

#### Northeastern University

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# The **BARNETT GAZETTE**

The Barnett Institute of Chemical and Biological Analysis

Vol. 13, No. 1 Fall / Winter 2001

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Barry L. Karger, Director Bill C. Giessen, Associate Director Geoffrey Davies, Associate Director of Operations, Editor

# SECOND ANNUAL DIETER AND INGE HOEHN LECTURES HELD



Dieter Hoehn enjoys a joke with Lou Barnett and his daughter Dr. Silvia Hoehn

The second Annual Dieter and Inge Hoehn Lectures in Bioanalytical Chemistry on Nov. 1st were presented to a capacity audience from Northeastern and the Boston biotechnology community. We were delighted to have Advisory Council member Dieter Hoehn on the front row. Dieter and his wife Inge generously established the Lectures with a Silver Anniversary gift to the Institute. The Hoehn Lectures combine scientific and business interests at the forefront of bioanalytical chemistry.

The focus this year was Proteomics. Dr. Leigh Anderson, CEO of Large Scale Biology Corporation, Rockville, Maryland and a pioneer in 2-D gel electrophoresis, delivered the first Lecture "Proteomics Technology in the Post-Genome Era." Leigh emphasized the importance of large-scale protein expression studies in understanding biological pathways. Special attention was given to implementation of two-dimensional gel electrophoresis, largescale robotics, mass spectrometry and database searching for protein identifiHoehn Lectures continued from page 1

cation and disease marker discovery. The second Lecture, "Proteomics on the Cheap: Academic Applications of Proteomics," was given by Professor John Yates III (Scripps Research Institute, San Diego, California). John focused on future directions of high-throughput protein identification using a shotgun approach, which is protein mixture digestion followed by multidimensional LC separations - tandem MS and SEQUEST database searching. Both speakers emphasized the importance and big challenges of proteomics, which is the major focus of attention in the post-genome era.

> Dieter and Barry Karger with Hoehn Lecturers John Yates (left) and Leigh Anderson



## **ADVISORY COUNCIL MEETS**

The first item of business at the Annual Meeting of the Institute's Advisory Council on November 2, 2000 was the noting of our new name – the Barnett Institute of Chemical and Biological Analysis - which best reflects our current focus. Three new members of the Council were introduced. Professor Susan Powers-Lee is Acting Chair of Biology and a well-known faculty member at Northeastern. Dr. William Thilly is Director of the Center for Environmental Health Sciences at MIT and a long time research partner with the Institute. Dr. Stephen Zoloth recently left Hunter College in New York to become Dean of the Bouvé College of Health Sciences at Northeastern. Guests William Detrich (Biology), Vladimir Torchilin (Pharmaceutics) and Anthony Pirri (Technology Transfer) were recognized.

Director Barry Karger summarized the Annual Report and gave research highlights. The Institute now has over 300 alumni, the endowment is \$7.9m and \$0.65m was generated in licensing fees for Institute patents this past year. A major achievement is establishment of the framework for the biotechnology initiative being developed across Colleges with the active support of President Richard Freeland and Provost David Hall. Appointment of a Director to inspire and lead the Program and a Program Coordinator to manage operations will accelerate the biotechnology initiative so that curricula can be organized and research groups can be assembled. Preference was expressed for the Biotechnology Program Director to be a faculty member. Strategic alliances with other institutions are part of the building process. Council member and Dean of Arts and Sciences James Stellar reported that a joint program in Bioinformatics with Boston University is operating with support from the Sloan Foundation. This is a seed for Biotechnology at Northeastern. Also noted is groundbreaking for the new Behrakis Health Sciences Center, part of the active thrust at Northeastern into biological sciences.

Dr. Karger summarized Faculty Fellows research and work in his own group. Roger Giese is making headway in ultratrace analysis, high speed interfacing and environmental cancer research (his group has developed very sensitive methods of DNA adduct analysis). Graham Jones is recognized for his enediyne reagents for DNA cleavage and for cancer drug delivery, for example as activated by PSA, the enzyme associated with prostate cancer. Paul Vouros' group also is focused on DNA adduct detection and currently is examining animal samples and DNA from humans. Among activities in Barry Karger's group are assembly of multichannel microchips and the concept of a bioinstrumentation center jointly with MIT. Dr. Karger's focus in research is turning towards high throughput mass spectrometry for application in proteomics studies.

President Richard Freeland answered Council questions on events at Northeastern and the biotechnology initiative. He commended the Institute for sustaining the biotechnology effort by working with Arts and Sciences, Bouvé and a number of other units across campus. Biotechnology programs are a way to achieve Northeastern's goal of becoming a distinguished research institution in the near future, and they also respond educationally to the high unfilled biotech job vacancy rate in the region and nation.

Associate Director of the Institute Bill Giessen received applause for his brief history of materials science since the beginning of the Institute (the Howard Hughes will, the MS in Forensic Chemistry, indelible firearm serial numbers, glassy metals and superconductors, just to name a few). Director of Technology Transfer Anthony Pirri noted that the Institute is Northeastern's leader in patent licensing. Currently in development are plans for Northeastern to have equity in 10-12 start up companies in an incubator concept. Dr. Karger closed the Meeting with thanks to the Advisory Council and guests for helpful comments on the biotechnology program and for their continuing support of the Institute and its activities.

## **INSTITUTE RETREAT HELD**

The Institute held its second annual Retreat on September 7, 2000. Researchers and faculty from the Institute research groups presented on-going research. Roger Giese described how laser-desorportionelectron capture-time-of-flight mass spectrometry can be used for SNP analysis at rates of 20 samples/sec. with high accuracy. Graham Jones is making excellent progress in synthesizing enediynes as specific protein cleaners and PSA-active toxin delivery systems for prostate cancer therapy. Bill Giessen gave a convincing demonstration that chemical commodity prices are cyclical and not random. Barry Karger, with Bill Thilly at MIT, is gathering genomics and proteomics data to begin to answer questions like, "Can you predict longevity?" and "Is this individual prone to prostate cancer?" Tomás Rejtar explained the latest achievements in interfacing CE-MALDI/TOF and next will investigate LC interfacing. Roger Kautz has made progress in LC-CE-NMR with a capillary probe in the 500 MHz instrument. Isoelectric focusing and isotachophoresis are being used to study protein interactions with minute amounts of proteins. Get-togethers like this are much enjoyed and we look forward to the next one.



#### Large photo:

Barry Karger and Roger Giese enjoyed a conversation over lunch during the September Institute Retreat.

Left inset: Barry and Roger smiled for the camera.

Center inset: Jeannine Delaney and Ping Hu compared notes.

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**Right inset:** Paul Vouros and students enjoyed the sunshine outside the Egan Research Center.

## ANNUAL AWARDS MADE

r. Iuliana M. Lazar was recognized as the 2000-2001 John N. Hatsopoulos Scholar at the Annual Awards reception on October 20, 2000. Ping Hu was awarded the Barnett Institute Alumni Graduate Fellowship and Staff Scientists Elham Ghabbour and Eugene Moskovits received grants from the Barnett Fund for Innovative Research. Many alumni will be pleased to know that Jana Volf, long time Administrative Secretary in the Institute and our new Web master, received the Staff Service Award.

> John N. Hatsopoulos Scholar Award Iulia Lazar

Barnett Institute Alumni Graduate Fellowship Award Ping Hu

Barnett Fund for Innovative Research Award Elham Ghabbour Eugene Moskovets

> Barnett Institute Service Award Jana Volf

The Douglas and Irene DeVivo Award Christine Andrews Lynn Gennaro

#### Gustel and Ernst Giessen Memorial Award in Advanced Research

Jun Chen Farid Fouad Jianxin Gao Chi-You Kao Ajay Purohit Tomas Rejtar John Soglia Robert Vallerio

Academic Excellence Award Jim Flarakos Anna Pashkova Immo Weber







Hatsopoulos Scholar Iulia Lazar with past Scholar and Group Leader Franta Foret

Eugene Moskovets, recipient of this year's Barnett Fund for Innovative Research Award





Lynn Genaro and Christine Andrews receive their DeVivo awards from Dr. Karger

## **SPECIAL GUEST LECTURERS**



# **BOSTON MUSEUM** OF SCIENCE **DIRECTOR SPEAKS**

bout forty years ago, an undergraduate researcher at MIT came to know a graduate student who was near the end of his

chemistry thesis research. Others at MIT at the time were Institute Faculty Fellows Roger Giese, Tom Gilbert and Paul Vouros. The undergraduate (Barry Karger) subsequently became Director of the Barnett Institute and since 1990 the graduate student (Dr. David Ellis) has been President and Director of the Boston Museum of Science, having received many honorary degrees and served previously in prestigious positions including President of Lafayette College in his native Pennsylvania. In his Special Lecture on October 3, Dr. Ellis described how he and the Museum are working to ensure that science museums worldwide assist in the scientific education of the nations. Boston's Museum of Science, founded in 1830 and at its present Charles River site since 1951, welcomes 1.8 million visitors a year, 50% of whom are under 18 years old. With 300 full time staff and 150 part time helpers, the Museum is recognized as leading the way in developing a truly interactive way of learning about science. Indefatigable and enthusiastic, David made it clear that the public needs to understand changes in science over time so that more young people will pursue science and technology careers.

## NANOGEN CHIP TECHNOLOGY DESCRIBED



r. Michael J. Heller, Founder and Chief Technical Officer

of Nanogen, Inc. San Diego, California, reviewed the principles, technology and applications of the microchip devices produced by Nanogen in a well-attended Special Lecture on November 9. Nanogen's technology allows small sequences of DNA capture probes to be electronically "addressed" to specific sites on the microchip. A test sample can then be analyzed for the presence of target DNA molecules by determining which of the DNA capture probes on the array bind, or hybridize, with complementary

DNA in the test sample. In contrast to non-electronic or passive hybridization with conventional arrays on paper or glass "chips," the use of electronically mediated active hybridization to move and concentrate target DNA molecules accelerates hybridization so that it may occur in minutes rather than the hours required for passive hybridization techniques. In addition to DNA applications, Nanogen believes its technology can be applied to a number of other analyses, including antigen-antibody, enzyme-substrate, cell-receptor and cell separation techniques. Additional information can be found at the company web site: www.nanogen.com



## VERSATILE SENSORS DEMONSTRATED

ost fiber optic cables are made of silica fibers. Each fiber has a silica core and a surface coat or cladding that makes for total internal reflection and 100% light transmission by the fiber.

Actual fibers are cast as a bundle of parallel hexagonal arrays in the flexible cladding material. Now imagine that each fiber is 2-3 microns in diameter and there are 10,000 fibers in the bundle. Etching the end of each fiber gives 10,000 wells at the end of the bundle. The possibilities for using the wells with the fiber and light as the activator and detector are endless.

One application described in the Special Lecture by Professor David Walt of Tufts University, Medford, Massachusetts on December 5 is to put microspheres in the wells. The microspheres carry fluorescent dyes, which respond to different analytes that interact with the spheres. The analytes could be perfumes or vapor from a land mine. The fiber delivers the excitation pulse to the microsphere and transmits the resulting fluorescence back to a CCD detector. The individual analytes or the overall characteristics of an odor are recorded as the emission wavelength/time pattern of the sample, which can be characterized by an pattern recognition algorithm. The beads can be altered to be more or less polar and the proportions of different beads in the wells can be changed to control the signals of particular analytes. What a great idea for sensors! Among other things, the technology is been developed for disease diagnosis by breath analysis and rapid identification of oligonucleotides and single nucleotide polymorphisms (SNPs) that are associated with particular ailments.

## HUMIC SUBSTANCES SEMINAR V SCHEDULED

Humic Substances Seminar IV, held at Northeastern in March, 2000 and hosted by the Institute, has resulted in the volume 'Humic Substances: Versatile Components of Plants, Soils and Water,' edited by Elham Ghabbour and Geoffrey Davies and published by the Royal Society of Chemistry, Cambridge (ISBN 0-85404-855-3). The HS Seminars are the major international forum on the structures, properties and uses of humic substances, nature's most versatile biomaterials. Seminar V scheduled for March 21-23, 2001 is shaping up as another excellent meeting. Details on Seminar abstracts, registration, housing and deadlines are at the web site www.hagroup.neu.edu.

# MAJOR IHSS CONFERENCE TO BE HOSTED



Northeastern has been selected as the venue of the 20th Anniversary Biennial Conference of the International Humic Substances Society to be held July 21-26, 2002. This is the first Conference in the US since IHSS was founded in 1982. It will be Chaired by Geoff Davies and Elham Ghabbour and hosted by the Barnett Institute. Boston is a popular conference center and at least 400 of the IHSS worldwide members are expected to attend. An impressive program is being planned and we look forward to showing Northeastern and its capabilities to our visitors. Further information with regular updates is available at the web site www.hagroup.neu.edu.

## HPCE 2001 TO BE HOSTED

Boston is the venue of HPCE 2001, to be held January 14th-18th. The Co-Chairs are Barry Karger and Barnett Institute Advisory Council member William C. Hancock, who is now with ThermoFinnigan. Faculty Fellow Tom Gilbert serves on the Organizing Committe. A special feature of the Boston meeting is two, 2-day minisymposia, one on Genomics and the other on Proteomics. An excellent program has been organized and several Institute members will make presentations. The full program can be accessed at www.casss.org under Meetings. The HPCE meetings were founded by Dr. Karger in 1989. This 14th International Symposium on Microscale Seperations and Analysis will have 600-800 participants.

# INSTITUTE MATERIALS SCIENCE DIVISION RECALLED

s you know, this summer the Institute changed its name to better emphasize its current, principal orientation towards chemical biotechnology, resulting in the dissolution of our Materials Science Division (MSD). I reported on the past, notable activities of the Division at the November Advisory Council meeting; the following words are based on those remarks.

The MSD had been a part of the Institute from its founding. The record of its accomplishments is laid down in about two hundred papers that form a sizable part of the Institute's large publication list, ten patents, several edited books and many presentations, all of which have helped to carry the names of the Institute and Northeastern University around the globe.

Major visible research milestones were our early contributions in forensic science (still quoted today in discussions on gun control legislation), significant advances in the industrially important rapid solidification processing (RSP) technology of metallic glasses that propelled us to a posi-

tion of international prominence, and contributions in alloy science that were recognized by the award of the Hume-Rothery Medal of TMS, the Metals and Materials Society of AIME, in 1990.

This work was followed by notable advances in the science of ceramic high- $T_c$ superconductors, where, for a while at least, our group held the runner-up worldwide record in superconducting transition temperature, and most



Patent number 5,114,905 for Crystal Alignment Technique for Superconductors -- only one of the ten patents filed by members of the Materials Science Division.

recently, ion nitride processing, where the "NU model" of the M-phase in nitrided austenitic stainless steels has become quite well known.

Within Northeastern, the Division had collaborators from Chemistry (where much of our work was centered and where the labs in which most of it was physically done were located), Physics, and what was then Mechanical Engineering (now the MIME Department).

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#### Materials Division Recalled continued from page 6

Among the many Northeastern colleagues who worked with the Division and shared Departmental and Institute publication credits, a special place belongs to Prof. Robert Markiewicz, the outstanding physicist and long-term Faculty Fellow who made so many valuable contributions to the Northeastern superconductivity program.

The Division had many well-known collaborators worldwide, was host to many visitors and visiting scientists and, most importantly, contributed to educating over twenty outstanding doctoral students and postdocs who now hold positions in industry in the US, Australia, India, the PRC, Spain, Switzerland and others, are employed by the US Government and teach at four universities and colleges here and abroad. It would transcend the frame of this report to list them, their work here and their subsequent careers in detail, and I ask for their indulgence at this time.

Outstanding staff members formerly affiliated with the Division include Drs. D. Polk (ONR), S. Whang (P.U.N.Y.) and K. Marchev (Gillette). Distinguished Advisory Council members representing the MSD were Prof. B. Kear of Rutgers, Prof. M. Cohen of MIT and Prof. F. Spaepen of Harvard, who generously gave their time.

The DeVivo Lectures in Materials Science brought reputed leaders in their fields to campus, most recently M. Arienzo, Head of Research at the United Technologies Research Center and John Preston, former Head of Technology Utilization at MIT.

My own research efforts are now focused on new interdisciplinary work in market analytical computational science and, perhaps, the creation of a new interdisciplinary program in this area as well. It will be left to new personnel constellations to move areas of materials science, in the framework of University-wide initiatives, to reach the rank befitting this University growing, as it is, in scope and stature.

But it also is fitting at this juncture to remember what we did together, to look back at it with pride and fond memories, and to thank all involved.

B. C. Giessen

# ENVIRONMENTAL CANCER RESEARCH PROGRAM HIGHLIGHTED

The Northeastern Voice ran a feature article on Senior Faculty Fellows Roger Giese and Paul Vouros and the Environmental Cancer Research Program (ECRP) at Northeastern in its November 7, 2000 issue. "Putting the Finger on Cancer," written by Frank DiCesare, describes how their groups, in collaboration with researchers from other institutions such as MIT and the Harvard University School of Public Health, have spent 15 years working on the detection of DNA adducts that reflect exposure and might signal some cancer risk. Currently, Paul and Roger have six NIH grants on the detection of DNA adducts. The basic idea at the ECRP is to help individualize cancer prevention.

DNA adducts in people seem to vary significantly in type, pattern and amount. The adducts form when highly active substances in food, water or air, or from natural body chemistry, react with nucleotides. DNA adducts can cause a mutation when DNA is replicated, leading to changes in genes responsible for cell growth that may initiate cancer. For established human chemical carcinogens, in nearly every case the agent is known to directly or indirectly form DNA adducts.

Harold Seifried, the National Cancer Institute's Program Director of the Chemical and Physical Carcinogenesis Branch, feels that an adduct-detecting blood test would be a welcome addition. "It's worthwhile information if you put it in its proper perspective," he said. "But it's certainly not a death sentence if a patient comes up with a certain level of adducts."

Repair enzymes replace adducted nucleotides with clean ones, so an individual lacking repair enzymes may face a higher likelihood of getting cancer. Ideally, a blood test for DNA adducts, along with other biomarker information, could enable people to make cancer-fighting alterations in their diet and environment. "Just as we are different on the outside in all sorts of obvious ways, inside we are just as different," says Roger. "This may translate into people differing widely in their susceptibility to cancer from environmental exposure" he added. Conceivably, some people may require more vitamin C, and others may be advised to eat less. Epidemiologists report that only 5-10% of people diagnosed with cancer inherit it genetically. The rest can contract cancer through diet, lifestyle habits such as smoking or other environmental exposures.

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#### Cancer Research continued from page 7

Recently, Paul and several graduate students have been examining the tissue of rats and monkeys dosed with IQ, a heterocyclic aromatic amine carcinogen that is produced in the grilling of beef or fish. They were able to measure adduct counts as low 10 damaged DNA bases in a billion, which provides a baseline for human DNA adduct study. "We can now search for specific chemicals attached to a human's DNA," said Paul. "That gives some idea of the potential risk of cancer in people."

According to the *Voice* article, it could be 20 years before the adduct-detecting blood test is sufficiently developed for evaluation by epidemiologists. The ECRP was formed to accelerate the development of the technology to reach this goal in five years.

As Roger says, "The more you understand something, the more you can fix it and control it. In our minds, there may be an opportunity for a shortcut here, a detour in helping to prevent cancer. Through this blood test, we hope to give individuals advice on how to reduce their level of DNA adducts and thereby reduce their risk of getting cancer. This is our hypothesis. It is an old idea, but good technology for testing it remains to be fully developed. Based on our prior fifteen years of work, we now believe we know how to do it, and now we want to scale up our effort through donations to the ECRP to get there faster."

Data from the Dana-Farber Cancer Institute suggest that "this year more than 1.2 million Americans will be diagnosed with cancer, which will claim 40 percent of them. Cancer is second to heart disease as the leading cause of death in the United States, and will account for 25 percent of all deaths reported in 2000." Interest from the business community is reflected in an article on the ECRP by Allison Connolly in the August 18, 2000 issue of Boston Business Week.



Structure of the IQ-DNA adduct (deoxyguanosine-N2-yl)-2-amino-3-methylimidazo[4,5-f]quinoline (dG-N2-IQ)

## NOVEL PROSTATE CANCER DRUGS DESCRIBED

In collaboration with colleagues at the Harvard Medical School, Graham Jones' group has been developing medicinal agents that are activated by the enzyme PSA. Such systems are predicted to be effective against advanced prostate cancers. In support of their idea, Graham and his co-workers recently demonstrated activation of such a drug (PSA-X) in human prostatic cancer cells. The drug, which effectively kills prostate cancer cells at very low dose, was essentially non-toxic to other cells. On the basis of this result, the Jones group is now engaged in animal trials. In addition to NIH and NSF funding for related work, Graham recently was awarded a grant from the Massachusetts Department of Public Health to conduct clinical studies on these drug delivery agents.



### LISTEN TO THIS! Some Recent Presentations by Institute Members

Karger, B. L., "High Throughput CDCE Using a Multiple Capillary Array and Automated Fraction Collection for Mutational Analysis", DNA 2000 Conference, Boston, Massachusetts, June, 2000.

Karger, B. L., Plenary Lecturer, "Separation Science: Is the Past Prologue to the Future?", 24th International Symposium on High Performance Liquid Phase Separations and Related Techniques, Seattle, Washington, June, 2000.

Davies, G. and Ghabbour, E. A. Invited Lecture, "Metal Binding by Solid Humic Acids is Free-Energy Buffered", 10th Biennial Conference of the International Humic Substances Society, Toulouse, France, July, 2000.

Foret, F., Invited Lecture, "Microdevices for Capillary Electrophoresis/Mass Spectrometry", Seminarios de Posgrado 2000, UNAM, Cuautitlan, Mexico, August, 2000.

Foret, F., Invited Lecture, "Miniaturized Systems for Capillary Electrophoresis-Mass Spectrometry", CE in the Pharmaceutical Industry, San Diego, California, August, 2000.

Foret, F., Invited Lecture, "Miniaturization and CE/MS", ITP-2000, Bratislava, Czech Republic, September, 2000.

Ghabbour, E. A, and Davies, G. Invited Lecture, "Effects of Tightly Bound Metals on the Sorptive Properties of Solid Humic Acids," International Conference on Interactions of Soil Minerals with Organic Components and Microorganisms, Naples, Italy, May, 2000.

## WELCOME!!

We are delighted to welcome the following new students and co-workers.

**Hsuan-Shen Chen** is a new graduate student in Dr. Karger's group.

**Olga Ivanova**, from the University of Oklahoma, has joined Roger Gieses's group as a Research Associate.

**Guodong Li**, formerly an Associate Professor at Nanjing Normal University in China, has joined Roger Gieses's group as a Research Scientist. Giese, R. W., Watkins Visiting Lectures: "Environmental Cancer: Going Beyond Civil Action" and "New Methodolgy for DNA Analysis", Wichita State University, Wichita, Kansas, October 2000.

Giese, R. W., "Laser-Induced Electron Capture Fourier Transform Mass Spectrometry", American Society of Mass Spectrometry (ASMS), Long Beach, California, June 2000.

Giese, R. W., "New Methodology for the Analysis of DNA Adducts", National Cancer Institute Innovative Molecular Analysis Technologies Program, Chantilly, Virginia, July 2000.

Jones, G. B., "Chemical and Biological Applications of Designed Enediynes", Scripps Research Institute, La Jolla, California, June, 2000.

Jones, G. B. Plenary Lecture "Catalytic Asymmetric Induction Using Arene Chromium Carbonyl Complexes", ACS Symposium on Asymmetric Chemistry for the 21st Century, Fargo, North Dakota, June, 2000.

Vouros, P., Invited Seminar, Ecole Polytechnique Federale Lausanne, Switzerland, June, 2000.

Vouros, P., Invited Seminar, University of Crete at Herakleon, Greece, June, 2000.

Vouros, P., Plenary Lecture, "Novel Non-polar Metabolites of Vitamin D: A New Metabolic Pathway", Seventh International Vitamin D Symposium, Brown University Medical School, Providence, Rhode Island, September, 2000.

**Wendy Luo** has joined Dr. Vouros' lab as a postdoctoral fellow. She received her Ph. D. in genetic toxicology at MIT in August, 2000, for work with Dr. William Thilly.

**Ludmilla Shirshova**, a Senior Scientist at the Institute of Basic Biological Problems of the Russian Academy of Sciences, is here as a Fulbright Scholar working on humic substances with Drs. Geoff Davies and Elham Ghabbour.

**Changming Yang**, who was awarded his Ph. D. degree at Oklahoma State University and was a postdoctoral fellow at Cornell, has joined Roger Gieses's group as a Research Associate.

## TRANSITIONS

Congratulations to the following Institute alumni who recently have made changes in their professional lives.

Xiaohua Qian has completed research in Roger Giese's group and now is a Senior Scientist with Echo Technologies in Boston, Massachusetts.

In new environments after finishing their work in Graham Jones' group are **Justin Wright** (now at Merck), **Ghassan Qabaja** (Endocyte), **Gary Plourde** (Eli Lilly), **Mustafa Guzel** (TransTech Pharma) and **Justin Wyatt** (Villanova University). We wish them all success.

**Nelson Cooke** has joined ThermoFinnigan in San Jose, California as the Senior Director of Marketing. He formerly was Vice President of Supelco, Inc. and received his Ph.D. under the advice of Dr. Karger some years ago.

**Paul Shieh** recently took a position in the proteomics group at ThermoQuest in San Jose, California. Prior to this he was Manager of Research & Development for Liquid Separations at Supelco, Inc. Paul also received his Ph.D. with Dr. Karger.

**Patricia Brandl**, until recently a Staff Scientist in Roger Gieses's group, is now a science teacher at Medford High School, Medford, Massachusetts.

Hanghui Liu is now associated with Senomyx, Inc. in San Diego, California. He formerly was with Coelocanth Chemical Corp. in New Brunswick, New Jersey. Hanghui spent two years as a Postdoctoral Research Fellow in Dr. Karger's laboratory.

Arthur Miller has accepted a position as Manager of Bioinformatics in a new start-up company, People's Genetics Institute, in Woburn, Massachusetts. He had been a Staff Scientist and then Principal Research Scientist in the Barnett Institute for the past 6 years, working in the laboratories of Dr. Karger.

**Daniel Kirby** has been working as a Senior Scientist at Praecis Pharmaceuticals, Inc. in Cambridge, Massachusetts. Formerly, he was associated with the Harvard Microchemistry Department and spent several years as a Staff Scientist in Dr. Vouros's mass spectrometry lab.

**Chantal Felten** is working as a Research Scientist at Genentech, Inc., Palo Alto, California after receiving her Ph.D. from the University of the Saarlandes, Saarbrucken, Germany. She spent several years in Dr. Karger's laboratory as a Visiting Scientist while performing research for her degree.

**Bailin Zhang** and **Haihong Zhou** have joined the Institute alumni by successfully defending their Ph. D. theses of research with Dr. Karger. Bailin now is a Research Scientist with ArQule, Inc. in Woburn, Massachusetts and Haihong is working at SurroMed, Inc. in Palo Alto, California.

**Eric Gangl** has completed the requirements for his Ph. D. for research with Dr. Vouros and is now working for Vertex Pharmaceuticals in Cambridge, Massachusetts.

Alumni reading this feature are encouraged to keep Gazette readers informed about your professional changes. Please send your information to Geoff Davies or Beverly Brenner at gdavies@lynx.neu.edu or bbrenner@lynx.neu.edu. Thank you!

#### A HAPPY NEW YEAR TO ALL OUR READERS!!

#### **Barry Karger**

Liu, H., Felten, C., Xue, Zhang, B., Jedrzejewski, P., Karger, B.L. and Foret, F., "Development of Multichannel Devices with an Array of Electrospray Tips for High-Throughput Mass Spectrometry", *Anal. Chem.*, <u>72</u>, 3303-3310 (2000).

Preisler, J., Hu, P., Rejtar, T. and Karger, B.L., "Capillary Electrophoresis – Matrix-Assisted Laser Desorption/ Ionization Time-of-Flight Mass Spectrometry Using a Vacuum Deposition Interface", *Anal. Chem.*, <u>72</u>, 4785-4795 (2000).

#### **Geoffrey Davies**

Mao, J. D., Hu, W.-G., Schmidt-Rohr, K., Davies, G., Ghabbour, E.A. and Xing, B., "Quantitative Characterization of Humic Substances by <sup>13</sup>C NMR Spectroscopy", *Soil Sci. Amer. J.*, <u>64</u>, 873-884 (2000).

#### Elham Ghabbour

Ghabbour, E.A. and Davies, G. (eds.), *Humic Substances: Versatile Components of Plants, Soils and Water*, Royal Society of Chemistry, Cambridge, 2000.

#### **Roger Giese**

Lu, R.J., Liu, D. and Giese, R.W., "Detritylation with Ytterbium Triflate", *Tet. Lett*, <u>41</u>, 2817-2819 (2000).

Bocek, P., Vespalec, R. and Giese, R.W., "Selectivity in CE", *Anal. Chem.*, <u>72</u>, 587A-595A (2000).

Giese, R.W., "Electron-capture Mass Spectrometry: Recent Advances", *J. Chromatogr.*, <u>892</u>, 329-346 (2000).

#### **Thomas Gilbert**

Carrilho, E. N. V. M. and Gilbert, T.R., "Assessing Metal Sorption on the Marine Alga *Pilayella Littoralis*", *J. Environ. Monitor.*, <u>2</u>, 410-415 (2000)

#### **Graham Jones**

Jones, G. B., Guzel, M. and Heaton, S. B., "Enantioselective Catalysis using Planar Chiral  $\eta$ 6 Arene Chromium Complexes: 1,2-Diols as Cycloaddition Catalysts", *Tetrahedron: Asymmetry*, <u>11</u>, 4303 (2000).

Jones, G. B., Wright, J., Plourde II, G., Purohit, A. D., Wyatt, J. Hynd, G. and Fouad, F. "Photoactivated Enediynes as Affinity Cleavage Agents", *J. Am. Chem. Soc.*, <u>122</u>, 9872 (2000).

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#### **Paul Vouros**

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## **UPCOMING EVENTS**

(AUT) lingA	<b>Barnett Lecture</b> John Hayes, Woods Hole Oceanographic Institution
	Details at www.hagroup.neu.edu
March 21-23	Humic Substances Seminar V
	Federal Bureau of Investigation
	Bruce Budowle,
February 13 and 14	2nd Saferstein Memorial Lectures
	nuqer Meetings
	Details at www.casss.org
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