

# Leading by example

Scientist Nancy Ip Yuk-yu is proving to be an inspiring role model, says **Anjali Hazari**

Students seeking to undertake postgraduate study in the sciences would be hard pressed to find a better role model than Professor Nancy Ip Yuk-yu. Dean of Science, Chair Professor of the Division of Life Science, and Director of the State Key Laboratory of Molecular Neuroscience at the Hong Kong University of Science and Technology, Ip is a world-renowned researcher who has made significant contribution to the field of neuroscience.

Recently she and her team identified a protein found on the surface of brain cells involved in the progress of Alzheimer's disease, one of the leading causes of death among elderly people. They found that when over-activated the protein EphA4 causes deterioration in learning and memory abilities.

The team has also identified a molecule in the Chinese medicinal herb *gou teng* or *Uncaria rhynchophylla* that inhibits this protein's activity. "We hope our method will be able to target early



Scientific research can be an extremely demanding career to pursue. Photo: NYT

abnormal changes in Alzheimer's patients and can slow the progression of the disease," said Ip.

The list of awards she has received is as long as it is illustrious. They include the Honours for Women Innovators at the Apec Women and Economy Summit (2011), the Scientific and Technological Progress Prize of the Ho Leung Ho Lee Foundation (2008), and the National Natural Science Award, China's highest honour in the natural sciences (2003). She was elected Academician of the Chinese Academy of Sciences, the highest academic honour bestowed on Chinese scientists (2001), and a Fellow of the Academy of Sciences for the Developing World (2004).

However, she acknowledges it has not been an easy journey. "It has been tough. I have needed to overcome some tough challenges, but I am very passionate about what I do," says Ip, identifying it as a key element to a successful career in scientific research. Ip was an alumnus of St Mary Canossian College where she studied right through from Primary 1 to Form 7, she secured a scholarship conferred to women and went to Simmons College in Boston to pursue an undergraduate degree in biology. Realising she enjoyed chemistry immensely, she ended up doing a double major and then went on to do a PhD in pharmacology at Harvard.

Ip often advises her students not to consider research as a job. "Go with your heart and you will do very well because it comes from yourself." And she practices what she preaches.



Professor Nancy Ip Yuk-yu and her team identified a means to potentially slow the progression of Alzheimer's disease. Photo: Dickson Lee

Although Ip has published over 210 scientific papers in prominent reputable journals with more than 13,600 Science Citation Index citations, and has been among the top 100 highly cited researchers in neuroscience and holds 23 patents, she has also encouraged her own children to pursue their passions. Her son, a graduate of the Massachusetts Institute of Technology, is pursuing a career as a pediatric dermatologist and her daughter did her postgraduate studies in business at Stanford University.

Whilst a postgraduate degree allows students to pursue their passion for a discipline, students should have a clear idea what they wish to accomplish. Among the most common reasons for pursuing a postgraduate degree are furthering one's career, changing career direction and, often when undertaking it in the sciences,

affording entry into a profession that needs a specific qualification or skills.

After getting her PhD, Ip spent a year at Sloan Kettering hospital in New York to learn molecular biology techniques, recognising that having trained as a neuroscientist she would need those skills to become a neuroscience researcher.

However, passion and vision need to be complemented with resilience and persistence to achieve any measure of success. A scientist needs to be curious and have critical, independent thinking skills.

"It means not taking short cuts," says Ip. "I spend a lot of time teaching my students how to be good scientists. Research ethic and responsible conduct are important."

Often students don't realise that good skills in themselves are not enough. "I would rather students learn from their mistakes and not fabricate data. These are the

**The world needs science and science needs women**

PROFESSOR NANCY IP YUK-YU

fundamentals I instil in my students very early on."

Historically, scientists and engineers received doctoral training with the goal of achieving a research position either at a university or a research institute. Principal investigators can obtain seed capital from the institution; however, they need to get funding to buy supplies, equipment, hire graduate students, fund postdoctoral positions and technicians.

Ip returned to Hong Kong and joined HKUST as an associate professor in 1993. And she went from being one of the first scientists employed by Regeneron Pharmaceuticals after her post-doctoral training, where she had a competent research team supporting her and significant funding, to starting from scratch.

"It was a challenging time for me," she reminisces. "Students were inexperienced. [I had to] motivate, nurture and train them. It took a few years before my lab was established and I had a good team to investigate fundamental questions in biology."

Ip's lab now employs 52 staff, including 16 post-doctoral fellows and 12 postgraduate students who conduct seminal research.

She has gone on to become the first honoree in life sciences from China to be bestowed the L'Oréal-Unesco For Women in Science Award, that aims to improve the position of women in science by recognising outstanding women researchers who have contributed to scientific progress.

This award has a powerful message that resonates with Ip: "The world needs science and science needs women."

Given that less than 10 per cent of the faculty at HKUST are women she is committed to making it possible for women to become successful scientists, recognising the importance of both gender and ethnic diversity in creating a more balanced research environment.

Although meritorious opportunities abound for both men and women alike, the "leaky pipeline" begins after women scientists complete their postgraduate education and begin their careers. "Many women scientists cannot take on the challenges between post-doctoral training and picking up an independent faculty position. The time commitment to a research career is a lot," notes Ip.

Whilst she received support from her husband and children she recognises that the career clock and biological clock run in opposite directions, and meeting expectations of a family is a major challenge for women scientists.

At HKUST she has helped form task forces to look at diversity and a family friendly work environment. She advocates special considerations for teaching relief, delaying the tenure clock and supporting faculty members to get back into the routine after they start their families – so that a new group of postgraduate students will be able to pursue their passion for the sciences.