

Alon Can'ani

Alon Can'ani is a Postdoctoral Researcher in the Department of Food Sciences at the University of Copenhagen, Denmark. With a background in secondary metabolism and floral volatile chemistry, he now studies flavour chemistry of cereals. Alon is a former Features Editor for *The Plant Journal*.



doing my Master's and my PhD. That work was very basic molecular science: how flowers produce and emit volatile compounds, and how environmental conditions affect these processes. Later I moved to Ben-Gurion University and expanded these ideas into the wild, studying how desert species modulate daily scent emission patterns depending on their environment.

What are you working on currently?

Today I have shifted my research into food and I work as a postdoc at the Department of Food Sciences, University of Copenhagen. I'm still very much into aroma compounds and I work on flavor chemistry of cereals, specifically bread and a middle eastern product called Freekeh. Freekeh is a green durum wheat that is harvested

prematurely, toasted, and dried. The toasting reduces moisture content, eases threshing, stops enzymatic processes and gives a very special smoky and nutty aroma. I am interested in how this aroma is formed and what affects it - from the field to the plate. For example, we are studying how the choice of durum genotype, processing method, and harvesting time shape the quality of the end product. So, in a sense, this project is somewhere in between plant and food sciences – I'm working with farmers and seed companies as well as food technologists and chefs. I am using a combination of analytical and sensory methods to understand the aroma and taste profiles, and how consumers perceive these. A very nice part of this project is to combine a lot of different disciplines to get a very broad understanding of flavor.

Tell us about your background. How did you first become interested in plant biology?

I grew up in a small town, in a very green area. Our house was pretty much inside the woods and we spent a lot of time outside in the forest and hills around the town. Nature and plants were a very strong part of the culture we absorbed as kids. For example, we had a traditional competition to identify plants in elementary school (which I won as a first grader, the peak of my achievements!) Later in life I started working in agriculture and wanted to become a farmer. That is how I entered the Faculty of Agriculture at the Hebrew University of Jerusalem. I realized that farming wasn't for me, but I fell in love with plant biology. I was especially interested in secondary metabolism and started working for Prof. Alexander Vainstein, who studies floral scent. I ended up staying there for 7 years,



Left: Toasted and untoasted spikes of bread wheat. *Right:* Diversity of Freekeh samples used for sensory analyses.

What does a typical day look like for you?

That depends a lot on the season. During the summer I was very busy in the field as we were testing Freekeh production using alternative grains to durum. So a summer day would begin very early in the lab, organizing all the equipment needed to produce Freekeh in the field: gas burners, motorized hedge cutters, cement mixers, bags etc. Then we would go to the field, select a good plot, assess the crop developmental stage, and start working. To produce a batch we needed to cut the spikes and scorch these with a gas burner, mixing to prevent over charring. We then went back to the lab to dry the batches before threshing and dehulling.

Off season, I drop the kids at school and cycle to work, about 7 km altogether. After a cup of coffee, I usually work on designing experiments, doing some GCMS runs or analyzing the data. In some cases we have a tasting panel, so a lot of work goes into preparing the samples or training the panelists before they get to taste the



Above: Development of Freekeh based products: a prototype of a Freekeh/legume Tempeh, based on the fermented soy-bean Indonesian delicacy.

products. Once a week I work with our collaborators: a company that develops new food products, which is a lot of fun, especially trying out new ideas and tasting a lot of good stuff. Afternoons are usually spent with the family, spending time outside if weather permits, or else indoors.

What do you most enjoy about your work?

I think the best part of my job is working with many different disciplines including sensory science, plant biology, analytical chemistry, and culinary development. I get to meet a lot of interesting people and hear new ideas every day. I think in biology we tend to zero in on a problem using very high throughput techniques but essentially limiting ourselves to a specific type of answer. My approach has always been to go as broad as I can.

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What do you find most challenging?

Anytime that I need to work using a new protocol, equipment, or method that my lab hasn't used before. This is a big challenge as I have to spend a lot of time setting everything up, figuring out all the small details, and calibrating instruments. Recently I've had to do a lot of this because my section in the department doesn't tend to do much lab work.



Above: Experimental processing of barley Freekeh using a rotating drum and gas torch.

What are you hoping to work on in the future?

I would really love to expand my work into other crops or foods. It would be nice to work in a group that focuses on food quality. This work could bring together plant biologists, chemists, chefs, and even anthropologists to create a better understanding of food quality.

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

Go and see what the rest of the world looks like! This is something I haven't done enough. If you stay in one place too long it narrows down your interests and creates patterns that make you inflexible. Plus it's fun to live abroad!

Who are your scientific heroes?

I would briefly mention two – Barbara McClintock and David Zilber.