

# **LABORATORY PRIMATE NEWSLETTER**

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## POLICY STATEMENT

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

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

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

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

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Cover photograph of a white-handed gibbon (*Hylobates lar*),  
taken at the San Diego Zoo by Mark Abbott in 2007

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## Information Requested or Available

### Specific Gravity of Primates' Urine

Brooke Aldrich, of the Monkey Sanctuary Trust, Looe, Cornwall, PL13 1NZ, U.K. [Phone and fax: 01503 262 532; e-mail: [email@monkeysanctuary.org](mailto:email@monkeysanctuary.org)] has been trying to monitor the health of an elderly female patas monkey (*Erithrocebus patas*). Part of the monitoring is regular 'multistix' tests of her urine. Multistix measure a variety of things (glucose, protein, and so on). "Most of them we have a grip on but normal specific gravity seems to vary between humans, cats, and dogs and I can only assume different primate species have different 'normal' measures. If anyone can furnish values, or references to values, for patas monkeys (and, for that matter, other primate species, such as Barbary macaques, various capuchins, woolly monkeys), we will be very grateful."

### The Enrichment Record

"The first issue of *The Enrichment Record* is now available online. This quarterly E-Zine has been created by and for the laboratory animal research community as an online forum for:

- discussing environmental enrichment in the optimal care of laboratory animals;
- documenting best practices and approaches for addressing challenges of implementation and assessment at every level;
- sharing data on the impact of environmental enrichment on science; and

- building the case for integrating enrichment into research design.

"This community-based publication is not peer-reviewed. However, members of our Editorial Board are actively involved in all aspects of the publication. If you want to write an article, submit a topic for discussion, or have any suggestions for ways to expand and engage our community in a lively dialogue on this subject, please contact Jayne Mackta [732.869.9499; e-mail: [mackta@gr8tt.com](mailto:mackta@gr8tt.com)].

"Subscriptions are free; the potential benefit to lab animal welfare of sharing is priceless. We encourage you to subscribe and to spread the word about this new resource; see <[www.gr8tt.com/enrichrecord.html](http://www.gr8tt.com/enrichrecord.html)>."

### More Interesting Websites

- American Association for Laboratory Animal Science (AALAS)'s online *Buyers Guide*: <[laboratoryanimalsciencebuyersguide.com](http://laboratoryanimalsciencebuyersguide.com)>
- *Animal Technology and Welfare*: <[www.nc3rs.org.uk](http://www.nc3rs.org.uk)>
- Legal Books from LexisNexis: <[www.lexisnexis.com/store/catalog/category\\_lawfirms.jsp?segmentid=seg\\_law](http://www.lexisnexis.com/store/catalog/category_lawfirms.jsp?segmentid=seg_law)>
- National Association for Biomedical Research's Animal Law Section: <[www.NABRanimallaw.org](http://www.NABRanimallaw.org)>

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## Primateology, Wildlife Ecology, and Conservation Field School

Jack Harris, Professor of Anthropology, Rutgers University, and Co-Director of Field Schools, Kenya, recently wrote to the Primate-Science mailing list: "The fourth annual Primateology, Wildlife Ecology, and Conservation Field School will be held from August 3rd – 28th, 2010, in Kenya. This field school is a joint effort of Rutgers University, the National Museums of Kenya, and the Kenya Wildlife Services.

"The field school provides a distinctive opportunity for students to gain hands-on experience in field work methodologies and research on some of Kenya's exquisite wildlife including a variety of Old World primates. One site we will visit is the Tana River Primate National Reserve where students will conduct independent research projects and have the opportunity to observe not only the two endemic and endangered species, the Tana River mangabey and Tana River red colobus, but also yellow baboons and Sykes monkeys.

"We will also spend time on the Laikipia Plateau of central Kenya. At the different sites where we camp, students will receive lectures, complete readings, and have discussions with the Field School directors as well as a wide range of consultants to the Field School including Dr. Martin Mulama of Sweetwaters Chimpanzee Sanctuary, Dr. Paul Muoria of the African Wildlife Foundation, and Dr. Daniel Rubenstein of Mpala Research Centre, to name a few. In addition, we will stay on Mugie Ranch where we will visit their black rhino sanctuary and data collection lab. We will observe radio-collared lions and learn about the Laikipia Predator Project from Project Biologist Alayne Cotterill. Students will also do field work, making the Field School worth six academic credits.

"To obtain more information about this program, see <[primate.rutgers.edu](http://primate.rutgers.edu)>, contact me directly at <[jwharris@rci.rutgers.edu](mailto:jwharris@rci.rutgers.edu)>, or visit the Rutgers Study Abroad Website at <[studyabroad.rutgers.edu](http://studyabroad.rutgers.edu)>."

## News Briefs

### FBR's New Campaign

The Foundation for Biomedical Research (FBR) commissions public opinion polls and has found a precipitous drop in public support of animal research, from 64% in 2004 to 54% in 2008. In response, FBR recently launched ResearchSaves, a campaign to explain why animal research is an essential step in finding new treatments and cures for disease. "ResearchSaves corrects misconceptions about biomedical research and stresses that animal research is important, humane, and necessary to save lives," FBR president Frankie Trull said. The campaign includes a robust media strategy to reach as many Americans as possible, including national TV and radio spots, billboards in select markets, social media outreach through *Twitter* and *Facebook*, and *ResearchSaves*, a quarterly magazine that highlights the latest medical breakthroughs with foundations in animal research. – *FBR's The Research Advocate, September 9*

### Successful Congo Basin Forest Partnership

The Congo Basin Forest Partnership consists of an international association of more than forty governments, international organizations, and private sector and civil society representatives and is designed to enhance the sustainable management of the Congo Basin ecosystem. The Partnership promotes economic development, poverty alleviation, and effective governance through the conservation and sustainable management of natural resources, including forests and wildlife. It serves as a global model of public/private cross-boundary cooperation and has resulted in improved sustainable forest management, new multi-national, anti-poaching initiatives, and a declining rate of biodiversity loss for a rainforest area larger than Texas.

The United States government has invested more than \$100 million in funds and technical expertise into the Partnership over the last ten years. By the end of 2009, through the Central Africa Regional Program for the Environment (CARPE), U.S. programs have improved land management of 56 million hectares; trained nearly 25,000 people in conservation; put in place ten forestry, biodiversity, and conservation laws; allocated \$2.5 million in small grants to local NGOs; provided for logging concession monitoring in Cameroon, Central African Republic, the Republic of Congo, Gabon, and the Democratic Republic of Congo (DRC); and completed a logging title conversion process in the Democratic Republic of Congo, with additional support from the World Bank and the European Union.

Established at the 2002 World Summit on Sustainable Development, the Partnership operates within the framework of the Council of Ministers in charge of the Forests

of Central Africa (COMIFAC: <[www.comifac.org](http://www.comifac.org)>) and in accordance with its strategic plan, the Plan de Convergence. The Partnership focuses on 12 ecologically sensitive and biologically diverse areas and wildlife corridors called forest landscapes, which are viewed as the most vulnerable to deforestation and other threats to biodiversity. Together, these landscapes comprise more than 80 million hectares of critically important tropical forest in Central Africa.

Other U.S. agencies that have invested in the Congo Basin Forest Partnership include the U.S. Agency for International Development, the U.S. Forest Service, and the U.S. Fish and Wildlife Service. – *U.S. Dept of State Press Release: September 29, 2009*

### Grand Opening of Baboon Cliffs Exhibit

A ribbon cutting ceremony took place October 1 at the Oakland (California) Zoo to celebrate the grand opening of the new Baboon Cliffs Exhibit. The Baboon Cliffs Exhibit is approximately 8,100 square feet and includes a cascading waterfall, climbing structures, a spacious area for the baboons to roam, a night house facility, and offices for Zoo staff. The exhibit also has a large viewing deck for the public. – *Press release, October 1, 2009*

### Extended Habitat for the Greater Bamboo Lemur

One of the world's most endangered primates, the greater bamboo lemur, a species endemic to Madagascar, has been found in an area where it was feared extinct, environmental organizations said on October 5. The species, *Prolemur simus*, has been found at 11 sites in a swath of forest in the east of the island. This finding opens "a new chapter for the species and for the places we can protect it by preserving the forest as the main problem is loss of habitat," Mahaoly Ravaloharimanitra, a research assistant at the Aspinall Foundation, told Agence France-Press (AFP).

Illegal logging and slash-and-burn agriculture are among the practices that threaten the survival of this species. Primate specialists say that while this type of lemur was once found throughout this Indian Ocean island, now no more than 300 individuals are still in existence. As its common name suggests, *Prolemur simus* feeds mainly on bamboo, which limits its habitat options. "They are very secretive, which makes it difficult to approach them and protect them. Most of the time we don't see the animal, just traces of food or droppings," Tovanahary Rasolofoharivelo from Conservation International told AFP.

The greater bamboo lemur was thought to be extinct until it was rediscovered in the 1980s, the two associations said in a statement. – *Copyright © 2009 AFP*

## More U.S. Law Schools Have Animal Law Courses

Over half of U.S. law schools now have animal law courses, including many in universities with medical and research programs that utilize animals protected by federal welfare laws. Courses that promote standards for humane animal care and welfare are unlikely to provoke conflict, but programs championing animal rights or “liberation” set up adversarial potential on campuses and pose a serious risk to the future of animal research. The use of the law instead of violence and threats, however, should be acknowledged as a forward step.

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## Position Available: The Animal Welfare Institute

The Animal Welfare Institute in Washington DC is accepting applications for its full-time position of Laboratory Animal Advisor. Candidates are expected to:

- have a genuine reverence for living creatures;
  - not be afraid to actively express compassion for animals kept in research laboratories and educational institutions;
  - not be categorically against research with animals;
  - not be categorically for research with animals;
  - have several years of experience with traditional and refined housing and handling practices for at least one nonhuman primate species and at least one non-primate species commonly found in research labs;
  - be familiar with the professional and scientific literature pertaining to the housing and handling of animals assigned to research and teaching projects;
  - have published several professional or scientific articles (a copy of one article should be attached to the application);
  - publish articles on species-adequate housing and stress-mitigating handling of animal species commonly found in laboratories;
- visit animal research facilities and offer advice on species-adequate housing and stress-mitigating handling of animal species commonly found in laboratories;
  - represent the Animal Welfare Institute at professional and scientific meetings;
  - manage and update at a three-month interval two annotated databases on • environmental enrichment and • refinement for animals in research institutions; and
  - write comments on federal draft regulations and professional draft guidelines on the housing and handling of animals kept in research laboratories.

No specific academic or professional diplomas are required to apply for this position, which is presently held by Viktor Reinhardt, who will be retiring. Candidates are free to specify their salary expectations in their applications. Applications – original and two copies – should be mailed to Cathy Liss, 900 Pennsylvania Ave. SE, Washington, DC 20003, by May 1, 2010. The position will be available on September 1, 2010.

\* \* \*

## Call for Nominations: ASLAP Research Award

Nominations for the 2010 American Society of Laboratory Animal Practitioner’s (ASLAP) Research Award may be submitted, by January 15, 2010, to Dr. Fred Rock (ASLAP Secretary-Treasurer) through the ASLAP Office (Darlene Brown, ASLAP Coordinator, P.O. Box 125, Adamstown, MD 21710 [e-mail: [aslap@aaalac.org](mailto:aslap@aaalac.org)]). This award was created to honor members in good standing of ASLAP and the American Veterinary Medical Association (AVMA) for scientific contributions to the fields of laboratory animal medicine and/or comparative medicine. The award is intended to honor individuals who have made significant and repeated scientific contributions to the field. The scientific contributions may be of significance to refinement or development of technical procedures within laboratory animal medicine which have

resulted in contributions to animal welfare, animal husbandry, animal health, or development of animal models. Studies which have used laboratory animals and have resulted in significant contributions to human health, either through basic or applied research, are also applicable. While the award is not intended to be for recognition of administrative accomplishments alone, contributions to the service functions of ASLAP and other professional organizations will also be evaluated.

A nomination letter, four to six supporting letters directly relating to the award criteria, and a curriculum vitae should be submitted. Awards will be presented at the AVMA meeting in July of the same year. The awardee will receive a plaque and an honorarium.

## Resources Wanted and Available

### Housing and Handling Photos Wanted

Viktor Reinhardt is seeking photo material for his second volume of LAREF discussions (see [labanimals.awionline.org/pubs/LAREF/LAREF-bk.html](http://labanimals.awionline.org/pubs/LAREF/LAREF-bk.html) for first volume). If you can and want to share photos related to refinement of housing and handling conditions of nonhuman primates, or any other species kept in research institutions, please send them as .JPG files to [viktor@snowcrest.net](mailto:viktor@snowcrest.net) or as prints to Viktor Reinhardt, 6014 Palmer Dr., Weed, CA 96094 U.S.A. Please include a brief explanation of each picture.

### NIH Curriculum Supplement: "Exploring Bioethics"

"Exploring Bioethics" is a model for ethical inquiry to help students in grades 6 to 12 develop thoughtful positions on complex bioethical issues. The supplement's six modules each contain three 45-minute class periods of lessons on a specific issue. The topics presented are genetic testing, the use of human subjects in research, steroid use by athletes, organ allocation for transplants, and the modification of animals for human benefit. The lessons promote problem-solving and communication skills, critical thinking, and teamwork. The curriculum supplement presents six three-day lessons in a convenient, all-in-one resource that is well organized for integration into a broader curriculum. "Exploring Bioethics" is available at [science.education.nih.gov/customers.nsf/HSBioethics.htm](http://science.education.nih.gov/customers.nsf/HSBioethics.htm). – *National Institutes of Health, September 15*

### IJCP Freely Available Online

The *International Journal of Comparative Psychology* is now freely accessible online. For more information, see: [www.ComparativePsychology.org](http://www.ComparativePsychology.org).

### Primate Sanctuary Computer Program Update

Nedim C. Buyukmihci has announced that an updated version (November 24, 2009) of his Primate Sanctuary Database program is on the Website [www.cbydata.org/pigbyte\\_psd.html](http://www.cbydata.org/pigbyte_psd.html) for downloading and installing. It has several enhancements (see the Website for list). If you already have the program, you only need to download the update installation file. He recommends you install this update so that you can take advantage of the new features.

As stated before, if you are using the program and provide him with an e-mail address, he will place you on the list to notify when an update becomes available. E-mail Ned at [ncbuyukmihci@ucdavis.edu](mailto:ncbuyukmihci@ucdavis.edu). Your address will be kept private.

[*Editors' Note: We will not be repeating this announcement, so get onto his mailing list!*]

### Australasian Conference Abstracts

Abstracts of the 2002, 2007, and 2008 conferences of the Australasian Primate Society are now available at [www.primates.on.net/apsconf.htm](http://www.primates.on.net/apsconf.htm).

### Updated Guidance in Protocol Review

The *Guidance* section of the Office of Laboratory Animal Welfare (OLAW) home page, [grants.nih.gov/grants/olaw/references/commentary.htm](http://grants.nih.gov/grants/olaw/references/commentary.htm), has updated its *Commentary on Lab Animal Protocol Review* Columns. "A Word from OLAW and USDA" responds to the topic *Required Modifications and Designated Member Reviews* in the July, 2009, issue. The November, 2009, issue addresses *Categorizing Insufficient Pain Alleviation*. To further explore these and other topics, browse the OLAW Topic Index. – *from the National Institutes of Health, November 28*

### Evolution Versus Creation

This is a Yahoo group, at [groups.yahoo.com/group/evolutionversuscreation](http://groups.yahoo.com/group/evolutionversuscreation), featuring discussions of past and current events in science, technology, and society.

### Interspecies Dosage Calculator

The Federal Drug Administration has brought back the Interspecies Dosage Calculator, which will allow you to convert dosages from mg/kg to mg/sq-m (body surface area) and allow you to determine equivalent doses across species. [www.fda.gov/Drugs/DevelopmentApprovalProcess/DevelopmentResources/CancerDrugs/UCM189252](http://www.fda.gov/Drugs/DevelopmentApprovalProcess/DevelopmentResources/CancerDrugs/UCM189252). – *posted to COMPMED by Bob Harris*

### First Voluntary Gorilla Blood Pressure Reading

Zoo Atlanta recently became the first zoological institution in the world to obtain voluntary blood pressure readings from a gorilla. This groundbreaking stride was made possible by the Gorilla Tough Cuff, a blood pressure reading system devised through partnership with the Wallace H. Coulter Department of Biomedical Engineering at Georgia Institute of Technology and Emory University. Created as a senior design project by biomedical engineering undergraduates David Sotto, Nisha Bhatia, Stephanie Drewicz, and Scott Seaman, the prototype has now been successfully tested on one of Zoo Atlanta's 22 western lowland gorillas. The students also had guidance from Professors Hanjoong Jo, and Franklin Bost.

The Gorilla Tough Cuff operates in the same manner as the mechanism familiar to humans, with the patient slipping an arm into a cuff. As the cuff inflates, the blood pressure reading is measured and displayed on a monitor. The student design team's biggest set of challenges, however, was constructing a durable, comfortable cuff large enough to fit an adult male gorilla weighing upwards of 300 pounds. The prototype system was comprised of a blood pressure cuff bolted to a casing made of acrylonitrile butadiene styrene plastic. The casing was zip-tied to a rectangular mesh trap and the trap was temporarily attached to the gorilla cage. The pressure cuff tubing was connected to an off-the-shelf veterinary blood pressure monitor located outside of the gorilla cage.

"We also built a safety mechanism into the device so that the gorillas would not be injured if they became alarmed or frightened and tried to remove their arm from the cuff," said Sotto, who is currently a graduate student at Georgia Tech.

Once the prototype was complete, the Tough Cuff had its first tester: Ozzie, a 48-year-old male western lowland gorilla. Gorillas aren't typically keen on the idea of inserting their arms into inflatable cuffs: Ozzie's accomplishment is the result of months of patience and diligent voluntary positive reinforcement training on the part of Zoo Atlanta's Primate Team.

One of four geriatric gorillas living at the Zoo, Ozzie is at an age where he may be subject to health concerns similar to those experienced by mature humans. Cardiac disease is the leading cause of mortality in adult male gorillas living in captive settings, and the new system will enable veterinarians to more effectively monitor precursory signs such as high blood pressure.

The Gorilla Tough Cuff has already been demonstrated for veterinarians and animal care professionals from numerous other accredited zoos. The device could ultimately prove invaluable to the more than 100 institutions around the world currently housing the species. – November 10, Georgia Tech press release

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## Announcements from Publications

### **Biology Direct Publishes Thematic Series**

In this Darwin 150<sup>th</sup> Birthday Year *Biology Direct* has published the first articles in a thematic series covering today's understanding of evolution at all levels. See <[www.biology-direct.com/series/Darwin\\_Anniversary](http://www.biology-direct.com/series/Darwin_Anniversary)>. Further articles will be added to the series in due course, and proposals are welcome for consideration.

### **Primate Specialist Group's Publications Online**

All past editions of the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC) Primate Specialist Group (PSG)'s newsletters and journals are now available online through the PSG Website. These are the Web addresses for each of these publications. All of the following are now available with open access at <[www.primates-g.org/journals.htm](http://www.primates-g.org/journals.htm)>.

- *Primate Conservation* from No 1, 1981: <[www.primates-g.org/pc.htm](http://www.primates-g.org/pc.htm)>
- *Asian Primates Newsletter* from I[1], 1991: <[www.primates-g.org/as.htm](http://www.primates-g.org/as.htm)>
- *Asian Primates Journal* from I[1], 2008: <[www.primates-g.org/apj.htm](http://www.primates-g.org/apj.htm)>
- *Neotropical Primates* from I[1], 1993: <[www.primates-g.org/np.htm](http://www.primates-g.org/np.htm)>
- *African Primates* from I[1], 1995: <[www.primates-g.org/ap.htm](http://www.primates-g.org/ap.htm)>
- *Lemur News* from No. 1, 1996: <[www.primates-g.org/ln.htm](http://www.primates-g.org/ln.htm)>

### **African Primates Invites Submissions**

Carolyn L. Ehardt, Senior Editor for the IUCN SSC Primate Specialist Group's journal *African Primates*, enthusiastically invites submissions to that journal from all who conduct research on or have information about Africa's primate species. This journal will now be published as an Open Resource journal, fully indexed, and available worldwide, including to the 1200+ readership that has received printed copies in the past. The journal fell into a prolonged hiatus during the transition between editors, but Ehardt is now expecting the inaugural edition of the revitalized journal to launch very soon. If any of you or your students/colleagues wish to submit materials for consideration for publication in the journal, please do so. The document *Notes and Instructions for Contributors to African Primates*, which has all relevant information, is available at <[www.primates-g.org/PDF/APguideline.pdf](http://www.primates-g.org/PDF/APguideline.pdf)>.

*African Primates* encourages submission of relevant information in the form of research findings, field survey results, advances in field and laboratory techniques, field action alerts, and book reviews, as well as notification of events, funding possibilities, grassroots efforts such as letter-writing campaigns and other activities that might benefit from the support of the readership, and recent publications in other formats (including reports and theses). All submissions should be sent to the Senior Editor [e-mail: [Carolyn.Ehardt@utsa.edu](mailto:Carolyn.Ehardt@utsa.edu)]. Research articles are peer-reviewed before acceptance for publication.

## Meeting Announcements

The Center for Disease Control and Prevention (CDC)'s **11th International Symposium on Biosafety: Management Challenges for Safe Operation of BSL3/ABSL3 Facilities**, will be held January 23-27, 2010, at the Crowne Plaza Ravinia, Atlanta, Georgia. For more information, see <[www.eagleson.org/cdc](http://www.eagleson.org/cdc)>.

"The **50th Annual Conference of the Northeastern Anthropological Association** will be held March 5-7, 2010, at the Marriott Hotel in Amherst, New York, adjacent to the campus of the State University of New York at Buffalo (UB). UB, which hosted the first NEAA conference, is pleased to be able to sponsor and host this 50th anniversary conference. We have chosen as our theme 'Borders, Margins, and Passages'. Buffalo, which sits on an international border, is an ideal location from which to think about these critical issues in contemporary anthropology, as borders become blurred or erased in an age of globalization; refugees and immigrants dominate attention to national identities; and anthropologists increasingly find that fieldwork takes on global dimensions. Registration fees will be the same as last year: Professional rate: \$40; Student rate: \$25. The Saturday banquet will be \$25 per person. This year the NEAA will use an online conference planning system for registration and for collecting proposals for paper presentations and sessions. Conference participants can check the NEAA Website, <[www.neaa.org](http://www.neaa.org)>, for a link to that system. Paper and poster abstracts and proposals for organized sessions should be submitted by January 15, 2010."

The **Animal Transport Association (AATA)** announces that its 2010 annual conference will be held in Fort Lauderdale, Florida, May 9-12, 2010. The goals of the Association are to further the ability for animals to be transported and to ensure that this transport is carried out in a humane manner, consistent with all applicable rules and regulations. The AATA acts to monitor the myriad of regulations and policies that affect this transport, as well as the transport of exotics, livestock, companion animals, equines and many other species. The 2010 Florida conference will have a specific track geared towards issues and concerns involving the transport of laboratory animals. If you wish to be kept informed about programming and registration information, contact Matt Block and ask to be placed on the distribution list. Additionally, AATA is seeking sponsors and exhibitors who

may be interested in having a presence and promoting their business at this international event. For further details, contact Matt Block, Chair-Sponsorships and Exhibits, AATA-2010 [305-588-0998; e-mail: [matt.block@wwprimates.com](mailto:matt.block@wwprimates.com)]; or see <[www.aata-animaltransport.org](http://www.aata-animaltransport.org)>.

The **International Society for Comparative Psychology** is organizing its 15th Biennial Meeting in Hyogo, Japan, May 19-21, 2010. Check the program and consider submitting an abstract for an oral or poster presentation: <[www.ComparativePsychology.org](http://www.ComparativePsychology.org)>.

The **Annual Forum of the American College of Veterinary Internal Medicine** will take place June 9-12, 2010, in Anaheim, California. For information, see <[www.acvimforum.org/websites/forum2010/index.php?p=358](http://www.acvimforum.org/websites/forum2010/index.php?p=358)> or call 800-245-9081 (U.S. and Canada only).

The **American Society of Primatologists** will meet June 16-19, 2010, in Louisville, Kentucky. Abstracts for all presentations will be due January 29th, 2010. See <[www.asp.org/meetings/index.html](http://www.asp.org/meetings/index.html)>.

An **International Course on Laboratory Animal Science IV** will be held October 4-15, 2010, in Vari, Greece, organized at the Biomedical Sciences Research Center (BSRC) Alexander Fleming – Vari. The objective of this course is to present basic facts and principles that are essential for the humane use and care of animals and for the quality of research. The contents of the course are in line with recommendations of the Federation of European Laboratory Animal Science Associations regarding the training of the young scientist whose research involves the use of vertebrate animals. For information and application forms, please contact Marie Kamber, BSRC Alexander Fleming, 34, Alexander Fleming Str., P.O. 16672, Vari, Greece [00 30 210 9656310; Fax: 00 30 210 9656563; e-mail: [kamber@fleming.gr](mailto:kamber@fleming.gr)]; and see <[www.fleming.gr](http://www.fleming.gr)>.

**Behavior 2011**, the joint meeting of the **Animal Behavior Society** and the **International Ethological Conference (IEC)**, will be held July 25-30, 2011, at Indiana University in Bloomington, Indiana. More information about the meeting is available at <[www.indiana.edu/~behav11](http://www.indiana.edu/~behav11)>.

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## Grants Available

### Project Proposals for Ape Conservation

The U.S. Fish and Wildlife Service's (USFWS) Great Ape Conservation Fund is soliciting project proposals for the conservation of apes: gorillas, chimpanzees, bonobos, orangutans, and gibbons throughout their ranges. Now is an ideal time to apply for field activities taking place in 2010. The USFWS program for African great apes is carried out in collaboration with the U.S. Agency for International Development's (USAID) Central African Regional Program for the Environment (CARPE).

The Great Ape Conservation Fund's next regular deadline is April 1, 2010. This applies to other USFWS multinational species funds: African Elephant, Asian Elephant, Rhinoceros, and Tiger. As the Website has recently been redesigned, please use these links:

- Program guidelines and application procedures for the Great Ape Conservation Fund are available at: [www.fws.gov/international/DIC/species/great\\_apes/ga\\_howtoapply.html](http://www.fws.gov/international/DIC/species/great_apes/ga_howtoapply.html).
- Guidelines and information for the other multinational species conservation funds are available at: [www.fws.gov/international/DIC/species/species.html](http://www.fws.gov/international/DIC/species/species.html).

The entire application must be sent as one file (a single .doc or .pdf containing the signed cover page, text of the proposal, maps, budget, government letters of endorsement, etc.). The file must be formatted for letter. Please include sequential page numbers in a header on the top of every page.

Please submit your completed application by e-mail to: [MSCF\\_GreatApe@fws.gov](mailto:MSCF_GreatApe@fws.gov).

If you have any questions, contact Dirck Byler, Program Officer, Great Apes Africa [703-358-2337; e-mail: [dirck\\_byler@fws.gov](mailto:dirck_byler@fws.gov)]; or Fred Bagley, Program Officer, Great Apes Asia [703-358-1760; [fred\\_bagley@fws.gov](mailto:fred_bagley@fws.gov)].

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### Workshop Announcement: Animal Concepts Workshops

Animal Concepts [www.animalconcepts.eu](http://www.animalconcepts.eu) announces two workshops for 2010:

- Environmental Enrichment Workshop with David Sheperdson and other speakers in collaboration with the Odense Zoo in Denmark: April 22-25, 2010; and
- Advanced Animal Learning Seminar with Tim Sullivan

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### Call for Applications to the GLAS Program

The American Association for Laboratory Animal Science (AALAS) Grants for Laboratory Animal Science (GLAS) Program, now entering its fourth year, provides competitive one-year research grants to AALAS member applicants who wish to enhance the scientific knowledge of laboratory animals through research. Examples of research topics for consideration are: • environmental conditions; • housing and enrichment; • pain and distress; • health and welfare; • euthanasia; and • advancements in animal care and use. The principal investigator applying for a GLAS application award may be anyone in the laboratory animal science field who is an AALAS member, such as technicians, veterinarians, and research scientists. The GLAS program encourages all those involved in the care and use of animals to apply for grants independent of their education or scientific background. Collaboration with the broader scientific community is encouraged, and co-investigators are not required to be AALAS members. The Scientific Advisory Committee oversees this program and issues awards of up to \$50,000. Applications and instructions are available on [www.aalas.org/glas](http://www.aalas.org/glas). Only electronically submitted applications in their original format will be accepted through February 1, 2009. Awardees will be notified in April, 2010, and funds will be dispersed in May.

For guidance in preparing and submitting a GLAS application, the online tutorial on the AALAS GLAS web page • explains the different GLAS application sections; • presents examples of a successful application; and • outlines strategies for success in a GLAS application.

Please visit [www.aalas.org/glas](http://www.aalas.org/glas) for an application form, supporting documents, list of previous awardees, and the tutorial. Contact us at [glas@aalas.org](mailto:glas@aalas.org) for more information about the GLAS program.

and other speakers in collaboration with the Chester Zoo in the U.K.: June 4-7, 2010.

More information will be available soon on [www.animalconcepts.eu](http://www.animalconcepts.eu). If you are interested in either (or both) program(s), contact Sabrina at [animalconcepts@me.com](mailto:animalconcepts@me.com) or [sbrando@animalconcepts.eu](mailto:sbrando@animalconcepts.eu).

## Recent Books and Articles

(Addresses are those of first authors unless otherwise indicated)

### Books

- *The Age of Empathy: Nature's Lessons for a Kinder Society*. F. de Waal. New York: Random House, 2009. [Price: \$25.99]
- *The Fruit, the Tree, and the Serpent: Why We See So Well*. L. A. Isbell. Cambridge, MA: Harvard University Press, 2009. [Price: £33.95; US\$45]
- *A New Biology for the 21st Century: Ensuring the United States Leads the Coming Biology Revolution*. Washington, DC: National Academies Press. [Free prepublication copy: contact 202-334-3313 or 800-624-6242 or <www.nap.edu>.]
- *Primate Parasite Ecology: The Dynamics and Study of Host-Parasite Relationships*. M. A. Huffman & C. A. Chapman (Eds.). Cambridge Studies in Biological and Evolutionary Anthropology. Cambridge University Press, <www.cambridge.org>, 2009. [Price: \$126]
- *The Real Chimpanzee: Sex Strategies in the Forest*. C. Boesch. Cambridge University Press, <www.cambridge.org>, 2009. [Price: Hardcover, \$115.00; Paperback, \$48.00; e-book, \$38.00]
- *Simian virology*. A. F. Voevodin & P. A. Marx, Jr. (Eds). Wiley-Blackwell, 2009, <www.simianvirology.com>. [Price: \$199]

### Handbooks

- *Oncology for Veterinary Technicians and Nurses*. A. S. Moore & A. E. Frimberger (Eds.). Hoboken, NJ: Wiley, 2009. [Price: US\$69.99]

### Magazines and Newsletters

- *Animal Behaviour*, 2008, 76[1].  
Contents include: Cultural differences in army ant predation by West African chimpanzees? A comparative study of microecological variables, by Y. Möbius, C. Boesch, K. Koops, T. Matsuzawa, & T. Humle; On the road again: Competitive effects and condition-dependent dispersal in male baboons, by P. M. R. Clarke, S. P. Henzi, L. Barrett, & D. Rendall; and Kin-biased social behaviour in wild adult female white-faced capuchins, *Cebus capucinus*, by S. Perry, J. H. Manson, L. Muniz, J. Gros-Louis, & L. Vigilant.
- *Animal Behaviour*, 2008, 76[2].  
Contents include: Testosterone is associated with mating success but not attractiveness or masculinity in human

males, by M. Peters, L. W. Simmons, & G. Rhodes; Formal submission, tolerance and socioecological models: A test with female Hanuman langurs, by A. Lu, A. Koenig, & C. Borries; Individual differences in infant temperament predict social relationships of yearling rhesus monkeys, *Macaca mulatta*, by T. A. R. Weinstein & J. P. Capitanio; Social complexity predicts transitive reasoning in prosimian primates, by E. L. MacLean, D. J. Merritt, & E. M. Brannon; and Sex differences in children's formation of exclusionary alliances under scarce resource conditions, by J. F. Benenson, T. J. Antonellis, B. J. Cotton, K. E. Noddin, & K. A. Campbell.

- *Animal Behaviour*, 2008, 76[3].

Contents include: Peacemaking on treetops: First evidence of reconciliation from a wild prosimian (*Propithecus verreauxi*), by E. Palagi, D. Antonacci, & I. Norscia; and Do chimpanzees reciprocate received favours? by A. P. Melis, B. Hare, & M. Tomasello.

- *Animal Behaviour*, 2008, 76[4].

Contents include: Life history trade-offs are influenced by the diversity, availability and interactions of dietary antioxidants, by C. Catoni, A. Peters, & H. M. Schaefer; Visual attention and its relation to knowledge states in chimpanzees, *Pan troglodytes*, by M. J. Bulloch, S. T. Boysen, & E. E. Furlong; Costs and benefits of group living in primates: Group size effects on behaviour and demography, by B. Majolo, A. de Bortoli Vizioli, & G. Schino; Battle of the sexes: Cost asymmetry explains female dominance in lemurs, by A. E. Dunham; Exact conditional tests for log-linear models: Application to animal dominance, by J. M. Roberts, Jr.; and Soundscape orientation: A new field in need of sound investigation, by H. Slabbekoorn & N. Bouton.

- *Animal Behaviour*, 2008, 76[5].

Contents include: Selfish or altruistic? An analysis of alarm call function in wild capuchin monkeys, *Cebus apella nigritus*, by B. C. Wheeler; Immigration costs for female chimpanzees and male protection as an immigrant counterstrategy to intrasexual aggression, by S. M. Kahlenberg, M. E. Thompson, M. N. Muller, & R. W. Wrangham; The economics of tracking a changing environment: competition and social information, by C. L. Hall & D. L. Kramer; Time allocation and the evolution of group size, by K. A. Pollard & D. T. Blumstein; and A multidimensional approach to investigations of behaviour: Revealing structure in animal communication signals, by G. S. Forrester.

- *Animal Behaviour*, 2008, 76[6].

Contents include: Pattern recognition mediates flexible timing of vocalizations in nonhuman primates: Experiments with cottontop tamarins, by E. Versace, A. D. En-

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

dress, & M. D. Hauser; and A spatial model of producing and scrounging, by G. Beauchamp.

- *Comparative Medicine*, 2009, 59[4], <tinyurl.com/lm5b31>.

Contents include: Alopecia: Possible causes and treatments, particularly in captive nonhuman primates, by M. J. Kessler; Response to Dr. Kessler's Letter to the Editor, by M. Novak & J. Meyer; and Prevalence of viremia and oral shedding of rhesus rhadinovirus and retroperitoneal fibromatosis herpesvirus in large age-structured breeding groups of rhesus macaques (*Macaca mulatta*), by J. A. White, P. A. Todd, J. L. Yee, A. Kalman-Bowlus, K. S. Rodgers, X. Yang, S. W. Wong, P. Barry, & N. W. Lerche.

- *Folia Primatologica*, 2009, 80[3], <www.karger.com/fpr>.

Contents: Effect of nest box availability on the circadian activity rhythm of common marmosets (*Callithrix jacchus*), by F. B. Gonçalves, A. S. Belísio, & C. V. M. Azevedo; Locomotor behavior and skeletal morphology of the odd-nosed monkeys, by D. F. Su & N. G. Jablonski; Matching vocalizations to faces of familiar conspecifics in grey-cheeked mangabeys (*Lophocebus albigena*), by D. Bovet & B. L. Deputte; and Feeding outside the forest: The importance of crop raiding and an invasive weed in the diet of gallery forest ring-tailed lemurs (*Lemur catta*) following a cyclone at the Beza Mahafaly Special Reserve, Madagascar, by M. LaFleur & L. Gould.

- *Folia Primatologica*, 2009, 80[4], <www.karger.com/fpr>.

Contents: Guest Editorial: Darwinius: Sequel to a Messel divorce, by C. Soligo & R. D. Martin; Condensed tannin intake in spiny-forest-dwelling *Lemur catta* at Berenty Reserve, Madagascar, during reproductive periods, by L. Gould, P. Constabel; R. Mellway; & H. Rambeloarivony; Factors affecting the distribution of copulatory plugs in rhesus monkeys (*Macaca mulatta*) on Cayo Santiago, by J. Danzy; V. Gutierrez; J. Pampush; & B. Campbell; Patterns of water use in primates, by E. Kempf; and Habitat quality of the woolly spider monkey (*Brachyteles hypoxanthus*), by W. M. da Silva Júnior; J. A. Alves Meira-Neto; F. M. da Silva Carmo; F. Rodrigues de Melo, L. Santana Moreira; E. Ferreira Barbosa; L. G. Dias, & C. A. da Silva Peres.

- *Folia Primatologica*, 2009, 80[5], <www.karger.com/fpr>.

Contents: The kinematics of load carrying in humans and great apes: Implications for the evolution of human bipedalism, by J. Watson, R. Payne, A. Chamberlain, R. Jones, & W. I. Sellers; Postconflict behaviour in brown capuchin monkeys (*Cebus apella*), by J. R. Daniel, A. J. Santos, & M. G. Cruz; Sex ratio at birth and age-reversed dominance among female *Varecia*, by F. J. White; and

Distribution of chimpanzees and interactions with humans in Guinea-Bissau and Western Guinea, West Africa, by D. Brugiere, I. Badjinca, C. Silva, & A. Serra.

- *IPPL News*, September, 2009, 36[2], <www.ippl.org/news.php>. (Intl Primate Protection League, P.O. Box 766, Summerville, SC 29484 [e-mail: [info@ippl.org](mailto:info@ippl.org)]).

- *Primates*, 2009, 50[3], <www.springerlink.com/content/pu573t8t96u4>.

Contents: Factors underlying party size differences between chimpanzees and bonobos: A review and hypotheses for future study, by T. Furuichi; Estimation of African apes' body size from postcranial dimensions, by M. Niskanen & J.-A. Junno; Buccal dental microwear variability in extant African Hominoidea: Taxonomy versus ecology, by J. Galbany, F. Estebanz, L. M. Martínez, & A. Pérez-Pérez; Vocalisations of wild common marmosets are influenced by diurnal and ontogenetic factors, by B. Martins Bezerra, A. da Silva Souto, M. A. Borstelmann de Oliveira, & L. G. Halsey; Interspecific primate associations in Amazonian flooded and unflooded forests, by T. Haugeaasen & C. A. Peres; Behavioral and hormonal response of common marmosets, *Callithrix jacchus*, to two environmental conditions, by M. Nascimento Barbosa & M. T. da Silva Mota; Geographic distribution and population characteristics of the endangered white-fronted spider monkey (*Ateles marginatus*) on the lower Tapajós River in central Brazilian Amazonia, by A. L. Ravetta & S. F. Ferrari; Tool use in wild spider monkeys (*Ateles geoffroyi*), by S. M. Lindshield & M. A. Rodrigues; Hand-clapping as a communicative gesture by wild female swamp gorillas, by A. K. Kalan & H. J. Rainey; and Two cases of mother-infant cannibalism in orangutans, by D. F. Dellatore, C. D. Waitt, & I. Foitova.

- *Primates*, 2009, 50[4], <www.springerlink.com/content/r204402x4748>.

Contents: Infanticide and social flexibility in the genus *Gorilla*, by J. Yamagiwa, J. Kahekwa, & A. K. Basabose; Rib orientation and implications for orthograde positional behavior in nonhuman anthropoids, by M. Kagaya, N. Ogihara, & M. Nakatsukasa; New proconsuloid postcranials from the early Miocene of Kenya, by D. L. Gebo, N. R. Malit, & I. O. Nengo; Group unity of chimpanzees elucidated by comparison of sex differences in short-range interactions in Mahale Mountains National Park, Tanzania, by T. Sakamaki; Pirouettes: The rotational play of wild chimpanzees, by T. Nishida & A. Inaba; A social network analysis of primate groups, by C. Kasper & B. Voelkl; On the occurrence of *Cebus flavius* (Schreber 1774) in the Caatinga, and the use of semi-arid environments by *Cebus* species in the Brazilian state of Rio Grande do Norte, by R. G. Ferreira, L. Jerusalinsky, T. C. Farias Silva, M. de Souza Fialho, A. de Araújo Roque, A. Fernandes, & F. Arruda; and Standardised protocol for primate faecal

analysis, by W. C. McGrew, L. F. Marchant, & C. A. Phillips.

- *International Journal of Primatology*, 2009, 30[4], <[www.springerlink.com/content/104389](http://www.springerlink.com/content/104389)>.

Contents: Travel and spatial patterns change when *Chiropotes satanas chiropotes* inhabit forest fragments, by S. A. Boyle, W. C. Lourenço, L. R. da Silva, & A. T. Smith; A new subspecies of *Saguinus fuscicollis* (Primates, Callitrichidae), by F. Röhe, J. de Sousa e Silva, R. Sampaio, & A. B. Rylands; Are *Hylobates lar* extirpated from China? by C. C. Grueter, X. Jiang, R. Konrad, P. Fan, Z. Guan, & T. Geissmann; Effects of food type and number of feeding sites in a tree on aggression during feeding in wild *Macaca fuscata*, by G. Hanya; Factors influencing interannual and intersite variability in the diet of *Trachypithecus francoisi*, by Q. Zhou, Z. Huang, X. Wei, F. Wei, & C. Huang; Dietary profile of *Rhinopithecus bieti* and its socioecological implications, by C. C. Grueter, D. Li, B. Ren, F. Wei, & C. P. van Schaik; and Social relationships in free-ranging male *Macaca arctoides*, by L. Mevis, S. Malaivijitnond, O. Schülke, & J. Ostner.

- *International Journal of Primatology*, 2009, 30[5], <[www.springerlink.com/content/104389](http://www.springerlink.com/content/104389)>.

Contents: Reappraisal of *Macaca speciosa subfossilis* from the late Pleistocene of northern Vietnam based on the analysis of cranial anatomy, by T. Ito, T. D. Nishimura, B. Senut, T. Koppe, J. Treil, & M. Takai; *Cebus apella* tolerate intermittent unreliability in human experimenters, by S. F. Brosnan & F. B. M. de Waal; Nutritional ecology of *Ateles chamek* in lowland Bolivia: How macronutrient balancing influences food choices, by A. M. Felton, A. Felton, J. T. Wood, W. J. Foley, D. Raubenheimer, I. R. Wallis, & D. B. Lindenmayer; Quantitative analysis of the deltoid and rotator cuff muscles in humans and great apes, by J. M. Potau, X. Bardina, N. Ciurana, D. Camprubí, J. F. Pastor, F. de Paz, & M. Barbosa; Activity patterns, home range size, and intergroup encounters in *Cebus albifrons* support existing models of capuchin socioecology, by L. J. Matthews; Rapid assessment of the nutritional value of foods eaten by mountain gorillas: Applying near-infrared reflectance spectroscopy to primatology, by J. M. Rothman, C. A. Chapman, J. L. Hansen, D. J. R. Cherney, & A. N. Pell; and Habitat impoverishment and egg predation by *Alouatta caraya*, by J. C. Bicca-Marques, C. Barboza Muhle, H. Mattjie Prates, S. Garcia de Oliveira, & C. Calegari-Marques.

- *Journal of Medical Primatology*, 2009, 38[6], <[www3.interscience.wiley.com/journal/118493879/home](http://www3.interscience.wiley.com/journal/118493879/home)>.

Contents: Spontaneous pathology of the baboon endocrine system, by R. Guardado-Mendoza, E. J. Dick, Jr., L. M. Jimenez-Ceja, A. Davalli, A. O. Chavez, F. Folli, & G. B. Hubbard; Evaluation of four hematology and a chemistry portable benchtop analyzers using non-human primate

blood, by C. L. Snider, E. J. Dick Jr., D. L. McGlasson, M. C. Robbins, R. L. Sholund, Y. R. Bommineni, & G. B. Hubbard; Resident bacteria in a mixed population of rhesus macaque (*Macaca mulatta*) monkeys: A prevalence study, by C. A. Carrier, T. B. Elliott, & G. D. Ledney; Reversal of Ketamine/Xylazine combination anesthesia by Atipamezole in olive baboons (*Papio anubis*), by D. L. Langoi, P. G. Mwethera, K. S. P. Abelson, I. O. Farah, & H. E. Carlson; Detection of Mycobacterium tuberculosis infection in chacma baboons (*Papio ursinus*) using the QuantiFERON-TB Gold (In-Tube) assay, by S. D. C. Parsons, T. A. Gous, R. M. Warren, C. de Villiers, J. V. Seier, & P. D. van Helden; Association of monocyte chemoattractant protein-1 with adipocyte number, insulin resistance and liver function markers, by T. Bose, J. C. Lopez Alvarenga, M. E. Tejero, V. S. Voruganti, J. M. Proffitt, J. H. Freeland-Graves, S. A. Cole, & A. G. Comuzzie; Myeloablative irradiation in non-human primates, by K. L. Watts, B. C. Beard, B. L. Wood, & H. P. Kiem; Foreign body urethral obstruction in a chimpanzee (*Pan troglodytes*), by E. E. Hammond, J. Bennett, T. Wolf, S. Cyril, Jr., & S. E. Evans; Ex vivo expansion and lentiviral transduction of *Macaca nemestrina* CD4+ T cells, by N. M. Muñoz, G. D. Trobridge, & H.-P. Kiem; Cutaneous melanoma with metastasis in a cynomolgus monkey (*Macaca fascicularis*), by G. Pellegrini, J. G. Bienvenu, J. T. Meehan, S. A. Mischler, R. W. Perry, D. W. Scott, & W. I. Anderson; and Testicular and epididymal appendages in the cynomolgus macaque (*Macaca fascicularis*), by M. Zöller, S. Friderichs-Gromoll, & J. Kaspareit.

### Proceedings

- *Proceedings of the Biennial Symposium of the American Academy of Veterinary Pharmacology and Therapeutics*, 2009, <[www.ivis.org/signin.asp?url=/proceedings/aavpt/2009/toc.asp](http://www.ivis.org/signin.asp?url=/proceedings/aavpt/2009/toc.asp)>.

### Special Journal Issues

- Abstracts of the 6th European Congress on Tropical Medicine and International Health and 1st Mediterranean Conference on Migration and Travel Health, Verona, Italy, 6-10 September 2009. *Tropical Medicine & International Health*, 2009, 14[s2], <[www3.interscience.wiley.com/journal/122574503/issue](http://www3.interscience.wiley.com/journal/122574503/issue)>.
- Out of Africa: Modern Human Origins Special Feature (free online). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 16028-16033, <[www.pnas.org/content/106/38.toc#content-block](http://www.pnas.org/content/106/38.toc#content-block)>. Contents: Human origins: Out of Africa, by I. Tattersall; The meaning of Neandertal skeletal morphology, by T. D. Weaver; The origin of Neandertals, by J. J. Hublin; Isotopic evidence for the diets of European Neandertals and early modern humans, by M. P. Richards & E. Trinkaus; The spread of modern humans in Europe, by J. F. Hoffecker; Middle and later Pleistocene hominins in Africa

and Southwest Asia, by G. P. Rightmire; Additional evidence on the use of personal ornaments in the Middle Paleolithic of North Africa, by F. d'Errico, M. Vanhaeren, N. Barton, A. Bouzouggar, H. Mienis, D. Richter, J.-J. Hublin, S. P. McPherron, & P. Lozouet; and Explaining worldwide patterns of human genetic variation using a coalescent-based serial founder model of migration outward from Africa, by M. DeGiorgio, M. Jakobsson, & N. A. Rosenberg.

- Special Anniversary Volume: The Three Rs. *Alternatives to Laboratory Animals*, 2009, 37[3], <[www.frame.org.uk/page.php?pg\\_id=19](http://www.frame.org.uk/page.php?pg_id=19)>.

- 26th Annual Symposium of Nonhuman Primate Models for AIDS. *Journal of Medical Primatology*, 2009, 38[s1], <[www3.interscience.wiley.com/journal/122652807/issue](http://www3.interscience.wiley.com/journal/122652807/issue)>.

Contents: Introduction, by R. S. Veazey, D. O'Connor, & E. Kraiselburd; Viral interleukin-6 encoded by rhesus macaque rhadinovirus is associated with lymphoproliferative disorder (LPD), by B. U. Orzechowska, M. Manoharan, J. Sprague, R. D. Estep, M. K. Axthelm, & S. W. Wong; Vaccination with SIVmac239 nef activates CD4<sup>+</sup> T cells in the absence of CD4<sup>+</sup> T-cell loss, by R. K. Reeves, J. Gillis, F. E. Wong, & R. P. Johnson; Resources for genetic management and genomics research on non-human primates at the National Primate Research Centers (NPRCs), by S. Kanthaswamy, J. P. Capitanio, C. J. Dubay, B. Ferguson, T. Folks, J. C. Ha, C. E. Hotchkiss, Z. P. Johnson, M. G. Katze, L. S. Kean, H. M. Kubisch, S. Lank, L. A. Lyons, G. M. Miller, J. Nylander, D. H. O'Connor, R. E. Palermo, D. G. Smith, E. J. Vallender, R. W. Wiseman, & J. Rogers; CD4 T cell subsets in the mucosa are CD28<sup>+</sup>Ki-67 HLA-DR CD69<sup>+</sup> but show differential infection based on  $\alpha 4\beta 7$  receptor expression during acute SIV infection, by M. Kader, S. Bixler, M. Roederer, R. Veazey, & J. J. Mattapallil; Anti-retroviral therapy fails to restore the severe Th-17: Tc-17 imbalance observed in peripheral blood during simian immunodeficiency virus infection, by M. Kader, S. Bixler, M. Piatak, J. Lifson, & J. J. Mattapallil; *Macaca fascicularis* are highly susceptible to an RT-SHIV following intravaginal inoculation: A new model for microbicide evaluation, by Y. Jiang, B. Tian, M. B. Agy, M. Saifuddin, & C.-C. Tsai; and Conference abstracts.

- Arthur M. Sackler Colloquium in celebration of the Centennial of the Museum of Vertebrate Zoology at the University of California at Berkeley. *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106[Suppl. 2], <[www.pnas.org/content/vol106/Supplement\\_2/?e\\_toc](http://www.pnas.org/content/vol106/Supplement_2/?e_toc)>.

### Anatomy and Physiology

- Variation in clitoral length in rhesus macaques (*Macaca mulatta*). Goldschmidt, B., Cabello, P. H., Kugelmeier,

T., Pereira, B. B., Lopes, C. A., Fasano, D. M., Andrade, M. C., Santos, J. S., & Marinho, A. M. (Primate Dept, Center for Lab. Animal Breeding, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil). *Journal of the American Association for Laboratory Animal Science*, 2009, 48, 482-485.

“Clitoromegaly in the neonatal period is an important morphologic sign that can be useful for sexual determination in aberrant cases. In rhesus monkeys, differentiation of the external genitalia occurs early during gestation (at 55 to 60 d) and is complete by approximately 80 d. Most of the critical steps in genital differentiation in primates occur prenatally. We sought to determine clitoral size in normal rhesus monkeys (*Macaca mulatta*) and possible effects of age and inheritance. Clitoral length was highly variable and had no relationship to fertility. Statistical evaluation revealed no association in the distribution of daughters with and without clitoris between mothers with and without clitoris. However, even when mated with several female monkeys, some male macaques produced primarily daughters without clitoris.”

- Color-tuned neurons are spatially clustered according to color preference within alert macaque posterior inferior temporal cortex. Conway, B. R., & Tsao, D. Y. (Neurosci. Prog., Wellesley Coll., Wellesley, MA 02481 [e-mail: [bconway@wellesley.edu](mailto:bconway@wellesley.edu)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 18034-18039, <[www.pnas.org/content/106/42/18034.full](http://www.pnas.org/content/106/42/18034.full)>.

“Large islands of extrastriate cortex that are enriched for color-tuned neurons have recently been described in alert macaque using a combination of functional magnetic resonance imaging (fMRI) and single-unit recording. These millimeter-sized islands, dubbed “globs,” are scattered throughout the posterior inferior temporal cortex (PIT), a swath of brain anterior to area V3, including areas V4, PITd, and posterior TEO. We investigated the microorganization of neurons within the globs. We used fMRI to identify the globs and then used MRI-guided microelectrodes to test the color properties of single glob cells. We used color stimuli that sample the CIELUV perceptual color space at regular intervals to test the color tuning of single units, and make two observations. First, color-tuned neurons of various color preferences were found within single globs. Second, adjacent glob cells tended to have the same color tuning, demonstrating that glob cells are clustered by color preference and suggesting that they are arranged in color columns. Neurons separated by 50  $\mu\text{m}$ , measured parallel to the cortical sheet, had more similar color tuning than neurons separated by 100  $\mu\text{m}$ , suggesting that the scale of the color columns is <100  $\mu\text{m}$ . These results show that color-tuned neurons in PIT are organized by color preference on a finer scale than the scale of single globs. Moreover, the color preferences of neurons recorded sequentially along a given electrode penetration shifted gradually in many penetrations, suggesting that the

color columns are arranged according to a chromotopic map reflecting perceptual color space.”

- Gray and white matter changes associated with tool-use learning in macaque monkeys. Quallo, M. M., Price, C. J., Ueno, K., Asamizuya, T., Cheng, K., Lemon, R. N., & Iriki, A. (A. I., RIKEN Brain Science Inst., 2-1 Hirosawa, Wako-shi, Saitama 351-0198, Japan [e-mail: [iriki@brain.riken.jp](mailto:iriki@brain.riken.jp)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 18379-18384, <[www.pnas.org/content/106/43/18379.full](http://www.pnas.org/content/106/43/18379.full)>.

“We used noninvasive MRI and voxel-based morphometry (VBM) to detect changes in brain structure in three adult Japanese macaques trained to use a rake to retrieve food rewards. Monkeys, who were naive to any previous tool use, were scanned repeatedly in a 4-T scanner over 6 weeks, comprising 2 weeks of habituation followed by 2 weeks of intensive daily training and a 2-week posttraining period. VBM analysis revealed significant increases in gray matter with rake performance across the three monkeys. The effects were most significant ( $P < 0.05$  corrected for multiple comparisons across the whole brain) in the right superior temporal sulcus, right second somatosensory area, and right intraparietal sulcus, with less significant effects ( $P < 0.001$  uncorrected) in these same regions of the left hemisphere. Bilateral increases were also observed in the white matter of the cerebellar hemisphere in lobule 5. In two of the monkeys who exhibited rapid learning of the rake task, gray matter volume in peak voxels increased by up to 17% during the intensive training period; the earliest changes were seen after 1 week of intensive training, and they generally peaked when performance on the task plateaued. In the third monkey, who was slower to learn the task, peak voxels showed no systematic changes. Thus, VBM can detect significant brain changes in individual trained monkeys exposed to tool-use training for the first time. This approach could open up a means of investigating the underlying neurobiology of motor learning and other higher brain functions in individual animals.”

- The effects of normal aging on myelinated nerve fibers in monkey central nervous system. Peters, A. (Dept of Anat. & Neurobiol., Sch. of Med., Boston Univ., 72 E. Concord Street, Boston MA 02118 [e-mail: [valan@bu.edu](mailto:valan@bu.edu)]). *Frontiers in Neuroanatomy*, 2009, 3[11], <[frontiersin.org/neuroanatomy/paper/10.3389/neuro.0/011.2009/html](http://frontiersin.org/neuroanatomy/paper/10.3389/neuro.0/011.2009/html)>.

The effects of aging on myelinated nerve fibers of the central nervous system are complex. Many myelinated nerve fibers in white matter degenerate and are lost, leading to some disconnections between various parts of the central nervous system. Other myelinated nerve fibers are affected differently, because only their sheaths degenerate, leaving the axons intact. Such axons are remyelinated by a series of internodes that are much shorter than the original ones and are composed of thinner sheaths. Thus the mye-

lin-forming cells of the central nervous system, the oligodendrocytes, remain active during aging. Indeed, not only do these neuroglial cells remyelinate axons, with age they also continue to add lamellae to the myelin sheaths of intact nerve fibers, so that sheaths become thicker. It is presumed that the degeneration of myelin sheaths is due to the degeneration of the parent oligodendrocyte, and that the production of increased numbers of internodes as a consequence of remyelination requires additional oligodendrocytes. Whether there is a turnover of oligodendrocytes during life has not been studied in primates, but it has been established that over the life span of the monkey, there is a substantial increase in the numbers of oligodendrocytes. While the loss of some myelinated nerve fibers leads to some disconnections, the degeneration of other myelin sheaths and the subsequent remyelination of axons by shorter internodes slow down the rate of conduction along nerve fibers. These changes affect the integrity and timing in neuronal circuits, and there is evidence that they contribute to cognitive decline.

### Animal Models

- Functional CRH variation increases stress-induced alcohol consumption in primates. Barr, C. S., Dvoskin, R. L., Gupte, M., Sommer, W., Sun, H., Schwandt, M. L., Lindell, S. G., Kasckow, J. W., Suomi, S. J., Goldman, D., Higley, J. D., & Heilig, M. (NIH Animal Center, P.O. Box 529, Poolesville, MD 20837 [e-mail: [cbarr@mail.nih.gov](mailto:cbarr@mail.nih.gov)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 14593-14598, <[www.pnas.org/content/106/34/14593.full](http://www.pnas.org/content/106/34/14593.full)>.

“Corticotropin-releasing factor (CRF), encoded by the *CRH* gene, is a key integrator of stress responses, and, as such, *CRH* gene variation may contribute to individual differences in susceptibility to stress-related pathology. In rhesus macaques, a single nucleotide polymorphism (SNP) is found within the *CRH* promoter (−248C→T). Here, we assessed whether this variant influenced stress responding and, because increased CRF system activity drives alcohol drinking in rodents, we examined whether it predicted voluntary alcohol consumption as a function of prior stress exposure. Using a hypothalamic nuclear extract, we showed that the −248 T allele resulted in increased DNA protein interactions relative to the C allele. In vitro, the T allele resulted in *CRH* promoter activity that was higher following both stimulation with forskolin and treatment with dexamethasone. Endocrine and behavioral responses to social separation stress (release of ACTH and cortisol, and suppression of environmental exploration, respectively) were higher among carriers of the T allele, particularly among those exposed to early adversity in the form of peer rearing. We also found that T allele carriers with a history of early life adversity consumed more alcohol in a limited-access paradigm. Our data suggest that *CRH* promoter variation that confers increased stress reactivity in-

creases the risk for alcohol use disorders in stress-exposed individuals.”

- Spatial decisions and cognitive strategies of monkeys and humans based on abstract spatial stimuli in rotation test. Nekovarova, T., Nedvidek, J., Klement, D., & Bures, J. (Inst. of Physiol., Acad. of Sci. of the Czech Republic, 1083 Videnska, 14220 Prague, Czech Republic [e-mail: [mt@biomed.cas.cz](mailto:mt@biomed.cas.cz)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, *106*, 15478-15482, <[www.pnas.org/content/106/36/15478.full](http://www.pnas.org/content/106/36/15478.full)>.

“We showed previously that macaque monkeys (*Macaca mulatta*) could orient in real space using abstract visual stimuli presented on a computer screen. They made correct choices according to both spatial stimuli (designed as an abstract representation of a real space) and nonspatial stimuli (pictures lacking any inner configuration information). However, we suggested that there were differences in processing spatial and nonspatial stimuli. In the present experiment we show that monkeys could also use as a cue abstract spatial stimuli rotated with respect to the real response space. We studied the ability of monkeys to decode abstract spatial information provided in one spatial frame (computer screen) and to perform spatial choices in another spatial frame (touch panel separated from the screen). We analyzed how the monkeys were affected by the type of training, whether they perceived the stimuli as ‘spatial’ or ‘nonspatial,’ and which cues they used to decode them. We compared humans to monkeys in a similar test to find out which cognitive strategy they used and whether they perceive spatial stimuli in the same way. We demonstrated that there were two possible strategies to solve the task, simple ‘fitting’ ignoring rotations and ‘re-mapping,’ when the stimulus was represented as an ‘abstract space’ per se.”

- Alefacept promotes co-stimulation blockade based allograft survival in nonhuman primates. Weaver, T. A., Charafeddine, A. H., Agarwal, A., Turner, A. P., Russell, M., Leopardi, F. V., Kampen, R. L., Stempora, L., Song, M., Larsen, C. P., & Kirk, A. D. (A.D.K., Emory Transplant Ctr, Emory Univ., Atlanta, Georgia, 30322-1059 [e-mail: [adkirk@emory.edu](mailto:adkirk@emory.edu)]). *Nature Medicine*, 2009, *15*, 746-749, <[www.nature.com/nm/journal/v15/n7/full/nm.1993.html](http://www.nature.com/nm/journal/v15/n7/full/nm.1993.html)>.

“Memory T cells promote allograft rejection, particularly in co-stimulation blockade based immunosuppressive regimens. Here we show that the CD2-specific fusion protein alefacept (lymphocyte function-associated antigen-3-Ig; LFA-3-Ig) selectively eliminates memory T cells and, when combined with a co-stimulation blockade-based regimen using cytotoxic T lymphocyte antigen-4 (CTLA-4)-Ig, a CD80- and CD86-specific fusion protein, prevents renal allograft rejection and alloantibody formation in nonhuman primates. These results support the immediate translation of a regimen for the prevention of allograft re-

jection without the use of calcineurin inhibitors, steroids, or pan-T cell depletion.”

- Neuroprotective effects of brain-derived neurotrophic factor in rodent and primate models of Alzheimer’s disease. Nagahara, A. H., Merrill, D. A., Coppola, G., Tsukada, S., Schroeder, B. E., Shaked, G. M., Wang, L., Blesch, A., Kim, A., Conner, J. M., Rockenstein, E., Chao, M. V., Koo, E. H., Geschwind, D., Masliah, E., Chiba, A. A., & Tuszynski, M. H. (M. H. T., Dept of Neurosciences-0626, 9500 Gilman Dr., Univ. of California, San Diego, La Jolla, CA 92093 [e-mail: [mtuszynski@ucsd.edu](mailto:mtuszynski@ucsd.edu)]). *Nature Medicine*, 2009, *15*, 331-337, <[www.nature.com/nm/journal/v15/n3/full/nm.1912.html](http://www.nature.com/nm/journal/v15/n3/full/nm.1912.html)>.

“Profound neuronal dysfunction in the entorhinal cortex contributes to early loss of short-term memory in Alzheimer’s disease. Here we show broad neuroprotective effects of entorhinal brain-derived neurotrophic factor (BDNF) administration in several animal models of Alzheimer’s disease, with extension of therapeutic benefits into the degenerating hippocampus. In amyloid-transgenic mice, BDNF gene delivery, when administered after disease onset, reverses synapse loss, partially normalizes aberrant gene expression, improves cell signaling and restores learning and memory. These outcomes occur independently of effects on amyloid plaque load. In aged rats, BDNF infusion reverses cognitive decline, improves age-related perturbations in gene expression and restores cell signaling. In adult rats and primates, BDNF prevents lesion-induced death of entorhinal cortical neurons. In aged primates, BDNF reverses neuronal atrophy and ameliorates age-related cognitive impairment. Collectively, these findings indicate that BDNF exerts substantial protective effects on crucial neuronal circuitry involved in Alzheimer’s disease, acting through amyloid-independent mechanisms. BDNF therapeutic delivery merits exploration as a potential therapy for Alzheimer’s disease.”

- Mitochondrial gene replacement in primate offspring and embryonic stem cells. Tachibana, M., Sparman, M., Sritanau-domchai, H., Ma, H., Clepper, L., Woodward, J., Li, Y., Ramsey, C., Kolotushkina, O., & Mitalipov, S. (S. M., Oregon NPRC, 505 N.W. 185th Ave, Beaverton, OR 97006 [e-mail: [mitalipo@ohsu.edu](mailto:mitalipo@ohsu.edu)]). *Nature*, 2009, *461*, 367-372, <[www.nature.com/nature/journal/v461/n7262/full/nature08368.html](http://www.nature.com/nature/journal/v461/n7262/full/nature08368.html)>.

“Mitochondria are found in all eukaryotic cells and contain their own genome (mitochondrial DNA or mtDNA). Unlike the nuclear genome, which is derived from both the egg and sperm at fertilization, the mtDNA in the embryo is derived almost exclusively from the egg; that is, it is of maternal origin. Mutations in mtDNA contribute to a diverse range of currently incurable human diseases and disorders. To establish preclinical models for new therapeutic approaches, we demonstrate here that the mitochondrial genome can be efficiently re-

placed in mature nonhuman primate oocytes (*Macaca mulatta*) by spindle–chromosomal complex transfer from one egg to an enucleated, mitochondrial-replete egg. The reconstructed oocytes with the mitochondrial replacement were capable of supporting normal fertilization, embryo development and produced healthy offspring. Genetic analysis confirmed that nuclear DNA in the three infants born so far originated from the spindle donors whereas mtDNA came from the cytoplasm donors. No contribution of spindle donor mtDNA was detected in offspring. Spindle replacement is shown here as an efficient protocol replacing the full complement of mitochondria in newly generated embryonic stem cell lines. This approach may offer a reproductive option to prevent mtDNA disease transmission in affected families.”

- Dopamine gene therapy for Parkinson’s disease in a non-human primate without associated dyskinesia. Jarraya, B., Boulet, S., Ralph, G. S., Jan, C., Bonvento, G., Azzouz, M., Miskin, J. E., Shin, M., Delzescaux, T., Drouot, X., Hérard, A.-S., Day, D. M., Brouillet, E., Kingsman, S. M., Hantraye, P., Mitrophanous, K. A., Mazarakis, N. D., & Palfi, S. (CEA, CNRS URA 2210, F-92265 Fontenay-aux-Roses, France [e-mail: [bechir.jarraya@cea.fr](mailto:bechir.jarraya@cea.fr)]). *Science Translational Medicine*, 2009, 1, 2ra4, <[stm.sciencemag.org/content/1/2/2ra4.full](http://stm.sciencemag.org/content/1/2/2ra4.full)>.

“In Parkinson’s disease, degeneration of specific neurons in the midbrain can cause severe motor deficits, including tremors and the inability to initiate movement. The standard treatment is administration of pharmacological agents that transiently increase concentrations of brain dopamine and thereby discontinuously modulate neuronal activity in the striatum, the primary target of dopaminergic neurons. The resulting intermittent dopamine alleviates parkinsonian symptoms but is also thought to cause abnormal involuntary movements, called dyskinesias. To investigate gene therapy for Parkinson’s disease, we simulated the disease in macaque monkeys by treating them with the complex I mitochondrial inhibitor 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine, which induces selective degeneration of dopamine-producing neurons. In this model, we demonstrated that injection of a tricistronic lentiviral vector encoding the critical genes for dopamine synthesis (tyrosine hydroxylase, aromatic L-amino acid decarboxylase, and guanosine 5’-triphosphate cyclohydrolase 1) into the striatum safely restored extracellular concentrations of dopamine and corrected the motor deficits for 12 months without associated dyskinesias. Gene therapy-mediated dopamine replacement may be able to correct Parkinsonism in patients without the complications of dyskinesias.”

- Spatiotemporal precision and hemodynamic mechanism of optical point spreads in alert primates. Sirotin, Y. B., Hillman, E. M. C., Bordier, C., & Das, A. (A. D., Columbia Univ., New York, NY 10027 [e-mail: [ad2069@columbia.edu](mailto:ad2069@columbia.edu)]) *Proceedings of the National*

*Academy of Sciences, U.S.A.*, 2009, 106, 18390-18395, <[www.pnas.org/content/106/43/18390.full](http://www.pnas.org/content/106/43/18390.full)>.

“In functional brain imaging there is controversy over which hemodynamic signal best represents neural activity. Intrinsic signal optical imaging (ISOI) suggests that the best signal is the early darkening observed at wavelengths absorbed preferentially by deoxyhemoglobin (HbR). It is assumed that this darkening or ‘initial dip’ reports local conversion of oxyhemoglobin (HbO) to HbR, i.e., oxygen consumption caused by local neural activity, thus giving the most specific measure of such activity. The blood volume signal, by contrast, is believed to be more delayed and less specific. Here, we used multiwavelength ISOI to simultaneously map oxygenation and blood volume [i.e., total hemoglobin (HbT)] in primary visual cortex (V1) of the alert macaque. We found that the hemodynamic ‘point spread’, i.e., impulse response to a minimal visual stimulus, was as rapid and retinotopically specific when imaged by using blood volume as when using the initial dip. Quantitative separation of the imaged signal into HbR, HbO, and HbT showed, moreover, that the initial dip was dominated by a fast local increase in HbT, with no increase in HbR. We found only a delayed HbR decrease that was broader in retinotopic spread than HbO or HbT. Further, we show that the multiphasic time course of typical ISOI signals and the strength of the initial dip may reflect the temporal interplay of monophasic HbO, HbR, and HbT signals. Characterizing the hemodynamic response is important for understanding neurovascular coupling and elucidating the physiological basis of imaging techniques such as fMRI.”

- Cloning and comparison of factor X from rhesus monkey (*Macaca mulatta*). Chen, Y., Qin, S., Tan, W., Lu, Y., Zhang, J., Li, H., Bu, H., & Cheng, J. (Key Lab. of Transplant Engineering & Immunology, Ministry of Health, West China Hospital, Sichuan Univ., P. R. China). *Comparative Medicine*, 2009, 59, 476-481, <[www.ncbi.nlm.nih.gov/pubmed/19887032](http://www.ncbi.nlm.nih.gov/pubmed/19887032)>.

“The reliability of the rhesus monkey as an important experimental animal depends on its genetic concordance with human. During our assessment of the rhesus monkey as a preclinical model for coagulation-related research, we cloned the full-length cDNA of rhesus monkey factor X (FX) and compared its genetic characteristics and coagulation activity with those of human FX. The full-length cDNA of rhesus monkey FX was 1683 bp in length, corresponding to 487 coding amino acids and sharing 94.71% nucleotide identity and 93.65% amino acid identity with human FX. When FX sequences from different animals were compared with that of human FX, rhesus monkey and baboon FX showed similar degrees of homology to human FX, which were less than that between human and chimpanzee FX sequences but remarkably higher than those of another two monkey species, bovine, pig, and rodents. Comparison of functional sites between human and rhesus

monkey FX revealed high similarities between their amino acids sequences and 3-dimensional structures. The average coagulation activity of FX from 24 rhesus monkeys was in the normal range of that of healthy humans. The rhesus monkey therefore may be a suitable animal model for research addressing coagulation factor X.”

- Doublecortin-expressing cells persist in the associative cerebral cortex and amygdala in aged nonhuman primates. Zhang, X.-M., Cai, Y., Chu, Y., Chen, E.-Y., Feng, J.-C., Luo, X.-G., Xiong, K., Struble, R. G., Clough, R. W., Patrylo, P. R., Kordower, J. H., & Yan, X. X. (X.-X. Y., Dept of Anatomy, So. Illinois Univ. at Carbondale, 1135 Lincoln Dr. LSIII, Carbondale, IL 62901 [e-mail: [xyan@siu.edu](mailto:xyan@siu.edu)]). *Frontiers of Neuroanatomy*, 2009, <[www.frontiersin.org/neuroanatomy/paper/10.3389/neuro.05/017.2009/html](http://www.frontiersin.org/neuroanatomy/paper/10.3389/neuro.05/017.2009/html)>.

“A novel population of cells that express typical immature neuronal markers including doublecortin (DCX+) has been recently identified throughout the adult cerebral cortex of relatively large mammals (guinea pig, rabbit, cat, monkey and human). These cells are more common in the associative relative to primary cortical areas and appear to develop into interneurons including type II nitrinergic neurons. Here we further describe these cells in the cerebral cortex and amygdala, in comparison with DCX+ cells in the hippocampal dentate gyrus, in 3 age groups of rhesus monkeys: young adult (12.3±0.2 yrs, *n*=3), mid-age (21.2±1.9 yrs, *n*=3) and aged (31.3±1.8 yrs, *n*=4). DCX+ cells with a heterogeneous morphology persisted in layers II/III primarily over the associative cortex and amygdala in all groups (including in two old animals with cerebral amyloid pathology), showing a parallel decline in cell density with age across regions. In contrast to the cortex and amygdala, DCX+ cells in the subgranular zone diminished in the mid-age and aged groups. DCX+ cortical cells might arrange as long tangential migratory chains in the mid-age and aged animals, with apparently distorted cell clusters seen in the aged group. Cortical DCX+ cells colocalized commonly with polysialylated neural cell adhesion molecule (PSA-NCAM) and partially with neuron-specific nuclear protein (NeuN) and  $\gamma$ -aminobutyric acid (GABA), suggesting a potential differentiation of these cells into interneuron phenotype. These data suggest a life-long role for immature interneuron-like cells in the associative cerebral cortex and amygdala in nonhuman primates.”

#### Animal Welfare

- Developmental context effects on bicultural posttrauma self repair in chimpanzees. Bradshaw, G. A., Capaldo, T., Lindner, L., & Grow, G. (The Kerulos Center, P.O. Box 1446, Jacksonville, OR 97530 [e-mail: [bradshaw@kerulos.org](mailto:bradshaw@kerulos.org)]). *Developmental Psychology*, 2009, 45, 1376-1388 <[psycnet.apa.org/journals/dev/45/5/1376](http://psycnet.apa.org/journals/dev/45/5/1376)>.

Longitudinal studies have shown how early developmental contexts contribute significantly to self-development; their influence extends through adulthood, informs sociality, and affects resilience under severe stress. While the importance of sociality in trauma recovery is recognized, the relationship between developmental and posttrauma contexts and recovery effects is less appreciated, particularly in cases in which recovery contexts differ widely from the culture of origin. Using an attachment-based model of bicultural (competence in two cultures) development, the authors examined the role of self in post-trauma repair of chimpanzees (*Pan troglodytes*) who had been differentially reared by humans during neuroethologically formative periods and subsequently used as biomedical subjects. Results show that variations in posttrauma schema correlate with early socialization patterns. Self-resilience supports, but also may constrain, recovery depending on the compatibility of internal self models with recovery resources. Trauma severity notwithstanding, the cultural context of origin emerges as a critical factor in designing effective therapeutic intervention and assessments in primates, humans inclusive. Finally, the results underscore the ethical implications for the practices of cross-fostering nonhuman primates and their use in research.

#### Behavior

- Orangutans employ unique strategies to control branch flexibility. Thorpe, S. K. S., Holder, R., & Crompton, R. H. (School of Biosciences, Univ. of Birmingham, Edgbaston, Birmingham B15 2TT, U.K. [e-mail: [s.k.thorpe@bham.ac.uk](mailto:s.k.thorpe@bham.ac.uk)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 12646-12651, <[www.pnas.org/content/106/31/12646.full](http://www.pnas.org/content/106/31/12646.full)>.

“Orangutans are the largest habitually arboreal mammal. For them, as for all arboreal mammals, access to the abundant fruits and narrowest gaps found among the thin peripheral branches of tree crowns poses considerable safety risks and energetic demands. Most arboreal primates use flexed-limb postures to minimize problems caused by branch compliance and instability. Here, we show that Sumatran orangutans employ unique locomotor strategies to control compliance and allow access to the terminal branch niche for feeding and gap crossing. We calculated a ‘stiffness score’, which is a measure of the flexibility of the supports on which orangutans moved. We found that certain locomotor behaviors clearly are associated with the most compliant supports; these behaviors appear to lack regular limb sequences, which serves to avoid the risk of resonance in branch sway caused by high-frequency, patterned gait. Balance and increased stability are achieved through long contact times between multiple limbs and supports and a combination of pronograde (horizontal) and orthograde (vertical) body postures, used both above branches and in suspension underneath them. Overall, adult females seem to be the most conservative in their

travel, selecting more solid and secure supports than males and adolescents. These results have implications for understanding locomotor diversity in fossil and extant apes and for orangutan conservation and reintroduction programs.”

- Monkey drumming reveals common networks for perceiving vocal and nonvocal communication sounds. Remedios, R., Logothetis, N. K., & Kayser, C. (Max-Planck Inst. For Biol. Cybernetics, Spemannstr. 38, 72076 Tübingen, Germany [e-mail: [nikos.logothetis@tuebingen.mpg.de](mailto:nikos.logothetis@tuebingen.mpg.de)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 18010-18015, <[www.pnas.org/content/106/42/18010.full](http://www.pnas.org/content/106/42/18010.full)>.

“Salient sounds such as those created by drumming can serve as means of nonvocal acoustic communication in addition to vocal sounds. Despite the ubiquity of drumming across human cultures, its origins and the brain regions specialized in processing such signals remain unexplored. Here, we report that an important animal model for vocal communication, the macaque monkey, also displays drumming behavior, and we exploit this finding to show that vocal and nonvocal communication sounds are represented by overlapping networks in the brain's temporal lobe. Observing social macaque groups, we found that these animals use artificial objects to produce salient periodic sounds, similar to acoustic gestures. Behavioral tests confirmed that these drumming sounds attract the attention of listening monkeys similarly as conspecific vocalizations. Furthermore, in a preferential looking experiment, drumming sounds influenced the way monkeys viewed their conspecifics, suggesting that drumming serves as a multimodal signal of social dominance. Finally, by using high-resolution functional imaging we identified those brain regions preferentially activated by drumming sounds or by vocalizations and found that the representations of both these communication sounds overlap in caudal auditory cortex and the amygdala. The similar behavioral responses to drumming and vocal sounds, and their shared neural representation, suggest a common origin of primate vocal and nonvocal communication systems and support the notion of a gestural origin of speech and music.”

- Contagious yawning in gelada baboons as a possible expression of empathy. Palagi, E., Leone, A., Mancini, G., & Ferrari, P. F. (Centro Interdipartimentale Museo di Storia Naturale e del Territorio, Univ. di Pisa, 56011 Pisa, Italy [e-mail: [beta.palagi@museo.unipi.it](mailto:beta.palagi@museo.unipi.it)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 19262-19267, <[www.pnas.org/content/106/46/19262.full](http://www.pnas.org/content/106/46/19262.full)>.

“Yawn contagion in humans has been proposed to be related to our capacity for empathy. It is presently unclear whether this capacity is uniquely human or shared with other primates, especially monkeys. Here, we show that in gelada baboons (*Theropithecus gelada*) yawning is contagious between individuals, especially those that are so-

cially close, i.e., the contagiousness of yawning correlated with the level of grooming contact between individuals. This correlation persisted after controlling for the effect of spatial association. Thus, emotional proximity rather than spatial proximity best predicts yawn contagion. Adult females showed precise matching of different yawning types, which suggests a mirroring mechanism that activates shared representations. The present study also suggests that females have an enhanced sensitivity and emotional tuning toward companions. These findings are consistent with the view that contagious yawning reveals an emotional connection between individuals. This phenomenon, here demonstrated in monkeys, could be a building block for full-blown empathy.”

### Care

- Environmental enrichment for common marmosets (*Callithrix jacchus jacchus*) at Mysore Zoo. Narasimha, R. L., & Singh, V. R. (Sri Chamarajendra Zool. Gardens, Mysore, India [e-mail: [rl\\_narasimha@yahoo.co.in](mailto:rl_narasimha@yahoo.co.in)]). *ZOOS' PRINT*, 2009, 24[10], 12-14, <[www.zoosprint.org/ZooPrintMagazine/2009/October/12-14.pdf](http://www.zoosprint.org/ZooPrintMagazine/2009/October/12-14.pdf)>.

A detailed account of setting up an enriched habitat in a formerly barren and unhealthful enclosure.

- Enoxaparin treatment of spontaneous deep vein thrombosis in a chronically catheterized rhesus macaque (*Macaca mulatta*). Wathen, A. B., Myers, D. D., Jr., Zajkowski, P., Flory, G., & Hankenson, F. C. (Unit for Lab. Animal Med., Univ. of Michigan Med. Ctr, Ann Arbor, MI). *Journal of the American Association for Laboratory Animal Science*, 2009, 48, 521-526, <[www.ncbi.nlm.nih.gov/pubmed/19807974](http://www.ncbi.nlm.nih.gov/pubmed/19807974)>.

A chronically catheterized 14-year-old male rhesus macaque was reported for recurrent scrotal swelling. The scrotum was enlarged and warm to touch, and associated skin was noted to be lichenified on physical examination. The penis could not be extruded due to preputial swelling. Results from the following diagnostic tests were all unremarkable or within normal limits: scrotal aspirate, hematology, serum biochemistries, urinalysis, and radiography of the thorax, scrotum, and abdomen. Ultrasonography of lower extremities identified thrombi in bilateral iliac veins and left femoral vein. Collateral circulation surrounding the left femoral vein permitted some compensatory venous return. The left femoral vein of this animal had been catheterized approximately two months before initial presentation. A coagulation panel revealed a positive D-dimer test, indicative of elevated levels of fibrin degradation products due to active thrombus breakdown. Enoxaparin sodium, a low-molecular-weight heparin for human use, was administered at 20 mg subcutaneously once daily for 10 days to treat occlusive venous thrombi. After enoxaparin treatment, the edema was greatly decreased. To achieve complete resolution, a second course of enoxaparin was administered two months after the first. Ultra-

sonography of the pelvic vasculature six months after completion of therapy showed marked thrombus resolution, allowing for bilateral patency in the iliac and femoral veins. Follow-up evaluation revealed that D-dimer values were negative as well. This case demonstrates the novel application of the human medication enoxaparin to treat clinical signs of deep vein thrombosis in a chronically catheterized rhesus macaque.

### Conservation

- Modelling spider monkeys *Ateles* spp. Gray, 1825: Ecological responses and conservation implications to increased elevation. Shanee, S. (Neotropical Primate Conservation, 65 Whaddon Rd, Cheltenham, Gloucestershire GL52 5NE, U.K. [e-mail: [samshanee@gmail.com](mailto:samshanee@gmail.com)]). *Journal of Threatened Taxa*, 2009, 1, 450-456, <[www.threatenedtaxa.org/ZooPrintJournal/2009/September/Sam.htm](http://www.threatenedtaxa.org/ZooPrintJournal/2009/September/Sam.htm)>.

Spider monkeys (*Ateles* spp.) are among the most widely distributed and endangered neotropical primate genera. Throughout their distribution expanding human populations and associated demands for land are causing widespread deforestation, especially in low-lying areas where many populations of spider monkeys are being pushed to high elevation sites with sub-optimal conditions. In this paper ecological data from a wide range of sources has been collected and examined to try to better understand and predict spider monkey ecological responses to high elevation areas with lower environmental carrying capacities. Results show a significant reduction in group and foraging party sizes with increased elevation. A general reduction in density is also noted with increasing elevation, while home range sizes remain static. It is recommended that these observations be taken into account when planning conservation actions and new protected areas, and further implications are also discussed.

### Development and Aging

- Age-dependent alteration in hippocampal neurogenesis correlates with learning performance of macaque monkeys. Aizawa, K., Ageyama, N., Yokoyama, C., & Hisatsune, T. (T. H., Dept of Integrated Biosci., Univ. of Tokyo, Biosci. Bldg. 402, 5-1-5 Kashiwanoha, Kashiwa, Chiba 277-8562, Japan). *Experimental Animals*, 2009, 58, 403-407, <[www.jstage.jst.go.jp/article/expanim/58/4/403/\\_pdf](http://www.jstage.jst.go.jp/article/expanim/58/4/403/_pdf)>.

“Newborn neurons are continuously produced in the hippocampus, which may be involved in several cognitive functions, including learning and memory, throughout life. However, both hippocampus-dependent cognitive functions and the level of adult neurogenesis are gradually attenuated as aging progresses. Few studies have explored the relationship between adult neurogenesis and cognitive functions, especially in primates. In this study, we evaluated learning performance and hippocampal neurogenesis utilizing young and aged cynomolgus monkeys. Signifi-

cant attenuations in learning performance and adult neurogenesis were detected in aged monkeys. Interestingly, there was a positive correlation between learning performance and the level of neurogenesis. Our findings suggest that cognitive functions and adult neurogenesis may have some interdependent relationships during aging.”

### Disease

- *Plasmodium knowlesi* malaria in humans is widely distributed and potentially life threatening. Singh, J. C., Davis, T. M. E., Lee, K. S., Shamsul, S. S. G., Matusop, A., Ratnam, S., Rahman, H. A., Conway, D. J., & Singh, B. (Malaria Research Centre, Fac. of Med. & Health Sci., Univ. Malaysia Sarawak, Kuching, Sarawak, Malaysian Borneo [[coxsingh@gmail.co](mailto:coxsingh@gmail.co)]). *Clinical Infectious Diseases*, 2008, 46, 165-171, <[www.journals.uchicago.edu/doi/full/10.1086/524888](http://www.journals.uchicago.edu/doi/full/10.1086/524888)>.

“Until recently, *Plasmodium knowlesi* malaria in humans was misdiagnosed as *Plasmodium malariae* malaria. The objectives of the present study were to determine the geographic distribution of *P. knowlesi* malaria in the human population in Malaysia and to investigate 4 suspected fatal cases. Sensitive and specific nested polymerase chain reaction was used to identify all *Plasmodium* species present in (1) blood samples obtained from 960 patients with malaria who were hospitalized in Sarawak, Malaysian Borneo, during 2001–2006; (2) 54 *P. malariae* archival blood films from 15 districts in Sabah, Malaysian Borneo (during 2003–2005), and 4 districts in Pahang, Peninsular Malaysia (during 2004–2005); and (3) 4 patients whose suspected cause of death was *P. knowlesi* malaria. For the 4 latter cases, available clinical and laboratory data were reviewed. *P. knowlesi* DNA was detected in 266 (27.7%) of 960 of the samples from Sarawak hospitals, 41 (83.7%) of 49 from Sabah, and all 5 from Pahang. Only *P. knowlesi* DNA was detected in archival blood films from the 4 patients who died. All were hyperparasitemic and developed marked hepatorenal dysfunction. Human infections with *P. knowlesi*, commonly misidentified as the more benign *P. malariae*, are widely distributed across Malaysian Borneo and extend to Peninsular Malaysia. Because *P. knowlesi* replicates every 24 h, rapid diagnosis and prompt effective treatment are essential. In the absence of a specific routine diagnostic test for *P. knowlesi* malaria, we recommend that patients who reside in or have traveled to Southeast Asia and who have received a “*P. malariae*” hyperparasitemia diagnosis by microscopy receive intensive management as appropriate for severe falciparum malaria.”

- DNA vaccination in rhesus macaques induces potent immune responses and decreases acute and chronic viremia after SIVmac251 challenge. Rosati, M., Bergamaschi, C., Valentin, A., Kulkarni, V., Jalah, R., Alicea, C., Patel, V., von Gegerfelt, A. S., Montefiori, D. C., Venzon, D. J., Khan, A. S., Draghia-Akli, R., Van Rompay, K. K. A.,

Felber, B. K., & Pavlakis, G. N. (G. N. P., Vaccine Branch, Center for Cancer Research, National Cancer Institute at Frederick, Frederick, MD 21702-1201 [e-mail: [pavlakis@ncifcrf.gov](mailto:pavlakis@ncifcrf.gov)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 15831-15836, <[www.pnas.org/content/106/37/15831.full](http://www.pnas.org/content/106/37/15831.full)>.

Optimized plasmid DNAs encoding the majority of SIVmac239 proteins and delivered by electroporation (EP) elicited strong immune responses in rhesus macaques. Vaccination decreased viremia in both the acute and chronic phases of infection after challenge with pathogenic SIVmac251. Two groups of macaques were vaccinated with DNA plasmids producing different antigen forms, “native” and “modified,” inducing distinct immune responses. Both groups showed significantly lower viremia during the acute phase of infection, whereas the group immunized with the native antigens showed better protection during the chronic phase (1.7 log decrease in virus load,  $P = 0.009$ ). Both groups developed strong cellular and humoral responses against the DNA vaccine antigens, which included Gag, Pol, Env, Nef, and Tat. Vaccination induced both central memory and effector memory T cells that were maintained at the day of challenge, suggesting the potential for rapid mobilization upon virus challenge. The group receiving the native antigens developed higher and more durable anti-Env antibodies, including neutralizing antibodies at the day of challenge. These results demonstrate that DNA vaccination in the absence of any heterologous boost can provide protection from high viremia comparable to any other vaccine modalities tested in this macaque model.

- Simian varicella virus in pigtailed macaques (*Macaca nemestrina*): Clinical, pathologic, and virologic features. Hukkanen, R. R., Gillen, M., Grant, R., Liggitt, H. D., Kiem, H.-P., & Kelley, S. T. (Washington NPRC, Univ. of Washington, Seattle, WA). *Comparative Medicine*, 2009, 59, 482-487.

Simian varicella virus (SVV; *Cercopithecine herpesvirus 9*) is a naturally occurring herpesvirus of nonhuman primates. Here we present the clinical, pathologic, and virologic findings from two cases of SVV in adult female pigtailed macaques. The initial case presented with hyperthermia and a diffuse inguinal rash which spread centripetally, progressing to vesiculoulcerative dermatitis of the trunk, face, and extremities. At 96 h after presentation, the animal was anorexic and lethargic and had oral and glossal ulcerations. Euthanasia was elected in light of the macaque’s failure to respond to clinical treatment. Seven days after the first case was identified, a second macaque presented with a vesicular rash and was euthanized. Gross necropsy lesions for both cases included vesicular, ulcerative dermatitis with mucocutaneous extension and hepatic necrosis; the initial case also demonstrated necrohemorrhagic gastroenterocolitis and multifocal splenic necrosis. Histology confirmed herpetic viral infection with abundant

intranuclear inclusion bodies. Immunofluorescence assays detected antibodies specific for SVV. PCR assays of vesicular fluid, tissue, and blood confirmed SVV and excluded varicella-zoster virus (*Human herpesvirus 3*). Serology for *Macacine herpesvirus 1* (formerly *Cercopithecine herpesvirus 1*), poxvirus (monkeypox), and rubella was negative. Banked serum samples confirmed SVV exposure and seroconversion. Investigation into the epidemiology of the seroconversion demonstrated a SVV colony prevalence of 20%. The described cases occurred in animals with reconstituted immune systems (after total-body irradiation) and demonstrate the clinical effects of infection with an endemic infectious agent in animals with a questionable immune status.”

### Evolution, Genetics, and Taxonomy

- Independent evolution of knuckle-walking in African apes shows that humans did not evolve from a knuckle-walking ancestor. Kivell, T. L., & Schmitt, D. (Dept of Evolutionary Anthro., Duke Univ., P.O. Box 90383 Science Dr., Durham, NC 27708-0383 [e-mail: [tracy.kivell@duke.edu](mailto:tracy.kivell@duke.edu)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 14241-14246, <[www.pnas.org/content/106/34/14241.full](http://www.pnas.org/content/106/34/14241.full)>.

“Despite decades of debate, it remains unclear whether human bipedalism evolved from a terrestrial knuckle-walking ancestor or from a more generalized, arboreal ape ancestor. Proponents of the knuckle-walking hypothesis focused on the wrist and hand to find morphological evidence of this behavior in the human fossil record. These studies, however, have not examined variation or development of purported knuckle-walking features in apes or other primates, data that are critical to resolution of this long-standing debate. Here we present novel data on the frequency and development of putative knuckle-walking features of the wrist in apes and monkeys. We use these data to test the hypothesis that all knuckle-walking apes share similar anatomical features and that these features can be used to reliably infer locomotor behavior in our extinct ancestors. Contrary to previous expectations, features long-assumed to indicate knuckle-walking behavior are not found in all African apes, show different developmental patterns across species, and are found in non-knuckle-walking primates as well. However, variation among African ape wrist morphology can be clearly explained if we accept the likely independent evolution of two fundamentally different biomechanical modes of knuckle-walking: an extended wrist posture in an arboreal environment (*Pan*) versus a neutral, columnar hand posture in a terrestrial environment (*Gorilla*). The presence of purported knuckle-walking features in the hominin wrist can thus be viewed as evidence of arboreality, not terrestriality, and provide evidence that human bipedalism evolved from a more arboreal ancestor occupying the ecological niche common to all living apes.”

- Ancient origin of placental expression in the growth hormone genes of anthropoid primates. Papper, Z., Jameson, N. M., Romero, R., Weckle, A. L., Mittal, P., Benirschke, K., Santolaya-Forgas, J., Uddin, M., Haig, D., Goodman, M., & Wildman, D. E. (D. E. W., Ctr for Molecular Med. & Genetics, Wayne State Univ. Sch. of Med., Detroit, MI 48201 [e-mail: [dwildman@med.wayne.edu](mailto:dwildman@med.wayne.edu)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 17083-17088, <[www.pnas.org/content/106/40/17083.full](http://www.pnas.org/content/106/40/17083.full)>.

“In anthropoid primates, growth hormone (GH) genes have undergone at least two independent locus expansions, one in platyrrhines (New World monkeys) and another in catarrhines (Old World monkeys and apes). In catarrhines, the GH cluster has a pituitary-expressed gene called *GHI*; the remaining GH genes include placental GHs and placental lactogens. Here, we provide cDNA sequence evidence that the platyrrhine GH cluster also includes at least three placenta-expressed genes and phylogenetic evidence that placenta-expressed anthropoid GH genes have undergone strong adaptive evolution, whereas pituitary-expressed GH genes have faced strict functional constraint. Our phylogenetic evidence also points to lineage-specific gene gain and loss in early placental mammalian evolution, with at least three copies of the GH gene present at the time of the last common ancestor (LCA) of primates, rodents, and laurasiatherians. Anthropoid primates and laurasiatherians share gene descendants of one of these three copies, whereas rodents and strepsirrhine primates each maintain a separate copy. Eight of the amino-acid replacements that occurred on the lineage leading to the LCA of extant anthropoids have been implicated in GH signaling at the maternal-fetal interface. Thus, placental expression of GH may have preceded the separate series of GH gene duplications that occurred in catarrhines and platyrrhines (i.e., the roles played by placenta-expressed GHs in human pregnancy may have a longer evolutionary history than previously appreciated).”

- Convergent evolution of anthropoid-like adaptations in Eocene adapiform primates. Seiffert, E. R., Perry, J. M. G., Simons, E. L., & Boyer, D. M. (Dept of Anatomical Sciences, Stony Brook Univ., Stony Brook, NY 11794-8081 [e-mail: [erik.seiffert@stonybrook.edu](mailto:erik.seiffert@stonybrook.edu)]). *Nature*, 2009, 461, 1118-1121, <[www.nature.com/nature/journal/v461/n7267/full/nature08429.html](http://www.nature.com/nature/journal/v461/n7267/full/nature08429.html)>.

“Adapiform or ‘adapoid’ primates first appear in the fossil record in the earliest Eocene epoch (55 million years [Myr] ago), and were common components of Palaeogene primate communities in Europe, Asia and North America. Adapiforms are commonly referred to as the ‘lemur-like’ primates of the Eocene epoch, and recent phylogenetic analyses have placed adapiforms as stem members of Strepsirrhini, a primate suborder whose crown clade includes lemurs, lorises and galagos. An alternative view is that adapiforms are stem anthropoids. This debate has re-

cently been rekindled by the description of a largely complete skeleton of the adapiform *Darwinius*, from the middle Eocene of Europe, which has been widely publicised as an important ‘link’ in the early evolution of Anthropoidea. Here we describe the complete dentition and jaw of a large-bodied adapiform (*Afradapis* gen. nov.) from the earliest late Eocene of Egypt (37 Myr ago) that exhibits a striking series of derived dental and gnathic features that also occur in younger anthropoid primates—notably the earliest catarrhine ancestors of Old World monkeys and apes. Phylogenetic analysis of 360 morphological features scored across 117 living and extinct primates (including all candidate stem anthropoids) does not place adapiforms as haplorhines (that is, members of a *Tarsius*–Anthropoidea clade) or as stem anthropoids, but rather as sister taxa of crown Strepsirrhini; *Afradapis* and *Darwinius* are placed in a geographically widespread clade of caenopithecine adapiforms that left no known descendants. The specialized morphological features that these adapiforms share with anthropoids are therefore most parsimoniously interpreted as evolutionary convergences. As the largest non-anthropoid primate ever documented in Afro-Arabia, *Afradapis* nevertheless provides surprising new evidence for prosimian diversity in the Eocene of Africa, and raises the possibility that ecological competition between adapiforms and higher primates might have played an important role during the early evolution of stem and crown Anthropoidea in Afro-Arabia.”

- Evolution amplified processing with temporally dispersed slow neuronal connectivity in primates. Caminiti, R., Ghaziri, H., Galuske, R., Hof, P. R., & Innocenti, G. M. (Dept of Neurosci., Karolinska Inst, S-171 77, Stockholm, Sweden [e-mail: [giorgio.innocenti@ki.se](mailto:giorgio.innocenti@ki.se)]). *Proceedings of the National Academy of Sciences, U.S.A.*, 2009, 106, 19551-19556, <[www.pnas.org/content/106/46/19551.full](http://www.pnas.org/content/106/46/19551.full)>.

The corpus callosum (CC) provides the main route of communication between the 2 hemispheres of the brain. In monkeys, chimpanzees, and humans, callosal axons of distinct size interconnect functionally different cortical areas. Thinner axons in the genu and in the posterior body of the CC interconnect the prefrontal and parietal areas, respectively, and thicker axons in the midbody and in the splenium interconnect primary motor, somatosensory, and visual areas. At all locations, axon diameter, and hence its conduction velocity, increases slightly in the chimpanzee compared with the macaque because of an increased number of large axons but not between the chimpanzee and man. This, together with the longer connections in larger brains, doubles the expected conduction delays between the hemispheres, from macaque to man, and amplifies their range about 3-fold. These changes can have several consequences for cortical dynamics, particularly on the cycle of interhemispheric oscillators.

### Field Studies

- Predator-specific landscapes of fear and resource distribution: Effects on spatial range use. Willems, E. P., & Hill, R. A. (Dept of Anthro., Durham Univ., Dawson Bldg, South Rd, Durham DH1 3LE U.K. [e-mail: [e.p.willems@gmx.net](mailto:e.p.willems@gmx.net)]). *Ecology*, 2009, 90, 546-555, <[www.esajournals.org/doi/pdf/10.1890/08-0765.1](http://www.esajournals.org/doi/pdf/10.1890/08-0765.1)>.

“Although ecologists have long recognized that animal space use is primarily determined by the presence of predators and the distribution of resources, the effects of these two environmental conditions have never been quantified simultaneously in a single spatial model. Here, in a novel

approach, predator-specific landscapes of fear are constructed on the basis of behavioral responses of a prey species (vervet monkey: *Chlorocebus aethiops*), and we show how these can be combined with data on resource distribution to account for the observed variation in intensity of space use. Results from a mixed regressive-spatial regressive analysis demonstrate that ranging behavior can indeed be largely interpreted as an adaptive response to perceived risk of predation by some (but not all) predators and the spatial availability of resources. The theoretical framework behind the model is furthermore such that it can easily be extended to incorporate the effects of additional factors potentially shaping animal range use and thus may be of great value to the study of animal spatial ecology.”

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### Book Reviewers Wanted

Emily G. Patterson-Kane [e-mail: [rattitude@gmail.com](mailto:rattitude@gmail.com)], book review editor for the *Journal of Applied Animal Welfare Science (JAAWS)*, is looking for individuals who would be available to review books for the *Journal*. *JAAWS* is a peer-reviewed academic journal that publishes articles and reports discussing methods of experimentation, husbandry, and care that enhance the welfare of animals in laboratories, farms, homes, and the wild.

Reviewers should have a strong background in a scientific discipline or profession, and a sound understanding of animal welfare. Members of animal-related professions (e.g. laboratory technician, zookeeper, agriculture) are encouraged to offer, as well as animal scientists and graduate students in animal science disciplines.

Books will be made available for selection by the reviewers, and books that address the mission of *JAAWS* can be requested and may be provided, at the discretion of the publisher.

Reviews should be approximately 500-800 words in length and state a strong, expert opinion or perspective on the material covered in the book. The tone should be more like an editorial or commentary than a “book report”. Reviews are due within two months of the receipt of the book unless otherwise arranged, and will be published in *JAAWS*, provided they meet the approval of the editorial staff. See <[rattitude.wordpress.com](mailto:rattitude.wordpress.com)>

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### Publication Guidelines for Animal Studies

The Institute for Laboratory Animal Research, a component of the National Academies, has announced a new project: a committee will prepare a short report aimed at editors of journals that publish animal studies. The report will outline the information that should be included in scientific papers regarding the animal studies to ensure that the study can be replicated. The extent of the needed information will be determined by the committee, but will include, for example, conditions of housing and husbandry, genetic nomenclature, microbial status, detailed

experimental manipulations, and handling and use of pharmaceuticals. An evidence-based rationale for the need to include this information will be presented.

The project is sponsored by the U.S. Department of Health and Human Services. Committee membership information: <[www8.nationalacademies.org/cp/CommitteeView.aspx?key=DELS-ILAR-09-01](http://www8.nationalacademies.org/cp/CommitteeView.aspx?key=DELS-ILAR-09-01)>; Project Scope: <[www8.nationalacademies.org/cp/ProjectView.aspx?key=DELS-ILAR-09-01](http://www8.nationalacademies.org/cp/ProjectView.aspx?key=DELS-ILAR-09-01)>.

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