We will start momentarily at 2pm ET

Slides available now! Recordings will be available to ACS members after two weeks
http://acswebinars.org/surviving-grad-school

Contact ACS Webinars ® at acswebinars@acs.org

Have Questions?

"Why am I muted?"
Don’t worry. Everyone is muted except the presenter and host. Thank you and enjoy the show.

Type them into questions box!

Contact ACS Webinars ® at acswebinars@acs.org
Have you discovered the missing element?

www.join.acs.org

Find the many benefits of ACS membership!

Like us on Facebook!

facebook.com/acswebinars
How has ACS Webinars® benefited you?

“Gives me great ideas for topics to explore with my students, and ways to do so. Even when I don't adapt the topic directly into a lesson plan or lab activity, sharing the scope of what ‘chemistry’ is and can be helps to motivate the students.”

Fan of the Week
Amy Naylor, M.D.,
Biology & Chemistry Instructor,
Mitchell Community College

Be a featured fan on an upcoming webinar! Write to us @ acsw webinars@acs.org

Join us for part 2 of the Grad School Doubleheader!

ACS WEBINARS®
July 10 @ 2PM ET

“STRATEGIES FOR APPLYING TO GRAD SCHOOL”
Part 2 in the Grad School Series!

Featuring Sam Pacicci, Ph.D
University of New Hampshire
Hungry for a brain snack?

“ACS Webinets™ are 2 minute segments that bring you valuable insight from some of our most popular full length ACS Webinars®.”

See all the ACS Webinets at youtube.com/acswebinars
Beginning in 2014 all recordings of ACS Webinars will be available to current ACS members two weeks after the Live broadcast date.

Live weekly ACS Webinars will continue to be available to the general public.

Contact ACS Webinars® at acswebinars@acs.org

Upcoming ACS Webinars®

www.acs.org/acswebinars

Thursday, May 15, 2014

“From Batteries to Biological Machines - Crystallography Frontiers”

Cora Lind-Kovacs, American Crystallographic Association
Jim Kaduk, American Crystallographic Association

Thursday, May 29, 2014

Drug Discovery Series - Session 3

“Lead Optimization – Building Efficacy & Safety”

Dr. Craig Lindsley, Vanderbilt University
Dr. Joseph Fortunak, Howard University

Contact ACS Webinars® at acswebinars@acs.org
Surviving and Succeeding in Grad School

Patricia Simpson
University of Illinois, Urbana-Champaign’s School of Chemical Sciences

Sam Pazicni
University of New Hampshire

Slides available now! Recordings will be available to ACS members after two weeks
http://acswebinars.org/surviving-grad-school

This ACS Webinar is co-produced by the ACS Education Division

Surviving and Succeeding in Grad School

08 May 2014

American Chemical Society
Surviving and Succeeding in Graduate School

- How is graduate school different than undergrad?
- What should I do before I go there?
- What happens when I get there?
- How do I choose a research advisor?
- What kind of experiences will I have? What kind of experiences should I have?
- What does it take to succeed in graduate school?

I am but one person… with one set of opinions on these issues.
That is why we have these wonderful folks!

Prof. Kim Linenberger  
Department of Chemistry and Biochemistry,  
Kennesaw State University

Ms. Whitney Kellett  
Ph.D. student,  
Purdue University

Which of the following best describes you?

• I am entering graduate school this fall, having just finished my undergraduate studies.
• I am entering graduate school this fall after taking time off between after my undergraduate studies.
• I am currently finishing my undergraduate studies and will take time off before graduate school.
• I am a current undergraduate looking forward to graduate school in the future.
• I am currently in graduate school.
The Grad School Journey

• lots of young people from all over the world converging on a single chemistry department
• many will live together
• competing in a game of wit, skill, and tenacity
• there will be tears, laughter, sadness, and swearing
• typically, the most stubborn “contestants” win

The Biggest Differences

• undergraduate
  – you play the “credit game”
  – you have courses and grades as motivators
• graduate school
  – It’s a very individual process - no student takes the exact same journey as another student
  – at times, you are your only motivator
  – your intellectual progress is monitored by a committee; the “credit game” is over
Experiences to have before graduate school

• chemistry coursework
  – 2 semesters of general chemistry with laboratory
  – 2 semesters of organic chemistry with laboratory
  – 2 semesters of physical chemistry with laboratory
  – 1-2 semesters of analytical chemistry with laboratory
  – 1-2 semesters of inorganic chemistry with laboratory
  – 1 semester of biochemistry

• other coursework
  – physics, calculus
  – depends on to what graduate program you aspire

Experiences to have before graduate school

• practice with both written and oral communication skills
• gain comfort/proficiency with software
  – Microsoft Excel, Powerpoint, Word (or similar)
  – Origin or Igor Pro (data graphing software)
  – ChemDraw (chemical structure drawing software)
  – EndNote or RefWorks (citation tools)
• gain skill with search engines like SciFinder, WebofScience, and PubMed
Planning for Graduate Work in Chemistry

This publication contains a wealth of information!

Just “Google” the title and you’ll find it!

The Grad School Journey

**indoctrination.** A whole lot of new will be coming at you from every direction. Don’t worry, everyone else feels exactly like you do.

| year 1 | year 2 | year 3 | years 4+ |

**a time for intense study and reflection.** Rely on your strengths; recognize and confront your weaknesses.

**learn to manage your time.** Work hard *most* of the time; work smart *all* of the time.
The Grad School Journey

- sorting
- TA training
- entrance/advising exams
- ALL classes begin!
- faculty interviews/research rotations
- join a research group!
- summer research time!

American Chemical Society

On being a teaching assistant...

Graduate Students' Teaching Experiences Improve Their Methodological Research Skills

David F. Felder, 1,2 James Poulson, 1 Eliana E. Finnenkas, 3 Michelle A. Wolf, 1,3 Melissa Harris, 1,3 Berta M. Strong, 1,3 Joanne A. Hennon 1 Cindy Stanghellini

Science, technology, engineering, and mathematics (STEM) graduate students are often encouraged to maintain their engagement with experimental research and minimal teaching obligations. However, the process of teaching students engaged in inquiry provides practice in the application of important research skills. During a performance matrix, we compared the quality of methodological skills demonstrated in written research proposals for two groups of early-career graduate students: one with both teaching and research responsibilities and the other with only research responsibilities. We then evaluated the students’ self-reported teaching activities and teaching effectiveness. The results indicate that teaching activities are associated significantly with improvements in their abilities to generate feasible hypotheses and design valid experiments. These results indicate that teaching experiences can contribute substantially to the improvement of essential research skills.

Academic culture is socialized research endeavors. STEM (science, technology, engineering, mathematics) programs typically value research activity over teaching (1, 2). Faculty commonly believe that research activities enhance teaching quality, but do not believe that teaching similarly enhances research skills (3, 4). These beliefs influence not only the professional priorities of STEM faculty, but also the guidance that is critical in a context that requires students to create novel and testable research ideas and solve problems through inquiry. Furthermore, formative hypothesis, design, valid experiments, and draw appropriate conclusions based on data. Researchers must practice these skills themselves so that they can teach these skills to their students. When students are trying to solve similar problems, the design, analysis, and interpretation of their own experiments, their research advisors may request more detailed explanations of their methods and results.

Science (2011) 333, 1037-1039

American Chemical Society
And Gladly Teach

a brief yet comprehensive guide to preparing for and securing a faculty position at a college or university

has some great information on being a teaching assistant!

American Chemical Society

The Research Mentor

• a critical decision!
• don’t decide on prestige alone (or at all)...
  – does your personality mesh with your mentor?
  – does your mentor’s management style mesh with your work habits?
  – does your mentor appreciate your goals and aspirations?
  – can you learn from your mentor?
  – how does your mentor define “success”?

American Chemical Society
The Grad School Journey

you’re not new anymore. time to start becoming self-motivated and a little more independent!

transition your learning. classes are almost done; time to learn for the sake of learning and discovery

assess and reflect. you should be progressing and growing. are you? are you overcoming weaknesses?

begin comprehensive exams

start giving presentations: group meetings, department functions, conferences

continue TAing and taking classes (?)

finish comprehensive exams and classes(?)

committee progress report!
Attending ACS Meetings

American Chemical Society

Gordon Research Conferences and Seminars

American Chemical Society
The Grad School Journey

RESEARCH!

develop good habits...

- keep your lab notebook detailed, up-to-date, and indexed
- write up each of your experiments as a full report (methods, results, and conclusions!)
- keep a literature notebook - one page summaries of any publication you read
- build a bibliography (using Endnote, RefWords, etc.)

The Grad School Journey

a turning point. time for your mentors to assess your progress and your strengths/weaknesses

begin to take charge of your research. come up with your own ideas and directions. become the expert!

push yourself. the excitement has worn off… but you’re not that close to being done
The Grad School Journey

own your research. learn to communicate and promote your work: publishing, presenting talks and posters, write and defend your dissertation

you’re the expert. mentor a younger grad student or an undergrad; become the sensei

prepare for life after graduate school. engage in professional development activities to supplement your scientific training
The Grad School Journey

write your dissertation!
defend your dissertation!

year 1
year 2
year 3
years 4+

RESEARCH!
become the expert!
become independent!

gain the skills necessary to be successful in future pursuits

GRADUATE!

American Chemical Society

The End!!
... or is it?

apply for jobs!

year 1

year 2

year 3

years 4+

• how can your mentor and institution help with this?
• get to know other members of the faculty (not just those on your committee)
• NETWORK at meetings/conferences and online!!
• take advantage of what the ACS has to offer!

American Chemical Society

What do you want to do after graduate school?

• proceed directly to an industrial job
• proceed directly to a teaching-oriented faculty position
• obtain post-doctoral training and, eventually, an industrial or academic job
• pursue training outside of the lab (policy, journalism, etc.)
• I’m not sure!

American Chemical Society
ACS Resources for Grads

American Chemical Society

ACS Resources for Grads

American Chemical Society
ACS Resources for Grads

http://www.acs.org/content/acs/en/about/governance/acs-presidential-commission-on-graduation-education-in-the-chemical-sciences.html

http://sciencecareers.sciencemag.org/career_magazine/previous_issues/articles/2013_02_01/caredit.a1300008


---

Enjoying Success

- Your graduate cohort will have entered on equal footing
  - the tenacious will not give up
  - the reflective will quickly recognize weaknesses and work to strengthen them
  - the swashbucklers will gain independence quickly
  - the good communicators will “own” their work
  - those with flexibility and good time management will work smart and hard
  - the self-motivated will do all of the above while the research mentor is out of town
  - those that enjoy Science will do all of the above with a smile on their face… most of the time!
This ACS Webinar is co-produced by the ACS Education Division

Surviving and Succeeding in Grad School

Slides available now! Recordings will be available to ACS members after two weeks
http://acswebinars.org/surviving-grad-school

Join us for part 2 of the Grad School Doubleheader!

"STRATEGIES FOR APPLYING TO GRAD SCHOOL"
Part 2 in the Grad School Series!
Featuring Sam Pazicni, Ph.D.
University of New Hampshire
Upcoming ACS Webinars®
www.acs.org/acswebinars

Thursday, May 15, 2014
“From Batteries to Biological Machines - Crystallography Frontiers”
Cora Lind-Kovacs, American Crystallographic Association
Jim Kaduk, American Crystallographic Association

Thursday, May 29, 2014
Drug Discovery Series - Session 3
"Lead Optimization – Building Efficacy & Safety"
Dr. Craig Lindsley, Vanderbilt University
Dr. Joseph Fortunak, Howard University

Contact ACS Webinars® at acswebinars@acs.org

Surviving and Succeeding in Grad School

Patricia Simpson
University of Illinois, Urbana-Champaign's School of Chemical Sciences

Sam Pazici
University of New Hampshire

Slides available now! Recordings will be available to ACS members after two weeks
http://acswebinars.org/surviving-grad-school

This ACS Webinar is co-produced by the ACS Education Division
How has ACS Webinars® benefited you?

“Gives me great ideas for topics to explore with my students, and ways to do so. Even when I don't adapt the topic directly into a lesson plan or lab activity, sharing the scope of what 'chemistry' is and can be helps to motivate the students.”

Fan of the Week
Amy Naylor, M.D.,
Biology & Chemistry Instructor,
Mitchell Community College

Be a featured fan on an upcoming webinar! Write to us @ acswbinars@acs.org
Have you discovered the missing element?

www.join.acs.org

Find the many benefits of ACS membership!

ACS Webinars® does not endorse any products or services. The views expressed in this presentation are those of the presenter and do not necessarily reflect the views or policies of the American Chemical Society.

Contact ACS Webinars® at acswebinars@acs.org
Thursday, May 15, 2014
“From Batteries to Biological Machines - Crystallography Frontiers”
Cora Lind-Kovacs, American Crystallographic Association
Jim Kaduk, American Crystallographic Association

Thursday, May 29, 2014
Drug Discovery Series - Session 3
"Lead Optimization – Building Efficacy & Safety"
Dr. Craig Lindsley, Vanderbilt University
Dr. Joseph Fortunak, Howard University