

> IUBMB TI – Your Monthly Minutes

Your favorite monthly newsletter



Hello and welcome everyone!

This time, we hear from Sunnie Kong who will introduce us to the biology and chemistry that works without oxygen! Above that, we will see that it is worth to stand up for your well-being.

> *Who Sunnie is*

Living in San Francisco, California



Working on my PhD



Uses ancient research knacks



Mastering Pipette and Pencil



I grew up in Vancouver, Canada. Later, I went to Boston to do a combined Bachelor-Masters program. The undergraduate was focused on Biochemistry & Molecular Biology, whereas the Masters on Biotechnology. Apart from that, I did some summer research at the University of British Columbia working on natural product synthesis.



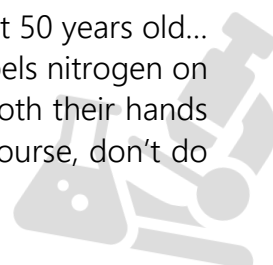
In my PhD, I try to understand obligatory anaerobic enzymatic pathways. The ultimate goal is to “translate” or copy them into E.coli. Therefore, I work with bacteria that are able to fix CO₂ to drive their metabolism without using oxygen at all.



Let me tell you, at the University of California we went on a strike for better pay. Like 50,000 people signed the proposal. When we were on the streets, everyone from Canada I knew, actually joined! It was like “if you want us to stay here, then treat us properly”. In the end we got the raise! However, there are still plenty of things to fight for ... health care, maternal leave rights etc...

You work under anaerobic conditions – that means you are allowed to use these fancy “hoods” right? (they are called glove boxes as I learned)

That is true, most of my second year I spend fixing ours since it is about 50 years old... In fact, I went old-school, using a bunch of tubes and a nozzle that expels nitrogen on the bacteria. You should see the old practices! Since people needed both their hands for operating the set-up, they held the pipet in their mouths :D I, of course, don't do that – I rather use the glove box in the other labs.



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A colorful hobby

Most of my time I spend figuring out an enzymatic complex with a di-Nickel-Cofactor. Those are pretty rare in nature. However, I really like painting. Sometimes I simply do not know what to paint. Therefore, I got involved in contributing to a magazine for post-docs and grad students in Berkely. I designed some graphics for them which show what people are working on or what kind of research they are doing. That is really neat as an outreach activity and to share some science.



Teaching teaches you

In the beginning of my PhD, I had to teach some classes. For one, I did non-major chemistry for people from various backgrounds. Some of them asked questions I wouldn't ever have thought about explaining. It really showed how many angles on a certain topic you can have. I think at the end it is key to take every student from the level they can understand. The advanced students will work a bit more independently while you take the time for the others.



An idea for you

Oxygen is a really great electron acceptor. Thus, under anaerobic conditions very interesting alternatives evolved. Do you know how many pathways happen in cells although they are energetically unfavorable? There is a [super fascinating graphic](#) showing the different metabolic pathways in cells – everything that is not a blue line, shows you another that actually works without oxygen.



Our Future

I would wish for the IUBMB TI to reach each and every corner of the globe. Although we are a global initiative, we are only a handful of people representing a handful of regions. Therefore, we should not only extend our network but also think about maintaining it. We could create a list to collect all the people who once were part of our leadership committee to always be able to reach out.

> Connecting through science

I have the feeling that as biochemists we are often cut off from environmental research. Regarding the underlying problem, I think it is important that people have their minds open to appreciate basic science because this is what connects us. Just think about studying drug interactions vs wastewater treatment – at first, they do not seem related at all, but both have to do with enzymatic reactions. Especially reading from journals that are not exactly focused on your area is a great way to get inspired by other fields.

It was a pleasure writing for you –



Trainee Initiative

– Wish you all the best ;)