

## Nervous System Engineers | Miranda's Story

# Transcript

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- Miranda: Science is just so much more than just a subject or a concept. We owe everything to science. And if something is wrong, you can dive deep and figure out why it's wrong and then you can fix it.

My name is Miranda and I'm a student at University of Wisconsin-Milwaukee studying biomedical sciences. I was born and raised here in Milwaukee, Wisconsin.

I was a very talkative child. And I was very family oriented, you know even back then I loved playing with my cousins and I have a big family. And I was always active and playing, but my parents found something odd. I was very delayed in developing and they wondered why. So they took me to the doctor very regularly to do tests and see what was wrong. Um, finally I had an MRI when I was five years old and they found a tumor in my spinal cord. Um, and it was intertwined with my nerves.

In order to remove that tumor, there was going to be some nerve damage. And so that resulted in spinal cord injury. Um, I lost most sensation in my right leg, some sensation in my left leg. And, um, that led to me, you know, losing my ability to walk.

I think that that's what the doctors were kind of preparing us for. Saying, "Hey, you know, spinal cord injury, often results in paralysis," it was likely that I was just going to be in a wheelchair for the rest of my life.

But my parents and I were like, Nope, my parents And I refused to accept that. And so, you know, we pushed. That's the thing about my family. We are hard workers.

I was a very curious child and so I always, um, liked to do a lot of reading. And my dad is also very into reading too and learning what's going on in the world. And he was the one who told me that, you know, stem cells are a thing. Have you heard about stem cells? Um, and he basically said it's like a clean slate for cells and they can, they can grow into whatever they want.

I also learned that, you know, the reason that I wasn't going to get any better was because, um, my nerve cells were damaged, they don't regenerate. And so when I put those two together, I said, "Oh, that's, a key player in something that could fix this." I was a kid when I learned that. And so I didn't know what to do with that information. All I knew was that there was hope, you know, and I knew that people knew about this and that people were doing something about it.

I was in a wheelchair for maybe about, um, a year. I just always found a way as a kid to participate. I mean even when I was in a wheelchair in recess I used to like race people. And, um, I used to do like donuts on the wheelchair and like wheelies. Like I was pretty cool in the wheelchair.

In elementary school, I always told kids, um, that by high school I would be walking again without any aid. Um, and it was hard once I realized that I was in crutches for a really long time. I have had people throughout my journey, um, that, you know, didn't believe in, in me. Um, people thought that, you know, things were going to be hard for me, which they are, but they thought I couldn't do it. People would stare at me. You know, students, my peers would stare at me when I was in class, and you know, just all these

little things add up and they hurt.

So there comes a point where too many people are telling you that you can't do it and it's hard, but I was raised, you know, to go against all odds. And so I kept going. I started to reflect on, um, all of the people that have impacted my life, all of the healthcare professionals that have impacted my life.

I had many physical therapists and all of them who, you know, would get together with other physical therapists and say, Hey, like, we need to figure out a plan, and every time I would see them, they'd be excited and, you know, tell me I'm making progress or, you know, "Good job, here's a Gatorade." There are all these people that come together and they work as teams and they build communities to support each other and, um, to make the world a better place.

I want to be that person in people's lives too. And so ultimately that's how I've decided that I want to go into medicine specifically.

In high school we learned about the nervous system and our anatomy class. And we read this article about zebra fish that, um, they can, you know, regenerate their CNS, um, their central nervous system cells. And that this was, they were using this concept to try to apply them to humans. And so that article, I said, Oh my gosh, you know what? I am old enough now that I can start looking into opportunities where I can be a part of that too.

When I looked at what UW Madison was offering, I saw that they were working with stem cells for central nervous system, you know, tissues, I was so excited. This is something I have been dreaming of for so long. And now I get to be a part of that.

I'm hopeful that with this research there, it will impact me directly, but um, I have let go of the dream to be fully cured because I have already accepted this but I know that if this happened to another kid, it would be really hard for them. I mean, it took me 15 years to come to this point. All that is important to me is that I can impact somebody else's life in the long run.

We are starting to get a good idea of stem cells, but then again, there's so much, we don't know. I mean, we know that we can, um, influence these cells with different, you know, molecular factors and say, "Hey, if, you know, if we give you these signals, will you grow into what we want you to grow into?"

And sometimes it works and sometimes it doesn't. And so you have to tweak things and put them in different environments, like, okay, does it, since it works on this plate, will it work in a human? And so, I mean, we've learned a lot, but there's still a lot more to learn. I need more scientists, so we need more scientists for that.

Science is everywhere around us and we can come to appreciate that when we have people that dedicate their careers and their lives and their time to finding answers and to making things better for the rest of the world and the people in it.