



Dr. Sarah Symanzik in FiBL's bright, new greenhouse for studying plant cultivation and soil fertility. In the image to the right, she is preparing soil samples for PCR sequencing.

Alumni careers: Sarah Symanczik

In the field for mission “soil fertility”.

Text: Davina Benkert

What is it that makes good soil good? Biologist Sarah Symanczik is dedicated to finding the answer. She is currently conducting research into European wheat farming to determine what makes soil resistant to climate stress.

Dr. Sarah Symanczik studies how practitioners of organic farming can work with soil to increase yields and improve soil resistance to climate change. Symanczik, a biologist, laid the groundwork for this research in her dissertation, which she completed at the University of Basel's Institute of Botany. Her dissertation focused on whether inoculating soil with mycorrhizal fungi could increase plant growth and resistance to drought. Mycorrhizal fungi are microorganisms that enter into natural symbiotic associations with plants through interactions with their root systems in the soil. Their extensive underground fungal networks allow plants to absorb nutrients from the soil more efficiently. If soil is depleted, however there may be fewer mycorrhizal fungi present. As a result, plants grow more slowly and produce smaller yields.

From theory to practice

Symanczik's determination to use her research to help solve agricultural challenges motivated her to apply for a position at the Research Institute of Organic Agriculture (FiBL) in Frick, Switzerland after completing her doctorate in 2014. FiBL is one of the world's leading institutes in the field of organic agriculture. The institute focuses on interdisciplinary research and pursues joint initiatives together with farms and the food industry. “During my studies, I was always more interested in applied research than I was

in basic research. FiBL has a strong focus on practical applications and implementation of research findings. Working here and contributing to the development and increased acceptance of organic farming methods is my dream job,” explains an enthusiastic Symanczik.

In her first project following her dissertation, she studied whether it would be possible to increase the yield of date palms in Morocco by inoculating the soil with mycorrhizal fungi and fertilizing with compost. The trials were so successful, reports Symanczik with pride, that the date farmers who worked near to the test trees adopted the same methods for themselves.

As to the question of whether mycorrhizal fungi could help improve the yields of potatoes or wheat in Switzerland, Symanczik remains somewhat skeptical. The method is effective primarily for dry soils in regions that receive little precipitation, as soil fertility in these areas is normally lower. Most Swiss soils, in contrast, even those farmed using conventional methods, generally have a higher level of fertility. “The reason for that,” says Symanczik, “is that many Swiss farmers employ agricultural practices that increase soil fertility. That means that farmers apply crop rotation to prevent soil depletion and organic fertilizers and compost on a regular basis.”

Swiss soils under pressure

Yet the soil in Switzerland is facing increased stress due to climate change. “To protect the soil and the agricultural sector in Switzerland, we need to know our options for dealing with the effects of climate change. Wheat is one of the most critical staple foods in Europe, and it is of

key importance for ensuring long-term food security,” says Symanczik, explaining the motivation underlying her current research project, which is funded by the Swiss National Science Foundation. She and her team have joined with European partners to study how different types of soil used for wheat cultivation respond to climate stress, such as drought or increased atmospheric CO₂ concentrations, and investigate the behavior of soil microorganisms. In a test field in France, the researchers explore how the soil responds when the weather is drier than average or when atmospheric carbon dioxide rises. “We want to learn what soil properties and microorganisms help increase soil's resistance to stress and climate change. The goal is to protect agricultural yields in the long term so we can ensure a sufficient food supply.” Symanczik believes using organic farming methods is one of the best ways to do that. ■



Letter from Perth

A new start with obstacles and opportunities.

Letizia Scholl and Basil Hatz

(both 34) studied medicine together at the University of Basel and graduated in 2013. Having passed her board exam for anesthesiology, Letizia began working as an anesthesiology fellow at Fiona Stanley Hospital in Perth, Australia, in August 2021. Basil got his specialization in general surgery in spring 2021 and then accompanied Letizia “down under.” He is now working in trauma surgery at Royal Perth Hospital in Perth.

My partner Letizia and I always loved the idea of traveling and discovering the world. When we were at medical school, we spent six weeks of our internship year on a placement in Brazil. The differences to the Swiss system made us want to go abroad once we were fully qualified. After taking our board exams – so we already had a fair bit of experience – we started planning. Colleagues had always spoken highly about Australia, saying it was a teaching paradise. So “Project Go Abroad” soon became “Project Australia.”

We knew it would be difficult to find two jobs in the same city. So we agreed to go wherever one of us found a job first, even if it meant that the other would have a gap in their CV. In September 2020, Letizia got accepted for a fellowship in Perth, starting in August 2021. Still in Switzerland, we embarked on a seemingly never-ending odyssey through red tape and formalities. A month before we were supposed to leave, we had packed up everything but were still waiting for our visas. Our precious papers finally arrived just two weeks before our flight in July 2021.

Quarantine and culture shock

So there we were on the plane to Perth – two suitcases each and no idea what Australia would be like. Our welcome in Perth was not as warm as we had hoped: A police escort delivered us directly to the hotel where we would spend the next two weeks in quarantine.

Just before we had left, I’d seen a call for applications for a trauma surgery fellowship in Perth. So I spent my quarantine putting the lengthy application together. The application process was a nail-biting

business that lasted several months. I was accepted, but the confirmation only came in December 2021 for a start in February 2022.

It was a bit of a culture shock transitioning from Switzerland, which was in the midst of another coronavirus wave, to Covid-free Western Australia where life was no different to pre-pandemic times. Still, we quickly adapted to our reclaimed freedom and the luxury of day-to-day normality: We explored Perth and set up our new life. Our reward for jumping through all the bureaucratic hoops was a small apartment with an ocean view just a few minutes’ walk from the beach. Every day now is a delight!

Letizia’s fellowship began in August 2021 at Fiona Stanley Hospital. The first few weeks were really tough: The combination of a new country, a new hospital, a foreign language, a different healthcare system and being away from home was very draining. Letizia started out as a general fellow for anesthesia. Then in November, she got the opportunity to do a fellowship in regional anesthesia. So now she’s being trained by consultant anesthesiologists in regional techniques. The Australians are really proud of their education system and love teaching.

An enriching sabbatical

As for me, I’d thought a bit about how I could make best use of the time in our new home while I was between jobs. I spent the first month sorting out the practical things like fixing up our flat and registering our car. That left Letizia free to focus on the new challenges at the hospital. I was also looking for a job – no decision had been made on my fellowship application by that point – and I did some further

training online. Another project grew out of the question everyone kept asking me before I'd left: What would I do in Australia without a job? "I'm going to swim with dolphins," was my tongue-in-cheek reply. That gave me the idea of volunteering with animals.

I got my chance when we visited Caversham Wildlife Park, which is dedicated to preserving endangered species and looking after wild animals that have been orphaned or injured. While we were there, we learned that the park relies on help from volunteers. So from then on, I worked at Caversham Wildlife Park on Thursdays. Volunteering there was a real highlight of my sabbatical. Working in an entirely new area and experiencing things that had nothing to do with medicine really taught me a lot. Also, I'd never had much to do with animals before so being able to see these fascinating wild creatures up close and be partly responsible for their well-being was hands down one of the most enriching experiences of my life.

My traumatology fellowship began in February at Royal Perth Hospital. It's a leading trauma center in Western Australia – which means it treats any patient who has to be hospitalized for a severe traumatic injury. My Australian medical license hadn't been issued by the time of my induction, so I spent the first week as an observer and accompanied my colleagues on rounds, in the OR and in the emergency department. It was fascinating and really instructive; the perfect introduction without any of the pressure that I would have been under if my license had been issued on day one. The team was really open and welcoming from the start – once again, I was bowled over by how helpful the Australians are.

Don't wait – just do it

After seven months in Australia, we've finally settled in and have made a great life for ourselves here. We've had a wonderful time so far – it's been exciting, and we've learned a lot. Now we're really looking forward to what's still to come. My position means that we can stay until at least January 2023. We deliberately chose not to commit to any jobs in Switzerland so that we could stay flexible in case other opportunities come up here in Australia. The question of whether we'll stay forever has presented itself a few times, because the working conditions for physicians and the quality of life are much better here than in Switzerland. But we're both very close to our friends and family, so we'll probably want to go back at some point.



A lovely way to wrap up his time as a volunteer at Caversham Wildlife Park: Basil gives Letizia a peek behind the scenes.

Although the preparations for our trip were nerve-racking and made us doubt ourselves a fair bit, it was more than worth the effort. "Project Australia" is teaching us so much in every respect. Professionally and within our specialties, we're gaining new perspectives – in a positive as well as a negative sense. We've moved out of our comfort zone and are now living and working in a foreign language. Both of these things have broadened our horizons. I'm glad that I dared to have a gap in my medical CV because it gave me new experiences through the volunteering, and allowed me to take some time out and do things just for fun.

In short, we'd say this: If you're dreaming about doing something new and exciting, don't hesitate – just go ahead and do it. It's so worth it! ■