

林重慶博士

Dr. Victor Ling

科研千里目 願景上層樓

全球知名的癌症專家林重慶博士，於1976年對癌症抗藥性作出了突破性發現，然而這只是一個開始；往後的30多年，他憑著鏗而不捨的精神、力求進步的態度，致力把癌症研究工作向多方面推展，並擔任「泰瑞法克斯基金會全國研究中心」的創辦人及科學部門主任。在他眼中，科學研究的領域每天都可能有新的突破、新的發現，然而，要讓突破繼續發展、發揚光大，以致改變世界，往往是更大的願景與挑戰。

在加拿大對抗癌症的歷史上，有好些甚具代表性人物，例如Terry Fox（泰瑞法克斯）便是一位家傳戶曉的抗癌英雄。這位身患骨癌而被迫截腿的青年人，一度嘗試長跑橫越加拿大，為癌症研究機構募款；雖則最終不敵病魔而逝，卻成為「泰瑞法克斯基金會」創立的緣由，激起後人在全球各地步其後塵舉行慈善路跑籌款。

林重慶博士是癌症研究領域中另一個具有代表性的名字；最為人知的是在1976年對P-糖蛋白(p-gp)的突破性發現，證明這種蛋白質是導致化療效果降低，使腫瘤細胞產生耐藥性的原因之一；由此引伸，若能抑制p-gp對藥物的排斥，便可提高化療藥物殺傷腫瘤細胞的作用；這對提高化療效果具有重要意義。

2005年，林博士與泰瑞法克斯奇妙地結緣；當時在泰瑞法克斯基金會任職總監的Darryl Fox（泰瑞法克斯的胞弟），向林博士和幾位科研專家徵詢意見，希望能將基金會籌得的款項善用於癌病研究，因而促成「泰瑞法克斯基金會全國研究中心」於2007年正式成立，林博士亦成為創辦人及科學部門主任。

研究中心的成立，旨在提升癌症研究的成果，並透過與全加拿大 60 多個癌症治療及研究機構的合作，務求將研究轉化為切實可行的方法救治全球各地的癌症患者。其出發點雖以科研為基礎，背後的精神和信念卻與泰瑞法克斯殊途同歸，肩負著抗癌勇士的角色。時至今日，研究中心的工作已涵蓋基礎研究、提升效能等領域，並務求把泰瑞法克斯基金會籌得的每一分毫延伸至癌症研究的每一層面，包括培育研究癌症的接班人。

林博士笑言，他現在的工作好像做媒人一樣，把來自不同界別與機構的精英和工作者撮合在一起，推行更有效和更大型的癌症研究計劃。此外，亦要協力籌募更多經費發展研究工作；與此同時，他也兼任卑詩大學病理和實驗醫學、生物化學和分子生物學系的教授，以及卑詩省癌症署的傑出科學家。

隨著角色與身份的轉移，曾經專精於實驗室研究工作的林博士表示，他的願景和理想始終不變，只是以另一種方式去達成他的目標。多年來在科研界累積所得的經驗，讓他培養出開放的態度和創新的精神，因為科研向來是每一天都可能有新發現；最重要的是隨時準備好自己，迎接意想不到，甚至事與願違的結果，並且繼續走下去。

回看他過往的經歷，令人想到許多傳奇背後，總會有鮮為人知的一些艱辛片段，就如他走過的路，高峰與高潮之間有低谷、成果與成功之間有失敗。

前人引路 一己願闖

林博士1943年出生於上海，幼年隨家人到香港短暫停留，隨即移居多倫多。他的父親從事出入口生意；自小看到父親終日為工作而忙得不可開交；他對這份「苦工」不禁望而卻步；那邊廂，他讀到某些科學偉人如牛頓的故事，反

而印象深刻。

在父母沒有指定他要修哪一科、幹哪一行的氛圍下，林博士選上了生物化學系，在多倫多大學畢業後，再到卑詩大學攻讀博士學位，繼而往英國劍橋大學從事博士後研究，並成為已故諾貝爾化學獎得主Frederick Sanger的得意門生。至於如何走上研究的路，則是緣於在多倫多唸大學時，在瑪嘉烈公主醫院當過一份暑期工，對研究開始產生興趣。於完成博士後研究之後，剛好得悉瑪嘉烈公主醫院有一個新設的研究人員職位，於是便從此與癌症研究結緣。

林博士說他自小喜歡觀察前人走過的路，從中領略不同道理，繼而闖出自己的路。時至今日，他依然認為父親是對他影響最大的人，尤其是從他經營生意的方法和智慧，看到掌握機會與資源的重要。無論要成為一位成功的商家還是科學家，都是同一道理。

林博士也提到另一位對他影響深遠的良師Frederick Sanger給他的啟發。回想當年在劍橋作為Sanger的門生，跟他每天進出實驗室的日子，曾經有一整年時間天天吃「白果」，研究苦無進展，令他感到甚為氣餒。Sanger給他的話是：「這研究說不定要用10年、20年、甚至50年時間才會有成果，但始終要有人開始去做啊！」

這幾句話給他很大啟發，讓他明白到，科研之路並非如一般人所想的輝煌，有時甚至有如一份「苦工」；困難、挫敗，是等閒之事；最重要的是一己如何去面對，勇於接受失敗和低落的時刻；隨時作好準備，迎接成功和新發現的來臨，並且抓緊機會把成果推展開去。

研究之路 長闊高深

林博士認定了自己要走的路，多年來專精癌細胞因多重藥物所產生抗藥性的研究；在他眼中，這已成為與他息息相關的事，生活的一部份，就如癌病已成為我們每一個都有可能面對的事情一樣。

林博士在防癌藥物研究上的成就，讓他得獎無數，他的研究著作曾出現於200多份刊物；過去曾獲的獎項與榮譽包括：1990年獲Gairdner 基金頒發的醫學貢獻獎、1991年獲癌症研究領域中的最高榮譽Steiner大獎、1994年獲加拿大國家癌症研究所頒發的Robert L. Noble Prize、2000年獲頒卑詩省頒贈勳章、2006年獲約克大學頒贈科學博士榮譽學位、以及2009獲頒授加拿大勳章。

這眾多的尊崇及掌聲，並沒有讓林博士自滿或停步。此間他在泰瑞法克斯基金會全國研究中心的職務，給他帶來研究以外的新挑戰。雖然他不用再天天走進實驗室，但仍得抱持從事研究的態度，面對得與失，正面與反面的結果；何況，他現時的工作，還是離不開科研界常要面對的困難與挑戰。

他坦言，科研界是一個競爭很激烈的圈子，尤其當圈中有那麼多傑出的人物，追求超越與互相比較是難免的事。在他的新角色之中，他採取了一個新的角度，透過多方溝通、聯繫、交流，把眾多傑出的人才拉攏在一起，形成一股強大的凝聚力，產生前所未及的影響力。比方說，一個實驗若能從100個人擴大到1000個人身上進行，結果肯定有顯著分別；這正是他帶領泰瑞法克斯基金會全國研究中心走向的目標和大前題。

在他眼中，研究的路其實一點也不孤單；如今我們更進入了一個最令人興奮的時代；加拿大是一個幅員廣闊、資源豐富的國家；另一方面，也不斷吸納來自世界各地的人和才日見多元文化；大家只要願意彼此合作；共同努力，必能合力對抗癌症。他亦相信；科技一直是向前邁進；成功無論距離有多遠，總會在望。

林博士的領袖才能，亦備受肯定。去年，他獲得加拿大癌症研究聯盟頒發的癌症研究傑出領袖獎，表揚他在泰瑞法克斯基金會全國研究中心的卓越領導，以及他如何努力發展控制癌病的策略，以致最終成立了「加拿大抗癌合作伙伴」。

談到他對人生的追求，他表示他追求的並非完美，而是至善；兩者的分別在於：完美主義者無法接受失敗，而追求至善，則是願意走過經歷失敗的路。

至於下一個追求是甚麼，他說隨著年紀漸長，希望可以幫助下一代，鼓勵他們追求人生的新發現。他認為一個成功的科學家，必須要相信自己的直覺；因為科研不是單憑客觀事實；更要根據主觀的觀察，從看到一點端倪開始，雖然不知其所以然，或其重要性，但這正是新發現的起步點。

穹蒼之下有無窮新事，可以窮一生去發現與追尋；怪不得工作以外的林博士，原來喜愛到野外露營；走向自然界，猶如步向一個新世界。

Dr. Victor Ling

In the scientific world, there can be new breakthroughs, new discoveries everyday but it is a bigger challenge to continue development after the breakthrough, so that its impact can change the world. To world-renowned cancer scientist Dr. Victor Ling, his discovery of P-glycoprotein, the first molecule identified to be responsible for drug resistance, was only a beginning. His perseverance and commitment to continually move forward in cancer research over the next 30 years underlie Dr. Ling's vision and achievement.

In the history of the fight against cancer in Canada, Terry Fox is an iconic figure, a well-known household name and cancer-fighting hero. Having lost a leg to bone cancer, this courageous young man ran across Canada to raise money for cancer research. Eventually Terry lost his battle against cancer, but he was the reason that “The Terry Fox Foundation” was founded, and each year charity runs are held in his honor to raise funds for cancer research around the world.

Dr. Victor Ling is another iconic figure in the field of cancer research; he is best known for his 1976 discovery of P- glycoprotein, associated with multiple-drug resistance in cancerous cells. A main focus of his research is the investigation of resistance mechanisms in tumor cells to drugs, the hypothesis being that if we could manipulate or inhibit these resistance mechanisms, we would improve the efficacy of chemotherapy treatment.

Although Dr. Ling and Terry Fox had never met, the two are intricately linked. In 2005, The Terry Fox Foundation raised a lot of funds on its 25th anniversary and Darrell Fox, Terry's brother and then the director of the foundation, approached Dr. Ling and a panel of scientists about how best to use these funds for cancer research. As a result, in 2007, The Terry Fox Research Institute (TFRI) was created with Dr. Ling named as its Founding President and Scientific Director. Dr. Ling also serves as Professor of Pathology and Professor of Biochemistry at the University of British Columbia as well as Distinguished Scientist at the BC Cancer Agency.

TFRI is an organization that involves more than 60 cancer research institutions, hospitals and universities across Canada. While initially focused on translational or applied research, TFRI's portfolio now includes discovery or fundamental research and building capacity. Today it invests all of the funds raised by the foundation in cancer programs and projects covering the full spectrum of cancer research and including supporting future leaders in cancer research.

Dr. Ling says with a laugh that his job is like that of a matchmaker, bringing together the best scientists and researchers from different institutions, to put in place more effective and larger-scale cancer research studies. In addition, he has to strive to raise more funds for this type of collaborative research.

With his evolving role at The Terry Fox Research Institute, Dr. Ling says his vision and ideals stay the same, and this role is just another way to reach the same goal of furthering Terry's mission to end cancer or to find cures to cancer. His years of accumulated scientific research experience are now being applied differently. As in scientific research, one must have the mindset that nothing goes as planned. On any given day, there could be a new discovery and the most important thing is to be always prepared for the unexpected, and one must go on even when the findings are contrary to what one hopes for. This reflects the harsh reality behind many legendary stories and hardships encountered on one's way to fame and glory, yet seldom known to others - those long periods of darkness between bright lights, and failure between success and results.

Dr. Ling was born in 1943 in Shanghai. He moved with his family when he was very young to Hong Kong for a short stay, and then the family settled in Toronto. His father worked in the import/export business. Growing up, Dr. Ling was used to seeing both his parents work hard day in and day out, and could not help but flinch at this 'hard labour'. On the other hand, the stories of great scientists like Newton made an indelible impression on him.

Dr. Ling's parents did not push him to study any particular subject or go into any specific career. Dr. Ling chose to major in Biochemistry at the University of Toronto. Following graduation, he went to the University of British Columbia for his PhD degree and then to the University of Cambridge (UK) for a post-doctoral fellowship, where he was a student of two-time Nobel Prize winner, the late Frederick Sanger. While attending the University of Toronto, he held a summer job at Princess Margaret Hospital (PMH) (now the Princess Margaret Cancer Centre), which sparked his interest in research. When he completed his post-doctoral fellowship, he learned that there was a research position at PMH, and thus launched into a cancer research career.

Dr. Ling says even when he was young, he loved to observe how others did things. He liked to glean the facts from his observations, and then find his own way. Today, he still believes that his father was a most influential person in his life; through him, Dr. Ling learned his way of doing business, his trustworthiness in dealing with clients or partners, his wisdom in grasping opportunities when he could, and the importance of working hard and having adequate resources. Whether one wants to become a successful businessman or a scientist, the same principles apply.

Dr. Ling says his mentor Frederick Sanger also influenced him deeply. He recalls that in Cambridge, as Sanger's protégé, he spent a whole year in the research laboratory without any results. Discouraged, he lamented to Sanger about the long and uncertain nature of the research work they were doing (sequencing the human genome), to which Sanger responded: "It might take 10, 20 or 50 years to complete...but someone has to start it!"

Those words gave him great inspiration, and made him understand that research is not all glamour, but rather it is "hard labour". Most of the time researchers face obstacles, setbacks, and often failure; the success rate is very low. The most important thing is to know how to deal with those dark moments and have the courage to accept failure.

Dr. Ling found his calling in cancer research. For many years he has focused on the investigation of drug resistance mechanisms in tumor cells. This has become an integral part of him, part of his life, just as cancer is an inevitable part of our world.

Over the years, his dedication and achievements have earned him much recognition and many prestigious awards. In 1990 he was awarded the Gairdner Foundation International Award; in 1991, he was awarded the highest honors in the field of cancer research: the Dr. Josef Steiner Award and the General Motors Kettering prize. In 1994 the National Cancer Institute of Canada awarded Dr. Ling the Robert L. Noble Prize. He was recognized with the Order of British Columbia in 2000, and made an Officer of the Order of Canada in 2009. In 2006, both York University and Trinity Western University conferred honorary degrees of Doctor of Science on him. His research work has also appeared in more than 200 publications.

Despite all the honours and recognition bestowed upon him, Dr. Ling has not become complacent. His responsibilities at The Terry Fox Research Institute have brought him new challenges. Even though he does not have to go to a laboratory everyday, he has to keep up with new and emerging research results, and remain prepared to act in the face of uncertain outcomes that could be positive or negative. His work now, moreover, is inseparable from the difficulties and challenges faced by the scientific community.

Dr. Ling says frankly that the academic community is a very competitive world, with many brilliant scientists competing with one another for the available research dollars. In his role as President of TFRI, he has taken on a new strategic initiative, through multi-party partnerships and personal connections, to draw together all these talents to form a powerful, cohesive group, so that together they can generate unprecedented influence and achieve more than they might individually to improve the lives of cancer patients worldwide. For example, a clinical study on 1,000 subjects would produce results that would be much more significant than a study involving only 100 subjects. Collaboration and team science are important TFRI goals.

Dr. Ling cites a recent project, a clinical study into the early detection of lung cancer that involved over 2,500 patients, and how its results have caught the attention of the scientific community all over the world.

In Dr. Ling's eyes, scientific research is not a lonely road. Canada is a vast country, but with only 35 million people, equivalent to the population size of Greater Tokyo, we do not have the scale of other countries. We can only succeed if everyone is willing to collaborate and work together to fight cancer. Dr. Ling stresses that collaboration is not the same as co-operation. For him, the latter means not harming each other, whereas the former means working together to achieve something that each entity cannot accomplish alone. With our diverse talents and a culture of multiculturalism, Dr. Ling feels Canada will then be able to compete on the world stage.

It is clear that Dr. Ling's leadership has been recognized. The Canadian Cancer Research Alliance recognized him last year with an award of 'Exceptional Leadership in Cancer Research' for his contributions to the field, including his role as the visionary leader of The Terry Fox Research Institute and his contribution to the development of a Canadian strategy for cancer control which ultimately led to the formation of the Canadian Partnership Against Cancer.

On his philosophy of life, Dr. Ling says he does not seek perfection, only excellence. For him the difference between the two lies in one's attitude: a perfectionist cannot accept defeat, while one is willing to accept failure in the pursuit of excellence.

As for his own personal goals, he says that as he grows older, he hopes to help the next generation of scientists, encouraging them to pursue new discoveries. He thinks that a successful scientist must have good intuition and trust his instincts. Research is not solely about objective data; there must be subjective observations. There could be just a little clue in the beginning, and even though one does not know its reason or importance, it could be the springboard for a new discovery. He also believes that science and technology are constantly moving forward, and no matter how far away the goal is, some day we will get there.

With a hectic work and travel schedule, Dr. Ling unwinds by enjoying the outdoors. In fact, his great love is going camping in BC with his wife, son and daughter.

One could imagine his enjoyment of nature's mysteries would only be surpassed by his wonderment at the mysteries of the universe.