Scientist-Community Partnerships

A Scientist's Guide to Successful Collaboration

{cSD
Center for
Science and Democracy
at the Union of Concerned Scientists

Scientists have a tremendous opportunity to improve access to and understanding of technical information in communities, leading to better solutions to science-based challenges that advance public protections.

People who can freely access and consider scientific information are better equipped to engage in the decision-making processes that support a stronger democracy. When community members and scientists collaborate, they bring together unique strengths and types of knowledge that can help address our most pressing challenges, inform decision making at the local level, and develop solutions that benefit all people.

Scientist-community partnerships, when approached thoughtfully, can bring about meaningful change and help level the playing field for communities that are being shut out of important policy discussions in part because they lack access to scientific information or the ability to evaluate and interpret technical findings. Communities that directly bear the burden of environmental and public health hazards in their neighborhoods often have the least access to scientific and technical expertise—even when their own experience and knowledge clearly show the need for action. These and other communities are enthusiastic about engaging with researchers (see Table 1, p. 5).

Despite the many benefits of these partnerships, it can be challenging to get them under way. Many scientists (including early-career scientists) struggle to effectively participate in public discussions and policy deliberations because they may be used to communicating with technical audiences, or are simply unaware that such collaborative opportunities exist. They also may be concerned about the potential impacts of public engagement activities on their professional advancement or reputation.

Recognizing the need for, and value of, effective scientist-community collaborations, the Union of Concerned Scientists (UCS) created this guide to give scientists and other experts information and tools they need for developing strong, mutually beneficial partnerships. Our goals with this guide are to help you:

- **Understand the mutual benefits of scientist-community partnership**s

- **Bring your scientific and technical skills to bear on the needs and priorities of your community while maintaining your scientific integrity and independence**

- **Navigate the process of building a relationship with community members**

- **Overcome common challenges to getting involved in your community**

- **Access a wealth of additional knowledge and resources on scientist-community partnerships**

For additional information on building strong partnerships, to read more about the case studies presented in this guide, or to share your experiences, visit the UCS website at www.ucsusa.org/scientistsandcommunities.

Why We Made This Guide

Fostering scientist-community partnerships is a natural fit for the Center for Science and Democracy at the Union of Concerned Scientists. Our mission is to strengthen American democracy by advancing the essential role of science, evidence-based decision making, and constructive debate as a means to improve the health, security, and prosperity of all people. We believe improved understanding, access, and inclusion can build trusted and genuine partnerships between scientists and their local communities.

We developed this guide using input and guidance from academics, decision makers, scientists, and community leaders who shared not only their experiences with us, but also the models and frameworks they have used to shape their own partnerships. This guide seeks to illustrate generally recognized best practices for collaboration and to celebrate the critical work of individuals and organizations engaged in these collaborative efforts. As we continue to learn how to enhance the impact and effectiveness of such partnerships, we welcome feedback and experience that will help improve this guidance in the future.

Engagement Can Take Many Paths, and Yield Many Benefits

There are many different ways in which you can use your expertise in partnership with community organizations to bring positive changes on issues you care about.

Your scientific and technical skills could be a benefit to a community group, even if they don't directly relate to your specific area of expertise.

Depending on your expertise, interest, availability, and the needs of the community, you can:

- **Identify** credible sources of information on an issue

- **Help** communities access and understand the scientific research and results most relevant to their priorities or challenges

- **Present and discuss** data at a public meeting

- **Analyze** an environmental impacts statement or risk assessment

- **Serve** as a subject matter expert in the community

- **Work with community members** to identify where more scientific understanding would be helpful

- Help **design, implement, and analyze** surveys or other research activities

- **Cowrite or otherwise help** communities submit grant proposals to appropriate funders

- **Provide informational background** for science-based public comments on proposed policies and regulations

- **Communicate** the scientific and technical aspects of a local issue to decision makers or students

- **Collaborate** with community leaders to educate the media about an issue

- **Serve** on an advisory committee or board of a local organization

- **Lead** a citizen science project with community participants
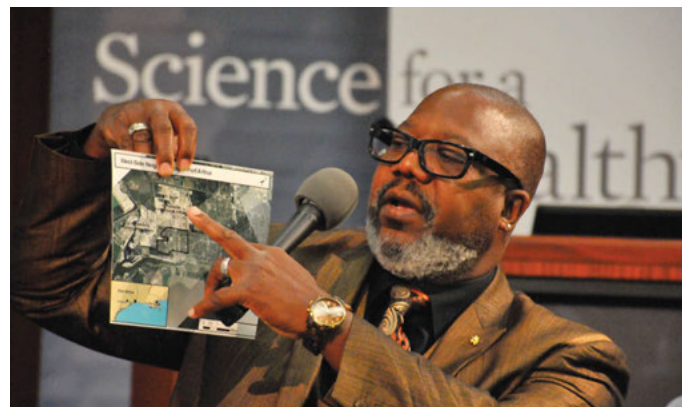
Benefits of Scientist-Community Partnerships

A successful scientist-community partnership brings benefits to both parties. For scientists, this may be an opportunity to not only use your scientific skills or research to address issues affecting people's everyday lives, but also learn or practice other skills—for example, public speaking, media interviews, grant writing, or working with broad coalitions of people. These activities can also be learning opportunities for community members, especially those who are new to civic engagement. Early-career scientists (graduate students, recent graduates, and post-docs) in particular may benefit from the skills gained through community-scientist partnerships, and develop a better understanding of how their research and technical expertise can help affect outcomes outside of the classroom or laboratory. Additional benefits are listed on p. 4.

Being open about the reasons for your engagement and the benefits and outcomes you seek will help establish trust with the community, enabling you to include these skills in a resume or grant/award application, or apply them to other areas of your life, without the appearance of "using" the community group to this end.

Benefits for Scientists Can Include:

Understanding the legal, ethical, and social dimensions of science-based challenges

Applying scientific knowledge and technical skills to address real-world problems in the community

Building and strengthening personal relationships within the community

Building trust in science and scientists, as well as support for scientific research

Collecting data and increasing visibility for their own work

Identifying future research questions

Learning about community concerns and gaining a greater appreciation of local knowledge and community experiences

Benefits for Communities Can Include:

Accessing data and technical expertise

Building scientific and technical understanding

Acquiring and/or applying research skills

Increasing credibility with decision makers

Making their voices heard about critical issues

Informing and participating in scientific research

Gaining a greater understanding and appreciation of scientific issues and process

Building and strengthening personal relationships with scientific and technical experts

MEXICO: PARTNERING TO PREVENT UNTREATED WASTEWATER USE IN AGRICULTURE

An environmental scientist and engineer, asked by a local environmental group to assess the health of a lake in San Miguel de Allende in Mexico, discovered that more than half of local wastewater was being diverted before sewage treatment, much of it to irrigate surrounding crop fields. This discovery led to a project involving multiple community stakeholders to gather information about health and environmental impacts, document their findings, and advocate for solutions with local and federal authorities. Stakeholders are continuing to meet with local officials to educate them on the issue.

TABLE 1. How Scientists and Community Members Want to Engage with Each Other

Community Members

Ways in Which Scientists, Public Health Officials, and People with Technical Expertise Can Engage with Communities on Food Equity	% Respondents Who Feel These Engagement Opportunities Exist in Their Community, or Are Needed	
	Exist	Needed
To fill in research or data gaps.	9%	71%
To help develop metrics to evaluate the impact of your work.	14%	71%
To form a community-researcher partnership to participate in the research and policy process.	21%	78%
To help you or your community write grants for special projects that increase access to healthy food.	24%	88%
To inform you of relevant data sources and availability.	26%	80%
To serve as a bridge to the scientific, technical, and academic communities to help bring awareness and promote the communities' work and needs.	26%	84%
To serve as an advocate for greater community participation in the research and policy process.	26%	81%
To help develop policy solutions to propose to local or state officials.	35%	87%
To inform you of the latest research on food and its impacts on health with community-friendly materials (fact sheets, toolkits, videos).	43%	82%

Scientists

What Kinds of Activities in Your Geographic Area Would You Want to Participate In?	% Respondents
Connect with local elected officials or policy makers to offer scientific information and expertise	59%
Offer technical expertise or assistance to a community organization	56%
Serve on advisory committees to help inform local policy decisions	54%
Host or participate in public education events on science policy issues	45%
Connect with reporters to help inform coverage of scientific and science policy topics	38%
Write a letter to the editor or an op-ed defending science and combating misinformation	37%
Provide testimony at public hearings related to my expertise	34%

In two separate surveys, UCS asked community members and scientists how they would like to engage with each other. While the surveys were unrelated, several similar engagement opportunities rose to the top in both groups, underscoring the need for and importance of building strong collaborative partnerships.

Notes: The community survey was conducted in 2015 among North Minneapolis residents on the subject of food equity; 112 responded. The scientists survey was conducted in 2015 among UCS Science Network members; 346 responded. Respondents of both surveys were allowed to select multiple choices.

An Integrated Approach to Making a Difference in Your Community

Before connecting with community members, it is important to consider how to approach the partnership. There are many different models of partnership; the most effective and engaging are built on mutual respect and benefits, and open communication.

Building respect and trust is essential for a successful and mutually beneficial partnership, regardless of a project's scope or timeline. The illustration and table below offer a useful example of a values-based framework for partnering with a community organization; other frameworks are described in the Resources section (p. 14). While this guide focuses on scientists proactively reaching out to communities—largely because community members may not be aware of your interest in collaborating—the framework in Figure 1 and Table 2 also applies to partnerships initiated by community members.

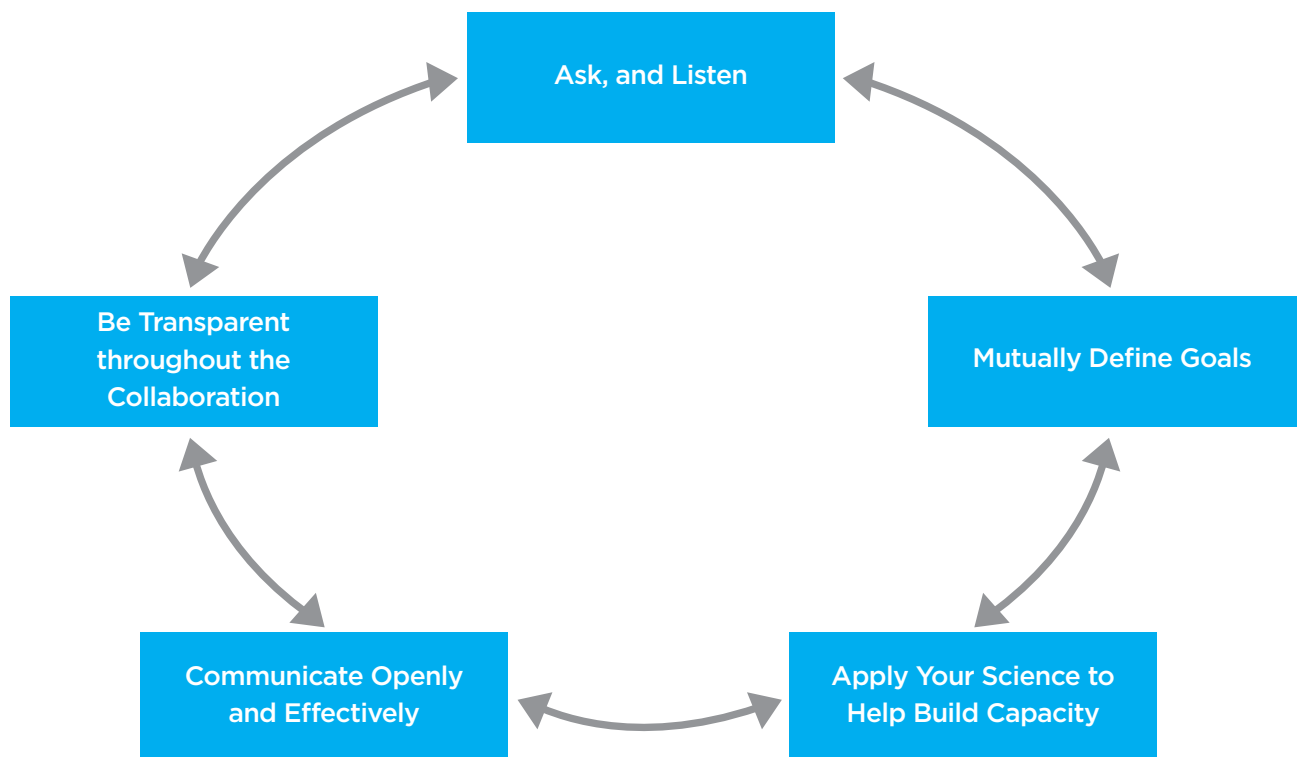FIGURE 1. Effective Collaboration Is an Iterative Process

TABLE 2. Focus on Values for Meaningful Engagement

Engagement Value	What It Means
Ask, and Listen	Acknowledge that there are types of knowledge beyond the scientific and technical data; listen to community members about their needs; and respect their history, culture, and priorities. Communities are well aware of the impacts they face, and they possess unique knowledge about the issue through their experience, history, culture, and interactions with their neighbors and environment.
Mutually Define Goals	Scientists and community members may operate with differing cultural norms, expectations, and ways to express themselves. Make sure you're on the same page and in agreement when you chart out a collaboration's purpose, desired outcomes, and expected involvement (e.g., timeframes, deadlines, capacity).
Apply Your Science to Help Build Capacity	Scientific expertise can help provide communities with information that makes them stronger advocates. Your interactions with community groups can add value to their cause, be it through technical knowledge, skills, connections to other researchers, or credibility with decision makers or the media.
Communicate Openly and Effectively	Science is often steeped in technical terms, but communicating without jargon is critical not only to building understanding of your work, but also to bridging the divide that may exist between scientists and the public. Consider the audiences with whom you will be communicating (e.g., local residents, decision makers, the media), their needs, and their understanding of the topic to shape how you share your research and scientific knowledge.
Be Transparent throughout the Collaboration	Transparency and accountability from the start are essential to building trust. The information you gather and share with communities needs to be based in the questions they are asking. If you involve the community in a research project, be sure to share your data and findings with community members first, before disseminating it to broader audiences. Stay in close contact with the communities you work with and raise issues as soon as you notice them.

ON LISTENING TO THE COMMUNITY:

{ *"If you want to learn how to start a community partnership, show up, shut up, eat up."* }

— Rajul Pandya, program director, American Geophysical Union Thriving Earth Exchange

ON BUILDING COMMUNITY CAPACITY:

{ *"We don't want our day saved, we want to save our own day."* }

— Irma Muñoz, founder and president, Mujeres de la Tierra

ON OPEN COMMUNICATION:

{ *"Planning for regular two-way communication is vital to creating science that answers questions pertinent to communities and practitioners."* }

— Lauren Richter, PhD student in sociology, Northeastern University

Getting Started in a Collaborative Partnership

Entering a partnership with a community may feel intimidating. But with exploration, consultation, and planning, you can help narrow your focus and identify the best paths forward for engagement.

First, think about the role you want to play:

- What issues are you interested in? What issues are confronting the community? They may be broad (e.g., public health, renewable energy) or narrow (e.g., testing for lead in drinking water, siting a wind turbine in your town).

- What expertise and support do you feel you can lend to the issues?

Then, think about the resources in your community:

- Who are the leading voices in the most affected areas on the issue?

- What kinds of groups work on the issues of interest? Examples include

    - Local boards or policy councils (e.g., food, public health, transportation, waste)

    - Local environmental or civic organizations

    - Church groups

    - Neighborhood associations

    - Social justice groups

    - Public health laboratories

    - Elected officials' offices

CANADA: ENGAGING WITH COMMUNITIES GOES BEYOND SCIENTIFIC RESEARCH

Megan Adams, a PhD student at the University of Victoria and a Hakai-Raincoast Scholar, studies predator-prey systems in collaboration with members of the Wuikinuxv band of First Nations people, who accompany her and volunteer the use of their boats in return for technical training. She found that, more often than not, the open communication needed to build strong and transparent relationships happened not during the research itself, but during moments like eating and feasting together, and sharing in celebration and ceremonies. She says, "I will not pretend an engaged research process comes without its challenges. . . . It has been during conversations in the local restaurant over a cup of coffee, a chat down at the wharf, or a walk to the river with the school kids that I have found space to overcome these challenges. These are the times where I have begun learning to listen."

Photo: © Scott Rogers

- Where can you connect to these groups? Examples include

  - Regularly scheduled or special meetings hosted by the organizations of interest

  - Town halls

  - Educational or social events

  - Social media (e.g., a group's Facebook page)

Feeling overwhelmed at the prospect of starting a brand-new partnership? Consider a third-party connector. UCS and other groups including the American Association for the Advancement of Science's On-Call Scientists, the American Geophysical Union's Thriving Earth Exchange, Public Lab, and Toxics Action Center can help facilitate the process of connecting you with communities that need access to your expertise. More information on these groups is in the Resources section (p. 14).

While keeping in mind the engagement values in Figure 1, reach out to the community group(s) you identified through the following steps.

1. Reach out to the leadership or members of the group and ask to have a conversation about the group's work. Use the first meeting to get mutually acquainted—say, over coffee or a meal—without immediately diving into a proposed collaboration, as your thoughts and ideas might evolve over the course of the conversation. Ask questions about the history of the group, and what inspired you to contact them, and actively listen.
   Note: In environmental justice (EJ) communities— communities of color, low-income communities, and tribal communities that are disproportionately affected by problems such as climate change, environmental contamination, and lack of access to healthy food—it is especially important to employ the "ask and listen" process to understand the historical context and consider how your participation can help address these issues.

2. If the group is interested in pursuing a partnership, create guidelines for collaboration:

   a. Put together an action plan that makes sense for both parties. Remember it may take a few rounds of discussions to shape and finalize one. Include roles (e.g., what the community members will do, what you will do, how the roles will support each other), deadlines, milestones, deliverables, how often to check in, and preferred modes of communication.

CALIFORNIA: ESTABLISHING GUIDELINES FOR CONSTRUCTIVE PARTNERSHIPS

Between 2014 and 2015, Mujeres de la Tierra (MDLT), an environmental nonprofit working to empower women, collaborated with UCS to connect five communities in Los Angeles County with local scientists to help answer questions on oil and gas development. Part of the introductory process was separate calls with the scientists and community representatives where they could speak freely about their concerns and expectations. This platform provided a comfortable and confidential place for them and encouraged them to communicate with MDLT and UCS when needed.

Clear and concise expectations were important for both the community members and the scientists, particularly around time constraints, volunteerism, transparency, and mutual benefits and respect. Community members benefited from having more access to scientific information and experts on oil and gas development; scientists had additional opportunities to collect data for their work and get their research in the hands of local decision makers. Scientists who were faculty were also able to get their students involved in this project as a practical way of applying scientific skills in the community.

ALABAMA, OREGON, AND TEXAS: COMMUNICATING FINDINGS ON WOMEN'S RIGHTS

In 2015, the United Nations Working Group on the Issue of Discrimination against Women in Law and in Practice (UN WGDAW) reviewed US laws and policies related to women's access to health care, education, and employment. The working group focused on Alabama, Oregon, and Texas—three states that, based on initial research, had both positive and negative laws and policies affecting women's rights. AAAS On-call Scientists Initiative facilitated a partnership between the UN WGDAW and a statistician, who worked with the US Human Rights Network to compile relevant data and present the findings to the working group in advance of community meetings it scheduled in the three states. She also participated in a meeting of civil society organizations with the UN WGDAW in Alabama; her personal involvement in that meeting helped the delegation better understand the context of the statistics and what they meant in the day-to-day lives of women in Alabama. The UN WGDAW cited the state findings in its preliminary report and is expected to use the information in its formal report, to be presented to the UN Human Rights Council in 2016.

b. Discuss the anticipated time frame for the collaboration, and whether it is dependent on outside factors (e.g., a town council meeting, a funding application deadline, a regulatory comment period) that may shape the scope of work. A partnership can be short term or long term; the length of the partnership will not necessarily reflect its success.

c. Assess whether you have the time and capacity to take on all the work that needs to be done. If your role, project timeline, and deliverables are not in line with what you can honestly commit to, make it clear up front and work with the group to explore potential solutions—for example, finding a different role you can play that is still useful to the community, or recruiting colleagues or students to assist.

d. Be up front that the facts may not necessarily support a particular course of action, and if you are doing research or analysis, it may not yield the specific results the group may expect—and in some cases, the data might even be counter to community beliefs.

e. Discuss needs for resources and, if applicable, compensation for both parties at the beginning. Reach out to institutional or peer support

systems if you have questions or need additional capacity. Community members will also need support, especially recognition of their time and knowledge, and may also need or request compensation (if it is available) if they are involved in research or data collection.

For examples of partnership agreements, see the Resources section on p. 14.

3. Build a trusted relationship with the community throughout the project:

a. Learn from one another. Community members can share the political and historical aspects of issues of concern, and the stakeholders involved in it; assist with collecting data; or introduce scientists to decision makers and local journalists. Scientists or technical experts can share information about what studies have been done previously, and what data gaps exist. Both partners can work together to write grants and reports, or copresent results to different audiences.

b. Communicate results and provide data. The information that scientists collect should be provided to the community partners so they can fully understand the findings as well as the limitations of the study. Work with the community to identify how they prefer the results to be communicated—for

example, in a written summary, in a public presentation, and/or on a website—and whether additional formats are needed for use with relevant stakeholders and decision makers.

4. Evaluate the partnership at the end of the project. Establishing goals and a timeline at the beginning can help give clarity around when one project is finished,

but it may often feel like there's always one more thing to do. Make the time to discuss with your partners what happens after you've achieved your outcome or reached a milestone. Potential evaluation questions include:

a. What worked well, particularly with regard to communication, setting goals, implementation of your plan, and accomplishments?

b. What, if anything, would you change in how you approach future collaborations?

c. What comes next for community action and scientific analysis? How should data, contacts, and responsibilities be transferred?

d. How would you like to keep in touch about future opportunities?

e. How much time would you like to spend staying involved moving forward?

COLORADO: THE SAN JUAN HEADWATERS FOREST HEALTH PARTNERSHIP

Through open dialogue and trust, the Colorado-based San Juan Headwaters Forest Health Partnership developed science-based collaborative priorities for managing and monitoring vegetation and forest health in the southwest region of the state. By bringing together land managers, businesses, community members, and environmental groups to discuss project needs, locations, goals, and impacts before the projects are initiated, San Juan Headwaters successfully addressed concerns and built support for projects that are determined to be relevant and important, not just for the local ecosystem but also for the local economy and public health.

Identifying and Overcoming Barriers to Engaging with Communities

Scientist-community partnerships can be very rewarding for both parties, but perceived and real barriers can keep scientists from engaging with communities.

Scientists interested in partnering with communities may face a number of challenges that could result in their shying away from engagement. In addition to those listed in Figure 2, scientists can also face conflicts of interest and may encounter reluctance from certain communities to work with them. Building on the guidance in earlier pages, we outline some key strategies to overcome often-encountered barriers to engagement.

Balancing Science and Advocacy

If you have concerns about your work with the community being questioned by your peers or supervisors, you can take extra precautions. As part of the plan you develop with the community members, be explicit in the role you will play, the questions your data may answer, and what you will and will not address. Share this plan with your supervisor or

FIGURE 2. Common Challenges to Engagement That Scientists Face

In its 2015 annual survey to Science Network members, UCS asked respondents, "What do you think are the biggest barriers for local scientists and technical experts to engage more with local community groups or policy makers?" This chart reflects the responses of 434 Science Network members; respondents were allowed to pick multiple choices.

colleagues. Acknowledging that your science or research is driven by pursuit of information and not biased to serve a specific outcome will help address concerns, as well as set the stage for an honest partnership.

While addressing professional concerns with your institution or peers about your engagement with the community is important, remember that as an individual you have the right to civic participation. Adrian Shelley, executive director of Air Alliance Houston, shared this anecdote at a 2015 town hall meeting on community-scientist partnerships: "I was talking to an academic partner. . . about putting health disparities on [a] map. His institution didn't want him to do that because mapping health disparities has a social agenda. . . . There's no social justice agenda in facts. Facts do not have an agenda. It's your responsibility as a scientist, as an organizer, as a community member, to find those facts . . . and figure out what it is you need to do with them to make life better for everybody."

Stepping Outside Your Comfort Zone

Many scientists get nervous about communicating to non-scientists; indeed, it can be challenging to make scientific concepts accessible. Fortunately, there are many resources available to scientists who are interested in becoming better communicators (see the Resources section on p. 15), and with practice these skills will help you convey your work to not only community groups but also legislators, reporters, students, funders, and other audiences.

Identifying Opportunities in Your Own Backyard

A common barrier to engagement is simply not knowing what issues and challenges are in your area. Opportunities for scientist-community partnerships exist in most locales, even if they might not be readily apparent. See p. 8 for a list of the types of groups you may have in your community; you can also contact a third-party connector (see the Resources section on p. 14) for additional ideas.

Finding Support for Your Partnership

If funding or compensation is helpful or necessary in order to collaborate on a community project, there may be resources available to you through university extension programs or public engagement centers on your campus. If you are a principal investigator and the partnership aligns with your research, you may be able to write this type of engagement

MINNESOTA: SCIENCE AND HERITAGE COMBINE TO GIVE HEIRLOOM SEEDS A NEW LIFE

Dream of Wild Health (DWH), formerly known as Peta Wakan Tipi, is a Native American nonprofit that provides agricultural and educational programs for the Twin Cities' urban Native community. In 2000 the organization received a gift of indigenous seeds from Cora Baker, a Potawatomi elder and seed keeper. DWH started the Indigenous Corn Propagation Project to understand how best to grow these seeds—knowledge displaced over the years by the reservation-based commodity food system—and to help rebuild health in the Native community by returning to the traditional foods of their ancestors. As part of this project, DWH developed a partnership with the University of Minnesota; together, they raised nine varieties of indigenous corn, with the university providing technical expertise during the growing process as well as expertise on health and nutrition curriculum.

into your grant proposals. You could also seek support from your institution or academic department, local foundations, government agencies, or one of the third-party connectors mentioned on p. 14. Ensure that you apply for funding in consultation and collaboration with community partners, requesting support for both sides as needed.

Building Communities' Trust

Some groups may feel reluctant to work with scientists directly, and understandably so—in the past, some researchers have breached the public trust by using unethical practices such as experimenting on people without their consent, studying the community without providing the results, and being dismissive of community experiences and local knowledge. In other cases, communities may perceive a conflict of interest due to the researcher's funding sources or previous research findings. In such cases, it is especially important to take the time to build trust and respect with the community before any research or analysis begins. If you are not a member of the community you are partnering with, there may be skepticism or suspicion regarding your motives, and thus it may take longer to build trust. In addition to following the trust-building and listening steps presented earlier, it may be useful to build in additional time to engage with the community in ways unrelated to your research, such as socializing with community members and participating in or contributing to community activities.

Additional Tools and Resources

UCS has a wealth of information on building strong scientist-community partnerships at *www.ucsusa.org/scientistsand communities*. In addition to an electronic version of this toolkit, you can view or read webinars, case studies (including many of the ones included in this toolkit), and videos. You can also share your own experiences or questions on scientist-community partnerships.

Below are links to other helpful UCS online resources, as well as to various organizations and agencies that have created helpful resources for both scientists and community members.

Partnership Building Principles and Frameworks

- **Union of Concerned Scientists: Building Community-Academic Partnerships**
  UCS convened a broad array of stakeholders to discuss institutional inequities and injustices in the food system. Our webpage includes frameworks for building respectful and trusted partnerships that value scientific and community knowledge and experience, and examples of partnership agreements.

  www.ucsusa.org/center-for-science-and-democracy/events/ food-justice-science-democracy-community-forum

- **Partners in Excellence: Creating Effective Strategic Partnerships**
  This organization explains how the most successful partnerships share risk, resources, rewards, vision, and values.

  www.excellenc.com/Partnerships.htm

- **National Institute of Environmental Health Sciences: Successful Models of Community-Based Participatory Research**
  This summary report looks at various examples of community-based participatory research through a public health lens, with a focus on partnership building, processes, and evaluation.

  www.hud.gov/offices/lead/library/hhts/NIEHS_ Successful_Models.pdf

- **Stakeholders in Climate Science: Beyond Lip Service?**
  This article published in *Science* compares a number of research networks and how they develop knowledge, particularly with regard to how local stakeholders are involved in decision making processes.

  www.blogs-mri.org/?p=897

- **Engaging Scientists and Engineers in Policy**
  This coalition of scientific and engineering societies has curated resources and opportunities for scientists and technical experts who are interested in exploring the policy side of community engagement.

  www.science-engage.org

Third-party Connectors

- **Union of Concerned Scientists**

  www.ucsusa.org/scientistsandcommunities

- **Thriving Earth Exchange** (an initiative of the American Geophysical Union)

  www.thrivingearthexchange.org

- **Toxics Action Center**

  www.toxicsaction.org/how-we-can-help/network-of-experts

- **Public Lab** (The Public Laboratory for Open Technology and Science)

  www.publiclab.org/getting-started

- **On-call Scientists** (an initiative of the American Association for the Advancement of Science)

  www.aaas.org/oncallscientists

- **The New England Environmental Justice Network**

  www.northeastern.edu/ejresearchnetwork

Improving Communication Skills

- **Scientists as Stronger Community Partners**
Watch two webinars from UCS and Coming Clean
(a collaborative of environmental health and justice
experts that promotes human health, environmental
protection, and economic fairness): "Hear Me
Out: Making Meaningful Connections through
Storytelling" and "Step Out of the Silo: Science
through a Community and Social Justice Lens."

  www.ucsusa.org/scientistsandcommunities

- **Storytelling to Make Meaningful Connections and
Science More Inclusive**
Mónica I. Feliú-Mójer, vice-director of Ciencia Puerto
Rico and program manager for iBiology, offers a robust
collection of storytelling and science-communication
resources.

  *www.cienciapr.org/es/blogs/members/storytelling-make-
meaningful-connections-and-science-more-inclusive*

ABOUT THE AUTHORS

*Melissa Varga is the outreach associate and community
manager for the Center of Science and Democracy at the
Union of Concerned Scientists. Charise Johnson is the
research associate for the Center. Danielle Fox is the senior
outreach coordinator for the Center. Pallavi Phartiyal is the
senior analyst and program manager for the Center.*

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[**Scientist-community partnerships can bring about meaningful change and help level the playing field for communities that are being shut out of important policy discussions. This guide can help you foster mutually beneficial and impactful collaborations in your community.**]

North Cascades National Park

Union of Concerned Scientists

The Union of Concerned Scientists puts rigorous, independent science to work to solve our planet's most pressing problems. Joining with citizens across the country, we combine technical analysis and effective advocacy to create innovative, practical solutions for a healthy, safe, and sustainable future.