The Tao of Science Fairs

As a kid in Brazil, Dayan (Jack) Li played in the citrus groves of the experimental fruit farm where his dad did field research. He enjoyed poking the occasional poisonous toad to watch the oil ooze from its blistered back, but he never envisioned winning accolades at a prestigious international science fair.

Li didn’t know what a science fair was until he moved to Laurel, Maryland, and participated in one as a seventh grader. By the time he entered Eleanor Roosevelt High School, the HHMI-funded science and technology magnet, he was hooked ... and winning. He graduated from Harvard University this summer.

Growing up in Moorestown, New Jersey, Maria Elena (Ellen) De Obaldia delighted in working on kitchen table science projects with her sisters. For one experiment, the girls even talked their dentist into irradiating fruit flies with his x-ray machine. De Obaldia, also a Harvard grad, went on to win elite science competitions, where students develop innovative projects in fields as diverse as encryption, human behavior, cancer, and astronomy. Today she is a graduate student at University of Pennsylvania (Penn), where, as part of the HHMI Med into Grad Program, doctoral students get exposure to principles of medicine and disease.

Li’s and De Obaldia’s paths to success were wildly different, but both occasionally wished they could have had more guidance along the way. So they jumped at the chance in 2008 to work with three other Harvard students to write a book—Success with Science: The Winners’ Guide to High School Research—published in January. (See Observations, inside back cover.)

“There is incredible value in hearing the advice from peers who have so recently experienced the same thing,” says Michele C. Glidden, director for science education at the Society for Science and the Public, the long-time organizer of elite science competitions. “The book shows the good nature of scientists and the importance of sharing best practices and research.”

The brainchild of Shiv Gaglani, a 2010 Harvard graduate, the book aims to demystify the process of finding a mentor, initiating a project, and competing in high-caliber science fairs. Gaglani recruited fellow science fair winners among Harvard undergrads, and they divvied up 24 chapters, culling the wisdom of about 50 science fair winners. De Obaldia focused on personal development, scientific method, and keeping a log book.

“No one wanted to write the chapter about documenting your work, but I did!” she laughs, remembering the fun she had with her log book and how she personalized it. “I used photographs to document things like how I set up tubes and what materials I bought.”

In his chapters, Li encourages students to approach the lab as a foreign country, noting, “some people are surprised that it takes time to get used to the environment and the rhythms and norms of behavior.” He also touts the value of internships with financial support as a help for finding research mentors. Li did his Intel project work as a summer intern in the research lab of David Roberts at the National Institutes of Health.

Having smoothed the journey for those following in their footsteps, Li and De Obaldia are moving forward on their career paths. Li will be pursuing an M.D./Ph.D. in the Harvard/MIT Medical Science Training Program. De Obaldia is a Ph.D. candidate in immunology at Penn. Ultimately, she wants to be a professor with her own research lab.

“Science fairs gave me the chance to be creative and then show what I had accomplished,” De Obaldia says. “The process builds so much confidence and that influences everything else I do.”

—Lisa Chiu

WEB EXTRA: To marvel at the science honors achieved by each of the book’s coauthors, go to www.hhmi.org/bulletin/aug2011.