inChemistry

THE MAGAZINE FOR ACS STUDENT MEMBERS

April/May 2012

FROM COLLEGE TO CAREER

ALSO IN THIS ISSUE

- Strategies for Finding Employment in a Tough Job Market
- Are You Struggling with an Undiagnosed Learning Disability?
- Chapters Making a Difference with Innovative Activities Grants

ACS Chemistry for Life®

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937–2012

67TH ACS NORTHWEST REGIONAL MEETING (NORM 2012)

Undergraduate Program

Hosted by the ACS Student Chapters at Boise State University and the College of Idaho

June 24–27 • Boise Centre on the Grove • Boise, ID

SUNDAY, JUNE 24

7:30 pm – 10:00 pm	**Liquid Nitrogen Ice Cream Social and Dessert Reception**
8:00 pm – 10:00 pm	**Undergraduate Poster Session #1**

MONDAY, JUNE 25

1:00 pm – 3:00 pm	**Undergraduate Poster Session #2**

TUESDAY, JUNE 26

7:30 am – 9:00 am	**Breakfast with Keynote Speaker** Paul Rothemund, Senior Research Associate at Caltech and recipient of the Feynman Prize for Nanotechnology, the World Technology Award for Biotechnology, and a MacArthur Foundation Fellowship.
9:20 am – 12:00 pm	**Graduate School Recruiting Symposium**
12:00 pm – 1:30 pm	**Graduate School Recruitment Luncheon**
2:30 pm – 4:00 pm	**Micron Plant Tour**

The NORM 2012 meeting is co-located with the American Association for the Advancement of Science Pacific Division regional meeting, creating opportunities for students to interact with undergraduates, academics, and professionals from numerous scientific disciplines.

For more information on the full program of meeting activities and events, go to:

http://www.snakeriveracs.com/norm2012.html

inChemistry

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THE MAGAZINE FOR ACS STUDENT MEMBERS

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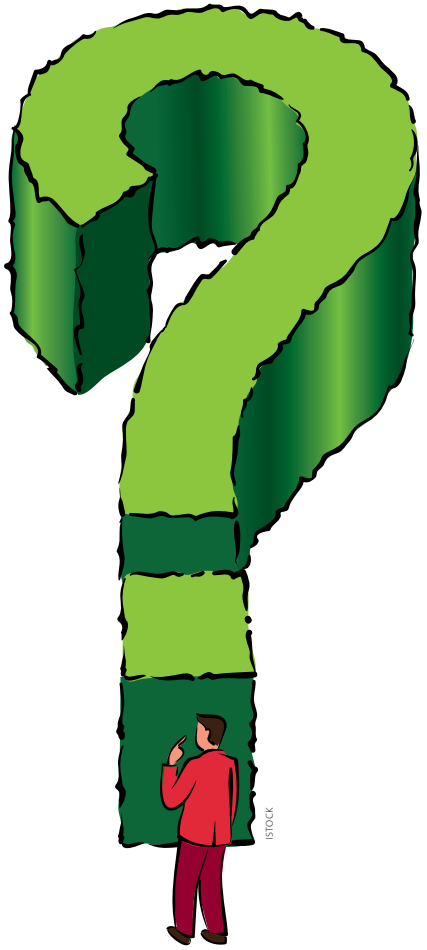
Cover: Aundrea Piper in Peter Brzezinski's laser laboratory at Stockholm University in Sweden. 3



ISTOCK

CONTENTS

ACS & YOU

EDITORIAL
Funding Available! By Matthew J. Mio 2

ASK ACS
Travel grant applications, periodic table blanket, student chapter reports, and ACS Exams Study Guides By Robin Lindsey 2

ACS RESOURCES
An American Undergraduate in Stockholm By Aundrea Piper 3

Undergraduate Program: 244th ACS National Meeting 4

FEATURES

Making the Journey to Job or Graduate School: Successful Transitions after Graduation By Lisa B. Marshall 6

I'm Graduating and Don't Have a Job. What Should I Do? By Lisa M. Balbes 8

More Women Are Feeling at Ease in Science Labs
By Martha Irvine/Associated Press 11

Could You Have a Learning Disability? Recognizing Learning Differences and Getting Help By Carl B. "Burt" Hollandsworth 13

CHAPTERS

Funds Available for Outreach and New Projects: Innovative Activities Grants Can Help Your Chapter Make a Big Difference By Allison Byrum Proffitt 16

Science ROCKs at Saint Francis University... and Will Soon ROLL! By Jessie Minor, Travis Rosmus, and Edward P. Zovinka 19

SFU Demo: Birthday Party Chemistry 22

SPOTLIGHTS
Western Kentucky University, Allegheny College, University of San Diego, and Saginaw Valley State University 24

EDITORIAL:
Funding Available!
Grants Can Help Your Chapter — All You Have to Do is Apply

BY MATTHEW J. MIO

In tough economic times, "Funding Available" can be two of the most important words an ACS student chapter member can hear! While fund-raising is still a tried-and-true method for supporting programming, sometimes the nature of an event or idea calls for a different financial plan. Are you aware that there are five different opportunities, all funded through the ACS Undergraduate Programs Office, to help student chapters provide community and student programming? All you need is a willingness to explore the proposal process — a necessary quality for any future scientist.

Community Interactions Grants (CIG) provide up to $500 in matching funds for student chapters to engage under-represented minorities in the study of science. Funded proposals deepen the understanding of science for K–12 students, while helping train chapter members to become teachers and mentors.

Do you have an off-the-wall idea that doesn't seem to fit in your regular budget? If so, Innovative Activities Grants (IAG) provide up to $500 to fund new and innovative chemistry-related programs for your chapter. For IAG ideas, see Allison Byrum Proffitt's article on page 16. Keep in mind, an IAG can be the start of something big; see page 19 to find out about the Saint Francis University ROCK program, which all began with an IAG in 1995.

Twice each year, ACS holds national meetings, where undergraduates gather to talk chemistry, network, and have fun. Unless the meeting is being held nearby, you'll need funding to send your members. National Meeting Travel Grants support student chapters by covering hotel, transportation, or registration fees for undergraduates presenting posters at national meetings.

Undergraduate Programming at Regional Meetings Grants provide up to $2,800 for chapters to coordinate undergraduate events and activities at ACS regional meetings. Through these grants, chapter members advance their professional skill sets by planning technical programming, all while having their event and publicity expenses funded.

Last but not least, Starter Grants for Student Chapters at Two-Year Colleges provide $500 to support the formation of new ACS student chapters or the reactivation of inactive chapters at two-year colleges.

The grant proposal process itself is a fantastic learning experience. Developing an idea for an event, writing/submitting a proposal, and interpreting reviewer comments can be very instructive. Some grants require recipients to also use their analytical skills by assessing of the impact programming that takes place or reporting on how funds were ultimately used. From inception to afterglow, the granting process is a rewarding one for the attentive learner.

Active chapters in good standing are eligible to apply for any of the grants listed above. See the Student Chapter Grants link at www.acs.org/undergrad for more information, and get cracking — there's money out there for those with great ideas. Applications for IAG, CIG , and National Meeting Travel Grants are due June 6! inc

Matthew J. Mio *is an associate professor at the University of Detroit Mercy in Detroit, MI. When he's not enjoying time with his family or obsessing over Halloween, he serves as Chair of the ACS Society Committee on Education Task Force on Undergraduate Programming.*

ASK ACS

Do you have any questions relating to ACS student chapters or other programs at ACS? If so, e-mail us at undergrad@acs.org and we'll find your answer.

Q: When are chapter travel grant applications due for the ACS national meeting in Philadelphia?

A: All chapter travel grant applications for the 244th ACS National Meeting in Philadelphia are due Wednesday, June 6, 2012. For more information, please contact Christopher Zeigler at c_zeigler@acs.org or at 1-800-227-5558 x4565. You'll find the application by going to www.acs.org/undergrad and clicking on Student Chapters.

Q: How can I purchase the periodic table blanket that is advertised on the ACS website?

A: The only way to obtain a periodic table blanket is by referring a friend, a student, a colleague, or a spouse for membership. If you recruit a new member through the Member-Get-A-Member (MGM) campaign, the Office of Member Services will send you a free Periodic Table of the Elements blanket. This blanket is unique to the MGM campaign and is not available anywhere for purchase. For more information on the periodic table blanket, please visit http://undergrad.acs.org/mgm.vp.html.

Q: When are the 2011–2012 student chapter reports due?

A: Student chapter reports are due Wednesday, May 23, 2012. Please make sure your chapter has an account for the online system. For more information on student chapter reports, please go to www.acs.org/undergrad and click on Student Chapters. If you have questions or experience any problems uploading your forms, please contact Nicole Di Fabio at 1-800-227-5558 x8010 or Robin Lindsey at 1-800-227-5558 x4480.

Q: Our chapter wants to sell ACS Exams Study Guides as a fund-raiser. How do we order the study guides?

A: All active ACS student chapters may order study guides from the ACS Exams Institute at Iowa State University. The address is ACS Exams Institute at Iowa State University, 0213 Gilman Hall, Ames, IA 50010; 800-854-1672 (phone) or 515-294-4492 (fax).

Robin Lindsey *is a program administrator in the ACS Undergraduate Programs Office. She finds Ask ACS answers for you.*

ACS RESOURCES: An American Undergraduate in Stockholm

My Experience with the New ACS GREET Travel Award Program

BY AUNDREA PIPER

As a grant recipient of the ACS Global Research Experiences, Exchanges and Training (GREET) program, I was immersed for six memorable weeks in the culture, society, and history that can only be found in the Scandinavian cities of Northern Europe.

My research advisor at the University of Colorado Denver, Scott Reed, and I were one of five inaugural mentee/mentor pairs to receive a grant from the new ACS GREET program, which provides seed funding to establish new international collaborations. Our grant funded a joint research collaboration with the Biochemistry and Biophysics Department of Stockholm University and the Biomolecular Physics Department at the Royal Institute of Technology in Stockholm.

Through my experience with GREET, I learned that stepping out of your comfort zone can be rewarding for both personal and professional growth. The benefits include global networking, improved communication skills, experience with techniques, instruments, and modes of scientific inquiry not necessarily available at your home institution, and exposure to other cultures.

Global networking

In Sweden, a tradition called fika is enjoyed at least three times a day. Students and professors meet in the cafeterias to enjoy freshly baked sweets and Swedish coffee. For me, this tradition facilitated communication with professors and faculty I would not have otherwise met. Our collaborations have continued to thrive, and in fact, my home laboratory is looking forward to hosting a graduate student from our Swedish partner's group for several weeks in April.

Improved communication

During my time abroad I got to work with peers from Germany, Switzerland, Spain, Poland, Romania, Australia, Japan, Finland, and of course, Sweden. Although English is the de facto international language of science, communicating with individuals of phenomenally diverse educational, societal, and cultural backgrounds was at first a challenge. By the end of my time abroad, however, I was able to form my thoughts into concise explanations, which were understood by everyone — and this was one of the most rewarding aspects of my ACS GREET experience.

Opening your mind

In Sweden, university research takes place in a very open and friendly learning environment. The principal investigators expect all lab members to take an active role through independent thought, motivation, and accountability. In addition, afternoon fika and weekly social events helped to create a warm sense of belonging and family throughout the lab. Participating in international collaboration through ACS GREET not only opened my mind to other cultures, but also opened doors to future study and work abroad. By the time my plane left for home, I knew a small part of Stockholm would stay with me, not only for the remainder of my college career, but for the rest of my life. Adjö Stockholm, tills nästa gång (Goodbye Stockholm, until next time)! inc

Aundrea Piper *is a senior at the University of Colorado Denver. She served as the ACS student chapter president for two years and is currently president of the Phi Beta Chapter of the Gamma Sigma Epsilon National Chemistry Honor Society.*

GREETing Global Opportunities

The GREET program was established as a pilot program in 2011 to provide funding for international experiences among U.S. scientists, academics, and students. Each year, the program enables five mentor/mentee pairs to establish new collaborations with their international partners by providing seed funding of up to $11,000 per team. Applications are due in mid-April. GREET is administered by the ACS International Activities Committee and the ACS Office of International Activities and supported by the ACS International Activities Committee. Learn more at www.acs.org/greet. inc

IT'S POSITIVELY ELECTRIFYING!

The Undergraduate Program in Philadelphia, PA

244th ACS National Meeting August 19–23, 2012

SUNDAY, AUGUST 19

Hospitality Center
8:00 a.m. – 5:00 p.m.

Graduate School Reality Check
9:00 – 10:30 a.m.

Technical Symposium: Detection of Counterfeit Drugs
10:45 a.m. – 12:00 noon

Careers in Chemistry Workshop: Careers in Government
1:00 – 3:00 p.m.

Career Training Workshop
3:00 – 5:00 p.m.

Networking Social with Graduate School Recruiters
5:00 – 6:30 p.m.

MONDAY, AUGUST 20

Hospitality Center
8:00 a.m. – 5:00 p.m.

Graduate School Recruiting Breakfast
8:00 – 9:30 a.m.

Outreach Workshop
9:30 – 11:30 a.m.

Eminent Scientist Lecture and Luncheon Featuring M. Katherine Holloway
11:45 a.m. – 1:15 p.m.

Undergraduate Research Poster Session
2:30 – 4:30 p.m.

Kavli Foundation Lecture
5:30 – 6:30 p.m.

Sci-Mix/Successful Student Affiliates Chapter Posters
8:00 – 10:00 p.m.

ACS Chemistry for Life™

ACS STUDENT MEMBERS CELEBRATE 75 YEARS 1937–2012

Opportunities for Graduate School Recruiters

Showcase your graduate program at the "Networking Social with Graduate School Recruiters" on Sunday, August 19, and the "Graduate School Recruiting Breakfast" on Monday, August 20. It's a great opportunity to meet and talk with hundreds of undergraduate students who will be attending the 244th ACS National Meeting in Philadelphia, PA. For more information on how to register for these events, contact Lori Betsock at l_betsock@acs.org. To register, go to **www.acs.org/GradSchoolRecruiters**.

Travel Grants for Student Chapters

Get a National Meeting Travel Grant! Grants are available to active student chapters with students who are presenting individual or chapter posters in the Division of Chemical Education's Undergraduate Research Poster Session. Apply by June 6, 2012. For more information, contact Chris Zeigler at c_zeigler@acs.org.

Program format and times are subject to change. Please consult the final program.

All events are sponsored or co-sponsored by the Society Committee on Education Task Force on Undergraduate Programming. Chair: Matthew J. Mio, University of Detroit Mercy, MI. Program Chair: Elizabeth Jensen, Aquinas College, Grand Rapids, MI. For more information, contact the ACS Undergraduate Programs Office at 800-227-5558, ext 4480, or go to **www.acs.org/undergrad.**

Making the Journey to Job or Graduate School

Successful Transitions after Graduation

BY LISA B. MARSHALL

ISTOCK

Whew! You made it! Whether you have just landed your first professional position or you have been accepted to graduate school, your career plan is on track. But just when you think that you've finally earned the right to relax a bit, you might find yourself feeling a bit anxious about entering this next phase in your life. This article offers valuable tips for those going through such a transition. It's the stuff many people learn the hard way — but wish someone had shared with them first.

Start strong

When starting at either grad school or a new job, you can easily become overwhelmed. Not only are there usually a large amount of new things you need to learn, but you also need to learn them rapidly. In fact, the faster you learn, the more successful you'll be.

But don't forget: in addition to learning new chemistry knowledge, you need to learn about a new role and new profession as well. And perhaps most importantly, during the first three months or so, you'll be creating many important first (and often lasting) impressions that will follow you as long as you stay at the organization or institution.

Plan to be fully absorbed in learning for at least the first year, perhaps even the first two or three years. It's important that in addition to your assigned work, you seek out additional opportunities for learning. (Yes, really.) That's how you'll stand out above the others who started at the same time you did. If you are in graduate school, this means seeking out professional experiences by selectively applying for short-term projects. If you are starting in a new job, it means studying the culture, the key players, and your boss, and of course, quickly mastering the technical aspects of your job. Perhaps you could even begin to look for a mentor.

Invest in learning — quickly

I once started at a very technical job with a company that required every technical employee to pass a certain test within the first six to eight months. The test was so difficult that most people failed the first time they took it. I decided to use all of my free time during my first three weeks to focus on learning the technical parts of the job — exactly what the test covered. At the end of my third week, I took the test and passed! I set a company record, built instant credibility, and was rewarded with two very swift and unexpected promotions. It was time well invested.

Later, in graduate school, I took on an internship. It was an unpaid position; however, I enjoyed the work so much that I put in many extra hours and expanded the scope of the project. The company's managers were so pleased with my work, they offered to pay me. That's when I realized I had discovered my true passion. I loved what I was doing so much that it was hard for me to believe that they wanted to give me money for doing it!

Find a mentor

During your transitions, try to find great mentors. These are people who are well respected and well established in your organization or institution. You will progress so much faster if you find someone who has "been there, done that" and who is open to helping you with your career progress. Such individuals can often provide insight into the "political landscape" that would otherwise take years to ferret out. In addition, they can also help you with your time management and knowledge acquisition strategies (especially helpful in the beginning, when everything seems so overwhelming). Last but not least, remember that as a young professional, if you don't take some risks, you won't stand out — so it is extremely helpful to have a more senior mentor who can help guide you through uncharted territory.

So how do you find a good mentor? Ask your peers and colleagues to talk about who helped them most with their career. Use LinkedIn to find people who have worked or studied there before, and ask them as well. Ask someone you trust whom he or she trusts. Ask for suggestions. Then create a campaign to get to know a few key people. My favorite way to get to know someone is by sharing meals or outside activities. If you're interested in meeting people but they don't have time to go out to eat, then offer to pick up a sandwich for them and eat together in their office. Sharing spontaneous conversation will naturally lead to forming a closer bond.

> *"Life, it seems, is nothing if not a series of initiations, transitions, and incorporations."*
>
> — Alan Dundes, American folklorist

Stay positive

During this type of life transition, many people experience a sense of insecurity. They suddenly find themselves "competing" with like-minded, smart, intelligent professionals who are also eager to learn and to grow. It's easy to feel overwhelmed and insecure when you are in transition.

However, it's important to recognize that this is a normal and natural reaction. So allow yourself to be overwhelmed — but not for long. Remember: you are on equal footing now. Your fellow graduate students were accepted to your program, just like you. Your co-workers who started with you have the same amount of experience at your company. It's up to *you* to not let your mind play tricks on you.

You are in this new position because you deserve to be there. Do not underestimate the skills you bring. All organizations need fresh perspectives and new, creative solutions. And don't forget that when you start out, it's hard to lose. If you make a suggestion and it's perceived to be "not so hot," it will be chalked up to your lack of experience. However, if you come up with what people see as a brilliant idea, you will be considered a "high potential" professional. Just remember to not be presumptuous or overconfident, or you'll likely get labeled accordingly.

Transitions are a time of excitement and rapid growth. They are times to enjoy, but also opportunities to really focus on your professional goals. If possible, set aside extra time to focus on your transition. The more you invest in it, the more likely you will succeed. Are you ready to move on to your next step? What will you invest? inc

More Tips for Success

- **Know your role and what is expected of you.** Think about the tasks assigned to you, and be clear about what you need to do to accomplish them. Don't miss deadlines. Strive to meet or exceed expectations for all tasks assigned to you.
- **Dress for success.** Find out if there's a dress code in your workplace, and adhere to it. Be sure your clothes are clean, well pressed, and in good condition.
- **Be positive.** Show enthusiasm toward your work (including the tasks you consider boring!), toward your colleagues, and for the organization.
- **Don't be afraid to ask questions.** You're new on the job and will probably need help. Your co-workers understand and will likely be very supportive. If you don't understand an assignment or what's expected of you, don't wing it. Seek help.
- **Demonstrate a strong work ethic.** Establish an excellent attendance record. Be punctual, or better yet, arrive to work a few minutes early and leave a few minutes late.
- **Rise above office gossip.** Every office has its gossips, who will be looking for the opportunity to give you the lowdown on your boss and co-workers. While it's okay to store this information in the back of your mind, don't seek out gossip or contribute to it.
- **Continue building your network.** Attend staff meetings. Participate in after-hours activities offered by your employer. Join professional organizations and attend conferences. You'll meet new people and develop professional relationships that could be useful for the future. inc

Lisa B. Marshall *is a communication expert, host of "The Public Speaker" podcast, and author of* The Public Speaker's Guide to Ace Your Interview: 6 Steps to Get the Job You Want *(Macmillan Audiobooks) and the e-book* Ace Your Interview.

I'm Graduating and Don't Have a Job. *What Should I Do?*

Strategies for Finding Employment in a Tough Job Market

BY LISA M. BALBES

Spring, when a young chemist's fancy turns to... employment. This is the time of year when large numbers of students finish their formal education and move on to the next stage of their careers.

Most graduates are looking for permanent employment, but many don't have a firm offer yet. If you are in this situation, you are not alone. But the good news is that, while the job market is tighter than it has been, almost 90% of last year's graduates who majored in chemistry were employed or enrolled in a graduate program by the following October (http://cen.acs.org/articles/89/i45/Anemic-Recovery-Restrains-Hiring.html).

Your college education and experiences have prepared you well, even if you're not entirely sure of the direction you want to follow once you graduate. There are many things you can do to make yourself even more attractive to potential employers, and many places you can look for employment opportunities. Now is the time to be proactive, promote your accomplishments, and find the right job for you. By preparing a stellar résumé, using your network, and being flexible about your career objectives, you can maximize your chances of a successful job search.

Getting started

A great way to start is by identifying your strengths. Write down all the skills you have acquired throughout your education in chemistry. Technical skills are easy to identify — NMR spectroscopy, chromatography, computer simulations, titrations, and so on. Consider not only your classes, but also paid or unpaid internships, and any time you spent in a lab. But don't forget to identify your nontechnical or "soft" skills: communication (oral and written), problem solving, leadership, and so on. These skills are becoming increasingly important, and if you have specific accomplishments that demonstrate such capabilities, you will be ahead of the crowd.

Marketing yourself

Next, showcase those skills in a résumé that is a professional, accurate, error-free, and powerful tool for marketing what you have to sell — yourself! It should contain your professional contact information, education, employment history, and significant accomplishments (presented quantitatively where possible) that showcase those skills.

You will use your résumé to promote yourself in the best possible light, so polish it until it shines. If your overall GPA is not high, perhaps you could instead include your GPA in your major or in your senior year, if either is a higher number. Or perhaps you might decide to not report any GPAs. While everything on the résumé must be true and accurate, you can choose not to include things that don't help you.

Once you have a fabulous résumé, you need to know where to send it. The best résumé isn't going to work if you're not sending it to the right places. These days, many jobs are found by networking: one colleague talking to another and passing along a lead. You have a network, so now is the time to start using it! Make sure everyone knows what you're looking for, and ask them to forward your career objective to their friends. You never know whom someone else knows; your mother's co-worker's friend may know of a local lab that is looking to hire some summer interns. That's exactly how one student I know found her position.

Don't send out mass-produced résumés. Tailor each résumé to both the company and the job requirements, using keywords from each job description. Make it clear that you can do what they need, because you have already done similar things. For example, if the ad mentions "analytical test methods such as titrations, ICP-AES, ICP-MS," make sure you have all of these keywords on your résumé somewhere, and describe your level of familiarity with each.

After you've customized your résumé, make sure to have someone else read it carefully. Many university career services offices will do this, and they often continue to help alumni after graduation. The career office can also provide lists of local companies and internship opportunities, interviewing tips, and much more. If you haven't already been talking to them, now is the time to start. Last but not least, remember to send your polished résumé to companies in the manner they prefer. Usually, this means e-mailing the résumés to their human resources departments, or submitting them through their websites.

"Sending targeted résumés in response to specific job listings works much better than spamming every employer in *C&EN* with a generic résumé," explains David Harwell, Assistant Director of Career Management & Development at ACS. "Employers need to know why you are the best person for their organization. To show them, you should tailor your résumé to the needs that the employer expressed in their job listing. Remember, this process is not about promoting yourself as much as it is about highlighting the key skills you possess that meet their needs. It is about them!"

Following up

Once you've applied, don't forget to follow up! Often the position goes to the person who is the most interested and enthusiastic,

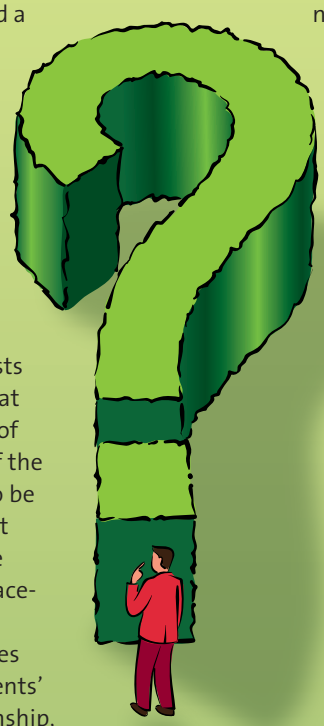
which is commonly evidenced by who follows up. If you can find out who the hiring managers are and contact them directly, great! Otherwise, call the human resources department and ask about the status of your application. Calling two to three weeks after submission, to ask when you should expect to hear a decision, is quite reasonable.

Thinking outside the box

Should you go nontraditional? While looking for jobs, make sure you think outside the box and consider different kinds of jobs. Look for employment in nontraditional places; the more flexible you are about where you will work, the more options you will have. Chemistry majors are needed in all sorts of places, including intellectual property law firms, scientific sales, technical support, contract research organizations, and more. Many people find a nontraditional career more satisfying than a traditional laboratory career, and you might as well.

In addition to permanent positions, consider internships. While an internship is by definition a temporary position where you may or may not be paid, it can be a great way to get started in your chosen profession. You will get real-world experience, learn how things are done in industry, and make connections with other scientists.

There are national agencies that place scientists in labs for short-term contract work, positions that can last anywhere from a few weeks to a couple of years. Depending on the agency and the terms of the agreement, you may or may not have the right to be hired for a permanent position when the contract ends. During the term of the contract, you will be paid by, and receive benefits (if any) from, the placement agency, not the client company. While the placement agency is always looking for new places to send you, their main concern is filling their clients' positions, not placing you. But just as in an internship, during your time on-site you are learning, improving your technical skills, expanding your soft skills, and making contacts that can help get you to the next step in your career. (See "Permanent Temporary Employees," *inChemistry*, April/May 2011, pages 23–25.)



Looking beyond your chosen field

If you are unable to find a job in your chosen field, another option is to find a nontechnical job that will pay the bills. If possible, choose a position where you will come in contact with people who have the job you want to have, or who work where you want to work. You may take a nontechnical job at a technical company (hoping to change roles once you are on the inside) or a retail position near technical companies. For example, by working at a coffee shop near major biotechnical companies, over time, you could get to know the regulars, many of whom may work nearby at the very companies in which you are interested.

If you can't find a paying position (and even if you can), volunteering is one of the best ways to learn new skills and enhance your employability. Since there are more volunteer opportunities than you'll ever be able to fill, select carefully. Choose a group or event where you are likely to meet fellow scientists, or where you can learn or demonstrate nontechnical skills (communication, teamwork, leadership) that will be of value to potential employers. For example, you could organize a National Chemistry Week activity with other chemical professionals. You will get to know them, and they will get to know you and may share leads on new openings or industrial trends.

Creating version 2.0 of you

If you can't find a volunteer position that will teach you a new skill, you can always pay for additional education. Take a course in technical writing, for example, or in business. In addition to semester-long courses at community colleges, there are often short-term courses available for adult learners in the evenings or on weekends. Investing in your own continuing education will show future employers that you are serious about your profession and about improving yourself.

Continuing your education by attending graduate school is also a possibility. Earning a master's or Ph.D. degree in chemistry will teach you how to think deeply about a problem, design an experiment, and conduct research and, at the same time, give you lots of hands-on experience in specific experimental techniques.

Before entering graduate school in the hopes that the job market will improve before you graduate, give some serious thought to what you want to do long-term and if this is the best way to get there. The additional years you spend in school will mean waiting that much longer before you start earning a "real" salary. The additional salary that comes with a Ph.D. may or may not make up for the lost earnings from your extra years in school. Depending on the program, you may or may not accumulate student debt. You will gain the prestige of those three letters after your name, but you will also significantly change the way people look at you and the types of jobs for which you are qualified.

If you're already doing all of this… great! Keep it up! If you continue to seek out companies and positions that are a good match for your skills and interests, enhance your professional skill set, and nurture your professional network, you can be assured of eventual success in your job hunt.

Good luck on the next stage of your professional career! **inc**

Lisa M. Balbes, *of Balbes Consultants LLC, is a technical writer/editor and author of* Nontraditional Careers for Chemists: New Formulas for Chemistry Careers, *published by Oxford University Press.*

More Women Are Feeling at Ease in Science Labs

BY MARTHA IRVINE/ASSOCIATED PRESS

Rebecca Allred has fond memories of the lab at the College of William and Mary (Williamsburg, VA). She and her peers spent hours there. They worked into the night for their professor, Elizabeth Harbron, because they wanted to, blowing off steam by dancing to the soundtrack of "Mamma Mia" or taking a break on Fridays to play miniature golf together.

Harbron was not only their mentor but also often a confidante. They shared their frustrations. They celebrated their successes. Several published their findings with Harbron's guidance, a rarity for undergraduates.

"That lab was a refuge between classes. I loved being there," says Allred, now a second-year doctoral student in the Yale University chemistry department and one of a new generation of young women who are helping change the face of the so-called STEM fields— science, technology, engineering, and math.

Although she was happy to help blaze the path for them, Harbron says she didn't set out to create an all-women's lab. It happened naturally. Students such as Allred sought her out because they liked her informal, lively teaching style.

"I don't want to become a female ghetto of overachieving white girls," Harbron jokes, referring to the general makeup of her lab these days. Then she asks, more seriously, "But am I just perpetuating the model that's gotten us where we are?" In other words, she wonders, has she inadvertently created the female version of the "old boys' network"?

A matter of time?

Whatever the answer, it's hard to argue with her results: her lab has become a place where young women gain confidence to match their abilities, Harbron says. Many, like Allred, have gone on to graduate programs.

That's a big deal in the STEM fields, which have been slower than other disciplines to integrate women at the highest levels. With two-thirds of all undergraduate degrees and 60% of master's degrees now going to women, many believe it's only a matter of time before that trend influences the upper echelons of the STEM fields.

Already, statistics from the Council of Graduate Schools show that women earned slightly more than half of the doctorates handed out in all disciplines in the United States in 2009 and 2010. In the STEM disciplines, women have been most successful in medicine and biology, and least

PHOTO: ASSOCIATED PRESS

Rebecca Allred, who is working on a doctorate at Yale University, wasn't put off by initially being the only female undergraduate in a chemistry lab at the College of William and Mary.

BACKGROUND PHOTO: ISTOCK

successful in engineering, math, and computer science.

But experts hope that, too, will change. A recent report from the American Association of University Women notes that 30 years ago, the ratio of the number of seventh-and eighth-grade boys who scored more than 700 on the SAT math exam, compared with the number of girls, was 13 to 1. Now it's 3 to 1.

"You gotta fill up the pipeline and support these good people and, after a while, things get straightened out," says Thomas Pollard, dean of Yale's Graduate School of Arts and Sciences, which includes Allred's program.

Leaks in the pipeline

Some would argue that the pipeline is still too leaky in the STEM fields. "In an ideal world you'd expect that it would catch up, but it doesn't quite catch up because we're still losing women at every level," says Ted Greenwood, a former director with the Alfred P. Sloan Foundation, which funds several STEM programs that target women and minorities.

That said, he and others note that women are still making more progress than minorities, particularly black men. And even in such fields as chemistry, engineering, and math, the percentages of women who received doctorates still has steadily increased over the past decade, according to the Council of Graduate Schools report.

Rebecca Allred's path to a doctoral program provides a glimpse of how it's happening — and how crucial access and support can be.

Some would say there was no way Allred — who was known as Rebecca Mikulas before she married her college sweetheart in 2009 — could have failed. She had educational opportunities that many do not, including attending a private school in rural Virginia where classes were small and where she was given the chance to study at her own pace. She also had the smarts, skipping kindergarten and second grade and taking college classes by the time she was in middle school.

She finished her high school requirements by age 16 but then decided to take more math and science courses at a public high school, where she also excelled at volleyball, basketball, and track.

She had supportive parents, both of whom were trained as engineers. Her parents always worked to integrate math and science into everyday life on their family farm and during dinnertime conversations.

But she also had teachers who encouraged and challenged her — another key, experts say, in keeping girls engaged.

Her mother remembers how Rebecca's high school chemistry teacher put off retiring for a year so she could have Rebecca as a student in her advanced-placement class. The teacher was certain Rebecca would be her first student to receive the top score of 5 on the AP chemistry test. And Rebecca did.

Rebecca was considering colleges, including Harvard, around the time when Harvard's then-president, Lawrence Summers, made controversial comments questioning women's aptitude for top-level science and math. He later stepped down.

At age 17, Rebecca went to William and Mary on a track scholarship. There, she took a chemistry class with Harbron — and applied for a spot in Harbron's lab.

She quickly realized she had found her next mentor. "She was so animated and funny — and into what she was doing," Allred says of her professor. "I wanted to be a part of it."

Becoming a part of it

When she joined Harbron's lab, Allred was the only female student. You might not think that would matter much. But Harbron and other professors say they often see an interesting dynamic in coed labs. Women tend to hang back, they say, and let men take the lead role.

"They're so afraid of being wrong. I don't think guys have that fear," Harbron says. "If [women] are admitting they don't know something, then they are admitting a vulnerability. But what they don't realize is that other people don't know, either."

Increasingly, some institutions are finding value in all-women's programs in the STEM fields. Smith College in Massachusetts, for instance, bucked its liberal arts tradition and started an engineering program 10 years ago — a decision other all-women's schools are following. Some students come to Smith knowing they want to be engineers. Others are drawn into the program by an introductory class called "Engineering for Everyone."

Another interesting result: most of the students in the Smith program have ended up choosing mechanical or electrical engineering — specialties within that field that women have tended to avoid. Some academic institutions have also taken note of important extra-academic issues. Yale, where Allred is balancing parenthood with her studies, now provides parental leave for students.

"I think it's being driven by doing the right thing as opposed to being used as a recruiting tool," says Pollard, the dean who oversees Allred's program at Yale. "But we all know that if you have good practices, you attract good students."

Pollard also concedes that he is particularly sensitive to family-life issues because his own daughter, a junior professor at another institution, just had twins. Among other things, he hopes the university will improve its daycare options.

And he says Yale just completed a report that examines how departments can make sure their students — female and male — finish their programs.

Once again, Allred says she feels that crucial support, from her advisor and also her fellow students. Her husband also has agreed to stay home with their daughter, Anna, until Allred gets her doctorate, maybe by the time Anna is in kindergarten.

Allred jokes that she'll then take on the title of "Dr. Mom," certain that she will be able to add her name to the list of women with a Ph.D. in the STEM fields, a list that is growing, slowly but surely.

"I'm not sure where this is going to take me," Allred says. "I'm just so grateful that I'm here at a time when I can do this." inc

Martha Irvine/*Associated Press*

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BACKGROUND PHOTO: ISTOCK

Could You Have a Learning Disability?

Recognizing Learning Differences and Getting Help

BY CARL B. "BURT" HOLLANDSWORTH

Have you ever thought that you could have done much better in general chemistry... if only you didn't have to take exams with all of those other people in the room? Or that you just couldn't concentrate with the noises that the other students were making?

Or maybe you have always been a good student but have noticed that you have a relative weakness in writing or reading skills. Maybe you tend to earn A's in all of your math and science classes but struggle to pass in English and other courses with intensive writing requirements.

Even if one of these scenarios sounds familiar, you might still not imagine that you could have a learning difference. A smart, competent student can go a long way before a learning difference is suspected. In fact, it's not unusual for students to receive this diagnosis only when they reach college, when the more demanding level of work can expose the problem.

Do you have a learning difference that is significantly impeding your academic success? Even if you do, you may not be aware of how to categorize your difference or have it officially diagnosed. The good news is that test-taking issues and problems caused by learning differences are easily accommodated if they are diagnosed early in a student's undergraduate career and brought to the instructor's attention early on in a course. This article will outline the most common types of learning differences and how they can be mitigated in the college environment.

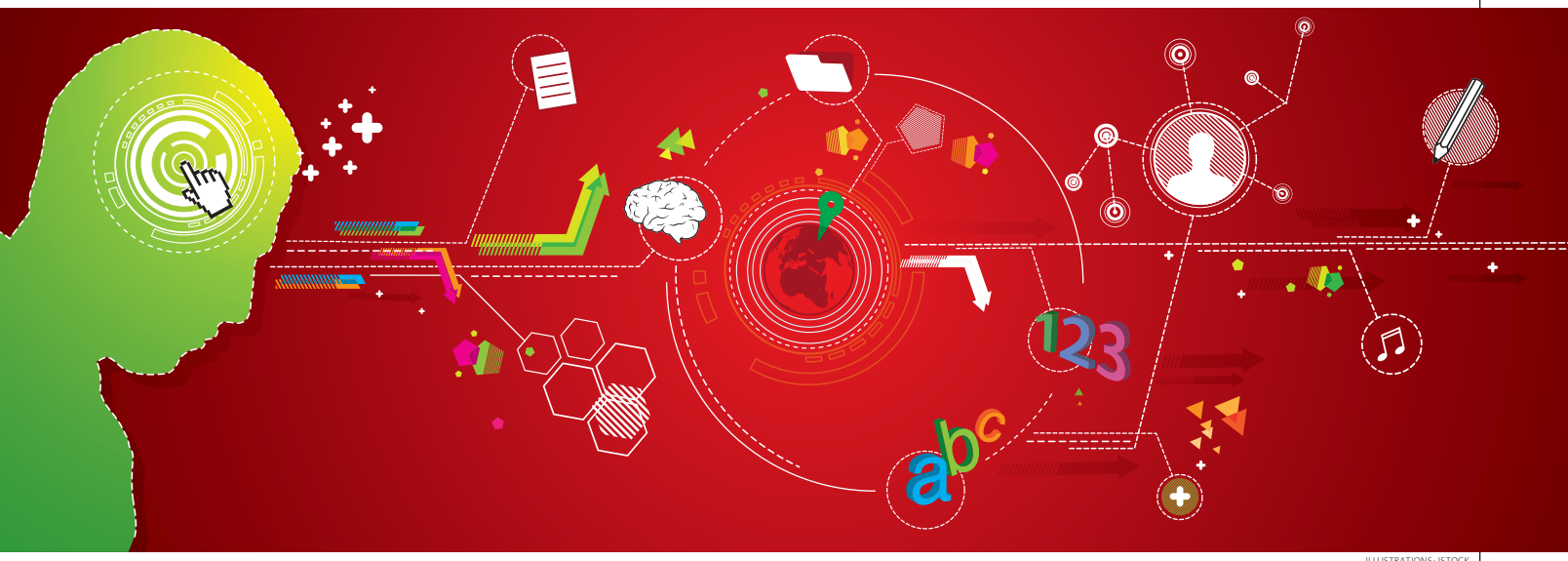
What the ADA says

The Americans with Disabilities Act of 1990 (ADA) mandates that all institutions of higher learning receiving federal funding must provide reasonable accommodations for students with learning differences and other types of disabilities. Your college or university likely has an office, or at least a coordinator, who is responsible for ensuring that the university strictly adheres to the guidelines of this law. Faculty members and ADA coordinators are eager to work with students who provide proper documentation of a learning difference, and to make accommodations that level the playing field for all students.

Types of learning differences

Learning differences are generally classified as lifelong conditions of neurological origin. Attention deficit hyperactivity disorder (ADHD) is the disability that most commonly comes to mind. It is a brain disorder caused by imbalances in levels of neurotransmitters. It cannot be cured, but can be treated.

Of course, there are many types of physical problems that could impede your ability to learn and study but, in terms of the ADA, are not considered learning disabilities. Accommodations would certainly be provided for students with temporary physical disabilities such as a broken arm or life-long sensory disabilities, such as blindness. However, these are not considered learning differences.



ILLUSTRATIONS: ISTOCK

THE MOST COMMON TYPES OF LEARNING DIFFERENCES INCLUDE:

1. Perceptual-Motor Differences

This category includes auditory, visual, spatio-motor, and perceptual differences. Students who find it challenging to translate spoken words into directions or who have trouble comprehending spoken abstract reasoning may have difficulty in lectures where the instructor speaks without using visual stimulation. Students with visual learning issues may have difficulty using computerized answer sheets, or making sense of graphs or charts. They may benefit from a professor or friend talking them through visual stimuli. Spatio-motor differences may manifest themselves in a laboratory course where students have trouble handling lab equipment. Perceptual differences include difficulty in perceiving the nonverbal communication clues, like body language and facial expressions, that can be important to learning in any context.

2. Processing Differences

Some students who find it challenging to think, either sequentially or simultaneously, may have a processing difference. This type of learning difference will quickly present itself in a chemistry course, where many problems require both accurate, multistep solutions and the ability to integrate detailed knowledge into the "big conceptual picture."

3. Academic Differences

Dyslexia refers to a variety of reading difficulties. ***Dyscalculia*** is similar to dyslexia but refers to difficulty in processing numbers and mathematical functions. Students with ***Dysgraphia*** face challenges with the psychomotor skills required for writing (for example, note-taking). Most of these serious academic differences are observable early in childhood and tend to be diagnosed long before a student reaches a college or university.

4. Social and Interpersonal Concerns

The stress of coping with learning differences can lead to problems with self-esteem, anxiety, and other psychological issues. Students facing these issues should go to their college health services to get a referral for appropriate diagnosis and help.

Getting a diagnosis

Before they will provide accommodations for a learning difference, colleges and universities require *documentation* of the difference from a qualified psychiatrist or psychologist who has comprehensive training and experience working with young adults with learning differences. For this reason, notes from parents or school counselors cannot be used as documentation.

Many students arrive on campus with the proper documentation for their learning difference, having been diagnosed previously in their academic career. Other students with learning differences might have been able to cope and succeed throughout high school but are no longer able to thrive in the more demanding college atmosphere. Students in the latter category need to seek a qualified medical or psychological evaluation as soon as they suspect a difficulty with learning. Keep in mind that many colleges and universities do not have qualified staff members who can test for learning differences, but almost all ADA coordinators can recommend qualified professionals who practice nearby. It is the responsibility of the student, and not the institution, to obtain psychological testing and provide documentation that a learning difference exists.

Accommodations

The Department of Justice allows each college or university to decide what constitutes "reasonable" accommodations for each type of learning difference. Students are treated on a case-by-case basis, and input from the medical professional, student, and professors may be used to decide on the best course of accommodations.

Some learning issues are "triggered" by external stimuli such as noisy or crowded rooms. Accommodations in these cases require removing the student from the trigger situation, especially during examinations. Other accommodations may be suggested and provided, such as assistance with note-taking, use of a recording device for lectures, or the help of a special assistant for lab experiments.

Alternative testing is one of the most common types of accommodations on college campuses. Students may be given extended or untimed examinations or be allowed to take tests in an alternate format. Students who have documented dyscalculia may be allowed to use calculators on all exams and assignments.

Keep in mind that the overall goals and standards for a course cannot be altered to accommodate a student's learning difference. For instance, lowering the numerical cutoff for a certain letter grade or providing an exemption from a lab practical examination would not be an acceptable accommodation for a difference. Another example of an unworkable accommodation could be a nursing or pre-medical student requesting exemption from examining patients. Since this is an integral part of the profession, it would not be reasonable to exempt such requirements for disabled students.

That being said, there are many substitutions and alterations that can be implemented that still require the student to complete the same level of effort as all other students. If in doubt, just ask!

Getting accommodations

If you have a diagnosed learning difference, let your campus ADA office or coordinator know as early in the semester as possible. These professionals will typically give you a form to take to each faculty member that specifies the requested accommodations. Each faculty member will keep your learning difference confidential and should check with you at several points throughout the semester to make sure that accommodations are working.

If you suspect that you might have an undiagnosed learning difference, then schedule an appointment with a qualified psychologist or psychiatrist as soon as possible. Be sure to ask if they can test you for specific learning disabilities. Give as much detail as possible about the difficulties that you are having. Obtain documentation from their offices and take it to your campus ADA office or coordinator.

If you are having academic difficulties, resist the urge to try to cope with a learning difference on your own. Request assistance early in the semester, regardless of the perceived difficulty of your courses, and you may increase your level of achievement. inc

Carl B. "Burt" Hollandsworth *is an assistant professor of chemistry at Harding University in Searcy, AR.*

Signs of Potential Learning Differences

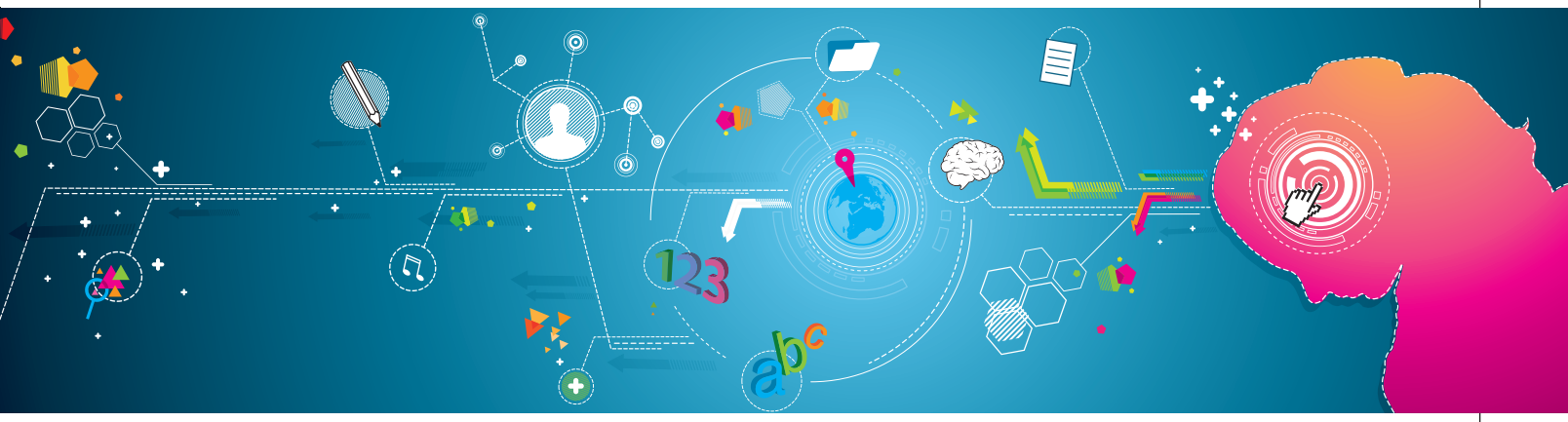
Most people will, from time to time, display one or more of the following signs of learning differences. If, however, you exhibit several of these characteristics over a long period of time, consider the possibility that you have a learning difference.

- Difficulty in comprehending written or spoken language, or with your writing or reasoning abilities (often avoiding reading and writing tasks as a result)
- Hyperactivity, inattention, and perceptual coordination issues
- Weak memory skills
- Uneven and unpredictable test performance
- Perceptual impairments, motor difficulties, and behaviors such as impulsiveness, low tolerance for frustration, and problems handling day-to-day social interactions and situations
- Poor spelling skills (for instance, frequently spelling the same word differently in a single piece of writing)
- Difficulty with open-ended questions on tests
- Difficulty adjusting to new settings
- Tendency to work very slowly compared with other students
- Poor grasp of abstract concepts
- Paying too little attention to details (or focusing on them too much). inc

SOURCES:

Kennedy Krieger Institute, Baltimore, MD: www.kennedykrieger.org/patient-care/diagnoses-disorders/learning-disorders.

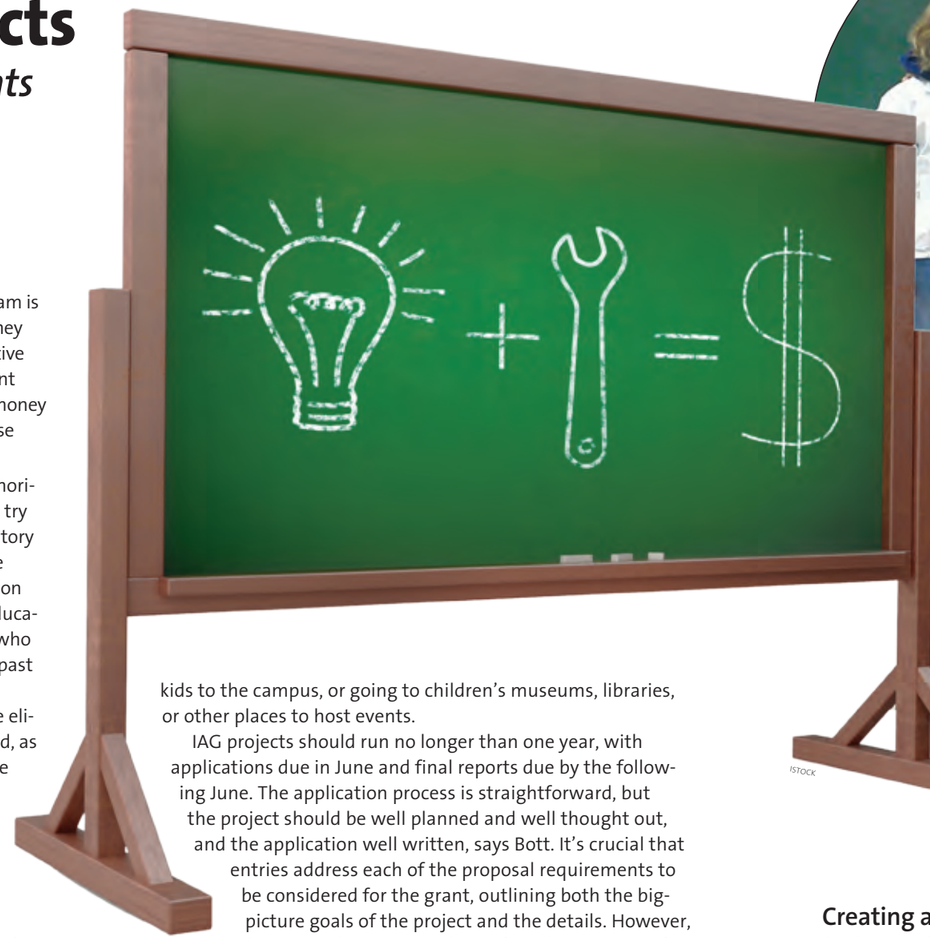
LDOnline: LD Basics: Common Signs of Learning Disabilities, www.ldonline.org/ldbasics/signs.



Funds Available for Outreach and New Projects

Innovative Activities Grants Can Help Your Chapter Make a Big Difference

BY ALLISON BYRUM PROFFITT



ISTOCK

The ACS Innovative Activities Grants (IAG) program is designed to support ACS student chapters as they launch new programs. Experimental or innovative events are often difficult to fund, especially for student chapters that are already having trouble raising the money they need. The IAG program specifically supports these new ideas with $500 matching grants.

"The idea here is to make chapters expand their horizons a little bit, to provide them with the support to try something that in many cases can be rather exploratory for them, without having to risk blowing their entire year's budget," says the University of Houston's Simon Bott, a member of the ACS Society Committee on Education (SOCED) and a student chapter faculty advisor who has helped judge the IAG proposals for three of the past four years.

Active ACS student chapters in good standing are eligible to apply, and any type of project may be funded, as long as it is not one the chapter has done before. The project must be relevant to chemistry and involve maximum participation from ACS student members. New community service, research, or educational programs qualify as do programs that involve collaboration with another school or sister professional societies.

As Bott sees it, "Student chapters' number one priority should be outreach to the community, particularly K–12 students. It's all well and good for student members to host professional development activities, events to raise money for themselves and other college students, or simply occasions to get together for pizza and ice cream. But the most important thing they can do is get out to the rural schools, the inner city schools, and share their love of science. It's amazing," he adds, "the effect that having some college kids go out to these schools can have, especially when the college kids are from the same background as the kids they're visiting." For this reason, a major portion of the IAG funds are dedicated to outreach programs, whether they involve traveling to visit schoolkids, bringing the kids to the campus, or going to children's museums, libraries, or other places to host events.

IAG projects should run no longer than one year, with applications due in June and final reports due by the following June. The application process is straightforward, but the project should be well planned and well thought out, and the application well written, says Bott. It's crucial that entries address each of the proposal requirements to be considered for the grant, outlining both the big-picture goals of the project and the details. However, Bott says, there are two key points that must receive special attention.

"Number one, you can't even get an idea funded if you do not have matching funds. Ideally, we need demonstration of those matching funds. There was one phenomenal proposal from one chapter— one of the best chapters in the whole country— where they actually said, 'Yeah, we want this $500. We're not going to worry about matching funds, we'll match something in kind.' Our committee didn't even review the proposal, because the proposal didn't list any matching funds."

The second essential point is safety. "If anyone is touching chemicals we need to know that they're aware of the issues with those chemicals. We need to know they're going to be adopting safe habits, and particularly, of course, if they're doing it with schoolchildren we need to know that the kids are going to be safe," Bott says.

The Washington State University student chapter received an IAG to assemble grab-and-go demonstration kits for local teachers. They also used part of the grant money to build an online portal to enable the teachers to learn about and request the kits.

PHOTO COURTESY OF WASHINGTON STATE UNIVERSITY.

In the 2010–2011 grant year, winning proposals were submitted by six institutions: University of Arkansas at Little Rock, Washington State University, Southeastern Oklahoma State University, Ball State University, New Mexico Institute of Mining & Technology, and Yeshiva University (see the February/March 2012 issue of *inChemistry*).

Creating a new safety video

Students at the University of Arkansas at Little Rock were tired of the chemistry safety video shown to lab members. It was outdated, was generic, and didn't cover all the areas that needed to be addressed. Students proposed a collaboration with an on-campus audiovisual team to film a new, more relevant safety video featuring the familiar faces and spaces of the chemistry department.

"The remake of the chemistry safety video is a project that has been in discussion for over a year," explain Jerry Darsey, chapter advisor, and Amy Alexander, chapter president. "Receiving the IAG funding gave this project the push that was needed to set it into action." The Little Rock chapter had actually applied for an IAG before, but this was their first award. "Chapter officers should educate themselves and communicate these opportunities (and the deadlines) to all members and volunteers," stress Darsey and Alexander. "Two of our previous IAG proposals were denied, but ACS sends out suggestions and comments to the denied proposals as to how we can improve and expand the idea. Take these suggestions to heart; be proactive, and try again the following year. And the year after that, and again, and again, etc."

Demo kits to go

Washington State University ACS student chapter members assembled grab-and-go demonstration kits for local teachers. Each kit included a curriculum, worksheets, and detailed instructions, as well as all reagents, glassware, safety equipment, and other materials. They assembled similar kits for their own chemistry demonstrations— demos and workshops that would require additional knowledge, materials, or safety equipment that couldn't be included in the teachers' kits. "With the IAG, we were able to put together kits for our most popular demonstrations and experiments (plus a few new ones!), which we will be able to use for years in the future. Best of all," notes Jen Ratfield, the chapter president, "the kits are portable, allowing the demonstrations to travel to wherever the educational activity will take place. Next year's chapter officers will be expanding the kits and encouraging more local educators to take advantage of this resource."

The chapter also recognized that the processes for publicizing and distributing the kits could be disrupted by normal chapter turnover. As the members who were most familiar with the program graduated, the program might start losing momentum, or things could slip through the cracks. So the chapter also proposed a project to streamline its chemistry demonstration process.

The proposal was approved, and the chapter received funding to enable their Information Technology officer to build an online portal to make it easy for local teachers to learn about the project and request kits. "This component will be structured so that any transitions of student or faculty leadership within our student chapter will not adversely affect our ability to provide fun, educational, chemistry-themed demonstrations to the community," the chapter explained in its proposal.

TOP LEFT: **Simon Bott is an ACS student chapter faculty advisor at the University of Houston and a member of SOCED who has helped to judge the IAG proposals.** PHOTO COURTESY OF THE UNIVERSITY OF HOUSTON.

TOP AND BOTTOM RIGHT: **With the money it received from an IAG, the student chapter at the University of Arkansas at Little Rock teamed with an on-campus audiovisual team to create a laboratory safety video for use in the university's chemistry department.** PHOTOS COURTESY OF THE UNIVERSITY OF ARKANSAS, LITTLE ROCK.

Reaching Native American students

Southeastern Oklahoma State University (SEOSU) is located in southeast Oklahoma, a mostly rural area with a large Native American population; in fact, almost 30% of the SEOSU student population is Native American as well. The ACS student chapter at SEOSU wanted to reach out to the rural high school students, many of whom come from households below the federal poverty line, with parents who did not attend or complete college.

The chapter hopes to focus on high schools in the most rural and underfunded areas in the university's region. Students prepared a simple demonstration on recycling and plastics, a topic that they felt would be accessible and familiar to students. They hope to engage students in the experiment either in hands-on labs or by using student volunteers in a larger setting. The student members will then talk with the high school students about college life and encourage them to consider chemistry. "We hope these talks will help the students see themselves performing research in science fields," the chapter explained in its application. "We will also hand out information about the chemistry-related degrees at SEOSU, including advisor contact information and examples of where recent graduates are now."

Boosting student success

About 600 students take introductory chemistry in their first semester at Ball State University, and one-quarter of them withdraw or earn a D or F grade. The Ball State ACS student chapter proposed an organized plan of attack to improve those numbers.

Starting by holding a Surviving Chemistry workshop at the beginning of the semester, the student members will offer study sessions before each scheduled test and exam for both first- and second-semester general chemistry. Chemistry majors who succeeded in introductory chemistry will share their tips for study habits, note-taking, class attendance, exam prep, and getting the most value from labs. Study guides and outlines will be provided for the students before the first exam, and they will be shown how to effectively prepare their own study materials for the subsequent exams.

"The goal of the project would be to help students who are struggling with general chemistry to not only stay in the class, but to do well," the chapter noted in its proposal. The dedicated and consistent effort will also expose underclassmen to the ACS student chapter and student members early in their college careers.

Made-to-order lab materials

ACS student members at New Mexico Tech noticed that the nearest high school, Socorro High School, did not offer a laboratory component to its chemistry lecture, and many high schools in the state do not offer a chemistry course or lab. To help better equip high school juniors, the student members — with additional funds from the Central New Mexico ACS Local Section — prepared a Chemistry Lab pilot program.

They assembled a kit consisting of five experiments and required materials for use by high school teachers. Using projects outlined in the ACS *Activities Workbook for Chemistry in the Community*, the student members assembled kits with activities including measuring the relative reactivity of metals, retrieving copper, calculating the caloric content of nuts, and testing water for certain ions. The New Mexico Tech student members will evaluate these five experiments based on the high school students' data and success with each lab. Using these data, changes can be made in the experiments or the kit design, and the findings will be used to establish a permanent chemistry lab at Socorro High School. inc

Allison Byrum Proffitt *is a writer and editor based in Singapore and covers science all over the world. When she's not writing, she's traveling as much as she can.*

Science ROCKs at Saint Francis University... and Will Soon ROLL!

Creating a Dynamic Rural Outreach Program

BY JESSIE MINOR, TRAVIS ROSMUS, AND EDWARD P. ZOVINKA

SAINT FRANCIS UNIVERSITY

ROCK

RURAL OUTREACH CHEMISTRY *for* KIDS

See the reaction!

The words "ROCK" and "ROLL" have taken on special meaning in the chemistry department at Saint Francis University (SFU). Dedicated faculty and students are working to bring science to the community through two efforts: ROCK (Rural Outreach Chemistry for Kids) and ROLL (Rural Outreach Learning Laboratories).

SFU is a coeducational, comprehensive university with approximately 1,600 undergraduates located in the heart of the rural Allegheny Mountains, in the Appalachian region of South Central Pennsylvania.

What is ROCK?

SFU ROCK aims to provide K–12 students with extra opportunities to perform hands-on scientific experiments using mostly household products. The program engages students in a science activity highlighting the "Wow!" factor of science, while also explaining the chemistry behind the activity. Trained undergraduate students and faculty members lead the ROCK events, which are often scheduled during the academic day for K–12 audiences. SFU also schedules evening or weekend events to reach organizations such as Girl Scouts and Boy Scouts. An ideal ROCK event is not demonstration-driven; rather, it directly engages students in a small-group setting. A ROCK leader orchestrates the whole activity, while each SFU volunteer assists a group of four to five students.

We often begin an event by asking the K–12 students to think about how science impacts our society, and the role it may have in the future. While connecting science and the future for the audience, we implement the activities so that participants become aware that science is interesting and FUN! We hope that, by seeing chemistry in a different light, the students will stay interested in science and have the confidence to pursue higher levels of science education, and thus prepare for adulthood in an increasingly science- and technology-intense society.

Program coverage

ROCK events initially focused on chemistry topics and concepts, but based on teacher and student requests, events now include activities beyond the typical boundaries of chemistry. ROCK events include such activities as Liquid Nitrogen, Slime & Silly Putty, Birthday Party Chemistry, Dry Ice, Cleaning Water with Dirt, Oily Oceans, Keep Them Clean, Density Towers, From Corn to Plastic, and others. We explore the topics by sharing fun (and hands-on) activities to help connect students' knowledge with concrete actions. Safety is always a priority, so we insist on proper handling and disposal of

LEFT TO RIGHT: **The ROCK team: Ben Schultz, Travis Rosmus, Jessie Minor, Rob Hodgson, and Edward P. Zovinka.**

ALL PHOTOS COURTESY OF SAINT FRANCIS UNIVERSITY.

chemicals and on wearing safety glasses during the activity portion of each event.

At the beginning of each event, the students take part in a question-and-answer style discussion in which they learn about the topic. Discussion points include "Why is the experiment important?" and "What do you think will happen?" Providing a few surprises throughout the demonstrations, such as breaking racquetballs (in the Liquid Nitrogen activity) and popping tops off of old film canisters (in the Dry Ice activity), drives home the "Wow!" factor— and also keeps the students engaged and encouraged to participate further. After the activity, leaders review what happened and why, helping the students better understand what they have just experienced.

Of course, with any "live" event, problems or surprises do occur— including unexpected challenges for the presenters. For example, there have been a few Liquid Nitrogen demonstrations in which the chilled racquetball did not shatter as expected when bounced by the student volunteer. However, we have found that even these occurrences can be "teachable moments," since we can explain to students what we have learned. We've dented a few ceiling tiles along the way... and have come to the conclusion that tournament racquetballs either thaw out faster than other types or are made of material that is stronger and more pliable. In either case, we recommend that tournament racquetballs should *not* be used!

All of our activities are created by the student and faculty leaders to fulfill specific Pennsylvania state curriculum standards (see page 22) and are designed to be very affordable. In fact, we hope that the teachers will integrate our activities into their curriculum, and even request that we add new activities to our menu.

Finances

In order to support our free ROCK offerings, Edward P. Zovinka, our faculty advisor, has written many grant proposals to organizations such as ACS, the Buhl Foundation, the Association of Independent Colleges and Universities of Pennsylvania, and the Society for Analytical Chemists of Pittsburgh (see sidebar). Support is also provided by the SFU Student Government Association and the SFU chemistry department.

While ROCK's growth in popularity has come mostly from word of mouth, we also send out invitation letters to local teachers at the beginning of each year. In addition, the Science Outreach Center website provides more information for interested educators. Events can be requested using the online request form found at the center's website (www.francis.edu/soc) or by e-mailing ROCK@francis.edu. Visits with local school districts are scheduled by ROCK's student director during the fall and spring semesters on a first-come, first-served basis. However, school districts that are more than 45 minutes away from SFU are usually scheduled for May.

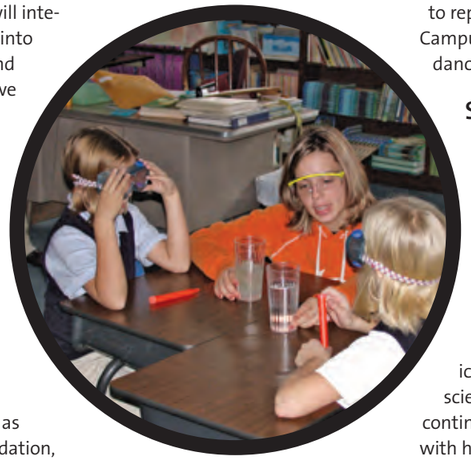
In addition, the Thomas Automotive Family supports our program by making donations of minivans. The company's first donation was approximately 11 years ago, and it recently donated yet another van to replace an older vehicle. All drivers are approved by the SFU Campus Police Department and operate the vehicles in accordance with university policy.

How We Got Started

After I was asked to raise the community visibility of the chemistry department, the resultant revival of our ACS student chapter and the establishment of the ROCK program jolted the department in a new direction.

The program began modestly, hosting approximately 10 events in 1995, and has increased its impact every year since. We started by writing a proposal for an ACS IAG in May 1995 to pilot the program. We wrote in our proposal, "In our inaugural year, chapter members and the advisor will visit five local high schools. These particular schools (Cambria Heights H.S., Central Cambria H.S., Northern Cambria H.S., Bishop Carroll H.S., and Tyrone H.S.) have been targeted since chapter members are graduates of these schools. The program will utilize the entire current chapter membership since each high school visit will use two different members for each of the five visits." In fact, the program has grown so much that, between September 2010 and May 2011, we reached over 4,000 students through 156 events.

—Edward P. Zovinka



Student leadership

Due to the size and importance of the program, a student director is selected for the entire academic year. This individual is responsible for scheduling events with local schools, coordinating appropriate activities, and recruiting and training SFU student volunteers. Our past student directors have come to the chapter from a variety of majors, including chemistry, elementary/special education, mathematics, and psychology.

Our current student director, Jessie Minor, a mathematics/secondary education major with a minor in forensic science, was chosen for the position in May 2010 and will continue in this role until summer 2012, when she graduates with her BS degree. Meanwhile, our faculty director oversees the program; handles training, budgets, and community relations; and also deals with day-to-day decisions and problem-solving to ensure the program runs smoothly.

The program is guided by the faculty and student directors; however, without the chapter members and other volunteers, the events would not happen. Volunteers are recruited from both inside and outside the chapter, as SFU professors will often offer students the opportunity to drop their lowest quiz grade of the semester if they participate in a ROCK event and write a reflection paper.

Students have a variety of other incentives for participating. For example, students in the education program (pre-service teachers) often volunteer their time to gain training in the field. Meanwhile, students taking religious studies courses are required by the university to perform 10 hours of community service, and many see ROCK as a fun way to reach their service goals. Whatever their motivation, SFU students who help in the program experience science first-hand and connect with younger students, thus sharing their knowledge.

All volunteers are required to agree to and sign a Code of Conduct form that states how to dress, handle equipment, and act appropriately at each event. The volunteers are then trained on how to do specific activities. Ideally, training of new volunteers is completed before the event— but sometimes, due to time constraints, training has occurred in transit to the event! Flexibility and willingness to follow the leader is key!

Let's ROLL!

Since the time demands of the ROCK program place a considerable demand on the schedules of SFU chapter student members and faculty, some questions arose: "How do we avoid becoming burnt out?" and "How can we sustain our outreach efforts on a small budget?"

With assistance from the Buhl Foundation, we "ROLLed" into engaging the high school faculty members themselves to increase the reach of our activities. In collaboration with the teachers, we identified needs in the high school chemistry curriculum and are currently adapting laboratory modules to be taught using portable laboratory equipment that we loan to the high schools. The modules have been tested by certified high school teachers, and the portable spectrometers, gas chromatographs, and potentiostats will be piloted in their schools.

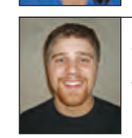
Making an impact

While not necessarily musical, ROCK and ROLL is the sound of our ACS student chapter reaching out. By leading free activities and lending portable equipment, the SFU chapter members have become a commonly heard science resource for our community.

Our chapter's membership was originally small, but our students wanted to be involved in something new and different— and that has helped us grow. The ROCK program provided the tool to bring chemistry majors together, and a way for our chapter to make a name for itself. inc

LOWER LEFT: **ROCK volunteer Ashley Lucas discusses reaction rates using glow sticks.** ABOVE LEFT: **ROCK leader Chris Kurtz helps high school students make ice cream with liquid nitrogen.** ABOVE RIGHT: **Rob Hodgson prepares for a ROCK outreach event at a local ballpark.**

Jessie Minor *is a senior mathematics/secondary education major and is the current ROCK student director.*



Travis Rosmus *is a senior chemistry major and chapter president.*

Faculty advisor **Edward P. Zovinka** *is a professor of chemistry and the faculty director of the ROCK program.*

SFU Demo: Birthday Party Chemistry

Curriculum Standards

These activities are designed to align with several Pennsylvania state academic standards, including:

- Identify and use the nature of scientific and technological knowledge. Provide clear explanations that account for observations and results.
- Recognize and use the elements of scientific inquiry to solve problems. Conduct an experiment.
- Recognize basic concepts about the structure and properties of matter. Describe properties of matter. Know different material characteristics.
- Describe concepts about the structure and properties of matter. Describe and conduct experiments that identify chemical and physical properties.
- Analyze how human ingenuity and technological resources satisfy specific human needs and improve the quality of life. Identify several problems and opportunities that exist in your community, and apply various problem-solving methods to design and evaluate possible solutions.
- Apply concepts about the structure and properties of matter. Explain how the forces that bind solids, liquids, and gases affect their properties.

If your chapter wants to do these or other activities for high schools, we recommend that you research standards in your own state to determine which standards your activities address. inc

GRADES: 4–7

Pancake or Birthday Cake?

Liquid Nitrogen Ice Cream

Polymers — Balloon on a Stick

ILLUSTRATIONS: ISTOCK

MATERIALS

Pancake or Birthday Cake?

- Safety goggles
- Easy-Bake Ovens (2)
- Oven baking trays for the Easy-Bake Ovens (2)
- Cake batter:
- 1/2 c. cooking oil
- 2-1/2 c. flour
- 1 tsp. salt
- 1-1/2 c. sugar
- 1-1/4 c. milk
- 3 eggs
- 2 tsp. vanilla extract
- 1 tsp. baking powder (don't add until step 2 of the experiment)
- Non-stick cooking spray
- Measuring teaspoon

Liquid Nitrogen Ice Cream

- 5L Liquid nitrogen
- Liquid nitrogen Dewar flask (SFU uses 10L and 35L flasks)
- 4L Nalgene Dewar flask
- Cold gloves

Materials for each student involved:

- Safety goggles
- Small plastic cup
- Plastic spoon
- Cold gloves for any students who stir

For each student group (4–6 students):

- Dry measuring cup
- Liquid measuring cup
- Wooden bowl
- Wooden spoon
- Ice cream mixtures
- 1 c. 2% milk
- 1 c. heavy whipping cream
- 1/4 c. sugar
- Vanilla extract
- Chocolate or strawberry syrup (optional)

Polymers — Balloon on a Stick

- Safety goggles
- Balloons
- Cooking oil or petroleum jelly
- Wooden skewers

ACTIVITY INSTRUCTIONS

Pancake or Birthday Cake?

1. Prepare the cake batter prior to the experiment.
2. Plug in the Easy-Bake Ovens 15 minutes before needed.

✦ Explain the baking procedure and the important role that baking powder plays in it. Ask if any students have nut allergies.

3. Spray both baking trays with non-stick spray, and have two student volunteers place batter in each pan.
4. Instruct one student volunteer to add a teaspoon of baking powder to one of the two pans, and help them place the pans in the oven.

SAFETY NOTICE: Use oven mitts and do not allow participants to touch the pans unless they are wearing gloves. Follow all safety recommendations associated with the Easy-Bake Oven.

5. Allow the mixtures to bake for 12 to 15 minutes or until the cake with baking powder has risen and both are cooked thoroughly.

Move onto the Liquid Nitrogen Ice Cream activity while the cakes bake.

(~10 minutes)

Liquid Nitrogen Ice Cream

(Is it OK to have ice cream at the party, too?)

SAFETY NOTICE: Wear goggles, cold gloves, and closed-toed shoes and make sure all students who stir are wearing wearing these items as well. Ask if any students are lactose intolerant.

✦ Ask "What is in air?" Have the students talk with each other and make suggestions, and make sure to share the point that the main component of air is nitrogen.

✦ Explain that in order to change nitrogen gas into the liquid form, we must cool it down to a very low temperature.

✦ Ask students, "What temperature do you consider 'cold'?"

✦ "Nitrogen actually becomes liquid at –321°F (which converts to –196°C), so it is extremely cold. If you get liquid nitrogen in your eyes, it will be harmful, so you must wear safety goggles."

✦ Pass out the safety goggles to each student. Make sure each is wearing the glasses!

✦ Explain that liquid nitrogen can also be used to make ice cream.

1. Pass out the following to each group (4–6 students per group):
   - A plastic bowl
   - A wooden spoon
   - 1 plastic cup per student
   - 1 plastic spoon per student
   - A 1-cup measuring cup
2. Pass out the milk, cream, sugar, and vanilla extract. Instruct the students to add to their bowl 1 cup of milk, 1 cup of whipping cream, 1/4 cup of sugar, and a splash (or capful) of vanilla extract.

SAFETY NOTICE: Away from the participants, pour approximately 1 cup of the liquid nitrogen from the larger Dewar into the smaller Nalgene Dewer to reduce the risk from a spill. Do not allow the students to handle the liquid nitrogen.

3. Add liquid nitrogen to the bowls until the ice cream is frozen, and make sure a student continues to stir as you add it. Have the students divide the ice cream within their group, and add syrup if desired.

(~15 minutes)

4. While the students are eating the ice cream, take the cakes out of the ovens and allow them to cool. Pass the cakes around to let the students see the difference between the two, and elaborate about the baking and rising process and the role of the baking powder.

(~10 minutes)

Polymers — Balloon on a Stick

(Every party needs balloons!)

1. Choose one or several students to blow up balloons, making sure that there is still enough of the "dark" part around the opening, or bottom, of the balloon. (This is where the polymers are still really close together.)
2. Once they have tied off the balloons, give the students wooden skewers to dip into the vegetable oil or petroleum jelly, and have them carefully slide the skewers up through the bottom part of the balloons, all the way through the top where the balloon material is still dark. (Polymers are close together here as well.)

Discussion:

Why didn't the balloon pop? (The polymers are still really close together, and we are able to "slide" through them without breaking bonds.)

Why did we use vegetable oil or petroleum jelly on the skewer? (It helps to "slide the skewer past" the polymers.)

3. Have the students slide the skewer through the middle, or side, of the balloon. (Where the balloon material is stretched more tightly, the polymers are farther apart.)

Discussion:

Why did the balloon pop? (The polymers are stretched thin on the sides, as opposed to the bottom and the top.)

(~10 minutes)

Review:

✦ What makes the holes in our cakes? (The baking powder releases CO_2.)

✦ How do we get nitrogen into its liquid form? (We cool it to a very low temperature and keep it under high pressure.)

✦ Why didn't the balloon pop when we slid the skewer into the thickest part of the balloon? (In that part of the balloon surface, there are more polymers, and they are closer together.)

✦ Why would the balloon pop if we slid the skewer through the thinner part of the balloon? (In that part of the balloon surface, the polymers are stretched out and have no flexibility.)

✦ Why do you think we coated the skewer with cooking oil or petroleum jelly? (They work as lubricants, and also as sealants for the holes made by the skewers.)

(~5 minutes) inc

SPOTLIGHT

Western Kentucky University Bowling Green, KY

COMPILED BY ACS STAFF

Chapter president: Sarah Ward **Number of chapter members:** 39 **Number of ACS student members:** 20
Institution description: Large, public, rural, minority-serving, 4-year institution

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

A: In order to standardize procedures from year to year, our members are creating a "How-to Guide" for the chapter. When completed, it will be the official reference for all chapter procedures: from facilitating an event to sending an e-mail to the chapter members to ensuring a smooth officer transition.

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

A: Our most popular chapter event is always liquid nitrogen ice cream. The students that pass by (whether they like chemistry or not) are always mesmerized. This opens a door to capturing people's interest in chemistry.

Q: How did you celebrate National Chemistry Week?

A: During NCW, we encourage our chapter members to wear a chemistry-themed shirt each day. In addition, our members baked, decorated, and sold cupcakes that formed a periodic table, with all proceeds going to Potter Children's Home. To correlate with the theme of NCW, "Behind the Scenes with Chemistry," we created a display of elements in jars and facts about the elements, such as the discovery and name origin, in a glass cabinet in one of the science buildings.

Q: What is your most successful recruiting event/method?

A: Each fall we recruit new ACS student members through our membership drive. Our chapter subsidizes half of the student dues to encourage them to join ACS. We also have a recruiting event at the beginning of the fall semester, which is announced to each chemistry lecture class by the professors. Finally, this year we hosted a chemistry movie night where we watched "Weird Science."

Q: What is your most successful fund-raiser to date?

A: The periodic table of cupcakes is our chapter's most successful fund-raising event to date. We had the whole building buzzing about our "elemental cupcakes." Everyone not only paid for their own cupcakes but also donated above and beyond the price. The faculty of our chemistry department enjoyed buying the element most relevant to their research. In addition, many students bought cupcakes to pass out to their most valued faculty members.

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

A: Our chapter actively partners with other clubs for departmental events such as the Spring Picnic, which encourages faculty-student interaction.

Q: What is the most effective communication tool that your chapter uses to promote chapter activities?

A: Our chapter's officers communicate with members through a weekly e-mail, and we follow up by posting flyers. Our chapter maintains an "Important Dates" section on our Blackboard website as a quick reference for the members. inc

PHOTO COURTESY OF WESTERN KENTUCKY UNIVERSITY

To ensure a smooth transition for the coming year, the WKU chapter is creating a "How-to Guide," which will serve as an official reference for all chapter procedures for new officers.

Faculty advisor:
Lester Pesterfield, 3 years

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

Pesterfield: The most rewarding aspect of being the faculty advisor has been working with the students. I have been truly blessed with a great group of officers and students to work with over the last three years. I have enjoyed seeing them get excited about an event or activity for NCW or Earth Day or Girls in Science, then getting everyone organized and materials put together, and finally participating in the event. inc

SPOTLIGHT

Allegheny College

Meadville, PA

COMPILED BY ACS STAFF

Chapter president: John Milligan **Number of chapter members:** 30 **Number of ACS student members:** 24
Website: sites.google.com/a/allegheny.edu/chemii/ **Institution description:** Small, private, rural, 4-year institution

Q: Do you have any unique positions?

A: As part of our executive board, we have three committee chairs— Outreach, Public Relations, and Social. The committee chairs are selected by the incoming executive board each spring. These positions give students an opportunity for leadership and also facilitate better communication between the executive board and members.

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

A: We ran an after-school chemistry club at a local elementary school. The program was open to third and fourth graders in the school, and activities included making ice cream, Diet Coke/Mentos geysers, and sugar carbon snakes.

Q: Does the group collaborate with its ACS Local Section?

A: Members of our chapter attend several Erie Local Section meetings during the academic year. It's difficult during a busy semester to commit to a two-hour round trip to go to some of the meetings; otherwise we would have been likely to attend more meetings. We also host a local section meeting, which a large number of our members attend.

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

A: The admissions office at Allegheny College hosts two Trustee Scholar Weekends in the spring semester. Chapter members serve as tour guides for the chemistry department facilities, and the chapter hosts a pizza party for prospective students. This allows prospective students to learn about our chapter prior to enrolling at Allegheny. In addition, our chapter subsidizes 40% of the dues for chapter members and we participate in the ACS's Member-Get-A-Member program.

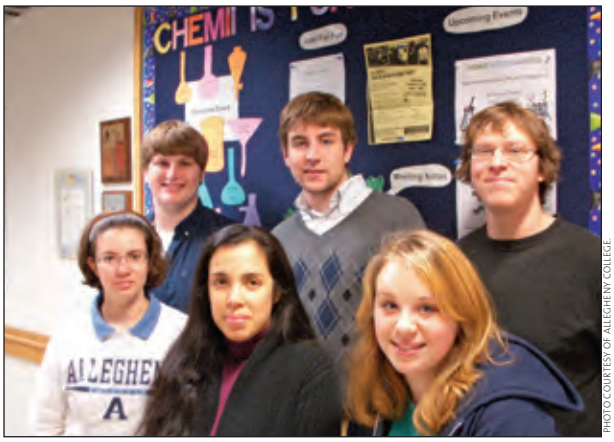


PHOTO COURTESY OF ALLEGHENY COLLEGE

During the spring semester Trustee Scholar Weekends, Allegheny College chapter members serve as chemistry department tour guides and also host a pizza party for prospective freshmen.

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

A: We host a "Social Catalyst Reaction" after our first meeting. Members dine on pizza topped with their favorite compounds (glucose), to create and strengthen covalent bonds with other members, and to put Gibbs free energy to work and create entropy playing 6 x 10^{23} molecularly cool games. The event offers a relaxed atmosphere for both new and returning members to meet, reconnect, and build momentum for upcoming chapter events.

Q: What is the most effective communication tool that your chapter uses to promote chapter activities?

A: Approximately one week before each general meeting, we post fliers with information about the meeting time, location, and topics of discussion. On the day of the meetings, we post a description of the meeting on our college's "College Headlines," which are e-mailed to all students each morning. Faculty members also announce our meetings in their chemistry classes, particularly in freshman chemistry.

Q: What innovative methods of communication are used to inform chapter members of chapter activities?

A: This year, we are highlighting some of the history of the department and chapter, so we created two posters and hung them in the chemistry building, along with photos of students, faculty, and facilities. We also post information about the ACS's Molecule of the Week around the chemistry building to build awareness about our chapter.

Q: What is your most successful fund-raiser to date?

A: Every year, our ACS student chapter sells lab notebooks and safety goggles. We make the materials available to the students during each lab section throughout a two-week period. In addition, every other year we have a contest to design a chapter T-shirt, and then we sell the winning T-shirt. inc

Faculty advisors:
Ivelitza Garcia, 1 year
Mark Ams

Q: Why/how did you become a faculty advisor?

Garcia: I became a faculty advisor for several reasons. As an undergraduate at Florida International University, I was very active in the ACS student chapter and truly valued my experience as part of the executive committee as well as my interactions with our faculty advisor. This involvement helped shape my future goals in chemistry, and so I want to facilitate a similar positive experience for our current chemistry chapter members. I also enjoy bringing chemistry to the community and local schools in the hopes that we can serve as inspiration to others. inc

SPOTLIGHT

University of San Diego

San Diego, CA

COMPILED BY ACS STAFF

Chapter president: Shannen Cravens **Number of chapter members:** 80 **Number of ACS student members:** 12
Website: http://sites.sandiego.edu/chemclub/ **Institution description:** Small, private, urban, 4-year institution

Q: Do you have any unique positions? If so, can you describe them?

A: We have a Community Service Coordinator who oversees coordinating and communicating with the various schools that participate in our outreach programs.

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

A: All students who declare a chemistry or biochemistry major are automatically made a member of our chapter. We retain members by diversifying our activities, including a mix of social events and community service opportunities. Adding food has also helped draw in a crowd at each event!

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

A: Our two most popular activities are both held in collaboration with other science and pre-health clubs on campus. At our Science Department Holiday Party, we decorate ornaments and cookies, while our "Beauty and the Geek Bucky Ball" is an on-campus spring formal with a DJ and catered Italian food. Last year, approximately 100 students and faculty took part in both festivities, which was a new record for our chapter!

Q: What types of activities do you sponsor?

A: We sponsor outdoor movie nights, lab coat tie-dye, holiday parties, and several outreach programs in our community. We have a Careers in Chemistry seminar series to help students realize there are plenty of career options for them in addition to medicine and academia. Speakers have included forensic and environmental scientists, a scientific illustrator, a structural biologist, and biotech professionals.

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

A: Our chapter has an officer shadow program. Potential new officers are recruited halfway through the academic year and are teamed with the current officers who hold the positions in which the potential officers are interested. This allows the potential officers to learn how the chapter functions before they assume their new roles, and also allows the current council to determine who is best suited for each job. At our officer council "boot camp," new officers learn about our chapter's annual activities, past event successes and failures, and the duties of their new jobs.

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

A: Our chapter is housed in a building with several other science departments, so we make an effort to collaborate with the biology, marine science, and physics clubs. This year, we planned a holiday party, spring formal, and DNA Day together. Each activity was run by a planning committee composed of representatives from each participating club.

Q: What innovative methods of communication are used to inform chapter members of chapter activities?

A: We started a Facebook page a couple of years ago, and we now have a functioning website that is attached to our university's official webpage. These online resources allow us to reach out to more students, especially those who have yet to declare their major. It also provides members with a way to contact the officer council directly with any questions. We also have a bulletin board in our science building that is dedicated to chapter news. inc

PHOTO COURTESY OF UNIVERSITY OF SAN DIEGO

The USD student chapter has an officer shadow program to help potential officers learn the duties of the position before taking office.

Faculty advisor:
Christopher Daley, 9 years

Q: Why/how did you become a faculty advisor?

Daley: I have fond memories of my undergraduate days with my student chapter and remember the strong sense of community we felt between students and faculty. As an assistant professor, I wanted to see the same sense of community in my department, so I took on the role of faculty advisor.

Q: What challenges have you faced in your position?

Daley: One of the main challenges is to learn the student-faculty culture at your institution. Each institution I have attended, whether as a student, a postdoctoral fellow, or a professor, has had a different departmental culture. The challenge is to determine which form of student-faculty community can be built and sustained in your department by your chapter.

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

Daley: There are many, but one of the major ones is seeing a community develop among the students, staff, and faculty in our department. Our students spend four (approximately) very influential years of their lives in our midst, and it gives us great pleasure to watch them grow and mature as people and as future scientists. inc

SPOTLIGHT

Saginaw Valley State University University Center, MI

COMPILED BY ACS STAFF

Chapter president: Anthony Lucio **Number of chapter members:** 16 **Number of ACS student members:** 13
Institution description: Small, public, rural, minority-serving, 4-year institution

Q: Do you have any unique positions? If so, what are they?

A: We appoint an activities coordinator who is responsible for planning social activities for the chapter. We also have a chapter historian. The historian's job is to take photos at each chapter event and to compose a digital scrapbook of the chapter's activities at the end of each year.

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

A: We currently partner with a local high school, where we tutor students, assist with their greenhouse, and incorporate lab demonstrations into their chemistry classes. In addition, we annually volunteer for Sci-Fest, an event hosted around Halloween, and Science and Math Extravaganza for Kids (SMEK), held each February.

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

A: For two years, our chapter has offered a Member-of-the-Year Award — a gift card at a local store — to a deserving non-officer within the chapter who has demonstrated high levels of participation and enthusiasm throughout the year. Every recipient of this award has assumed an officer position in our chapter the following year.

Q: How involved is your chapter on campus?

A: Our chapter participates in events hosted by other Registered Student Organizations (RSOs) on campus. Each year we set up a booth at Cards Party, an event that provides information about campus clubs to potential members. We also participate in a Relay for Life event on campus.

Q: What is your most effective communication tool for promoting activities?

A: E-mail has been the staple communication tool for informing our members about upcoming events. However, we also use Facebook to reach not only our current members but past and prospective members as well.

Q: What is your most successful fund-raiser to date?

A: Our chapter's most successful fund-raiser has been "Pie Your Professor," an event where students pay to get "up close and personal" with their teachers — with a pie to the face. This event, held near the end of the semester after most exams, is very popular among the students. At the end of the event, the professors also get a turn to take a shot at the student chapter members. The money raised from this event goes to a scholarship fund for an SVSU student to conduct undergraduate research.

Q: What types of activities do you sponsor?

A: Every year, the chapter hosts an annual research symposium where we invite professors to speak about their research. This gives undergraduates a "one-stop shop" to see the different research opportunities available at our university. inc

PHOTO COURTESY OF SAGINAW VALLEY STATE UNIVERSITY

Each spring, the SVSU chapter gives a "Member-of-the-Year" award to a deserving non-officer within the chapter. Every recipient has later become a chapter officer.

Faculty advisor:
David Karpovich, 5 years

Q: Why/how did you become a faculty advisor?

Karpovich: I appreciated the mentorship provided by my chapter faculty advisor (years ago) and wanted to give the same to our chapter members.

Q: What challenges have you faced in your position?

Karpovich: Sometimes my faculty duties make it difficult to devote the time that the chapter really deserves. I'm grateful that our chapter leaders are always willing to step up to make things happen.

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

Karpovich: It's very rewarding to see chapter members grow from curious observers into passionate and active participants.

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

Karpovich: Rather than trying to shape the chapter into what you think it should be, encourage the members to follow their interests, work from their strengths, and make the chapter their own. inc

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