

# THE ETHICAL USE OF ANIMALS IN SPACE LIFE SCIENCES RESEARCH

## Interview with Joseph Bielitzki

Joe Bielitzki joined NASA in 1996 as the agency's first Chief Veterinary Officer. He brought with him 20 years of experience in veterinary positions in institutional, private practice, and consulting settings, including many years at the University of Washington Primate Center.

At NASA, Bielitzki is responsible for ensuring that the animals used in space flight and ground-based research are properly cared for and experience minimal pain and distress. He is also responsible for the compliance of all science protocols with the laws, rules, and regulations established for animal care in scientific research. When an experiment requires training or conditioning of animals or complex surgical procedures, he may provide consultation on the experiment design.

Commenting on his role in space life sciences research, Bielitzki said, "My job has to do with societal benefits. At NASA, the job has to do with being able to identify the risks of space travel for the astronauts. If we are going to fly humans, then we should know what's going to make them sick, how sick they are going to be, and how we can treat them if and when they get sick. Most of that work is going to be tested and developed with animals, so the animal models are very important. Veterinarians are the first people you look to when you are looking at new treatments or new medicines or new ways to deal with the problems that the astronauts might have because much of the early work is done in animal models."

Since Bielitzki's arrival, NASA has established bioethical principles for the use of animals in space life sciences research. The principles address the ethical justification for using animals in research. "It is a significant contribution to the entire federal program. We are the first federal agency to develop principles like these," said Bielitzki. "Those principles have been endorsed by the rest of the federal agencies now." These bioethical principles are as follows :

- **Respect for Life:** Research animals should be of an appropriate species and health status. The number used should be the minimum required to obtain valid scientific results. Selection should include cognitive capacity. Nonanimal alternatives should be used when possible.
- **Societal Benefit:** Assessment of the overall ethical value of animal use should include consideration of the full range of potential societal benefits, the populations affected, and expected burdens to the research animals.
- **Nonmaleficence:** The minimization of distress, pain, and suffering is a moral imperative.

"If nothing else happens in my career, the establishment of these principles is probably the most significant thing I've been able to accomplish. It is a very short set of principles, but it is one that I think is going to stand the test of time. I hope that they are improved upon, but I doubt that anyone will be able to take away from them," said Bielitzki.

The hope is that the bioethical principles will also be used in the International Space Station (ISS) in agreement with partnering nations. Bielitzki has been tasked with developing animal use standards for the ISS. "We're going into a partnership where there are different cultures, local standards, and norms, and we have to come up with a set of standards that's going to meet everybody's needs. We may well end up with some rules and requirements that are more stringent than what we see in the United States in a number of areas, to meet the requirements of the member nations," said Bielitzki.

In fact, there are currently no international standards for the use of animals in biomedical research. Space life sciences research and the ISS may end up providing an imperative to develop such standards.