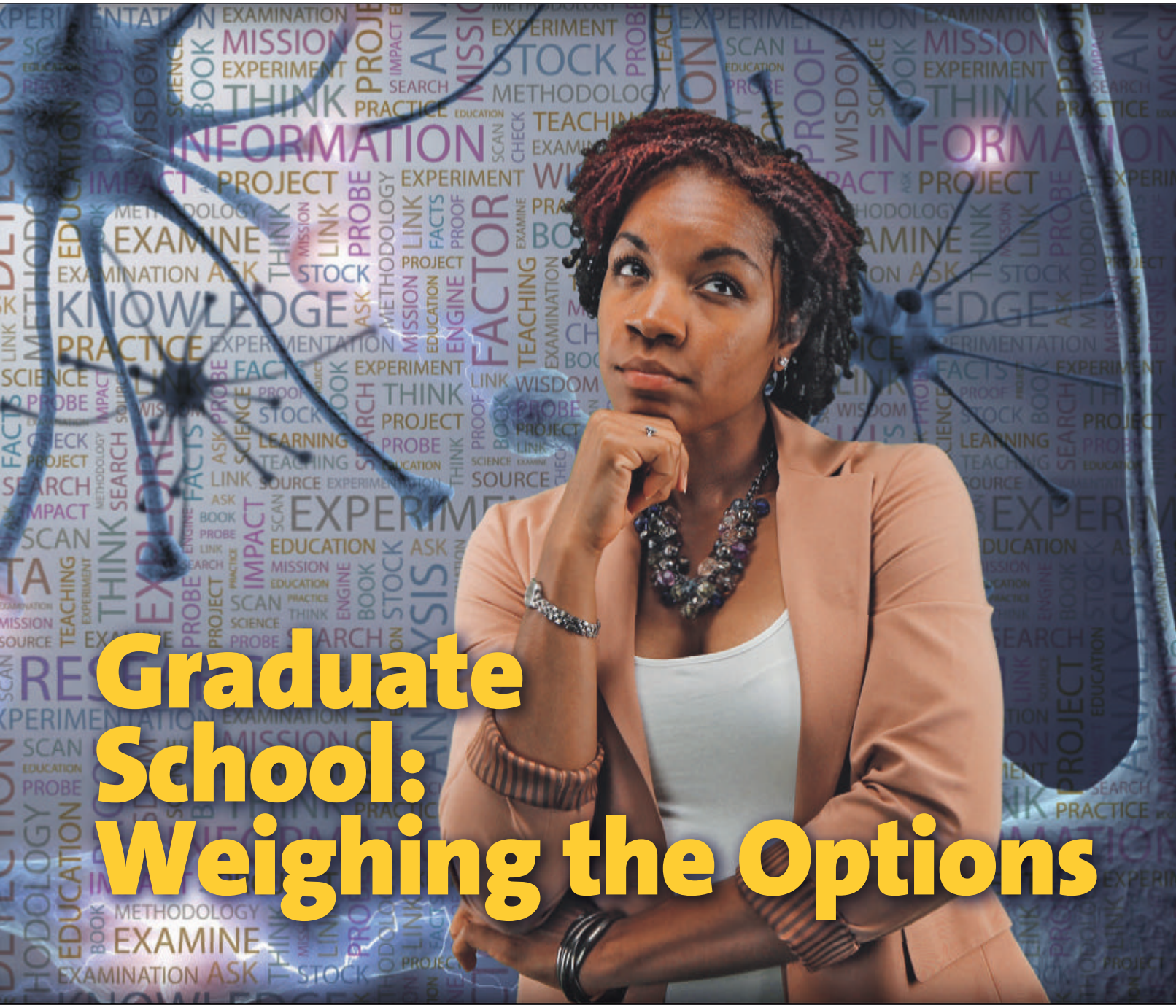
inChemistry

THE MAGAZINE FOR ACS STUDENT MEMBERS September/October 2012



Graduate School: Weighing the Options

ALSO IN THIS ISSUE

- **What Industry and Graduate School Recruiters Are Looking For**
- **Finding a Way to Succeed in Today's Uncertain Job Market**
- **Funding Your Trip to the ACS National Meeting in New Orleans**

ACS Chemistry for Life®

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937–2012

ACS
Chemistry for Life™

15 Undergraduates Will Be Awarded All-Expense-Paid Trips to Attend the 2013 ACS Leadership Institute January 25–27, 2013 Dallas, TX

This Is an Exceptional Opportunity for ACS Student Members to:

- Learn effective strategies for leading teams, planning events, and raising funds for your chapter.
- Develop professional networks with professional chemists from industry and academe.
- Meet and work with student chapter, local section, and division leaders; national committee chairs; and younger chemists.
- Develop communication, management, leadership and networking skills .

Strong applicants will demonstrate a strong interest in their ACS student chapter activities, and in becoming more effective chapter leaders and more actively involved in ACS.

To access forms and more information about applying for a Student Leadership Award for the 2013 ACS Leadership Institute, go to: **www.acs.org/undergrad**.

Application Deadline: Friday, November 2, 2012

American Chemical Society **www.acs.org**

inChemistry

EDITOR Nancy Bakowski
MANAGING EDITOR Lori Betsock
EDITORIAL ASSISTANT Robin Lindsey
ASSOCIATE EDITOR Chris Zeigler
COPY EDITORS Eric R. Stewart
Karen Müller
DESIGN & PRODUCTION Amy Phifer
Plum Creative Services
DIRECTOR, EDUCATION DIVISION, ACS
Mary M. Kirchhoff
ASSISTANT DIRECTOR FOR HIGHER EDUCATION, ACS
Jodi L. Wesemann

Published for student members by the American Chemical Society Education Division at 1155 Sixteenth Street, NW, Washington, DC 20036

ACS
Chemistry for Life®

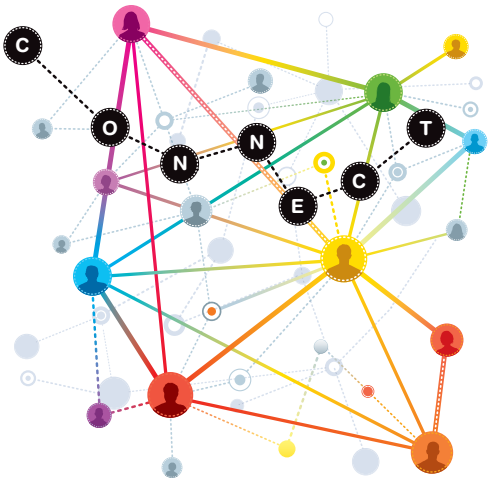
inChemistry

THE MAGAZINE FOR ACS STUDENT MEMBERS

Volume 21 • Number 1
September/October 2012

PHOTO: SEAN PARSONS/ACS · BACKGROUND IMAGES: ISTOCK & 123RF

Cover: Brittny Humphrey is a recent M.S. graduate in chemistry from Howard University. 10



CONTENTS

EDITORIAL: Seeing the Big Picture as a Graduate Student

BY BEATRIZ RIOS MCKEE

Like most graduate students I know, I first became an ACS member to attend national meetings at a reduced price. My involvement as a member began by simply attending meetings, presenting my research, and attending talks to stay up to date on cutting-edge research.

Graduate students can have a tendency toward tunnel vision; I know I did. But I learned to visualize and work toward the big picture beyond my research project. A friend of mine once commented, "It's too bad there aren't more than two national meetings each year. Every time you come back, I see you in the lab with new excitement and an amazing positive attitude." He was right! I always returned refreshed, inspired, invigorated, and driven to continue my work with a newfound passion.

As a third-year graduate student, I became more involved with ACS when I applied for and was appointed to a graduate student position on the Graduate Education Advisory Board (GEAB). GEAB meets at ACS national meetings to focus on issues related to graduate education and postdoctoral training in chemistry and related fields.

At my first GEAB meeting, I was pleasantly surprised that board members were interested in my experience as a graduate student and sought my opinions about the resources, opportunities, and support that ACS and the ACS Graduate and Postdoctoral Scholars Office (GPSO) provide for graduate students and postdocs.

As you ponder the possibilities of graduate school, try to keep the big picture in mind. Remember that GEAB and GPSO support graduate students. In addition to promoting funding resources for graduate students and postdocs available through ACS and other scientific organizations, GEAB and GPSO offer programs to help graduate students and postdocs develop skills outside of research.

Once you become a graduate student, these programs will give you an edge in working toward your future career. In addition, ACS Careers offers workshops where you can learn how to write an effective résumé, sharpen your interviewing skills, explore alternative careers, and discover ways to stand out among other applicants.

I feel privileged to have served as a graduate student member of GEAB. In addition to the experiences described above, this involvement provided opportunities to meet new colleagues and build meaningful and long-lasting relationships with faculty, students, postdocs, and ACS staff.

If you feel motivated to volunteer for the Society, I strongly urge you to do so. Many opportunities await you at the local section and division levels and on regional and national meeting planning committees. I also encourage you to take advantage of the ACS resources available to you as a future graduate student, postdoc, and eventually a professional. See "Easing the Transition to Graduate School" on page 4 to learn more about resources for graduate students offered by ACS. Also, go to **www.acs.org/grad** and 'like' the ACS Graduate Students Facebook page. inc

Beatriz Rios McKee *earned a Ph.D. in chemistry from Southern Methodist University in 2011. She is now a Level 1 Coach at Playtri Performance Center, a triathlon performance center in Dallas, TX, and plans to do a postdoctoral fellowship in exercise physiology.*

ACS CALENDAR

SEPTEMBER

15 Applications for the ACS Women Chemists Committee/Eli Lilly Travel Awards due **www.acs.org/diversity**

16 Poster abstracts for the Southeastern Regional Meeting of the ACS due **www.sermacs2012.org/submit-abstracts.php**

28 Undergraduate Programming at Regional Meetings Grant applications for Spring 2013 programming due

30–10/3 ACS Northeast Regional Meeting (NERM), Rochester, NY

OCTOBER

17–20 ACS Rocky Mountain Regional Meeting (RMRM), Westminster, CO

21–27 National Chemistry Week 2012 — Nanotechnology: The Smallest BIG Idea in Science

23 Mole Day

24–27 ACS Midwest Regional Meeting (MWRM), Omaha, NE

29 Undergraduate Research Poster abstracts for the 245th ACS National Meeting in New Orleans, LA, due

NOVEMBER

2 Undergraduate Programming at Regional Meetings Grant applications for Fall 2013 programming due

2 Applications for the ACS 2013 Student Leadership Awards due

4–7 ACS Southwest Regional Meeting (SWRM), Baton Rouge, LA

9 Starter Grant for ACS Student Chapters at Two-Year Colleges applications due

14–17 Southeastern Regional Meeting of the ACS (SERMACS), Raleigh, NC

DECEMBER

15 Applications for the SCI Scholar Summer Industrial Internship due

REVEAL YOUR RESEARCH!

Present Your Undergraduate Research Poster at the Spring 2013 ACS National Meeting & Exposition

NEW ORLEANS, LA
APRIL 7–11, 2013

Join more than 15,000 chemical science and engineering professionals at the 245th American Chemical Society National Meeting.

For more information about the Undergraduate Program in New Orleans, e-mail undergrad@acs.org or go to www.acs.org/undergrad.

To be considered for a presentation, submit an abstract via the Program and Abstract Creation System (PACS).

SUBMIT YOUR ABSTRACT AT HTTP://ABSTRACTS.ACS.ORG

ABSTRACT DEADLINE: OCTOBER 29, 2012

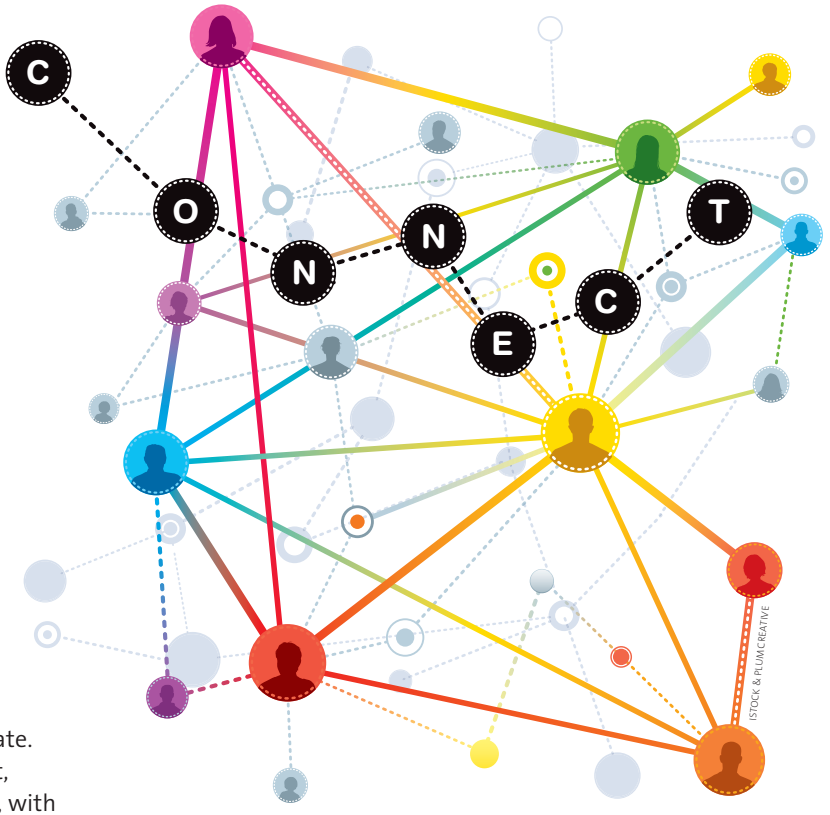
ACS
Chemistry for Life®

www.acs.org

ACS RESOURCES: Easing the Transition to Graduate School

How the ACS Graduate and Postdoctoral Scholars Office Can Help You

BY JOE Z. SOSTARIC AND CORRIE Y. KUNIYOSHI



ISTOCK & PLUM CREATIVE

If you decide to pursue graduate studies in the chemical sciences, you will find that more is expected of you than when you were an undergraduate. Greater personal responsibility is just one example — first, relating to your studies and your research work, and later, with regard to your status as a freshly minted master's or Ph.D. chemist.

You'll also find differences between the types of ACS offerings and programs available to you as a graduate student compared with those programs offered by the ACS Undergraduate Programs Office. To help you successfully adjust to this transition, this article will introduce you to the offerings of the ACS Graduate and Postdoctoral Scholars Office (GPSO) and give you a few tips on how best to access and make use of the many programs and resources ACS offers to the graduate and postdoctoral scholars (GPS) community.

Access online resources now

The GPS community webpage, www.acs.org/grad, should be the first place you go as an aspiring graduate student. You'll find relevant and useful information on how to plan for and find the right graduate school, links to grants and fellowships, information for international students coming to the United States from abroad to study, and access to the many programs and resources ACS offers to the GPS community.

The *ACS Graduate & Postdoctoral Scholars Bulletin* is e-mailed monthly to ACS graduate student members and subscribers. Subscribe to this free publication and take the time to read the *Bulletin* articles on careers and various opportunities and resources targeted to graduate students and postdocs. The information will help you gain a broader perspective on the chemical world around you. The publication also lists funding and volunteer opportunities, science news, and meeting announcements. (See current and past issues, and subscribe to receive the *Bulletin* at www.acs.org/gradbulletin).

Connect with ACS, and students like you, for excellent networking opportunities

Connect with other graduate students

The ACS Graduate Students page on Facebook will help you connect with other chemistry graduate students. This page provides an excellent forum for networking with other chemists at similar points in their careers, and also for keeping in touch with GPSO staff. You'll get regular updates on topics and programs that are timely and relevant, receive invitations to special events at ACS national meetings, and become eligible for thank-you gifts by participating in our surveys. To access the ACS Graduate Students page, go to www.facebook.com and search for "ACS Graduate Students."

Ask Your Graduate Chemistry Department to Host a Workshop!

Help spread the word! The Preparing for Life after Graduate School workshop provides invaluable information on the job search and recruitment process, and GPSO wants to partner with your graduate chemistry department and/or graduate school to bring this resource to graduate students and postdocs. For more information, contact Corrie Kuniyoshi at c_kuniyoshi@acs.org or at (800) 227-5558, ext. 4588. inc

PHOTOS: ACS

The ACS GPSO provides opportunities for graduate students to connect with one another. One of the most popular events is the Graduate and Postdoctoral Scholars Reception, which is held at every ACS national meeting.

A Graduate and Postdoctoral Scholars Reception is held at every ACS national meeting, usually from 7:00 to 8:30 p.m. on Monday, just before the popular poster session, Sci-Mix. The reception held at the Spring 2012 ACS National Meeting in San Diego attracted more than 700 graduate students and postdocs, who enjoyed an evening of complimentary refreshments, opportunities to network with ACS technical division representatives, and a chance to win a 64 GB iPad.

Get Involved!

ACS is committed to building a strong chemistry graduate student community through GPSO and other programs and activities. However, because the decisions you make as a graduate student may have long-ranging implications later in your career, the responsibility falls mostly on you.

Given this fact, you cannot afford to wait for opportunities to come knocking on your door. Start planning for your success early! Become involved with groups within ACS, such as the Younger Chemists Committee, your local section, and technical divisions. Seek out mentors, network with your fellow students and other chemists at ACS national meetings and, most of all, make sure you know how to go about starting a successful career.

STAY INVOLVED

The period in your life where you must take a proactive role to be successful begins now. ACS has the programs and resources you'll need as a graduate student — but we will need to hear from you and your fellow students and postdoctoral colleagues in order to deliver many of these services to you.

Be sure to stay in touch with us and the GPS community so that your needs can be met. Indeed, whether you're an undergraduate student considering graduate school, or you've already taken that step, join the ACS Graduate Students page on Facebook today and leave a post on the wall to let us know that you've arrived! We'll be glad to welcome you!

If you have any questions about the programs and resources available through the ACS GPSO, or would like to share any comments or concerns, do not hesitate to connect with us at GradEd@acs.org. We look forward to serving you! inc

Plan your career

Depending on your particular situation as a graduate student, the responsibility for career preparation may fall largely or entirely on your shoulders. The two-day Preparing for Life after Graduate School workshop (www.acs.org/gradworkshop) is organized by ACS GPSO with the support of a host chemistry department, and provides senior graduate students and postdoctoral scholars with information, tools, and strategies on making career choices, obtaining positions, and other challenging tasks. This unique workshop will enable you to:

- **Examine careers suitable for Ph.D. chemists**
- **Get to know the critical non-technical skills that employers look for in candidates**
- **Find employment opportunities**
- **Prepare for academic positions**
- **Learn to put this knowledge into practice.** inc

Joe Z. Sostaric *is program manager in the GPSO at ACS. He obtained his Ph.D. in chemistry in 1999 at the University of Melbourne, Australia, and has worked in scientific research, consulting, and graduate education.*

Corrie Y. Kuniyoshi *is a senior education associate in the GPSO at ACS and editor of the* ACS Graduate & Postdoctoral Scholars Bulletin. *She obtained her Ph.D. in chemistry from the University of California, Los Angeles in 2005.*

Graduate Students and Recent B.S. Recipients Receive Discounts on ACS Dues!

A person who is a full-time graduate student, majoring in a chemical science or related academic discipline, is entitled to a discount of one-half of the membership dues. Special student subscription prices for most journals are available.

In addition, if you are graduating with a bachelor's degree in a chemical science, you may apply for membership within one year from the date of graduation to receive an extra discount of one-half of the membership dues. inc

New Colleagues. New Insights. New Skills. New Ideas.

The Many Ways Our Chapter Benefited from Planning and Hosting the Undergraduate Program at an Acs Regional Meeting

BY LAUREN LONDON

The East Los Angeles College (ELAC) ACS student chapter — better known on our campus as the Priory of Biology and Chemistry — planned and helped run the undergraduate program at the ACS Western Regional Meeting (WRM) in Pasadena, CA, in November 2011. Members of our student chapter worked hard to develop a great program, and we each benefited in different ways from the experience.

After we applied for and received an ACS Undergraduate Programming at Regional Meetings Grant, our goal from the outset was to design a unique program. We wanted to serve the diverse needs and interests of students at community colleges like ours, as well as those at four-year universities. To make sure the program would also meet the needs of students attending four-year universities, we enlisted the help of the ACS student chapter at the University of California, Los Angeles.

Together, we chose the theme "Discovering Your Chemical Pathway," and focused on developing undergraduate events that would encourage students to meet and network with one another and ACS members from industry, government, and academe. We wanted to help students better understand where a career in chemistry could take them and how to reach their career goals.

Career speed-dating

One of our most popular events was "In the Fast Lane with Chemistry Pathways," a career exploration session set up like a speed-dating event. Every 10 minutes, students rotated to a new table, meeting and networking with different chemists representing a variety of traditional and nontraditional career pathways. ACS President-Elect Marinda Wu gave a presentation on "Introduction to Careers in Chemistry," and we held a panel discussion led by recruiters from graduate school programs and industry. Other events included a graduate school recruiting event, an undergraduate research poster session, and a field trip to the Huntington Library and Botanical Gardens.

Antonio Tinoco, president of the Priory, led the planning of the WRM undergraduate program. "This experience helped me to improve my communication skills," Tinoco explains, "and taught me how to balance my time between school and other chapter activities." He learned that being a leader was not only about gathering people together and taking charge but also about following up and making sure people received the support they needed to get their jobs done. Attending the meeting itself was also a boon for Tinoco, a chemical engineering major. He benefited from his interactions with chemists, who talked with him about their careers and educational experiences. "Now more than ever," Tinoco adds, "I am sure about going to graduate school to earn a master's degree after I complete my bachelor's degree."

Interesting reactions

WRM was a lot of fun, and it also allowed meaningful interactions to occur that are already shaping students' paths. For Leanna Xu, a newly declared chemistry major, the career speed-dating event was a defining experience. "I gained a better perspective of what chemists do," she observes. "It allowed me to think about a future in chemistry, and also realize the educational and job opportunities available to me." The experience also convinced her to modify her educational goals. Prior to the event, Xu had planned to earn a master's degree, but afterwards, she realized she was more interested in a career in chemical research, and decided that earning a Ph.D. would give her the most career opportunity.

Helping to plan, and then attending, WRM taught Amy Ng, a biochemistry major, about the practice of meeting planning and the important role of good communication skills. "Meeting recruiting professionals from industry, government, and academe for the chemistry speed-dating event," she reflects, "was an eye-opening experience for me and most of the students involved." For Ng, the poster session was another valuable experience. "I was able to interact with my peers, see what types of research other students were working on, and learn how they were contributing to scientific advancement." After helping to plan the WRM undergraduate

ISTOCK

program, Ng has started looking more actively toward her future educational and career goals, equipped with more information about what possibilities lie in store for her.

The ELAC student chapter derives part of its strength from its diverse student members, who are brought together by a shared interest in science. Xingyu Lu, an environmental engineering student from China who is studying in the United States as an international student, felt a key lesson he learned was about the importance of having a passion for chemistry.

Ng has started looking more actively toward her future educational and career goals, equipped with more information about what possibilities lie in store for her.

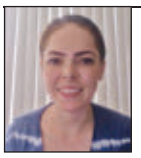
As Lu explains, "Research experience is important, but passion is also important for staying in the lab and achieving success over the long run." Attending WRM enabled Lu to find answers to questions he had about chemistry and career options. These answers fueled more questions and encouraged his exploration into chemistry even further.

Networking opportunities

Even for students who had more concrete ideas about their future career goals, planning and attending WRM was meaningful. Brian Kang, a biochemistry major, enjoyed the networking opportunities. "I met great and interesting scientists and made friends with students who shared my enthusiasm for science," he recalls. The event also reinforced for him how interconnected the STEM fields (science, technology, engineering, and mathematics) are, and how much collaboration is necessary, both for student events and for research as a career professional.

Often, students outside our chapter ask how we are able to get so involved in ACS events and in our local community. A big part of our achievement is thanks to our two extremely committed chapter advisors, Veronica Jaramillo and Armando Rivera, who provide guidance, experience, and a commitment to the belief that we can and will be successful. For our strong community of learners, being involved is just another part of the educational experience that will serve us during our time at ELAC, and also beyond.

Planning and participating in WRM did take a lot of time and effort, but in the process, it also allowed us to grow as scientists and leaders, and to connect with the ACS community at large. We learned from experience if you put yourself out there and do the hard work, the results may not be perfect, but they can be something impactful and really great for a lot of students. inc



Lauren London *completed her prerequisites for professional school at East Los Angeles College in May 2012 and is now in pharmacy school at the University of the Pacific in Stockton, CA.*

PHOTO COURTESY OF EAST LOS ANGELES COLLEGE

PHOTO: ACS STAFF

UPPER LEFT: **East Los Angeles College chapter members** (LEFT TO RIGHT) **Kyu Hyuk Kang, Amy Ng, Antonio Tinoco, Lauren London, and Leanna Xu enjoy a relaxing moment at the Huntington Library gardens.** UPPER RIGHT: **Margaret Kaleuati** (LEFT)**, senior criminalist at the Los Angeles Coroner's Department, and an undergraduate from Mount St. Mary's College (Los Angeles, CA) network at the career speed-dating event.**

Is Graduate School Right for Me?

BY MATTHEW J. MIO

There are many questions that students considering graduate school in the chemical sciences must ask themselves, but two of the most fundamental are, "Should I go to graduate school?" and, if the answer to that question is yes, "Do I have good reasons for doing so?"

In my experience as an undergraduate academic advisor, it is the first of these questions that stymies students the most, but the second is also critical. This article aims to help students answer both.

Professional vs. graduate degrees

Many undergraduate students who cross paths with the subject of chemistry are interested in earning a professional degree in the health professions. Professional degrees of any sort — including law, business, and architecture — are academic degrees that purposefully prepare the holder to work in a certain profession and stress skills and practical analysis.

Graduate degrees, in contrast, embrace a different educational outlook, and emphasize theory and research – the systematic search for information. Those who wish to earn such degrees are expected to make original contributions to knowledge during their graduate career. This is the core difference between a professional and a graduate degree: one accentuates skill competency, whereas the other stresses research.

Understanding this subtle difference can be difficult in light of modern society's pop culture fascination with the health and legal professions. Although *Grey's Anatomy* and *Damages*-type dramas abound, there have been very few TV shows about chemists (one telling exception is *Breaking Bad*!). Yet, this differentiation is at the very heart of answering the first question posed above: "Should I go to graduate school?"

I believe performing research at the undergraduate level is the single greatest factor in a student's educational maturation. Why? Those who engage in undergraduate research find out very quickly if they enjoy the discovery aspect of chemistry; in addition, the presentation aspect of research can develop writing, speaking, and critical thinking abilities. Having research experience is one way undergraduates can distinguish themselves from the pool of applicants with similar GPAs when it comes to applying for graduate school and professional employment positions. Remember that "systematic search for information" mentioned above? Certainly you've heard this definition before — it's science!

The engine of graduate study is research, and that engine is put together with the gears of science. Experimenting with undergraduate research can help you assess your interests and commitment to science. Of course, it's also OK to find out that you do not have a strong interest in laboratory work.

Undergraduate research experiences, even if negative, are significant factors to consider when making decisions about your future. Research is a major component of graduate school and in entry-level research and development (R&D) positions in industry. In industry, after you have a few years of experience, if you wish to branch out to new areas, there are many other paths that you can take that do not involve laboratory work. You can also choose a nontraditional career in chemistry that does not involve R&D, including forensics, public policy and advocacy, law, sales and marketing, public health, and regulatory affairs.

As a budding chemist seeking to determine your pathway, you can also personally investigate the question at hand. Ask members of ACS what got them interested in chemistry, and you are bound to get a variety of responses: a caring educator in their past, an inquisitiveness about materials, a love for "stinks and bangs," a desire to know more about the nanoscopic world. But ask the same individuals why they went to graduate school, and they'll very likely tell you that they love to do science. If *you* love doing science, then you owe it to yourself to consider graduate school.

Evaluating your motivations

If your devotion to science has you thinking about graduate school, the next stage of your decision is to evaluate your reasons for attending. In short, why go? Some people's faces light up when the subject of tuition-free higher education is discussed, but they may not be fully aware of the time and effort needed to persevere through a graduate education (five or more years, on average).

I am an undergraduate academic advisor, but I also served my

ISTOCK

own graduate department as a recruiter. In both capacities, I have had unique opportunities to work with and observe students who are motivated to attend graduate school for a variety of reasons. Some of these reasons, however, tend to ultimately result in student unhappiness, research advisor discontent, and premature cessation of study.

Seriously — think twice about attending graduate school if your sole motivation is pressure from family, friends, or your professor. As always, attempting to please others as a first priority inevitably leads to not pleasing yourself; however, when your heart is in your work, it never seems like work.

Some people who earn a Ph.D. do so because they are extremely motivated to be among the 2% of the population who have Ph.D.s, or to be considered "the best of the best." For many others, however, getting a Ph.D. credential and the title 'doctor' are small recompense for a five-year or longer investment of time and effort; the ends will not justify the means. I've also seen many students who choose to go to graduate school for no particular reason at all. People in this category tend to be more apathetic about their studies and research and more likely to drop out of graduate school. They seem to lack the commitment to education needed to succeed.

I've also observed some patterns among students who had successful graduate school careers characterized by positive research experiences, gainful employment, and personal growth and satisfaction.

Successful Ph.D. students are often motivated by a passion to deepen their knowledge of chemistry. Graduate school demands a paradoxical combination of qualities from the student. For example, you must be willing to become an expert at the same time that you are augmenting your overall knowledge base. In fact, when you complete your thesis, you will be the only person on the planet with expertise in that specific area! If you go on to work in industry, you will be considered an expert in your field and will be treated with much respect by your co-workers.

Others are highly 'career-motivated.' They view their careers as lifelong vocations that are professionally rewarding and financially viable, and tend to aspire toward ever-higher levels of responsibility. In many ways, these are some of the ultimate goals of every professional.

By rising to the challenges of graduate school and graduate-level research projects, you will also gain leadership, collaboration, and communication skills, as well as learn valuable lessons about teamwork. B.S. and M.S. level chemists typically work under the direction of a Ph.D. (or equivalent experience) level chemist. Chemists at all degree levels make valuable contributions to their companies' success, which makes your decision very important to your personal fulfillment on your career path.

Some students apply to graduate school because they seek intellectual challenge or maturity. They find that testing one's limits is an excellent way to delineate strengths and weaknesses; knowing weaknesses can lead to self-improvement. They may also be fascinated by the thought of finding what they don't know — this is a scary prospect that even many veteran professionals are not willing to face. Again, knowing your limitations helps promote your intellectual maturity.

Get your thinking in order

Be honest about your true reasons for attending graduate school. Proper alignment of priorities before enrolling in graduate school can yield fantastic, long-term career opportunities and personal fulfillment.

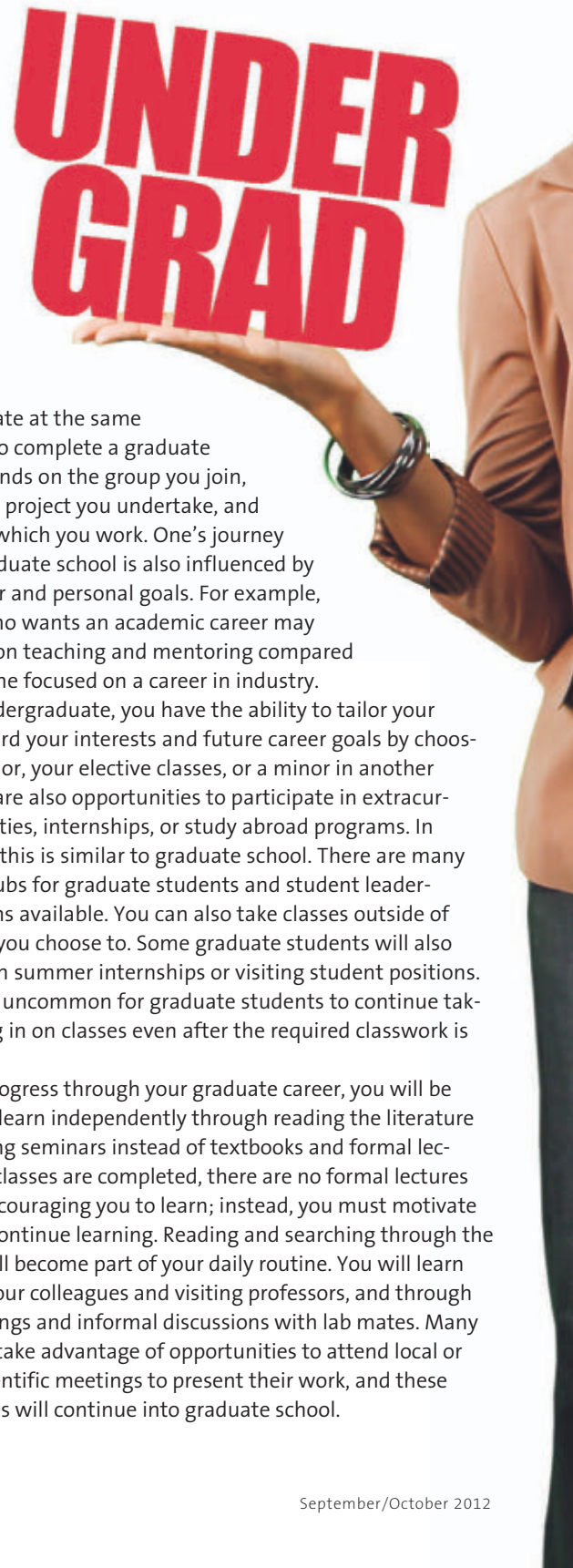
A very wise chemistry professor once told me: "Always get your thinking in order first." Why is it so important to consider the question, "Should I go to graduate school?" The path to even getting into graduate school is long, often lasting 8–10 months, and is fraught with the highs and lows of any major life decision. However, that process pales in comparison with the commitment needed to survive and succeed in earning one's degree!

Graduate school involves year-round coursework, reading, writing, presenting, and of course, research lab work that leads to a dissertation. Earning a terminal degree is not meant to be easy, and definitely is not for everyone. If you get your thinking in order ahead of time, the probability of success rises exponentially. Put simply, if you have dedication for science, you should consider attending graduate school. And if your motivation is strong, it will be one of the most gratifying experiences of your life. Good luck… and never stop asking questions! inc

Matthew J. Mio *is an associate professor at the University of Detroit Mercy in the Department of Chemistry and Biochemistry. In his more than eight years as a faculty member, the most enjoyable part of his career has been academic advising and helping students with their pre-professional training.*

Undergrad vs. Graduate School: How Do They Compare?

BY AMY M. HAMLIN



Now that you have mastered the art of balancing a full course load, a decent study schedule, some undergraduate research, and a social life, graduation is upon you... and it is time to move on to the next chapter of your life, graduate school. Graduate school may seem like a continuation of your undergraduate studies, but there are several differences one should be aware of before embarking on a journey toward a master's or Ph.D.

First, the way in which you are expected to learn new information will change. As an undergrad, there is a huge focus on grades and GPAs. You are expected to learn from lectures, textbooks, and hands-on laboratory experiments — and then be able to display your understanding of the concepts through exams, projects, or papers.

In graduate school there is less of a focus on classwork and GPAs. You will still take classes, but they will be fewer in number and usually only during your first year or two. These classes typically move at a faster pace and require more time outside of lecture. While it is still important to do the best you can in these courses, it may be difficult to completely grasp all the concepts presented. Your focus in graduate classes should not be on the grade, but instead on setting the foundation necessary for further independent study in your field.

Neither the number of credit hours you have taken nor the grades you receive measures your progress or success in a graduate program. Instead, progress is measured by your completion of specific program requirements, work in the research lab, and ability to communicate results to other scientists. Requirements differ by school but may include research reports, a qualifying exam, teaching requirements, a research proposal, a written thesis, and a thesis defense. Your research advisor will also have a big influence on your progression through graduate school and when you will graduate.

Chart your own path

The journey through grad school is unique for each student and is often influenced by your specific research project, as well as your advisor's opinion of your progress as a researcher and teacher. Everyone will take a different amount of time to complete his or her requirements, and the deadlines to complete specific milestones are not set in stone. Another student, even one who began at the same time as you, may not necessarily graduate at the same time. Time to complete a graduate degree depends on the group you join, the research project you undertake, and the pace at which you work. One's journey through graduate school is also influenced by future career and personal goals. For example, someone who wants an academic career may focus more on teaching and mentoring compared with someone focused on a career in industry.

As an undergraduate, you have the ability to tailor your degree toward your interests and future career goals by choosing your major, your elective classes, or a minor in another field. There are also opportunities to participate in extracurricular activities, internships, or study abroad programs. In many ways, this is similar to graduate school. There are many academic clubs for graduate students and student leadership positions available. You can also take classes outside of your field if you choose to. Some graduate students will also participate in summer internships or visiting student positions. It is also not uncommon for graduate students to continue taking or sitting in on classes even after the required classwork is completed.

As you progress through your graduate career, you will be expected to learn independently through reading the literature and attending seminars instead of textbooks and formal lectures. After classes are completed, there are no formal lectures or exams encouraging you to learn; instead, you must motivate yourself to continue learning. Reading and searching through the literature will become part of your daily routine. You will learn from both your colleagues and visiting professors, and through group meetings and informal discussions with lab mates. Many undergrads take advantage of opportunities to attend local or national scientific meetings to present their work, and these opportunities will continue into graduate school.

PHOTO: SEAN PARSONS/ACS

The focus on research

Probably the biggest difference between undergraduate and graduate school is that as a grad student, research becomes your main priority. Most undergrads thinking about going to grad school do participate in some type of undergraduate research, but not with the same intensity as a graduate student. As an undergrad, research is fitted into your schedule around classes, studying, and other extracurricular activities — but as a grad student, everything else is scheduled around your time in the lab. Early in your graduate career, you will begin working on your thesis project, and working on this project will be your primary focus for the next few years of your academic life.

Research will often require late nights, early mornings, and weekends in the lab. Extracurricular activities and time with family and friends are often scheduled around experiments. For some graduate students, this rigorous lab schedule does not allow for as much flexibility or free time. In fact, sometimes it will be necessary to give up time with family and friends in order to focus on your work. Although it may seem attractive as an undergrad to be able to only focus all your time on science instead of having to worry about other required classes outside of your major, it is possible to become burned out if you do not take a break to do something else every once in a while.

In college, there are times when school requires your complete attention, such as when studying for finals, finishing a final project, and so on. This is also true for graduate school. The few weeks before a department presentation or a qualifying exam can be very stressful, but these are the times when the studying and planning skills you learned in college will come in handy. There may also be occasions when more time is required in the lab, right when you're also trying to finish a paper or thesis, for example. Your organizational skills learned in college will be very useful during semesters in grad school when you have to juggle classes, teaching, and research. So don't throw out that college planner just yet! There are also some other obvious differences between undergrad and grad school. First, as a graduate student in the sciences, your tuition and fees will be covered and you will receive a modest teaching or research stipend to cover living expenses. So instead of relying on family, scholarships, part-time jobs, or student loans to finance your education, your educational expenses will now be covered — and you may even have a little extra money.

Another difference is that instead of getting breaks from school, such as spring break or summer break, you will have vacation time. Some schools or groups may even have a set number of vacation days you may take per year. University breaks mean a break from teaching, but that doesn't mean that you get a break from the lab. Lab work may even require working through long weekends and holidays when your friends are off having fun.

It is important to know what is the most pressing priority during each stage of your graduate career. Study and organizational skills learned in college will be very helpful as you further your education, but don't expect graduate school to just be a continuation of your undergrad experience. Graduate school is a huge commitment, but it also provides many new and exciting opportunities to learn and make a contribution to the scientific community. inc

Amy M. Hamlin *is a graduate student at the University of California, Berkeley studying synthetic organic chemistry. She graduated from the University of Detroit Mercy in 2009 with a B.S. in chemistry.*

ASK THE RECRUITERS...

...about Applying to Graduate School

Featuring questions and answers with guest columnist Melissa Bowman, Coordinator of Academic Programs for Polymer Science at the University of Akron (UA), OH. One of her main responsibilities is recruitment and admissions for the M.S. and Ph.D. programs. If you have a question to ask a graduate school recruiter, please e-mail it to inChemistry@acs.org.

inC: How important is the GPA to the graduate school process?

Bowman: Admissions committees typically place a lot of weight on the GPA, especially in math and science courses. The average GPA of students admitted into UA M.S. and Ph.D. programs in polymer science is 3.50. Every part of each student's application is examined closely by the admissions committee, so there is no single element that would make or break a student's admission. Even though they are ranked by GPA, all applicants in the 3.0 or higher GPA range are evaluated on an individual basis.

inC: Do any other factors compensate for low GRE scores, or will high GRE scores compensate for low grades?

Bowman: Many admissions committees view GRE scores as good indicators of success. Successful research experience can sometimes compensate for lower GRE scores. UA's average GRE scores range from 1000 to 1200, verbal plus quantitative. With international applications, we find that each country typically has trends of certain scores, and the admissions committee keeps this in mind when evaluating these applications.

inC: If an applicant has had academic obstacles as an undergraduate, are admissions officers understanding of this, or do they focus on the GPA trend?

Bowman: Ph.D. programs typically have a very tough first-year interdisciplinary curriculum, and the rest of the program is research-intensive. Admissions committees often feel the best predictors of students' success are grades and test scores in science and math. Both help predict whether students are able to take on difficult subject matter and succeed. The admissions committee may be willing to take into consideration one or two subpar semesters, but not a pattern of such performance.

inC: How important is being published? Do you expect undergraduates to have first authorship on research papers when they apply to graduate school?

Bowman: Publications certainly catch the eye of our admissions committee members, but first authorship is not a necessity. Some prior research experience, however, is usually a must.

inC: Do undergraduates need to include recommendation letters from their research advisors?

Bowman: If a student has had a research experience, admissions committees typically expect to see a letter speaking about what they did, how they did it, and their outcomes. Letters of recommendation should come from professors who have first-hand knowledge about how the student handles a scientific question and answer. Our admissions committee members look closely at the wording in recommendation letters and often will contact a recommender if they have questions.

inC: What do admissions committees look for in a recommendation letter?

Bowman: Graduate school admissions committees look for students who are hardworking, innovative, and creative problem solvers who also have a passion for research. They want to see how students attacked problems, what avenues they used to solve problems, and the outcomes. They look for students who can work independently, yet contribute to a group as well. Recommendation letters should be based mostly on students' performance in the classroom and laboratory, so students should work hard in both. If students have the passion for scientific research it will show, and their professors can write about it.

inC: Should applicants e-mail faculty at the institution to which they're applying during the application process?

Bowman: We encourage prospective students to initiate conversation with graduate faculty about research topics and ask questions about their research. The best way to initiate contact is by e-mail.

inC: What is the expected 'netiquette' when contacting graduate professors?

Bowman: Send an e-mail introducing yourself and explain why you are contacting them. Let them know what kinds of projects you are working on and if there is any connection to something they are doing. Any questions about the application process, on the other hand, should be directed to the admissions office.

...about Applying for a Job in Industry

Featuring questions and answers with guest columnist Mark D. Frishberg, Ph.D., Vice President of Business Development at JenKem Technology USA, Inc. If you have a question to ask an industry recruiter, please e-mail it to inChemistry@acs.org.

inC: Many universities offer an ACS-certified chemistry degree, which requires more coursework in chemistry than a non-certified degree. Does having an ACS-certified degree make a graduate more likely to get an industry job?

Frishberg: I strongly recommend getting an ACS-certified chemistry degree, if it's an option. It may not make a difference in small companies, or with management who are not familiar with this distinction, but it does show a higher level of academic achievement. Also, it could be very helpful to you if you're seeking an entry-level position with a large company as a technician or associate. ACS surveys have shown that a chemistry graduate with a non-certified degree may be offered several thousand dollars less in salary than a B.S. chemist with an ACS-certified degree. The surveys have also shown that B.S. chemists with ACS-certified degrees are more likely to start at the "chemist" entry level, and thus be one step higher in advancement from the very beginning.

inC: What is your opinion on undergraduate research, or the lack thereof? Will having research experience make any difference to a potential employer?

Frishberg: Undergraduate research experience is generally good to have on one's résumé. It improves one's chances to acquire more lab skills, offers the potential for publication, and generally results in better reference letters from the faculty member — all of which will be viewed positively by a prospective employer. If you haven't done undergraduate research, for whatever reason, make sure that your résumé includes some other activities or accomplishments that strengthen your credentials.

inC: Does a candidate's area of research have any impact when you are screening résumés?

Frishberg: Your area of research may or may not have impact. It depends on the employer and the entry-level position under consideration. What is important is that you have attained some research experience.

inC: What types of technical and professional skills should one try to acquire as an undergraduate?

Frishberg: At the undergraduate level, be sure to build the basic academic and laboratory skills needed to enter the chemistry profession, whether you're moving directly into industry, or going on to grad school first. You should have a solid background in the foundational areas of organic, physical, inorganic, analytical, and biochemistry, along with math and physics. If you take specialized courses, make sure that they are not in lieu of core courses, and that they are directed toward specific career goals. For positions involving laboratory work, expected skills include being able to set up and run reactions, and use associated analytical and computer techniques. Try to learn advanced techniques that differentiate you.

Keep in mind that as an undergraduate, you are learning how to learn. Industry is prepared to teach you about their products and markets, and the specific skills needed to perform your job responsibilities. Employers do not, however, expect to need to teach you basic chemistry and computer skills.

inC: Which non-technical skills are most important?

Frishberg: So-called "soft skills," or non-technical capabilities, have become more and more important in industry, and elsewhere. These include skills in oral and written communication, as well as listening. The ability to function well in a team environment and adjust to a variety of cultures is also very important.

inC: Will it benefit me to seek out volunteer experiences or work experiences unrelated to chemistry?

Frishberg: It depends on what they are, the lessons or skills you gain from them, and how you present the experiences in a résumé or interview. Such skills or experiences can add to your résumé by providing examples of leadership capabilities, teamwork, and/or comfort with marketplace interactions. They may not be the best opportunity for strengthening one's technical skills, but many companies do look favorably at a person who is well rounded in their skill set.

For example, let's say a student tried but failed to get a summer job or internship in a lab, and took a job at a fast food restaurant. If the person were to summarize this experience on their résumé or at an interview as essentially "just getting any kind of job and going through the paces," then there is not much value. On the other hand, if the student were to explain that they used the opportunity to earn some money to help pay for their college expenses, while also getting a chance to interact with the public and learn how to function in a team environment to meet company objectives, then it shows maturity and an understanding of interpersonal dynamics that could be important in business. inc

VOICES OF EXPERIENCE

In this issue, graduate students offer tips about choosing a graduate program.

COMPILED BY LORI BETSOCK

Do You Have the Passion?

My greatest fear transitioning into graduate school was self-doubt: Am I smart enough to really do this? As an undergraduate, I struggled with understanding much more than the first few paragraphs in scientific papers, much less following the logical conclusions in the results section and making sense of the materials and methods.

Reflecting back on my relative inexperience as a scientist, my greatest pleasure in graduate school has been transitioning from being a complete novice in my field to becoming a published author with some expertise, albeit still growing. Hard work, persistence, and even some luck all have gone into building my skill set, but I think one of the most important factors has been a passion for my field.

Graduate school can really only be described as an act of love. This may seem surprising given that textbooks and scientific papers are written in an almost sterile manner. But go to any thesis defense and listen, not so much to the content of the talk but rather to how the student presents it. Reactions, crystal structures, and microscopy images — any type of data, really — are presented objectively... but approached almost as if they were great paintings. I have even heard a fellow student describe J-coupling on an NMR spectrum as "beautiful."

The passion for improving not only my scholarship but also my craft as a scientist is what drives me to stay up all night monitoring a reaction or even spend hundreds of hours on microscopy to consistently reproduce the one perfect image. I think I asked the wrong question when I started graduate school. The question I should have asked was not, "Am I smart enough?" but rather, "Am I passionate enough?" inc

Nathan Cook *is a fifth-year graduate student at Rice University. His research focuses on the interaction of metal complexes with amyloid proteins.*

Solving the Graduate School Puzzle

The process of applying for and choosing a graduate school is similar to assembling a large puzzle. First, you must decide which pieces to use, and then figure out how to fit them all together.

I entered a chemical engineering program as an undergraduate with a broad career goal of helping develop treatments for diseases. After working as a tutor, I realized I had a passion for teaching, and that I could combine it with research by working as a university professor. Obtaining a Ph.D. seemed like a logical next step.

To piece together the grad school puzzle, I considered using university rankings as a guide, and I looked at top-ranking chemical engineering graduate programs. I quickly noticed that California had a strong presence, and coming from Puerto Rico, California's warm weather was definitely a bonus.

While working in a biotechnology lab, I became fascinated with protein engineering, so I had figured out another puzzle piece — which area to specialize in. "Sampling" other research areas through an industry internship and an international Research Experience for Undergraduates helped me feel sure about my decision. I narrowed my search by looking for departments that had multiple faculty members working in protein engineering.

I also participated in a few "preview programs" to learn about a university's graduate programs before actually applying. Making the final decision was hard, but it all came down to choosing the school with the most appealing attributes. For me, these were: having multiple professors working in my area of interest, including one whose research I found particularly fascinating; a collaborative environment; a diverse student body; location and weather; and the availability of exciting extracurricular activities, among others. inc

Jorge L. Santiago Ortiz *is a third-year graduate student in chemical and biomolecular engineering at the University of California, Berkeley.*

Opting for a Professional Science Master's Degree

As an undergraduate, I majored in biochemistry because the discipline combined my two favorite high school classes. By the time I was a senior I knew that I loved doing research and came to the conclusion that I wanted to get a Ph.D.

After attending the Graduate School Reality Check event at an ACS national meeting, I learned about Professional Science Master's (PSM) degree programs. I talked to a representative for the Keck Graduate Institute (KGI) of Applied Life Sciences about their Master of Bioscience program.

PSM programs are geared to students who already have scientific backgrounds and are interested in careers in industry. These programs include business classes focused on life science and other industry areas.

Choosing a PSM program meant I would have to learn about the business side to science. I was nervous, since I had no type of business background (I never even took economics). However, since I enrolled I have had not only science classes but also business classes in bioscience strategy and introductory finance and accounting principles. I have also taken on an independent research project combining the laboratories from Western University of Health Sciences and KGI.

Most importantly, I have learned how to be a professional in the scientific community. I have four different résumés (highlighting different skills), have done mock interviews (and actual interviews for biotechnology companies), have gone to several team building and project management seminars, and just completed a summer internship with the University of Nebraska Medical Center.

I have always loved science, and I eventually want to earn a Ph.D., but now I can be more successful in the scientific community. I know how to market myself and make myself successful in the life science industry because of my PSM. inc

Kelly Gross *will complete the PSM degree program at KGI in 2013 and then hopes to continue her studies in KGI's Ph.D. program in pharmacology. She earned a B.S. in biochemistry from Angelo State University in San Angelo, TX.*

The Terminal Master's Pathway

I graduated in the top 10% of my high school class, and like many other students, I was ready to go off to college and be on my own. Well, things were not as I had imagined, and adjusting to college life was a struggle.

College was not where I wanted to be at that moment, so I left without a degree and almost $30,000 in debt. I got a job to support myself and started paying off the college debt, but always felt that I had unfinished business. Eventually, I enrolled at a community college and then transferred to Illinois State University (ISU) and earned B.S. degrees in biochemistry/molecular biology and chemistry.

At ISU, as I was reading descriptions of different areas of research, work with *Leishmania* (a parasite that causes leishmaniasis disease) caught my interest.

This research experience opened my eyes to a possible research career in biochemistry. However, with a B.S. degree, I didn't feel that I had enough experience yet. The idea of earning a Ph.D. was tempting, but as a nontraditional student, I wasn't sure I was up for the challenge. Instead, I applied to the terminal Master of Science program at ISU and continued to conduct research in Marjorie Jones' lab.

The past two years in the M.S. program have had their ups and downs. The coursework is tough, and research does not always work. In addition, I am a teaching assistant, which requires me to assist in undergraduate labs, grading, and tutoring.

In the end, however, it *was* worth it! I've made some great friends, improved my communication skills, and had real access to research equipment. Most importantly, the program further developed my problem-solving skills and confidence. With a terminal M.S. degree, I am ready to step into industry and will also be ahead of the curve when I pursue a Ph.D. inc

Victoria H. Nguyen *graduated in May 2012 from Illinois State University with an M.S. in chemistry. She is working as a polymer synthesis intern at Valspar Corporation in Marengo, IL.*

Finding Your Niche

"Why?" When it came to choosing chemistry as a career, the question, rather than the answer, came easily to me. I had always been curious, and through chemistry, I felt I could find how and why things work. The more I studied chemistry, the more I got asked by those around me who were not in the field to share with them what I knew. I enjoyed it so much that I decided to pursue graduate studies.

I had participated in REU programs at the University of Wisconsin-Madison (UW-M) and Penn State. Both experiences allowed me to learn and participate in outreach activities. Most importantly, I was able to do research in what ultimately became my field: materials chemistry. I found a niche in a field that combines fundamental, interdisciplinary, and practical research.

When it came to choosing a graduate program, I wanted a school where I could do more than research during my Ph.D. training, so I did extensive research. I learned that UW-M has been a pioneer in science communication for many years, and I knew it was a good fit. I also learned that, as a graduate student pursuing materials chemistry, I could earn a minor in life sciences communication or a science teaching certificate by taking some additional classes.

To me, this is more than ideal, considering that I truly love doing research, but I love talking about my research to nonscientists even more. I can see myself working as a science educator by teaching, writing, or working in chemistry outreach programs where I can communicate scientific knowledge in terms that everyone can understand. inc

Jaritza Gómez-Zayas *did her undergraduate studies at the University of Puerto Rico at Cayey. She is finishing her first year as a Ph.D. student in materials chemistry at the University of Wisconsin-Madison.*

ACS
Chemistry for Life™

ACS Directory of Graduate Research 2011

+

DGRweb: Searchable Online Database 2011

AVAILABLE IN HARDCOVER AND FREE ONLINE!

>> Facilitates Research Collaborations in Chemical Sciences

>> Enables Networking Across Chemical Subdisciplines

>> Helps Students with Selecting a Graduate Program

DGR and **DGRweb 2011** provide the most comprehensive information about graduate research and researchers at universities in North America.

Conduct free online searches at **www.acs.org/dgrweb.**

>> Get your print copy of DGR 2011 today!

Item **DGR2011**, US **$105** each plus shipping. Additional taxes will be charged where applicable.

Online: www.acs.org/dgrweb then use the sidebar link to purchase a print copy

By phone: using a credit card (MasterCard, Visa, American Express, or Discover), call **1-800-227-5558** or **1-202-872-4600**

By fax: send your order to **1-202-872-6067** (please include credit card account number, expiration date, name on the card, and authorizing signature)

SEARCH EIGHT AVAILABLE DISCIPLINES:

> Chemistry
> Chemical Engineering
> Biochemistry
> Medicinal/Pharmaceutical Chemistry
> Polymers and Materials Science
> Toxicology
> Marine Science
> Environmental Science

FIND INFORMATION ON:

672
academic departments

8,542
faculty members

65,995
publication citations

ACS Chemistry for Life™ | SCI America | AIChE

Call for Applications

SCI SCHOLARS

Summer Industrial Internship Program for Undergraduates

Summer 2013

The Society of Chemical Industry (SCI) is pleased to offer the **SCI Scholars Program,** which is designed to introduce exceptional chemistry and chemical engineering students to careers in chemical industry. Selected students will become SCI Scholars and participate in one of many prestigious 10-week industrial internships during the summer of 2013.

BENEFITS:

- Industrial experience
- Generous award—the stipend is in the $7,000–10,000 range for the 10-week internship
- Certificate and $1000 travel award to participate in a scientific meeting
- SCI Scholars will nominate a high school chemistry teacher for recognition and a $1000 award

REQUIREMENTS:

- Current sophomore or junior
- Chemistry or chemical engineering major
- Minimum GPA of 3.5
- U.S. citizen or permanent resident

SCI Scholars will be selected based upon the strength of their application, statement of interest, and letters of recommendation.

To see detailed information and apply, visit www.acs.org/sci

Succeeding in an Uncertain Job Market

How I Blazed My Own Trail

BY NICHOLAS M. KELLY

In 2009, I completed my undergraduate degree, only to enter what was the worst job market since the 1980s. Jobs were few and the future looked uncertain. After some trial and error, I eventually found a path that worked for me. I'm now a process sustaining engineer at Fairchild Semiconductor. Previously I had a full-time process engineer co-op and earned an M.S. degree in chemistry. In the next few pages, I'll describe what I learned in my journey — including coming to view my chemistry degree as a springboard into a world not limited to medical school, a Ph.D., or a lab bench.

When I was taking classes as an undergrad, I was also working on a senior thesis, spending time with friends, and figuring out where my life was going after graduation. I envied my peers who "knew" they were going to medical school, or who had gotten into graduate school (which, in the sciences, overwhelmingly meant working on a Ph.D.). Others had lined up well-paying employment in finance or engineering. Still more were enrolled in Teach for America, had a Fulbright Scholarship, or were going to teach English in Korea.

Immediately after college, Kelly (RIGHT) worked as an energy engineer for Kalamazoo College, where his responsibilities included obtaining temperature measurements and estimating steam leakage rates in the college's steam tunnels. On the left is his co-worker Chris Hutchinson.

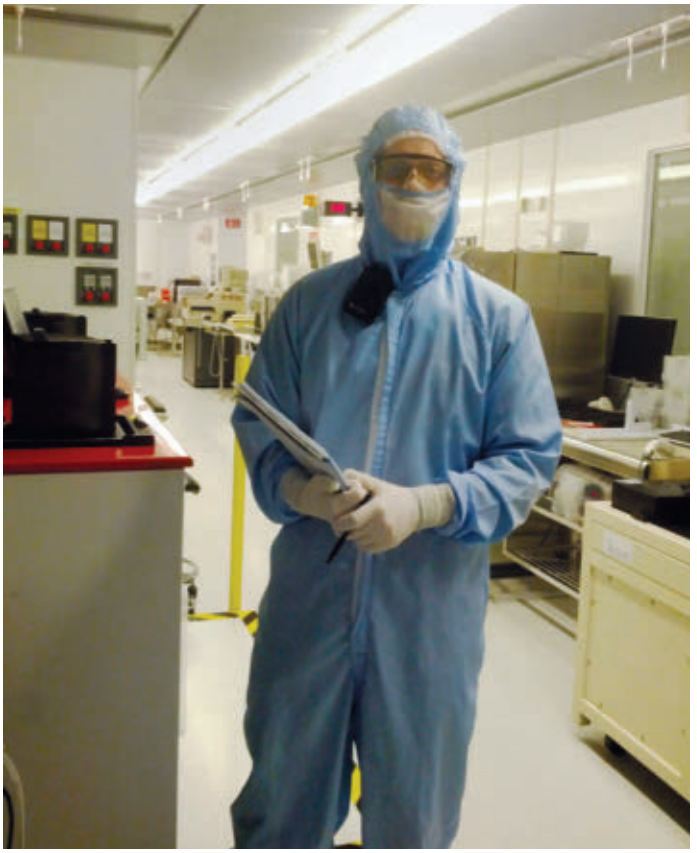
Everyone seemed to have his or her life in order... except me. As much as I longed for the freedom of not being in school, it was nerve-wracking to consider what would happen after graduation. So I did what many do when faced with an uncomfortable truth: I avoided thinking about it, for the most part.

Of course, I'd entertained visions of developing the next renewable energy source, perhaps overhauling the food system along the way. How to actually pursue those dreams, however, was much less obvious. For me, finding the answer required a journey.

Career road trip

It took a summer of working a job in the facilities management area as an energy efficiency intern at Kalamazoo College and a newfound delight in culinary simplicity. I managed to save up enough money for a road trip across the country, during which I would apply to jobs along the way. Plenty of older friends had already graduated and started working, which meant I had plenty of couches to sleep on. This was my first lesson in the value of a strong network: know people, talk to them

Kelly worked as a wildland firefighter and is shown here at a controlled burn in Pike National Forest in the Colorado Rockies. The fire was intentionally set by firefighters to reduce the amount of combustible material in the forest.



At the Fairchild Semiconductor fabrication facility, Kelly spends much of his time in a cleanroom suit running experiments and solving problems relating to wafer manufacturing.

PHOTOS COURTESY OF ??????????????????????????

occasionally, and they will be tremendously helpful as you bounce around in this world.

I applied to jobs all over: in environmental consulting, labs, and even warehouses. My approach looked something like this: find a job posting; decide why the job sounded interesting; and try to communicate my exuberance and suitability. I figured that saying I had some project management experience was sufficient, rather than drawing the connections between *my* past, *their* needs, and our future together. I assumed each company was going to make the effort to see how and where I could help.

Not surprisingly, despite having a degree in the physical sciences and four summers of internship experience, I still got no calls back. This was due in part to my approach, and the fact that the fall of 2009 really was a bad time to compete for entry-level employment. It turned out to be an excellent time, however, for a reality check.

After three months on the road, I returned to my parents' house in Michigan with a rapidly dwindling bank account and some radically redrawn plans. I had assumed I would find a job with a starting salary of at least $38,000 (the median annual salary among recent graduates with a B.A. or B.S., according to ACS). But I never even considered the idea that I might be *un*employed — just as were many of my college classmates.

Preparing for my next act

I spent weeks sitting in local coffee shops, searching online, and applying to jobs. I became efficient at writing e-mails to people from whom I never expected responses. I made phone calls, bought people coffee, and generally did everything one is told to do… but to no avail.

At some point I became disillusioned with jobs in energy, environment, and chemistry, and decided I just wanted to work outdoors for a while. I applied with the U.S. Bureau of Land Management, National Park Service, and U.S. Forest Service. I had always thought it would be fun to be a wildland firefighter, so I sent out salvos of applications through USAJobs.gov, the federal government's official job site. About six weeks later I was offered a job on a fire engine in Pike National Forest in the Colorado Rockies. Goodbye, chemistry!

Coming out of academia, serving on a fire crew was an adjustment. The people, working environment, and responsibilities are all vastly different. Before, I had to accomplish multiple projects

simultaneously, with little opportunity to do anything else. Now I was expected to keep my mouth shut and swing a tool. This was, believe it or not, enormously liberating: to not be responsible for things beyond my immediate control. There were no papers due, no finals, and no thoughts about what I was going to do when I graduated. I had to show up on time and work hard — but evenings and weekends were mine.

However, I soon found myself spending my spare time re-reading old textbooks, and realized I needed to get back into science. Making this decision was an exercise in "satisficing" — that is, finding something that was reasonably interesting and paid well *enough*, but still offered a sense of balance.

I thought about getting a Ph.D. in chemistry or chemical engineering, but I worried that becoming so highly educated with such a small amount of work experience might make it difficult to find employment. Going for a master's degree, on the other hand, felt just right. It would give me an edge in the market but would neither take five years nor pigeonhole me into something forever. I eventually found and enrolled in a program that grants an M.S. in chemistry after 15 months, including 9 months of work experience.

I soon found myself spending my spare time re-reading old textbooks, and realized I needed to get back into science.

In contrast to going back for a traditional master's or Ph.D., my master's program was more akin to an apprenticeship. I worked in a semiconductor fabrication facility that makes chips for cell phones and tablet computers. My job was to prevent failures from occurring in plasma etch processes and processing tools. To be successful, I had to rely on concepts from almost every chemistry course that I'd ever taken, as well as electronics and electricity and magnetism. After graduation, I could choose to stay where I was, look for another job in semiconductors or another chemistry-related field, continue on for a Ph.D. in chemistry, or even go back to working for the Forest Service.

Finding a place in a crowded pool

According to the *ACS Annual Report of Earned Degrees, 2008–2009,* there were about 14,600 B.A. and B.S. degrees in chemistry awarded in the United States in 2009, and about 5000 in chemical engineering. At the same time, I was competing with newly unemployed, experienced chemists for entry-level jobs.

With so many people vying for a limited number of opportunities, finding a job was and still is not as simple as flashing your diploma; you need to stand out. Suppose, for instance, that I have the skills to solve a specific set of technical problems faced by a firm. Once they post a job opening, I need to convince them that I'm one of the top candidates, based on three personal assets: my experience, people in my network, and my education.

Companies are looking for someone with the experience to get the job done and add value to the organization. Frequently that means taking on small, unglamorous tasks that aren't discussed in theoretical coursework but are still absolutely essential. Applicants with previous experience frequently come in with a certain understanding of what is and isn't possible with the available resources. In addition, so-called "soft skills" — like writing, giving presentations, or simply being able to work with a rude co-worker — are very desirable to employers.

People in your network can also help you distinguish yourself with a potential employer. If you've worked successfully as a member of a team, that establishes you as a competent colleague, with whom others will want to work. Your fellow team members can be a *huge* component of your network, by serving as references for future employers.

Last, but not least, there is your education. Your undergraduate degree will qualify you for certain types of entry-level positions, but will not distinguish you from the thousands of other recently minted B.A. and B.S. job candidates. If you're interested in continuing your education, however, remember that there are options beyond Ph.D.s and professional degree programs.

Master's degrees offer specialized experience (e.g., research and advanced coursework) that industry seeks in applicants, and they do so without a four-plus-year commitment. Many master's programs offer the opportunity to co-op with a company in your field. After a company invests many months in training you, you're an obvious choice for any permanent openings. And even if you don't ultimately work for that company, you still have contacts within the industry, and experience with which to market yourself.

Looking back, planning ahead

I completed my undergraduate degree in 2009, but since then I've had plenty of adventures. Two years ago I was just starting my graduate coursework, and now I have an M.S. degree and a position at one of the most established and widely recognized names in semiconductors.

I've also learned a few simple but valuable lessons. First, use your experience, references, and education to actively market yourself to potential employers. Don't get stuck thinking that the only experience worth having is in your industry! Taking a year off to do something unusual is often a great option (and not just for your psyche: it *will* make you stand out later). And most importantly, try to figure out what you want, and use that insight to guide you.

By applying these principles (mostly unwittingly), I've more than once found myself working at a job that was fulfilling, with some time on the side to enjoy life. The world is a big place; don't be afraid to wander out into it once in a while. inc

Nicholas M. Kelly *is a process sustaining engineer at Fairchild Semiconductor in Portland, ME. He earned a B.A. in chemistry at Kalamazoo College, MI, and an M.S. in semiconductor processing at the University of Oregon, Eugene, OR.*

ACS **Member Insurance Program**

PROTECTION. COMMITMENT. STABILITY.

Have you started building your safety net?

Whether you're **IN SCHOOL**, **GETTING READY TO GRADUATE**, or **STARTING YOUR CAREER**, it is time to start thinking about coverage. Did you know that your ACS membership gives you access to a variety of benefits, including insurance?

IT'S NEVER TOO EARLY! Do you have a plan in case you become ill and need to see a doctor? Or what if you get injured and need to visit the emergency room? Do you have a vehicle that needs to be covered? Do you have renters or homeowners insurance? These are very important considerations for someone in your stage of life. The world is full of unexpected events that can affect your life, and insurance is crucial in these moments.

The ACS Member Insurance Program can help you build your insurance portfolio with plans that are affordable and portable:

Short-Term Medical
Temporary health insurance designed to protect you when you are between permanent health plans.

Auto & Homeowners Plus
For vehicles, rentals, homes, and other personal property.

Health Insurance Brokerage Service
Connects you with over 100 basic medical insurance plan options, tailored to fit your lifestyle.

Group Term Life*
For just pennies a day, get the coverage you need to help the loved ones you leave behind.

Sponsored by the Board of Trustees
Group Insurance Plans for ACS Members
Your Colleagues Working For You!

ACS Insurance Plans **Member Insurance Program**

To find out more and apply online: **1.866.679.0811** | **www.acsmemberinsurance.com/student**

**Underwritten by New York Life Insurance Company, 51 Madison Avenue, New York, NY 10010, under Policy Form GMR. Brokered and administered by Pearl Insurance, 1200 E Glen Avenue, Peoria Heights, IL 61616.*

120065-ACS-AllPlans
License: CA# 0F76076, AR# 1322

How Chapters Find the Funds to Attend ACS National Meetings

BY ERIC STEWART

Have you heard? The 245th ACS National Meeting will be in New Orleans, April 7–11, 2013! While traveling to an ACS national meeting is always an amazing experience for members of student chapters, when you add the fun and excitement of New Orleans to the already great networking, educational, and résumé-building opportunities at ACS national meetings, every ACS student chapter should be signing up members NOW to attend.

"Sure," you might be saying, "attending would be a great thing to do. But how do we pay for it?" Well, read on!

Money helps!

When you add it all up, there are potentially a lot of expenses related to attending an ACS national meeting, including not only travel, accommodations, and registration but also poster printing, incidental expenses, and more. Fortunately, there is also a long list of possible sources of funds, not to mention a variety of proven tips and strategies that other chapters are happy to share.

Know your sources

Everyone seems to agree on one central fact: you'll almost certainly have to tap a variety of funding sources in order to take some or all of your chapter members to the national meeting. Fortunately, there are many to choose from:

FUNDRAISING — First and foremost, you and your fellow members can directly increase your ability to attend the national meeting by conducting your own fundraising activities. In speaking with ACS student members and faculty advisors, we heard about a wide range of ventures. In fact, the list of fundraising ideas is limited only by your imagination.

But if you're still looking for ideas to implement on your own campus, be sure to read the Chapter Spotlight section of *inChemistry* magazine to learn about the many innovative ways chapters go about raising funds from year to year. You can also check out Allison Byrum Proffitt's "Show Me the Money, Honey: Fund-Raising Ideas for ACS Student Chapters" in the February/March 2012 issue. Read the article online at www.acs.org/inchemistry.

ACS TRAVEL GRANTS — The ACS Undergraduate Programs Office offers National Meeting Travel Grants to help ACS student chapters attend national meetings. Monique Wilhelm, adjunct lecturer and chapter advisor at the University of Michigan Flint (UMF), notes that her students get a combination of benefits from writing proposals for these grants each year. "In addition to helping to make attending the meeting more affordable," she notes, "it's also a great experience for our students. It's not nearly as challenging as writing a grant for NSF funding, but it's still a real sense of accomplishment." For more information, visit www.acs.org/undergrad and click on Student Chapters and Grants.

ACS DIVISION-LEVEL GRANTS — In addition to Travel Grants from the ACS Undergraduate Programs Office, be sure to check out the websites of the 34 ACS divisions and secretariats, many of which also offer grants to individual students who are presenting posters to their specific technical areas.

UNIVERSITY RESEARCH/TRAVEL GRANTS — Every college and university is different, but you should check with your chemistry department to see whether your institution offers grants for costs related to research, which sometimes cover costs such as travel or printing posters.

ACS LOCAL SECTION GRANTS — Many ACS local sections offer grants to help ACS student chapters. Be sure to reach out to your local section to inquire. "I always tell my students, 'You're now colleagues with working chemists in the region,'" says Wilhelm, "'and they're interested in helping you get your career off to a strong start.' So check to see if your local section can help."

SUPPORT FROM YOUR DEPARTMENT — Ask whether your own chemistry department can help with travel funds. According to Pam Mabrouk, a professor of chemistry and chemical biology at Northeastern University and associate dean for academic affairs, it never hurts to try to remind potential sources of funding about the professional opportunities a meeting presents for students. Several years ago, for example, Mabrouk urged one of her freshman students, Anthony Fusco, to write an abstract about his research, and the recommendation paid off. "With Professor Mabrouk's advice and help," says Fusco, "I managed to get the grant that allowed me to go to my first meeting, and that in turn helped me go to other ones — and those experiences ultimately helped me get my current job."

YOUR INSTITUTION'S STUDENT GOVERNMENT — Just as with your chemistry department, your student government may be interested in helping you get to the national meeting, especially if doing so will help to bring some national recognition to your institution in the form of an ACS student chapter award.

Other tips and strategies

STICK TO A SCHEDULE — At Henderson State University in Arkadelphia, AR, members of the ACS student chapter usually begin planning for the national meeting early in the fall, says David Bateman, assistant professor of chemistry and faculty advisor. "That way, by the time Christmas break rolls around, we know who's going and have our airplane tickets and hotel rooms reserved and paid for." Also, Bateman says, it means his students can spend the few months leading up to the meeting finishing up their posters explaining their research. "There are so many things to do," he says, "if we don't stay organized, it could be a headache to keep up with everything."

DELEGATE ROLES — One of the realities of raising enough funds for the national meeting is that you'll probably need to have a number of different "pots" of money to make it work. "We have a treasurer who keeps track of the various funds we've raised," notes Bateman, "but my co-sponsor and I stay in constant touch and meet with our members regularly to stay on top. We also have a secretary who's in charge of writing reports and updating changes on Facebook so all members know what's going on."

PHOTO COURTESY OF SOUTH TEXAS COLLEGE

PHOTO COURTESY OF CARROLL UNIVERSITY

TOP: **The South Texas College (McAllen) ACS student chapter has attended ACS national meetings since 2005, thanks to members' diligence in applying for travel grants, raising funds, and finding creative ways to reduce travel costs.**
BOTTOM: **To finance their travel to ACS national meetings, chapter members at Carroll University (Waukesha, WI) tap into a special chemistry department endowment fund that pays for the trips.**

BUILD ON YOUR SUCCESSES — At UMF, says Wilhelm, there was a time when the students had to pay for the bulk of their travel expenses themselves. Then they began to raise funds by selling T-shirts and ACS study guides, and eventually became more active, selling lab coats and other items. This led to increased recognition and visibility on campus, which helped them win an Outstanding Student Chapter Award — and that in turn led the university to want to help them attend the national meeting in order to receive the award.

CONTROL COSTS — Last but not least, another strategy for helping your members get to the national meeting is to control expenses wherever you can. Ludivina Avila, chemistry instructor at South Texas College (STC) and faculty advisor of STC's ACS student chapter, has been helping her students attend the national meeting each spring (and sometimes the fall meetings as well) since 2005.

Avila observes that in addition to being diligent about applying for travel grants and raising funds through sales, her group has also developed some reliable ways to reduce expenses — while not detracting from the experience. "For example," she notes, "my students have used online hotel booking services to get the best possible room rates, and also found ways to reduce airfare by arranging to arrive to meetings a day or two earlier."

In addition, she explains, her students have developed strategies to control incidental costs during the meeting itself. For example, when her group arrives, one of the first things they do is have some members find a local grocery store and stock up on water, sodas, chips, and snacks. "That way," she explains, "the students can use their money for other things during the meeting."

Ideas for Funding National Meeting Travel

- www.acs.org/inchemistry Read "Show Me the Money, Honey" by Allison Byrum Proffitt in the February/March 2012 issue on pages 12–14.
- www.acs.org/undergrad Click on Student Chapters and Grants to find out about $300 ACS Travel Grants that are available to student chapters.
- www.acs.org/divisions Click on Technical Division Websites and search "awards." inc

PHOTO COURTESY OF MARION UNIVERSITY

Don't Overlook Local Scholarships and Foundations

Here's a tip that may or may not apply to your institution, but it's still worth investigating. There may be specialized endowments or scholarship funds to which you can apply.

At Carroll University, for example, the ACS student chapter is fortunate to pay for a significant portion of its meeting travel expenses thanks to an endowment that is only available to one small group within the field of higher education: the students and faculty of the chemistry department of Carroll University. "In fact," says Greg Marks, faculty advisor and assistant professor of biochemistry and chemistry, "that money not only pays for our trips to national meetings but also allows a small group of students and faculty members to do research abroad each year."

Other endowments and foundations may focus on certain student demographics, areas of inquiry, or regions of the country — so it's worth investigating to see if there are any that would be interested in supporting your group's efforts to attend national meetings. inc

Get started today!

Make no mistake: attending a national meeting is worth a little extra effort.

"The whole experience definitely lived up to my expectations," says Elizabeth Ebensperger, Carroll University's ACS student chapter president and a junior majoring in biochemistry. "I loved meeting the other students and working chemists, attending the various presentations, and talking with different recruiters." At her last national meeting, Ebensperger presented a poster on her university's student chapter. "But next year in New Orleans," she notes, "it's my chance to present on my own research, and I'm really looking forward to that."

If you and your fellow members are interested in enjoying a similar experience, there's no better time to start than now! In fact, across the country, chapters begin planning for the spring national meeting each fall — and continue their fundraising activities throughout the year.

So good luck with your planning efforts, and we hope to see you in New Orleans! inc

Eric Stewart *is a freelance writer and editor living in Arlington, VA.*

PENNSTATE Berks 1855

SPOTLIGHT

Penn State Berks Reading, PA

COMPILED BY CHRIS ZEIGLER

Chapter president: Kristin Kamowski **Number of chapter members:** 75 **Number of ACS student members:** 10
Website: www.clubs.psu.edu/bk/chemsociety **Institution description:** Small, public, suburban, 4-year institution

Q: In what ways does your chapter give back to the community?

A: We've contributed to our community in several unique ways. First, we volunteer time at a nearby city library to educate local kids about chemistry and its impact on their everyday lives. Most recently we worked on a drive to collect soda can tabs for the Ronald McDonald House in Hershey, PA, to benefit the families of children with life-threatening diseases who are undergoing treatment at the Hershey Medical Center.

Q: What are your most popular or unique chapter activities?

A: Our most unique activity is a "glow party" where we perform experiments while a DJ plays rave music. We sell glow sticks and bracelets as a fundraiser for the chapter. The most popular events that we sponsor are our volunteer activities at local libraries. We have a great turnout from the community and have a lot of fun working with the kids.

Q: Do you collaborate with other clubs on campus on activities?

A: We have collaborated with the Environmental Club to clean up litter in the local county park, and also worked with the campus activities board on fund-raising events. Every year we provide an educational opportunity for local middle school students called PEPP (Penn State Educational Partnership Program). Students participating in PEPP come onto campus and participate in demonstrations and hands-on mini-experiments in chemistry and biology.

Q: What are some of the interesting ways your chapter recruits/retains its members?

A: We collaborate on events with other clubs to recruit members from those organizations and reach out to potential members who attend. We also provide résumé workshops and host guest speakers, and make in-class announcements inviting students to join us. What we've found works best for recruiting college students, predictably, is providing free food!

PHOTO COURTESY OF PENN STATE BERKS

As a fundraiser, the Penn State Berks chapter sponsors a glow party where it sells glow sticks and bracelets while members perform experiments and a DJ plays rave music.

Q: How do you ensure a smooth officer transition from year to year?

A: Officer candidates must be chapter members for at least one year and regularly attend meetings. This ensures the officer is familiar with our unique requirements as a chapter. We also hold officer elections early in the spring to give the new officers time to shadow their predecessors and learn the procedures of their offices. inc

Faculty advisor:
Greglynn Gibbs, 2 years

Q: How did you become a faculty advisor?

Gibbs: It was my idea to start up a chapter on campus. After approaching some students and professors, I started to recruit new members and build support for the chapter among the students on campus.

Q: What challenges have you faced in your position?

Gibbs: Convincing students that we don't just talk about chemistry all day, and that our group is not just for chemistry majors. We emphasize that our main goal is educational community outreach. Another challenge we have faced is getting the campus community to recognize that we, as a group, contribute strongly to the good name of our campus and its students.

Q: What has been the most rewarding aspect of your service as a faculty advisor?

Gibbs: The most rewarding experience for me is being a motivating force to those involved with our group. Sometimes there can be headaches that come with running a group, but seeing the college students strive to do better, children in the community wanting to learn, and parents trying to interact more at the community events — it's these things that really make it all worthwhile. inc

SPOTLIGHT

University of West Florida Pensacola, FL

COMPILED BY CHRIS ZEIGLER

Chapter president: Dylan Christiansen **Number of chapter members:** 80 **Number of ACS student members:** 20
Website: uwf.edu/chemistry/club/index.cfmy **Institution description:** Small, private, suburban, 4-year institution

Q: **How do you ensure a smooth officer transition from year to year?**

A: Incoming officers are elected at the beginning of the spring term in order to shadow the previous years' officers. Prospective officers attend campus budget meetings and other important events with current officers in order to acclimate themselves to leading the chapter.

Q: **Do you have any unique positions?**

A: The community service chair is a unique position in our organization. This officer arranges events at which members volunteer.

Q: **In what ways does your chapter give back to the community?**

A: Our chapter has participated in Relay for Life, judged local high school science fairs, and offered free tutoring to university students. In addition, for National Chemistry Week, we volunteered at an event held at the Institute for Human and Machine Cognition specifically for children, where we assisted by performing chemistry demonstrations.

Q: **How do you retain members from year to year?**

A: We offer a wide variety of activities to cater to a broad spectrum of student interests. These activities build camaraderie among students at different levels and also encourage rising juniors and seniors to consider running for officer positions, which ensures continuity.

Q: **What is your most popular or unique chapter activity?**

A: Our chapter has participated in the Muggle Outreach Conference, where we performed several demonstrations for students interested in Harry Potter. This complements our annual Halloween party, which we open to the entire campus.

Q: **Can you talk about a challenge your chapter recently overcame, and how you did so?**

A: Communication among chapter members has been a challenge in the past. Until recently, members exchanged messages via a variety of channels, including a web-based program for university organizations, Facebook, text messages, and e-mail. Occasionally important messages were missed. At a recent meeting, we all agreed to use UWF e-mail as our primary communication medium among members, which has made life simpler. Other channels are still used for unofficial communication and outreach.

PHOTO COURTESY OF UNIVERSITY OF WEST FLORIDA

The University of West Florida chapter participates in the university's annual Muggle Outreach event and performs demonstrations for Harry Potter fans.

Q: **Has your chapter recently attended an ACS regional, national, or local section meeting? If so, what did they think of the experience?**

A: Thirteen undergraduate members were able to attend the Spring 2012 ACS National Meeting in San Diego, where they benefited by learning about others' research projects and meeting with potential employers and faculty from other universities. Attending ACS local section meetings has also been beneficial, as members have been able to network locally. inc

Faculty advisor:
Tim Royappa, 13 years
(not continuously)

Q: **What challenges have you faced in your position?**

Royappa: The communication issue described above was our biggest recent challenge, but this seems to have been settled. Since most of our students not only take full class loads but also hold down jobs and commute, the most common challenge that remains is that members sometimes lack the time to get involved in the club's programs.

Q: **What has been the most rewarding aspect of your service as a faculty advisor?**

Royappa: It has been very rewarding to see our students win national recognition for our chapter's activities.

Q: **What advice can you offer those new to the advisor position?**

Royappa: Keep a list of important dates handy — when chapter reports are due, when elections are held, when budget requests are due to the Student Government Association, and so on. Mark these on your calendar and notify students a month or so in advance. inc

SPOTLIGHT
Purdue University
West Lafayette, IN

COMPILED BY CHRIS ZEIGLER

PURDUE UNIVERSITY

Chapter president: Gabriel Magallanes **Number of chapter members:** 55 **Number of ACS student members:** 26
Website: http://web.ics.purdue.edu/~acssa **Institution description:** Large, public, rural, 4-year institution

Q: Do you have any unique officer-level positions?

A: The vice-president of our chapter is also the demo master and is in charge of the demonstrations in all the meetings (about eight demos per year). Some of the demos we perform include the thermite reaction, the vomiting pumpkin (for Halloween), the colorful oscillating reaction, and the iodine clock, among others.

Q: In what ways does your chapter give back to the community?

A: One of Purdue University's biggest events is Spring Fest. Every school and department at Purdue participates. The university sets up tents all over campus and has activities for students and families. The entomology department has a cricket spitting contest; we make oobleck. We also have a booth at the Indiana State Fair in Indianapolis. We give out information and provide demos that appeal to all ages.

Q: What methods do you use to retain members from year to year?

A: We have weekly meetings that include demos, scholarly activities — such as a visit to industry or interesting spots on campus — and fun activities, including ice-skating, Mole Day, and Red Mango (a frozen-yogurt and smoothie quick serve shop in our area) Day. Our chapter also provides a wide variety of activities, including, field trips, and sponsors speakers, such as professors who give talks about their research and graduate students who share the process of application and graduate student life.

Q: Describe any fun social events your chapter recently had.

A: We had a lot of fun making liquid nitrogen ice cream during Grand Alternative Week. Grand Prix is a big event in which students, alumni, and others come together for the race. Grand Alternative Week is an initiative to provide substance-free entertainment to all students.

Q: Describe a challenge your chapter recently overcame and how members overcame the challenge.

A: Our membership was drecreasing. Meetings felt impersonal and similar to a classroom lecture course because we used a huge classroom as a meeting space. After we changed the meetings to a smaller room, the dynamic of the interaction between audience and invited speakers was definitely warmer and more appealing to the members. We also started to make every member part of our activities so that everyone participated in an event.

Q: Describe a special project the chapter recently did or is now doing.

A: On Valentine's Day, we fill test tubes with candy and we sell them. Everyone is amused to see the colorful test-tubes, and we get a lot of support from the chemistry department. The test tubes sell out quickly.

PHOTO COURTESY OF PURDUE UNIVERSITY

The ACS student chapter at Purdue has increased member retention by offering weekly meetings with a varied agenda that includes demos, invited speakers, and trips to area companies or interesting spots on campus, and activities such as ice-skating.

Q: Is there anything else do you want the readers of *inChemistry* to know about your chapter?

A: As members, we have an awesome time and make a lot of supportive friends by being part of an ACS student chapter at Purdue. It is also a great talking point during interviews! inc

Faculty advisor:
Beatriz Cisneros, 7 years

Q: How did you become a faculty advisor?

Cisneros: I have been a member of the Purdue ACS local section leadership and an academic advisor for undergraduates in chemistry at Purdue for eight years, and when I was invited to be their faculty advisor, it just felt like the right thing to do.

Q: What challenges have you faced in your position?

Cisneros: Since the meetings are at night during weekdays, I can't always attend. I keep up with them through e-mail and in one-on-one meetings with the officers.

Q: What advice can you offer those new to the advisor position?

Cisneros: Don't worry if you are not the perfect advisor; as long as the students know where to find you and you facilitate their work with simple little things (getting a room for their event, paying for the liquid nitrogen from your account, sending out the e-mails to the whole department, sharing their success with the Purdue-Chemistry community and the ACS community), your relationship will grow and the fruits will talk for themselves. inc

PHOTO CHEMISTRY

Student chapter highlights from the Spring 2012 ACS National Meeting in San Diego, CA

PHOTO: ISTOCK

Millersville University (PA) chapter members get a close-up view of California wildlife at the Natural History Museum in San Diego.

PHOTO COURTESY OF MILLERSVILLE UNIVERSITY

At Sci-Mix, Missouri State University was one of 115 chapters that presented posters about their activities.

PHOTO COURTESY OF MISSOURI STATE UNIVERSITY

Students and faculty from the University of Texas of the Permian Basin (Odessa) celebrate their Commendable Chapter Award. PHOTO COURTESY OF THE UNIVERSITY OF TEXAS OF THE PERMIAN BASIN

Nick L. Mole, chemistry department mascot from California State University, Fresno, poses with students from Miami University (Oxford, OH) at the Festival of Science and Engineering outreach event. PHOTO COURTESY OF MIAMI UNIVERSITY OF OHIO

At the Chem Demo Exchange, Carroll University (Waukesha, WI) students make a few last-minute adjustments to their Red Cabbage Indicator demonstration before sharing it with other participants.

PHOTO COURTESY OF CARROLL UNIVERSITY

Students from the College of Saint Elizabeth (Florham Park, NJ) pose by a banner in the San Diego Convention Center commemorating 75 years of student involvement in ACS.

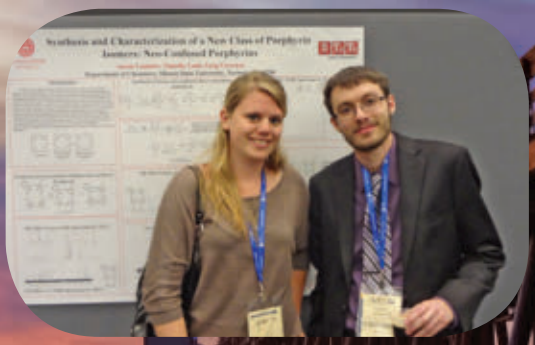
PHOTO COURTESY OF THE COLLEGE OF SAINT ELIZABETH

In between meeting events, students from The College of New Jersey enjoyed exploring the sights at the San Diego Zoo.

PHOTO COURTESY OF THE COLLEGE OF NEW JERSEY

Students from the University of Puerto Rico Aguadilla practice demos to celebrate Earth Day at the Community Outreach Workshop.

PHOTO COURTESY OF THE UNIVERSITY OF PUERTO RICO AGUADILLA



Students from Illinois State University are ready to present their poster at the Undergraduate Poster Session, which featured more than 1200 posters. PHOTO COURTESY OF ILLINOIS STATE UNIVERSITY

Graduate school recruiting events gave students the opportunity to talk to recruiters from more than 50 graduate-level Ph.D., M.S., and PSM programs. PHOTO BY ACS STAFF

Outside the San Diego Convention Center, Duquesne University (Pittsburgh, PA) students take a few moments to enjoy the mild San Diego weather. PHOTO COURTESY OF DUQUESNE UNIVERSITY

The Student Chapter Awards Ceremony formally honored 229 award-winning chapters, including that from the University of Detroit Mercy, which earned an Outstanding Chapter Award. PHOTO COURTESY OF UNIVERSITY OF DETROIT MERCY

PHOTO COURTESY OF DUQUESNE UNIVERSITY

PHOTO COURTESY OF MIAMI UNIVERSITY

CHEMISTRY O!
A Bridge to Discovery
47th ACS Midwest Regional Meeting
October 24-27, 2012, Omaha, NE

RAMADA PLAZA HOTEL & CONVENTION CENTER

Undergraduate Program

Events Include:

Wednesday, October 24

- Chemistry of Brewing Beer Lecture
- Sci-Mix Poster Session and Welcome Social

Thursday, October 25

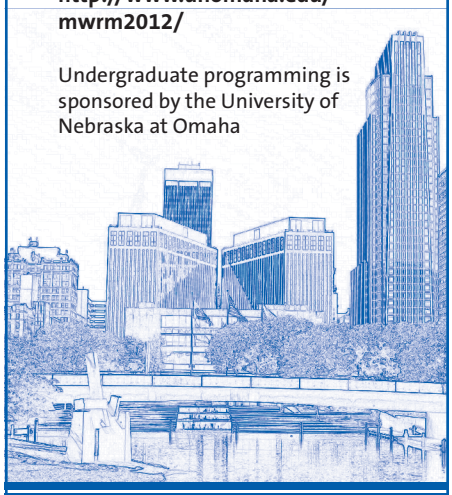
- Undergraduate Poster Session
- Chemistry in Cinema Lunch Lecture
- Pizza and Pool Party

Friday, October 26

- Undergraduate Poster Session

For more information, go to **http://www.unomaha.edu/mwrm2012/**

Undergraduate programming is sponsored by the University of Nebraska at Omaha

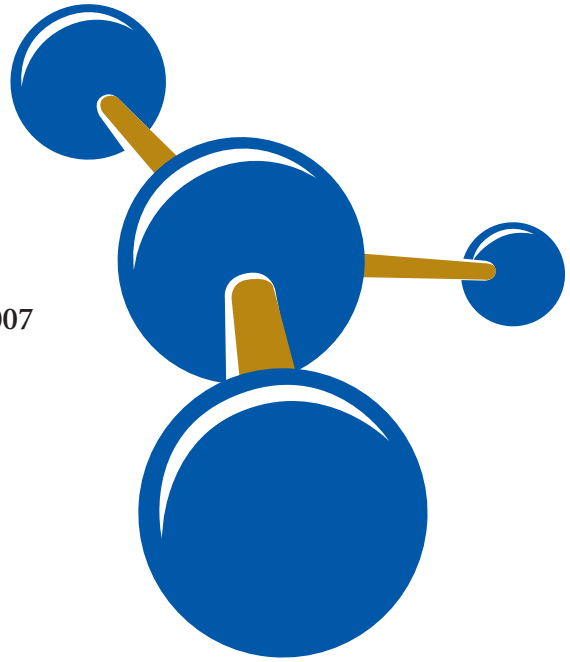


47th ACS Midwest Regional Meeting
October 24–27, 2012
Omaha, NE

South Dakota State University

Graduate Studies

Chemistry & Biochemistry



Department of Chemistry and Biochemistry

Box 2202
Brookings, SD 57007
(605) 688-5151

SDSU®

The Department

A medium-sized, friendly department with 16 faculty and 65 graduate students. New research and instructional laboratory facilities.Well-equipped core instrumentation facilities.

Degrees

Ph.D. and M.S. degrees in chemistry. Research specializations in Analytical/ Environmental, Biochemistry, Organic, Biophysical Chemistry, Biophotonics, and Chemical Education.

Financial Aid

All students admitted receive a full stipend and tuition remission.

Admission Requirements

Applicants should be nearing completion of a degree in chemistry, biochemistry, or related fields and have a B average or better.

For More Information

Phone: (605) 688-5151

E-mail: chemgrad@sdstate.edu.

Web: www.chembiochem.sdstate.edu or scan the QR code to visit our site.

ACS
Chemistry for Life®

American Chemical Society
1155 Sixteenth Street, NW
Washington, DC 20036

NON-PROFIT ORG.
U.S. POSTAGE
PAID
Washington, DC
PERMIT NO. 4119