

# Folk Medicine for the 21<sup>st</sup> Century



**G**rowing up in Birzeit, Palestine, **Mary George Kaileh** thought she'd become a pharmacist, like her uncle. Entering Birzeit University, she planned to transfer eventually to a college offering a pharmacy degree—until her unexpected fascination with molecular biology surfaced.

## Hundreds of Helpful Plants

With a Bachelor of Science degree in biology, Mary became a research assistant at her university, studying the effects of medicinal plants on bacteria. In Palestinian

folk medicine, over 700 plant species are botanical pesticides or medicinal herbs.

In 1999, professors from a consortium of Belgian universities visited her lab. Professor Guy Haegeman invited Mary to a three-month molecular biology training program at the University of Ghent, and later encouraged her to apply to their doctoral program. She received one of the consortium's 10 annual graduate scholarships.

For her Ph.D. in biochemistry, Mary researched potential anti-inflammatory and antitumor effects of local medicinal plants. "I looked for drugs to reduce the effects of a particular protein (NFκB), which leads to long-lasting inflammation if it is not properly regulated," she explains.

## Attacking Inflammation

Her research focused on *Withania somnifera*, a plant related to the deadly nightshade and used to treat wounds and reduce inflammation. "No one knew how it worked. I was the first person to study the molecular mechanism that controls the protein and the inflammation," she says proudly. "But research is very competitive. Before I published my first paper, an article came out by an Indian researcher on the same subject. At first, it was a shock," Mary confides. Fortunately, her research team, with more and broader data, was still able to publish their research in 2007. The research funded by her UNESCO-L'Oréal Fellowship in 2003 helped her complete her data analysis, Mary notes gratefully. "It's a very nice program that recognizes women in science."

She wanted to travel to the United States for a postdoctoral fellowship. "I'd already tried science in Europe," notes Mary, who is fluent in English, Palestine's second language. As a visiting fellow at the National Institute on Aging (NIA) in Baltimore since March 2007, she studies the biology of certain immune system cells that are the basis for effective vaccination, hoping to discover new ways to treat disease.

Mary finds that being a researcher in the United States is not like Europe, where she was encouraged to travel and to maintain a more balanced life. "Here, everything revolves around your work," reflects Mary. "My boss in Ghent wanted us to work, but also to take vacations, to have a more open mind." She couldn't see the reason then,

but after her postdoc experience in the United States, she better understands her previous boss's view.

## Having a Balanced Life

Mary hadn't expected to be one of only two women in her Ph.D. program. "In Palestine, 50 percent of university students are women. I was shocked that, around the world, the higher you go—at Ph.D. or professor levels—the lower the percentage of women scientists. Even in the US, with all the universities, you still don't have many women in science," she laments.

But Mary is grateful that she's able to continue her studies in the United States. "Palestine has limited graduate study. People often don't have enough money to go abroad, like I did," Mary observes. In Birzeit, Tamer Essawi urged her to pursue a Ph.D. Mary says that without the support of both her mentors, Essawi and Haegeman, "I wouldn't be here now."

## 'She Will Crack the Problem'

"As a scientist, Mary brings rare intensity, determination and passion to her work," says Ranjan Sen, chief of the NIA's Laboratory of Cellular and Molecular Biology. "She exudes the attitude that she will crack the problem, no matter what it takes, and wills herself to reach beyond the easily accessible. Mary is the social life of our laboratory; her empathy toward colleagues is unmistakable."

After her postdoc ends, Mary has a clear goal: raising funds to start a research lab at Birzeit University, allowing local people to pursue graduate degrees. "From my scholarship, I was able to buy a little equipment. I hope I can do it—it's so difficult to find funds, especially for a lab. Most funds for education in Palestine come from the European Union, so there is little money for costly research or expensive molecular biology equipment. With checkpoints and other obstacles, you can't be sure you'll get back to the lab to finish your work." Despite the hurdles, "The women at our universities are looking to improve ourselves more and more," she declares.



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