Report of the
Chimpanzee Management Plan Working Group
to the National Advisory Research Resources Council

The National Center for Research Resources (NCRR), one of the 27 Institutes/Centers of the National Institutes of Health (NIH), supports primary research to create and develop critical resources, models, and technologies. NCRR funding provides biomedical researchers with access to diverse instrumentation, technologies, basic and clinical research facilities, animal models, genetic stocks, biomaterials, and more. These resources enable scientific advances in biomedicine that lead to the development of lifesaving drugs, devices, and therapies. Within NCRR, the Division of Comparative Medicine (DCM) helps to meet the needs of biomedical researchers for high-quality, disease-free animals and specialized animal research facilities. Through grants, cooperative agreements, and contracts, the DCM supports national primate research centers and their field stations, resource-related projects, development of mammalian and nonmammalian animal model resources, postdoctoral training, and a variety of research projects. Within DCM, the Chimpanzee Management Program (ChiMP) supports long-term, cost-effective care and housing for chimpanzees.

The ChiMP Working Group, convened by the National Advisory Research Resources Council (NARRC) on May 18, 2005, serves as a fact-finding body that gathers information, analyzes relevant issues and facts, and drafts proposed position papers. The information gathered by this Working Group will be presented to the NARRC for final deliberation during the open session of the Council's meeting in September. The Working Group is comprised of non-government members with a wide range of scientific and non-scientific expertise. Three NARRC members, Drs. Knowles, Zimmet, and Zola, are members of the Working Group and attended the May 2005 meeting.

The meeting began with a discussion of responsibilities defined in the NCRR Chimpanzee Management Plan (ChiMP), the mission of the Chimpanzee Working Group, and a brief introduction regarding biomedical and behavioral research using chimpanzees. The major current needs for chimpanzees in research include studies to develop vaccines and antiviral treatments for hepatitis C virus (HCV) and respiratory syncytial virus (RSV), genomic and proteomic investigations, testing of monoclonal antibodies for safety and efficacy, and neuroscience/behavioral studies. The chimpanzee-based studies that produced hepatitis B virus (HBV) vaccines and that made the blood supply safe from HCV were invaluable to human public health and could not have been achieved using a different animal model. In contrast, studies to model human Acquired Immunodeficiency Syndrome (AIDS) now typically use macaques and simian immunodeficiency virus (SIV) rather than chimpanzees and human immunodeficiency virus (HIV). Data regarding the need to use chimpanzees in research can be found in the references listed below and by examining lists of NIH grants and contracts. The Working Group considered how the need for research using chimpanzees might change in the future, especially with respect to investigations relevant to emerging infectious diseases. Although chimpanzees in the wild are susceptible to human pathogens such as Ebola,

problems such as lack of appropriate containment facilities would make use of chimpanzees in most biodefense efforts very problematic.

One presenter, who described behavioral studies conducted with chimpanzees, expressed the opinion that the knowledge of the chimpanzee genome supports the principle of conducting research with chimpanzees, only if they are the most suitable animal model. Examples of such research are studies that depend on the high homology between human and chimpanzee brain cDNA sequences.

A Working Group Member put the chimpanzee/human differences and similarities into a simple context. In general, due to evolutionary forces acting over approximately 6 million years since divergence from our common ancestor primate, the chimpanzee to human sequence divergence is approximately 10 times that found in two unrelated humans, and the chimpanzee species has genes arranged on 48 chromosomes instead of the 46 for humans.

Another Working Group Member presented an overview of the special facility, veterinary, and husbandry needs of chimpanzees being used in research and how these needs often significantly change as a chimpanzee ages. For example, use of various behavioral training techniques in these facilities helps both the caretakers as well as the chimpanzees. The psychological well-being of chimpanzees is a major concern. This presents a unique challenge, since appropriate strategies for psychological well-being and enrichment vary across animals as a function of their age, sex, and temperament.

NCRR staff discussed how NCRR has implemented the CHIMP Act of 2000 by contracting with Chimp Haven to build and maintain the NCRR/NIH-funded Sanctuary. The first 25 chimpanzees arrived in Shreveport, Louisiana in April 2005.

A representative from the International Species Information System (ISIS) presented the demography of chimpanzees in the U.S. and worldwide. An important consideration is how many males and female chimpanzees in U.S. research facilities are potential breeders for future years. A draft definition of a potential breeder was presented; this definition will be useful with the ISIS database to predict how many breeders would be available in any given future year.

Additional Members presented data regarding reproductive parameters in chimpanzees and behavioral parameters that affect reproduction in chimpanzees. Sperm samples have been cryopreserved and found to be motile upon thawing; however, the ability of chimpanzees to produce live offspring via artificial insemination has not been satisfactorily tested.

The Working Group members extensively discussed the potential effects of extending the breeding moratorium on NCRR-owned or supported chimpanzees. The Working Group members believe that data regarding potential future breeders should continue to be further developed. In addition, the method of rearing in the early years should be considered in reference to the planned research use for a chimpanzee.

The Working Group members reached the following conclusions:

1. The moratorium on breeding of NCRR-owned or supported chimpanzees should be extended through the end of calendar year 2006. There is a need for the Working Group and NCRR staff to periodically reassess this issue while the moratorium continues. Demographic estimates of current and projected capability need to be placed into a meaningful context. Earmarking of the potential future breeders is advisable.

2. Chimpanzees remain crucial for HCV and RSV investigations, and may become necessary for undefined future studies. Currently, there are many underutilized chimpanzees at some U.S. facilities that could meet the immediate need for chimpanzee-based Federally funded research protocols. The major consideration for relaxing the moratorium appears to be the need to ensure availability of this laboratory animal for HCV and RSV studies in the near future, and for currently undefined future needs in coming decades.

3. For appropriate research protocols, investigators should work with chimpanzees from the reserve colony at the Alamogordo Primate Facility or underutilized facilities, rather than relying on breeding to obtain additional chimpanzees.

4. A comprehensive national "management and financial plan" for chimpanzee research should be developed. Although variable among sites, income at research facilities derives from the following: 1) core support from NCRR, 2) research grants from other NIH Institutes and Centers that synergize with the NCRR core support, 3) short-term use fees associated with acute research studies that are funded, for example, by pharmaceutical companies, 4) the substantial use fee required when members of a colony are selected for studies using potentially chronic viruses, and 5) the use fees for safety and efficacy studies of drugs and biologics. Fiscal responsibilities at research facilities include life-long maintenance of the colony's research, potential breeding, and reserve chimpanzees.

NCRR is reviewing these recommendations and will prepare a report to Council.

Attendees

Working Group Members: Elizabeth Ford, D.V.M., M.P.V.M. (The Scripps Research Institute); Barbara Knowles, Ph.D. (The Jackson Laboratory); Thomas J. Kuehl, Ph.D. (Scott and White Memorial Hospital); William R. Morton, V.M.D. (Paris NHP and University of Washington); Melinda Novak, Ph.D. (University of Massachusetts, Amherst and New England National Primate Research Center); Sarah Williams-Blangero, Ph.D. (Southwest National Primate Research Center); Sheila C. Zimmet, R.N, J.D. (Weill Medical College of Cornell University); Stuart Zola, Ph.D. (Yerkes National Primate Research Center).

Chair: Dr. Raymond O'Neill (National Center for Research Resources).

Speakers: Dr. Roger Fouts (Central Washington University); Mr. David R. Lukens, Jr. (U.S. Chimps Program Director).

NIH Staff: Dr. Barbara Alving, Dr. Louise Ramm, Dr. Franziska Grieder, Dr. William Watson, Dr. John Harding, Dr. Bonnie Mathieson, Dr. Douglas Powell, Dr. Margaret Snyder, Dr. Carol Wigglesworth.

References:

Letter from the Director of NIH to the Humane Society of the US, 2004.
NRC Book on Chimpanzees in Research, 1997.
Special issue of the ILAR Journal, on "Animal Models of Hepatitis," Volume 42 number 2, 2001.
Chimpanzee Conservation and Public Health, 1992.