Welcome to Chemistry at UAlbany! 2015 has brought tremendous growth to the department. We continue to set record enrollment numbers in both lectures and laboratories, and the number of Chemistry majors continues to grow. Three new courses have been added at the undergraduate level: Chemistry and Sustainability (ACHM 100), The Chemistry of Sex, Drugs, and Sports (ACHM 101) and Advanced Separation Science – HPLC (ACHM 434/534). We proudly welcome two new faculty and two new staff members. Overall, a total of 10 new faculty joined the department within the last four years. As we end our recruitment effort with a huge success, we turn our attention to building academic programs, especially in the area of research. Faculty research in Chemistry is focused on some of the most demanding challenges of our time. We are particularly strong in forensic chemistry, ribonucleic acids (RNAs), medicinal and synthetic chemistry, material science, and biochemistry and biophysics. We are enormously grateful to friends and alumni who have supported our work. I am delighted to report that we have two new endowed awards for our students: the Arthur O. Long Teaching Award and the Morris and Rita Deutsch Scholarship Fund. As we continue to meet the challenges ahead, we are deeply committed to strive to reach new heights in building better and richer research, and educational programs for our students.

Enjoy reading the newsletter.

— Li Niu, Professor & Department Chair

The Department welcomes the New Fall 2015 Class of Graduate Students:
Top Row (from left to right): K. McHugh, L. McGoldrick
Third row: C. Longo, S. Magliocco, A. Uresk
Second row: B. Date, S. Galagedera, P. Harehanroengra, L. Breindel
Bottom row: J. Carozza, S. Rodriguez, M. Fikiet
Not pictured: B. Bechand, A. Chen, S. Dansereau, P. Ebrahim, C. Ronca & A. Thompson

2015 Commencement Awards:
Chemistry Department Scholar Awards: Allix Coon & Nicholas Dixon
Chemistry Faculty Award: Gabrielle Hoover
CRC Press Freshman Award: Kevin Cao & Taylor Casey
Derk V. Tieszen Award: Jeremy Manheim
Arthur O. Long Teaching Award: Paul Savoie
Shelton Bank Prize for Excellence in Chemistry: Kelly Gordon
Lawrence & Marie Shore Scholarship: MD Muhit Rana

Newsletter Editors:
Professor Li Niu
Administrative Manager Brian Gabriel
& Department Secretary Nicole Genc
Chem-E-News: “E” Stands for Electric Battery

What started more than 200 years ago with Galvani and his “electric” frog’s legs and Voltaic piles has become the most widely used application of electrochemistry. Electric batteries represented the first continuous source for electric energy. Before that, so-called electrostatic machines would only produce tiny amounts of electricity to be discharged by a single spark. The friction-based static electricity observations can be traced back to the ancient Greeks, who called fossilized tree resin amber “ᾲλεκτρόν” (ālektron). Nowadays, electric batteries can be found practically everywhere in the modern technological world. Every car has at least one, and countless electronic devices like laptops, smartphones, watches, calculators etc., could not work without electrochemical energy. More than 1.5 million hybrid electrical vehicles have been sold worldwide in 2014, 20% more than in 2013. Electric sports cars accelerate from 0-60 mph in 3.7 seconds and can reach a range of up to 300 miles. The future of battery technology will be even brighter. Ongoing development will lead to commercially available fuel cell-powered cars. Researchers in the Department of Chemistry at the University at Albany are active in these exciting fields. The proposed Emerging Technology and Entrepreneurship Complex (ETEC) building will host state of the art labs for electrochemical research as part of its sustainability mission.

Contributed by Professor Gerd-Uwe Flechsig

Department Highlights

The Department recruited 19 graduate students who joined the department in the Fall of 2015.

Two new faculty members joined the department from Memorial Sloan-Kettering Cancer Center. We also welcomed two staff members to the department.

Congratulations to Dr. Alex Shekhtman who was promoted from associate professor to the rank of full professor.

On August 25, the department hosted its annual back-to-school BBQ to welcome our new faculty, graduate, and undergraduate students. Several raffle prizes were awarded and there was a large turnout for the event.

In the spring commencement of 2015, David W. Krick, D.V.M. who received a BS in Chemistry in 1978 from UAlbany, gave an inspiring commencement speech (see the photo on the left). We were honored to have him back.

The annual Life Sciences Research Symposium was held in early September 2015. Professor Jia Sheng co-organized the symposium. Many graduate students and postdoctoral fellows presented their research results in either talks or posters.

The inaugural Undergraduate Chemistry Research Symposium was held in late October in the Life Science Research Building (LSRB). The symposium brought 51 undergraduate students together to share their research. Our thanks to Professors Jia Sheng and Alan Chen for organizing this Symposium.

Provost James Stellar and Dean Edelgard Wulfert of the College of Arts and Sciences visited the department in the summer of 2015 and met with a representative group of undergraduate students who are doing research in Chemistry labs. The Provost and the Dean encouraged our continuing efforts to engage our undergraduate students with research opportunities. In early Fall, the Provost and Dean returned to the department; they toured our teaching labs and met with our faculty and staff.

The 2015 Albany: the 19th Conversation was held from June 9 to June 13 at UAlbany. Two Nobel Laureates, Phillip Sharp (MIT) and Martin Karplus (Harvard) gave keynote lectures. Dr. Ramaswamy H. Sarma, Professor Emeritus of Chemistry, organized and hosted the meeting. Over 250 researchers from around the world attended this biennial event.

Three new courses have been added to our course offering. (1) Chemistry and Sustainability (ACHM 100) to be taught by Professors Shekhtman and Chen in the spring of 2016. This course covers topics such as green energy, air and water quality, household chemicals and their environmental impacts and modernizes the previous edition of this course. (2) The Chemistry of Sex, Drugs, and Sports (ACHM 101) taught by Prof. Royzen in Fall 2015. This new and popular general education course exposes non-science majors to the importance of chemistry in our lives. The first two courses are both Gen
**Department Highlights continued**

Ed and “21st Century” courses, and both contain lab sessions. (3) Advanced Separation Science – HPLC (ACHM 434/534) to be taught by Professor Flechsig beginning in the Spring semester of 2016. This course aims at providing students with fundamental skills and knowledge in advanced separation science, particularly by the use of high performance liquid chromatography (HPLC). The students will gain hands-on training in operating HPLC. Albany Molecular Research Inc. (AMRI), a pharmaceutical company based in Albany, donated four HPLCs.

In the Spring 2015, 32 undergraduate students completed their BS degree in Chemistry. We celebrated the great accomplishment of our students, and wished them the best for their future endeavors. Below is a photo of some of our graduates at the Spring commencement ceremony.

This year, Professor Alan Chen is serving as the faculty advisor for the World of Chemistry Living-Learning Community. Graduate student Kelly Gordon is serving as a graduate assistant to these programs. Professor Chen and Kelly meet weekly with our students – this year there are 16 freshman chemistry majors enrolled in these programs.

The Department gave out 5 travel awards to graduate students last year to sponsor students’ attendance and presentations at major scientific conferences. Each student received a $500 award.

Our General Chemistry labs have been completely redesigned. The new design focuses on training students to use computer-based data acquisition tools and software for chemistry. The department spent over $50,000 purchasing MicroLab instruments and another $20,000 replacing balances in the General Chemistry labs.

The new Bioanalytical lab course ran for the first time in the Spring of 2015. The Department spent about $20,000 on equipment and instrumentation for the new course.

A new teaching assistant (TA) training policy has been implemented. In addition to small team TA meetings, a new meeting/class that focuses on teaching freshman chemistry students is held weekly.

The department designed its own logo for a line of T-shirts and sweatshirts (see photo below). These are very popular items. The “UALBANY” are pieced together using the proper chemical symbols from the Periodic Table of Elements. They are for sale, and all the proceeds go to supporting student activities in the department.

**2015 GRADUATE DEGREES**

The following students received an MS degree in Chemistry:
Cortney Von Hahmann (Welch lab), and Angelo Christopher Setaro (Chen lab).

The following students received a Ph.D. degree in Chemistry:
Craig Lieberman (Dikarev lab), Samuel Joseph Camardello (Toscano lab), Subhabrata Majumder (Shekhtman lab), Rebecca Rose (Fabris lab), Elena Ryzhikova (Lednev lab), Paul Savoie (Welch lab), Valentin Sereda (Lednev lab), Maruda Shanmugasundaram (Lednev lab), Gaius Takor (Welch lab), and Zheng Wei (Dikarev lab).
World of Chemistry — Living Learning Community Returns!

The 2015 academic year brought in a brand new World of Chemistry Learning-Living Community (WoC L-LC), and 16 enthusiastic UAlbany freshmen were chosen to participate in this year’s WoC L-LC. The World of Chemistry is part of a larger UAlbany-wide initiative designed to foster a cadre of highly engaged students who take an active role in shaping their educational experiences both in and out of the classroom. WoC members take core academic courses together, live in the same residence hall, and attend a weekly seminar led by Prof. Alan Chen. Out-of-classroom activities such as study breaks, community service trips, and social events are coordinated by Community Assistant Kelly Gordon, a graduate student in the Department of Chemistry. WoC L-LC Students also attend a weekly lunch with Prof. Chen and all invited guest speakers.

The major goal of the WoC is to encourage early exploration of potential careers in the chemical sciences, exposing students to possible internship and research opportunities. Guest speakers were invited from a wide range of chemistry related professions, to talk about what they do in their jobs and how they got to where they are today. External guest speakers thus far have included: Jim Silva, PhD (chemical engineer, G.E. Global Research), Chris Neale, PhD (computational biophysicist, Los Alamos National Lab), Nicolas Peterson (forensic scientist, NYS Police crime lab) and Mike Bradley, PhD (lead biochemist, Syros Pharmaceuticals). Many faculty from our department also presented their research. A hearty thanks to all the speakers who generously took time out of their busy schedules to share their experiences and advice!

Contributed by Professor Alan Chen

Two New Endowments for Our Students

Arthur Long Teaching Award
The endowed Arthur Long Teaching Award, in honor of Dr. Arthur Long, “recognizes graduate teaching assistants for meritorious service. Awardees should show high moral and ethical character, excellence in scholarship and genuine concern for the intellectual growth of their students.” The endowment will provide a perpetual means of memorializing Arthur’s dedication to his students and his excellence in teaching chemistry. For most of his 30+ year tenure at the Department of Chemistry, UAlbany, Arthur taught Chemistry 101, Intro to Chemistry for majors. Students remember him for being consummately prepared for every lecture. It should be noted that this endowment could not have happened without the leading effort by Dr. David Krick ’78 and the generosity of Arthur’s students, our alumni and our faculty. As a result, this fund was established one year ahead of the original schedule. We wish to thank all those who have made this endowment possible!

The Morris and Rita Deutsch Scholarship Fund
The Morris and Rita Deutsch Scholarship Fund is being established to support students majoring in Chemistry who demonstrate financial need and academic excellence. The fund is established by the estate of Dr. Gloria Fay Deutsch ’60. Dr. Deutsch was a retired Chemistry Teacher at Sharon High School, where she taught for 35 years. She loved sharing her understanding of chemistry with her students. It gave her much joy to open their eyes to all the sciences, especially bi-
Two New Endowments for Our Students continued

ological and environmental chemistry, and to ensure that students were informed in all matters important to their world. Dr. Deutsch was a graduate of Roosevelt High School in the Bronx where she earned a Roosevelt Scholarship, which enabled her to attend and study at the State University of New York at Albany. She earned a BS degree in Chemistry, and later earned her doctoral degree at Brandeis University. Dr. Deutsch was active in the Alumni Association at the University at Albany. She was a very charitable individual who supported local and national charities including civil rights, veterans, and humane, environmental and Jewish philanthropic organizations. She was born in New York, NY, the daughter of the late Rita (Kaplan) and Morris Deutsch.

Chemistry Hosts Its Annual Undergraduate Research Symposium

This year, our department hosted the first annual Undergraduate Chemistry Research Symposium, co-organized by Professors Jia Sheng and Alan Chen. There were three main goals: First and foremost, we wanted to provide our undergraduate researchers an opportunity to formally present their research and be recognized for their hard work by the entire Chemistry community. Second, we wanted undergraduates not yet in a lab to attend and be inspired by their peers to start getting involved in research as soon as possible. Lastly, it was a prime opportunity to showcase our department, particularly to attendees from nearby institutions who might later become prospective graduate students.

There were a total of 51 registered undergraduate participants from UAlbany, RPI, Albany College of Pharmacy, and Siena College; naturally, many of our department’s faculty, graduate students, staff, and post-docs were also in attendance. All 16 students in the 2015 WoC L-LC attended as well. We wanted these students to hear how getting involved with research can jumpstart their careers, which was also the theme of the opening remarks by Professor Jeanette Altarriba, the Dean of the Undergraduate Education. Christina Dubceac, a PhD student in Chemistry, shared her personal experiences in how getting involved in research as an undergraduate laid the foundation for her productive graduate career in Professor Petrukhina’s lab. Student presentations followed, with 10 students selected to present 10-minute talks. A captivating keynote lecture “50 Years of Smelling Sulfur” was given by Professor Eric Block, Carla Rizzo Delray Distinguished Professor. During lunch time, our entire faculty and graduate students talked with all participating undergraduate students and visited posters presented by our undergraduate researchers. Prizes for the best presentations were awarded to Kacey Lawson, Victoria Pelliccia and Oksana Levchenko (they are pictured here from left to right).

All in all, the symposium clearly brought out a high level of engagement and enthusiasm for research among our undergraduate students. We look forward to hosting another symposium next year! Thanks to all who participated and helped make this important symposium a big success!

Contributed by Professors Jia Sheng and Alan Chen
Faculty Accomplishments During 2014-2015

Eric Block was the recipient of the 2016 Ernest Guenther Award in the Chemistry of Natural Products from the American Chemical Society. He was senior author on a paper, “Implausibility of the Vibrational Theory of Olfaction,” and a Letter to the Editor of the same title in the Proceedings of the National Academy of Sciences. Dr. Block’s paper was the subject of a feature article in Chemical and Engineering News and a PNAS editor-invited commentary. Dr. Block and colleagues Hanyi Zhuang and Hiroaki Matsunami were granted a Chinese Patent, “A detection method using metal-coordinating odorants”.

Alan Chen co-published 2 journal articles with colleague Dr. Jia Sheng, on the structure and thermodynamic effects of RNA chemical modifications. He was an invited speaker at three national conferences where he presented recent progress in molecular dynamics simulations of RNA folding. This computationally intensive work was facilitated by the recent award of 1.5 million CPU-hours on the STAMPEDE supercomputer through NSF XSEDE, and 100,000 hours on the ANTON supercomputer designed by D.E. Shaw Research.

Evgeny Dikarev published an Edge Article in Chemical Science on low-temperature preparation of mixed-transition metal oxides, the prospective catalysts for oxygen-evolution reaction (OER). He traveled with his students Craig Liebermann and Matthew Barry to Moscow, Russia to learn new characterization techniques and to present his work, supported by NSF and CRDF grants, at the bilateral workshop “Inorganic Chemistry towards Materials for Energy”.

Gerd-Uwe Flechsig published 3 articles in Catalysis Today, European Journal of Organic Chemistry, and ACS Applied Materials & Interfaces. In addition he was issued a European and a U.S. patent for two inventions for electrochemical PCR devices; and he delivered a keynote lecture at the 7th International Workshop on Surface Modification for Chemical and Biochemical Sensing in Poland. His lab was host to four visiting doctoral students from the University of Oxford (UK). Dr. Flechsig also joined the Editorial Board of the newly established Elsevier journal Helikon.

Jan Halámek’s lab developed a bioanalytical protocol for determining gender from latent fingerprints. The article was published in ACS Analytical Chemistry and also featured in Chemical & Engineering News and The Scientist as well as the New York Times. The Halámek group also developed a concept for determining the age of blood samples, which was published in Analyst and highlighted on the cover page. Recently Dr. Halámek has published 3 book chapters, 4 research papers and co-edited a book- Forensic Science - A Multidisciplinary Approach (Wiley-VCH Publishing group). He was also invited to give two lectures on recent developments in Forensic Analysis.

Igor Lednev received the SUNY Chancellor’s Award for Excellence in Scholarship and Creative Activities. His group published 13 articles including a critical review in Analytical Chemistry invited by the Editorial Board that was featured on the journal cover and an Audio/Podcast. An article on Alzheimer’s disease diagnostics was featured on the cover of Journal of Biophotonics. Dr. Lednev was featured in a story 10 Brilliant People Working and Living in the Capital Region in 518Life Magazine. His research, supported by NIH, NSF and NIJ, was highlighted seven times in newspapers and magazines. Dr. Lednev and Muhammad Ali, a senior from Shaker High School, were interviewed by the Times Union and Channel 10 TV.

Rabi Musah received 3 grants, published 4 articles, and presented her research work at four conferences including the American Society of Mass Spectrometry Annual and Sanibel meetings, the Eastern Analytical Symposium and the Northeastern Association of Forensic Sciences conference. She also received a Presidential Research Initiative and Scholarship Award for her work in Forensic Science. She served as Chair of the SUNY-STEM biennial 2015 conference on STEM in higher education, as well as a conference organizer. She completed work on installing a new Direct Analytical Mass Spectrometer (DART-HRMS) whose acquisition was funded by a grant from NSF, for which she serves as PI. She also completed filming a NOVA TV series documentary, due to be released this winter, about the chemistry of plastics.

Li Niu’s group published 3 papers, one book chapter and one review article. His group also filed a non-provisional patent application for an RNA sequence that forms a thermoreversible hydrogel without any cross-linker. Dr. Niu gave an invited talk about the RNA hydrogel at the 2015 EMN Polymer Meeting. He also gave invited talk on mechanistic studies of AMPA receptor inhibitors at an international conference. Dr. Niu received the 2015 Presidential Award on Excellence in Research and Creative Activities (UAlbany). In August 2015, Dr. Niu organized and hosted the 2015 “iGluRs Retreat” here at the university. This was an international meeting attended by almost all research groups in the US that study the structure and function of glutamate ion channel receptors and also by researchers from Canada, England and Denmark.
Jayanti Pande published 2 papers on the mechanisms underlying protein aggregation, chaperone function and protein deamidation associated with cataract formation. One of these papers was featured in the January 5th issue of C & E News (News of the Week: Warding off Cataracts). She also gave invited talks at three premier institutions in India: The Indian Institute of Science, the National Center for Biological Sciences, and the Narayana Netralaya Eye Hospital.


Max Royzen and his research group attended and presented their research at the Nucleic Acids Gordon Conference and the American Chemical Society Meeting in Boston.

Charles Scholes published one paper on the structure of stem-loop DNA annealing to complementary stem-loop RNA in Biophysical Journal. The work was performed in collaboration with the Cornell Center for Advanced ESR Research. Additionally, Dr. Scholes serves as the Board President of the 501 (c) (3) USA philanthropic fund-raising arm of PAZAPA, a center for more than a hundred children with special education needs in Jacmel, Haiti (www.pazapa.org).


Jia Sheng’s group published two papers in Chem. Commun. on the structural and functional studies of natural DNA/RNA modifications. He also presented their work at the Gordon Conference and the American Chemical Society meeting in Boston. Dr. Rui Wang began a postdoctoral fellowship from Simons Foundation in Sheng’s lab.

Jun Wang’s group published 1 paper in jove and 1 book chapter, and has submitted 2 papers and 2 patent applications. He received the Presidential Initiatives Fund for Research and Scholarship award. He has organized and chaired symposiums five times at national conferences including ACS, BMES and AICHE. Dr. Wang was also invited to visit and present his work at SUNY Polytechnic Institute and Cancer Research Center.

Mehmet Yigit’s group published 4 articles in Langmuir, Bioconjugate Chemistry, Methods Mol. Biol and ACS Biomater. Sci and Eng. Dr. Yigit and Maksim Royzen’s joint research program is highlighted in the 2014-15 annual research report from the university, Reimagine Research.

Our Faculty

| Li Niu  | Professor & Chair |
| Paul Agris | Professor & Director, RNA Institute |
| Eric Block | Carla Rizzo Delray, Distinguished Professor |
| Alan Chen  | Assistant Professor |
| Evgeny Dikarev | Professor |
| Dan Fabris  | Professor |
| Gerd-Uwe Flechsig | Assistant Professor |
| Jan Halamek  | Assistant Professor |
| Igor Lednev  | Professor & Director, Forensics Institute |
| Rabi Musah  | Associate Professor |
| Jayanti Pande  | Associate Professor |
| Marina Petrukhina  | Professor |
| Maksim Royzen  | Assistant Professor |
| Halimah Sayahi | Lecturer |
| Charles Scholes | Professor |
| Alexander Shekhtman | Professor & Director, Graduate Studies |
| Jia Sheng  | Assistant Professor |
| Lawrence Snyder  | Professor Emeritus |
| Paul Toscano  | Associate Professor & Director of Undergraduate Studies |
| Jun Wang  | Assistant Professor |
| Ting Wang  | Assistant Professor |
| Zhang Wang  | Assistant Professor |
| John Welch  | Professor |
| Mehmet Yigit  | Assistant Professor |
| Qiang Zhang  | Assistant Professor |
New Faculty Appointments

We warmly welcome Drs. Ting Wang and Qiang Zhang as newly appointed assistant professors in our department.

Ting Wang received his BS from Tianjin University in Tianjin, China. In 2005, he came to the US to pursue doctoral studies. In 2011, he completed his PhD thesis work in Organic Chemistry under the direction of Professor Craig Forsyth at the Ohio State University. His graduate research centered on the synthesis of natural products phorboxazole and thuggacins. After graduation, Ting joined Professor Samuel Danishefsky’s lab at Memorial Sloan-Kettering Cancer Center where his postdoctoral research focused on developing an isonitrile-mediated amidation strategy and its application to peptide synthesis. In 2015, Dr. Wang joined the department as an Assistant Professor of Chemistry. His research program focuses on developing new methods to synthesize natural products. The targeted bioactive natural products and their analogues could serve as potential treatments for neurodegenerative disorders, such as Alzheimer’s disease.

Qiang Zhang received his PhD from Boston University in 2011 under the guidance of Professor John Porco. While at Boston University, Dr. Zhang completed total syntheses of the polycyclic acylphloroglucinol plukenetione A and 7-epi-nemorosone. After completing his degree, Dr. Zhang moved to the Memorial Sloan-Kettering Cancer Center to pursue post-doctoral training in the laboratory of Professor Samuel Danishesky where he worked on the chemical synthesis of carbohydrates and glycoproteins. In July 2015, Dr. Zhang joined the Department of Chemistry as an Assistant Professor. Using organic synthesis and chemical biology approaches, his research focuses on developing new tools to broaden the fundamental understanding of chemistry while addressing problems significant to human health, in particular, neurodegenerative diseases. The main research theme of his group is synthesis of neurologically related targets complemented by new methodology discoveries, including Tau protein aggregation inhibitors, voltage-gated sodium channel blockers, and neurotoxic glycopeptides.

New Staff Appointments

We are pleased to welcome Nicole Gene to the University at Albany and to the Department of Chemistry. Nicole joined the Department in January 2015. Nicole has close to a decade of New York State service which includes service within the NYS Department of Health and the NYS Office of Mental Health. She holds a BA degree and recently completed her MBA degree. Nicole provides administrative support to the faculty, staff, and students. We are delighted to have her as part of our team.

We welcome Timothy Muzio as a new Instructional Support Associate. Tim joined the Department in Summer 2015. He graduated with a BS degree in Chemistry. Tim mainly oversees the organic chemistry labs and provides staff support and supervision for all of our evening labs where hundreds of students attend each week. In his short time here, he has already contributed to the development of several lab courses and the new General Chemistry recitation session. The department is very excited to have Tim as a new staff member for laboratory instructional support.

OUR STAFF

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<th>Brian A. Gabriel</th>
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<th>David S. Burz</th>
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Graduate Student Activities, Accomplishments and Awards

Mustafa Balcioglu presented a poster and gave a talk at the Life Science Research Symposium and 19th Conversation. He also presented a poster at the National ACS Meeting and also first authored a paper published in ACS Biomaterials Science & Engineering. Matthew Barry presented his work at a symposium at Moscow State University Moscow, Russia and the ACS North East Regional Meeting (NERM) in Ithaca, NY. Matt also presented at the 250th ACS National Meeting in Boston, MA. Berenice Dethier received an IFW (Initiatives for Women) award and a departmental travel award to present her research at Pacifichem in Hawaii. She also attended the conference “Chirality 2015” in Boston and co-authored a PNAS paper. Kyle Doty was awarded a National Institute of Justice Graduate Research Fellowship. He authored two review articles about applications of vibrational spectroscopy in forensic science. Kyle gave oral presentations at the 2015 Northeastern Association of Forensic Scientists meeting, the 2015 CAS Life Science Research Symposium (where he won the best overall oral presentation), and the 2015 Federation of Analytical Chemistry and Spectroscopy Societies (FACSS) meeting. Cristina Dubceac received the ACS Women Chemists/Eli Lilly Award. She published 2 first author papers: one in Crystal Growth & Design and another in Chemistry - A European Journal. Cristina also presented her work at the ACS Northeast Regional meeting in Ithaca, NY and at the ACS National meeting in Boston, MA. Justine Giffen presented at the American Society of Mass Spectrometry Annual meeting in June 2015. Mustafa Hizir received “Krackeler’s Best Talk Award” at the Life Science Research Symposium and presented a poster at the 250th ACS National Meeting. Tony Hoang filed a patent application for a single molecule apparatus. Crystal Huynh received a 2015 Graduate Student Travel Award from the Department to present her research at a scientific meeting. Bill Jaremko, Janet Lynch, Andrew Wu, Wen Wei, Yu-Chuan Shen attended the “iGluRs Retreat”, an international conference on glutamate receptors. They also helped organize the conference. Ashton Lesiak was a contributing author on a publication in Scientific Reports and first author on a publication in Analytical Chemistry. She presented a poster at the American Society of Mass Spectrometry (ASMS) Sanibel conference on Forensics and Homeland Security, gave talks at the ASMS and Northeastern Association of Forensic Scientists (NEAFS) annual meetings, and was selected as one of four recipients of the Eastern Analytical Symposium Graduate Student Award and the sole recipient of the NEAFS Carol De Forest Research Grant. Jennifer Lippens gave an oral presentation at the 24th International Conference on Ion Mobility Spectrometry in Códoba, Spain (she received a 2015 RNA Institute Travel Award to attend the conference). She also gave a talk at the 63rd ASMS Conference on Mass Spectrometry and Allied Topics. Claire Muro published an invited review in Analytical Chemistry’s Annual Critical Review issue and was awarded a National Institute of Justice’s Graduate Research Fellowship. Natalie O’Neil co-authored a paper published in J. Am. Chem. Soc. She was also the recipient of the UAlbany Sustainability Innovation Grant Program and received a Travel Scholarship from the Green Chemistry Initiative at the University of Toronto. Lisa Ramirez presented a poster at the 6th Annual Life Science Research Symposium. She also published a first-author paper in the Journal of Visualized Experiments. Lisa also became a member of the AAAS/Science Program for Excellence in Science. Muhit Rana received the 2015 Lawrence and Marie Shore Graduate Scholarship and received a UA-GSA Research Grant. Muhit presented posters at the Life Science Research Symposium and the 19th Conversation. He also presented a poster at the 250th ACS National Meeting. Rebecca Rose was an invited speaker at Marist College in November 2014. She published a first author paper in RNA Journal. Rebecca gave a poster presentation at ASMS 2015 and was also an invited speaker for the Nucleic Acids Interest Group at ASMS 2015. Her work was accepted for a talk at the RNA Society Meeting 2015 and she also won the RNA Institute Travel Award and an ASMS Student Travel Stipend in 2015. Maruda Shanmugasundaram won a Best Poster award at the 2015 Life Sciences Research Symposium sponsored by Krackeler Scientific. Maruda also presented a talk and a poster at the SciX 2015 conference in Providence, Rhode Island. He published a first-author paper in Journal of Physical Chemistry B and co-authored a paper published in the EMBO Journal. Gaius Takor published a paper entitled “The Role of Proline-Containing Peptide Triads in β-Sheet Formation: A Kinetic Study” in February, 2015. Valentin Sereda co-authored a paper published in the Journal of Physical Chemistry B, a first-author paper in the Journal of the American Chemical Society and gave an invited talk at PittCON 2015 in New Orleans, LA. Wei Wen co-authored a paper published in Plos One. Andrew Wu presented a poster at the “iGluRs Retreat” describing his work on AMPA receptor inhibitors.
I had the opportunity to work in Professor Alan Chen’s research lab during the 2015 summer session. As a student who had just completed her freshman year with no prior research experience, I had no idea that it was even possible to get involved in research so early in my undergraduate career. Those eight weeks gave me more knowledge and experience with hands-on learning than I had experienced in the classroom. Professor Chen’s lab uses computer simulations to study the behavior of biomolecules, in particular RNA function and dynamics. Professor Chen and the other members of the lab were very gracious and helpful to me. They first supplied me with tutorials and papers to better explain what I would be working on. After becoming familiar with these materials, I was able to set up the simulations that I needed to run. I learned about scientific programming and how it can be used to simulate folding of RNA molecules. Everyone in the lab worked closely together and they were extremely supportive of one another. We were able to give each other our opinions on different projects and bring new perspectives when something wasn’t turning out correctly, because often someone else had encountered a similar problem before and knew how to work around it. Working in the lab was an incredible experience for me. I enjoyed doing the research and I realized how much work and dedication goes into making new discoveries.

My specific research was to simulate flavin adenine dinucleotide (FAD). This is essentially flavin mononucleotide (FMN) fused with an adenine nucleotide. Because there is experimental data on FAD but not on FMN, we wanted to parameterize its stacking so that we could apply those parameters to FMN. We could further simulate FMN with its RNA aptamer to see them fold and recognize one another. I simulated the folding and collected the data on various models of FAD. I also read many research papers to learn more about FAD stacking. Comparing experimental results to our simulation informed how the simulation models could be further improved. I was only involved in the beginning stage of this project, but by summer’s end I felt a sense of accomplishment as I knew that the role I played will help define what will be done in the future.

As a result of my involvement with research this past summer, I have had several exciting opportunities to engage other students. I had the chance to speak at an Explore UAlbany Part II and at the Undergraduate Research Forum to large, diverse student audiences. I was able to share my research experiences and encourage my fellow students to get involved as early as they possibly can. I also presented a poster at the 1st Annual Chemistry Undergraduate Research Symposium. I had never done a poster presentation before, but I was amazed at how much information I had learned during those eight weeks on my project and how exciting it was to share it with others.

Although my role in the research was small, I realized that I was extremely fortunate to have been given this opportunity to be aiding in this discovery. I truly enjoyed working on the unknown and it was through this experience that I realized that I definitely want to do more research in the future.

Contributed by Allix Coon, the recipient of the 2015 Chemistry Department Scholar Award given to the most outstanding freshman student in Honors General Chemistry

My undergraduate research experience at the University at Albany began in the second semester of sophomore year. At that point I really enjoyed my general and organic chemistry labs and I thought that it might be fun to work in a research lab so that I would have the opportunity to improve my experimental skills. I looked up research opportunities on the Department of Chemistry website and found a professor (Prof. Petrukhina) in an area I was interested in, inorganic chemistry. Prof. Petrukhina taught me the techniques and skills needed to work in the lab while I worked closely with a graduate student in her lab.

I learned and benefitted greatly from my research experience. It gave me exposure to research in chemistry. It provided me with valuable training in how to conduct research. I was able to gain a better understanding of chemical principles. As a result of my work as an undergraduate researcher I was able to co-author several research articles, attend and present at ACS national meetings, and write my Bachelor’s thesis.
My involvement in undergraduate research promoted my interest in graduate education. By my senior year of undergraduate study I developed a passion for research and I started to consider a Ph.D. program because I wanted to continue doing research and learn more along the way. Graduate school was the perfect chance to do that.

The educational benefits of doing undergraduate research were numerous. First of all I developed a one-on-one mentor-mentee relationship with my advisor, Prof. Petrukhina. This in return earned me great recommendation letters. I earned course credit for every semester that I’ve spent in the lab. Doing research gave me the opportunity to apply what I’ve learned in the classroom to real life situations. It enhanced my critical thinking, creativity, and problem-solving skills. I acquired knowledge in my field of research that expanded significantly beyond the classroom study. By engaging in research I found it easier to understand the rationale underlying others’ research, thus allowing me to better understand published works.

Undergraduate research as a scholarly activity is also a great professional development tool. It prepared me for graduate school by enhancing my academic credentials to support the graduate school application. It provided effective career preparation because it helped clarify my career interests and goals following graduation. I learned to work not only independently but also with my laboratory teammates in a collaborative manner.

By engaging in undergraduate research, I became part of an innovation- and goal-oriented culture. For the first time I became exposed to the concept of research ethics and the importance of a strong work ethic. Although it might have seemed intimidating at first to learn something completely new, research has challenged me to be mentally versatile and tough. I acquired intellectual independence and self-confidence.

I found that participation in undergraduate research has significantly contributed to my educational, professional, and personal growth. If a student is considering research as a career path, experience in a research lab setting is particularly valuable. The earlier students become involved in research the more experience they will attain, which will enhance their learning and career preparation so that students will be better prepared to meet whatever challenges they encounter after graduation.

Contributed by Cristina Dubceac. Cristina is currently a doctoral student in the Department, and she won a 2015 Eli Lily/WCC Travel Award to present her research at the ACS National Meeting in Boston.
**Recent Funding Highlights**

**Eric Block** received a subcontract grant, “Peripheral Odor Coding in Mammals,” from the NIH for $242,891, as well as a conference grant for $3,000 from the Organic Division of the ACS to support the Symposium on New Organosulfur Chemistry Block will chair at Pacificchem 2015 in Honolulu, December 2015.

**Alan Chen** received a one-year, $100,000 “research starter” grant from the Pharmaceutical Research and Manufacturers of America Foundation for physics-based prediction of RNA 3D structure. His group is developing improved computer models to simulate the folding of viral RNAs and aptamer-ligand interactions, which lay the groundwork for future studies on RNA-based drug design.

**Igor Lednev** - Kyle Doty and Claire Muro from the Lednev laboratory were awarded Graduate Fellowships from the National Institute of Justice. These prestigious fellowships will support Kyle’s and Claire’s research targeting the development of new methods for forensic characterization of body fluid traces. This long-term project involves a close collaboration with the NY State Police Crime Laboratories. Two graduates from Lednev laboratory are currently employed at the Crime Laboratories.

**Rabi Musah** received a 3-year $689,000 grant from the National Institute of Justice for “Development of Ambient Ionization Mass Spectrometric and Multivariate Statistical Analysis Methods for Rapid High Throughput Analysis and Identification of Psychotropic Plant Species.” She also received a Technology Accelerator Fund grant for commercial development of an Automated Gel Electrophoresis Detection platform for which she was recently issued a patent. In addition, she won a Presidential Initiatives Fund Research and Scholarship Award (under the Forensics and Cybersecurity Program) for her project entitled “Application of Multivariate Statistical Analysis to Mass Spectrometry-derived Plant Metabolome Profiles for Forensic Identification of Drugs of Abuse.”

**Jayanti Pande**’s renewal grant application to NIH was recently reviewed by the Scientific Review Group and received a priority score of 2nd-percentile. This grant was renewed for four more years to continue her work on “Crystallin modifications and mechanisms of lens opacity”.

**Alex Shekhtman** is co-PI on a 2-year $160,000 R24 grant from NIH in collaboration with Anne Marie Schmidt (NYU) to study RAGE biology.

**John Welch** received a three-year NSF grant, which allows him and his students to study a new type of fluorinated molecule, aliphatic fluorinated hypervalent sulfur compounds. These molecules may find wide applications in pharmaceuticals and agrochemicals as well as in materials science. See a story about this study at http://www.albany.edu/news/63017.php?WT.eml=nc.
**Recent Funding Highlights continued**

**Jun Wang** received a Presidential Initiatives Fund for Research and Scholarship grant to support a cancer related project in his Multiplex Biotechnology Laboratory. His team includes two graduate students and a postdoc fellow, and they are developing multiple advanced microfluidic devices to monitor the progression of cancer through genomic analysis. They will also apply a single-cell microchip to study the course of cancer metastasis from human samples and measure the occurrence of heterogeneity during this process. This question is important because heterogeneity severely impedes the effectiveness of cancer treatment using existing drugs.

**Mehmet Yigit** (left) and **Maksim Royzen** (right) received a joint Presidential Initiatives Fund for Research and Scholarship grant for their collaborative project on breast cancer imaging. Mehmet Yigit also serves as a co-PI in the recent *SUNY Health Network of Excellence* grant titled “Designing new miR-30c mimics and delivery systems to treat cardiovascular disease”.

**Capital Improvements**

Recent upgrades in lab curricula and instrumentation in our teaching labs are providing students with hands-on experience in data collection and analysis, by using the state-of-the-art technology and computer software, starting from day one and continuing throughout their academic careers. The department has been working hard to ensure that our students are trained on the best instrumentation to enable them to possess the technical skills needed to meet challenges of the 21st century.

This year, the Chemistry Department installed 50 computer-based data acquisition instruments in all General Chemistry labs. Each MicroLab instrument is an entire lab platform containing a spectrophotometer, thermocouple, timer, pH meter, pressure sensor, conductivity meter, potentiostat and voltage meter. The College of Arts and Sciences donated 50 computers so that we can run the MicroLab software interface. Each pair of General Chemistry students has their own work station equipped with the MicroLab, a computer and other essential equipment (analytical balance, stirrer-hotplate, etc. – see the photo). This innovative technology provides students an opportunity to maximize their instrument usage time while exploring a wide range of chemical experiments.

The Chemistry Department recently received four High Pressure Liquid Chromatography (HPLC) instruments from Albany Molecular Research, Inc. (AMRI); this generous donation allowed us to offer a new lab course in Spring 2016. HPLC is a major analytical method widely employed in diverse fields such as the pharmaceutical, food and beverage industry, forensic science, and clinical and environmental research laboratories, to name a few. Students will learn the theory of HPLC separation in the classroom, and perform hands-on experiments in the laboratory. This course will better prepare our students for internships and employment opportunities.
**HONOR ROLL OF DONORS**

*The Department of Chemistry thanks all of the donors for their generous support.*

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Prior to starting my freshman year at SUNY Albany, I knew that I wanted to be a pre-med chemistry major. I started CHM131 (Dr. Long) in August 1973 with great hopes, and a fair amount of trepidation. That was a tough course, but somehow I made it through and went on in the “Core Program”. The real treat was the following year, when I, along with 15 other “survivors”, started CHM231a, which was team-taught by Drs. Shelton Bank and JJ Zuckerman. CHM231 is one of the most memorable courses in my life, unlike anything I have experienced before or after. This course got me so excited about chemistry!!! The following year, I began doing research with Dr. Bank. I remain disappointed in myself to this day that the research project never really went anywhere, but it did get me started in research which has been an integral part of my life since then. Dr. Bank was “that professor” for me as well, and I remain indebted to him and in awe of his character and abilities as teacher, scientist and mentor. Dr. Bank was instrumental in my securing a place in graduate school, and I earned an MA in Physical-Organic chemistry, investigating the electrochemistry of α-α’ dibromoketones at Wesleyan University.

The next phase of my career began with enrolling at SUNY Upstate, followed by a residency in General Surgery and a fellowship in Surgical Oncology at the NIH, where I did research in tumor immunology, including some basic studies on Interleukin-2. I then joined the faculty at the University of Maryland as Assistant Professor of Surgery, followed by a few years at UC San Diego. During that time, I ran a tumor immunology laboratory, all based on the love of research I started while in Dr. Bank’s lab at SUNY Albany. I was then appointed as Program Director in General Surgery and Director of GME at Cedars-Sinai Medical Center in Los Angeles, as well as Professor of Surgery at the UCLA School of Medicine. I earned an MPH from UCLA in 1999. In 2007, I moved to Japan in my current position as Professor of Surgery at Jichi Medical University in Tochigi.

I have continued to pursue research throughout my career, now focusing on clinical and education research. I have continuously been employed as a full-time faculty member at universities since completing my training. In addition, I completed my lifelong dream of formally studying general relativity and earned a PhD in Theoretical Astrophysics, specializing in strong gravitational lensing, from Tohoku University (Sendai, Japan) in 2015. Having been an investigator in the rather disparate fields of chemistry, bio-medicine and astrophysics, I can clearly state that “research is research”, and for me, it all started at SUNY Albany in the Chemistry Building.

I feel incredibly fortunate to have been influenced by Dr. Bank. When my son was born, he sent me a note that said “Welcome to the world of non-linear time”. Truer words have never been spoken. I was lucky to stay in touch with him over the years, and last saw him and Janet at the home of another SUNY Albany and Bank lab alumnus, Dr. Terry Aragoni, in California some years ago. It is a great honor for me to participate in the award that bears his name. My time at SUNY Albany, the chemistry “Core Program”, and my year in Dr. Bank’s lab were surely the spark for my career in research and teaching.

**NEWSLETTER CONTRIBUTIONS**

We welcome very much our alumni to contribute to the newsletter series. If you are interested in contributing an article in the future, please contact Department Chair Li Niu at lniu@albany.edu. If you know an alumnus whom we should send a copy of this newsletter as well, please let us know.
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