

Nonhuman primate research integral to search for future cures

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Research in nonhuman primates (NHP) has led to some of the most significant medical advancements known today and will be essential to continued biomedical progress, according to the new white paper "The Critical Role of Nonhuman Primates in Medical Research." Experts from the American Physiological Society (APS) contributed to the development of the report along with experts from the American Academy of Neurology, American Transplant Foundation, Federation of American Societies for Experimental Biology, Society for Neuroscience, American Society for Microbiology, American College of Neuropsychopharmacology, Endocrine Society and Foundation for Biomedical Research.

"While NHPs account for just one-half of one percent of animals in current medical research, it is no exaggeration to say they are essential to our ability to find cures for cancer, AIDS, Alzheimer's, Parkinson's, obesity/diabetes and dozens of other diseases that cause human suffering and death," the report noted. "Research with monkeys is critical to increasing our knowledge of how the human brain works and its role in cognitive, motor and mental illnesses such as Alzheimer's, Parkinson's and depression. This research is also fundamental to understanding how to prevent and treat emerging infectious diseases like Zika and Ebola. NHP research is uncovering critical information about the most common and costly metabolic disorder in the U.S. – type 2 diabetes – as well as the obesity that leads to most cases."

"When a scientific problem requires that we study a living animal,

researchers start by finding out as much as possible with species such as fruit flies, zebrafish and rodents," APS Executive Director Martin Frank said. "Nevertheless, because the immune system, metabolism and brain structures of [nonhuman primates](#) much more closely resemble those of humans, nonhuman primates play a critical role in the search to understand basic biology and find cures for disease."

Most NHP research in the U.S. involves monkeys such as macaques, squirrel monkeys and African green monkeys. Some of the research also involves other species such as baboons and marmosets. As noted in the white paper, research with NHPs is subject to a high level of regulatory scrutiny including the requirement that scientists may only study them if no other species will suffice to answer a scientific question.

The [white paper](#) highlights some of the promising areas of research involving nonhuman primates including:

- Treating glioblastoma with a modified version of the polio virus to help the body's immune system mobilize against this deadly brain cancer.
- Using antibodies—molecules that are part of the immune system—to prevent HIV-positive mothers from transmitting this virus to their babies.
- Boosting the effectiveness of treatments for HIV and chronic hepatitis B with a combination of drugs to stimulate the immune system.
- Understanding how the Zika virus can infect a fetus and the mother's placenta to prevent this from happening.
- Coaxing the [immune system](#) of patients to tolerate organ transplants without the need for drugs that suppress all of the body's immune defenses.
- Mapping how the brain works to find better ways to treat diseases including Parkinson's, other movement disorders,

Alzheimer's, alcoholism, drug addiction, bipolar disorder, and autism.

- Developing technology to enable paralyzed individuals to control a prosthetic arm through a brain-machine interface.
- Understanding why blood pressure rises as we age and more about one inherited form of hypertension to reduce heart disease, kidney damage, memory problems, and more.
- Finding safe and effective treatments to address obesity and diabetes.

More information: The Critical Role of Nonhuman Primates in Medical Research. www.the-aps.org/mm/SciencePolicyResearchpdf.pdf

Provided by American Physiological Society

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