CAREERS

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Marie Curie (second from right) and her daughter Irène (second from left) both followed careers in science.

RELATIONSHIPS

Scions of science

Relatives in the same career bring advantages — and challenges — for junior researchers.

BY AMBER DANCE

For Irina Kareva, maths is a family affair. The theoretical biologist and her parents, both mathematicians, find maths conferences convenient gathering points. At a 2011 meeting in Vancouver, Canada, Kareva and her father presented a study that the three of them had co-authored, and then went on a hike together.

"Working with my parents is awesome," says Kareva, who lives in Boston, Massachusetts, and is seeking a job. "It brings us together."

Children generally forge a different path from their parents', but science certainly runs in some clans, as it did in the Curie family, whose members laid claim to five Nobel prizes. A 2013 survey commissioned by the family-history website Ancestry.co.uk found that 7% of respondents end up in the same career as a parent. Ismail Onur Filiz and Lada Adamic, social scientists at Facebook, found in an unpublished study of career inheritance that 3.2% of users who listed a career in science had at least one parent who did, too. (The latter number may be an underestimate, they add, because they could analyse only users whose parents were also on Facebook and listed their jobs.)

"I suspect there are many science families," says Celia Schiffer, director of the Institute for Drug Resistance at the University of Massachusetts Medical School in Worcester. Schiffer, who has several scientists in her family, estimates that half of her colleagues have parents who are scientists or engineers. The succession rates for science careers may be particularly high in some cultures, adds Jinsong Liu, a biochemist at the Chinese Academy of Sciences' Guangzhou Institutes of Biomedicine and Health. China, for example, sees a relatively high proportion of offspring choose a parent's career.

Being the junior member of a family of scientists has clear perks: budding researchers have a great way to find out the workings of the academic enterprise, and can benefit from introductions and connections from their parents (see 'Family ties'). But there are downsides, too: young scientists generally want to distinguish themselves from their relatives and avoid any suggestion that their career success is the result of unfair advantage. They also may face extra pressure to succeed if they feel they need to live up to a parent's reputation, or if others expect them to achieve similar levels of success.

And ultimately, it is important for children or relatives of a researcher — especially an ▶

eminent one — to remember that their life is their own and that they, not their parents, are responsible for their career progress. "A big thing I had to overcome, for myself, is that I'm not just an extension of them," says Kareva.

THRILLS AND SPILLS

Growing up with a scientist, one sees both the positives, including the thrill of discovery, and the negatives, such as pressure to get funding. Kevin Gardner, director of the Structural Biology Initiative at the City University of New York's Advanced Science Research Center, says that his teenaged daughters can tell when he's stressing about a grant. But they also get to see that his delight in his work outweighs the headaches, and he's already helped to connect his daughter with an expert to advise on her plant-biology projects.

Students can often parlay their family-scientist connection into a low-level lab job. Although some institutions don't allow faculty members to hire their children, positions can sometimes be found in a neighbouring lab. "I call them 'parking-lot jobs'," says Carolyn Jensen, director of the Eberly College of Science Academic Advising Center at the Pennsylvania State University (Penn State) in University Park. Her father — who was a biochemist at Penn State when she was growing up — sometimes cornered a colleague on the way to the car park to say, "Oh, my daughter's looking for a summer job." These sorts of positions can be a crucial first step for a scientist-in-training, says Sue Biggins, a cell biologist at the Fred Hutchinson Cancer Research Center in Seattle, Washington. They provide valuable exposure to the process of science and a chance to develop key skills.

Once they move on from lab chores to real research, young scientists ought to find independent mentors. It would be hard to be an effective adviser when the relationship includes a family link, Biggins says, and she points out that for future jobs, researchers will need honest, unbiased letters of recommendation.

Kareva, for one, was careful to assert her independence during her PhD at Arizona State University in Tempe. Although her parents acted as unofficial co-advisers for her thesis, she says that it was important and a source of pride for her to include some dissertation chapters that they had nothing to do with.

Now that Kareva is looking for a job, she's ready to embrace her parents' professional network. Given the competitive nature of science, researchers agree that there's no shame in using a relative's network. "It is critical, in this day and age, for people to seek out opportunities wherever they can," advises Belinda Huang, former executive director of the National Postdoctoral Association in Washington DC.

Scientists who share a workplace with a parent or relative should be prepared for potentially awkward moments. Biostatistician Paul Edlefsen and his mother, public-health researcher Nicole Urban, both work at the Fred Hutchinson centre. Occasionally, he will encounter someone at work who knew him as a child, and who comments on how proud his mother must be of him. "The best thing to do is to take the compliment as intended," he says. But Edlefsen tries to draw a line between family and career — he avoids seeking help on his work from his mother, he says, as a way to maintain that divide.

Family members who work at the same institution must take care to avoid conflicts of interest. Bill Berquist, a gastroenterologist and clinical researcher at Lucile Packard Children's Hospital Stanford in Palo Alto, California, kept out of the selection of fellows in his department when his daughter applied. Now, they work together at the hospital. And Maryanne Large, a physicist at the University of Sydney in Australia, earned her undergraduate degree at the University of Sydney in Australia, where her father was a faculty member. The physics department arranged her father's teaching schedule so that he would never grade her.

Even if relatives are based at different institutions but work in the same field, family connections can create tangles. Grant reviews must be independent: committee members at the US National Institutes of Health (NIH) are required to leave the review panel if a close family member applies. The situation differs in the case of permanent reviewers, who serve for years. If there is a potential conflict, the NIH dictates that the grant application must be reviewed by a different department. That means that the proposal might be evaluated differently from others in the field, Biggins says.

FOR THE PARENTS

Having a parent in the same career is an advantage — but only if the parents provide the right level of encouragement. Successful scions of science say that their parents never pushed them into their career — rather, mum or dad just made the job look appealing.

Tagging along on work trips makes a big impression, says David Sabatini, a biochemist at the Whitehead Institute in Cambridge, Massachusetts, who travelled with his cell-biologist father. "He seemed to have an interesting life, with interesting and smart people in it," Sabatini says. Sabatini has already taken his own five-year-old son along to a presentation in the Turks and Caicos Islands. (The boy liked the talk, but admonished his father for not explaining things well enough.)

Parents can help their children to get started on a scientific career, but should make sure that science is the right course for them. If the child's school does not offer much career counselling, the parents can point their children to online assessments such Career Driver Online by SkillScan to figure out whether science matches their skills and interests.

A positive family influence is especially important for girls and women in areas of science in which they are under-represented. Elizabeth Larson, an undergraduate student who is majoring in physics and English at the University of Virginia in Charlottesville, has only a few other women in her physics classes — just as her geologist mother was surrounded by mostly male peers during her education. Larson says that she's faced casual sexism — for example, a professor who noted that only his male students had played with electromagnets as kids — and talking with her mum has helped her to work through it.

As scientists climb the career ladder, savvy parents can offer advice on selecting mentors or a place to work, as well as on job prospects in different fields, and even technical advice on specific projects. Jennifer Leeds, head of antibacterial discovery at the Novartis Institute for Biomedical Research in Emeryville, California, says that as her older son was looking around different universities, she called in every

FAMILY TIES

How to make relationships work to your advantage

If your family already boasts a successful scientist or three, it's possible to take advantage of their knowledge or connections while still forging an independent career. Here are some key tips.

- Don't feel bad about tapping into your relative's network. Everyone has one — yours just happens to share some DNA.
- If you're working with a relative, make sure to lay and reinforce ground rules. For example, say, "Please talk to me as you would a collaborator," recommends theoretical biologist Irina Kareva in Boston, Massachusetts.
- Keep it professional at work. (You might need to refer to mum as 'Dr Smith' around patients.)
- Be careful to avoid even the appearance of a conflict of interest; step back from any committees or decisions that involve your relative.
- Be sure to seek diverse mentors outside your family.
- Don't stress about living up to the career of a hotshot parent or relative.
- Realize that some people might think that your successes are down to your relative, rather than your own merit. If they bring it up, explain that even if your parent helped you to make a contact, the successes after that were your own. A.D.

COURTESY KAREVA FAMILY

Theoretical biologist Irena Kareva (centre) is inspired by her mathematician parents.

connection she had so that he could meet faculty members and learn more about the institutes. Jensen recalls that her father made subtle suggestions about which professors to take courses from when she was an undergraduate at Penn State; for those he didn't recommend, he'd say, "He's not particularly interested in undergraduate education." Later on, he gave her the name of the person she applied to for a teaching position at the university, although she earned the position on her own merit. And when Gardner started working in the field of optogenetics, he recalls that his father, a retired laser development engineer, would help him to decide what laser systems to use and how to couple the lasers to fibres, which was valuable as he got started.

"What matters is what you do and how you prove yourself once you're given that opportunity."

Parents should keep a light touch, advises Berquist, so that their offspring can feel independent and think creatively on their own. Three of his four children worked in his office as teens, but he let others supervise them. Now that they are grown — two work at the Children's Hospital and one is pursuing a medical degree — he is careful not to hover. "I try to avoid being very critical, unless I'm asked," he says.

HIGH EXPECTATIONS

It can be a bit tough to follow the career of a parent, particularly if she or he is a superstar. Stuart Cahalan originally found it disheartening to think that he might never measure up to his father, biophysicist Michael Cahalan, a department chair at the University of California, Irvine, and a member of the US National Academy of Sciences. "Every kid wants to be better than their parent, or at least as good," says Stuart, a postdoc in biology at the Scripps Research Institute in La Jolla, California.

When the younger Cahalan was being interviewed for graduate school, faculty members quickly recognized his father's name, he says, and he realized that in science, he would always be Michael Cahalan's son. In time, he came to accept that fact. And his knowledge now exceeds that of his father's in some areas. Recently, he proofread and commented on one of his father's grant applications.

Although scientists may stay independent of their parents, others may not necessarily believe that to be the case. David Sabatini's brother Bernardo, a neurobiologist at Harvard Medical School in Boston, Massachusetts, says that he's heard occasional quips about the easy path he must have had because their father was well known by those higher up at the university because he chaired the cell-biology department at New York University. "My response is always the same," says Bernardo. "Even if somebody has help getting in the door, what matters is what you do and how you prove yourself once you're given that opportunity."

But the occasional bit of snark or envy is no reason not to follow in a parent's footsteps, be it the field the child chooses or the institution where he or she lands, scientists say.

Nepotism can't get one ahead too much in science anyway, they say, because researchers are evaluated independently in grant and paper reviews. Success comes from passion and hard work, not pedigree. "It's all about following your heart," says Schiffer. ■

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FACULTY POSITIONS

Tenure figures tumble

The number of US faculty members who have tenure or are on the tenure track is falling, according to a report by the American Association of University Professors in Washington DC. Over the past 40 years, the proportion of the academic labour force that is in a full-time tenured position has shrunk by one-quarter, and the proportion in tenure-track posts has halved, reports *Higher Education at a Crossroads*. In 2014, the study found, 21% of faculty appointments were full-time tenured and 41% were part-time. On average, male professors earned more than female professors in full-time positions at every rank and across all types of institution. Overall, positions in New England paid the most, whereas those in Iowa, Kansas, Minnesota, Missouri, Nebraska, North Dakota and South Dakota paid the least. The report also found that part-time appointees were less likely to conduct long-term research and experiment with teaching methods and course content. Citing a correlation between lower student-graduation rates and increases in the number of part-time and non-tenure-track positions, the association calls for institutions to convert part-time, non-tenure positions into tenure-track posts.

ACADEMIES

Diversity drive

Women represent an average of 12% of the memberships of academic science societies worldwide, finds a report from the InterAcademy Partnership (IAP): The Global Network of Science Academies. *Women for Science: Inclusion and Participation in Academies of Science* examined the membership of 69 national science societies around the world, and found that women comprise 14–16% of academies whose members are concentrated in the biological, medical and social sciences. In maths and engineering societies, women average 5–6% of membership. Female representation on academy governing boards, however, average 20%. Just 40% of the societies said that they have a gender policy or strategy to increase female participation in academy activities. The report recommends that IAP member academies collect and report data annually on membership and activities. It also suggests that academies create committees to establish strategies that will boost gender equality in membership and governance.