

## Director's letter

Greetings from Evanston! By the time this reaches you, Fall will have arrived on the shores of Lake Michigan and students will have just started to repopulate our beautiful NU campus. This year's newsletter comes to you later than usual because I wanted to wait to give you an update on the status of our beloved ISP house. We are finishing the second major phase of renovation on the ISP building with the installation of a fire exit on the second floor, which allows us to meet Evanston fire codes and brings the ISP classes back into the building. You can see the photos of the renovation on our website ([www.isp.northwestern.edu/renovation.html](http://www.isp.northwestern.edu/renovation.html)).

AY 03-04 has been another very successful year for ISP. **Igor Dubinsky (EC 00)** and **Mike Stukel (EC 00)** graduated with honors. **Becky Miller (EC 02)** won the Goldwater scholarship. Former ISP **Donde Anderson (EC 98)** won an NSF predoctoral fellowship to support her graduate study in chemistry at Caltech. **Donde** and **Mike Campos (EC 96)** also won NSF-EAPSI Graduate Fellowships to study in Japan this summer. This year, a whole host of current ISP students, many of whom are freshmen, were awarded research fellowships to stay at NU in the summer doing independent research with NU faculty. These fellowships were only made available recently when the university and WCAS decided to invest a significant amount of resources into undergraduate education—our ISP students have been quick to take advantage of them to make exciting discoveries in the laboratory. Go ISP!



Special congratulations go to **Indira Raman** who won a Weinberg College Distinguished Teaching Award for her work with the ISP Neurobiology class. The support from ISP alumni and students who took time out to write letters on Indira's behalf was overwhelming. ISP continues to be blessed with excellent teachers such as Indira, Fred Lewis (Chem 212) who won the 2004 Northwestern Alumni Association teaching award, and Barry Coddens (Chem 212) who received an Outstanding Freshman Advisor Award from WCAS for AY 03-04. I am confident that these will be the first in a string of teaching awards to come. Please join me in thanking Indira, Fred, and Barry for doing great jobs at teaching ISP students over the years. We hope that you will continue your association with ISP for many years to come!

As I complete my first year at the helm of ISP, I am delighted to report that the program is doing well. The advanced computational science cluster that Bill Halperin mentioned in last year's newsletter is finally ready to be used in ISP 101 (A01) this Fall. We started out with 5 IBM Intellistation nodes (dual Pentium IV processors and 1GB of memory) and plan to add a few more nodes each year as need arises. One idea is to also make computer-modeling software available on this cluster for ISP freshmen to carry out computational research at the end of their ISP 101 class. Furthermore, we will continue with the last phase of the renovation by waterproofing the basement of the ISP building to house this new Linux cluster. Finally, we are also putting on the web a page listing academic publications by ISP alumni and students (<http://www.isp.northwestern.edu/publications/publications.html>). If you have copies of your NU papers, please send along one of each (PDF files would be much appreciated) for posting.

Over this past year, many discussions have been held among the current ISP faculty and students on ways to make the program more cohesive outside of academia and across the entering classes. We will schedule several social outings and seminars for new students to network with the faculty and more senior classes. Taking advice from students and alumni, we are in the process of planning an alumni database for networking. An ISP group is now available on Yahoo for everyone to keep in touch (go to <http://groups.yahoo.com/> and register for NUISP). To exemplify the proud ISP spirit, a number of students and alumni have also come up with an ISP T-shirt, which is also available in hooded sweatshirt format. Visit <http://www.isp.northwestern.edu/shirts/shirts.html> to view the design. On the recruiting front, we welcome EC04 (31 students) to NU this Fall. They are a great bunch of students with tremendous potential worthy of the ISP tradition and we are thrilled to have them.

To all ISP's everywhere, thank you for being ISP and thank you for your support. We invite you to visit us on campus to renew old friendships and see the progress that the program has made over the years. Just drop Steve Daut ([s-daut@northwestern.edu](mailto:s-daut@northwestern.edu)) or me ([ispdir@northwestern.edu](mailto:ispdir@northwestern.edu)) a message before you come and we will be glad to show you around.

SonBinh T. Nguyen  
 Director, Integrated Science Program and  
 Dow Chemical Company Research Professor of Chemistry



# Integrated Science Program Newsletter

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### Special points of interest:

- Current Students' Exciting Summer Plans
- ISP Graduates' Amazing Achievements
- Alumni News
- Edited by Steven Daut

# Summer Plans

ISP's participate in a wide variety of research projects both during the academic year and in the summer months as well. Students work here at Northwestern and in many other academic institutions across the country. Below is a sample of what our students are working on this summer.

**Jeff Kaplan (EC03)** is carrying out research with Professor Michael Schmitt in particle physics. The project involves writing code to analyze Fermilab data; specifically, they are looking at events that produce muon pairs. Additionally, Jeff is working on a project for Professor Vicky Kalogera in Astrophysics. He analyzes theoretical data on binary neutron star systems, investigating the distributions for the system mass ratio, eccentricity, orbital separation, and merger time.

**Tiara Kawahara (EC01)** is working at NU in Professor Richard Morimoto's Lab, studying small molecule modulators of the heat shock response.

**Jason Stein (EC02)** is working with Professor Heidi Schellman on a physics project to determine the asymmetry in the beam of protons and antiprotons with respect to the W boson at the D0 detector located at Fermi National Accelerator Laboratory. However, Jason is actually doing his work here on campus, not at Fermilab. The asymmetry in the beam has to do with how many more protons or antiprotons are in a colliding bunch.

**Lauren Holliday (EC02)** is working in Northwestern's department of Academic Technologies. She makes Flash movie components for the CD version of the Encyclopedia of Chicago, which comes out next summer. Lauren is also working on background research for a grant project that artist Harlan Wallach is doing on the digital 3D rendition of caves in China. She says, "A01 helped me get the job!! Who knew?!"

**Andy Pistner (EC03)** is working at the University of Rochester Medical Center doing medical research.

**Todd Levin (EC02)** is working here at NU over the summer with Vicky Kalogera in the Astrophysics Department. His project studies interactions in binary neutron star systems, and more specifically looks for a mechanism of mass transfer to avoid the late stage spin down of millisecond pulsars that are formed in such systems as the neutron star accretes mass from its companion.



*ISP EC03 Gillian Hsieh grilling at the annual ISP Spring BBQ*

**Audrey Thompson (EC02)** is here again this summer working for Professor Hilary Godwin in her chemistry lab. They are studying the effects of lead on zinc finger proteins, which may explain why young children suffer neurological defects when they contract lead poisoning. They are trying to find out if lead actually disrupts the function and structure of these proteins.

**Rachel Scheidegger (EC01)** is doing high energy physics research this summer at CERN in Switzerland with Professor Heidi Velasco from Northwestern.

**Nathan Brown (EC02)** is attending a Mathematics REU at Williams College in Massachusetts this summer, studying Algebraic Geometry. His research group will be searching for examples of manifolds with positive curvature by finding new examples of invariant metrics on Lie groups with nonnegative curvature.

**Tom Lippman (EC03)** received a UGRC grant to work in Professor Bill Halperin's lab, on the thermal conductivity of UPT3, a heavy-fermion superconductor.

**Chiaki Nakanishi (EC02)** returns to Nancy Kleckner's Lab in the Department of Molecular and Cellular Biology at Harvard University where she conducted research last summer. Her lab is interested in meiotic recombination. In particular, Chiaki will be studying possible interactions between recombinant mutants and histone mutations using yeast as the model organism.

**Andrew Lee (EC03)** received a WCAS grant to work in Professor SonBinh Nguyen's lab, on the design of polymer-based smart micelle for the targeted treatment of cancer.

**Wen Hao Liu (EC01)** is participating in an REU program through Stanford's Center for Polymer Interfaces and Macromolecular Assemblies. He will be conducting research at IBM Almaden Research Center in San Jose, CA with Dr. Craig Hawker and will be involved in the synthesis and characterization of self-assembling materials, particularly block co-polymers. These materials will be investigated in thin films with potential applications for use in future nano-scale devices.

**Lance Min (EC03)** was awarded a WCAS summer research grant and is working with Professor John Ketterson at the Northwestern Physics department on Evanescent Field Microscopy.

**Silpa Patel (EC01)** is studying abroad in Australia from June to August on a Duke University program that focuses on the biogeography of Australia (evolution of plants and animals).

**Gillian Hsieh (EC03)** is carrying out research with Professor Michael Schmitt in the NU Physics Department over the summer and is also working with Professor Seidman in Materials Science.

**Jin Suntivich (EC02)** received an Undergraduate Research Grant to work in Northwestern's Materials Science Department.

**Rena Shah (EC01)** is conducting research in Dr. Guillermo Ameer's

Research lab on kidney dialysis in the Biomedical Engineering Department. Specifically, she is trying to find a better filtration method of the blood because so many other ailments occur with kidney failure due to poor filtration. Rena is also the Biology 110 (summer Biology) teaching assistant.

**Taylor Raack (EC01)** is working at the NASA Glenn Research Center in Cleveland Ohio. His internship is being funded by the Ohio Aerospace Institute. He is

working in the Electro-Physics branch of the Power and On-Board Propulsion Division of the Research directorate. Taylor's work involves computer modeling to identify the parameters needed to texture carbon-carbon composite radiator surfaces utilizing atomic oxygen technology with end Hall thrusters. This radiator technology will ultimately be used for heat transfer applications on the upcoming Jupiter Icy Moons Orbiter, JIMO.



EC03's Eddie Fonner, Sam Eckels, Ross Keenholz, Andrew Karaba, and Faysal Altahawi at the annual ISP Spring BBQ.

## Our Outstanding 2004 Graduates

**Igor Dubinsky (EC00)** graduated with majors in Integrated Science (with Honors), Biological Sciences, and Physics. Igor will be studying Intellectual Property Law and Commercial Enterprise Law at DePaul Law School next year. Igor worked with Physics professor Venkat Chandrasekhar on an honors project that involved the development of a scanning probe instrument capable of imaging carbon nanotubes, highly ordered pyrolytic graphite (HOPG), and biological samples under ambient conditions with a high resolution. He also worked on designing and manufacturing tuning fork scanner heads for use in a Tuning Fork Atomic Force Microscope (TF-AFM).

**Dan Greene (EC00)** graduated with a major in Integrated Science. Dan conducted research with Dr. Larry Birnbaum in the Department of Computer Science. He worked as part of a team on a project called "LavaNews." The idea behind the project was to build a dynamic visualization of a semantic hierarchy of news stories, or conference papers, etc., that looked a bit like a lava lamp. Categories were designed to "bubble up" from the bottom, bounce into each other, merge, and break up in semantically meaningful ways aimed at giving the viewer some sense of the contents of the hierarchy.

**Seth Haney (EC00)** graduated with majors in Integrated Science and Mathematics. Seth will be going to the University of California, Irvine where he will be studying Applied Mathematics. Seth worked for several quarters with Dr. Hermann Riecke in the Applied Mathematics Department where he used computational models of neural networks to study the effect of different learning rules in the olfactory center of a locust.

**Sudhi Kurup (EC00)** graduated in December of 2003 with degrees in Biological Science (with Honors) and Integrated Science. He is planning on attending medical school at the University of California, San Diego (UCSD). Sudhi worked with Professor Teresa Woodruff on a project that dealt with studying mutants of two TGF-B ligands to see how specific mutations affect the binding abilities of activin/inhibin to its receptor.

**Mike Stukel (EC00)** graduated with majors in Integrated Science (with Honors) and Biological Sciences. Mike worked for several quarters with Professor Paul Loach where his research project focused on membrane biochemistry and photosynthesis. They predicted the existence of a previously undiscovered protein, based on the fact that it was highly conserved between species of photosynthetic bacteria. Mike's

work is expected to be published soon in the Journal of Biochemistry. Mike plans to enter a PhD program in Environmental Science at the Scripps Institute of Oceanography this fall.

**Stephen Zgrabik (EC00)** graduated with an Integrated Science Program major. He conducted research in Professor Jon Levine's physiology lab. Working with a graduate student, he ovariectomized female rats so that they could be given specific amounts of estrogen (E) and progesterone (P). Stephen injected E and P directly into the brains of the rats to test the effect of these hormones on GnRH release and evaluate their effect on ATP-sensitive Potassium channels. Stephen is currently applying to graduate programs in physiology.



Our 2004 ISP graduating class. The few, the proud: (L-R) Dan Greene, Mike Stukel, Igor Dubinsky, Stephen Zgrabik, and Seth Haney.

# Alumni News

Please drop us a note at [infoisp@northwestern.edu](mailto:infoisp@northwestern.edu) or write us at ISP, Northwestern University, 616 Noyes Street, Evanston, IL 60201 if you have news that you would like to share with the rest of the ISP community. We love to hear about new research, personal accomplishments, career changes, and anything else you would like us to publish. Also, please write if you will be changing your mailing address. Keep in touch!

**Donde Anderson (EC98)** wrote "Just wanted to drop a note that **Mike Campos (EC96)** and I are both spending the summer in Japan via the NSF-sponsored program: East Asia and Pacific Summer Institutes (<http://www.nsf-tokyo.org/spmenu.html>). He is in Nara and I am in Kyoto."

**Yu Shan Chuang (EC95)** was in touch to let everyone know that she is in the Bay Area of California and will be starting law school part time in the fall. Her concentration will be in IP law.

**Kevin Curran (EC90)** was on campus last October. He gave a talk entitled "Patents: A Convergence of Science and Law" to current science and

engineering students interested in a career in patent law. Kevin is an Intellectual Property Strategist in the Global IP Group of SAP AG.

**Mike Henninger (EC99)** is going to Ghana as a Peace Corps volunteer! He'll be putting his ISP major to work as a science teacher.

**Alia Majeed (EC99)** will head out to Stanford in September to get her PhD in Biosciences. She is looking forward to West Coast living, hanging out with fellow ISP alum Adam Tenderholt (EC99) again, and the high concentration of horses in the Palo Alto area. During Alia's year off after graduation she worked as a technician at NU in Dr. Paul Loach's lab, investigating the structure-function relationships in light harvesting proteins in photosynthetic systems. They recently had a paper published in Biochemistry, and another paper is in the review process. For the past few months, Alia has been working at a stable just over the border in Wisconsin teaching lessons, riding horses, and acting as sometime-groom for a couple of the trainers there. She is hoping to take this habit on the road

with her to California. She writes, "That's about it... life has been mostly horses and protein for the past year!"

**Jennifer Vomaske (EC98)** wrote, "I'm entering my second year as a US Peace Corps Volunteer in Kenya, East Africa working on HIV/AIDS education and awareness in a small village in the west of Kenya."

**Julie Osladil Smallfield (EC 92)** is working as a research physicist at Milliken Research Corporation. Julie has returned over the last few years to NU to recruit for her company.



Alums Mike Campos and Donde Anderson (second and fourth from left) with friends in Kyoto Japan at the East Asia and Pacific Summer Institutes orientation.

## Donor Thanks

Thanks very much to all of our generous donors over the last year: Josh Amato, Nathaniel Brese, Mark Bollman, Ted Carniol, Nancy Carson, Suzanne Casement, Stephen Cronen-Townsend, David Darwin, Jeffrey Goldman, John Hebden, Randal Hoke, Joseph Hora, Philip Kaldon, Timothy Krauskopf, Rebecca Levin-Goodman, Robert Maki, David Matheson, Jeffrey Miner, Yuji Nakanishi, Joseph Pauli, Jim Pendleton, Marcus Rafiee, Bradford Sandor, Peter Schmid, Peter Schroeder, Howard Schwartz, Paul Kenji Seo,

Robert Singer, Shantell Thomas, and Chris Vargas. Your much needed donations allow us to improve the facilities of the ISP House. Remember, if you make a gift to NU, write ISP on the comment line of the check to make sure it goes to the Integrated Science Program. Keep in mind that many companies have matching programs for gifts. This could effectively double or triple the amount that you give. Ask your human resources department on information on how to do this.

Visit our Website at  
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