AUSTRIAN SCIENTIST OF THE YEAR 2008, FATIMA FERREIRA, AWAKENS A "SLEEPING BEAUTY"

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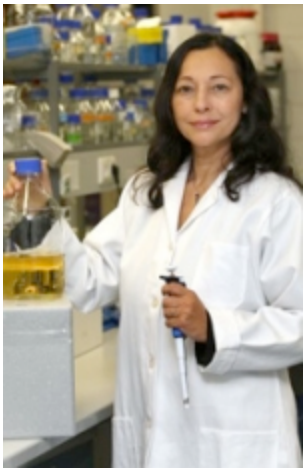
By Juliet M. Beverly


Fatima Ferreira

Austrian Scientist of Year 2008, Dr. Fatima Ferreira, director of the Christian Doppler Laboratory for Allergy Diagnosis and Therapy at the University of Salzburg in Austria, gave an evening lecture at the Embassy of Austria in Washington, DC, on June 29, at which she discussed a topic that affects 25 percent of people in Europe, 20 percent of people in the US, and millions around the world - *allergies*. Ferreira's current research focuses on the development of birch, ragweed, mugwort, Japanese cedar, and cypress pollen allergy vaccines. With the lab's industrial partnership with the Austrian biotechnology company, Biomay, Ferreira and her colleagues were involved in the first worldwide development of recombinant birch pollen allergen Bet v 1 - an artificial allergen that provides a more specialized approach to curing allergies.

A jury from the Austrian Club of Education and Science Journalists elected Ferreira as Austrian Scientist of the Year 2008 and, as in years past, the Office of Science & Technology (OST) at the Embassy of Austria invited the Austrian Scientist of the Year to Washington to present her work - using the US capital as a platform to communicate the work to the American public. Hosted by the OST, the event was held in cooperation with the Embassy of Brazil in Washington, DC, and was also part of the European Science Series in collaboration with Euraxess .

Ferreira's stay in Washington included a luncheon hosted in her honor by the Brazilian Ambassador to the US, Antonio de Aguiar Patriota, at his official residence, with the recently appointed Austrian Ambassador to the US, Christian Prosl. Ferreira's schedule also included meetings with representatives from some of Washington's key and most influential S&T institutions such as AAAS , NIH , and the Janelia Farm Research Campus of the Howard Hughes Medical Institute .

Images from the Event Photo Gallery


Austrian Science Attache to the US and Canada, in the background, laureate Fatima Ferreira and her husband Peter Briza.

Over 100 scientists, policy makers, and managers in R&D attended the lecture. Ambassador Prosl gave the opening welcome for the lecture, followed by Ferreira's introduction by OST Science Attaché, Philipp Marxgut. "In addition to being an excellent scientist and science communicator, Fatima was chosen by the association [Austrian Club of Education and Science Journalists] for inspiring female students and researchers to start careers in the fields of science and technology - still largely dominated by males - and also for being a wonderful role model for the ongoing internationalization of science in Austria," said Marxgut, noting that Ferreira is the first Austrian Scientist of the Year not born in Austria.

Ferreira was born in Goias, Brazil, in 1959. She attended Universidade de São Paulo where she earned doctorates both in dental surgery and in biochemical sciences. In 1988, Ferreira left Brazil. "I was always interested in research and I knew in Brazil that some possibilities were limited," Ferreira told *bridges*. "I knew North America was an excellent place for research, and it was clear for me if I wanted to develop my career in science that I should, at some time, come

Ferreira as she gives her presentation at the Emabssy of Austria, Washington, DC.

First row from left to right: Austrian Ambassador Christian Prosl, NSF Director Arden Bement, AAAS Center for Science, Technology and Security Policy Director Norman Neureiter with wife Georgine, Science Advisor to the US Secretary of State Nina Fedoroff, Deputy Director of the OST Caroline Adenberger (click here to enlarge image).

to North America. So I decided to go to Canada."

At the age of 30, shortly after she finished her research assistant position at the Department of Morphological Sciences at the Federal University of Santa Catarina State in Santa Catarina, Brazil, Ferreira left South America to go to Canada, where she was a postdoctoral fellow in the lab of Dr. Anders Bennick in the Department of Biochemistry at the University of Toronto. It was in her first year in Canada that she met her future husband - an Austrian - Peter Briza, an associate professor of genetics at the University of Salzburg, who was also a postdoctoral fellow when he first met Ferreira. Although they worked in neighboring labs, they rarely saw each other at first. As they describe it to *bridges*, "The doors to the labs were always closed." However, a closed door proved *not* to be a hurdle for this couple, now married for 10 years. Once they finished their postdocs in Canada, Briza was offered a job in Austria, and Ferreira decided to make the same move, which led Ferreira, the Brazilian scientist, to become an Austrian scientist - now going on 20 years. From that point on, Ferreira excelled in her field as a top allergy research specialist, becoming the second woman in Austria to be elected to head a Christian Doppler Laboratory .

Currently, in Salzburg, Ferreira manages a group of 20 Ph.D. students, postdocs, and research assistants working on treatments for pollen allergies that cover a fairly wide portion of the globe:

- Birch - found in the northern hemisphere mostly in temperate climates
- Ragweed - common to North America and parts of South America with warmer and drier climates
- Mugwort - a plant related to ragweed that that is native to Europe and some parts of Asia and northern Africa
- Japanese cedar and cypress - common to Japan, China, Central Asia, and Mediterranean countries.

Allergy, by definition, is a disorder of the immune system that produces an inappropriate response to *harmless* environmental substances, or allergens. The concept of "allergy" was originally introduced in 1906 by Clemens von Pirquet a Viennese pediatrician. Allergies are most prevalent in industrialized nations, affecting 20 to 25 percent of the general population. Why industrialized nations? Some attribute this to the "Hygiene Hypothesis " - a lack of exposure of the immune system to stimuli, such as bacteria, and viruses, lead to allergies arising later in life. There is no clear-cut cause for allergies, although some have been attributed to host factors, such as heredity, sex, race, age; and environmental factors such as infectious diseases, pollution, allergen levels and exposure, and diet (click here to watch a video on what happens in the body when exposed to allergens).

In 1911, at St. Mary's Hospital in London, Drs. Leonard Noon and John Freeman adopted a different approach to treating patients suffering from hay fever by introducing increasing doses of pollen extracts under the skin to decrease the sensitivity to pollen that characterizes hay fever sufferers. As Ferreira explained during her lecture at the embassy, "Allergy Vaccines: Waking Up a Sleeping Beauty," the procedure first conducted in 1911 hasn't changed since. "The treatment is a *beauty* because it works. But, there is more that can be developed in treatments and a lot more to be improved, or awakened," said Ferreira, stating the philosophy behind her research.

"If you can make individual vaccines for pollen and other allergies, why not have a universal allergy vaccine?" asked Aleksandr Simonian, program director for the directorate for engineering at the National Science Foundation (NSF), during the question and answer session that followed the lecture. Ferreira explained that her lab is taking a more delicate approach to allergy vaccines - which, according to her philosophy, makes the most sense: You should always awake a sleeping beauty *gently*. Ferreira explained that a universal vaccine approach could compromise the normal functioning of the immune system and further trigger allergic reactions by the introduction of multiple types of allergens.


Aleksandr Simonian


Fatima Ferreira

Ferreira's work doesn't stop in the lab. In a project called the "*Das fliegende Immunologische Klassenzimmer*," or "The Flying Lab," Ferreira brings science to children. Along with her colleague, Reinhard Nestelbacher, Ferreira developed the concept for an immunological lab-on-wheels for schools. This allows students, along with their teachers, to conduct hands-on allergy-focused experiments. "The reason I started this project was because I wanted, in particular, young students to experience what science is. At a young age I had the opportunity to explore my interest in science and it was the opportunity that awoke my career in science," Ferreira told *bridges*. "If someone shows drive early on, exposure to different opportunities will give them the motivation to go on. So this is how I am doing my part to communicate science and give opportunities."

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The author, Juliet M. Beverly, has been a member of the bridges editorial team since January 2007.

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