APBN manages to secure an interview opportunity with an internationally prominent molecular cardiologist, Professor Judith Swain who is the founding Executive Director of Singapore Institute of Clinical Sciences (SICS), a research institute of Agency for Science, Technology and Research (A*STAR) in Singapore. She is one of the clinician scientists who drive the translational medical research and clinical science initiatives in Singapore.

Professor Judith Swain and Professor Edward Holmes – the husband-and-wife team who enjoyed their illustrious career as scientists and administrators at Stanford University and the University of California, San Diego (UCSD) – were lured from their posts to take up top positions with the A*STAR in Singapore. They are the latest eminent research heavyweights wooed by Singapore's expanding commitment to biomedical sciences. Prof Swain will place great focus on developing areas of strength in the clinical sciences and translational medicine.

Translational medicine is the study of human diseases for the development of new therapies and diagnostics. It basically involves bringing ideas back to laboratories and then, connecting the laboratories to the patients. The transfer of laboratory discoveries to patients helps us understand all diseases and interface with the diagnosis, treatment or prevention of the disease.
To be a clinical scientist, it is not about which discipline of medicine you specialize in, but rather, the fact that you study humans and human diseases. PhD scientists, basic research scientists, and clinical researchers all may be involved in translational research. Translational research is, in fact, a team effort. Some team members will focus mainly on the scientific and research aspects of the disease, whereas other team members will function in a more clinical-intensive role.

In the U.S., translational researchers are scarce in numbers, and they are sometimes known as the “endangered species”. The training for this field is just too long, as one is required to gain expertise and specialist knowledge for a number of years in order to reach scientist status and the training involves high budget commitment. The National University Health System (NUHS) – which brings the National University Hospital (NUH), the National University of Singapore (NUS) Yong Loo Lin School of Medicine and the Faculty of Dentistry together – will be an important center for translational medicine where medical research, education and clinical care are synergistically integrated under a common combined governance.

The Singapore Institute of Clinical Sciences (SICS) focuses on clinical sciences. So, what exactly does it mean to be a clinical scientist?

Tell us the goals and objectives that you envision for SICS and the plans you have in store for SICS. To help us understand further, shed some light on the training programs of SICS.

Singapore Institute for Clinical Sciences is poised to become an excellent training ground to nurture the next generation of clinician investigators and translational researchers in Singapore. Building up this pool of talents, and developing research for a greater in-depth dimension rather than simply a broader coverage, are the main focuses of SICS. As training is key, we focus on the physician-scientist training within both the NUS Yong Loo Lin School of Medicine and Duke-NUS Graduate Medical School.

We have a Growth, Development and Metabolism program that enhances our understanding of early fetus and neonate development and also our study on the interplay of environment and genetics leading to metabolic diseases, e.g. diabetes, obesity in later part of human life.
In addition to training, SICS is positioned to be the bridge between the Biopolis* and the hospitals and the healthcare systems. We encourage and facilitate moving work out of basic science and developing into new treatments and diagnosis. We encourage clinicians to identify the problems and needs of any particular disease areas, which involve the process of taking patient observations and samples, and then work “backwards” to examine the problems, such as why diseases progress, why certain patients respond to treatment while others do not, how to develop drugs faster, as well as devising improved and affordable infrastructure to improve clinical research.

*The Biopolis in Singapore is the hub of biomedical science research and development in Asia; it is a 2 million sq ft biomedical complex that houses key government agencies, public-funded research institutes and R&D laboratories of pharmaceutical and biotech companies.

You co-founded the medical device incubator company Synecor, which has since expanded to cover all medical specialties besides interventional cardiology. Tell us more about your level of involvement with the company now.

Synecor is performing extremely well, primarily due to the efforts of its managing director, Dr Richard Stack. Since its start-up in 1998, Synecor has managed to spin out at least three medical device companies and is now setting up a fund to support the development of these spin-offs from Synecor. It is really interesting to see any of the spin-offs, or those of other companies, could grow and participate in cardiac device development here as Singapore. I no longer have active involvement with Synecor, but I do with other companies, and I encourage them to think of Singapore when they are looking for clinical research sites. I hope that we can further develop the cardiac device area here in Singapore.
I have done some research work with the U.S. Olympic Center, the U.S. Naval Special Warfare Center, and the Department of Defense, due to my interest in extreme performance which relates to special operations in the military. We explore the use of modern neuroscience technologies to increase the effectiveness of elite performance (mental toughness) which ultimately is more important than physical strength. In Singapore, I had visited the Defense Science and Technology Agency (DSTO) and DSO (Defense Science Organization) National Laboratories, as there are investigators that have interesting programs here. This research is not part of SICS, but someday I hope that we can have some cooperative research programs in this area between different Singapore institutions.

Tell us about your stint in defense medicine. What made you interested in it and what is extreme performance?

I would say the NUHS is developing into a truly an academic medical center since it now has governance of the medical school and hospital under a single structure. Its clinical care and teaching as well as research facilitate and make translational medicine easier. For translational medicine to happen, all these three factors need be synergistically integrated. Combined governance is still a nascent concept in the U.K. but in the U.S., it is very common.

The U.S. is too big a country, currently there is national healthcare system or overall governance of the healthcare systems. On the other hand, Singapore is small and compact. Here, the consolidation comes under Ministry of Health (MOH) and thus it is easier to develop nationwide healthcare policies. Singapore has a vociferous appetite, capability, capacity and willingness for change within a robust economy.

One suggestion for improvement is to foster closer collaboration between Biopolis and the medical schools, and this will create the synergy to move clinical research forward.

What are your views of the biomedical research and healthcare system in Singapore? What are the improvements you would recommend?

Since moving to Singapore, what are the differences that you have encountered personally in terms of doing research in the U.S. and Singapore?

The first 20 years of my career was research-intensive and that was my focus, but now I do more administrative work to help build programs and policies.

Singapore is small and nimble. It is used to changes. Thus, it is much easier to get things started and affect change in Singapore than in the U.S.
About Professor Judith Swain

Professor Judith Swain is the founding Executive Director of the Singapore Institute for Clinical Sciences (SICS). Upon joining A*STAR, Prof Swain and her husband, Professor Edward Holmes are appointed Lien Ying Chow Professors of Medicine at National University of Singapore. Prior to joining SICS in 2007, Prof Swain was the Professor of Medicine, dean for Translational Medicine and founding director of the College of Integrated Life Sciences (COILS) at the University of California, San Diego (UCSD). Prior to that, she was Chair of the Department of Medicine at Stanford University. Widely regarded as one of the world’s leading molecular cardiologists, Prof Swain is well-known for her work in creating models to understand the genetic basis of cardiovascular development and disease.

Professor Swain has served in numerous U.S. leadership roles including the Presidency of the American Society for Clinical Investigation, which is America’s leading society for young clinician-scientists, and the Presidency of the American Association of Physicians, which is the leading society for senior physician scientists. She has served on numerous National Institutes of Health (NIH) committees including the NIH National Research Resources Council, as well as the Council of the National Heart, Lung, and Blood Institute. She is an active member of the Board of Army Science and Technology of the National Research Council and on the Army Laboratory Assessment Group. She is a director of the Burroughs Wellcome Fund, a member of the scientific advisory board of the Doris Duke Charitable Trust, and a member of the Council of the Institute of Medicine.

About the Singapore Institute for Clinical Sciences (SICS)

The Singapore Institute for Clinical Sciences (SICS) is the Agency for Science, Technology and Research’s (A*STAR’s) key initiative to develop world-class clinical sciences programs. The objective of SICS is to find more effective and expeditious ways to develop novel therapeutic and diagnostic modalities for common diseases, such as cancer and vascular disease. It will serve as a critical bridge linking basic biomedical research undertaken by A*STAR Research Institutes and program with clinical research focus in the Ministry of Health (MOH) hospitals, disease centers and the universities. Singapore has the advantage of being more compact and nimble, as well as being home to the three ethnic populations which represent a substantial portion of Asia’s population. Any discovery and novel technology that is developed for Singapore’s population will also be highly relevant to the rest of Asia’s needs.