Where I work
Mona Minkara

Photographed for *Nature* by Kayana Szymczak.

My group wants to understand the components of lung surfactants — complex substances that keep our air sacs from collapsing. Bioengineers would like to make synthetic surfactants to treat lung disease, but we must understand the real ones first.

As a computational chemist, I use computer simulations to understand the molecular dynamics of how the lipids and proteins in the surfactants react to one another at the air–liquid interface.

My group studies the four proteins in pulmonary surfactant. Two of these flag down any foreign entity that enters the lungs, and we're interested in their interactions with respiratory viruses. The proteins instruct immune cells to engulf and kill invaders. But how do they identify intruders? It's like being a detective on the atomic scale to work out which atoms of the molecules are attracted to which others.

Does being blind help me to visualize molecular interactions in different ways from sighted chemists? That's the million-dollar question. I think so. There is an often-unseen advantage to the scientific community including as many differently abled people from diverse backgrounds as possible. I want my lab group to be like that, so we can solve problems creatively.

I've collected various accessibility tools on my career path, and I believe in sharing them to catalyse knowledge. I helped to design the 3D-printed chemistry modelling kit shown here. Although anyone can work with the model, it is textured as well as colour-coded, so that a blind person can use it through the Braille-labelled key. The red oxygen module has tiny bumps, the purple boron module has wavy lines, and so on.

Academic science is not inclusive because we do not understand our differences. Not understanding is OK, but not acting to improve understanding is not OK. Everyone needs to see people with disabilities as capable, even if they are capable in different ways.

Mona Minkara is a computational chemist at Northeastern University in Boston, Massachusetts. **Interview by Kendall Powell**.