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.

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 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.”

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“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
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.

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.
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.

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](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.

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**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/](http://www.mdibl.org/courses/Evolution_and_Medicine/296/)

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**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](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 Élisik 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.

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**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.

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.
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/videocontest. 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 biodiversity 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 (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

**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

**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

**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


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.”


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