



ALUMNI



Leading the Charge IN MEDICAL INNOVATION

Accomplished alumna Dr. Ediuska Laurens is using the powers of science and engineering and her know-how of industry to improve the health of vulnerable populations

DR. EDIUSKA LAURENS, who earned a doctoral degree in Applied Biomedical Engineering in 2009 from a joint doctoral program of the College of Engineering of Cleveland State University and the Cleveland Clinic, invented a device to help infants who are born with jaws too small to function properly.

"In plain English, we were making implants that are used to repair babies' heads," she says.

It's called a pediatric mandibular distractor. At the time, she was leading a global research and development team at Stryker Corporation, a giant medical technology company, "and pretty much taking products from concept to global commercialization," she says.

That means navigating the approval process of the U.S. Food and Drug Administration, which might sound like a chore. For Dr. Laurens, it was an adventure.

"During product development, we had an explosion in one of our plants in Germany," she says. "When we were trying to do FDA approval, the U.S. government shut down. When we finally got clearance, we had to accelerate product launch, because there was already a surgery booked, so we needed to expedite everything. There's a baby that needs this."

She emerged with a keen understanding of what the approval process does to ensure the quality of a new product, and also of the advantages she had because she was learning the process at a Fortune 500 company. That led her to form Genius Shield, which helps smaller companies navigate the system.

"Unless you spend many years in the industry connecting the dots, like I had the opportunity to do, it's not going to make sense right away," Dr. Laurens says.

"What is happening is you get this flow of amazing new ideas to solve medical issues," she says, that could be coming from entrepreneurs

who could be students or experienced surgeons. "But they have absolutely no clue what it really takes to develop and get this through this regulatory process, which includes product development and quality. There's tremendous risk of not knowing that. Not only you failing as a company, but most importantly, harming patients."

"I always say that I was the entrepreneur at Stryker, with all the cash, the expertise and a process already in place," she says. "And then you get the early-stage medical device companies, they have none of that. Sometimes they don't even realize that they need to take a step back. They're brilliant people, brilliant engineers and scientists. It's just that, where would you learn this?"

Enter Genius Shield. The company website, geniushield.io, identifies Dr. Laurens as the "Head Fanatic" and explains the mission as "We geek-out on safer products and successful launches."

Dr. Laurens says a friend told her, "I've never met anybody as passionate about regulation as you."

"I'm actually passionate about protecting patients," she shares. "I truly believe that we live in a time where, if we do this correctly, if we're mindful of this, we have an opportunity to raise the quality standards in the market. So we can reduce, if possible completely eliminate, any type of recalls that are affecting your mother, your father."

Dr. Laurens' own parents were the target of her first big sales pitch. When she was an 8-year-old girl in Venezuela, she told them she wanted to move to the United States to build satellites.

She came to the U.S. at age 16, shortly after graduating from high school. "That was the deal that I made with my parents. I was valedictorian at my school, so I was showing my parents that I meant business."

Years later, she was finishing a master's in mechanical engineering at SUNY Buffalo. Her mentor there, Dr. Robert Baier, suggested she consider a biomedical engineering doctoral program run in partnership by CSU and the Cleveland Clinic.

"I looked it up, and there was a lab at the Cleveland Clinic working with hydrogel biomaterials, which is exactly what I wanted to do since I studied them during my master's," she reveals. "They're like jelly, they're like 90% water and they can be synthetic or natural, and can easily change their mechanical properties. It was love at first sight when I learned about this lab."

Using tickets to a Maroon 5 concert as bait, she persuaded a friend to drive her to Cleveland to check it out.

"The program is set up in a way where you spend the first year between Cleveland State University and Cleveland Clinic," Dr. Laurens says. "You take the courses at the University and you do the research at the Cleveland Clinic. I think this partnership is so brilliant, and it offers such a robust ecosystem that I was very fortunate to be part of it and have the best of both worlds. I had so many incredible opportunities, including being elected as the student representative of the International Society of Biomechanics."

That put her in a position to found a gait analysis laboratory in Venezuela, only the second one in the country. "I could have only had this opportunity by being in this ecosystem," she says. "Definitely some of my best years. After succeeding in shipping equipment to a developing country like Venezuela, I felt like I could do anything."

After she finished her post-doctorate at the Cleveland Clinic, Dr. Laurens started at a Stryker office in Mahwah, New Jersey. She is now based in Jersey City.

"I learned the know-how in one of the best environments to learn the know-how," she says. "There is an advantage to being in the kind of environment where you are just absorbing and learning, and there's opportunity for mentorship. When you are in a startup, it's chaotic. You're trying to create some sort of stability. I have a clear language for the science and engineering, I can speak that language very well. I also speak the product development and regulatory language very well and know exactly how to translate the science into a medical product. And now I can take all of that and really help these early-stage med device companies to put it together, and set them up for success from the very beginning."

In March 2020, Dr. Laurens came back to Cleveland to accept a Women in STEM award at a CSU Women's History Month event. "A couple of weeks after, I received an invitation to attend the Women and Girls in Science assembly of the United Nations, which was another amazing surprise. I was just on cloud nine."

While in Cleveland, she made a presentation about pediatric mandibular distractors. The award, she says, "felt like a confirmation from the universe that I am in the right path with what I consider to be my mission. I truly believe that we live in a very exciting era for women, where women, and especially women in science and engineering, will play a crucial role in democratizing health care globally, because it is a human right."

"I believe that inspiration is one of the most powerful feelings. It's contagious, and this is how we get to make positive change for the good of all and really serve humanity."



CSU student Hanieh Mohammadi, Dr. Ediuska Laurens, Jarrett Pratt (CSU's Director of Student Success, The Pratt Center), CSU alumna Cassidy Reaser and Dr. Jeanne Porter King (keynote speaker at the event)