Welcome to the FGSA Spring 2018 Newsletter!

This issue focuses on physics outside the lab. You’ll find articles about science advocacy on Capitol Hill, physics education and the shortage of qualified physics teachers, and the climate and culture within our field. We’ve also brought back Dr. Crystal Bailey, Careers Program Manager at APS, for another career column—this time, she talks about the pitfalls of cold calling and provides advice on how to successfully build your professional network. We will also be coming out with a summer newsletter with articles on the transition from undergraduate life to grad school (requested by a reader!), as well as a piece on sexual harassment in the field.

As always, your comments are welcome! If there are any topics you’d like to see discussed in future newsletters or if you’d like to submit feedback, feel free to email FGSA at fgsaexec@aps.org, or use our Google Form.

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Beyond the Cold Call:
How to Supercharge Your Career Network

By Crystal Bailey, Careers Program Manager at APS

You’ve probably heard the phase, “it isn’t what you know, but who you know” when referring to finding new professional opportunities. And even though it might fly in the face of what you have experienced as a physics graduate student—where you’re used to being evaluated primarily on your physics knowledge—who you know is indeed the single most important factor when it comes to furthering your career path, whether in or out of academia.

It has been estimated that approximately 70% of people have gotten their professional breaks through their network. This means that your chances of being successful at connecting with a potential employer, or with someone whose career you’re interested in learning more about in an informational interview (for more information about informational interviews, please visit our Online Professional Guidebook) depends greatly on how well you’ve been able to build and leverage your own professional network.

Why “Cold Calling/Emailing” Seldom Works

These days we are all constantly bombarded with requests for our attention through phone calls and emails. Busy professionals are constantly having to decide where to focus their energy based on the return on investment of a response. Some requests merit immediate action (such as those tied to that person carrying out their job responsibilities). Others are less immediate and can be responded to when, or if, the person has time. Still others offer no direct benefit to the person for responding; these requests may be ignored. The problem with cold calls/emails is that they usually fall in the last category – if the person doesn’t stand to gain something from the interaction, they are less likely to respond. The challenge facing job seekers who wish to reach someone in a company is standing out above the “noise” of the requests that bring little to no return on investment for that person.

However, one thing that works to your advantage is our natural tendency to respond to those we have something in common with. Imagine meeting someone at a conference who grew up in your same hometown, was advised by one of your collaborators, or was a friend of one of your friends, as opposed to someone without that common background. Perhaps you would feel more drawn to the person with whom you had a shared experience. The truth is that when we are able to reach out to someone through a shared connection – a mutual friend, membership in a society, or shared alma mater – we rise above the “potential energy barrier” which keeps all those other requests the other person is dealing with at bay. This makes that person more likely to help us by giving us information, or by helping us find the right contact for insights into a job opportunity.

How to Build a Useful Network

One way to build a professional network is to take advantage of membership in professional societies, or alumni groups. As an APS Member you have access to the Membership Database, which you can use to search for other members by Company, Government Lab,
and other types of affiliation - you can even narrow the search down to your state to identify local contacts. Through your institution’s alumni office, you can gain access to information about what former physics graduates of that institution are doing, along with their contact information. Contacts gathered through either of these means would be a great first step in building more professional relationships. When you reach out to these individuals, be sure to mention your shared connection through APS or your institution.

You should also take advantage of professional society meetings to expand your network. Most of these meetings have built-in opportunities for attendees to meet each other (e.g. receptions, lunches, happy hours). Attend these kinds of events whenever possible, and be prepared to talk to everyone you meet about your professional goals. You will be amazed at how many opportunities you can uncover through informal conversations.

Lastly, you should take advantage of resources such as LinkedIn®. LinkedIn® is a powerful tool because it can give you access to all of your 1st degree (people you know directly) and 2nd degree (people who your 1st degree connections know) connections at a glance. Let’s say you wanted to find someone in a specific company to contact for an informational interview. You could go into LinkedIn® and perform a people search, typing the company name in the “Current Company” field, and checking the 1st and 2nd degree connection boxes in the search window. Each of those search results would show you your shared connections to that person, i.e. your 1st degree connections who could provide an email introduction for you. Having that mutual contact introduce you to this new person takes the guesswork out of how to reach out – and as we’ve already discussed, it will also increase the likelihood that they will respond to your request for help.

Taking advantage of your professional network is the best way to learn about opportunities outside of your immediate sphere of experience. However, if all else fails, and you find yourself in a position where a cold call or email is the only option, do your research and try to contact the person who has experience most relevant to your interests – and if possible, try to offer something in return for the exchange, for example helping them to solve a technical problem or providing them with information on a topic that you have some expertise in. With patience, and through trying a variety of techniques, you should successfully be able to forge a variety of personal connections that will benefit your professional development for years to come.

Spring Spotlight:
APS March and April Meetings

By Rachael Mansbach and Midhat Farooq

SCIENCE, POLICY, AND CONNECTIONS AT APS MARCH MEETING

APS March Meeting, with its over 11,000 scientists meeting over a period of more than four days, can be almost overwhelming in its sheer scale, and yet one of its charms lies in its ability to foster small-scale interactions and create and refresh connections. In the middle of Monday morning, I was climbing the escalator from the bottom to the top floor of the Los Angeles Convention Center, having arranged to meet up with a colleague I’d been introduced to by my advisor, when I saw another member of FGSA having an animated conversation with someone I knew only slightly. “I know, moving is difficult, but if you need any tips, let me know!” she was saying.

I joined the conversation. “Where are you moving?” I asked.

“Oh, the Philadelphia area.”

“Philly? I know Philly. I did my undergraduate at Swarthmore, it’s a small liberal arts college about twenty minutes outside of the city.” I always add that rider because Swarthmore College is very small, and

I only have about a fifty percent success rate of people knowing where I’m talking about.

To my surprise, the speaker grinned a little awkwardly. “Oh,” she said. “I’m starting as Swarthmore’s newest faculty member next year.” I burst out laughing; we started talking about all the good points of the Swarthmore Physics Department--and out of the crowd materialized Amy Graves, one of my professors at Swarthmore and the only one I know who routinely attends March Meeting. “Did someone say Swarthmore? Oh, hello!” she said to us, both of whom she knew from obviously very different contexts.

This little episode is indicative of how things happen at APS—through small scale interactions that cause a ripple effect until somewhere, at a higher level, maybe on a country-wide level, something changes. Certainly the concept was addressed in detail at this year’s FGSA session, which covered science policy and the importance of influencing the government in a time when partisanship and lack of cooperation are at an all-time high. The discussion focused on grassroots advocacy and how telling one person’s story can make a big difference.
The FGSA session was chaired by Danielle Scheff, a member of the APS executive board, and consisted of talks and discussion led by two members of the APS Office of Government Affairs. First, Francis Slakey, the APS Chief Government Affairs Officer, told us about how APS successfully developed a grassroots-based advocacy policy to successfully reverse the proposed budget cuts to science in 2017. They came up with a new approach he referred to as “integrated” advocacy, which involves identifying a target politician, finding one of their constituents whose individual experience is highly relevant, and then moving to grassroots advocacy in their district. APS successfully employed this strategy in 2018 to protect graduate student tuition waivers from being labeled as taxable income. “Your voice made a huge difference,” Slakey told the students attending the session, and he went on to describe how APS’ new strategy of being “nimble and responsive” had strongly paid off. Although he cautioned that there are still many issues to be addressed in 2019, he left me, at least, with a sense of confidence that I have not felt in quite a number of months.

After Slakey had finished his overview, he turned the floor over to Gregory Mack, the Manager of Grassroots Advocacy, who led the next, more interactive part of the session. He presented the five top issues that the APS Office of Government Affairs had identified as most pressing in the next year:

- federal research funding
- infrastructure
- science education
- H1-B Visas
- climate change

He asked the room to vote on the two they thought were the most important, following which he solicited other issues from the audience. Three more issues were identified: (1) graduate student unions, (2) gun laws on campuses, and (3) support systems for under-represented groups. When asked who was concerned about these problems, a large number of people raised their hands.

Mack continued to solicit input from the audience as he described potential involvement for graduate students, giving examples of how the Office of Government Affairs brought graduate students to meet with senators and congresspeople in DC and in their own states, as well as describing options for students to get involved as postdoctoral fellows or summer interns.

He repeatedly highlighted the importance of the personal angle—something that, as physicists, we often overlook. Anecdotes are not data, but if properly tailored to the audience, they can have a much stronger impact. Mack had the audience members pair up and practice explaining why a particular issue was important to them. My neighbor turned out to be a young physicist named Mary Ann Mort, who had just finished her undergraduate degree. She told me that she felt the session was invaluable, that a large number of people raised their hands.

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Another small-scale interaction: exactly the kind of microscopic alchemy that leads to friendliness and cooperation, and it is this friendliness and cooperation surfacing from these interactions that Gregory Mack and Francis Slakey are tapping into in order to advance the cause of science in a highly-charged political environment. They, and others, were even able to discuss the overly-fraught topic of climate change without animosity with members from any political party—climate change is, in fact, now recognized as a “direct threat to US national security.”

So, yes, March Meeting is huge, and there is so much science-related work going on that it can be difficult to know where to focus your attention, but don’t worry: every little interaction leads to another and another until we build up a resonant frequency of change in whatever area is most important to us.

By Rachael Mansbach

It’s April, and unlike last year, this means that the annual APS April Meeting is just around the corner! The meeting will take place Saturday, April 14th through Tuesday the 17th, with a couple of pre-meeting sessions on Friday.

Besides all the great scientific research talks that I am sure you all have marked on your calendars, as well as the kick-off Welcome Reception and the first poster session, on Saturday, April 14th, 5:30-7:30 pm, don’t forget about some of the other events, including social outings, networking activities, and student-specific sessions:

- Maybe you want to brush up on your networking abilities at the Professional Skills Development Workshop for Women on Friday, April 13th, 8 am-4 pm
- Satisfy your curiosity about career path options at the Preparing Students for Careers Outside Academia event organized by the APS Forum on Education on Sunday, April 15th, 12-2 pm
- Perhaps you’re interested in participating in the Roundtable: Improving the Climate in Physics for LGBT+ Physicists on Sunday, 6:30-7:30 pm
- If you are passionate about outreach and are looking for new ideas, you can attend the Innovative Ideas for Engaging the Public sponsored by the Forum on Education and Outreach and Engaging the Public on Sunday, 1:30-3:18 pm
- There is even a Forum with Congressman Bill Foster (the only Physics PhD in Congress!) on Sunday, 12-1:30 pm
- Whatever your interest, make sure you check out the meeting schedule to see if any specific events catch your eye!

Lastly, FGSA would like to remind everyone that APS has a Code of Conduct for meetings that everyone should read and follow.

We wish all attendees a happy meeting!

By Midhat Farooq
Forty-eight volunteers representing APS’s Unit leadership took to Capitol Hill on Feb. 1 to make the case for critical science policy issues. The volunteers represented 35 Units and participated in 93 meetings, representing 25 states and one territory during the Society’s first Congressional Visits Day (CVD) in 2018.

“Meeting physicists interested in advocacy from all over the country was an amazing experience,” said Joshua Einstein-Curtis, chair of the APS Forum on Graduate Student Affairs and a Ph.D. student at Colorado State University.

“Graduate students and higher education have been under attack by several groups, and there is a need for the USA to protect our standing in the world. Without our higher education institutions and the open nature of our society, we don’t have much to offer to science and technology firms when compared to other countries. We need to find ways to raise the awareness of science and work toward common goals.”

Einstein-Curtis said the CVD was “very well organized” and that “meeting with congressional staffers was an experience unlike any other I’ve had.”

He added, “We found that the staffers were excited by some the topics that we were presenting. I felt like we were able to help provide a way forward on some of the issues, particularly on the need for science infrastructure.”

Marion White, a Chicago-area physicist and secretary/treasurer for the APS Division of Physics of Beams, stated about her experience: “There was an almost universally positive reception from staffer in the Illinois offices we visited. Even in the most difficult office, we were able to find some common ground and have a meaningful discussion.”

White, who described her experience as “amazing” and “life-changing,” said she decided to participate in CVD because the United States has “fallen behind much of the rest of the developed world in science, technology, and education.”

She further explained, “The threats to our security from climate change, disease, cyber attacks (and many other issues), appear to be ignored at the highest levels. I decided if I could contribute to anything positive, I should try.”

Kristan Corwin, chair-elect of the APS Division of Laser Sciences and associate dean for research at Kansas State University, expressed a similar concern about the country’s declining role as a global leader.

“I felt there has never been a more urgent need for scientists to reach out to Congress and ask for their help to preserve our nation’s leadership position in science and technology. Furthermore, I felt empowered by my experience as an associate dean with a bigger view of how academic research benefits and shapes our society at large.”

Corwin described her experience during the CVD as “wonderful.” “Greg Mack (manager of grassroots advocacy) and the APS as a whole displayed a deep knowledge of the big issues, and also an understanding of what we might be able to ask for to advance the agenda of science funding immediately, with an eye toward the long run.”

She added, “I found the staffers were really interested in how the larger issues affect their universities and districts back home, and what they can do to help.”

During their meetings with Congress, APS members addressed the following issues: research funding and infrastructure, STEM education, H-1B visas and climate change. The APS Office of Government Affairs (APS OGA) decided on the issues after surveying members during various meetings held last year. Volunteers were asked to advocate for research and infrastructure funding and given the opportunity to choose among the other issues based on their particular interests.

To ensure volunteers were adequately prepared for the meetings, Mack organized a video, small-group web videoconferences, and an in-person briefing session. APS OGA also supplied them with materials and scheduled their meetings.

“We were strategic in our approach to the meetings and wanted the APS members to be as prepared and comfortable as possible,” he said. “In addition to the online preparation, during the in-person session, we held a mock meeting, and the volunteers had opportunities to brainstorm about the most crucial part of their meetings: telling their personal stories and connecting the issues to their states and districts.”

Mack added, “I feel everyone had a good handle on the issues and was equipped with pertinent information and materials to have constructive conversations.”

“We’re off to a good start with our first CVD of 2018,” said Francis Slakey, chair of government affairs office for APS OGA. “We’ll face similar challenges in 2018 to the ones we faced last year,” Slakey added, “and the APS OGA will continue to up its game and partner with our APS units.”

In 2017, APS OGA assisted Society members with 14,873 contacts – phone calls, emails, and meetings – to their congressional representatives on crucial science policy issues. These included targeted approaches in specific states and districts, 15 nationwide online-campaigns for APS units, and activities at APS meetings. In many cases, the House and Senate took action influenced by the strong response from APS members.

About the Author:
Tawanda W. Johnson is the press secretary in the APS Office of Government Affairs, where she has worked for the past 11 years. Previously, Tawanda spent 20 years working as a reporter for various newspapers across the country, including The Pittsburgh Post-Gazette, The New Pittsburgh Courier and The Baltimore Examiner. She earned her bachelor’s degree in journalism from Syracuse University and a master’s in strategic public relations from George Washington University.
At the end of January, I had the opportunity to attend the APS leadership convocation along with Lesya Horyn, an FGSA Member-at-Large. The event was held at the JW Marriott in Washington, DC, just a few steps from both the White House and the Capitol. Meeting with the APS leadership from the central office and all the units opened up potential opportunities that FGSA can take advantage of in the coming year. In addition, there were several well-attended information sessions with discussions on how to best engage volunteer members. First, and most important for FGSA, we were given tools and guidance that will help us run a successful unit. These covered a wide range of useful skills, from managing receipts, to tracking the success of email campaigns, to the best way to review awards. Additionally, due to the events of the past year, FGSA has taken a larger role in advocacy campaigns and with APS as a whole, which has given us more opportunities to work with other units present at the Convocation.

In particular, for me at least, the Convocation highlighted the roles that graduate students can take at the local level in geographical sections. As graduate students, we are some of the best advocates for physics. Given our experiences, we can show local students and communities why it is important to train a new generation of scientists and what that training involves. Another item of note announced at Convocation is that APS is in the process of upgrading their management system, which will make it easier for people to become involved in volunteering or outreach. We’re always looking for people who want to do more with FGSA, but don’t have a good way to track members and their various interests. This upgrade will allow us to get even more people involved by actively knowing what members want to do, as opposed to just asking when we need people. We want to have our members more involved in everything we do, from local outreach to joining the executive committee, and we are looking forward to making that easier for them. Finally, we learned more about some of the great resources that APS offers our members—especially in the areas of job hunting and networking. The partnerships available between forums offer tools that we didn’t know existed. For example, the Forum on Industrial and Applied Physics (FIAP) has a mentoring program available for graduate students and postdocs called IMPACT that connects them with physicists working in industry.

The most shocking thing that I learned at the convocation was that less than 50% of physics teachers in K-12 have a physics degree. Education is such an important part of promoting physics and science, and I’ve always found that no one ever seems to talk about “teacher” as a career possibility when in graduate school. To address this, APS, in cooperation with AAPT, has a program called PhysTEC1 that helps promote physics teacher education in the US. For more information, see article about PhysTec below.

If you’re interested in being more involved with APS, just let us know. We’d be happy to have your help.

Get involved in FGSA
http://www.aps.org/units/fgsa/getinvolved.cfm or email me at jeinstein@mailaps.org

Convocation Presentations:
https://www.aps.org/membership/units/handbook/convocation.cfm

Advocacy:
http://www.aps.org/policy/issues/index.cfm

STEM Education:
http://www.aps.org/policy/issues/stemeducation.cfm

IMPACT:
http://www.aps.org/units/fiap/index.cfm

https://aps.xinspire.com/

1 See page 6 for an article about PhysTEC
In the 1960’s, the space race inspired a national movement to improve the quality of math and science teachers by investing in their training and professional development. Consequently, the courses that these teachers taught, as well as the students taking these courses, benefited tremendously from this investment. Today, more than fifty years later, however, our nation is facing a critical shortage of qualified science teachers, specifically in the areas of physics and physical science. Another investment is needed!

Nationwide enrollment in physics classes is growing rapidly. In fact, in the last twenty years, the number of students completing a high school physics class has more than doubled. Unfortunately, fewer than half of all physics classes are taught by someone with a degree in physics or physics education. As colleges and universities around the country take steps to respond to this need, various strategies and approaches are being employed. The Physics Teacher Education Coalition (PhysTEC) has proved to be one of the key drivers of innovative and impactful methods that address this need for more qualified physics teachers.

The PhysTEC project is led by the American Physical Society (APS) and the American Association of Physics Teachers (AAPT). Started in 2001, the mission of PhysTEC is to improve and promote the education of future physics teachers.

To address this shortage of qualified physics teachers while keeping the mission in mind, PhysTEC has funded nearly 50 institutions around the nation that are focused on preparing more physics teachers. These institutions, which are a mix of private, public, and minority-serving institutions, applied for and were selected to receive PhysTEC funding to support their efforts. Nearly all have been successful at increasing the number of highly qualified physics teachers, and collectively, they have more than doubled the annual number of graduates who are highly qualified to teach physics.

Public and private organizations offer physics teachers a wide variety of well-supported and well-organized professional development opportunities in both the areas of science and science education. QuarkNet, Physics Modeling workshops, Research Experiences for Teachers, Einstein Fellowships, and national meetings of professional organizations such as AAPT and NSTA are just some of the many opportunities that teachers can pursue. These allow physics teachers to continue to grow and learn in meaningful ways.

In addition to the funded sites, PhysTEC has established a national coalition of more than 300 institutions that are committed to the project’s mission and goals. These institutions, which extend to all 50 states, are actively engaged in the project and its goals, and are regularly updated and informed of project news via email.

PhysTEC also organizes an annual conference that consists of physics teacher preparation-focused workshops and plenary talks, and provides valuable networking opportunities for attendees. This is the only national conference that is solely focused on physics teacher preparation. Additionally, PhysTEC holds talks, posters, and sessions at other national conferences such as the annual AAPT Summer and Winter Meetings and the annual Noyce Conference.

PhysTEC has had a long and successful history of addressing the critical need that our nation has for highly qualified physics teachers. The project continues to grow and adapt as it addresses this need. With a recent grant from the National Science Foundation, PhysTEC will be able to build on its success and continue preparing physics teachers to meet the needs of our changing society.
FGSA Updates:

**FGSA TRAVEL GRANT**

Did you know that FGSA offers travel awards for our members each quarter of the year? Here are the winners from FGSA’s 1st Quarter (2018) Travel Awards:

- Lucila Andrea Acevedo  
  Cornell University
- Anna Ogorzalek  
  Stanford University
- Abigail Plummer  
  Harvard University
- Felix Wong  
  Harvard University

CONGRATULATIONS TO YOU ALL!

**INTERESTED IN FGSA TRAVEL GRANT?**

The FGSA Travel Award recognizes graduate students who have made noteworthy progress in their academic careers. This includes both graduate students who demonstrate great potential as well as those with considerable accomplishments in their field. The award partially covers travel expenses to attend a scientific conference or workshop, including conference fees, travel, lodging, and food for the duration of the event.

**Maximum Award Allocation:** $500

**Eligibility:** Graduate students who are members of APS and FGSA

**Application materials:**

- A maximum 4-page CV
- A maximum 2-page statement of purpose. The statement of purpose should describe applicant’s interest and purpose for attending the conference. The applicant should note how their participation will benefit them professionally and contribute in achieving their professional long-term goals. The statement may also include information on the applicant’s interest in the award.
- A 1-page maximum list of objectives that the applicant hopes to accomplish from attending the conference/workshop.

We encourage graduate students of all stages to apply. Please apply online. Have all materials ready when submitting your application. You cannot save the application or return to edit it. If you have any questions, please email fgsatravel@aps.org.

For more information about FGSA Travel Grant

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**HAVE FEEDBACK?**
Would you like to write for us? Let us know by filling out the [Google Form](#)