





Make a Difference in Science Policies





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Chemistry Ambassadors offer expertise on how to engage peers for volunteering.

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Processing Grade Grief

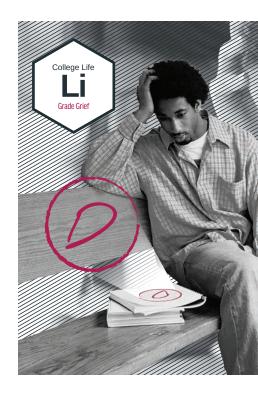
Don't let a bad grade consume you. There are several ways to rebound and do better next time.



Chapter Spotlight

Check out what student chapters are doing at the National University of Singapore and the University of Maryland, College Park.

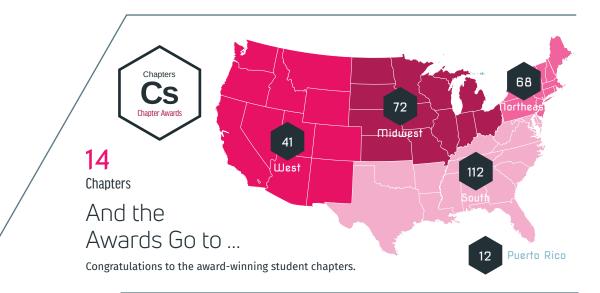




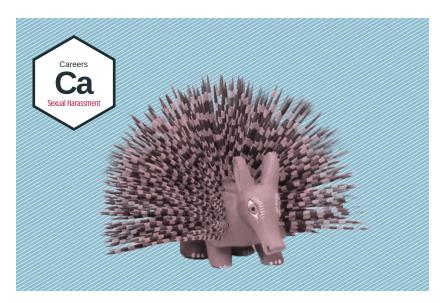
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How to choose between a M.S./M.A., P.S.M, and Ph.D.





9 Ways to Recruit Chapter Members—and Keep Them

BY AMINA KHALIFA EL-ASHMAWY AND MICHEAL FULTZ

One of the toughest parts of having an ACS student chapter is recruiting and retaining members. Volunteer activities are often pushed aside when coursework, jobs, and other immediate demands start piling up. If you're having trouble attracting new members or keeping people motivated to stick around, have no fear! ACS's 9200 Chemistry Ambassadors combined their expertise on successful ways to recruit and retain volunteers for community outreach that will help you keep your members engaged.

1. Know your people

To get volunteers, it is important to understand why people volunteer. Some volunteer because they enjoy serving their communities. Some people are looking for professional development opportunities. Others may simply love public accolades.

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- National University of Singapore
- · University of Maryland, College Park



Fast Fact

ACS's 9200 Chemistry
Ambassadors promote chemistry
in their communities. Ambassadors
make science relatable to the
general public by promoting the
importance of chemistry to our
everyday lives through a range
of activities, such as speaking at
schools, hosting science cafés,
lobbying legislators, and more!

Take time to learn why students at your school might be interested in a chemistry-focused activity, and develop a recruitment plan based on your findings.

2. Peddle the advantages

Many students need to build résumés, and some of your peers are in degree programs that require professional development units (PDUs) or community service hours to graduate. In the state of West Virginia, for example, education majors must complete PDUs to graduate, and to meet requirements, some students serve in community organizations that promote science. You can expand participation in your chapter by bringing in recruits who will benefit personally from your community service projects—even students

majoring in a discipline outside of chemistry.

You can emphasize the professional development experience they can get from organizing an outreach activity and participating in chapter events. Students build leadership and grantwriting skills, and they get experience in fundraising. Chapter members also develop communication, networking, and public speaking skills by presenting at ACS meetings. These valuable experiences are excellent for résumés, job interviews, and being a great performer when you do land your first job or internship.

3. Tap ACS assistance

Even the most engaged volunteers can feel burdened with the task of creating activities from scratch. Fortunately, ACS has some great resources for volunteers to get the ball rolling. National Chemistry Week (www.acs.org/ncw) and Chemists Celebrate Earth Week (www.acs. org/ccew) are two well-established programs that provide support and guidance for students looking to begin their outreach activities. Additionally, the ACS store (www. acs.org/store) has tools that make promoting science in the classroom efficient and fun. Check out the classroom kits that cover such topics as color and light. These kits

Duquesne University ACS Student Chapter members staff a recruiting table at the university's Fall Expo



come with all the supplies, ageappropriate background information, and worksheets that can be shared with the outreach participants.

4. Alleviate fears

The unknown can be scary. Joining a chapter or supporting an event can be daunting if you don't know exactly what you are committing to. Alleviate this fear by assigning specific, clearly defined tasks and offering training to help volunteers fulfill responsibilities. If you find that students are intimidated by working with children or people with nonscience backgrounds, pair them with more experienced volunteers. People tend to feel less pressure when they are supported by peers. You can also try one-on-one mentoring to help students blossom.

5. Food, food, food

Free food is a great way to bring people together. It doesn't have to be fancy—pizza, snacks, or even a potluck will work. Not only will food attract volunteers, it will also make meetings more casual and enjoyable and help members feel connected.

6. Communication + positive feedback = strength

Provide a pathway for clear communication and feedback. Volunteers need to know what they did well and how they can improve interactions with audiences. Positive feedback may come from peers, clients, via social media, or personal communication with a mentor. You can base feedback on pre- and post-tests and surveys from event participants or your own observations.

Likewise, collect feedback on the event from volunteers and be sure to follow up on their comments and suggestions. Feedback ensures that volunteers are comfortable, and it gives you a chance to improve.

7. R.E.S.P.E.C.T.

Student chapter leaders should be respectful of their volunteers' time. With all the commitments that students have, some of your members can be stretched thin. Look for activities that require minimal prep time, such as making slime, tie-dyeing shirts, or career day presentations. Adding a chemistry booth to events organized by others (career fairs, carnivals, or other community events) is one way to minimize the volunteer workload while still providing an outreach opportunity for chapter members.

8. Create professional experiences

Support your volunteers in ways that help them build their careers. Such experiences can include covering the travel costs to attend ACS meetings or providing them with opportunities to attend workshops that help build their skills and knowledge. The ACS Leadership Institute (www.acs.org/leadershipinstitute) has many workshops that build leadership skills as well as ways to recruit volunteers.

9. Show appreciation

People want to feel appreciated, and when they feel appreciated, they are more motivated. That's why recognizing volunteers is very important. Be sure to thank everyone who volunteers after every activity. You can also celebrate your successes with an end-of-the-year potluck party and recognize exceptional volunteers with a "Volunteer of the Year" "Chemistry Ambassador" award. Does appreciation matter? Of course! Research has shown that volunteers have a 27% higher chance of finding employment after being out of work than non-volunteers. 🖨

Amina Khalifa El-Ashmawy is a professor of chemistry at Collin College. She serves on the ACS Undergraduate Programs Advisory
Board and the Committee on Public Relations and Communications (CPRC) and is a member of its Chemistry Ambassadors
subcommittee. Micheal Fultz is an associate professor of chemistry at West Virginia State University, a student chapter advisor, and a
member of the ACS CPRC, serving as the 2017 subcommittee chair for the Chemistry Ambassadors program.



National University of Singapore

Faculty Advisor Chin Wee Shong

F

www.facebook.com/nusacssc

Chapter President Max Tan Jin Hui



www.acsnus.wix.com/nusacssc

Members 10

FACULTY PROFILE CHIN WEE SHONG

How long have you been an advisor?

Since 2014. I have been through two batches of the Executive Council (EXCO) since the chapter was set up.

What makes your chapter successful?

EXCO chapter members have a very high sense of pride in doing what they believe is good for the members and the community. They have initiated good projects and carried them through to success, despite the fact that we do not yet have a large and permanent member base. As an advisor, I believe in giving them a free hand to decide what to do. My role is to support and guide them through the execution, and ensure they learn along the way. And I enjoy working with them!

What inspired you to start an ACS international student chapter?

Before our inception in 2014, there was only one chemistry society at the National University of Singapore (NUS), and they focused more on student welfare. Their hallmark activities were the freshmen orientation camp and end-ofsemester celebratory dinner. We set up the NUS ACS Student Chapter to provide academic and career guidance to current chemistry undergraduates through events, such as industrial visits and research symposia, so that they are better prepared for the transition to working life after graduation. We also aimed to organize outreach activities to high schools in order to encourage more students to choose chemistry as their undergraduate course of study.

What events has your chapter organized recently?

We organized the NUS-ACS Undergraduate Symposium for undergraduates to share their research, exchange ideas with professors, and develop science communication skills and inspire others to explore research at the undergraduate level.

We also organized an industrial visit to Solvay for students to gain insight into working life in the chemical industry. The director of Solvay gave a talk, and we did a tour and had a networking session with Solvay staff.

We also interviewed current working professionals in the industry as part of our Chemistry Careers Video Series (see below), a collection of videos on possible career paths after graduation.







What's the best aspect of having a chapter on your campus?

We are the only ACS student chapter in the nation, so it acts as a bridge between ACS and all Singapore chemistry students. It also helps instill inspiration and passion for chemistry among Singapore students. In addition, the activities we organize are open to the entire country.

How does your chapter recruit members?

We call for applications via the usual platforms (school email, Facebook,

announcements during lectures), and then we invite applicants for an interview. The primary attribute we look for is commitment.

What do students enjoy most about being part of the chapter?

The freedom to initiate projects and be supported by our supervisor (Professor Chin Wee Shong) and the department is a big draw. Although our programs mainly are aimed to better serve the chemistry student population in NUS, the planning of such events enriches us with many organizational

skills. It also helps that we are privy to many cool experiments and people that might not be as accessible to other students.

How has your chapter had an impact on the community?

We organize outreach activities to high schools in order to raise interest in chemistry and hopefully inspire them to take up chemistry as their undergraduate course of study. Some of the workshops we have conducted include molecular gastronomy and Nobel Prize in Chemistry experiments. We have

an upcoming workshop in June on Fischer esterification.

What's unique about your chapter's activities?

Being the only student chapter in Singapore, we organize activities that are aimed at students not only in the university, but in the entire nation! This allows us to learn about how chemistry is done at different levels and at different labs in Singapore.

We are also currently working with other scientific student groups (e.g., in physics and life sciences) in rolling out interdisciplinary activities.



University of Maryland, College Park

Faculty Advisors Efrain Rodriguez, Philip DeShong



http://www2.chem.umd.edu/acs/

Chapter President Seth Cohen

Members

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

One of our proudest achievements is building a tutoring program at College Park Academy. We initially reached out to the school to see if we could come in to do some fun demonstrations to get the kids excited about chemistry. After speaking with an administrator at the school, we learned that the students were really struggling with chemistry, and she asked us if we would be willing to put together a tutoring program

FACULTY Profile **EFRAIN RODRIGUEZ**

Why/how did you become a faculty advisor?

I was a starting assistant professor in the fall of 2012, and I wanted to better connect with our undergraduate students in the department to recruit into my lab. I thought it was a great mechanism for better involving our students in research not just in my lab but that of my colleagues as well. We started the chapter in the fall of 2012 with the help of the department and a representative from the ACS national office who gave a presentation to our students on the benefits of being part of this larger network. A core group of very active students took it upon themselves to organize and restart the student chapter at UMD College Park. We have been going strong since then.

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

The biggest reward for me has been taking a group of students to the ACS national meetings and watching them interact with the larger community and develop their professional skills. The students are really taken aback by the size of the meetings and how broad and impactful the chemical sciences are in many aspects of life. They attend symposia showcasing great science, and they also get to see with other universities, industry, and government. They get a much broader view of the world going to these conferences, and that helps them mature in their undergraduate careers. As faculty, to see my students present their work to a larger audience and start to develop the skills of being a professional scientist is very rewarding.

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

I cannot think of a more wonderful group of enthusiastic young students to work with than the ACS student members. They want to succeed, and they want to represent the university well. If you can guide them on how to use their positive energy on well-defined and focused projects, then both the department and the students will benefit enormously from having an ACS student chapter on campus.



for them. The logistics were difficult to work out, because volunteers in this school district are required to be fingerprinted and have background checks. Hosting the program was also a bigger challenge than we expected, because we had to put together lesson plans each week, and think of ways to teach the concepts so that the kids could understand them. It was a lot of hard work, but it was extremely gratifying when we were finally able to give the kids "aha" moments

How did you celebrate National Chemistry Week?

Last year, we organized a Mole Day Celebration to highlight the STEM community on campus. We invited several other STEM student organizations, including the Society of Physics Students, American Medical Student Association, International Genetically Engineered Machine Team, and Society of Asian Scientists and Engineers, to participate in a unique tabling session where they each brought an activity to represent their club. The Younger Chemists Committee provided our club with a grant that covered the cost of dinner and prizes for the trivia contest and costume contest that took place during the event.

During National Chemistry Week we volunteered at a fundraiser for John Eaton Elementary School. The fundraiser was a fair that featured fun chemistry activities for the students and their families to enjoy. Several of our members drove up to the school in DC, helped set up the fundraiser, and manned some of the different chemistry demo stations.

What are some interesting ways your chapter recruits and retains members?

We host engaging teambuilding events at our first meeting so that students can get to know each other better. We have a tradition of making liquid nitrogen ice cream. It's a great way to get people to come out to our events, because liquid nitrogen is always cool to watch and everyone loves ice cream. Even though our ice cream tends to come out more like a milkshake than ice cream, everyone still has a lot of fun. In addition to making ice cream this fall, we had members get into teams of people they didn't already know and held a little competition to see who could build the tallest structure out of uncooked spaghetti and marshmallows. The pressure of competition generated a ton of excitement and helped forge new friendships.

Do you collaborate with other clubs on campus? If so, what do you do with them?

Our ACS chapter often



University of Maryland, College Park



participates in and spearheads collaborations with other groups. We started our annual Mole Day event, which brings together a variety of STEM organizations for a science celebration. We have also partnered with the Society of Physics Students on their full-day campus outreach event (also outlined above). We will continue these collaborations and start new ones this year. We're planning to collaborate with the Food Science Club to bring a chocolatier chemist to one of our meetings to talk to students about their work.

What local ACS student chapters have you collaborated with?

To date we have not collaborated with other ACS student chapters in the area. We therefore decided to get started reaching out this year. After meeting officers from the UMBC chapter at the ACS national meeting this past August, we agreed

that our chapters should have a tighter bond. So far we are planning to have their chapter visit us for Mole Day (we plan to apply for an Inter-Chapter Relations Grant for the event), and we may also have our members drive up to UMBC to see one of their speakers. Additionally, their chapter came up with the great idea that we could produce a joint presentation to give at a local ACS event in the near future.

What is your most successful fundraiser to date?

Our most successful fundraisers are "Launch Campaigns" that we hold about every other year. Launch UMD is a campus crowdfunding platform that is widely recognized by students, parents, faculty, and alumni at UMD. This past spring, we were able to raise a little under \$2500. The purpose of the fundraiser was to cover the costs to send some of our members to the ACS national meeting

in Washington, DC, and we were able to raise significantly more than we needed. We will be using the leftover funds to cover the costs of our outreach programs and toward the ACS meeting next fall.

What career-related events does your chapter hold?

Our seminar series is closely tied to professional development, as we generally invite speakers at surrounding institutions that accept interns. We ask the speakers to talk about their research and how they developed their careers. This year we will be testing out a General Body Meeting dedicated to professional development. Our faculty advisor, Dr. Rodriguez, will give a short talk about what he looks for when he is recruiting undergraduates to work in his lab. Afterward we will do a peer résumé swap to try to improve our résumés with the advice from Dr. Rodriguez. We will be providing pizza since it promises to be a long night of work.

If your chapter has recently attended an ACS regional, national, or local section meeting, how did members benefit?

Each year several of our members attend the fall national meeting. This past meeting, we had the opportunity to stop by the Grad School Fair, where we spoke to representatives from various schools about different programs.

We also participated in a Speed Networking event, during which we spoke to several chemists about their career paths and asked them for advice about our own careers.

We also attended seminars on a wide range of different chemical disciplines. It was interesting to see a little bit of what researchers are working on at other institutions, and this was especially helpful to some of our members in figuring out what they might be interested in doing in the future.



Grad School

Know Your Grad School Options

M.S./M.A.

Master of Science (M.S.) Master of Arts (M.A.)



Advanced education in a specialized area of chemistry

Look for a robust program dedicated to master's students. M.S. degrees usually transfer to a Ph.D. program for career flexibility

For students who want to

Advance chemistry knowledge

Pursue non-research careers (analysis, policy, K-12 education)

Supplement a professional degree program (e.g., law)



Components

coursework, research, thesis (varies)



Commitment

2-3 years



Financial Support

tuition waivers, stipends through teaching assistantships; independent funding may be available P.S.M.

Professional Science Masters



Combines advanced chemistry education with business, leadership, project management skills, and other STEM fields

P.S.M. programs tend to be multidisciplinary and are relatively new in academia. Make sure the program emphasizes required skills for your desired career path.

For students

Pursue management, finance, intellectual property, or similar business positions in a chemical company

Start a business

Combine chemistry knowledge with another field



Components

coursework, internships



Commitment

2-3 years

Ph.D.

Doctorate



Highly specialized programs for leading independent research

Doctoral programs are research-intensive, so look for programs with the resources to support your interests.

For students who want to pursue

Chemistry and chemistry research

Independent research

Postsecondary teaching



Components

research, coursework, departmental seminar, thesis



Commitment

3-4 years with M.S., 5-6 years without M.S.



Financial Support

tuition waivers are standard; living stipends are provided through teaching assistantships in the first two years, and research assistantships later; independent funding may be available



Celebrating the Amazing Work of ACS Student Chapters

The ACS Society Committee on Education has selected 305 student chapters to receive special recognition for distinguished programs and activities described in their 2016–2017 annual reports. They will be honored at the 255th ACS National Meeting in New Orleans, LA, on Sunday, March 18, 2018.

In addition, the ACS Green Chemistry Institute is recognizing 56 chapters that have engaged in at least three green chemistry activities as a way of integrating environmentally benign technologies in an academic setting.

Congratulations to the 52
Outstanding, 114 Commendable, 139
Honorable Mention, and 56 Green
Chemistry award-winning student
chapters!

Key

Winning Institutions
Faculty Advisors
Chapter Presidents
*Green Chemistry Award Winners

OUTSTANDING

Alvernia University, Reading, PA* Rosemarie Chinni & Kevin Burns Katelyn Weeber & Amanda Petrin

Barry University, Miami Shores, FL George Fisher & Tamara Hamilton Diana Cordero & Qiwen Su

Bellevue College, WA Carole Berg Miwako Ito & Sophia Orlando

Bucknell University, Lewisburg, PAPatrick Martino
Susan Hartzell

California State University-Sacramento Cynthia Kellen-Yuen & Benjamin Gherman Alex Zurmuhle

California State University-Stanislaus, Turlock Elvin Aleman

Ka Chan & Kenji Soares

City Colleges of Chicago Wilbur Wright College, IL*

Doris Joy Espiritu Andrew Dobria & Javier Mulero

Duquesne University, Pittsburgh, PA* Jeffrey Evanseck & Paul Johnson Danielle Bautista & Ayan Ahmed

Eastern Oregon University, La Grande Anna Cavinato Donovan Spikerman & Brian Mandella

Erskine College, Due West, SC* Tiffany Hayden & Joel Boyd Arielle Houston & Kayla Squiggins

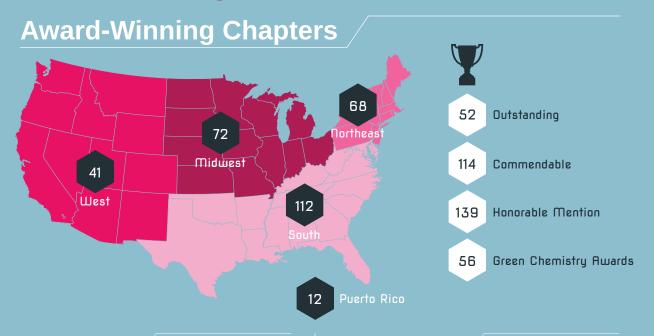
Florida International University-Biscayne Bay Campus, Miami Milagros Delgado Joan Glenny-Pescov

Florida Southern College, Lakeland Jarrod Eubank

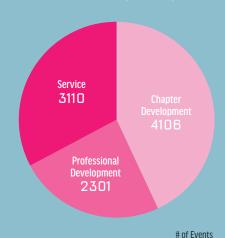
Jarrod Eubank Suzanne Wilson & Kristen Martinet



Student Chapter Awards, 2016–2017

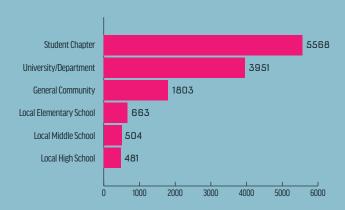


Impact



Chapter Development	
Chapter Business Function/Fundraising	2354
Social	1587
Competition/Contest	165
Professional Development	
Hosting Presentation/Speaker	1146
Attending Scientific Meeting	444
Attending Presentation/Speaker	412
Attending Tour/Field Trip	208
Hosting and Attending Tour/Field Trip	91
Service	
Outreach/Service to Community	2115
Outreach/Service to University	995

Events





129 Salt Lake Community College Chapters with the Most Events

Western Washington University

104 Waynesburg University

102 Alvernia University

Student Chapter Awards

Georgia College & State University, Milledgeville

Catrena Lisse Martin Alcantar & Samoya Forbes-Pentecost

Gordon College, Wenham, MA* Irvin Levy

Quincy Dougherty & Sara Lareau

Heidelberg University, Tiffin, OH Nathaniel Beres

Alexandra Bauer & Kevin Scrudders

Henderson State University, Arkadelphia, AR*

Bradley Rowland & David Bateman Wade Garrett & Carlie Clem

Idaho State University, Pocatello Joshua Pak

William Spence & Ben Poulter

Illinois Valley Community College, Oglesby

Matthew Johll & Richard Ault Ken Murphy & Rion Schulz

Inter American University of Puerto Rico-Ponce Campus, Mercedita*

Edmy Ferrer Torres Aleishka Almodovar Ortiz & Felix Rodriguez

Inter American University of Puerto Rico-San Germán*

Angela Gonzalez Andres Acosta-Mercado & Gabriel Martinez-Bracero

Midland College, TX*

Patcheammalle Nandakumar & John Anderson Zachary Hunter & Megan Ennis

Mississippi College, Clinton* Trent Selby

Jonathan Bethea & Aubrey Smyly

Pace University, New York, NY* JaimeLee Rizzo

Kenya Velez & Luke Shapiro

Ramapo College of New Jersey, Mahwah*

Sarah Carberry Aleksandar Goranov & Devashri Parikh

Salt Lake Community College, UT*

Ron Valcarce

Sierra Cunningham & Nathan Elmore

Santa Monica College, CA*

Jennifer Hsieh & Travis Pecorelli Samantha Purucker

Seton Hill University, Greensburg, PA Demetra Czegan & Diane Miller

Margaret Gerthoffer & William Hoover

South Texas College, McAllen*

Ludivina Avila & Karlos Moreno Jorge Cisneros & Martha Villegas

Southwest Minnesota State University, Marshall

Noelle Beyer & Frank Schindler Rhiannon Sears & Victoria Henry

Tennessee Technological University, Cookeville*

Amanda Carroll & Janet Coonce Shikha Amin & Ashley Barnes

Texas Christian University, Fort Worth

Kayla Green & Julie Fry Amanda Vu

The Evergreen State College, Olympia, WA

Dharshi Bopegedera & Rebecca Sunderman Ky Johnson & Megan Keating

The Pontifical Catholic University of Puerto Rico, Ponce*

Lizette Santos & Carmen Collazo Jann Vale Hernandez & Sandy Rodriguez

Autori de Acueductos y de Puerto Rico ONAL DE ALC. ARCELONET

The University of Utah, Salt Lake City Holly Sebahar & Jon Rainier Amy Loret & Sarah Lee

University of Alabama at Birmingham* Jacqueline Nikles & Gary Gray Ryan Murphy & Emily Quarato

University of California-Davis* Kirill Kovnir Benjamin Wigman & Chelsey Souza

University of California-Riverside

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University of Central Florida, Orlando Stephen Kuebler Ryan Sapia & Jennifer Lear

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University of Michigan-FlintJessica Tischler, Monique Wilhelm, & Samantha Grathoff

Samantha Grathoff Anthony Maxwell

University of New England, Biddeford, ME* Amy Keirstead Molly Wright & Jessica Woolf

University of Puerto Rico at Cayey* Edgardo Rivera Tirado Luis Renta Morales

University of Puerto Rico-Aguadilla* Brenda Ramos-Santana &

Carlos Ruiz-Martinez Ricardo Pitre-Yulfo & Michael Arocho-Caban

University of Puerto Rico-Río Piedras Campus*

Ingrid Montes Andrés González López & Jan-Louis Cosme-Silva

University of St. Thomas, St. Paul, MN*

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Emory University, Atlanta, GA

Douglas Mulford & Jeremy Weaver Daniel Salgueiro

Francis Marion University, Florence, SC

Jennifer Kelley

Caitlyn English & Corbin Witt

Frostburg State University, MD

Benjamin Norris & Blair Knouse Amie Lette & Brian Day

Georgia Gwinnett College, Lawrenceville

Gillian Rudd & Rebecca Kalman Joshua Massey & Ara Ko

Georgia Institute of Technology, Atlanta

Michael Evans Karen Rakowiecki

Hillsdale College, MI

Matthew Young & Christopher Hamilton Andrea Lee & Micah Heinz

Student Chapter Awards

Hiram College, OH

Carol Shreiner & Steven Romberger Emily Hruska & Christian O'Neil

Hope College, Holland, MI Jeffrey Johnson Stanna Dorn

Houston Baptist University, TX Saul Trevino Christopher Ha

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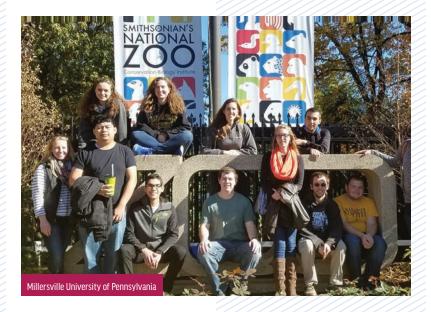
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10 Tips for Transferring to a 4-Year College

BY NEIL R. BASTIAN



A two-year college can be a great place to start a chemistry career. Two-year colleges generally have lower tuition and have smaller class sizes compared with large state universities. Also, because faculty are hired to be educators rather than researchers, they are often more flexible and use more innovative teaching methods.

But if your ultimate goal is to earn a bachelor's degree, you will have to transfer to a four-year institution at some point. Here are some tips to help smooth your transition from a two-year school to a four-year school.

1. Talk to an academic advisor

Academic advisors can help you figure out an optimal path for reaching your goals. If those goals include transfer, be sure to talk to a professional transfer advisor. Such advisors will be familiar with any articulation agreements between your current two-year college (known as your "home institution") and the school to which you plan to transfer An articulation agreement is a formalized arrangement wherein the two schools will accept each other's transferred classes and which details how they will address students' transition challenges.

You should visit with a transfer advisor at your four-year institution at least one semester before you expect to transfer. Make sure that the advisor you are talking to is an academic advisor, not a faculty advisor. Faculty advisors can give great advice about careers, classes, and jobs, but when you want advice about transferring, see an academic advisor who is aware of the intricacies of transfer.

2. Ask lots of questions

Your transfer process will be unique, and you are your own best advocate. Here are some key questions to ask:

- Are there articulation agreements between my home institution and my chosen transfer institution?
- What documents do I need to ensure that my credits transfer?
 Without an articulation agreement (or sometimes even with one) someone at the transfer institution will need to review your courses.
 You need to ask the transfer office at the transfer institution what information they need. For example, they may need to see syllabi for your classes, and may want to know which textbook(s) you used.
- Will my courses transfer as intended? For example, will

General Chemistry I transfer as General Chemistry I, or does it transfer as a chemistry elective?

3. Get to know your professors

Two-year college faculty are used to helping students through the transfer process. They may know the faculty at your transfer institution, and they can help you make contacts. They can also give you better recommendation letters, because they already know you as a student.

4. Take all sequence courses at the same institution

Both chemistry faculty and transfer advisors generally recommend taking courses sequentially at the same school. For example, if you take General Chemistry I at a two-year college, make sure to take General Chemistry II there as well. Although most schools cover the same topics throughout the year, there may be differences in whether a topic is covered in part I or II of the course. Changes in textbook, teaching styles, and institutional policies can also be mitigated by taking a given sequence at the same school.

5. Know your credit requirements

A bachelor's degree requires a set number of upper-division classes (junior and senior level). The exact number varies by state and school, and they cannot be taken at a community college. Specific requirements can occasionally be waived by a department, but an upper-division elective will still be required. For example, you may be able to get credit for that great analytical chemistry class you took at the two-year college, but you will still need another upper-division

6. Complete your associate's degree before you transfer

Getting your associate's degree is helpful for several reasons. First, degrees often transfer more easily than individual courses. Second, an associate's degree certifies that you have completed all of your general education requirements (be sure you have a basic understanding of the general education requirements at the school to which you are transferring). Finally, an associate's degree provides you with a credential to fall back on should you need to put your bachelor's work on hold for any reason.

7. Hang on to your course syllabi

You should always keep copies of your course syllabi in case you need to appeal a school's decision regarding your previous courses. Of course, you can always go back to your previous professors and ask for the syllabus, but that just adds more things for you to do.

8. Look for financial aid

Financial aid doesn't last forever. If you spend too much time and

Faculty advisors can give great advice about careers, classes, and jobs, but when you want advice about transferring, see an academic advisor who is aware of the intricacies of transfer."

money taking classes at your home institution, you may use up your eligibility for financial aid while trying to finish up your degree at the more expensive four-year institution. Always keep your eyes open for new financial aid opportunities; many schools have scholarships

9. Prepare for the actual transfer

Start the process early. Keep track of all deadlines, and meet them. Make sure that you turn in the application for admission, the processing fee(s), and all supporting credentials. These three things seem obvious, but if something is missing or late, you won't be able to transfer.

You will need official transcripts from all colleges and universities you have attended. These must be mailed by the school you attended directly to the office of admissions at the transfer institution (which usually requires you to pay a processing fee). If you have fewer than 30 credit hours at the two-year college, you may need a high school transcript and ACT/SAT scores.

You will also want to contact some of the professors at the school you are transferring to. If they know you are coming, they can help you with the transition.

Visit the campus. If there are any orientations or workshops for transfer students. be sure to attend them.

10. Stay engaged post-transfer

Transitions are always difficult. You are entering a completely new environment, with new faces, buildings, rhythms, and routines. Get to know as many students and professors (undergraduate and graduate) as possible. If there is an ACS student chapter (or another interesting club), join it. Students who are involved in campus activities generally are happier, do better in their classes, and graduate sooner.

There are additional benefits to engaging with students and professors at the transfer institution. For example, you never know who could become a mentor, answer your questions, or help you in other ways. You may need a student mentor to help you navigate the new campus, choose professors, find friends, and possibly find research opportunities. A good faculty mentor can help plan your career, choose a graduate school, and even plan your classes so that you can graduate on time. Of course, you will also need their help when it comes time for those letters of recommendation

In an ideal world, the transfer process would be seamless. But the world isn't perfect, so you should anticipate problems that might arise, and plan as much as possible to prevent them.

Neil R. Bastian is a professor of chemistry at Salt Lake Community College. His 28 years of faculty experience are equally split between two-year and four-year schools.



DON'T LET A BAD GRAD CONSUME YOU! IT'S UNDERSTANDABLE YOU'RE FRUSTRATED. IT'S EASY TO GIVE UP. HERE ARE A FEW WAYS GET PAST A TEMPORARY SETBACK AND DO BETTER NEXT TIME. BY AMANDA J. CARROLL

Processing Grade Grief

(and Moving Forward)

We've all been there. You get a paper back from your instructor or check your grades online, and there it is: a grade much lower than you wanted. Or, even worse, the grade you expected. Getting a poor grade on an exam or quiz creates an immediate sense of dread. You might be thinking, What did I do wrong? Am I in the wrong class? Maybe I'm not smart enough?

As every Ph.D. who ever tanked a test can tell you (really, it happens—just ask your professor!), tanking a test is not the end of the world, or your major. But it is something you need to deal with. What you do after receiving the grade is more important than the grade itself. One grade doesn't define your entire semester, your career, or most importantly, you as a person. You are not your grade. Grades, however, are a source of feedback for understanding the material. So using that feedback in a positive and productive way will serve you well.

What not to do after a bad grade

The worst things you can do after receiving a bad grade are, unfortunately, the easiest. You may let the grade dictate the rest of your time in the course. You may place the blame on someone, likely yourself or your professor. You may even throw your test in the trash and walk away, never thinking of the grade again. If any of these responses occur to you, resist the urge; they're all reactions that put you on the fast track to self-doubt and giving up.

This is not to say you should ignore your feelings completely. Anger and sadness are common feelings that are completely normal. Feeling the disappointment can help you cope with failure and move on. But the disappointment doesn't have to dictate future grades or your experience with the course itself. Let yourself sulk for a bit, and then work on moving forward.

How to move forward

There are several positive ways to deal with a bad grade. Here are some actions to take:

Adjust your expectations

Students often think a grade is bad even when it's actually much better in comparison with the class average. That's why having perspective is very helpful when dealing with disappointment.

One way to gain better perspective is by distinguishing between a failed effort and one that is simply not up to your standards. For many students, a bad grade is the first time they have ever been truly challenged in a course. This is especially common in students moving from high school to college. If studying and good grades have always come easily to you, and now you have to expend more effort than ever before on coursework, you will have to rise to the challenge to achieve your same standards.



Author

Amanda J. Carroll, Ph.D. is a lecturer at Tennessee Technological University. Allow your grade to fuel your determination to advance in the subject.

See where you went wrong

One critical way to deal with a bad grade is to learn from it. You can evaluate how you studied or prepared. Maybe you covered definitions and theory but the exam was more about applications. In this situation, you will want to make sure you practice applying the material a lot before the next exam.

Certain practice materials, like homework and worksheets, allow you to make mistakes before performing graded assignments. You can work on sample problems from the back of the book and have a friend or tutor grade them; it's a great method to see what you know and what you need more work on.

It's also incredibly helpful to review the graded document and understand why you lost points, especially if you will encounter this material again later in the course, or build on it in the future (chemistry is a cumulative topic). Always keep your graded papers. And always take the time to compare them with the key, or read over your professor's comments so you can get a better understanding of where and why you lost points.

Spending time reviewing graded work helps you avoid repeating the same mistakes. Reviewing also reveals whether you made simple mistakes or just didn't know how to successfully complete a question or an assignment.

Get help

Sometimes you don't know what to expect when taking the first quiz or exam with a new professor, and that alone can result in lower grades. Your professor may have a different way of asking or wording questions than what you anticipate or are accustomed to. Make sure to use the first grade as a way to prepare for the way in which your professor will present material on the next test.

If you still don't understand where you went wrong, talk to your professor and ask for advice. All professors have office hours, but if they don't fit your schedule, ask for an appointment—and keep it! Your professors want you to understand the lessons, and they appreciate when students make an extra effort to use feedback to improve.

Along with talking with your professor, you can seek out tutors and study groups and practice with your peers to build up your skills. Also, chances are good that you understand something that someone else is having trouble with, so you get to help others while helping yourself.

Facing reality

Sometimes you do all that you can and you're still not happy with your grade. If you know you didn't put in enough effort, you have to accept that you have made decisions that affected your outcome. Your progress in a course is entirely up to you, so make the necessary shifts to improve.

If you are working your hardest, however, and you're still not where you want to be, have a couple of serious talks with both your professor and your academic advisor. Your professor can help you get perspective on your progress in the course and determine if your challenges are normal or a real concern. Likewise, your advisor can help you decide if the course or major is where your passions truly lie, or if it's time to pursue something

Yes, some classes are difficult, and A's can be hard to come by. But if you put in your best effort and use all available resources, you will be proud of the grades you earn. Knowledge isn't always accurately represented on paper by a number. Your effort, however, can always be a source of pride. As long as you stay determined to do your best and improve, and remember that you are more than a number, you can still achieve great knowledge and success.



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ALTHOUGH CHEMISTRY HASN'T HAD A SEXUAL HARASSMENT CASE COME TO NATIONAL PROMINENCE, ALL TOO MANY FEMALE CHEMISTS HAVE A STORY TO TELL.

BY LINDA WANG AND ANDREA WIDENER

LIKE TO BE A PORCUPINE."

-Judith N. Burstyn on being guarded as a woman in science

Confronting Sexual Harassment

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It started innocently enough. He was a prominent chemistry professor at a major research university, and she was eager to make a good impression. "I was a pretty insecure grad student in my early years, and the fact that he was paying attention to me and interested in my work and how I was doing in his class was kind of flattering," says Tara (not her real name).

The professor was not her advisor. Nevertheless, "He invited me to lunch a few times and just sought me out quite a bit. And then he invited me over to his house to watch a movie. He didn't do anything inappropriate. But after that night, I was like, 'Something's weird here; he has a family.' And his family was away for the weekend."

Those seemingly innocent actions became increasingly inappropriate. "The culmination was when he wrote me a love note. It was a proposition note, I guess. It basically said he wanted to have an affair with me. I stormed into his office and said, 'You've got to be kidding me. This is offensive. I thought you were hanging out with me because I was talented."

After that incident, Tara went out of her way to avoid the professor. "It was really hard," she says, in part because his office was along the hallway she traversed between her lab and desk. Yet she didn't report the situation to

anyone. "I felt guilty, like I had somehow done something to have brought this on," she says.

Tara's story is a common one in university chemistry departments nationwide, echoing the problems of sexual harassment in the larger science community and the nation. Although chemistry hasn't had a sexual harassment case come to national prominence yet, most female chemists can tell stories of harassment or discrimination of themselves or their colleagues. It may be among the reasons women aren't reaching parity in chemistry Ph.D. programs and faculty positions.

"It was one of the many factors why I ultimately was unsatisfied and uncomfortable in science," says Tara, who completed her Ph.D. but decided to leave chemistry and is now working in an unrelated field.

The culture that allows harassment within male-dominated academic chemistry departments has been slow to change. But increased attention to sexual harassment in the larger science community—spurred by public harassment investigations into academic scientists, including former University of Chicago molecular biologist Jason Lieb and former University of California (UC), Berkeley, astronomer Geoff Marcy—is shining a brighter light on the problem.



Many U.S. universities are now paying attention to the discriminatory behavior for the first time, forced in part by new interpretations of Title IX, the 1972 law that prevents discrimination based on sex. Scientific societies are also exploring ways to address sexual harassment, and women are publicly banding together to support each other. The National Academy of Sciences has launched a study of the issue. At the same time, some advocates caution that common practices intended to root out harassers may at best be neutral and at worst could backfire.

As discussion of sexual harassment becomes more prominent in the scientific community, survivors are slowly starting to speak out. *C&EN* is telling the stories of many female chemists who contacted us about their harassment experiences, but we are protecting their identities because they fear further discrimination if their experiences are revealed. Studies show that just 6% of sexual harassment survivors report it, for reasons that include fear for their safety, fear for their future career, and belief that it's their fault.

"It's just astonishing to me how the problem persists," says Cynthia Lewis, an English professor at Davidson College who is writing a book about sexual harassment by faculty. "We are in a transitional period, when the situation is becoming more and more acknowledged. But there is a long way to go."

Learning the facts

Sexual harassment is certainly not unique to academia. Surveys show that 25% of women in the workplace—and 10% of men—experience sexual harassment. But unlike companies, universities are particularly prone to overlook harassment because of their faculty members' independence, says Billie Dziech, coauthor of the 1984 book *The Lecherous Professor*, one of the first to call attention to sexual harassment by faculty.

Lacking a manager looking over their shoulders, faculty members have almost total

freedom. "Then, even if we transgress, there's so much diffusion of authority. Nobody is willing to take responsibility," says Dziech, an English professor at the University of Cincinnati.

But universities also have a special responsibility to students, Davidson College's Lewis says. "Education is built on trust between a faculty member and a student," she explains. "It strikes me that the very last place where this should happen is in a school, except for maybe the church."

Lewis started writing her book after decades of seeing overlooked or tacitly condoned faculty–student relationships that later ruined the careers of promising female students. "To me there's a special heinousness, a moral objectionability about it happening in a place" that is founded on trust between a teacher and a student, she says.

And it's clear that sexual harassment is common in academia. A 2015 survey by the Association of American Universities of 27 research universities showed that 62% of female undergraduate and 44% of female graduate students experienced sexual harassment. For graduate students, the perpetrator was most likely to be a faculty member or advisor, whereas for undergraduates the perpetrator was most likely to be a fellow student.

Another recent survey by the National Postdoctoral Association demonstrated that the problem is also extensive in that population. It showed that about 700 women and men were harassed out of more than 2700 who responded. It also confirmed that the majority of postdocs who were harassed did not report it, either because they didn't think it was serious enough to report or because they thought it would make the workplace even more uncomfortable.

A 2014 survey of field scientists, led by University of Illinois, Urbana-Champaign, (UIUC) anthropologist Kathryn B. H. Clancy, was one of the first to show pervasive sexual misconduct against scientists doing

6% of sexual harassment survivors report it.

He would keep touching my hand with his hand, and that's how it started." —Sanda Sun

fieldwork. More than 60% of women reported being harassed, and more than 20% reported being assaulted. Clancy was surprised by the widespread denial among academic scientists, who seem to think that decades of data from the broader workforce—or even the field science survey results—don't apply to them

"Every professional society and department is contacting me saying, 'We want to do your study in our department.' Or you can just trust my data, and say, 'It's probably like this here,'" says Clancy, who is a member of the National Academy of Sciences panel investigating sexual harassment. "Just because they haven't had a Geoff Marcy doesn't mean they don't have some soulsearching to do."

Natia Frank, a chemistry professor at the University of Victoria, was sitting at a table full of female chemists at a recent Gordon Research Conference when her colleagues began sharing their harassment experiences. "The stories I heard were horrifying and heartbreaking. Every single one of us had stories about retribution from senior members of the faculty," says Frank, who is chairing a panel on harassment in her department after issues surfaced there.

Frank has heard chemistry called "the Marines of the sciences," and she thinks that a historically male-dominated environment has helped chemists overlook harassing behavior by their faculty colleagues. Few women report it, because the attitude within chemistry is "'Oh, don't cause problems, that's just the way it is," Frank says. Graduate students or postdocs who are sexually harassed must then decide whether they want to fight their way through it or pursue another career path.



An unwanted experience

The emotional trauma of being sexually harassed, especially over an extended period, can take a toll on a person's physical health and even derail a chemist's career, potentially causing or exacerbating depression and other mental health issues that are particularly prevalent among grad students.

Sanda Sun, who is a chemistry instructor now at Irvine Valley College, says the sexual harassment she endured as a graduate student in the late 1970s by her research advisor elicited such significant mental and physical distress that she ended up in her school's infirmary for two weeks. She also saw a psychiatrist to cope with her stress and anxiety.

Like it often does, the harassment Sun experienced began subtly. "I was under his wing on a research project, and he was explaining things," she says of her advisor. "He would keep touching my hand with his hand, and that's how it started. His home was far away, and he was even willing to miss the train to explain things for me. At first, I thought, 'Wow, he's so devoted.'"

But the attention from the married professor soon became uncomfortable and unwanted. "He always said, 'Good morning.' Then it led to a good morning hug, and then a good morning kiss." One time, while Sun was in his office, he waited for his postdoc and another graduate student to leave so that he could be alone with her. "He started to kiss me, and I said, 'Are you crazy?' and I took off," Sun says.

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Sun says she reached out to other faculty members for help, but nobody was willing to get involved. She decided that she needed to leave her Ph.D. program. After she told her advisor of her plans, he showed up at her home bearing a gift and asking for her forgiveness. Before Sun realized what was happening, the professor removed his pants and exposed himself to her. "He said, 'I'm in love with you. I want to make love to you.' I puked. It was really so disgusting. I said, 'Get out. Get out. You need to leave,'" Sun recounts.

Sun moved across the country to get as far away from the professor as possible. For years, she blamed herself for the harassment, wondering what she did to make him think she wanted an intimate relationship with him. "I wore tennis shorts to play tennis, very innocently. Nothing very sexy, just tennis shorts. I was wearing tennis shorts in and out of the lab, so I blamed myself."

Chemist Mary K. Boyd, who recently became provost of Berry College, says that when there's a power differential, it can be almost impossible for a student to say no. "The professor is writing a letter for them or serving as their research advisor or deciding who will receive travel funding to conferences. It's really hard," she says.

Boyd, who herself has experienced varying degrees of sexual harassment during her career, says female graduate students have told her that they are going into industry instead of academia because they believe sexual harassment will be taken more seriously in industry.

"I'm saddened to think that women may choose not to pursue a brilliant career in academia because of their experiences with sexual harassment," Boyd says. "What is the potential loss in what they may have brought to the discipline if only they had felt they would be taken seriously?"

Feeling invalidated is among the reasons why a large majority of sexual harassment survivors never report the perpetrator. In one study that looked at sexual harassment of graduate students, of those who were harassed by professors, "we had 6% who reported it to any university source at all. Which means 94% did not," says Jennifer J. Freyd, a University of Oregon psychology professor who is one of the coauthors of the research.

Another reason harassment survivors don't report is embarrassment. "The shame of being involved in a harassment situation is quite overwhelming," says "Nancy", who was sexually harassed by a department administrator when she was a graduate student. "You don't want anyone to know because you think they will wonder how a smart woman could ever get into a situation like that."

Then there's the fact that reporting may not make anything better—and may in fact make things worse. "There doesn't appear to be a huge reason for me to step up and put myself out there when I don't feel like there's anything that's going to happen as a result," says "Lisa", who was sexually harassed by a more senior colleague when she was a new assistant professor.

Lisa says she felt alone and vulnerable as her harassment intensified. "The professor became increasingly powerful within the department as years went by, and he actively made an effort to make my life hell," she says. "Although many of my colleagues acknowledged his bad behavior, nobody seemed inclined to stand up to a tenured faculty member. One senior faculty member finally tried to stand up on my behalf, telling both the chair and the dean what was happening, but nothing appeared to be done. Or, at least, nothing changed."

She considered leaving academia. "For about three years, that was a very serious thought in my head every day," Lisa says. "The thing that kept me there was my students. I would walk into the lab, and I would see my students, and I would say, 'OK, this is the good part of my life.' I realized I would be hurting their careers if I suddenly walked away, so that kept me going, especially through the toughest periods."

25% of women in

the workplace experience sexual harassment.

The shame of being involved in a harassment situation is quite overwhelming. You don't want anyone to know because you think they will wonder how a smart woman could ever get into a situation like that." —"Nancy"

For international students or postdocs, reporting sexual harassment could mean losing even the choice to continue, because they could wind up deported. More than 70% of postdocs in the United States are in the country on work visas, notes Kate Sleeth, chair of the National Postdoctoral Association's board of directors and associate dean of administration and student development at City of Hope medical center. "If someone wants to behave inappropriately, then they will say, 'You can't tell anyone because I'll send you home or you'll lose your job,'" explains Sleeth, who was harassed as an international graduate student.

Struggle to confront

Many universities are getting tougher on harassers. But in most cases, the changes are not by choice. Departments are unlikely to root out problem faculty on their own, just like families may protect an abuser in their midst for decades, says Heidi Lockwood, a Southern Connecticut State University philosophy professor who is an advocate for sexual harassment survivors at universities.

"Universities absolutely must step in," Lockwood says. But "unless universities have a financial incentive to step in—meaning unless there are really stiff, tangible consequences for failing to step in—it's not going to happen."

A 2011 "Dear Colleague" letter from former president Barack Obama's Education Department has been that lever for most universities. The letter pointed out that under Title IX, universities are responsible for having a system of tracking and responding to sexual harassment. The letter also emphasized universities' legal liability if they neglect that obligation. (In a September 7 speech, President Donald J. Trump's secretary

of education, Betsy DeVos, said that the department will review its approach to Title IX compliance and campus sexual misconduct.)

"Although they are historically a bastion of great creative ideas and high intellectual thought, universities are very reactionary when it comes to changing their own ways. Administrators are not bold, and it takes a crisis," or fear of a crisis, to initiate change, says James Sears Bryant, a lawyer who has worked on several high-profile Title IX investigations at universities. "It's good that they're reacting now. The key is to continue the momentum and to continue to refine it and create a safe environment."

At many schools, the Dear Colleague letter prompted re-examination of how they dealt with sexual assault and harassment, says Dana Scaduto, general counsel at Dickinson College and a member of the National Association of College and University Attorneys. Colleges and universities started paying attention to the issues, "and a lot of good has come out of it," she says.

The Dear Colleague letter laid out some guidelines for how universities should deal with harassment but didn't dictate a plan. Theoretically, that approach gave universities freedom to set up a sexual harassment reporting system that works for them. "The objective has to be to effectively address the issue," Scaduto says. But every school is different, and "there's not one answer that's going to work on every campus."

In practice, however, many schools don't seem to be taking advantage of that flexibility. "Everyone wants to kind of be a copycat," attorney Bryant says. "They want to adopt the practices of someone that's just a little bit more famous or higher in the U.S. News



& World Report [rankings]." That means many schools end up with similar policies surrounding harassment, such as rules regarding relationships between faculty and students and mandatory reporting of harassment by faculty.

Most schools "discourage" but don't prohibit relationships between faculty and students, or schools allow such relationships if the professor does not directly supervise the student. However, a small but increasing number of universities—especially those that have had major harassment cases, like Yale, Stanford, and Northwestern—prohibit any relationship between a faculty member and a student, no matter the age or level of supervision.

Many faculty members are against these rules, citing cases of "true love" found between, for example, a graduate student and advisor. "But none of us knows anything about all of the flameouts that have ruined people's careers," UIUC's Clancy says.

She is even more hesitant to allow these relationships because often the faculty member is a man and the graduate student is a woman, she says. "The woman does get her Ph.D. but then becomes a stay-at-home mom, and it just enables the career of the man," Clancy says.

Davidson College's Lewis sympathizes with faculty who believe they might not meet a partner off campus, but she also gives this advice: "Look elsewhere. Have you heard of Match.com?"

Even more contentious is the issue of mandatory reporting of sexual harassment. Many schools interpreted the Dear Colleague letter as a directive that every faculty member become a mandatory reporter of harassment.

Mandatory reporting is part of creating a well-understood process for how universities handle sexual harassment, says Kathleen Salvaty, formerly a Title IX officer at UC, Los Angeles, and now the first person in a new position overseeing sexual misconduct policies at all 10 UC campuses. "Ultimately, having a transparent and clear process for how we respond to reports is really important because it's going to encourage people to report," Salvaty says.

But advocates say mandatory reporting may actually hurt survivors by giving them no one to turn to after they are harassed. Lockwood, the Southern Connecticut State University professor and advocate, says faculty shouldn't have to say to a hurting harassment victim, "'Hey, anything you say can and will be used against you, can and will be reported to the administration," she says. "For very fragile victims, that can be something that pushes them over the edge into a downward spiral if they feel betrayed by a faculty member they trusted."

Freyd, the University of Oregon psychologist, says that "any kind of sexual violence in the first place takes away control. When the response is to take away more control, even if it's well intentioned, I think of it like a second concussion" that just adds to the damage.

She believes that Obama-era guidelines on mandatory reporting have been overinterpreted. "It doesn't say everybody has to be a mandatory reporter. It says that some employees have to be designated that way," she says. "Students tell us they're much more willing to report if they believe that they'll have control over what happens to the information"

To that end, the University of Oregon is implementing student-directed reporting, which allows students to say what they want to have happen with the information they provide, Freyd says. Only high-level administrators are mandatory reporters, while regular professors and staff follow the student's lead. The university is also one of about a dozen schools that have begun subscribing to Callisto, an online sexual harassment reporting system that launched two years ago.

10% of men in the workplace experience sexual harassment. Whatever policies universities have, they often haven't filtered down to faculty on the ground, such as chemistry department chairs. "I've been chair for four years. No information [on sexual harassment] has come to me in either a formal way or an informal way, so it's just not been directly on my radar screen," says Robert J. McMahon, immediate past chair of the chemistry department at the University of Wisconsin (UW), Madison. The lack of information is changing, though. New department chairs at UW Madison now get training on sexual harassment policies and procedures.

Unfortunately, training department chairs or even faculty more broadly might not help address sexual harassment, because current training approaches at most universities don't seem to work. For example, in 2005 California began requiring two hours of sexual harassment training for state employees every two years, explains UC, Irvine, classics professor Maria C. Pantelia, who was a member of a UC system-wide task force on sexual harassment. The task force found that even after biennial training, faculty, students, and postdocs still didn't know how to report harassment. "The question is, 'What are we doing wrong?'" Pantelia says. UC's solution to the training problem right now is to add more training; for undergrads, it occurs three times in their first six to eight weeks, says Salvaty, the UCwide Title IX officer.

UIUC's Clancy believes one problem with training as it's practiced now is that examples in video or online training never feel real or applicable to the viewer. She thinks the best training is when people get together and talk about the culture they want to create—ideally one that treats all faculty, staff, and students as professionals deserving of respect. "When you tie respect to workplace culture, then you're not going to see as much sexual harassment," she says.

Talking to colleagues, discussing sexual harassment data, and looking at real cases of harassment is the best way to get across

the reality that harassment happens and causes harm, UC, Irvine's Pantelia agrees. "What is lacking is a focus on awareness and a focus on the consequences that this kind of behavior has on others," she says.

Changing culture

Judith N. Burstyn, chair of UW Madison's chemistry department, is no stranger to issues of sexual harassment. When she was a graduate student, someone left sexually explicit messages in her books.

"Every woman experiences a certain level of sexual harassment, be it people groping them, be it people making sexually explicit remarks, be it whatever. Some of them are more intrusive and violent than others," she says.

She has a porcupine sculpture in her office that she says represents her feelings about what it's like to be a woman in science. "There are times when I would like to be a porcupine.

What to do if you are harassed

- If you feel comfortable, approach the offender directly: State your
 position clearly, and relate what happened, how it made you feel,
 and what you prefer.
- Document what happened: Write down as much as you can, while
 the details are still fresh in your mind. Be clear, specific, and
 objective. Note the place, time, and anyone involved or nearby. If
 the harassment is online, save copies. Take pictures, if appropriate.
- Seek support: Talk to someone you trust, be it a friend, family
 member, mentor, or someone at the campus clinic or local hospital (if
 needed). If you don't feel like you are getting the support you need,
 find someone else who will listen and help you through the process.
- File a complaint with your school: Ask Student Services about your school's procedures for sexual harassment. Filing a complaint with your school gives you access to the school's resources and documents your case.
- Find legal help: Sexual harassment is illegal. Schools are obligated to maintain a safe environment for their students and employees.
 If you do not feel safe, you have the right to go to the police.



I don't like people who pat me, for example. I don't think that's ever appropriate, but I can tell you that happens all the time," she says.

Burstyn believes that harassment will disappear only when chemistry department cultures change, which is something she intends to prioritize as chair. "Every work environment has power structures and power inequities, and these power inequities can be taken advantage of in ways that are gendered and ways that involve sexual harassment," Burstyn says. Protecting students from harassment is especially important because they are "more vulnerable, less savvy, and less experienced, so they are particularly susceptible to being taken advantage of. That actually means that we as the power-holding people in academia should have a greater awareness and responsibility," Burstyn says.

Others are also looking at what they can do to change their organization's culture. After seeing high-profile cases of sexual harassment in the news, Nicholas J. Giordano, dean of the College of Sciences and Mathematics at Auburn University, began requiring sexual harassment training for new graduate students three years ago. At the 90-minute training session, which takes place in the fall when the school year begins, the university's Title IX officer gives a presentation about sexual harassment, leads the group through role-playing activities, and discusses cases she has handled, Giordano says.

Curtis Shannon, chair of Auburn University's chemistry department, says the training "helps to clarify what the reporting channels should be, so if you're a graduate student and you are the victim of sexual harassment, you understand the broad outlines of the Title IX requirements."

A similar training session for faculty was particularly eye-opening, Shannon says. "The 'aha' moment for me was when I realized that I am compelled to report this," he says. "It changes your idea of what it means to be a faculty member. It reminds you that there's a well-defined border between the faculty and

the students. We're not there to be friends with the students."

Giordano doesn't think training will stop harassers from harassing. But he hopes training will provide victims and bystanders with information on how to recognize and report sexual harassment.

Yale University's chemistry department was prompted to provide additional sexual harassment training after chair Gary Brudvig saw the results of the Association of American Universities report, which showed that the majority of graduate student harassment comes from professors. Brudvig invited the school's Title IX officer to lead a discussion about harassment with the department's faculty.

The faculty's tendency before the session might have been "not only to smooth things over, but sort of keep it under wraps" if they heard about harassment, Brudvig says. Now, faculty know how to handle a problem confidentially but still take appropriate action, such as by reporting to Yale's Title IX office, Brudvig says.

The faculty discussion in turn inspired the department's director of graduate studies, Patrick L. Holland, to hold a mandatory sexual harassment education session for the department's graduate students last year. The students looked at the survey data—which included disturbing results from Yale—and then broke into small groups to talk about different harassment scenarios.

"Once you have seen those graphs you're aware, 'Oh, this is actually happening, and it's not a myth,'" says Yale graduate student Jaylissa Torres Robles.

A year after the session, Torres Robles remembers well the scenarios they discussed, including obvious examples like a professor asking for sexual favors to less obvious ones like a professor suggesting a student not have a baby while in graduate school. But she also remembers being surprised that some of her fellow students saw the same scenario in a different way than she did.

of university students report they have been sexually harassed.

Although Torres Robles now knows what steps to take if she is harassed, she still isn't sure how she would respond if it happens. "If you're not in the situation, you're like, 'Yeah, I would [report] it, definitely.' Because it's my life and it's my right," she says. "But sometimes when people are in the situation they think about other things, like 'Is this going to affect my career?"

One important way to change the culture of departments would be to stop hiring new faculty who are harassers. Brudvig says the Yale human resources department conducts a background check, but otherwise there isn't a way for the chemistry department to find out whether someone has been accused of harassment

In harassment cases in which faculty are forced out of a school, often both sides sign a confidentiality agreement that prevents word from getting out publicly. But even when hiring institutions know about past complaints, it can be difficult to decide how much consideration to give to them. "There has to be some balancing of interests. If someone harassed another person and appropriate measures were taken to stop the harassment and restore the environment, does that make the person who was responsible unemployable for life?" asks Scaduto, the Dickinson College lawyer.

At the same time, "Hiring committees can be very naive about the signs and a sort of profile of somebody who would repeat this kind of behavior," says Davidson College's Lewis. "If they hire someone who they suspect might repeat the behavior—or they don't even bother to think about it—then they're putting their students in danger."

Money in particular can be a powerful incentive to downplay past bad actions. Stanford University chemistry professor Richard N. Zare says he knows of cases when chemistry departments have turned a blind eye to behaviors that are otherwise unacceptable because the professor brings in a lot of money. "People who have done things

Every woman experiences a certain level of sexual harassment, be it people groping them, be it people making sexually explicit remarks, be it whatever."—Judith N. Burstyn

that I think are wrong will get hired again because they'll bring in funding. It happens when a university has the wrong priorities, when the priority is on funding," he says.

That's what U.S. Rep. Jackie Speier (D-Calif.) wants to stop with a bill she introduced last year that would require universities to report all substantiated findings of harassment to federal agencies that have awarded the harasser money within the past 10 years. The agency would then decide what to do with that information, but Speier hopes they would hold that person accountable. "My bill would be a first step to ending rampant sexual abuse and harassment in academia," she says.

UIUC's Clancy supports the bill because it has the potential to stop what some people call "Pass the Harasser," she says. Also, "If people are going to be paying taxes for scientific research, should it really be going toward sexual harassers? I think it's a pretty reasonable question to ask."

Female chemistry professors are also tackling harassment on their own by doing things such as organizing support groups. Georgia Institute of Technology's Elsa Reichmanis and another female faculty member started a monthly all-woman lunch group of several faculty and graduate students. "Basically, we're trying to create a safe environment where students just feel comfortable talking," says Reichmanis, who was harassed as a graduate student. Reichmanis notes that the academic culture around harassment stands in stark contrast to her years at Bell Labs, where harassment training involved days-long workshops by trained facilitators rather than a one-hour video that no one takes seriously. "The corporate culture says, 'This is our expectation for your behavior, and if you don't conform to



the expectation, you're out the door," she says. At the University of Victoria, Natia Frank is leading a group to help address harassment in her department after reports surfaced from many women there, primarily undergraduates. "It was a cultural problem, and the cultural problem was that disrespectful things were being said," Frank says. "Disrespectful behaviors were being tolerated by the faculty and staff."

For example, "If a student reports that someone makes sexual advances toward her while she's giving her poster at a meeting, the appropriate response is not, 'Let it go, don't make a big deal about it," Frank says. "The appropriate response is, 'This is unprofessional, and I will speak to that individual."

Frank says about her male colleagues that "I think the desire is to do the right thing, but there is a sense of confusion and frustration—and a little bit of fear, now—around these issues." Her aim is to make her fellow faculty members really understand what their goal should be: "to make the environment professional, where every individual is respected."

Societies take action

While she was attending her first conference as an assistant professor, "Nicole" says, a senior faculty member from another institution came up to her and said he was a reviewer on one of her research proposals. "Later that night, we were alone, and then he grabbed me and kissed me and tried to—you know. It was pretty awful," Nicole says.

"I'm thinking, 'What do I do? Do I shove him? Do I do anything? He's got my proposal.' I learned right then and there to never be alone at a meeting. What a lesson to learn. It never occurred to me that I wouldn't be safe at a conference with other chemists," she says.

A growing number of scientific societies are recognizing that sexual harassment is a real problem at conferences, and organizations are taking tougher stands against it. "We

haven't looked very closely at what the consequences of sexual misconduct could be on our members, and that's something I think that all societies should explore," says Joanne Carney, director of the Office of Government Relations at the American Association for the Advancement of Science, noting that its code of conduct for its annual meeting addresses sexual harassment specifically.

The American Geophysical Union (AGU) has begun classifying sexual misconduct as scientific misconduct, and it is revising its code-of-conduct policy for meetings to reflect this change. "It's a pretty big move, and I think it's an important statement," says AGU President Eric Davidson. "Historically, scientific misconduct has primarily been looked at through such things as plagiarism and falsification of data. As the scientific workforce has evolved, the issues have evolved, and so now it's time to look at scientific misconduct through another lens."

"This is about culture change, and what the ethics policy update does is it establishes our expectations for members of our society," says AGU science director Billy Williams, who manages the organization's ethics-related programs. He says the AGU Board of Directors is reviewing the revised policy this month. If approved, it will be made available to the public.

Changes in meeting policies are leading to more reports of sexual harassment. In 2014. after the Entomological Society of America (ESA) incorporated language about sexual misconduct into its code of conduct, it received its first report of sexual harassment at ESA's annual conference. The number of reported cases grew to four in 2015. In 2016, a report came in about the same perpetrator as in 2014. "After our initial review of the complaints, we notified the member that if they did something similar at a future meeting, we would ask them to leave and not return to future meetings. In another meeting, we had to take that step after receiving a new complaint," says Rosina Romano, ESA's director of meetings. The organization has also stripped offenders of their ESA membership.

34%

of female graduate and professional students report they have been harassed by a teacher, advisor, co-worker, boss, or supervisor, compared with 11% of undergraduates. Romano says that ESA takes active steps to communicate its code of conduct to its members. All meeting registrants must agree to the code of conduct before they can complete their registration. In addition, the code of conduct is on the website, the program book, and a sign at registration, "and then our executive director reminds everybody during the opening plenary," says Romano. The code of conduct is also communicated at meetings of the society's branches.

"I don't want women to feel like they can't come to our meeting and share their research [because of an] unsafe atmosphere or feel like they need to go straight to their room at night because they don't feel safe around other colleagues," Romano says.

More societies should be following the lead of AGU and ESA, says Sherry Marts, a consultant who has worked for several societies. She says it is societies' responsibility to tackle harassment at meetings.

"One of the things I like to remind associations of is that membership in a professional society—particularly membership in a scholarly society—is a privilege. It's not a right," Marts says. "When harassers do this at the meetings, it's not just the targets they're affecting. They're infecting the entire atmosphere around them."

ACS developed its Volunteer/National Meeting Attendee Conduct Policy in 2013. The policy includes language about sexual harassment: "Harassment of any kind, including but not limited to unwelcome sexual advances, requests for sexual favors, and other verbal or physical harassment will not be tolerated."

ACS General Counsel Flint Lewis says that since this revision, there have been "a handful" of reported incidents that required an investigation. "In one extreme case, we barred somebody from a national meeting for a year," he says. "We take it very seriously. We want to ensure that our attendees and volunteers who are interacting with ACS have a very positive experience."

He says the code of conduct is available to all members in the online program book, but he acknowledges that many people may not read it or be aware of it. He says that ACS has not yet placed any signs at the meeting about the code of conduct but that it should be considered. Lewis personally handles reports of harassment. If someone experiences harassment at an ACS meeting, they should report it to a staff member or to ACS's operations office, he says.

In addition to updating its code of conduct for national meetings, in 2015 ACS streamlined its member expulsion provision in the ACS bylaws. That provision states that members whose conduct injures the society or adversely affects its reputation may have their membership revoked. Lewis says that to his knowledge no member has ever been expelled from the society, but that the sanction is intended to discourage misconduct. Also in the past couple of years, the society has added new procedures to rescind a national award or ACS Fellow designation for reasons including "misconduct".

The ACS Women Chemists Committee (WCC) is considering adding sexual harassment to its areas of advocacy, which currently include awards and non-tenure-track faculty issues, says Laura S. Sremaniak, WCC chair and a chemistry professor at North Carolina State University. "WCC is concerned about the leaky pipeline," Sremaniak says, referring to women dropping out of science careers. People debate how directly sexual harassment leads to the leaky pipeline, Sremaniak says, "but I think everybody suspects that sexual harassment is one major contributor toward the leaks. Neither women nor men should have to accept that sexual harassment is part of the price of admission into a promising career in the chemical sciences."

Neither women nor men should have to accept that sexual harassment is part of the price of admission into a promising career in the chemical sciences." —Laura S. Sremaniak



Authors

Linda Wang and Andrea Widener are senior editors for Chemical & Engineering News.

Among the ideas that WCC is exploring is to have an anonymous reporting hotline at ACS national meetings. That idea was suggested by Stephanie Hare, a graduate student in chemistry at UC, Davis, and co-president of the nonprofit Alliance for Diversity in Science and Engineering.

Hare says the issue is very important to her because she has been sexually harassed at scientific conferences. Several times at poster sessions she has wound up talking to someone about her research for a long time. "I think it's a really nice conversation. and then the poster session will end and basically I'll be asked out on a date," she says. "Or the next day, it will be clear that the person who was talking to me initially about my research at this poster session was expecting something more from me.

"When something like that has happened, and you have an awkward relationship with someone that you're going to see at conferences in the future, it makes you less likely to even want to go," she says.

Moving forward

The cost of sexual harassment to the sciences isn't limited to loss of talent. Add to that the "businesses that are not established, the discoveries that are not made, the advancements that are not made for societal well-being," says Rita R. Colwell, chair of the National Academy of Sciences' Committee on Women in Science, Engineering, and Medicine.

The committee is currently examining the scope of sexual misconduct in the sciences and how best to address it at all levels. "It's timely because of the greater willingness to speak out, the greater willingness to resist and not tolerate sexual harassment," she says.

The increased dialogue about sexual harassment is forcing changes. "The key is to take negative history and turn it into better futures," says Bryant, the lawyer who has worked with universities on harassment. "We've had a real rash of bad stuff going on at major universities. I think the systems are better because of the bad things that have happened. I think there's heightened awareness, and there are more progressive procedures. I think people are taking it seriously, and the sector will be better in the future than it has been in the past."

And survivors of sexual harassment are feeling more empowered to speak out. Tara, who was propositioned by a professor, says that, looking back, she wishes she had said something about the harassment she faced. "My actions could have helped someone else if I had reported this," she says. "Who knows who came after me that I could have done something about?" 📵

Harassment Resources

LEGAL ADVICE

 National Women's Law Center

· American Association of University Women

Legal Momentum

COUNSELING

Rape, Abuse & Incest **National Network**

REPORT

• Project Callisto

FILE A COMPLAINT Department of Education, Office for Civil Rights

nwlc.org

aauw.org

legalmomentum.org

rainn.org 1-800-656-HOPE

projectcallisto.org

ed.gov

cen.acs.org

Read more from C&EN.

Sources of statistics:

- 1. Psychology of Women Quarterly 2016, DOI: 10.1177/0361684316644838
- 2. 2011 ABC News/Washington Post poll
- 3. 2015 Association of American Universities Campus Climate Survey on Sexual Assault and Sexual Misconduct





Chemists Celebrate Earth Week (CCEW)

LOOK & LEARN Video Contest

for ACS Student Chapters with a sponsoring faculty advisor

PARTICIPATING IS SIMPLE!

Record a three-minute video for CCEW on the theme, "Dive into Marine Chemistry." Using chemistry concepts, explain and demonstrate how chemistry is used to study marine phenomena or processes of the world's oceans.

The contest is now open at www.acs.org/ccewvideocontest

Deadline to submit: Friday, November 17, 2017

Your ACS Student Chapter could win:







\$250

\$150

Honorable Mention

The winning video will be highlighted as a resource for the 2018 CCEW celebration sponsored by the American Chemical Society.



How to Advocate for Science, Effect Change



By Blake Aronson and Lauren Posey

Every year, the U.S. Congress and state legislatures consider programs and legislation that have impacts on everything from federal funding for scientific research to environmental sustainability to homeland security. Few scientists (approximately 5%) and even fewer chemists serve in public office. That means critical decisions affecting science education, research, technology, and many areas of concern are in the hands of attorneys, businesspeople, and professionals who know very little about science.

How can you as a chemistry student make your voice heard among the miasma of shouted slogans and accusations of false news?

Here are five tips and resources on how to speak out on the issues you care about

1. Start small

Ultimately, all politics is local, and voters like you remain the most compelling reason for congressional action. You're not just a student; you are a key member of a robust intellectual, innovative society. Expressing what directly affects you as a citizen and the decisions you make about your research and career can influence the decisions of policymakers.

Chemistry Ambassadors

By becoming a Chemistry
Ambassador, you can help
educate people about the
importance of chemists and
chemistry while taking part in
community activities that are
engaging and fulfilling for you
on your own time schedule.
Chemistry Ambassadors
provides you with the skills,
tips, and tools that can help you
improve awareness and public
appreciation for the central role
of chemistry in our everyday
lives. Learn more at www.acs.org/
Chemistry/Ambassadors

You can reach out to your local representative in our national and state capitols, write op-eds in your local newspaper, or visit a town hall meeting. These may seem like small things, but political leaders pay a lot of attention to these actions.

2. Identify your request

What do you want your audience to do with the information you provide? Do you want them to vote for a piece of legislation? Use alternative fuels? Support science education? It's important to have a clear call to action in any form of communication you use and center

everything you say and do on that point.

People respond much better to a clear task than to a complex issue. Climate change, for example, is a hugely complex issue that involves individual choices, economic and societal drivers, and elaborate atmospheric modeling. The layperson can easily get lost in the morass of information; however, advocating support for tax subsidies for solar panel usage is more easily digestible. You can lead your effort with a specific call to action, and then explain how it benefits the Earth and its people. Your audience will come away knowing what to do and why.

3. Use plain, but precise, language

Make sure your message is crystal clear. "Less invasions, more equations" is a popular slogan for posters because it clearly states a position that is easily understood.

Stick to vocabulary your audience already feels comfortable with. To the uninitiated, "dihydrogen monoxide" is a mysterious compound whose inhalation can cause death. On the other hand, "water" is a familiar substance that everyone can easily identify.

Likewise, the word "chemical" is unnerving to many people and overly broad (really, what isn't a chemical?). So talk about specific chemicals, or categories ("reactants", "bases", "gases", etc.).

4. Know your audience

Who are you trying to reach, and what do they want? If you are talking to legislators, they are probably interested in things like the economy and societal growth. You can frame your argument by talking about how innovations in science lead to more jobs and a stronger economy.

If you're writing an op-ed for the local newspaper, your readers usually have immediate, day-to-day concerns. But they might be interested in how small investments

in solar panels can lead to big savings in their electric bills, or how better science education can help their children thrive in higherpaying jobs down the line.

5. Take advantage of ACS resources

ACS has lots of resources to help you speak your piece in government. Visit the Act4Chemistry Legislative Action Network (www.acs.org/Act4Chemistry) to stay informed on high-priority issues affecting the chemical enterprise and get tips on speaking to lawmakers.

You can also hone your communication skills with ACS Webinars (www.acs.org/webinar). A series of videos is available to ACS members that covers science and communicating to both science and

non-science audiences. You can learn how to create infographics, articulate your research, and improve your online presence using social media.

Communication training courses are offered in a variety of venues to help you understand how to effectively communicate your research to the public, the media, policymakers, and others in your community. Contact externalaffairs@acs.org for more information.

Remember, you don't need a nationwide platform to have an impact. Use your passion and the resources available to get involved!

Act4Chemistry

The Act4Chemistry Advocacy Toolkit includes web-based resources that help you make your opinions on science policy heard. The advocacy toolkit allows you to find your lawmakers and speak for science in a straightforward and simple manner by:

- Writing and calling your policymakers
- Desired and a factor of bull according
- Visiting your Congressperson in district or DC offices
- Hosting your lawmakers
- Working with the media and your community on science-related stories
- · Inviting your policymakers to join the Congressional Chemistry Caucus

If you would like to participate in the Act4Chemistry Network, you can visit the Advocacy tab on the www.acs.org homepage or email ACS External Affairs and Communications at advocacy@acs.org.



Blake Aronson is a lead associate for ACS Student Communities. She works with undergraduate programs at two- and four-year institutions, the SCI Scholars program, and other ACS initiatives. **Lauren Posey** is a lead legislative associate for the ACS Office of External Affairs and Communications. She manages the Science Education and Workforce advocacy portfolio.





SCI SCHOLARS INTERNSHIP PROGRAM FOR UNDERGRADUATES

SUMMER 2018

Test-drive a career in the chemical industries with SCI Scholars. This competitive program provides 10-week summer internships to undergraduates interested in industrial careers.

SCI Scholars is open to sophomores and juniors majoring in chemistry or chemical engineering. Students must be U.S. citizens or permanent residents and have at least a 3.5 GPA. Applicants selected for the program will receive:

- Up to \$10,000 for the internship
- \$1,000 for professional development
- Certificate
- Opportunity to recognize an inspirational high school teacher

All SCI Scholars internships provide exceptional workplace experience in the intern's field of study. Learn more at acs.org/SCI.

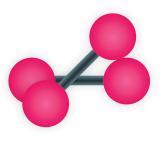
The Society of Chemical Industry (SCI) America International Group is a nonprofit organization dedicated to advancing excellence in the chemical industry. All SCI Scholars internships are with SCI member companies.



Puzzle

Pumping Iron

Give your knowledge of chemistry a workout. Write the answers to each of the clues in the spaces provided. Then transfer the letters in the numbered spaces to the corresponding space at the bottom of the page. If you do it correctly, you'll get an appropriate joke... and maybe a few reps for your diaphragm.



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