

A quick guide to effective grassroots advocacy for scientists

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ABSTRACT The current political climate in the United States has mobilized scientists to become more cognizant of the need to advocate for sustainable science funding from the federal government and for acceptance of evidence-based policy making that relies on the best available scientific data. Many scientists, however, do not learn about science policy or how to advocate in Washington, D.C., or at the local level as part of their scientific training. Here we explain why science advocacy is important and provide steps on how to get involved by communicating with elected officials and engaging in the local community.

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SCIENTISTS: THE RELUCTANT ADVOCATES

Scientists have not always been eager to communicate their science to the general public or their lawmakers or to engage in science advocacy of any kind. Many would like to believe that the sanctity of science is and should remain above the political fray and hope that everyone, including politicians and the general public, has or should have a basic appreciation of science, of the scientific process, and of scientific facts. The current political climate in the United States, however, is forcing many scientists to reconsider this notion. Indeed, if there is a positive aspect of the current climate in terms of science, it is that it has had a mobilizing effect on scientists to get involved in communicating the value of science and supporting evidence-based learning and policy.

As scientists involved in advocacy through the American Society for Cell Biology (ASCB) and other avenues, we both have worked to convince scientists that advocating for science and communicating one's science is an *obligation* for all scientists and not just in this current political climate, but throughout one's scientific career. Here we offer a short guide on how to go about science advocacy. Although these steps are primarily relevant for science advocacy in the United States, we hope that some of the steps presented here may also be useful for scientists from other nations.

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Abbreviations used: ASCB, American Society for Cell Biology; CLS, Coalition for the Life Sciences; NIH, National Institutes of Health; NSF, National Science Foundation; PPC, Public Policy Committee.

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POLITICAL PROCESS VERSUS PARTISAN ISSUE

Although private foundation and philanthropic support of science is growing, most basic science research in the United States is supported by grants from federal agencies such as the National Institutes of Health (NIH), the National Science Foundation (NSF), and others. Even though the President sends budget recommendations to Congress every year, each agency's budget is actually set through an appropriations process in both the Senate and the House of Representatives. After a joint Senate/House conference committee works out the differences in Senate and House versions and a budget is approved, it is then sent to the President for signature (for more details, see Pollard, 2012). Thus, given that our lawmakers negotiate and vote on the budget that funds the NIH, NSF, and other federal agencies every year, science is inherently a *political* process. It is the hope, however, that science itself, and determining the budget to support science, is not a *partisan* issue. In fact, some of the biggest champions of the NIH have come from both sides of the aisle—Republicans (e.g., Newt Gingrich, Arlen Specter, Roy Blunt, Tom Cole) and Democrats (e.g., Tom Harkin, Edward Kennedy, Rush Holt, Richard Durbin).

WHY SCIENCE ADVOCACY IS IMPORTANT

Can we, as scientists, make a difference in how and to what levels science is funded and in support of evidence-based policies? It is important for our members of Congress to hear from the scientific community, just as they hear from citizens representing almost all sectors of the economy. Lawmakers want to know how federal funds for science are being spent, and they need to appreciate that investments in science are critical for our future competitiveness and for training the next generation of scientific leaders. They need to hear about our exciting research findings, the breakthroughs that have already been made, those that are around the corner, and the important work that lies ahead. Be sure to share with them why your research is important, and, if

BOX 1: Scripts for phone calls.

Script for setting up an in-district meeting:

You can set up a meeting with your congressperson or their staff either as an individual or as a group of concerned scientists (for example a group of graduate students or postdoctoral fellows). You can meet with the congressperson representing where you live or where your institution is located if they are not the same person.

You: Hello, my name is X and I am a constituent of [your congressperson]. I would like to set up a meeting during the congressperson's next recess for a group of graduate students in X department. We would like to discuss federal appropriations for science funding and issues regarding training the biomedical workforce. Would you let me know some dates that he/she or a staff person might be available to meet with us?

If you are not offered an appointment during your initial phone call, offer your contact information, take down the name of the staffer with whom you spoke, and ask when you should expect to hear back about your appointment. Ask for an email address to follow-up your request in writing. Be polite and thank the staffer for their time. Be prepared to make follow-up phone calls.

Script for calling about a bill:

You: Hello, this is X and I am a constituent living in [name of town/city] in zip code X. I'd like to know how [your congressperson] plans to vote on [name of the bill]?

If your congressperson plans on voting the way you hope, be sure to express your thanks to the staffer and express your support for that position and end your call. If you disagree with the way they are voting or if the staffer indicates they are undecided:

You: I hope [your congressperson] will vote no on [name of bill]. As a scientist, I disagree with the proposed legislation because [list 1-2 main reasons you oppose the bill]. Please pass my concerns along to [your congressperson]. May I also send an email to one of the staff members with more details on the scientific evidence behind my opposition to [name of the bill]? Can you please give me the email address of the appropriate staff person?

If you or your research will be personally affected by the proposed legislation be sure to tell your story succinctly. Anecdotes can be very powerful. When you finish expressing your position, be sure to thank the staffer for their time. If you would like a response, indicate that to the staffer and provide your contact information.

If you call and get the voicemail, just state your name and zipcode and whether you support or oppose the piece of legislation.

your projects are successful, the ultimate goal of your research. They will want to hear of specific examples of how today's research, with the support of federal funds, can lead to the new technologies and therapeutic drugs of tomorrow, which are also critical for stimulating new biotechnology start-ups and new patents. If you have a federal grant, let them know how the money helps stimulate the local economy in your state by supporting jobs in your laboratory and supporting local companies, such as those selling laboratory supplies.

FOUR STRATEGIES TO ADVOCATE FOR SCIENCE

Most of us have a personal narrative of why science is important and why we chose science as a career, but the hard part can be translating that experience into action. Here are strategies that can be used to be an effective advocate. Some are quick and easy, whereas others require a more significant time investment. We also emphasize that noncitizens can engage in many of the same activities that U.S. citizens can, short of voting in elections. Elected officials represent everyone residing in their district, not only those who voted for them. However, individuals should participate only in activities and events in which they feel comfortable and safe. McDowell (2017) provides details on how international scientists can advocate.

Visit your member of Congress

Visit your member of Congress either in Washington, D.C., or at their local, in-district offices. Many scientific societies offer "Hill Day" trips for scientists, some of which are all expenses paid, to visit Capitol Hill. For example, the Coalition for the Life Sciences (CLS) hosts Capitol Hill Days for its member organizations, including the ASCB. Visiting your in-district office and attending town halls are great options when your members of Congress are on recess and spending time in their home state. You can build relationships with the staff in your district because you will often have more opportunities to interact with staff compared with your representatives. Staff are great resources for discussing issues related to science funding and constituent issues and for inviting to events at your institution. In addition to your members of Congress, the elected officials in your state legislature are also key stakeholders for creating science- and innovation-friendly environments, especially for institutions that rely on state funding. On your Congressperson's website you can find information about arranging a meeting or you can do so by calling their local office and requesting a constituent meeting (see Box 1 for a sample script).

When you are visiting your elected officials, make sure to indicate you are advocating as an individual (unless you are officially acting as a representative of your institution), and think ahead about what your message will be. Be sure to practice a 1- to 2-minute elevator speech about your research in general terms, avoiding scientific jargon, and emphasize the importance of federal/state funding for your research. If possible, try to connect your research to an issue that is of importance to the elected official, which can be evidenced by his or her voting record and committee memberships. If you have a personal story connected to the issue for which you are advocating, make sure to tell it, as anecdotes can be powerful. You can ask for meetings without specific legislation in mind, to discuss generally the need for a strong scientific workforce and stable science funding. Being able to associate faces and names with research can be great goal for advocacy. Always be respectful, and after your visit, be sure to reach out and thank your elected officials when they support legislation that benefits the scientific enterprise.

In addition, visiting your elected officials is a great opportunity to extend an invitation for them to speak at your institution or tour your lab. Your elected officials may never have been inside a research lab or had the opportunity to speak to a group of scientists. If you are a principal investigator, it is important for them to see how many people you train or employ in your laboratory, and if you are supported by federal grant dollars, to see first hand how this money is spent. If you are successful in getting your elected official or staff to visit your institution, make sure to work with your institution's government affairs office to make the arrangements.

Another way to engage your elected officials, especially at the state level, is to hold presentations at the state capitol. For example, in Kansas, six of the public research universities showcase their graduate research annually in Topeka, the state capital, in an event called the Capitol Graduate Research Summit. Graduate students present posters highlighting their research and how it benefits Kansans to state legislators and members of the public. State legislators are able to see the results of their investments in basic science research.

Call or write your members of Congress

In addition to visits, phone calls and emails are other ways to make sure your voice is heard. Phone calls are usually most effective before an upcoming vote, with staffers tallying the number of yes versus no calls on a specific issue. It may be helpful to have a script written out for your call, indicating the issue on which you are calling and what your position is on that issue (Box 1). Staff look for trends, so if there is an issue of particular importance in your community, it may be most effective to organize a group of people to call about the same issue in a short period of time.

Emails are another way to communicate, although less effective than face-to-face meetings. In an email, have a specific ask, tell a personal story, and end by offering your expertise and willingness to meet. Although personalized emails are better than form letters, if you are short on time, a form letter is fine for the purposes of staffers tallying yes versus no recommendations for their member of Congress. General email addresses are sometimes available on members' websites, but if you know the name of a particular staffer, sending it to him or her directly is recommended. In the Senate, email addresses are based on the staffer's first and last name and the name of the Senator. For example, if Jane Doe works for Senator Smith, her email is Jane_Doe@Smith.senate.gov. The House of Representative email address for Jane Doe would be Jane.Doe@mail.house.gov.

As always, with any form of communication, be succinct and respectful and understand that your request is more likely to be heard if it is amplified by multiple individuals with a common message. If you would like to send a written letter on an institutional letterhead or organize a letter drive at your institution, send the letters to your in-district office instead of the Washington, D.C., offices.

Social media, such as Facebook and Twitter, are usually ineffective in communicating with your elected officials unless you have a huge number of followers or are launching a coordinated effort to make an issue go viral. You should follow your elected officials on social media, however, as a way to gain information about their activities and views.

Join an advocacy group

Joining an advocacy group is a great way to be more involved in science policy and to start building a network that you can use for professional development and career opportunities even outside of advocacy. The easiest way to get involved with science advocacy activities is to join a scientific society, most of which have a policy committee. For example, the ASCB has an active Public Policy Committee (PPC) to advocate for cell biologists at the federal level. The ASCB is also a member of the CLS, an alliance of professional organizations working together to foster public policies that advance basic biological research and its applications in medicine and other fields. Both of these groups will send out alerts about when you can take action on a specific issue or piece of legislation, as well as keep you informed about the status of science-relevant legislation as it moves through Congress. Groups like the PPC or CLS can amplify

the voices of thousands of scientists. Your time commitment can range from signing up to receive email alerts to seeking membership on a committee.

In addition, there are many science policy groups at institutions run by students and postdoctoral fellows. These groups give members a chance to attend organized workshops, such as working on your elevator speech or a getting crash course in federal appropriations, and also focus on institutional, municipal, or state issues in addition to federal ones. Don't have a group at your institution? Check out the ASCB's Advocacy Toolbox for the guide Starting and Sustaining a Student Policy and Advocacy Group (www.ascb.org/toolbox/).

Volunteer your time

Do not underestimate the power of getting to know the communities in which you live and work. Getting in front of members of the public, whether it is talking to a classroom or holding a science talk at a local cafe, and talking about your science and how supporting science can benefit their lives is important and necessary. This is also a good option for scientists who may be more reticent about venturing into the advocacy and activism spheres. By speaking with your fellow citizens, you can create champions for science. We should strive to introduce ourselves to our community because if people get to know scientists, feel comfortable understanding and interpreting science, and understand the role science plays in their lives, they may be more likely to stand up for science and scientists at marches, town halls, and the polls.

Finally, there are many advocacy groups outside of scientific societies and institutional groups, such as civic organizations, political party coordinating committees, and groups relating to specific diseases, to name just a few. Science touches so many facets of our society that going outside of your academic community is a great way to build bridges and educate yourself and others. This is also a great way to enter the realm of activism if that is something that appeals to you. If you would like to become even more involved in helping to set policy for your community, city and state boards and commissions are always seeking local experts to serve on committees representing a wide range of topics, including public health, climate change, education, and more. Positions on boards and commissions are usually awarded by mayoral or gubernatorial appointment after an application process. A list of openings and details about the application process can be found on your city or state government websites. These are great volunteer opportunities to get your feet wet in local government and explore whether a career in policy may be a good fit, with a time commitment of one to two meetings a month.

Imagine if everyone who participated in the worldwide marches for science volunteered a few times in the next year in their communities, the impact that could have, and the partnerships that could be built!

GO FORTH AND ADVOCATE

Being an effective advocate for science takes practice and persistence, just like learning any other scientific skill. Your goal is to build relationships with politicians and their staffers. Keep yourself educated on the political issues around your area of science, including what bills are being introduced at the state and federal levels. You can also watch congressional hearings via webcast or recordings as a way to keep informed. Use www.congress.gov to find texts of bills and current legislative activity, including livestreams and recordings of committee meetings. In addition to the ASCB and CLS resources already mentioned, here are a few additional resources:

- 314 Action: www.314action.org/.
- 500 Women Scientists: <https://500womenscientists.org/>.
- Policy and Advocacy, American Association for the Advancement of Science: www.aaas.org/informing-policy.
- The Indivisible Guide: www.indivisibleguide.com/.
- Science Policy and Advocacy, Federation of American Societies for Experimental Biology: www.faseb.org/Science-Policy-and-Advocacy.aspx.

Whether you are a long-time advocate or the March for Science was your first foray into political activism, advocacy is a never-ending process that should be an integral part of your regular activities. Although you might think that as one person you cannot make a difference, individual voices can join together into movements. If the March for Science is to be a starting point for a sustainable social movement promoting the importance of science in public discourse, then we need scientists and those who support science to keep advocating long term. Movements can change public opinion and

policy. There is a long history of advocacy and activism in the United States, and we should be open to learning effective strategies for advocacy from a variety of movements, especially those outside the scientific community. If we as scientists are not willing to communicate about the importance of science and to advocate for science, who will?

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