

## **NSF, Science Communication, and You:** Resources for communicating through NSF

The National Science Foundation (NSF) places importance on the communication of NSF-funded science and associated activities to various audiences including the general public and non-experts. This is a resource containing statements on the importance and benefits of science communication, suggestions for communicating effectively, the ideal communication process, and descriptions of all of NSF's communication channels.

### **A. What can you communicate?**

- Research results that are breaking news
- Research results that are not breaking news
- Broader Impacts including activities and outcomes
- Other interesting aspects of you, your research, and your activities connected to your NSF funding

### **B. How do you interact with NSF when you have something to communicate?**

*Ideal communication chain:*

- You contact your Public Information Officer (PIO) who contacts your NSF Office of Legislative and Public Affairs (OLPA) representative directly: <http://www.nsf.gov/news/olpastaff.jsp>
- You simultaneously contact your NSF Program Director.

*Alternative communication chains:*

- You contact your NSF Program Director who contacts OLPA.
- OLPA discovers your news through third-party sources.

*A few examples of when to contact NSF:*

- You are thinking of writing or have written a press release.
- You would like to quote a Program Officer at NSF in your media product.
- You would like NSF to publish your press release on NSF's website.
- You would like to share an interesting result of your NSF-funded research that is not breaking news.
- You would like to share video/pictures of your research or Broader Impact activities.

Note: When creating your communication material, your NSF Program Director or your colleagues can help suggest how to simplify technical language to make it suitable for certain audiences. See the section "What are Some Helpful Tips for Communicating Science?" for other suggestions.

## C. Why should you communicate?

### **NSF believes science is important and essential—and that communicating it is crucial:**

You know that science is important and essential. Communicating your science to others helps them understand why you and people like you invest so much time and effort in the National Science Foundation’s mission “to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense; and for other purposes.”

Throughout your studies you’ve learned to see the world through the lens of a scientist. Not everyone shares that vision with you—businessmen/women, artists, politicians, authors, lawyers, investment bankers, and more all see the world differently. For example, what do you first think when you see an apple tree? Each scientific field even has a different perspective, speaking with its own specialized scientific language.

You have the opportunity to give people a glimpse through your lens when you communicate your science. Why should you? It’s easy for people to forget that science plays an important role in their lives every day—not just in technological applications, but in how the world works. You can show them why they should care about your science and the scientific perspective, helping lead to greater public understanding of the value of NSF-funded research.

### **Speak simply and relatably, with meaning:**

You’d be surprised how many people want to know more details about your science—they just don’t have the years of training you do. Remember, there was a time that you didn’t have that knowledge, either! How would you talk about your science to your younger self? Would you do it in a way that would inspire curiosity?

It’s a common misconception that communicating science to the public or non-experts means diluting the science and intellectual level so much that little substance is left. The only things remaining then are misunderstanding and disappointment, for both the expert and the non-expert. On the other hand, it is also important to not include too much specialized detail for a broad audience. You may think that you are speaking clearly, but using your field’s highly-technical terms and acronyms may cause more confusion than enlightenment. Instead, you can speak in simpler terms about your science, still including detail about what is involved and why it is important without going into thesis-heavy descriptions, but doing so in a way that is more relatable to your audience. Yes, this is a challenge—but so was getting a PhD! You can do it, though it might take some time and effort.

**The effort is worth it:** What are the benefits of communicating science?

- Increased visibility of your science, leading to a more science-literate nation and to greater public understanding of the value of NSF-funded research.
- A strengthened perception of NSF's support for science communication and more knowledge of the nature and mission of NSF.
- An increase in the integration and quality of Broader Impact components in proposals.
- Deeper levels of communication between NSF Program Directors and Principal Investigators.

Your science is cool. Why not share your excitement about it and inspire others?

**D. What are some helpful tips for communicating science?**

### **3 Questions to think about when creating communication materials**

- 1.** Who is your audience? Who are you trying to reach? Other experts in your subfield? Other scientists in other fields (non-experts in your field)? Other non-experts including the general public? Each audience requires a different approach, including considerations for the level, amount of detail, and method. Some audiences require more background information than others or a different emphasis. Some delivery methods or presentation approaches are better suited for specific audiences. It is best to have your audience in mind when creating your material.
- 2.** What is your main message? What is the point you are trying to get across? What do you want the audience to get from your communication? Be sure to structure your materials so that this is clear.
- 3.** Why is your message important? Why are you communicating this in the first place? Why should the audience care about your message? The answers to these questions should influence how you are communicating and what you include.

## 7 DOs and DON'Ts for communicating science

1. DO: Be concise. People experiencing new information often understand more easily if given smaller amounts of material to process as opposed to long explanations.
2. DO: Edit. Once you have finished creating your material, look at it with a critical eye. This might involve taking some time away from it. Perhaps ask someone else to look at it to get another perspective. Don't be afraid to change it if you realize that it is not getting your message across in the right way.
3. DO: Think about including visuals such as pictures and graphics. Pictures of your experiment, your research, your lab, the people involved, simulations you create, and more can all help to communicate your message and provide context.
4. DO: Be prepared. When giving a talk or an interview or answering questions, be prepared and be mindful of the message that you want to get across.
5. DON'T: Structure it like a scientific journal article or a classroom lecture. Communicating science to a broad audience requires a different approach. It is more beneficial to keep the main message at the forefront (the "bottom line" or the "what?/so what?") backed up with relevant information and details than it is to provide a long narrative leading to a conclusion.
6. DON'T: "Dumb it down" or overload with too much information. Those two different extremes can appear condescending or overwhelming. Instead, try to meet the audience where it is – understanding its level of knowledge on your subject and respecting that your audience really wants to know what you have to say. Keeping your audience in mind will help you figure out what amount and type of information is best.
7. DON'T: Use highly-technical terms or acronyms. If your audience has not been working in your field, they may not know all the technical terms or acronyms you regularly use to communicate with other experts in your subject area. If those terms or acronyms are not common or are unfamiliar to the audience either choose other words to use or be sure to explain them in sufficient detail to get your message across. If you are not sure, ask someone who is representative of the audience you are trying to reach.

## **E. How can you improve your interaction with the media and the public?**

**NOTE:** If you're called by a reporter, ask "Can I call you back?" A reporter may call you for an interview about your research or your activities. A best practice when this happens is to ask to call that person back later. Often the information is not needed right away. This gives you time to collect your thoughts and to prepare.

When this happens, contact your Public Information Officer (PIO) and, if it is associated with your NSF award, it is encouraged, but not necessary, that you contact your NSF Program Director. They can help you prepare.

### **7 ways to communicate science and engineering**

- 1.** Volunteer for a science café. Often called a café scientifique, these informal talks take place in a coffee shop, restaurant or university. Part lecture, part entertainment, and mostly Q&A, these events are a great way to interact with science-interested locals.
- 2.** Invite people into your lab. Host a lab open house, a career day, or a tour of your research facility. Invite your local congressperson, high school classes, scout troops, or other youth groups as well as adult organizations, such as a cancer survivor group or veterans association. Plan demos, short talks or poster sessions.
- 3.** Do the same for family and friends. Organize a "family and friends day" and invite staff, vendors and their families to learn about your current research. It's a chance to enlist them in your efforts to educate the public. Let your staff and vendors explain how they contribute to your research.
- 4.** Start a blog. You can keep it short. Talk about your findings and your research process. Create a widget so others can post it on their Web sites.
- 5.** Use social media. Your research group can start its own Facebook, Twitter or YouTube account. Encourage others to become fans so they can stay up-to-date on your activities. Post simple videos or photos of your work in the lab, interviews or announcements. Link them to your blog.
- 6.** Publish results in diverse media. In addition to technical journals, include non-technical literature and websites to reach both public audiences and scientific ones.
- 7.** Partner with other institutions. Museums, science centers, nature centers, schools and related institutions develop exhibits and provide outreach opportunities to engage the public.

## **7 secrets for holding an audience's attention**

- 1.** Audience knows best. Start by polling the audience about some aspect of your presentation topic. This helps gauge your audience's familiarity and interest in the topic while also engaging them right away.
- 2.** Speak from the heart, not notes. Familiar anecdotes need no notes, and personal stories get attention and humanize your presentation. However, they are best delivered extemporaneously. Save your notes for the rest of the speech.
- 3.** Lose the lectern. Instead of hiding behind a lectern and note, relax and move around so you can actively engage with your audience and make eye contact.
- 4.** It's in the hands. Gesture for emphasis, but make those gestures count.
- 5.** Props are better than Powerpoint. Want someone to remember what you've said, then bring a visual aid that can drive the point home. And props provide an opportunity to add humor as well. And humor is almost always a hit if done well.
- 6.** May I have a volunteer from the audience? Magicians aren't the only ones who benefit from audience participation. It can help illustrate principles, makes the presentation memorable and breaks from the monotony of a speaker who just drones on and on.
- 7.** It's not all about you. Allow time for audience questions so they can apply what they've just heard to their own situations.

## **5 best practices for preparing for an interview**

- 1.** Anticipate reporters' questions. If you know why you are being interviewed, you can conjecture the kinds of questions you will be asked – especially the tough ones. From here, you need to fashion appropriate answers as well – especially for the tough questions.
- 2.** Prepare key messages. A successful interview is one where you are in charge. Know what messages and information you want included in this story and be sure to use those “talking points” throughout your interview.
- 3.** Know your stuff. You are far more likely to succeed in an interview if you know your material.
- 4.** Research less familiar and controversial stuff. And if you don't know the material well in certain areas, or some areas pose tricky landmines because of controversy, be sure you have your facts straight. Uncertainty in an interview can cause you to appear untrustworthy.
- 5.** Think about handouts. Imagery and video add considerably to any story, so if you have some you can share, you should. Additionally, if you can provide a follow-up email or written material to a reporter that reiterates your key messages, that is helpful too. But prepare those ahead of the interview if possible.

## **8 questions you can and should ask reporters before and during an interview**

- 1.** What is your deadline? Knowing time constraints lets you also know whether you have time for providing additional information after the interview and whether your own schedule will allow you to participate. A corollary to this is “Can we talk later? I’m in the middle of something at the moment.” It’s a bad idea to enter an interview unprepared. Even, if the reporter has a deadline within the day or hour, ask if you can call him/her back after you have had at least a few minutes to collect your thoughts.
- 2.** What kind of information are you looking for from me? This helps you understand the reporter’s intent and whether and how you want to fit into this story.
- 3.** Who else have you talked to? You can then advise the reporter on who else is important to the story and know whether dissenting views might be included in this story.
- 4.** Is there a news event driving this? This too will explain the story’s urgency and/or angle.
- 5.** When do you think the story will run? They may not know, but it’s helpful if they do, so you can look for the final product.
- 6.** Why don’t you ask me...? If they haven’t asked what you want to talk about, this is a good way to get them to do so.
- 7.** Shall we review? At the end of the interview, this can be helpful. Making sure the reporter understands – especially when presenting complex scientific information or data – betters your chances for reporting accuracy.
- 8.** How can I reach you? If you come up with some additional information for the story, you want to know how to get in touch.

## **7 tactics for when your mind goes blank during an interview**

It's easy to lose your train of thought in an interview. Here are 7 ways to get back on track:

- 1.** Ask for clarification. Sometimes the reason you aren't sure what to say is because the question hasn't be asked clearly.
- 2.** Go back to your key messages. Hopefully, before this interview you had a few key messages that you wanted to be sure the reporter heard. When all else fails, return to those messages.
- 3.** Provide background. "First you need to know..." is a great way to provide context for your answer and stall for a little time on how to answer the reporter's question.
- 4.** Rephrase the question. Are you stymied because you just don't like what they asked? Reframe the question in a way that gets to what you think they SHOULD have been asking you.
- 5.** Incorporate your interview experiences. "No one's ever asked me that before..." or "I've spent 20 years doing this research, and that's never come up before..." buy a little time, so you can think about how to answer the question.
- 6.** Employ neutral phrases. You can also buy some time with "I'm trying to recall when that has happened in the past" or "Let's look at the evidence on that point."
- 7.** Defer your answer. Sometimes you just need to get more information to answer a question, so there's nothing wrong with saying, "I need to get back to you on that..."

## **9 tips to get noticed at a trade show**

- 1.** Start early. Trade shows are often large events with many opportunities to get attention. They are complex machines, so study the following tips and plan ahead.
- 2.** Read ahead. Most shows have free media and communications opportunities on their websites. These are tailored for the event and audience.
- 3.** Show, don't tell. Have demo materials or a prototype at your booth to illustrate your ideas. People will walk right by if you only have a poster. Make them want to stop.
- 4.** Practice your pitch. Keep it short. Don't be too technical. Practice your elevator speech for multiple audiences. Interactions will be spontaneous so be prepared at all times.
- 5.** Keep it simple. Don't make your booth too complicated. Have electronics or a monitor to catch the eye. Make signs concise and engaging. Have space to interact with multiple guests at once.
- 6.** Maximize your credibility. Use the NSF logo. An NSF award means you passed a rigorous merit review process.
- 7.** Bring offerings. Use flash drives to hand out media packets and press releases. Keep handouts visual, tidy and have 300-500 available. When in doubt, have a bowl of candy.
- 8.** Be meticulous. Pay attention to the company or booth description you provide to the organizers. Attendees often decide which booths to visit solely on this. Ask a friend to critique and proofread.
- 9.** Network. Network. Network. Visit the other exhibitors. See your competition and potential collaborators. If you have a portable product, bring two so one can stay at the booth and the other can travel around.

## F. NSF's Communication Development Services

- NSF's Office of Legislative and Public Affairs (OLPA) has different communications training and development services for Principal Investigators.
- These are handled by the External Affairs Group in OLPA's Division of Legislative Affairs:  
[http://www.nsf.gov/staff/staff\\_list.jsp?orgId=5210&subDiv=y&org=OLPA&from\\_org=OLPA](http://www.nsf.gov/staff/staff_list.jsp?orgId=5210&subDiv=y&org=OLPA&from_org=OLPA)
- Services include:
  - On-site, customizable communications workshops
  - One-on-one coaching
  - Webcasted seminars
  - Online learning centers, such as a virtual training course

## G. What are NSF's options for communicating your research and broader impact activities?

### Online Print

- Publicizing pre-written press releases (NSF News from the Field): Promoting/publishing press releases already written by funded entities
  - NOT written by NSF OLPA
  - [http://www.nsf.gov/news/news\\_list.cfm?nt=12](http://www.nsf.gov/news/news_list.cfm?nt=12)
- NSF-written press/news releases: Written by NSF OLPA staff in concert with Principal Investigators/Program Directors
  - NEEDS advance warning and a significant story.
  - [http://www.nsf.gov/news/news\\_list.cfm?nt=2](http://www.nsf.gov/news/news_list.cfm?nt=2)
- Feature stories (NSF Discoveries): Articles that appear on the NSF webpage, written by OLPA staff for general audiences.
  - NOT for breaking news stories.
  - <http://www.nsf.gov/discoveries/>
- Written Q&A Interviews with researchers (Science Lives)
  - Done by NSF in partnership with LiveScience.com, profiling a researcher including both science and personal aspects.
  - <http://www.livescience.com/topics/sciencelives-nsf/>
- High-impact visual images (Science360 News): NSF multimedia portal into all things scientific, technological, and engineering
  - Images could be a slideshow
  - <http://news.science360.gov/>

## Recorded Video

- Video Interviews with researchers: NSF can conduct in-person or remote video interviews with researchers which can then be put online. These are sometimes done in partnership with LiveScience.com as "Science Lives" profiles. This also includes the NSF interview series 'Scientists and Engineers on Sofas (and other furnishings).'
  - NEEDS scientists with good speaking-skills/camera presence
  - <https://www.youtube.com/channel/UCRuCgmzhczsm89jzPtN2Wuw>
  - <http://www.livescience.com/topics/sciencelives-nsf/>
- Publicizing pre-made videos from NSF-funded entities: NSF can post videos from researchers, universities, institutions, centers, etc., on Science360 and promote them via social media including YouTube.
  - <http://science360.gov/files/>
  - <https://www.youtube.com/user/VideosatNSF>
- Short videos: NSF OLPA staff can film short videos at the NSF studio for no cost and show them via the NSF webpage, Science360, and social media. SF OLPA staff can also take pieces of video, graphics, pictures, etc., and edit them into a short video or slideshow, shown in the same ways as just mentioned.
  - <http://science360.gov/>
- Directed video stories (Science Nation): A 3-minute video story on a funded-entity, including off-site filming.
  - NEEDS a compelling story, months of time, and NSF Division/Directorate money.
  - [http://www.nsf.gov/news/special\\_reports/science\\_nation/index.jsp](http://www.nsf.gov/news/special_reports/science_nation/index.jsp)
- In-depth video documentaries/series: NSF OLPA staff can work with producers to create videos highlighting compelling research.
  - NEEDS a significant investment in time and NSF Division/Directorate money.
- Recorded webcasts: NSF has the capability to broadcast on the Internet and to record those programs.
  - This can also be done as an audio-only program.
- Weekly news round-up (Science Now): This fast-paced news round-up reports many of the week's top stories.
  - <http://science360.gov/series/nsf-science-now/89a1b896-e8a7-4176-816e-08b4415308f8>

## Live Video

- Webcasts: NSF has the capability to broadcast on the Internet.
  - This can also be done as an audio-only program.
- Live press briefings: NSF has the capability to broadcast live press briefings on the internet
  - Requires significant importance
- Google Hangouts: A live-streaming web-based video program hosted through Google+ with

NSF staff and/or funded entities.

- Hosted by NSF OLPA staff from the NSF studio; other participants can connect remotely
- Viewers can submit questions in real-time via email or Twitter monitored by NSF staff
- Archived on YouTube when complete

### **Recorded Audio**

- Ninety-second radio news features (NSF Discovery Files): A short radio story that highlights a research topic, airing on 1500 commercial radio stations.
  - Free to radio stations, available on iTunes
  - <http://www.nsf.gov/news/mmg/index.jsp?s=1>
- Podcasts (Science360 Radio): NSF has the capability in its AV studio to record podcasts which are put out on Science360 Radio.
  - Science360 is NSF's multimedia portal into all things scientific, technological, and engineering
  - <http://science360.gov/radio/>
- Large-scale radio documentaries: NSF works with contractors to produce radio documentaries (single episodes or a series) concerning initiatives or large programs.
  - NEEDS money from the interested NSF Division(s)/Directorate(s) and months of time to produce.

### **Live Audio**

- Webcasts and call-in programs: NSF has the capability to broadcast on the Internet.
  - This can be an audio-only program utilizing phones or the web.
- Live press briefings: NSF has the capability to broadcast live press briefings on the internet.
  - Requires significant importance

### **Social Media**

<http://www.nsf.gov/social/>

- Twitter: A "microblogging" site where 140 characters is the maximum length of a post, which could contain text, links, and/or a picture. Each post is called a "tweet" and other twitter users can "Favorite," retweet (share), and reply to posts.
  - NSF has a twitterfeed for the agency and also for each Directorate
  - <https://twitter.com/NSF>

- [https://twitter.com/NSF\\_MPS](https://twitter.com/NSF_MPS)
- See all accounts here: <http://www.nsf.gov/social>
- Twitterchats can be held as online conversations/forums.
- Live-tweeting of events can also be done.
- Facebook: A site to post and share pictures, videos, and links to websites and articles. Users can "Like," share, and comment on posts.
  - NSF has one Facebook page for the entire agency.
  - <https://www.facebook.com/US.NSF>
- YouTube: A site to post and share videos.
  - NSF has a YouTube channel which includes ScienceLives interviews, Science Nation videos, ScienceNow news breaks, archived Google Hangouts, and more.
  - <https://www.youtube.com/user/VideosatNSF>
- Tumblr: A highly-visual blog where pictures, lengthy text, videos, and links to websites and articles can be posted. Posts are arranged in columns and are archived. Users can share posts and add notes.
  - NSF has a Tumblr page for the Foundation.
  - <http://nationalsciencefoundation.tumblr.com/>
- Google+ and Google Hangouts: A site to post and share pictures, videos, and links to websites and articles. Users can "+1," share, and comment on posts.
  - NSF has a Google+ page for the agency
  - <https://plus.google.com/+VideosatNSF>
  - Operates Google Hangouts: A live-streaming web-based video program hosted through Google+ with NSF staff and/or funded entities.
    - Hosted by NSF OLPA staff from the NSF studio; other participants can connect remotely
    - Viewers can submit questions in real-time via email or Twitter monitored by NSF staff
    - Archived on YouTube when complete
- Flickr: A site to house and curate a collection of photos.
  - NSF has a Flickr page for the agency where photos are collected.
  - [https://www.flickr.com/photos/nsf\\_beta/](https://www.flickr.com/photos/nsf_beta/)
- Pinterest: A highly-visual site to post pictures and descriptions, and collect visual bookmarks of webpages. These are pinned to boards by users, who can pin from other users' boards.
  - NSF has a Pinterest page for the Foundation.
  - <http://www.pinterest.com/USNSF/>
- LinkedIn: A site for professional networking connections where you can post your resume and credentials. Users can also write blog posts.
  - NSF has an agency-specific LinkedIn page
  - <https://www.linkedin.com/company/national-science-foundation>