



CHEMISTRY NEWS

A publication of a division of the
Council on Undergraduate Research

CUR Chem Is Working for You!

by Kimberley Frederick

As elected councilors in the Council on Undergraduate Research's Chemistry Division, our goal is to support chemistry faculty as they work with their undergraduate students to advance the chemical sciences and develop their students as the future of the scientific community. To that end, we have been working on several initiatives.

Increased networking opportunities at national meetings: We held a great social event at the spring 2018 ACS National Meeting (255th Meeting) with food, libation, and conversation at the District Lounge in New Orleans. Take advantage of the social meetups hosted by the CUR Chem Division at the CUR Biennial on July 1–3 in Arlington, VA. Look for blogposts about details as we get closer to the meeting dates.

Understanding and addressing the unique challenges of UR and first-generation students: This year, we have a task force thinking about practices that could make UR more accessible for students who are balancing school and work or family commitments, how to make UR opportunities more visible for students, and what practices in the course sequence might help with student success. If you are interested in joining that discussion, please contact Karen Almeida (kalmeida@ric.edu).

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About CUR's Chemistry Division

The Chemistry Division of the Council on Undergraduate Research—the oldest and largest division of CUR—provides networking opportunities, activities, and resources to assist chemistry administrators, faculty members, students, practitioners, and others in advancing undergraduate research.

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New publications to disseminate best practices: “Best Practices for Supporting and Expanding Undergraduate Research in Chemistry” Volume 1275 of the ACS Symposium Series was developed and edited by two of the CUR Chem Councilors, Bridget Gourley and Rebecca Jones. The book is the result of their four-year organization of symposia at the spring ACS national meetings focused on how to increase and improve the undergraduate research experiences of students and faculty. Two current Councilors, Robert Bachman and Mary Konkle, are chapter authors, and several former councilors also contributed their thoughts.

Do you have suggestions for other initiatives that CUR Chem should undertake? Want to get more involved in CUR? Tell us about them by emailing me (kfreder1@skidmore.edu). CUR Chem wants to support you as you engage your students in the scientific enterprise. •

Are You a Newly Hired Assistant Professor Looking Forward to Getting Off to a Great Start This Fall? Advice from One Assistant Professor to Another

by Michelle L. Kovarik

When I started my faculty position in July 2013, I was particularly excited to work in the research laboratory with undergraduates. Although I had mentored several undergraduate students while I was in graduate school and during my post-doctoral research, we would now be pursuing my independent research ideas. Below, I share some of the most important things that I learned during my first year.

Commit to one or more research students as soon as you feel ready. You should take time to establish yourself as a teacher and get to know your new campus and colleagues in your first year, but if you feel it is possible, I recommend that you take on one or two research students your first year as well. Committing to those students will make your research urgent in the same way that your teaching is urgent. There will be a designated time each week when your research student arrives ready to work, and you will have committed to having equipment and supplies ready and to spending that time engaged on research together. In the absence of that commitment, it is easy to let teaching responsibilities fill all of your time.

Be thorough in training your students, especially the first few. How you treat and train your first few undergraduate research students will establish the culture of your laboratory. Training these students well initially will pay off when they help to train new students in the future. (Conversely, underinvestment in how you train your first few students could start “bad habits” in the lab.) Be ready to discuss your expectations with students as soon as they join the lab, and learn about their expectations as well. Take the time to review students’ lab notebooks and offer constructive criticism. Have the students write (and revise) standard operating procedures for the lab. Address problems or lapses directly, as soon as they arise. Meet regularly with students, preferably as a group. Having a regular lab meeting builds rapport and gives students an opportunity to practice discussing their work with peers.

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Resources on training and mentoring undergraduate research students.

- [“A guide to mentoring undergraduates in the lab”](#) by Philip Lukeman (*Nature Nanotechnology* 2013)
- [“Nature’s guide for mentors”](#) from 14 June 2007 issue
- [Research mentor training](#) from the National Research Mentoring Network (NRMN)
- [Advisor, Teacher, Role Model, Friend: On Being a Mentor to Students in Science and Engineering](#), 1997 Consensus Study Report from the National Academies Press
- Web Guide to Research for Undergraduates ([WebGURU](#)), hosted and maintained by Northeastern University

Start drafting a grant proposal. Even if you don’t have time to finish and submit a research proposal during your first year and even if your start-up funds will cover your costs into the near future, carve out time to start a grant proposal. Writing a proposal is one of the best ways to refine your thinking and crystallize your ideas into concrete plans. Use this as an opportunity to consider how major goals might be divided into individual student projects. Get to know the staff in the sponsored research office on your campus. Find out what assistance they offer and what requirements are in place for external grant submissions on your campus. Find out which established faculty on your campus have been successful in applying for outside funding and seek their advice.

Some funding programs for chemistry faculty at primarily undergraduate institutions (PUIs).

- National Science Foundation Research at Undergraduate Institutions program ([RUI](#))
- National Institutes of Health [AREA/R15](#) program
- American Chemical Society [Petroleum Research Fund](#)
- Research Corporation for Science Advancement [Cottrell Scholars Award](#)
- [Henry Dreyfus Teacher-Scholar Awards](#) (mid-career award)
- Pittsburgh Conference Memorial National College Grants program ([PCMNCG](#))
- [Edmund Optics EO Educational Award](#)
- [Hamilton Syringe Grant](#)

Attend a research conference. Starting an independent research program is exciting but can also be intimidating. As a graduate student or postdoc, we’ve often been one part of a large group of experts. As new faculty, you may be the only expert in your subfield on campus or for miles around. More experienced undergraduate research students can and will make significant intellectual contributions to their projects. Before your research group is established, however, you will often do the heavy intellectual lifting on your own. Attending a conference is an opportunity to reconnect with former colleagues, network with experts, and get feedback on early results. Traveling during the semester can be

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stressful since you will need to find substitutes to teach your classes or schedule make-up classes. To mitigate this, plan ahead. Look up when and where the major conferences in your field will be held for the next few years. Look for dates and locations that will make travel less challenging.

Plan your summer. Find out early on what the options are for undergraduate summer research on your campus. Learn whether internal support is available for student stipends and housing, and if so, what the application deadlines are. Full-time summer work is a transformative experience for undergraduates. The opportunity to immerse themselves in the lab means that, after 8–10 weeks of full-time summer research, they are far more independent and productive than after a full academic year of part-time work. Summer is also an opportunity to undertake experiments that might be too lengthy or complex to attempt while teaching, so think ahead about which experiments might be best done outside the academic year.

For more ideas... In 2015, I wrote a [perspective](#) for *Analytical Methods* on analytical chemistry research at PUIs, which includes advice from several established faculty members about maintaining an active research program with undergraduates. In 2018, *Analytical and Bioanalytical Chemistry* published a [column](#) on “Successfully Navigating the Early Years of a Faculty Position” by myself, Chris Harrison, and Tom Wenzel. Of course, some of the best advice will come from your new colleagues, who know the local environment. Finally, research is an inherently creative process, so make time

for yourself to think and reflect—even within the stress of that very first year!•



Michelle L. Kovarik is an assistant professor of chemistry at Trinity College in Hartford beginning her sixth year. She is a bioanalytical chemist whose research is focused on the development of molecular and microfluidic tools for enzyme assays in the social amoeba *Dictyostelium discoideum*. Since 2013, this work has engaged 17 undergraduate students who collectively have given 22 poster and podium presentations at local, regional, and national meetings.

Starting an Undergraduate Research Program or Rethinking One? Have You Considered Attending a CUR Institute?

Is your department, college, or university interested in starting or planning to revise the approach or support for undergraduate research? If so, perhaps participation in an upcoming CUR institute might be an invaluable opportunity for 3–5 decision makers to come together and explore the issues more deeply with a team of experienced CUR facilitators. There are two institutes relevant to chemists coming up this fall:

- [Beginning a Research Program in the Natural Sciences at a Predominately Undergraduate Institution Institute](#) (10/5–7/18; Stetson University, DeLand, FL)
- [Transforming Undergraduate Research Culture and Curricula Institute \(TURCC\)](#) (10/12–14/18; Capital University, Columbus, OH) Deadlines for application to these institutes are 8/15/18 and 8/17/18, respectively.



Best Practices for Supporting and Expanding Undergraduate Research in Chemistry

Two of our CUR Chemistry Councilors spearheaded an ACS Symposium Series volume resulting from symposia organized at three spring ACS meetings. *Best Practices for Supporting and Expanding Undergraduate Research in Chemistry* (ed. Bridget Gourley and Rebecca Jones) is available online now and will be out in print in September 2018. Twenty chapters contributed by 49 authors and coauthors, those active in CUR and beyond, provide a breadth of models and perspectives. An impactful resource for modern chemical educators and administrators, the volume contains examples from a diverse array of institutions. Included are approaches that infuse undergraduate research at all levels of the curriculum. Chapters also describe frameworks to support and assess undergraduate research programs and strategies to broaden participation, facilitate partnerships, and effectively mentor undergraduate researchers. These practical

models help readers implement best practices at their own institutions.

Editor Bios. Bridget L. Gourley is Percy Lavon Julian Professor of Chemistry and Biochemistry at DePauw University. Rebecca M. Jones is a term associate professor in the Department of Chemistry and Biochemistry and the STEM Accelerator in the College of Science at George Mason University. Both are elected CUR Chemistry Councilors.

CUR Biennial Conference (7/1–3/18)

The [18th CUR National Conference](#) will take place in Arlington, VA, at the Hyatt Regency Crystal City on July 1–3, 2018. The conference theme is "Creating Collaborative Connections in and through Undergraduate Research." The Chemistry Division will be active participants at the conference. The conference program will be available shortly on the CUR website.

Have You Checked Out [CURCHEM](#), Our Division's Blog, Recently?

- [A Summer Without Students? Gearing Up for Pre-Tenure Sabbatical...](#) (June 4)
- [Were You Declined? Here are Some Reasons to Keep Going](#) (May 7)
- [Reflecting on 35 Years: Rules to Research By...](#)(April 23)
- [Reflecting on 35 Years: What's Most Important](#) (April 16)

Have You Checked Out the New Peer-Reviewed, CUR Scholarly Journal, SPUR?

Scholarship and Practice of Undergraduate Research (SPUR) is the new, peer-reviewed scholarly journal published by CUR. SPUR is one of the many benefits of CUR membership. The theme of the spring 2018 [issue](#) is "Undergraduate Research and Student Success Outcomes." This issue includes an [article](#) by CUR Chemistry Division Councilor Joseph Grabowski and colleagues Paulette Vincent-Ruz and Christian Shun from the University of Pittsburgh who examined the benefits of early undergraduate research experiences on premed students' success at key steps (second-year course performance and retention) along these students' path to medical school acceptance.

The summer 2018 issue will explore the benefits of undergraduate research in the recruitment, retention, and success of traditionally underserved populations such as underrepresented, first-generation, and/or low-income students. If you would like to submit a manuscript for any issue of SPUR, please contact CUR Chemistry Division Councilor Rebecca Jones (George Mason University) who is the Chemistry-Divisional editor. The table of contents for the spring 2018 issue is available [here](#).

Upcoming Chemistry-Related Funding Programs and Deadlines

[American Chemical Society](#) (9/24/18-10/19/18)

[New Directions](#) (grants for faculty in PhD granting departments)

[Doctoral New Investigator](#) (starter grants for new faculty in PhD granting departments)

[Undergraduate New Investigator](#) (starter grants for new faculty in non-doctoral departments)

[Undergraduate Research](#) (grants for faculty in nondoctoral departments)

[National Science Foundation](#) – grant deadlines before 10/1/18

[Science of Learning](#) (7/11/18)

[Faculty Early Career Development Program](#) (7/18/18 or 7/19/18)

[Historically Black Colleges and Universities – Undergraduate Program \(HBCU-UP\)](#) (letter of intent 7/24/18, 9/4/18)

[Chemistry Research Experiences for Undergraduates](#) (REU) (8/22/18)

[Tribal Universities and Colleges Program](#) (TCUP) (9/4/18, 9/17/18)

[International Research Experiences for Undergraduates Program](#) (IRES) (9/11/18, 9/18/18, 9/25/18)

[EHR Core Research Program](#) (ECR) 9/13/18)

[Improving Undergraduate STEM Education \(IUSE\) Exploration and Design](#) no deadline after 10/1/18 applications may be submitted at any time until 5/1/19

National Institutes of Health

K series ([research career development](#))

7/12/18, 11/12/18

R01 10/5/18

R15 ([AREA](#)) 10/25/18

R21 7/16/18, 11/16/18

World CUR Conference (5/23–25/19)

The [Second World Congress on Undergraduate Research](#) will take place at the Carl von Ossietzky University in Oldenburg, Germany, on May 23–25, 2019. Submissions aligned with one or more of six [themes](#) (environment, health, economy, communication, politics, and create) are welcome in all academic disciplines. The abstract portal is expected to open on June 22, 2018.

Upcoming Opportunities for Your Undergraduate Research Students

April 2019, Washington, DC.

[Posters on the Hill \(POH\)](#) Student abstracts will likely be due between Sept.–Nov. 2018

April 2019, [National Conference on Undergraduate Research](#) Abstract submission will likely open in early Oct. 2018

RIP: Robert L. Lichter

It is with deep regret that we report the passing of Dr. Robert L. Lichter on March 24, 2018. Bob began his career as a faculty member and later chair of the Chemistry Department at Hunter College of the City University of New York. He was a passionate advocate of undergraduate research and a past Chemistry Councilor. He was also a member of the Board of Governors for the National Conferences on Undergraduate Research (1992–1998) and served as chair of the board from 1994–1996. Outside of CUR he was active in the AAAS, Sigma Xi, and ACS. Throughout his career, he worked actively to promote diversity and inclusiveness in our discipline. You can find more complete bibliographic information on Bob [here](#). The division plans to recognize Bob appropriately at a later time. If you would like to be part of this effort, please contact CUR Chemistry Division Chair Kimberly Frederick (kfreder1@skidmore.edu).