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Interview with Dr Lee Hartwell

By Dr Toh Han Chong, Editor
and Ms Sia Jia Hui, SingHealth

Dr Lee Hartwell and SingHealth GCEO Prof Tan Ser Kiat after signing the MOU for Partnership for Personalised Medicine.

Dr Lee Hartwell is the President and Director of the Fred Hutchinson Cancer Research Centre in Seattle. He is also the Professor of Genome Sciences and Adjunct Professor of Medicine at the University of Washington School of Medicine, as well as the American Cancer Society Research Professor of Genetics.

Most of Dr Hartwell's career was spent on studying genes that control cell division in yeast. His insights into cell-cycle control are being used at the Hutchinson Centre and other places to develop treatments for cancer and other diseases. Together with Dr Michael Birt of the National Bureau for Asian Research, he also organised the first international

Pacific Health Summit in June 2005.

Dr Hartwell's efforts are now directed towards improving the field of protein diagnostics, which he believes can provide the best diagnostic information and aid to identify individuals at high risk for diseases, detect cancer and other diseases at an early stage.

For his work, he received numerous national and international scientific awards, most notably the 2001 Nobel Prize in Physiology and Medicine. Other honours include the Albert Lasker Basic Medical Research Award, the Alfred P. Sloan Award in Cancer Research and so on.

Dr Hartwell now lives in Seattle with his wife, Ms Theresa Naujack.

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Page 3 ►

CONTENT

6 President's Forum - We Will Not Lose The Script | **11** Emergency Departments versus 24-hour Clinics
12 Bienvenido a Mexico! | **16** Hobbit - Guide to Specialisation | **18** The Duke Surgical Experience

◀ Page 1 – Interview with Dr Lee Hartwell

Dr Toh Han Chong: As a child, you used to love the natural world and collected spiders and butterflies. Are you still very much a nature lover?

Dr Lee Hartwell: I do not collect insects anymore but I certainly enjoy nature. That interest has stayed with me.

THC: What kind of recreational activities do you enjoy?

LH: Well, I take walks, ride a bike, watch movies but I mostly walk and hike. When my wife and I go to other countries, we try to find parks to walk in.

THC: You have been to many places all over the world, visited many healthcare systems and many societies - what are the things that have really left a deep impression on you?



Dr Lee Hartwell (centre) with his wife Theresa Naujack and Dr Michael Birt

LH: Good question. Theresa has a comment.

Ms Theresa Naujack (wife of Dr Hartwell): I would guess maybe the Tzu Chi Foundation.

LH: Yes, that is good. Tzu Chi is a Buddhist group and is the biggest philanthropic organisation in Taiwan. We have visited it a couple of times.

But I think what is perhaps most impressive is how universal the culture of science is. Any scientist here often spends several years in the US or England. It is so easy internationally to connect with people around science because we are really all talking the same language.

THC: There is a global emphasis for more translational research. The roadmap for NIH is to focus more on translational research. In Singapore, we are trying to do the same. What is your feeling about this attention paid to translational research? Is that the right strategy?

LH: I think you have got to have a mix of basic research and applied research. You do not want to neglect basic research because you will not be able to do any applied research a decade from now. But the challenge with applied research is that it is very hard to do. There are not a lot of successes in creating therapeutics that have strong clinical benefit.

THC: Such an example is therapeutics for cancer. There have been many failures and some success stories. Are you optimistic about the strategy of pharmaceutical companies in developing targeted agents?

LH: It has been surprisingly unproductive and there are two sides to it. One is technology – the ability to predict the therapeutic response from inhibiting a particular target and from picking an important target is still

really quite unsophisticated. On the other side, cancer is so complex. DNA sequencing and experiments recently on different kinds of cancer show that they are very heterogenous. So I think we have a real challenge ahead of us. I do not think we have a very clear path to developing good targeted therapeutics.

THC: Ironically, it is the ‘dirtiness’ rather than the singular selectivity of drugs that have better efficacy because they inadvertently target more than one target such as one part of a signalling pathway?

LH: Maybe that is part of the problem but it is not clear that ‘clean’ drugs will be any better. The reason is because we tend to think of a target that is having one function. But it does not. Every protein has lots of functions. P53 is involved in almost every side of the cell process. So even a perfect drug is going to inhibit lots of different things.

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Dr Lee Hartwell has a discussion with Dr Terrance Chua, Deputy Medical Director of National Heart Centre Singapore (centre) and A/Prof Lim Swee Han, Head of SGH A&E Department.

THC: What is it like running the Fred Hutchinson Cancer Research Centre? Is it challenging to look after a large pool of talented physicians?

LH: No, I think they look after themselves. The Centre is a very easy place to run because you do not have to run it. *(Laughs)* You know, we have 200 faculty members all of whom have their own research careers, getting their own grants and running their own laboratories so I do not consider my job as really to run the place.

THC: It must have been quite a surprise that the cell cycle genes in baker's yeast can be translatable to human cells. Did you intuitively think this was going to be the case?

LH: Not really. I think today we realise how conserved biochemistry is. But we did not know this at that time. I was not motivated or concerned one way or other to whether yeast can be translatable to humans. I just wanted to work on some eukaryotic cells where we could find out something about cell division. Yeast was the only game in town.

THC: Science is such a competitive game today. Was there more generosity or more competition

in the scientific community when you were a graduate student, then a post-doctorate, and later a senior scientist?

LH: I never felt competition in science. I was in an earlier era so maybe it just was not as competitive then. I think now that the problems are big and complicated enough, sharing is always better than competing.

THC: Was being conferred the Nobel Prize life-changing?

LH: Not in that sense. I think what it does is to credential you to the lay public as a spokesperson for science. And so you have to be careful in what you say. One needs to take seriously the ambassador role that you play in science. But I do not think that it is so life defining in the sense of career defining. What I am doing now is just derived completely from my interest in medicine and does not have anything to do with the Nobel Prize.

THC: Is the United States ready for universal healthcare? Americans are known for their sense of individualism and a culture of taking care of oneself than to embrace a national policy such as universal coverage.

◀ Page 4– Interview with Dr Lee Hartwell

LH: People would like universal healthcare. The federal government would have to take on the insurance. I think it is something the country and the people would like. I do not think it has much to do with individualism.

THC: Which persons have influenced you as an individual?

LH: I think in every turn of my career, there were people who influenced me, all the way back to high school. I felt fortunate because there have been people who have encouraged me, given me advice and helped me at every step of the way. I cannot think of any step of the way that I went through without somebody there giving advice. I think that is very crucial.

Ms Jia Hui: I have one question, which is regarding the partnership and memorandum of understanding that was signed with SingHealth today. What do you hope we can achieve, looking forward five years from now, out of this partnership between the Fred Hutchinson Cancer Research Centre and SingHealth?

LH: Our aspiration is that we will identify new diagnostic tests that will improve the

management of patients for specific diseases that we might pick as a collaborative project. But I think the important thing to realise is that this is very much at the forefront of research. We should aim for success for doing a project together that really provides new medical information. It will be a breakthrough in encouraging the whole field to develop one.

JH: So after Singapore, where else do you plan to go?

LH: There are no specific plans. Through the Pacific Health Summit, we have developed relationships with a number of different decision makers in different countries, so I think there are a number of opportunities. But we do not have the capacity for very many opportunities. We can only do a few major projects. I think the biggest challenge in my mind is to find healthcare systems that are very future-oriented and realise the importance of investment in changing how medicine is done and in practising the standard care.

THC: Thank you for your time. ■

Photo Credit: SingHealth Corporate Communications



Discussion with clinician leaders.