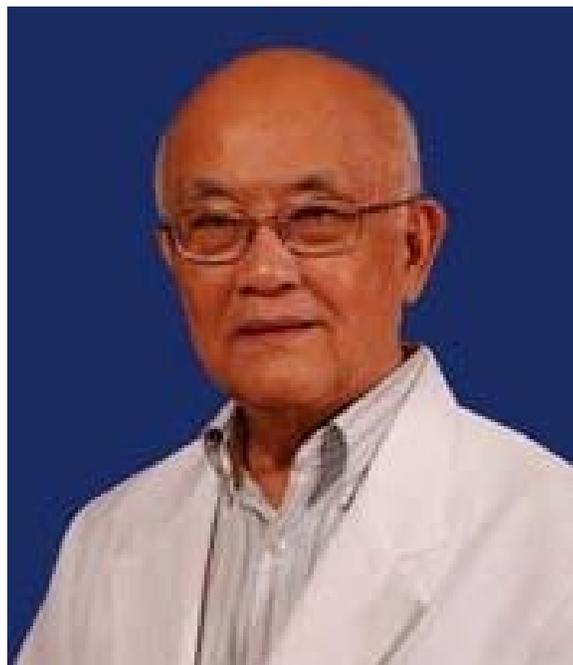


Hard work pays off: Getting to Know Dr. Ernesto Domingo

By Jortan Tun*



Reading life stories of scientists is a perfect way to get inspiration, encouragements, valuable tips, best practices, and insights that may help budding scientists generate the motivation they need to do great work. A recount of the life and work of National Scientist Ernesto O. Domingo is among the most inspiring.

When I was asked to write an article about him, I felt honored, yet uncertain. I inquired naively: “Who is Ernesto Domingo?” We certainly have read a lot about foreign scientists: Albert Einstein, Isaac Newton, and Charles Darwin to name a few. But we, particularly the young investigators, hardly know our own scientists and their contributions to the country. And if you are like me, you probably have not heard of Dr. Ernesto Domingo.

As you continue reading, you will find out more about him - his med school life, hobbies, accomplishments and contributions, current preoccupation after the prestigious Ramon Magsaysay Award, love life, and legacy to the next generation.

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The young Dr. Domingo. Born in Malabon, the young Dr. Domingo, or Ernie as he is known to his friends, grew up as a keen learner, absorbing every piece of knowledge he can get from his surroundings. For instance, they had a small jeepney transportation business, where he learned about car engines. “That’s why I cannot fool him, when he hears an unusual sound from my car” tells his wife. He has an obsessive compulsive behaviour about that stuff and so he would fix it right away. He also knows a lot of things outside the academe and he continues to feed his mind with other good stuff during his free time, like watching late night National Geographic TV shows. What a stimulating and productive way to spend your free time!

He grew up with seven siblings. He was the apple of the eye of his grandparents, always being carried on their backs during town processions of every feast. But as the eldest, he was raised with a sense of responsibility, and like in many Philippine households, he was also asked to go to the market, scrub the floor, etc.

Educational trajectory. Dr. Domingo was firmly resolved to become a doctor after graduating from high school at the National Teachers College in Malabon. His father was only too glad to see him through. He went to the University of the Philippines (UP) Diliman for his pre-med course, then after three years, he enrolled as a medical student at UP Manila. While most of the students were working only enough to pass, he put a little more heart to what he was doing. There were 120 of them in the



(From left to right) Former and Present Health Secretaries – Dr. Esperanza Cabral, the late Dr. Alberto Romualdez, Jr. and Enrique T. Ona - with Dr. Ernesto Domingo of the University of the Philippines - National Institutes of Health (UP-NIH) Universal Health Care Study Group who acts as moderator, listen and answer queries from stakeholders during the launch of Health System Shapers at the DOH Duque Hall on June 19, 2013. Photo by Dr. Juan Antonio Ricarte. Retrieved from: <http://www.healthbeat.ph/health-systems-shapers/>

beginning, but only a hundred (including those who were delayed) who made it through. He strived for excellence ranking 8th in the class and achieving third place in the Physician's Licensure Examination with a record score of 98% in internal medicine. To him, internal medicine became an obvious choice of specialty training at the Philippine General Hospital (PGH).

While he was a resident, he became particularly interested in the hemodynamics of portal hypertension caused by schistosomiasis. Together with his colleagues, they performed a classic study on the hemodynamic changes in the portal circulation of patient with hepato-splenic form of *Schistosomiasis japonica*. They were able to trace that the block to portal blood flow at the presinusoidal level is caused by the classical pipe-item fibrosis (PSF) around the intrahepatic radicles of the portal vein. Thus, splenic pulp and portal pressures are markedly elevated while wedged hepatic vein pressure is almost always normal (Sulit et al. in 1969). Still, at that time, very little was known about the cause of the obstruction in the portal vein system, and thus the etiology of this neglected disease remained a mystery. Early on, he showed an obvious talent in his chosen field. Always a passionate student, he would work until 1 am in the lab. This caught the attention of his mentor, Dr. Oscar Liboro. His hard work and perseverance won him an endorsement to study at Case Western Reserve University (CWRU) as a fellow in Gastroenterology Hepatology under the tutelage of Dr. Kenneth Warren, one of the world leaders in schistosomiasis research.

From hemodynamics, he went to focus his study on the

mechanism of spontaneous granuloma modulation around *S. mansoni* eggs. Dr. Domingo and Dr. Warren were able to provide evidence that the pathogenesis of schistosomiasis is caused by schistosome eggs trapped in portal venules, triggering host granulomatous inflammation. This leads to the progressive development of fibrosis around them, thereby blocking the portal blood flow. Dr. Domingo tackled these important areas and succeeded in elucidating the role of host granulomatous formation in hepatosplenic disease and how this can be of significance in disease management (Domingo and Warren 1967; Warren et al. 1967; Domingo and Warren 1968; Domingo and Warren 1968a).

Dr. Domingo's educational trajectory was clear-cut and exceptionally elite. He was very serious in what he was aiming for. In today's context, we call students like him as "nerds". Yet years later, his genius not only became one of the most appreciated, but also most celebrated. Such crisp focus is the reason why he is a successful physician-scientist. He received distinguished honors throughout his career, including being named among the 50 Men and Women of Science, receiving the UP Alumni Association Lifetime Achievement Award, the Civil Service Commission Dangal ng Bayan Award, and the Philippine College of Physicians Most Outstanding Physician Award, among numerous others. He was given the rank and title of National Scientist of the Philippines (Pambansang Alagad ng Agham ng Pilipinas) in 2010, the highest award accorded to Filipino scientists by the national government. He received international acclaim when he was honored with the Ramon Magsaysay Award in 2013.

Academic and teaching career. After three years of fellowship abroad, Dr. Domingo returned to the Philippines and joined the faculty of the Department of Medicine in UP Manila in 1967 as an Assistant Professor. He taught for 34 years, moving through the ranks, and became a Full Professor in just nine years, the fastest track in clinical departments and second fastest track in the College of Medicine. He is one of the only two University Professors in UP Manila to date. Dr. Domingo has spent his whole adult life within the University of the Philippines, and very successfully played a variety of senior roles including Chancellor of UP Manila, and various flavours of academic administrative positions including Chairman of the Department of Medicine, Director of Postgraduate School of Medicine, Associate Dean of the College of Medicine, Coordinator for Teaching and Research of the Philippine General Hospital and Sponsor of Clinical Epidemiology Unit. He also served on the influential Board of Regents of the UP System as Faculty Regent.

Dr. Domingo was the architect of the fellowship program in the clinical departments of PGH with a grant from the China Medical Board of New York. This became the model for most of the fellowship programs in other teaching hospitals in the country. He organized the first formal national postgraduate circuit course that accelerated the development of continuing medical education in the country. In recognition, the Philippine College of Physicians bestowed on Dr. Domingo the Distinguished Teacher Award in 1983.

In 1984, Dr. Domingo organized the Clinical Epidemiology Unit (CEU) in UP Manila through a grant from the Rockefeller Foundation. As sponsor of the unit, he devoted considerable time, effort, and resources to it. It is quite likely that this national asset would not exist had it not been for Dr. Domingo. This unit is now both an Institute and a Department, complete with a graduate program. It also spawned similar epidemiology units in other clinics and spurred a lot of researches.

His success as sponsor of the country's CEU was acknowledged by his appointment to the Board of Trustees of the International Clinical Epidemiology Network (INCLEN) in Philadelphia, which is the overall administrative organization for the CEU around the world. He was very active and travelled frequently to Philadelphia, but would stay only for a short period of time. This actually made the US Bureau of Immigration suspicious, such that on one such trip, he was held by the Bureau for investigation, who thought he might be smuggling drugs. Dr. Domingo immediately called CWRU, asking them to get in touch with the airport. Needless to say, the episode had a happy ending. In retrospect, it was a hilariously funny side show of a Filipino doctor's enduring commitment to serve the world.

He is a very good teacher and is well-grounded in the basics. He diagnoses patients by directly examining them. For him, lab tests are used just to confirm the ailments. Dr. Domingo's contributions to the expansion of the field of

gastroenterology, oncology, and hepatology in the country were evident throughout his career. His prolific publications testify to the range, depth, and vigor of his scholarly achievement. This is also evidently reflected in the achievements of the huge number of students and fellow scientists with whom he has interacted, collaborated, and stimulated.

The war on hepatitis. Dr. Domingo continued his work on schistosomiasis here in the country, initiating morbidity studies in a community setting (Domingo et al. 1980). He established the first schistosomiasis research laboratory in UP Manila through the Rockefeller Foundation. Later on, this served as the precursor of the same lab at the Research Institute for Tropical Medicine (RITM) of the Department of Health (DOH). Then, he became interested in another form of liver disease: viral hepatitis. His work on viral hepatitis became the centrepiece of his life and passion.

The conception of the Liver Study Group in UP Manila marked the start of the battle against hepatitis. Dr. Domingo and the late Dr. Augusto Lingao are considered the founding fathers and leaders of this group. They championed the investigation of hepatitis in the country and are credited for saving the lives of millions of Filipinos from the notoriously fastidious hepatitis virus. At that time there were no data on hepatitis. They had to start from the epidemiology of the disease. Together with RITM, they provided a very good picture of the burden of disease in the Philippines using the rapid epidemiologic assessment of HbeAG-positive individuals and the microparticle agglutination test (Arguillas et al. 1991). They were able to study viral infection among blood donors, medical personnel, and patient groups. One significant information that they established is the vertical transmission of hepatitis B virus (HBV) from infected mother to child (Lingao et al. 1989).

Aside from hepatitis, Dr. Domingo also performed extensive studies on hepatocellular carcinoma. His group was able to establish a causative link between viral hepatitis and liver cancer (Munoz et al. 1989). They provided evidence of patterns of transmission of HBV and the risk of developing liver cancer. Liver cancer has been very difficult to treat especially back then when liver transplant was not yet available. Almost all modalities of treatment, like chemotherapy, resection, and combination of such, failed to cure hepatocellular carcinoma most of the time. It was resolved that the best way to reduce the prevalence of liver carcinoma is to prevent HBV infection through vaccination. It took a while for the government to pay attention to his research. But, Dr. Domingo was a strong intellectual force. He succeeded in making his findings the basis of the decision of DOH in developing its policy on hepatitis B immunization. As a hepatologist, Dr. Domingo is very proud of this achievement.

Nurturing the academic environment. Dr. Domingo's emphasis on developing the overall academic environment was demonstrated by his major involvement in the reorganization of

UP Manila in 1988, during President Jose Abueva's tenure. Shortly after becoming the Chancellor of UP Manila, he embarked on reclaiming for the University all the land occupied by the National Science Development Board. This enabled most of the academic units of UP Manila to have their own building.

He was also responsible for the establishment of the UP Manila Library. As Chancellor, he was responsible for the full time appointment of all academic administration leaders from department head and up - a task that Dr. Domingo performed with careful judgment.

"Medicine is basically a social science", Dr. Domingo says. He enthusiastically supported the concept of merging these two fields for a joint effort in research and pushed for the establishment of the Institute of Socio-Biomedical Research, which culminated in the founding of the National Institutes of Health.

He sought to enhance the visibility of medical sciences to the community at large by embarking on the forging of advantageous agreements between UP Manila, the national government, and private institutions. The fruits of this effort include the Metro Manila Health Science community. This is a testimonial to the commitment of the medical sciences to improve the quality of life of the people, particularly of the poor.

Preoccupation. Dr. Domingo is still full of energy and ideas. He did not stop with the establishment of the hepatitis immunization policy. In 2008, he and several distinguished colleagues formulated the Universal Health Care (UHC) Study Group with the aim to "make the dream of health care based on health needs—rather than the ability to pay", as Dr. Domingo declares. Canada, Britain, and other Scandinavian countries have functional healthcare systems wherein one could get treated without worrying about fees. This is the kind of system that Dr. Domingo and his colleagues hope to have in our country also.

The UHC Study Group produced a "Blueprint for Universal Health Care" and actively campaigned for its adoption. This continues to be Dr. Domingo's primary preoccupation and his efforts are definitely not futile. He was instrumental in the crafting of the government's "Kalusugang Pangkalahatan" (Universal Health Care) Program. The continuing commitment of the government to UHC is evident. DOH's budget has doubled in three short years, a greater focus on health equity issues has led to some 80 percent of the population now enrolled in the national health insurance program, and public health care delivery capacities are being upgraded.

His contributions to science and the society have been enormous. Perhaps no complete record of his output exists. Recently, he was honored with the 2013 Ramon Magsaysay Award for his "exemplary embrace of the social mission of his medical science and profession, his steadfast leadership in pursuing *health for all* as a shared moral responsibility of all

sectors, and his groundbreaking and successful advocacy for neonatal hepatitis vaccination, thereby saving millions of lives in the Philippines." - stated in his citation.

When doctors marry doctors. A lot of horrifying stories from mentors and colleagues have made physicians unwilling to engage in romantic relationships with fellow doctors. To marry or not to marry fellow doctors is a serious perplexing issue. In fact in 1999, a group of researchers from CWRU even made a study exploring how marriage to another physician affects the professional and family lives of doctors themselves (Sobeck et al. 1999). Balancing career and family is similar to any scientific pursuit. It requires hard work and patience; fortuitously, Dr. Domingo has these qualities in spades.

His wife, Dr. Carmelita Domingo was notably a shaping influence in the life of Dr. Domingo. Their love evolved during the long hours of training and study in medical school. At that time, when cellphones and social networks were non-existent, relationships depended largely on proximity. Seatmates would often turn into lovers. But Dr. Domingo was very shy and did not want to entertain something that may cause him distractions. He focused on his studies like a true nerd according to Dr. Carmelita. Perhaps it was not yet the right time for a romantic partnership.

In 1964, during his fellowship training in Cleveland, he had another chance encounter with Dr. Carmelita, who also happened to be training in the US, but on a relatively distant state, Kansas. Dr. Domingo still carried the habit of working till late hours, but keeping connections amidst crazy schedules is one of his many talents. Dr. Carmelita appreciated his thoughtfulness in their long-distance relationship. "Sometimes even when he is working late in the lab, around 1 or 2 am, he would call me just to say hello." she recalls during an interview. Back then, calls were very expensive, yet he managed to save every dollar he could, while at the same time supporting his siblings out of his humble allowance. Unfailing phone calls and frequent love letters led to dates, engagement, and marriage. The partnership was a lasting one and produced four children.

Being both clinicians and scientists kept them fully occupied, but they were nonetheless fully devoted to their family. They made sure that the children did not lack parental attention. I was delighted to hear their stories on how they enjoyed themselves with their little children. "When entertainment venues like malls were not yet around, we used to bring our kids to Baguio, and then to our friend, Dr. Cesar Reyes in Lipa, Batangas." said Dr. Carmelita. Dr. Domingo is also fond of fishing. They would go to Malabon and enjoy fresh seafood. Dr. Carmelita was also the one who took the children to and from school. And when the children grew up, they were able to take them along to their conferences abroad. It was their chance to take the children to other places. "We don't have unlimited resources, but at least we were able to make them see Disneyland and Universal Studios. I thought we had a very good



Dr. Remigio Olveda with his mentor, Dr. Ernesto Domingo during the NAST 34th Annual Scientific Meeting at the Manila Hotel last year. Dr. Olveda received the NAST-LELEDFI Award for Outstanding Research in Tropical Medicine entitled “The Long-Term Impact of Population-Based Chemotherapy on Infection, Transmission and Morbidity”. In the photo are: (from left) Mrs. Teresita Uy-Olveda, Dr. Gisela Concepcion, Dr. Ernesto Domingo, his son, Dr. David Olveda, and his daughter-in-law, Dr. Marilyn Vinluan-Olveda.

quality time.”

Still, at the peak of Dr. Domingo’s career, he was undeniably very busy. Hours in the clinic, bench work, and administrative duties can play havoc on a relationship. And who could understand these challenges better than another medical doctor? He had the help, understanding, and acceptance of Dr. Carmelita, his clinician-partner who genuinely understands the myriad endeavours unique to his profession. She steadfastly supported him all throughout, giving him the freedom to focus his efforts on scientific research. As a mother, parenting required huge sacrifices from Dr. Carmelita, but eventually she was able to continue her medical profession successfully and unregretfully. Looking back, they wonder how they raised a family. “I think it’s a matter of working together in harmony”, says Dr. Carmelita. One easily admires this example of how a man and a woman can make a successful life together.

Passing the baton to future leaders. Mentoring has proven to be a catalyst of scientific progress in the country. Mentors have a powerful influence on their protégés. They are the ones who inspire learners to expand their boundaries and

explore unimagined vistas. Emulating mentors helps clarify one's paths and effloresce one's values. A prime example is the influence that the life and work of Dr. Domingo had on Dr. Remigio Olveda, recently retired director of the Research Institute for Tropical Medicine, who was encouraged to abandon greener pastures and instead pursue research for the country.

Never did it occur to Dr. Olveda that one day he would become a researcher. Dr. Domingo saw great potential in Dr. Olveda when the young doctor entered UP PGH as the first research fellow in the gastroenterology fellowship program. Dr. Olveda recalls that it was Dr. Domingo who made it possible for him to go to CWRU and get involved in the study of schistosomiasis. When he came back, Dr. Olveda received a grant which he used to continue the research in the country.

As a student, colleague, and, ultimately, one of the successors of Dr. Domingo, Dr. Olveda learned from his mentor that

research is really a matter of dedication. Like Dr. Domingo, who devoted his lifetime to alleviating hepatitis and hepatocarcinoma in the country, Dr. Olveda also strived since the 1980s to combat schistosomiasis through research.

Dr. Domingo taught all the trade secrets he knew in the clinic and lab to Dr. Olveda. After Dr. Olveda’s fellowship training in CWRU, Dr. Domingo vouched for his return as clinician who would also devote time on research. Dr. Olveda was confronted with the same dilemma as other clinicians in the country, who may find their roles critical in research, yet confounded by financial issues. “Scientist here are not paid well, you will not survive if you have a family to take care of.” says Dr. Olveda. Unlike Dr. Domingo, whose lab and clinic were near each other, Dr. Olveda's were not. It was quite difficult for him to be clinician and researcher at the same time. But, Dr. Olveda had spent both business and pleasure times with Dr. Domingo’s family and he witnessed first-hand Dr. Domingo’s devotion to the Filipino community as a private citizen, as a doctor, and as a researcher. Dr. Domingo’s sacrifices and enduring mark on the field impressed him and led him to choose the path of research.

Successful mentors sometimes produce even more successful protégés. But Dr. Olveda thinks he can never outperform Dr. Domingo. “If you gauge me, I am just half as good”, says Dr. Olveda with a smile. He once asked his boss in CWRU, Dr. Adel Mahmoud, to compare his performance with that of Dr. Domingo’s as a fellow. Dr. Mahmoud replied jokingly: “In a scale of 1 to 10, you are 10, but Dr. Domingo is 20.”

Through the years, Dr. Domingo has literally trained thousands of students, many of whom have gone on to become leading scholars, educators, administrators, and medical practitioners.

I wonder why his life is so dedicated to service, to improving the human condition, and to making the country a better place. Perhaps he can’t help it because the rudiments of medicine, science, and service are deeply intertwined in his nature.

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