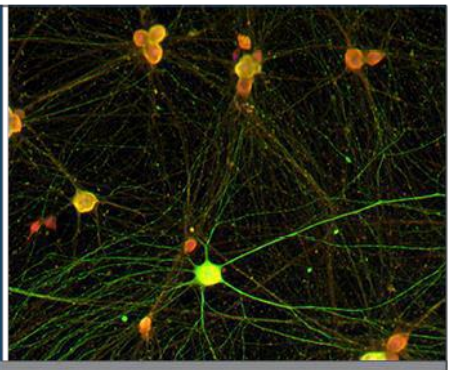
Animals in Research

How Rigorous Oversight and Ethical Standards Guide the Use of Animal Models in Research



The Importance of Animal Models in Research

The importance of animal models for biomedical research cannot be overstated. These models are a critical part of the discovery and evaluation of new therapeutics before they go to human and veterinary clinical trials. SfN and its members around the world support the responsible use of animals in research. It is important to note that animal models are currently the best way researchers have to advance life-saving medicines and treatments.[1]

Regulation, Policies, and Principles

Biomedical research using animal models must be carefully regulated and conducted humanely. To ensure this goal, governments worldwide have regulatory bodies to oversee and inspect laboratories conducting primate research. In the United States, animal model use in scientific research is already heavily regulated, including requirements to use as few animals as possible to achieve reliable results. There are three main regulatory bodies overseeing animal research:

National Institutes of Health (NIH)[2]

- Reviews the institution's program for the humane care and use of animals
- Inspects the institution's animal facilities (including satellite facilities)
- Reviews animal welfare concerns

United States Department of Agriculture (USDA)[3]

- Enforces the Animal Welfare Act (AWA), which regulates the treatment of certain species of vertebrate animals
- Conducts unannounced inspections at least once a year; posts inspection reports publicly

Public Health Service (PHS)[4]

- Requires institutions to ensure the appropriate care and use of all animals involved in research conducted or supported by PHS
- Requires institutions to adhere to the Institute for Laboratory Animal Research (ILAR) Guide for the Care and Use of Laboratory Animals
- Incorporates the U.S. Government Principles for the Utilization and Care of Vertebrate Animals Used in Testing, Research, and Training

Notable Advancements

Development of Deep Brain Stimulation
Researchers pioneering the application of high-frequency stimulation, named deep brain stimulation, of the subthalamic nucleus in patients suffering from Parkinson's disease relied on the non-human primate model in the discovery of this neurosurgical therapy, now regarded as the current therapeutic gold standard of the disease.[5]

Advancements in Addiction Research
Neuroimaging has been used effectively in non-human primates to advance scientific understanding of how addiction, and its intervention, affects neural networks. Collectively, the results of these studies of non-human primates have enhanced our understanding of the neurobiological basis of stimulant addiction and should have a significant impact on efforts to develop medications to treat stimulant abuse.[6]

Brain-computer Interfaces Restoring Speech
Researchers have been developing brain-computer interfaces, or BCIs, that can translate brain activity into written or audible words to restore communication for patients who have lost the ability to speak. BCI research relies on foundational work using rodent and non-human primate models to test the electrodes that are used on the brain

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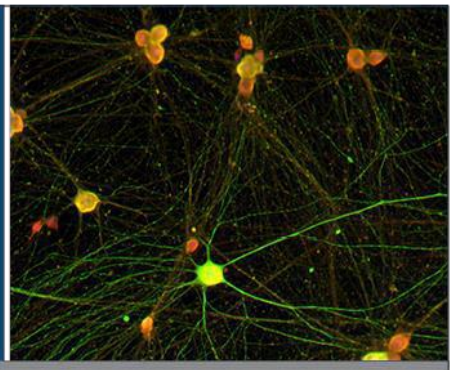

IACUCs

In the United States, the methods of animal models must be also approved by the Institutional Animal Care and Use Committee (IACUC), which includes a veterinarian, a member of the public, and other scientists. As scientific advancements are pursued, animal models are only used when necessary to assure validity and rigor. The scientific community takes these obligations, principles, and professional responsibilities seriously.

In Conclusion

A choice to turn away from animal research would have immediate and dire consequences. The United States would lose essential avenues for discovery. We would fail to realize continued progress in understanding the neural, behavioral, cognitive, developmental, physiological, genetic, and biological processes which contribute to human and animal health and disease. Assessment of the safety and efficacy of new medications would also be severely compromised.

[1] https://www.faseb.org/getmedia/6d1eb49d-f819-4376-8074-4f4e859e29df/FASEB-22-Fact-Sheet-03.pdf
[2] https://olaw.nih.gov/resources/tutorial/iacuc.htm
[3] https://www.nal.usda.gov/awic
[4] https://olaw.nih.gov/policies-laws/phs-policy.htm
[5] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4709425/
[6] https://pubmed.ncbi.nlm.nih.gov/18991958/
[7] https://www.nih.gov/news-events/nih-research-matters/brain-computer-interface-restores-natural-speech-after-paralysis

The Society for Neuroscience (SfN) is a nonprofit membership organization of around 30,000 scientists and physicians who study the brain and nervous system. Visit SfN.org or email advocacy@sfn.org to learn more.