

Sarah Raffan



Sarah Raffan is a Postdoctoral Fellow at the SALK Institute in California, working to generate wheat with improved root traits and increased carbon sequestration capabilities. In this interview, Sarah reflects on her former role as a Postdoctoral Researcher at Rothamsted Research, Harpenden, UK. In this position, Sarah focussed on generating low acrylamide wheat via CRISPR/Cas9, and on trialling these lines in the field.

Tell us about your background. How did you first become interested in plant science and agricultural biotechnology?

I didn't actually become interested in plant science and agricultural biotechnology until my second year of university. I didn't know much about plant science before university, and I originally thought I was going to be more focused on conservation. However, I fell in love with molecular biology, and with the fascinating biology of plants, which led me to agricultural biotechnology.

What are you working on currently?

I have been working on Europe's first genome-edited wheat field trial. This field trial has been testing some low-acrylamide wheat lines which were generated using CRISPR/Cas9. Acrylamide is a probable human carcinogen and it is found in cooked food products. These wheat lines aim to reduce this risk in wheat products.

What does a typical day look like for you?

I honestly don't think there is a typical day as I am often trying new things! I try and keep most of my lab work to the morning, and to keep my afternoons for visiting the field site or the glasshouses.

What do you most enjoy about your work?

I love investigating new things and encountering new challenges. The techniques might become routine, and sometimes repetitive, but I am applying them to new questions and getting new, sometimes surprising, results.

What do you find most challenging?

The rate of failure. As a scientist you are constantly trying new things and investigating new pathways, and so there are a lot of failed experiments and a lot of troubleshooting. This can be quite hard to deal with and there is a level of resilience you need to cultivate.

What are you hoping to work on in the future?

I am moving to California shortly to work in a new area focusing more on climate resilience and adaptability, which is an area that I am really keen to move into.

What advice would you give to aspiring scientists in this area?

I would advise them to push the boundaries and try something new. Whether that is gaining experience in different research areas, or applying and adapting new techniques to their current area. I would also advise them to talk to as many people they can,

and to go to as many talks as they can, as sometimes you get the best ideas, or solve your hardest problems, when you look outside your immediate area.

Who are your scientific heroes?

I have actually changed my answer to this question over the years. Nowadays I think my scientific heroes are people much closer to home, who have affected me so positively and who I would like to emulate in my career going forward. Many of these heroes make up the ranks of Rothamsted. Professor Lin Field for example, who alongside her outstanding scientific career, puts so much effort into helping students and early career researchers grow; and Professor Nigel Halford, who has worked tirelessly in the agribiotech area for many years, and who set a really high standard for being a scientist and a supervisor.

Selected Publications from SEB Journals

Raffan S, Oddy J, Mead A, Barker G, Curtis T, Usher S, Burt C, Halford NG. 2023. [Field assessment of genome-edited, low asparagine wheat: Europe's first CRISPR wheat field trial](#). *Plant Biotechnology Journal* 21, 1097-1099.

Raffan S, Sparks C, Huttly A, Hyde L, Martignago D, Mead A, Hanley SJ, Wilkinson PA, Barker G, Edwards KJ, Curtis TY, Usher S, Kosik O, Halford NG. 2021. [Wheat with greatly reduced accumulation of free asparagine in the grain, produced by CRISPR/Cas9 editing of asparagine synthetase gene *TaASN2*](#). *Plant Biotechnology Journal* 19, 1602-1613.