



## 有志者事竟成 約克大學生物系教授彭純

一個艷陽高照的夏日午後，入選今年「紅楓傳奇」人物的約克大學生物系教授彭純(Professor Chun Peng)女士接受筆者的訪談。這位看起來遠比實際年齡輕很多的華裔學者，已在生物學的領域裡闖出一片天地，而且繼續朝著目標邁進。她的研究項目如果進一步有所突破的話，將對人類的生育、避孕、孕婦和胎兒疾病的防治、魚類的繁殖等產生重大的影響。但是她謙稱，醫學從理論到實際的路很遠，尤其是與人類健康有關的研究，必須經過嚴格的實驗，證明有效而沒有副作用，才能運用到醫學上。她成功的故事，再次證明了「有志者事竟成」的哲理。

### 文革期間一家人被拆散

她有今天的成就，是靠多年的努力得來的，絕非僥倖。這要從彭純童年說起，1962年雖然新中國已成立13年，但是國力仍然薄弱，人民生活普遍貧窮，彭純於這一年出生在廣東潮州，家裡四個孩子全是女的，她最小，上頭有三個姐姐，父母都是國家幹部，按說日子應該過得踏實。但是一波接一波的政治運動，使她的童年變得動盪不安，1966年「文化大革命」爆發，她父親被標籤為「歷史反革命」，受到嚴厲的批鬥，最後被關進牢裡，母親受到牽連，被送進「五七幹校」接受改造，四個無辜的孩子頓時成了沒有大人照顧的「孤兒」。她回憶這一段往事：「我父親曾經教過書，但是當國共內戰時期，他的學校的全體教員加入國民黨的『三民主義青年團』，文革時期被挖出來作為批鬥他的證據，就這樣，我們四個女孩只有自理生活，最大的姐姐12歲，我只有5歲，為了免遭文革武鬥的波及，親友將我們四姐妹從城裡轉

彭純教授  
Professor Chun Peng

移到鄉下去住。文革那些年，我們吃不飽，穿不暖，母親雖然每個星期可以來看我們一次，但聚少離多，日子不好過。」

「正因經歷這種苦難，我從小就會做很多大人做的事，舉例來說，潮州的刺繡很出名，我學會刺繡，經常在昏暗的煤油燈下，在枕頭套上繡花，一件可賺取一塊錢人民幣的工錢，幫補家用或其他開支。」

### 三次參加高考得償宿願

「1976年文革結束，政府恢復高考，我少上了兩年學，但也有了高中畢業的資格，報名參加高考，只是結果不理想。我原本想當作家，但地理的考試成績不理想，沒有考取，第二年轉考理科，成績也不理想，分發到一所大學，我沒去註冊，我就是不服輸，第三年(1979)重考，終於考上第一志願廣州中山大學生物系，開展了我人生的第一奮鬥階段。」在中山大學就讀期間，彭純珍惜學習的每一個機會，1983年以優異成績畢業，取得學士學位，同年考上研究生，3年後取得碩士學位，這期間，她有幸遇見了指導老師林浩然教授，由於林老師與當時加拿大亞爾伯達大學(University of Alberta)生物系教授迪克·彼得(Dr. Dick Peter)有科研合作計劃，經林老師的推薦，彭純獲得加拿大國際合作研究中心(IDRC)的資助，到了彼得的實驗室，1988年，她來到亞爾伯達大學攻讀博士，下飛機時，她口袋裡僅有50美元。彼得教授是著名魚類生理學家，在他的悉心指導下，她學到很多前沿科學知識。皇天不負苦心人，寒窗四年，1992年彭純取得亞大生物學博士學位。

雖然擁有博士學位，但她明白想在科研的領域更上層樓，路途還很遙遠，於是她申請到卑詩大學(University of British Columbia)繼續接受博士後的訓練，直到1995年，她受聘為約克

大學(York University)生物系助理教授，開拓她獨立的學術生涯，2007年，她被提升為正教授(Full Professor)。除了繼續做研究，每年要上幾車本科及研究生的課，同時指導她所帶領的碩士、博士研究生，以及博士後的研究課題。

### 致力女性生殖健康的研究

這位加拿大華裔生物學權威最早開始是以魚為研究對象，問她為甚麼挑中魚類，她笑稱可以用來作研究的動物種類繁多，但她只敢觸碰魚類，所以選了以魚為研究對象。她從中山大學研究生時代就鑽進有關魚類性腺激素分泌和排卵的研究，她所參與的研究最終變成了應用於水產養殖業上產品。一直到今天，她仍然熱衷這方面的研究。目前她在約大實驗室，是以一種名為斑馬魚的熱帶魚作試驗，研究各種基因對卵巢發育和卵子成熟的調控。在卑詩大學接受博士後訓練期間，她研究激素控制生殖功能所發揮的關鍵作用。她首次證實常用於治療不孕患者的「促性腺激素釋放激素」及其受體，可能直接影響卵巢。這些發現是研究激素控制卵巢功能的重要里程碑。她期望她的研究對水產養殖業及女性生殖，比如避孕及治療不孕症等有幫助。

卵巢癌是致命率最高的婦科癌症。彭純和她的研究室在10年前開始進入這個領域的研究。她們首首次證明了NODAL對卵巢癌細胞的分裂及凋亡有調節作用。並找到了幾個NODAL的靶基因，最近她們進一步發現了與卵巢癌病人抗藥性相關的一個小RNA。這些研究為尋找卵巢癌更有效地治療方案有所幫助。

彭純對胎盤發育和「先兆子癇」(PREECLAMPSIA)也做了深入的研究。她解釋說，大約5%的孕婦在懷孕期間會患上這種病。這種病危及母親與胎兒的生存。目前病因不明，但與胎盤的發育不正常有關。這種病也沒有有效的預測方法，所以她們近年

來致力在血液尋找可以預測「先兆子癩」的生物標記物。她們也對胎盤細胞進行深入的研究，以便日後找出有效的治療方法。

由於彭純在科研的領域裡相當傑出，曾獲得許多獎勵，常應邀到許多國際會議做報告。她也常到不同的中小學演講，鼓勵及提高中小學生對生物學的興趣，對於手下的研究生，她充滿著耐心和愛心去協助他（她）們完成有關的研究，希望他們學有所成，貢獻人類。

#### 成為移民但未忘本

很多中國留學生都成為加國移民，彭純也是其中之一，但她沒有忘本，她多次回到母校中山大學講學，目前還是中山大學的客座教授。除此之外，她與中國科學院動物研究所學術交流，她也邀請中國的學者利用學者基金或中央及省政府的支助計劃，到加拿大進修。促進加中兩國之間的學術交流。她認為加拿大在科研方面的水平不錯，但可以做得更好。彭純回憶她那個年代，有機會出國留學的人都非常珍惜難得的機會。她以自己本人為例，留學期間幾乎每天都是一早八點鐘就到實驗室做研究，經常到半夜才離開實驗室，而現在許多留學生是因為家裡有錢送出來「留學」，很多年輕人未必專心向學，尤其是一胎化政策下的孩子，有四個老人再加上父母的寵愛，在這種環境下，能否學會獨立自主都令人懷疑。但是彭純亦擔心在這裡成長的小孩也有所不足，這兒的中小學重視啟發孩子的創造力，培養孩子的自信心，但過於寬鬆。她認為最好是結合中國和西方的教育方式，既不是中國的填鴨式，也不是西方的放縱式。

彭純在出國之前，1986年即與專攻物理學的何星飛結婚，婚後彭純來了加拿大，而另一半則去了坎培拉澳大利亞國立大學留學，夫婿取得博士學位後，於1991年亦到加拿大，他們在卑詩大

學重聚，如今何星飛在安省滑鐵盧一間公司任職，他們育有兩個孩子，女孩12歲，男孩8歲，一個讀第七班，一個讀第三班。除了正常的學校課程，彭純鼓勵兩個孩子要多學點東西，包括學中文、學琴、學游泳、學繪畫等，告誡孩子必須辛勤工作，沒有平白從天上掉下來的東西。從簽證留學生變成移民、入籍公民，彭純一路走來從不覺得受到種族歧視，她認為自身的努力很重要，不要把自己追求不到的目標，都歸類為種歧視下的結果。

#### 肯定中國的成就

身為華人，又來自中國大陸，毫無疑問，彭純關心中國的變化。她表示中國整體國力提升了，人民生活比起幾十年前確實改善不少，但問題還是很多，例如貧富差距太大，社會福利政策不健全，健康保險不普及，不過，總體來說，她還是給予正面的評價，她相信當改革的呼聲逐漸加大時，民主政治會逐步完善。她認為目前像美加這樣的民主選舉，在中國大陸還是行不通的。對於中國的高校教育制度和科研單位，她認為中國高校的教授雜務太多，許多事情不一定與學術有關，處理這麼多的雜務會影響高校的學術水平。

彭純認為中國現在富裕了，應該重視科研，重視人才，多選派優良人員出國進修，加強與外國高水準的學術機構合作。近幾年，中國吸引了在國外有成就的「海歸」，他（她）們正成為國內很多大學及研究所的學術帶頭人。「海歸」將成為中國未來發展的重要力量。



20歲的彭純  
Chun Peng at her 20's.



1988年彭純來加拿大深造前，  
在北京機場與夫婿何星飛合影。  
With husband at Beijing Airport before  
setting off to Canada in 1988 to further  
her studies.



1992年底，彭純取得博士學位，  
與指導教授Dick Peter夫婦合影。  
Pictured with her supervising professor  
Dick Peter after getting her doctorate  
degree in 1992.



1995年回到中山大學與出國前的指導  
教授林浩然在生命科學學院前合影。  
Chun Peng returned to Zhong Shan  
University in 1995 and visited her  
supervising professor there.



2011年8月，彭純和她領導的  
研究團隊合攝於彭宅。  
Prof Peng with her research team members  
at her home in 2011.



2010年12月，彭純和夫婿及子女攝於  
廣州中山大學校園內。  
Prof Peng with her husband and children at  
Guangdong Zhong Shan University in 2010.



2009年與實驗室同仁參與在中央島舉行的「希望之行」。  
Taking part in a walkathon on Centre Island with her  
laboratory colleagues in 2009.



1992年底，彭純取得博士學位，  
與夫婿何星飛一齊慶祝。  
Chun Peng got her doctorate degree in 1992....  
a celebration with her husband.



與父母攝於溫哥華卑詩大學。  
Prof Peng with parents at The University  
Of British Columbia



彭純在國際學術會議上發表演講。  
Prof Peng speaking at an international  
academic conference.

## Professor Chun Peng

*The interview took place on a hot and sunny afternoon. Professor Chun Peng, looking much younger than her years, talks about her work at York University. She has already made quite a name for herself in the field of biology with her findings. Her research has a positive impact towards the understanding of how hormones and growth factors control female reproduction and has potential applications in the development of diagnostic and therapeutic methods for ovarian cancer and pregnancy-related diseases. But she humbly says that from research to practical application is a long road, especially when it relates to human health. A research result has to be rigorously tested to prove its effectiveness and that there are no adverse side effects before it can be used in the field of medicine. Professor Chun Peng's success story proves once again that 'where there is a will, there is a way'.*

Her success today is due to her hard work over many years. Chun Peng's story began in 1962 in the city of Chaozhou in Guangdong province where she was born to a family with four girls, Chun being the youngest one. The communist government at that time had been established for only thirteen years, and there was poverty all around. Her parents were public servants and the family should have been living a comfortable life. Unfortunately political changes came one after another, and Chun had a very unsettled childhood. In 1966 during the Cultural Revolution, her father was identified as an 'anti-revolutionary', severely criticized and put into a jail at the end. Her mother was also tainted and had to undergo 'transformation' in a 'May 7 State Official school' (farms where state officials were sent for 'thought re-education' during the cultural revolution). Their four innocent children became 'orphans' instantly. Chun Peng remembers what happened, 'My father was a teacher at one time, and during the civil war, all the teachers in his school joined the Chinese Nationalist Party's Youth League. During the Cultural Revolution, this involvement was dug up as evidence against him. From then on, we four girls had to take care of ourselves. My oldest sister was twelve and I was only five at that time.

To get us away from the chaos of that time, our relatives sent us to live in a village. During those years, there were not enough clothes to keep us warm, nor enough food to keep us full. Although our mother could come to see us every week, most of the time we were separated.'

'Because we had gone through such hardship, I could do many things when I was young that normally only adults do. As an example, to supplement our family income, I did needlework on pillowcases, each pillowcase earning one RMB, and much of that work was done under a dim gas light.'

Following the end of the Cultural Revolution in 1976, the Chinese Government resumed holding the University Entrance Examination. Despite missing two years of school, I was qualified to take the examination. My results were not good on the first try. I wanted to be a writer, but I did poorly in geography and was rejected. The second year, I took the examination in sciences, but once again my results were inadequate. Although I was assigned to a university, I did not accept the offer because I did not want to give up on my top choice. In 1979, on my third try, I got accepted into my first choice: the Biology Department in Sun Yat-Sen University in Guangzhou, and thus began another phase of my life.'

Chun Peng treasured each study moment while at university. In 1983, she got her Bachelor's degree with outstanding results, and became a postgraduate student. Three years later, she was conferred a Master's degree. During her graduate studies, she was fortunate to work with Professor Lin Haoran, who at that time was collaborating with Dr. Dick Peter of the University of Alberta in research. Through his recommendation, she obtained financial assistance from the International Development Research Centre (IDRC) and was able to join Dr. Dick Peter's laboratory. In 1988, she started her PhD studies at the University of Alberta. When she got off the plane, she had only US\$50 in her pocket. Dr. Dick Peter was a renowned fish endocrinologist, and under his guidance, she acquired a lot of leading

edge scientific knowledge. Despite the financial hardship, Chun Peng completed her PhD studies four years later in 1992.

Even with a PhD degree, Chun knew that to reach another level in research, she still had a long road ahead, so she applied for a fellowship from the Natural Science and Engineering Research Council (NSERC) to do further research at the University of British Columbia, staying there until she was offered an Assistant Professor position at York University in 1995. Since then she has been doing independent research. She was promoted to be an associate professor with tenure in 2001 and a full professor in 2007. Aside from doing research, Professor Chun Peng teaches biology classes, and supervises various Masters and PhD students, as well as Research Fellows in their research work.

Professor Chun Peng's initial research began with fish. She jokes that there are many animals that can be research subjects, but she dares to touch only fish. When she was studying at Sun Yet-Sen University, she was part of a research team to study how hormones control ovulation and their research results led to the development of a commercial product in the fish hatchery industry. To this day, she is still enthusiastic about the research in this area. Currently her research uses a small tropical fish called zebrafish to investigate the effect of various genes in the development of the ovary and maturation of eggs. When she was at the University of British Columbia for her postdoctoral training, she discovered that gonadotropin-releasing hormone, a hormone known to promote secretions of gonadotropins from the pituitary, had a direct effect on the ovary. This finding had an important implication in the research of hormones and fertility treatment. She hopes her research could help the fish hatchery industry as well as human reproduction, such as contraception and treatment for infertility.

Ovarian cancer is the most fatal disease among all the gynaecological cancers. Professor Chun Peng and her research team began studies in this area ten years ago. They proved for the first time that NODAL

decreases ovarian cancer cell proliferation and induces their apoptosis. They were also able to elucidate how NODAL causes cancer cells to proliferate slower and how it triggers cells to undergo apoptosis. More recently they discovered a small RNA that was related to drug resistance in certain ovarian cancer patients. This research is beneficial in helping to find more effective treatment for ovarian cancer patients.

Professor Peng is also investigating placental development and pre-eclampsia, a pregnancy specific disorder. She explains that about 5% of pregnant women suffer from this disease, which endangers both the lives of the mother and the unborn child. Currently the causes of pre-eclampsia are not well understood, but abnormal placental development is known to be linked to the disease. There is no effective way for predicting the probable occurrence of the disease, and in recent years they have been searching for plasma bio-markers for pre-eclampsia. They have also been studying how growth factors control the development of placenta and how their abnormal function contributes to the pathogenesis of pre-eclampsia.

Professor Chun Peng has received many awards for her outstanding scientific research. She has also attracted substantial amount of funding from NSERC and the Canadian Institute of Health Research (CIHR). She often gets invited to give talks on her work at many international and national conferences. Furthermore, she has been actively involved in science outreach activities and often goes to primary and high schools to give speeches to encourage elementary and high school students to take an interest in biology. For her own students and trainees, she is always full of love and patience in helping them finish their research work.

Professor Chun Peng is one of many who come to Canada as a student and in the end become an immigrant. But she has not forgotten her mother country. She has returned to China to give talks at various universities and research institutes. Presently, she is a guest professor at Sun Yat-Sen University. In addition, she has been collaborating

with scientists from the Institute of Zoology, the Chinese Academy of Sciences and with clinicians in hospitals as well. She also invites Chinese scholars to come to her lab to study, supporting the ongoing academic exchange between Canada and China. She feels that Canada conducts good quality scientific research, but can improve further. Professor Peng remembers in her time, those who had an opportunity to go abroad really treasured the opportunity. Using herself as an example, every morning she began her research work at 8 am, and often stayed there until midnight. Now many students go abroad because their parents can afford it. She feels the youths today don't focus on their studies, especially the students who are raised under China's 'one-child' policy, spoiled by four grandparents and two parents. It is doubtful if they can become independent under those circumstances. Professor Chun Peng is also concerned about the children who are raised here. While the educational system here stresses creativity and self-confidence, it provides a lax environment. She thinks the best educational system is a combination of Chinese and western styles, neither rigid like in China, nor lax like here.

Chun married her school mate He Xing- Fei, a physicist, in 1986. When Chun came to Canada in 1988, her husband went to the Australian National University in Canberra. After her husband obtained his PhD degree, he went to the University of British Columbia in 1991 and Chun joined him in Vancouver at the end of 1992. Today Xing-Fei is working at a company in Waterloo. They have two children, a twelve year old girl and an eight year old boy. Chun encourages both of them to take extracurricular courses such as Chinese language, piano, swimming, and drawing. She often teaches her children to work hard to reach their full potential.

Chun feels lucky to be an immigrant in Canada where she has never experienced discrimination. She thinks that self-motivation is very important and that one cannot blame discrimination for not reaching one's goal in life.

Being a Chinese-Canadian immigrant from China, Professor Chun Peng is very concerned about what goes on in China. She says that on the whole the country is much stronger and generally life is better than before. But there are still many problems, such as the large gap between rich and poor, the inadequate social welfare system, and the lack of health insurance coverage. But on the whole Professor Peng's evaluation is positive. She believes that democracy will slowly evolve when there is more call for political reform. She feels that democratic elections are not feasible currently in China. She also thinks that school teachers as well as researchers have too many administrative tasks, which impact both their time and their academic achievement.

Professor Chun Peng feels that China is richer now, and could pay more attention to scientific research. They should value their talent, send the top students abroad, and strengthen collaboration efforts between China and foreign institutes. Most recently China has attracted a number of high-performing researchers to return, and they will become future academic leaders in universities and research institutes. Returning scholars could be a very important force in China's future development.