

# AN EDIFYING ADDICTION



**M**aking a cup of hot green tea – that’s her ritual to start the day. That is about the only thing that is routine or expected in her line of work.

Dr. Adelene Sim is a computational structural biologist. Here, she works with powerful computers, pulling cutting-edge research from the fields of physics, chemistry and biology to search for answers to complex questions. She shares, “I work on computational modelling of biological systems, with the goal of understanding how the molecules work and function in the body.”

To Adelene, routine is a stranger. “There’s an hour or two of learning, and some significant time set aside to keep up to date with scientific literature. And then, there’s some amount of coding for data analysis, or setting up

simulation experiments, and attending talks or meetings. I dedicate time to teaching interns as well,” describes Adelene. “Nothing is quite ‘typical’ in my day!”

## SEARCHING AND RESEARCHING FOR CLUES

Her projects reveal just how diverse her work is. “What we do can help us in different ways, such as designing better drugs to inhibit various diseases,” says Adelene. “So, a project we work on looks at reactivating a tumour-suppressing protein in cancer cells using peptide-based drugs. We also look at how viruses work. For instance, we study the changes of the dengue virus as it matures, so that we can design drugs that inhibit these changes, and these can serve as potential medication for dengue patients.”

**“A career in science gives me the chance to keep learning and to ask questions to decipher how the world works. The knowledge will hopefully help us to improve lives.”**



**Dr. Adelene Sim**  
Scientist, Bioinformatics Institute



In a field where multiple disciplines converge, problem-solving can get pretty complicated. Adelene comments, "There's a reason it's called RE-search, rather than just search."

Trial and error and testing out new methods or ideas is standard fare. But the challenge sometimes is in finding out where the issue lies. "It could be having to debug a code, or improving an algorithm so that it runs faster. Or sometimes, specific knowledge is needed, and I have to go back to basic biology to ask the right questions," she explains. "It is necessary to think out of the box, and often a solution can come days, weeks or even months later."

Returning to the problem again and again, and researching for answers require a degree of determination, coupled with the ability to explore the same confounding issue from different perspectives.

"I'm a bit obsessive, which works great in research," confesses Adelene. "I like looking for new and interesting ideas, and I enjoy logical and systematic trains of thoughts to explain what I observe. In my spare time, I take online courses for leisure. There's a wealth of really good classes out there for free and I get to learn lots of different things, work-related or not. I enjoy reading biographies and non-fiction books too; they open my eyes to the way others think. I'm addicted to learning."

## PASSING ON THE ADDICTION TO LEARNING

Besides satiating her natural urge to acquire more knowledge, Adelene is also eager to pass on this addiction to younger generations.

At A\*STAR, Adelene takes care to work closely with young scientists and interns, and to mentor and teach them. "I get excited when I see a spark in the student's eyes when an idea suddenly clicks in place," smiles Adelene. "It is not easy – outreach and mentoring requires time commitment, and it comes with a lot of frustration. But there is a great sense of fulfilment when you see the individual develop in various ways under your guidance."

Besides igniting the passion for learning and science, Adelene is also interested in shaping characters too. She says, "What I do in outreach and mentorship is also about teaching character, integrity and critical thinking skills to students."

To Adelene, mentorship is a more sustainable approach to develop the next generation of scientists. Reflecting on her personal journey to a career in science, she shares, "I recall that when I was 19, I didn't know many people in science. The decision to go into a scientific career was a stab in the dark then. These days, students have a lot more opportunities to make informed decisions, and I feel obliged to be part of passing on accurate information, so that they can make the best decisions. To me, it is my responsibility to contribute to the society that has sponsored a large part of my education. I've had nice thank you notes from students in the past, which is a good motivation!"

