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Newsletter of the National Evolutionary Synthesis Center, an NSF-funded collaborative research center operated by Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University.

IN THIS ISSUE:

EVOLUTION 2011

Don't miss these exciting events at Evolution 2011!

There's something for everyone at this year's Evolution meeting in Norman, OK. Turn to page 6 for more information about the following events:

Fri. June 17: K-14 teachers are invited to attend a full-day workshop on human evolution

Sat. June 18: Join a lunchtime discussion about teaching human evolution

Sun. June 19: Attend a full-day research symposium on evolutionary medicine

Mon. June 20: View and vote on your favorite evolution videos at the NESCent Evolution Film Festival

Tues-Wed. June 21-22: Participate in the 2nd annual iEvoBio conference on evolutionary informatics

RESEARCH HIGHLIGHTS

The Aging Ape

Humans aren't the only ones who grow old gracefully, says a new study of primate aging patterns.

For a long time it was thought that humans, with our relatively long life spans and access to modern medicine, aged more slowly than other animals. But now, the first-ever multi-species comparison of human aging patterns with those in chimps, gorillas, and other primates suggests the pace of human aging may not be so unique after all.

"If we were like other mammals, we would start dying fairly rapidly after we reach midlife. But we don't." –Anne Bronikowski

The findings appeared in the March 11 issue of *Science*.

You don't need to read obituaries or sell life insurance to know that death and disease become more common as we transition from middle age to old age. But scientists studying creatures from mice to fruit flies long assumed the aging clock ticked more slowly for humans.

We had good reason to think human aging was unique, said co-author Anne Bronikowski of Iowa State University. For one, humans live longer than many other animals.

"Humans live for many more years past their reproductive prime," Bronikowski said. "If we were like other mammals, we would start dying fairly rapidly after we reach midlife. But we don't."

"Scientists have argued for a long time that human aging was unique, but we didn't have data on aging in wild primates besides chimps until recently," said co-author Susan Alberts, associate director at NESCent and a biologist at Duke University.

The study included data from several famous long-term studies of primates in the wild, including the mountain gorilla study started by Dian Fossey.

The researchers combined data from long-term studies of seven species of wild primates: capuchin monkeys from Costa Rica, muriqui monkeys from Brazil, baboons and blue monkeys from Kenya, chimpanzees from Tanzania, gorillas from Rwanda, and sifaka lemurs from Madagascar.

The team focused not on the inevitable decline in health or fertility that come with advancing age, but rather on the risk of dying. When they compared human aging rates — measured as the rate at which mortality risk increases with age — to similar data for nearly 3,000 individual monkeys, apes and lemurs, the human data fell neatly within the primate continuum.

"Human patterns are not strikingly different, even though wild primates experience sources of mortality from which humans may

see AGING APE, p8

NEXT PROPOSAL DEADLINES:

July 1: graduate fellowships, short-term visitors

July 10: sabbaticals, catalysis meetings, working groups

July 15: journalists-in-residence

For more information, turn to page 4 or visit **http://nescent.org/science/proposals.php**

ABOUT NESCENT:

NESCent is a scientific research center dedicated to cross-disciplinary research in evolution. The center's mission is to promote the synthesis of information, concepts and knowledge to address significant, emerging, or novel questions in evolutionary science and its applications. NESCent achieves this by supporting research and education across disciplinary, institutional, geographic, and demographic boundaries.

Funded by the National Science Foundation (award #EF-0905606), NESCent is a collaborative partnership between Duke University, the University of North Carolina at Chapel Hill, and North Carolina State University. For more information about research and training opportunities at NESCent, visit **http://www.nescent.org**.

SENIOR LEADERSHIP:

Allen Rodrigo, Director

Susan Alberts
Associate Director of Science and Synthesis

Todd Vision
Associate Director of Informatics

Brian Wiegmann
Associate Director of Education and Outreach

Letter from the director

We've had a great start to the year, and I am excited about what's coming up as well. In February, NESCent celebrated Darwin Day by sending our scholars on the road: NESCent scientists visited schools in Nebraska, Iowa, Montana and Virginia, as part of our first national Darwin Day Roadshow. Find out how it went in the New York Times article highlighted in our "In the Media" section on page 3. In addition, two of our Associate Directors, Todd Vision and Brian Wiegmann, celebrated Darwin Day by visiting the University of San Francisco at Quito in Ecuador with other NESCent scientists. Amongst other outreach events, including a workshop on genetic methods in ecology and evolution, they gave a Darwin Day lecture on the Galapagos Islands, and set the wheels in motion for ongoing collaborations.

ALLEN RODRIGO

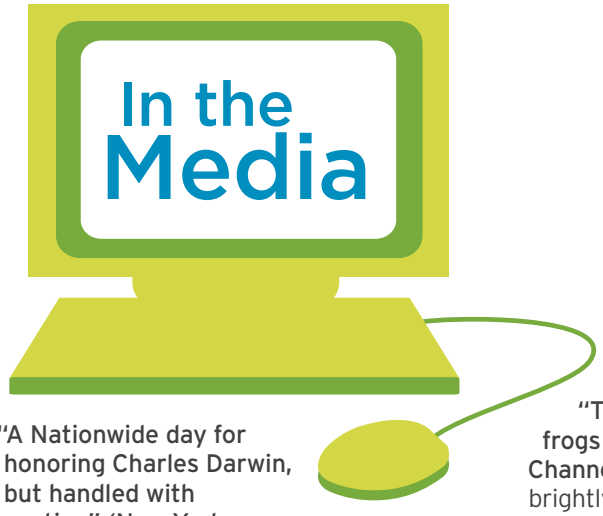
As always, NESCent will be present at the Evolution 2011 meeting in Norman, Oklahoma – please come by and visit our booth. This year, we're excited to launch the first annual NESCent Video Competition. Please come to the film festival on Monday June 20th from 6:30-7:30 PM on-site at the meeting in Norman to view and vote on your favorites. We look forward to watching your movies.

You can also expect a full schedule of hands-on evolution workshops from the recently-launched NESCent Academy. Karen Cranston, our Training Coordinator and Bioinformatics Project Manager, has had her hands full setting up an exciting lineup of courses. The course schedules are now online and summer at NESCent will be a busy time, with students, instructors, and a heady mix of quantitative evolutionary genetics, practical computing for biologists, and next-generation sequencing. For more information please see page 4.

Lastly, an update on our newest initiatives: We have had a good number of proposals for our call to develop curricular materials in evolutionary medicine for medical and pre-med students. We expect to decide soon which of these best serves our mission to ensure that an understanding of evolution is important if we are to understand human health and disease.

Also, a catalysis meeting on Evolution, Astrobiology and Synthetic Biology will take place from Oct 11 – 13, 2011 at NESCent. As part of our ongoing effort to stimulate research and education beyond traditional boundaries, NESCent will also launch two additional thematic activities in 2011/2012. The first focuses on evolution and the social sciences, and we will put out a call for proposals later this year for one or more meetings exploring the intersection between the evolutionary and social sciences. The second activity centers on the development of evolution-related educational resources specifically for K-12 under-represented minorities. Again, we expect to issue a call for working group proposals towards the end of 2011. Stay tuned for these and other opportunities in the coming months.

As always, NESCent is a community resource — we want to hear from you, and we look forward to receiving your proposals. We encourage you to contact us, to let us know what you think are emerging and important new trends in evolutionary science.



"A Nationwide day for honoring Charles Darwin, but handled with caution" (New York Times) NESCent scientists head to the heartland to show students in rural areas of the US that science is cool. Find the full story at **http://nyti.ms/g5TIM3**.

"Study offers warning about next potential mass extinction."(USA Today) Earth's sixth mass extinction: is it almost here? NESCent paleontologist Jenny McGuire and colleagues weigh in at **http://usat.ly/dPJ9dU**.

"How male birds affect female fertility" (MSNBC) Better bird dads help their mates stay youthful longer, reports NESCent postdoc Josh Auld and colleagues. Read the full story at **http://on.msnbc.com/g6OvtR**.

"The mass extinction of scientists who study species" (Wired) The biodiversity crisis isn't just a loss of species, says NESCent's Craig McClain. It's also a loss of the scientists who study them. Learn more at **http://bit.ly/eYr2vA.**

"Evolution drives many plants and animals to be bigger, faster" (Eurekalert) For the vast majority of plants and animals, the 'bigger is better' view of evolution may not be far off the mark, says a new broad-scale study of natural selection by co-authors Joel Kingsolver and Sarah Diamond. Read more at **http://bit.ly/i8k0RQ.**

"New study pinpoints why some microbial genes are more promiscuous than others" (Eurekalert) A new study of more than three dozen bacteria species – including the microbes responsible for pneumonia, meningitis, stomach ulcers and plague – settles a longstanding debate about why bacteria are more likely to steal some genes than others. Read the full story at **http://bit.ly/gaCPgj**.

"Treadmill test reveals most poisonous frogs are best frog athletes" (Discovery Channel: Animal Planet) The most toxic, brightly colored members of the poison frog family may also be the best athletes, says a new study by NESCent researcher Juan Santos. Learn more at **http://bit.ly/fipIKo. See also:**

"Poisonous lifestyle makes frogs more fit" (Wired Science) http://bit.ly/g9X8wq.

"Poison dart frogs leap to the top for frog fitness" (MSNBC News) http://on.msnbc.com/fdc4Zt.

"Despite long lives, humans age like other primates" (NPR's Science Friday) For a long time it was thought that humans, with our relatively long life spans and access to modern medicine, aged more slowly than other animals. Now, a new study of primate aging patterns suggests the pace of human aging may not be so unique after all. Read more on page 1, or listen on NPR at **http://bit.ly/i21wgD. See also:**

"Humans age at same rate as chimps, gorillas" (Discovery News) http://bit.ly/eDNIYr.

"Humans age at same pace as other primates, study finds" (US News & World Report) http://bit.ly/eI5xMO.

"Humans, apes, have similar aging patterns" (ABC News) http://abcn.ws/dFeWs5.

"What do you mean I'm aging like a baboon?!" (MSNBC News) http://on.msnbc.com/gCfEb2.

"Humans, apes, have similar aging patterns" (USA Today) http://usat.ly/h83yFF.

"Humans, primates age in similar ways" (CBS News) http://bit.ly/fzPiNT.

OPPORTUNITIES

Job openings

Interested in employment opportunities at NESCent? Our center runs with the help of a dynamic team of programmers, financial experts, event planners, and other specialists. To find out about job openings as they become available, visit **http://nescent.org/about/employment.php**.

COMING SOON

Summer field course in Highlands, NC

K-12 teachers are invited to apply

Where: Highlands Biological Station, North Carolina
When: June 20 - July 2, 2011

This two-week course will combine lecture, lab, and field work in the spectacular Blue Ridge and Great Smoky Mountains to explore key evolutionary concepts in biology. Participants will learn about recent research from scientists and best practices in evolution education from specialists in the field.

Expect to walk away with novel resources, new approaches to teaching evolution in the classroom, and exciting new insights into evolutionary science. Co-sponsored by the Center for Mathematics and Science Education at Western Carolina University, Highlands Biological Station, and the BEACON Center for the Study of Evolution in Action. For more information, visit **http://bit.ly/g9Cqnh.**

Beef up your evolutionary toolbox

Interested in hands-on training workshops in evolutionary biology? Act fast: Applications will soon close for the following NESCent Academy courses for summer 2011. Graduate students, postdoctoral fellows and junior faculty members are eligible to apply:

Evolutionary quantitative genetics

When: August 8-13, 2011
Where: Durham, NC
Deadline: May 15, 2011

Participants in this workshop will review the basics of theory in the field of evolutionary quantitative genetics and its connections to evolution at various time scales. Modeling and analysis of phenotypic trait evolution on phylogenies and in paleontological time series will be a primary focus. Participants will learn to use R, an open-source statistical programming language, to build and test evolutionary models. For more information, including costs, see the course page at **https://www.nescent.org/sites/academy/Evolutionary_quantitative_genetics**

Instructors: Stevan J. Arnold, Joe Felsenstein

Guest instructors: Trudy Mackay, Adam Jones, Marguerite Butler, Luke Harmon

How to apply: Apply before May 15 using the online application form.

Evolution and Medicine

When: August 8-12, 2011
Where: Mount Desert Island Biological Laboratory, Bar Harbor, Maine

Participants in this course will learn strategies for applying core principles of evolutionary biology to problems in medicine and public health. Evolution and Medicine is offered by the Mount Desert Island Biological Laboratory and co-sponsored by NESCent.

Instructors: William Aird (Harvard University), Gillian Bentley (Durham University, UK), Carl Bergstrom (University of Washington), Peter Gluckman (University of Auckland), Peter Ellison (Harvard University), Randolph Nesse, course director (University of Michigan), Chris Reiber (SUNY Binghamton), Stephen Stearns (Yale University)

How to apply: For more information or to apply online, please visit **http://www.mdibl.org/courses/Evolution_and_Medicine/296/**

Next-gen sequencing

When: August 15 - 26, 2011
Where: Durham, NC
Deadline: May 15, 2011

Participants in this will gain a concrete understanding of the general power and limitations of next-gen sequencing, an understanding of which tools should be used and why, and the ability to address a biological question of interest using the raw data from the sequencing machine. Learn about data acquisition, comparative genomics, design and analysis for population genetics, systematics and development. For more information, including costs, see the course page at **https://www.nescent.org/sites/academy/Next-gen_sequencing**

Instructors: William Cresko (U. Oregon), Brian O'Connor (U. North Carolina), Mónica Cecilia Muñoz-Torres (Georgetown, Christine Elsik lab), Alexie Papanicolaou (CSIRO, Australia), Konrad Paszkiewicz (U. Exeter, UK), Jennifer Taylor (CSIRO, Australia), Francesc López & Jeffrey Townsend (Yale)

How to apply: Apply before May 15 using the online application form.

Have an idea for an evolution-related course that you want to teach? NESCent Academy welcomes your proposals. The deadline for course proposals is July 10 of each year.

CALL FOR PROPOSALS

Call for proposals

Looking for support for a graduate student, faculty sabbatical, short-term visit or meeting? NESCent welcomes your proposals. We are looking to support innovative approaches to outstanding problems in evolutionary biology. In particular, proposals that have a clear interdisciplinary focus, or involve evolutionary concepts in non-traditional disciplines, are strongly encouraged, as are proposals that demonstrate international participation and a mix of senior and emerging researchers, including graduate students.

Proposals for short-term visits are 2 weeks to 3 months. Proposals for sabbaticals may be for up to a full year. The next deadline for short-term visitors and graduate fellowships is July 1. For sabbaticals, working groups, and catalysis meetings, the next deadline is July 10. Proposals for postdoctoral fellowships are accepted once a year on December 1.

For more information, please visit **http://nescent.org/science/proposals.php**.

Journals encourage authors to publish and preserve their data

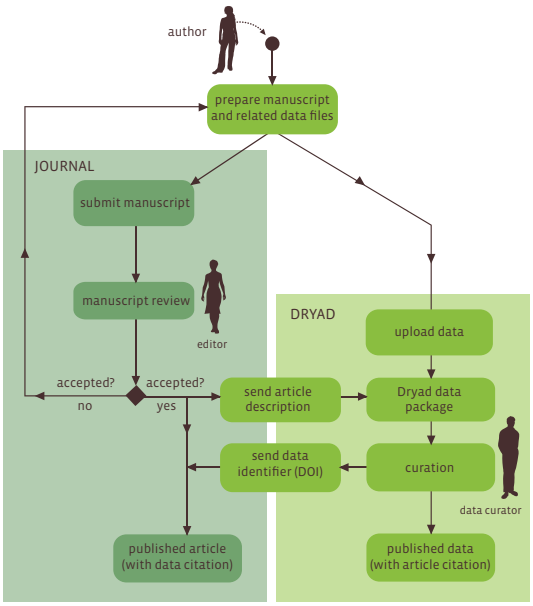
When you publish your research, do you also publish the data behind it? A digital repository known as Dryad (datadryad.org) enables authors publishing in the basic and applied biosciences to deposit and publish their data.

As of April 2011, the Dryad data repository contained more than 1,400 data files, associated with articles in 67 journals. Nearly 20 of those journals—including many of the most widely read journals in evolutionary biology—have agreed to integrate their article and data submission processes with Dryad. If you publish in any of the following journals, you may receive an email encouraging you to deposit your data. Simply click on the link embedded in the invitation and follow the directions to upload your data files:

- The American Naturalist
- Biological Journal of the Linnean Society
- Evolution
- Evolutionary Applications
- Journal of Evolutionary Biology
- Journal of Heredity
- Molecular Ecology
- Molecular Ecology Resources

Coming soon:

- BMC Evolutionary Biology
- BMC Ecology
- Ecological Monographs
- Heredity
- Integrative and Comparative Biology
- Journal of Paleontology
- Paleobiology
- PLoS Biology
- Systematic Biology



To expedite the process, your bibliographic information will be imported for you. After you deposit your data, the journal will be notified of your submission, and will include a Dryad DOI with the published article. You may also wish to include this DOI in the final proof of the manuscript to help interested readers locate your data. ●

QUESTIONS? A two-minute "how to" video shows you how it's done: **www.scivee.tv/node/26563**. For more information please visit **http://www.datadryad.org/depositing**.

COMING SOON

Teacher workshop in Madison, WI

Where: University of Wisconsin-Madison
When: August 8-12, 2011

High school and middle school teachers are invited to apply for a week-long evolution workshop in Madison, Wisconsin, August 8-12, 2011. The workshop will include presentations by scientists on cutting-edge research, field trips to the Geology Museum, Vilas Zoo and BioCore Prairie, as well as provide resources for teaching key evolutionary concepts in the classroom.

Registration opens April 15. For more information and to register, visit **http://bit.ly/eqhekS** or contact course organizer Dr. Kristin Jenkins (kjenkins@nescent.org).

The workshop is cosponsored by NESCent and the University of Wisconsin Crow Institute for the Study of Evolution.

NABT evolution symposium

Where: Anaheim, CA
When: October 12-15, 2011 (Early bird registration closes May 31)

If you're interested in human evolution, you may not want to miss the next evolution symposium at the annual meeting of the National Association of Biology Teachers (NABT), coming this October in Anaheim, CA. The 2011 evolution symposium will feature four exciting speakers: Susan Antón of New York University, Jill Pruetz of Iowa State University, John Hawks of the University of Wisconsin-Madison, and Rick Potts of the National Museum of Natural History.

Don't delay: Early bird registration closes May 31st!

The premier annual international conference of evolutionary biologists

EVOLUTION 2011

Human evolution workshop for K-14 teachers

Where: Embassy Suites Conference Center, Norman, OK

When: Friday June 17th, 8:00 AM – 5:00 PM

K-14 educators are invited to attend a full-day workshop on human evolution on Friday, June 17 at the Embassy Suites Conference Center in Norman, OK. This workshop will combine presentations, panel discussions and hands-on activities for the classroom. A small registration fee covers lunch and access to the full Evolution 2011 meetings for teachers. Scientists attending Evolution 2011 are welcome to participate in the workshop as well. For more information and to register, please visit **http://bit.ly/g8JbcX.**

Teaching human evolution and evolutionary medicine

Where: Embassy Suites Conference Center, Norman, OK

When: Saturday June 18th 10:30 – 12:00 noon

Conference attendees who are interested in incorporating aspects of human evolution and evolutionary medicine into their classrooms are invited to a lunch workshop scheduled for Saturday June 20th from 10:30 – 12:00 noon. Learn more about the new NIH education module on evolutionary medicine, and join a discussion of resources and ideas for teaching human evolution. The workshop will include lunch, and will conclude in time to allow participants to attend the Gould Lecture at noon. For more information visit **http://www.evolution2011.ou.edu/workshops.html.**

Evolutionary medicine symposium

Where: Embassy Suites Conference Center, Norman, OK

When: Sunday June 19th 8:30 AM – 4:30 PM

Join the discussion of how the fields of evolution and medicine can inform each other in a full-day symposium in honor of George Williams on Sunday, June 19th from 8:30 AM to 4:30 PM. Learn how evolutionary principles and research approaches are being applied to increase our understanding of both the disease and the patient sides of the human health equation. The engaging line up of speakers includes:

Mike Antolin (Colorado State U.)

Randolph Nesse (U. of Michigan)

Anna DiRienzo (U. of Chicago)

Peter Gluckman (U. of Auckland)

Gil Omenn (U. of Michigan Med School)

Carlos Bustamante (Cornell U.)

Stephen Stearns (Yale U.)

Kathy Hanley (New Mexico State U.)

Dyann Wirth (Harvard School of Public Health)

Subhajyoti De & Franciska Michor (Harvard U.)

Carl Bergstrom (U. of Washington)

Irene Eckstrand (NIH)

For more information visit **http://www.evolution2011.ou.edu/symposia.html.**

Ready for some REEL science? NESCent Evolution Film Festival comes to Norman, OK

Where: Embassy Suites Conference Center, Norman, OK

When: Monday June 20th, 6:30-7:30 PM

The National Evolutionary Synthesis Center (NESCent) invites you to attend the first annual NESCent Evolution Video Contest, to take place Monday June 20th from 6:30-7:30 PM at the Evolution 2011 conference in Norman.

Contestants were challenged to submit an entertaining and informative video that explains a fun fact, key concept, compelling question, or exciting area of evolution research in three minutes or less.

Come to the film festival to view and vote on the finalists. We'll supply the popcorn and drinks! The winners will be announced and screened at the conference banquet on Tuesday June 21st.

If you will be at the Evolution 2011 conference, check your meeting program for the room location for the film festival, or visit the NESCent booth in the exhibit hall for more info.

For more information about the NESCent Evolution Video Contest, please see **www.nescent.org/eog/video contest**. You do not need to attend the conference to submit a video.

Congratulations to the newest award recipients for 2011

NESCent is pleased to announce the following new awards:

POSTDOCTORAL FELLOWS

Kate Hertweck (University of Missouri)
Comparative biology of transposable element proliferation

Mira Han (Indiana University, Bloomington)
Gene evolution in genomic context: Integrating genomic location into gene evolution models

Tami Cruickshank (Indiana University, Bloomington)
Population genetics of maternal effects and their influence on molecular evolution

Robert Lanfear (Australian National University)
Synthesising methods and data to understand the mutational processes that shape genomes

Elizabeth Sbrocco (Boston University)
Exploring environmental correlates of range limits across a marine biodiveristy hotspot

Adam Smith (University of Texas, Austin)
Evaluating effect of temporal distribution of fossil calibrations on divergence analyses

Paul Harnik (Stanford University)
Ecological controls on evolutionary rates in marine systems

CATALYSIS MEETINGS

David Liberles (University of Wyoming)
Modeling protein structural and energetic constraints on sequence evolution

Andrew Groover (US Forest Service and University of California-Davis)
Evolutionary origins and development of woody plants

CATALYSIS MEETINGS (cont'd)

Jason Wolf (University of Bath, UK)
An integrative understanding of the evolution of genomic imprinting

Erin Crandall (University of California-Santa Cruz)
The molecular ecology and evolution of the Indo-Pacific: a Collaborative Research Network

WORKING GROUPS

Doris Bachtrog (University of California, Berkeley)
The tree of sex – a comprehensive synthesis of sex determination systems in eukaryotes

Jennifer Fewell (Arizona State University)
Large-scale demographic, network and behavioral trait analyses of sociality

Arlin Stoltzfus (Center for Advanced Research in Biotechnology)
HIP: Hackathons, Interoperability, Phylogenies

LONG-TERM SABBATICAL SCHOLARS

Christina Caruso (University of Guelph, Canada)
The evolutionary ecology of genetic conflict in plants

Dena Smith (University of Colorado, Boulder)
Evolution of the Coleoptera: A paleontological perspective

Michael Wade (Indiana University, Bloomington)
A critical synthesis of indirect genetic effects in adaptive evolution

SHORT-TERM SABBATICAL SCHOLARS

Douglas Soltis (University of Florida), Pamela Soltis (University of Florida)
Reconstructing the Great Tree of Life

Rebecca Safran (University of Colorado)
An integrative evolutionary approach to examine sexual selection as a mechanism of speciation

TRIANGLE SCHOLARS

Tyler Curtain (University of North Carolina, Chapel Hill)
Darwin and Nietzsche: evolutionary thought within literary theory

JOURNALIST-IN-RESIDENCE

Molly Samuel (National Public Radio, KQED, freelance)
Shipwrecked on Dry Land: a documentary for public radio

MSI FACULTY TRAVEL AWARDS

Ross McCauley (Fort Lewis College)

Corey Welch (Haskell College/Univ. of Kansas)

Barbara Musolf (Clayton State University)

Stanley Rice (Southeastern Oklahoma State University)

For more information about these scholars and their research projects, please visit **http://www.nescent.org/science/awards.php**.

Recent publications by NESCent authors

Adams, M., S. Wedderburn, et al. (2011). "Congeneric assessment demonstrates the linked genetic histories of two threatened fishes (Atherinidae: Craterocephalus) in Australia's Murray-Darling Basin." Conservation Biology. In press.

Angert, A., L. Crozier, et al. (2011). "Do species' traits predict recent shifts at expanding range edges?" Ecology Letters. In press.

Barnosky, A., N. Matzke, et al. (2011). "Has the Earth's sixth mass extinction already arrived?" Nature 471(51-57).

Barzel, A., E. Privman, et al. (2011). "Native homing endonucleases can target conserved genes in humans and in animal models." Nucleic Acids Research doi:10.1093/nar/gkr242: 1-14.

Bronikowski, A., J. Altmann, et al. (2011). "Aging in the natural world: comparative data reveal similar mortality patterns across primates." Science 331(6022).

Burleigh, J. G., M. S. Bansal, et al. (2010). "Genome-scale phylogenetics: inferring the plant tree of life from 18,896 gene trees." Systematic Biology doi:10.1093/sysbio/syq072.

Kelly, B., A. Whiteley, et al. (2010). "The Arctic melting pot: hybridization in polar species could hit biodiversity hard." Nature 468(891).

Kingsolver, J. and S. Diamond (2011). "Phenotypic selection in natural populations: what limits directional selection?" American Naturalist 177(3): 346-357.

Laikre, L., M. Schwartz, et al. (2010). "Compromising genetic diversity in the wild: unmonitored large-scale release of plants and animals." Trends in Ecology and Evolution 25(520-529).

McClain, C., J. Nekola, et al. (2011). "Local-scale faunal turnover on the deep Pacific seafloor." Marine ecology progress series 422: 193-200.

Rubio de Casas, R. (2011). "Sun and shade leaves of Olea Europaea respond differently to plant size, light availability and genetic variation " Functional Ecology. **doi:10.1111/j.1365-2435.2011.01851.x**

Santos, J. and D. Cannatella (2011). "Phenotypic integration emerges from aposematism and scale in poison frogs." Proceedings of the National Academy of Sciences **www.pnas.org/cgi/doi/10.1073/pnas.1010952108**.

Unmack, P., M. Hammer, et al. (2011). "A phylogenetic analysis of pygmy perches (Teleostei: Percichthyidae) with an assessment of the major historical influences on aquatic biogeography in southern Australia." Systematic Biology In press.

Van Valkenburgh, B., A. Curtis, et al. (2011). "Aquatic adaptations in the nose of carnivorans: evidence from the turbinates." Journal of Anatomy 218: 298-310.

AGING APE, continued

be protected," the authors wrote in a letter to *Science*.

The results also confirm a pattern observed in humans and elsewhere in the animal kingdom: as males age, they tend to die sooner than their female counterparts. In primates, the mortality gap between males and females is narrowest for the species with the least amount of male-male aggression — a monkey called the muriqui, said co-author Karen Strier of the University of Wisconsin, who has studied muriquis since 1982. The results suggest the reason why males of other species die faster than females may be the stress and strain of competition, the authors said.

Do the findings have any practical implications for humans? Modern medicine is helping humans live longer than ever before, the researchers note.

"Yet we still don't know what governs maximum life span," Alberts said. "Some human studies suggest we might be able to live a lot longer than we do now. Looking to other primates to understand where we are and aren't flexible in our aging will help answer that question." ●

Sifaka Lemur. PHOTO BY DAVID DENNIS, WIKIMEDIA COMMONS

CITATION: Bronikowski, A., J. Altmann, et al. (2011). "Aging in the natural world: comparative data reveal similar mortality patterns across primates." Science 331(6022).

Data available in the Dryad Digital Repository at **http://dx.doi.org/10.5061/dryad.8682**.