

Department of Biological Sciences

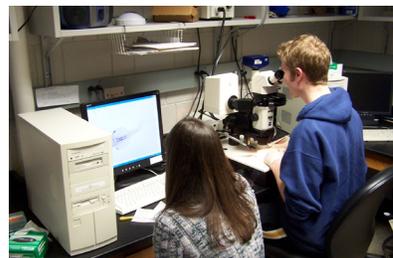
NEWSLETTER

THE UNIVERSITY OF IOWA



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Research and Teaching

The Inseparable Functions of the University

In this issue we focus on the **Cell and Developmental Biology** group which studies a set of very diverse problems, but as I hope you will see they have an underlying theme based on understanding the molecular machinery that endows cells with the ability to assume different sets of properties or phenotypes and thus carry out very distinct roles in the organism. Furthermore, cells change their properties many times during the transition from a single fertilized cell to the billions of cells that make up the adult organism. And they do all this in concert with surrounding cells, moving and changing in a pattern that is constant from one individual to the next and changing very slowly over evolutionary time.

Cell and Developmental Biologists address how cells receive information from their environment (including other cells), how they translate that information into one of thousands of different

potential responses through differential activation of genes and finally how the proteins encoded by these genes are assembled into molecular machines that run the activity centers of the cells. Addressing these basic questions involves many different approaches and techniques and, equally challenging, the integration of millions of independent observations and experiments into a coherent picture of cell function and development, a problem addressed by new methodologies in the field of informatics.

Given the magnitude and diversity of questions, our group covers a considerable spectrum of approaches on a diverse set of organisms from the pathogenic fungus *Candida* to the mouse.

Douglas Houston, the newest member of this group, studies embryonic development in the African clawed toad, *Xenopus laevis*. *Xenopus* has been the paradigmatic organism for studying



From the Chair



Dear Friends and Alumni,

We continue to develop, expand and improve all aspects of the department from our undergraduate and graduate curricula to our physical facilities and instrumentation base. A few new things you will note as you scan this year's newsletter. We received final approval for awarding graduate degrees in specific emphasis areas: Cell and Developmental Biology, Evolution, Genetics, and Neurobiology. These graduate tracks reinforce and extend our commitment to growth in these areas. We have added two new laboratory courses, Developmental Biology and Neurobiology; this gives undergraduate students a unique hands-on laboratory experience in two of our most popular emphasis areas. The DNA laboratory associated Roy J. Carver Center for Comparative Genomics continues to grow and accrue new instruments that facilitate research for the entire faculty. Growth has been so robust that we have had to relocate the laboratory into new and larger quarters.

I want to emphasize that the engine of growth for the department is the graduate program. It is our graduate students that provide the "outlandish" ideas that turn into new research and it is their hands that move the research forward. I have made numerous pleas in this newsletter and in other venues to help us fund our graduate program. This is the one area where we need the greatest amount of help because of decreases in state funding and federal funding of research grants. We have established a special fund for graduate education and are slowly building this fund into a real endowment. We have recently received a terrific boost in this endeavor from David Soll in his capacity as director of the Developmental Studies Hybridoma Bank (DSHB, see the Fall 2005 Newsletter for some information on the Developmental Studies Hybridoma Bank). He has kick started this fund by committing the interest from a \$700,000 working DSHB account. In addition he has made a multiyear pledge that will ultimately exceed \$250,000 and may reach \$1,000,000. This is a great beginning; we want to accrue \$4,000,000, yes, four million dollars over the next 5 years to insure that our graduate program is financially sound well into the future. Please continue to support us in any way you can.

Sincerely,

Jack Lilien, Ph.D.
Professor & Chair



International Faculty of 1000

The Faculty of 1000-Biology is a relatively new (since 2002) online research tool that highlights the most interesting papers in biology throughout the world. Selection of the papers is done through recommendations of over 1000 leading scientists (the "Faculty") organized by field and subfield. Faculty members assign to each paper they select one of three ratings: "Exceptional", "Must Read" or "Recommended". Members also classify each paper according to the type of scientific advance: "New Finding", "Technical Advance", "Interesting Hypothesis" or "Important Confirmation." Subscribers to the web site can access papers of interest by subfield and the evaluating comments of the Faculty. A paper can also be labeled by consensus as a "Hidden Jewel". Each week, the site lists the top ten most highly rated papers—in all of biology as well as in each field.

Joseph Comeron has been a member of the Faculty (Evolutionary/Comparative Genetics) since its inception and three papers from his lab have been singled out for special mention. Similarly, **Debashish Bhattacharia, John Logsdon, Bryant McAllister** (all in Evolutionary/Comparative Genetics) were appointed to the Faculty in 2004-2005. **Christopher Stipp** was appointed (2004) in Neuroscience, Neuronal and Glial Biology, and **David Soll** is on the Faculty (2006) for Medical Microbiology. In addition, papers by others on our faculty have been singled out. The individuals and number of their papers: **Daniel Eberl** (1), **Diane Slusarski** (2), **Michael Dailey** (4, including 3 of the last four), **Jack Lilien** (2), **Jan Fassler** and **Robert Malone** (1 jointly), and **David Soll** whose papers have merited special attention in 2002 (5), 2003 (4) and 2005 (1). This is an astonishing affirmation of the quality of our faculty members and their science. Congratulations to all.

Academic Freedom Symposium

In November of 2004, an Animal Rights group broke into Spence labs (Psychology) causing \$450,000 of damage, ruining years of research for UI faculty, students and staff, and disrupting classes for hundreds of UI students. In response to this break-in and an attempt to remove funding from a peer-reviewed research grant, a group of University of Iowa faculty members met to create a symposium to discuss the nature of academic freedom. The College of Liberal Arts and Sciences Faculty Assembly asked John Menninger, Professor of Biological Sciences, to chair a Committee on Academic Freedom, and to coordinate a symposium. The Committee on Academic Freedom included faculty from various departments within the College of Liberal Arts and Sciences.

The Academic Freedom Symposium was held on April 21 and 22, 2006. Lead-off speaker was Williard (Sandy) Boyd, UI Emeritus President, and UI Emeritus Law professor, who spoke on the University's experience with academic freedom. The first session, intended for faculty, staff and students, featured representatives from the UI Provost, the UI VP Research offices and the Psychology department. It dealt with the academic freedom of faculty, staff and students to teach and do research. Professor Mark Blumberg put a human face on the effects of the break-in and subsequent internet posting of Psychology faculty names, addresses and telephone numbers. The second session was intended for the general public and featured faculty from Education and Law, as well as US Congressman, the Honorable James Leach. This session gave accounts of the history of academic freedom, the distinctions between academic freedom and freedom of speech and legislative efforts that could affect academic freedom.

002:095

Plants and Human Affairs

This class used to be part of the Saturday and Evening curriculum but now is part of the regular curriculum taught by Diana Horton, Ph.D. The beginning of the course covers basic plant biology, including plant structure. The class investigates the origins of agriculture and the domesticated plants utilized in today's society. The focus is on how plants impact our lives from food, beverages, herbs, medicines, wood for homes, paper, psychoactive drugs and the creation of environmental conditions.



002:104

Developmental Biology Lab

The inaugural class of Developmental Biology Lab, developed and taught by Prof. Douglas Houston, was held in the spring semester of 2006. The class gave students hands-on experience with embryos of different organisms, and introduced them to the experimental manipulation of development. Students fabricated their own dissection tools and then performed classic experiments in sea urchin and amphibian embryos, such as the development of complete sea urchin larvae from individual dissociated cells, and the induction of mesoderm in *Xenopus* "animal cap" explants. Using early *Drosophila* embryos, students saw a dramatic demonstration of pattern formation in development through antibody staining for gap and segment polarity gene products. The class then examined early stages of chick embryogenesis and the students were able to observe beating of the embryonic heart and the formation of blood vessels. Later, students designed their own experiments and manipulated chick limb development in ovo, in some cases creating inverted or duplicated wings. Students capped off the semester by presenting their results to the class in a "lab meeting." Overall, the students greatly enjoyed learning about development by observing living embryos, as well as learning difficult microdissection techniques. This initial class was limited to eight students, but will expand to sixteen students in 2007, and additional sections will be added in the future. Shown below are students from the inaugural class honing their microdissection skills.



New class Initiatives

Creating Better Facilities

Bioscience Alliance of Iowa Innovation Fund



Associate Professor Diane Slusarski is collaborating in a research project to use animal models to study human disease. Dr. Slusarski is co-PI on a Bioscience Alliance of Iowa Innovation Fund. This work received funding from the state as a mechanism to couple Biomedical research with economic development initiatives. One aspect is to utilize local/regional companies. For the proposed studies, researchers need to increase the housing of animals on campus. Techspace, a local Iowa company will be involved in the design of state of the art facilities.

Dr. Slusarski's component of the grant uses zebrafish to model human diseases, in particular retinal degeneration. The zebrafish has very rapid growth and the eggs are clear, allowing researchers to monitor development under a microscope as the embryo grows.

The application to human disease involves antisense technologies to knock down gene activity and monitor defects in zebrafish embryos. Candidate genes for human diseases sometimes do not have strong evidence. However, if the function of that gene is removed in a model organism, such as zebrafish, and a similar defect arises, that is one way to narrow down the cause for the pathophysiological issue.

Faculty activity

New Grants

D.F. Eberl as Co-PI has been awarded a 5-year grant from the NIH (NIDCD), "Myosins VIIA, VIIB and XV in fly hearing and morphogenesis."

S.H. Green has received funding for '05-'06 for "Role of JNK signaling in the death of spiral ganglion neurons after hair cell loss" from the American Hearing Research Foundation. In addition, a student in Dr. Green's lab was awarded a three year post-doctoral fellowship from NIH NIDCD; another student received a one-year pre-doctoral grant from the American Heart Association Heartland Affiliate.

A.R. Kay has received four years of funding from the NIH for "Defining the roles of metals in synaptic transmission."

J.T. Schabilion received a grant from the Church of Jesus Christ of Latter Day Saints to repair the prairie and otherwise restore the University's Mormon Handcart Park in Iowa City/Coralville. This was the site of over-wintering by Mormon migrants during the great trek westward of 1849. The 150th anniversary celebration of the trek will be held this summer.

D.C. Slusarski was awarded five years of financial support from the NIH for her work on "Wnt/Ca⁺⁺ function in development and tumor suppression".

B.A. Stay was the recipient of a three-year grant from the NSF.

C.S. Stipp received a two-year March of Dimes Basil O'Connor Starter Scholarship award.

J.A. Weiner was awarded a grant from the Edward Mallinckrodt Jr. Foundation, "The role of gamma-protocadherins in neural survival", and another from the E. Matilda Ziegler Foundation for the Blind, Inc., "The role of ALCAM-mediated adhesion and signaling in the development of the choroid and the integrity of ocular structure."

New Appointments

as Panelists, Editors and Society Officers, etc.

D. Bhattacharya was appointed to a 3 year term on the Advisory Board, CCMP Culture Collection, Bigelow, ME, and was Chairman for 2005-6 of the Nominating Committee for the International Society of Protistologists.

S.H. Green was selected for the Long-Range Planning Committee of the Association for Research in Otolaryngology.

E.E. Irish joined the Steering Committee of the Maize Genetics Meeting.

J.J.-C. Lin has been elected a Fellow of the AAAS.

J.M. Logsdon, Jr. is Chairman of Division X (Molecular, Cellular and General Biology of Eukaryotes of the American Society for Microbiology, and has been selected for the Faculty of 1000. He has also been appointed to the UI MSTP faculty as a mentor for a 5 year term.

M.-C. Shih served as a panelist on the NSF Program on Graduate Research Fellowships.

D.C. Slusarski has been appointed to the UI MSTP faculty as a mentor for a 5 year term.

D.R. Soll was elected as Fellow of the AAAS as well as fellow of the American Academy of Microbiology.

C. Stipp has been appointed to the UI MSTP faculty as a mentor for a 5 year term.

C.-F. Wu has been elected as Fellow of the AAAS. Also, he was appointed to the following research grant panels: MDCN-SYN Study Section, NIH; MDCN-G Special Emphasis panel, NIH; External Reviewer, Canada Research Chairs Program.

AAAS Fellow Awards

The American Association for the Advancement of Science (AAAS) has awarded 3 of our faculty members the distinction of fellow. The AAAS is the world's largest general scientific society and publisher of the journal *Science*. Fellows are elected by their peers based on their individual efforts to advance science or its applications are deemed scientifically or socially distinguished.

Jim Lin, who joined the UI faculty in 1984 and earned his doctorate in molecular biology from the University of Connecticut Health Center in 1979, was elected in the biological sciences section for his contributions to understanding the role of actin-binding proteins in regulating cell motility, the control of cardiac-specific gene expression and the role of intercalated disc proteins in cardiac morphogenesis and function. His work includes studying the molecular basis of animal cell motility, as well as the molecular mechanisms regulating cardiac gene expression and function.

David Soll, who joined the UI faculty in 1972 and earned his doctorate in biology from the University of Wisconsin in 1969, was elected in the biological sciences section for his contributions to the fields of fungal pathogenesis and epidemiology, cell motility and the cytoskeleton, and computer-assisted motion analysis technology. His work includes investigating the molecular mechanisms regulating fungal infections, animal cell locomotion including white blood cell function, the effects of HIV on white blood cell behavior, the basis for Shwachman-Diamond Syndrome (a rare disease occurring mostly in children and affecting bone marrow, the pancreas and other organs) and the use of ultrasound in seed germination and waste management.

Chun-Fang Wu, who joined the UI faculty in 1979 and earned his doctorate in biology from Purdue University in 1976, was elected in the biological sciences section for his pioneering work in developing unique assays and standards for *in vivo* analyses of genes that regulate neuronal excitability, plasticity and behavior in *Drosophila*. His research involves studying the genetic framework underlying nervous system function and behavior.

CARVER CENTER for Comparative Genomics



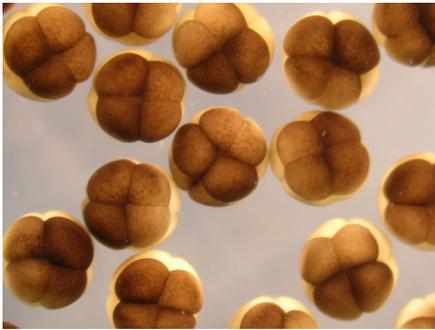
Since the inception of the Carver Center for Comparative Genomics, the Center has grown by leaps and bounds with the growth continuing. Planning for the growth has led the department to move the Center from the second floor of the biology building to the first floor. The move not only allows more room for the Center but also creates greater accessibility for those using the facility. The CCG facilities began as a small common equipment room. Now the CCG includes lab space. The new CCG consolidates all of the equipment, including imagers, real-time PCR, sequencing and microarray equipment into a single space.

Along with the new space is a new logo. A contest to create a new logo for the Center allowed several people in the department to show their creativity. There were over 20 entries received. A small group of 3 people decided the winning entry. The winner's logo, submitted by graduate student Sandhya Shankarayan, is featured above. It was chosen because it captured the imagination of the committee. Ms. Shankarayan received an IPOD for her winning design. A runner-up prize was given to Kelley Foreman. The logo will soon be incorporated into the CCG's webpage as well as other places.

Research and Teaching

Continued from cover

development for several decades because the large size of its eggs lends visibility and manipulability, and their needs are simple - they develop in pond water. Many of the genes essential for early development of many different animal species were first discovered in *Xenopus*. Doug is studying the role of gene products that the mother deposits in the egg during oogenesis. These gene products guide the earliest stages in the development of an organism. One of these genes has been identified in humans as mutated in certain types of cleft palate; so understanding the role of these genes in development will shed light on the basis for several human birth defects.



Developing frog eggs at cleavage.

Diane Slusarski studies embryonic development in the Zebrafish. These are the small, very popular, longitudinally striped aquarium fish. Zebrafish are a powerful system for studying development because it is possible to manipulate them genetically, and because the transparent embryos develop in fresh water outside of the mother, making it possible to observe development very carefully looking for defects due to mutations. Diane studies genes and events that are critical to formation of the embryonic axes, that is the proper orientation of all the organ systems along the anterior-posterior and dorsal-ventral coordinates of the embryo. She is particularly interested in the intricate interactions among a set of molecules that receive and transmit a signal from neighboring cells to dictate

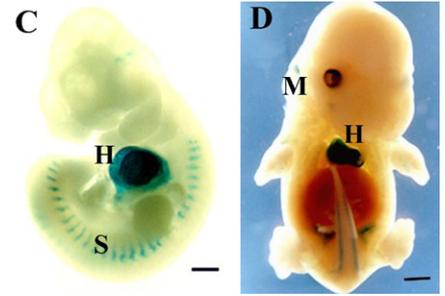
new patterns of gene expression. This particular signaling network, termed the Wnt network, is very important for controlling the patterning of embryos and is likely to be involved in congenital defects such as the common abnormalities in heart development.



The top picture shows a normal embryonic zebrafish, the bottom picture captures a calcium inhibited embryo of the same age.

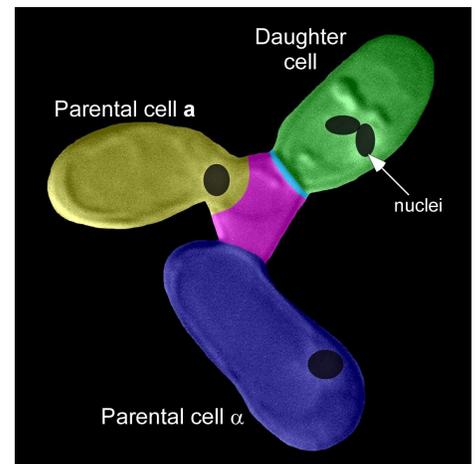
Jim Lin's research focuses on the development of the heart in mice. Jim has recently identified a new gene called Xin (heart in Chinese) that appears to play an important role in the heart's response to stress. The gene product is a protein that is located at the intercalated disk, the very tight and stable junctions between heart cells. Under pressure-overload stress to the heart, mice that do not have this gene have an accelerated rate of cardiac hypertrophy, and ultrastructural studies show a disruption of the intercalated disc. In normal wild type mice under cardiac stress the Xin gene product is dramatically increased, further suggesting that the protein may play a role in preventing cardiac hypertrophy under overload conditions.

Moving a giant step from vertebrates to single celled organisms; **Joe Frankel** has been studying the patterning of the hair-like projections called cilia on some protozoans for many years. The mechanisms underlying this type of patterning were thought to be an important organizing principle during the development of "higher" organisms. While his research laboratory has been winding down, Joe is still an active participant at meetings devoted to protozoans and is an active participant in the ciliate genome project.



Normal development of a mouse embryo, at left day 10 at right day 14. The heart is the blue in both pictures as is the developing body musculature, the orange is the liver.

David Soll studies the mechanisms regulating development and infectivity of the yeast *Candida albicans*. David's research group is identifying the genes involved in virulence of *Candida*. This has tremendous public health consequences as *Candida* is one of the most common infectious diseases in the world and understanding the details of the process of infection will undoubtedly generate new approaches to controlling infection. Another area of research interest of David's laboratory focuses on the mechanisms that regulate single cell motility and the direction of movement. Motility and the molecular mechanisms that regulate its rate and direction are very important both in the formation of the basic organization of embryos and in many disease states; for example, the Shwachman-Diamond Syndrome is accompanied by a loss of white blood cells' ability to move toward a source of infection and ultimately destroy the invading organisms.



Sex in *Candida albicans*: mating between the two mating types a and α with the daughter cell.

NIH Grant to Study Red Tide

Biological Sciences faculty member, Debashish Bhattacharya has received a \$1.1 million, 3 year grant from NIH to study the occurrence of Red Tide in the North Atlantic Ocean. Red Tide (*Alexandrium tamarense*) is a unicellular dinoflagellate protist that causes harmful algal blooms (HABs) and paralytic shellfish poisoning through the production of saxitoxins. The research will generate a significant genomics resource for *Alexandrium* to accelerate knowledge of the basic biology and control of HABs and on nuclear genome evolution in dinoflagellates. This study will result in valuable molecular resource for scientists working to understand the ecology and toxicity of HAB species like *Alexandrium* and will provide the first comprehensive genomics resource for these fascinating protists.

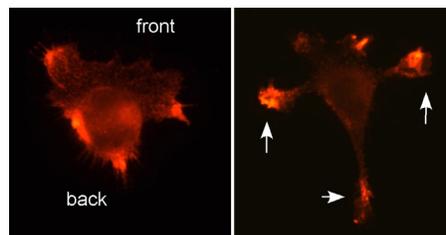
“Our specific aims are to use a highly efficient gene discovery strategy to generate a comprehensive expressed sequence tag for *Alexandrium*. Analysis of the different sequences in the *Alexandrium* unigene set will also reveal key aspects of dinoflagellate nuclear gene origin and genome evolution”.

Bhattacharya will be collaborating with Marcelo Bento Soares of Northwestern University in Chicago, Illinois and Donald

Anderson of The Woods Hole Oceanographic Institution in Woods Hole, Massachusetts. Each person brings their unique expertise to the project. Soares will be responsible for the critical normalized and subtracted Expressed Sequence Tag (EST) library production and sequencing. Anderson will be culturing *Alexandrium* and providing key insights into its ecology, physiology and patterns of gene expression. Bhattacharya will be doing analysis and annotation of EST data produced by Bento Soares as well as analysis of MPSS data in collaboration with the Woods Hole Oceanographic Institute colleagues.



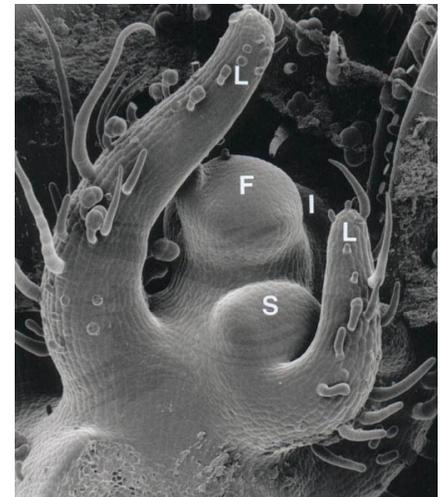
Christopher Stipp's research laboratory also focuses on cell motility but from a very different angle; he is studying how cells adhere to substrates and how this process is altered in cancer cells. Underlying all epithelial layers in embryos and adult organisms is a layer of secreted material called the basement membrane; cells adhere to this acellular membrane through a group of cell surface receptors called integrins. One of the most critical steps in cancer progression occurs when tumor cells bore through the basement membrane and spread to other parts of the body. Chris is studying how integrin function is regulated and what induces cancer cells to change their properties and begin to escape through the basement membrane and move to other parts of the body. Last, but not least, we move on to plants. Like stem cells in animals, plant meristems are a perpetual source of new cells.



On the left, an epithelial tumor cell migrating on a basement membrane component has a fan shaped front edge and a relatively smooth back edge. Direction of migration is toward the top of the figure. On the right, a tumor cell engineered to lack a key integrin-interacting protein develops sticky protrusions (arrows) that slow its progress. Fluorescent red staining reveals that integrin appears to accumulate in the protrusions.

Erin Irish studies shoot meristems which have two distinct functions: initiation of tissues and cell division. However, shoot meristems eventually lose the ability to add more tissues or organs, becoming determinate. Think of your tomato plants that just keep growing like topsy, they are indeterminate; the ones that reach a particular size and stop growing, staying in their proper place in the garden are determinate. Erin studies the timing of determinacy, how early or

late it occurs in each meristem during the development of the shoot, and how determinacy of the meristem is related to differentiation of the shoot.



Tomato shoot meristem.

If you wish to find out more about any of these programs visit our web site at <http://www.biology.uiowa.edu>.

Graduate Student First Year Seminars

Each semester, a faculty member teaches a seminar for graduate students. Much of the seminar series requires that students write and critique articles research scientists in the field have written. One of the biggest challenges is to get students to understand how to critique articles that are relevant to the course. It is also essential to learn how to write in a scientific manner. The students write a major paper that involves a research project. Writing an original work can be difficult, but it is an essential skill when doing research.

During the **Spring 2006** semester the seminar, "Insect Societies" was taught by Professor Barbara Stay. The goal of the seminar was to introduce students to the fascinating subject of Insect Societies. The class studied how they are organized as "superorganisms", how they communicate, and how hormones influence the development of castes that perform different tasks. The most exciting aspect of the course was when the students played with the insects in Dr. Stay's lab. Her goal was to get them to be as enthusiastic as she is about the subject.

The **Fall 2006** class will be taught by Assistant Professor Joshua Weiner. Brain cells, or neurons, form connections with each other at specialized structures called synapses. The human brain contains trillions of synapses, and communication between neurons at these synapses underlies our capacities for learning, memory, consciousness, emotion, and sensory and motor functions. In this seminar, the course will look at how synapses and their mode of action were discovered by scientists, and what modern neurobiology is revealing about how synapses form during development, how they function, and how they are modified by experience, drugs, and psychiatric disorders. Also discussed will be whether, or how, to use emerging medical technology that allows us to enhance, correct, or otherwise modify our synaptic transmission. These topics will be explored using readings of recent popular science books and articles, and with opportunities for students to use microscopy to see actual neurons and synapses in brain tissues.

In each class, after a short didactic lecture, we will all discuss topics from that week's reading. Students will be provided with several study questions to think about as they read, and these will give a framework for class discussions. Students will write a research paper on a topic of their choice, which will require them to read, understand, and synthesize several primary and secondary literature sources. Students' research papers will be evaluated twice. A first draft will be graded by the professor, who will provide detailed comments and suggestions for improvements. Students will then revise the paper, which will be turned in for a final grade.

Undergraduate Research Achievement Awardees

Robbie Prize

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.

Tyler Kerr graduated from the department of Biological Sciences with a B.S. degree in May 2006. As an honors student, he worked in the lab of Dr. Douglas Houston. Dr. Houston's lab focuses on the expression of growth factors, molecules that cause cells to grow, differentiate and adopt spatial patterns which must occur at the proper place and time for the establishment of the embryonic body axis. Tyler's project was to elucidate the role of TGIF, a transcription factor deficient in the human birth defect Holoprosencephaly, in regulating early growth factor expression, using the frog, *Xenopus*, as a model organism. The study determined that TGIF is critical for controlling the initial levels of the Nodal class of growth factors, and thus regulating the amount of mesoderm (prospective muscle) produced by the embryos. Additionally, we found that TGIF likely acts as a transcriptional repressor to turn off expression of Nodal genes at the proper time for normal development to occur. By answering basic questions about axial patterning in a model organism, these results will provide insight into the identification of new candidate genes that are mutated in human birth defects.

Biology Honors Graduates May and June 2006

Alpheus Ben Appenheimer (Ballard Lab)
Laura Britigan (Horton Lab)
Beth Carver (Lin Lab)
David Cervantes (Stipp Lab)
Peter Chimenti (Dailey Lab)
Lauren Coyne (Slusarski Lab)
Megan Dunn (Slusarski Lab)
Benjamin Hanshaw (Murray lab)
Tyler Kerr (Houston Lab)
Michael Krein (Slusarski Lab)
Nicholas Lyons (Malone Lab)
Teresa Obr (Menninger Lab)
Erika Takle (Logsdon Lab)
Monica Verma (Dailey Lab)
Kelley Victor (Murray Lab)
Cara Zimmerman (Murray Lab)

Evelyn Hart Watson Scholarship

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.

David G. Brauer from Valley High School, West Des Moines, IA

Amanda N. Henning from Prairie Ridge High School, Crystal Lake, IA

2006 Collegiate Scholar Award

\$100 is granted to a select group of graduating seniors and are based on outstanding academic accomplishment.

Laura Britigan (Horton Lab)

Rhodes Dunlap Scholarships

Rhodes Dunlap Scholarships recognize the outstanding academic achievement of undergraduates in the University Honors Program. The students must be returning as a junior. There are 5 awards of \$1500 each for the following academic school year.

Bryan Leppert

2006 Rhodes Dunlap Collegiate Scholar Awards

2006 Rhodes Dunlap Collegiate Scholar Awards are based on academic merit and University or community involvement. There are 20 awards given in the College of Liberal Arts and Sciences of \$3000 for the following academic year.

John Heineman (Lilien Lab)

Lisa Raffensperger (Murray Lab)

Honor Roll

of 2005 Contributors

This honor roll gratefully recognizes graduates, faculty, and friends who contributed \$100 or more from January 1, 2005, through June 30, 2006, to the Department of Biological Sciences through The University of Iowa Foundation, the preferred channel for private support of all areas of the University. 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 from January 1, 2005, through June 30, 2006. Contributors of \$1,000 to \$2,500 from January 1, 2005, through June 30, 2006, qualify for the College of Liberal Arts and Sciences Dean's Club, which is indicated by a (DC) following their names.

Allhiser, Carin L., Appleton, Wis.
Allhiser, John N., Appleton, Wis.
Bagnara, Joseph T., Tucson, Ariz.
Bagnara, Mary Louise, Tucson, Ariz.
Barch, Abram M., East Lansing, Mich.
Barch, Stephanie H., East Lansing, Mich.
Bibb, Brenda J., Kingston, R.I.
Bibb, Harold D., Kingston, R.I.
Bowen, William R., Maumelle, Ark.
Buffo, Jeffrey J., Cedar Rapids, Iowa
Burns, Elizabeth A., Grand Forks, N.D.
Roy J. Carver Charitable Trust,
Muscatine, Iowa (PC)
Cech, Annette M., Des Moines, Iowa
Cech, Robert F., Des Moines, Iowa
Cherwin, Jerrold L., Arlington Heights, Ill.
Cherwin, Jessica M., Arlington Heights, Ill.
Chouinard, Claire C., Medford, Mass.
Chouinard, Scott W., Medford, Mass.
Dingus, Jane, Mount Pleasant, S.C.
Edwards, Kevin B., Milwaukee, Wis.
Erickson, Nancy Nielsen, Missoula, Mont.
Erickson, Ronald E., Missoula, Mont.
Filos-Diaz, J. A., Panama, Panama (PC)
Frankel, Anne W. Koopmans, Iowa City, Iowa
Frankel, Joseph, Iowa City, Iowa
Fribourgh, James H., Little Rock, Ark.
Harbour, Laurel J., Leawood, Kan. (PC)
Heithaus, Patricia A. Smith, Mount Vernon, Ohio
Hemesath, Timothy J., Natick, Mass.
Hendrix, Stephen D., Iowa City, Iowa (DC)
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
Jane, Nicole M., South Lake Tahoe, Calif.
Jefson, Jerry A., Lafayette, Ind.
Johnson, Gwen M., Moorland, Iowa
Johnson, James L., Moorland, Iowa
Joos, Karen, Nashville, Tenn.
Kaung, Hue-Lee, Lyndhurst
Mayfield, Ohio (DC)
Kaung, Thomas T. S.,
Lyndhurst Mayfield, Ohio (DC)
Kennedy, Janice K., Knoxville, Tenn.
Kennedy, John R., Jr., Knoxville, Tenn.
Kessel, Richard G., Iowa City, Iowa (DC)
Kirchner, Debra, Peru, N.Y.
Kirchner, Frederick R., Peru, N.Y.
Kollros, Jerry J., Iowa City, Iowa (PC)
Kroeger, Linda, Manhattan, Kan.
Lansing, Jeanne G., Cary, N.C.
Lansing, Timothy J., Cary, N.C.
Lawson, Jeffrey H., Durham, N.C.
Lin, Jenny Li-Chun, Iowa City, Iowa (DC)
Lin, Jim Jung-Ching, Iowa City, Iowa (DC)
Lizotte, Pauline A., Orlando, Fla.
Lynch, Carol Becker, Boulder, Colo. (DC)

Lynch, G. Robert, Boulder, Colo. (DC)
Magrane, Diane M., Potomac, Md.
Malone, Cheryl L., West Branch, Iowa (DC)
Malone, Robert E., West Branch, Iowa (DC)
Maxson, Linda, Iowa City, Iowa (DC)
Maxson, Rick, Iowa City, Iowa (DC)
Menninger, John R., Iowa City, Iowa (PC)
Mills, Thomas M., Augusta, Ga.
Mintz, Beatrice, Elkins Park, Pa.
Mohler, Bobby A., Waldport, Ore.
Mohler, James D., Waldport, Ore.
Ostedgaard, David Lee, Iowa City, Iowa
Ostedgaard, Lynda S., Iowa City, Iowa
Pollack, Christine F., Skokie, Ill.
Pollack, Emanuel D., Skokie, Ill.
Sampsell, Bonnie M., Chapel Hill, N.C.
Sedar, Jean Dimmitt, Cherry Hill, N.J.
Segal, Harriet F., New York, N.Y.
Segal, Sheldon J., New York, N.Y.
Sjolund, Richard D., Solon, Iowa
Sjolund, Rina R., Solon, Iowa
Smith, Blanche, Los Angeles, Calif.
Smith, Phillip M., Sr., Los Angeles, Calif.
Sullivan, Anne L. S., Coralville, Iowa
Sullivan, Michael J., Coralville, Iowa
Von Eschen, LeAnn K., Columbia Heights, Minn.
Wang, Hwei-Gene Heidi, Hamden, Conn.
Warner, Thomas B., Fort Wayne, Ind.
Williams, Norman E., Iowa City, Iowa (PC)
Yen, Kwang-Mu, Thousand Oaks, Calif.
Zallek, Chris, East Peoria, Ill.
Zallek, Sarah, 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.

Obituaries

Abel, Lucille S. (Sawyer)

M.S. (Botany) '26.

Bailey, Ouida F. (Lowry)

M.S. (Zool) '40.

Barton (see **Timnick**)

Bence, Charles A.

B.A. (Zool.) '21.

Brokaw, Jack D.

B.A. (Botany) '58.

Buchanan, LeForest L.

B.A. (Zool.) '17

Everett, Guy M.

Ph.D., (Zool.) '37

Dr. Everett died in 1994; we only just received this information.

Griffith (see **Keesey**)

Keesey, Esther M. (Griffith)

B.A. (Zool.) '26

Look, Helena

B.A. (Zool.) '23.

Lowry (see **Bailey**).

McConkey, Patrick

M.S. (Zool.) '72.

McIlrath, Wayne J.

Ph.D. (Botany) '49.

McTigue, James E.

B.A. (Zool.) '50

Roeder, Ted L.

M.D., B.S. (Biol.) '89.

Sawyer (see **Abel**)

Timnick, Margaret B. (Barton)

M.S. (Botany), '47.

Wilson, Charles M.

Maj, Ret., BA (Zool.) '49.

Alumni NEWS

Aittaniemi, Mark, M.D., graduated from the Medical School of the American University of the Caribbean and, as a visiting student, from the U. of Texas Southwestern School of Medicine, on 10/29/05.

Dahm (see **Sebby**).

Kennedy, John R. Jr, Ph.D.(Zool) '64 is retiring after 37 years teaching and research. He is Professor in the Dept. of Biochemistry/Cellular and Molecular Biology at the U. of Tennessee.

Mall, Vicki B., B.A. (Botany) '82, is the lead horticultural technician at Vander Veer Park in Davenport, Iowa. She invites all Iowa Alumni to visit Vander Veer gardens and conservatory.

Sebby, Melanie S. (Dahm), B.S. (Biology) '01 has the position of Office Manager in Plainfield, IL She resides in Naperville.

Srednick, David A., B.S.(Biology) '01, in 2005-2006 was a first year optometry student at the Illinois College of Optometry.



Biological Sciences faculty, students and staff welcomed new graduate students to the department at the August picnic.

KEEP IN TOUCH ALUMNI QUESTIONNAIRE

Name _____

Address _____

Business Address _____

Position _____

Professional Society meetings that you attend _____

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 DR. EUGENE SPAZIANI, THE UNIVERSITY OF IOWA, 143 BB IOWA CITY, IA 52242 OR EMAIL: biological-sciences@uiowa.edu or fill out the new Alumni Information webpage at <http://www.biology.uiowa.edu/alumni.php>.

Faculty Speaker Invitations

D. Bhattacharya was a frequently invited speaker in 2005: The Annual Meeting of the Society for Molecular Biology and Evolution, June, Auckland, N. Z., "Eukaryotic plastid endosymbiosis"; Algal Node Meeting of the European network "Marine genomics Europe, Febr., Banyuls sur Mer, France, "The 'blooming' of algal genomics in the US and Canada."; Northeast Algal Society, 44th Annual Meeting, April, Rockport, ME, the plenary talk, "A phylogenetic and genomic perspective on the origins of photosynthetic eukaryotes within the tree of life."

J.M. Comeron delivered a talk, "Weak selection, recombination and gene structure" at Iowa State U., December, '05.

D.F. Eberl presented a full day of instruction (a lecture and practicum) for the Neurobiology of *Drosophila* course at Cold Spring harbor, NY.

J. Frankel gave a presentation to the 12th international Conference on Ciliate Molecular Biology, Il, Ciocco, Italy, August, '05.

S.H. Green spoke at the AAAS Annual Meeting in the "Symposium on restoring damaged inner ear hair cells and their neural connections", Washington, D.C., February '05, and gave a talk, "Molecular mechanisms controlling spiral ganglion neuronal survival and death", to the dept. of Otolaryngology, U. California, San Francisco, May, '05.

G.N. Gussin was invited to speak at two symposia last year, one in honor of Howard Goodman in Boston, MA, in October, and the other in honor of Walter Gilbert at the Cold Spring Harbor Laboratory, NY, in August.

L. Hadany presented the lectures: "Genetic variation, stress and their interaction: New evolutionary models," at the Max Plank Institute for Evolutionary Anthropology, Leipzig, Germany; "Fitness

associated recombination, complex adaptation, and the evolution of sex, to the Dept. of Ecology and Evolutionary Biology, U. of Arizona, Tucson; and "The value of dying: On the evolution of susceptibility to stress," to Stanford U., Stanford, CA.

D.W. Houston gave a talk to the Dept. of Biology, Knox College, Galesburg, Il.

A.R. Kay presented talks to the U. of Laval, Quebec City, Canada, the Dept. of Biological Sciences, Columbia U., NY, and to the Dept. of Pediatrics, Albert Einstein College of Medicine, NY.

J. Lilien was an invited speaker and session chair at the Gordon Research Conference on Cell Adhesion, and gave a talk to the Dept. of Molecular Biology, UNDNJ.

J.J.-C. Lin gave two talks in Taipei, Taiwan in 2005: "Abnormal cardiac structure and function in mXina knockout mouse." To the Section on Cardiology, Taipei Veterans General Hospital, and "Control of cardiac troponin T and Xin gene expression," to the Institute of Physiology, National Defense Medical Center.

J.M. Logsdon, Jr. gave several invited presentations in 2005: "Molecular voyeurism: using a meiosis detection kit to reveal hidden sex lives of eukaryotes", given to the Genomes in Flux Symposium at Indiana U. and the 5th Georgia Tech International Conference on Bioinformatics; "Phylogenomics of protists and other eukaryotes: hidden sex lives and an early origin of meiosis" to the Dept. of Biology, U. of North Carolina, Chapel Hill and to the Microbial Population Biology Gordon Research conference; "Meiosis early or late? Phylogenetic analyses of the origin and evolution of sex", as the keynote address for the BCMB Dept. retreat, U. of Tennessee, Knoxville, to the Dept. of Biology, Georgetown U., Washington, D.C. and to the EEOB Dept., Iowa State U., Ames.

B.F. McAllister gave two talks at e U. of Arizona, Tucson, "Placing the genome assembly on the chromosome map of *Drosophila virilis*" and "The *Drosophila virilis* species group" (to the *Drosophila* Species Workshop).

J.R. Menninger spoke on "Tasting the art of science: Symposium to celebrate the scientific exploration of Walter Gilbert", Cold Spring Harbor Laboratories, NY.

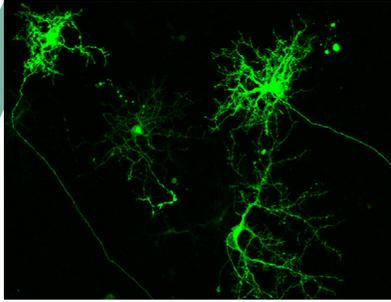
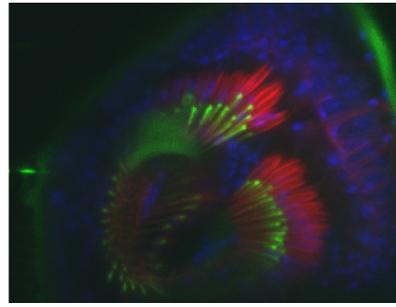
M.-C. Shih gave several talks in China (Rice Functional Genomics Workshop, Hai Nan Island; College of Life Sciences, Sun Yat Sun U., Kongzhou; College of Life Sciences, Nankai U., Tianjin), in Taiwan (Dept. of Life Sciences, National Taiwan Normal U. and the Dept. of Life Sciences, Tunghai, U.) and in South Korea (National Institute of Agricultural Biotechnology and the College of Life Sciences, Seoul National U., Seoul).

D.C. Slusarski organized the symposium, "Maternal factors in vertebrate development" and was session Chair, Experimental Biology meeting, San Diego. She also was Session Chair for the "Strategic Conference of Zebra Fish investigators, MDIBL, Bar Harbor, ME.

D.R. Soll presented talks to the Cell Imaging Seminar Series, U California, Irvine; the Dept. of Microbiology, U. of Tennessee College of Medicine, Knoxville; Department of Microbiology, Columbia U. , New York.

B. Stay gave a talk to the Dept. of Entomology, U. of Wisconsin, Madison.

C.-F. Wu organized a workshop, "Drosophila as a model system for Neuroscience Research, and organized an international symposium (in which he was also a speaker), "Genetic model systems for Neuroscience Research", at the Brain Research Center, U. System of Taiwan, Taipei.



Department of **Biological Sciences**

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NEWSLETTER

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