Worldwide acclaim for ground breaking local heroines

Matthew Reisz on the awards that highlight the developing world's leading young female scientists

In Jordan, says Lubna Tahtamouni, smart women are often "labelled as unattractive, not feminine enough or even masculine. Our achievements are usually celebrated in the same way as the achievements of handicapped people." She recalls comments to the effect that: "It is great that, despite the fact you are a woman, you published an article or won an award."

In 2005, Tahtamouni completed a PhD at Colorado State University and joined the Hashemite University in Jordan as an assistant professor in the department of biology and biotechnology, where she was promoted to associate professor in August. She is currently chair of the department and works on the causes of male infertility and "the role of actin-binding proteins during cell migration".

Her family was supportive of her decision to build a career as a research scientist, but Tahtamouni recalls that before she got married, "they kept reminding me that I needed to have a 'life' outside my lab. Jordan is very permissive when it comes to women's education and work, but traditionally women's priorities are pre-defined: her husband, children and household."

Tahtamouni says that "many times over the years I thought of leaving academia because of the frustrations", but she has recently received an award that "made all the disappointments go away. It gave me a huge push forward to write research proposals, mentor new graduate students and spend more time in the lab."

Along with biologists from Bangladesh and Cuba, mathematicians and physicists from India and Mexico and chemists from Egypt and Nigeria, Tahtamouni was one of 11 winners of the prestigious 2011 OWSD Award for Young Women Scientists from the Developing World.

Supported by a grant from the Elsevier Foundation, the annual awards are given by the Academy of Sciences for the Developing World and the Organization for Women in Science for the Developing World (OWSD), after shortlisted candidates are ranked by the president and regional vice-presidents of the latter.

The 2011 awards ceremony took place at the end of September during an international symposium, Women in Science and Engineering, held in Kuala Lumpur.

"It is important to highlight that women, even from developing countries, are doing great things: making breakthroughs, contributing to advances in medicine, science, chemistry and engineering – becoming leaders and experts in their fields," says one of the researchers honoured in this year's awards, Denise Evans from South Africa.

Change begins at home

But although the winners are obviously exceptional individuals, their stories also illuminate wider issues of funding, the support that such scientists receive and the obstacles they often have to overcome. While acknowledging the importance of foreign experience and contacts, several women express a strong desire to contribute to the development of their own nations and regions.

Tahtamouni, for example, has spent three months every summer since 2006 in US or Australian labs and hopes to spend the academic year 2012-13 on sabbatical either in one of those countries or in Germany or the UK. Yet, although "the award has opened many doors for me", she says, her intention is to remain as a teacher and mentor in Jordan.

"If I can make a change or impact the life of one student (especially a female student), then my work in Jordan and 'sacrifices' are worth it." She also wants to focus some of her research efforts on topics of particular concern to her female compatriots, namely "the invasion signature of breast cancer among Jordanian females" and the appropriate therapeutic interventions.

Similar themes emerge in the career of Evans, a biologist at the University of the Witwatersrand, Johannesburg. She completed her doctoral degree and a postdoctoral fellowship in medical laboratory technology before moving into the HIV and infectious diseases arena as an epidemiologist and researcher in 2009.

Family support and encouragement, she says, enabled her "to continue as a full-time student for more than 10 years…I was also very fortunate to receive postdoctoral fellowships hosted by two different institutions within South Africa. Most sponsors prefer that you do a postdoctoral fellowship abroad. In my case, I still obtained the necessary experience and mentorship without going abroad for two years."

While pointing out that "HIV is an international problem and not confined to Africa", Evans also stresses that "many of the other resource-limited settings share the same challenges that we do", and she seems most interested in building collaborations within this sphere.

Her current research interests, she says, include "HIV and nutrition, low-cost monitoring of HIV for resource-limited settings and improving treatment outcomes in paediatric, adolescent and adult HIV-positive patients on antiretroviral therapy. I would like to continue analysing observational data from a large cohort of HIV-positive patients to monitor treatment and patient outcomes. I will also continue to provide statistical and methodological support to academic staff and students."

Launching careers

Two of this year's winners have been able to use their experience in leading Western universities as a launch pad for impressive careers in their own countries.

Silvina Pellegrinet studied chemistry at the National University of Rosario, her home town in Argentina, graduated in 1995 and was awarded a PhD fellowship by CONICET, Argentina's national research council. This included a period at the University of Seville in Spain, where she worked on the synthesis of antibacterial, antiviral and antifungal agents from sugars.

After completion of her PhD in 1999, Pellegrinet embarked on a postdoc at the University of Cambridge, where she was also a research fellow at Lucy Cavendish College. She returned to Rosario in 2001 and, the following year, obtained a CONICET-funded position as assistant research scientist.

Pellegrinet was later promoted to adjunct research scientist and then independent research scientist in 2010. To date, she has published 32 papers in peer-reviewed journals and been invited to deliver lectures at American Chemical Society conferences.

In achieving all this, Pellegrinet stresses the support of her family, and particularly the "strong influence" of her engineer father. She also acknowledges the government support she received, "because I always attended public (and therefore free) educational institutions and because the national research council funded my PhD, my postdoc and my career as a scientist".

Yet her future career development is also likely to depend on "collaborations with groups in world-leading institutions such as the one I have maintained with my postdoc supervisor at the University of Cambridge for more than 10 years now".

Continuous support

On the other side of the world, Farzana Shaheen obtained her MSc and MPhil at Quaid-e-Azam University in Islamabad before moving to the University of Karachi's HEJ Research Institute of Chemistry, where she and her supervisors worked on the isolation of anti-epileptic natural products from the medicinal plants of Pakistan.

She acquired a basic training in combinatorial chemistry at the University of Southampton after becoming the first Pakistani to win a L'Oréal-Unesco Fellowship for Young Women in Life Sciences in 2004. She developed her skills further through a Fulbright Scholarship for the academic year 2008-09 at the University of California, Davis.

Shaheen says she has enjoyed "continuous support from my mentor, teachers and family, due to which I could continue my research work even after my marriage", but she highlights the challenges she has faced as a mother of two young children in keeping "a balance between my professional and family life and also to perform high-quality research work".

She has now returned to the HEJ Institute as a tenure-track assistant professor, where she focuses on research on medicinal plants and on "new lead compounds against microbial infections".

Shaheen already has 50 publications in international journals and two patents to her name – and, like her 10 fellow OWSD award-winners, seems more than likely to continue "doing great things".

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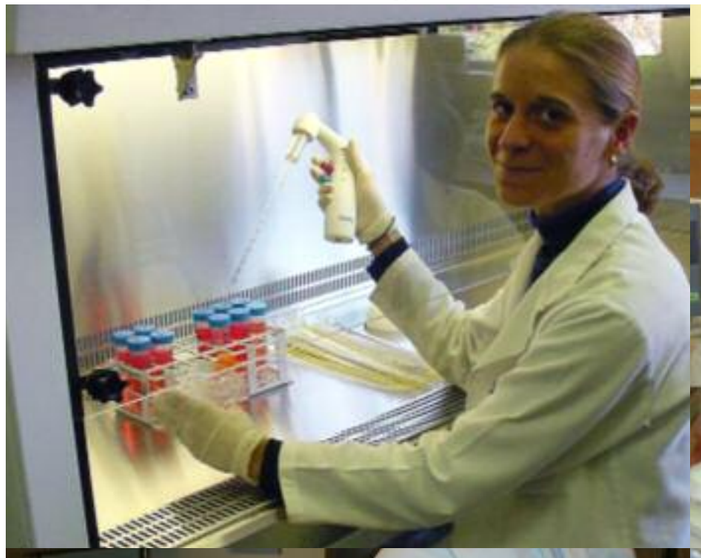

Not resting on their laurels clockwise from top left, the OWSD award-winners Denise Evans of South Africa, Farzana Shaheen of Pakistan, Silvina Pellegrinet of Argentina and Lubna Tahtamouni of Jordan