

CAREERS

COLUMN Scientific research shares traits with musical composition **p.245**

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NETWORKING

Real connections

Meeting up in person is still the best way to make contacts and ease career moves.

BY AMY MAXMEN

Justin Hall was close to finishing his PhD in crystallography at Oregon State University in Corvallis when, in 2010, he attended a Gordon Research Conference on protein interaction dynamics in Galveston, Texas. He felt uncertain about his future, and was open to switching sectors — as long as the science stayed

interesting. Over dinners and coffees he talked about biophysics with scientists from universities, hospitals and industry. “I just wanted to hear about people’s science, so I asked all sorts of scientists lots of questions,” says Hall.

In the lift he talked to Xiayang Qiu, director of structural biology at the pharmaceutical company Pfizer in Groton, Connecticut. Qiu was impressed with Hall’s excitement about

research. He went on to offer Hall a postdoctoral research position in his own lab. Hall accepted, found that he enjoyed working in industry and is now a senior structural biologist with Pfizer.

Not all networking encounters have such happy endings. But forming connections and relationships, whether at conferences or designated networking events, is essential for researchers looking for jobs — especially those who want to move to a new sector.

Most thesis advisers, however helpful, know little about careers outside their immediate academic scope. Networking allows students to build up contacts outside that scope, and to demonstrate their interpersonal skills, which are often crucial in industry. Making contacts might lead immediately to a new career, as it did for Hall, or might lay the foundation for a web of connections that can open doors for decades to come. Connections at start-ups or bigger companies can tell researchers about positions not listed on job websites, and recommendations from shared acquaintances will improve scientists’ chances of getting job applications read.

“You learn about how many opportunities there are by networking,” says Keren Weiser, a postdoc studying breast cancer at Weill Cornell Medical College in New York, who works with the events-planning team at networking organization NYC Bio and attends events run by NYC Medtech. “This isn’t something you can just Google.”

Scientists who have moved between sectors advise early-career researchers to begin building their networks early, ideally during graduate and postdoctoral training. The Internet has facilitated networking, but in-person events often come with extra benefits. Whereas professional networking platforms online can list a person’s achievements, an in-person introduction reveals more about social skills, attitude and confidence, so contacts may be more likely to reach out when a relevant opportunity comes their way.

By finding the right events and following a few basic guidelines, early-career researchers can become deft networkers.

WHEN AND WHERE

Networking venues range from conferences to themed events held during happy hour at a bar. Hall prefers meetings with fewer than 100 attendees, which includes many of the Gordon conferences, because conversations tend to happen easily in small groups. ▶

► However, bigger conferences often have a large exhibition area and booths staffed by scientists who are ready and willing to chat. In both cases, a young scientist should actively seek out researchers outside their own sphere.

Hall was exhibiting a poster at the Gordon conference where he was offered his Pfizer postdoc. It showed off his research, but he says that it was actually his unabashed conversations with people in high places that got him noticed. “The rule is engagement,” he says. “Just ask people about their science, and later, if you feel the time is right, say, ‘What you’re doing is really great, how can I follow in your path.’” Jumping directly into a request for a job can sound desperate, he warns. “Networking is not done well if you come across as a networker.”

Some universities host careers fairs that bring together people from different sectors, and tend to be announced in flyers and campus- or department-wide e-mails. When Ashok Chander was a graduate student in biophysics at Columbia University in New York, he went to a mixer for engineering and business students. He talked to a business student about his ideas for diagnostic tests, and although the student was not interested in the life sciences, he knew people who were. Two connections later, Chander met the person who would become his business partner: Mani Foroohar, now chief medical officer in their start-up, Cellynx Diagnostics in Boston, Massachusetts.

Networking opportunities can often come from regional organizations such as NYC Bio; Women in Bio, a professional organization with chapters around the United States; and One Nucleus in Cambridge, UK, which hosts biotechnology-themed events such as BioWednesdays in London. Attending multiple events run by the same organization gives researchers a chance to meet the same people repeatedly, strengthening connections, and cultivating a web of contacts. Weiser, for example, helps to organize NYC Bio events partly to prepare herself for the inevitable job search after her postdoc.

Already, the events have helped her to learn about careers outside academia, and her NYC Bio colleagues circulate information about job openings.

Researchers wanting to develop contacts abroad can search for country-specific organizations. For example, the German Center for Research and Innovation has bases in New York, Tokyo, São Paulo in Brazil, Moscow and



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Scientists network at an event held by the German Center for Research and Innovation in New York.

New Delhi. They organize events with themes such as nanotechnology, in the hope of encouraging collaborations with German researchers.

Professional networking websites such as LinkedIn, ResearchGate and Academia.edu allow scientists to contact one another virtually. LinkedIn is the most widely used among industry scientists, and young researchers should maintain an up-to-date profile in case an employer is using it to recruit, says Joanne Kamens, executive director of the Addgene plasmid repository in Cambridge, Massachusetts, and a speaker on career development. Kamens advises early-career scientists in academia to keep their LinkedIn profiles general so as to not be pigeon-holed into a very specific field (see *Nature* **471**, 667–669; 2011). She also warns that connecting with scientists through the site is no substitute for building relationships in person. “LinkedIn is a supplement to networking,” says Kamens. “It’s one way to stay in touch, but it probably will not get you a job.”

BEFORE THE GAME

Preparing for networking events means polishing one’s personal image. Researchers at all career stages should have business cards that detail their contact information and, if applicable, a link to their website. A homepage will direct attention to the projects that a researcher wants to highlight; one or two personal photos are acceptable, but researchers should try to keep images and blogposts professional. For bonus points, they should pay attention to the website’s design. Website-publishing platforms such as Squarespace or Cargo can help, as can blogging sites such as WordPress, which offers premium features to make the site look more professional.

All researchers should own at least one business-style outfit. A three-piece suit is usually unnecessary, but T-shirts, shorts and clothes with too many patterns can present the wrong image. Instead, try a sports jacket or blazer, smart trousers and a dress shirt with tie for men, or a trouser suit, skirt suit or dress

for women. Although they may hide a creative flair, these clothes convey a sense of responsibility. “Science gives us a lot of freedom to choose how to dress but it doesn’t change the fact that what we look like carries a message,” says Marc Kuchner, an astrophysicist at the Goddard Space Flight Center in Greenbelt, Maryland, who frequently blogs about career advice.

TALK THE TALK

Researchers should also consider conversations in advance. Networkers will probably ask about a potential contact’s work, so scientists should have an ‘elevator pitch’ prepared. This talk, lasting between 30 seconds and two minutes, should describe the research in terms of its broader impact (see *Nature* **494**, 137–138; 2013). For example, a scientist studying RNA that controls the expression of a gene involved in leukaemia should skip the mechanistic details and instead note how many people have this disease, the mortality rate and how the findings might help to improve patient prognoses.

Researchers should also have an ambitious and positive way to describe their professional aspirations. Instead of discussing how they want to leave academia after a grant proposal was rejected or tenure denied, they should focus on what they are looking for in a dream job, such as the ability to translate their research into treatments.

When inviting people to events, John Lieberman, founder of NYC Medtech, looks for researchers who are passionate about their work and have a connection to biotechnology. He invites some — such as company lead scientists — on the basis of the information and opportunities they might have to offer. Other scientists hear about events through the grapevine or find them online, and ask Lieberman for an invitation. The events include drinks, dinner and quick talks about scientists’ projects. Socializing is essential, and Lieberman helps new attendees by suggesting that they keep in mind a few topics for casual conversations, such as current events, the weather, sport

or the event itself and why they are attending. That helps nervous attendees to avoid blurting out something awkward that will turn off a potential employer, he says.

At the event, researchers should relax and talk to whomever feels most approachable. Successful networkers know that any contact could prove valuable, so attendees should keep an open mind. At the Gordon Conference, Hall spoke to scientists at pharmaceutical companies even though he was not explicitly looking for a job in that sector. Jason Kreisberg, a microbiologist turned freelance science editor based in San Diego, California, gained his current biotechnology client through contacts with an investment adviser to whom he had casually spoken at an alumni event.

Listening is as important as talking. Researchers should pay attention to the professional aims and needs of the people they talk to, says Kamens, because the best way to build a relationship is to offer help. Such offers might entail e-mailing a research manuscript or simply introducing the contact to a colleague — and they provide an excuse to reconnect online. The personal connection encourages the contact to return the favour as soon as an opportunity arises.

Many early-career scientists experience a plunge in self-confidence at least once

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while networking. Perhaps someone abruptly excuses themselves from the conversation out of apparent

boredom, or a desired contact seems unapproachable. The best way to handle these negative emotions is to realize that they are normal, and to let them pass. Later, consider what might have gone wrong. Weiser says that attending networking events taught her about the cultural differences between New Yorkers and residents of her native Israel. In Israel, she says, it is common to interject one’s thoughts mid-conversation, but in New York, she has found that this habit turns some people off. “I’ve had to learn to be less aggressive in conversations, and to not interrupt people,” she says, adding that these adjustments have been worth the effort, and her talks with new colleagues are now more fluid.

“The worst that happens is that you leave the event feeling like you didn’t present yourself well,” says Kreisberg. “So you drive home and think about how to work on your elevator pitch or how to better explain your goals,” he says. “For me, the best motivation is to fail a couple of times, and then you realize, ‘Okay, I can get better at this.’” ■

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COLUMN

Music meets science

Successful musical composition and scientific research share important traits, argues **Stephane Detournay**.

What do Paul McCartney and Stephen Hawking have in common? One is recognized as one of the most successful composers and recording artists of all time; the other is a world-acclaimed theoretical physicist and a pioneer in uncovering the mysteries of the Universe. But both infused their respective fields with creativity.

The relationship between science, music and the arts has been demonstrated in various contexts. In the 1979 book *Gödel, Escher, Bach* (Basic Books), for example, author Douglas Hofstadter used the exploits of mathematician Kurt Gödel, artist Maurits Cornelis Escher and composer Johann Sebastian Bach to illustrate the cognitive underpinnings that their fields have in common.

Less well documented is the idea that scientific research and musical composition share a number of essential stepping stones. One might loosely classify them into four steps: onset, development, refinement and exposition.

Ideas start germinating in many ways. Scientific collaborators often engage in ‘jamming’, for example, when they interact to decide on a structured way to answer a question. Sometimes researchers notice connections across fields, realizing that a given question has been answered using a certain technique, and that a similar approach can be exploited to tackle another problem — something like introducing a string octet or a sitar into a Beatles song. Or a scientist might just think hard about how to achieve a particular objective. ‘A-ha’ moments can happen anywhere, at any time: while attending a conference, standing at a concert, or watching a captivating movie or a boring talk. The same is true in music: McCartney said that the 1965 song ‘Yesterday’, one of the greatest hits of all time, came to him in a dream and that he himself could not believe that he had composed it.

After the early excitement of a new idea comes the next phase: development. Then, once a nebulous idea has been honed and better defined, it is time for practical implementation. Both scientists and musicians can work alone, or embark on a collaboration. Hawking’s work with mathematician Roger Penrose led the pair to conclude that the Universe began as a singularity. McCartney’s contribution to The Beatles is hard to disentangle from John Lennon’s. But both Hawking and McCartney also have long track records of brilliant solo contributions.



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Refinement is the last part of a project. You know that you have some nice results and that the work has potential, yet it has to be presented and rendered accurately. This phase can sometimes be frustrating. The song has been written, but still needs recording; computations work, but must be submitted to a journal for review. Musicians can spend hours on detailed clean-up in the same way that scientists might repeatedly review their arguments to weed out weak points, eradicate misplaced assumptions or identify overlooked data.

Once the songs are released and the papers are published, there is the last phase: exposition. How will people judge your work? Papers will be read and songs listened to by a varied audience: scientists will give talks and musicians will perform at concerts. A community will perhaps slowly start to form an opinion on the materials you obsessed over for weeks, months or years. You might feel great pride or satisfaction — or you might become disillusioned.

Some musicians will be lucky enough to land a recording contract and find success; some scientists will earn an academic post or tenure. For the rest, there is always the option of instilling Hawking’s dream — to spread into space and reach out to the stars, across the Universe — into their career pursuits. Many will search out alternative scenarios and then find the means to uncover their own professional niche — a cross-disciplinary, cross-genre space in which few have dared to jam before. ■

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