

Nu

HUSKY

Chemist



Aug. 07

Department Climbs to #1

Figures released by the university confirm the Department of Chemistry and Chemical Biology is now top of the table in key metrics used in the university to assess performance. These include research funding growth of 45% to reach a steady state of \$18 million, which is the highest in the college, and number one in the university per FTE. Even more substantial in growth, the chemistry major skyrocketed from 46 in 2003, to 134 with the class entering this fall. Chemistry has clearly become the destination of choice for high quality applicants. SAT scores for the early admission entrants this fall average in excess of 1350. This growth, which is attributed to the recent investments in our program, and the success of our faculty, who continue to garner national and international awards, is the highest in the university over this period.

The department has now transformed itself into a campus leader and, coupled with its new curricular offerings (including the combined BS-MS and co-op PhD), is serving as a model for other units at NU and chemistry programs in the U.S. and overseas. Newly inaugurated president, Joseph Aoun, has unveiled an academic investment program known as the *Excellence and Distinction Initiative*, and the department will feature as a cornerstone of this program.

Mukerjee Receives Klein Memorial Lecture Award

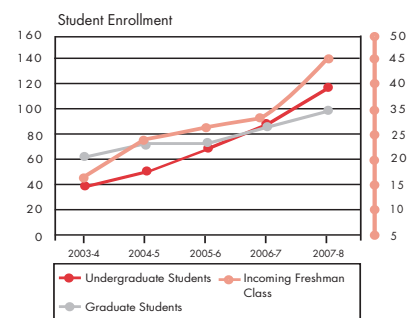
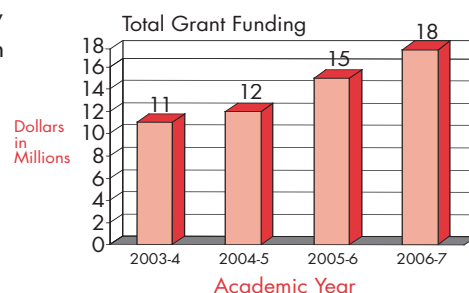
Professor Sanjeev Mukerjee delivered the 43rd annual Klein lecture on March 29, as one of the special events held during the weeklong celebration of the inauguration of university President Joseph Aoun. Titled "Finally Unplugged: The New Revolution of Energy Conversion," Mukerjee spoke about the revolutionary discoveries taking place today in the development of fuel cells and batteries.

An international leader in applied electrochemistry, Mukerjee incorporates an interdisciplinary approach encompassing solid-state chemistry, spectroscopy and electrochemistry of electrode materials for electrochemical conversion and storage. His research group focuses on the development of novel electrode materials that could eventually result in better batteries, supercapacitors and fuel cells to enable a truly wireless society.



University President Joseph Aoun and Professor Sanjeev Mukerjee

The university lectureship was established in 1964, and in 1979 renamed in tribute to the late Robert D. Klein, professor of mathematics and chairman of the Faculty Senate Agenda Committee and vice chairman of the Faculty Senate.



In THIS ISSUE:

p1: Department Climbs to #1; Mukerjee Receives Klein Award **p2:** Message From The Chair
p3: Curricular News: New Forensics Chemistry Course; New Scholarship Program **p4-5:** Faculty Update **p6-7:** Faculty Spotlights: New Hire Sunny Zhou, Penny Beuning, Graham Jones; Karger Receives Torbern Bergman Medal; Million Dollar Grants Secured **p8-9:** Student News: GSA Update; Recent Awards and Graduates; ACS Student News **p10-11:** News from Around Hurtig: DNA Repair; Hurtig Renovations; Waters Mass Spectrometry Lab Opens; NU Partners with Greece; Staff & Alumni News; In Memoriam

The 2006-7 academic year saw a number of prominent developments at Northeastern and in our department. First, and foremost, was the arrival of Joseph Aoun, inaugurated as Northeastern's seventh president. His bold leadership and vision will help sustain our growth, and his recently announced "Excellence and Distinction" academic initiative will feature chemistry as the 'central' science. Accordingly, within a short space of time, our department faculty have become involved in a number of university-wide programs, as we help transform Northeastern from a top 100 school into an international market leader. Some of these activities will immediately benefit our faculty and students, including the opening of interdisciplinary research centers on campus (e.g. molecular imaging, fuel cells), the establishment of overseas innovation centers (including Greece and France) and affiliation of our research and academic programs with the Harvard Medical School teaching hospitals. Exciting times lie ahead, and we must grasp opportunities and provide leadership for other units on campus who can emulate our success.



Our faculty continue to produce world-class research, which garners attention both in the academy and the media. Just this past year, some of our work was featured in *Newsweek*, *Time* magazine and the *Wall Street Journal* to name a few. The honors and awards that my colleagues have had bestowed upon them is a testimony to their commitment to excellence and has created an invigorating atmosphere in the department. Such activity helps attract more and more visibility in the industrial sector, where numerous corporations have now established special agreements with us on research, recruiting, and internships — these are foundations for our future. Our success story is viewed with envy by our competitors and serves as an example of best practice on campus. While growing our programs, our department delivered 15,520 credit hours of instruction (the highest in the sciences per FTE) and held research grants in excess of \$18M (the highest per FTE in the University), and, for the third straight year, broke records on growth in student recruitment. Our success allowed us to attract and welcome new colleagues — five new professors joined us this past year — and several more will arrive in the coming years.

All this activity has had a transforming impact on our student body. We will welcome another incoming class of 20+ graduate students to our PhD program this fall, bringing our steady state to around 100 students. The chemistry undergraduate major is growing at an even greater pace, with an incoming class of 45, bringing our total to over 130. This growth reflects the reputation and environment we have established in our program, and this, in turn, has allowed us to be extremely competitive on the national scale — SAT scores for the incoming classes have been rising significantly each year, with averages now approaching 1400.

It has been a remarkable and rewarding experience overseeing the growth and development of the department these past four years. Congratulating this year's graduating class and their families was a special pleasure, as the class of '07 has witnessed and contributed to so many of the changes we have introduced. Not least among these programs was the combined BS-MS degree, which graduated its first class this past May. Our four students were the first in the university to be awarded the dual degree, which, based on our example, has now been adopted in over a dozen subjects across campus.

To all of our Husky Chemists — alums, current, and future — I want to thank you for being part of a special family. We learn together and grow together, and will always be there to make a difference. Education is for life, and we must always rise to the challenges life presents. Thanks to each and every one of you for making a difference. It has been a pleasure to work on your behalf, and you must all share in our success — as we will share in yours.

A handwritten signature in black ink, appearing to read "Graham Jones". The signature is fluid and cursive, with a large initial "G" and "J".

Graham Jones

Introductory Forensics Chemistry Course Launches Fall 2007



As forensic science has been popularized by TV dramas, such as the CSI franchise, and highly publicized murder cases of the past decade, students have become increasingly interested in studying this subject. To fill this demand at Northeastern, a new Introductory Forensic Chemistry course, CHM U107, has been developed by Professor Ira Krull, with graduate student Terrence Black, and criminalistics expert and author Dr. Richard Saferstein. This course will provide students with insights into forensic science from a fundamental, chemical perspective. Topics to be covered include drug analysis, arson investigation, questioned document analysis, serology, DNA evidence, fiber analyses and weapon impressions.

The format of the class will involve lectures, followed by customized virtual labs in which a crime scene will be presented, and the students must determine what evidence is useful and what instrumentation to use to “solve the case.” A multimedia suite developed by Krull, Black and Saferstein, with Prentice Hall, will be used, along with Dr. Saferstein’s textbook *Criminalistics: An Introduction to Forensic Science*. The bulk of enrollment in CHM U107 will consist of criminal justice majors, and the course will meet student demands for more applied science electives. It is expected that it will also better prepare non-science majors for co-ops and careers in all fields that require critical thinking and use of the scientific process to gather empirical data in order to make conclusions.

This is the second course in forensics to be offered by the department, following CHM U341, a course for chemistry majors, which launched in 2006.



Chemistry & Chemical Biology Faculty Statistics 2006-7

- Taught 14,500 semester hours of undergraduate classes
- Taught 1,015 hours of graduate classes
- Annualized grant holding > \$7.9 million
- Total grant holding > \$18 million
- Submitted research proposals totaling in excess of \$22 million
- Produced 91 articles in refereed journals, 7 book chapters, 47 abstracts/presentations and 2 patents
- Supported 87 graduate students and 12 research fellows

Alum Rolls Out New Scholarship Program

We are pleased to announce the establishment of a new scholarship program made possible by alumna Carole Shapazian [BA '66] to support research internships in the clinical/medical field for students in our BS-MS program. The \$10,000 scholarships will provide financial support to allow students to pursue independent, research driven co-ops. Students in the program will have an opportunity to conduct research at Harvard Medical School affiliated teaching hospitals, including Dana Farber Cancer Institute, and Beth Israel Deaconess Medical Center. The department will leverage this gift by pursuing matching contributions from healthcare organizations and biotech/pharma companies we currently have ties with. This scholarship program will impact the department by attracting elite pre-med students and will enhance our visibility in a key market sector. The first round of scholarships will be implemented in 2008.

Our first group of BS-MS students graduated this May. Amy Kallmerten and Joelle Torregrossa conducted thesis research at HMS, and their success, coupled with the launch of the Shapazian scholarship, has now been incorporated into a university marketing campaign. Congratulations to Amy and Joelle as well as Matthew Daniels, and Zachary Robinson!



Faculty Update 2007



Penny Beuning

Bolstered by funding from the Dreyfus Foundation [see page 6), Professor **Penny Beuning's** research program has rapidly expanded and now includes 9 students and a postdoctoral fellow. Penny has revamped the Graduate Skills & Ethics course (G200), which is a requirement for all graduate students.



Bill Giessen

Professor **Bill Giessen** continues developments in a new interdisciplinary field combining chemometric pattern recognition techniques, economics and financial analysis to produce market-predictive tools. Bill also served on the Department's Honors and Awards Committee and the College Curriculum Committee.



David Budil

The NSF-sponsored Electron Spin Resonance facility, managed by Professor **David Budil**, in the Egan Research Center, continues to attract new external collaborators from our region, including researchers from Brown, Harvard and Boston College. Prof. Budil is continuing his activities as Head Advisor in the Biochemistry Program, which has grown to over 120 majors.



Thomas Gilbert

Professor **Thomas Gilbert** is now in his second year as Dean of the School of Education, which recently moved under the auspices of the School of Professional and Continuing Studies. The ACS student affiliates group, which he mentors, continued their streak, winning recognition with a national award for the third year in a row.



Geoffrey Davies

This year marked a decade that the Humic Substances Group (led by Professor **Geoffrey Davies** and Dr. Elham Ghabbour) has hosted the annual international Humic Science & Technology Conference, bringing together researchers from all over the world. Elham and Geoff are Editors of the peer-reviewed, on-line open access journal *Annals of Environmental Science*, <www.aes.northeastern.edu>.



William Hancock

Professor **William Hancock** is President-elect of Human Proteome Organization (HUPO). Research from his laboratory received national attention, with one article featured on the ACS Publications website as a "2006 Most-Cited Article"- based on citation data obtained from Thomson ISI.



Max Diem

Professor **Max Diem** and postdoc Dr. Melissa Romeo hosted the 1st International Workshop On Spectral Diagnostics held at NU this June. Max's program is now having a major impact on campus-wide efforts in optical imaging. He has become a key member of CenSSIS, and also spearheaded a major NIH training grant program in biophysical chemistry.



Robert Hanson

Professor **Robert Hanson** is gearing up for the sabbatical phase of the Matthews Distinguished Professor award, which will involve collaboration with the Harvard Medical School and the University of Chicago Medical Center on estrogen receptor targeted therapeutics.



John Engen

The Waters Mass Spectrometry lab of Professor **John Engen** was dedicated May 1 (see page 10). John's program on hydrogen exchange mass spec continues to garner attention, and his group gave invited presentations at Pittcon and ASMS meetings.



Graham Jones

Professor **Graham Jones'** research program secured a number of new awards, including projects on novel antimicrobial agents with Mycosol-Elion, and adenosine inhibitors with the NETPI. Graham continued his dual appointment in the Provost Office, responsible for faculty affairs, technology transfer, corporations/foundations, and research development.



David Forsyth

Professor **David Forsyth** continued in his role as Graduate Coordinator with another successful recruiting campaign. Additionally, David has been instrumental in securing graduate scholarships for incoming students in collaboration with the Provost's Office.



Barry Karger

Professor **Barry Karger**, Director of the Barnett Institute, was instrumental in securing a major partnership with BSI, along with Prof. Hancock. Prof. Karger was also co-PI in a recently funded initiative from the Keck Foundation (\$1.2 M) for development of lab on a chip technology.



Rein Kirss

Professor **Rein Kirss** continued as lead supervisor for a number of BS-MS researchers in our program that is now in full swing. Rein, along with Tom Gilbert, is also engaged in finalizing the 2nd edition of the textbook, *Chemistry: The Science in Context*.



Ira Krull

Professor **Ira Krull** returned from the first stage of his sabbatical and exchange program with Ben Gurion University. Ira taught a variety of bioanalytical and biotechnology courses and forged institutional ties with the biotech industry in Israel.



Philip Le Quesne

Professor **Philip Le Quesne** assisted with the NOVA documentary "Forgotten Genius" about groundbreaking African-American chemist Percy Julian, which aired on PBS in February. Phil is planning his sabbatical/ exchange program with the University of Auckland next year.



Pam Mabrouk

Professor **Pam Mabrouk** completed her term as Chair of NESACS and also edited an ACS symposium series on active learning methods in the analytical sciences. Pam received a two-year grant from the Dreyfus Foundation to continue development of webGURU, a self-directed web-based resource for undergraduate research, endorsed by NSF.



Alexandros Makriyannis

Professor **Alexandros Makriyannis'** Center for Drug Discovery continues to expand and currently has 57 members. The Center has been active in attracting substantial research support, participating in international research collaborations and biotechnology meetings, and hosting visiting scientists from around the globe.



Sanjeev Mukerjee

Professor **Sanjeev Mukerjee** recently formed the Nanotechnology Center for Energy and Environment, an institute which draws together and directs campus-wide efforts on fuel cell and energy-related research, along with corporate partners. Sanjeev was the recipient of this year's Klein Lectureship (see page 1).



Mary Jo Ondrechen

Professor **Mary Jo Ondrechen** was honored by being appointed to serve on the 2007 Committee of Visitors for the NSF Division of Chemistry. She was also co-PI on a grant that resulted in NU being one of 19 universities selected to host the 2007 ExxonMobil Bernard Harris Summer Science Camps for middle school students.



William Reiff

Professor **William Reiff's** research program is now fully up to speed in the Nahant Marine Science Center. Bill was hosted by the National Magnet Laboratory (Tallahassee, FL) in February, and is currently collaborating with magnet lab scientists in an effort to establish a national facility for very high field nuclear gamma resonance research.



Eriks Rozners

Professor **Eriks Rozners'** research group on modified RNA analogs received a major \$1.25M NIH award. His program is now attracting interest from biotech companies. Eriks has already established collaboration with Alnylam Pharmaceuticals, focusing on therapeutic applications of modified RNA.



Eugene Smotkin

Professor **Eugene Smotkin's** laboratories are now being renovated on the fourth floor of Hurtig for work in fuel cell chemistry. Gene's collaborative activity with NuVant, Inc. resulted in a \$2 million federal research award, which also involves provision for co-op opportunities.



Paul Vouros

Professor **Paul Vouros'** research group continued to maintain robust funding with the most recent award of \$600K from NIH. Partnership with SIONEX has resulted in a major development in translational research.



Philip Warner

Professor **Philip Warner** has established active collaborations involving computational research on organic reaction mechanisms which have resulted in a number of high profile publications. Phil also served on the College of Arts & Sciences Tenure and Promotion Committee this year.



Sunny Zhou

Renovations on the fourth floor of Hurtig are underway for Professor **Sunny Zhou's** research group. Sunny inked a new patent for his work on a methyltransferase enzyme assay, which has already been licensed to a biotech company.

New Hire Professor Sunny Zhou



The department was pleased to welcome on board this spring Professor Zhaohui “Sunny” Zhou, who holds a joint appointment as Associate Professor in Chemistry & Chemical Biology and Faculty Fellow in the Barnett Institute. Professor Zhou comes to us from Washington State University. He holds a BS degree in organic chemistry from Peking University and a PhD in bioorganic chemistry from the Scripps Research Institute in California, where he studied under Professor Don Hilvert. Professor Zhou completed postdoctoral work on biochemical studies and biophysical characterization of zinc enzymes at the University of Michigan, Ann Arbor, in the laboratory of Professor Rowena G. Matthews.

Professor Zhou applies organic chemistry, analytical chemistry, and protein engineering to biology and medicine. One program is to devise new methodologies to characterize protein post-translational modifications, such as S-adenosylmethionine-dependent

methylations and protein processing via proteolysis. In addition, a general strategy is envisioned to selectively decorate proteins, such as protein drugs, using a combination of engineered enzymes with tailored sequence specificity and chemical modifications with functional selectivity. A second program area is the mechanistic study of biologically important enzymes, towards the design and synthesis of inhibitors. Current targets include several pathways involved in bacterial communication and biofilm formation, a major clinical problem with no effective treatment.

Professor Zhou has brought four postdoctoral fellows and PhD students with him from Washington State, supported by his NIH-funded program. Sunny’s family, including wife Leah, and son Eddie, welcomed a new addition, baby KellyJo Yijia Wang, in April. Welcome!

Beuning Receives Dreyfus Foundation New Faculty Award



Assistant Professor Penny Beuning was named as a recipient of the 2006 Camille and Henry Dreyfus Foundation New Faculty Award last August. This prestigious award was given to only 12 recipients “who demonstrate the potential to produce an independent body of scientific scholarship of outstanding quality and will make significant contributions to overall education in the chemical sciences.” Other recipients include faculty from Columbia,

Cornell, Georgia Tech, Iowa State, Purdue, Texas A&M, University of Chicago, University of Illinois and the University of Minnesota. The award provides a \$50,000 unrestricted research grant, typically expended over a period of five years. Professor Beuning’s research group is investigating repair pathways linked to DNA polymerase enzymes and uncovering new mechanisms of resistance to DNA damage. Congratulations, Penny.

Jones Tapped By UK Government



Following an international search, Professor Graham Jones has been appointed as an external consultant to a UK government council. The Science-Industry Council (SIC) has the brief to promote stronger ties between UK universities and industry, and to develop international partnerships. Areas for initial collaboration include technology transfer, fuel cell energy technology, stem cell research and advanced materials.

Graham has agreed initially to work with the so-called N8 group of universities. The N8 group is comprised of eight research

intensive universities in northern England that together take in a combined \$1.2 billion in research income. They are: Durham University, University of Lancaster, University of Leeds, University of Liverpool, University of Manchester, Newcastle University, University of Sheffield, and University of York. In connection with this work, Graham is in the process of establishing research ties between the N8 group and research centers at NU, including links to our fuel cell laboratories. Congrats!

Karger To Receive Torbern Bergman Medal



Professor Barry Karger, Director of the Barnett Institute, has been selected to receive the Torbern Bergman Medal for 2008 by the Analytical Division of the Swedish Chemical Society. This is one of the most prestigious international awards in the field of analytical chemistry. Barry will receive the medal at a special symposium in his honor in Gothenburg, Sweden next June. The Torbern Bergman Medal has been awarded biennially since 1967, the 200th anniversary of Bergman assuming the professorship in chemistry in Uppsala. Professor Karger was also recently elected an Honorary Member of the Hungarian Academy of Sciences. While membership in the Hungarian Academy is generally restricted to Hungarian citizens, in special cases, scholars or scientists active in a foreign country may be elected to become honorary members of the academy, if they pursue their field on an internationally recognized level, and their achievements are worthy of the special esteem of Hungarian scientific life. Congratulations, Barry!

Faculty Secure Million Dollar Grants

Good news came this spring to Professors Max Diem and Eriks Rozners, who both received grants of over a million dollars from the National Institutes of Health. Professor Rozners was awarded \$1.25 million for his project titled "Amide-Modified RNA: Synthesis, Structure and Potential for RNA Interference". The long-term goal of his research is to explore RNA's structure and function using chemical approaches, and to develop modifications for practical application in RNA interference. The present program focuses on internucleoside amides as non-ionic mimics of the phosphodiester linkages, and will test the hypotheses that amides (1) can be readily introduced in RNA using solid-phase synthesis, (2) are excellent mimics of the phosphate backbone of RNA, and (3) will increase enzymatic stability and cellular uptake of short interfering RNAs without compromising their activity. Professor Rozners' research group also envisions that amides may improve biodistribution and pharmacokinetics of short interfering RNAs. If accepted by RNA binding proteins, amides may significantly improve properties of short interfering RNAs, and may be used to design a novel class of chemically modified short interfering RNAs. Combination of synthetic chemistry, structural studies and RNA biology will provide unique insights into how chemical modifications (amides) influence conformation, hydration, and thermal stability of RNA. Such knowledge is important for rational design of nucleic acid analogues and for developing gene selective therapeutic agents for such long standing problems as cancer, viral infections, genetic disorders, and neurodegenerative diseases.

Professor Max Diem was awarded \$1.4 million by the NIH for his project titled "Micro-Spectroscopy for Cytological Screening, and Staging of Disease." This award is a renewal of an NIH grant with similar scope, namely the detection of pre-cancerous and cancerous cells from a sample of exfoliated human cells. Presently, methods to detect abnormal cells are being carried out by visual microscopic inspection of stained cells by a cytologist. In the US alone, such tests are performed millions of times each year, for example, in the screening for cervical cancer (the "Pap" test), or for cells removed from

the body by fine needle aspiration. Unfortunately, the accuracy of cytological tests is only about 65 %, since the visual distinction of pre-cancerous cells from normal cells is extremely difficult, and since a sample of exfoliated cells may contain but a few abnormal cells. The methods being developed in Professor Diem's Laboratory for Spectral Diagnosis use fast optical measurements, coupled to sophisticated, computer-based algorithms, to classify cells (and tissue sections) in an objective, quantitative and reproducible manner. The methodology of early cancer detection and staging of disease, based on optical methods, has been recognized by the NIH as one of the prime funding targets since it promises better and faster diagnostics, independent of the expertise of cytologists and pathologists.

Professor Barry Karger is one of a team of Northeastern researchers to receive a \$1.2 million grant from the W. M. Keck Foundation to develop an innovative multifunctional nanochip. The long term goal of the chip is for it to be used as a powerful nanobiosensor and drug delivery system, able to identify antigens in body fluid or tissue and release specific drugs and dosages in real-time, based on what is detected. The two year grant will support development of the nanochip's major design features and feasibility testing of the new design for biomarker monitoring and controlled drug release, both in vitro (in a laboratory setting) and in vivo (within a living organism) to determine detection limits, bio-fouling protection and effectiveness. The project is being led by Ahmed Busnaina, W.L. Smith professor of Engineering and Director of the NSF Nanoscale Science and Engineering Center for High-Rate Nanomanufacturing, and the team also includes Vladimir Torchilin, Distinguished Professor and Chair of the Department of Pharmaceutical Sciences and Director of the Center for Pharmaceutical Biotechnology and Nanomedicine. Chair Graham Jones, working with Foundations director Pat Denn, was instrumental in assembling the team and winning bid including hosting site visits with NU foundation officials. Of significance, the Northeastern team beat off competition from MIT for the prestigious award!

GSA News

The 2006-07 academic year has been an important and fruitful year for the GSA. We set out with the objective of continuing our tradition of service to the chemistry graduate students and to the Department through social events, colloquium series and promotion of the graduate program. As with previous years, we organized several social activities that provide a chance for the incoming graduate students to meet their colleagues and quickly become a part of the community. Our most popular events this year have been the Sam Adams tour in September, the trip to Nashoba Valley Orchard in October, our traditional International Day lunch in November, the Holiday Party in December as well as our monthly Movie Night and several impromptu visits to Mathews arena to cheer on the Huskies. I thank all the graduate students and professors who participated in the events, many of which would not have been possible without the generosity of the Chemistry Department.

Throughout the year we have kept a busy social calendar, however that is only part of our mission. We have also continued our tradition of service to the department by helping to organize the Colloquium Series and the Chemistry Graduate Open House. These two activities are the pride of the GSA, because it is through them that we give back to the Department and take an active role in advancing our education and promoting our program. We owe a debt of gratitude to all the students involved in the GSA, but in particular we thank Jim Glick, Heather Brodtkin and Meghan Johnston for organizing more than 20 seminars this year. Just as commendable is the work of Heidi Teng and Erin Shelnut who organized our most successful Open House to date!

I am happy to see that the original spirit of the GSA has been taken up with enthusiasm by the new class of graduate students. Next year's GSA promises to be as involved in the daily life of the Department as ever. The new group will be headed by Heidi Teng as President and Erin Shelnut as Vice-president and will include many GSA veterans as



CGSA Officers: l to r: Tom Arruda, Danielle Falcone, Meghan Johnston, Susie Schiavo, Caroline Ceailles, Stefano Gulla, Nick Karapanos, Heidi Teng, Erin Shelnut, Ian Kendrick, Front: Brian Hult

well as several newcomers that will ensure continuity in the coming years.

The last official event for the GSA this year was the Spring BBQ on April 30, which included the presentation of the GSA Award. The award went to Jean Harris, an essential member of the administrative staff of our Department who has been recognized for the positive impact that her professionalism and services as Graduate Program Advisor have made on the graduate student community. The GSA officers, as well as the graduate students as a whole, greeted her nomination very enthusiastically. It is difficult to find a graduate student who hasn't had to count on her help to navigate the bureaucratic practices of our institution. Personally, I thank Jean and all the members of the staff for their constant support of the graduate students — it would be impossible for the GSA to thrive, as it has, without their help.

The spring BBQ was enjoyed by both students and faculty, however not everything went as planned. Due to rain that morning we were unable to play the classic Faculty vs. Students softball match. I would be lying to say that I wasn't disappointed particularly because after our embarrassing loss to the faculty in last year's game we were quite eager to take back the title. The match will be rescheduled, and I'm confident that this time the faculty will find a much harder opponent!

— Stefano Gulla
CGSA President

GRADUATE STUDENT AWARDS 2006-7

Departmental Citizenship
James Glick

Excellence in Chemical Research
Stefano Gulla

Outstanding Teaching Assistants
Nagappan Ramaswamy
Anna Williams
Xiaomei He
Christopher Morgan

UNDERGRADUATE AWARDS 2006-7

Outstanding Undergraduate Researcher Award
Matthew Daniels

Chemistry Undergraduate Leadership Award
Amy Kallmerten

Al & Joy Viola Scholarship
Tsun Au-Yeung
Theresa Dunstan

Bernie Lemire Outstanding Senior Award
Joelle Torregrossa

Carole J. Urich Shapazian Scholars
Junior: Tsun Au Yeung
Middle: Greg Morehouse
Sophomore: Sarah Pileeki
Freshmen: Rhiannon Thomas

2006-7 GRADUATES

Bachelor of Science (Chemistry)

Garrett Ainslie
Matthew Daniels
Amy Kallmerten
Micki Miskiv
Zachary Robinson
Brittany Rowland
Joelle Torregrossa
Adam Visentin

Bachelor of Science (Biochemistry)

Ashley Penvose
Emily J. Blake
Kathleen Collins
Diane N. Lusas
Erik A. Respini
Nicholas J. Arango
Nicholas B. Borotto

Hoang K. Danh
Marah E. Elston
Masud Habibullah
Hassan E. Harris
Margaret A. Horton
Megan E. Keenan
Benjamin L. Liu
Daren J. Mccalla
Erin P. Murphy
Kara M. Neely
Sara F. Richards
Ann-Marcia Tukpah
Nathaniel H. West
William C. Woolbright

Master of Science

Amy Baldwin
Jason Brewer
Christopher Brassard
Bridget Cooney
Matthew Daniels
Thamara Desilva
Pamela J. Hill
Amy Kallmerten
Naim Nazef
Zachary Robinson
Joelle Torregrossa
Milena Virrankoski
Lauren Young

Doctor of Philosophy

Edward Hua
Lingyun Li
Kevin Millea
Ke Xu

ACS Student Affiliate Chapter News

This year was certainly an exciting one for NUSAACS. Led by myself and Mike Ordazzo, as well as Micki Miskiv, Andrea Lebed, Blair Lapointe, Catherine Cote, Joelle Torregrossa and Lauren Chapman, we expanded our membership, held more successful events, and were rewarded for our efforts with the Commendable Student Affiliate Chapter Award, which the executive board received at the ACS National Meeting this spring in Chicago.

During the fall semester, we continued our annual tradition of National Chemistry Week demonstrations in the quad. With the theme based around household products, we encouraged passers-by to dig their hands into our cornstarch and food coloring creations, and made many a shrinky-dink keychain. Again, keeping up with tradition, our submission to the annual "Chemvention" competition placed in the top five, winning an award in the form of a travel grant to this spring's National meeting!

Social events of the fall semester included a trip to Canobie Lake Amusement Park that left us all very wet after a ride down their log-flume. We once again accompanied the graduate students to an orchard — this year the destination was Nashoba Valley Orchard for their Octoberfest event. The Celtics game was a hit as always. We wrapped up the year with the NUSAACS annual Christmas party catered by Chili's!

The spring brought exciting events such as a trip to the Frog Pond to go ice skating, a trip to Nashoba Valley Ski Area for snow-tubing, and Earth Day which included a video competition, recycling events, and various volunteering activities.

We were privileged to host several speakers this year. In the fall, representatives from Merck came to hear presentations given by several students. They returned to us in the spring to give their own presentation about Merck, with the initiative to hire coops and full-time graduates! We also were thrilled to host Dr. Richard Saferstein, who came to speak with us about his 30 years of forensic chemistry experience at the New Jersey State Crime Lab, as well as his textbook, which will be used in the new forensics course starting Fall 2007.

Our officers continue to assist in important events such as recruitment, as well as events for undecided freshman on campus. Micki Miskiv and I agreed to serve on the board of the College of Arts and Sciences Student Advisory Committee to help other student groups and majors to mimic the success of NUSAACS and the Department of Chemistry and Chemical Biology.

NUSAACS has been, and continues to be, a large part of the undergraduate chemistry program here at Northeastern, and with such a productive year, it's hard to imagine otherwise. We enthusiastically look forward to the coming year — to helping to host the ACS national meeting in Boston this fall, as well as to continuing to expand our membership and activities with more speakers, more events, and continued overall success!

Thank you all for such an amazing year!!

— Amy Kallmerten
NUSAACS President



Chapman Awarded Presidential Scholarship

Lauren Chapman, Chemistry '08, has been awarded a Presidential Scholarship for 2007. The Presidential Scholarship is a highly competitive, merit-based scholarship awarded to only 12 of the over 300 people who apply each year, and it will provide tuition for the remainder of Lauren's undergraduate program. Congratulations, Lauren!



Gulla Receives Research Awards

Stefano Gulla was presented with a Certificate of Excellence for his outstanding presentation at Northeastern's 2007 Research and Scholarship Expo, for his poster entitled, "Electron Spin Labeling Studies of Proteins and Nanodevices." He also received the department's Excellence in Chemical Science Award. Way to go, Stefano!



More Awards!

We also congratulate the following majors: Matthew Daniels, who received the American Institute of Chemists Award to a Senior; Colleen Mitchell, who was awarded Outstanding Undergraduate Analytical Chemistry Student by the ACS Analytical Chemistry Division; and Michael Ordazzo, who received a NU Provost's Office Undergraduate Research Grant. In addition, we note the achievement of graduate student Tatyana Chernenko, who secured an IGERT traineeship in nanomedicine, as well as the following graduate students who received Barnett Institute Awards: Ye Gu, Barnett Institute Alumni Fellowship Award; John Williams and Haitao Jiang, the Douglas and Irene DeVivo Award; Majlinda Kullolli and Wennan Xiong, the Gustel and Ernst Giessen Memorial Fund Awards; and Haven Baker and Dongdong Wang, Academic Excellence Awards.



l to r: Graduate Student Awardees - Anna Williams, Stefano Gulla, Graham Jones, Jim Glick, Nagappan Ramaswamy



Undergraduate Senior Awardees - l to r: Amy Kallmerten, Graham Jones, Joelle Torregrossa, Matthew Daniels

DNA Repair: Understanding Cellular Responses to Environmental Stresses

The department celebrated the opening of the The DNA Repair Laboratory, headed by Professor Penny Beuning, on December 1, 2006. The DRL investigates the fundamental mechanisms of how genetic integrity is maintained in the face of DNA damage. This is accomplished partially by utilizing a family of enzymes that can copy damaged DNA, a process which often results in mutations. In bacteria this can lead to antibiotic resistance, whereas in higher organisms mutations can lead to cancer. The Laboratory combines biochemical, biophysical, genetic, and computational approaches to understand the specificity and regulation of these enzymes in both bacteria and higher organisms, and thus gain insight into oncogenesis.

The newly renovated laboratory is on the ground floor of Hurtig Hall, and includes cold and warm rooms. Major research equipment includes cell culture facilities, a phosphorimager for quantifying radioactivity and fluorescence, chromatography and PCR equipment, and state-of-the-art protein purification instrumentation. The DRL is a modern laboratory with extensive biophysical and biochemical capabilities for analysis of protein-protein and protein-nucleic acid interactions.



L to r: John Sheldon [Sr. architect], Graham Jones, Penny Beuning at laboratory opening

Joining Penny in the lab, which is supported with funding from the Camille and Henry Dreyfus Foundation, are a postdoctoral fellow, three graduate students, and six undergraduate students. The Laboratory has established strategic collaborations with other researchers in Chemistry and Chemical Biology, with groups in Chemical Engineering and Physics, as well as with researchers around the country and the world.

Hurtig renovations continue

The main office, located in 102 Hurtig Hall, was transformed last summer into a streamlined, modern office space. Reconfigured to include two separate offices with a centralized reception station and a waiting area, the space is light, open and inviting. Department members are enjoying the décor and the efficiency of the new layout!

Remodeled in the same scheme as the main office, room 121 Hurtig now serves as an advising suite where new coop coordinator and advisor, Jordan Swift, is hosting students and corporate partners.

The Beuning DNA Repair lab renovations were completed during the fall semester and renovations of the laboratories of Profs. Smotkin, Zhou and Engen are in progress.

To highlight accomplishments of students and faculty, the walls of Hurtig are progressively being decorated with framed works. Journal covers, original research papers, and professional awards are some of the items showcased, and a display cabinet will soon be installed to promote additional visibility.



Renovated James L. Waters Mass Spectrometry Facility Opens

The Barnett Institute celebrated the opening of the renovated Waters Mass Spectrometry laboratory with a gala ribbon-cutting ceremony on May 1.

Institute Director Barry Karger and university President Joseph Aoun were on hand to welcome a delegation from Waters Corporation led by CEO Douglas A. Berthiaume, Executive Vice President Art Caputo, and James L. Waters, founder of Waters Corp. and a longtime supporter of Northeastern and the Institute.

The new laboratory, led by Associate Professor John R. Engen (who holds a joint appointment in the department and the Barnett Institute) is dedicated to studying protein shapes and characteristics to provide pharmaceutical and biotechnology innovators with the tools necessary to develop treatment options for some of the world's deadliest diseases, such as AIDS and cancer. The lab has been completely refurbished and is equipped with four new mass spectrometers including a Waters LCT-Classic, and LCT PremierXE, a QToF API-US and a QToF Premier. In addition, a custom nanoAcquity UPLC system dedicated to hydrogen exchange mass spectrometry was also recently commissioned.

Professor Engen came to Northeastern in September from the University of New Mexico and currently has a staff scientist, postdoc, two graduate students and an undergraduate student in his research group.

NU Partners with Greece for Innovation Center

Led by trustee George Behrakis, a team of key Northeastern alumni assisted in forging a new technology transfer partnership between Northeastern University and Greek universities and research centers. The agreement, which calls for creation of a Northeastern University – Greece Innovation Center, was formalized in February with President Aoun and senior officers from the Republic of Greece signing a memorandum.

To initiate collaborative activity, Northeastern agreed to sponsor a partnership between the fuel cell laboratory, led by Profs. Sanjeev Mukerjee and Gene Smotkin, and Advent Technologies SA, a company based at the University of Patras Science Park. This collaboration, which commenced this June, involves hosting a postdoctoral fellow, faculty exchange, and the development of joint IP. Advent are providing NU with an applications laboratory and administrative space in the newly constructed Patras Science Park, and this facility will serve as the administrative hub for Northeastern's presence in Greece.

Professor Graham Jones traveled to Greece this June to attend the dedication of the NU Innovation Center and to meet with administrators and research faculty at numerous institutions to discuss prospects for developing collaborative activity. He also presented an overview of NU's aspirations for partnership with Greece to an audience of 150 delegates from industry, academia and the government, as part of a ceremony to celebrate the completion of the first phase of the Patras Science Park.



Celebrating the dedication of the NU-Greek Innovation Center are l to r: Prof. Sanjeev Mukerjee, Prof. Petros Groupmas, Director of Science Park, Patras, Prof. Graham Jones, Prof. Vasilis Anastasopoulos, Vice-Rector, University of Patras

Staff News

Jordan Swift joined the department as co-op coordinator and student advisor to our majors this summer. Jordan has been the advisor to all of our majors through the college these past three years, and her move to chemistry and incorporation of the co-op portfolio is a reflection on the growth of our program and University support for our efforts. Jordan is located in the newly renovated 121HT, which also functions as the student advising suite. Welcome, Jordan!



Jean Harris received the 2007 Graduate Student Association Award for her dedication, professionalism and service as Graduate Program Administrator. **Shari Khalil**, assistant to the chair, was acknowledged for her contributions to the ACS Student Affiliate Chapter with their 2006 award.

Congratulations to **Shari and Darryl Khalil** on the birth of their son, Jakob Aaron, born November 26, 2006. We wholeheartedly extend our thanks to **Jabin Gustafson** who filled in while Shari was on maternity leave and stayed on through most of July. Jabin has returned to Seattle to pursue a career in development, and we wish her the best of luck.

Alumni News

Dr. Zhebo Ding, M.S. '98, returned to campus this April, as Distinguished Alumni Award winner, to present a seminar titled "Construction of Nanomaterials via Bio-inspired Self-Assembly." Dr. Ding studied under Prof. David Budil while at NU. He continued studies at Cornell University to obtain a Ph.D., followed by postdoctoral research at the University of California-Berkeley. He has been Lead Scientist in the Nanotechnology Laboratory at GE Global Research Center in Niskayuna, New York since 2004. Congratulations Zhebo!



l to r: Prof. Philip Le Quesne, Colloquium Coordinator, Dr. Zhebo Ding, Prof. David Budil

Congratulations to our alums on their successful careers! We welcome news from you as well as visits if you will be in the area. Please contact Shari Khalil at s.khalil@neu.edu or 617-373-2822.

C & CB to Host International Conferences

The Barnett Institute and the Department of Chemistry and Chemical Biology will be hosting an international conference on biogenerics March 2-4, 2008. This will be an open forum on the scientific and regulatory issues, with key international leaders from industry, government and academia in attendance. The scientific and regulatory decisions addressing this emerging industry will have a far-reaching impact on the future of pharmaceutical production world-wide. Speakers include Amy Rosenberg, Director, Division of Therapeutic Proteins, FDA, and Jean-Hugues Trouvin, Head of Biologics Working Party, European Medicines Agency [EMA], among many others. For more information, or to receive updates, please email Biogenerics2008@neu.edu.

Along with Boston University's Photonics Center and College of Arts and Sciences, Northeastern University's Department of Chemistry and Chemical Biology and Physics Department will be hosting the XXIInd International Conference on Raman Spectroscopy in August 2010. ICORS was last held at a site in North America in 1996.

In Memoriam

We were deeply saddened to learn of the death of Dr. David M. Howell, who passed away July 26, 2006, at age 81. Dr. Howell was a professor of chemistry at Northeastern from 1951 until his retirement in 1990. A graduate of the University of California, Berkeley, Dr. Howell went on to receive his Masters and PhD degrees from the University of Michigan. Dr. Howell was an active member of the American Chemical Society and former editor of the Northeast Section's newsletter, the Nucleus. He was also a member of the Teacher Education Association of Chemistry and the Royal Society of Chemistry.

**Northeastern University
Department of Chemistry
and Chemical Biology**

102 Hurtig Hall

360 Huntington Avenue

Boston, MA 02115-5000



NU HUSKY
Chemist