Primate Experimentation in the US:

The Facts We Weren't Supposed to Know

By

Michael A. Budkie, A.H.T.

513-575-5517

saen@saenonline.org

Contents

Introduction

The use of primates in experimentation is an extremely controversial issue. Some scientists claim that primate experimentation is crucial to medical advancement.[1] Others claim that the use of primates has not contributed to advances in the diseases that are currently killing humans (i.e. heart disease, cancer, HIV, etc.) [2] While humans are more closely related to primates than to other species, primates may still be too dissimilar to be suitable subjects in studies of human diseases.

Many people also have significant ethical concerns regarding the use of primates in experimentation. Due to the social nature of primates, their confinement in laboratories has significant consequences. If primates are psychologically similar to human beings in their ability to suffer, then the use of primates in potentially painful/stressful projects should raise serious moral questions.

However, with the expansion of certain fields of investigation, experimentation on primates is likely to increase in coming years. Expansion of the Primate Centers is currently underway with concurrent increases in funding.

Therefore, this is a particularly relevant time to be placing primate experimentation in general, and the larger primate labs in particular, under closer scrutiny. This report marks the second step of such an effort.

This report will discuss the amount of funding given to primate experimentation on the national level. While the funding issue is being discussed, the closely related area of experimental duplication (and the potential waste of federal funding) will also be examined.

This document will also examine the conditions primates are subjected to within laboratories. While it is currently difficult to discuss the situation within all laboratories, certain specific labs will be examined regarding the way that primates are treated.

One basic area that has become difficult to discuss is the actual number of primates in laboratories. While the number of primates in labs has been released by the USDA in a more thorough way than ever before, the classification system used in releasing this information has made it impossible to compare current statistics with similar statistics from previous years. As a result, it will be impossible to discuss trends based on the cumulative statistics promulgated by the USDA. However, trends involving the use of primates in experimentation can still be discussed by utilizing a different methodology.

The data source for comparing primate populations will be specific documents for the larger primate labs in the US. The reader will see that a substantial percentage of the primates within US labs are centralized in just a few facilities. Therefore, this report will utilize two sources to provide data on these large facilities. USDA reports for specific facilities and NIH progress reports for other facilities will be the informational base for the determination of the direction of primate experimentation.

In summary, this report will provide invaluable information regarding the number of primates within labs, the types of experiments performed on primates, the number of projects using primates, the funding of primate experimentation on the national level, and the conditions within labs that use primates.

Footnotes

1 Expert Panel's Recommendations for the Regional Primate Research Centers Program, January 18, 2001, Office of Science Policy and Public Liaison

2 Is Primate – Modeled Research Crucial, C. Ray Greek, in *Pathways to Progress*, at http://www.curedisease.com/Pathways/PathwaysFall03.pdf

Executive Summary

While exact numerical comparisons regarding the number of primates in laboratories are difficult due to reporting inconsistencies, it is clear that a very high number of primates are currently imprisoned within U.S. laboratories. For fiscal 2002 the USDA reports the use of 52,275 primates in experimentation for the entire U.S. The USDA also reports that U.S. labs held 43,676 primates for breeding or conditioning. This places 95,951 primates within U.S. laboratories. The trend in laboratory populations of primates is increasing dramatically, having risen 42% in the last five years.

Funding for primate experimentation appears to be at an all time high with the National Institutes of Health currently directing over $950 million into primate experimentation. The overall estimate for federal spending on primate experimentation (including spending by the NIH, DOD, USDA, EPA, NSF, SBIR) is $1.1 billion. The number of primate grants funded by the National Institutes of Health has risen 54.6% in the last ten years.

Government documents reveal a pattern of Animal Welfare Act violations within major primate laboratories across the United States. Primates appear to be dying of dehydration and literally wasting away within many large laboratories. Environmental enhancement appears to be another area of consistent violations of the Animal Welfare Act by laboratories across the U.S. Internal government documents also reveal that as many as 35% of all primates within laboratories experience some level of social isolation. USDA inspection reports and other documents indicate that many facilities still maintain large numbers of primates in social isolation. The cages of many primates are utterly barren, lacking even a simple perch.

Health care records from several research facilities, as well as USDA inspection reports, indicate that primates within many research facilities are suffering from severe levels of stress. Self-injurious behavior ranging from over-grooming to the destruction of extremities occurs regularly. Other psychologically pathological behavior (stress pacing, saluting, etc.) by primates is not uncommon. This stress has led to high levels of gastro-intestinal tract disease and high infant mortality rates in laboratory primates.

Many violations of federal regulations for primate care occur regularly within US labs. At least three major primate labs are the subjects of governmental regulatory action as this report is being written.

Redundant research is the norm with 188 separate experiments examining neural information processing in macaque monkeys. Many other areas of experimentation are highly duplicative, including addiction experimentation and behavioral testing.

This report makes recommendations which will lead to the elimination of redundant experimentation, accurate reporting of experimentation by laboratories, and additional public oversight regarding the escalating use of primates within U.S. laboratories.

Statistical Highlights:

1. 95,951 primates confined in labs, 42% increase over the last 5 years
2. $1.1 billion spent on primate experimentation by Federal Agencies (NIH, NSF, USDA, EPA, DOD, SBIR)
3. 54.6% increase in the number of NIH grants for primate experimentation for the last 10 years
4. Funding of the Primate Research Center System has increased by 182% in the last 5 years

How Many Primates Are in Labs??

In the past all estimates regarding the number of primates in laboratories across the United States have been incomplete. These statistics have been based on data promulgated by the USDA. Previous USDA data has dealt specifically with the number of primates actually used in experimentation. No statistics were kept for the number of primates held in labs for breeding or other purposes. However, these practices changed for the reporting of statistics by the USDA for fiscal 2002.

For the first time statistics are now available which deal with all primates in labs, whether held for breeding, or actually used in experimentation. For fiscal 2002 the USDA reports the use of 52,275 primates in experimentation for the entire U.S. The USDA also reports that U.S. labs held 43,676 primates for breeding or conditioning. This places 95,951 primates within U.S. laboratories. This information may not be totally complete, because since 1985 the USDA has never been successful in obtaining reports from all U.S. labs. But it is reasonable to assume that the majority of primates have been accounted for.

This information (and more detailed data including state by state listings, etc.) is available at: http://www.all-creatures.org/saen/res-usda-anexstats-2002_All_All_animal_usage_w_not_yet_used.pdf.

The states which record the largest population of primates within laboratories are:

The 12 States with the Largest Populations of Primates within Laboratories

State	Primate Population within labs	Major Primate Labs within the State	
Louisiana	11,673	Tulane Primate Center	6319
		New Iberia Lab	5000
California	8,841	UC Davis Primate Center	4112
Texas	8,307	Southwest Foundation Primate Center	5755
Maryland	7,593	Various Government Labs	
New Jersey	7,572		
Massachusetts	6,007	New England Primate Center	2156
Georgia	5,227	Yerkes Primate Center	3861
South Carolina	5,092	LABS of Virginia	6736
Virginia	4,549		
Wisconsin	4,543	Wisconsin Primate Center	1756
Washington	4,116	Washington Primate Center	2898
Oregon	3,335	Oregon Primate Center	4027
Total	76,855	Total	46,620

80% of the primates currently held within U.S. labs are located within 12 states, with 52% in the top six. Many of these primates are maintained within just a few labs (listed in the table above). In fact 48% of the primates in US labs are held in only 10 labs.

What trends are taking place in the use of primates in laboratories? The USDA has been charged with maintaining statistics regarding the use of animals in experimentation. However, the statistics maintained by the USDA have several severe limitations. Firstly, at no time in recent years have all US labs reported. With respect to primates, even the non-reporting of one or even two labs could substantially skew the statistics. Secondly, only recently has the USDA published data regarding the number of primates in labs for breeding and conditioning. For 2002 these non-experimented upon primates made up almost 44,000 of the approximately 96,000 primates maintained within labs. This is another serious drawback.

Therefore, a different method of tracking primate populations within labs has been utilized. Primate populations at sixteen large labs have been compared for the years 1997 and 2002. For 2002 these nineteen labs comprised (when counting both experimented upon and non-experimented upon primates) 47% of the total US laboratory population of primates. This is clearly a reasonable sampling to determine trends in terms of primate populations within laboratories.

Primarily two types of documents were used for this comparison. Eight of these labs are part of the National Primate Research System. These labs file (with the NIH) annual progress reports that disclose their primate populations. The reports for the 2002 - 2003 year were compared with similar reports for 1997. This utilization of documentation was necessary because the reporting period has changed for these reports. For the southwest Foundation for Biomedical Research a slightly different approach was utilized. This lab joined the Primate Center System during this period. Therefore, the 2002 NIH report was compared with the annual report for the USDA report for 1997. Data for the other labs relied entirely on USDA reports (2001 vs. 1997).

The results of this comparison were startling. These nineteen labs housed/experimented on 31,655 primates in 1997. During 2002, these same facilities housed/experimented on 45,036 primates. This is an increase of 13,381 or 42%. This is an amazing increase for such a short period. The individual facility information is contained in the table which follows.

US Primate Laboratory Populations (a sampling)

	1997	2001/2002	increase	% increase
Harvard	1435	2156	721	50
U of Washington (Seattle)	2018	2898	880	44
U of CA (Davis)	3980	4112	132	3
U of CA (SF)	131	188	57	44
U of Oregon Health Sciences	2734	4027	1293	47
Emory	3281	3861	580	18
U of OK	197	285	88	45
Tulane	4857	6319	1462	30
Southwest Foundation for Biomedical Research	3081	5755	2674	87
U of Pittsburgh	422	606	184	44
U of WI (Madison)	1540	1756	216	14
Labs of Virginia	2399	6736	4337	181
U of PR	1806	1835	29	2
Wake Forest	1636	1004	-632	-39
Advanced Biosciences	162	591	429	260
Johns Hopkins	398	544	146	37
Novartis	312	701	389	125
Primedica	615	817	202	33
Bioqual	651	845	194	30
Totals	**31,655**	**45,036**	**13,381**	**42%**

How Are Primates Cared For Within Laboratories?

Are laboratories following laws regarding proper care of primates? This is a difficult question to answer. Many of the regulations regarding the care of animals are common to all species of animals. In other words, for the most part the regulations are the same whether we are speaking of primates or rabbits. The regulations which were derived from the Animal Welfare Act cover veterinary care, feeding, pain relief in surgery, etc. But very often the same regulation is used for all species. Therefore it is difficult to ascertain which violations pertain to primates.

USDA/APHIS information regarding violations of the AWA is available on the USDA website at http://www.aphis.usda.gov/ac/violationssumwopara.pdf and http://www.aphis.usda.gov/ac/FY2002_3_81_violation_sum.PDF.

Examination of the violations listed at this location shows that approximately 1 out of every 4 labs has a violation regarding animal care, and approximately 1 out of every 2 labs has a violation regarding the Institutional Animal Care & Use Committee, the internal body that is responsible for enforcement of the Animal Welfare Act within each facility and for the approval of experimental protocols. As will be shown when specific facilities are examined, many of these violations were relevant to primates.

It is also significant to note that there were 227 separate violations of the requirements for providing environmental enhancement for primates. Many of these violations took place in research facilities. The trend towards non-compliance with this new area of enforcement will be examined when specific facilities are discussed. The psychological well being of primates within laboratories is a major concern. Isolation has been shown to have very deleterious effects on the psychological well being of primates. Therefore, during 2000 – 2001 the USDA undertook a Housing Survey to investigate the conditions within which primates are housed. Research facilities had a much worse record for providing socialization for primates than did either exhibitors or animal dealers. Dealers housed 89% of their animals in pair/group housing; exhibitors gave 91% of the primates in their care socialized housing. Research facilities gave only 65% socialized housing. Or, 35% of the primates in research facilities experienced some level of social isolation. Problems with environmental enhancement are common in the specific facilities which will be examined next.

While this discussion of national trends in AWA violations has been useful, an examination of specific facilities will provide examples of violations at well-known laboratories.

Northwestern University

Inspection reports from USDA visits to Northwestern University dated 6/11/02 indicate violations within areas including veterinary care, IACUC, and personnel qualifications. Within these documents the deaths of several primates are discussed. Primate 8D4 died within ½ hour of the completion of a marathon 9-hour surgical procedure. Other investigators at Northwestern had completed similar procedures in half the time. Another primate, 9K2, is said to have died as a result of water deprivation. Apparently this primate was involved in a procedure wherein the animal's water intake was severely limited. At the same time the automatic watering system for a set of 4 monkeys, one of which was primate 9K2, was malfunctioning. This caused 9K2 to be water deprived even at times when water was supposed to be available, leading to death. The other three primates in this quad are also said to have been "very thirsty" when they finally received water.

University of Pittsburgh

An inspection report for September 3, 2002 discusses seven individually housed primates in one room. "The largest of these was exhibiting stereotypic pacing and limited use of an enlarged cage. There was no evidence of any real enrichments being provided to these animals."

On 1/22/03 the University of Pittsburgh Plumborough Primate facility was cited for the use of expired drugs, inadequate care of primates recovering from anesthesia, inadequate storage of primate food, and unnecessary isolation of primates.

In March of 2003 several drugs are listed as being expired and primates are listed as being housed in cages that are too small.

An inspection report for May 19, 2003 lists primates utilized in an experiment that restricts their access to water. However, "The items listed to monitor their health failed to consider even rudimentary signs of dehydration."

University of Pennsylvania

USDA inspection reports from 6/20/02 indicate violations in the area of environmental enhancement for primates. Only two of 19 baboons are socially housed when the cages and protocols could clearly allow social housing. Seven of the seventeen cynomolgous monkeys are still not socially housed. Several primates do not have perches, and other more complex enrichment devices have not been used in months, even though the university apparently has them.

Several examples are illustrative: "Two single housed rhesus in IHGT are exhibiting stereotypic behaviors but are receiving no additional special enrichment. These are rhesus 94B106 who is stress pacing and AC3H who is very aggressive and exhibiting saluting behaviors."

Inspection reports for May 16, 2003 discuss surgical procedures on several primates where post-operative analgesics were not used, despite provisions for the use of these drugs in the research protocol. In the Richards Building, animal facility, room 310, four primates are housed individually in cages that are too small for their needs.

There are multiple violations of environmental enhancement requirements. In the Richards Building three African Green Monkeys did not have so much as a perch in their cages. In room 309 of the same building four primates did not have perches. Five more primates in this building are not receiving adequate enhancement (lack of perches, swings, or devices improperly installed). Four more primates in this building are individually housed without even being able to see another primate. Three more primates that undergo "chair procedures" (are confined to primate restraint chairs) receive no special considerations to compensate for their specialized confinement.

As of May 15, 2003 the Nonhuman Primate Environmental Enrichment Plan has not been updated since 1997. Numerous research protocols are listed with various deficiencies. Many of these protocols are listed by number only and it is impossible to determine if they impact primates in any way.

Johns Hopkins University

In August of 2000 Johns Hopkins is cited for primate cages that are too small. Environmental enhancement is minimal and may consist of only a kong toy. Primates do not even have perches in their cages. Primates who suffered and died during the period for the previous year's report were fraudulently reported as not having suffered.

USDA reports from inspections on 6/24/02 reveal violations in many areas. The IACUC is cited for inadequate justification of the use of baboons and squirrel monkeys in drug studies. Environmental enhancement is also an issue at this facility because "Over half of the nonhuman primates are singly housed. . . . A baboon was housed alone with no other nonhuman primate contact and minimum enrichment at Asthma and Allergy. The baboon was acting distressed, pacing in circles."

Six primates are housed in cages that are insufficient in size. Many primate cages do not have perches, the enrichment plan is minimal with treats merely scattered on the floor of the cages. The documented enrichment plan has not been updated since 1994.

During 1999 Riki, a rhesus monkey, died at Johns Hopkins University. This primate had received treatment for ulcers in 1996. During 1999 Riki was found to be biting his/her stifles (area near the knee), a form of self-mutilation. On 8/27/99 Riki was found lying on his/her side at noon. Examinations showed that Riki was in shock. The only treatment given was intravenous fluids. A government report states: "The primate was allowed to suffer and die, instead of being immediately humanely euthanized when the decision was made not to administer further treatment."

Also at Johns Hopkins -- Primate 58L, a marmoset, had surgery on 7/11/00 to place a head implant. On the day after surgery 58L was found shivering on a heating pad that had been turned off.

Emory University

USDA inspection reports dated 3/18/03 discuss violations in the areas of IACUCs for improper internal inspections, and Housing facilities for non-human primates. A report from 8/23/02 discusses the death of Rhesus monkey #3566 on 4/16/02. Apparently this primate had been steadily declining since 6/01 – losing 32% of his/her body weight in this 14-month period. This primate had received multiple MPTP treatments over a 6-month period. The primate received treatment for clinical problems on 3/16 and 3/31. Health concerns were again raised on 4/14. However, the researchers did not observe the primate on this day, and were unavailable for contact from the veterinary staff. Husbandry staff didn't report the animal's anorexic condition until 4/15 – when the animal was found with no evident heartbeat or respiration, and hypothermia. The primate was revived, but was found dead the next morning.

Another incident at Emory described in the USDA report involves an ". . . anorexic, barely mobile, syringe-fed monkey that had been living in a sleep study cubicle for 'several days' following multiple, systemic MPTP injections."

The USDA inspector concludes the report with this comment: "Recent incidents described herein demonstrate (a) lack (of) timely communications between investigators/husbandry staff and the attending veterinarian, one of which resulted in an animal death."

Other inspection reports (from 3/30/00) list deficiencies in space requirements, environmental enrichment, and veterinary care. In relation to the Environmental enrichment violations the inspector makes an interesting statement: ". . . although a significant percentage of

the macaques at the Yerkes Field Station are partially or entirely bald, this condition has not been noted as not normal, accessed for the extent of the condition, nor possible reasons or solutions investigated. The baldness appears to be due to overgrooming, and may indicate a need for the opportunity to express other normal behaviors (climbing, exploring) more frequently."

The care of primates at Emory University is particularly important because Emory is the home of the Yerkes Primate Research Center, which handles over 3000 primates per year.

Wake Forest University

Beginning in September 2000 Wake Forest is cited for having an inadequate environmental enhancement program for primates. In August of 2001 the plan is still listed as being inadequate, with many of the primates at the Bowman-Gray and Chestnut campuses not even having a perch to sit on. At this time the lab is also cited for using outdated drugs such as pentobarbital throughout the Bowman-Gray campus.

In February of 2002, 31 primates still do not even have perches to sit on. Many research protocols call for different kinds of enrichment items ". . . but no such items were observed in the animal cages." In one protocol in which the primates are "head-capped" (have metallic devices attached – often by screws -- to their heads) the primates are socially isolated simply because of the headcaps. The inspector notes that headcapped primates at other institutions have been successfully housed socially. Some protocols called for primates to be housed socially, but on inspection they were still being housed individually. Food for the primates was also not being stored in such a way as to insure nutritional integrity.

On March 27, 2002 Wake Forest is again cited for violations of environmental enhancement for primates with 18 primates housed individually without justification. Later that year, on November 21, three primates still did not even have a perch to sit on. This brings the total of violations in this area to four in a three-year period without any meaningful enforcement actions taken by the USDA. We must begin to wonder if either Wake Forest or the USDA takes this regulation seriously.

Duke University

USDA documents regarding inspections at Duke University performed on 9/17/02 indicate repeat violations of the Environmental Enrichment program for primates. The majority of the primates at this facility are still individually housed. One specific owl monkey is noted as exhibiting symptoms of psychological distress. These symptoms include: self-clasping, poor haircoat, and depression. This is significant because Duke University routinely handles over 400 primates per year.

Yale University

USDA documentation for routine inspections of Yale University dated 9/3/02 cites inadequate veterinary care for the use of outdated drugs (oxytetracycline and penicillin). Three nonhuman primates (94-37, 00-38 and 00-39) are exhibiting signs of distress as a result of insufficient environmental enhancement. Violations also exist in the areas of IACUCs in the area of records regarding experiments with kittens and personnel qualifications relating to inadequate dosing of post-operative analgesics. However, the most significant violation on this date is the fact that several primates were without water at the time of inspection. The inspection of 9/6/01 also showed a primate who indicated signs of psychological distress.

Harvard University

Government documents for 1/22/01 reveal violations in the areas of IACUCs, veterinary care, housing, and environmental enrichment. Several primates were recovering from anesthesia without posting of their condition or observation. Several primates are noted with substantial hair loss (a potential sign of stress), and another primate is showing evidence of a bloody nose. Primate #210-99 – "exhibits hair loss, crouching type behavior, and pattern type movements around cage. No evidence in records that any behavioral abnormalities were noted." Information from other sources (i.e. a report filed by Harvard with the NIH) reveals some startling instances of death and disease at the primate center.

Harvard/NENPRC (New England National Primate Research Center) houses rhesus monkeys, cynomolgus monkeys, marmosets, aotus monkeys, squirrel monkeys, and cotton-top tamarins. The overall colony size began the year at 1705 primates and ended the year at 1749. Essentially, the size of the colony did not change in any meaningful way.

The colony of cotton-top tamarins did not change in size. 22 tamarins were born, and 22 died. The center started the year with 1062 rhesus macaques. There were 92 live births, 127 died in experimentation, 17 died of natural causes, and 48 came to the center from outside sources – resulting in an ending population of 1058. 8 aotus monkeys began the year at the center, one died during experimentation, leaving 7 at the end of the year. 60 squirrel monkeys started the year at the center. 12 were added to the population from outside sources, 15 died during experimentation, leaving 57 at the end of the year.

Potentially the most significant finding came in the marmoset colony. 323 marmosets started the year at NENPRC. 5 marmosets were born during the year. 222 more marmosets were brought in from outside sources. 15 marmosets died during experimentation. However, 148 died of disease or other non-experimental causes. The majority of these deaths from disease came in the experimental colony of marmosets. This colony began the year with only 145, with 39 being added during the year. 15 died during experimentation and another 144 died of disease, leaving only 25 at the end of the year. In other words, 80% of this colony died of disease during the year. This is an outrageous level of death from disease, and must draw the veterinary care at the NENPRC into question.

Overall, 417 primates died at the center during the last reporting year, or approximately 1 out of every 5. At least, the pathology section of the report lists 417 post mortem workups (necropsies) being done on center primates. This may be cause for concern because the colony tables list only 368 deaths. This is a discrepancy of 49 primates.

The successful birth rate at the NENPRC is also a cause for concern. The progress report lists 119 live births. The report also lists post mortem workups on 144 neonatal/aborted primates, which could indicate an infant mortality rate of 55%. This information can be broken

down further. 5 marmosets, 92 rhesus macaques, and 22 tamarins were born. However, the same report lists post mortem reports for 17 rhesus macaques, 47 tamarins, and 80 marmosets – all in the neonatal/abortion category. These statistics may indicate a very high rate of abortions/stillbirths. This could be the source of the 49 primate discrepancy listed above. There may have been 49 naturally occurring abortions at the primate center. If this is the case, then there were 168 total pregnancies at the center. All that can be said for certain is that young primates do not survive at NENPRC.

The bacteriological lab at NENPRC diagnosed the presence of many very pathogenic bacteria within the primates. Staphylococcus bacteria were isolated 233 times from center primates. Other pathogenic bacteria were also isolated: E. coli – 318, and Streptococcus was isolated 238 times. As many as 45% of the center's final population could have been positive for one of these pathogenic bacteria.

McLean Hospital

USDA documents for inspections performed at McLean Hospital on 2/2/00 list many problems in the area of Veterinary Care and IACUCs relative to primates. Drugs that had expired as much as 2 years and 10 months before the inspection were still in use. Primates (#261-85 and #258-90) have "excessive generalized hair loss" and the records for these primates do not indicate that this has even been noticed. Primate #91-94 is "limping and holding left leg up." Again, this health issue is not even mentioned in the records for this primate. There are violations regarding the IACUCs which refer to a project which deprives primates of food.

By December 5, 2000 other expired drugs have piled up at McLean Hospital, and the condition of primates #261-85 and #258-90 have still not been noticed. And primate 91-94 now is ". . . still holding leg up and observations of foot at time of this inspection showed curled up appearance (disuse atrophy?)." Another primate, #347, also has unidentified health care issues.

University of Oklahoma Health Science Center

Inspection reports for August 8, 2003 list 15 adult male primates that are housed individually with nothing to demonstrate environmental enhancement other than the residue of some treats left on the bottom of their cages. They had been maintained this way for 4 – 6 months despite the requirements of the environmental enhancement plan which called for perches, toys, etc.

This same report also states: "The temperature outside was 100 degrees Fahrenheit. The outside portion of their enclosure has 3 3x3 raised platforms with a roof, there are approximately 60 non-human primates in each enclosure and they are locked out from the indoor portion of their housing enclosure. The temperature did not drop until 5:00 PM when a rain storm came through the area and it was 85 degrees at 9:00 AM. More shade must be provided along with protection from the weather if kept outside or access to the inside at all times so that the non-human primates can get out of the weather when necessary." The enclosure also lacked a perimeter fence to keep wild animals away from the primates.

There are several violations in the area of environmental enhancement. "Aggressive behavior has been on the rise lately, severe injuries have occurred, yet the daily log books don't indicate anything to be out of the ordinary. The care givers apparently don't have the time to

spend observing the animals to determine which ones are doing the attacks, there were 5 – 6 attacks just in the 10 – 15 minutes that I was watching."

In September of 2003 various violations in the area of environmental enhancement are listed. Many devices (hanging balls, swings, foraging opportunities, video and radio stimulation) are supposed to be in place. However, none of these items are apparent at the time of inspection, and no logs indicate that they have been used. At this time this lab housed 230 primates.

University of California, San Francisco

Inspection reports for the University of California, San Francisco (UCSF) beginning in September of 2000 reveal a continuing pattern of animal abuse and neglect. On September 27 and 28 USDA/APHIS officials performed an inspection of UCSF labs as a result of a complaint which was filed against the facility. Their inspections found that the complaint was "basically valid." The complaint centered around experimentation on primates which denied them sufficient food and water. Violations in areas of IACUC, Personnel Qualifications, Veterinary care ("Monkey #17562 was identified as not being a good candidate for a water restriction study, due to a chronic diarrhea problem, according to veterinary statements in the animal's medical record. The records did not indicate a resolution of the chronic diarrhea [a water loss problem], yet this animal remained assigned to the protocol and was placed on a long-term water restriction schedule in October 1999. The animal was also noted as thin and not gaining weight as early as July 13, 1999, yet no medical attention was provided for this problem until August, 2000."), Handling, and Feeding. The inspector concludes the report with a very damning statement: "In my professional judgment, the nutritional requirements of these animals were not met for either food or water."

On 5/17 – 25/01 UCSF is cited for IACUC violations for performing survival surgery on an animal that was sick, and for inappropriately monitoring a research protocol that involved confining primates to restraint chairs for a period of up to 8 hours, and improper use of post-operative analgesics. UCSF is also cited for inadequate veterinary care of sheep at this time.

On 7/30/01 UCSF is again inspected as a result of a complaint. The complaint was apparently filed because a primate had been ill and vomiting for approximately 5 weeks. This primate was also involved in a training protocol that involved water restriction.

On 1/28/02 the UCSF IACUC is again cited for ineffective monitoring of experimental procedures. Specifically, the primate water restriction project is mentioned again. Insufficient means of monitoring the weight loss of primates, and the endpoint necessary for the advent of veterinary involvement are deemed to be insufficient. The lab is also cited for inappropriate feed storage, primary enclosures, sanitation, and inappropriate waste disposal.

On 8/5/02 UCSF is again cited for IACUC violations for investigators not following experimental protocols, insufficient administration of analgesics, insufficient consideration given to potentially painful and stressful procedures (in primates), and inadequate veterinary care. The veterinary care incident involved a marmoset that had been allowed to lose 36% of his/her body weight without receiving any treatment. Violations in sanitation and cleaning are again mentioned.

On 2/4/03 UCSF is again cited for IACUC violations regarding post-surgical monitoring of primates and inadequate use of analgesics. These violations involve projects where holes were bored into the skulls of primates. The facility is also cited for falsification of animal records and inadequate sanitation.

According to the *San Francisco Chronicle* the United States Department of Agriculture has recently filed charges against UCSF for:

"-- Doing a craniotomy to expose a monkey's brain without administering post-operative analgesics.

-- Over-breeding marmoset monkeys.

-- Depriving monkeys of water, resulting in severe weight loss.

-- Not monitoring animals after surgery."

University of Washington, Seattle

Internal documents obtained from the UW indicate significant problems in areas of primate care. One primate (K93464) died (9/01) as a result of ingesting a set of latex gloves. Another primate (T93497) died (1/01) after being anesthetized for a blood draw, potentially as a result of anesthetic overdose. Another primate (#93169) died (7/00) of anesthetic overdose. Two primates (A00131 and 98026) in the care of investigator CC Tsai died with "total absence of body fat stores" and "total absence of subcutaneous fat." Dehydration is also discussed in reference to primate #98026. Primate F93276 who died 6/01 is discussed as having "Malnutrition, chronic, severe" and "Dehydration, severe."

University of Wisconsin Primate Health Care

During the 2002 - 2003 period the WNPRC housed roughly 1500 primates. Most of these primates are macaca mulatta or rhesus monkeys. The next largest group of primates is callithrix jacchus or marmosets. These primates are maintained to be used as research subjects, or in the breeding of primates for research. The center supports research in aging, diet, reproduction, psychology, and other areas.

The colony statistics table from the NIH progress report filed by WNPRC reveals a number of interesting statistics. The year began with 1513 primates in residence at the center. 84 marmosets were born during the year, no macaques were born. For the purposes of the progress report live births are defined as "inflated lungs." The progress report does not list any infant or juvenile macaques or marmosets dying at the WNPRC. 159 primates were added to the colony from outside sources. 29 primates died during experimentation. 118 primates died of non-experimental causes. The total number of primate deaths listed in the report (experimental and non-experimental) is 147. 95 were sold or transferred outside the center.

The following table lists the numbers of primates for whom WNPRC provided necropsy reports (i.e. post-mortem reports) whose dates correspond to the time period for the progress report that WNPRC filed with the NIH. These primates all apparently died of natural causes.

	Adult	1 day – 1 month old	Stillbirths
Macaques	70	8	10
Marmosets	36	40	21
Total	106	48	31

Note: 3 additional necropsy reports were provided from macaque monkeys that were euthanized during experimentation.
Total deaths (non-stillbirths) 157

Closer examination of these records raises many questions. For example: the 8 macaques in the 1 day – 1 month old category had ages of: 1 day (3x), 2 day, 1 week, 2 ½ weeks, and 1 month (2x). If, as the progress report says, no macaques were born during this period, where did these young animals come from? It is not likely that 1 day old primates were shipped in from a supplier. It is even more surprising that the report lists no infant/juvenile macaques as dying. What about these 8 macaques? The progress report also lists no deaths among infant/juvenile marmosets. However WNPRC provided necropsy reports for 40 marmosets in the 1 day – 1 month old category. Apparently the WNPRC conveniently forgot about these 48 short lives when filing their NIH progress report. The progress report lists 147 deaths at the primate center, but WNPRC provided 157 necropsy reports that occurred during this period.

Many other pieces of information can be derived from the necropsy reports at the WNPRC. This information can reveal patterns in the diseases which functioned as causes of death, thereby providing an indication of the conditions at the WNPRC.

Macaques

1. 38 (54.3%) died with lymphoplasmacytic gastritis – this disease can be caused by stress.
2. 27 (21%) died with enteritis and/or colitis – also potentially caused by stress.
3. 2 had reached a state of emaciation
4. 4 had begun to self-mutilate
5. Other disease conditions included: pneumonia, hepatitis, endometriosis, peritonitis, etc.

Marmosets

1. 23 (64%) had lymphocytic enteritis – this disease can be caused by stress
2. 8 (22%) had become cachetic (emaciated) 6 (16.7%) more were listed as thin -- or -- 14 (38.9%) were substantially undernourished
3. 1 marmoset had begun to self-mutilate
4. Other diseases included lymphosarcoma, hepatitis, meningitis, encephalitis, etc.
5. The infant mortality rate for the marmoset colony is 58.1% = (live births – infant necropsies) / (live births + stillbirths)
6. 8 of the infant animals that were given post-mortem examinations had been cannibalized by other marmosets

What do these individual pieces of information lead to? Lymphoplasmacytic gastritis in macaques and lymphocytic enteritis in marmosets can be caused by stress. High infant mortality rates can be caused by stress. Cannibalism can also be influenced by stress. A significant number of primates at WNPRC engaged in self-mutilation. This is likely a result of social isolation. It is very likely that only the most susceptible primates engaged in self-mutilation; others have probably developed behavioral pathologies of a different nature. Additionally, we only have

knowledge of the self-mutilating primates that died. We have no way of knowing how many living macaques and marmosets are physically injuring themselves at this very moment. We must also conclude that the animals within this colony suffer from chronic stress. All the signs are there: gastro-intestinal tract disease.

Additionally, three marmosets were recently killed at the WNPRC when they were not removed from their cage before the cage was sanitized.

Primate Health Care at UC Davis/CPRC

Statistics filed in reports by the California Primate Research Center with the NIH are not conclusive. The methodology of these statistics does not allow for meaningful interpretation. Therefore, post-mortem records (obtained through public records request to the University of California) for 321 primates who died at the California primate Research Center will be the basis of assessing the health and treatment of the animals at CPRC.

This group of 321 primates died from January of 2001 through September 2001. 49 of these necropsies represented abortions/stillbirths. 21 represented neonatal deaths which were caused by everything from parental neglect to failure to thrive. 195 of the deaths were experimental in nature. 78 of the experimental deaths had little/no diagnostic work done because the animals were killed for tissue harvest. Therefore these 78 deaths will not figure into calculations regarding health matters. 56 adult primates died of non-experimental causes.

For statistical purposes this report will use a sampling of 173 non-infant primates who died of both experimental and non-experimental causes. Many causes of death were listed including: pneumonia, meningitis, encephalitis, colitis, bloat, etc. The most common findings in these documents were: colitis/gastritis/enteritis (63 or 36%), inanition/thin (59 or 34%), dehydration (34 or 19.7%) and parasites (24 or 13.9%). Fully 1/3 of the primate deaths, of either or non-experimental causes involved gastro-intestinal tract disease.

The information would lead to several conclusions. While gastro-intestinal tract disease can have many causes, in captive animals – especially those who are subjected to unnatural conditions and/or experimentation – stress is a common cause. Additionally, 1/3 of these primates were allowed to reach an advanced state of debilitation marked by substantial loss of body mass (inanition/thin) and/or dehydration. Clearly, these animals are being allowed to reach an unacceptable level of deterioration. It is highly likely that these animals received inadequate care. Whatever the cause, at least 46 of the primates at CPRC suffered substantially as a result of their diseases – many of which were experimentally induced. However, according to the staff of UC Davis none of these animals (despite the severely debilitated conditions which were reached by these animals) experienced any pain or distress.

Animal care practices at UC Davis have recently come under fire after the deaths of seven primates due to a malfunctioning heater.

How Much Money is Spent on Primate Experimentation?

Due to changes in the way that the USDA categorizes primates within research facilities, it is impossible to compare fiscal 2002 animal use statistics with those from previous years. Since trends cannot be elucidated by discussing individual animals, the number of research projects which utilize primates will be discussed. The National Institutes of Health is the government agency which funds the single largest portion of animal research. Therefore, the

number of grants funded by this agency will be used as a gauge of the overall direction of primate experimentation. The time period used will be a ten-year span (1993 – 2002).

National Institutes of Health Primate Grants

Species	# 2002 grants	#1993 grants	%increase
Macaque	**1072**	**680**	**57.6**
Baboon	**177**	**101**	**75.2**
Chimpanzee	**62**	**31**	**100.0**
Squirrel Monkey	**94**	**77**	**22.1**
Marmoset	**40**	**22**	**81.8**
Vervet	**30**	**48**	**[38]**
Aotus	**28**	**15**	**86.7**
Mangabey	**12**	**4**	**200.0**
Totals	**1513**	**978**	**54.6%**

As the table indicates, the use of primates in experimentation has increased by 54.6% in the last ten years. Searches within the NIH system on generic terms reveal similar trends. Projects utilizing monkeys increased by 51.9% over the same ten-year period (from 297 to 451), and projects using the word primate increased 77.6% in ten years (from 559 to 993).

Again, exact totals are not available regarding the amount of funding that primate experimentation receives from the federal government. However, an estimate can be derived from the number of grants listed above. The first step is to consider the Primate Research Center System facilities separately. These facilities comprise a large percentage of the primates in US labs, and they utilize primates in ways that may not show up in conventional CRISP searches. The annual federal funding (fiscal 2002) for the Primate Centers is $609,067,164. Individual Primate Centers are listed in the table below.

Primate Center System Funding

	Fiscal 2002	Fiscal 1997
Oregon Health Science University	128,067,513	40,770,052
University of Washington, Seattle	137,567,855	58,776,707
Emory University	102,974,826	11,825,854

University of Wisconsin, Madison	32,424,030	26,971,379
Harvard University	27,101,309	32,973,539
University of California, Davis	59,182,742	13,525,662
Tulane University	69,888,853	12,918,498
Total without Southwest	**557,207,128**	**197,761,691**
Southwest Foundation For Biomedical Research	51,860,036	n/a -- was not a part of the Center System in 1997
Total 2002 Primate Center System Funding	**$609,067,164**	
Funding Increase 1997 – 2002		**$359,445,437 or 182%**

The primate center system accounts for about 25% of the primates within labs in the US, but these labs claim a much larger percentage of the funding. For fiscal 2002 these 8 labs brought in $609,067,164.

The funding directed to non-Primate Center System facilities accounts for 1134 of the 1513 grants listed above. The most recent average grant amount posted by the National Institutes of Health is approximately $300,000 per grant. When this is multiplied by the number of grants listed above we see that non-Primate Center labs receive $340,200,000 from the NIH. The Primate Centers receive roughly $609,000,000. When utilizing the Federal Research and Development website it is possible to search across the databases of the USDA (United States Department of Agriculture), NSF (National Science Foundation), EPA (Environmental Protection Agency), and the SBIR (Small Business Innovation Research). Searching across these four systems reveals 517 projects with estimated funding of $155,100,000. Similarly, searching the DOD database (available at http://www.scitechweb.com/acau/brd/) provides a total of 68 projects involving primates. Assuming the same cost level as the NIH, the DOD is spending approximately $20,400,000 on primate experimentation. This would give us a grant total of $ spent on primate experimentation from only two federal agencies. This total would not include funding of projects from agencies such as NASA, the USDA, etc. It would be safe to say that the federal government is currently spending $1,124,700,000 per year on primate experimentation.

2002 National Primate Experimentation Funding Estimate

Total of NIH-funded non-Primate Center System Grants	**1134**	**x**	**$300,000 =**	**$340,200,000**

Total of NIH Primate Center Funding				**$609,000,000**
Total DOD projects	**68**	**x**	**$300,000 =**	**$ 20,400,000**
Other Federal Agencies (USDA, EPA, NSF, SBIR)	**517**	**x**	**$300,000 =**	**$155,100,000**
Estimated Total Federal Spending on Primate Experimentation				**$1,124,700,000**

What Kinds of Experiments Are Performed on Primates?

Searches within the NIH CRISP system revealed some common areas of experimentation that utilize primates. These areas of experimentation were examined in macaque monkeys, the most commonly used species of primates. CRISP searches reveal 15 experiments that study heart disease in macaques, and 34 that study cancer. However, this same system contains 51 projects that study cocaine in macaques, 58 that study neurobiology, 44 that study alcohol, and 188 that study neural information processing in macaques. Another 21 projects study macaque sex and an additional 16 examine reproduction in macaques. It appears that the NIH is more

interested in getting primates drunk or stoned and showing them a good time, than in curing real diseases.

The CRISP system lists a total of 1,072 projects that involve macaque monkeys. 188, or 17.5%, are in the area of neural information processing. Another substantial (116 or 10.8%) set of grants study alcohol or addictive drugs in macaques.

Macaque Monkey Project Categorization
Based on the National Institutes of Health CRISP system

Heart Disease	**15**
Sex	**21**
Cancer	**34**
Neurobiology	**58**
Reproduction	**16**
Stress	**68**
Learning	**62**
Alcohol & Addictive Drugs	**116**
Memory	**105**
Behavior Tests	**147**
Neural information processing	**188**

Recommendations of this Report

1. The United States Department of Agriculture should develop specific definitions of experimental procedures potentially causing pain or distress within primate experiments. These definitions should discuss issues such as social isolation, severe confinement (i.e. use of primate restraint chairs, head immobilization, etc.), severe food/water limitations, the use of electric shock, etc. Facilities should be required to report experiments of this type as causing pain or distress, and should be subject to regulatory action for failure to do so.

2. The General Accounting Office should perform an audit of the National Institutes of Health to address the use of primates in duplicative experiments, forwarding the results to the United States Department of Agriculture for regulatory action against those laboratories performing unnecessarily duplicative procedures, and those procedures should be immediately terminated.

3. The National Institutes of Health should develop guidelines to prevent the unnecessary duplication of experimental projects. For example, a limitation should be placed on the number of projects funded in specific areas on a species by species basis.

4. Laboratories utilizing primates should open their doors to closer public scrutiny, including tours of both laboratories and holding facilities for print and broadcast media. These same laboratories should also make relevant records (such as primate health care records, necropsy reports and research protocols) available to the public.

5. Upon completion of the GAO audit, congressional oversight hearings investigating the funding of projects by the NIH should be convened.