

Letter from the Chair

By Mark Bertness

It has been a busy but exciting year at Brown and in EEB. President Simmons' Academic Enrichment Initiative is now in full swing, with more ongoing faculty searches than at any other



time in Brown's history. EEB has been heavily involved in these exciting developments. We are currently negotiating to bring Dr. Osvaldo Sala of the University of Buenos Aires to Brown to lead the Environmental Change Initiative. Dr. Sala is a charismatic, internationally influential, environmental scientist who works on ecosystem processes in grassland systems and is the Secretary General of SCOPE, the Scientific Committee on the Environment, based in Paris. Dr. Sala would be a great catch for Brown, and his faculty appointment would be in our Department. We are also in the process of getting Brown/EEB faculty appointments for five scientists at the Marine Biological Laboratory (MBL), Woods Hole. As the Brown/MBL partnership grows over the next few years, we anticipate many more of these joint appointments and that our new MBL colleagues will add an exciting new dimension to EEB, particularly to our graduate program. Next fall the first four Brown/MBL joint graduate program students arrive on campus.

On a more somber note, Ted Goslow recently announced that he was retiring at the end of the semester to be closer to his family on the West Coast. Ted has played a larger-than-life role in pumping life into the human morphology course and building our morphology group. His positive energy and gentle spirit will be sorely missed. We wish him the best as he heads west to tend to his other family. To fill the large shoes left by Ted we are aggressively looking

into attracting a senior leader for the morphology group. We are focusing our attention on Dr. Beth Brainerd of U Mass, Amherst. She would be a superb addition. Stay tuned.

Our newest faculty members continue to set the pace for us. Molly Przeworski was recently selected to be an Alfred P. Sloan Fellow in Computational Molecular Biology, and Jen Hughes was awarded a prestigious NSF Career Award.

Here's to a great summer. Mark

Undergraduate Honors Thesis Presentations

Pamela Tan: *Do bats use gaits?* Advisor: Sharon Swartz

Nicholas Horton: *Habitat zonation of the herbivorous intertidal snail Littorina littorea.* Advisor: Mark Bertness

Corinne Shubin: *The relative effects of exercise and artificial selection on bone morphology and strength.* Advisor: Sharon Swartz

Boris Gershman: *Microarray change-point analysis of the response to nutrition in Drosophila melanogaster.* Advisor: Marc Tatar

Carolyn Wessinger: *The interaction of environmental signals with the autonomous flowering pathway.* Advisor: Johanna Schmitt

Whitney Brim-DeForest: *Maneuverability of the southern flying squirrel (Glaucomys volans).* Advisor: Sharon Swartz

Kelly Stellmach: *Arboreal running in southern flying squirrels (Glaucomys volans).* Advisor: Sharon Swartz

Ellen Goldstein: *Nuclear-mitochondrial interactions in Drosophila melanogaster.* Advisor: David Rand

In the Greenhouse

By Fred Jackson



It's that time of year when greenhouse experiments are beginning at a rapid pace. Graduate student **Eric von Wettberg** heads the list

of experiments with a number of interesting projects this spring. Experiment #1: His big leaf litter experiment looks at the genetic correlation of etiolating and shade avoidance plasticity in Jewelweed (*Impatiens capensis*). Experiment #2: Replicated population differentiation - Eric's biggest project ever, using over 6,000 plants from seven pairs of sun and wood populations of Jewelweed from across New England looking to see if sun and wood populations evolve frequently. Experiment #3: *Liatris borealis* seed experiment with Steve Hamburg's lab tech **Matt Vadeboncoeur** will involve germinating seeds from Maine to quantify natural germination percentages. Experiment #4: Another dual experiment, with undergraduate **Novem Auyeung**, looking at dried dormancy of native introduced and ornamental *Impatiens*.

In the *Arabidopsis thaliana* department, two equally important and interesting experiments are busting out on the greenhouse scene this spring. Postdoc **Tonia Korves** is busy crossing ecotypes of *Arabidopsis* to detect natural variation in genes that influence flowering time. Postdoc **John Stinchcombe** and lab tech **Robin Hopkins** are testing how vernalization and the gene FRI affect flowering time in ecotypes across a latitudinal cline.

Recently we have had our share of Bio 20 (Intro Biology Lab) visitors in the collection conservatory. Over 200 students passed through in a three-day period devoted to identifying characteristics of plant families.

Finally, as always, the production greenhouse is filled with flowering geraniums and other flowers for the grounds department and the 2004 commencement.

It's been a great run, Ted!

By Doug Morse

As proof to the adage that "all good things must come to an end", we're sorry to report that Ted Goslow will be retiring, and that he and Lisa will be moving on at the end of the summer to their western roots, settling in Oregon.



In addition to endearing himself to

us all, Ted has accomplished a lot for us in the short 15 years he's been at Brown. Upon arrival he took on the responsibility for getting our morphology group up and running as well as totally revamping the current human morphology course. Ted joined us in the Fall of 1989 after a distinguished stint as a Professor of Biology at Northern Arizona University in Flagstaff. In addition to receiving the major teaching awards at NAU, he developed a sterling research program on the neuromuscular control of locomotion, which he has continued at Brown, over this period concentrating primarily on bird flight. And, since coming to Brown, Ted has inspired us in his excellence as a teacher, for which he has been widely recognized on campus and beyond. As one privileged to see Ted's student evaluations, it is easy to understand how he gained that reputation. To a fault his students in human morphology have considered him to be a superb and inspirational teacher – and these are first-year medical students, who are not generally lauded for being charitable! And some of the testimonials were eloquent. At this very graduation the senior medical class is giving Ted its Medical Senior Citation. I'm sure that Ted's humanity has helped, in no small way, to make them better people and better future care providers. And, surely any one of us who has seen Ted literally wire himself up for his neuromuscular lecture will not forget that experience soon! Thanks for everything, Ted, and be sure to keep us in your thoughts. We love you.

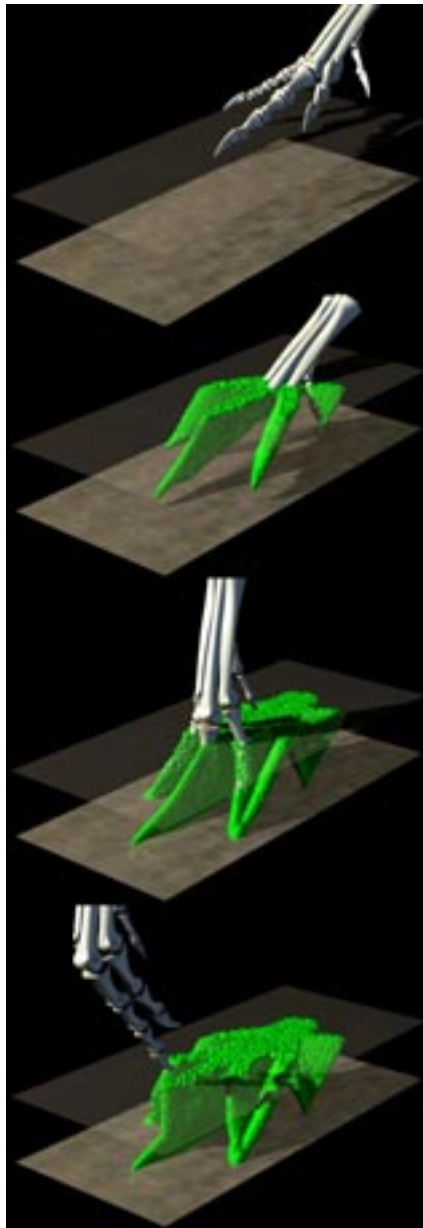
In the Lab

By Steve Gatesy

“Oh, you’re the one with the Jurassic Park grant”. This isn’t exactly what I want to hear from the University’s Office of Research Administration, but I guess I shouldn’t be surprised. When you put “dinosaurs” and “3-D animation” together in a grant proposal’s title, people naturally think Hollywood. Although we employ the same digital tools that animators use to make Nemo swim and Gollum sneer, our goals are more humbly scientific. We’re part of a growing group of paleontologists trained in functional morphology and biomechanics seeking to understand dinosaurs as living animals.

My students and I study the evolution of vertebrate locomotion. We’ve focused on a lineage of meat-eating dinosaurs called theropods, which include forms like *Tyrannosaurus* and *Velociraptor*, as well as their flying descendants—birds. Theropods have been walking and running around on two legs for the past 220 million years. How has such a conservative behavior been affected by dramatic fluctuations in body size, changes in limb proportions, tail reduction, and the origin of flight? It’s relatively easy to observe and measure limb function in living birds, but how do you study locomotion in an extinct animal? One approach we’ve taken is to use fossilized footprints, which were left behind by theropods as they walked across vast mudflats beside a shallow lake in what is now eastern Greenland. With my colleagues, Farish Jenkins of Harvard, Neil Shubin of the University of Chicago, and former student Kevin Middleton of Brown, over the last 15 years I’ve documented and analyzed hundreds of the thousands of Triassic dinosaur tracks that we’ve discovered above the icy Arctic fjords.

Most footprints show where a foot was placed, but record little evidence of how the limb moved as the animal progressed. Fortunately for us, our sites in Greenland contain layers of rock that were once exposed as wet, sloppy mud. When theropods



walked across this mucky substrate, they sank down to considerable depths, leaving behind a highly distorted track that hardly resembles a foot at all. But what these deep prints lack in anatomical detail, they more than make up for in motion; the 3-D path of the foot is preserved in a volume of rock. To decipher these complex structures, I’ve been using 3-D animation software to simulate tracks with a virtual theropod foot. Starting with the foot movements of a living turkey, I “devolve” the motion in order to create simulated tracks that have the features and proportions of real Greenlandic specimens.

These same digital tools are helpful for understanding living animals as well. For example, my graduate student, Dave Baier, is investigating how the mechanics of the shoulder joint changed during the transformation of forelimbs into wings. As part of this project, Dave is analyzing the forelimb movement of alligators as they walk on a treadmill. He first laser scans each bone to make 3-D models, which are linked to create a digital puppet. The alligator puppet is posed by sequentially aligning its bones with X-ray and light video, thereby animating and quantifying skeletal motion simultaneously. I’m using this same technique to measure bird flight with Farish Jenkins and Ken Dial at the University of Montana. Animation

also plays a major role in my theoretical studies of limb movement with Nancy Pollard, a computer scientist and robotics researcher at Carnegie Mellon University.

Over the past year I’ve taken 3-D a step further by presenting our findings in stereo. It’s been fun handing out those dorky red-blue cardboard glasses to a seminar audience or someone visiting our poster at a conference. Some of the best stereo examples come from former EEB undergraduate Kate Kenny’s research on dinosaur skin impressions. Kate’s scanning electron micrographs reveal a miniature world of sedimentary hills and valleys formed by the touch of a dinosaur. But there is more to the tree of life than scales and feathers. First-year student Andy Clifford plans to study the evolution of locomotion in hoofed mammals, more about his progress in the future.

Our New Faculty Member

By Molly Przeworski

Unfortunately, I cannot provide pictures of tropical vistas, plants or even pipettes, as my work is entirely computational. I am a population geneticist and have just joined the department, after two years as a research scientist at the amazing Max



Planck Institute for Evolutionary Anthropology in Leipzig, Germany (check it out at www.eva.mpg.de).

My research relies on the fact that patterns of genetic variation that we observe today are the product of evolution. They have been shaped by changes in population sizes, geographic structure and adaptations and therefore carry information about these events that can be exploited to make inferences about evolutionary processes. As an illustration, the distribution of genetic variation among extant humans can be used to ask when it is that the human population began increasing in size: Was it 12,000 years ago, with the advent of agriculture, or roughly 100,000 years, when modern humans first spread across the globe, replacing archaic humans? Genetic variation can also be used to learn more about the origin of species: for example, has the Congo River that currently separates pygmy and common chimpanzees always been an impenetrable barrier or is there evidence for past interbreeding?



I am particularly interested in using these types of data to identify genes that underlie species-specific traits. The classical approach to dissecting the genetic architecture of an adaptation is to look at variation in the trait of interest and match this variation to underlying genotypes (using molecular biology or statistical approaches). Unfortunately, for traits that

evolved in the human lineage, there may not be enough variation among extant humans for this approach to be feasible (e.g., think of the position of the larynx in the throat) and of course we can't manipulate humans to create it. Besides, even if there were variation in a trait, it is unclear whether the genes that underlie variation today are the ones on which natural selection has acted in the past. So how can we learn about adaptations in the past? One idea is to proceed from genotypes to phenotypes. Adaptations leave signatures in the genome, either in the differences between species or in the distribution of variation within species. So, given a reasonable model of human evolution, we should be able to scan the genome for regions that are particularly likely to have been the target of adaptations, and then try to figure out what these regions do. To pursue this goal, a postdoc in my group, Kosuke Teshima, is developing statistical tools to identify the signature of natural selection.

Once candidate genes have been identified, we can also learn about the timing and nature of evolutionary adaptations. An intriguing example is FOXP2. Mutations at the FOXP2 gene in humans lead to a speech and language disorder. Population genetic analyses that I was involved in (together with Svante Pääbo and members of his lab) indicate that this gene has evolved under positive selection in the human lineage and that the last adaptation was fairly recent (in the past 200,000 years roughly). If FOXP2 was the target of selection because of its role in language, this suggests that anatomically modern humans were the first to possess whatever linguistic advantage it confers. The big question now is



what exactly is the function of FOXP2? Once we have many examples such as FOXP2, we will gain a sense of the chronology of human evolution. For example, we can ask how old the selective pressures on language are, or whether

hearing and speech evolved in concert. A characterization of the genetic basis of adaptations is still far away, but we already have some fascinating examples, from insecticide resistance in flies to lactose tolerance in humans.

Alumni News

We've gotten some nice, newsy bits from two of our graduates, which we pass on to you. We hope that the rest of you out there will take these contributions as a hint to be more forthcoming!

George Gilchrist, who was a M.S. student with Jon Waage from 1985-87, took his Ph.D. with Joel Kingsolver at the University of Washington in 1993. He continued on at UW as a postdoc for several years in Ray Huey's lab before moving on to Clarkson, where he spent the years of 1998-2002. Wishing to thaw out from the cake of ice that is northernmost New York, he journeyed southward to William & Mary, where he is an assistant professor of biology. George's current interests focus on adaptations to changing environments, and (sorry, folks) he uses *Drosophila* for this research, especially *D. subobscura*. George seems to have retained considerable Brown blood, for he and David Rand recently were funded by NSF for a collaborative project on thermal adaptation in *D. melanogaster*. Along with Annie Schmitt, he is also a member of a NSF-supported group working on function-valued traits (ones that change as a function of time or environmental variables).

After leaving Brown, **Jeff Parrish**, a Ph.D. student with Doug Morse from 1991-1996, did a year's stint as a scientific advisor for forestry and biodiversity projects at the US Agency for International Development, focusing on regional biodiversity projects in the Ukraine and Russia. He subsequently moved to the Nature Conservancy, where he has in rapid order held a wide variety of positions. These have included conservation ornithologist for the Wings of the Americas Program (bird conservation programs in Latin America and the Caribbean), ecologist for the conservation management of protected areas within the Caribbean, director of the international site conservation program, and, currently, director of conservation science and planning in Colorado and science leader for the Rocky Mountain Division. Though he may seem settled, Jeff continues his work in the Andes and Caribbean. It goes without saying that he travels a lot! Here's hoping that you get the chance to do a bit of "twitching" in the process, Jeff.

News Update

Brian Silliman defended his thesis in April and received a Smith Postdoctoral Fellowship from the Nature Conservancy and an assistant professorship at the University of Florida.

The MD Class of 2004 has chosen **Ted Goslow** to receive the Medical Senior Citation.

Devon Bradley was awarded an NSF graduate research fellowship.

Four of our undergrads also received NSF fellowships: **Adelia Barber, Sarah Kingan, Rebecca Lutz & Mary O'Connor**.

John Stinchcombe was runner-up for the American Society of Naturalists Young Investigator Prize.

David Rand received an NSF Population Biology Collaborative Research Award with George Gilchrist of William and Mary, "Genetic architecture of thermal selection in *Drosophila*" (see Alumni News).

Jennifer Hughes received a Faculty Early Career Development grant from NSF and has been appointed, effective July 1st, a Manning Assistant Professor.

Melissa Lage, Robert Haney & Jon Duke were awarded NOAA National Estuarine Research Reserve Fellowships.

Eric von Wettberg & Kristin Bishop were awarded NSF Dissertation Improvement grants and Eric also received a travel grant from the Society for Integrative and Comparative Biology.

Eric Sanford has accepted a position as an Assistant Professor of Evolution and Ecology at UC Davis. He will head west in December and will be based full time at Bodega Marine Laboratory.

In April 2004 **Thomas Flatt**, a new postdoc in the Tatar lab, received a Swiss National Science Foundation Postdoctoral Fellowship. He is currently working on the genetics of the gonad signal control of aging in fruit flies.

Andrew Clifford has an article on moose nose anatomy (*J. Zool.*, 262(4):339-360) featured in Nature, and the Associated Press wrote a popular article on it.

Marc Tatar was featured in the April 2004 edition of Rhode Island Monthly in an article titled "Lord of the Flies".

Andrew Altieri has been awarded a Faculty Fellow Award from Brown University.

David Baier was awarded the Stephen J. Gould Grant from the Paleontological Society to examine recently discovered fossils of early birds and closely related theropod dinosaurs in China.

Spring 2004 Seminars

Brown Bag Seminars catch up on research and work in progress within EEB, and the more formal colloquium series features speakers from outside the University. This semester EEB also hosted a special seminar series supported by the Wayland Collegium, "The Environmental Future of Planet Earth," to kick off the Environmental Change Initiative.

Brown Bag Seminars

February 20 **Jonathan Waage**. *The perils and pearls of PowerPoint.*

February 27 **Eric Sanford**. *Fiddlers on the edge: dispersal, adaptation and geographic range limits.*

March 5 **Stephen Gatesy**. *Seminar in stereo: effective, ostentatious or both* (dorky 3-D glasses provided).

March 12 **Daniel Orenstein**. *Fifty years of change in Israel: tracking loss of open space and its ecological implications.*

March 26 **Kristin Bishop**. *Wing shape and the origin of flight in bats.*

April 9 **Manuel Mendoza**. *How communities evolve.*

April 30 **Brian Silliman**, Ph.D. Defense. *A trophic cascade regulates salt marsh primary production: will blue crab declines trigger die-off of southern salt marshes?*

Monday Colloquia

February 2 **Lauren Meyers**, University of Texas at Austin. *Contact network epidemiology in infectious disease prediction and control.*

February 9 **Lynn Adler ('95)**, Virginia Tech. *The ecology and evolution of attraction and defense in plant-animal interactions.*

February 16 **Ulla Lindhe Norberg**, Göteborg University. *Wing design, flight mode and sexual selection.*

March 1 **Barney Schlinger**, UCLA. *Singing, snapping and CNS sex-steroid synthesis.*

March 8 **Gabriele Gerlach**, Marine Biological Laboratory. *Smelly fish: chemical communication in zebrafish.*

March 10 **Geoffrey Spedding**, University of Southern California. *Bird flight aerodynamics for engineers and biologists.*

March 15 **Michele Dudash**, University of Maryland. *Historic inbreeding, phenotypic plasticity, and founding population size as predictors of establishment success in native and non-native habitats of *Mimulus guttatus*.*

March 22 **Douglas Gill**, University of Maryland. *An experiment in grassland restoration: a field of dreams.*

April 5 **James Lovvorn**, University of Wyoming. *Hot air, drag, and inertia: transcending the daily grind of flying underwater.*

April 12 **Daniel Lieberman**, Harvard University. *Evolved to run: endurance running and human evolution.*

April 19 **William Smith**, Wake Forest University. *Photosynthetic adaptation from the cell to the landscape.*

April 20 **Elizabeth Brainerd**, University of Massachusetts, Amherst. *Biomechanics of segmented axial musculature in fishes and salamanders.*

April 26 **Tadeusz Kawecki**, University of Fribourg. *Evolutionary biology of learning ability: lessons from *Drosophila*.*

May 11 **Amy Austin**, University of Buenos Aires. *What makes the N cycle leak? An exploration of controls on N retention in terrestrial ecosystems.*

The Environmental Future of Planet Earth Seminar Series

February 12 **Peter Kareiva**, The Nature Conservancy. *Good intentions are not enough: using science to be smart about conservation.*

March 15 **Jorge Sarmiento**, Princeton University. *The Earth's greenhouse: human impacts on atmospheric carbon dioxide.*

April 13 **B. L. Turner II**, Clark University. *The changing landscape of the southern Yucatan: history to models.*

April 19 **Pamela Matson**, Stanford University. *A transition to sustainability? Reconciling environment and development in the 21st century.*

April 26 **Callum Roberts**, University of York. *Explorers, exploiters and the unnatural history of the sea.*

New Publications

- Bertness, M.D., B.R. Silliman & R. Jefferies.** 2004. *Salt marshes under siege*. Amer. Sci. 92:54-61.
- Bertness, M.D., G. Trussell, P. Ewanchuk & B.R. Silliman.** 2004. *Do alternate community stable states exist on rocky shores in the Gulf of Maine? A reply*. Ecology 85:1165-1167.
- Clifford, A.B. & L.M. Witmer.** 2004. *Case studies in novel narial anatomy: 2. The enigmatic nose of moose (Artiodactyla: Cervidae: Alces alces)*. J. Zool., Lond. 262:339-360.
- Ewanchuk, P.J. & M.D. Bertness.** 2004. *Structure and organization of a northern New England salt marsh plant community*. J. Ecol. 92:72-85.
- Fisher, A., V. Wiebe, S. Pääbo & M. Przeworski.** 2004. *Evidence for a complex demographic history of chimpanzees*. Mol. Biol. Evol. 21:799-808.
- Flatt, T. & I. Scheuring.** 2004. *Stabilizing factors interact in promoting host-parasite coexistence*. J. Theor. Biol. 228:241-249.
- Flatt, T.** 2004. *Assessing natural variation in genes affecting Drosophila lifespan*. Mech. Ageing Devel. 125:155-159.
- Gilad, Y., V. Wiebe, M. Przeworski, D. Lancet & S. Pääbo.** 2004. *Loss of olfactory receptor genes coincides with the acquisition of full trichromatic vision in primates*. PloS Biol. 2:E5.
- Helmann, I., I. Ebersberger, S.E. Ptak, S. Pääbo & M. Przeworski.** 2003. *A neutral explanation for the correlation of diversity with recombination rates in humans*. Amer. J. Hum. Genet. 72:1527-1535.
- Heschel, M.S., J.R. Stinchcombe, K.E. Holsinger & J. Schmitt.** 2004. *Natural selection on light response curve parameters in the herbaceous annual, Impatiens capensis*. Oecologia 139:487-494.
- Huber, H., N. Kane, M.S. Heschel, E.J. von Wettberg, J. Banta, A. Leuck & J. Schmitt.** 2004. *Frequency and microenvironmental pattern of selection on plastic shade-avoidance traits in a natural population of Impatiens capensis*. Amer. Natur. 163:548-563.
- Janis, C.M.** 2003. *Tectonics, climatic change and atmospheric carbon dioxide in the evolution of mammalian ecosystems*. In *Evolution on Planet Earth: the Impact of the Physical Environment*. eds. L. J. Rothschild and A. Lister, Academic Press, London. Pp. 319-338.
- Lin, T.-C., S.P. Hamburg, Y.-J. Hsia, T.-T. Lin, H.-B. King, L.-J. Wang & K.-C. Lin.** 2003. *Influences of typhoon disturbance on the understory light of a subtropical rain forest in Northeastern Taiwan*. J. For. Res. 8:139-145.
- Lin, K.-C., S.P. Hamburg, S.L. Tang, Y.-J. Hsia & T.-C. Lin.** 2003. *Typhoon effects on litterfall in a subtropical forest*. Can. J. For. Res. 33:2184-2192.
- Min, K.J., T.E. Taub-Montemayor, K.D. Linse, J.K. Kent & M.A. Rankin.** 2004. *Relationship of adipokinetic hormone I and II to migratory flight propensity in the grasshopper, Melanoplus sanguinipes*. Arch. Insect Biochem. Phys. 55:33-42.
- Morse, D.H.** 2004. *A test of sexual cannibalism models, using a sit-and-wait predator*. Biol. J. Linnean Soc. 81:427-438.
- Morse, D.H. & H.H. Hu.** 2004. *Age-dependent cannibalism of male crab spiders*. Amer. Midl. Natur. 151:318-325.
- Moyle, L.C., J.R. Stinchcombe, B.R. Hudgens & W.F. Morris.** 2003. *Conservation genetics in the recovery of endangered animal species: a review of U.S. endangered species recovery plans (1977-1998)*. Anim. Biodiv. Cons. 26:85-95.
- Pigliucci, M. & J. Schmitt.** 2004. *Phenotypic plasticity in response to foliar and neutral shade in gibberellin mutants of Arabidopsis thaliana*. Evol. Ecol. Res. 6:1-17.
- Przeworski, M.** 2003. *Estimating the time since the fixation of a beneficial allele*. Genetics 164:1667-1676.
- Rhoads, A.G., S.P. Hamburg, T.J. Fahey, T.G. Siccama & R. Kobe.** 2004. *Comparing direct and indirect methods of assessing canopy structure in a northern hardwood forest*. Can. J. For. Res. 34:584-591.
- Schmitt, J., J.R. Stinchcombe, M.S. Heschel & H. Huber.** 2003. *The adaptive evolution of plasticity: Phytochrome-mediated shade avoidance responses*. Integ. Comp. Biol. 43:459-469.
- Stinchcombe, J.R., L.A. Dorn & J. Schmitt.** 2004. *Flowering time plasticity in Arabidopsis thaliana: a reanalysis of Westerman and Lawrence (1970)*. J. Evol. Biol. 17:197-207.
- Stinchcombe, J.R., C. Weinig, M. Ungerer, K.M. Olsen, C. Mays, S.S. Halldorsdottir, M.D. Purugganan & J. Schmitt.** 2004. *A latitudinal cline in flowering time in Arabidopsis thaliana modulated by the flowering time gene FRIGIDA*. Proc. Nat. Acad. Sci. 101:4712-4717.
- Tatar, M.** 2004. *The neuroendocrine regulation of Drosophila aging*. Exper. Med. (in Japanese). 22:823-830.
- Tomanek, L. & E. Sanford.** 2003. *Heat-shock protein (Hsp 70) as a biochemical stress indicator: an experimental field test in two cogenetic intertidal gastropods (Genus Tegula)*. Biol. Bull. 205:276-284.
- Townsend, J.P. & D.M. Rand.** 2004. *Mitochondrial genome size variation in New World and Old World populations of Drosophila melanogaster*. Heredity 92:500-506.
- Trussell, G.C., P.J. Ewanchuk, M.D. Bertness & B.R. Silliman.** 2004. *Trophic cascades in rocky shore tide pools: distinguishing lethal and non-lethal effects*. Oecologia 139:427-432.
- Tu, M.-P. & M. Tatar.** 2003. *Juvenile diet restriction and the aging and reproduction of adult Drosophila melanogaster*. Aging Cell 2:327-333.
- von Wettberg, E. & J. Weiner.** 2004. *Effects of distance to crop rows and to conspecific neighbours on the size of Brassica napus and Veronica persica weeds*. Basic Appl. Ecol. 5:35-41.

**Ecology & Evolutionary Biology
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Feedback to the EEB Newsletter

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Alumni Notes (___check if only for our files) _____

Can we contact you for further information about your activities in Biology? ___yes ___no