

# POP SCIENCE



## Rubbing Elbows with Nobel Laureates and Japanese Royalty

by Imee Su Martinez, Ph.D.

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Every year when the Sakura quiver in anticipation for spring, the Japan Society for the Promotion of Science invites promising young scientists from the Asia-Pacific and Africa to a gathering called the HOPE Meeting. "HOPE signifies the promise held by young scientists, and the optimism for a bright science and technology future" (JSPS, 2010). This meeting provides opportunities for starting researchers to interact with Nobel Laureates in order to expose them to the highest level of scientific endeavors, and to inspire them to aim for loftier goals. The meeting also intends to foster collaborations among the participants, and to provide them avenues for stimulating intellectual discussions.

The 7<sup>th</sup> HOPE Meeting held last March 1-5 was quite special. This is because the Nobel Prize Dialogue, which is normally held in Sweden, was held for the first time in Tokyo. The Hope Meeting participants were invited to the event. This, of course was the beginning of my unforgettable Hope Meeting experience.

This year's Nobel Prize Dialogue held last March 1<sup>st</sup> was entitled "The Genetic Revolution and Its Future Impact". The seven Nobel Laureates that attended the dialogue were Hiroshi Amano (Physics, 2014), Andrew Fire (Physiology or Medicine, 2006), Tim Hunt (Physiology and Medicine, 2001), Richard J. Roberts (Physiology or Medicine, 1993), Koichi Tanaka (Chemistry, 2002), Kurt Wüthrich (Chemistry, 2002), and Shinya Yamanaka (Physiology or Medicine, 2012).

The day started with Dr. Richard Roberts' lecture on loving bacteria. He was very keen that we understood the role of bacteria in our bodily processes, and that contrary to common knowledge in an antibiotic dependent world, bacteria are our friends fighting with us against common pathogens. He stressed the current misuse of antibiotics, and the harm they inflict on people and the environment. His description of an unconventional form of treatment called fecal transplant, where solid bodily refuse from a healthy individual is transferred to another suffering from gastrointestinal diseases, was quite interesting.

The second speaker caught the attention of many scientists in the audience. Dr. Helga Nowotny is a social scientist that received the J. D. Bernal Prize for lifetime achievements. Her talk entitled "A Social Scientist in the Land of

Scientific Promise" views science as a promise to society for a better future. According to her, science gives hope to society by providing ways to solve its problems. As a young scientist who is still starting her career, I was reminded of the gravity of my chosen profession. She also mentioned that when society provides support to science, it is trusting science to do its job well, and honestly. Her talk lauded science to admonish its practitioners, which to me was quite humbling but also inspiring.

The other lectures were "Discovery of iPS cells and their Applications to Medicine" by Dr. Shinya Yamanaka, "Biobanks in the Developing World: A Need for Better Governance" by Dr. Tikki Pang, "Genetics the Last Frontier in Agriculture and Food" by Dr. Louise O. Fresco, "Were Darwin alive today... would he write the same book?" by Dr. Juan Enriquez, and a special message from the most recent Nobel prize winner Dr. Hiroshi Amano, who was one of the inventors of the blue light emitting diodes.

Induced pluripotent stem (iPS) cells were quite popular in the panel discussions. Dr. Yamanaka was able to generate embryonic stem cells by adding four genes into adult skin cells. The implication of iPS cells to regenerative medicine is quite astounding, making it a very good example of the consequences of genetic revolution. Food from genetically modified organisms (GMO) was yet another point of discourse. I did appreciate Dr. Fresco's way of explaining the need for such food sources due to our rapidly growing population. She pointed out that we have been slowly genetically modifying our crops since the beginning of agriculture, choosing which species to breed or interbreed to get the best yield or the most resistant to diseases or pests. Her talk went very well with that of Dr. Enriquez who was talking about human evolution. According to him, gene is the survival of the fittest purported by Darwin. Weak and bad genes can be removed and improved, and nature is no longer the sole dictator of who survives. Now, man has his say! In fact, cloning was predicted in the panel discussions, as a possible solution to infertility, which may be unaccepted at first, but will be later on embraced just like "in vitro fertilization". But unmentioned huge elephants were also present in the room. Questions like "Is GMO really safe?" and "Are we playing God?" were whispered in corners.

The highlight of the event was a reception in honor of the Nobel Laureates. The imperial majesties Emperor Akihito and Empress Michiko dignified the event. We clapped in earnest as they walked past us. They spent a significant amount of time conversing with the Nobel Laureates. It was only later that I have learned from a Japanese participant that the emperor is a marine biologist! She also mentioned that seeing them is a real treat, as they only appear in public twice a year, one for the Emperor's birthday and the other on New Year's Day. I felt quite privileged to see them up close and personal.

The real highlight of my evening however, was bumping into Tim Hunt at the buffet. I was eyeing the buffet table, wondering what to try first when he came to me and asked me about the food! I was naturally star-struck and started mumbling about Kobe beef! After four sentences, I have decided to be candid and told him that I am in awe of him. He was actually my favorite in the panel discussions as he was quite hilarious. Then he broke the ice by saying, "Don't be star-struck, I am just a dope, really. I will tell you a secret. Don't take yourself too seriously. Do your science well, and then after that you can just be funny!" Awe went up a notch higher. I was touched by his humility, and his effort to make me feel at ease. I thought to myself, he is just human, just like me, albeit an exceptionally brilliant one!

The rest of the conference involved even closer encounters with Noble Laureates. There were plenaries as well as intimate small group discussions, where we were encouraged to ask them about anything under the sun. The questions varied from their discoveries and inventions, secrets to success, and personal lives. The distinguished scientists that spent a lot of time with us were Nobel Laureates Dan Shechtman (Chemistry, 2011), Douglas D. Osheroff (Physics, 1996), Ei-ichi Negishi (Chemistry, 2010), and J. Georg Bednorz (Physics, 1987), 2014 Lasker Awardee Kazutoshi Mori, and the former Secretary General of the The Royal Academy of Sciences Prof. Gunnar Öquist.

I was able to interact more with some than others, depending on my small group session schedule. Prof. Shechtman was telling us to be experts in our chosen field, to be tenacious, to believe in oneself and to be resilient. He said, "Don't show me the books! Change the books!" He also mentioned that the greatest gift is life, since theoretically the probability of life existing is lower than winning the lottery, and yet life is here. In one of our group discussions, I was able to ask him if his tie was made especially for him. The tie was blue with the Penrose tiles pattern on it, looking exactly like his discovery! Quasi-ordered crystals spatially arranged like Fibonacci's rabbits! And true enough; Technion University in Israel makes the tie exclusively for him. Apparently, he gave Obama one, and some prime ministers.

Prof. Bednorz was very passionate when he quoted J. Liebig. With utmost conviction he said, "The secret of all those who make discoveries is that they regard nothing as impossible." And I believed him! After all, you need a lot of faith to invent superconductors. He also advised us to keep our sense of awe of the world like little children, so we will keep discovering things. He was most fond of his high school art teacher who imparted to him the ability to feel passion for his work.

Prof. Negishi, the "Palladium King" on the other hand advised us to put health and family first before research, although with mirth he mentioned that his wife will probably disagree since he spent a lot of time in the lab. Even Prof. Osheroff has the same sentiment about his research, and even went to the extent of saying that he married in a garden close to his lab to keep working. He was very keen in emphasizing that we should always be aware of unexplained behavior, that it can be nature whispering her secrets, the same way she showed him his Helium-3 phase diagram.

They gave us a lot of advices, and in my opinion really tried to inspire us. It seems to me that all of them really wanted to make our world a better place, and the prize is just a little extra, but not necessary. I was also struck by their humility, it was one thing that they all have in common. They all seem to have the ability to embrace failure, and view it as a path to success. I certainly experienced inspiration overload!

At the closing ceremonies of March 5th, before we left for our tour of Kamakura, the only female scientist in the organizing committee, Prof. Keiko Natsuaki (VP of Tokyo University of Agriculture) gave us farewell advices. She was telling us that we cannot be shy, which means to be bold in asking questions, and to be kind, to answer questions patiently.

All in all, it was a wonderful experience for me, from the flash talks to the poster sessions, to the heated discussions on research integrity and women in science, to the cultural activities (i.e. Ikebana, calligraphy), to the fancy farewell party on top of the Yokohama Marine Tower, and even to plain hanging out with fellow participants in some tiny pub in Tokyo. Two words can describe how I felt, "truly grateful" for the opportunity. The HOPE Meeting should become a tradition, and should be kept going especially for young scientists who are still struggling for funding, fighting with procurement, wrestling with mentoring, and needing a lot of inspiration. Yes, it should be kept alive every year, when the Sakura are quivering in anticipation of spring...



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