Published on *Ciencia Puerto Rico* (https://www.cienciapr.org)

Dr. Idhaliz Flores Caldera: educator, researcher and a pioneer of endometriosis research in Puerto Rico [1]

Submitted by Lumarie Pérez-Guzmán [2] on 7 August 2016 - 4:33pm



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Dr. Idhaliz Flores Caldera

Endometriosis [4] is a painful disorder in which the endometrium, the tissue that lines the uterus, grows outside of it. This generally occurs in the linings of the abdomen and pelvic cavity. Its main symptom is pain during menstruation, also known as dysmenorrhea. Other symptoms include chronic pelvic pain and infertility. Worldwide, it is estimated that 1 in every 10 women of reproductive age is affected by endometriosis including approximately 9 million women in the

United States, and 50 thousand in Puerto Rico.

Although the cause has not been determined, it has been identified that genetic, environmental and immunological factors play key roles in the development of this disease. Dr. Idhaliz Flores Caldera [5], and her collaborators are investigating these factors at Ponce School of Medicine and Health Sciences [6].

Dr. Idhaliz Flores Caldera was born in Coamo, Puerto Rico. At a very young age she became interested in science and English. Idhaliz studied at the University of Puerto Rico, Mayagüez Campus [7] where she majored in industrial microbiology. She was fascinated by microbiology, and the microscopic world around us. She understood that pursuing a career in science would allow her to impact the lives of many patients, and this motivated her to continue graduate studies. In 1988 se completed her bachelor's degree with high honors. In fact, due to her excellent academic achievements, she received the Charles Darwin Award for best student of the Biology department. Shortly after, she moved to New Jersey where she completed her doctorate degree at Rutgers University [8]. For her dissertation, she studied the gene therapy of cancer and her research focused on genetically modified tumor cells used as vaccines to augment antitumor immune responses.



Dr. Idhaliz Flores and her research group at the Society for Reproductive Research conference in Toronto, Canada. Photo provided by Dr. Flores.

In 1994, she started working as assistant professor in the Department of Microbiology at Ponce School of Medicine. For 15 years, she taught courses such as molecular genetics, parasitology, and bacteriology. In 2010, she became associate professor of the Departments of Clinical Sciences, and Basic Sciences. At the former, she works with the Program of Obstetrics and Gynecology where she teaches *Current Concepts of the Pathophysiology of Endometriosis for Medical Students*. As a professor of Basic Sciences, she teaches core courses, and *Medical Ethics* (Human Subject Research, Ethics of the New Genetics). As a committed educator, she has been a mentor for programs such as STEP UP (Short-Term Research Experience for Underrepresented Persons), and RISE (Research Initiative for Scientific Enhancement). The goal of these programs is the promotion of science among high school, and undergraduate students respectively. She has also been an advisor for 7 doctorate students, 1 master's student, and over a dozen undergraduates.

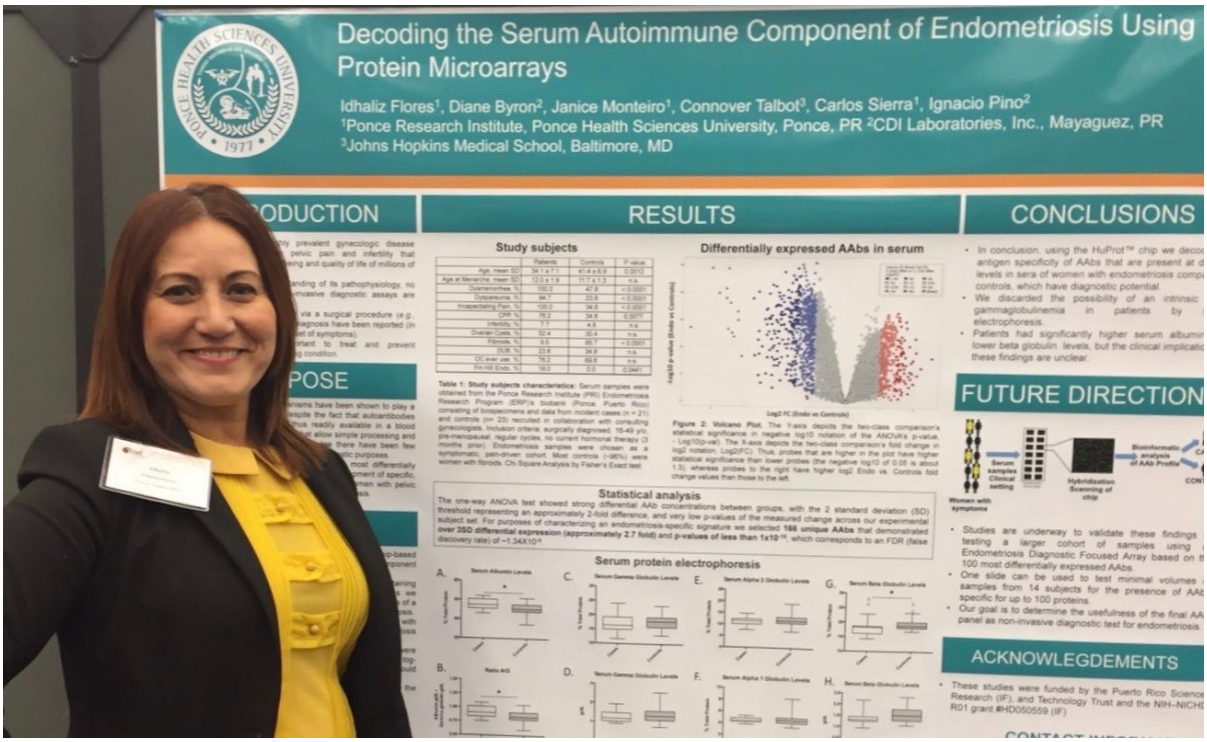
Along with her passion for teaching, Dr. Flores is interested in identifying specific and sensitive biological markers that could be used to diagnose endometriosis, and to further understand the genetic and epigenetic mechanisms that lead to the development of this disease. Moreover, they are interested in developing non-invasive diagnostic methods because to date it is only possible through a surgical procedure known as laparatomy.



Students from the Endometriosis Research Program. Photo provided by Dr. Flores.

Her passion for understanding the biological basis of endometriosis originated after her diagnosis with this disease in the 1990s. Since research about the subject was then limited, she decided to use both, her personal experience as a patient and her professional background to study the disease and help other women.

In this way, in 1997, she started directing a research program about the epidemiology of endometriosis in Puerto Rico, and since then has received funding from the National Institutes of Health (NIH) [9]. Recently, she received funding from the Puerto Rico Science, Technology, and Research Trust [10] to develop non-invasive methods to diagnose it. Her work and collaborations have been presented in more than 100 local, national and international scientific meetings, and have been published in prestigious scientific journals. She has also worked in the development of patented therapies, and methodologies for the identification and diagnosis of endometriosis, and for treating solid tumors.



Dr. Flores presenting her research poster. Photo courtesy of Dr. Flores.

Among her research interests, she has been investigating the effect of anxiety and stress on endometriosis [11]. In 2012, she collaborated with Drs. Marielly Cuevas, Kenira J. Thompson, Dinah Ramos-Ortolaza, Annelyn Torres-Reverón, and Caroline Appleyard in a study that demonstrated that stress contributes to both, the development and severity of endometriosis. Three years later, a study directed by Dr. Appleyard confirmed those findings, and showed that managing or controlling stress modules the behavior and pathophysiology of the disease. [11]

Dr. Flores' commitment to help women that suffer from endometriosis is evidenced by her work outside of the laboratory. Dr. Flores is one of the founding members of the *Puertorriqueña de Pacientes con Endometriosis* [12] (Puerto Rican Foundation of Patients with Endometriosis) and organizer of the first group of endometriosis patients in Puerto Rico. Additionally, she offers

workshops and seminars to educate not only patients suffering this condition, but also patient's relatives, and health professionals. In her talks, she explains the disease, the importance of managing stress, and the benefits of both clinical and holistic (meditation, massages, acupuncture) treatments. One of the objectives of the workshops is to make clear that the pain women go through when suffering from endometriosis should not be taken lightly; that the discomfort is not being exaggerated. Endometriosis is a chronic condition affecting a high number of women of reproductive age.

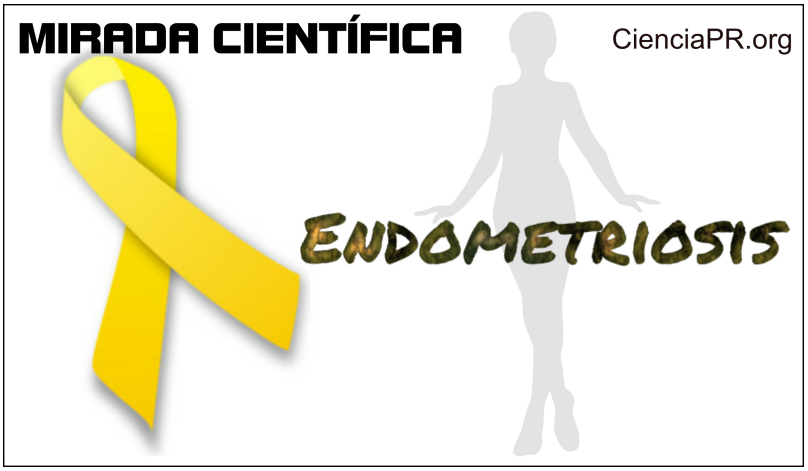


Borinqueñas united against endometriosis. Photo provided by Dr. Flores.

When asked about how her path in an academic career has been, Dr. Flores acknowledges that a career in science is dynamic, challenging, and never boring. It also gives you a feeling of accomplishment. She believes that in order to success in this field, you need to know your limitations and work to improve them, find what you are passionate about, and make sure you manage time efficiently. For this, she suggests having a great support system (family, friends and colleagues) and being well structured. For the latter she recommends organizing responsibilities and scheduling times or days for specific activities or duties, while also taking time for relaxation.

If you would like to know more about Dr. Flores or wish to contact her, visit her profile [5].

To learn more about endometrioisis and her research efforts you can listen to her interview for Mirada Científica [13] (in Spanish).



Tags:

- endometriosis [14]
- Biological Sciences [15]
- women in science [16]
- women in STEM [17]

Categorías de Contenido:

- Biological and health sciences [18]
- Undergraduates [19]
- Graduates [20]
- Postdocs [21]
- Faculty [22]

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