

CELEBRATING 40 YEARS TOGETHER

DEPARTMENT OF MEDICAL PHYSICS

UNIVERSITY OF WISCONSIN-MADISON

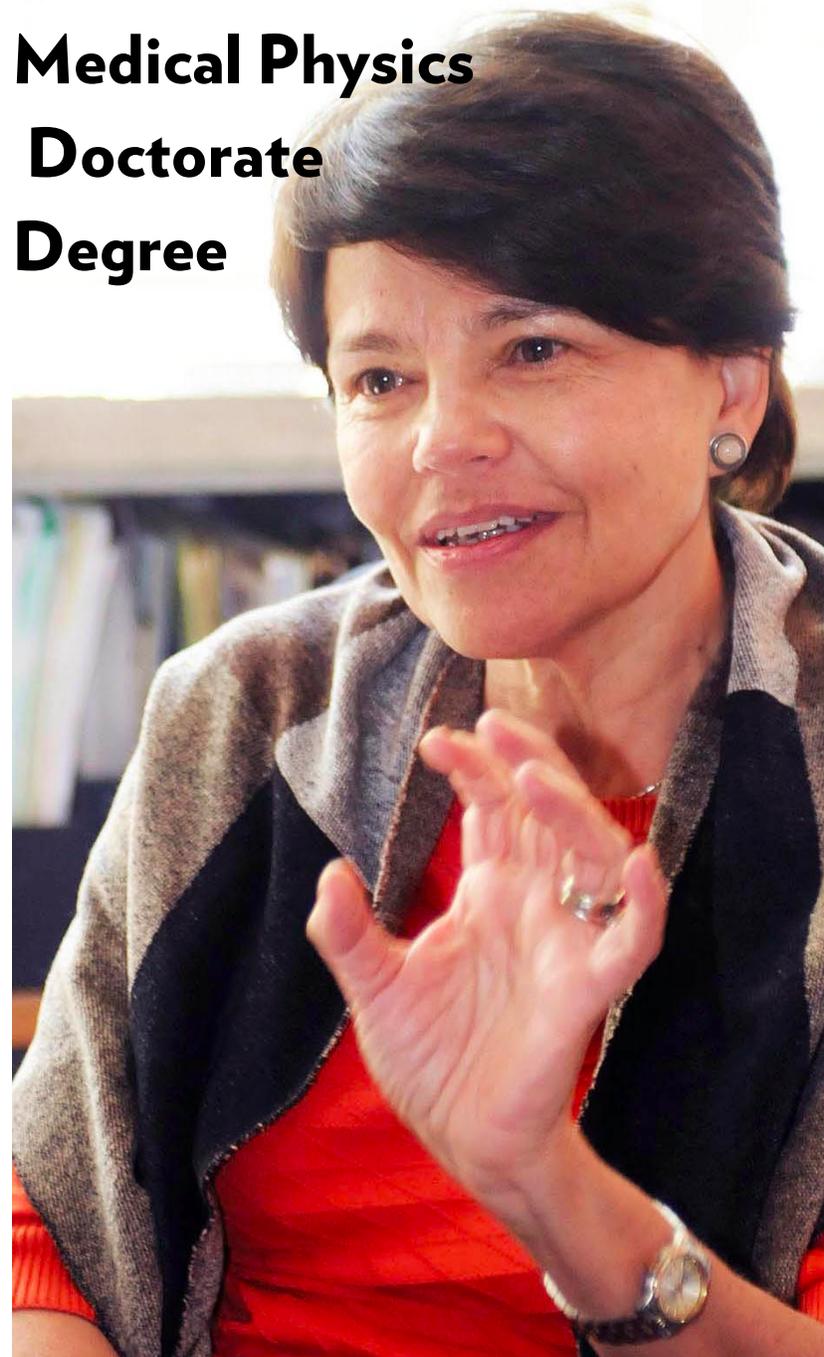
We would not be where we are today without the courageous women who have carved a path for the next generation of women. As we celebrate Women's History Month, we are not only celebrating the accomplishments of women, but the way they view the world and impact they leave. Join us in honoring Dr. María-Ester Brandan, the first woman to hold a PhD in Medical Physics. Through her career, she has continued to make history in the field and advocate for women in STEM.

Dr. María-Ester Brandan got her PhD in Physics at UW-Madison in 1979, making her the first woman to get her PhD in the field of Medical Physics from the UW and the first student advised by Dr. Paul DeLuca. It was an interest in a PhD in experimental nuclear physics that originally brought her to Madison, but a course in Health Physics that put her in touch with Dr. DeLuca, and ultimately Medical Physics. Since graduating from the UW, she has had a prolific career, traveling extensively to do her post-doctoral studies in France, and in her home country of Chile, and to do research at the Lawrence Berkeley National Laboratory in Berkeley, CA and Cyclotron Institute in College Station, TX. As well as spending sabbatical years in France and Spain.

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At the time there were not many women in the department, or in the field at all. "I felt that being one of few women around the Physics Department was normal, I had encountered that since my undergraduate studies in Chile, and I thought that it was a fact of life," she says.

The First Woman with a Medical Physics Doctorate Degree



Despite female colleagues and mentors being few and far between, she thoroughly enjoyed her experience here. “Those years I was thoroughly happy, I loved Madison (including the weather), the Memorial Union, being a graduate student. I felt very proud of being part of [Dr. DeLuca]'s group, and also being part of the reduced (by today's standards) medical physics community.”

Still, studying at the UW in the 1970s presented some interesting challenges. Dr. Brandan recalls a couple funny and unusual situations: “Since I was taking my thesis data at the [Physical Sciences Lab (PSL)] in Stoughton and I did not have a car, I became the driver of the PSL pickup truck (from campus to Stoughton) every morning. Sometimes I had to work in the data analysis until late at night (no laptops at the time) and I had to stay at PSL, essentially alone, and sleep at the lab (on a bench). The lab did not have women’s restrooms in all its buildings, only one in the aisle where secretaries worked. Interesting circumstances.”

Her interest in a PhD in experimental nuclear physics was what had originally brought her to Madison, and it was a course in Health Physics that put her in touch with Dr. DeLuca who was a junior faculty member at the time. Dr. Brandan recalls that the path to completing this thesis under her advisor was a little hectic: “When I decided I would do my Physics Ph.D. thesis under [Dr. DeLuca]'s guidance, this was not accepted because he was still a junior faculty.”

In the end, things went along as planned thanks to a little help from the department’s founder, “John Cameron saved the situation by becoming my advisor until the thesis was finished and Paul’s direction was formally recognized. This happened a couple of days before the thesis was submitted for revision,” and she was able to submit her dissertation with Dr. DeLuca as her official advisor. Her thesis abstract, titled "Measurement of Energy Deposition Distributions Produced in Cylindrical Geometry by Irradiation with 15 MeV Neutrons," which is still available for viewing on the Medical Physics webpage today.

Since graduating from the UW, she has had a prolific career. She has traveled extensively, doing post-doctoral studies at both the Institut des Sciences Nucléaires, (ISN) Grenoble, France, and in her home country of Chile, at the Universidad de Chile in Santiago. Additionally, she has been a visiting researcher at the Lawrence Berkeley National Laboratory in Berkeley CA, as well as the Cyclotron Institute in College Station, TX, and spent sabbatical years back at the ISN, and at the Universidad Complutense de Madrid, Spain.

Her research interests range from experimental nuclear physics to radiation dosimetry to medical physics, and she has participated in over 140 publications in her career. Dr. Brandan's expertise has garnered her fellowships, awards, and has made her much sought after for committees to strengthen the academic and professional world of Medical Physics, including such honors as:

- International Commission on Radiation Units and Measurements (ICRU), Commissioner, 2015
- Deputy Editor of Biomedical Physics & Engineering Express Journal, present
- American Association of Physicists in Medicine, Fellow, 2018
- Academy of Sciences for the Developing World, Fellow, 2011
- American Physical Society, Nuclear Physics Division, Fellow, 1997
- Medical Physics Division of the Mexican Physics Society, Founding Member
- Mexican Federation of Organizations for Medical Physics, Founding Member
- Nuclear Physics and the Medical Physics Divisions of the Mexican Physics Society, President
- International Solid-State Dosimetry Organization (ISSDO), Chairperson, 2010-2013
- Mexican National System of Researchers (SNI), maximum level since 1991 and Emeritus since 2019.
- UNAM, Catedrático Award, maximum level, 2000
- Mexican Physics Society Medal to the Development of Physics in Mexico, 2003
- International Organization of Medical Physics, 2018 International Day of Medical Physics Award- Latin America
- UNAM 2013 Premio Universidad Nacional Award in the area of Research in Exact Sciences

When Dr. Brandan is not traveling the world as an esteemed researcher, she lives in Mexico City, where she is currently a tenured professor at the Physics Institute of the National Autonomous University of Mexico (UNAM) where she created the UNAM M.Sc. in Medical Physics program within the Graduate Program in Physical Sciences

in 1997 and coordinated it for 20 years. As of today, the program has graduated over 150 medical physics specialists! The Medical Physics program at UNAM has strengthened research in the field of medical physics and has promoted the direct collaboration between physicists, biologists and medical doctors at UNAM, in Mexico, and all over the world.

Even with these myriad accomplishments, she still maintains ties to the UW and her mentors. Of her connection with UW-Madison and the Medical Physics department, Dr. Brandan has said, "I have been fortunate to receive Paul's (as well as John Cameron's) support whenever I needed "a little help from my friends" to promote medical physics in Mexico," and has kept in contact with Dr. DeLuca, returning to Madison many times over the years.

On one trip to Madison, she gave a talk for the MP 900 seminar series on thermoluminescent dosimetry, a topic near and dear to Dr. John Cameron, but originally was not a main focus of hers while a student at the UW. In a twist of irony or fate, thermoluminescent dosimetry became her first big research project when she took up her position at UNAM, and has been a major topic of interest for her since. The facilities at UNAM have made many breakthroughs in the field that she believes would have "made John Cameron proud." Given Dr. Cameron's interest in growing the field of Medical Physics around the world, that sounds about right.

Dr. Brandan has another unique connection to the UW in the form of the students she has worked with who have also come to Madison to receive their PhD. Most recently, Juan-Pablo Cruz-Bastida, who graduated with his PhD in 2019 from Dr. Guang-Hong Chen's group, received his MSc from UNAM under Dr. Brandan's guidance, and she encouraged him to continue on to get his PhD in Madison. Everardo Flores (2017, Dr. Larry DeWerd), and Miguel-Ángel Ávila (2007, Dr. R. J. "Jerry" Nickles) also came from the UNAM Medical Physics program. Dr. Brandan was a member of Dr. Ávila's dissertation committee, and was delighted to return to Madison in this capacity. Dr. Ávila now serves as Head of the PET/CT Cyclotron facility at UNAM's School of Medicine.

The fourth of these students happens to be one of UW Medical Physics' newest faculty members. "I've had the privilege of knowing Dr. Brandan and having her as mentor for almost 16 years," says Dr. Ivan Rosado-Mendez, Assistant Professor of Medical Physics, recently returned to the department in this new role. "I learned about the field of Medical Physics through her outreach activities. I got my master's degree in the Medical Physics program at UNAM, which she created."

As was the case with Drs. Cruz-Bastida, Flores, and Ávila, it was Dr. Brandan who brought Dr. Rosado-Mendez to the UW. He recounts, "Being a UW alumna, she encouraged me to come to UW to get my doctoral degree," which he completed in 2014, and continued on as a post-doctoral researcher until 2016, when he returned to UNAM as a Research Associate.

There, he once again had the chance to work with his former mentor. Though he's returned to Madison and the UW Department of Medical Physics, he carries with him this advice from Dr. Brandan: "Through all these years, three of the many, many lessons that I've learned from her are to be critical (even of my own work), to guide my actions through the lens of ethics, and to convince by actions and results rather than by discourse."

As for her incredible career, and the future of women in STEM, Dr. Brandan leaves us with this, "I feel privileged to be witness to the current changes for women in STEM careers and hope that my experience helps to convince young women -- and their families -- that it is possible to have a successful career in exact sciences and also have their own family if that is their choice." With women like Dr. Brandan blazing the path for women who continue to innovate and influence the world of STEM, this hope is becoming more of a reality.