CCR Fellows & Young Investigators Newsletter

Center for Cancer Research

Volume 18, Issue 3

Fall 2019

As the chilly weather is upon us, grab a cup of hot coffee (or tea or cocoa) and enjoy learning more about career development programs for NCI Fellows, tips to enhance your public speaking and networking skills, and opportunities to use them in your future careers in Technology Transfer, Science Policy or at the FDA. Curious to read more about a mentor and mentee that won Nobel prizes? Read part 4 of our ongoing series of "History of Women in Science".
… and don't forget to check out the flyers at the end of this document for all the ways you can be involved in all the exciting and enriching activities of the CCR-FYI.
I hope you enjoy reading the Fall 2019 Newsletter. – Alida Palmisano (Editor-In-Chief)

Inside this issue

Connect with CCR-FYI

CCR-FYI Association is supported by the **Center for Cancer Training (CCT)** and CCR Office of the Director, National Cancer Institute

NCI's Diversity Career Development Program (DCDP)

by: Lorena Parlea

NCI is committed to excellence in scientific training and to fostering a diverse and inclusive workforce. The Center for Cancer Training (CCT) established the Intramural Diversity Workforce Branch to support scientists from diverse backgrounds. Its mission is to build and leverage a diverse trainee pool by honing their leadership proficiencies and organizational capacity. As such, the Diversity Career Development Program (DCDP) was created in 2016, under Dr. Ofelia Olivero and with the support of CCT Director, Dr. Jonathan Wiest. The program seeks to empower talented NCI postdoctoral trainees, including, but not limited to, those from underrepresented and disadvantaged groups. The one-year DCDP provides trainees the leadership skills and professional tools to transition to independent research careers.

The DCDP program helps early-career scientists to define a vision and set up goals for an independent research career. The participants will learn how to identify and celebrate their unique talents and how to develop their superpowers.

A career coach mentors participants to confront their inner dialog and limiting beliefs to help them build their confidence as scientists, leaders, and individuals. They learn how to have difficult conversations and how to envision and build strong relationships and networks. These leadership skills are imperative proficiencies for modern scientists.

More than 40 postdoctoral trainees have participated in the program thus far. From the first three cohorts (2016 – 2018), half of the fellows transitioned to independent extramural positions, and half are in intramural positions as Research Fellows, Research Scientists, Independent Scholars or Principal Investigators. The remaining trainees and fellows from the fourth cohort are finishing up their postdoctoral training.

The DCDP fellowship runs from December to November of the following year. Applications are due during the month of October. Nominations of underrepresented candidates, individuals with disabilities, and individuals from disadvantaged backgrounds are highly encouraged. Please note that J1- Visa holders are eligible to participate in the program. The sessions are held bi-weekly on the Shady Grove or Bethesda Campuses.

How to apply

Interested postdoctoral fellows (NCI intramural fellows only) should talk to their supervisors about the program, discussing the requirements and their desire to participate. The application deadline is in October, so please be aware that the 2019 applications are currently closed. The program begins in December and ends November the following year. Please view the 2019 DCDP program agenda for details on the workshops.

Nominees must complete the application, submit a personal statement (not to exceed one page), detailing their interest in the program, and an updated CV.

Once a nominee submits their application, the supervisor is emailed with instructions on how to submit the Letter of Support on the nominee's behalf. Please note: applications **are not** be accepted without the supervisor's Letter of Support.

Nominations are carefully evaluated by a selection committee and up to 12 individuals are invited to participate in the program.

If you have additional questions, please contact Dr. Ofelia Olivero at oliveroo@exchange.nih.gov. For more information, visit https://www.cancer.gov/grants-training/training/idwb/dcd-program

Networking – Keep Your Garden Growing

by: Molly Congdon

So, you have managed to meet new professional contacts. You've made yourself known in the professional community, connected on LinkedIn, and exchanged professional cards. Great job! Now what? Do you file your connections away for future reference when you need them at some undetermined time in the future? Simply put, no. Your network is like a garden. It needs time, care, and constant maintenance in order to thrive. Failure to maintain your network will lead to connections that don't remember you and can lead to missed career opportunities.

So how do you maintain your network? While it is impossible to constantly connect with every contact in your professional network, you can easily reach out a few times a year to keep in touch. Online resources, such as LinkedIn and Research Gate, make it easy to update your contacts about career changes, promotions, new publications, and professional awards easily. These impersonal, mass notifications inform your contacts about updates in your world, but do not add value to your relationships. To cultivate your relationships with your network, online resources can also be used to send personalized messages to members of your network containing information about research, publications, events, etc. that you think may be of interest to them. One example of this type of communication is the "publication alert" discussed by CCR-FYI Colloquium speaker Dr. Elizabeth Jeanne Thatcher and described in the previous edition of this series.

Despite the ease of online correspondence, it is also important to meet with your connections in person, if possible. If your connections are local, try to plan to meet occasionally. This can be anything from meeting at a local networking event, conference, getting together to grab a

bite to eat or a drink, or even hosting an event at your house. If your connections aren't local, try to maintain a standing invitation to meet whenever you are in each other's city or attending the same conference. If you have their numbers, pick up the phone and call. It doesn't need to be a long conversation. A simple 15-30-minute call every few months is all it takes to maintain an important relationship.

While establishing and maintaining your professional network is essential for your career advancement and personal growth, it is vital to stay up to date on the careers of your connections as well. LinkedIn is a fantastic tool to help you stay updated on changes in your network; however, don't be passive about it. Congratulate them on professional achievements, and this doesn't mean just hitting the "Like" button. Write a comment or send them a personal message. Whatever you decide to do, it does not need to be big or long. Throughout the year, send birthday wishes and holiday messages or cards vial mail or email if you know their addresses. Announce openings in your organization. You never know who your contacts know. A posting of an opening from you, may help your contact or your contact's contact. Finally, never ignore a correspondence from anyone in your network. Helping your connection is a great way to build the relationship and you never know where it will lead.

Remember, when you first met and established a connection in your network, you both believed that the connection would be mutually beneficial. No matter how you do it, the important thing is to get in touch a few times a year. Just as with your garden, too much or too little water is a bad thing. Too much correspondence and too little correspondence can work against you. Balancing the right amount of communication with each of your connections will help your career flourish and thrive.

References:

1. Establishing and Maintaining Networks, Phil Ryan, Office of Intramural Training and Education, National Institutes of Health, https://www.youtube.com/watch?v=5ODitkpR4Ow, Accessed Oct. 4th , 2019
2. How To Build And Maintain A Professional Network. Dawn Rosenberg McKay. The Balance Careers. 2019, https://www.thebalancecareers.com/building-growing-and-maintaining-a-professional-network-525834, Accessed Oct. 4th, 2019
3. Ten Ways to Build and Maintain Your Professional Network. William Arruda. The Personal Branding Blog 2019, https://www.thepersonalbrandingblog.com/ten-ways-to-build-and-maintain-your-professional-network/, Accessed Oct. 4th,2019
4. Networking – How to Start, CCR-FYI Newsletter Spring 2019, https://ccrod.cancer.gov/confluence/display/FYISteering/Newsletters?preview=/41423162/179049, Accessed Oct. 5th, 2019.
5. Networking – Be Your Memorable Self, CCR-FYI Newsletter Special Edition:19th CCR-FYI Colloquium Summer 2019, https://ccrod.cancer.gov/confluence/display/FYISteering/Newsletters?preview=/41423162/179049, Accessed Oct. 5th, 2019

Public Speaking is No Longer a "Soft Skill" but a Key to One's Success

by: Sarwat Naz

A scientist's ability to get up in front of an audience and give a good talk is no longer just an incidentally useful skill. For today's scientist, the art of engaging a group of listeners is integral to success in the research world. Susan McConnell, a neurobiologist at Stanford University, has been giving talks on public speaking for more than a decade. She aptly says, "The whole point of doing science is to be able to communicate it to others. Whether it is to our close colleagues, other scientists with a general interest in our area or to non-scientists, clarity of communication is essential" [1].

More than ever before, communicating science to the general public is increasingly recognized as a responsibility of scientists [2,3]. The public must be able to understand the basics of science to make informed decisions. Perhaps the most dramatic example of the negative consequences of poor communication between scientists and the public is the issue of climate change. A variety of factors, not the least of which is a breakdown in explaining fundamental climate data to the general public, has contributed to widespread mistrust and misunderstanding of scientists and their research [4]. The issue of climate change also illustrates how public acceptance and understanding of science (or lack thereof) can influence governmental decision-making in regard to regulation, science policy, and funding. Effective communication with a general audience is also critical for issues such as the genetic basis for a particular behavior, the therapeutic potential of stem cell therapy, or the use of animal models. Furthermore, with continuing advances in individual genome sequencing and the advent of personalized medicine, more non-scientists will need to be comfortable explaining complex scientific information to the lay audience for decision-making that directly affects their quality of life.

Collectively, we agree that it is important for scientists to be able to communicate with non-scientists. However, this is a difficult skill that many practicing scientists lack, likely due to the combination of increased specialization over time and the absence of formal training in science communication to lay audiences. Fear of public speaking is also a common challenge and form of anxiety. Many scientists with this fear avoid public speaking altogether, or they suffer through them with shaking hands and a quavering voice. But the good news is that with formal training, preparation, and persistence, one can become effective in scientific communication. Experts and professional presenters share advice on how to capture and hold the attention of a crowd. Here are few public speaking hacks [5] and useful tips laid by science writer Nic Fleming for beginners [6]. With growing courses and workshops on the subject, there is a strategic effort made by several universities and research institutions to help train the next generation of scientist to be effective public speakers of science. Here at NIH,

OITE and CCT have effectively focused on training tools, courses, and workshops for the scientists to generate the right message for the right audience. At NCI, I was fortunate to attend a stellar two-day workshop on "High Impact Communication" conducted by NCI's Office of Workforce Planning and Development. This workshop was developed and delivered by CI International. The workshop focused on five key areas: 1) How to make a connection with the audience, 2) The importance of listening, 3) Feeling confident, 4) Looking confident, and 5) Tools to organize one's thoughts. The take-home message that I learned to make a presentation impactful is to "Be real, not perfect."

Another great resource for training in science communication/public speaking is the CCR-FYI Presentation And Seminar Skill (PASS) program. As a chair of the PASS program, I highly recommend fellows to take advantage of this training opportunity. Through PASS, postdoctoral fellows, research fellows, clinical fellows, staff scientists, and young investigators receive one-on-one training to improve their presentation skills by an expert science communication consultant, Scott Morgan. He is also the author of the book *Speaking About Science: A Manual for Creating Clear Presentations* [7]. During the PASS sessions, fellows can work on any number of communication challenges: presentations for lab meetings, conferences, departmental retreats, posters, chalk talks, elevator pitches, or job talks. Scott has been training scientists at NIH for the past 25 years. I personally wanted to have his perspective on the public speaking challenges that scientists face, which he finds very common. According to Scott, there are certain science storytelling components that need special attention. Regardless of the scenario, good talks should address the bigger scientific problem. Audiences feel included when they feel your work is relevant to their own. Secondly, a good talk makes the overarching question of the project extremely clear. It should be singular, but not a simple yes or no question. It can be either data or method oriented, whichever the speaker chooses – but sticking to one is important because double storylines are confusing to follow. Towards the end of a talk, the audience should hear a single take home message that is a direct match to the data or method question. As the speaker is unfolding the argument, vivid examples are very helpful. However, speakers should not be overly thorough and trust that selected highlights are more effective than a plethora of information. At the end, a good talk has three future directions with an image that helps the audience visualize the steps forward. It will also help guide the "question and answer" session following the talk. Lastly, good speakers show natural enthusiasm for their work, so be sure to share the "really cool" part of your work during the narrative. These are the main things Scott looks for in any scientific talk.

Despite specific trainings and attending workshops I feel that practicing skills for public speaking is equally important. NCI Scientist in the Community program is a great platform for fellow to practice public speaking. Some of the opportunities involve explaining one's research to school kids. Another great resource is NIH Toastmasters Club. This organization has helped

develop international leaders and communicators for the past 50 years. I believe public speaking is part of the life of a research scientist, and you should take every possible opportunity to advocate your work. What is the point of making scientific discoveries (big or small) if no one knows about them?

The best way to deal with the need to speak publicly is to embrace it, realizing how it will help you and your audience enjoy the conversation that it sparks. I hope you find this subject and its content helpful in your personal journey of becoming an effective science communicator. I look forward to hearing your feedback.

Feel free to connect with me at sarwat.naz@nih.gov.

References:

1. ibiology. Org.
2. Greenwood MRC, Riordan DG (2001) Civic scientist/Civic Duty. Science Communication 23:28-40.
3. Leshner AI (2003) Public engagement with science. Science 299:977.
4. Somerville RC, Hassol SJ (2011) Communicating the science of climate change. Phys Today 64:48-53
5. Public Speaking Hacks for Scientists. Sweet Tea, Science. https://sweetteascience.com/2016/10/06/public-speaking-hacks-for-scientists/. (October 7, 2019).
6. Fleming N (2018) How to give a great scientific talk. Nature 564: S84-S85.
7. Morgan S. and Whitener B. (2006) *Speaking about Science: A Manual for Creating Clear Presentations*. Cambridge University Press, New York, NY, USA.

The Importance of Informational Interviews: Exploring the Technology Transfer Career Path

by: Julie Nyman

These days, many people want to expand their skill set beyond typical laboratory techniques. An up-and-coming field in science is technology transfer. Technology transfer refers to "the transfer of new technology from the originator to a secondary user" (1). For example, in the quest to defeat cancer and HIV/AIDS, many new technologies and assays are being developed in the laboratories of the National Cancer Institute. As a result, there is a burgeoning need to transfer these technologies to secondary users.

In my exploration of science careers away from the lab and because I am a woman in science with a physical disability, I selected several advisors based on their connections and experiences in those areas. These people included Laura Hooper - the CCR Frederick Fellows Coordinator at NCI and participant and facilitator of the CCR Fellows and Young Investigators Steering committee, Frederick Diversity Committee, and Women Scientist Adviser, and Howard Young – a principal investigator at NCI-Frederick and proponent for diversity in science. One of Laura's initial questions to me was "What is your passion?" My answer: "I love science and am passionate about

diversity and about communicating science but do not want to lead a lab." Having established that, Laura suggested several suitable career pathways- including science writing, technology transfer, and data science. Laura was very helpful and shared the contacts of people she knew in those areas. Concurrently, my mentor recommended that I speak with Taryn Dick of the Technology Transfer Center as he had dealt with her to transfer technologies developed in his lab in the past. Because of his connections, I decided to reach out to people associated with the Technology Transfer Center at NCI so that I could learn more and decide if this career path would interest me. I contacted Mukta Nag (a Technology Transfer ambassador), Taryn Dick (a Technology Transfer Manager), Rebecca Erwin-Cowen (a Technology Transfer Manager and Fellow), and Rose Kreel (another Technology Transfer manager).

Before meeting with these people, I searched the Internet using the term "informational interviews." I found several websites that offered sample questions to ask during the interview (2, 3). I found that informational interviews are distinctly different from traditional interviews. Instead of trying to prove you are the best candidate for a position, the goal of an informational interview is to network while learning more about an employer in a low-pressure setting. One of the greatest benefits of informational interviews is the ability to ask any related question. First, I had an in-person meeting with Mukta. During this meeting, she efficiently handled my questions. After getting her perspective, I reached out via phone to Rebecca who was more than happy to chat with me. I did not ask many questions; she already had a lot she wanted to share! Next, I had a phone interview with Taryn. She answered many of my questions, most of which were variations on the ones that I asked Mukta. Finally, I met Rose at the Technology Transfer Center and peppered her with questions. Several examples of questions that I asked were: "How does your position affect your general lifestyle?" and "What do you like the most about your work?".

Overall, what I learned of the field was very positive, and I was happy to know that I would continue to learn about scientific advances and to stretch my mind, even while not in the lab. In addition, I always asked about work-life balance and about favorite aspects of the job. Based on people's responses, I would have a better work-life balance; something that seems to be hard to achieve while pursuing a Ph.D. and following the traditional academic route. My new connections referred me to additional opportunities of interest! I found that informational interviewing is important for getting an insider's view of a position, networking, and putting one's name out there. Most people, no matter if they are senior or junior in their experience levels, are willing to lend a helping hand!

References

1. Technology Transfer. Lexico Powered by Oxford. https://www.lexico.com/en/definition/technology_transfer (Accessed October 18, 2019)
2. Informational Interviewing. University of California Berkley Career Center. https://career.berkeley.edu/Info/InfoInterview (Accessed October 11, 2019)
3. Informational Interviews. Career Onestop. https://www.careeronestop.org/JobSearch/Network/informational-interviews.aspx (Accessed Oct. 11, 2019)

Fancy a Career at the Food and Drug Administration?

Insights from a Networking Session with Agency Representatives

by: Dali Zong

As you toil away in the bustling lab, a fleeting thought drifts across your mind: "perhaps this is not the right career for me". As you sit staring at the seemingly endless number of culture dishes stacked in front you, your inner voice nags: "I don't think I want to keep doing this forever." And what about the papers that you need to constantly publish, grants that constantly need to be won, and conference talks that constantly need to be delivered? Let's face it, a career in academic research is not for everyone.

Perhaps you already know exactly what you want to do instead, in which case, more power to you. But maybe you are thinking of shifting to a different career path, but don't know where? Well, have you ever thought about working for the U.S. Food and Drug Administration (FDA)?

As its name implies, the FDA is the premier federal agency tasked with protecting public health by regulating the safety of food and drugs. In addition, the FDA also regulates medical devices, tobacco and tobacco-related products, radiation-emitting products, vaccines, blood-derived products, biopharmaceuticals, animal feed, veterinary products and cosmetics. The broad scope of FDA's authority means there are plenty of opportunities for aspiring NIH fellows coming from diverse research backgrounds.

As part of an OITE-sponsored career event, Drs. Megan Schroeder, Lynn Hull and their colleagues from the Behavioral and Clinical Pharmacology (BCP) branch within the Office of Science (OS) at FDA's Center for Tobacco Products (CTP) recently came to the NIH Bethesda campus to describe their work and upcoming career opportunities within the branch. During this interactive and informal networking session, interested NIH fellows mingled with the BCP representatives and got a lot of useful information and helpful feedback. Below is a summary of the Q & A that were of particular interest to the attendees.

What is CTP and what does it do?

The overarching goal of CTP is to oversee the implementation of the Family Smoking Prevention and Tobacco Control Act in order to protect public health and reduce harm from tobacco products. In particular, staff within BCP branch conduct rigorous scientific review of premarket and modified risk tobacco product applications; maintain knowledge about the abuse liability of tobacco products; sponsor clinical tobacco product abuse liability studies (the research itself is conducted by external contractors) and develops science-based product standards (e.g., reducing nicotine to levels that make cigarettes non-addictive). Though not specifically performed by the BCP, other branches within the CTP also work on establishing and enforcing rules/regulations on how tobacco-related products may be advertised and promoted.

Is CTP currently hiring?

This was by far the most important question of course. The short answer is "Yes!". CTP is the youngest center (just 10 years old!) within FDA and is undergoing tremendous growth. CTP anticipates that it will need to fill multiple scientific positions over the next six months. These scientific reviewers may primarily evaluate premarket tobacco product applications. There is no bench work involved. Within the General Schedule (GS) pay scale used for the majority of federal employees, these positions typically start at GS12 or 13, with a salary of around $85k.

Do you need to be a U.S. citizen to work for CTP/FDA?

This was the question every non-citizen fellow wanted to know. A lot of federal positions, including many scientific positions posted on USAjobs.gov, do require proof of U.S. citizenship. However, foreign nationals are eligible to apply for staff fellow positions.

Do you need a Ph.D. in Pharmacology or Toxicology to work for CTP/FDA?

This question brought a lot of nods from the attendees, as it appears to be a common belief among NIH fellows. Luckily, it turned out to be a myth. While it certainly can help, a background in Pharmacology or Toxicology is not absolutely necessary for a career at the CTP. Indeed, CTP/OS employs scientists from diverse disciplines, including microbiologists, chemists, engineers, epidemiologists, social scientists and, of course, pharmacologists/toxicologists. However, to be hired specifically as a pharmacologist or toxicologist, a Ph.D. in Pharmacology or Toxicology is required.

What does the hiring timeline look like?

This was another highly relevant question as NIH fellows can't just drop what they do at a moment's notice. But don't worry as the hiring timeline at CTP/FDA is generally flexible. Typically, an interview is scheduled within a month of application, and there is flexibility on start dates, as well.

What should I highlight in my resume?

When applying specifically to positions within BCP, any prior experience in clinical pharmacology, behavioral science, (especially substance abuse liability research in rodents) and psychology should be highlighted in your resume. Other important qualities to emphasize and showcase in your resume are your abilities to work independently as well as part of an interdisciplinary team and your oral/written communication skills.

Where and how can I apply?

As for all federal jobs, openings at CTP/FDA are posted on USAjobs.gov. You need to set up an account to apply. You can also set up a "key word" search to alert you when relevant jobs are posted. Please note that federal resume styles differ substantially from industry resumes. In particular, federal resumes need to be much more detailed. The OITE career office can help you tailor your resume to match the federal requirements and there are also numerous online tutorials on this topic. Note also that for those fellows with foreign degrees, your academic credentials must be certified by an accredited organization to be equivalent to a degree from a U.S.-based institution. We hope you find this information useful in helping you evaluate potential career options and when you are ready, happy job hunting!

Science Policy: A two-way street with many drivers

by: Catherine Sullenberger

As scientists, we are driven by a common curiosity to understand how the world around us works. A curiosity which is further compelled by the idea that our research could have a positive impact on society. But how do we translate scientific breakthroughs into innovative technology, treatment plans, or regulations that promote progress in various societal issues such as human health? One avenue that research can travel to fulfill these needs is science policy. When considering the term "science policy", people often envision science-driven policymaking in which scientific data is used to develop federal rules and regulations to better serve the public. For example, the Centers for Disease Control and Prevention (CDC) uses its research to help establish the most effective vaccination laws. However, science policy is a two-way street and running opposite to "science for policy" is "policy for science" which applies to policies that govern scientists from the way research is conducted and funded to programs that promote STEM education and workplace safety. In this article I'll navigate the streets of science policy to introduce you to the people that drive science policy, provide insights from science policy professionals, and discuss how you can get involved in science advocacy.

Many drivers travel the streets of science policy, deciding the flow of traffic and the number of stops. Beyond researchers and elected government officials, lobbyists, special interest groups, pharmaceutical companies, universities and the general public can all influence the relationship between science and policy. "Science, Technology, and Policy Decisions" by Anne and Richard Hiskes describes the relationship between these entities from a historical perspective. For instance, the authors discuss how the economic hardships of the Great Depression spurred a distrust between the lay and scientific communities, in turn, leading to new funding policies that focused on life sciences rather than physical sciences. These changing policies unfortunately forced many researchers in physical sciences off the road but also paved new roads for the life sciences, exemplifying the impact public opinion can have on scientific research. Science can also be shaped by federal policies which at first glance seem unrelated to scientific research. For example, NPR recently reported that Presidential Proclamation 9645, which restricts travel from Iran, Libya, North Korea, Somalia, Syria, Venezuela, and Yemen to the United States, prevented many international scientists from presenting their work at this year's annual meeting for the Society of Neuroscience in Chicago. With so many drivers on the road, it is increasingly important for researchers to be involved in policy decisions and to bridge the gap between scientific and non-scientific communities.

To learn how science policy professionals map out their travels, I spoke with Dr. Tyrone Spady, a new member to our NIH family and the Director of the Division for Science Policy

Coordination, Collaboration, and Reporting, as well as Benjamin Corb and Andrè Porter, both from the American Society for Biochemistry and Molecular Biology (ASBMB). With a Ph.D. in zoology focused on evolutionary and developmental biology, Dr. Spady says he takes the logic and strategic planning he learned from the bench to the policy arena to help him achieve his goals. Benjamin Corb, Director of Public Affairs at ASBMB, works to create an "environment in which science in America can flourish". With a background in political science, but not scientific research, Mr. Corb relies on scientists to communicate their needs and the significance of their scientific discoveries which he can then relay to federal agencies. Science policy analyst Andrè Porter, who earned a Masters studying the mating behaviors of fish, helps to connect researchers and other members of the public with activities of federal agencies and institutions. He drafts information about current policies, monitors legislation that affects research, and provides the public with summaries of his findings through outlets such as the ASBMB Policy Blotter, a blog discussing science policy news. One thing all three interviewees unanimously trumpeted was the importance of scientists to be aware of, and to participate in, science policy and science advocacy.

Climate change, genome editing, funding for scientific research, data sharing, and the soaring costs of pharmaceuticals are just a few of the issues currently being discussed in science policy. I encourage you to find topics that you are passionate about and to share your views, not just with elected public officials, but with the people in your community to foster discussions on important issues regarding scientific research, training, and discoveries. Becoming involved in professional societies is a great way to participate in activities related to science policy and science advocacy. If you are unsure about how to take those first steps towards science advocacy, ASBMB and the Coalition of Engaging Scientists and Engineers in Policy (ESEP) provide online toolkits (ASBMB advocacy toolkit and ESEP outreach toolkit) to help you with the process. Further, ASBMB offers an Advocacy Training Program (ATP) to familiarize its members with the inter-workings of local and state government to promote civic engagement in local communities.

In the words of Dr. Spady "science policy is expansive"; it is a complex interface between regulations and research that helps navigate the direction of science in society and the involvement of scientists is crucial! So, let us navigate the streets of science policy together to ensure that science is aptly represented and supported through the coming years.

History of Women in Science – Nobel Laureates Part 4

by: Dorothy L. Butler and Molly D. Congdon

Introduction

In our fourth edition of the *Women in Science: Nobel Laureates* series, we highlight the career and contributions of two women, a mentor and mentee, whose research had profound impacts on the understanding of chromosome biology. Doctors Elizabeth Helen Blackburn and Carol Widney Greider, along with their colleague Dr. Jack William Szostak, received the Nobel Prize in Physiology or Medicine in 2009 "for the discovery of how chromosomes are protected by telomeres and the enzyme telomerase."

Elizabeth H. Blackburn Ph.D.

Elizabeth Blackburn was the first Australian woman scientist to receive a Nobel Prize in Physiology or Medicine and is an advocate for good scientific research and policy.

In 1948, Elizabeth was born in Hobart, Tasmania, and became the second child of seven siblings. Growing up, she was fascinated with animals and insects, a trait she may have inherited from her great-grandfather who collected beetles throughout his life. Elizabeth collected various animals from ants, jellyfish, and tadpoles to chickens, rabbits, dogs, and cats. Although she played piano in high school and fantasized about becoming a musician, her fascination with animals led to a deep interest in biology, which ultimately shaped her educational and professional pursuits.

Graduating with honors and a biochemistry degree from the University of Melbourne in 1970, Elizabeth remained in Melbourne for two years to complete her Masters with Frank Hird. After gaining research experience during her Masters, she was able to attend the University of Cambridge and earned her Ph.D. in 1975 under the direction of Fred Sanger. Moving to another country for her Ph.D. was an adventure and the beginning of her work in molecular biology. Under the direction of Fred Sanger, Elizabeth studied nucleic acid composition of bacteriophages and became familiar with DNA sequencing. She had the foresight to show a 48-nucleotide fragment of bacteriophage DNA to her mathematically inclined cousin, who drew her attention to the repeats at a time before anyone was thinking about analyzing DNA sequence patterns.

After completing her Ph.D. in 1975, she moved to the United States to conduct postdoctoral research with Joseph Gall at Yale University. Her research focused on sequencing the DNA of the protozoan *Tetrahymena thermophila*. Dedicated to her research and making new discoveries, one experiment had her using large amounts of radioactive ^{32}P isotope in a "hot lab" to radiolabel rDNA *in vivo*. She had a desire to understand how everything worked on a deeper level. She said, "I didn't want to just know the names of things. I remember really wanting to know how it all worked."

She followed her husband, Jon Sedat, to California where he had accepted an Assistant Professor position at UCSF. Elizabeth had applied to several assistant professor positions and was rejected, which left her feeling discouraged. She eventually accepted a research track position at UCSF and was awarded her first NIH grant to pay for her salary and research expenses. Soon after, she accepted an associate professor position at UC Berkeley, where she became a full professor after 8 years. In 1986, the same year she became a full professor, she had her first child. As a result of her desire to successfully balance her research and family life, she moved her lab to UCSF in 1990, where she has remained since. Her lab's research focuses on studying the nature and mechanisms of telomeres and telomerase.

Beyond the lab, Elizabeth is interested in understanding the implications of research for humans. She has had the opportunity to serve as President of the American Society for Cell Biology and as a member of the President's Council of Bioethics. Her time spent on the Council, and the widespread concern for science policy, reinforced her desire to search for truth through good research.

Elizabeth acknowledges the long line of scientists who have gone before her to make the discoveries necessary for her to complete her research. She also shows gratitude for the many teachers, advisors, and mentors that have supported her along the way. One of the most memorable encouragements she received was to trust her intuition about her research results. In addition to her great scientific career, she was named one of TIME Magazine's 100 Most Influential People in 2007. Elizabeth Blackburn's life is a success in the eyes of the scientific community; however, she continues to be a mentor and an advocate for science research and policy in hopes of influencing future generations to continue the great research she has been a part of. She said, "There are very few women who have won the Nobel Prize and that's particularly true in the sciences. I want people to see, by my example, 'Look, you can be a woman and be in the sciences and win a Nobel Prize.'" This was true for her and for her mentee, Carol Greider.

"Look, you can be a woman and be in the sciences and win a Nobel Prize."

Carol W. Greider, Ph.D.

The second child of two academics, Carol Widney Greider was born in 1961 in San Diego, California. Her father studied high-energy nuclear physics while her mother was a mycologist and geneticist studying various fungal species. Her family briefly moved to Connecticut when her father took a faculty position in the Yale Physics Department in 1962. They relocated back to California in 1965, when he joined the faculty in the Physics Department at the University of California, Davis. Carol established her independent persona at a young age walking herself to and from school. At the tender age of

seven, her mother passed away. This loss helped further her independence and self-reliance.

School was arduous for Carol during her youth, and she was embarrassed about being placed in remedial classes. Eventually, she was diagnosed with dyslexia, but by then her feelings of insecurity due to do being "different" and "stupid" were already ingrained. When her father took a sabbatical at the Max Planck Institute for Nuclear Physics in Heidelberg Germany, Carol was finally able to embrace being different. During this time, she and her brother attended a private German school, *Englisches Institut,* and gained more independence navigating a new school, town, language, and culture. Her father was able to have them excused from "religion" class, since her family attended a Unitarian Church in America and were not Catholic or Protestant. Instead, they used their free period as a study hall and met other kids who were different from the general population. Her first friend was a Jewish student also excused from "religion" class. This experience cultivated her appreciation for diversity and the unconventional, as well as furthered her independence.

Upon returning to the United States, her family had to readjust to the American culture. Finally, when she reached junior high, Carol was able to overcome her dyslexia through reading and bulk memorization of words. As her grades improved, so did her confidence. She credits her father as the main influencer of her opinions about science and academics. "My father would talk about academic freedom and the importance of liking what you do. He would say, 'You can do whatever you want, but you have to like whatever you do'," Carol said in the John Hopkins press release announcing her Nobel award. As her high school years passed, Carol was not interested in becoming a scientist until her passionate 12th grade biology teacher sparked her interest in biology.

After high school, Carol wanted to blaze her own path deciding not to attend University California, Davis or Berkeley like her peers. Instead, she attended the University of California, Santa Barbara, receiving a B.A. in Biology in 1983. Her graduate career led her to the University of California, Berkeley. During this time, she studied under the tutelage of Dr. Elizabeth Blackburn, earning her Ph.D. in Molecular Biology in 1987. It was for her 1984 discovery of telomerase, a reverse transcriptase that adds a telomere repeat sequence at the 3' end of telomeres to maintain chromosome length and integrity, with Dr. Blackburn that Dr. Greider was awarded the Nobel Prize. Additionally, she discovered that the enzyme contains an organism-specific RNA component that serves as a backbone for chromosome expansion and integrity. She shares the prize with Drs. Elizabeth Blackburn and Jack Szoztak. The three also share the 2006 Albert Lasker Award for Basic Medical Research for their work on telomeres.

Upon completing her doctorate, Dr. Greider worked at Cold Spring Harbor Laboratory on Long Island Sound in New York for 9 years. She began as a postdoctoral fellow, eventually transitioning into an associate investigator position. During this time her work, now with Dr. Calvin Harley at McMaster University, focused on studying telomerase activity in cancer cells. This work lead to the discovery that telomere length is correlated to cellular aging. They also found that increased telomerase activity in cancer cells allows the cells to grow as immortalized cells.

In 1997, Dr. Greider moved to John Hopkins University in Baltimore, Maryland, where she is currently appointed as a Professor of Oncology, the Daniel Nathans Professor and Director in the Department of Molecular Biology and Genetics, and a Bloomberg Distinguished Professor in the John Hopkins University School of Medicine. Her current research focuses on understanding telomere function, regulation, and role in stem cell viability, as well as telomerase mutations in disease. To this end she has developed telomerase null mice and a mouse model of autosomal dominant dyskeratosis congenita, a disease caused by a telomerase mutation which results in bone marrow failure.

When awarded the Noble Prize for her work in 2009, she expressed her elation that the prize was awarded to research driven by basic curiosity at its onset. "What intrigues basic scientists like me is that any time we do a series of experiments, there are going to be three or four new questions that come up when you think you've answered one. Our approach shows that while you can do research that tries to answer specific questions about a disease, you can also just follow your nose," she said in a press release.

"While you can do research that tries to answer specific questions about a disease, you can also just follow your nose."

Outside of the lab, she has been the recipient of numerous awards for her work with telomerases, advised multiple committees, review groups, and study sections, as well as, organized scientific conferences. She has also juggled the balance between raising two kids and running a full-time lab. "My lab knows that I am a mom first." Driven by fundamental curiosity, Dr. Greider continues to be an inspiration and role model to current and future scientists. Her advice to young scientists striving to have it all: "the main thing is to find the time to get things done; it is not the hours at work but the overall productivity that counts."

Together these women have reminded us that asking fundamental questions about basic biological processes can lead to monumental discoveries in cancer research. As Carol stated in her Nobel biography, "Science is not done alone. It is through talking with others and sharing progress that is made."

References:

- Elizabeth H. Blackburn – Facts.NobelPrize.org. Nobel Media AB 2019. Wed. 2 Oct 2019 https://www.nobelprize.org/prizes/medicine/2009/blackburn/facts/
- Blackburn E. 2018 Jun 26. Laureate - Elizabeth H. Blackburn Wed. 2 oct. 2019 https://www.mediatheque.lindau-nobel.org/laureates/blackburn
- Elizabeth H. Blackburn American Molecular Biologist and Biochemist. Kara Rogers. Encyclopedia Britannica 2019 Wed. 2 oct. 2019 https://www.britannica.com/biography/Elizabeth-Blackburn
- Carol W. Greider – Facts. NobelPrize.org Nobel Media AB 2019 Wed. 2 Oct 2019. https://www.nobelprize.org/prizes/medicine/2009/greider/facts/
- "Carol Greider" Johns Hopkins University 2019. Tues 1 Oct 2019. https://www.mbg.jhmi.edu/people/faculty/carol-greider

- "Telomere" Expert Carol Greider Shares 2009 Nobel Prize in Physiology or Medicine" The Johns Hopkins University, The Johns Hopkins Hospital, and The Johns Hopkins Health System. 2019 Wed. 2 Oct 2019. https://www.hopkinsmedicine.org/news/media/releases/telomere_expert_carol_greider_shares_2009_nobel_prize_in_physiology_or_medicine
- "The Greider Lab". Johns Hopkins Medicine. 2019. Tues. 1 Oct 2019. http://www.greiderlab.org/
- Carol W. Greider American Molecular Biologist. Kara Rogers. Encyclopedia Britannica 2019 Wed. 2 oct. 2019 https://www.britannica.com/biography/Carol-W-Greider#ref1075529
- Carol W. Greider – Biographical. NobelPrize.org. Nobel Media AB 2019 Fri 5 Oct 2019 https://www.nobelprize.org/prizes/medicine/2009/greider/biographical/

Photo Credits:

Elizabeth Helen Blackburn

Photo source: copyright: The Nobel Foundation/ U. Montan

Carol Widney Greider

Photo source: copyright: The Nobel Foundation/ U. Montan

National Postdoctoral Association

National Postdoctoral Association

NATIONAL POSTDOCTORAL ASSOCIATION

What the NPA Does:

- Promote positive change in the postdoctoral experience.
- Develop and provide resources that postdoctoral scholars and administrators need for success.
- Provide opportunities for the postdoctoral community to connect.

NPA Highlights:

- Recommendations for postdoctoral policies and practices
- International postdoc survival guide
- Resources for developing mentoring plans for postdocs
- Responsible conduct of research toolkit
- The Elsevier Foundation New Scholars Grant
- PDA and PDO toolkits

NPA Membership Benefits:

- Leadership and professional development opportunities through volunteer service
- Opportunities to make your voice heard on national postdoctoral issues
- Subscriptions to the NPA e-alerts and The POSTDOCket (quarterly newsletter)
- Reduced meeting registration fees, as well as other discounts
- Access to members-only Web content

Providing a National Voice and Seeking Positive Change

To join the NPA, please visit: www.nationalpostdoc.org

Sallie Rosen Kaplan Postdoctoral Fellowship

NIH NATIONAL CANCER INSTITUTE
Center for Cancer Training

Sallie Rosen Kaplan Postdoctoral Fellowship for Women Scientists in Cancer Research (SRK Program)

What happens during the transition from trainee to independence?

How do we better retain and advance the careers of women in science?

How can we better face the competitive nature of the job market?

SRK Program provides:

- Leadership skills
- Confidence building
- Additional mentorship
- Networking opportunities
- Peer-to-peer connections

SRK Program elements:

- 30-week professional coaching with customized program
- Monthly meeting with second mentor selected from senior women in government, academia, or industry
- Additional workshops by NCI Office of Workforce and Professional Development
- Additional coaching on Presentation and Communication skills
- Career development panel discussion
- Grantsmanship seminar

For more information:

https://www.cancer.gov/grants-training/training/at-nci/srk

Frederick Diversity Committee

MISSION

To celebrate diversity, inclusion, promote productivity, work-life balance and career satisfaction.

WHO WE ARE

The Frederick Diversity Committee (FDC) is a group of fellows from NCI-Frederick striving to promote diversity and inclusivity at the Frederick campus

FDC meets every 3rd Friday at 1pm

FDC creates avenues for trainees to engage in:

- Personal and Professional Development
- Career Exploration and Enrichment
- Networking
- Mentorship

https://ncifrederick.cancer.gov/Diversity

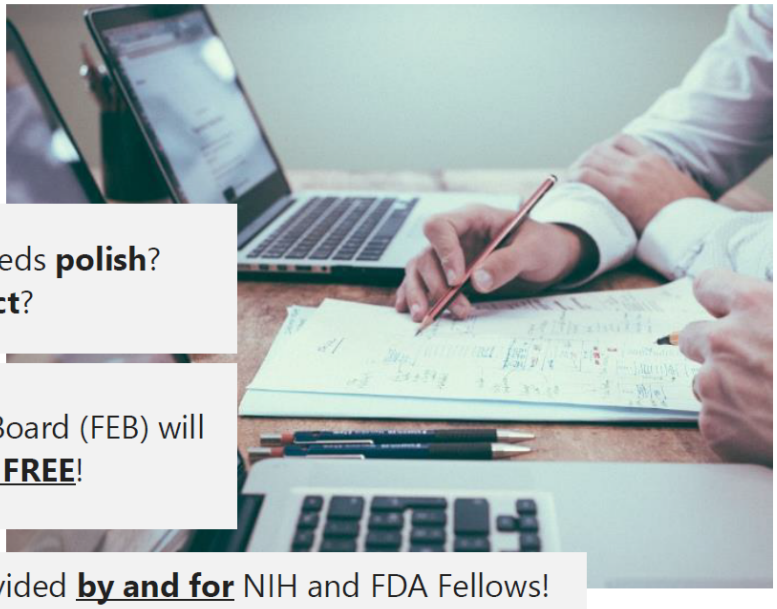
NIH NATIONAL CANCER INSTITUTE
Center for Cancer Training

Frederick Diversity Committee
FDC

Fellows Editorial Board

The NIH Fellows Editorial Board is…

…the best tool before submission of your manuscript!



Have a manuscript that needs **polish**?
Want to enhance its **impact**?

The NIH Fellows Editorial Board (FEB) will **edit your manuscript for FREE**!

A confidential service provided **by and for** NIH and FDA Fellows!

NIH FELLOWS EDITORIAL BOARD

Visit our website at
https://www.cancer.gov/grants-training/training/resources-trainees/get-involved/editorial-board
or e-mail us at
ncieditors@mail.nih.gov

FEB edits various scientific documents such as manuscripts, book chapters, and grant proposals for grammar, form, and clarity.

We review essential elements pertinent to the document, such as figures and figure legends, but **do not consider scientific merit**. Authors generally receive written feedback in 10 business days.

This service is open to all NIH and FDA fellows (postbac, predoctoral, postdoctoral, research, and clinical).

Diversity Career Development Program

NIH NATIONAL CANCER INSTITUTE

Diversity Career Development Program (DCDP)

Application deadline: October 25th, 2019
https://www.cancer.gov/grants-training/training/idwb/dcd-program

Duration: December 4th, 2019 - November 6th, 2020

Engineer your inner core:

- identify and celebrate your unique talents
- develop your superpowers
- confront your inner dialog and limiting beliefs
- learn to have difficult conversations
- build strong relationships and networks.
- set a vision, goals and define priorities
- build confidence as scientist, leader, and individual

How to apply: (J1- Visa holders are eligible)

- NCI intramural fellows should talk to their supervisors about the program
- Complete the application, submit a personal statement and an updated CV
- Supervisor will be automatically emailed with a instructions on how to submit a Letter of Support

Questions? Contact Dr. Ofelia Olivero at oliveroo@exchange.nih.gov

Intramural Diversity Workforce Branch

CCR Central

CCR Central

A one-stop shop intranet; the information you need to get your job done.

- Annual Report
- CCR Management and Organization
- Communications Resources
- Conducting Clinical Trials
- Ethics
- Events & Meeting Support
- Fellows/Trainees
- Funding Opportunities
- IT and Bioinformatics
- Managing Your Lab
- Managing Your Staff
- Scientific Networks/Groups
- Scientific Resources
- Site Visits, Tenure, and Quad Review
- Staff Training
- Tech Transfer

On a PC? Look for this icon in your start menu under NCI CCR.
Got a Mac? Find it in your dock.

Provide your Feedback

Use this button to give us feedback! Find it on the bottom right corner of every page on CCR Central.

Visit ccr.cancer.gov/ccr-central to learn more

FYI activities

Are you interested in a career in science journalism or mass media communication? Join the CCR-FYI Newsletter Team to gain valuable experiences and skills!

Open positions:

• Writer • Editor • Advertisement Designer

Skills:

• Professional writing • Communicating science and non-science related topics to the public • Presenting academic information in a popular manner • Non-science investigatory writing

Benefits:

• Supportive team environment • Flexible writing topics • Gain writing experience• Network with fellows outside of your group • Positively influence the training experience with valuable information

Providing a Voice for CCR Fellows

To join, please contact: alida.palmisano@nih.gov

Join the 2020 CCR-FYI Colloquium Planning Committee!

Are you interested in networking with extramural scientists, exploring alternative careers in science, or giving back to the community? The planning of the 2020 CCR-FYI Colloquium is already underway, but you can still join!

To join, begin attending the CCR-FYI monthly meetings in Bethesda and Frederick on the last Thursday of the month, at 11am.




Providing Valuable Training Experiences for CCR Fellows

For more information, please contact:
Jessica.Eisenstatt@nih.gov and Amy.Funk@nih.gov

Join the Fellows and Young Investigators Steering Committee!

Are you interested in networking with other fellows, exploring alternative careers in science, gaining marketable skills, or giving back to the community? Join the CCR-FYI SC! Meetings are held monthly in Bethesda and Frederick on the last Thursday of the month, at 11am.

Providing Valuable Training Experiences for CCR Fellows

For more information, please contact:
Molly.Congdon@nih.gov and Jessica.Eisenstatt@nih.gov

CCR-FYI Annual Holiday Gift Drive Benefiting the NIH Children's Inn

The Children's Inn at NIH

Help stock the "Gingerbread Gift Shop" for The Children's Inn at NIH
Children and their families can shop for holiday gifts –at no cost –for their loved ones!

Festive, marked collection boxes will be placed around all campuses during the end of November and beginning of December.

All gift items should be **new**, in original packaging, and **not wrapped**
***stuffed toys cannot be accepted**

Questions? Contact: Molly.Congdon@nih.gov or Brandi.Carofino@nih.gov