

A microscopic view of various green, spherical cells, some clustered together and others individual, set against a dark green background. The cells have a textured, almost crystalline appearance.

Ángela Restrepo Moreno
Colombia

“ It is worth trying to change
the world through your work ”

Interview by Andrea Linares*

Ángela Restrepo, 'Microbe Hunter'

Summary

Dr. Restrepo is Colombia's most highly renowned microbiologist. Now 80, she holds a doctorate in microbiology and medical mycology from the University of Tulane, New Orleans (United States). Her achievements range from developing a line of research on the diseases caused by fungi to contributing to national policies on education and research.

Restrepo has always been fascinated by the tiniest yet powerful forms of life: microorganisms. She saw them for the first time as a child, through her grandfather's microscope, and her studies began with the book *Microbe Hunters* by Paul de Kruiff.

Among this vast microbe universe, she chose to focus her study on fungi, particularly those that cause diseases in humans. Her work produced concrete results, as she established a line of research on a disease produced specifically by fungi, which has only been diagnosed in Latin America and was discovered over a hundred years ago in Brazil: paracoccidiodomycosis. It is a severe infection caused by a fungus, the *Paracoccidiodimicobrasiliensis*, affecting the entire organism and considered an endemic disease in Brazil and other Latin American countries. The fungus is inhaled, causing a pulmonary clinical profile that can subsequently affect the skin and oral, nasal

and gastrointestinal mucus. The spleen and liver may also be affected.

A research group created decades ago by Dr. Restrepo is currently following two key lines of work. Firstly, understanding in detail the relationship between patient, fungi and environment, to develop modern (molecular) diagnostic methods to define the diseases caused by fungi and treat them appropriately. Secondly, knowing in depth how fungi cells work in order to deal with them and prevent them from multiplying in an infected person.

Restrepo's scientific career began formally when she was accepted at the University of Tulane in 1960. There she realized the crucial role of scientific research and decided to devote herself to it.

She was attracted by research and teaching and keen to advance scientific knowledge, to "give humans a better appreciation of the wonders and mysteries of Nature."

Who or what inspired her to work in science?

"Pasteur and his disciples were definitely my first source of inspiration," she replies. She also mentions the teachers at the university



Academics Santiago Díaz, Michel Hermelin and Ángela Restrepo, during the swearing-in ceremony of Michel Hermelin as a member of the Colombian Academy of Sciences, Bogotá, 11 April 2007.

where she completed her graduate degree and the advice and work of renowned researchers such as Burnet, Medawar, Monod, Palov and Rostand.

Dr. Restrepo, a co-founder of the Corporation for Biological Research (CIB), a private, non-profit institution devoted to scientific

research to which is she currently attached, has always been known for her scientific rigor and commitment to her profession.

She admits to having very little spare time, as she is constantly writing reports and articles or checking theses. However, she enjoys classical music and reading historical novels.

“I am immensely proud of having given many patients the benefit of accurate diagnoses, always with all due respect,” she says. She also took part in developing new antifungal drugs used regularly throughout the world.

Her other achievements

Angela Restrepo is one of several female scientists in Colombia, but the one with the longest career, her many achievements spanning almost fifty years. In 2007 she received the SCOPUS Prize (Elsevier) awarded to Colombian scientists with the greatest number of publications and citations. She also established the first diagnostic laboratory in her home city, Medellín, devoted to research on medical mycology and in particular fungi pathogenic for humans.

She has also earned numerous prizes, recognitions and honorary doctorates throughout her career, and made major contributions to developing clear policies on education and research in Colombia. There is even a school located in the municipality of San Antonio de Prado (Antioquia) named after her.

Dr. Restrepo has also demonstrated that 5% of Colombian university students are suited to scientific research, following systematic studies of their personality and abilities.

Indeed, she states that “the greatest satisfaction of my scientific career has been training numerous young Colombians, both male and female.”

She therefore does not believe that there are differences between men and women as regards their ability to pursue a scientific career. Nonetheless, she explains that, “Women have a particular sensitivity that allows them to focus in greater depth on biological problems.”

Restrepo has had to overcome barriers to achieving her dreams, as some of her relatives (although not her parents) objected to her becoming a professional. It was also difficult for her to find a university that taught the subject in which she was interested: microbiology. However resolve, persistence - which she calls stubbornness - and faith allowed her to achieve her dreams.

She stresses the fact that many female scientists display qualities such as patience and persistence, essential traits for research.

“Women’s ability in science is beyond question, as demonstrated by the many women to receive the Nobel Prize and those holding prominent positions in universities, institutes and research and development centers,” she explains.



Her research group is currently pursuing two lines of work; the development of modern diagnostic methods and the study of mushroom cells, in order to deal with them and prevent their multiplication in an infected person.



"My greatest satisfaction is to have trained a certain number of young Colombian men and women in the discipline of scientific research"

She also offers women the following advice: "If they are already scientists, they should never lose their optimism or their desire to open new roads for future scientists."

It is worth trying to change the world through their work, she says, and they should always be enthusiastic and willing to pursue



"One of the things I am proud of is to have served many patients, with the respect they deserved, thanks to accurate diagnoses"

ambitious objectives. Her own career has been an endorsement of these principles. ■

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