AATEX **14**, Special Issue, 111-118
Proc. 6th World Congress on Alternatives & Animal Use in the Life Sciences
August 21-25, 2007, Tokyo, Japan

Chimpanzees in research and testing worldwide: Overview, oversight and applicable laws

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Abstract
The use of chimpanzees for biomedical research and testing has been on the decline in recent years and is now restricted or prohibited in a number of countries, largely due to ethical concerns, public opinion, financial costs, as well as scientific issues. The US and Gabon are the only countries that still have chimpanzees for research purposes, with the US having the largest colony in the world of approximately 1,200 chimpanzees at nine U.S laboratories. A timeline and overview of existing and proposed international laws and resolutions regarding chimpanzee research will be discussed. Detailed historical and current information regarding chimpanzee research in the United States will also be provided, including areas of chimpanzee research and testing, demographics, financial costs of research and maintenance, status of alternatives, public opinion, and recent events that will impact the use of chimpanzees in the future. The Humane Society of the United States' *Chimps Deserve Better* campaign seeks to end invasive biomedical research and testing on chimpanzees in the United States and retire chimpanzees in laboratories to appropriate sanctuary. An overview and update of this campaign will be outlined, including arguments for such a campaign as well as planned activities.

Keyword: chimpanzee, primate, great ape, international laws, regulations

Introduction

There is a history of using nonhuman great apes for harmful research and testing in the United States and abroad. However, the chimpanzee is the only nonhuman great ape species remaining in laboratories today. Their use likely continued beyond that of gorillas and orangutans because they successfully breed in captivity and are smaller and easier to handle than gorillas and orangutans. However, the use of chimpanzees in harmful research has come to be questioned throughout the world. Public support for chimpanzee research has been declining over time, costs of using chimpanzees have been rising, there is increased competition for health-related research resources and funds, the scientific validity of chimpanzee research is being scrutinized, the number of chimpanzees in laboratories (including in the United States) has been declining, and legislation and policies prohibiting the use of great apes in research have been increasing internationally. These trends likely indicate an end to the use of chimpanzees in research, in the United States and abroad, in the near future.

In light of these existing trends, The Humane Society of the United States, through its *Chimps Deserve Better* campaign, is working to phase out the use of chimpanzees for harmful research and retire chimpanzees to sanctuary. Various aspects of the campaign will be discussed here, such as the aims of the campaign, further explanation as to why this campaign was pursued, what tactics are used, what obstacles must be addressed, and recent successes. The discussion of the campaign will be preceded by an overview of chimpanzee research, including demographics, research uses, financial information and relevant laws regarding chimpanzee research in the US and abroad.

Demographic history of chimpanzees in the US

It is believed that chimpanzee research began with the work of Robert M. Yerkes, who established a laboratory at his home in the 1920's when he purchased one chimpanzee and one bonobo (believed at the time to be two chimpanzees) (Yerkes & Learned 1925). Yerkes' laboratory moved first to Orange Park, Florida in 1930 and re-located in 1965 to Emory University in Atlanta, Georgia, where it remains today and is known as Yerkes National Primate Research Center (Yerkes National Primate Research Center n.d.).

In the 1940's the focus at Yerkes National Primate Research Center shifted from the study of behavior to the study of infectious disease (Committee on Animal Models in Biomedical Research 1995). The use of

chimpanzees for the study of infectious disease has increased even further since then, particularly in the fields of hepatitis and human immunodeficiency virus (HIV).

In the 1950's the U.S. Air Force imported 65 wild-caught chimpanzees to create a breeding program and to use chimpanzees in the space program in order to determine the potential effects of space flight on humans (Brent 2004; Save the Chimps n.d.). In 1975, the Convention on International Trade in Endangered Species was adopted, which greatly restricted importation of chimpanzees from the wild and prompted a greater captive breeding effort within the United States, which was federally funded from 1986-2007.

Over the last decade, the number of chimpanzees in laboratories in the United States has declined drastically. In the mid-1990's, the population was estimated at just over 1,800 chimpanzees at 14 laboratories (Stephens, 1995). In the mid-80's, there was a major breeding effort in order to create chimpanzees for use in HIV research—but this model largely failed when it was found that chimpanzees exposed to HIV do not progress to AIDS (Balls 1995, Nath, Schumann, and Boyer 2000). As a result of this failure, we started to see a decline in chimpanzee research in the 1990's as some laboratories began to shut down. In 2001, the National Institutes of Heath submitted a report to Congress stating that there were 1584 chimpanzees who may have been used in federally supported research in 13 laboratories in the US—614 of them federally owned (National Center for Research Resources, 2001). Recent estimates indicate that there are currently 1200-1300 chimpanzees in nine US laboratories. See Table 1 for a list of laboratories and the estimated number of chimpanzees at each.

The history of moving chimpanzees between laboratories in the US and the closing (or plans to close within the next few years) of five facilities since the mid-90's is particularly interesting and reflects the overall decline in the number of chimpanzees in US laboratories. Just over ten years ago, in 1995, the Laboratory for Experimental Medicine & Surgery in Primates (LEMSIP) closed its doors and divested itself of over 300 chimpanzees. While there was an effort by an individual to get as many chimpanzees as possible to sanctuary, just over 100 chimpanzees were sent to sanctuaries throughout the United States. Unfortunately, approximately 200 chimpanzees were sent to the Coulston Foundation, which became the largest chimpanzee colony in the world, with approximately 650 chimpanzees at one time.

Just two years following the closure of LEMSIP, the Air Force decided to get out of the chimpanzee research business. Despite offers from sanctuaries to take the chimpanzees in, only 30 chimpanzees were sent to a sanctuary in Texas and the remaining 111 were sent to the Coulston Foundation. One sanctuary, Save the Chimps, secured custody of 21 of the 111 chimpanzees following a lawsuit.

Meanwhile, the Coulston Foundation (TCF) was coming under increasing scrutiny. U.S. Department of Agriculture inspection reports demonstrated numerous Animal Welfare Act violations. As part of an Animal Welfare Act settlement, 300 chimpanzees were transferred from TCF to the Alamogordo Primate Facility. The National Institutes of Health (NIH)

Table 1: US facilities currently associated w/ biomedical research and testing on chimpanzees and the approximate number of chimpanzees at each facility

Facility	State	Approximate # of chimpanzees*
New Iberia Research Center	LA	370
Southwest National Primate Research Center	TX	250
Alamogordo Primate Center	NM	240
MD Anderson Cancer Center	TX	135
Yerkes National Primate Research Center	GA	110
Primate Foundation of Arizona	AZ	73
Bioqual	MD	63
Centers for Disease Control	GA	14
Food and Drug Administration	MD	<10

*The following sources were used to make these approximations:

1. VandeBerg, J.L. et al., 2005. A Unique Biomedical Resource at Risk. *Nature*. 437(7055):30-32.

2. Conlee, K.M. and Boysen, S.T. 2005. "Chimpanzees in Research: Past, Present and Future." In: Salem, D.J., and A.N. Rowan, eds. *The State of the Animals III: 2005*. Washington, D.C.: Humane Society Press.

3. New England Anti-Vivisection Society. 2005. Snapshot of Chimpanzee Use in U.S. Research: Facilities and Numbers. Retrieved at: http://www.releasechimps.org/pdfs/Facilities-Numbers.pdf (Sources cited: FOIA request submitted in 2004 to NIH for data from 2002 and 2004 data received from facilities via FOIA request).

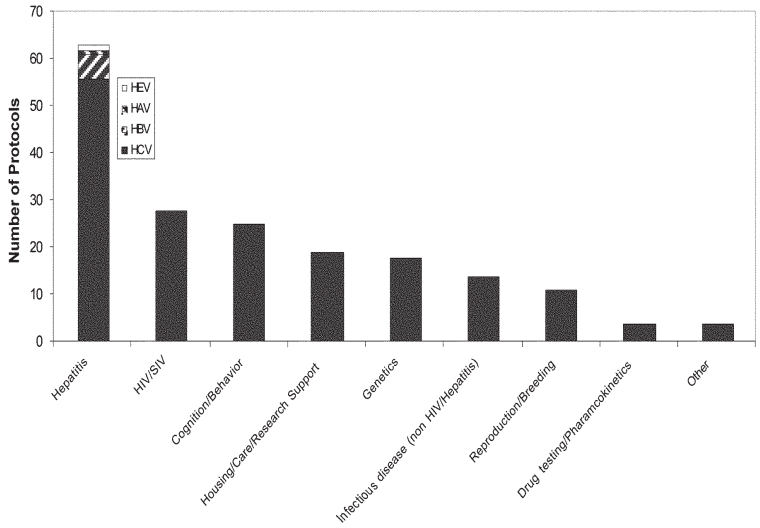

Fig. 1. Types of research funded by the U.S. Public Health Service using live chimpanzees for the years 2000-2006

awarded a 10-year, $42 million contract to Charles River Laboratories to care for the chimpanzees there. Meanwhile, the problems at TCF continued to worsen. In 2001, the National Institutes of Health stopped funding the TCF (Brent 2004) and by 2002 the company collapsed financially and divested itself of 266 chimpanzees to Save the Chimps, a sanctuary organization still caring for the chimpanzees today.

Since its opening in April of 2005, Chimp Haven, an organization that currently runs the national sanctuary system, has taken in a number of chimpanzees from different research facilities. As of December 2007, Chimp Haven had 125 residents.

Other recent transfers involved Ohio State University, Primate Foundation of Arizona and Buckshire Corporation. In 2006, Ohio State University, which conducted behavioral research only, closed its chimpanzee laboratory, allegedly due to a lack of funding for the research being conducted there (Lafferty, 2006). The transfer of the nine chimpanzees to Primarily Primates led to a great deal of controversy, particularly because two chimpanzees, Kermit and Bobby, died within six weeks following arrival at the facility. Legal activities ensued and the chimpanzees were transferred to Chimp Haven, a sanctuary in Louisiana, where they remain today.

Primate Foundation of Arizona (PFA), a facility that provides chimpanzees for biomedical research, in 2006 announced its pending closure and transfer of 69 chimpanzees to MD Anderson Cancer Center, a research laboratory in Texas, and four chimpanzees to sanctuary by the year 2010 (Primate Foundation of Arizona, 2006). Government documents reveal that the National Institutes of Health (NIH) would like to consolidate all government owned chimpanzees into two or three facilities; the PFA closure is an example of this consolidation. Finally, it was announced in 2007 that Buckshire Corporation, a private laboratory in Pennsylvania plans to transfer its seven remaining chimpanzees to Chimpanzee Sanctuary Northwest in spring of 2008 (Associated Press, 2007).

Ownership and colony management

It is estimated that 550-650 chimpanzees are government owned and the remaining are privately owned. It is difficult to determine the exact number owned by the government since the government has indicated that they don't have a list or records of those chimpanzees who are federally owned and the number provided to the media by the government frequently fluctuates between 550 and 650.

The colony of chimpanzees owned by the government is managed by the National Center for Research Resources (NCRR) of the National Institutes of Health. According to NCRR, this management includes decisions regarding housing, maintenance and breeding of chimpanzees as well as their care at the national sanctuary system after they are retired from research. NCRR decided on May 22, 2007 that it will no longer financially support the breeding of chimpanzees for research purposes. A moratorium on breeding was put into effect in 1995 but this recent decision will permanently end financial support of breeding.

Current research using chimpanzees

In order to determine the extent to which chimpanzee research is funded by the US government, The HSUS conducted an analysis of CRISP (Computer Retrieval of Information on Scientific Projects), a database of extramural research projects funded by the Public Health Service (PHS), which is a government entity. Importantly, the CRISP analysis does not include information about research conducted by private research institutions nor research conducted within government agencies

(known as intramural projects).

A total of 517 federally funded grants between 2000 and 2006 involved the use or care of live chimpanzees, with approximately 37% related to hepatitis research, and 14% related to HIV research. In 2006 alone, there were 52 federally funded grants which involved the use or care of chimpanzees. Approximately 42% of those grants were related to hepatitis and 10% to HIV. Stephens (1995) reported that approximately 80% of research conducted on chimpanzees in the early 90's was related to hepatitis and HIV. Therefore, these types of biomedical research with chimpanzees are not as prevalent as the recent past, likely due to the failure of the use of the chimpanzee as an AIDS model.

Other areas of research for which chimpanzees are currently used include cognitive and behavioral studies, as models for human reproduction, malaria, gene therapy, respiratory viruses, Crohn's disease, drug and vaccine testing, and other infectious diseases (Fig. 1). Experiments in some of these areas, such as studies of certain strains of HIV, can lead to severe appetite and weight loss, lethargy, diarrhea, severe illness, infections and/or eventual death. Procedures such as major surgery, liver biopsies (required for some protocols in hepatitis research and often involving multiple biopsies within a short timeframe), frequent blood sampling, and restraint can also cause pain, distress and fear. The chimpanzees may also be housed alone, including for long periods of time, for certain protocols, which can cause psychological damage.

Overall, The HSUS analysis of government-funded great ape research found that approximately $20-25 million dollars of federal funding per year is devoted to chimpanzee research and care. Due to the nature of the information provided, only an estimate can be determined.

Laws pertaining to chimpanzees in US laboratories

There are four main laws that pertain to chimpanzees being held in US laboratories: the Animal Welfare Act; Public Health Service Policy; the Chimpanzee Health Improvement, Maintenance and Protection (CHIMP) Act; and the Endangered Species Act. An overview of each of these laws is discussed here.

Animal Welfare Act

The Animal Welfare Act (AWA) provides minimal standards of care for warm-blooded animals used in research, testing and education (other than mice of the genus *Mus*, rats of the Genus *Rattus* and birds bred for research purposes). The U.S. Department of Agriculture (USDA) is authorized by Congress to enforce the AWA. Research institutions are inspected annually and violations can result in fines and penalties; although warnings are often provided and the institution is then given an opportunity to correct the problem without fines. Each research institution must have an Institutional Animal Care and Use Committee (IACUC), which oversees the animal care program, reviews animal research protocols, among other duties.

There are special provisions under the AWA regarding environmental enhancement to promote psychological well-being of nonhuman primates, specifically in regards to social housing, special needs considerations (such as infants and psychologically distressed individuals), and physical environment . While the regulations do call for social housing, an exemption can be given for scientific or other reasons.

Public Health Service Policy

Public Health Service Policy applies to institutions that receive federal funding. The Office of Laboratory Animal Welfare of the National Institutes of Health is the body that oversees PHS Policy. PHS Policy does not have an inspection mechanism as the AWA does; instead, institutions simply file a Statement of Assurance with OLAW indicating that they will comply with PHS Policy and self-report noncompliance to OLAW. OLAW will also investigate complaints filed against institutions—via either correspondence or on-site visits. Severe deficiencies can result in loss of funding, but this is extremely rare.

CHIMP Act

In 1986, a major chimpanzee breeding effort was launched in the U.S. because it was believed that the chimpanzee was a critical model for HIV research. The number of chimpanzees produced exceeded expectations, while it was also determined that the chimpanzee was a poor model for HIV research; the result was a "surplus" of chimpanzees for research. In order to determine a way to address the surplus, NIH called on the National Research Council (NRC) to provide input on the number of chimpanzees required to support research needs and how to address the long-term needs of the animals. Three major findings of the NRC were that euthanasia is not considered an acceptable means of addressing the surplus issue, a breeding moratorium should be adopted for five years, and sanctuaries should be established for the long-term care of retired chimpanzees (National Research Council 1997). The report also recommended that the government maintain a colony of 1,000 chimpanzees for research purposes.

Following the NRC report, there were efforts to create a national sanctuary system via federal legislation, resulting in introduction of the Chimpanzee Health Improvement, Maintenance and Protection Act (CHIMP Act) in Congress. The

CHIMP Act incited controversy when amendments were proposed that would provide the research community with limited access to chimpanzees after they were sent into the sanctuary system. The animal protection community worked to weaken these proposed amendments to the extent possible and the CHIMP Act (Public Law 106-551) was signed into law on December 20, 2000.

Although the original CHIMP Act allowed return of chimpanzees from sanctuary to research under certain circumstances, this provision was never utilized. In 2007, amendments were introduced in Congress to remove these provisions and on December 19, the legislation passed Congress and was signed into law by the President. The new version of the law will ensure ***permanent*** sanctuary for all chimpanzees sent to the national sanctuary system.

Overall, the major impact of the CHIMP Act has been a shift in thinking and policy related to the use of chimpanzees for research purposes.

Endangered Species Act

The Endangered Species Act (ESA) is meant to protect endangered species, but history shows that that is not always the case. In 1976 the U.S. Fish & Wildlife Service (USFWS), which enforces the ESA, listed the chimpanzee as "threatened" under the ESA, which provided them with certain protections. However in 1978, the agency created a special regulation to exempt chimpanzees from protections afforded by the "threatened" designation under the ESA. This special regulation allowed their continued use for harmful research. In the late 1980's, animal protection groups submitted a petition to the USFWS requesting a change to the status of chimpanzees from "threatened" to "endangered." The USFWS subsequently published a proposed rule to classify *wild* chimpanzees as endangered and *captive* chimpanzees as threatened (with the special regulation intact) under the ESA. This proposal was eventually published as a final rule in 1990. The chimpanzee is the only species used in research that is "split-listed" under the ESA. Many would argue that this current status of chimpanzees doesn't reflect the intent of the ESA.

Recent events outside of the United States

In recent history, there have been only a handful of countries conducting invasive research on great apes, but today only the United States and Gabon are engaged in the practice. As far as can be determined, the Centre International de Recherches Medicales (CIRMF) currently houses 75 chimpanzees for research purposes. At the end of 2006, Japan announced an end to harmful research and retirement of their 80 chimpanzees to sanctuary. New York Blood Center also recently announced retirement of its 74 chimpanzees who were used for hepatitis research and live in Liberia, where they will remain.

While some countries have simply phased out chimpanzee research, others have adopted laws or policies to prohibit or greatly restrict research on great apes. For example, in 1997, Great Britain announced that it would no longer grant licenses for research on great apes, although great apes had not been used there since 1986. In 2000 and 2002, New Zealand and the Netherlands, respectively, passed laws that placed stringent restrictions on the use of nonhuman great apes for research. Sweden took it a bit further by passing a law in 2003 that prohibits research on all nonhuman apes, therefore including gibbons. Austria soon followed by passing similar legislation in 2006, although nonhuman apes hadn't been used in Austria since 2002. In that same year, two federal commissions in Switzerland called for an end of great ape research. Australia, through its Code of Practice, placed restrictions on the use of great apes for research purposes in 2003.

Most recently, significant legal advances occurred in 2007. The European Parliament adopted a written declaration that calls for making an end to the use of great apes and wild-caught primates for research an urgent priority as well as for the establishment of a timetable to replace nonhuman primates in experiments with alternatives. The next step is for the European Commission to create an action plan. The Balearic Islands also approved a resolution in 2007 to grant legal rights to great apes.

Chimps deserve better

The HSUS's *Chimps Deserve Better* campaign seeks to end the use of chimpanzees for invasive biomedical research and testing and to retire chimpanzees currently living in laboratories to appropriate sanctuary.

Why end harmful research on chimpanzees?

There are various reasons for pursuing this campaign, including ethical, scientific, and financial concerns as well as current public opinion.

The main ethical arguments against chimpanzee use are that they are an endangered species, they have a lifespan of up to 60 years and can be kept in laboratories for all of that time, and there is extensive evidence that chimpanzees are extremely intelligent and capable of a broad range of emotions once only attributed to humans. One must ask whether it's possible to meet the needs of chimpanzees in a laboratory setting—we argue that it isn't possible.

The following are only some examples of what we know about chimpanzee capabilities (see Conlee and Boysen, 2005, including for specific references):

- An extensive list of some 39+ types of tool use in wild;

- Numerical skills, including counting abilities that are comparable in their development to young children;
- Productive use and comprehension of symbolic language-like systems of several types, including American Sign Language, visual symbol systems such as plastic shapes that stand for words, or graphic symbols that are computer-interfaced to display which word-like symbols are chosen and the order in which they have been selected;
- Extensive skills with problem-solving of all kinds observed in both the wild and under experimental conditions in captivity;
- Studies that suggest chimpanzees, like humans, understand that other chimpanzees may have the same or different set of beliefs, desires, and knowledge than they do; a capacity formerly believed to be unique to humans.

Competition for funding to address public health issues demands pursuits that will be fruitful. In addition to the failure of chimpanzees as a model for HIV, there is additional evidence that the chimpanzee is a poor model for various human diseases and conditions. For example, Bailey, Balcombe and Knight (2007) conducted a citation analysis in order to determine whether published research using chimpanzees has been cited in the human literature. The authors examined corresponding disciplines of 749 studies using chimpanzees published between 1995 and 2004 and conducted a citation analysis on 95 randomly selected articles. It was found that 49.5% of those papers had not been cited in the human literature, 38.5% were cited by papers that "did not describe well-developed methods for combating human diseases" and 14.7% were cited by papers that described "well-developed prophylactic, diagnostic or therapeutic methods for combating human diseases" although in vitro research, human investigations, molecular assays and methods were the major contributors to their development. The authors concluded that the analysis demonstrated that there was no essential or even a significant contribution to the development of human treatment through the use of chimpanzees.

We have already pointed out that the US government spends $20-25 million per year for chimpanzee care and research; a conservative estimate is that it costs $300,000-500,000 per chimpanzee over his/her lifetime. These costs were the main reason cited by NCRR for implementing a permanent moratorium on chimpanzee breeding.

Finally, but importantly, the public is concerned about the harmful use of chimpanzees and their confinement in laboratories. This increasing public concern has largely driven efforts internationally to

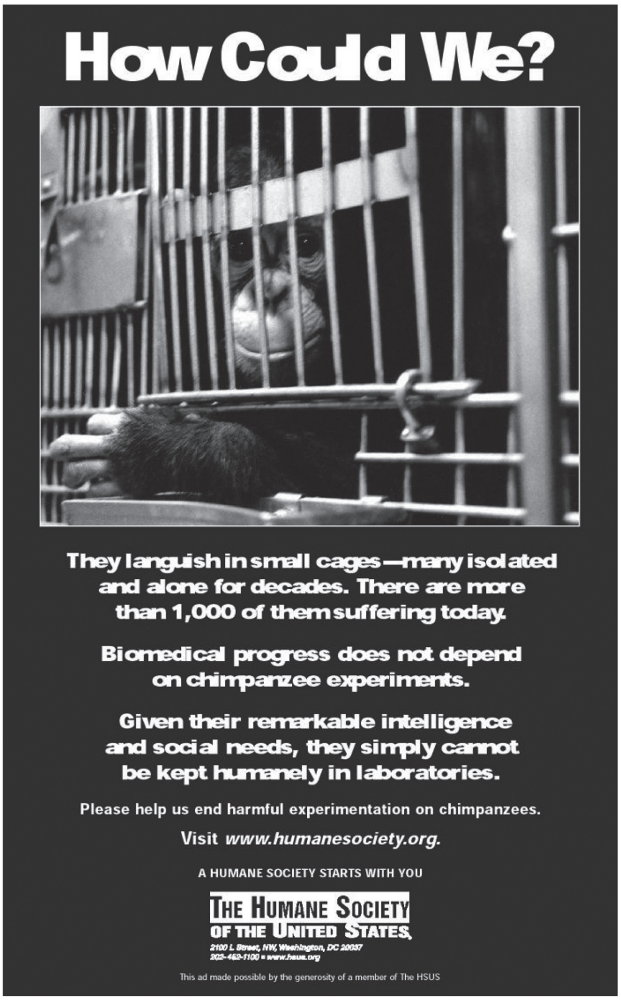

Fig. 2. A full-page ad that appeared in the *New York Times* on November 28, 2006.

end the use of chimpanzees in research. According to a recent opinion poll, 90% of Americans believe it is unacceptable to confine chimpanzees in government-approved cages (5 ft x 5ft x 7ft), fifty-four percent believe that it is unacceptable for chimpanzees to "undergo research which causes them to suffer for human benefit," and 65% say it is unacceptable to kill them for research (conducted by Zogby International for Doris Day Animal League, 2001).

Results of a survey conducted in 2006 reveal that nearly three-fourths of the American public (71%) believes that a chimpanzee used for more than 10 years in research should be retired, which is estimated to make up 90% of chimpanzees in research laboratories.

The public is not only concerned about whether chimpanzees experience harm while in laboratories, but are also concerned about their lifetime care once they are out of laboratories. An opinion poll conducted in 2002 found that 79% of the U.S. public supports the creation of a government-sponsored sanctuary system to provide lifetime care to chimpanzees no longer used in research (Conlee

and Boysen, 2005). In conjunction with other survey findings, this indicates that not only does the public oppose suffering of chimpanzees in research, but they are willing to financially support the lifetime care of chimpanzees, who can live to be 60 years old in captivity.

Campaign approach and strategy

The HSUS is using various approaches in pursuit of the goal to end invasive research on chimpanzees and provide sanctuary for chimpanzees currently in laboratories. These approaches include influencing policy, pressuring private industry, educating the public, gaining scientist support, ensuring a sanctuary strategy, and working with groups that share the same goal, such as Project Release & Restitution for Chimpanzees in US Laboratories (Project R&R).

Public education on the issue of chimpanzees in research is essential so that we can increase their interest, which leads to increased support when we ask the public to take action. Some examples of how we have been educating the public includes website content and email messages to our members; media work, including press releases and letters to the editor; presentations and exhibits at conferences and other venues; as well as advertising. Fig. 2 shows a full-page ad that was published on November 28, 2006 in the *New York Times.*

It has become increasingly evident that chimpanzee experts and other scientists share concern about the use of chimpanzees for invasive research. Support of scientists only adds credibility to the efforts to phase out invasive research on chimpanzees. To date, 266 scientists have signed the following statement:

"We, the undersigned members of the scientific and academic community, support efforts to end the use of chimpanzees for biomedical research and testing in the United States and to provide them permanent sanctuary."

The work we did in regards to the moratorium on breeding of government-owned chimpanzees serves as an example of how a combination of approaches can lead to success. By tracking the breeding issue, it was known that before the end of 2007 the government would make a decision on whether to again extend the breeding moratorium (which had been in place since 1995). When we confirmed that the issue was on the agenda for the May 22 meeting, we took immediate action and sent an email alert to some of our members and a total of approximately 22,000 people wrote to NCRR urging the agency to make the breeding moratorium permanent. The HSUS and Project R&R also sent a join letter to NCRR, which included a list of 250 higher-degree scientists and chimpanzee experts that support our campaign. Finally, a member of Congress sent a letter to NCRR urging a permanent breeding moratorium as well.

On May 22, The HSUS attended the council meeting, at which it was announced that NCRR was making the breeding moratorium permanent. We sent out a joint press release with Project R&R and the story received international media coverage. While NCRR cites the exorbitant cost of lifetime chimpanzee care as the main reason for its decision to permanently end breeding of government owned chimpanzees, we believe that public, scientific and lawmaker action and support made an impact on this decision as well. We will continue to use the combination of public, scientist and policymaker support to our advantage as the campaign moves forward.

Campaign obstacles

As with any campaign, there are obstacles that must be faced. For example, a main obstacle is the group of laboratories that make money maintaining and using chimpanzees. They clearly have a stake in whether chimpanzee research and maintenance ends. A positive development is that the number of government grants and government funding of harmful chimpanzee research have been steadily declining.

Two additional arguments used by the opposition are that chimpanzees are needed for hepatitis C research and should also be available for the as-of-yet unknown disease that could arise in the future. Recently, however, there have been advances in the hepatitis C field, particularly the ability to culture the virus in vitro. These advances in conjunction with other approaches, such as human clinical information, support the case that chimpanzees are not necessary for hepatitis C research. Furthermore, while it is difficult to create a response to arguments regarding a disease that doesn't exist, we can say that chimpanzee use historically hasn't been the answer to crises, such as HIV/AIDS. One must consider that prohibiting the use of chimpanzees will likely result in scientists successfully developing alternatives to the use of chimpanzees and will stop the cycle of researchers automatically turning to chimpanzees simply because they are available.

There is one more obstacle that has a simple explanation but is still difficult to overcome: entrenchment of attitudes. There are some factions that oppose any increased regulation or restrictions on animal research, no matter how modest.

Signs of success

In addition to increasing opposition of scientists to chimpanzee research and passage of legislation and policies from an increasing number of countries, there are other recent signs of success in regards to

ending invasive chimpanzee research. The breeding moratorium decision, the increasing support of scientists and the public, and alternatives advances (such as those seen in the field of hepatitis C research) are recent success stories. In general, great apes have been in the spotlight, which only further educates the public about their plight. Some examples are media coverage of captive and wild studies demonstrating cognitive abilities and culture of chimpanzees; a gathering of world-renowned experts at a conference entitled "The Mind of the Chimpanzee;" and the death of a chimpanzee named Washoe, who was well-known for her ability to communicate in American Sign Language.

Conclusion

The stars seem to be aligned in terms of public support, increasing scientist support, and decisions by policymakers worldwide to prohibit harmful use of great apes for research and testing; therefore now is a crucial time to end invasive research and testing on the approximately 1200 chimpanzees currently living in US laboratories and to retire them to appropriate sanctuaries. The HSUS will continue its *Chimps Deserve Better* campaign through public action, influence over policymakers, scientist support, scientific rigor, and organizational partnerships until our goals are reached.

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