EXECUTIVE SUMMARY
On December 5-6, 2013, COMPASS convened the #GradSciComm workshop, bringing together a select group of 30 science communication trainers, scholars, science society leaders, funders, administrators, and graduate student leaders at the National Academy of Sciences in Washington, D.C. The participants came together to explore pathways for integrating science communication training into STEM graduate education, and to identify a list of core competencies for effective science communication training. Though the group is still refining the core competency list, top themes include: 1) knowing your audience (including social science constructs); 2) stating the “so what” of your science clearly; 3) avoiding jargon; 4) storytelling; and 5) writing clearly. They also identified barriers of integration for communication training, which includes faculty/mentor support and effective monitoring and evaluation. The group discussed the conditions that enable change to take place, notably funding, motivation, alignment, incentives, and pressure. Moving forward, in early 2014, the workshop participants will be refining the descriptions of core competencies and developing a roadmap and dissemination plan for integrating communication training into STEM graduate education.

RATIONALE AND PROCESS
The need for better professional skills training is a key element of the larger national conversation around graduate education reform. #GradSciComm focused on science communication as subset of broader professional training needs identified for STEM graduate students. With funding from the National Science Foundation, COMPASS has worked over the past year to assess the current landscape of communication training available to graduate students in the STEM disciplines. The effort has included building a community-sourced database that provides some insight into the current capacity and content of workshops and courses. The workshop represented a culmination of the year’s effort, taking the first steps toward developing a roadmap for integrating communication training into STEM graduate education.

OUTCOMES
Throughout the two-day engagement, the group worked to identify a collective vision of what would be different if the currently unmet need for graduate science communication training were met, in order to elucidate drivers of change and explore ways to navigate specific roadblocks.

Self, Science, Society
The workshop participants identified that successful integration of communication training into graduate training could catalyze change at varying scales. At the broadest scale, improved science communication could advance science literacy and inform policy. It could also help facilitate effective interdisciplinary science and help advance alternate career pathways for Ph.D.’s. For graduate education specifically, the group articulated the following end goals:

- Communication would be integral to the fabric of graduate education, just like ethics and statistics.
- Graduate advisors would endorse communication training.
- Institutions producing STEM Ph.D.’s would have the capacity to provide communication training.
- Educators and trainers would have a shared understanding of best practices in pedagogy.
Drivers of Change

One of the key realizations the group made is that **funding is a pathway, not an obstacle**, toward integrating science communication training with graduate education. Catalytic, sustained, and targeted funding could advance many of the possible pathways toward change. Other drivers identified include:

- **Motivation** – Students, faculty, and university administrators recognize the importance of communication training and work as appropriate to make it accessible.
- **Alignment** – Timing, career-wide training goals, personal, and institutional incentives align in ways that favor individual self-interest, along with collective goals.
- **Champions** – The right people at the right level at the right time act to accelerate change in a manner appropriate to local conditions.
- **Incentives** – Individual and institutional rewards encourage changes in the status quo.
- **Pressure** – Membership societies such as AAU or APLU exert pressure and funding agencies act to more stringently enforce policies like the NSF Broader Impact requirements.

Roadblocks

The group identified two critical roadblocks that must be overcome to achieve the goal of integrating science communication training into graduate education. These include:

- **Faculty support** – Faculty often fear that supporting communication training will take time away from advancing research, along with the potential attrition of students to alternate careers impedes motivation to provide access to training for students.
- **Monitoring and Evaluation** – Effective communication training requires training, feedback, and practice. Few programs do sufficient and/or appropriate evaluation to demonstrate the efficacy of their approach, making it difficult to justify large-scale return on investment.

Participants

- Ardon Shorr - Carnegie Mellon University
- Brooke Smith - COMPASS
- Bruce Lewenstein - Cornell University
- Clare Fiesler - University of North Carolina
- Dietram Scheufele - University of Wisconsin, Madison
- Erica Goldman - COMPASS
- Geoff Hunt - American Society for Biochemistry and Molecular Biology (ASBMB)
- Jack Schultz - University of Missouri
- Jamie Bell - Center for Advancement of Informal Science Education (CAISE)
- Jay Labov - National Academy of Sciences, National Research Council
- Jerry Blazy - White House Office of Science and Technology Policy
- Jessica Rohde - University of Washington, ENGAGE
- John Sonsteng - William and Mitchell College of Law
- Kate Stoll - National Science Foundation, Emerging Leaders In Science & Society
- Lisa Graumlich - University of Washington
- Liz Bass - Stony Brook University
- Liz Neeley - COMPASS
- Martin Storksteck - National Academy of Sciences, National Research Council
- Michelle Paulsen - Northwestern University
- Nancy Baron - COMPASS
- Patricia Labosky - National Institutes of Health
- Philip Clifford - Medical College of Wisconsin
- Rich Boone - National Science Foundation
- Rick Tankersley - National Science Foundation
- Russ Campbell - Burroughs Welcome Fund
- Sharon Dunwoody - University of Wisconsin, Madison
- Susan Mason - National Science Foundation
- Tiffany Lohwater - AAAS
- Toby Smith - Association of American Universities
- Tom Hayden - Stanford University

Resources

Materials from #GradSciComm effort can be found in the following locations:

- COMPASS resources: [http://compassblogs.org/gradscicomm/](http://compassblogs.org/gradscicomm/). These include links to a series of blog posts, the database, and workshop agenda and participants.
- Workshop Slides: Day 1 – [http://slideshe.re/1gC05nE](http://slideshe.re/1gC05nE); Day 2 – [http://slideshe.re/J0gG5M](http://slideshe.re/J0gG5M)