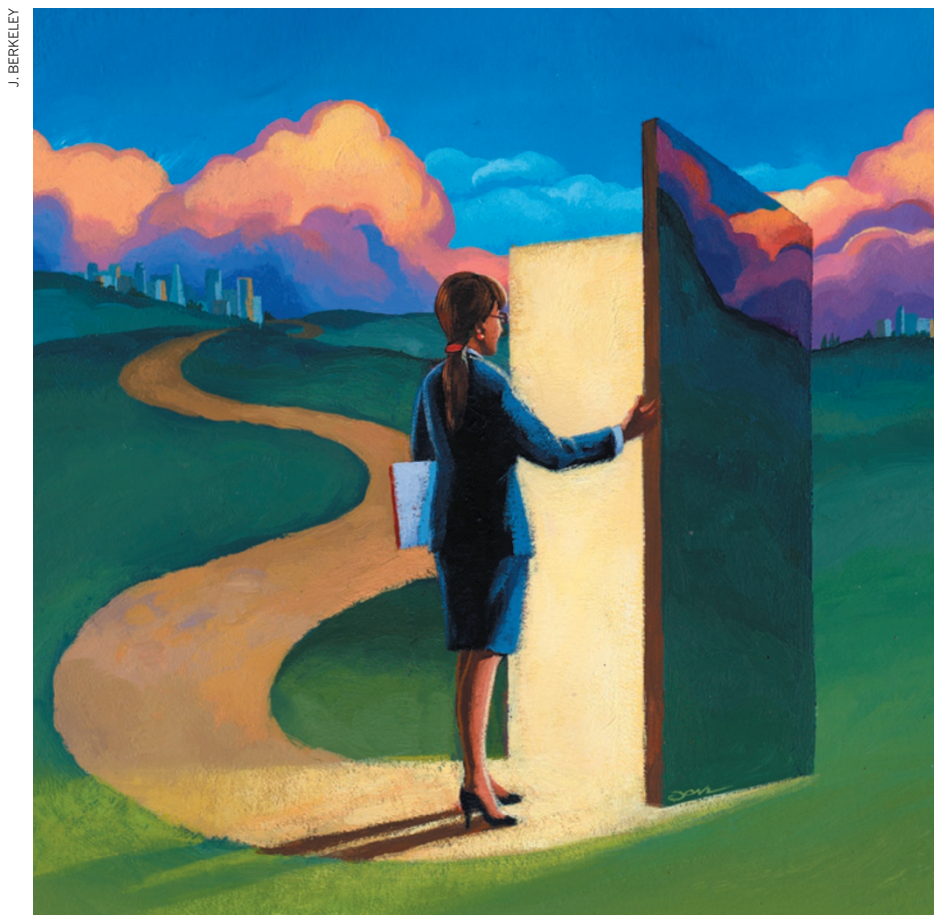


CAREERS

TURNING POINT UK postdoc hopes that prizewinning essay will open doors **p.105**

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WOMEN IN BUSINESS

Finding a way in

Female scientists hoping to become entrepreneurs face obstacles — but there are organizations that can help.

BY VIRGINIA GEWIN

When her adviser left, Mona Jhaveri was two years into her biochemistry postdoc at the US National Cancer Institute in Bethesda, Maryland. But for Jhaveri, it was as much an opportunity as a setback.

Jhaveri had helped to discover that a small DNA sequence could be designed to knock down levels of the messenger RNA that codes for the folate-receptor protein, which is over-expressed in ovarian cancer cells. When her

adviser left in 2000, Jhaveri secured all patent rights to the sequence. In 2006, intellectual property in hand, she launched FOLIGO Therapeutics, a biotechnology company in Rockville, Maryland, that focused on developing DNA-based medicines and molecular diagnostics for ovarian cancer. She raised US\$500,000 in capital through social connections.

Then the money ran out. In 2010, Jhaveri shut down operations. She is now attempting to raise the \$5 million to \$6 million that she needs to get a compound through clinical

trials. Jhaveri acknowledges that the recession and the dismal state of the biotech industry have made it difficult for everyone to secure funding, but she suggests that women still have a tougher time than men — including when it comes to accessing capital. “Deals are still made on the golf course,” she says.

Jhaveri’s struggles are typical. In the United States and Europe, women make up only a small fraction of business leaders. They find it hard to raise funds, make contacts and pitch ideas, and they are less confident than men about finding and creating opportunities.

Still, the number of women entrepreneurs could be set to rise, thanks to a host of resources available to help women to overcome the apparent crises of confidence and capital. Female-focused mentoring and training programmes promise participants the support and advice that they need to become investment-ready — but raising the funds requires a unisex approach.

GENDER BIAS

Women account for just 35.3% of total US entrepreneurship, according to the Index of Entrepreneurial Activity published by the Kauffman Foundation, a non-profit organization focused on entrepreneurship and based in Kansas City, Missouri. Of the US-based companies that received venture-capital financing in 2010, only 10% had ever had a female founder or chief executive, according to Dow Jones VentureSource. And fear of financial woes is among the main reasons that women opt out of becoming entrepreneurs, says Jeffrey Sohl, director of the Center for Venture Research at the University of New Hampshire in Durham.

But the paucity of female entrepreneurs is a result of more than a lack of capital. Surveying 59 economies, the *Global Entrepreneurship Monitor 2010 Women’s Report*, published last month by Babson College in Babson Park, Massachusetts, found that women are less likely than men to believe that they have the opportunities to start a business. They are also more likely to let fear of failure dissuade them from entrepreneurship. According to *Overcoming the Gender Gap: Women Entrepreneurs as Economic Drivers*, a report released in September by the Kauffman Foundation, women entrepreneurs often neglect to take the steps necessary to launch a high-growth business, such as patenting their research or making connections outside academia.

For female would-be entrepreneurs, these challenges make it difficult to pursue a ▶

► potentially rewarding career path. In the United Kingdom, for example, 15% of businesses are led by women, yet women account for only 7% of entrepreneurs in science, engineering or technology fields.

“Women don’t ask for opportunities and they undersell their abilities and expertise,” says Sharon Vosmek, chief executive of Astia, a non-profit organization in San Francisco, California, that supports women-led, high-growth companies in technology and the life sciences around the world. Often, she adds, women miss opportunities because they don’t know how to take advantage of their scientific credentials.

When it comes to pitching business ideas, women are often less aggressive and more cautious than men — which can be interpreted as a lack of confidence, undermining the pitch. Women are also “more open to a discussion about the cons as well as the pros of a potential business — which can make an idea look less attractive to an investor”, says Joanna Horobin, president and chief executive of Syndax Pharmaceuticals in Waltham, Massachusetts.

FOLLOW THE LEADERS

Experts in entrepreneurialism agree that finding mentors — preferably ones who have formed successful companies and are willing to walk newcomers through the process — is a must for women and men alike. But Lydia Villa-Komaroff, chief scientific officer of CytonomeST in Boston, Massachusetts, says that women require extra support. “Women need advocates — people willing to make introductions and vouch that you are a known quantity,” she says. A scheme announced on 4 November by Theresa May, the UK women’s and equalities minister, will spend £2 million (US\$3.14 million) to train 5,000 volunteer business mentors for women.

And a number of organizations have popped up in recent years to bolster women’s entrepreneurial activity. ACTiVATE, a programme that was originally funded by the US National Science Foundation (NSF), teaches women how to create technology companies. It lasts for 10–12 months and trains participants in how to assess a market for their idea, develop a business plan and form a company. The 130 programme graduates have together created more than 40 businesses. “Even though all of them

won’t be chief executives, understanding the process makes them more valuable members of a start-up team, such as a chief scientific officer,” says Julie Lenzer Kirk, co-founder of the Path Forward Center for Innovation and Entrepreneurship, a non-profit group in Germantown, Maryland, that licensed ACTiVATE from the NSF.

ACTiVATE and other programmes, such as those sponsored by Women Entrepreneurs in Science and Technology in Cambridge, Massachusetts, or the Association for Women in Science and Engineering, a group of female academic and industrial scientists in Cambridge, UK, are great starting points for learning about businesses and finding mentors, say participants. Still, their reach can go only so far. “ACTiVATE gave me the confidence and a path that I wouldn’t have formed on my own,” says Jhaveri. But it did not give her access to capital.

A DEARTH OF FUNDS

Women tend to limit themselves in how they search for funding, according to research from Sohl. Angel investors — affluent individuals who invest their own funds — are generally the largest source of funding for early-stage, high-growth companies, yet women pursue such investment at substantially lower rates than men. And women most often seek money from other women. This presents a problem, given that only 10–15% of angels are women. Yet Sohl’s research shows that once women overcome barriers and submit proposals for angel funding, they have a roughly 14% success rate, about the same as men.

Even so, women have problems securing more lucrative, later-stage venture-capital deals. In the United States, just 2% of venture capital went to companies with women chief executives and founders in 1998, according to the Diana Project, a longitudinal study on women in business, based at Babson College. The proportion had increased to 10% by 2010, finds Dow Jones, but that is still a small total — especially considering that women make up half of the nation’s MDs and half of PhDs in some fields. Women, especially scientists and engineers, don’t have the necessary networks in the private sector, says Lesa Mitchell, a vice-president with the Kauffman Foundation.

Women looking for funding might consider organizations such as Golden Seeds, an angel-investment network based in New York City. Founded in 2004, it has invested \$30 million in dozens of companies, many of which focus on science and technology — and all of which have at least one woman in a leadership role who has equity in the company. They typically see 300 applications each year, and fund between 10 and 12 of those companies, according to Nadia Jain, Golden Seeds managing partner. She adds that the network often offers guidance to entrepreneurs in whom it does not actually invest.

Too frequently, budding women entrepreneurs are content to scrape by rather than make

a bold request. “Women tend to think they can ‘get by’ with \$250,000 when they should be asking for \$1 million,” says Susan Windham-Bannister, president and chief executive of Massachusetts Life Sciences Center in Waltham. That strategy effectively shoots an entrepreneur in the foot twice, she points out — not only does the fund-seeker fail to secure the necessary support, but she also sends a signal that she doesn’t understand what it takes to develop a product.

There are few women-centric organizations focused on raising capital, but they do exist. Springboard Enterprises, a non-profit organization in Washington DC, has helped to raise more than \$5 billion for more than 400 women-led companies. Astia screens and selects women entrepreneurs with fundable high-growth companies, and fosters networking opportunities to get the capital to succeed. Now serving 307 companies globally, Astia began tracking a cohort of women-led start-ups in 2005; the group of women eligible for Astia support has since grown from 50 to 500.

Exposure to the venture side of business can be valuable. Horobin started her career in clinical drug development and served as vice-president of oncology at Rhône-Poulenc Rorer (now Sanofi) in Paris, before moving on to smaller start-ups and deciding that she wanted to become an entrepreneur. But she needed a better understanding of how to raise capital. So she joined a venture-capital firm for one year as an entrepreneur-in-residence.



“Women tend to think they can ‘get by’ with \$250,000 when they should be asking for \$1 million.”

Susan Windham-Bannister.

“If I’m going to run a venture-backed company, I need to see how things work from the other side of the table,” says Horobin. The most important thing she learned, she says, is to research thoroughly which investors will be the best fit for a specific company: exchanging company equity for capital requires trust and like-mindedness. Details such as the size and age of the investors’ fund, what investments they’ve made in the past and what they hope to do in the future can be

important indicators of the potential success of the partnership.

Vosmek and other entrepreneurial experts say that women should be careful not to network and seek resources only from women’s groups. Doing so often separates the would-be entrepreneur from sources of money controlled by men, points out Barbara Fox, chief executive of Avaxia Biologics, a biotechnology company in Lexington, Massachusetts.



Women, especially scientists and engineers, don’t have the necessary networks in the private sector.

Lesla Mitchell

Vosmek encourages women to make their way into the ownership structure of the company. For example, scientific advisory board members are often compensated in stock. “You don’t have to be an entrepreneur to benefit from the financial upside of your science,” says Vosmek. But only 6.5% of scientific advisory board members of US life-sciences firms are women. In the United Kingdom, 14.2% of board directors of firms on the London Stock Exchange’s FTSE 100 index are women. That is up almost 2% since 2010, following the February 2011 publication of *Women on Boards*, a report by Mervyn Davies, the former UK trade and industry minister, which called for a minimum of 25% female board representation by 2015.

CULTIVATING CONTACTS

Learning about the entrepreneurial ecosystem is a crucial step towards breaking out of the female niche. One of the most efficient ways for a woman to network may be to join the lab of a principal investigator who has established industry contacts. Villa-Komaroff took a postdoc with Walter Gilbert, a molecular biologist at Harvard University in Cambridge, Massachusetts, who would go on to be a co-winner of the 1980 Nobel Prize in Chemistry. Unbeknown to Villa-Komaroff, Gilbert was in the middle of co-founding Biogen, one of the first biotechnology companies. Although she turned down an offer to join Biogen (now Biogen Idec, based in Weston, Massachusetts), Villa-Komaroff’s interest in industry was sparked once she began to attend board meetings as a consultant to the company. She went on to serve on other company boards, until John Gilbert, Walter’s son, approached her to join CytonomeST. Villa-Komaroff served as the company’s chief executive before taking on her current post.

With confidence and mentors in hand, women still face the same challenges as all entrepreneurs: identifying a good idea, coming up with a business plan that gauges a product’s market and attracting investment. Even as she struggles to gain a foothold, Jhaveri is certain that there is a market for the detection and treatment of ovarian cancer. But given the early stage of her work, and with no return in sight, she realizes the risk for investors. So she is turning to her networks, including contacts in philanthropy and entertainment, to see whether fund-raising events involving leading comedians will provide the money she needs. “The best entrepreneurs,” says Vosmek, “are innovating the business model as well as the science.” ■

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TURNING POINT

Tiago Branco

Tiago Branco, a postdoc at University College London (UCL), received the 2011 Eppendorf and Science Prize for Neurobiology on 12 November at the Society for Neuroscience annual meeting in Washington DC.

What do you consider your most pivotal career decision?

I was in my last year of medical school at the University of Lisbon in 2002, and I had to decide whether to go on for two years of residency or do a PhD. Given my interest in research, my adviser at the time encouraged me to apply to UK graduate programmes. I decided to attend UCL. It was all very quick: I had to finish medical school on a Friday and start at UCL on the Monday. I really wanted to do this programme because I didn’t have a background in neuroscience and it offered one year of lectures and experience in different labs.

Describe your PhD research.

Transmission of signals between neurons fails most of the time. My PhD studied how this is regulated — and why some junctions, or synapses, are reliable and others are not. We found that the neuron receiving the connection talks to the neurons sending the transmitter, and regulates the reliability of the synapse, so that it is not too excited or silent — it maintains a balance.

Is there something you would like to have done differently during your PhD?

The PhD is an ideal time to try high-risk research, but I naively didn’t realize how crucial it is to have publications by the end of it. If I were to do things differently, I would conduct experiments that are sure to produce data, as well as try riskier things. I didn’t account for the time to publication, which can be problematic under Britain’s three-year PhD programme. If it takes, on average, a year to get a paper published and a year to get your technique up and running, you basically have one year to generate publishable data. My advice for PhD students, especially in Britain, is that it is important to determine the work that will define your PhD research as early as possible. It will make life much easier.

How did the lack of publications affect your career progression?

I had a paper accepted for publication one year into my postdoc. Luckily, I was able to start a postdoc at UCL without a first-authored paper. But if I hadn’t had that opportunity, I don’t know what I would have done. The lack of publications at the end of my PhD did knock



me out of competition for a postdoc fellowship. I found out that my paper had been accepted by *Neuron* two months after I was declined for the fellowship. Timing can be as narrow as that.

You won the Eppendorf prize with an essay on how dendrites affect neurotransmission. What inspired it?

I wanted to write about why I’m motivated to study neurobiology — why I think that tracking single neurons is a good way to investigate how the brain controls behaviour. I wanted to write about my research without the constraints of a scientific publication or the worry that the paper might be shot down. It was a great exercise.

Do you think the award will help your job search?

It will increase my visibility, and might help me to get past the first round of eliminations. Selection committees are looking for something to make you stand out. I’m hoping that this increases awareness of who I am and what I’ve done.

How would you describe the job scene?

In Britain, the recession is definitely affecting jobs. Most universities have a freeze on hiring — which means that your options for starting a career, or a lab, are limited. The main way of starting a job in academia is to get a lectureship and apply for grants for research money. That’s hardly an option at the moment because so few lectureships are available. My only chance of staying at UCL is to get a fellowship. But the odds of that are minute. And the success rate in terms of grant funding has decreased. It feels as if you have to get every career decision right or you might end up in a bad spot. ■

INTERVIEW BY VIRGINIA GEWIN