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LETTERS

edited by Etta Kavanagh

The Uncertain Future of Research Chimpanzees

THE OTHERWISE EXCELLENT NEWS FOCUS ARTICLE BY JON COHEN ON THE FUTURE OF "THE endangered lab chimp" (26 Jan., p. 450) does not emphasize one compelling reason why studies of captive chimpanzees should continue—the significant differences in their disease patterns, incidence, and severity from those of humans (*1*). As human and chimpanzee proteins are >99% identical (*2*), it should be possible to explain some of these surprising disease differences at the molecular level. Thus, more studies are needed not because chimpanzees are good models for human diseases, but rather because they are surprisingly bad models in many instances, for example, HIV infection progressing to AIDS and *P. falciparum* malaria. Such investigations could adopt approaches similar to those currently used for studying human diseases, and the results would benefit the care of both humans and chimpanzees. The NIH spent many dollars to sequence the chimpanzee genome (*2*). If the existing captive chimpanzee population is allowed to die out in sanctuaries without adequate funding or facilities for such research, some of the most biomedically valuable benefits of the chimpanzee genome sequencing will never be realized.

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References

1. A. Varki, T. K. Altheide, *Genome Res.* **15**, 1746 (2005).
2. The Chimpanzee Sequencing and Analysis Consortium, *Nature* **437**, 69 (2005).

E-Letters

Please see our online letters section, E-Letters, for further discussion of chimpanzee research >> www.sciencemag.org/cgi/letters/315/5811/450

MORE THAN 25 YEARS AGO, *SCIENCE* PUBlished a letter from me (*1*) criticizing an NIH report on future U.S. needs for chimpanzees in research, which called for 300 to 350 chimpanzees a year and a major expansion of captive breeding. We now know that those figures were exaggerated. In 1994, NIH reported a chimpanzee surplus and requested advice from the National Research Council; this led to a breeding moratorium that began in 1995.

Jon Cohen's article, The endangered lab chimp" (News Focus, 26. Jan., p. 450) reports that scientists are projecting a shortage and calling for renewed breeding. However, when various countries are ending chimpanzee research, it is time for the United States to follow suit.

We base this on ethical, financial, and scientific arguments. Chimpanzees have very complex mental and social needs that simply cannot be met in laboratory housing. Ethically, we should not use them merely as a utilitarian means to an end (collecting data) no matter how useful we think they might be. Chimpanzee research has produced far less value to human health than scientific rhetoric commonly claims.

Each chimpanzee bred will cost up to $500,000 or more for lifetime care. High costs stack the odds against chimpanzee research producing significant human health benefits, partially due to small study group sizes (usually two to four individuals).

Scientist support for invasive chimpanzee research has declined greatly. We challenge those few who advocate renewed chimpanzee breeding to justify their arguments on the basis of appropriately sophisticated ethical and scientific analyses. Vague allusions to the need for chimpanzees to combat some future Ebola-like disease do not meet the standard required.

This is the ideal moment to phase out the use of this endangered species in invasive research and send the remaining laboratory chimpanzees to permanent sanctuary.

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Reference

1 A. N. Rowan, *Science* **203**, 1069 (1979).

IN HIS ARTICLE "THE ENDANGERED LAB CHIMP" (News Focus, 26 Jan., p. 450), Jon Cohen describes the unwinnable dilemma presented by the intersection of our need to conduct scientific research on chimpanzees to better understand both them and ourselves with our strong ethical obligation to do chimpanzees no harm. There is a way to recast the problem that will make a resolution possible.

Much of the argument for breeding comes from the realization that if the moratorium is not lifted, the captive research population will become extinct; John Vandeberg calculates that by 2037 only postreproductive individuals will remain. Will that mark the beginning of the end of captive chimpanzee research? Only if there are no other chimpanzees. However, the goal of conservationists is to ensure large, stable wild populations on an indefinite basis, and capture of wild chimpanzees will always be possible (one assumes that by 2030, available methods would not be as brutal and wasteful as those of today).

There is no need to end the moratorium any time soon, and with efficient, humane, and noninvasive use of existing individuals, most of the truly important biological questions about our kin are likely to be answered well before 2030. As for the possible epidemic mentioned in the article's last paragraph: If it happens sooner, we have sufficient numbers, and if it happens later, surely the compelling need generated by a (hypothetical) devastating threat that cannot be addressed in any other way will justify carefully implemented exemptions to bans on captures from the wild. Transfer of maintenance funds from

dwindling captive populations to in situ conservation would ensure this option.

There are arguments for breeding captive apes; preservation of an "endangered population" is not one of them.

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IN HIS THOUGHTFUL ARTICLE ON THE ISSUE of whether chimpanzees should continue to be bred for use in biomedical research ("The endangered lab chimp," News Focus, 26 Jan., p. 450), Jon Cohen raises a critical issue that may have important consequences for human welfare. Chimpanzees have proven to be the only animal model for the study of some important human pathogens, particularly hepatitis B (HBV) and C (HCV) viruses. The use of chimps was vital to the development of HBV vaccines and is currently an important component of efforts to develop an HCV vaccine. As Cohen points out, emergence of future pathogens with similarly reduced host ranges may also provide an important need for chimpanzees in the future.

The future availability of these animals for use in medical research depends on whether the United States continues its current moratorium on the breeding of these animals. If this ban is modified or reversed, it would also be essential that chimpanzees always be housed in social groups with enriched facilities for play, ideally outdoors, and that when research studies are finished, the animals be transferred to outdoor sanctuaries for retirement in large social groups. It is also important that the lives and health of chimpanzees in research not be endangered. Fortunately, chimpanzees do not develop clinical illness when infected with the hepatitis viruses. We have adhered to these goals in our work with chimpanzees in our laboratory, Vilab II, in Liberia. (This laboratory, which I headed for 32 years, is still the responsibility of the New York Blood Center, not the Hepatitis Research Foundation, as stated in Cohen's article.) The Blood Center has decided to close it for future research and transfer the remaining animals to island sanctuaries. The reasons for this decision are partly economic and also reflect the fact that sanctuary organizations, now being sought to take long-term responsibility for this sanctuary, generally do not permit continuation of research. The Hepatitis Research Foundation, which supports research on the development of HCV vaccines and immunotherapies, would like to continue limited but important research in parallel to the development and maintenance of the sanctuary. Such research would not need to involve the sanctuary animals, as chimpanzees that have been held as pets in Liberia or confiscated by the wildlife authorities are available and would have a better future if they passed through Vilab II on the way to retirement in the sanctuary.

Only a very small number of chimpanzees are needed to provide preliminary evidence of the protective efficacy of an HCV vaccine. If such studies cannot be done, large and very costly human clinical trials would be required. Without prior indications of efficacy of a candidate vaccine, funds for such trials would be difficult to obtain, and thus the development of an HCV vaccine may be delayed for decades.

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