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Major General Charles Bolden, Jr.  
Administrator of NASA  
NASA Headquarters  
Suite 5K39  
Washington, DC 20546-0001

November 24, 2009

Dear General Bolden:

I am writing on behalf of The Humane Society of the United States and our 11 million members and supporters and also as the chair of the working group convened by NASA in 1996 which produced what is known as the NASA Principles for the Ethical Care and Use of Animals (also known as the Sundowner Report). I am specifically writing in regards to a radiation research project that NASA plans to conduct on squirrel monkeys. We urge the agency to stop this project.

According to the NASA Space Radiation Program website, a number of grants have recently been made to examine the effects of radiation, including the proposed project on squirrel monkeys. The website states: "The research to be supported by these grants will seek to reduce the uncertainties in risk predictions for cancer radiation risks, to provide the necessary data and knowledge to develop risk projection models for central nervous system (CNS) and other degenerative tissue risks, and significantly advance the understanding of the mechanisms of biological damage that underlies radiation health risks." We fail to see how the proposed project will contribute substantively to these goals.

There are a number of concerns raised by this current proposal, including the fact that radiation research has been conducted in numerous species (including primates) at a number of institutions across the US over the last few decades. Has NASA determined that the desired data isn't already available? As chair of the NASA Working Group's Sundowner Report, I am concerned that NASA's ethical principles are not being followed. Finally, in addition to serious animal welfare concerns, the project seems to have major scientific flaws.

One of the Sundowner Principles is respect for life and further indicates "selection of appropriate species should consider cognitive capacity and other morally relevant factors"; it does not appear as if this principle has been applied in this case because primates will be used. A second Sundowner principle relates to societal benefit and burden on the animals; in this case, the burden on the animals far outweighs alleged benefit since space travel is extremely limited at this time.

Based on news accounts, rats and mice have been used to study the effects of low level radiation, but there is a desire to use a species more closely related to humans.

The first question is why rats and mice were used at all if the results were believed to be of no use? It appears that the principle on the selection of appropriate species failed to be applied in those cases as well. Furthermore, this is the classic application of what is known as the high fidelity fallacy, delineated in *The Principles of Humane Experimental Technique* written by Russell and Burch in 1959, which argues that the closeness of the species to humans doesn't necessarily best predict what will happen in humans. Models that offer "high discrimination" often provide better predictive opportunity than apparently "high fidelity" ones.

Finally, it is our understanding that the project seeks to understand the effects of exposure to low levels of radiation over time; however it has been stated that the monkeys will "be exposed once to radiation via a particle beam at NASA's Space Radiation Laboratory at the Department of Energy's Brookhaven National Laboratory on Long Island, N.Y." (Florida Today, November 6). Aside from the inherent problems of relying on the primate model for the desired results, how is it expected that one high dose of radiation will mimic low dose radiation exposure over time? We also have a major concern that high doses of radiation will likely cause the animals to suffer, as has been seen in radiation studies to date.

The Humane Society of the United States sees a number of problems with the proposed use of squirrel monkeys by NASA to study radiation and we urge the agency to stop pursuit of this project and the resultant waste of taxpayer dollars.

Sincerely,

A handwritten signature in black ink, appearing to read "Andrew N. Rowan". The signature is fluid and cursive, with a long horizontal stroke at the end.

Andrew N. Rowan  
Chief Scientific Officer  
The Humane Society of the United States