Pipe Dream or Reality *By Dr Michael Chee*

WHAT IS A CLINICIAN-SCIENTIST?

A Clinician-Scientist is an individual who has completed both scientific and clinical training to allow him/her to independently compete for grant funding, so as to lead a research team that generates scientific knowledge and applications. The playing field is international, the competition is fierce and there are relatively few takers, anywhere in the world.

Clinician-Scientists are viewed as valuable in most developed countries because they are seen as a potential shortcut to discovery of novel disease mechanisms, diagnostic tools and therapies. In order to do this, the Clinician-Scientist has to have the capability of juggling vast amounts of information on one hand, and be able to sniff out opportunities for translation like an entrepreneur looking for business niches, on the other. Some famous Clinician-Scientists include Richard Frackowiak, a neurologist/neuroscientist from the University College of London, Anthony Fauci of the National Institute of Allergy and Infectious Diseases in the USA, and Priscilla Kincaid-Smith, a renal physician who was originally English and who subsequently made a name for Australian medicine.

In order to be competitive, a Clinician-Scientist has to spend long years acquiring skills that provide him/her with credibility and capability to lead a lab. In addition to technical skills, a clear understanding of the different contexts in which scientific and medical staff operate in, is essential for success. The use of language and metaphor vary significantly between persons of different backgrounds and it takes skill to get a team to inter-operate. This is difficult to replicate and when properly set up, a productive, multi-disciplinary team is a valuable entity.

REALITY BITES

Unfortunately, Singaporean medical undergraduates are generally ill-prepared for, and not particularly inclined, to pursue a Clinician-Scientist track. Tertiary education to date has been very focused on churning out a professional with job-specific technical skills and does not provide a broad enough fund of knowledge for a typical medical graduate to make an informed decision about a career in science; this is exacerbated by lack of education and exposure to a scientifically-oriented career. The risk-averse culture is of little help.

The constant criticism about poor talent management in public health care institutions and a general lack of a proactive approach to scientific career development all conspire to make it difficult for a prospective Clinician-Scientist to choose this path. As if these were not enough, there are issues of petty professional jealousies that work against any serious inter-disciplinary collaboration, clinical heads who are not supportive, and finance controllers who covetously watch the hospital's bottom line.

Perhaps more serious than any of these problems is the dearth of role models and mentors. Clinician-Scientist mentors who have the branding of clinical greats of years gone by have yet to emerge, and they are in dire need.

The good news is that quite a few Singaporeans have excelled in research while on HMDP fellowships. There are a fair number of extremely driven and tenacious individuals amongst the medical community. We have a history of re-inventing ourselves. We have a siege mentality that keeps the critical few perpetually hungry and eager to improve.

Funding for research, on a per-capita basis is generous, although its distribution and usage still leaves much to be desired. It is reasonably easy to secure a large grant in Singapore for relatively modest levels of grantsmanship. We have access to new equipment and facilities that are the envy of many.

More importantly, a good number of top class scientists pass through Singapore and while geography is not in our favour, few junior PI's in more developed countries have access to the kind of talent on a one-on-one basis as we do in Singapore.

HOW NOT TO SELL OURSELVES SHORT

Singaporeans are a curious mix of arrogance and self-deprecation. On one hand, we like to feel we have done well (and we have). When prominent researchers pass through Singapore, they are given a treat to the eye candy of impressive new facilities and impressive grant numbers, that in the scientific world count for naught without commensurate research output. On the other hand, there is also genuine talent on the island that is only now beginning to be recognised and upheld as desirable.

Nobody would want to be operated on by a surgeon with inadequate training or skills and who spends most of his time telling his juniors how to do surgery. Along the same vein, Clinician-Scientist awards should be reserved for persons who are really dedicated to making research a very significant part of their professional lives. A minimal commitment to science to stay internationally competitive is 70% of one's time. It's not an easy decision to make to spend so much time on science when it is relatively easier to maintain a high income doing routine clinical work; but without commitment and capability, success will not be forthcoming.

HOW DO WE TURN THE CORNER?

The secret of the next lap in Singapore's economic future is no secret: do what is difficult to replicate. It is easy to provide funding and to construct buildings. It is difficult to raise people who are hungry despite being well-equipped, who long to discover new things, who are willing to work long hours, who are willing to build trust and to build careers for their juniors.

For Clinician-Scientists to emerge and to succeed in the brutally competitive international science environment, their existence has to be valued in real terms. They should have a defined career track with financial compensation commensurate with that of a valued contributor to the institution. They should be well-mentored in their early years in laboratories that are reputable. Clinician-Scientists should have to spend less time contending with how they pay their lab's rent or how to support their salaries, and more time working on experiments. They should be given support in recruiting patients or volunteers for studies by clinical colleagues whose patient loads

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and reputations stand to gain if they are perceived to be working as part of the "A team". They should be given opportunities to supervise graduate students and to inspire the next generation of medical students.

WHAT IS THE PAYBACK?

Patients want to be seen at institutions where doctors are willing and able to deliver the most up-to-date treatment that has been carefully validated. Clinician-Scientists do much to generate the perception that there is a commitment to excellence in terms of finding newer and safer interventions for disease.

By winning research grants, Clinician-Scientists add to the infrastructure of a health care institution in terms of trained manpower and equipment.

By serving as mentors and instructors, Clinician-Scientists imbue in generations of medical students the benefits of rigorous analytical thinking. Thinking out of the box is an increasingly valued capability and a Clinician-Scientist by the nature of his/her job has to do this. ■

About the Author:

In his early forties, Dr Michael Chee Wei-Liang (MBBS, 1983) was fortunate to have instilled in him the work ethic of Prof Seah Cheng Siang and his team of dedicated internists in MUIII SGH, as a medical student. He trained in internal medicine in Singapore General Hospital (SGH) and Tan Tock Seng Hospital (TTSH) before undergoing specialty training in neurology in TTSH. His first real taste of research was during a two-year fellowship in epilepsy and clinical neurophysiology at the Cleveland Clinic Foundation. His interest in brain imaging was kindled by the use of MRI in selecting candidates for epilepsy surgery and his experience with electrical stimulation of the human brain provided a backdrop for developing a second career in cognitive neuroscience. He underwent research training supported in part by personal savings at the Massachusetts General Hospital NMR centre and upon his return to Singapore, was fortunate to publish two influential papers on the organisation of the bilingual brain, from work done in Singapore. The Cognitive Neuroscience Laboratory that he has set up is a young multi-disciplinary, multi-nationality team equipped with a new 3T MR scanner that will serve as a generator of new knowledge about language and memory as well a nidus for those wishing to use MR imaging as a research tool. In his capacity as a research administrator, he hopes to contribute to mentoring and building up the next generation of Clinician-Scientists. Forever optimistic despite appearances, Dr Chee believes, as do some from his alma mater: The Best Is Yet to Be!