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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 $5.00 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 $80/year within the U.S.; $100/year outside the U.S. (Please make checks payable to Brown University.) Readers with access to electronic mail may receive the nongraphic contents of each issue by sending the message **subscribe LPN-L your-own-name** to **listserv@listserv.brown.edu** (Send the message **subscribe LPN-PEF** to receive PDF files by e-mail; or the message **subscribe LPN-WARN** to receive a notice when a new issue is put on the Website.) 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. Technical names of monkeys should be indicated at least once in each note and article. In general, to avoid inconsistencies within the *Newsletter*, the scientific 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 chapter by Maryeva Terry in A. M. Schrier (Ed.), *Behavioral Primatology: Advances in Research and Theory* (Vol. 1). Hillsdale, NJ: Lawrence Erlbaum Associates, 1977.

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Cover photograph of a cotton-top tamarin (*Saguinus oedipus*) at Roger Williams Park Zoo, by Mark Abbott

Hormonal Correlates of Post-Conceptive Mating in Female Japanese Macaques

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Introduction

Although post-conceptive sexual activity has widely been reported in Japanese macaques (*Macaca fuscata;* see, e.g., Eaton, 1978; Mitsunaga et al., 1992; Nigi et al., 1990; Soltis et al., 2002; Takahata, 1980; Wolfe, 1979), the relationship between such behavior and the hormonal status of the females has not been previously documented. Pregnancy is associated with marked fluctuations in concentrations of progesterone and estrogen, which are known to affect behavior (Dixson, 1998; Soltis et al., 1999). This study examines hormonal correlates of post-conceptive mating in the Arashiyama West group of Japanese macaques.

In captivity, rhesus monkeys have been observed to copulate during pregnancy, displaying a secondary peak in mating between the 6th and 10th week of gestation, when progesterone levels temporarily drop (Bielert et al., 1976). Furthermore, Wilson et al. (1982) found that female rhesus who displayed post-conceptive mating activity exhibited a drop in progesterone concentrations below an apparently critical level, whereas females who did not exhibit post-conceptive mating had comparatively higher concentrations of progesterone.

Female pig-tailed macaques also exhibit a peak in mating between weeks 4 and 10 (Maestripieri, 1999); however they do not show a decrease in progesterone levels until week 16, by which time the frequency of post-conceptive mating activity has all but ceased. In addition, some non-macaque cercopithecoid species have been reported to exhibit post-conceptive mating (e.g., sooty mangabeys: Gust, 1994; blue monkeys: Pazol, 2003) and at least one of these (Hanuman langurs: Sommer, 1993) showed a peak in post-conceptive mating during the 6th to 10th week of gestation.

Here we describe the hormonal correlates as well as the timing, frequency, and sex of partners involved in post-conceptive mating, information that may shed some light on the etiology of this form of nonconceptive mating in Japanese macaques. Our objective was to examine the timing of mating during the gestational period and the relationship to changing levels of excreted reproductive steroid metabolites.

Methods

The subjects were 8 adult female Japanese macaques living in a 65-acre enclosure at the Arashiyama West Texas Snow Monkey Sanctuary. For details of group structure and history, see O'Neill, 2000, and Fedigan & Asquith, 1991. Behavioral data were collected from October through April during the 1997/1998 breeding season. A total of 41 to 48 hours of focal data per female were collected. For the females that conceived, approximately 30 to 35 hours of that data was during gestation. Focal data were collected daily, but each female was followed only 3 or 4 times/week. Fecal samples were collected two to three times per week from each of the eight target females between the hours of 8:00 a.m. and 6:00 p.m.

The two main fecal metabolites of estrogens are estradiol and estrone, and the progestins may metabolize as progesterone or pregnanediol. Analysis by radioimmunoassay revealed that estrone and pregnanediol were the most abundant fecal metabolites of estrogens and progestins in female Japanese macaques. Extraction of ovarian steroids (estrone-glucuronide [E1] and pregnanediol-glucuronide [PdG]) was performed as described by Strier and Ziegler (1997) and Ziegler et al. (1997). Fecal samples were analyzed using enzyme immunoassays; see O'Neill (2000) and O'Neill et al. (2004b), for a detailed description of assays and validations.

Female	Data collected	Estimated Gestation length	Post-conceptive mating partners
A	Week 1 to Week 18	192 days	1 male partner 5 female partners
B	Week 1 to Week 12	170 days	0 male partners 1 female partner
C	Week 1 to Week 16	176 days	2 male partners 0 female partners
D	Week 1 to Week 19	163 days	1 male partner 0 female partners

Table 1: Gestation and post-conceptive mating in Arashiyama West female Japanese macaques.

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Hormone profiles were used to calculate ovulatory cycle and gestation lengths. Copulatory activity during pregnancy was analyzed for the four females who conceived and carried to term during the 1997/1998 mating season. Data were collected from the first week through the 12th-19th week of gestation for the four females (*Table 1*). The earliest possible day of conception was considered to be the estimated day of ovulation when PdG levels failed to return to their lowest baseline levels. The length of gestation was calculated as the interval between the estimated day of ovulation during the cycle in which conception occurred and the date of parturition. Parturition dates were defined as the first day in which the female was observed with a new infant and were accurate to within two days.

A Spearman nonparametric correlation was used to analyze the relationship between hormone levels and mounting behavior during pregnancy.

Results

Hormone levels during early pregnancy

Mean PdG levels were 50.01 ng/g in the first week of gestation, increasing to 100.70 ng/g by the 5th week, followed by a temporary drop in weeks 6 through 8, averaging 56.03 ng/g, then steadily increasing to 131.18 ng/g by the 18th week (*Figure 1*). E1 levels were highly variable for the initial weeks of gestation, but then showed a steady increase by the 14th week (*Figure 1*). A positive correlation was found between PdG and E1 levels (Spearman: $r_s = 0.51$, $P<0.05$), showing a parallel rise in both hormones as the pregnancy nears term.

During the study period, four of the eight females conceived after 1 to 4 cycles. The mean gestation length for the four females that carried to term was calculated to be 175 ± 12.8 days (*Table 1*, median=173 days).

Post-conceptive mating

The majority of post-conceptive mating occurred during weeks 6-11 of gestation (*Figure 1*). The rate of post-conceptive mounts was similar for both heterosexual and same-sex pairs (mounts received: 13.17/hour for same-sex and 16.86/hour for heterosexual; mounts directed: 5.13/hour for same-sex and 5.67/hour for heterosexual). We have previously reported that same-sex mating presents very similar patterns to heterosexual mating activity (O'Neill et al., 2004a).

We found that weeks with higher levels of mounting were significantly associated with decreases in PdG levels relative to the previous week (Spearman: $r_s = 0.59$; $p < 0.05$).

Discussion

The mean gestation length that we calculated for these Japanese macaque females was comparable to earlier findings based on non-hormonal studies. Nigi (1976) reported a mean gestation length of 173 ± 6.9 days and Kawai (1966) reported a gestation period of 171-180 days.

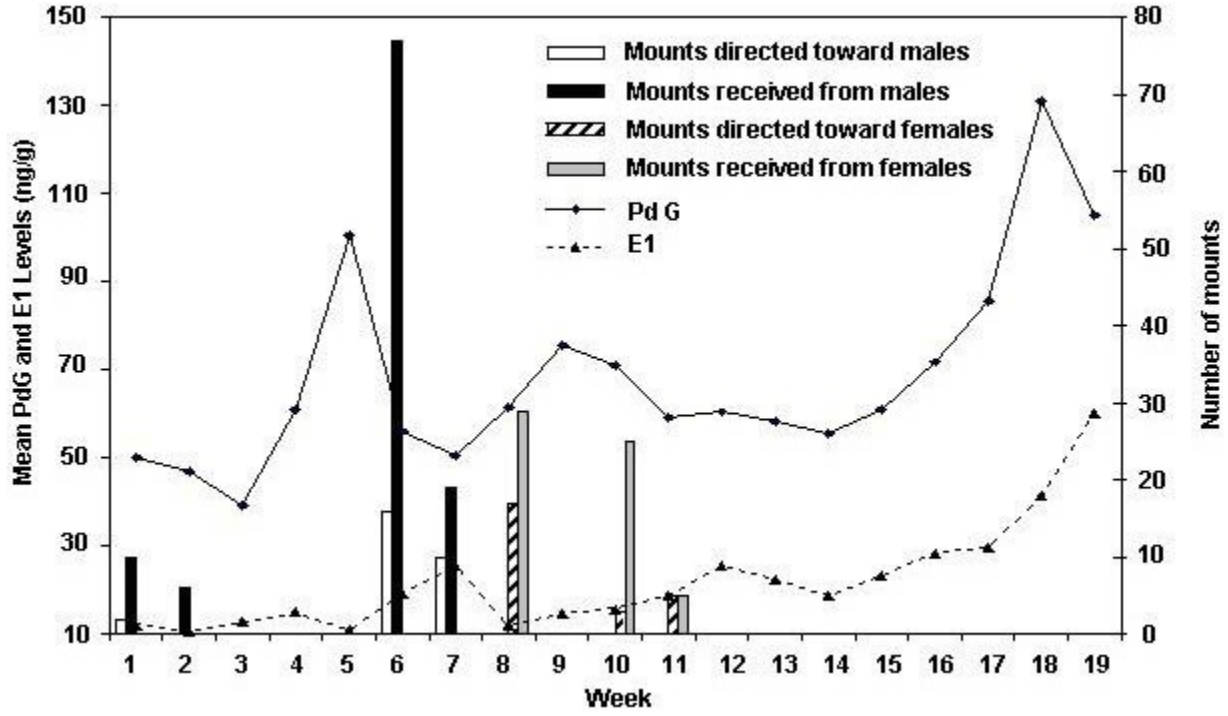

Figure 1: Mean pregnanediol (PdG) and estrone (E1) levels in four Japanese macaque females during the initial 19 weeks of gestation, and total number of mounts observed being received and directed by those females during those weeks.

PdG and E1 levels showed fluctuations in the initial 100 days of gestation. PdG concentrations rose steadily from the time of conception to approximately the 5th week of gestation, followed by a drop in concentration and low levels between weeks 6 and 14, after which PdG levels continue to increase steadily toward term. Although E1 levels followed a similar pattern as that of PdG, the changes in concentration were not as marked during the temporary decline in the 6th to 12th week. This pattern of hormone fluctuations throughout pregnancy is similar to findings on other macaque species (*Macaca mulatta*: Wilson et al., 1982; *Macaca fasicularis*: Stabenfelt & Hendrikx, 1973; *Macaca radiata*: Stabenfelt & Hendrikx, 1972).

We found an association between dropping PdG levels during gestation and the rate of mounting. Decreases in PdG levels during gestation may allow for the expression of proceptivity in females, similar to the effects of decreased PdG levels during the follicular and periovulatory phases of the cycle (O'Neill et al., 2004b).

The majority of post-conceptive mating occurred during weeks 6-11 of gestation, during the period of low PdG levels, as has been previously reported for rhesus monkeys (Bielert et al., 1976) and Hanuman langurs (Sommer, 1993). Although the sample is small, it is worth noting that, while most heterosexual mating activity occurred during weeks 6 and 7, same-sex mating took place in weeks 8 to 11.

The ovary is essential for the production of progestins and estrogens during the first few weeks of gestation, after which the placenta assumes the production of these hormones. Our finding of an increase in PdG and E1 between the 3rd and 5th week of gestation may represent a temporary dual production of these hormones by both the ovaries and the placenta. The subsequent drop in hormones between weeks 6 and 12 may represent a loss of the ovaries' contribution, while the placenta attempts to take its place in the production of progestins and estrogens. Both PdG and E1 levels then begin to recover and continue to rise.

In terms of a proximate explanation for the widely reported pattern of post-conceptive mating in Japanese macaques, we suggest that the temporary drop in PdG levels during the 6th and 11th weeks of gestation may facilitate a false "estrus" or period of proceptivity and attractivity in the pregnant female. Furthermore, if post-conceptive mating does encourage males to behave more tolerantly toward pregnant females and their subsequent infants, then a hormonally-induced period of proceptivity/attractivity during gestation may also be selectively advantageous. More data are required to determine whether a peak in mating activity between weeks 6 and 10 is prevalent in this and other Old World monkey species.

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USDA Inspection Process Changes Can Be Expected

Research facilities may see some changes in their next U.S. Department of Agriculture inspection. Prompted by the Audit Report of Animal Welfare Act (AWA) enforcement issued last fall by the USDA Office of Inspector General (OIG), the Animal & Plant Health Inspection Service (APHIS) is modifying some of its policies and procedures or is clarifying existing requirements. USDA inspectors have been instructed to do the following:

- Verify the accuracy of the number of animals by category reflected in the facility's last annual report. APHIS plans to revise Animal Care Policy #17 to assist facilities in preparing annual reports.
- Adequately sample research protocols, including those for animals not present in the facility at the time of inspection. For this purpose, inspectors may rely on the list of proposed activities for IACUC review that current regulations require be prepared (7 USC Sec. 2.31(d)(2).
- Review all available records, such as acquisition and disposition records for animals other than dogs or cats, if such records are kept.
- Look at the training program for IACUC members. Animal Care Policy #15 has been revised to indicate that IACUC members should be trained in understanding the AWA, protocol review and facility inspection.

Beyond the administrative changes above, APHIS has agreed to propose several revisions to current regulations. As recommended by the OIG, research facilities could be required to identify the number of protocols as well as animals in each pain relief category of their annual reports. IACUCs might be asked to conduct more frequent reviews of facilities deemed to be repeat violators. Also, the OIG directed APHIS to provide a plan for increasing fines imposed on research facilities for violations, a step that necessitates amending the AWA. The National Association for Biomedical Research (NABR) will monitor any regulatory or legislative changes that may be proposed.

If you have questions, comments or concerns, please contact NABR [e-mail: *info@nabr.org*]. NABR is interested in hearing about USDA inspection experiences so that staff will understand members' needs and can better advise others about AWA compliance, as well as represent research interests to regulators. As NABR goes about doing its job, individual research facilities are never identified without expressed permission.

Finding New Homes for Ex-Laboratory and Surplus Zoo Primates

Mark J. Prescott
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Introduction

This article is written to assist organizations which may be considering "rehoming" primates and draws upon the experience of members of the Primate Society of Great Britain (PSGB) Captive Care Working Party.

Rehoming ex-laboratory and surplus zoo primates is not a new concept. A number of New World and Old World monkey and ape species have been successfully rehomed to reputable sanctuaries in Europe and the U.S.A., allowing the animals to live out the remainder of their lives relatively free of human disturbance. Rehoming has been found to benefit the morale of staff members involved with caring for the animals and can help further develop a culture of care. However, the rehoming process can entail welfare costs to the animals involved, depending on, for example, their ages and state of health, the circumstances and duration of transport to the new site, and the physical and social conditions in which the animals will be kept. Primates should thus only be rehomed if it is clear that the process will be truly in the best interests of the individual animals, that it will not harm their welfare, and that the new home offers a good quality of life.

Rehoming and laboratories: Every year around 65,000 primates are used in European and U.S. laboratories, mainly for pharmaceutical safety and efficacy evaluation and research in the fields of microbiology, neuroscience, and biochemistry/chemistry (Carlsson et al., 2004; European Commission, 2005; United States Department of Agriculture, 2004). The majority of these animals are euthanized as an integral part of the experimental procedures. In situations where this is not required, or in the case of former breeding or surplus stock animals, it may be possible to rehome the animals as an alternative. Legitimate sanctuaries will accept ex-laboratory primates but registered zoos tend not to do so because, with the exception of the chimpanzee (*Pan troglodytes*) and cotton-top tamarin (*Saguinus oedipus*), species commonly used in biomedical research and testing (see Conlee et al., 2004; European Commission, 2002) are not priority species for captive breeding for conservation[2].

Rehoming and zoos: Rehoming is also an option for surplus zoo primates no longer capable of being housed at the zoo because of limited space and resources and for which alternative zoo accommodation cannot be found. Surplus animals are those not suitable for breeding because of their pedigree (e.g., over-representation of the bloodline), quality (e.g., poor breeding performance), age (e.g., no longer reproductively viable), or sex (e.g., bachelor males of polygynous species), and hence not needed for the survival of the captive population. Such animals are an inevitable product of captive breeding programs, even where breeding opportunities are carefully controlled through studbooks and effective birth control. Euthanasia of healthy surplus zoo animals to increase available space and the viability of captive populations is justifiable in some cases but is extremely controversial, especially when the individuals involved are of an endangered species. Rehoming to a sanctuary with high standards of animal welfare is a potential solution to this complex problem.

The relocation of surplus zoo animals for use in experimental procedures is generally discouraged because of adverse welfare effects associated with the change from the zoo to the laboratory environment. However, this might be considered acceptable if it can be guaranteed that the animal can be used in a terminal procedure within a short time, and that this could potentially make unnecessary the breeding or capture from the wild of another animal specifically for that purpose (Graham 1996)[3].

Guidance on the Rehoming Process

Rehoming and relocating primates is not something that can be done lightly, both because of the nature of the animals and because of the need to find facilities that can properly accommodate and look after them in the long term. Careful and timely planning of the whole process is critically important (Brent, 2004; Seelig & Truitt, 1999). Any organization setting out to rehome animals should, therefore, have a clearly defined and documented procedure in place which enables all issues relating to animal welfare, health, and safety, the prospective owner, and any participating organizations, to be addressed. The factors that must be considered include:

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[2] A ban on the use of great apes was introduced in the U.K. in 1997.

[3] In the U.K., zoo primates are not placed with laboratories because: i) unless the Secretary of State considers that an exception is justified, animals used under the Animals (Scientific Procedures) Act 1986 must have been bred at a designated breeding establishment or obtained from a designated supplying establishment; and ii) few primate species kept in zoos are commonly used for biomedical research and testing in the U.K. However, animals have been exchanged between zoo and laboratory breeding colonies to maintain genetic diversity and minimize inbreeding.

- the suitability of individual animals;
- the way they will be prepared for their new lives;
- the assessment of the suitability of new homes and owners; and
- follow-up after rehoming.

Selection of suitable animals: Clearly, animals should only be rehomed if they are not suffering or likely to suffer any adverse effects from their experiences in the laboratory or zoo environment[4]. In the case of ex-laboratory primates, there must be careful consideration of any experimental work that has taken place with the animal, and any long-term effects that this may have. It is important to assess any health issues that the experimental work or life in the zoo may have raised and the background health status of the animal. These may affect the likelihood of rehoming, since sanctuaries are obviously reluctant to introduce new transmissible diseases into their colonies, as well as future care and husbandry. The behavioral health, social experience, and character of the individual animals, and whether they are likely to be able to cope in a new environment, should also be considered. In addition, serious thought should be given to permanent sterilization of any animals chosen for rehoming.

Preparation of animals: Rehoming primates usually results in a change of conspecifics, and will certainly involve new human contacts and a different physical environment, all of which may have behavioral consequences for the animals. These must be addressed if rehoming is to be a positive experience. It is important to consider whether each individual animal can learn to cope with a change in what is "normal" in his or her environment. The "normal" environment for a laboratory primate is relatively constant and constrained, and often exclusively indoor. It may offer primate companionship but limited human interaction. In contrast, the environment of a primate in a zoo or sanctuary may be more spacious, complex, and varied, with outdoor and indoor elements, and a variety of experiences with humans. It is therefore vital to have a preparatory phase in any rehoming scheme. Although this could take place immediately prior to release, once rehoming is accepted as a potential option, there is much that can be done within the routine management of both breeding and experimental animals to begin preparation for future potential rehoming. For example, the animals can be socialized to other primates and to humans of either sex and varying appearance, habituated to a transport box, and trained to station (i.e. stay at a particular location) using positive reinforcement techniques (Prescott & Buchanan-Smith, 2003; Prescott et al., 2005a, 2005b). Such activities will assist with capture, transport, and health inspection in the new home. Furthermore, programs of socialization, habituation and training not only make the animals more suitable for rehoming, but also benefit both science and animal welfare, since they lower the animals' stress levels when faced with novel or stressful situations in the laboratory or zoo environment, such as strange humans or scientific, veterinary, or husbandry procedures (e.g. Bassett et al., 2003; Savastano et al., 2003). Ethological or animal training advice should be sought from specialists for the design of such programs.

In view of their highly social nature, primates should never be rehomed alone or into homes without compatible companions of the same species. Formation of compatible pairs or groups prior to rehoming will facilitate integration into the new social group. For advice on animal introductions see Watts & Meder, 1996.

Transport can be a stressful experience for primates (e.g. Honess et al., 2004, 2005; Prescott & Jennings, 2004; Wolfensohn, 1997). It is important, therefore, to use a reputable transport company and to take all steps necessary to ensure their safe arrival in good health and with minimal distress. For guidance on transporting primates, see Swallow et al., 2005. It is recommended that a familiar caregiver be present on the day of introduction of the animals to their new environment and social companions, in order to provide continuity and deal with any potential problems. Maximizing the degree of visual and olfactory familiarity by passing on pen furniture and toys when relocating animals, and ensuring a gradual change in diet, is also likely to be beneficial.

Assessing the suitability of a new home: As with any animal rehoming program, proper matching of the retired primate/s with the new home and prospective owners is a basic condition for success. Primates should only be rehomed to the care of professional and experienced primate keepers (i.e.., from reputable sanctuaries and registered/accredited zoos[5] or laboratory breeding establishments). With few exceptions, private individuals should be considered unacceptable as new owners of primates[6]. Ideally, the prospective owners should have a recommen-

[4] For laboratory primates in the U.K., their fitness for rehoming must be assessed and certified by a veterinarian. For guidance on the discharge of animals from the Animals (Scientific Procedures) Act 1986 see Laboratory Animal Veterinary Association (2001).

[5] In the U.K., establishments that keep animals for exhibition to the public for seven or more days of the year are classified as zoos under the Zoo Licensing Act 1981 and are thereby subject to inspection by qualified inspectors and are required to meet the welfare standards set down in the Secretary of State's Standards of Modern Zoo Practice. Similar inspection requirements apply in Europe under the European Council Directive 99/22/EC, and in the U.S.A. under the Animal Welfare Act.

[6] The PSGB and American Society of Primatologists discourage private ownership of primates due to the difficulties of meeting the complex physical, behavioral, and psychological needs of primates in private homes and the risk of disease transmission <www.asp.org/society/resolutions/private.html>.

dation from the relevant committee of a professional primatological society (e.g., Captive Care Working Party of the PSGB or Captive Care Committee of the International Primatological Society) or zoo association, or from an animal welfare organization that already rehomes primates (e.g., U.K.'s Royal Society for the Prevention of Cruelty to Animals, or the International Primate Protection League).

It is essential to visit prospective homes to check that they can provide a suitably high standard of accommodation and care (e.g. spacious and enriched enclosures, designed with the animals' needs in mind; trained and competent staff and volunteers), that they have good background knowledge of the species and its requirements (e.g. Prescott & Buchanan-Smith, 2004), and that the facilities are secure. Make sure that the prospective owners have any necessary licenses[7], have access to veterinary advice, and can catch the animals if they require treatment. Be aware that identifying, researching, and evaluating candidate homes for the animals can take some time.

Primates have long life spans and prospective new homes may be taking responsibility for many years of the animals' lives, and will also have to make decisions about euthanasia at the end of those lives. It is vital, therefore, to confirm that prospective owners are genuine (e.g., not animal dealers who intend to breed or sell the animals, or give them to a friend), that they intend to care for the animals in the long term, and that they have the financial security to do so. Reputable zoos and sanctuaries know their own limits and usually will not accept animals that they cannot care for; they will also prevent them from breeding. For further useful criteria for distinguishing true sanctuaries from "pseudo-sanctuaries", see Seelig & Truitt, 1999.

Establishments receiving ex-laboratory primates need to be chosen with care as, in some instances, they have portrayed the animals as being "rescued" from the laboratory. This situation can be avoided by ensuring that the receiving establishment and any intermediaries participate in the right spirit, with full knowledge of the reasons for the animals' past use, and that they agree on any public statements that will be made prior to receipt of the animals. Involving primatological societies and animal welfare organizations (as above) will also help in this respect.

Follow-up: Primates may take some time to adjust to their new environment. In view of this, it is important to follow up on animals once they have been placed in their new home, to ensure that their welfare is not compromised and that the rehoming process is successful. Provide contact telephone numbers to the new owners for advice (e.g., a named person under the U.K. Animals [Scientific Procedures] Act 1986 or senior zoo keeper, plus a veterinary practitioner experienced with primates), and request that the new owners give updates of the animals' progress, since this will help determine whether the process itself is successful, as well as whether it is successful for individual animals. It is advisable to undertake behavioral studies to assess how well the animals are settling into their new homes. The output from such follow-up studies should be used to review and improve socialization, habituation, and training programs to facilitate safe and humane rehoming in the future.

[7] In the U.K., a licence is required under the Dangerous Wild Animals Act 1976 for most primate species other than marmosets <www.defra.gov.uk/wildlife-countryside/gwd/animallist.pdf>.

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* * *

"Well, since I can't thumb a ride,
I guess I'll have to **call a bus."**

Thanks to Pierre Abbat, the Punmeister

More Fun with a Barrel Full of Monkeys: A Nonhuman Primate Swing Made by Recycling Plastic Barrels

Ernie Davis
National Institutes of Health

Providing a suitable living environment for many species of socially housed nonhuman primates can be both challenging and expensive, requiring institutions to be innovative and resourceful when devising their enrichment programs. Development, encouragement, and enhancement of species-typical behaviors should be the primary objectives when designing these man-made environments. One innovative way to enhance these behaviors is to incorporate them into the structural setting, since structures and furnishings are vital components of any captive living environment. Structures not only increase the usable cage volume; they also provide animals with greater enrichment opportunities by engaging them in many types of species-typical activities.

The NIH Shared Animal Facilities' enrichment program has developed a primate swing created from recycling our discarded plastic 30- and 55-gallon detergent barrels. These swings are easy to construct and are effective in increasing our animals' behavioral repertoires. Additionally, these swings are safe, portable, non-toxic, easy to sanitize, and almost indestructible. We have used these barrels in our socially-housed monkey runs for over three years, and they are still going strong!

Tool list and other equipment needed:

1. Barrel
2. Power drill and drill bits
3. Jig saw
4. Marking pen
5. Tape measure
6. 3/8" eye bolt, 3" long, and 9/16" nut
7. Length of chain, 3/8 to 5/8" thick
8. Snap hook
9. Hole saw, 1" diameter
10. Piece of 1"-thick x 5"- or 6"-wide x 12" long plastic floor decking (can be bought at home improvement centers or ordered online)
11. Screws – Philips Pan A Tapping #10, 1 ¼" long

Note: *Before starting your project, wash and rinse your barrel thoroughly both inside and out to remove leftover detergent residue.*

To start your project, select a 30- or 55-gallon plastic barrel.

Note that on the barrel's outer surface there is a seam running vertically along the entire length of the barrel on both sides. This seam was produced during the barrel's molding process. You can use this seam as a guide or reference point to find the vertical center of your barrel.

Follow this center seam to the top of your barrel. The "top" of your barrel, for construction purposes, will now be designated as the "bottom" of your swing.

Author's address: Environmental Enrichment Technician, NIH / NICHD Shared Animal Facilities, Poolesville, MD 20842 [e-mail: *daviser@mail.nih.gov*].

We would like to acknowledge Mr. David Cook of Engineered Plastics Systems (EPS), LLC, for providing us with a free sample of EPS decking board.

A version of this paper was presented as a poster at the 2005 meeting of the American Society of Primatologists.

To start construction, follow the vertical center seam to the designated bottom of your swing where the barrel starts tapering inwardly.

At this junction measure outward 8" on each side of the center seam and make a mark with your pen. Once marked, this will give you a total span of 16" in width.

Then go to the opposite side of the barrel and mark out the same measurements at the same location. After this is completed both sides should look identical and be opposite from one another.

Once these bottom marks are established you will need to follow the center seam past one horizontal reinforcement band, to the second band from the bottom.

At this junction and again centered on the vertical seam, measure and mark out 3" on each side of the center seam. This will give you a span of 6". This area will become the top portion of your swing. Repeat on the opposite side.

Now, on each side of the barrel, join all lines together with a straight edge as illustrated in the photo.

Next, cut your swing out as illustrated, leaving the lines intact.

The next part of your production process is to fasten the Decking Board to the top of your swing. This is done by fastening screws to the top end of your swing and to the edges of the decking board as shown in the photo.

Next, with a one-inch hole saw, cut drainage holes into the bottom of your barrel.

The last step in completing this project is to attach your chain and eye bolt to the top of your swing.

The Results

Perching

Swinging

Swingers

Taking It Easy

* * *

Using Recycled Barrel Swings vs. Prima-Hedrons in Primate Enclosures

Kimran E. Miller, Katalin Laszlo, and S. J. Suomi
National Institutes of Health

To document the utility of using recycled barrel swings vs. Prima-Hedrons® as enrichment objects, we observed a socially housed group of 28 tufted capuchins (*Cebus apella*) at the NIH Shared Animal Facility in Poolesville, Maryland. Their indoor enclosure included five Prima-Hedrons and two recycled barrels, among other objects including fixed perches, on which the capuchins could locomote or engage in stationary behaviors.

Figure 1: Prima-Hedrons.

The Prima-Hedrons and barrels were of a similar size. We collected data on the location of the focal animal within the enclosure every 30 seconds during 5-minute focal observations on each animal per day (October 2004 to May 2005, n = 70 days). We calculated frequencies of object use by dividing the number of times an animal was located on an object by the total number of location data points collected for that animal.

We calculated an average frequency of use for Prima-Hedrons and for barrels, for each animal. We found no significant difference in the average frequency of use of hanging Prima-Hedrons vs. hanging barrels (Wilcoxon matched pairs test, n=28, W=73.0, p=0.12). Our results indicate that recycled barrels may be used as a viable alternative to Prima-Hedrons for enriching enclosure use.

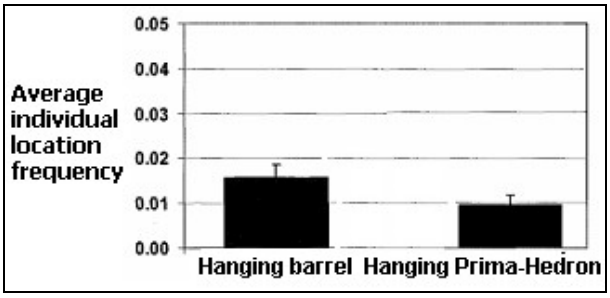

Figure 2: Average frequency of use of two enrichment objects.

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Volunteers Wanted – South Africa

Monkey Town, near Cape Town, South Africa, is looking for experienced primate keepers to come as volunteers for 3-12 months (accommodations would be provided) to help with over 200 primates. Volunteers are needed for the second half of this year and for next year.

The park has chimps; gibbons; baboons; liontailed macques; whitefaced sakis; squirrel, owl, Goeldi's, and spider monkeys; marmosets and tamarins; capuchins; and lemurs. See <www.monkeys.co.za> for more information about Monkey Town. To volunteer, or get more information about volunteering, contact Nina von Boemcken by e-mail at <*primatecare@aol.com*].

Is a Swimming Pool Safe for Macaques? A Discussion

The following discussion took place on the Laboratory Animal Refinement & Enrichment Forum (LAREF) among Heather Kirby [e-mail: *hkirby@wfubmc.edu*], Wake Forest University; Jill Rawlins [*rawlinsj@ohsu.edu*], Oregon Primate Research Center; Polly Schultz [*schultz11@earthlink.net*], Wisconsin Primate Research Center; and Natasha Down [*ndown@yorku.ca*], York University. The posted contributions have been edited by Viktor Reinhardt [*viktor@snowcrest.net*], moderator of the forum.

Kirby: "The center where I work has several long-tailed macaque breeding colonies housed in large outdoor enclosures. I am interested in using stock tanks to provide foraging opportunities in the winter and swimming opportunities in the summer. I have heard that cynos are adept swimmers, but is there is a risk of drowning, particularly for infants? Is there danger of one monkey inadvertently drowning another monkey?"

Rawlins: "The stock tanks we use have a lip half way up the inside of the tank, so if an infant would fall into the water it could easily get back out. We used these tanks all of last summer and half of the summer before and never encountered any problem. The monkeys who do go under water hold their breath for a surprisingly long time."

Schultz: "I have watched juvenile cynos three months old and older swim with no difficulty. I have never come across one who can't swim. It seems to be a very natural, instinctive skill for them that they do not have to learn. The only time we had a problem — or let's say 'near problem' — was when an adult female was swimming underwater, and a big male was playing around, like a cat chasing after a mouse, from outside of the pool, and finally jumped on her back. He put his hands around her neck and appeared to be deliberately holding her under in the 3-feet-deep water. After about 15 seconds I panicked, as I thought he was actually drowning her. I rushed to the scene to 'interfere', but just at that point he released her and retreated. She shot out of the water like a rocket and was REALLY angry with him, screeching and with rage in her eyes. He looked surprised, and as if he had made a significant error, ran screaming away from her as she chased him down and bit him a good one and repeatedly slapped and pinched him. The whole time he was acting submissively toward her, lip smacking wildly, and ducking as she continued to clobber him.

"The two have been in the pool together many times since then, but the female never takes her eye off the male even when she's under water (as cynos dive with their eyes open).

"With regard to infants I would perhaps be concerned with a tank if there is not a really easy way for them to crawl out. I would place PVC tubing arranged like branches of a submerged tree sticking out of the water and providing a bridge between water and the safe rim of the pool.

"Macaques not only enjoy being in water but also playing with water (*Figure 1*)."

Figure 1: Playing on the "bathtub".

Down: "We used to give two pair-housed rhesus girls a 'bathtub' on Fridays. The tub was simply a rat cage filled with water placed in the tunnel of the two interconnected cages (*Figure 2*). *Tejas* would go under water and keep her eyes open. The other girl, *Kuaui*, would dive with her eyes and mouth open! Since the rat cage was transparent, I could see everything. The two were quite hilarious! I am surprised they could fit themselves into the 'bathtub' but they loved it! *Tejas* once held her breath while under water for 15 seconds. This is quite impressive, as they were both scared of the tub when I very first introduced it!"

Figure 2: Playing in the "bathtub".

Reinhardt: There are a few published articles on the successful use of shallow-water swimming pools for

rhesus and long-tailed macaques — especially juveniles — and for marmosets. Safety or hygienic problems are not mentioned in any of these papers. Here are the references in chronological order, each with a short annotation:

Gilbert, S. G., & Wrenshall, E. (1989). Environmental enrichment for monkeys used in behavioral toxicology studies. In E. F. Segal (Ed.), *Housing, care and psychological wellbeing of captive and laboratory Primates* (pp. 244-254). Park Ridge, NJ: Noyes Publications.

Young cynos adapt easily to water and are instinctively good swimmers. They will dive with their eyes open looking for raisins and playing with each other.

Anderson, J. R., Peignot, P., & Adelbrecht, C. (1992). Task-directed and recreational underwater swimming in captive rhesus monkeys (*Macaca mulatta*). *Laboratory Primate Newsletter, 31*[4], 1-4.
<www.brown.edu/Research/Primate/lpn31-4.html#swim>

Facilitating thermoregulation and increasing social play are two reasons to consider a swimming facility to be a cheap and clean environmental enrichment.

Hazlewood, S. J. (2001). From beagles to marmosets – The development of a marmoset breeding cage. *Animal Technology, 52*, 149-152.

The provision of water baths was found to be of little interest to marmosets, who only used it as a toilet!

Rock, A., Azzarano, J., Adams, K., Murray, L., & Clark, L. P. (2004). Swimming pools provide additional socialization to group-housed male macaques. *Tech Talk, 9*[4], 1-2.

A group of five subadult male macaques [probably rhesus] adapted easily to a wading pool filled with about 30-cm-deep water. The animals swam and dived with eyes open and played in the water.

Rawlins, J. (2005). Stock tanks for yearlong primate enrichment. *Tech Talk, 10*[3], 1-2.
<www.aalas.org/pdfUtility.aspx?pdf=TT/10_3.pdf>

Stock tanks are used year-round as enrichment devices for group-housed rhesus macaques — for swimming and playing in about 30-cm-deep water during the summer and foraging during the winter.

* * *

Donations Sought for Sylvia Taylor Memorial Session

As announced in the April, 2006, issue of the *LPN*, on August 14, 2006, as part of its annual meeting, the Animal Behavior Society (ABS) will host a special session, called "Primate Behavior Studies: Essential to Primate Welfare," to explore the relationship between a knowledge of primate behavior and the ability to provide for the welfare of primates, both in the wild and in captivity. This session will be held in memory of Dr. Sylvia Taylor, an active ABS member and the primate field specialist for the USDA, APHIS (Animal Care), at the time of her unexpected death in 2005.

While the Animal Behavior Society will be hosting this special session, it will not be providing any additional funding to underwrite the appearance of the speakers. Therefore, donations are needed to ensure that the speakers will be available to make their planned presentations. Organizations or individuals willing to sponsor one or more speakers may do so for a donation of $1,000 per speaker, and their sponsorship will be recognized during the introduction of the speaker(s). It is hoped that the proceedings of this session will be published, and it is planned to recognize all donors if such proceedings do become available, unless a donor wishes to remain anonymous.

The speakers will be (tentatively, at this time) Sue Savage-Rumbaugh, David Seelig, Gail Laule, Steve Schapiro, Kate Baker, Linda Brent, Terry Maple, and Elizabeth Lonsdorf.

Any funds collected in excess of the expenses of producing the special session and the proceedings will be used to fund a research grant in Dr. Taylor's honor. Donations may be may be made online at <www.animalbehavior.org/Conference/Snowbird06/Scientific-Program/sylviataylorsession/sylviataylordonations.htm> or mailed to The Sylvia Taylor Memorial Fund, Animal Behavior Society, 2611 East 10th St, Bloomington IN 47408-2603. For more information, contact Steve Ramey of ABS [812-856-5541].

* * *

Proposed Amendment to Animal Welfare Act

On April 28, USDA's APHIS announced a request for comments, **due June 26, 2006**, on a proposed rule that would amend Animal Welfare Act regulations requiring the use of shift cages for moving and transporting potentially dangerous animals, including nonhuman primates and other species. This proposed rule would require the use of shift cages for gorillas, chimpanzees, orangutans and "other nonhuman primates". There is concern about how this rule would affect the research community. The proposed rule is located in the Federal Register Vol. 71, No. 82, Friday, April 28, 2006, 9 CFR Part 2, APHIS Docket No. APHIS-2005-0118.

To view the Federal Register announcement online go to: <www.gpoaccess.gov/fr/index.html> and enter the phrase "shift cages" into the search field. To submit comments online, go to <www.regulations.gov> and search for Docket ID APHIS-2005-0118.

* * *

Resources Available

Enrichment for Nonhuman Primates

The NIH's Office of Laboratory Animal Welfare (OLAW) has announced a new resource on enrichment for nonhuman primates, developed in concert with the Association of Primate Veterinarians, the American Society of Primatologists, and USDA Animal Care. This resource is divided into six booklets that serve as an introduction to the basic behavior and environmental enrichment of species commonly used in education, research, and entertainment. The booklets are intended to be primers because they provide a basic introduction to the subject of environmental enrichment for primates housed in a diversity of conditions. The booklets may be downloaded as PDF files from <grants.nih.gov/grants/olaw/request_publications.htm>, where instructions are also available for requesting hard copy (delivery may take 5-6 weeks).

The booklets are *Baboons*, NIH Pub No. 05-5745; *Capuchins*, NIH Pub No. 05-5746; *Chimpanzees*, NIH Pub No. 05-5748; *Macaques*, NIH Pub No. 05-5744; *Marmosets and Tamarins*, NIH Pub No. 05-5747; and *Squirrel Monkeys*, NIH Pub No. 05-574.

Used NHP Caging Available

Lab4less, at <www.Lab4less.com>, has a large variety of surplus nonhuman primate caging available: – baboon, macaque, squirrel monkey, marmoset, etc. – aluminum and stainless steel, auto and manual water, pushback, on racks and on casters. Please visit our Website and search "For Sale" then the Category "NHP caging" for available inventory. We also have many items not yet listed on the Website, so if you don't see what you are looking for, contact Ian Gardner, Lab4less, LLC [619-222-4940; e-mail: *igardner@lab4less.com*].

NIH Curriculum Supplements for Middle Schools

The National Institutes of Health (NIH) is releasing its latest installments in a popular series of curriculum supplements designed to promote inquiry-based, interdisciplinary learning and stimulate students' interest in science. NIH distributes these supplements free of charge to teachers, allowing them to update their curricula with all-in-one teaching materials that incorporate topical issues and current scientific research.

Each new supplement is a self-contained teacher's guide to two weeks of lessons on science and human health, and includes background information, lesson plans, take-home materials, and a Web-based component. The new titles (listed below) are aligned with the National Science Education Standards released by the National Academy of Sciences.

- "Doing Science: The Process of Scientific Inquiry" – Students explore the basics of scientific inquiry, refine their critical-thinking skills, and learn to appreciate the purpose of scientific research. (Grades 7-8)
- "Looking Good, Feeling Good: From the Inside Out (Exploring Bone, Muscle, and Skin)" – Students learn about the structures of the musculoskeletal and skin systems, the interactions between these body systems, and the factors that influence their functions. (Grades 7-8)
- "The Science of Mental Illness" – Students gain insight into the biological basis of mental illness and how scientific evidence and research can help us understand its causes and lead to treatments and, ultimately, cures. (Grades 6- 8)

NIH produced these modules in partnership with curriculum developers from Biological Sciences Curriculum Study (BSCS), a nonprofit corporation located in Colorado Springs, Colorado. A team of top scientists and educators developed the modules, which were field-tested by teachers and students across the country.

To request these curriculum supplements or learn more about this series, visit the NIH Office of Science Education Website at <science/education.nih.gov/supplements>. – *NIH News Release, June 9, 2006, available online at* <www.nih.gov/news/pr/jun2006/od-09.htm>

WAZA's Virtual Zoo

"The World Association of Zoos and Aquariums (WAZA)'s Virtual Zoo is open to the public! To visit, go to <www.waza.org> and click on the button 'VIRTUAL ZOO' on the left side of the screen.

"As in real life, a zoo is never complete. The VIRTUAL ZOO is still a construction site, but we have a collection of 266 taxa. There is a thumbnail picture for each taxon, as well as some basic information such as scientific and common names; taxonomic, conservation, and CITES status; distribution; and habitat. Under the heading "Did you know?" there are some fun facts on each species. Where available, information on the size of wild and zoo populations is provided. The fact sheets contain 868 photos and 262 distribution maps.

"We have received assistance from about 30 people in the WAZA Community who provided texts, and many more who provided pictures. To complete the first phase of the Zoo, however, about 200 photographs and 600 texts are needed. There may be errors in the existing texts, and there are a few photographs we may have stolen from your Websites without asking you (the vast majority have been taken by me or made officially available by members and partners). In a number of cases it is not yet acknowledged where a picture had been taken. Any identification assistance you could provide would be greatly appreciated and any comments will be welcome.

"Visit regularly, as existing data sheets will be permanently updated and more species will be added to the collection!" – *from Peter Dollinger, Executive Director, WAZA, P.O.Box 23 , CH-3097 Liebefeld-Berne, Switzerland [++ 41-31-300 20 30; fax: ++ 41-31-300 20 31; e-mail:* secretariat@waza.org*].*

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Announcements from Publications: *ILAR e-Journal*

If you have a manuscript that relates to science-based, high-quality, humane care of animals, novel animal or other biological models for the study of disease, or any other topic pertinent to the mission of the Institute for Laboratory Animal Research (ILAR), you may submit it for publication in the new *ILAR e-Journal.* While the theme-based quarterly issues of *ILAR Journal* will not change, the *ILAR e-Journal* will address the need for more published information on these topics. All submitted manuscripts will be peer reviewed. All published articles will be fully indexed online and will have the same visibility as *ILAR Journal* articles that appear originally in print. Interested authors should follow the *ILAR Journal* Instructions to Authors: <dels.nas.edu/ilar_n/ ilarjournal/instructions_to_authors.shtml>; e-mail manuscripts to <*ILAR@nas.edu*>; and include "Prospective MS" on the Subject line of the e-mail.

ILAR e-Journal is available ONLY ONLINE. Institutional members have online access to current *ILAR Journal* and *ILAR e-Journal* issues. For more information, contact Kathleen Beil [e-mail: *Kbeil@nas.edu*].

* * *

Travelers' Health Notes: International Assn for Medical Assistance to Travelers

The International Association for Medical Assistance to Travelers (IAMAT), a volunteer group, compiles an annual list of doctors around the world who meet the organization's criteria, who speak English or another second language, and who agree to charge a specific fee. The 2006 Directory lists the current schedule of fees as US$80 for an office visit, US$100 for a house (or hotel) call, and US$120 for night, Sunday, and local holiday calls. These fees do not include consultants, laboratory or surgical procedures, hospitalization, or other expenses. The current listing of doctors and centers includes 93 countries, plus a listing of mental health resources in 16 countries (five of which are not listed in the "Medical Resources" section).

IAMAT also publishes and provides to its members pamphlets on immunization, schistosomiasis, and malaria, as well as "World Climate Charts" and a "Traveller Clinical Record" form. IAMAT has a scholarship program for physicians from developing countries to attend travel medicine training courses in North America.

For information, contact IAMAT, 40 Regal Rd, Guelph, Ontario, N1K 1B5, Canada [519-836-0102]; 1623 Military Rd, #279, Niagara Falls, NY 14304-1745, U.S.A. [716-754-4883]; 206 Papanui Rd, Christchurch 5, New Zealand; or 57 Voirets, 1212 Grand-Lancy-Geneva, Switzerland [e-mail: *info@iamat.org*]; or see <www.iamat.org>.

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Positions Available

Laboratory Animal Veterinarian – Bethesda

SAIC-Frederick, Operations and Technical Support contractor for the National Cancer Institute (NCI), has an excellent opportunity for a laboratory animal veterinarian, supporting and contributing to research at the NCI in Bethesda, Maryland. We are looking for a veterinarian with at least one year of experience working with nonhuman primates. The position will include overseeing facility technical staff, providing medical care to macaques; surgical, endoscopic, and laparoscopic service and support; oversight of at least one mouse facility; IACUC membership; and possible research collaboration involving a novel AIDS vaccine. As a member of the Laboratory Animal Science Program team in Bethesda, this veterinarian will be supported by three ACLAM-certified veterinarians. Our animal program is fully accredited by AAALAC International and includes a diverse, energetic, and high-performing, cooperative staff.

"SAIC" is Science Applications International Corporation, an employee-owned Fortune 500 company. Employee ownership is credited in part to the great success of the company, and stock ownership is currently spread across its 43,000 employees. Our corporate environment promotes continuing education, professional growth, technology application and development, quality business management, and unquestionable ethical conduct.

For more information, contact John U. Dennis (contractor), Animal Program Director, NCI–Bethesda, LASP, SAIC-Frederick, Bldg 31, 4A34, Bethesda, MD 20892-2471 [301.496.1866; fax: 301.402.1276; e-mail: *dennisj@mail.nih.gov*].

Research Specialist – Princeton University

The Department of Ecology and Evolutionary Biology at Princeton University seeks a full-time research specialist for work on the Amboseli Baboon Research Project. This position entails maintaining and updating a large relational database containing long-term behavioral, ecological, and demographic data from a field study of wild baboons. Maintenance of the database requires accuracy, integrity, and precise protocol documentation for the addition of new data and revision of current data sets. Data extraction and statistical analysis will be required for use in presentations, grant proposals, and publications. The ability to coordinate with project collaborators and assist in the supervision of undergraduate and graduate student research projects is necessary, especially when the Principal Investigator is in the field.

Requirements: bachelor's degree in relevant field, course work and research experience in behavioral ecology and evolutionary biology, experience with relational database management, ability to use elementary statistics, and excellent organizational skills. Familiarity with Windows-based computer programs and the SQL computer language would be a plus.

To apply, please send resume by e-mail (preferred) to <*jinl@princeton.edu*>, with subject "Research Specialist Application". Or send resume by regular mail to Jin Lee, Dept of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ 08544. Princeton University is an affirmative action/equal opportunity employer.

Senior Animal Program Veterinarian – Bethesda

SAIC-Frederick, Inc., has an excellent opportunity for a Senior Animal Program Veterinarian supporting and contributing to research at the National Cancer Institute (NCI) in Bethesda, Maryland. We are looking for a DVM or VMD with at least seven years of experience in the field of laboratory animal medicine, which includes previous experience handling and caring for nonhuman primates. The selected candidate will provide direct oversight of medical and surgical care of nonhuman primates and rodents, oversee technical staff, and provide collaborative research support to the AIDS Vaccine Program. The candidate will also serve on the IACUC, have a key role in overseeing and contributing to the NCI Animal Program, and may be designated as Associate Director.

As a member of the Laboratory Animal Science Program team in Bethesda, you will be supported by three ACLAM-board-certified veterinarians. The NCI animal program includes state-of-the-art animal research practices and cutting-edge research. It is fully accredited by AAALAC International and includes a diverse, energetic, and high-performing cooperative staff. Furthermore, the position is based on the NIH main campus and is part of the NIH Intramural Research Program, which includes approximately fifty other laboratory animal veterinarians.

We offer an excellent salary and benefits program, including medical, dental, and life insurance; 401(k) retirement savings plan; and educational assistance. For information about the benefits of employee ownership, see <www.saic.com/empown>.

SAIC-Frederick, Inc., a subsidiary of SAIC, is the Operations and Technical Support Contractor for the National Cancer Institute at Frederick (NCI-Frederick), a federally funded research and development center. SAIC-Frederick, Inc., is one of four related NCI contractors onsite and serves as the infrastructure support for the entire center. The contract is the largest single research contract awarded by the Department of Health and Human Services (DHHS).

For immediate consideration and to see the full job description, see

<cp-its-rmprd.saic.com/MAIN/careerportal/Job_Profile.cfm?szUniqueCareerPortalID=85&szOrderID=58403CareerPortalID=85&szOrderID=58403>.

For questions or to send your resume please contact: Jaime Conley, Employment Specialist [e-mail: *jconley@ncifcrf.gov*]. SAIC values diversity in the workplace. EEO M/F/D/V.

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Two Positions at CERCOPAN in Nigeria

The Centre for Education, Research and Conservation of Primates and Nature (CERCOPAN) in Cross River State, Nigeria, is seeking to fill two positions. For information about CERCOPAN, see <www.cercopan.org>.

Deputy Director

This person will be responsible for the overall operational management and smooth running of the organization. This includes many different areas, such as management and recruitment of staff and volunteers, training and development, overall responsibility for management of projects and programs (e.g. education, community, research, primate rehabilitation, ecotourism, forest conservation, and partnership projects), management of staff house and offices, health and safety, and accounting and administration. S/he also has a strong role to play in the development of the organization, working closely with the Director on fundraising, marketing, and profile-raising; program and strategic planning; and budget projection and management. S/he will make regular reports to the Director and Trustees of CERCOPAN.

Educational qualification is, at minimum, a B.Sc. (honors) degree in conservation, environmental resource management, or zoology. A professional management qualification or master's level degree would be desirable. Other qualifications are a full clean driver's license and a "First Aid at Work" certificate, plus expertise in at least two of the following areas: conservation research, animal rehabilitation, environmental education, veterinary nursing, and community development. We also expect at least one year of work experience in Africa; at least three years' experience in the field of conservation; a proven history of managing organizations or large national projects/programs; a proven history of managing accounts and budgets; a proven history of staff management; implementation and reporting on medium scale grants using logical frameworks; fundraising experience; excellent administration and report-writing skills; good computer skills; experience representing an organization at local and national levels; a proven history of capacity-building within an organization; strong leadership and team-building skills; a proven record of building partnerships; and public speaking and media presentation skills, as well as a good understanding of African conservation issues and how they relate to global issues.

This person should have flexibility and the ability to adapt to extreme situations; be hardworking, self-motivated, fair, and consistent; have humility and the ability to work for the overall goal rather than for personal gain; have excellent communication, with both verbal and written skills and excellent organizational skills; and empathy for wildlife conservation and animal welfare.

This position begins September 1st, 2006. Terms are dependent on duration of contract, but we expect two years at minimum, with three years preferred.

Volunteer Veterinarian

This position involves managing the veterinary program for a busy (over 100 primates of six rainforest species) rehabilitation and conservation project in southern Nigeria. Duties include management and training of primate care staff, training veterinary nurse, developing and implementing a program of training Nigerian veterinary interns (final-year students or recent graduates), training a newly employed national veterinarian, monitoring preventive medicine, following reintroduction and quarantine protocol guidelines, and coordinating veterinary activities. The position is voluntary: room, board, and a Sterling stipend are provided, as are flights (from Europe/U.K. only); minimum contract is one year, preferably two years. This is a challenging and rewarding position for anyone interested in making a contribution to primate conservation. Starting date is August 1st, 2006. Deadline for applications is June 30, 2006.

To apply for either position, send a full letter of introduction, a resume or CV, and references to Zena Tooze, Director, CERCOPAN [e-mail: *zena@cercopan.org* or *cercopan@compuserve.com*].

* * *

Address Change

The Pan African Sanctuary Alliance (PASA)

headquarters: PASA, P.O. Box 86645, Portland, Oregon 97206-9998.

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Awards Granted

IPS Conservation Grants and Award Winners

The International Primatological Society is pleased to announce the winners of the 2005 Galante and Southwick Awards and Conservation Grants. Information on these awards and application procedures can be found at: <pin.primate.wisc.edu/ips/ipsfunding.html>.

The winner of 2005 Galante Award is Inza Kone, of the Laboratory of Zoology, University of Cocody, Abidjan, Côte-d'Ivoire, and Centre Suisse de Recherches Scientifiques en Côte-d'Ivoire.

The winners of 2005 IPS Conservation Grants are: • Pamela Cunneyworth: *Conducting a census of the rare Angolan black and white colobus monkey (*Colobus angolensis palliates*): Comparing populations over time in an "hyper-hot" biodiversity area.* • Ilaria Agostini: *A population assessment and comparative study of two howler monkeys (*Alouatta guariba *and* Alouatta caraya*) living in sympatry*. • Tharcisse Ukizintambara: *Status of L'Hoest's monkey (*Cercopithecus lhoesti*) in Bwindi Impenetrable National Park, Uganda: Habitat characteristics, edge effects, intra-specific behavioral ecology and conservation*. • Kimberley Williams-Guillen: *Survey and assessment of primate populations in Chococente Wildlife Refuge, Nicaragua*. • Melissa Remis: *Assessing human impact on forest mammals in the Dzanga-Sangha Reserve, Central African Republic*.

Wilson Ateh, the Education Officer of the Limbe Wildlife Center in Cameroon, won the Charles Southwick Conservation Education Commitment Award. Ateh will receive US$750 for his achievement, with another US$250 for an education program at Limbe. Ateh has helped Limbe establish one of the most successful and comprehensive conservation education programs among Pan African Sanctuary Alliance (PASA) sanctuaries, and will take part in the PASA Conservation Education Symposium that will be held June 28th at the IPS 2006 Conference in Entebbe, Uganda. For information, see <www.panafricanprimates.org>.

2005/2006 ABS Research Grant Results

The Animal Behavior Society received 131 completed applications this year for Student Research Grants, the E. O. Wilson Conservation Award, and Cetacean Behavior and Conservation Awards. Funds were sufficient to support 28 proposals. The E. O. Wilson Conservation Award was given at $1,000, and one Cetacean Award was funded at $500. Among the Student Research Grants, 13 were funded at $1000 and a further 13 at $500. A committee of 13 ABS members reviewed proposals; funding decisions were based on the scores and evaluations provided by these reviewers.

Among the winners were • Sarah Benson-Amram, Michigan State University, for *Social complexity and comparative general intelligence in mammalian carnivores*; • Cindy Lee Carlson, University of Chicago, for *Postcopulatory sexual selection and female reproductive strategies in pigtailed macaques*; • Stacy Marie Lindshield, Iowa State University, for *The black-handed spider monkey (*Ateles geoffroyi ornatus*) in a mosaic landscape at El Zota Biological Field Station, Costa Rica*; and • Kara Nuss, University of Chicago, for *Behavioral and hormonal aspects of pair formation in captive Goeldi's monkeys*.

For a complete list of winners, see <www.animalbehavior.org/ABSGrants>.

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Call for Award Nominations: Fyssen Foundation 2006 Prize Fellowships

The Fyssen Foundation's general aim is to "encourage all forms of scientific enquiry into cognitive mechanisms, including thought and reasoning, that underlie animal and human behavior, their biological and cultural bases, and phylogenetic and ontogenetic development."

An International Prize of 50,000 Euros is awarded annually to a scientist who has conducted distinguished research in the areas supported by the Foundation. This prize was awarded in 1980 to Professor Andre Leroi-Gourhan; in 1981 to Professor William H. Thorpe; in 1982 to Professor Vernon B. Mountcastle; in 1983 to Professor Harold C. Conklin; in 1984 to R. W. Brown; in 1985 to P. Buser; in 1986 to D. Pilbeam; in 1987 to D. Premack; in 1988 to J. C. Gardin; in 1989 to P. S. Goldman-Rakic; in 1990 to J. Goody; in 1991 to G. A. Miller; in 1992 to P. Rakic; in 1993 to L. L. Cavalli-Sforza; in 1994 to L. R. Gleitman; in 1995 to W. D. Hamilton; in 1996 to C. Renfrew; in 1997 to M. Jouvet; in 1998 to A. Walker; in 1999 to B. Berlin; in 2000 to J. Fuster; in 2001 to P. Marler; in 2002 to P. N. Johnson-Laird; in 2003 to M. I. Posner; and in 2004 to M. Tomasello. The topic for the 2006 prize: Evolution of Human Societies.

Nominations must be proposed by recognized scientists, and should include: a CV of the nominee; a list of publications; and a summary (four pages maximum) of the research work upon which the nomination is based. Nominations should be sent in 15 copies to the Secrétariat de la Fondation Fyssen, 194, rue de Rivoli, 7500l Paris, France. Deadline for receipt of nominations is October 31, 2006.

Grants Available

Oral Biology of HIV Infection

The National Institute of Dental and Craniofacial Research (NIDCR; <www.nidcr.nih.gov>) has posted a Funding Opportunity Announcement (FOA), soliciting applications that will use nonhuman primate models to study the oral biology of HIV infection and the oral complications associated with AIDS. This is an exploratory/developmental award with limited funding that is designed to maximize the use of animals currently involved in ongoing studies. Studies that will increase our knowledge of the basic biology, pathogenic mechanisms, immunology, diagnosis, treatment, and prevention of oral HIV/AIDS in simian macaque models are requested. Exploratory projects in emerging areas of importance for oral manifestations of AIDS and other acquired immunodeficiencies are of particular interest. It is expected that investigators will base their studies on recent developments in the field and will make use of the new and emerging state-of-the-art technologies.

This FOA will utilize the Exploratory/Developmental (R21) grant mechanisms. The anticipated number of awards will depend upon the mechanism numbers, quality, duration, and costs of the applications received. The total project period for an application submitted in response to this funding opportunity may not exceed two years. Direct costs are limited to $275,000 over an R21 two-year period, with no more than $200,000 in direct costs allowed in any single year.

This is a reissue of PAS-04-066, which was previously released February 24, 2004. Applications submitted in response to this FOA must be submitted electronically through Grants.gov <www.grants.gov>, using the SF424 Research and Related (R&R) forms and the SF424 (R&R) Application Guide. **APPLICATIONS MAY NOT BE SUBMITTED IN PAPER FORMAT.** A registration process is necessary before submission and applicants are highly encouraged to start the process at least four weeks prior to the grant submission/receipt date. Expiration date of this FOA is January 3, 2007. To download a SF424 (R&R) Application Package and SF424 (R&R) Application Guide for completing the SF424 (R&R) forms for this FOA, link to <www.grants.gov/Apply> and follow the directions provided on that Website. For further assistance, contact GrantsInfo [301-435-0714; e-mail: *GrantsInfo@nih.gov*].

For scientific questions, contact Mostafa Nokta, Center for Integrative Biology & Infectious Diseases, NIDCR, Bldg 45, Rm 4AN-18H, Bethesda, MD, 20892-6402 [301-594-7985; fax: 301-480-8319; e-mail: *Mostafa.Nokta@nih.gov*].

Developmental Psychopharmacology

A Funding Opportunity Announcement (FOA) by the National Institute of Mental Health (NIMH), the National Institute of Child Health and Human Development (NICHD), and the National Institute on Drug Abuse (NIDA) requests research applications to examine the neurobiological impact of psychotherapeutic medications upon the immature brain, with particular emphasis upon mapping the precise developmental profile of physiological response to psychotropic agents used in the treatment of mental disorders in children. Responsive research includes studies in model systems, including nonhuman primates in particular, and in human populations. For detailed information, see <grants.nih.gov/grants/guide/pa-files/PA-06-379.html>.

NHP Islet/Kidney Transplantation Tolerance

The National Institute of Allergy and Infectious Diseases (NIAID) and the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) invite new or competitive renewal applications from single institutions and consortia of institutions to participate in the Non-Human Primate Transplantation Tolerance Cooperative Study Group (NHPCSG) program. The goals of the NHPCSG are to evaluate the preclinical safety and efficacy of existing and newly developed immune tolerance induction regimens and to elucidate the underlying mechanisms of the induction, maintenance, and/or loss of tolerance in nonhuman primate (NHP) models of islet, kidney, heart, and lung transplantation. Currently funded NHPCSG research projects of islet and kidney transplantation tolerance models expire in FY 2007. This Request for Applications is a renewal of that portion of the program focused on NHP islet and kidney models. For details, see <grants.nih.gov/grants/guide/rfa-files/RFA-AI-06-018.html>.

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Meeting Announcements

The **Marmoset Research Group of the Americas** will hold its **Second Meeting** August 15-16, 2006, at the Southwest National Primate Research Center in San Antonio, Texas. For details, see <www.marmosetresearchgroup.org>.

The **Twenty-Ninth Meeting of the American Society of Primatologists** will be held at the Hyatt Regency in San Antonio, Texas, from August 16-19, 2006. For details, see <www.asp.org/asp2006/index.htm>.

The **9th World Congress of Veterinary Anaesthesiologists** will be held from September 12-16, 2006, in Santos, a coastal city located a 1.5 hour drive from São Paulo, Brazil. See <www.cbcav.org.br/congresso>.

On September 13 and 14, 2006, Cornell University and the Office of Laboratory Animal Welfare of NIH will co-sponsor **"Practical Approaches to Managing Occupational Health Programs in Your Animal Facility"** at the Statler Hotel in Ithaca, New York. For information about the conference and for the registration form, see <www.research.cornell.edu/care/conference.htm>.

The **34th Association of Primate Veterinarians Annual Workshop** will be held in Park City, Utah, October 12-14, 2006. The registration form is available at <www.primatevets.org/workshops.asp>.

The **American College of Veterinary Pathologists,** along with the **American Society for Veterinary Clinical Pathology,** will hold their **Annual Meeting** December 2-6, 2006, in Tucson, Arizona. There will be six specialty groups: Clinical Pathology, Diagnostic Pathology, Education, Experimental Disease, Natural Disease, and Toxicologic Pathology. For details, see <www.acvp.org/meeting> or contact Jane Shepard, 7600 Terrace Ave, Suite 203 Middleton, WI 53562 [608-833-8725].

The **2007 Animal Behavior Management Alliance Conference** will take place on board the Carnival Cruise ship "Victory" January 14-21, 2007, providing a rare occasion for innovative programming and conference design. The amount of time available for educational exchange during this conference increases due to the setting, and this venue decreases the price! See <www.theabma.org/events.asp>, or contact Michelle Farmerie [412-365-2385; e-mail: Mrfarmerie@aol.com] or Nicole Begley [412-323-7235; ext. 216] for more information about the conference. The registration deadline is August 1, 2006. Abstracts are due June 28, 2006. Keynote speakers will include Anne Savage, of Disney's Animal Kingdom, speaking on the Proyecto Titi program, and Charlene Jendry, of the Colombus Zoo and Aquarium, on the Partners in Conservation program.

The Lester E. Fisher Center for the Study and Conservation of Apes at Lincoln Park Zoo is proud to announce **The Mind of the Chimpanzee**, an international multidisciplinary conference on chimpanzee cognition, March 22-25, 2007, at Lincoln Park Zoo, Chicago, Illinois. In the tradition of the "Understanding Chimpanzees" conferences, which started in Chicago 20 years ago, "The Mind of the Chimpanzee" conference will bring together the top experts in the fields of chimpanzee cognition and conservation, as well as the "next generation" of chimpanzee researchers, in order to share new research findings, generate new collaborative research partnerships, and examine how studying chimpanzee cognition influences chimpanzee conservation. For more information, e-mail <*chimpmind@lpzoo.org*>, or see <www.chimpmindconference.org>.

The **Laboratory Animal Welfare Training Exchange (LAWTE) Biennial Conference** will be held August 8-10, 2007, in Boston, Massachusetts. The theme will be "RePLAY: Relieve Pain in Laboratory Animals...and Yourself", featuring Dr. Paul Flecknell and AAALAC, International. For more information, see <www.lawte.org/2007_Conference_Boston.htm>.

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News Briefs

Orangutan, 44, dies at St. Louis Zoo

Junior, patriarch of the St. Louis Zoo's orangutan family, was euthanized Tuesday after a long struggle with arthritis. Junior was an estimated 44 years old and was one of the oldest male orangutans living in captivity. Zoo veterinarians had been treating Junior with anti-inflammatory and anti-pain medications for three years. Recently, however, Junior showed a reluctance to eat, move, or play with his two-year old daughter Rubih, once a favorite activity.

Sumatran orangutans like Junior are critically endangered. In the past decade, the wild population has been cut in half to 5,000 animals. – *By Diane Toroian Keaggy*, St. Louis Post-Dispatch, *March 29*

New Manager at Sweetwaters, Kenya

Sweetwaters Chimpanzee Sanctuary has named Kenyan conservation biologist Martin Mulama as its manager, effective March 6, 2006. Mulama has over 15 years of experience as a senior manager within the Kenya Wildlife Services and is undertaking a PhD course in the Department of Biological Science at Moi University in Kenya. Mulama will oversee Sweetwaters' community of 45 chimpanzees near Mount Kenya, in addition to implementing a recently adopted five-year development plan and a standard operating procedures manual. In addition, Sweetwaters is committed to creating an education facility at the sanctuary, to better inform visitors about the plight of chimpanzees in the wild and the urgent need for strong conservation measures. For more information, e-mail: *<chimps@olpejetaconservancy.org>*. – *From a PASA e-announcement*

DRC Entrusts Two Reserves to Communities

KINSHASA, Democratic Republic of Congo, April 10, 2006 (ENS) – Legally recognized community conservation took a big step forward in the Democratic Republic of Congo last week when the government handed the care and control of two large nature reserves over to local community groups. Adjacent to each other, the reserves form a globally important biodiversity site inhabited by endangered Grauer's gorillas, eastern chimpanzees, forest elephants, and okapi.

DRC Minister of Environment Anselme Enerunga signed two new decrees that legally gazette two large nature reserves, the Tayna Nature Reserve, 900 square kilometers, and the Kisimba-Ikobo Nature Reserve, 1,370 square kilometers. Enerunga says DRC plans to increase the amount of its forested protected areas to 15 percent of the total national area. Currently, about eight percent of the country is protected. The two decrees will be accompanied by contracts in which complete management and responsibility for protecting the two reserves is ceded by the government to the local people. Local people acting as eco-rangers can be deputized by the government to bear arms to protect against poaching and the illegal wildlife trade. – © *Environment News Service, 2006*

Monkeys Ruin Crops in Puerto Rico

A group of angry farmers gathered in the small town of Cabo Rojo, Puerto Rico, to talk about this year's crops and, surprisingly, none is worried about drought or wildfires that ruined thousands of acres of last year. Rather, the farmers are worried about a much different menace – one that has laid waste to far more crops in recent years than any disease, drought or other natural disaster. The threat comes from hordes of feral monkeys –sometimes descending into fields in groups of 20 or more – that ruin thousands of acres of squash, melons and other produce.

In reaction, farmers are taking matters into their own hands and shooting the wild monkeys. That move comes weeks after the island's Department of Natural and Environmental Resources (DNER) announced that a continuing financial crisis in San Juan made it impossible to fund a program to trap the monkeys and sell them for medical research.

"What farmers do on their own lands in their business," said Marcos Irizarry, a squash farmer and mayor of the nearby village of Lajas. "All Puerto Rico's government wants to do about these monkeys is talk about them," he said. "That's not doing anyone any good. The problem is out of control."

Irizarry said the estimated 2,000 monkeys in southwest Puerto Rico are descendants of patas and rhesus monkeys that escaped from a nearby medical research laboratory during the 1950s and 1960s. Around that time, more than 100 monkeys were released on a tiny island in the Boqueron Forest, about a quarter-mile offshore. In the 1960s, Lajas residents told authorities about clans of monkeys entering their yards, raiding their fruit trees and even throwing large ripe fruits at dogs and other animals.

DNER officials say the monkeys should not be thought of animals that might one day be domesticated. These monkeys, officials said, are "wild animals that carry diseases and could bite." "We urge people to stay away from them," said Ernesto Diaz, a top administrator in the department's San Juan office. – *By Ray Quintanilla*, Tribune *staff reporter, April 11, 2006*, © Chicago Tribune

Monkey Menace in Kendrapara, India

Kendrapara district administration has shot off an SOS to the state forest department pleading for an early end to the ongoing man-monkey conflict. The administration is worried over the growing nuisance of monkeys, leaving at least one dead and more than 200 persons injured in the

last month. An assistant conservator of forest is scheduled to visit the area to assess the gravity of the situation. Later the forest department plan to find ways and means to get rid of the menace.

An infant was picked up by a male monkey and later thrown from the housetop, killing the child instantly. The monkeys, who have lately turned violent, have targeted school children, snatching edibles from the children during recess hours. Last week more than a dozen children were bitten by monkeys in two government-run primary schools in the township.

Apart from trampling crop and vegetable fields beyond redemption, the monkeys have also not spared the government offices, ransacking valuable documents.

The monkey nuisance had hogged the spotlight in 2002, when classes of a college in Tirtol area had to be suspended following a week-long spell of violence by the animals. A male monkey atop a banyan tree inside the college campus had injured more than 50 college students. That had led to thin attendance, prompting the college authorities to suspend classes.

Animal researchers believe that this behavioral change can be traced back to the loss of monkeys' habitat and food, starting in 1999 when a cyclone caused heavy damage to trees. – *Statesman News Service, April 12*

Second Ohio State Chimp Dies at Texas Sanctuary

A second chimpanzee, who had been moved to a Texas animal sanctuary after Ohio State University decided to close a research center, has died, the University said April 21. The 16-year-old male, named Bobby, was found dead in his enclosure April 20. No cause of death was immediately determined.

Caretakers noticed Bobby seemed unwell April 19 and had scheduled a visit with a veterinarian for the next day, the university said. The remaining chimpanzees appear to be healthy.

Dr. Sally Boysen, the Ohio State psychology professor who had worked with the chimps for decades, has sued the university, saying the refuge is unsafe and is trying to get the animals sent elsewhere. – *Akron* Beacon Journal, *April 24*

There is much controversy about this subject. At least two Websites are making conflicting statements: <www.kermitscommunity.com> *and* <www.personhood.org/news/primarily_primates.html>.

Chimps Kill Tour Driver, Escape from Sanctuary

A group of chimpanzees attacked and killed a Sierra Leonean driver and seriously injured two American visitors and one Canadian at a wildlife sanctuary on Sunday, a police spokesman said. The attack occurred at the Tacugama Chimpanzee Sanctuary on the outskirts of this capital. The center, set up in 1995 to give shelter to orphaned and abandoned chimpanzees, houses nearly 70 primates in a semiwild environment. The police said a large group of chimpanzees suddenly turned on the four, biting and tearing at their clothes. The driver was employed by the reserve. The injured survivors, employees of a construction company in Sierra Leone, were taken to a hospital. – *Reuters, April 24, 2006*

Thirty-two chimps escaped, but they gradually came closer, and most returned, by ones and twos. By the end of April, there were 14 chimpanzees – 12 adults and two infants – still out in the forest. Police and law enforcement followed orders not to shoot any chimpanzees or other wildlife. "The support the Government of Sierra Leone has shown during this crisis is extremely encouraging," said Tacugama founder Bala Amaresekaran. Following the escape, villagers in the surrounding area were given telephone contact numbers for Tacugama and asked to call the staff if they spotted any chimpanzees.

Amarasekaran said that he was surprised and encouraged by how quickly the sanctuary chimpanzees adapted to life in the forest – including the ability to find food and shelter – especially given how physically and emotionally damaged many of them were upon arrival at Tacugama. Nevertheless, the goal is return all of the escaped chimpanzees to the sanctuary.

As this issue of the *LPN* is going to press, there are six chimpanzees, including one infant, still in the forest.

Gorilla Haven Receives Second Resident

An update announcing Gorilla Haven's second gorilla's arrival is now up at <www.gorilla-haven.org>. Besides details of Oliver's arrival, there's a new Super-Super-Mom award for Zoo Atlanta's gorilla, Kuchi, as well as information on primates in the entertainment industry. – *May 17 announcement by Jane Dewar*

Monkeys destroy crops in Tanzania

Thousands of monkeys are wreaking havoc on Tumbatu, an island in Tanzania's Zanzibar archipelago, where locals have appealed for help to exterminate the simians, officials said. Increasingly, colobus monkeys are destroying farmers' crops on the islet just north of Zanzibar's main island of Unguja in the Indian Ocean, they said.

"Some farmers have been spending nights in their fields to protect crops from being eaten or destroyed by the monkeys," said Zanzibar north regional commissioner Pembe Juma. "We have been providing tools to kill the monkeys, but still there are many continuing to destroy farm produce," he said. – *Sapa-Agence France-Presse June 1*

Research and Educational Opportunities

Wildlife Medicine, Management, and Conservation

The Department of Agricultural and Animal Production and the Joint Departments of Veterinary Medicine and Animal Husbandry of Universidad Autónoma Metropolitana – Xochimilco (UAM-X), Mexico, present their First Course on Wildlife Medicine, Management, and Conservation, which will take place at UAM-X from September 27 through November 22, 2006. Enrollment is open to all interested persons and is limited to 35 participants.

The course will consist of eight intensive, scholarly, theoretical sessions. We will have lectures on the following topics: Introduction to the conservation of wildlife; Nutrition and clinical nutrition; Preventive medicine and zoonoses; Management and conservation of primates, as well as of wild ungulates, wild felids, reptiles and amphibians, and marine mammals.

The purpose of the course is to offer to interested persons basic theoretical knowledge for the use, conservation, and medical treatment of wildlife specimens in their care. It is designed for students of biology and veterinary medicine, professionals and academics interested in wildlife, students studying for related careers, veterinarians in private practice, gamekeepers, animal trainers, and private collectors.

The fee for the course is 1000 pesos for professionals, 500 pesos for students. The organizing committee is Dr. Germán Mendoza Martínez (UAM-X), and Dra. Rosalía Pastor-Nieto (Ecología y Hábitat AC). For more information, contact Dra. Pastor-Nieto <*baknikte@inbox.com*>. For our (Spanish language) poster, see <www.brown.edu/primate/UAM.pdf>.

Ialatsara Lemur Forest Camp, Madagascar

Ialatsara, which means "good forest" in Malagasy, is a new private reserve containing six wild lemur species. Eight groups of Milne Edwards Sifaka (*Propithecus edwardsi*) are found here, seven of which, in primary forest, have radio identity collars. In addition, the following lemurs are naturally found here: • *Eulemur rubriventer* (red-bellied lemur) • *Hapalemur griseus* (Eastern lesser bamboo lemur) • *Microcebus rufus* (rufus mouse lemur) • *Lepilemur microdon* (small-toothed sportive lemur) • *Cheirogaleus medius* (fat-tailed dwarf lemur).

This 2500-hectare reserve contains approximately 1000 hectares of primary forest and is located just 60 km north of Madagascar's second largest city, Fianarantsoa, along the national highway, RT 7.

Ialatsara Lemur Forest Camp invites researchers, conservationists, and ecotourists to visit and work here. Facilities include comfortable permanent tents, electricity, and a small restaurant.

Currently, Jane Foltz is conducting a three-year study of *Propithecus edwardsi* behavior, feeding ecology, and genetics. Erik Patel is soon to begin research on *P. edwardsi* acoustic and chemical communication.

Contact Daniel and Bérénice Rajaona at Lemur Forest Camp, BP 09 Ialatsara, 305 Ambohimahasoa, Madagascar [e-mail: *kimbaforest@mel.wanadoo.mg*].

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Information Requested or Available

NIH Extramural Nexus

The *NIH Extramural Nexus* is a bimonthly update e-mailed from the National Institutes of Health Office of Extramural Research. To subscribe to the *NIH Extramural Nexus*, send a plain text e-mail to <*Listserv@list.nih.gov*>, including only the words **Subscribe EXTRAMURALNEXUS** in the body of the message. Articles, comments, questions and suggestions may be addressed to the Editor at <*ExtramuralNexus@mail.nih.gov*>. The *NIH Extramural Nexus* reserves the right to select and edit items submitted for inclusion.

Primateforum

A new e-mail discussion list has been started, to "discuss the biology, psychology, and evolution of nonhuman and human primates." Register at <groups.yahoo.com/group/primateforum>.

discuss the biology, psychology and evolution of nonhuman and human primates

More Interesting Websites

• Fact Sheets describing how NIH research benefits the public: <www.nih.gov/about/researchresultsforthepublic>

• The Neuroscience Gateway (free access): <www.brainatlas.org/aba>

• Spuren- und Mengenelement-Gehalte in Laubfutter (Trace elements and minerals in leaves), by G. Rahmann: <orgprints.org/3221/01/3221.pdf>

• Virtual Tour and Activities. "Landscape and Life along the East African Rift: the Virunga Mountains of Rwanda", by Robert E. Ford: <www.wiley.com/college/ford_test/case7/tour_home.html>

• Smithsonian Institutions "Human Origins Program": <www.mnh.si.edu/anthro/humanorigins>

Recent Books and Articles

(Addresses are those of first authors unless otherwise indicated)

Books

• *Gorilla Dreams: The Legacy of Dian Fossey*. G. Nienaber. Lincoln, NE: iUniverse, 2006. [Price: $29.95, hardcover; $19.95, paperback; $6, e-book, <www.thelegacyofdianfossey.com>]

• *Cognitive Development in Chimpanzees*. T. Matsuzawa, M. Tomonaga, & M. Tanaka (Eds.). Tokyo: Springer Tokyo, Inc., 2006. [Price: $89.95]

Contents: Foreword, by J. Goodall; Preface, by T. Matsuzawa.

Part 1: Introduction to Cognitive Development in Chimpanzees. 1. Sociocognitive development in chimpanzees: A synthesis of laboratory work and fieldwork, by T. Matsuzawa.

Part 2: Behavioral and Physical Foundation. A new comparative perspective on prenatal motor behaviors: Preliminary research with four-dimensional ultrasonography, by H. Takeshita, M. Myowa-Yamakoshi, & S. Hirata; Cognitive abilities before birth: Learning and long-lasting memory in a chimpanzee fetus, by N. Kawai; Spindle neurons in the anterior cingulate cortex of humans and great apes, by M. Hayashi; Descent of the larynx in chimpanzees: Mosaic and multiple-step evolution of the foundations for human speech, by T. Nishimura; Understanding the growth pattern of chimpanzees: Does it conserve the pattern of the common ancestor of humans and chimpanzees? By Y. Hamada & T. Udono; The application of a human personality test to chimpanzees and survey of polymorphism in genes relating to neurotransmitters and hormones, by M. Inoue-Murayama, E. Hibino, T. Matsuzawa, S. Hirata, O. Takenaka, I. Hayasaka, S. Ito, & Y. Murayama.

Part 3: Communication and Mother-Infant Relationship. Evolutionary origins of the human mother-infant relationship, by T. Matsuzawa; Development of facial information processing in nonhuman primates, by M. Myowa-Yamakoshi; Development of joint attention in infant chimpanzees, by S. Okamoto-Barth & M. Tomonaga; Food sharing and referencing behavior in chimpanzee mother and infant, by A. Ueno; Development of chimpanzee social cognition in the first 2 years of life, by M. Tomonaga.

Part 4: Social cognition: Imitation and Understanding Others. Chimpanzee learning and transmission of tool use to fish for honey, by S. Hirata; How and when do chimpanzees acquire the ability to imitate? by M. Myowa-Yamakoshi; Yawning: An opening into empathy? by J. R. Anderson & T. Matsuzawa; How social influences affect food neophobia in captive chimpanzees: A comparative approach, by E. Addessi & E. Visalberghi; Tactical deception and understanding of others in chimpanzees, by S. Hirata.

Part 5: Conceptual Cognition. Early spontaneous categorization in primate infants – chimpanzees, humans, and Japanese macaques – with the familiarization-novelty preference task, by C. Murai; Processing of shadow information in chimpanzee (*Pan troglodytes*) and human (*Homo sapiens*) infants, by T. Imura, M. Tomonaga, & A. Yagi; Color recognition in chimpanzees (*Pan troglodytes*), by T. Matsuno, N. Kawai, & T. Matsuzawa; Auditory-visual crossmodal representations of species-specific vocalizations, by A. Izumi; Spontaneous categorization of natural objects in chimpanzees, by M. Tanaka; Cognitive enrichment in chimpanzees: An approach of welfare entailing an animal's entire resources, by N. Morimura.

Part 6: Tools and Culture. Cognitive development in apes and humans assessed by object manipulation, by M. Hayashi, H. Takeshita, & T. Matsuzawa; Token use by chimpanzees (*Pan troglodytes*): Choice, metatool, and cost, by C. Sousa & T. Matsuzawa; Behavioral repertoire of tool use in the wild chimpanzees at Bossou, by G. Ohashi; Ant dipping in chimpanzees: An example of how microecological variables, tool use, and culture reflect the cognitive abilities of chimpanzees, by T. Humle; Ontogeny and cultural propagation of tool use by wild chimpanzees at Bossou, Guinea: Case studies in nut cracking and leaf folding, by D. Biro, C. Sousa, & T. Matsuzawa.

• *Primates in Perspective*. C. J. Campbell, A. Fuentes, K. C. MacKinnon, M. Panger & S. K. Bearder [Eds.]. New York: Oxford University Press, 2007. [Price: $80; paper: $52.95]

Contents: *Introduction*, by P. Dolhinow.

Part One: Background. A brief history of primate field studies, by R. W. Sussman; Primate evolution, by W. Hartwig.

Part Two: The Primates. The lorisiform primates of Asia and mainland Africa: Diversity shrouded in darkness, by A. Nekaris & S. K. Bearder; Lemuriformes, by L. Gould & M. Sauther; Tarsiiformes, by S. Gursky; Callitrichines: The role of competition in cooperatively breeding species, by L. J. Digby, S. F. Ferrari, & W. Saltzman; The cebines: Toward an explanation of variable social structure, by K. M. Jack; Sakis, uakaris, and titi monkeys: Behavioral diversity in a radiation of primate seed predators, by M. A. Norconk; Aotinae: Social monogamy in the only nocturnal haplorhines, by E. Fernandez-Duque; The atelines: Variation in ecology, behavior, and social organization, by A. Di Fiore & C. J. Campbell; The Asian colobines: Diversity among leaf-eating monkeys, by R. C. Kirkpatrick; African colobine monkeys: Patterns of between-group interaction, by P. J. Fashing; The macaques: A double-layered social organization, by B. Thierry; Ba-

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

boons, mandrills, and mangabeys: Afro-papionin socioecology in a phylogenetic perspective, by C. J. Jolly; The guenons (genus *Cercopithecus*) and their allies: Behavioral ecology of polyspecific associations, by K. L. Enstam & L. A. Isbell; The hylobatidae: Small apes of Asia, by T. Q. Bartlett; Orangutans in perspective: Forced copulations and female mating resistance, by C. D. Knott & S. M. Kahlenberg; Gorillas: Diversity in ecology and behavior, by M. M. Robbins; Chimpanzees and bonobos: Diversity within and between species, by R. Stumpf.

Part Three: Methods. Research questions, by E. Ray; Advances in the understanding of primate reproductive endocrinology, by B. L. Lasley & A. Savage; Molecular primatology, by A. Di Fiore & P. Gagneux.

Part Four: Reproduction. Life history, by S. R. Leigh & G. Blomquist; Primate growth and development: A functional and evolutionary approach, by D. Bolter & A. Zihlman; Primate sexuality and reproduction, by C. J. Campbell; Reproductive cessation in female primates: Comparisons of Japanese macaques and humans, by L. M. Fedigan & M. S. M. Pavelka; Mate choice, by J. H. Manson.

Part Five: Ecology. The new era of primate socioecology: Ecology and intersexual conflict, by D. Overdorff & J. Parga; Primate nutritional ecology: Feeding biology and diet at ecological and evolutionary scales, by J. E. Lambert; Conservation, by K. B. Strier; Primate seed dispersal: Linking behavioral ecology with forest community structure, by C. A. Chapman & S. E. Russo; Predation on primates: Past studies, current challenges, and directions for the future, by L. E. Miller & A. Treves; Primate locomotor behavior and ecology, by P. A. Garber.

Part Six: Social Behavior and Intelligence. Social mechanisms in the control of primate aggression, by I. S. Bernstein; Social beginnings: The tapestry of infant and adult interactions, by K. C. MacKinnon; Postconflict reconciliation, by K. Arnold & F. Aureli; Social organization: Social systems and the complexities in understanding the evolution of primate behavior, by A. Fuentes; The conundrum of communication, by H. Gouzoules & S. Gouzoules; Cooperation and competition in primate social interactions, by R. W. Sussman & P. A. Garber; Social learning in monkeys and apes: Cultural animals? by C. A. Caldwell & A. Whiten; Tool use and cognition in primates, by M. Panger; Primate self-medication, by M. A. Huffman; Ethnoprimatology: Contextualizing human and nonhuman primate interactions, by L. D. Wolfe & A. Fuentes; Where we have been, where we are, and where we are going: The future of primatological research, by C. J. Campbell, A. Fuentes, K. C. MacKinnon, M. Panger, & S. K. Bearder.

Book Chapters

• Biology and medicine of non-human primates. Part I: Physiology and management. M. J. Linn, R. Duran-Struuck, A. K. Trivedi, L. B. Zajic, S. K. Wrobleski, A. E. Hawley, & D. D. Myers, Jr. In J. D. Reuter & M. A. Suckow (Eds.), *Laboratory animal medicine and management*. Ithaca, NY: International Veterinary Information Service, 2006, <www.ivis.org/advances/Reuter/myers/chapter.asp?LA=1>.

Audiovisual Material

• *Refinements in Primate Husbandry: A DVD Teaching Resource*. S. Wolfensohn & P. L. Finnemore. Oxford University Veterinary Services, 2006. [Price: £16.45] See <www.nc3rs.org.uk/downloaddoc.asp?id=372>.

A staff-training DVD on refinements in primate husbandry. Includes information on "a socialization program to encourage the primates to respond positively to human contact" and "some refinements to procedural techniques, such as training macaques to stand for injections."

• *Best Practice Capture, Handling and Restraint. Volume 9, Zoonoses.* Animals on Film [e-mail: *info@animalsonfilm.com*, or see <www.animalsonfilm.com>]. [Price: AU$237, including postage]

A program, consisting of a 45-minute DVD, built around interviews with experts in the field of zoonotic diseases, their risks, symptoms and methods of prevention. It includes an extremely comprehensive manual, in PDF format, detailing over 350 diseases along with their source animal hosts, vectors, symptoms and incubation periods.

• *Lemurs of Madagascar: Surviving on an Island of Change*. American Museum of Natural History, <sciencebulletins.amnh.org/bio/f/lemurs.20060401/?src=h_nc>.

Includes four essays, a video, multimedia items, and resources for educators.

Field Guides

• *Lemurs of Madagascar* (2nd ed.). R. A. Mittermeier, W. R. Konstant, F. Hawkins, E. E. Louis, O. Langrand, J. H. Ratsimbazafy, R. Rasoloarison, J. Ganzhorn, S. Rajaobelina, I. Tattersall, & D. M. Meyers (Eds.). S. D. Nash (Illus.). Washington, DC: Conservation International, 2006, <www.consesrvation.org/xp/CIWEB/library/books/lemurs_madagascar.xml>. [Price: $25]

This book contains extensive scientific information with chapters including: origin of lemurs; discovery and study of living lemurs; extinct lemurs; conservation of lemurs; geographic range and distribution of lemurs;ecology and behavior of lemurs; and conservation status and threats to lemurs. The guide is illustrated with over 200 drawings, photos and maps to assist in field identification. The three appendices are a) national maps depicting island topography, cities, rivers and protected areas; b) descriptions and representative photos of Madagascar's principal terrestrial habitats; and c) listings of key sites for lemur watching.

Magazines and Newsletters

• *African Primates: The Newsletter of the Africa Section of the IUCN/SSC Primate Specialist Group*, 2002-2003, *6*[1-2] [Zoo Atlanta, 800 Cherokee Ave S.E., Atlanta, GA 30315-1440].

Contents: Galagid taxonomy and the placement of the needle-clawed galago (*Euoticus*): Based on cytochrome *b*, 12S and 16S partial sequences, by E. Stiner & A. Turmelle; Hunting pressure on the drill *Mandrillus leucophaeus* in Korup Project Area, Cameroon, by C. Steiner, M. Waltert, & M. Mühlenberg; Distribution and abundance of the Roloway monkey *Cercopithecus Diana roloway* and other primate species in Ghana, by L. Magnuson; Zammarano's monkey *Cercopithecus mitis zammaranoi* de Beaux, 1923: The forgotten monkey of Somalia, by S. Gippoliti; Decline of primate populations in the Mbaéré-Bodingué Reserve, Central African Republic, by C. Sourmail; Distribution, abundance, and biomass estimates for primates within Kahuzi-Biega lowlands and adjacent forest in eastern DRC, by J. S. Hall, L. J. T. White, E. A. Williamson, B.-I. Inogwabini, & I. Omari; The world's top 25 most endangered primates – 2002, by W. R. Konstant, R. A. Mittermeier, T. M. Butynski, A. Eudey, J. Ganzhorn, R. Kormos, & A. B. Rylands; A note on the Somali galago *Galago gallarum* (Thomas, 1901), by A. W. Perkin & T. M. Butynski; Galago (galagidae) body measurements and museum collections data, by T. R. Olson & L. T. Nash; Sudden decline of a community of chimpanzees *Pan troglodytes* in Gombe National Park, Tanzania, by E. Greengrass; and Reproduction of three African cercopithecines in captivity in Brazil, by D. F. Gomes & J. C. Bicca-Marques.

• *Community Conservation*, Winter 2006, *17*[1], <www.communityconservation.org/newsletter.htm>.

• *The Gorilla Gazette*, April, 2006. (J. Dewar, P.O. Box 210, Morganton, GA 30560 [e-mail: *jdewar@gorillahaven.org*]).

Contents: Zoo Atlanta: The next generation, by C. Horton; Mbeli Bai study: Research, education and training, by T. Breuer; Birth and reintroduction at Busch Gardens, by K. Arnold & C. Bennis; Bongo: The end of an era, by Apenheul Gorilla caregivers; Partners in conservation: Working together to help wildlife and local people, by C. Jendry; Ousting a silverback: Chessington's Kumba, by I. Stewart & M. Riozzi; Eco-guard killed by poachers, by T. Sunderland; The social system of gorillas, by A. Meder; An update: Gorillas in GaiaPark, by T. ter Muelen; Gorilla retirement to the Spanish Mediterranean, by A. Mora & R. Pardo; Gorillas in Opole Zoo, Poland, by K. Kazanowski; Volunteering at CWAF, by Susan Eberth; Beginning our bachelor gorilla group, by D. Boyer & R. Moore; Mexican gorillas get a chance to breed, by F. Gual-Sill, R. Tinajero-Ayala & J. Ojeda-Chávez; The story of PASA, by D. Cress; Shanghai surprise: Gorillas as gifts? by J. Dewar; Cell phones and gorillas, by E. Ronay; Paignton Gorilla Workshop details; H.E.L.P. Congo: Hope for orphan chimpanzees, by A. Jamart & Be. Goossens; Restoring the sight of a young adult gorilla, by M. Gage & L. Bugg; Cheyenne Mountain Zoo gorillas, by H. Genter; New primate greenhouse at St. Martin La Plaine Zoo, by X. Debade; An accidental ape encounter, by Tracy Williams; and Mother-rearing: What to look for, by B. Armstrong.

• *Gorilla Journal, Journal of Berggorilla & Regenwald Direkthilfe*, June 2006, No. 32. German: <www.berggorilla.de/gj293.pdf>; English: <www.berggorilla.de/gj32e.pdf>; German: <www.berggorilla.de/gj30d.pdf>; French: <www.berggorilla.de/gj32f.pdf> [e-mail *meder@berggorilla.org* for notification of new issues].

• *IPS Bulletin*, February, 2006, *32*[1]. [K. Leighty, Disney's Animal Kingdom, P.O. Box 10000, Lake Buena Vista, FL 32830]

• *Journal of Medical Primatology*, 2006, *35*[1]; <www.blackwell-synergy.com/toc/jmp/35/1>.

Contents: OnlineEarly announcement, by P. A. Marx, & M. Vinding; Obituary: Jan Moor-Jankowski; Coat condition, housing condition and measurement of faecal cortisol metabolites: A non-invasive study about alopecia in captive rhesus macaques (*Macaca mulatta*), by H. W. Steinmetz, W. Kaumanns, I. Dix, M. Heistermann, M. Fox, & F.-J. Kaup; Cloning and sequencing of the cynomolgus monkey prostate specific antigen cDNA, by D. J. Marshall, K. A. Rudnick, J. Lu, & L. A. Snyder; The ductus venosus and intrahepatic venous system in *Callithrix jacchus*

jacchus and *Macaca fascicularis* fetuses, by M. Tchirikov, N. E. Schlabritz-Loutsevitch, G. B. Hubbard, S. Tardif, H. J. Schroder, & P. W. Nathanielsz; Normative nerve conductions in the tail of rhesus macaques (*Macaca mulatta*), by W. A. Graham, E. Ludlage, K. Mansfield, D. Magill, & S. Nesathurai; Characterization of obesity in Japanese monkeys (*Macaca fuscata*) in a pedigreed colony, by T. Takahashi, A. Higashino, K. Takagi, Y. Kamanaka, M. Abe, M. Morimoto, K. H. Kang, S. Goto, J. Suzuki, Y. Hamada, & T. Kageyama; Fetal ultrasonography: Biometric data from four African primate species, by O. Bourry, O. Ouwe-Missi-Oukem-Boyer, A. Blanchard, & P. Rouquet; Clinical, biochemical, and electrocardiographic aspects of *Trypanosoma cruzi* infection in free-ranging golden lion tamarins (*Leontopithecus rosalia*), by R. V. Monteiro, J. Baldez, J. Dietz, A. Baker, C. V. Lisboa, & A. M. Jansen; and Book Review: *Handbook of Primate Husbandry and Welfare*, by Kate C. Baker.

• *Journal of Medical Primatology*, 2006, *35*[2]; <www.blackwell-synergy.com/toc/jmp/35/2>.

Contents: Detection and molecular characterization of foamy viruses in Central African chimpanzees of the *Pan troglodytes troglodytes* and *Pan troglodytes vellerosus* sub-

species, by S. Calattini, E. Nerrienet, P. Mauclere, M.-C. Georges-Courbot, A. Saib, & A. Gessain; A non-invasive method for studying an index of pupil diameter and visual performance in the rhesus monkey, by S. J. Fairhall, C. A. Dickson, L. Scott, & P. C. Pearce; Middle cerebral artery occlusion in *Macaca fascicularis*: Acute and chronic stroke evolution, by H. E. D'Arceuil, M. Duggan, J. He, J. Pryor, & A. Crespigny; Widespread occurrence of antibodies against circumsporozoite protein and against blood forms of *Plasmodium vivax, P. falciparum* and *P. malariae* in Brazilian wild monkeys, by A. M. R. de C. Duarte, M. A. L. Porto, I. Curado, R. S. Malafronte, E. H. E. Hoffmann, S. G. Oliveira, A. M. J. Silva, J. K. Kloetzel, & A. de C. Gomes; Bone ALP and OC reference standards in adult baboons (*Papio hamadryas*) by sex and age, by L. M. Havill, L. G. Hale, D. E. Newman, S. M. Witte, & M. C. Mahaney; and Systemic arteriopathy in SIV-infected rhesus macaques (*Macaca mulatta*), by T. Yanai, A. A. Lackner, H. Sakai, T. Masegi, & M. A. Simon.

• *Journal of Medical Primatology*, 2006, *35*[3].

Contents: Experimental infection of rhesus macaques with *Streptococcus pneumoniae*: A possible model for vaccine assessment, by M. T. Philipp, J. E. Purcell, D. S. Martin, W. R. Buck, G. B. Plauché, E. P. Ribka, P. DeNoel, P. Hermand, L. E. Leiva, G. J. Bagby, & S. Nelson; Uterine evaluation and gestation diagnosis in owl monkey (*Aotus azarai infulatus*) using the B mode ultrasound, by F. O. B. Monteiro, M. B. de Koivisto, W. R. R. Vicente, R. de Amorim Carvalho, C. W. Whiteman, P. H. G. Castro, & C. E. Maia; Surgical bone marrow aspiration in *Aotus lemurinus griseimembra*, by C. Llanos, G. Quintero, A. Castellanos, M. Arevalo-Herrera, & S. Herrera; Prevalence and molecular characterization of the polymerase gene of gibbon lymphocryptovirus, by P. Phakdeewirot, S. Payungporn, S. Chutinimitkul, A. Theamboonlers, & Y. Poovorawan; Analysis in non-human primates reveals that the ancestral Band 3 gene encodes Di^b and the Band 3-Memphis phenotype, by A. Schawalder, K. Hue-Roye, L. Castilho, A. Chaudhuri, & M. E. Reid; Airsacculitis in fourteen juvenile southern Bornean orangutans (*Pongo pygmaeus wurmbii*), by B. Lawson, R. Garriga, & B. M. F. Galdikas; Marmoset glutathione peroxidases: cDNA sequences, molecular evolution, and gene expression, by S. Atanasova, N. von Ahsen, C. Schlumbohm, E. Wieland, M. Oellerich, & V. Armstrong; Attempted therapeutic immunization in a chimpanzee chronic HBV carrier with a high viral load, by M. T. M. Shata, W. Pfahler, B. Brotman, D.-H. Lee, N. Tricoche, K. Murthy, & A. M. Prince; and Comparison of efficacy of moxidectin and ivermectin in the treatment of *Strongyloides fulleborni* infection in rhesus macaques, by J. P. Dufour, F. B. Cogswell, K. M. Phillippi-Falkenstein, & R. P. Boh.

• *Tropical Medicine and International Health*, 2006, *11*[5], <www.blackwell-synergy.com/toc/tmi/11/5>.

Contents include: Comparative efficacy of chloroquine and sulphadoxine-pyrimethamine in pregnant women and children: A meta-analysis, by G. C. Kalanda, J. Hill, F. H. Verhoeff, & B. J. Brabin; Urban malaria and anaemia in children: A cross-sectional survey in two cities of Ghana, by E. Klinkenberg, P. J. McCall, M. D. Wilson, A. O. Akoto, F. P. Amerasinghe, I. Bates, F. H. Verhoeff, G. Barnish, & M. J. Donnelly; Tolerability of amodiaquine and sulphadoxine-pyrimethamine, alone or in combination for the treatment of uncomplicated *Plasmodium falciparum* malaria in Rwandan adults, by C. I. Fanello, C. Karema, W. van Doren, C. E. Rwagacondo, & U. D'Alessandro; The indoor use of plastic sheeting pre-impregnated with insecticide for control of malaria vectors, by A. Diabate, F. Chandre, M. Rowland, R. N'guessan, S. Duchon, K. R. Dabire, & J.-M. Hougard; The efficacy of sulfadoxine-pyrimethamine alone and in combination with chloroquine for malaria treatment in rural eastern Sudan: The interrelation between resistance, age and gametocytogenesis, by I. E. A-Elbasit, M. I. Elbashir, I. F. Khalil, M. Alifrangis, & H. A. Giha; and Seasonal variation and high multiplicity of first *Plasmodium falciparum* infections in children from a holoendemic area in Ghana, West Africa, by R. Kobbe, R. Neuhoff, F. Marks, S. Adjei, I. Langefeld, C. von Reden, O. Adjei, C. G. Meyer, & J. May.

Reports

• The Pan African Sanctuary Alliance (PASA) 2005 Workshop Report. Printed and distributed by the Conservation Breeding Specialist Group: <www.cbsg.org>.

Includes reports from the PASA 2005 Education Workshop and the PASA 2005 Veterinary Healthcare Workshop.

Special Journal Issues

• Animal models of infant development, particularly nonhuman primates. *Infancy*, 2006, *9*[2].

Contents: Editor's note, by R. N. Aslin; Why primates? The importance of nonhuman primates for understanding human infancy, by D. J. Weiss & L. R. Santos; Cotton-top tamarins' (*Saguinus oedipus*) expectations about occluded objects: A dissociation between looking and reaching tasks, by L. R. Santos, D. Seelig, & M. D. Hauser; The effect of heterogeneity on numerical ordering in rhesus monkeys, by J. F. Cantlon & E. M. Brannon; Self-awareness in human and chimpanzee infants: What is measured and what is meant by the mark and mirror test? by K. A. Bard, B. K. Todd, C. Bernier, J. Love, & D. A. Leavens; Behavior of infant chimpanzees during the night in the first 4 months of life: Smiling and suckling in relation to behavioral state, by Y. Mizuno, H. Takeshita, & T. Matsuzawa; and Mechanisms underlying language acquisition: Benefits from a comparative approach, by D. J. Weiss & E. L. Newport.

• Program for the Twenty-First Congress of the International Primatological Society. *International Journal of*

Primatology, 2006, *27*[Suppl. 1]. T. L. Bettinger & K. A. Leighty (Guest Co-Eds.).

• Abstracts of Scientific Meetings of The French Primatological Society (*La Société Francophone de Primatologie*); The Italian Primatological Society (*Associazione Primatologica Italiana*); and The Spanish Primatological Society (*Asociación Primatológica Española*). *Folia Primatologica*, 2006, *77*[4].

Anatomy and Physiology

• Twenty-four-hour rhythmic gene expression in the rhesus macaque adrenal gland. Lemos, D. R., Downs, J. L., & Urbanski, H. F. (H. F. U., Div. of Neuroscience, Oregon NPRC, 505 Northwest 185th Ave, Beaverton, Oregon 97006 [e-mail: *urbanski@ohsu.edu*]). *Molecular Endocrinology*, 2006, *20*, 1164-1176.

"The suprachiasmatic nucleus plays a key role in the circadian secretion of adrenocortical hormones. However, there is evidence from mouse studies that components of the circadian clock are also expressed within the adrenal gland itself. In the present study we performed genome-wide expression profiling to determine whether the adrenal gland of rhesus monkeys shows temporal gene expression across a 24-h period. We identified 322 transcripts with rhythmic patterns of expression and found that the phase distribution of cycling transcripts varied across the day, with more genes showing activation during the night. We classified the transcripts by their function and clustered them according to their participation in common biochemical pathways: 1) catecholamine synthesis and reuptake; 2) cholesterol cleavage and dehydroepiandrosterone sulfate synthesis; 3) protein synthesis and turnover; and 4) the circadian clock mechanism. In an additional experiment, we assessed the expression of various clock genes at two time points, 12 h apart. We found that expression of *Bmal1* and *Cry1* was higher at 1300 h, or *zeitgeber* time 6, whereas expression of *Per1* was higher at 0100 h (*zeitgeber* time 18). Expression levels of *Rev-erbα* were higher at 0100 h than at 1300 h ($P < 0.05$), and immunohistochemistry revealed a strong expression of this transcription factor specifically in chromaffin cells of the adrenal medulla. Taken together, the data indicate that the primate adrenal gland shows rhythmic expression of genes associated with cell biology and synthesis of steroids and catecholamines. Moreover, they strongly imply the existence of an intrinsic circadian clock."

Animal Models

• Comparative analysis of cancer genes in the human and chimpanzee genomes. Puente, X. S., Velasco, G., Gutiérrez-Fernández, A., Bertranpetit, J., King, M.-C., & López-Otín, C. [Depto de Bioquímica y Biología Molecular, Fac. de Med., Inst. Univ. de Oncología, Univ. de Oviedo, 33006-Oviedo, Spain [e-mail: *xspuente@uniovi.es*]). *BMC Genomics*, 2006, *7*-15.

"Cancer is a major medical problem in modern societies. However, the incidence of this disease in nonhuman primates is very low. To study whether genetic differences between human and chimpanzee could contribute to their distinct cancer susceptibility, we have examined in the chimpanzee genome the orthologous genes of a set of 333 human cancer genes. This analysis has revealed that all examined human cancer genes are present in chimpanzee, contain intact open reading frames and show a high degree of conservation between both species. However, detailed analysis of this set of genes has shown some differences in genes of special relevance for human cancer. Thus, the chimpanzee gene encoding p53 contains a Pro residue at codon 72, while this codon is polymorphic in humans and can code for Arg or Pro, generating isoforms with different ability to induce apoptosis or interact with p73. Moreover, sequencing of the *BRCA1* gene has shown an 8 Kb deletion in the chimpanzee sequence that prematurely truncates the co-regulated *NBR2* gene. These data suggest that small differences in cancer genes, as those found in tumor suppressor genes, might influence the differences in cancer susceptibility between human and chimpanzee. Nevertheless, further analysis will be required to determine the exact contribution of the genetic changes identified in this study to the different cancer incidence in nonhuman primates."

• Cynomolgus macaque as an animal model for severe acute respiratory syndrome. Lawler, J. V., Endy, T. P., Hensley, L. E., Garrison, A., Fritz, E. A., Lesar, M., Baric, R. S., Kulesh, D. A., Norwood, D. A., Wasieloski, L. P., Ulrich, M. P., Slezak, T. R., Vitalis, E., Huggins, J. W., Jahrling, P. B., & Paragas, J. (J. P., Virology Div., USAMRIID, Fort Detrick, MD [e-mail: *jason.paragas@det.amedd.army.mil*]). *PLoS Med*, 2006, *3*[5]: e149.

"The emergence of severe acute respiratory syndrome (SARS) in 2002 and 2003 affected global health and caused major economic disruption. Adequate animal models are required to study the underlying pathogenesis of SARS-associated coronavirus (SARS-CoV) infection and to develop effective vaccines and therapeutics. We report the first findings of measurable clinical disease in nonhuman primates (NHPs) infected with SARS-CoV."

• Postexposure protection against Marburg haemorrhagic fever with recombinant vesicular stomatitis virus vectors in non-human primates: An efficacy assessment. Daddario-DiCaprio, K. M., Geisbert, T. W., Ströher, U., Geisbert, J. B., Grolla, A., Fritz, E. A., Fernando, L., Kagan, E., Jahrling, P. B., Hensley, L. E., Jones, S. M., & Feldmann, H. (T. W. G., USAMRIID, Fort Detrick, MD 21702 [e-mail: *tom.geisbert@amedd.army.mil*]). *The Lancet*, 2006, *367*, 1373-1374.

"Effective countermeasures are urgently needed to prevent and treat infections caused by highly pathogenic and biological threat agents such as Marburg virus (MARV).

We aimed to test the efficacy of a replication-competent vaccine based on attenuated recombinant vesicular stomatitis virus (rVSV), as a postexposure treatment for MARV haemorrhagic fever. We used a rhesus macaque model of MARV haemorrhagic fever that produced 100% lethality. We administered rVSV vectors expressing the MARV Musoke strain glycoprotein to five macaques 20-30 min after a high-dose lethal injection of homologous MARV. Three animals were MARV-positive controls and received non-specific rVSV vectors. We tested for viraemia, undertook analyses for haematology and serum biochemistry, and measured humoral and cellular immune responses. All five rhesus monkeys that were treated with the rVSV MARV vectors as a postexposure treatment survived a high-dose lethal challenge of MARV for at least 80 days. None of these five animals developed clinical symptoms consistent with MARV haemorrhagic fever. All the control animals developed fulminant disease and succumbed to the MARV challenge by day 12. MARV disease in the controls was indicated by: high titres of MARV (10^3–10^5 plaque-forming units per mL); development of leucocytosis with concurrent neutrophilia at end-stage disease; and possible damage to the liver, kidney, and pancreas. Post-exposure protection against MARV in non-human primates provides a paradigm for the treatment of MARV haemorrhagic fever. Indeed, these data suggest that rVSV-based filoviral vaccines might not only have potential as preventive vaccines, but also could be equally useful for post-exposure treatment of filoviral infections."

• RNAi-mediated gene silencing in non-human primates. Zimmermann, T. S., Lee, A. C. H., Akinc, A., Bramlage, B., Bumcrot, D., Fedoruk, M. N., Harborth, J., Heyes, J. A., Jeffs, L. B., John, M., Judge, A. D., Lam, K., McClintock, K., Nechev, L. V., Palmer, L. R., Racie, T., Röhl, I., Seiffert, S., Shanmugam, S., Sood, V., Soutschek, J., Toudjarska, I., Wheat, A. J., Yaworski, E., Zedalis, W., Koteliansky, V., Manoharan, M., Vornlocher, H.-P., & MacLachlan, I. (Alnylam Pharmaceuticals Inc., 300 Third St, Cambridge, MA 02142 [e-mail: *tzimmermann@alnylam.com*]). *Nature*, 2006, *441*, 111-114.

"The opportunity to harness the RNA interference (RNAi) pathway to silence disease-causing genes holds great promise for the development of therapeutics directed against targets that are otherwise not addressable with current medicines. Although there are numerous examples of *in vivo* silencing of target genes after local delivery of small interfering RNAs (siRNAs), there remain only a few reports of RNAi-mediated silencing in response to systemic delivery of siRNA, and there are no reports of systemic efficacy in non-rodent species. Here we show that siRNAs, when delivered systemically in a liposomal formulation, can silence the disease target apolipoprotein B (ApoB) in non-human primates. *APOB*-specific siRNAs were encapsulated in stable nucleic acid lipid particles (SNALP) and administered by intravenous injection to cynomolgus monkeys at doses of 1 or 2.5 mg/kg. A single siRNA injection resulted in dose-dependent silencing of *APOB* messenger RNA expression in the liver 48 h after administration, with maximal silencing of >90%. This silencing effect occurred as a result of *APOB* mRNA cleavage at precisely the site predicted for the RNAi mechanism. Significant reductions in ApoB protein, serum cholesterol and low-density lipoprotein levels were observed as early as 24 h after treatment and lasted for 11 days at the highest siRNA dose, thus demonstrating an immediate, potent and lasting biological effect of siRNA treatment. Our findings show clinically relevant RNAi-mediated gene silencing in non-human primates, supporting RNAi therapeutics as a potential new class of drugs."

Behavior

• Referential gestural communication in wild chimpanzees (*Pan troglodytes*). Pika, S., & Mitani, J. (School of Psychology, Univ. of St. Andrews, St. Mary's Quad, St. Andrews, Fife, KY16 9JP, Scotland, U.K. [e-mail: *sp60@st-andrews.ac.uk*]). *Current Biology*, 2006, *16*, R191-R192.

"Humans commonly use referential gestures, for example pointing, which direct the attention of recipients to particular aspects of the environment. The use of these gestures has been linked with cognitive capacities such as mental state attribution because the recipient must infer the signaler's meaning. In our closest living relatives, the non-human primates, referential gestures have been reported only in captive chimpanzees interacting with their human experimenters and human-raised or language-trained apes. Here is the first evidence for the widespread use of a referential gesture by wild chimpanzees (*Pan troglodytes*)."

• Why are some animals so smart? Van Schalk, C. **(**Anthropological Inst. & Museum, Univ. of Zurich, Switzerland). *Scientific American*, 2006, *294*[4], 64-71.

In this article the author seeks to understand why some animals are smarter than others and studies the orangutans of Sumatra in an attempt to answer that question. It has been discovered that there is never-before-seen tool use among these apes, a sign of intelligence. The author proposes that culture is the key to this activity and that the ability to learn the skills of others by observation is a means by which animals can increase levels of intelligence.

• Wild rhesus monkeys generate causal inferences about possible and impossible physical transformations in the absence of experience. Hauser, M., & Spaulding, B. (Dept of Psych., Harvard Univ., Cambridge, MA 02138 [e-mail: *mdh@wjh.harvard.edu*]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2006, *103*, 7181-7185, <www.pnas.org/cgi/content/full/103/18/7181>.

"Human infants and adults generate causal inferences about the physical world from observations of single, novel events, thereby violating Hume's thesis that spatiotemporal

co-occurrence from prior experience drives causal perception in our species. Is this capacity unique or shared with other animals? We address this question by presenting the results of three experiments on free-ranging rhesus monkeys (*Macaca mulatta*), focusing specifically on their capacity to generate expectations about the nature of completely unfamiliar physical transformations. By using an expectancy violation looking-time method, each experiment presented subjects with either physically possible or impossible transformations of objects (e.g., a knife, as opposed to a glass of water, appears to cut an apple in half). In both experiments, subjects looked longer when the transformation was impossible than when it was possible. Follow-up experiments ruled out that these patterns could be explained by association. These results show that in the absence of training or direct prior experience, rhesus monkeys generate causal inferences from single, novel events, using their knowledge of the physical world to guide such expectations."

• Language evolution: Semantic combinations in primate calls. Arnold, K., & Zuberbühler, K. (K. Z., Sch. of Psychology, Univ. of St Andrews, St Andrews Fife KY16 9JP, Scotland [e-mail: *kz3@st-and.ac.uk*]). *Nature*, 2006, *441*, 303.

"Syntax sets human language apart from other natural communication systems, although its evolutionary origins are obscure. Here we show that free-ranging putty-nosed monkeys (*Cercopithecus nictitans*) combine two vocalizations into different call sequences that are linked to specific external events, such as the presence of a predator and the imminent movement of the group. Our findings indicate that nonhuman primates can combine calls into higher-order sequences that have a particular meaning."

• Apes save tools for future use. Mulcahy, N. J., & Call, J. (J. C., Max Planck Inst. for Evolutionary Anthropology, Deutscher Platz 6, D-04103 Leipzig, Germany [e-mail: *call@eva.mpg.de*]). *Science*, 2006, *312*, 1038-1040.

Planning for future needs, not just current ones, is one of the most formidable human cognitive achievements. Whether this skill is a uniquely human adaptation is a controversial issue. In one study, bonobos and orangutans selected, transported, and saved appropriate tools above baseline levels to use them 1 hour later (Experiment 1). Experiment 2 extended these results to a 14-hour delay between collecting and using the tools. Experiment 3 showed that seeing the apparatus during tool selection was not necessary to succeed. These findings suggest that the precursor skills for planning for the future evolved in great apes before 14 million years ago, when all extant great ape species shared a common ancestor.

Care

• Postsurgical pairing: A discussion by the Refinement & Enrichment Forum. Van Loo, P., Skoumbourdis, E., & Reinhardt, V. (V. R., 6014 Palmer Dr., Weed, CA 96094 [e-mail: *viktorawi@yahoo.com*]). *Animal Technology and Welfare*, 2006, *5*, 17-19, <www.awionline.org/Lab_animals/biblio/atw9.html>.

Most of the discussion involves monkeys, but the care of mice is also addressed.

• Community involvement in behavioral enrichment at the Phoenix Zoo. Tresz, H. (Phoenix Zoo, 455 N. Galvin Pkwy, Phoenix, AZ 85008 [e-mail: *HTresz@thephxzoo.com*]. *Animal Keepers' Forum*, 2006, Vol. *33*, No. 1, 12-16. Available at <www.brown.edu/primate/tresz.pdf> with permission from American Association of Zoo Keepers, Inc., Topeka, KS <www.aakz.org>.

Conservation

• Prediction of parasite infection dynamics in primate metapopulations based on attributes of forest fragmentation. Gillespie, T. R., & Chapman, C. A. (Program in Ecology & Evolutionary Biology, Univ. of Illinois, Urbana, IL 61802 [e-mail: *trg@uiuc.edu*]). *Conservation Biology*, 2006, *20*, 441-448.

"Although the effects of forest fragmentation on species and ecological processes have been the focus of considerable research in conservation biology, our capacity to predict how processes will be altered and which taxonomic or functional groups will be most affected by fragmentation is still poor. This problem is exacerbated by inherent temporal and spatial variability in fragment attributes. To improve our understanding of this interplay, we examined how various fragment attributes affect one potentially important ecological process, parasite infection dynamics, and considered how changes in this process affect host metapopulations. From August 1999 to July 2003 we surveyed red colobus (*Piliocolobus tephrosceles*) metapopulations inhabiting nine fragments (1.2 to 8.7 ha) in western Uganda to determine the prevalence and richness of strongyle and rhabditoid nematodes, a group of potentially pathogenic gastrointestinal parasites. We used noninvasive fecal flotation and sedimentation (n = 536) to detect parasite eggs, cysts, and larvae in colobus fecal samples. To obtain an index of infection risk, we determined environmental contamination with *Oesophagostomum* sp., a representative strongyle nematode, in canopy (n = 30) and ground vegetation plots (n = 30). Concurrently, physical (i.e., size, location, and topography) and biological (i.e., tree diversity, tree density, stump density, and colobine density) attributes were quantified for each fragment. Interfragment comparisons of nine potential factors demonstrated that an index of degradation and human presence (tree stump density) strongly influenced the prevalence of parasitic nematodes. Infection risk was also higher in the fragment with the highest stump density than in the fragment with the lowest stump density. These results demonstrate that host-parasite dynamics can be altered in com-

plex ways by forest fragmentation and that intensity of extraction (e.g., stump density) best explains these changes."

Disease

• Cowpox virus transmission from rats to monkeys, the Netherlands. Bee, M., van Doornum, G., Dorrenstein, G. M., Niesters, H. G. M., Stittelaar, K. J., Wolaters, M. A. B. I., van Bolhuis, H. G. H., & Osterhaus, A. D. M. E. (A. D. M. E. O., Inst. of Virology, Erasmus Univ. Rotterdam, P.O. Box 1738, 3000 DR Rotterdam, Netherlands [e-mail: *a.osterhaus@erasmusmc.nl*]). *Emerging Infectious Diseases*, 2006, *12*[6], <www.cdc.gov/ncidod/EID/vol12no06/05-1513.htm>.

"We report an outbreak of cowpox virus among monkeys at a sanctuary for exotic animals. Serologic analysis and polymerase chain reaction were performed on blood and swab samples from different rodent species trapped at the sanctuary during the outbreak. Sequence comparison and serologic results showed that brown rats (*Rattus norvegicus*) transmitted the virus to monkeys."

Evolution, Genetics, and Taxonomy

• Cranial remains of an Eocene tarsier. Rossie, J. B., Ni, X., & Beard, K. C. (Dept of Anthropology, Stony Brook Univ., Stony Brook, NY [e-mail: *james.rossie@stonybrook.edu*]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2006, *103*, 4381-4385; <www.pnas.org/cgi/content/full/103/12/4381>.

The phylogenetic position of tarsiers relative to anthropoids and Paleogene omomyids remains a subject of lively debate that lies at the center of research into anthropoid origins. Omomyids have long been regarded as the nearest relatives of tarsiers, but a sister group relationship between anthropoids and tarsiers has also been proposed. These conflicting phylogenetic reconstructions rely heavily on comparisons of cranial anatomy, but until now, the fossil record of tarsiers has been limited to a single jaw and several isolated teeth. In this article, cranial material of a fossil tarsiid from the middle-Eocene Shanghuang fissure-fillings in southern Jiangsu Province, China, is described. This facial fragment, which is allocated to *Tarsius eocaenus*, is virtually identical to the corresponding anatomy in living tarsiers and differs substantially from that of early anthropoids such as *Bahinia*, *Phenacopithecus*, and *Parapithecus*. This new specimen indicates that tarsiers already possessed greatly enlarged orbits and a haplorhine oronasal configuration by the time they are first documented in the fossil record during the middle Eocene.

• New primate genus from the Miocene of Argentina. Tejedor, M. F., Tauber, A. A., Rosenberger, A. L., Swisher, C. C., III, & Palacios, M. E. (El CNICT, Lab. de Invest. Evol. y Biodiv., Fac. de Ciencias Naturales, Sede Esquel, Univ. Nac. de la Patagonia "San Juan Bosco", Sarmiento 849, 9200 Esquel, Argentina [e-mail: *mtejedor@lieb.org.ar*]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2006, *103*, 5437-5441; <www.pnas.org/cgi/content/abstract/103/14/5437>.

"*Killikaike blakei* is a new genus and species of anthropoid from the late Early Miocene of southeastern Argentina based on the most pristine fossil platyrrhine skull and dentition known so far. It is part of the New World platyrrhine clade (Family Cebidae; Subfamily Cebinae) including modern squirrel (*Saimiri*) and capuchin monkeys (*Cebus*) and their fossil relatives known from Early to Middle Miocene and subrecent periods. Living cebines are relatively large-brained, adroit predatory foragers and live within complex social groups, and wild capuchins exhibit a wide range of behaviors associated with enhanced intelligence. We show that *K. blakei* lacks diagnostic derived characteristics of the lower face and premolar dentition that are shared by modern cebines, but its strongly vaulted frontal bone and capacious anterior cranial fossa indicate the early evolution of an enlarged forebrain."

• Reactivation by exon shuffling of a conserved *HLA-DR3*-like pseudogene segment in a New World primate species. Doxiadis, G. G. M., van der Wiel, M. K. H., Brok, H. P. M., de Groot, N. G., Otting, N., t'Hart, B. A., van Rood, J. J., & Bontrop, R. E. (Dept of Comparative Genetics & Refinement, Biomedical Primate Research Centre, P.O. Box 3306, 2280 GH, Rijswijk, Netherlands [e-mail: *doxiadis@bprc.nl*]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2006, *103*, 5864-5868; <www.pnas.org/cgi/content/full/103/15/5864>.

The common marmoset (*Callithrix jacchus*), a New World monkey species with a limited MHC class II repertoire, is highly susceptible to certain bacterial infections. Genomic analysis of exon 2 sequences documented the existence of only one *DRB* region configuration harboring three loci. Two of these loci display moderate levels of allelic polymorphism, whereas the *-DRB*W12* gene appears to be monomorphic. This study shows that only the *Caja-DRB*W16* and *-DRB*W12* loci produce functional transcripts. The *Caja-DRB1*03* locus is occupied by a pseudogene, given that most of the transcripts, if detected at all, show imperfections and are present at low levels. Moreover, two hybrid transcripts were identified that feature the evolutionarily conserved peptide-binding motif characteristic for the *Caja-DRB1*03* gene. Thus, the severely reduced MHC class II repertoire in common marmosets has been expanded by reactivation of a pseudogene segment as a result of exon shuffling.

• Asa Issie, Aramis and the origin of *Australopithecus.* White, T. D., Gabriel, G. W., Asfaw, B., Ambrose, S., Beyene, Y., Bernor, R. L., Boisserie, J.-R., Currie, B., Gilbert, H., Haile-Selassie, Y., Hart, W. K., Hlusko, L. J., Howell, F. C., Kono, R. T., Lehmann, T., Louchart, A., Lovejoy, C. O., Renne, P. R., Saegusa, H., Vrba, E. S.,

Wesselman, H., & Suwa, G. (Dept of Integrative Biology, Univ. of California, Berkeley, CA 94720 [e-mail: *timwhite@berkeley.edu*]). *Nature,* 2006, *440,* 883-889.

"The origin of *Australopithecus*, the genus widely interpreted as ancestral to *Homo*, is a central problem in human evolutionary studies. *Australopithecus* species differ markedly from extant African apes and candidate ancestral hominids such as *Ardipithecus*, *Orrorin* and *Sahelanthropus*. The earliest described *Australopithecus* species is *Au. anamensis*, the probable chronospecies ancestor of *Au. afarensis*. Here we describe newly discovered fossils from the Middle Awash study area that extend the known *Au. anamensis* range into northeastern Ethiopia. The new fossils are from chronometrically controlled stratigraphic sequences and date to about 4.1 to 4.2 million years ago. They include diagnostic craniodental remains, the largest hominid canine yet recovered, and the earliest *Australopithecus* femur. These new fossils are sampled from a woodland context. Temporal and anatomical intermediacy between *Ar. ramidus* and *Au. afarensis* suggest a relatively rapid shift from *Ardipithecus* to *Australopithecus* in this region of Africa, involving either replacement or accelerated phyletic evolution."

• Independent evolution of bitter-taste sensitivity in humans and chimpanzees**.** Wooding, S., Bufe, B., Grassi, C., Howard, M. T., Stone, A. C., Vazquez, M., Dunn, D. M., Meyerhof, W., Weiss, R. B., & Bamshad, M. J. (Dept of Human Genetics, Univ. of Utah, 15 N. 2030 East, Salt Lake City, UT 84112-5330 [e-mail: *swooding@genetics.utah.edu*]). *Nature,* 2006, *440*, 930-934.

"It was reported over 65 years ago that chimpanzees, like humans, vary in taste sensitivity to the bitter compound phenylthiocarbamide (PTC). This was suggested to be the result of a shared balanced polymorphism, defining the first, and now classic, example of the effects of balancing selection in great apes. In humans, variable PTC sensitivity is largely controlled by the segregation of two common alleles at the *TAS2R38* locus, which encode receptor variants with different ligand affinities. Here we show that PTC taste sensitivity in chimpanzees is also controlled by two common alleles of *TAS2R38*; however, neither of these alleles is shared with humans. Instead, a mutation of the initiation codon results in the use of an alternative downstream start codon and production of a truncated receptor variant that fails to respond to PTC *in vitro*. Association testing of PTC sensitivity in a cohort of captive chimpanzees confirmed that chimpanzee *TAS2R38* genotype accurately predicts taster status *in vivo*. Therefore, although Fisher et al.'s observations were accurate, their explanation was wrong. Humans and chimpanzees share variable taste sensitivity to bitter compounds mediated by PTC receptor variants, but the molecular basis of this variation has arisen twice, independently, in the two species."

• A new genus of African monkey, *Rungwecebus*: Morphology, ecology, and molecular phylogenetics. Davenport, T. R. B., Stanley, W. T., Sargis, E. J., De Luca, D. W., Mpunga, N. E., Machaga, S. J., & Olson, L. E. (Wildlife Conservation Society, Southern Highlands Conservation Programme, P.O. Box 1475, Mbeya, Tanzania [e-mail: *tdavenport@wcs.org*]). *Science*, 2006, *312*, 1378-1381.

"A new species of African monkey, *Lophocebus kipunji*, was described in 2005 from two sites in Tanzania. We have since obtained a specimen killed by a farmer on Mt. Rungwe, the type locality. Detailed molecular phylogenetic analyses of this specimen demonstrate that the genus *Lophocebus* is diphyletic. We provide a description of a new genus of African monkey, and of the only preserved specimen of this primate. Information on the animal's ecology and conservation is also presented."

• Comment on "The brain of LB1, *Homo floresiensis*". Martin, R. D., MacLarnon, A. M., Phillips, J. L., Dussubieux, L., Williams, P. R., & Dobyns, W. B. (The Field Museum, Chicago, IL 60605–2496 [e-mail: *rdmartin@fieldmuseum.org*]). *Science*, 2006, *312*, 997-998.

Endocast analysis of the brain *Homo floresiensis* by Falk et al. (Reports, 8 April 2005, p. 242) implies that the hominid is an insular dwarf derived from *H. erectus*, but its tiny cranial capacity cannot result from normal dwarfing. Consideration of more appropriate microcephalic syndromes and specimens supports the hypothesis of modern human microcephaly.

• Response to Comment on "The brain of LB1, *Homo floresiensis*". Falk, D., Hildebolt, C., Smith, K., Morwood, M. J., Sutikna, T., Jatmiko, Saptomo, E. W., Brunsden, B., & Prior, F. (Department of Anthropology, Florida State University, Tallahassee, FL 32306 [e-mail: *dfalk@fsu.edu*]). *Science*, 2006, *312*, 999.

Martin et al. claim that they have two endocasts from microcephalics that appear similar to that of LB1, *Homo floresiensis*. However, the line drawings they present as evidence lack details about the transverse sinuses, cerebellum, and cerebral poles. Comparative measurements, actual photographs, and sketches that identify key features are needed to draw meaningful conclusions about Martin et al.'s assertions.

• Early stone technology on Flores and its implications for *Homo floresiensis.* Brumm, A., Aziz, F., van den Bergh, G. D., Morwood, M. J., Moore, M. W., Kurniawan, I., Hobbs, D. R., & Fullagar, R. (Dept of Archaeology & Natural History, Australian National University, Canberra, Australian Capital Territory 0200, Australia [e-mail: *adam.brumm@anu.edu.au*]). *Nature,* 2006, *441*, 624-628.

"In the Soa Basin of central Flores, eastern Indonesia, stratified archaeological sites, including Mata Menge, Boa Lesa and Kobatuwa, contain stone artefacts associated with the fossilized remains of *Stegodon florensis*, Komodo dragon, rat and various other taxa. These sites have been

dated to 840–700 kyr bp (thousand years before present). The authenticity of the Soa Basin artefacts and their provenance have been demonstrated by previous work, but to quell lingering doubts, here we describe the context, attributes and production modes of 507 artefacts excavated at Mata Menge. We also note specific similarities, and apparent technological continuity, between the Mata Menge stone artefacts and those excavated from Late Pleistocene levels at Liang Bua cave, 50 km to the west. The latter artefacts, dated to between 95–74 and 12 kyr ago, are associated with the remains of a dwarfed descendent of *S. florensis*, Komodo dragon, rat and a small-bodied hominin species, *Homo floresiensis*, which had a brain size of about 400 cubic centimetres. The Mata Menge evidence negates claims that stone artefacts associated with *H. floresiensis* are so complex that they must have been made by modern humans (*Homo sapiens*)."

Instruments and Techniques

• A universal microsatellite multiplex kit for genetic analysis of great apes. Roeder, A. D., Jeffery, K., & Bruford, M. W. (Biodiversity & Ecological Processes Group, Cardiff School of Bioscience, Main Bldg, Cardiff Univ., Cardiff, Wales CF10 3TL, U.K. [e-mail: *roederad@cf.ac.uk*]). *Folia Primatologica*, 2006, *77*, 240-245.

"DNA profiling with microsatellite markers is a commonly used genetic method of studying the great apes. An efficient method of generating the genetic data is amplification of multiple microsatellites in a single PCR reaction. Here we describe a PCR multiplex in which 9 genetic markers can be amplified simultaneously, thereby saving time, expenses and DNA. This marker system can discriminate between all the great ape species except bonobos and chimpanzees. Furthermore, the cumulative probability of identity values were low for all four species tested."

• A dynamic force analysis system for climbing of large primates. Schoonaert, K., D'Août, K., & Aerts, P. (Lab. of Functional Morphology, Dept of Biology, Univ. of Antwerp, Universiteitsplein 1, BE-2610 Wilrijk, Belgium [e-mail: *Kirsten.schoonaert@ua.ac.be*]). *Folia Primatologica*, 2006, *77*, 246-254.

"Registering substrate reaction forces from primates during climbing requires the design and construction of customized recording devices. The technical difficulties in constructing a reliable apparatus hinder research on the kinetics of primate locomotion. This is unfortunate since arboreal locomotion, especially vertical climbing, is an important component of the hominoid locomotor repertoire. In this technical paper, we describe a custom-built climbing pole that allows recordings of dynamic 3-dimensional forces during locomotion on horizontal and sloping substrates and during vertical climbing. The pole contains an instrumented section that can readily be modified and enables us to register forces of a single limb or multiple limbs in a broad range of primates. For verification, we constructed a similar set-up (which would not be usable for primates) using a conventional force plate. Data for a human subject walking on both set-ups were compared. The experimental set-up records accurate and reliable substrate reaction forces in three orthogonal directions. Because of its adjustability, this type of modular set-up can be used for a great variety of primate studies. When combining such kinetic measurements together with kinematic information, data of great biomechanical value can be generated. These data will hopefully allow biological anthropologists to answer current questions about primate behaviours on vertical substrates."

Reproduction

• Father-daughter inbreeding avoidance in a wild primate population. Muniz, L., Perry, S., Manson, J. H., Gilkenson, H., Gros-Louis, J., & Vigilant, L. (S. P., Dept of Anthropology, UCLA, Los Angeles, CA 90095 [e-mail: *sperry@anthro.ucla.edu*]). *Current Biology*, 2006, *16*, R156-R157.

"The most common way by which social animals avoid breeding with relatives is for members of one or both sexes to disperse before reproducing. In capuchin monkeys – as in most primates – males disperse while females benefit from lifelong relationships with maternal kin within the group. If alpha males – who sire most offspring in a given group – retain their rank for longer than 6 years, the age at which females reach sexual maturity, father-daughter inbreeding could occur. Here, we combine data from long-term observations and DNA analyses and present extensive genetic evidence for effective avoidance of father-daughter inbreeding without dispersal in wild capuchin monkeys."

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