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[New England Science Symposium](#)
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NESS KEYNOTE SPEAKER

Levi Garraway, MD, PhD

"In pharma R&D, we are in the business of science," says Levi Garraway, MD, PhD, chief medical officer, executive vice president and head of global product development for Roche (known as Genentech in the US). "It definitely helps to have taken care of patients with a lot of the diseases we aspire to treat more effectively. What's interesting now is that for a growing number of diseases, it also helps to understand the underlying biology more deeply. That is paramount: it helps to guide decision making." Garraway, who received his BS, MD and PhD from Harvard, says he was a scientist before a physician. He will deliver the keynote address at the New England Science Symposium on April 29.

As a boy Garraway was drawn to the field by his father, a plant biologist and professor at Ohio State University, whose "enthusiasm and *joie de vivre*" he found infectious. Another early inspiration was Garraway's uncle (Levi Watkins, J.), a cardiothoracic surgeon at Johns Hopkins who was a trailblazer, "one of the first to do a number of things, including the first African American cardiothoracic surgery chief resident at Johns Hopkins," he says.

When Garraway began his PhD studies, medical school was not even a consideration. But he quickly became interested in the human disease element during a laboratory rotation that explored a molecular basis for pain. "It was the patient experience that drove the fundamental research question," he explains. "I just thought that was really cool. I certainly liked fundamental discovery, but I thought it was even more interesting to see a lab where the scientific questions that were deemed interesting were so connected to the patient condition." Garraway's decision to pursue his PhD thesis in an infectious disease laboratory



Levi Garraway, MD, PhD

where functional genetics was just becoming possible reflected this fascination with the intersection of fundamental biology and human disease.

He only applied to Harvard Medical School for a combined MD-PhD program, since he was already in graduate school there. When he was accepted, he was "very much on the fence about whether I would eventually practice medicine." But several years later, during his internal medicine clerkship (which Garraway describes as a defining moment), "I got the sense that you didn't really understand a disease unless you had cared for patients with it. You didn't know the most important questions to ask unless you had been there. And I did, actually, genuinely enjoy taking care of patients."

Another defining moment, which triggered Garraway's interest in oncology, was his father's diagnosis of an aggressive form of prostate cancer. Garraway describes spending his days as a PhD candidate in the lab, but many evenings were spent at the library photocopying cancer articles. "At the time, I was so distraught that most

of the developments in [cancer] in the lab hadn't yet translated to treatment," he says. "Wanting to bridge that divide became the driving force for my career."

Therefore, Garraway pursued a fellowship in medical oncology after his residency and ultimately landed a junior faculty position at the Dana-Farber Cancer Institute (DFCI), Harvard Medical School and as an institute member of the Broad Institute. His initial work as an independent investigator led to the creation, in 2010, of Foundation Medicine, which utilizes genomic testing to help oncologists select the right treatment for cancer patients based on their tumor genetic profiles (a form of personalized medicine). As an HMS faculty member, Garraway continued to see cancer patients as an attending physician at the Brigham

and Women's Hospital for two weeks each year. "It was very valuable, an opportunity to stay connected with patients being treated with evolving medicines," he says.

In 2017 Garraway joined Eli Lilly as senior vice president of oncology research and development. "This was a unique opportunity to bring a new vision and strategy to what Lilly was doing in oncology," he says. "Also, I felt ready for a new career challenge."

Less than three years later, the CEO of Roche Pharmaceuticals presented him with an offer he could not refuse. "This was the dream job, a chance to impact medicine beyond just oncology," Garraway says. "And Roche/Genentech is very science driven. I felt comfortable: I could merge my 'first love' — disease biology — together with my clinical training and my interests in

personalizing health care." He adds that when COVID hit (five months after he joined the company), even his prior infectious disease training suddenly became relevant. "Everything I did in the past set me up for the job I'm doing now."

Garraway advises current students not to worry about where they will be 10 years from now, but to "immerse yourself in the now, in the moment. Get your experiments done. Don't get distracted." He also stresses that having an outstanding mentor during research is paramount. "It's nice if a mentor looks like you, but it is by no means necessary. The most important thing is an exceptional scientist who will also care about you personally. Then you just dive in and learn everything you can. Work extremely hard." ■

CAREER PATHS

Clinical Trialists

Cherie Butts, PhD, is medical director, Research & Development, at Biogen, where she designs clinical trials for neurodegenerative disease treatments. She is a rarity. Butts explains that the vast majority of medical directors at pharmaceutical companies are MDs. And in both government and academic medicine, it is unheard of for a PhD to hold the position.

"Clinical trialist as a role is not usually introduced as an option to science students," says the former science student. But she thinks it should be. Had she not already been working at Biogen, Butts concedes she likely would not have considered the position herself. But it has become her most rewarding job. "Clinical trials are the road to approving a drug. If I am the person responsible for designing the trial that determines if a drug gets approved, that's a really important job. That means I'm feeding into the medicines that will be in the health care ecosystem. I want all BSCP students to consider this as a path," she says.

When Butts was a PhD candidate at University of Texas MD Anderson Center, her advisor, a gynecologist who treated women with gynecological cancers, conducted a lot of trials. Butts analyzed samples. "But I hadn't really considered clinical trials as a job yet," she says. Her postdoc at the National Institutes of Health (NIH) involved a lot of pre-clinical research with animals. "But I still didn't think of clinical trials as a career," she says. Next, Butts went to the Food and Drug Administration (FDA). She continued to work with animals, but about 20 percent of her job involved reviewing drug applications. "This was where I was starting to see the value of clinical trials and the fact that they are driving whether or not a drug gets approved," she notes.

Shortly after her "aha" moment, Butts was recruited to work at Biogen. She knew immediately that she did not want to work in regulatory affairs, "because I wanted to better understand what fed into the applications for new drugs."

So she worked in research. "That's where I learned that the research questions we were asking in academia were dramatically different from those at NIH and FDA, which are also dramatically different from the questions we are asking in industry," she says. "That was where I appreciated the value of each sector."

Butts breaks it down like this:

- In *academia*, researchers are trying to better understand a disease or seeing how relevant certain proteins or biological pathways are to disease outcomes.
- In *government* (at least through her experience at two agencies), the focus is on public health. Research must consider how applicable it is for all who have the disease and what measures are most relevant for the greatest number of people. Trials would focus on disease not widely studied in an academic setting.



Cherie Butts, PhD

- In *industry*, researchers are focused on what a particular treatment can do in terms of improving health outcomes. Pharmaceutical companies tend to focus on where there is greatest unmet need. The goal is not only to develop novel medicines to treat disease but also ensure distribution of the treatment to anyone who wants it — wherever they are.

As medical director, Butts says she uses all of her scientific training in designing trials. “I think about what are the controls of the experiment, how will we analyze the data,”

she says. MDs in her role might focus more on patient safety, whereas she focuses on “how are we going to confirm the experimental design to evaluate the therapy was done right.”

Students interested in pursuing a career in clinical trials should know that critical thinking skills are vital, as is the ability to work in teams. “If you’re not a team player, this isn’t for you,” Butts says flatly. Companies and government agencies offer internships and opportunities for students to work with clinical trialists or investigators.

Butts, who has been an advisor and panelist at several Biomedical Science Careers Student Conferences as well as a New England Science Symposium judge, is passionate about her work and about helping others discover their professional possibilities. “Very few people have had the experiences and exposure that I have. I feel that if I don’t share my story, then people won’t recognize that the possibilities of career paths are far greater than they think.” ■

WHERE ARE THEY NOW

Sasha McGee, PhD, MPH

Sasha McGee, PhD, MPH, is a program scientist at Cherokee Nation Strategic Programs (CNSP), which offers cybersecurity, intelligence and vulnerability assessment to a range of Department of Defense and federal clients. McGee’s division is contracted to the Integrated Bio-surveillance Branch of the United States Armed Forces Health Surveillance Division (AFHSD), the central epidemiologic resource for the US Armed Forces. The position represents a culmination of eight years of experience in public health and epidemiology for McGee, a former BSCP Hope Scholarship recipient.

“Our main goal is to conduct bio-surveillance to identify or maintain awareness of potential public health threats that can affect active duty service members and Department of Defense beneficiaries in general,” McGee explains. Observing real-time data, and watching for patterns and trends daily, helps identify health events of interest, inform policy decisions and determine allocation of resources. “COVID-19 is one of the primary diseases we are reporting on,” she says, explaining that in addition to keeping track of disease frequency it means following activity like COVID-19-related medical visits.

With a PhD in health sciences and technology, McGee ultimately chose to work in public health because, she says, “I knew I didn’t want to continue the research I was doing in graduate school and I also didn’t want to teach. I did want to maintain a focus on health and do applied work.” Despite her degree, awards and fellowships, she had trouble finding a job in the field because she did not have relevant experience. A former undergraduate colleague suggested she consider epidemiology, which led McGee to return to school for an MPH earlier than she had planned, two years after receiving her PhD.

McGee joined the AFHSD Integrated Bio-surveillance Branch, based in Silver Spring, MD, in December 2021. Previously, she had spent two years working for the Centers for Disease Control and Prevention as an Epidemic Intelligence Service officer, and the last six at the DC Department of Health (DC Health), where she was a senior infectious disease epidemiologist. She says she was attracted to the CNSP position because it was still within the public health sector, with an epidemiologic point of view. She also was attracted by the opportunity to work as part of a “particularly great team.” And



Sasha McGee, PhD, MPH

she felt it was time to move to something new and “use experiences from my past. The population I’m focusing on is different in terms of the beneficiaries, but the principles are the same,” she notes.

At DC Health, McGee had more direct interaction with the public, businesses, health care facilities and other stakeholders. Now, more of her work is focused on analyzing data and writing reports. She admits that by the time she left DC Health she had some “burnout from the demands of pandemic response,” the pace she and her colleagues had to maintain and the constant change, saying, “For now I’m kind of happy to be a little removed.”

Having worked on the front line during the early days of the pandemic, McGee says she is driven by a desire to demonstrate the importance of public health and the need to expand existing programs. "It's exciting to be part of something that's on a growth track," she notes.

McGee attended her first Biomedical Science Careers Student Conference when she was a PhD candidate at MIT in 2002 and her first New England Science Symposium the following year. She has been mentoring informally outside of BSCP for several years. In 2016, she attended the Conference as a mentor/advisor for the first time and has continued in this role for every Conference since. She returned to BSCP, she says, because "it was a long journey. Now I had some experience under my belt. I was in a better place to support students." ■

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LINKEDIN TIPS FOR A SUCCESSFUL JOB SEARCH

From mid-March through mid-April this year, BSCP hosted a series of virtual seminars providing guidance on building and developing a professional brand using LinkedIn. These were led by Lauren Celano, co-founder and CEO of Propel Careers, a life science search and career development firm in Boston. She has worked with more than 60 companies and thousands of students, postdocs, medical residents and professionals to advance their careers. Lauren also mentors young scientists through groups like the Association of Women in Science and the International Center for Professional Development. Following are highlights from Lauren's seminars:

Tip #1: Have a professional looking LinkedIn photo.

People may attend a few networking events throughout a day or week, so pictures are more helpful than just names. Your photo does not have to be taken at a professional studio. Most digital cameras work well enough for this purpose. Wearing a professional outfit, stand against a blank wall, smile and have a friend take your photo. Try not to have a lot of objects or distractions in the photo. They can make you look unprofessional.

Tip #2: Include your academic research in the "Experience" section.

Students and postdoctoral fellows should highlight their research experiences in their LinkedIn "Experience" section. This could include research performed as part of a thesis for a bachelor's, master's or PhD program, as well as relevant course projects. Describe what techniques you used, what the research focused on, who you collaborated with, etc.

Tip #3: Make sure that your name on your LinkedIn account is the same as your resume.

Potential employers will almost always look at an individual's LinkedIn account as they are reviewing resumes. If the name on your resume is different than

the name on your LinkedIn account, modify one of them so they match. You can also include your LinkedIn link on your resume to make it easy for people to find you.

Tip #4: Develop the "About" section of your profile.

The section of LinkedIn that I like to review the most is the "About" section. This section can be really valuable to highlight your background, interests and expertise, and it can help tell your story. Students and postdoctoral fellows have a unique opportunity to highlight what led them to where they are now, what excites them about their current research and what they are looking to do next.

Tip #5: Link into people that you know.

As you grow your LinkedIn network, you should connect with people who you know and/or with whom you have something in common, such as an area of research. This way, your network becomes personal and is actually useful for you as you grow in your career.

Tip #6: Join groups to stay updated on areas of interest.

If you are looking to learn more about a certain area, join a LinkedIn group in that subject. When you are new to the job search process, this is extremely helpful for getting the lay of the land in your particular field. You can search for groups by keyword.

Tip #7: If you send someone a LinkedIn request, mention where you met them or why you are connecting with them.

People are busy, so the easier you can make it for them to remember how they met you or what you are looking for from them, the better. For example, if you met someone at an international networking event and are following up with a LinkedIn request, in the subject line, say, "international networking event follow up"; and in the body of the request reference the event and say that you would like to keep in touch. It is amazing how many times people don't do this. I wonder how many LinkedIn requests do not get answered because people cannot remember the context in which they met someone. ■