crack down on animal rights extremists who were engaged in acts and threats of violence and harassment against researchers working with animal models. At the time my role was to educate congress about the necessity for this legislation and to build a grassroots coalition (the Animal Enterprise Protection Coalition) to assist with the passage of the law.

In 2015, my responsibilities expanded to FBR as Executive Vice President for both organisations. Earlier this year, when the founding president retired, I stepped into my current role.

What does your role involve?

A large part of my role is to help educate the general public on the importance of animal

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research and the need for animal models, specifically that they still play a critical role in treatments and cures for disease. Currently, there appears to be a concerted effort to demonise the humane use of dogs in research; unfortunately, the public does not fully understand that many of the drugs available to them were developed with the help of dogs in research. We also often forget that animal research helps animals too.

Thanks to research with animals, in particular dogs, our pets are able to live healthier and longer lives than they ever have before. Every vaccine developed for your pet was developed with the help of animals. And the fact that pet owners are able to give their dogs and cats the best possible nutrition available, is owed to the fact that other dogs and cats have served in research.

Animal testing is a controversial topic and individuals and organisations associated with this type of research have become targets of illegal actions by animal rights activists. What is the impact of this hostility?

Before the Animal Enterprise Terrorism Act was passed by Congress and signed by the President in 2006, FBR tracked approximately 40 illegal incidents per year committed against researchers and institutions. After the law went into effect, the number of illegal incidents in the US has dropped to virtually zero.

The impact is very clear. Aside from the immense fear for the personal safety of researchers and their families, these actions contributed to, in some cases, the loss of decades-worth of scientific data, and significant delays in the ability to combat illness and cure disease. These illegal actions unequivocally presented a material risk to universities, pharmaceutical companies and the individuals who worked for them.

What is your approach to dealing with it? Though illegal incidents have declined precipitously, tactics by opponents of animal



research have changed. Today, animal rights activists spend more time applying pressure through social media channels, traditional media, and public demonstrations designed to shock their audience. They do these things in the hope of generating the attention of elected officials in order to ultimately restrict or eliminate research with animals.

What do animal experiments tell us about humans?

Because of the genetic similarities of animals and people, animals are invaluable models for human disease and are critical in the studies of incurable diseases like Zika, Ebola, Alzheimer's, Parkinson's, HIV/AIDS, and Malaria. Without

research animals, the world may never have seen the deployment of vaccines against typhus, yellow fever, and polio.

To give you an idea of the genetic similarities of animals and people, here are some facts and figures:

- Of the approximately 4000 genes studied, less than 10 are found in one species and not the other.
- On average, the protein-coding regions of the mouse and human genomes are 85 per cent identical; some genes are 99 per cent identical, while others are only 60 per cent identical. These regions are evolutionarily conserved because they are required for function (<https://www.genome.gov/10001345/>).
- Monkeys and humans share anywhere between 96 per cent to 99 per cent of genes.
- Scientists have sequenced the genome of the chimpanzee and found that humans are 96 per cent similar to the great ape species (NatGeo).
- Humans and chimps share a surprising 98.8 per cent of their DNA (American Museum of Natural History).



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How is the balance between animal rights and human health needs assessed?

While laboratory animals are a critical part of medical research, their welfare is extremely important to research scientists and research institutions. Not only do scientists need healthy and well-cared for animals in order to avoid skewed data, but the federal Animal Welfare Act requires animals be treated humanely. A research protocol may not move forward without serious consideration of research animal welfare by an institutional animal care and use committee (IACUC). This committee is made up of a variety of professionals that include veterinarians, veterinary technicians, and even outside community members.

Which diseases are most dependent on animal research for further advancement?

Because of the complexity of the brain, non-human primates are very important to neuroscience research. Both dogs and humans develop cancer in very similar ways – they are also treated for the disease in very similar ways. Animals are extremely important for vaccine development to treat both people and other animals including pets, farm animals, and endangered species.

What are the limitations of current animal testing alternatives?

While progress has been made in the area of alternatives to animals for toxicity testing, technology has not advanced to the point that it can replace animals in every area of research. The most obvious example is in the area of basic research – answering fundamental questions about how a complete living biological system works.

Most of the basic research conducted in the United States takes place at the academic level. Basic research has led to the accomplishments of several winners of the Nobel Prize in Medicine – ranging from the discovery of penicillin in the 1940s, to organ transplantation techniques in the 1990s, to the most recent advancements in malaria therapy which received the award in 2015 (Animal research in Nobel Prize in Medicine: <https://fbresearch.org/medical-advances/nobel-prizes/>).

In my opinion, for now and possibly the foreseeable future, computers and technology simply cannot replicate in full detail a complete biological system.



Matthew R. Bailey,
President of the
Foundation for
Biomedical Research
(FBR)

What does the future hold for animal testing?

Medicine is advancing at a very rapid pace. Scientists are continually striving to reduce, refine and replace animal models wherever and whenever possible. However, it is impossible to predict how many animals will be needed in research in the future.

Can you envisage a time when it will be replaced by an alternative system?

Perhaps in certain areas of toxicity or safety testing, yes. But until research scientists have answered every question that needs to be answered about a full living system, I would say there is not likely to be a total replacement for animals in research anytime soon.



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