



A Pioneering Spirit

By Dr Jeremy Lim, Editorial Board Member

The first doctor in Southeast Asia to have a disease – Tay Syndrome – named after him. The scientist who unravelled the poisonous sin lak asthma pills that were sold by Traditional Chinese Medicine physicians. The physician who helped identify the presence of both hand, food and mouth disease (HFMD) and eosinophilic arthritis in Singapore. These are just some of Dr Tay Chong Hai's achievements in his eventful medical career as an Internal Medicine physician and researcher. Currently running his own private practice at Mount Elizabeth Medical Centre, Dr Tay shares his scientific discoveries and journey through Medicine.

The story of Tay Syndrome

"Ichthyosiform Erythroderma, Hair Shaft Abnormalities, and Mental and Growth Retardation: A New Recessive Disorder" was the unassuming title of the 1971 *Archives of Dermatology* report¹ that eventually led to Dr Tay Chong Hai becoming the first Singaporean and Southeast Asian doctor to have a disease, trichothiodystrophy, named after him.

Dr Tay vividly describes the historic event: "One school doctor referred to me this girl from the school. The referral was for hair loss. To me, it looked very funny, especially because later on, we found that similarly, the brother also had hair loss. This hair loss was interesting because it just broke off. The hair was brittle. So far, they hadn't gone for haircuts. Looking at them, it was very interesting. At that time, one of them was nine years old and one was five years old, and they had premature ageing. They had bad skin, scaly skin. Also, they had other things like very low immunity and were also mentally not bright. Prof Khoo Oon Teik just bought a special microscope. I used it and managed to see the hair (for the first time), which looked like bamboo. I thought it was a different disease and that it was a good thing to report."

Dr Tay acknowledged Prof Khoo in the aforementioned publication, revealing that Tay Syndrome might have been Tay-Khoo Syndrome, if not for Prof Khoo's renowned modesty. Dr Tay also lets on that he had originally thought trichothiodystrophy was a different disease. However, reviewers from the *Archives of Dermatology* suggested studying the hair under polarised light, which he had not even heard of at that time! Then Dr Tay received help again, this time from a pathologist.

"I went to the pathologist and he said, 'Okay, no problem.' He went to the optician, where you could buy a pair of Polaroid sunglasses and they would give you another one to

test out. So you put one up and one down, you twist it and there you got it already. That was very clever, so that was my only expenses for this study, instead of millions (of dollars). We took pictures of it and it showed up like a tiger's tail. My idea was that this differentiation, this breaking part was when you're sick, like a nail, it would stop (growing). It is like a Braille line."

Career beginnings

Dr Tay's pioneering spirit was forged in the heady days of the 1960s, where training opportunities in Singapore were few and far between. Disdaining the limited options here, he headed to England with no referees, no jobs, nothing but a burning desire to learn. Why did he go? Simply on the advice of a virtual stranger!

"At that time, about 1959 to 1960, I met somebody who just returned from England. He told us, 'You don't have to wait to get a scholarship or traineeship. Let's go over! So I sold my car, my brand new car. I finished my housemanship and I had a very bad posting, Surgery B. After I sold my new car, I flew over to London. From London, I kept on writing for jobs.'"

I asked, somewhat incredulously, "So you went over without a job?" To which Dr Tay replied, "Of course. Not only me, many of my friends also went over to London. We stayed at Malayan House. We wrote letters to all the hospitals and then we went for interviews."

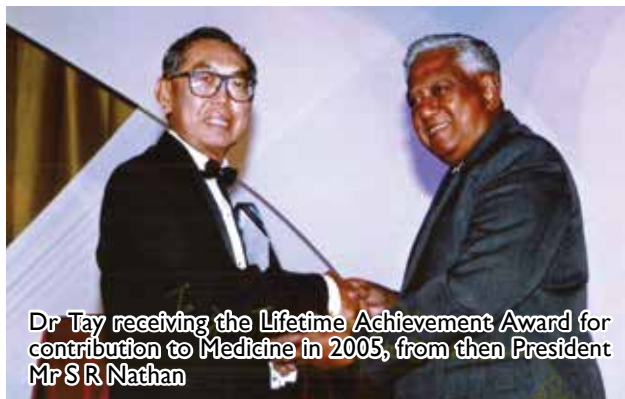
Although the conventional thinking then was "once you see an *angmoh* there, no chance, better go home", luck was on his side. At that time, chaotic postwar Britain was experiencing a shortage of doctors, and he finally found a job, paving the way for others to follow: "When I got my job, a lot of my classmates also went over."

In England, Dr Tay repeated housemanship and after a succession of posts, he successfully completed the

Photos: Dr Tay Chong Hai and Stock.XCHNG



Dr Tay and his wife, Dr Caroline Gaw at the first Tay Chong Hai Lecture organised by National Arthritis Foundation in 1998



Dr Tay receiving the Lifetime Achievement Award for contribution to Medicine in 2005, from then President Mr S R Nathan

membership examinations and enrolled into the Royal College of Physicians in Glasgow. Returning to Singapore, Dr Tay assumed the role of senior registrar in Medical Unit 2 at Outram Road General Hospital (now known as Singapore General Hospital [SGH]). Originally more interested in Neurology, Dr Tay moved to Dermatology because of Prof Khoo. At the time of Singapore's independence, Prof Khoo travelled to the most developed medical centres in the world and "brought back all the modern ideas. He started intensive care, coronary care. He later tried dialysis, and then after that, transplants. Not only that, he started the National Kidney Foundation." Prof Khoo's other interest was in skin – Dermatology. Dr Tay explained, "At that time, in 1960, the Skin Clinic at Middle Road was dealing with more leprosy, venereal disease and tuberculosis cases. Prof Khoo started his own clinic and he saw all sorts of skin. He delegated me to do skin although I was more interested in Neurology. I had to do skin clinic once or twice a week."

It was in this skin clinic that the young siblings with trichothiodystrophy were referred to the somewhat reluctant Dr Tay. One interesting anecdote: Tay Syndrome might never have been if the post office did not eventually realise that Singapore is not part of China and reroute the *Archives of Dermatology* review from China to Singapore! And as they say, the rest is history.

Other notable achievements

Another historic milestone in Singapore's medical history associated with Dr Tay was the discovery of high levels of arsenic in some Chinese medicines, the infamous *sin lak* asthma pills, which contributed to stricter regulation of Chinese Medicine and the eventual Medicines Act. What contributed to Dr Tay's knowledge of arsenic and Chinese Medicine? A trip to China won as a lucky draw prize at an SMA event! Dr Tay recalls, "I was also lucky enough to go on a China trip under an SMA lucky draw, before Mao Zedong passed away in 1972. Along the way, I bought herbal pills from Hong Kong, and analysed them to find that they were also full of arsenic. So we posed this question to a China specialist there." Dr Tay's findings on the *sin lak* asthma pills were subsequently published in several journals.^{2,3}

Dr Tay is also credited with correctly identifying the first outbreak of HFMD in Singapore in 1972. He and his colleagues' findings were published in the *Singapore Medical Journal* in 1974.⁴ He recounted how "many doctors misunderstood it to be chicken pox, scabies and all sorts of things, including drug rashes and so on. Although I'm not trained in Dermatology, I could look it up in the books and it was straightforward: hand, foot and mouth disease. I managed to get quite a lot of my doctor friends and together, we found over 100 cases." Dr Tay attributed his recognition of HFMD to his time in England, explaining that "doctors didn't know there was such a disease in Singapore; (they thought) it was only confined to England".

He further postulated that HFMD was introduced to Singapore because of shorter travel times: "Now I have an idea why it was not in Singapore at that time, because most of us who came from England to Singapore took two or three weeks. Even if they had HFMD, (the infectious stage would have) finished already. Then, with rapid air travel, all sorts of things were coming in and all sorts of things were going to England also. That's the reason why it suddenly became prevalent because the incubation period here was a week or two. If they came to Singapore on a boat or whatnot, you wouldn't get anything."

In the late 1990s, Dr Tay discovered another new disease called eosinophilic arthritis. He reported ten patients in Singapore who presented with acute polyarthritis without systematic involvement, but with very high eosinophils in their blood.⁵ Although a majority of the patients experienced pain at the joints in their bodies, such as the knees and ankles, there were no extra-articular manifestations. Investigations into the different causes of hyperesinophilia, especially for allergies and parasitic infestations were negative. The patients responded poorly to the usual anti-inflammatory drugs, but half of them improved with corticosteroids and others to Hetrazan (diethylcarbamazine citrate) or Ketrax (levamisole). Later, Dr Tay treated five new eosinophilic arthritis patients with Singulair (a leukotriene inhibitor) and achieved very good results – a breakthrough for a new but puzzling arthritic problem.

Dr Tay's discoveries are exhibited at the SGH Museum.

Concluding thoughts

Dr Tay's life story is one of serendipity, ingenuity and keen observation. The stories of Tay Syndrome, arsenic in Chinese medicines, HFMD and eosinophilic arthritis richly illustrate life's ample intellectual rewards to the curious and the committed.

"Chance favours the prepared mind" was what Louis Pasteur exhorted, and preparedness comes from the breadth of experience and wide knowledge beyond the narrow confines of one's discipline. His advice to young doctors and policy planners – firstly, keep medical education broad. Commenting on the current residency system, Dr Tay suggested, "They are trying the American system of traineeship, which I don't think is good at all because from the fifth year or so, they are already selected to do a specialty. That means they bypass everything else and they don't know anything. For me, for example, I discovered a lot of things not only because of one aspect. The human being does not only suffer from one part of the system. It is a multisystem problem."

Secondly, emphasise the power of observation. In a 2007 *Straits Times* interview, Dr Tay noted, "A lot of money is being poured in, to get foreign talent, to set up Biopolis, tons of money being spent. Hopefully, there will be some discoveries. But the best discovery is by simple clinical observation, not by spending tons of money."⁶

Finally, embrace chance and serendipity. As American

author and diplomat James Russell Lowell once quipped, "Good luck is the willing handmaid of an upright and energetic character, and conscientious observance of duty." Which sums up Dr Tay's life perfectly. **SMA**

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A poetic spirit

Dr Tay enjoys penning poems in his free time. A collection of his poems were published in the now defunct local daily, the *Singapore Standard*, and in a book titled *The Birth of a New Day*. They can also be found at http://www.viweb.freehosting.net/vilit_Tay-CH.htm. We reproduce two of his poems below.

About Skin

Some have thick skin,
Some, papery thin.

Some skins are coarse and stony,
Like sands and stiff ebony.

Yet other skins are soft and supple,
Satin-smooth and fur-like gentle,
A boon for aching vision;
A challenge to temptation.

Thus Beauty, Sex and Emotion
All a-mirror'd in its reflection.

Many a battle have been fought
Many a charmer's affection sought,
'Cause its texture and its shades
Wee bit vary, of different makes.

Tis strange how our lives and issues
Oft arise from tiny tissues.

Life

Life is a cycle of movements
Of harmonious systoles and diastole,
Rhythmic as jazz,
Eternal and tireless.

Cardiac stroke secondly, endlessly...
Maketh God's creatures as creatures
Feeding arteriovenous thoroughfares
Governing Life.

Machinelike valves ope and shut
Silent as the warm sticky current
Ejects and recedes.

Hark! whose voices cries, "Lub...Dup...Lub...Dup..."
Repeatedly, heartily.
'Tis Life marching its earthly life-span.

