

Inspiring young minds in Malaysia:

infocus speaks to Professor Kang-Nee Ting

infocus is delighted to feature an interview with Professor Kang-Nee Ting, who was recently announced as winner of the 2025 RMS Chris Hawes Outreach and Education Award. Kang-Nee is Head of School at University of Nottingham campus in Malaysia (UNM) for the School of Pharmacy and Division of Biomedical Sciences. Since 2017 she and her colleagues have been bringing the wonder of microscopy and science education to underprivileged and rural communities throughout Malaysia, with the aid of the RMS's Microscope Activity Kits. What began with a handful of school visits to her university campus has expanded into a nationwide project that continues to inspire hundreds of children.

Let's find out more...

April 2020: This was the last school visit before lockdown due to the Covid19 pandemic. SJK(T) Ladang Rasak and SJK(T) Bandar Spring Hill visited the University of Nottingham Malaysia for a 'Motivation Camp'. Both schools are listed as suburban schools attended by children whose parents are working in the rubber or oil palm plantations.



What drives your passion for microscopy and the education and outreach work that you do?

Microscopy is one of the most important subjects in learning about science, because when we are able to see things, it makes things clearer to us and it helps us to answer certain questions by seeing.

What I noticed, is that when we do molecular biology work for example, you just add solutions together but are not always able to see what's happening. So you always have this doubt whether you've done the right thing. But using microscopy, it gives you the ability to also see your experiment, and that enables you to confirm that what you're doing is correct.

It gave me the idea that for young children to gain an interest in science, they really need to see things that they cannot see with their naked eyes. Every time I'm working with children in schools or at the university campus, the happiness and the curiosity from the children really motivate me and my team, and it makes us feel that we are doing something right. Every time you carry out the activities with the kids – it might be a simple thing like looking at crystals, or ants and spiders - you see their excitement and there's a real sense of satisfaction from that.

How did your outreach journey begin?

I saw a post on Facebook from Susan Anderson (*Former RMS Honorary Secretary for Education*) – this was about 10 years ago – where she was talking about schools being able to loan microscopes from the RMS, so I just casually asked if it would be possible to loan some for us in Malaysia to work with children, and that was the beginning of this

journey. We began using the kits and the materials supplied by the RMS, but we also modified the activities to suit our children, because we found they sometimes struggled to follow all the written information. A typical session would start off by discussing the theory of magnification and then we would look at the crystal samples and get the kids to describe them. Then they would look at some examples of different types of snack food under the microscope and describe what they saw. We also did a comparison between the spider and the insect.

At the beginning, when we first received the microscopes, we invited schools to the university for the first few sessions. We did this without any funding and then, using the evidence from these first few visits, we managed to get some internal funding which enabled us to increase our outreach and start going out to schools. We have been using the RMS MAKs since 2017, and we now have about 20 kits to work with the children.

Can you give a brief overview of how things developed from there to the present day?

In addition to going out to schools we also continued to invite schools to us, and in some cases we

covered their transport costs – for example, schools from particularly deprived areas. They would come and we would also provide them with lunch.

So we were able to do this quite a lot within the vicinity



Professor Kang-Nee Ting.



September 2018: Dignity for Children's Foundation to expose children to the principle of magnification and the use of microscopes in research. Students looked at nematodes and they were briefed on how these worms were used for space experiments by Dr Sue-Mian Then. Dignity is a community learning centre set up to provide quality education to underserved communities including refugee children.

of the university – what we call the Klang Valley. We covered schools in Selangor, Negeri Sembilan and Kuala Lumpur. We had to stop everything when the COVID pandemic came, but once that was over, we still had some money in the pot that had not been spent, and also some funds from a few other grants.

We managed to fund two further trips to Sarawak and Sabah – in the Borneo side of Malaysia - in 2023, and using the evidence from those trips, we managed to convince the Ministry of Science, Technology and Innovation (MOSTI) and Ministry of Education, Innovation and Talent Development (MEITD) of Sarawak to provide further funding for us to travel out there again in 2024 and 2025, respectively. We covered the Eastern part of Sabah in 2024 and northern part of Sarawak in 2025. They also asked us to deliver a 'train the trainers' programme in addition to doing activities with the children. This means that if schools are able to buy their own microscopes, they will now have teachers able to deliver the activities themselves.

So, from when we started in 2017, the outreach work has expanded from the Klang Valley to the



April 2018: Students from Manna House and Sunway Mentari Learning Centres wearing their new glasses after having them fitted by optician, Paul Tan from New Mega Optic.



July 2023: We started our road trip to visit Schools in Sarawak and Sebah in East Malaysia (Borneo). We went to four schools surrounding Kuching.

Borneo side of Malaysia, and we still receive children on campus. It's great going out to the schools but one of the reasons we like children coming to campus is many of them are inspired when they see the surroundings, and what is available here. They say 'oh wow, university, I think I would like to come and study here' - and I think it is really important to give them that experience and hopefully plant a small seed in their minds.

Some of your outreach work has involved groups of refugee children. Can you tell us more about this?

We have done lots of work with the Refugee Learning Centers in Malaysia. They don't have any facilities - just rooms in a flat or a house - so we invite them to come to our campus so that the children can experience the university and hopefully be inspired. When I first talked to the teachers there, they said many of the kids had eyesight problems, and had difficulty looking at the whiteboard in their classes,

but they had no money for getting correction glasses. So I managed to find an optician to go out with us to one Learning Center, where we did some eye tests and then purchased some glasses for these children. It was a really simple thing that made such a difference in terms of their ability to learn better, and to use the microscopes effectively.

Are children and young people in Malaysia opting for STEM subjects and careers in science in sufficient numbers?

In Malaysia we have seen fewer and fewer older students picking STEM subjects due to the perceived difficulty in learning science. That has been a worrying trend, particularly as we are still a developing country and we need science to be the backbone to drive the nation forward.

As an academic, I am quite concerned about the potential impact on Malaysia in the next, I don't know, 20-30 years, when we will have an aging population and not enough engineers and healthcare



June 2024: This road trip STEM Camp was partially sponsored by the Ministry of Science, Technology and Innovation (MOSTI). We drove from Sandakan to Tawau, via Kinabatangan and Lahad Datu. This is St Dominic School in Lahad Datu where the Deputy Minister of MOSTI was in attendance. Around 480 students took part from seven primary schools.

professionals. So that is why the government is really focussed on promoting STEM education now. We're hoping to get children thinking differently about science, and it feels good to be supporting this. I'm very privileged to be able to bring some of this to schools, especially when we go to rural schools in Sabah and Sarawak, where most of the teachers and the children we meet have never even touched a microscope before.

Did you have any access to microscopes when you were growing up in Malaysia?

I never used a microscope in primary school, and in secondary school we had some basic lab facilities for biology, but for experiments that didn't involve microscopy. So I think the first time I

used microscope was when I went to university in Nottingham, UK.

So you actually did your undergraduate course in the UK?

Yes, that's right. I was lucky to get a scholarship to come to the UK to study. When I finished my PhD I went to Singapore to work, and a few years later my professor in Nottingham contacted me and asked me to go back to Malaysia because they were starting the school of pharmacy at Nottingham Malaysia, and he wanted me to come and help set up the school. So I said 'OK, I'll apply and see'. That was 20 years ago which is such a long time! So I've been here for 20 years, setting up the Master of Pharmacy programme and then moving on to set up more programmes.

I understand you have also been able to combine your research interests with the outreach work. Can you tell us more?

About six years ago I developed a real interest in the issue of plastic pollution in Malaysia, which is huge. Malaysia has been estimated to be one of the highest consumers of plastic through our food intake because we like to eat seafood, and we are also one of the top plastic polluters in the world.

I set up a group where we study microplastics, and their impact on environment, which has enabled me to prepare activities and samples for the children, focussed on this issue. Before we start running the microscope activities, I give a workshop on the plastic world, and show them how small pieces of plastic can be collected from – for example – the gut of a fish as a result of living in a polluted environment, and how these can only be viewed through a microscope.

So in addition to the microscope activities themselves, it is also an opportunity to teach children about planetary health and the issue of plastic pollution and human health

- because it's such a huge thing in Malaysia I started the research six years ago after taking my children on holiday to a beautiful island in Malaysia, and the state of the rubbish was shocking. So when I came back I spoke to my colleague in environmental science and we started up our little group. It's been quite successful so far and we have won two awards for our work.

How many people do you currently have in your team?

Usually there's about six or seven of us when we go outside the Klang Valley. That's about the limit because it's expensive to buy the flight tickets and accommodation, and then we have to rent cars or a van to take us around. We will do many things in a single trip. We also cover more things than just the microscopy work; I will do my environmental plastic workshop, I have a colleague who delivers

a chemistry workshop, and then another colleague will sometimes go to secondary schools to run a DNA detective workshop.

Can you tell us about some of the challenges associated with traveling out to these places and carrying out activities in remote, rural communities?

We will normally fly out to one town and then drive out to another location, stop there and then drive out to as many other places as we can within a week. We always have to rent a vehicle - I think the last time we had a big four wheel drive. In some of these places there's no electricity, and often they don't have a lab area, so you just run the activities in the school hall, for example. One school we visited had a very old microscope that hadn't had any maintenance and was no longer functional.



August 2025: This road trip covered Miri, Limbang and Lawas and was partially funded by the Sarawak Ministry of Education, Innovation and Talent Development. In addition to offering workshops to students, we also ran three 'Train the Trainers' sessions in each of these towns.

And with Malaysia being a humid, hot country, it had become covered in fungus. The teachers were saying that even using the very simple microscope that we brought with us from the RMS, made a big difference to the kids.

We will maybe get to five different towns and eight schools within a week. Sometimes we do the morning and afternoon, then the next day we will do a morning session and then after lunch we immediately start driving to the next city.

Wow – that sounds a bit like a military operation!

Yeah - and we have to get all the approvals from the district education authorities and the schools, months before we can go. So we have to plan the route, plan which schools we're going to visit, and get all this ready before we can book our flights. So it's definitely like an expedition.

How many trips do you get to do on average in a year?

We usually manage to go out for a week or 10 days, once a year. In 2023 we were lucky enough to go twice – visiting two different states. But on campus we still regularly host children coming to us. Those visits are for half a day, and we usually have maybe five to six of those per year, usually during our less busy times.

What are you planning next? Perhaps expanding to new areas?

It is difficult because one of the challenges we have is actually getting permission to go out to schools – in Borneo for instance - because it's not easy to deal with the government officer, and the paperwork is horrendous. We would maybe like to go out to the northern



Kang-Nee delivering a workshop to a class of eager schoolchildren.



Kang-Nee and her team pictured during the trip to Sarawak in August 2025. Left to right: Dr Wai-Hau Tung, Ioannes Tang, Siti Nor Asma, Dr Sue-Mian, Professor Kuan-Hon, Kang-Nee Ting.

peninsula of Malaysia in 2026, and I would also like to return to Sarawak, but it really depends on the motivation and energy of my team, because I have two staff who recently left and we are all being asked to teach more at the university. We would definitely like to return to Sarawak because the government there are very forward-looking, and very keen on STEM. They also want science to continue being taught in English, whereas in the rest of Malaysia the government has stopped this, and we now have science and maths taught in our Bahasa Malaysia language. I think this puts the children at a disadvantage because the terms of reference are different and the whole world uses English terms in science. But when we carry out our activities in Sarawak, they want us to teach in English. We use both languages actually, because some of the rural kids, they still struggle with English. I don't know if we could expand to a neighbouring

country, because I wouldn't be able to speak the language and I would have to find someone else who was willing to run it.

Do you think you will be able to continue the work in the coming years?

Unfortunately you can never be sure. As academics, we just apply for grants. When you have money, you continue your research. If you don't have money, you just apply again until you get some!

I'm hoping at some point we might be able to persuade some corporates – banks or big companies - to support us. If they are into CSR (Corporate Social Responsibility), hopefully some of them will pick it up and say they want to fund us. Something like that would be great, but I will just keep searching for funding to continue the work. As long as we still have money, we will keep going!