HARVARD MCB GRAPHICS

how to communicate during and after a hurricane, as well as scenarios for recovery.

Hurricane preparedness, which was dramatically revised by our current MSI director, is now a routine exercise for us. Three days in advance of the storm reaching us, we back up data on our computers. Two days before, we secure hazardous chemicals and equipment. One day before, we move glass and small electronic instruments off counters and into drawers, shut down major pieces of equipment — such as the gas chromatograph and quantitative polymerase chain reaction machines — and move valuable samples and expensive reagents to the refrigerator. Some people take especially valuable samples with them. As for the fish, our first goal is to give them the best chances for survival by making sure there is plenty of diesel fuel for the emergency generator.

We find that graduate students, who are not from the area and haven't been through a hurricane, need a bit of guidance and reassurance. There is the psychological aspect you have to prepare for, realizing that some people will need extra support.

In the aftermath of Harvey, John Sharp, the chancellor of Texas A&M University, offered offices and labs for our faculty members, staff and graduate students. It was helpful because Texas A&M has a campus in Corpus Christi, just 50 kilometres from Port Aransas. Many MSI researchers relocated there, but we were fortunate to get back into our lab three weeks after the hurricane. Our ability to get back in swiftly had much to do with having our hurricane action plan in place.

Now that we've assessed the damage, we will be redesigning our seawater intake systems to minimize damage in the future. Before the storm, we had plans for a new structure to house the seawater pumps and blowers. The current shed was lost to Harvey. Had we completed that project before this storm, we probably would not have lost the fish.

The seawater tank is on the roof of our building so that we can use gravity to supply all of our labs. The problem is that the storm blew the roof off the tank, and it filled with debris. It took quite some time to drain, repair, clean and refill the tank before we could re-establish the seawater supply to our labs and begin cleaning those tanks. We are now designing an improved seawater containment system — incorporating either a better roof cover or a giant flexible container that completely encloses the seawater. ■

INTERVIEWS BY VIRGINIA GEWIN

These interviews have been edited for clarity and length.

TURNING POINT

Gourmet investigator

Vayu Maini Rekdal moved from Sweden to New York City after high school to pursue his interest in cooking, before turning to chemical biology. He is now studying for a PhD at Harvard University in Cambridge, Massachusetts. In August, Rekdal, the son of an Indian mother and a Cuban–Norwegian father, received a Howard Hughes Medical Institute Gilliam fellowship for outstanding scientists, an award that aims to advance diversity in academia. He explains why it's important to engage primary-school students' interest in science.

How did cooking cultivate your interest in science?

I grew up in Stockholm in a cross-cultural family. My mum, who was born in Kenya, emigrated to Sweden in the 1960s. My dad is Cuban–Norwegian. I got in touch with my heritage through cooking, which I viewed as experimentation — I didn't know I was doing science. After high school, I moved to New York City to follow my goal of becoming a chef. But a restaurant is a fast-paced, intense environment that didn't offer time for thinking creatively. So I decided to apply to university to see how else I could explore my interests in food.

Where did those explorations take you?

I ended up at Carleton College in Northfield, Minnesota. As an undergraduate, I won a scholarship to go to Món Sant Benet, Spain, and work at the Alícia Foundation, a unique place that uses science to deconstruct and understand food. It was a pivotal choice. I went there thinking I would learn how to be a better chef, and came out realizing that cooking and science are one and the same. In June 2013, I went to Mayo Clinic in Rochester, Minnesota, to study gut microbes. When I was in my third year, I joined a chemical-biology lab at Harvard to continue studying gut microbes.

What motivated you to create a Young Chefs programme as an undergraduate?

Cooking made science relevant to me. I decided that it would be a fantastic way to get others interested in science as well. Initially, I worked with underserved young Somali and Latino immigrant students aged 11–14. Together with some professors and other students at Carleton, I developed a rigorous, hands-on scientific curriculum that addressed physical and life-science concepts. We now have 27 lesson plans that we made free and open access. It's been used by 300 educators around the world. It's something I'll do for the rest of my life.

What is your PhD research focused on?

I'm interested in the connection between gut microbes and human biology — specifically, how microbes in the gut metabolize molecules we ingest. When we consume something — be it a drug, food or a toxin — the body can't access those molecules immediately. They are first transformed by gut microbes, which in turn alter the molecular properties of the gut, with profound implications for health and disease.

What are your thoughts on the current status of diversity in academic science?

It's striking how much less diversity you find higher up in academia. As well as a lack of racial diversity, there's also a lack of diversity in socioeconomic or educational backgrounds. We need to get people interested in science at an earlier age to maintain a larger pool of young scientists.

As a Gilliam fellow, how do you hope to increase diversity and inclusivity in academia?

We need to get high-school and primary-school educators into the kitchens. I'm creating a dedicated teaching programme here at Harvard with partners to give underserved communities access to resources. We are launching a pilot this autumn with a group of teachers, tentatively called STEAMED, a play on cooking and STEM — science, technology, engineering and mathematics. This summer, we worked with Native American high-school students. More immediately, given how important mentors were for me, I'm hoping to mentor undergraduates and summer-school students.

Will you aim for a conventional academic career path?

I want to carve out my own. ■

INTERVIEW BY VIRGINIA GEWIN.

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