CAREERS

TURNING POINT Two awards ease the way for population geneticist **p.547**

CAREER TOOLKIT Expert advice on scientific career fundamentals **go.nature.com/mfgmok**

NATUREJOBS For the latest career listings and advice **www.naturejobs.com**

R. TATE/VETTA/GETTY

CAREER DEVELOPMENT

What's your type?

Personality and vocation tests can help researchers to improve their 'soft skills' and find careers that suit them.

BY CORIE LOK

When physicist David Dean joined the Oak Ridge National Laboratory in Tennessee in 1995, he says, he was a "typical theory guy": a staff scientist focused on research. About ten years later, as head of the nuclear-theory research group, he joined an in-house leadership-development programme that involved extensive personality tests meant to get trainees thinking about their leadership potential, and what skills they needed to work on. The tests, along with one-on-one sessions with a psychologist and a human-resources professional who helped to interpret the results, showed Dean that he had a 'collaborative' leadership style. But they also taught him that sometimes he needed to be a more 'directive' leader — to be more assertive and to make executive decisions more readily. Knowing about different leadership styles and when to implement them was useful and relevant as Dean took on a post first as a strategic planner for the director's office at Oak Ridge, then as a senior science adviser for the US Department of Energy. And, in July last year, the techniques he learned helped Dean to win the post of head of the physics division at Oak Ridge. The tests and the training augmented his leadership skills, says Dean. "It takes a certain personality to do these jobs."

Early- and mid-career scientists use personality tests in settings from career-counselling and human-resources offices in academia and businesses to training workshops at the US National Institutes of Health (NIH). Tests such as the Myers-Briggs Type Indicator assess how people tend to behave in certain situations, focusing on personality traits such as extroversion and agreeableness (see 'Type by type').

Assessments can also show people how they might differ from their colleagues in terms of, for example, communication style, approach to the workplace, interactions with workmates and conflict resolution. Armed with this information, scientists can manage their own behaviour to avoid misunderstandings, improve their communication and leadership skills, troubleshoot personality clashes, make teamwork function more smoothly and, like Dean, take their careers to the next level. "An awareness of your type can give you insight into your strengths and liabilities, and the ways you can grow as a scientist, as a member of a team, a member of society and a member of a household," says Sharon Milgram, director of the NIH's Office of Intramural Training and Education in Bethesda, Maryland.

INTEGRAL TRAITS

The Myers-Briggs assessment is probably the personality test most widely used by scientists and the general public, says John Lounsbury, a psychologist at the University of Tennessee in Knoxville who has conducted personality tests on Oak Ridge scientists. He and other academic psychologists say that Myers-Briggs is overly simplistic and misses out a few key traits, and that better tests exist. However, it remains popular because it is easy to understand, many people have been trained to administer it and there is a large body of interpretive books, websites and other materials that further boost awareness of the test. It assesses people on eight different personality traits, grouped into four dichotomies, so that a person is designated as introvert (I) or ▶

extrovert (E); sensing (S) or intuition (N); thinking (T) or feeling (F); and judging (J) or perception (P). The result is 16 possible combinations of personality type, such as INTJ, that can help to explain how people approach different aspects of their lives.

The big benefit of the Myers-Briggs assessment is that it shows test-takers how they differ from others in their personalities and approaches, says Milgram. "For many people, it is a validation of the fact that people can bring different styles and approaches to work and still be successful," she says. For the past couple of years, Milgram's office at the NIH has run training and orientation programmes including the Myers-Briggs assessment for students, postdocs, staff scientists and principal investigators.

"Myers-Briggs results provide just one window through which you can look at your overall capabilities."
Bill Lindstaedt

One set of Myers-Briggs traits that is particularly relevant to scientists is the sensing versus intuition axis. 'Sensing' people tend to focus on details and proceed through work step by step, whereas those designated 'intuition' look at the big picture and are less detail-oriented. "Good scientists need to be able to operate out of both worlds," says Bill Lindstaedt, director of the Office of Career and Professional Development at the University of California, San Francisco (UCSF), where he administers tests including the Myers-Briggs (see 'Interests before indicators'). No one can change whether they are inherently S or N, but with proper interpretation from a trained person such as a psychologist or career counsellor, personality assessments can suggest ways in which people can adjust and manage their behaviour to better understand and work with different personalities. For example, a big-picture thinker might need to sharpen their focus on the minutiae of a project or experiment when giving directions to a detail-oriented person. People can modulate their behaviour, develop skills or hire people who will complement their way of working to make sure that their team can move between the two modes, says Lindstaedt.

IN AND OUT

Another pair of traits that can come into play in the lab, especially in meetings, is introversion versus extroversion. For example, extroverts tend to talk aloud as they think, whereas introverts prefer to formulate their thoughts before voicing them. Milgram says that she is trying to alter her own extroverted behaviour by being less talkative in meetings and giving introverts in the room a chance to process before they speak.

Melissa Wong, a graduate student in virology and immunology at the UCSF who took the Myers-Briggs as part of an internship programme exploring non-academic scientific careers, was struck by how the E–I difference can underlie misunderstandings in the lab. For example, extroverts may think that introverts aren't bright enough to speak up right away, and introverts may think that extroverts speak without substance. "I work with both of those types of personalities, and I think there's a lot of miscommunication," says Wong.

"The worksheet helped me to realize what's most important in a work environment."
Melissa Wong

C. GOODFELLOW/GLADSTONE INST.

Becca Stoloff, a graduate student in neuroscience at the University of California, Berkeley, is considering embarking on a teaching career. She says that the Myers-Briggs confirmed that she had the personality of a mentor; this autumn, she will teach maths at a private school for a semester as part of her career exploration.

Individual scientists and labs are even starting to use Myers-Briggs outside training programmes. Milgram says that postdocs and students on the NIH's Bethesda campus are requesting Myers-Briggs workshops for labs and retreats. And in one developmental-biology lab at the University of Missouri in Columbia, the students have all taken the assessment; their four-letter personality types and a few words of description are posted on a chart next to the door. Lab leader Dawn Cornelison says that she first took the test as part of a lab-management

CAREER FOCUS

Interests before indicators

For young scientists trying to decide what type of career to pursue, vocational-interest inventories might be more useful than personality tests. Inventories gauge activities that a person enjoys and suggest possible occupations on the basis of careers undertaken by people with similar interests. Most of these tests can be taken through career-counselling or human-resources offices, or through private practices; some of them are available online.

Early-career researchers should also keep in mind, however, that most such inventories cover a vast range of occupations and don't focus solely on science. To fill this gap, Bill Lindstaedt, head of the careers office at the University of California, San Francisco (UCSF), collaborated on developing an assessment tailored to young researchers with advanced degrees who are interested in scientific careers outside of academia. The Career Assessment Worksheet asks graduate students to evaluate and prioritize their skills and interests, as well as the things that matter to them most at work. Students receive a list of 60 careers ranging from science-policy adviser to patent attorney, along with information about those careers. The students narrow down the list of possibilities by eliminating the careers that don't match their interests, skills and values.

The assessment exercise has proved effective. "That worksheet helped me realize what's most important to me in a work environment," says Melissa Wong, a UCSF graduate student in virology and immunology. She took the assessment this year as part of a university-run internship programme that helps students to explore science careers outside academia.

Wong already knew that academia wasn't for her when she entered the programme, but she wanted to stay close to science and thought that she might do bench research at a biotechnology firm. Then she completed the Career Assessment Worksheet, and realized that she wanted teamwork to be part of her job. After reading about the biotechnology industry, and meeting and speaking to several professionals in the field, Wong is now considering careers in regulatory affairs and business development.

At the end of the internship programme, Wong took the Myers-Briggs Type Indicator personality test. Lindstaedt gets the students to take the Career Assessment Worksheet first because he finds that it provides a more direct connection to possible career choices than the Myers-Briggs test does. "My skills, values and interests can more clearly point to a certain career path than my Myers-Briggs type," says Lindstaedt. "The Myers-Briggs is more useful for people, once they get into a job, to identify strengths and potential blind spots for success." C.L.

TOOLS AND TESTS

Type by type

Myers-Briggs Type Indicator Widely used test. Classifies personalities into 16 categories on the basis of the traits of extrovert and introvert, sensing and intuition, thinking and feeling, and judging and perception.

NEO Personality Inventory Based on the 'Big 5' model of traits — neuroticism, extroversion, openness to experience, agreeableness and conscientiousness. Used mostly in psychology research.

Hogan Personality Inventory Also based on the Big 5 model. Used mainly for career development and hiring.

Strong Interest Inventory Assesses interests and working styles, and compares them to the interests of people in a range of vocations. Used mostly by undergraduate students seeking advice on career choices. C.L.

'boot camp' for new faculty members offered by the US Society for Developmental Biology in Bethesda. When she told her students about it, they became interested, took the test and asked students joining the lab to take it as well. The assessment has become part of the culture of the Cornelison lab. "It's like a getting-to-know-you game," says Cornelison: it breaks the ice and helps new students to integrate rapidly into the lab.

PRESCRIPTION PRECAUTION

People who administer personality assessments are quick to point out that they are not meant to be deterministic or prescriptive. The results should not be used to pigeonhole someone, or to tell them what kind of job they should have or whether they can succeed at it. The assessments do provide some insight into what kind of person the test-taker is, but only as one data point to be used in overall career guidance and development. "Myers-Briggs results provide just one window through which you can look at your overall capabilities," says Lindstaedt.

Milgram emphasizes that there is no 'right' or 'wrong' personality type in science. No one needs to change their personality to be an excellent scientist. "It's about how you manage your behaviour," she says. ■

Corie Lok *is the editor of* Nature's *Research Highlights.*

TURNING POINT
Sohini Ramachandran

Sohini Ramachandran, a population geneticist at Brown University in Providence, Rhode Island, received two high-profile awards this year. In June, she was named a Pew Scholar in Biomedical Sciences by the Pew Charitable Trusts, based in Philadelphia, Pennsylvania; and in February, she received a fellowship from the Alfred P. Sloan Foundation in New York. She plans to use the grants to distinguish herself in a fast-moving field.

S. EWENS

How did you realize you wanted to combine maths and biology?
It began when I was in high school. Marcus Feldman, an evolutionary biologist at Stanford University in California, let me do a project in his lab so that I could enter what is now the Intel Science Talent Search, a pre-university research competition. I studied genetic variation in *Arabidopsis thaliana*, the plant equivalent of the lab rat, and found that the species moved into the Americas 30,000 years ago, at the same time as humans. I got fourth place. Later, as a computational-science undergraduate at Stanford, I attended a lecture by Feldman in which he estimated the number of females missing from China's population as a result of the one-child law. I realized how incredible it was that we could use maths to learn so much about human behaviour. I have since used genomics to study topics from historical patterns of human migration to whether genetic variation accounts for differences in cancer-treatment outcomes.

What was your first difficult career decision?
Whether to stay at Stanford for my graduate research. Everyone told me to go somewhere else to get broader experience, but I stayed and Feldman became my PhD adviser. I wanted to stay with him because he had a strong history of training students who go on to get tenure-track jobs and make an impact on the field.

How did you come to work at Brown?
I was lucky enough to have multiple offers, but my husband needed an academic post nearby, which can take a lot of time to work out. I found that this two-body problem has become so common that administrators expect it. My husband is a historian, and Brown came up with the best offer — a multi-year, non-tenure-track position. We had been living in different states since we met, so being at the same institution for the first time was important to us.

What is your current biggest career challenge?
Being a junior faculty member in human population genomics. The field is much more competitive than it used to be. All the data are coming from large consortia, such as the 1000 Genomes Project Consortium. Junior people just starting to establish their research credentials can have difficulty joining such consortia. I have always worked on publicly available data, so the biggest change to my research programme is trying to differentiate my work by generating new whole-genome and exome data and analytical methods. My two latest funding sources are very helpful because this work is expensive. Building collaborations is a new frontier for me, but I am finding colleagues at Brown — from anthropologists to clinicians — who have unique data sets to which I can apply my methods.

Did you have female role models in academia?
Yes, my mother and sister. My parents are statisticians at California State University in Sacramento, and my older sister is a pathologist at the University of California, San Francisco. They had a huge influence on me while I was growing up and as I got into applied maths. As a result, I didn't think about gender or the fact that there were few women in my classes.

Do young women seek you out as a mentor?
I get a lot of interest from both female and international students, and I mentor a number of undergraduate women. I understand that it can be difficult to pursue a career path without role models, and I am glad if I can provide an example for someone. Mentoring is a huge part of why I want to be a professor, and of what I plan to do in future. ■

INTERVIEW BY VIRGINIA GEWIN