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POLICY STATEMENT

The *Laboratory Primate Newsletter* provides a central source of information about nonhuman primates and related matters to scientists who use these animals in their research and those whose work supports such research. The *Newsletter* (1) provides information on care and breeding of nonhuman primates for laboratory research, (2) disseminates general information and news about the world of primate research (such as announcements of meetings, research projects, sources of information, nomenclature changes), (3) helps meet the special research needs of individual investigators by publishing requests for research material or for information related to specific research problems, and (4) serves the cause of conservation of nonhuman primates by publishing information on that topic. As a rule, research articles or summaries accepted for the *Newsletter* have some practical implications or provide general information likely to be of interest to investigators in a variety of areas of primate research. However, special consideration will be given to articles containing data on primates not conveniently publishable elsewhere. General descriptions of current research projects on primates will also be welcome.

The *Newsletter* appears quarterly and is intended primarily for persons doing research with nonhuman primates. Back issues may be purchased for \$10.00 each. We are no longer printing paper issues, except those we will send to subscribers who have paid in advance. We will not accept future subscriptions, unless subscribers are willing to pay \$100/year. (Please make checks payable to the Brown University Psychology Department.) Readers with access to electronic mail may receive a notice when a new issue is put on the Website by sending the message **subscribe LPN-WARN your-own-name to listserv@listserv.brown.edu**. (Send the message **subscribe LPN-PDF** to receive PDF files by e-mail; or the message **subscribe LPN-L** to receive the nongraphic contents of each issue.) Current and back issues of the *Newsletter* are available on the World Wide Web at <<http://www.brown.edu/primate>>. Persons who have absolutely no access to the Web, or to the electronic mailing, may ask to have paper copies sent to them.

The publication lag is typically no longer than the three months between issues and can be as short as a few weeks. The deadline for inclusion of a note or article in any given issue of the *Newsletter* has in practice been somewhat flexible, but is technically the tenth of December, March, June, or September, depending on which issue is scheduled to appear next. Reprints will not be supplied under any circumstances, but authors may reproduce their own articles in any quantity.

PREPARATION OF ARTICLES FOR THE NEWSLETTER. – Articles, notes, and announcements may be submitted by mail, e-mail, or computer disk, but a printed copy of manuscripts of any length or complexity should *also* be sent by regular mail. Articles in the References section should be referred to in the text by author(s) and date of publication, e.g., Smith (1960) or (Smith & Jones, 1962). Names of journals should be spelled out completely in the References section. Latin names of primates should be indicated at least once in each note and article. In general, to avoid inconsistencies within the *Newsletter*, the Latin names used will be those in *Mammal Species of The World: A Taxonomic and Geographic Reference*, 2nd Ed. D. E. Wilson & D. M. Reeder (Eds.). Washington, DC: Smithsonian Institution Press, 1993. For an introduction to and review of primate nomenclature see *The Pictorial Guide to the Living Primates*, by N. Rowe, Pogonias Press, 1996.

All correspondence concerning the *Newsletter* should be addressed to:
Judith E. Schrier, Psychology Department, Box 1853, Brown University
Providence, Rhode Island 02912 [401-863-2511; FAX: 401-863-1300]
e-mail address: **primate@brown.edu**

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Cover photograph of ring-tailed lemurs (*Lemur catta*),
taken at the San Diego Zoo by Paul Wilde, 1997

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First Report of a Uterine Leiomyoma in a Common Marmoset (*Callithrix jacchus*): Statistical Study Confirms Rarity of Spontaneous Neoplasms

P. Rodríguez¹, L. Flores¹, F. Fariñas², and J. Bakker³

¹Wildvets S.C., Sevilla, Spain; ²Instituto de Patología y Enfermedades Infecciosas (Grupo Histoferon), Málaga, Spain; and ³Biomedical Primate Research Centre, Rijswijk, The Netherlands

A three-year-old captive-born nulliparous female common marmoset (*Callithrix jacchus*), housed at the Rainfer Primate Center (Madrid, Spain), presented with a history of poor condition, weight loss, and dull hair coat. The veterinarian noted clinical signs of abdominal distension, hypothermia, and edema of the legs, and the animal was considered moribund. Palliative treatment in the form of subcutaneous administration of thermoregulated electrolyte solutions was applied. The marmoset died a few hours after the veterinary consultation.

A complete necropsy was performed using standard techniques. Tissue samples of all major organs were preserved by immersion in 10% neutral buffered formalin, processed routinely, embedded in paraffin, sectioned at 5µm, and stained with hematoxylin-eosin for light microscopy examination. Autopsy specimens were sent for bacterial culture to Instituto de Patología y Enfermedades Infecciosas (Grupo Histoferon, Málaga, Spain).

Macroscopic pathology revealed cardiomegaly, severe pulmonary congestion, several nodules on the uterus and ovary, and swelling and congestion of the liver. A histological examination revealed pulmonary alveolar edema, vascular ectasia in the liver and kidneys, follicular depletion in the lymph nodes, focal fibrosis in the myocardium, and mild myodystrophy of the skeletal musculature. The nodules in the uterus revealed the presence of a leiomyoma. These nodules showed a hypercellular proliferative neoplastic tissue, composed of smooth muscle cells, with neither anisocaryosis nor anisocytosis, with a low to slight mitotic index (mitoses range from 3 to 5/10 hpf), and without necrosis. More specifically, these tumor cells showed a fusiform morphology, with eosinophilic cytoplasm and a fibrillar pattern without a clear border, and elongated nuclei with blunt edges and a fine chromatin pattern. There was an infiltrative pattern in the tumor borders. Immunohistochemistry revealed marked positivity for smooth muscle actin (*Figure 1*) and was negative for cytokeratines and the S-100 protein. The ovaries were active, with the presence of normal corpora lutea and a small serous cyst. A microbiological examination of the autopsy specimens showed negative results.

In summary, the most likely cause of death was cardiorespiratory failure, with the leiomyoma probably a co-morbid finding not contributing to death. This is the

first report of a spontaneous uterine leiomyoma in a common marmoset.

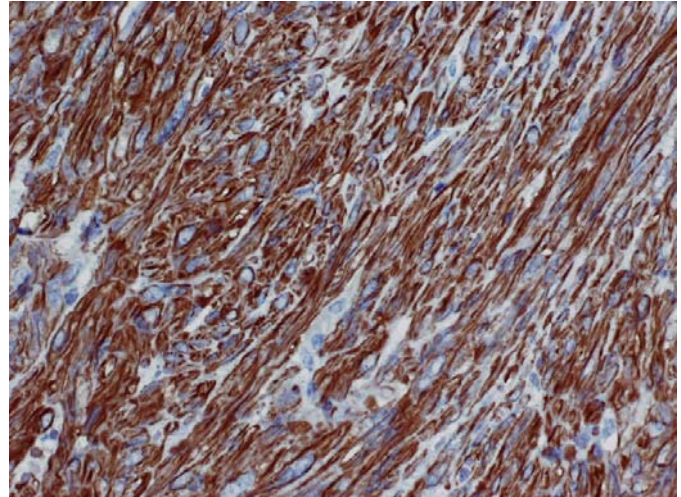


Figure 1: Uterus: immunohistochemical stain for smooth muscle actin. Marked positivity, with strong cytoplasmic staining.

Reports of spontaneous neoplasms in common marmosets are scarce; a few case reports have described squamous cell and undifferentiated carcinoma of the nasopharyngeal region (Betton, 1984; McIntosh et al., 1985), undifferentiated carcinoma of nasal tissue (Baskerville et al., 1984), not otherwise specified sarcoma in the thigh (Yamazoe et al., 2004), adenocarcinomas of the uteri (Kaspereit et al., 2005), malignant nephroblastoma (Zöllner et al., 2008), adrenal and hepatic myelolipoma (Kakinuma et al., 1994), adenocarcinoma of the small intestine (Chalifoux, 1990; Brack, 1998), bronchial adenoma (Brack et al., 1996), ovarian teratoma (Haworth et al., 2003), and paratracheal sweat gland adenocarcinoma (Khan et al., 1999). It is unclear whether this reflects underreporting or the real prevalence of neoplasms in marmosets.

It was for the above reason that we undertook this study of the incidence of neoplasms in marmosets housed at the Biomedical Primate Research Centre (BPRC), Rijswijk, The Netherlands. For the analysis, data used were obtained between January 1, 2004, and June 30, 2008. Risk is expressed as the number of events per 1000 animal years. The population at risk was quantified in animal years (with one animal year set at 365.25 days). The colony comprised animals ranging in age from parturition to adults over 26 years of age; the median age was 1.95 (Quartile range; 1.21-2.86). In total, 682 animals were

Corresponding author: J. Bakker, Lange Kleiweg 139, 2288 GJ Rijswijk, The Netherlands [+31152842579; fax: +31152843999; e-mail: bakker@bprc.nl].

housed at the BPRC during the study period in which all animal deaths were followed up with necropsy. The ages at which animals were considered at risk for neoplasm development began after 6 days of age. Seventeen animals died prior to entering this range and were excluded from the analysis. The remaining 665 animals were within this age range for a total of 1450 animal years during the study period. Considering the generally accepted fact that tumor incidence increases with age, an age distinction was made (Table 1). Of these 665 animals, 250 animals were alive at the end of the study period; during this period 181 animals were transferred to other institutes, and 234 died; 146 of the latter were sacrificed for experimental reasons and 88 died spontaneously or were sacrificed for ethical reasons. The average age of the necropsied marmosets was 3.50 (Quartile range; 2.02-3.79) years.

No neoplasms were observed during the study period, nor were any clinical signs of neoplasm detected. On the basis of these data, we can state that the incidence of neoplasms at the BPRC marmoset colony is estimated at 0. The upper 95% confidence limits are calculated by the use of Hanley's rule (Table 1) (Hanley & Lippman-Hand, 1983). It states that if no events occur in a series of N , the upper 95% confidence limit is $3/N$. With no events in 1450 monkey years, the upper confidence limit for the rate of neoplasm was 2.1 per 1000 monkey years. The data therefore confirm that neoplasms in common marmosets are indeed rare and that our finding of a tumor is significant.

Total # of Animals Housed		682	
Total # of Animals at Risk		665	
Total # of Animal Years		1450.2	
Years of age	# of animal years	Neoplasms	Rule of 3
0-1	407.6	0	7.4
1-2	414.9	0	7.2
2-3	228.1	0	13.2
3-4	129.5	0	23.2
4-5	79.9	0	37.5
5-6	55.7	0	53.9
6-7	36.1	0	83.0
7-8	23.8	0	126.0
8-9	16.4	0	183.5
9-10	9.8	0	306.0
10-15	20.1	0	148.9
15-20	14.3	0	209.5
20-25	10.1	0	298.0
25-30	3.7	0	805.4
Total # of Animal Years at Risk	1450	0	2.1

Table 1: Schematic data overview. The starting date was 1/1/2004; the ending date was 6/30/2008, for a span of 4.50 years.

In the case of leiomyomas, it is generally accepted that their incidence increases during an animal's reproductive years. However, the uterine tumor reported here was found in a non-breeding young adult female.

Altogether, the case described is exceptional, and is the first report of a spontaneous leiomyoma in a three-year-old nulliparous common marmoset.

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Information Requested or Available

European “3R’s” Website

The European Commission has launched a new Website, the “Tracking System for Alternative Test Methods Review Validation and Approval (TSAR)”, designed to track the development of new alternative test methods which should replace, reduce, and refine current animal testing.

European Science and Research Commissioner Janez Potočnik said, “It is in all our interests to avoid the use of animals in testing, for both ethical and animal welfare reasons. We also need fast, reliable and cost-effective test methods which ensure the safety of products for users, to help European industry, and which satisfy regulators.”

New alternative tests are subject to a process involving several stages of development, from proposal for validation to final inclusion in the EU regulatory framework. By consulting the Website, it will be possible to check whether an alternative test exists, for example, to test for “skin irritation and corrosion” and to know if that method is already accepted in the EU legislation or for other regulatory use. Detailed information on each method will also allow interested users to know which domain of the 3Rs the method applies to – i.e., if it reduces, replaces, or refines testing on animals – and which legislation refers to the method (in case of methods already adopted for regulatory use).

The Website, <ihcp.jrc.ec.europa.eu/tsar>, is managed by the Joint Research Centre’s Institute for Health and Consumer Protection.

The European Centre for the Validation of Alternative Methods’ also has a *Database on Alternative Methods* at <ecvam-dbalm.jrc.ec.europa.eu>.

IPS Guidelines

The second edition of *The IPS International Guidelines for the Acquisition, Care and Breeding of Nonhuman Primates* is available, in English, French, and now Spanish, from the International Primatological Society at <www.internationalprimatologicalsociety.org/publications.cfm>.

More Interesting Websites

- Erik R. Patel’s Silky Sifaka Conservation and Research Site: <www.erikpatel.com>
- FDA Public-Access Database of Animal Drug Approvals: <www.accessdata.fda.gov/scripts/animaldrugsatfda>
- Information about animal research for the lay public, and guidance and resources for researchers and their institutions (from the Office of Extramural Research of the National Institutes of Health): <grants.nih.gov/grants/policy/air/index.htm>
- The Mona Foundation: <www.mona-uk.org>
- Diane Fossey Gorilla Fund’s Gorilla E-news: <gorillafund.org/contact/gorilla_eneews.php>
- Virunga National Park, Democratic Republic of Congo: <gorilla.cd>
- Zoo and Aquarium Visitor: <www.zandavisitor.com>

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Announcements from Publications

Zoonova: Online Journal

Announcing a new online journal: *Zoonova*. Occasional papers in zoology, peer-reviewed on topics including: • Behavior • Conservation • Ecology • Morphology • Taxonomy • Zoogeography. Published online at <zoonova.afriherp.org> by Afriherp Communications, Greenford, United Kingdom. [A print version is also available for purchase: contact: <www.afrihefp.org>.] Author instructions are at <zoonova.afriherp.org/Author%20Instrs.html>

Gorilla Gazette

Articles are sought for the 2009 issue of the *Gorilla Gazette*. Any topic ranging from husbandry challenges or ideas, research, or any other subject relating to gorilla conservation or welfare will be considered. The deadline for submissions is January 20, 2009. For more details, please contact Jane Dewar [e-mail: jdewar@gorillahaven.org]. Thank you!

* * *

Report of Illegal Trade of the Common Marmoset (*Callithrix jacchus*) in Uruguay

Alejandro Fallabrino¹, Luciana Alonso¹ and Ana Paula Arévalo²

¹Antitráfico Neotropical Uruguay, Montevideo, Uruguay

²Reserva de Flora y Fauna “Dr. Rodolfo Tálce”, Trinidad. Flores, Uruguay

The illegal trade in wild primates has pushed many species to the brink of extinction (Mittermeier & Konstant, 1990; Redford & Robinson, 1991). The common marmoset, *Callithrix jacchus*, is distributed throughout the Atlantic Coastal Forest of northeastern Brazil (Almeida, 1990). Its remarkable adaptability makes it among the few species which are not currently under severe threat.

Although one specimen of *Alouatta caraya* has been reported in the north of Uruguay (Villalba, 1995), wild monkey populations do not really exist in this country. Nevertheless, several species of primates of the New World are exhibited in zoological gardens, including a couple of *C. jacchus* donated by individuals to the “Dr. Rodolfo Tálce” Nature and Wildlife Reserve. In Uruguay, all exotic species are regulated and protected by CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora), ratified at national level by Law 14.205 (1974). In this country, the competent authority for CITES is the Sustainable Natural Resources General Agency, part of the Ministry of Agriculture, Livestock and Fisheries. All primates, including *C. jacchus*, are listed in the Appendix II of CITES and their trade is prohibited in Uruguay. Despite this, importation has been recorded.

On June 13th, 2004, two *C. jacchus* were found for sale, for US\$100 each, in the Tristan Narvaja Fair in Montevideo. Because that day was Sunday (a non-working day), the crime could not be reported immediately to the Sustainable Natural Resources General Agency and one of the primates was sold.

Although this was a minimal number, it is the first report for illegal trade of this species in Uruguay, the nearest report being the confiscation of 150 *C. jacchus* in Argentina, where the animals were on sale for US\$150 each (Bertonatti, 1995).

The origin of these specimens is unknown but they could be from the north of Brazil. The illegal trade of primates from Brazil to Uruguay has been going on for decades. In general, this kind of trade is upon dealers' orders to smugglers. It is important to take measures to reduce the illegal trade in primates; therefore we recommend that the relevant authorities improve their ability to give a rapid and effective response when they

First author's address: Antitráfico Neotropical Uruguay, Montevideo, Uruguay [e-mail: atneotropical@gmail.com]. We wish to thank Dr. Anthony B. Rylands for the identification of the species.

receive a report. Moreover, it is essential to start a strong national-level campaign, to inform Uruguayan society about which species are illegal to buy at fairs and pet shops.



Figure 1: Two *C. jacchus* in a cage at a fair in Montevideo, Uruguay.

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Awards Granted: Jacobsen Conservation Award to Serge Wich

A scientist at the Great Ape Trust of Iowa, and one of the world's leading experts on orangutans and their habitat, has been honored with a prestigious conservation award by the Wisconsin National Primate Research Center. Dr. Serge Wich is the 2008 recipient of the Lawrence Jacobsen Conservation Research Award, which supports studies in applied conservation biology

that protect nonhuman primates in their habitat. Wich has been awarded a \$5,000 grant to help fund Sumatran orangutan research by students from Universitas Nasional in Jakarta and Universitas Syiah Kuala in Banda Aceh. For complete details, see <www.greatapetrust.org/media/releases/2008/nr_76a08.php>.

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Call for Award Nominations: Leopold and Hornaday Conservation Awards

In 2002, the American Society of Mammalogists established two conservation awards to recognize outstanding contributions to the conservation of mammals and their habitats. The Aldo Leopold Award is awarded to a well-established individual who has made a lasting scientific contribution to the conservation of mammals and their habitats. The recipient will be invited to address the Society in a plenary session at its annual meeting the following year. Previous awardees are Edward O. Wilson, Russell A. Mittermeier, George B. Schaller, Rodrigo A. Medellin, and Virgilio Roig.

The William T. Hornaday Award is awarded to a current undergraduate or graduate student who has made a significant scientific contribution as a student to the conservation of mammals and their habitats. The awardee will be offered a travel grant to attend the ASM meeting in Alaska and will be invited to present a paper on his or her conservation activities at the plenary session. Previous awardees are Brent Sewall, Isabel Beasley, and Angelia Vanderlaan. Nominees should have contributed substantially to (1) the conservation of one or more mammalian species, subspecies, or populations; (2) the conservation of mammalian assemblages and communities; or (3) advancing the field of conservation biology through focal research on mammals. Persons contributing to the conservation of land or marine mammals are eligible for consideration. We interpret "contribution" broadly to include (1) scientific research or political activism that has resulted in the preservation of an imperiled species; (2) development of protective management recommendations; (3) acquisition of new knowledge regarding the conservation status or causes for declines of mammalian species or populations; (4) the protection of significant mammalian

habitat; or (5) promotion of the conservation of mammals through public education.

All persons are invited to submit nominations for these awards. For each award, the nomination packet should include:

1. A brief narrative (two pages maximum) that introduces and describes the conservation accomplishments of the nominee;
2. As an addendum to this narrative, a list of relevant journal articles, government and NGO reports, newspaper clippings, and other materials that chronicle and corroborate the conservation-related accomplishments of the nominee;
3. A current CV or resume;
4. Contact information for the nominator and nominee;
5. Supporting material:
 - For the Aldo Leopold Award, include letters of recommendation from three individuals familiar with the nominee's contributions to mammalian conservation; one of the letters must be from the nominator.
 - For the William T. Hornaday Award, include letters of recommendation from two individuals familiar with the nominee's conservation activities. One of these letters must be from the student's research advisor.

Electronic submissions of nominations and supporting documents are strongly encouraged. Completed nomination packets should be sent to Richard Thorington, Div. of Mammals MRC 108, National Museum of Natural History, Smithsonian Institution., Washington, DC 20013-7012 [e-mail: ThoringtonR@si.edu]. The deadline for receipt of completed nominations is March 13, 2009. The recipients will be announced at the banquet at the ASM annual meeting in June, 2009.

* * *

The Russian Primate Research Center – A Survivor

E. P. Fridman and D. M. Bowden¹

The Research Institute of Medical Primatology (RIMP), the oldest and once the largest primate research center in the world², originally located in Sukhum³, Abkhazia, has survived many challenges: the repression of its scientists as “intelligentsia” during the Stalinist era; the civil war between Abkhazia and Georgia with the center’s rebirth across the border in southern Russia; the hyperinflation of currency and subsequent impoverishment of Russian research institutions under perestroika; and, in recent years, attacks by the media, the ferocity of which can only be compared with the anti-research campaign of the animal rights movement in the U.S. and Western Europe. The media attacks are particularly disturbing, because much of the disinformation has been generated by sensationalist writers posing as principled investigative reporters for respectable publications and television. In the spring of 2008 the stories were picked up by Western newspapers, which disseminated them widely in England and the United States (Stack, 2008; Walker, 2008).

With the democratic changes in Russia, abolishing censorship and lifting secrecy on many archives, the general press has generated a stream of sensationalist claims as to the reasons for creation of the Sukhum primate research center and its operations. The vociferous flow of disinformation has taken two general directions. It is claimed that the center was created to further “rejuvenation” efforts by Dr. S. A. Voronov to prolong the lives of the Bolshevik elite, with reporters naming alleged “needy recipients” of research funds, who had no qualms about spending the money of working people on this “sacrilegious business”. Secondly, it is claimed that the center was established to create a new breed of Soviet worker by creating hybrids of human and great ape species.

It is clear from the events leading up to the establishment of the center in 1927, by the most outstanding medical scientists and biologists in the nation, that neither ob-

jective was the case. The major purpose, as urged by leading scientists, such as Il’ia I. Mechnikov, Russian Nobel laureate and co-director of the Pasteur Institute in Paris, Albert Calmette, physician bacteriologist, developer of many vaccines and discoverer of the mycobacterium on which the antitubercular BCG vaccine was based, and Robert Yerkes, Yale psychologist and pioneer of U.S. primatology, was to meet the growing need of the biomedical sciences for experimental animal models more similar to humans than the frogs, rats, cats and dogs commonly found in early twentieth-century laboratories.

The most disturbing distortion of the center’s history has been the sensational “revelation” in the press and on national television that the center was created for the purpose of crossing humans with apes to breed new races of primate. In the late 1990s, the science fiction writer E. Parnov obtained documents related to the founding of the center, which he claimed were previously classified. These included a “Project Decree of the Scientific Section of the Soviet of the People’s Commissars (USSR government): Petition by the Institute of Experimental Endocrinology”, which he cited often in highly distorted or fictional reports. For example, in an article, “Women for Monkeys” (Parnov, 1998), he reported attempts by Professor Il’ia I. Ivanov, Director of the Physiology Division of the Moscow Institute of Experimental Veterinary Medicine, “to cross humans with apes,” first in Africa and then at the Sukhum primate center. Parnov writes, “Virtually unlimited resources were allotted.”

Parnov artificially knits together his “discovery” with a host of unrelated, often distant events from the same era. These include shocked reference to gonadal transplants from nonhuman primates by S. A. Voronov, who in France conducted extensive but ultimately unsuccessful attempts to restore sexual function to elderly men, a goal reached only recently through pharmacological treatment of erectile dysfunction. Parnov further included the confiscation by Russian secret police of the manuscript of M. Bulgakov’s novel *Heart of a Dog*. In the novel Bulgakov explored the potential consequences of transplanting the pituitary gland of a drunken donor into a stray dog, which becomes more human-like in its mission to clear the city of “vagrant quadrupeds” (cats). (The work is generally considered a biting satire of social climbers and crass opportunists in the early Soviet era.) Excerpts from documents in those “special files”, writes Parnov, “would strike fear into the heart of even the most hardened of brutes.” The goal, he alleges, was “to flout the laws of God and man, to bring forth a breed of ‘Yahoo Sovieticus’, dumb, obedient slaves to perform heavy labor.” All

1 Eman P. Fridman [e-mail: emanfridman@013net.net], Doctor of Biological Sciences, is former Chief of the Laboratory of Informational Analysis in Medical Primatology of the Russian primate center at Sukhum (Fridman, 2002). Douglas M. Bowden, MD, is Professor of Psychiatry and Behavioral Sciences and Core Staff Scientist of the National Primate Research Center at the University of Washington, Seattle, WA 98195 [e-mail: dmbowden@u.washington.edu].

2 RIMP celebrated its 80th anniversary in September, 2007, with an international conference in Sochi-Adler, Russia.

3 Referred to by its Georgian name, Sukhumi, during most of the Soviet era, the city has reverted to its earlier name, Sukhum, since Abkhazia claimed independence from Georgia in the early 1990s.

of this was cited as evidence that the center was intended to create hybrids and develop a new breed of worker.

After Parnov's publication of such provocative accounts, a series of similar reports appeared in the press and on television, where the theme of hybridizing species at Sukhum was intertwined with stories of the abominable snowman and other wonders, including aliens from outer space. Not only journalists but also professional scientists, such as A. Potapov of the Russian Military Medical Museum, the medical historian, T. Grekova, and other scholars joined the fray. For several years running, a government channel television series "Rossiya" has shown a production written by O. Shishkin and directed by D. Demin with the title "Red Frankenstein". The sensationalistic title persists to this day even though, within the film itself, the point is made that Ivanov was *not* a Frankenstein. Half-truths are mixed with rumors and outright falsehoods, but with no word about Ivanov's true objectives and scientific activities, his actual role in establishing the center, or the critical scientific questions facing medical primatology during that time.

From the first, these writers proclaimed the "revelation of secrets" and the uncovering of long-standing "mysteries of the KGB" that were based with few exceptions on information readily available in open archives of the Sukhum center, in the Leningrad Archive of the Russian Academy of Sciences, and in the personal archive of Professor Ivanov at the Academy of Sciences' Institute of Natural History and Technology in Moscow. Ivanov's research proposal, his "Report on the Expedition to Africa", his proposal for the creation of a primate center, and other pertinent materials are all available to anyone interested.

Several authors have reported that Stalin was impressed by the prospect of "cross-breeding humans with apes" and of creating a "new breed" of people. We have no intention to issue an apologia for Stalinism or for Stalin's "organs of surveillance", particularly in relation to the scientists and staff of the Sukhum center. They suffered dearly from the political repression of the times. Ivanov himself was ruined. Nestor Lakoba, an outstanding and devoted local patron of the center, died as a result of NKVD (People's Commissariat for Internal Affairs) intrigue. The distinguished Soviet scientist and organizer of research at the center, Academician P. F. Zdrodofsky, was imprisoned, as were the talented director, Pavel V. Lebedinsky, and employees D'iachenko, Bogdanov, and Fel'dman, who built the North Laboratory Building. Another who suffered significant persecution at the hands of "the organs of surveillance" was D. I. Miminoshvili, a former prisoner of war and military hero, who joined the center to lead a world-renowned research effort on social stress and hypertension in primates.

Few are aware that during the repression years these "enemies of the people" completed for publication two volumes of scientific reports on research conducted at the center. By the early 1960s they had accumulated more than 500 finished but unpublished reports for the literature. The decades-long delay in publication deprived other institutions, which were establishing research primate colonies around the world, of valuable knowledge compiled at the Sukhum center. Of course, it also deprived the center of priority in credit for discoveries on the acclimatization and adaptation of primates for laboratory research. By the time its findings were published the center was no longer the sole institution to have addressed such challenges by systematic scientific research.

Attempts by the media to portray as history reports that so cavalierly distort the true origins and accomplishments of this famous center should not go unchallenged. In 1925, when the decision was made to create a primate center, Stalin was still far from ascending to the status of "Great Leader" of the Soviet Union. He was not concerned with nonhuman primates and is quite unlikely to have known of the initiative by N. A. Semashko, then Minister of Public Health, and other Moscow scientists to establish the center. The Politburo itself did not then know who was to emerge as Great Leader; a mortal battle for power was in progress.

In a televised program, Parnov was introduced as an "expert on the history of the Sukhum primate center". He had written, "It is unlikely that anyone would guess what really was being done there during those *long years*" (italics added). The truth is that from its inception and throughout its 80-year history there was *never* an attempt to hybridize apes, much less to cross-breed apes with humans. Professor Ivanov had proposed cross-breeding experiments early on, but his purpose was merely to determine the degree of phylogenetic relationship between apes and humans. There was no absurd thought to create a "new breed of human". In the spring of 1927, before the center was established, he had conducted an experiment in Africa that involved artificial insemination of three chimpanzee females with human sperm. The attempt took place under formidable conditions in Conakry, then part of French Guinea, in West Africa. Two of the animals died on the ship between Dakar and Marseilles. Autopsies of the two, conducted on the ship, and of the third, by a pathologist at a local Sukhum hospital, yielded no evidence of conception. The experiment terminated before the center existed.

The Russian primate center was founded on August 24, 1927, the date that the first animals arrived. Professor Ivanov was never a staff member of the center. In fact he visited there only once for a few days in the early summer of 1928. He was a member of a team sent to inspect the

new facilities. The center had no great apes at the time of his visit.

Later, in October, 1928, the center obtained six chimpanzees (*Pan troglodytes*) and five orangutans (*Pongo pygmaeus*), together with 20 baboons (*Papio hamadryas*). The animals were obtained through the German firm, L. Rueh. They were shipped from Genoa, Italy, with transfer through Batumi, a port city on the Black Sea coast south of Sukhum. The great apes were so ill that some were accepted only on condition that they survive in a healthy state. Several died even before the supplier departed. Only the younger, sexually immature animals survived. The unsuccessful outcome of this delivery led to a long lawsuit with the Rueh firm. The last group of apes received at the center before World War II consisted of five chimpanzees, which arrived in the summer of 1930. They were accompanied by 11 macaques and 16 baboons. During those early years almost no ape survived at the center for more than a year and a half; only one lived longer, an orangutan, which died in 1933. In short, neither Ivanov nor any other investigator ever conducted great ape hybridization experiments at the center.

In a totally unrelated event of 1930, Professor Ivanov was arrested. He was exiled to Kazakhstan and on March 20, 1932, died of "arteriosclerosis". He was cleared of charges posthumously in 1959, six years after the death of Stalin.

In the late 1920s and early 1930s the local, national and international press disseminated information about Ivanov's *proposed* studies. During that time the center received letters from individuals of both sexes volunteering to "give themselves" to the research. And in later years, elderly residents were found who asserted "authoritatively" the existence of certain "fools who slept with the monkeys". But no claim as to specific events or individuals was ever forthcoming. Journalists alluded to one or two employees listed in work schedules as "for special duties" as possibly involved in secret studies. The center was chronically understaffed, however, and those duties no doubt represented a variety of odd jobs and errands essential to normal functioning of the institution.

The primate center at Sukhum was at first a section of the Moscow Institute of Experimental Endocrinology. Its sponsoring institution changed several times between 1927 and 1945, when it came under the jurisdiction of the U.S.S.R. Academy of Medical Sciences. During the "long years" of that stressful period, scientists at the center conducted the first systematic scientific effort by any institution to study the acclimatization and adaptation of nonhuman primates to temperate zone conditions and to apply their findings to the indoor/outdoor housing of large numbers of animals bred for multidisciplinary research. Throughout those and subsequent years the center served as a resource for biomedical research conducted by some

of the most outstanding scientists of the U.S.S.R. as they addressed the country's pressing public health challenges.

Anatoxins to tetanus and diphtheria, which were developed and tested at the center, saved the lives of hundreds of thousands of soldiers during World War II. Center scientists identified the tick carrier of Russian spring-summer encephalitis and tested vaccines against epidemic typhus. Penicillin tested on monkeys at the center in 1943 was immediately put to use at the front. In short, all antibiotics developed in the U.S.S.R. first underwent testing in primates at the center.

After the war, the method of delivering the live Sabin vaccine against poliomyelitis was developed and tested in monkeys at the center. The first mass field trials were conducted in Russia before the vaccine was adopted for use in the U.S. Considerable testing of protective agents against radiation sickness was carried out in primates. Studies of radiation effects at the center contributed to exposure standards set by the United Nations and were cited in U.N. deliberations regarding above-ground testing of nuclear weapons. The first primate models of experimentally induced malignant tumors were developed at the center; osteogenic sarcomas were induced by implantation of radioisotopes by the team of N. N. Petrov, as well as by chemical means, such as methylcholanthrene injection. Later studies produced models of soft tissue malignancies. Viral lymphomas were produced in several laboratory primate species, simultaneously with work by the U.S. scientists W. Winkle and K. Kofford, who showed increased sensitivity of monkeys to tumor viruses. Experiments on cardiorespiratory resuscitation provided the basic research for establishment of a network of treatment centers and mobile emergency care units throughout the U.S.S.R.

The Sukhum center is perhaps best known in the West as the model on which the U.S. National Primate Research Centers program and, indirectly, major primate centers in other countries, were based (Bowden & Smith, 2001). After the death of Stalin, when the Russians sent the first Sputnik into orbit, the U.S. and U.S.S.R. developed an extensive program of cultural, educational, and scientific exchanges. In 1957 Paul D. White, head of the International Association of Cardiologists and President Eisenhower's personal physician, together with James Watt, Director of the National Heart Institute, visited the Sukhum center. (White visited the center a second time in 1961.) Impressed, particularly by the work of D. I. Miminoshvili on the role of social stress in hypertension in baboons, they recommended that the U.S. establish a similar center. Congress extended the concept to encompass seven "regional" centers, which have recently expanded to eight "national" centers in the U.S.

The Russian primate center is further known internationally for its director, Boris A. Lapin, a medical pa-

thologist by training, who, together with L. A. Yakovleva, wrote the first textbook of primate pathology (Lapin & Yakovleva, 1963). That volume, translated into English and German during the early 1960s, was for several decades the most complete and authoritative source of information available to primate pathologists. Academician Lapin is known for original work on the role of oncogenic viruses in the etiology of human lymphomas and related conditions. Under his leadership, the center has been extensively involved as well in studies of primate responses to weightlessness conducted by the Russian space program, most recently in collaboration with NASA.

With the break-up of the Soviet Union and the civil war between Abkhazia and the newly constituted nation of Georgia, the center split into two institutions. One has continued severely curtailed operations in Sukhum where the government of the Republic of Abkhazia has included it in the Abkhazian Academy of Sciences. The other, which became the Research Institute of Medical Primatology (RIMP) in 1992, is located in Sochi-Adler on a site established in 1981 as a satellite breeding facility of the Sukhum center. The RIMP currently maintains colonies of about 4,000 monkeys, largely macaques, baboons, and other Old World species, for breeding and research.

While attacks by the Russian media continue to distress the staff and no doubt tarnish the center's reputation in the eyes of the public, the core primate colonies and research facilities of the Russian center have been reestablished. Foci of renewed research activity have emerged at RIMP in the areas of proteomics, immunology, aging, and infectious disease. But budgetary constraints shared by all institutes of the Russian Academy of Medical Sciences have so far prevented the center from resuming research programs on the scale pursued in earlier decades.

In September, 2007, the center celebrated its eightieth anniversary with an international conference on biomedical primatology⁴. In addition to a large number of par-

⁴ The conference, Fundamental and Applied Problems of Medicine and Biology in Experiments on Nonhuman Primates, Sep-

ticipants from throughout Russia, the meetings were attended by the heads of a number of primate research centers and husbandry programs from Western Europe, the United States, and Asia. All were gratified to see the parent of world primate research institutions resuming its role as a significant contributor to international biomedical research.

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tember 19-22, 2007, at Sochi-Adler, Russia, was jointly sponsored by the Research Institute of Medical Primatology, the Russian Academy of Medical Sciences, and the Institute of Experimental Pathology and Therapy, Abkhasian Academy of Sciences.

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Report on Present Distribution and Status of Macaques in Vietnam

Vo Dinh Son,¹ Suchinda Malaivijitnond,² Shunji Gotoh,³ Cao Quoc Tri,¹ Nguyen Van Hung,⁴ Le Van Hoang,⁴ Tran Cong Trang,⁵ and Yuzuru Hamada⁶

¹Saigon zoo, Vietnam; ²Primate Research Unit, Faculty of Science, Chulalongkorn University, Thailand; ³Japan Wildlife Institute, Japan; ⁴Highland University, Vietnam; ⁵University of Agriculture and Forestry, Vietnam; ⁶Morphology Section, Primate Research Institute, Kyoto University, Japan

Introduction

Vietnam is located in the Indo-Burma biodiversity hotspot, and there are many varieties of primates in the country. Of six primate genera and 24 primate taxa recorded, six taxa are endemic: Con Dao long-tailed macaque (*Macaca fascicularis condorensis*), Delacour's langur (*Trachypithecus delacouri*), Cat Ba langur (*T. poliocephalus*), grey-shanked douc langur (*Pygathrix cinera*), Tonkin snub-nose monkey (*Rhinopithecus avunculus*), and eastern black gibbon (*Nomascus nasutus*) (Nadler et al., 2007).

Although all Vietnamese primates are protected by wildlife protection law, the diversity of primates is endangered by illegal hunting, illegal trade, and habitat destruction, which are causing continuous decreases in the primate populations.

Studies concerning Vietnamese primates, mostly concentrating on colobine and gibbon species, have been carried out by national and international organizations. Surveys on macaque species tend to be general biodiversity surveys, and information about distribution and status of macaques is scarce and old.

In a cooperative research project (2004–2008), titled “Evolution of Macaques in the Indochinese Peninsula: In Particular the Rhesus (*Macaca mulatta*) and Long-tailed Macaques (*Macaca fascicularis*)”, researchers from Saigon Zoo and the Primate Research Institute, Kyoto University, have conducted a survey on distribution and status of Vietnamese macaques. The objectives of the project were to discover the distribution and present status of macaque troops in Vietnam and to examine geographic variation and biological characteristics.

In this paper, the names of provinces are underlined.

Methods

The study was implemented by field surveys, questionnaires, and capture and release field work (Hamada et al., 1987; Suchinda et al., 2005).

Round trip surveys were organized at specific localities from Quang Tri to Ca Mau and Con Dao Islands (ca. 16° 16' N to 8° 41' N) and in the Central Highlands of Vietnam. We collected information about origins and other information about macaques from villagers, pet owners,

and park and ranger staff. For pet monkeys, samples of DNA, morphological measurements, and photos were obtained. The names of the localities and geographical coordinates where we found macaques were noted by Global Positioning System (GPS). Part of the study was carried out by five students of two universities as their graduate research. The students were instructed about macaque classification, methods of interviewing with interview sheets, GPS measuring, DNA sampling from pets, and compiling data collected.

Questionnaires and brochures illustrating five Vietnamese macaque species were sent to villagers, conservation institutions, and college students.

Capture and release survey: After the field surveys, a suitable place was chosen to trap macaques for collecting samples, e.g., blood, feces, hair; recording morphology and hair color; and taking dermatoglyphic prints and photos.

Results and Discussion

Questionnaire census: In part of the Central Highlands (Kon Tum, Lam Dong, and Dak Lak), 600 questionnaires and brochures with stamped envelopes were sent to local residents and students of Highland University. We received 112 replies (ca.18.6% of all questionnaires sent out). We used the information received as guidance for the survey.

Field survey: 150 sites were visited and residents interviewed, along with pet and wild macaque observation. Some interviews were invalid due to inconsistencies in description or photo identification of *M. fascicularis*, *M. arctoides* or *M. nemestrina*. Many interviewees could not distinguish between *M. mulatta* and *M. assamensis*.

Field surveys: In the west of the Central Highlands, travel surveys ran into some difficulties. Therefore, part of the field survey was carried out by four students of Highland University as their graduate research. Two teams consisting of two members each conducted field surveys as follows:

- One team covered the northern Central Highlands (Gia Lai and Kon Tum).
- The other team organized field surveys in the southern Central Highlands (Dak Lak and Dak Nong).

Capture and release field work: In Ca Mau, Reserve area 184, a troop of mangrove *M. fascicularis* was caught by net. In addition, captive *M. fascicularis* kept at Ca Mau Park and Song Trem Reserve (Ca Mau) were exam-

Corresponding author's address: Saigon Zoo, Vietnam [e-mail: vdinhson@hcm.vnn.vn].

ined while anesthetized. A captive silvered leaf monkey (*Presbytis cristata*) was also examined. It had come from the same mangrove forest. The park staff also reported a native troop of this species living in a local mangrove forest.

A student of the University of Agriculture and Forestry in Ho Chi Minh City used some data (hematology and parasitology) from this field work, together with his continued work, for his graduate research.

Present Distribution and Status

The present distribution of species is illustrated in *Figure 1*, and there are lists of locations at brown.edu/primate/Table-Viet.html.

Crab-eating macaque (*Macaca fascicularis*): *Macaca fascicularis* is the most successful species, having a wide range of distribution from Son Tra (Da Nang) (16° 6' N) to southern Ca Mau and Con Dao Islands. We found them at 71 sites (ca. 47% of all localities surveyed) through both interviews and direct observations. Their habitats include riverbanks, primary forests, disturbed and secondary forests, public parks, pagodas, and especially mangrove forests (Can Gio [Ho Chi Minh City], and Ca Mau). The distribution pattern we found of this species is similar to that found in previous surveys (Fooden, 1995; Nhat, 2002).

Besides conservation areas, free-range *M. fascicularis* troops live in public parks and pagodas with provisioning. In Vung Tau (Ba Ria-Vung Tau), a group of about 50 monkeys live around Phap Hoa Pagoda, located at a small mountain. Tourists visit the pagoda and give the monkeys food. At a pagoda in Nui Ba Den (Tay Ninh), we found a group of mixed macaque species comprising *M. fascicularis*, *M. mulatta*, and *M. leonina*. In Can Gio Mangrove Biosphere Reserve (Ho Chi Minh City), a pet *M. leonina* lives in a group of long-tailed macaques. At Dambri recreational area (Da Lat), three species, *M. fascicularis*, *M. arctoides*, and *M. leonina*, were living in the same group. Non-indigenous individuals (confiscated or pet) have been released into the wild troops, and hybrids were seen.

At present, there is very little information about *M. fascicularis condorensis*, which has distribution at Con Son Island and Hon Ba Island (Ba Ria-Vung Tau Province). This species is not mentioned in the *Vietnam Red Data Book* (Ministry of Science and Technology, 2007).

Northern pig-tailed macaque (*Macaca leonina*): According to Groves (2001, p. 223), the northern pig-tailed macaque (*M. leonina*) occurs from Myanmar eastwards to Thailand, Cambodia, Laos, and Vietnam. In Vietnam, the species is recorded as far north as Ha Giang (19°N) to southern Binh Phuoc (Nhat, 2002), but information on this species does not provide a comprehensive overview of status in the wild.

In the survey, we found many pet *M. leonina* that had been caught by local people in mountains near their villages. This species seems to be the most common in the survey areas. The species was found at 73 sites through both interviews and direct observation of pet macaques: from A Luoi (Quang Tri) to Dak Nong.

Stump-tailed macaque (*Macaca arctoides*): The results of the survey suggest the presence of this species at 65 sites, representing ca. 43% of all surveyed localities in the following six provinces: Da Lat, Dak Nong, Gia Lai, Kon Tum, Quang Nam, and Quang Tri. Wild *M. arctoides* were observed at two locations: one troop at Den Ba Co (Lam Dong) and another troop at Deo Chuoi (Bao Loc, Lam Dong).

According to Nhat (2002), *M. arctoides* were recorded at Lam Dong (Da Lat), Cat Tien (Dong Nai), and Bu Dop (Binh Phuoc). In a recent report, Nadler et al. (2007) state that no field surveys have specifically focused on this species and no actual data on its status are available.

Assamese macaque (*Macaca assamensis*): During the survey, we did not get any information about this species. In Vietnam, the distribution of the species is limited to the northern parts of the country and does not stretch further south than Quang Binh Province (Nhat, 2002).

The presence of *M. assamensis* was recorded at Pu Mat National Park (Nghe An), and this species is the most difficult macaque to observe in the field (Nhan, 2004). There are no population estimates available in Vietnam, and even the distribution in Vietnam is not very clear yet (Nadler et al., 2007).

Rhesus macaque (*Macaca mulatta*): During field surveys, sightings and photographs of *M. mulatta* were achieved at the following locations:

- **Son Tra Mountain:** Three surveys were organized in Son Tra Mountain (16°07'N), Da Nang, in 2004, 2005, and 2006. On the morning of November 10, 2005, we observed a wild rhesus macaque along the road near the seashore, and at least one group of rhesus was confirmed by sound. A new road was opening along the seashore of this area, and according to workers, rhesus macaque groups often approached the road searching for food. We found two pet rhesus macaques in a villager's house at the same place. These monkeys were caught from a group of rhesus macaques foraging along the road nearby. At a restaurant near the seashore of Son Tra Mountain, we inspected an injured wild rhesus monkey that had been bitten by a dog. This monkey was kept as pet.

- **Cham Islands:** Surveys were conducted in the Cham Islands (15°57'N), off the shore of Hoi An (Quang Nam), and provided confirmation of rhesus macaques in these islands. In the survey in August, 2005, a baby pet rhesus monkey was found in a local fisherman's house. The owner caught this macaque from a troop that lives near



Figure 1: Provinces of Vietnam, showing distribution of Vietnamese macaques.

his house. In the survey in 2006, we went by boat from Bai Chong to Bai Nang and encountered a group of about 20 rhesus macaques sitting on a rock mountain near the sea. On the way from Bai Lang to Bai Chong and Bai Huong, we observed three troops of rhesus macaques. They were:

- One troop between Bai Huong and Bai Chong.
- One troop with a baby monkey at Bai Chong.
- One troop at Bai Nang.

The distribution of rhesus macaques in these islands was previously unknown, and it would be interesting to pursue further study on this population.

• **Central Highlands:** In the Central Highlands, pet rhesus macaques were found at three sites: in Hong Ha (Thua Thien Hue) (16°19'N, 109°10'E), Buon Me Thuoc City (Dak Lak) (ca. 13°58'N, 108°05'E), and Kon Tum (Kon Tum) (12°53'N, 109°49'E). Interviews suggest the presence of *M. mulatta* in the local forests nearby.



Figure 2: Hybrid-like macaque in Buon Me Thuoc

Rhesus macaques in Son Tra Mountain (Da Nang) and Cham Islands (Quang Nam) have tail length intermediate between rhesus and long-tailed macaques. “Hybrid-like” macaques were also found in A Luoi (Thua Thien Hue), Kon Tum (Kon Tum), and Buon Me Thuoc (Dak Lak), in the Central Highlands area. The “hybrids” have a mixture of characteristics of rhesus and long-tailed monkeys. One (a female) has the longer tail, about 80% of the crown-rump length, compared with 120% for *Macaca fascicularis* and 35-50% for *M. mulatta* (Figures 2-4).

According to Fooden (1996), *M. mulatta* inhabits northern and central Vietnam, and the *Macaca fascicularis*/*M. mulatta* integration zone is from Bu Gia Map (Binh Phuoc) (12°N 107°E) to Vinh Linh (Quang Tri) (17°N 107°E).

In a recent report, Huynh et al. (2001) and Tordoff et al. (2000) reported the presence of *M. mulatta* in Chu Mom Ray National Reserve (Kon Tum) (14°18'N

107°29'E) and Ngoc Linh Nature Reserve (Kon Tum) (15°01'N 107°55'E), respectively. There are no records of *M. mulatta* at national parks located from 11°02'N southwards, e.g., Lo Go Sa Mat National Park (Tay Ninh) (Tordoff et al., 2002), and Nam Cat Tien National Park (Dong Nai) (Polet et al., 2004).



Figure 3: Rhesus macaque in Kon Tum (N12° 53', E 109° 49')

Based on our analysis, we conclude that the “yellow” monkey is probably a rhesus macaque and the contacting or coexisting zone of these two species is estimated at the area from ca. 12°N to ca. 15°N, located east of the Truong Son mountain chains.



Figure 4: Baby pet rhesus monkey in Cham Islands.

Discussion

In the Central Highlands, located around 12°N to 16°N, *Macaca fascicularis* were found at 40 localities; *M. leonina* and *M. arctoides* were found at 65 and 67 localities, respectively. *M. mulatta* were found in only five localities. For a detailed list of these localities, see <brown.edu/primate/VietnameseList>.

In the past several decades, migrants have resettled in highland provinces and have earned their living from the forests. Field studies to date revealed that the resulting forest habitat fragmentation has resulted in macaque populations' becoming isolated from each other, while persistent hunting has made them very timid. We can observe them only in protected areas.

The results of this study show that five Vietnamese macaque species (*M. fascicularis*, *M. macaca*, *M. arctoides*, *M. leonina*, and *M. assamensis*) are severely depressed by hunting, illegal trade, and habitat destruction, while only three of these species are listed in the *Vietnam Red Data Book* (*M. arctoides*, *M. leonina*, and *M. assamensis*).

Confiscated or pet macaques have been introduced to some areas. This has created difficulties for assessing the true distribution and status of some species. Hybrids between some macaque species have been created.

The overall distribution of *M. fascicularis* is from southernmost Vietnam, in Ca Mau, northwards to Son Tra (Da Nang). However, confiscated specimens have been introduced to some areas in the north, i.e., Pu Mat National Park (Nghe An), Cat Ba National Park (Hai Phong) and Pu Luong Natural Reserve (Thanh Hoa) (Khoi & Shaw, 2005). In 1999, 97 rhesus macaques were released into Nam Cat Tien National Park (Dong Nai), although this species is not native to the Park (Polet et al., 2004).

Among 24 Vietnam primate taxa recorded, only one species (*M. fascicularis*) was previously thought to occur naturally in mangrove forests. Hence, the observation and reports of *Presbytis cristata* in such a forest in Ca Mau province are significant and worthy of further study.

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Workshop Announcements

Prosimian Husbandry

A Prosimian Husbandry Workshop will be hosted at Cleveland Metroparks Zoo from April 30 to May 2, 2009. The workshop will emphasize group discussion of captive prosimian husbandry and management issues. For complete information, see <www.clemetzoo.com/prosimianworkshop>.

Orangutan Species Survival Plan (SSP) Husbandry

Zoo Atlanta will host the Third Orangutan SSP Husbandry Workshop, to be held August 31 through September 2, 2009. This workshop will focus on the care and management of the orangutan in zoological parks and sanctuaries. The workshop will bring together orangutan caregivers and managers, researchers, and field biologists to share and disseminate the most current information on husbandry, conservation, and emergent issues pertaining to captive and wild populations of orangutans. The workshop will be held in conjunction with the Orangutan SSP Masterplan meetings which will take place on Sunday, August 30, 2009, prior to the workshops. For additional information, contact Thomas Heitz at <theitz@zoatlanta.org> or <thomas.heiz@gmail.com>; or call 404.624.5939 (work), or 404.414.9178 (cell).

Teaching Research Ethics

Indiana University's sixteenth annual Teaching Research Ethics Workshop will convene at the Indiana Memorial Union on the campus of Indiana University in Bloomington, Indiana, on May 13-16, 2009. Session topics will include an overview of ethical theory, trainee and authorship issues, conflicts of interest, using human subjects in clinical and non-clinical research, and responsible data management. Many sessions will feature techniques for teaching and assessing the responsible conduct of research.

For more information contact Glenda Murray, Program Associate, Poynter Center, Indiana University, 618

E. Third St, Bloomington IN 47405-3602 [812-855-0262; fax: 812-855-3315; e-mail: glmurray@indiana.edu]. Information and registration are also available at <poynter.indiana.edu>.

C. L. Davis Foundation Workshop and Symposium

The Midwest Division of The Charles Louis Davis, D.V.M. Foundation, in co-sponsorship with The Biologic Resources Laboratory (BRL) of The University of Illinois at Chicago, will present a Workshop and Symposium on Laboratory Animal Diseases on April 22-25, 2009. The Symposium, commencing at 8 a.m. on April 25, will be on "Diseases of Nonhuman Primates", presented by Dr. Keith Mansfield, Associate Professor of Pathology at Harvard Medical School and Associate Director at the New England Regional Primate Center.

The Biologic Resources Laboratory's collection of study materials will be available for review, at the BRL, 1840 West Taylor St, beginning at 8:30 a.m., April 22, and continuing through April 24. The 2 x 2 slide collection includes 14,000 Kodachromes, many of which have been digitalized, on laboratory animal diseases and management. In addition, glass micropathology slides with histories and sixty-six T60 video tutorials will be available for individual and/or group study. Microscopes, projectors, DVDs, and VCRs will be available at the Biologic Resources Laboratory.

Members of the senior staff of the Biologic Resources Laboratory will give a Simulated Practical Examination on the morning of April 24, and seminars that afternoon, covering Primate Taxonomy, Mouse Nomenclature, Mouse Pathology, Review of Behavioral Methods, Review of Legislation, and Topics on Large Animal Techniques.

For the complete text of the announcement and registration information, contact Jim Artwohl, <jeart@uic.edu>, or the C. L. Davis Foundation at <cldavisdvm@comcast.com>.

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After all, I've been at the University *more* than four years!

Meeting Announcements

The Ecological Laboratory Unit of the University of Ghana, in collaboration with the Africa Section of the Society for Conservation Biology and Living Earth Foundation Ghana, wish to announce the **1st Africa Regional Conservation Science – Policy Conference**, to be held at the University of Ghana, Legon, Accra, Ghana, January 28-30, 2009. The conference e-mail through which all communications must be channeled is: [scbafrica2009@conbio.org].

Looking into the Crystal Ball: The Laboratory Animal in a Changing World is a “3R Symposium”, sponsored by The Netherlands Centre on Alternatives to Animal Use, to be held February 5-7, 2009, in Utrecht, The Netherlands. For detailed information, see <www.3rsymposium.org>.

The **Northeastern Anthropological Association’s 49th Annual Meeting** will be held March 13-14, 2009, at Rhode Island College, Providence, Rhode Island. The 2009 theme, *The Challenges of Exploring Diversity*, highlights anthropology’s commitment to understanding the multiple histories, alternative languages, diverse cultures, and varied biological expressions that now define us. Only 150 years ago Charles Darwin published *On the Origin of Species*. Come listen to our keynote speaker, Dr. Ken Miller, Chairman of the Rutgers University Department of Earth and Planetary Sciences, who will help us celebrate this anniversary and the 200th anniversary of Charles Darwin’s birth at the NEAA’s Saturday evening banquet. We welcome proposals for symposia, poster sessions, abstracts, or workshops that will stimulate discussion. We look forward to helping you organize programs that highlight ideas and discoveries, cross disciplinary boundaries, or test conventional wisdom. The NEAA remains a regional conference for students and professionals. Abstracts and Session Proposals are due by February 6, 2009. Contact [neaaconference@ric.edu] or see <www.ric.edu/neaa2009> for more information.

The **2009 Animal Behavior Management Alliance (ABMA) Annual Conference** will be held in Providence, Rhode Island, April 26th to May 1st, at the Crowne Plaza Hotel, hosted by Roger Williams Park Zoo, Mystic Aquarium, Zoo New England, and the New England Aquarium. The theme is “Bridging the Gap”: bringing together trainers, handlers, and keepers of animals, regardless of species, to share information and address topics to help develop a comprehensive behavior management program. Learn the nuts and bolts of developing an enrichment program, including workshops on building and implementing enrichment items. There will be poster and paper presentations by animal care professionals. If you are interested in presenting a paper or poster, the deadline for abstract submissions is January 15, 2009.

You can find more information on how to submit your ideas for a presentation on our Website: <www.theabma.org>, where registration is also available. If you have suggestions, please contact: 1st Vice President, Penny Krebs [e-mail: pennykrebs@cox.net] or Conference Chair, Jennifer Hennessy [e-mail: jhennessy@rwpzoo.org].

The **International Conference on Diseases of Zoo and Wild Animals 2009** will be held on Wednesday, May 20-24, 2009, at the Safaripark Beekse Bergen, Hilvarenbeek, The Netherlands. Contact <seet@izw-berlin.de> for information.

The **2009 American College of Veterinary Internal Medicine Forum and Canadian Veterinary Medical Association Convention** will be held in Montreal, Canada, June 3-6, 2009. See <www.ACVMForum.org> for details.

The **3rd Congress of the European Federation for Primatology** will be held August 12-15, 2009, in Zürich, Switzerland, sponsored by the Anthropological Institute and Museum of the University of Zürich. See <www.aim.uzh.ch/EFP.html>.

The **Vth International Anthropological Congress of Ales Hrdlicka ‘Quo Vadis Homosocietas Humana?’** will be held September 2-5, 2009, in Prague and Humpolec, Czech Republic, sponsored by Charles University in Prague and the Czech Anthropological Society. See <www.anthropology-hrdlicka2009.cz>.

The **32nd meeting of the American Society of Primatologists** will be held September 18-21, 2009, at the Bahia Resort Hotel, San Diego, California. For complete information, see <www.asp.org/asp2009/index.htm>.

The **2009 American Association of Zoo Keepers’ National Conference** will be held September 24-29, in Seattle, Washington. See <www.pugetsoundazk.org/conference.html>.

The **World Association of Zoos and Aquariums (WAZA) 64th Annual Conference** will be held October 4-8, 2009, at the Renaissance Grand Hotel, St. Louis, Missouri, sponsored by the St. Louis Zoo. For more information, see <www.waza.org>.

A **Neotropical Primate Husbandry, Research, and Conservation Conference** will be held October 13-15, 2009, at Brookfield Zoo, 3300 Gold Rd, Brookfield, Illinois. Contact [vince.sodaro@czs.org] for additional information.

Resources Wanted and Available

Primate Diversity Festival

Marie-Claude Huynen writes: “The Université Liege is presently preparing an exhibition on the theme of primate diversity. This exhibition, called the “Primate Diversity Festival”, will take place in Liege, Belgium, close to the German and Holland borders, at the Institute of Zoology, from May to November, 2009. Our Website (a work in progress now) is: <www.diversiteprimates.be>.

“We are looking for good pictures that could be used to show various species, of course, but also to illustrate the following subjects: specific habitats, social and sexual relationships, parental behavior, feeding, and problems of conservation. If you have some documents, tell me your conditions for allowing us to use these documents for our exhibition. We want to make this a success and reach (mostly) the general public with high quality scientific information. Please help us in this enterprise!

“If you need details, I am here to answer questions!” Contact Marie-Claude Huynen, PhD, Université Liege, Faculté des Sciences, Dépt des Sciences et Gestion de l’Environnement, Unité Biologie du Comportement, Ethologie et Psychologie Animale, Quai Van Beneden, 22, B 4020 Liege, Belgium [(32) - 4366-5112; fax: (32) - 4366-5113; e-mail: marie-claude.huynen@ulg.ac.be].

The Role of Animals in Research

<www.AnimalResearch.info> is a new Website, written and edited by an international collaboration of scientists and researchers, to demonstrate the important contributions of animals to medical research. The site provides a source of information about the current and historical use of animals in science. The aim is to give scientists a voice and to give non-scientists a better, more direct understanding of research and the essential role of animals. The U.K.-based Research Defence Society conceived the idea and made it a reality. For more information, contact [info@animalresearch.info]. – from the *Americans for Medical Progress* News Service Digest, October 6

Free Scientific Enrichment Resources for Students

The Foundation for Biomedical Research announced on September 30 that it will provide free, downloadable Biomedical Research Puzzle Posters at <www.fbresearch.org/FeaturesCampaigns/AnimalResearchPuzzle/tabid/431/Default.aspx>. The puzzle posters teach elementary, middle, and high school students about research and development, and the vital role research with animals plays in the quest for cures and treatments for diseases.

NIH Freedom of Information Act Policies

A copy of the Office of Laboratory Animal Welfare (OLAW) IACUC Staff Online Seminar, “Freedom of Information Act Policies”, held on September 18, 2008, is now available for viewing from the OLAW Web page: <www.grants.nih.gov/grants/olaw/e-seminars.htm>.

“Clever Monkeys”

A Public Broadcasting Service special on “Clever Monkeys” was shown November 9. Shirley McGreal reports that “the program was excellent and introduces a wide range of monkeys, such as red colobus, douc langurs, geladas, pygmy marmosets, and capuchins. The Website, <www.pbs.org/wnet/nature/episodes/clever-monkeys>, has loads of information and some video clips. You can also get a DVD for \$19.99 plus shipping.”

Public Outreach Video

The University of California – Davis Animal Science Department has released a 30-minute streaming video. It is intended to educate the public about animal biotechnology. It is available at <animalscience.ucdavis.edu/animalbiotech/ucdavis_biotech_streaming.aspx>, or as a free DVD, which you can obtain by sending your name and mailing address to <biotech@asmail.ucdavis.edu>.

Silky Sifaka Conservation and Research Website

Erik Patel, a PhD candidate at Cornell University, is introducing a new silky sifaka (*Propithecus candidus*) conservation and research Website at <www.erikpatel.com>. It contains factual information, pictures, videos, vocalizations, and downloadable publications.

Silky sifakas are literally among the rarest mammals on earth, listed as one of the World’s Top 25 Most Critically Endangered Primates: <www.primates-g.org/T25full107.htm>. Global population size is roughly estimated between only 100 and 1000 total remaining individuals. They are only found within a few protected areas in the rainforests of northeastern Madagascar: Marojejy National Park <www.marojejy.com>, Anjanaharibe-Sud Special Reserve <anjanaharibe.marojejy.com>, and the Makira Conservation Site <www.wcs.org/globalconservation/Africa/madagascar/makira>.

Silky sifakas are the flagship species for these protected areas, particularly for Marojejy, which has recently been inaugurated as part of a World Heritage Site Cluster. Silky sifakas have never survived in captivity, probably due to their highly specialized folivorous diet.

Positive Reinforcement Training Network

EUPRIM-Net, the European Primate Network, now includes a Positive Reinforcement Training Network, at www.euprim-net.eu/network/prt.htm, to encourage implementation of Positive Reinforcement Training (PRT) methods for increasing the level of primates' cooperation in experimental and management procedures.

Stressful handling of nonhuman primates in conjunction with, e.g., blood sampling and injections, has a negative impact on animal welfare and can be a confounding factor in biomedical research. PRT reduces the stress that the animals experience during such procedures. As a consequence of such training, experimental results will become more reliable, and safety will be increased, both for animals and personnel. This activity will contribute to the 3R-approach, because the training will reduce anxiety during handling and therefore will improve the quality of data ("Refinement"). The present Network will ensure that PRT of primates becomes a standard technique across Europe. The aims of this Network activity are:

- All network members are committed to implement PRT as a daily routine in at least one of their research projects;
- PRT techniques will be standardized into Standard Operating Procedures (SOPs) in the centers of the network members;
- A professional video explaining and teaching the techniques has been developed (see below);

- The results of the work will be presented at conferences and in relevant scientific journals of laboratory animal science and nonhuman primate biology and ethology;
- An outreach program with on-site training of personnel will be offered to all European primate centers interested in implementing PRT.

DVD – Training Laboratory Primates

"This 15-minute video contains film clips of trained animals in research settings and demonstrates some of the potential uses of PRT. Each DVD includes an English and a French version, as well as subtitles in Italian, German, and Dutch. The DVD is offered only to primate facilities and not to the general public. If you submit an application, you will be required to sign a declaration about the use of the DVD and return it to us before we distribute copies of the DVD. The application will be subject to approval by EUPRIM-Net. Apply by contacting euprim@dpz.eu."

Year of the Gorilla 2009

The United Nations Environment Programme (UNEP) Convention on Migratory Species (CMS), the UNEP/UNESCO Great Ape Survival Partnership, and the World Association of Zoos and Aquariums have joined hands to declare 2009 the Year of the Gorilla, with an educational Website at yog2009.org.

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Educational Opportunity: Captive Care and Conservation of Callitrichids and Lemurs

Durrell Wildlife Conservation Trust's International Training Centre (ITC), in conjunction with its Mammal Department, is considering running a course on callitrichid and lemur husbandry at its Jersey headquarters. The course would last approximately five days and would be held towards the end of 2009. They are asking whether it would be of interest to enough people, and would appreciate responses to [Dominic.Wormell@durrell.org].

The course would be taught by Durrell staff along with external lecturers who will be invited to teach in their own special areas. The potential course topics include the following:

- Planning your collection;
- Enclosure design, husbandry, and stress management;
- Population management;
- Managing animal health; and
- Callitrichids, lemurs, and their conservation.

CHCI Summer Apprentice Program

The Chimpanzee & Human Communication Institute (CHCI) is currently taking applications for our Summer

Apprentice Program. Graduates, undergraduates, and post-graduates from various academic backgrounds (e.g., anthropology, biology, psychology, linguistics, philosophy) and all nationalities are encouraged to apply. The dates of the program are June 28 to August 21, 2009.

Research at CHCI involves a group of chimpanzees who use the signs of American Sign Language (ASL). Washoe, Moja, Tatu, and Dar were part of the crossfostering research that began in 1966 with Drs. R. A. & B. T. Gardner. Each chimpanzee was raised in an enriched environment in which his or her human family members used only ASL, much like the environment in which a deaf human child grows up. Loulis was adopted by Washoe in 1978 and learned his signs from chimpanzees. Currently, Tatu, Dar, and Loulis reside at CHCI on the campus of Central Washington University in Ellensburg, Washington, in a large state-of-the-art facility.

Apprentices are at the institute daily – cleaning enclosures, preparing meals and enrichment, making observations of the chimpanzees, and participating in one or more research projects. The first week is intensive training in

laboratory jobs and chimpanzee behaviors. After several weeks each apprentice becomes more autonomous and has responsibilities in research and husbandry. The philosophy of CHCI is that the needs of the chimpanzees come first. Apprentices are trained in humane care and research techniques.

The program fee is \$1800 and there is a nonrefundable \$25 application processing fee. These costs do not in-

clude housing and transportation. Inexpensive housing is available on campus. A course in ASL is highly recommended but not required. For more information on the program and the application please see our Web page at <www.cwu.edu/~cwuchci/apprentice.html> or contact Dr. Mary Lee Jensvold, CHCI, CWU, Ellensburg, WA 98926 [e-mail: jensvold@cwu.edu]. The deadline to apply is March 30, 2009.

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News Briefs

California Passes Law Protecting Animal Researchers

Responding to a string of firebomb attacks earlier this year and an increasing level of intimidation against scientists who perform research using animals in a laboratory environment, on September 28 Gov. Arnold Schwarzenegger signed into law a measure intended to provide new tools against those in the animal liberation movement who have destroyed property and threatened violence. Many of the animal researchers targeted by vandals in recent months work at the University of California, especially at the Los Angeles and Santa Cruz campuses. The university has lobbied heavily for the bill, which was sponsored by State Assembly member Gene Mullin, who represents a district including parts of San Francisco.

The law is part of a campaign, including litigation against animal liberation groups suspected of involvement in recent incidents, to protect animal researchers from harm. The Researcher Protection Act of 2008, which is already in effect, adds several new misdemeanor offenses — for example, against publicizing private information about, or the physical appearances of, researchers (or their immediate families) with the intent to imminently incite violence or threats of violence, and against trespassing on researchers' private property to commit a crime.

Some critics, including in the animal rights movement, contend that in protecting researchers' academic freedom, the law goes too far in suppressing (or chilling) free expression. Some also note that the law defines as crimes actions that in many cases are already illegal, such as trespassing, and fails to define how intent can be proven. — *Andy Guess*, *Inside Higher Ed*, *October 2*, <www.insidehighered.com/news/2008/10/02/protect>

Zerhouni Ends Tenure as Director of NIH

Elias A. Zerhouni, MD, the Director of the National Institutes of Health, has announced his plans to step down at the end of October, 2008, to pursue writing projects and explore other professional opportunities. Dr. Zerhouni, a physician, scientist, and leader in radiology research, has served as NIH Director since May, 2002. He led the

agency through a challenging period that required innovative solutions to transform basic and clinical research into tangible benefits for patients and their families. — *from an NIH Press Release*, *Sept. 24*, <www.nih.gov/news/health/sep2008/od-24.htm>

Nepal to Export Rhesus Monkeys to U.S.

Twenty-five rhesus monkeys from Nepal will soon be sent to the United States, where they will be used as subjects for research on HIV/AIDS and tuberculosis. The National Bio-Medical Research Centre (NBMRC) in Lele, Lalitpur, is exporting the primates to the U.S. to test vaccines for HIV and TB. The breeding facility of the NBMRC is funded by the U.S. government. The center has 210 monkeys and over 100 babies, all born in captivity. The NBMRC works with the Southwest Foundation for Biomedical Research in Texas, which has 6,000 monkeys. The U.S. scientists turned to Nepal for primates after the Indian government imposed a ban on the experimentation on monkeys due to reported inhumane treatment against the primates.

Prabesh Man Shrestha, Director of NBMRC, said the monkeys were taken into captivity from areas where they were troubling local residents. — *by Nadja Shanker*, *from The Himalayan Times*, *Kathmandu*, *November 18*

Madagascar Land to Grow Food for Korea

Daewoo Logistics of South Korea has secured a vast tract of farmland in Madagascar to grow food crops for Seoul, in a deal that diplomats and consultants said was the biggest of its kind. The company said it had leased 1.3 million hectares of farmland from Madagascar's government for 99 years. Daewoo's farm in Madagascar represents about half that country's arable land, according to estimates by the U.S. government. Shin Dong-hyun, a senior manager at Daewoo Logistics in Seoul, said the company would develop the arable land for farming over the next 15 years, using labor from South Africa. The intention is to replace about half South Korea's maize imports. — *Financial Times*, *November 19*, *By Javier Blas in London*

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Grants Available

Web Portal for NHP Research Models

A Funding Opportunity Announcement has been issued by the National Center for Research Resources (NCRR), National Institutes of Health, soliciting applications from institutions/organizations proposing to develop a comprehensive Web portal presenting extensive information on publicly-funded resources that provide nonhuman primates (NHPs) for research. A phased approach must be used, with the initial scientific focus on the use of NHP models in AIDS research, with later expansion in Phase II to all scientific fields that use NHPs as research subjects. This information would include capabilities regarding the supply of specific pathogen free NHPs, and related assays, reagents, and information. The target audience for the Phase I portal will be qualified research investigators in fields that include – but are not limited to – virology, immunology, genomics, proteomics, systems biology, and genetics, with later expansion to additional scientific fields during Phase II.

Currently, a significant amount of publicly accessible information regarding NHPs is available for research. For example, each of the eight National Primate Research Centers has a Website accessible to researchers and the public, as does the NCRR <www.ncrr.nih.gov/comparative_medicine/resource_directory>. Another example comprises several databases containing genetic data regarding NHPs (i.e., those listed in the annual Nucleic Acids Research database issue at <www.ncrr.nih.gov/comparative_medicine/resource_directory>. Additional examples include AIDS-related databases maintained by various components of NIH. However, there is no single Website from which an investigator can easily and systematically access all of these sources of information. The problem is that there are a large number of different Websites and it is challenging for an investigator to find them, and decide which ones are relevant to his/her specific interests. The proposed Web portal should provide reliable information. The ability to clearly and logically navigate through the portal's Web pages and its associated linked sites will be a major factor in the portal's use by the various user communities. Later integration of other scientific fields to the portal during Phase II will pose challenges.

There are some primate research facilities that do not currently provide Websites. The applicant for this funding opportunity will need to propose appropriate methods to identify these facilities, as well as other

information of interest, e.g., assays, reagents, and highly specialized technical capabilities; obtain the appropriate information; synthesize what the Web portal's user community may need to know; and provide the information in a form that is easily navigable by a variety of scientific users.

The NCRR will fund one cooperative agreement, with a maximum duration of three years. The single cooperative agreement will be funded at a cost to be justified in the application, but not more than a maximum of \$500,000 direct costs per year.

Application receipt date is January 5, 2009. The PHS 398 application instructions are available at <grants.nih.gov/grants/funding/phs398/phs398.html> in an interactive format. Applicants must use the currently approved version of the PHS 398. For further assistance contact GrantsInfo [301-435-0714; e-mail: GrantsInfo@nih.gov].

Nonhuman Primate Models for HIV Vaccine

The Center for HIV/AIDS Vaccine Immunology, the HIV Vaccine Trials Network, the National Center for Research Resources, the Global HIV Vaccine Enterprise, and the National Institute of Allergy and Infectious Diseases are participating in a novel collaborative research initiative entitled "The Early Career Investigator Scholar Award: Pilot Studies to Advance Nonhuman Primate (NHP) Models in Support of HIV Vaccine Clinical Research". Postdocs, clinical instructors, or assistant clinical professors who want to help advance HIV vaccine clinical research are encouraged to apply for this initiative, which has two primary objectives:

- To attract and retain promising early career investigators (ECIs) interested in improving nonhuman primate models that support preventive HIV vaccine development; and
- To provide a framework for ongoing ECI mentorship that will foster increased collaboration between clinical and NHP scientists, addressing common questions in vaccine discovery.

Funding will support 3-8 proposals with stipend, facility, and administrative costs up to \$450,000 per year for two years. This covers investigator time at 60-100% full-time equivalent, research development support, and career development/mentorship activities. Interested applicants can submit a Letter of Intent by 22 December 2008 to <research@hvtn.org>. Full applications are due February 23, 2009. For an overview of the award, see <www.hvtn.org/science/eci/ECI_award_overview.pdf>.

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Recent Books and Articles

(Addresses are those of first authors unless otherwise indicated)

Books

- *The Simian Tongue: The Long Debate About Animal Language*. G. Radick. Chicago, IL: University of Chicago Press, 2008. [Price: \$45]
- *Environmental Enrichment and Refinement for Nonhuman Primates Kept in Research Laboratories: A Photographic Documentation and Literature Review* (Third Ed.). V. Reinhardt & A. Reinhardt. Washington, DC: Animal Welfare Institute, 2008. 130 pp., <www.awionline.org/pubs/online_pub/EE08.pdf> or request a free copy from <viktor@snowcrest.net>.
- *Managing the Laboratory Animal Facility* (2nd Ed.). J. Silverman. London: Taylor & Francis, 2008. 328 pp. [Price: \$89.95]
- *Human: The Science Behind What Makes Us Unique*. M. S. Gazzaniga. New York City: Ecco Press, 2008. 464 pp. [Price: \$27.50]
- *Conservation biology: Evolution in action*. S. P. Carroll & C. W. Fox (Eds.). New York: Oxford Univ. Press, 2008. 380 pp. [Price: \$45, paperback]
- *Understanding Animal Welfare: The Science in its Cultural Context*. D. Fraser. Ames, IA: Blackwell Publishing, 2008. 336 pp. [Price: \$69.99, paperback]
- *Using Eye Movements as an Experimental Probe of Brain Function: A Symposium in Honor of Jean Büttner-Ennever*. C. Kennard & R. J. Leigh (Eds.). *Progress in brain research*, Vol. 171. Amsterdam: Elsevier, 2008. 652 pp.

Children's Books

- *Peppy – A Long Way from Home*. R. Hevesi; L. Tyson (Illus.). Cornwall, U.K.: Monkey Sanctuary Trust, 2008. [Price (Paperback): \$13.50]
- *I Am a Monkey*. R. Hevesi; L. Tyson (Illus.). Cornwall, U.K.: Monkey Sanctuary Trust, 2008. [Price (Paperback): \$12.99]
- *Yo Soy Un Mono*. R. Hevesi; L. Tyson (Illus.). Cornwall, U.K.: Monkey Sanctuary Trust, 2008. [Price: \$14.99] (Translation of the title above).

Stories based on the true stories of monkeys rescued by the Trust from the U.K. primate pet trade. Available from <info@monkeysanctuary.org>.

Bulletins

- *Animal Welfare Information Center Bulletin*, Summer 2008, 13[3].

We would like to acknowledge *Primate-Science* as a source for information about new books.

Contents include: The use of databases, information centers and guidelines when planning research that may involve animals, by A. J. Smith & T. Allen.

Handbooks

- *Guideline for Disinfection and Sterilization in Healthcare Facilities, 2008*. W. A. Rutala, D. J. Weber, & the Healthcare Infection Control Practices Advisory Committee. Centers for Disease Control, 2008. (158 pp.), <www.cdc.gov/ncidod/dhqp/pdf/guidelines/Disinfection_Nov_2008.pdf>.

Magazines and Newsletters

- *The Gibbon's Voice*, September, 2008, 10[1], <www.gibboncenter.org>. (Gibbon Conservation Center, P.O. Box 800249, Santa Clarita, CA 91380)
- *IPPL News*, September, 2008, 35[2], <www.ippl.org/news.php>. (International Primate Protection League, P.O. Box 766, Summerville, SC 29484 [e-mail: info@ippl.org]).
- *IPPL News*, December, 2008, 35[3], <www.ippl.org/news.php>. (Address same as above).
- *Journal of Medical Primatology*, 2008, 37[2], <www3.interscience.wiley.com/journal/119397379/issue>.

Contents: Eosinophilic bronchitis-like lesion as the cause of death in a *Macaca mulatta*: A first case report, by J. L. Christal, G. B. Hubbard, E. J. Dick, K. M. Brasky, & J. Jagirdar; Genetic characterization of wild and captive rhesus macaques in China, by J. Satkoski, D. George, D. G. Smith, & S. Kanthaswamy; Biochemical and white blood cell profiles of baboon neonates consuming formulas with moderate and high dietary long-chain polyunsaturated fatty acids, by A. T. Hsieh, J. C. Anthony, D. A. Diersen-Schade, P. W. Nathanielsz, & J. Thomas Brenna; Voluntary consumption of substances of unknown palatability by vervet monkeys: A refinement, by J. V. Seier, M. Mdhului, T. Collop, A. Davids, & R. Laubscher; Establishment of an ELISA system for the determination of Japanese monkey calreticulin and its application to plasma samples in macaques, by A. Higashino, S. Yonezawa, & T. Kageyama; and Evaluation of the cardiovascular function of older adult rhesus monkeys by ultrasonography, by H.-L. Tang, L.-L. Wang, G. Cheng, L. Wang, & S. Li.

- *NCA Newsletter*, November 2008, issue 25, <www.vet.uu.nl/nca/newsletters/current_issue> Netherlands Centre Alternatives to Animal Use.

- *November Newsletter* from Borneo Orangutan Survival UK, 2008, <www.savetheorangutan.co.uk/?p=1253>.

• *Wildlife Middle East News*, Sept. 2008, 3[2], <www.wmenews.com>.

• *Reaching Out*, 2008, 9[2], <www.primaterescue.org> (Primate Rescue Center, Inc., 2515 Bethel Rd, Nicholasville, KY 40356)

• *International Journal of Primatology*, 2008, 29[4].

Contents: Female reproductive strategies and competition in apes: An introduction, by M. E. Thompson, R. M. Stumpf, & A. E. Pusey; Life history and reproductive strategies of Khao Yai *Hylobates lar*: Implications for social evolution in apes, by U. H. Reichard & C. Barelli; Female mate preferences among *Pan troglodytes schweinfurthii* of Kanyawara, Kibale National Park, Uganda, by K. Pieta; A comparison of female mating strategies in *Pan troglodytes* and *Pongo* spp., by R. M. Stumpf, M. E. Thompson, & C. D. Knott; Male mating interest varies with female fecundity in *Pan troglodytes schweinfurthii* of Kanyawara, Kibale National Park, by M. E. Thompson & R. W. Wrangham; Grouping patterns and competition among female *Pan troglodytes schweinfurthii* at Ngogo, Kibale National Park, Uganda, by M. L. Wakefield; Female competition over core areas in *Pan troglodytes schweinfurthii*, Kibale National Park, Uganda, by S. M. Kahlenberg, M. E. Thompson, & R. W. Wrangham; Severe aggression among female *Pan troglodytes schweinfurthii* at Gombe National Park, Tanzania, by A. Pusey, C. Murray, W. Wallauer, M. Wilson, E. Wroblewski, & J. Goodall; Female-female competition in Bornean orangutans, by C. Knott, L. Beaudrot, T. Snaith, S. White, H. Tschauer, & G. Planansky; Feeding competition and agonistic relationships among Bwindi *Gorilla beringei*, by M. M. Robbins; Human sexual differences in the use of social ostracism as a competitive tactic, by J. F. Benenson, L. Hodgson, S. Heath, & P. J. Welch; Reproductive characters and mating behaviour of wild *Nomascus hainanus*, by J. Zhou, F. Wei, M. Li, C. B. P. Lok, & D. Wang; Seasonal variations in the activity budget of *Nomascus concolor jingdongensis* at Mt. Wuliang, Central Yunnan, China: Effects of diet and temperature, by P.-F. Fan, Q.-Y. Ni, G.-Z. Sun, B. Huang, & X.-L. Jiang; Fur-rubbing as a form of self-medication in *Pongo pygmaeus*, by H. C. Morrogh-Bernard; Impact of gun-hunting on diurnal primates in continental Equatorial Guinea, by N. F. Kümpel, E. J. Milner-Gulland, J. Marcus Rowcliffe, & G. Cowlshaw; Organization of group members at departure is driven by social structure in *Macaca*, by C. Sueur & O. Petit; and Berenty 2006: Census of *Propithecus verreauxi* and possible evidence of population stress, by I. Norscia & E. Palagi.

• *International Journal of Primatology*, 2008, 29[5].

Contents: Ranging of *Rhinopithecus bieti* in the Samage Forest, China. I. Characteristics of range use, by C. C. Grueter, D. Li, C. P. van Schaik, B. Ren, Y. Long, & F. Wei; Ranging of *Rhinopithecus bieti* in the Samage Forest, China. II. Use of land cover types and altitudes, by D. Li,

C. C. Grueter, B. Ren, Y. Long, M. Li, Z. Peng, & F. Wei; How reliable are density estimates for diurnal primates? by H. M. Hassel-Finnegan, C. Borries, E. Larney, M. Umponjan, & A. Koenig; Changes in demographic parameters of *Macaca fuscata* at Takasakiyama in relation to decrease of provisioned foods, by H. Kurita, Y. Sugiyama, H. Ohsawa, Y. Hamada, & T. Watanabe; Effects of a typhoon on foraging behavior and foraging success of *Macaca fuscata* on Kinkazan Island, Northern Japan, by Y. Tsuji & S. Takatsuki; Correlates of self-directed behaviors in captive *Cercopithecus aethiops*, by J. R. Daniel, A. J. dos Santos, & L. Vicente; Rates of agonism by diurnal lemuroids: Implications for female social relationships, by E. M. Erhart & D. J. Overdorff; Social influences on group membership in *Propithecus verreauxi verreauxi*, by R. J. Lewis; Morphological and body color variation in Thai *Macaca fascicularis fascicularis* north and south of the Isthmus of Kra, by Y. Hamada, B. Suryobroto, S. Goto, & S. Malaivijitnond; Hybridization and stratification of nuclear genetic variation in *Macaca mulatta* and *M. fascicularis*, by S. Kanthaswamy, J. Satkoski, D. George, A. Kou, B. J.-A. Erickson, & D. G. Smith; Evolutionary acceleration and divergence in *Procolobus kirkii*, by K. Nowak, A. Cardini, & S. Elton; Mitochondrial COII introgression into the nuclear genome of *Gorilla gorilla*, by W. K. Chung & M. E. Steiper; Testicular volume and reproductive status of wild *Callithrix jacchus*, by A. Araújo & M. B. Cordeiro de Sousa; Determination of fecal glucocorticoid metabolites to evaluate stress response in *Alouatta pigra*, by R. Martínez-Mota, C. Valdespino, J. A. R. Rebolledo, & R. Palme; and Hematologic values of free-ranging *Cebus cay* and *Cebus nigritus* in Southern Brazil, by K. K. M. da Costa Flaiban, K. A. H. Spohr, L. de Souza Malanski, W. K. Svoboda, M. M. Shiozawa, C. L. S. Hilst, L. M. Aguiar, G. Ludwig, F. C. Passos, I. T. Navarro, M. R. S. Balarin, & J. A. N. Lisboa.

• *Folia Primatologica*, 2008, 79[6], <www.karger.com/fpr>.

Contents: Ghosts of the past I: Some muscles and fasciae in the head domain, by C. E. Oxnard & D. Franklin; Ghosts of the past II: Muscles and fasciae in the primate forelimb domain, by C. E. Oxnard & D. Franklin; Changes in body mass of expectant male cotton-top tamarins (*Saguinus oedipus*), by S. Sánchez, F. Peláez, A. Fidalgo, A. Morcillo, & J. M. Caperos; Food competition in a semi-free-ranging *Cebus apella* group, by R. G. Ferreira, P. C. Lee, & P. Izar; and Composition and seasonality of diet in wild hamadryas baboons: Preliminary findings from Filoha, by L. Swedell, G. Hailemeskel, & A. Schreier.

• *Primates*, 2008, 49[4], <www.springerlink.com/content/109670>.

Contents: Seed size selection by olive baboons, by B. K. Kunz & K. E. Linsenmair; Survey of *Alouatta caraya*, the black-and-gold howler monkey, and *Alouatta guariba clamitans*, the brown howler monkey, in a contact zone, State of Rio Grande do Sul, Brazil: Evidence for hybridiza-

tion, by J. C. Bicca-Marques, H. M. Prates, F. R. Cunha de Aguiar, & C. B. Jones; Subjective assessment of chimpanzee (*Pan troglodytes*) personality: Reliability and stability of trait ratings, by D. M. Dutton; First evidence on foot preference during locomotion in Old World monkeys: A study of quadrupedal and bipedal actions in Sichuan snub-nosed monkeys (*Rhinopithecus roxellana*), by D. Zhao, B. Li, & K. Watanabe; Reproductive parameters of a captive colony of capuchin monkeys (*Cebus apella*) from 1984 to 2006, by A. Wirz & M. C. Riviello; Patterns of infant handling and relatedness in Barbary macaques (*Macaca sylvanus*) on Gibraltar, by R. Kümmerli & R. D. Martin; Histopathology findings in common marmosets (*Callithrix jacchus* Linnaeus, 1758) with chronic weight loss associated with bile tract obstruction by infestation with *Platynosomum* (Loos, 1907), by M. B. Cordeiro Sousa, A. Castro Leão, J. F. Vidal Coutinho, & A. M. de Oliveira Ramos; Sex differences in play behavior in juvenile tufted capuchin monkeys (*Cebus apella*), by A. Paukner & S. J. Suomi; Are lemurs' low basal metabolic rates an adaptation to Madagascar's unpredictable climate? by A. H. Harcourt; The timing of ovulation with respect to sexual swelling detumescence in wild olive baboons, by J. P. Higham, M. Heistermann, C. Ross, S. Semple, & A. MacLarnon; Two incidents of venomous snakebite on juvenile blue and Sykes monkeys (*Cercopithecus mitis stuhlmanni* and *C. m. albogularis*), by S. Foerster; and Infant hybrids in a newly formed mixed-species group of howler monkeys (*Alouatta guariba clamitans* and *Alouatta caraya*) in northeastern Argentina, by I. Agostini, I. Holzmann, & M. S. Di Bitetti.

Reports

- *Biennial Progress Report: Interagency Coordinating Committee on the Validation of Alternative Methods: 2006-2007*. NIH Publication Number 08-6529; <iccvam.niehs.nih.gov/docs/annrpt/BiennialRpt2007-508.pdf>.
- *2007 United States Animal Health Report*. Agriculture Information Bulletin No. 803. U.S. Dept of Agriculture, APHIS. 194 pp. <www.aphis.usda.gov/publications/animal_health/content/printable_version/ahr2007.pdf>.
- *2007 Animal Care Annual Report of Activities*. U.S. Department of Agriculture, <www.aphis.usda.gov/publications/animal_welfare/content/printable_version/2007_AC_Report.pdf>.

This report provides information about USDA's enforcement of the Animal Welfare Act (AWA) and highlights projects and activities conducted by USDA in its administration of the AWA. In addition, it contains a summary of related regulatory and legislative actions taken since the AWA became law, as well as a section on USDA's emergency management responsibilities regarding household pets, figures from research annual reports, and detailed enforcement data.

- *Regional Action Plan for the Conservation of the Cross River Gorilla* (*Gorilla gorilla diehli*). J. Oates, J. Sunderland-Groves, R. Bergl, A. Dunn, A. Nicholas, E. Takang, F. Omeni, I. Imong, R. Fotso, L. Nkernbi, & L. Williamson (Eds.). Arlington, VA: Conservation International, 2007. <www.primatesg.org/PDF/CRG.Action.Plan.pdf>.

Special Journal Issues

- Neurobiological lessons learned from comparative studies: Evolutionary forces shaping brain and behavior. *Brain, Behavior and Evolution*, 2008, 72[2].
- Animal use oversight: Balancing risk management with burden. *ILAR Journal*, 2008, 49[4], <dels.nas.edu/ilar_n/ilarjournal/49_4/html>.

- The unbearable importance of bonding: Attachment perspectives moving from their past towards the future. F. van der Horst & R. van der Veer (Guest Eds.). *Integrative Psychological and Behavioral Science*, 2008, 42[4].

Contents: Loneliness in infancy: Harry Harlow, John Bowlby and issues of separation, by F. C. P. van der Horst & R. van der Veer; The monkey as a psychological subject, by H. F. Harlow; Harry Harlow: From the other side of the desk, by H. A. LeRoy; Rigorous experiments on monkey love: An account of Harry F. Harlow's role in the history of attachment theory, by S. J. Suomi, F. C. P. van der Horst, & R. van der Veer; "When Strangers Meet": John Bowlby and Harry Harlow on attachment behavior, by F. C. P. van der Horst, H. A. LeRoy, & R. van der Veer; Social development: A psychobiological perspective, by W. A. Mason; Theories of attachment: The long and winding road to an integrative developmental science, by R. Lickliter; and Attachment — past and present. But what about the future? by H. Keller.

- Caring during crisis: Animal welfare during pandemics and natural disasters. *Journal of Applied Animal Welfare Science*, 2008, 11[2].

Animal Models

- An assessment of the role of chimpanzees in AIDS vaccine research. Bailey, J. (New England Anti-Vivisection Society, Boston, MA 02108). *Alternatives to Laboratory Animals*, 2008, 36, 381-428, <www.ncbi.nlm.nih.gov/pubmed/18826331>.

Prior to Simian Immunodeficiency Virus (SIV)-infected macaques' becoming the "model of choice" in the 1990s, chimpanzees were widely used in AIDS vaccine research and testing. Faced with the continued failure to develop an effective human vaccine, some scientists are calling for a return to their widespread use. To assess the past and potential future contribution of chimpanzees to AIDS vaccine development, databases and published literature were systematically searched to compare the results

of AIDS vaccine trials in chimpanzees with those of human clinical trials, and to determine whether the chimpanzee trials were predictive of the human response. Protective and/or therapeutic responses have been elicited in chimpanzees, via: passive antibody transfer; CD4 analogues; attenuated virus; many types and combinations of recombinant HIV proteins; DNA vaccines; recombinant adenovirus and canarypox vaccines; and many multi-component vaccines using more than one of these approaches. Immunogenicity has also been shown in chimpanzees for vaccinia-based and peptide vaccines. Protection and/or significant therapeutic effects have not been demonstrated by any vaccine to date in humans. Vaccine responses in chimpanzees and humans are highly discordant. Claims of the importance of chimpanzees in AIDS vaccine development are without foundation, and a return to the use of chimpanzees in AIDS research/vaccine development is scientifically unjustifiable.

- Divergent TLR7 and TLR9 signaling and type I interferon production distinguish pathogenic and nonpathogenic AIDS virus infections. Mandl, J. N., Barry, A. P., Vanderford, T. H., Kozyr, N., Chavan, R., Klucking, S., Barrat, F. J., Coffman, R. L., Staprans, S. I., & Feinberg, M. B. (M. B. F., Merck & Co., Inc., WP97-A337, 770 Sumneytown Pike, P.O. Box 4, West Point, PA 19486 [e-mail: mark_feinberg@merck.com]. *Nature Medicine*, 2008, 14, 1077-1087.

“Pathogenic HIV infections of humans and simian immunodeficiency virus (SIV) infections of rhesus macaques are characterized by generalized immune activation and progressive CD4⁺ T cell depletion. In contrast, natural reservoir hosts for SIV, such as sooty mangabeys, do not progress to AIDS and show a lack of aberrant immune activation and preserved CD4⁺ T cell populations, despite high levels of SIV replication. Here we show that sooty mangabeys have substantially reduced levels of innate immune system activation *in vivo* during acute and chronic SIV infection and that sooty mangabey plasmacytoid dendritic cells (pDCs) produce markedly less interferon- α in response to SIV and other Toll-like receptor 7 and 9 ligands *ex vivo*. We propose that chronic stimulation of pDCs by SIV and HIV in non-natural hosts may drive the unrelenting immune system activation and dysfunction underlying AIDS progression. Such a vicious cycle of continuous virus replication and immunopathology is absent in natural sooty mangabey hosts.”

- Putative dental pulp-derived stem/stromal cells promote proliferation and differentiation of endogenous neural cells in the hippocampus of mice. Huang, A. H.-C., Snyder, B. R., Cheng, P.-H., & Chan, A. W. S. (A. W. S. C., Yerkes NPRC, Rm. 2212 Neuroscience Bldg., 954 Gatewood Rd., N.E., Atlanta, GA 30329 [e-mail: achan@genetics.emory.edu]). *Stem Cells*, 2008, 26, 2654-2663.

“Until now, interest in dental pulp stem/stromal cell (DPSC) research has centered on mineralization and tooth

repair. Beginning a new paradigm in DPSC research, we grafted undifferentiated, untreated DPSCs into the hippocampus of immune-suppressed mice. The rhesus DPSC (rDPSC) line used was established from the dental pulp of rhesus macaques and found to be similar to human bone marrow/mesenchymal stem cells, which express Nanog, Rex-1, Oct-4, and various cell surface antigens, and have multipotent differentiation capability. Implantation of rDPSCs into the hippocampus of mice stimulated proliferation of endogenous neural cells and resulted in the recruitment of pre-existing Nestin⁺ neural progenitor cells (NPCs) and β -tubulin-III⁺ mature neurons to the site of the graft. Additionally, many cells born during the first 7 days after implantation proliferated, forming NPCs and neurons, and, to a lesser extent, underwent astrogliosis, forming astrocytes and microglia, by 30 days after implantation. Although the DPSC graft itself was short term, it had long-term effects by promoting growth factor signaling. Implantation of DPSCs enhanced the expression of ciliary neurotrophic factor, vascular endothelial growth factor, and fibroblast growth factor for up to 30 days after implantation. In conclusion, grafting rDPSCs promotes proliferation, cell recruitment, and maturation of endogenous stem/progenitor cells by modulating the local microenvironment. Our results suggest that DPSCs have a valuable, unique therapeutic potential, specifically as a stimulator and modulator of the local repair response in the central nervous system. DPSCs would be a preferable cell source for therapy due to the possibility of a ‘personalized’ stem cell, avoiding the problems associated with host immune rejection.”

- Direct control of paralysed muscles by cortical neurons. Moritz, C. T., Perlmutter, S. I., & Fetz, E. E. (Washington NPRC, Univ. of Washington, Seattle, WA 98195 [e-mail: ctmoritz@u.washington.edu]). *Nature*, 2008, 456, 639-642.

“A potential treatment for paralysis resulting from spinal cord injury is to route control signals from the brain around the injury by artificial connections. Such signals could then control electrical stimulation of muscles, thereby restoring volitional movement to paralysed limbs. In previously separate experiments, activity of motor cortex neurons related to actual or imagined movements has been used to control computer cursors and robotic arms, and paralyzed muscles have been activated by functional electrical stimulation. Here we show that *Macaca nemestrina* monkeys can directly control stimulation of muscles using the activity of neurons in the motor cortex, thereby restoring goal-directed movements to a transiently paralyzed arm. Moreover, neurons could control functional stimulation equally well regardless of any previous association to movement, a finding that considerably expands the source of control signals for brain-machine interfaces. Monkeys learned to use these artificial connections from cortical cells to muscles to generate bidirectional wrist

torques, and controlled multiple neuron–muscle pairs simultaneously. Such direct transforms from cortical activity to muscle stimulation could be implemented by autonomous electronic circuitry, creating a relatively natural neuroprosthesis. These results are the first demonstration that direct artificial connections between cortical cells and muscles can compensate for interrupted physiological pathways and restore volitional control of movement to paralysed limbs.”

Animal Welfare

- Combination therapy reduces self-injurious behavior in a chimpanzee (*Pan troglodytes troglodytes*): A case report. Bourgeois, S. R., Vazquez, M., & Brasky, K. (Dept of Comp. Med., Southwest NPRC/Southwest Foundation for Biomedical Research, San Antonio, TX). *Journal of Applied Animal Welfare Science*, 2007, 10, 123-140.

Self-injurious behavior (SIB) remains a severe and intractable abnormal behavior for nonhuman primates in diverse settings and is a significant concern for veterinarians and behavioral scientists. To date, no single pharmacological, behavioral, social, or environmental intervention method has emerged as a reliable permanent cure for treating SIB in all, or even most, individuals. Implementation and evaluation of a combination therapeutic approach to treating SIB for nonhuman primates is rare. In May, 2004, a 25-year-old male chimpanzee with severe SIB ($M = 2.09$ episodes/day, range = 1 to 4 episodes/day) underwent intensive behavioral intervention that utilized a combination of techniques. The combination therapy approach entailed the following: (a) pharmacological intervention with a gamma-aminobutyric acid (GABA) analogue to treat suspected HIV-related sensory neuropathic pain, (b) positive reinforcement training, and (c) environmental enrichment, as well as social and environmental modification. The severity of SIB warranted immediate implementation of intensive combination therapy rather than a systematic evaluation of the individual treatment options. The individually tailored, multifaceted combination therapy resulted in the virtual elimination of SIB in this chimpanzee over a 2-year period.

- The poor contribution of chimpanzee experiments to biomedical progress. Knight, A. (Animal Consultants International, London, U.K. [e-mail: info@animalconsultants.org]). *Journal of Applied Animal Welfare Science*, 2007, 10, 281-308.

Biomedical research on captive chimpanzees incurs substantial nonhuman animal welfare, ethical, and financial costs that advocates claim result in substantial advancements in biomedical knowledge. However, subsequent papers did not cite 49.5% (47/95), of 95 experiments randomly selected from a population of 749 published worldwide between 1995 and 2004, demonstrating minimal contribution toward the advancement of biomedical knowledge generally. Only 14.7% (14/95) were cited by 27 pa-

pers that abstracts indicated described well-developed methods for combating human diseases. However, detailed examination of these medical papers revealed that in vitro studies, human clinical and epidemiological studies, molecular assays and methods, and genomic studies contributed most to their development. No chimpanzee study made an essential contribution, or, in most cases, a significant contribution of any kind, to the development of the medical method described. The approval of these experiments indicates a failure of the ethics committee system. The demonstrable lack of benefit of most chimpanzee experimentation and its profound animal welfare and bioethical costs indicate that a ban is warranted in those remaining countries – notably the United States – that continue to conduct it.

- Ethical regulation and animal science: Why animal behaviour is special. Barnard, C. (Animal Behaviour & Ecology Research Group, School of Biology, University of Nottingham, U.K.). *Animal Behaviour*, 2007, 74, 5-13, <www.sciencedirect.com>.

“Like other areas of animal science, the study of animal behaviour is becoming increasingly subject to ethical regulation and legislation. Sensible and well-informed regulation is to be welcomed both on compassionate grounds and because misuse of animals is likely to compromise the science itself. However, it is evident that much of the impetus and direction in the regulation debate is coming from one particular corner of animal science: that concerned with utilitarian and commercial interests taking place in controlled laboratory environments. This is sustained by an overemphasis on potential medical benefits as the perceived key selling point for animal science to a hostile public. Such a bias risks potentially unfortunate consequences for wider aspects of animal science, and is unlikely to serve the best welfare interests of animals when viewed from their own biological perspective. I review some of the concerns that arise from this, and suggest that the study of animal behavior has a uniquely important role to play both in the development of animal welfare science itself and in the public debate about the regulation of animal science as a whole.”

- Ethical regulation and animal science: Why animal behaviour is not so special. Cuthill, I. C. (Centre for Behav. Biol., Sch. of Biol. Sci., Univ. of Bristol, Woodland Rd, Bristol BS8 1UG, U.K. [e-mail: i.cuthill@bristol.ac.uk]). *Animal Behaviour*, 2007, 74, 15-22, <www.sciencedirect.com>.

“Refinement, replacement and reduction of animals in research has become a guiding principle for legislation governing animal research, and for the implementation of that legislation. However, one of these ‘3Rs’, replacement, would seem incompatible with the science of animal behaviour, where the animal is not a model for the human condition, but the object of interest itself. This, the power of biomedical research and the pharmaceutical industry as

lobbying groups, and the fact that the public could come to equate ‘animal research’ with vivisection, should cause concern in the animal behaviour community. The dominance of the 3Rs, and the evaluation of the utility of animal research in terms of medical benefits, could come to dominate ethical decisions about animal research. I argue that the 3Rs are not as incompatible with the aims of animal behaviour as it first appears, and that their principles can be readily incorporated into our research, but this must be twinned with a greater commitment to dialogue with legislative bodies and biomedical lobbying groups, to ensure that the utility of animal research is not evaluated solely in terms of medical and other immediate human gains.”

Behavior

- Faces and behinds: Chimpanzee sex perception. de Waal, F. B. M., & Pokorny, J. J. (J. J. P., Living Links, Yerkes NRC, Emory Univ., Atlanta, GA 30329). *Advanced Science Letters*, 2008, 1, 99-103.

Six adult chimpanzees (*Pan troglodytes*) trained on computerized matching-to-sample were shown a sample behind (anogenital region) of a chimpanzee and rewarded for selecting a corresponding facial image. If the two faces were of the same sex, and one belonged to the same individual as the behind, subjects made the correct association for familiar individuals but not unfamiliar ones, suggesting whole-body knowledge of group mates. If the two faces were of opposite sex, subjects selected the same-sex face as the behind at first only for familiar individuals when face and behind belonged to the same individual. During subsequent exposures, however, they learned to associate the same-sex face with the behind even if the behind was “generic” male or female (i.e., unmatched to any known individual) provided the depicted individuals were familiar. This suggests that sex perception is aided by a “gender construct” derived from firsthand experience with group-mates, which is unavailable for unfamiliar individuals.

- Primate hunting by bonobos at LuiKotale, Salonga National Park. Surbeck, M., & Hohmann, G. (G. H., Dept of Primatology, Max-Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, D-04103 Leipzig, Germany [e-mail: hohmann@eva.mpg.de]). *Current Biology*, 2008, 18, R906-R907.

“Chimpanzees (*Pan troglodytes*) and bonobos (*P. paniscus*) hunt and consume the meat of various mammals. While chimpanzees frequently hunt in groups for arboreal, group-living monkey species, bonobos are thought to focus on medium-sized terrestrial prey, such as forest antelopes, squirrels and other rodents, which are caught opportunistically by single individuals. The absence of monkey hunting by bonobos is often used to illustrate the divergent evolution of the two *Pan* species. Here, we present the first information on hunting of diurnal, arboreal, and group living primates by wild bonobos.”

- Do chimpanzees learn reputation by observation? Evidence from direct and indirect experience with generous and selfish strangers. Subiaul, F., Vonk, J., Okamoto-Barth, S., & Barth, J. (Dept of Speech & Hearing Science, Mind, Brain & Evolution Cluster, George Washington Univ., 2115 G St, NW # 204, Washington, DC 20001 [e-mail: subiaul@gwu.edu]). *Animal Cognition*, 2008, 11, 611-623.

“Can chimpanzees learn the reputation of strangers indirectly by observation? Or are such stable behavioral attributions made exclusively by first-person interactions? To address this question, we let seven chimpanzees observe unfamiliar humans either consistently give (generous donor) or refuse to give (selfish donor) food to a familiar human recipient (Experiments 1 and 2) and a conspecific (Experiment 3). While chimpanzees did not initially prefer to beg for food from the generous donor (Experiment 1), after continued opportunities to observe the same behavioral exchanges, four chimpanzees developed a preference for gesturing to the generous donor (Experiment 2), and transferred this preference to novel unfamiliar donor pairs, significantly preferring to beg from the novel generous donors on the first opportunity to do so. In Experiment 3, four chimpanzees observed novel selfish and generous acts directed toward other chimpanzees by human experimenters. During the first half of testing, three chimpanzees exhibited a preference for the novel generous donor on the first trial. These results demonstrate that chimpanzees can infer the reputation of strangers by eavesdropping on third-party interactions.”

- Dominance and affiliation mediate despotism in a social primate. King, A. J., Douglas, C. M. S., Huchard, E., Isaac, N. J. B., & Cowlshaw, G. (Inst. of Zool., Zoo. Soc. of London, Regent’s Park, London, NW1 4RY, U.K. [e-mail: andrew.king@ioz.ac.uk]). *Current Biology*, 2008, 18, 1833-1839.

“Group-living animals routinely have to reach a consensus decision and choose between mutually exclusive actions in order to coordinate their activities and benefit from sociality. Theoretical models predict ‘democratic’ rather than ‘despotic’ decisions to be widespread in social vertebrates, because they result in lower ‘consensus costs’ – the costs of an individual foregoing its optimal action to comply with the decision – for the group as a whole. Yet, quantification of consensus costs is entirely lacking, and empirical observations provide strong support for the occurrence of both democratic and despotic decisions in nature. We conducted a foraging experiment on a wild social primate (chacma baboons, *Papio ursinus*) in order to gain new insights into despotic group decision making. The results show that group foraging decisions were consistently led by the individual who acquired the greatest benefits from those decisions, namely the dominant male. Subordinate group members followed the leader despite considerable consensus costs. Follower behavior was medi-

ated by social ties to the leader, and where these ties were weaker, group fission was more likely to occur. Our findings highlight the importance of leader incentives and social relationships in group decision-making processes and the emergence of despotism.”

Conservation

- Alarming decline of West African chimpanzees in Côte d’Ivoire. Campbell, G., Kuehl, H., N’Goran Kouamé, P., & Boesch, C. (Dept of Primatology, Max Planck Inst. for Evolutionary Anthropology, Deutscher Platz 6, Leipzig 04103, Germany [e-mail: genevieve.campbell@eva.mpg.de]). *Current Biology*, 2008, 18, R903-R904.

“Côte d’Ivoire is thought to be one of the final strongholds of the endangered West African chimpanzee (*Pan troglodytes verus*). In a recent assessment of their conservation status, Côte d’Ivoire was estimated to support between 8,000 and 12,000 individuals, accounting for almost half of the remaining world population; however, this estimate was based primarily on a nationwide chimpanzee survey that was conducted in 1989–1990. Since then, information on chimpanzee abundance and distribution within this region has been sparse. To update the status of chimpanzees in Côte d’Ivoire and evaluate their population trend, we repeated the 1989–1990 survey. Our results show that there has been an alarming decline in chimpanzee numbers, and that urgent action is required to prevent them from disappearing entirely.”

- Preliminary report: Survey to update population and distribution estimates of the Javan gibbon. Indonesian Primate Association (Jl. Burangrang No. 18 Bogor 16151, Indonesia [e-mail: apapi@wcsip.org]). *The Gibbon’s Voice*, 2008, 10, 2-7.

The Javan or silvery gibbon (*Hylobates moloch*), grizzled leaf monkey (*Presbytis comata*) and Javan ebony langur (*Trachypitecus auratus*) are endemic to Western and Central Java, and in Indonesia are categorized as endangered primates. Recently, the habitat condition and conservation status of these primates, particularly the Javan gibbon population, became critical due to the conversion of forest to farms and to the pet trade. Conservation efforts, including managing their populations and habitats in both conservation and non-conservation areas, could help sustain these primates into the future.

- Gastrointestinal bacterial transmission among humans, mountain gorillas, and livestock in Bwindi Impenetrable National Park, Uganda. Rwego, I. B., Isabirye-Basuta, G., Gillespie, T. R., & Goldberg, T. L. (Makerere Univ., Dept of Zool., P.O. Box 7062, Kampala, Uganda [e-mail: rwegovet@yahoo.co.uk]). *Conservation Biology*, 2008, 22, 1600-1607.

“Habitat overlap can increase the risks of anthroponotic and zoonotic pathogen transmission between humans, livestock, and wild apes. We collected *Escherichia coli* bacteria from humans, livestock, and mountain gorillas (*Gorilla*

gorilla beringei) in Bwindi Impenetrable National Park, Uganda, from May to August 2005 to examine whether habitat overlap influences rates and patterns of pathogen transmission between humans and apes and whether livestock might facilitate transmission. We genotyped 496 *E. coli* isolates with repetitive extragenic palindromic polymerase chain reaction fingerprinting and measured susceptibility to 11 antibiotics with the disc-diffusion method. We conducted population genetic analyses to examine genetic differences among populations of bacteria from different hosts and locations. Gorilla populations that overlapped in their use of habitat at high rates with people and livestock harbored *E. coli* that were genetically similar to *E. coli* from those people and livestock, whereas *E. coli* from gorillas that did not overlap in their use of habitats with people and livestock were more distantly related to human or livestock bacteria. Thirty-five percent of isolates from humans, 27% of isolates from livestock, and 17% of isolates from gorillas were clinically resistant to at least one antibiotic used by local people, and the proportion of individual gorillas harboring resistant isolates declined across populations in proportion to decreasing degrees of habitat overlap with humans. These patterns of genetic similarity and antibiotic resistance among *E. coli* from populations of apes, humans, and livestock indicate that habitat overlap between species affects the dynamics of gastrointestinal bacterial transmission, perhaps through domestic animal intermediates and the physical environment. Limiting such transmission would benefit human and domestic animal health and ape conservation.”

Disease

- Direct evidence of extensive diversity of HIV-1 in Kinshasa by 1960. Worobey, M., Gemmel, M., Teuwen, D. E., Haselkorn, T., Kunstman, K., Bunce, M., Muyembe, J.-J., Kabongo, J.-M. M., Kalengayi, R. M., Van Marck, E. M., Gilbert, T. P., & Wolinsky, S. M. (Ecology & Evolutionary Biol., Univ. of Arizona, Tucson, AZ 85721 [e-mail: worobey@email.arizona.edu]). *Nature*, 2008, 455, 661-664.

“Human immunodeficiency virus type 1 (HIV-1) sequences that pre-date the recognition of AIDS are critical to defining the time of origin and the timescale of virus evolution. A viral sequence from 1959 (ZR59) is the oldest known HIV-1 infection. Other historically documented sequences, important calibration points to convert evolutionary distance into time, are lacking, however; ZR59 is the only one sampled before 1976. Here we report the amplification and characterization of viral sequences from a Bouin’s-fixed paraffin-embedded lymph node biopsy specimen obtained in 1960 from an adult female in Léopoldville, Belgian Congo (now Kinshasa, Democratic Republic of the Congo (DRC)), and we use them to conduct the first comparative evolutionary genetic study of early pre-AIDS epidemic HIV-1 group M viruses. Phylogenetic analyses position this viral sequence (DRC60)

closest to the ancestral node of subtype A (excluding A2). Relaxed molecular clock analyses incorporating DRC60 and ZR59 date the most recent common ancestor of the M group to near the beginning of the twentieth century. The sizeable genetic distance between DRC60 and ZR59 directly demonstrates that diversification of HIV-1 in west-central Africa occurred long before the recognized AIDS pandemic. The recovery of viral gene sequences from decades-old paraffin-embedded tissues opens the door to a detailed palaeovirological investigation of the evolutionary history of HIV-1 that is not accessible by other methods.”

- Comparative genomics of the neglected human malaria parasite *Plasmodium vivax*. Carlton, J. M., Adams, J. H., Silva, J. C., Bidwell, S. L., Lorenzi, H., Caler, E., Crabtree, J., Angiuoli, S. V., Merino, E. F., Amedeo, P., Cheng, Q., Coulson, R. M. R., Crabb, B. S., del Portillo, H. A., Essien, K., Feldblyum, T. V., Fernandez-Becerra, C., Gilson, P. R., Gueye, A. H., Guo, X., Kang’a, S., Kooij, T. W. A., Korsinczky, M., V.-S. Meyer, E., Nene, V., Paulsen, I., White, O., Ralph, S. A., Ren, Q., Sargeant, T. J., Salzberg, S. L., Stoeckert, C. J., Sullivan, S. A., Yamamoto, M. M., Hoffman, S. L., Wortman, J. R., Gardner, M. J., Galinski, M. R., Barnwell, J. W., & Fraser-Liggett, C. M. (Dept of Med. Parasitol., NYU Langone Med. Center, 341 East 25th St, New York, NY 10010 [e-mail: jane.carlton@nyumc.org]). *Nature*, 2008, 455, 757-763.

“The human malaria parasite *Plasmodium vivax* is responsible for 25–40% of the ~ 515 million annual cases of malaria worldwide. Although seldom fatal, the parasite elicits severe and incapacitating clinical symptoms and often causes relapses months after a primary infection has cleared. Despite its importance as a major human pathogen, *P. vivax* is little studied because it cannot be propagated continuously in the laboratory except in nonhuman primates. We sequenced the genome of *P. vivax* to shed light on its distinctive biological features, and as a means to drive development of new drugs and vaccines. Here we describe the synteny and isochore structure of *P. vivax* chromosomes, and show that the parasite resembles other malaria parasites in gene content and metabolic potential, but possesses novel gene families and potential alternative invasion pathways not recognized previously. Completion of the *P. vivax* genome provides the scientific community with a valuable resource that can be used to advance investigation into this neglected species.”

- The genome of the simian and human malaria parasite *Plasmodium knowlesi*. Pain, A., Böhme, U., Berry, A. E., Mungall, K., Finn, R. D., Jackson, A. P., Mourier, T., Mistry, J., Pasini, E. M., Aslett, M. A., Balasubramaniam, S., Borgwardt, K., Brooks, K., Carret, C., Carver, T. J., Chervach, I., Chillingworth, T., Clark, T. G., Galinski, M. R., Hall, N., Harper, D., Harris, D., Hauser, H., Ivens, A., Janssen, C. S., Keane, T., Larke, N., Lapp, S., Marti, M., Moule, S., Meyer, I. M., Ormond, D., Peters, N., Sanders, M., Sanders, S., Sargeant, T. J., Simmonds, M., Smith, F.,

Squares, R., Thurston, S., Tivey, A. R., Walker, D., White, B., Zuiderwijk, E., Churcher, C., Quail, M. A., Cowman, A. F., Turner, C. M. R., Rajandream, M. A., Kocken, C. H. M., Thomas, A. W., Newbold, C. I., Barrell, B. G., & Beriman, M. (Wellcome Trust Sanger Inst., Genome Campus, Hinxton, Cambridgeshire CB10 1SA, U.K. [e-mail: ap2@sanger.ac.uk]). *Nature*, 2008, 455, 799-803.

“*Plasmodium knowlesi* is an intracellular malaria parasite whose natural vertebrate host is *Macaca fascicularis* (the ‘kra’ monkey); however, it is now increasingly recognized as a significant cause of human malaria, particularly in southeast Asia. *Plasmodium knowlesi* was the first malaria parasite species in which antigenic variation was demonstrated, and it has a close phylogenetic relationship to *Plasmodium vivax*, the second most important species of human malaria parasite. Despite their relatedness, there are important phenotypic differences between them, such as host blood cell preference, absence of a dormant liver stage or ‘hypnozoite’ in *P. knowlesi*, and length of the asexual cycle. Here we present an analysis of the *P. knowlesi* (H strain, Pk1(A+) clone5) nuclear genome sequence. This is the first monkey malaria parasite genome to be described, and it provides an opportunity for comparison with the recently completed *P. vivax* genome and other sequenced *Plasmodium* genomes. In contrast to other *Plasmodium* genomes, putative variant antigen families are dispersed throughout the genome and are associated with intrachromosomal telomere repeats. One of these families, the KIRs9, contains sequences that collectively match over one-half of the host CD99 extracellular domain, which may represent an unusual form of molecular mimicry.”

- Serological evidence for hepatitis E virus infection in laboratory monkeys and pigs in animal facilities in Japan. Yamamoto, H., Li, T.-C., Koshimoto, C., Ito, K., Kita, M., Miyashita, N., Arikawa, J., Yagami, K., Asano, M., Tezuka, H., Suzuki, N., Kurosawa, T., Shibahara, T., Furuya, M., Mohri, S., Sato, H., Ohsawa, K., Ibuki, K., & Takeda, N. (Div. Animal Resources & Development, Life Sci. Res. Ctr, Univ. of Toyama, 2630 Sugitani, Toyama 930-0194, Japan). *Experimental Animals*, 2008, 57, 367-376.

In laboratory animal facilities, monkeys and pigs are used for animal experiments, but the details of hepatitis E virus (HEV) infection in these animals are unknown. The risk of infection from laboratory animals to humans has become a concern; therefore, much attention should be paid to the handling of these animals during their care and use, including surgical procedures performed on infected animals. In this connection, serum samples collected from 916 monkeys and 77 pigs kept in 23 animal facilities belonging to Japanese universities were examined for the purpose of detecting antibodies to HEV and HEV RNA by using ELISA and RT-PCR, respectively. One hundred and seven serum samples of 916 (11.7%) monkeys were positive for anti-HEV IgG, and 7 and 17 serum samples of 916

(0.8% and 5.3%) monkeys were positive for anti-HEV IgM and IgA, respectively. Thirty-six samples from 62 (58.1%) farm pigs were positive for anti-HEV IgG, whereas all samples tested from miniature pigs were negative (0/15, 0%). Seven samples from 62 (9.1%) farm pigs and 7 samples from 916 (0.8%) monkeys were positive for IgM antibody, but these HEV-IgM antibody positive serum samples were HEV-RNA negative by RT-PCR. The IgM antibody positive rate (9.1%) of farm pigs was much higher than that of monkeys (0.8%). These results suggest the relative levels of risk of HEV infection from these animals to animal handlers and researchers who work with them in laboratory animal facilities.

Evolution, Genetics, and Taxonomy

- Evolution of grasping among anthropoids. Pouydebat, E., Laurin, M., Gorce, P., & Bels, V. (M. L., Comparative Osteohistology, UMR CNRS 7179, Univ. Pierre et Marie Curie (Paris 6), Paris, France [e-mail: michel.laurin@upmc.fr]). *Journal of Evolutionary Biology*, 2008, 21, 1732-1743.

“The prevailing hypothesis about grasping in primates stipulates an evolution from power towards precision grips in hominids. The evolution of grasping is far more complex, as shown by analysis of new morphometric and behavioral data. The latter concern the modes of food grasping in 11 species (one platyrrhine, nine catarrhines and humans). We show that precision grip and thumb-lateral behaviours are linked to carpus and thumb length, whereas power grasping is linked to second and third digit length. No phylogenetic signal was found in the behavioral characters when using squared-change parsimony and phylogenetic eigenvector regression, but such a signal was found in morphometric characters. Our findings shed new light on previously proposed models of the evolution of grasping. Inference models suggest that *Australopithecus*, *Oreopithecus* and *Proconsul* used a precision grip.”

- Neanderthal brain size at birth provides insights into the evolution of human life history. Ponce de León, M. S., Golovanova, L., Doronichev, V., Romanova, G., Akazawa, T., Kondo, O., Ishida, H., & Zollikofer, C. P. E. (Anthropological Inst. & Museum, Univ. of Zürich, CH-8057 Zürich, Switzerland [e-mail: marcia@aim.uzh.ch]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2008, 105, 13764-13768.

From birth to adulthood, the human brain expands by a factor of 3.3, compared with 2.5 in chimpanzees. How the required extra amount of human brain growth is achieved and what its implications are for human life history and cognitive development are still a matter of debate. Likewise, because comparative fossil evidence is scarce, when and how the modern human pattern of brain growth arose during evolution is largely unknown. Virtual reconstructions of a Neanderthal neonate from Mezmaiskaya Cave (Russia) and of two Neanderthal infant skeletons from

Dederiyeh Cave (Syria) now provide new comparative insights: Neanderthal brain size at birth was similar to that in recent *Homo sapiens* and most likely subject to similar obstetric constraints. Neanderthal brain growth rates during early infancy were higher, however. This pattern of growth resulted in larger adult brain sizes but not in earlier completion of brain growth. Because large brains growing at high rates require large, late-maturing, mothers, it is likely that Neanderthal life history was similarly slow, or even slower-paced, than in recent *H. sapiens*.

- Copy number variation and evolution in humans and chimpanzees. Perry, G. H., Yang, F., Marques-Bonet, T., Murphy, C., Fitzgerald, T., Lee, A. S., Hyland, C., Stone, A. C., Hurles, M. E., Tyler-Smith, C., Eichler, E. E., Carter, N. P., Lee, C., & Redon, R. (R. R., Wellcome Trust Sanger Institute, Hinxton, Cambridge CB10 1SA, U.K. [e-mail: rr@sanger.ac.uk]). *Genome Research*, 2008, 18, 1698-1710.

“Copy number variants (CNVs) underlie many aspects of human phenotypic diversity and provide the raw material for gene duplication and gene family expansion. However, our understanding of their evolutionary significance remains limited. We performed comparative genomic hybridization on a single human microarray platform to identify CNVs among the genomes of 30 humans and 30 chimpanzees as well as fixed copy number differences between species. We found that human and chimpanzee CNVs occur in orthologous genomic regions far more often than expected by chance and are strongly associated with the presence of highly homologous intrachromosomal segmental duplications. By adapting population genetic analyses for use with copy number data, we identified functional categories of genes that have likely evolved under purifying or positive selection for copy number changes. In particular, duplications and deletions of genes with inflammatory response and cell proliferation functions may have been fixed by positive selection and involved in the adaptive phenotypic differentiation of humans and chimpanzees.”

General

- Universities report continued decline in real federal S&E R&D funding in FY 2007. Britt, R. (Div. of Sci. Resources Statistics, NSF, 4201 Wilson Blvd, Suite 965, Arlington, VA 22230 [e-mail: rbritt@nsf.gov]). *Science Resources Statistics InfoBrief*, 2008, NSF 08-320, <www.nsf.gov/statistics/infbrief/nsf08320/#fn1>.

Federal funding of academic science and engineering (S&E) R&D failed to outpace inflation for the second year in a row, according to FY 2007 data from the National Science Foundation (NSF) Survey of Research and Development Expenditures at Universities and Colleges. In current dollars, federally funded academic R&D expenditures rose 1.1% in FY 2007 to \$30.4 billion. After adjusting for inflation, this represents a 1.6% decline from FY 2006 and

follows a 0.2% decline from the FY 2005 level. A 2-year decline in federal funding in constant dollars is unprecedented for this data series, which began in 1972. The federal government remains the largest source of academic R&D funding, accounting for more than 60% of total R&D expenditures most years since FY 1972. The federal government's share, however, has declined in recent years, dropping from 64% in FY 2005 to 62% in FY 2007.

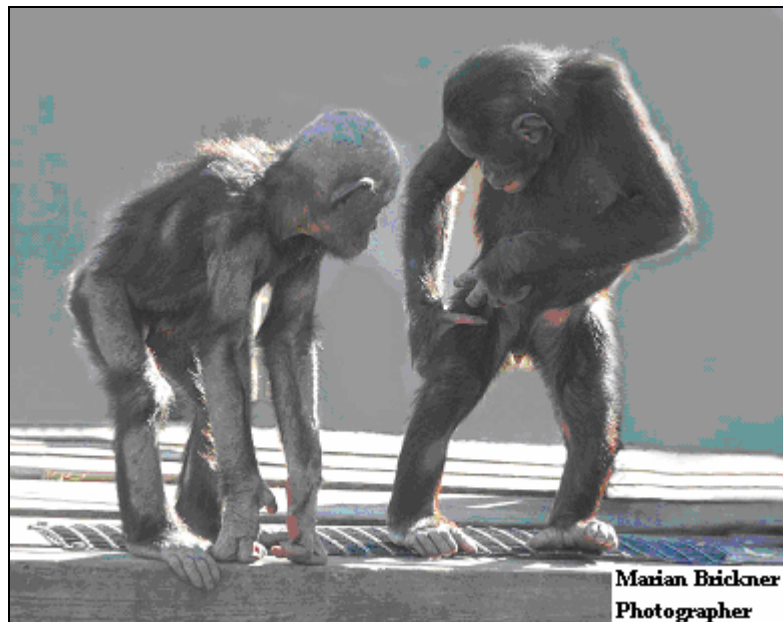
Physiology

- Comparing face patch systems in macaques and humans. Tsao, D. Y., Moeller, S., & Freiwald, W. A. (Inst. for Brain Research, Univ. of Bremen, P.O. Box 330440, D-28334 Bremen, Germany [e-mail: doris@nmr.mgh.harvard.edu]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2008, 105, 19514-19519.

“Face recognition is of central importance for primate

social behavior. In both humans and macaques, the visual analysis of faces is supported by a set of specialized face areas. The precise organization of these areas and the correspondence between individual macaque and human face-selective areas are debated. Here, we examined the organization of face-selective regions across the temporal lobe in a large number of macaque and human subjects. Macaques showed six regions of face-selective cortex arranged in a stereotypical pattern along the temporal lobe. Human subjects showed, in addition to three reported face areas (the occipital, fusiform, and superior temporal sulcus face areas), a face-selective area located anterior to the fusiform face area, in the anterior collateral sulcus. These results suggest a closer anatomical correspondence between macaque and human face-processing systems than previously realized.”

* * *



Hey, look at that miserable mosquito bite, will you? It's been itching like CRAZY!

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CONTENTS

Articles and Notes

First Report of a Uterine Leiomyoma in a Common Marmoset (<i>Callithrix jacchus</i>): Statistical Study Confirms Rarity of Spontaneous Neoplasms, by P. Rodríguez, L. Flores, F. Fariñas, and J. Bakker	1
Report of Illegal Trade of the Common Marmoset (<i>Callithrix jacchus</i>) in Uruguay, by A. Fallabrino, L. Alonso and A. P. Arévalo	4
The Russian Primate Research Center – A Survivor, by E. P. Fridman and D. M. Bowden.....	6
Report on Present Distribution and Status of Macaques in Vietnam, by Vo Dinh Son, S. Malaivijitnond, S. Gotoh, Cao Quoc Tri, Nguyen Van Hung, Le Van Hoang, Tran Cong Trang, and Y. Hamada	10

News, Information, and Announcements

Information Requested or Available.....	3
European “3R’s” Website; <i>IPS Guidelines</i> ; More Interesting Websites	
Announcements from Publications	3
<i>Zoonova</i> : Online Journal; <i>Gorilla Gazette</i>	
Awards Granted: Jacobsen Conservation Award to Serge Wich.....	5
Call for Award Nominations: Leopold and Hornaday Conservation Awards.....	5
Workshop Announcements.....	15
Prosimian Husbandry; Orangutan Species Survival Plan (SSP) Husbandry; Teaching Research Ethics; C. L. Davis Foundation Workshop and Symposium	
Meeting Announcements	16
Resources Wanted and Available	17
Primate Diversity Festival; The Role of Animals in Research; Free Scientific Enrichment Resources for Students; NIH Freedom of Information Act Policies; “Clever Monkeys”; Public Outreach Video; Silky Sifaka Conservation and Research Website; Positive Reinforcement Training Network; DVD – Training Laboratory Primates; Year of the Gorilla 2009	
Educational Opportunities	18
Captive Care of Callitrichids and Lemurs, CHCI Summer Apprentice Program	
News Briefs	19
California Passes Law Protecting Animal Researchers; Zerhouni Ends Tenure as Director of NIH; Nepal to Export Rhesus Monkeys to U.S.; Madagascar Land to Grow Food for Korea	
Grants Available	20
Web Portal for NHP Research Models; Nonhuman Primate Models for HIV Vaccine	
Photograph by M. Brickner	30

Departments

Recent Books and Articles.....	21
--------------------------------	----