

# Department of Biological Sciences

# NEWSLETTER

THE UNIVERSITY OF IOWA



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Workshop Organizers, from left: Dr. Jessica Kissinger, Univ. of Georgia; Dr. John Logsdon, Iowa; Dr. Sandie Baldauf, Univ. of York, UK; Dr. Debashish Bhattacharya, Iowa; Dr. Laura Katz, Smith College

## Protist Evolutionary Genomics Workshop

In May of 2004, NSF funded a workshop on the University of Iowa campus entitled *Frontiers in Genomics: Insights into Protist Evolutionary Biology*. UI faculty member, Debashish Bhattacharya, hosted the workshop which brought together experts in the fields of protist genomics, evolutionary biology, oceanography, and systematics, and leaders of culture collections, to discuss approaches to protist research. The National Science Foundation is interested in funding more research related to the protist genomics and asked experts in the field to gather to discuss and define mechanisms in which to train future scientists focusing on genomic research of these critical eukaryotes.

The workshop was comprised of a series of discussion groups. These groups discussed various topics regarding protist genomics such as how to choose target taxa for genome research and the appropriate type of data to gather for different research questions (e.g., EST, versus draft, versus complete genome sequences). The specific aims of the workshop were to define the role of genomics in ramifying the eukaryotic tree of life, to identify challenges in characterizing protist genomes, and to propose specific solutions to these challenges. In addition, an international steering committee was established to organize the community of protist genome researchers in order to coordinate their research and to spur

collaborations. The findings of the workshop will be disseminated through a peer-reviewed publication and online resources. Following the workshop there will be a symposium (funded by the NSF, the Alfred P. Sloan Foundation, and the Burroughs Wellcome Fund) at the annual meeting of the Society of Protozoologists entitled, "Genome Evolution in Microbial Eukaryotes". This symposium will be a public forum that consists of invited lectures from experts in the field of protist genomics that will provide the community with an update on the emerging data as well as information on appropriate genomic tools to use in the future. The proceedings of the symposium will be published as an edited volume to ensure the broadest distribution.

Protists constitute the bulk of eukaryotic diversity yet protist genomes remain relatively unexplored. We are now moving out of the model organism stage of genomic sequencing and the power/importance of comparative genomics is becoming apparent. Work on protist genomes is, however, hampered by a lack of understanding of protistology among genomicists and vice versa. The workshop and symposium bridged these two groups by bringing together experts in protist diversity, genomic data collection, and bioinformatics to spur protist genomic research and protist evolutionary biology from a genomic perspective.

# From the Chair



Jack Lilien, Ph.D

Dear Friends and Alumni,

We are getting our newsletter out a little sooner than last year. Well, we finally will complete the renovation and building project and we are celebrating with an open house October 15<sup>th</sup>; this is really the end of long journey. All of our faculty members are now in one location and we can feel the difference already.

Every 5 years we are mandated to undertake a Self Study, assessing our performance in each of three categories directed by the university: Teaching, Research or Scholarly Activity, and Service. The Self Study is followed by a review of the department by a combined team of experts drawn from on campus and off campus. Our review team is scheduled to visit the department in September. We are looking forward to this visit as significant changes have occurred, enhancing our ability to fulfill our mission: to insure that our undergraduates receive the best possible education to meet the needs of professional schools and the burgeoning biotech industries; to create new knowledge through research and development; and to serve the department, the university, the state and the nation through service on local, national and international bodies. In past newsletters we have relayed to you new initiatives that enhance our ability to meet these obligations such as our new undergraduate Bachelor of Science degree tracks and new research initiatives.

Success in research depends on our ability to recruit and support quality graduate students annually. Last year I emphasized the high cost of graduate education and asked you to direct your generosity toward helping us meet these expenses. I want to reiterate this plea, but first let me put a little more flesh on the seriousness of the problem.

Almost every state has had to reduce support for higher education due to decreased revenue, and Iowa has been among the hardest hit. Among other things this means that there are fewer dollars available to support research. One of the hardest hit areas on our campus has been support for entering graduate students; tuition has been increasing and funds to support graduate students stipends have been decreasing. To maintain our position as a top-flight research university, we the faculty must find ways of making up for this loss of revenue. Graduate students are extremely important; they bring vitality, energy and new ideas to the laboratory. Without them we cannot hope to remain a cutting edge research department. So I reiterate my plea of last year: please support our graduate program by giving to "Graduate Friends and Alumni Fellowships". Any size gift contributes to the yearly stipend and tuition expense of \$26,500 required to support a student for one year.

I hope to see you in Iowa City on October 15, to celebrate completion of the Biological Sciences Complex. The facilities are top notch, our faculty and students are accomplishing wonderful things, and we are enthusiastic about starting the new academic year.

Sincerely,

Jack Lilien, Ph.D.  
Professor & Chair

# New Faculty

**Dr. Houston** attended Florida Institute of Technology for his undergraduate work. His graduate studies at the U. of Miami were in the Program for Molecular, Cellular and Developmental Biology, leading to the Ph.D. degree in 1999 under the direction of Prof. Mary Lou King. The thesis research centered on germ plasm and molecular determinants of primordial cell differentiation in *Xenopus* embryos.

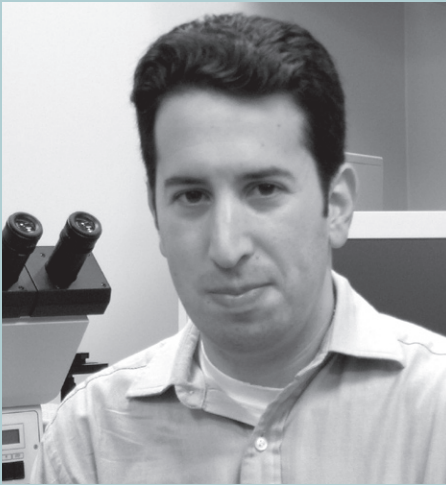
Before joining our faculty, Dr. Houston was a Research Fellow at the Children's Hospital Medical Center, Cincinnati, OH. His work there with Dr. Christopher Wylie dealt with the developmental control of *Xenopus* germ layer formation as mediated by maternal genes.

His work at Iowa will build on his interests in early vertebrate development, specifically on the observations that the specification of primary body axes and of the germ layers (ectoderm, mesoderm and endoderm) are dependent upon maternal signaling pathways mediated by molecules stored in the egg. He plans to pursue two main projects: In one, the role will be studied of a specific maternal gene that appears to regulate early brain development and the dorsal axis. In the other, his lab will focus on identifying maternal genes that affect germ layer formation and then finding their specific functions. He will use mRNAs from different small pools of cDNAs; the mRNA in each case is injected, and the embryos are assayed for perturbations in development or altered gene expression.

Doug's wife, Julie, is an attorney and will enter practice here. His hobbies include golf and long-distance running.



Douglas Houston



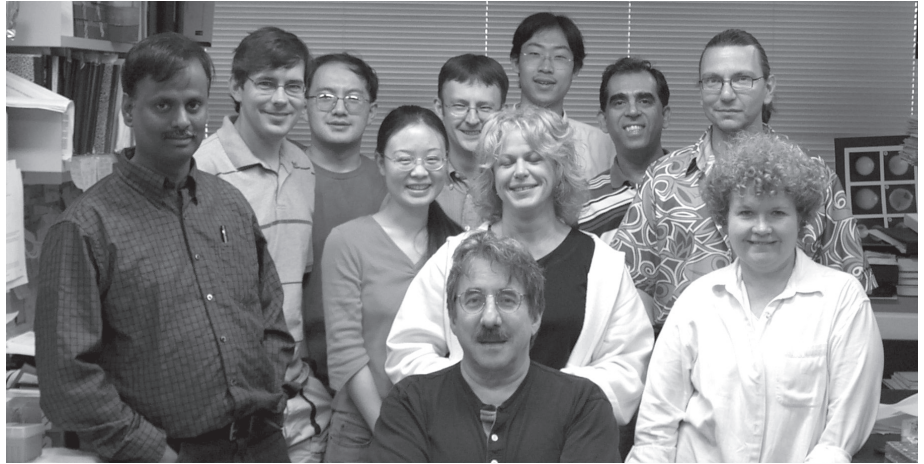
Joshua Weiner

**Dr. Weiner** is a developmental neurobiologist who majored in psychology as an undergraduate at Northwestern U. He earned a Ph.D. at the U. of California, San Diego in neuroscience, working with Dr. Jerold Chun on projects that identified novel lipid signaling systems in neuronal and glial development. There followed a post-doctoral period in the laboratory of Dr. Joshua Sanes at Washington U. School of Medicine, St. Louis, with whom he studied the role of adhesion molecules in the development of retinal and spinal synapses.

Dr. Weiner's interests center on the vast diversity and specificity exhibited by vertebrate neurons. He is pursuing the molecular cues that distinguish neuronal subsets, control their survival or apoptosis, and determine the astonishing specificity with which they form synapses. His work employs molecular biological, immunohistochemical, and genetic techniques, and uses mouse and chick retina and spinal cord as model systems. Dr. Weiner is focusing initially on several adhesion molecules of the cadherin and immunoglobulin superfamilies whose functions in neural development he has uncovered by analyzing animals in which their genes have been deleted. He arrived in July to begin preparing grant proposals and to set up his laboratory, the latter task helped considerably by his appointment as a UI Presidential Biological Scholar. This program, in its inaugural year, provides start-up funds as well as some support money for four years.

Josh and wife Katherine have two children, Noah (5) and Julia (1). For relaxation, Dr. Weiner writes and records music in his own basement studio, in which he sings and plays all the instruments (guitars, piano, and drums). He also reviews jazz CD releases for a popular website, [www.allaboutjazz.com](http://www.allaboutjazz.com).

# Conference on *Candida* and Candidiasis



Soll Lab, Center: Dr. David Soll, from left: Kumar Natarajan, Wei Wu, Julie Collins, Karla Daniels, Shawn Lockhart, Rui Zhao, Andrew Dodgeson, Song Yi, Srikantha Thyagarajan & Claude Pujol. Not pictured: Deborah Wessels

**M**arch of 2004, several members of the *Candida* portion of the Soll laboratory attended the American Society for Microbiology's conference on *Candida* and Candidiasis. Dr. David Soll was keynote speaker and chair of the conference's opening session. Researchers had several sessions to attend including: *Candida* mating and life cycle, host response, biofilms and intermicrobial interactions, morphogenesis, epidemiology and population studies, genomics and proteomics, pathogenesis, drug interactions and resistance, signaling, non-albicans *Candida*'s, and cell wall and surface molecules. The majority of speakers were chosen from the abstracts presented at the conference. Dr. Shawn Lockhart, who works with Dr. Soll, was one of the presenters during the session on *Candida* mating and life cycle. The Soll lab also presented fourteen posters which discussed some of their recent findings and ongoing *Candida* and Candidiasis research.

## July 28 - August 13, 2004

### 1<sup>st</sup> Summer Undergraduate Workshop on Comparative and Evolutionary Genomics

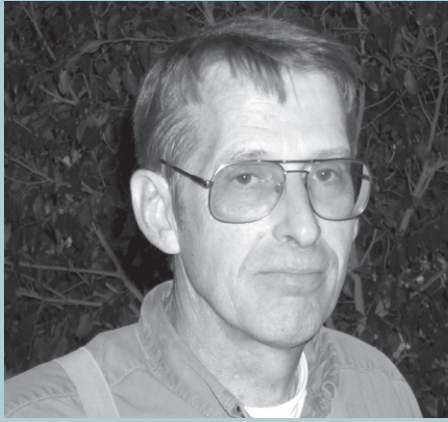
**I**n this day and age, there is an obvious social interest in anything 'genomics'—an interest that can only augment in the future—and, concomitantly, there is an increase in the demand for trained people in industry and academia able to use and/or comprehend genomic data. In fact, the understanding of genomic information is best achieved through an evolutionary point of view and this workshop represents a multidisciplinary effort in this direction at the University of Iowa (UI).

Every summer, a small group of students will be exposed to a sample of concepts, methods and techniques in comparative genomics, molecular evolution and phylogenetics. The students will receive extensive 'wet lab' experience

on modern molecular techniques (PCR, DNA sequencing, etc.), use new computer facilities and receive lectures from faculty associated with the CCG.

This workshop is organized by Dr. Josep M. Comeron and is part of a NSF Research Grant to investigate the influence of gene structure and recombination rates on rates and patterns of evolution in *Drosophila*. The funding is part of a National Science Foundation (NSF) research grant in collaboration with Department of Biological Sciences and the Roy J. Carver Center for Comparative Genomics (CCG). This year, 7 undergrads attended the workshop, taking advantage of complete and partial scholarships to defray housing and stipend costs.

Bruce Ritchie



Some people really are indispensable. Bruce Ritchie has been working in the Department for 15 years. Over this time Bruce has gradually assumed more and more of the responsibility for making research laboratories match the needs of the research program. This involves everything from maintenance to renovation.

As all of you are aware we have been in the midst of an extensive renovation program since 1996, and it is Bruce that has been at the helm of the most difficult task: moving faculty research laboratories from one building or room to

another, without interrupting the progress of the research. I am sure you realize that this task is almost superhuman; it is imperative for the success of each lab that experiments not be interrupted. This means that all the equipment and materials at everyone's fingertips one moment must also be at everyone's fingertips the very next moment, but in a new location.

Somehow Bruce has managed to orchestrate this task with few glitches. This is certainly due to dedication, hard work, good interpersonal skills, and most of all, the ability to move objects through time and space by telekinesis.

## Administrative Office

# Faculty Profile



Eberl Lab, from left: Lydia Morris, Jen Smith, Janice Fritz, Stacy Ehrisman, Elena Sivan-Loukinova, Katie Bruce, and Ryan Kavlie. Top Row Jason Caldwell, Daniel Eberl, Julie Jacobs, Sokol Todi.

While most of the summer insects will have stopped singing by the time you're reading this, insect sounds in Associate Professor Daniel Eberl's lab are buzzing all year round. Eberl is studying hearing mechanisms in the fruitfly, *Drosophila*. The fruitfly is a wonderful system in which to carry out this research because it benefits greatly from 100 years of Genetics research. For tiny little organisms 3 mm in length, these flies have an amazingly complex courtship ritual that includes the male dancing and following the female, tapping on her abdomen with his forelegs, and numerous other communication signals that involve smell, taste, touch and sight. Of most interest to the Eberl lab is the male's "love song", produced during courtship by extending

and vibrating one wing. This courtship song has been studied extensively to understand its role as a species "ID card"—allowing the females to determine whether or not the male courting her is a conspecific. Eberl and his students are focusing on the questions of how the females detect the song physiologically, and how they decipher the species-specific information from the song.

Before coming to Iowa, Eberl designed a mutagenesis screen at Harvard Medical School to recover mutants that no longer respond to the courtship song. One of these mutants, called beethoven, like its namesake, is almost completely deaf. Flies are exceptionally sensitive to the types of sounds in the courtship song, but deaf flies show no trace of an electrical response.

Here in Iowa, Eberl's lab has been busy characterizing beethoven and other deaf strains. Then PhD student Yashoda Sharma (now a postdoc at Jackson Labs in Bar Harbor, ME) spearheaded the effort, along with Research Assistant Julie Jacobs and PhD student Jason Caldwell, to discover that the beethoven gene encodes a dynein motor protein required for transporting assembly bi-products along microtubules from the dendritic sensory endings of the mechanoreceptive neurons. PhD student Sokol Todi showed that mutations in two kinesin subunits result in electrophysiological deafness; Postdoc Dr. Elena Sivan-Loukianova showed by electron microscopy that this deafness results because the dendritic endings in JO completely fail to assemble.

Two genes that cause both deafness and male sterility are being pursued by another PhD student, Ryan Kavlie, with help from undergraduate Lydia Morris. They believe that one of these genes, smetana (after the Czech composer that suffered severe tinnitus), encodes a subunit of a sodium/potassium pump. In anticipation that this is the correct gene, Kavlie will be collaborating with Dr. Richard Smith's lab (Otolaryngology) to screen human families with hereditary hearing loss with the hope of finding mutations in a human homolog.

The buzzing sounds continue as these and other members of the Eberl team carry on the quest to understand, in ever greater depth, the molecular workings of the insect auditory sense organs, their role in the fly's biology, their relationship to human auditory function, and the neural circuits that decipher the auditory signals and underlie the fascinating behavior of this organism.

# Honor Roll

## of 2003 Contributors

This honor roll gratefully recognizes graduates, faculty, and friends who contributed \$100 or more in 2003 to the Department of Biological Sciences through The University of Iowa Foundation, the University's preferred channel for private support. Contributors are listed alphabetically. A (PC) follows the names of those who qualified for membership in the College of Liberal Arts and Sciences Dean's Club Patrons Circle by contributing \$2,500 or more to any area in the College of Liberal Arts and Sciences in 2003. Contributors of \$1,000-\$2,499 in 2003 qualify for the College of Liberal Arts and Sciences Dean's Club, which is indicated by a (DC) following their names.

Alvine, Allison G., Sioux Falls, S.D.  
Alvine, Gregory F., Sioux Falls, S.D.  
Andrews, Betty J., Hot Springs Village, Ark.  
Andrews, Ted F., Hot Springs Village, Ark.  
Arens, David E., Des Moines, Iowa  
Arens, Marsha L., Des Moines, Iowa  
Bagnara, Joseph T., Tucson, Ariz.  
Bagnara, Mary Louise, Tucson, Ariz.  
Barch, Stephanie H., East Lansing, Mich. (DC)  
Benda, Anne K., Dubuque, Iowa  
Benda, Thomas J., Jr., Dubuque, Iowa  
Brown, Susan E., Iowa City, Iowa  
Buffo, Jeffrey J., Cedar Rapids, Iowa  
Burns, Elizabeth A., Grand Forks, N.D.  
Cairns, J. Scott, Mercer Island, Wash.  
Cherwin, Jerrold L., Arlington Heights, Ill.  
Cherwin, Jessica M., Arlington Heights, Ill.  
Chouinard, Scott W., Medford, Mass.  
Clampitt, Philip T., Auburn Hills, Mich.  
Dahl, Carol A., Mercer Island, Wash.  
Decker, Marlene L., Wilmette, Ill.  
Decker, Robert S., Wilmette, Ill.  
Easton, Douglas P., Tonawanda, N.Y.  
Erickson, Nancy Nielsen, Missoula, Mont.  
Erickson, Ronald E., Missoula, Mont.  
Filbrandt & Company, Middleton, Wis.  
Folk, Bess K., Iowa City, Iowa  
Folk, G. Edgar, Jr., Iowa City, Iowa  
Foulkes, Robert H., Rock Island, Ill.  
Frankel, Anne W. Koopmans, Iowa City, Iowa (DC)  
Frankel, Joseph, Iowa City, Iowa (DC)  
Fribourgh, Cairdenia M., Little Rock, Ark.  
Fribourgh, James H., Little Rock, Ark.  
Galbraith, Anne M., West Salem, Wis.  
Gibbons, Candice L., New Lenox, Ill.  
Goerd, Christopher J., Iowa City, Iowa  
Goerd, JoAnn L., Iowa City, Iowa  
Griffith, D. Gary, Roslindale, Mass.  
Gussin, Gary N., Iowa City, Iowa  
Habben, Barb A., Eau Claire, Wis.  
Habben, Greg A., Eau Claire, Wis.  
Harbour, Laurel J., Leawood, Kan. (PC)  
Havey, James Patrick, Wilmington, Ohio  
Havey, Kathleen S., Wilmington, Ohio

Hendrix, Stephen D., Iowa City, Iowa  
Henke, Virginia L., Iron Mountain, Mich.  
Herman, Michael A., Manhattan, Kan.  
Hildebrandt, John D., Mount Pleasant, S.C.  
Hoff, Richard L., Lincoln, Neb.  
Holbrook, Mark A., Iowa City, Iowa  
Howar, John W., Twin Falls, Idaho  
Howar, Linda D., Twin Falls, Idaho  
Jaeger, Erich B., San Francisco, Calif.  
Johnson, Donald C., Leawood, Kan.  
Johnson, Eleanore J., Leawood, Kan.  
Johnson, Gwen M., Moorland, Iowa  
Johnson, James L., Moorland, Iowa  
Kenney, Linda J., Chicago, Ill.  
Kiekhaefer, Margaret S., Coralville, Iowa  
Kleopfer, Lynn L., Columbia, Mo.  
Kollros, Jerry J., Iowa City, Iowa (PC)  
Kons, Jeffrey A., Indianapolis, Ind.  
Kons, Tracey M., Indianapolis, Ind.  
Konz, Katherine J., St. Joseph, Mo.  
Konz, Kenneth G., St. Joseph, Mo.  
Kroeger, Linda, Manhattan, Kan.  
Lansing, Jeanne G., Cary, N.C.  
Lansing, Timothy J., Cary, N.C.  
Lawson, Jeffrey H., Durham, N.C.  
Leff, Todd A., Ann Arbor, Mich.  
Lewin-Opitz, Susan O., Salt Lake City, Utah  
Lin, Jenny Li-Chun, Iowa City, Iowa (DC)  
Lin, Jim Jung-Ching, Iowa City, Iowa (DC)  
Lynch, Carol Becker, Boulder, Colo. (DC)  
Lynch, G. Robert, Boulder, Colo. (DC)  
Mather, Marilyn Fontaine, Delmar, N.Y.  
Maxson, Linda, Iowa City, Iowa (DC)  
Maxson, Rick, Iowa City, Iowa (DC)  
Meyer, Bert W., La Canada, Calif.  
Mintz, Beatrice, Elkins Park, Pa. (DC)  
Mohler, Bobby A., Waldport, Ore.  
Mohler, James D., Waldport, Ore.  
Muir, Ruth B., Iowa City, Iowa  
Opitz, John M., Salt Lake City, Utah  
Ostedgaard, David Lee, Iowa City, Iowa  
Ostedgaard, Lynda S., Iowa City, Iowa  
Pollack, Emanuel D., Skokie, Ill.  
Ricaurte, Edward L., Toledo, Ohio  
Ricaurte, Eve K., Toledo, Ohio  
Rice, David R., Jacksonville, Fla. (PC)  
Rice, Joan E. Sorensen, Jacksonville, Fla. (PC)  
Ring-Easton, Rosellen, Tonawanda, N.Y.  
Rozeboom, Deborah A., Bangor, Maine  
Rozeboom, Kenneth A., Bangor, Maine  
Ruffolo, John J., Jr., Brookings, S.D.  
Sampsell, Bonnie M., Chapel Hill, N.C.  
Schardein, James L., Chelsea, Mich.  
Schwartz, Joyce, Weston, Mass.  
Sedar, Jean Dimmitt, Cherry Hill, N.J.  
Segal, Sheldon J., Hartsdale, N.Y.  
Sjolund, Richard D., Solon, Iowa  
Sjolund, Rina, Solon, Iowa  
Skopec, Lynn L., Iowa City, Iowa  
Skopec, Timothy M., Iowa City, Iowa  
Smith, Blanche, Los Angeles, Calif.  
Smith, Phillip M., Sr., Los Angeles, Calif.  
Smrz, Melissa A., Alexandria, Va.  
Strohmer, Gerhard O., Coralville, Iowa  
Sullivan, Anne L. S., Coralville, Iowa  
Sullivan, Michael J., Coralville, Iowa  
Wang, Hwei-Gene Heidi, Hamden, Conn.  
Wang, Wei-Yeh, Iowa City, Iowa  
Wang, Wenan Lee, Iowa City, Iowa  
Wentzien, James B., Portland, Ore.  
Wentzien, Susan K., Portland, Ore.  
Williams, Norman E., Iowa City, Iowa (DC)  
Yen, Kwang-Mu, Thousand Oaks, Calif.  
Zallek, Chris, East Peoria, Ill.  
Zinser, Roger A., Grand Forks, N.D.

## Graduate Friends & Alumni Fellowship Fund

This new fund has been created to provide support for our graduate students, a critical component to our success. Salary and tuition costs exceed \$26,500 annually for each student; in order to attract and retain the best and the brightest, we need your help to meet this growing expense. Your generous donations are greatly appreciated.

# UPAS

As the University of Iowa moves toward the future, the Biological Sciences department is continually assessing services that will assist students to graduate with the desired degree in a timely manner. The Undergraduate Personal Academic Scheduler (UPAS) is an exciting new tool for undergraduate students that allow them to create a unique and complete semester by semester schedule of coursework required to graduate from The University of Iowa. UPAS was designed and created by the Biological Sciences Academic Advisor Amy Korthank and Biological Sciences Application and Development Support person, Matthew Brockman. This unique planning and tracking tool is designed to assist students in the development of their education.

UPAS is accessible through the Biological Sciences webpage. It is possible to visualize the information regarding available degrees. The system works interactively with the student. The student chooses a major, the application will show then go through all of the courses needed to complete the degree, alert them if prerequisites have not been taken and then work interactively to help them plan an accurate semester by semester schedule. This gives students the ability to assess their own degree goals and what it will take to complete the process. The UPAS system includes a general education program link to incorporate general education requirements most students take in their first 2 years at the University. It is easy to use and allows flexibility within the majors listed. The system also has links to ISIS for course descriptions and registration. UPAS saves the student's schedule and allows the student to access the schedule each semester, identify which courses have been taken and to rearrange scheduled classes if needed. By incorporating the ability to plan ahead and the ability to map out their entire college career, students can complete and keep track of coursework requirements and be assured that they have an accurate graduation plan.

UPAS is now being used by four departments: the Department of Biological Sciences, the Environmental Sciences Department, the English Department, and the Psychology Department. Several Departments will be added in by Spring 2005.

# Faculty activity

## New Grants

**D. Bhattacharya** received financial support from the NSF to host a workshop—“Frontiers in genomics: Insights into protist evolutionary biology”, which was held in Iowa City, May 19-21, 2004 and has been awarded a 3-year grant from NASA “Gene Transfer”.

**J. M. Comeron** has been awarded a 3-year NSF grant, “Influence of gene size and exon-intron structure on patterns and rates of evolution in *Drosophila*” and a collaborative grant from Applied Biosystems (with Co-PI, M. Kreitman), “On the power to detect SNP/phenotype association in candidate quantitative trait loci using computer simulations.”

**J.S. Fassler** received a 4-year grant from the NIH (with Co-PI, R.J. Deschenes) “Regulation of eucaryotic histidine kinases.”

**S. Hendrix** received a 2-year grant from the Iowa D.O.T., “Sustaining pollinator diversity”.

**A. Kay** received a 5-year grant from NIH, “Defining the roles of metal in synaptic transmission”.

**J. Lilien** was awarded a 4-year grant from the NIH, “PO-mediated signaling and myelination”.

**J.J.-C. Lin** is the Principal Investigator on a new grant from the NIH “Novel Xin protein in cardiac development and function” (3 years).

**J.C. Murray** has two recent grants from the NIH, “Discordant MZ twins in craniofacial gene discovery”, and “Gene-environment interactions in facial clefts.”

**J. E. Poulton** received two award supplements in the NSF's Research Experience for Undergraduates (REU) program.

**M.-C. Shih** was awarded a two-year grant from the USDA, “Stress responses of fermentative and glycolytic genes in *Arabidopsis*.”

**D.C. Slusarski** has been awarded three grants in this reporting period: From the NIH, “Mechanisms of RGS function in vertebrate development” (NIH, 2 years), “RGS6 signaling and function in neural development (NIH, 4 years), and as co-PI on “The influence of altered gravity in amphibian cranial neural crest cells” (NASA Space Grant Consortium, one year.

**C.-F. Wu** received a grant from the NIH, NINDS (five years), “Plasticity of neuronal functional form in *Drosophila*.”

## New Appointments

as Panelists, Editors and Society Officers, etc.

**D. Bhattacharya** was appointed a panel member of the NSF Microbial genome project grant program. He also was appointed Chairman of the Darbaker Prize Committee of the Botanical Society of America and as an Assoc. Editor of the *J. of Mycology*.

**D. Horton** was a participant in the NSF-sponsored Workshop to Produce a Decadal Vision for Taxonomy and Natural History Collections, and a review panel, the NSF Biodiversity Surveys and Inventories/Planetary Biodiversity Inventories.

**J. Lilien** was appointed in 2003 to the American Cancer Society study section on Cell Structure and Metastasis.

**J. Logsdon** was on the Program Committee at the Georgia Tech 4<sup>th</sup> International Bioinformatics Conference.

**R.E. Malone** received a UI Faculty Scholar Award.

**J.E. Poulton** served as research grants panelist for the NSF's Metabolic Biochemistry Program.

**D.R. Soll** has been appointed to the editorial board of *Mycology News* and appointed Chairman of the NIH panel on Fungal Adhesion. He was also appointed as Chairman, Board of Advisors, RCMI Center, U. of Puerto Rico.

**C.-F. Wu** joined the MDCN-6 study section of the NINDS, NIH.

# Staff profile

For most academics, summer represents a somewhat relaxed period, compared to the typically hectic pace of the academic year. For field ecologists, however, summer is the busiest time of year because outdoor activity is at its peak, as the window of opportunity to gather data and samples for most studies is typically limited to a few short months. In Steve Hendrix's lab, he and his students have been studying wild, solitary bee diversity in Iowa's fragmented landscape. These organisms provide a valuable ecological service because they are the pollinators of numerous crops and nearly all prairie forbs, but they are thought to be on the decline both locally and globally because of habitat fragmentation. In Iowa, the extent of fragmentation (99.9% of all prairies are gone) suggests these organisms are on the decline. Research in the Hendrix lab has been testing hypotheses that pollinator diversity and abundance in small (< 5 ha) and large tallgrass prairie fragments (>30 ha) will be influenced by the landscape context of the prairie fragment as well as the characteristics of the fragment itself. This summer they are determining if bees use agricultural fields and grassy corridors along waterways or if they are primarily restricted to high-quality remnants. These studies are providing the first ever survey of wild bees of Iowa and will yield valuable information that will be useful to understand how humans are affecting biodiversity and how conservation efforts can help construct landscapes that promote pollinator diversity.



Lin Lab, from Left: Jenny Lin, Jim Lin, Robbin Eppinga, Ram Wadhvani. Row Two: Shannon Jaacks, Elisabeth Gustafson, Rebecca Reiter, Sunju Choi. Row Three: Corey Gingerich, Dan Dallon, Warren Pierce, and Shaun Grosskurth.

Jenny Lin is celebrating her 20<sup>th</sup> year in the Department and her 21<sup>st</sup> year as a researcher with Dr. Jim Lin. Before coming to Iowa, Jim and Jenny were at the Cold Spring Harbor Laboratory where they had the privilege of working with Nobel Laureate James Watson and knowing Nobel Laureate Barbara McClintock. In particular, Barbara McClintock deeply inspired/influenced Jenny's attitude toward her scientific research career. Jenny always carries out her experiments with Dr. McClintock's personal advice in mind: "planning the experiment ahead, careful observation and good communication".

Jenny has worked on many projects in the Lin lab and has co-authored 27 scientific articles on the roles of muscle proteins, particularly tropomyosin, caldesmon, and troponin T in cell motility,

ulcerative colitis and heart development. Her expertise in cell culture, particularly hybridoma production and stably transfected cell cloning, and in Northern, Southern, Westerns, and gene cloning is highly valued in the lab. She has trained many graduate students and research assistants over the years. Dr. Lin refers to her as his "right hand" and indeed it would be difficult to imagine the Lin lab functioning without her.

In addition to her technical expertise, Jenny is greatly appreciated for her willingness to help others and her warm and welcoming personality.

Jim and Jenny are fortunate that both their children live in Iowa City and they are able to spend time with their children and four grandchildren. Congratulations, Jenny!

## Out in the Field



Professor Steve Hendrix examines the contents of one sweep with Honors Undergraduate Kyle Brown-Kaiser.



Marie Wendell (left), an honor's undergrad, & Chiara Hemsley, a graduate student, examine the contents of a "pan-trap" for bees that was set out early in the day.



Professor Steve Hendrix works with undergrad honors students Marie Wendell and Mary Oppold, and graduate student Amber Hill.

# Undergraduate Research Achievement Awardees

The **Robbie Prize** is given annually to an undergraduate senior Biology major who demonstrates excellence in course work and research, and who is preparing for a career in science. The award was established in 1969 with a bequest from the family of James P. Robbie (B.A., '64 in Zoology and Mathematics) in his memory. The award carries a prize of \$300 which includes a supplement from the Biology Department Development Fund.

The winner of the 2004 Robbie prize is **Mr. Nicholas J. Wilson**, who did honors research with **Dr. Michael Dailey**. Wilson easily fulfilled one of the requirements for the Robbie prize, exceptional academic performance. He compiled a 4.07 grade point average, an impressive achievement considering that he completed a double major, Biology and Psychology.

His laboratory research involved one of the major foci in the Dailey lab, the functions of microglia. The latter are non-neuronal cells that pack much of the space between nerve cells in the brain. Of special interest is that microglia, usually quiescent, become "activated" after brain injuries and transform to macrophage-like cells exhibiting phagocytosis and other properties. Intriguing questions revolve around regulation of the sequential changes that occur in structure and motility when microglia are activated. Wilson explored the regulation question by asking what stages of activation require protein synthesis, i.e., protein(s) newly transcribed in response to the activation stimulus.

He used the lab's well-developed rat brain culture system in combination with time-lapse confocal microscopy imaging to observe directly motility behaviors in live brain tissue slices. In time-lapse imaging experiments lasting up to eight hours, he compared microglial activation in the presence and absence of the protein synthesis inhibitor, anisomycin. Analysis of the large amount of data continues, but preliminary assessments indicate that new protein synthesis is not required until the cells change from in-place cell motility to locomotion. This important finding will be published and leads to a number of related questions about the nature and functions of the required proteins.

Wilson graduated in May 2004 and is taking a year off for research before applying to a medical school. He intends to enroll in a medical science training program to pursue both the M.D. and Ph.D. degrees, combining medical training with basic research.

The **Evelyn Hart Watson Scholarship**, part of a bequest to the Department from Mrs. Watson's estate, is awarded to a freshman Biology major with exceptional promise. It carries an award of \$500, renewable for three additional years assuming satisfactory progress towards an honors degree.

The Watson Scholar for 2004 is **Ms. Kristen D. Breaux**. Ms. Breaux was a May, 2003 graduate of Riverdale High School, Port Byron, IL She earned the distinction of being ranked at the top of her high school class of 97 students, and achieved a 4.0 grade point average in her freshman year at UI.

The **Clifford W. Hesselstine Scholarship in Biology** is awarded annually to an outstanding senior Biology major who has done noteworthy research, and/or is intending graduate work, with microorganisms. The award is a prize of \$1000.

The Clifford W. Hesselstine Scholarship in Biology for 2003-2004 has been awarded to **Ms. Sarah E. Nord**. She is currently in her senior year and has compiled a perfect 4.0 grade point average at UI while doing honors genetics research in the laboratory of **Dr. Robert Malone**. Nord was introduced to genetics when she took the Department's basic course and earned the top grade although she was a sophomore at the time. Her plans after graduation include entering a Ph.D. program in genetics and molecular biology.

Malone's laboratory studies chromosomal mechanics in gamete formation (e.g., meiosis) in yeast cells. They are investigating how two crucial meiotic events, recombination and the 1st meiotic division (M1), communicate with each other. The lab has found that products of six genes are required to initiate recombination and two of these are components of the synaptonemal complex (SC), a structure that holds chromosomes together. Nord has been working on the question, are the two SC genes part of the same signaling pathway as the recombinant genes or contribute to a parallel pathway? Her results thus far on one of the SC genes suggest that it is part of the same signaling pathway. The findings also bear on the signaling mechanism, implying that a protein complex involving both recombination and SC proteins is recognized as the signal. She will test the 2<sup>nd</sup> SC gene and go on to explore other aspects of the interaction of the two sets of genes.



# Alumni NEWS

**Hansen, Lori A.**, BA (Biol) '95 is a medical writer for Abbott Laboratories, Abbott Park, IL.

**Honts, Jerry E.**, PhD (Biol) '91 has been recognized for Distinguished Iowa Science Teaching by the Iowa Academy of Science (110:61-62, 2003). The citation noted that Dr. Honts has been the foremost advocate and practitioner of inquiry-based learning at Drake U. He has taught cell biology, molecular biology, structural biology as well as courses in evolution of life on Earth, Life in the Universe, biological computing and the senior capstone course which ties together all of biology through evolution.

**Page** (see Withington)

**Paulson, Charles R. ("Chuck")**, PhD (Biol) '86 is Associate Professor of Biology and the Director of the Honors program at the U. of Northern Florida, Jacksonville.

**Withington, Jennifer M. (Page)**, MS (Biol) '97 was a Fulbright Scholar in Poland in 2000-2001 and is currently a graduate student in ecology at Pennsylvania State U. She married R. Preston Withington III in the fall of 2001 and is the mom of R. Preston Withington IV, born 8/17/03.

## ATTENTION Alumni

We'd like the alumni news section to be the largest part of the newsletter. Let us know what you're doing personally and professionally, especially all you BA/BS graduates in Biology, Botany and Zoology. Use the handy questionnaire included in this mailing to send news directly to: Dr. Eugene Spaziani, Department of Biological Sciences, University of Iowa, 143 BB, Iowa City, IA 52242, or email: [eugene-spaziani@uiowa.edu](mailto:eugene-spaziani@uiowa.edu)

## Do YOU recognize these emeritus faculty?



Email your response to [Julie-Rogers@uiowa.edu](mailto:Julie-Rogers@uiowa.edu)

## Obituaries

- Aita, (Fordyce) Nell M., MS (Botany) '37.  
Barry, David G., PhD (Zool) '52.  
Bashaw (Fritz), Lois M., BA (Zool) '48.  
Burgoyne, Donald L., MS (Botany) '51.  
Calvert, Jack, DDS, BA (Zool) '49.  
Carroll, Arthur G., PhD (Botany) '53  
Clodfelter, Charles A., MS (Zoology) '40.  
Collodi, George A., PhD; BA (ZOOLOGY) '41.  
Damon (Scales), Meffie S., BA (Botany) '48.  
Edwards, (Trowbridge) Carolyn, T., MD; MS (Zool) '40.  
Erlanger, (Williams), M.W.; MA (Zool) '35.  
Fingert, Hyman H., MD; BA (Zool) '31.  
Flesner, Edna P., MS (Botany) '28.  
Fordyce (see Aita).  
Fritz (see Bashaw).  
Gibbens (Smith), Francis L., MS (Zool) '33.  
Jolliffe, Carl R., PhD; BA (Zool) '49.  
Kramer, Robert A., MD; BA (Zool) '51.  
Linthacum, Robert W., MD, BA (Zool) '50.  
McIlraith, Stuart M., PhD, MS. (Zool.) '60.  
Mills, Howard L., PhD (Botany) '51.  
Nelson, Clarence H., PhD (Botany) '43.  
Nicholson, Frank A., Major; MS (Zool) '40.  
Reger, James F., PhD (Zool.) '54.  
Scales (see Damon).  
Smith, Dorthea M., MS (Zool) '28.  
Smith, John S., MS (Botany) '51.  
Smith (see Gibbens).  
Swift, Hewson H., Ph.D.; MS (Zool) '45.  
Trowbridge (see Edwards).  
Unsicker, Willard D., MS (Botany) '47.  
Van Boskirk, John E., BA (Zool) '67.  
Walter, Irving H., BA (Zool) '32.  
Wang (Yang), Constance P., MS (Zool) '35.  
Werderitsh, Dorothy J., BA (Zool) '51.  
Westman, Howard, BA (Zool) '37.  
White, Julius S., PhD; MS (Botany), '34.  
Williams (see Erlanger).  
Wilson, Harold L., BA (Zool) '50.  
Yang (see Wang).

# Faculty Speaker Invitations

**D. Bhattacharya:** Gave eight invited national or international talks in 2004, which included: "Updating the tree of life", a symposium on A genomic and phylogenetic perspective on algal evolution, Geneva, Switzerland in March; "Genome evolution in microbial eukaryotes", part of an NSF-sponsored symposium which he co-organized at the annual meeting of the Society of Protozoologists; in Rhode Island in June; and a talk at the Gordon Research Conference series, a symposium on Marine Microbes—Picophytoplankton, From Ecology to Genomics, in June, in Roscoff, France.

**C.-L. Cheng:** Two talks at the Amer. Soc. of Plant Biologists, "Functional Genomics of Arabidopsis  $\beta$ -glucosidase gene family, and "Molecular modeling of  $\beta$ -glucosidase in Arabidopsis thaliana."

**M.E. Dailey:** Two talks in 2003, to the Dept. of Neuroscience, Johns Hopkins U. Medical School, Baltimore and to the Great Lakes Glia Conference, Traverse City, MI.

**D. Eberl:** Two talks in late 2003: "Mechanisms of hearing in Drosophila" (Creighton U. School of Medicine) and "The sound of one wing flapping: Mechanisms of Drosophila hearing" (Western Illinois U, Biological Sciences).

**J. S. Fassler:** A talk at the 2003 Gordon Research Conference on Cellular Osmoregulation, Bristol, RI.

**J. Frankel:** A seminar, "Hierarchical patterning in cells," at the Harvard U. Medical School, and was Chairman of a session of papers, "Morphogenesis and Development" at the 10<sup>th</sup> annual meeting on Ciliate Molecular Genetics, Saxton River, VT.

**G. Gussin:** The Banbury Center Conference on Phage Genetic Networks, Cold Spring Harbor, NY.

**S.D. Hendrix:** The Dept. of Entomology, U. California, Davis.

**E. Irish:** "Regulation of inflorescence morphology—Insights from genetics and genomics.". Banbury, CSHL.

**A. Kay:** Three invited talks in the '03-'04 period, in the Dept. of Pharmacology of Yale U., in Biological Sciences at the U. of Illinois, Chicago and at a Gordon Conference, Metals in Biology, Ventura, CA.

**J. Lilien:** The Society for Cell Biology and was speaker and session Chairman at the Timberline Conference on Epithelial Polarity.

**J.J.-C. Lin:** Three talks in Taiwan, at the National Taiwan U. College of Medicine, the Tri-Service General Hospital, National Defense Center and the Institute of Physiology, National Defense Medical Center.

**J. Logsdon:** Two invited talks at the Japan Biological Information Research Center, Tokyo, another at the National Center for Genome Research, Santa Fe, the Genome of Trichomonads symposium, Philadelphia and at the Dept. of Biology, Indian U.

**J.C. Murray:** Numerous invited lectures on the Human Genome Project in which is lab is a participant. These include talks in Brazil, Denmark and Canada as well as Boston, Colorado Springs, San Francisco, Seattle and St. Louis in the U.S.

**B.F. McAllister:** A seminar at the Drosophila Species Workshop, Tucson Stock Center, U. of Arizona, and is a member of the Advisory Board of the Center.

**M.-C. Shih:** Talks to the Dept. of Plant Biology, U. of Illinois, Urbana, and at the Workshop on Functional Genomics of Cell Wall Proteins, annual meeting of the American Society of Plant Biology, Honolulu.

**D.C. Slusarski:** Dept. of Pharmacology, Northwestern U.; Symposium, Calcium

Function in Development and Disease, Hong Kong; Regional Zebrafish Meeting, U. of Chicago; and the Midwest Developmental Biology Meeting, Stowers Institute, MO.

**D.R. Soll:** EMBO Cell Motility Workshop, Heidelberg, Germany; International Society of Human and Animal Mycology, San Antonio, TX (and Co-Chairman of the session, and invited speaker in another session); the MSA/BMS Meeting, Asilomar, CA; Polymicrobial Diseases, ASM, Lake Tahoe, NA.; ASM Candida Meeting (keynote speaker and Convenor of the Plenary Session), Austin, TX. He also gave talks in 2003 at the College of Dentistry, Louisiana State U., New Orleans, the Molecular Mycology Course, Woods Hole, MA, the Dept. of Biology, U. of Puerto Rico, San Juan and the National Cancer Institute, Fredericks, MD.

**B. Stay:** Two talks and Chaired one session at the Invertebrate Neuropeptide Conference, Sidney, Australia.

**C.S. Stipp:** The Federation of American Societies for Cell Biology Summer Research Conference, Advances in Tetraspanin Research, Pine Mountain, GA, and the Annual meeting of the American Society for Cell Biology, San Francisco.

**C.-F. Wu:** Co-Organized and Co-Chaired the symposium, Genetic Model Systems for Biomedical Research, at the 10<sup>th</sup> International Symposia and Workshops, Society of Chinese Bioscientists, Beijing, China. Also, he was invited to talks: The Neuroscience Program, U. of Missouri, Columbia, MO; the CSHL Meeting on Learning and Memory, Cold Spring Harbor, NY; the Inauguration Symposium for the Brain Research Center, University System of Taiwan and National Yang-Ming U., Taipei; the Life Science Institutes of National Yang-Ming U, Taipei, and the National Tsing Hua U, Hsinchu, Taiwan.

# Keep In Touch

## Questionnaire

Name \_\_\_\_\_

Address \_\_\_\_\_

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Business Address \_\_\_\_\_

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Position \_\_\_\_\_

\_\_\_\_\_

Professional Society meetings that you attend \_\_\_\_\_

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Please send me more information:

- Alumni gatherings at meetings
- How I can help graduate recruiting
- Membership in the Alumni Advisory Board
- Department needs for private support
- Other (please specify) \_\_\_\_\_

**News about you:**

Please send this page with all of your updated information to Eugene Spaziani, The University of Iowa, 143 BB, Iowa City, IA 52242-1324, or email [eugene-spaziani@uiowa.edu](mailto:eugene-spaziani@uiowa.edu)

**Grand Opening**   
**Biological Sciences Complex**  
THE UNIVERSITY OF IOWA



**Oct. 15, 2004**  
**4:00-7:00 pm**

program & reception  
tour the facility  
meet the faculty  
visit with fellow alumni

Department of  
**Biological Sciences**

**NEWSLETTER**

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