Meet the Champions

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To Understand What Happens to the Foods That You and I Eat

An Interview with Dr. Vay Liang Go

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Abstract

Vay Liang Go is an internationally renowned pancreatic scientist and clinical investigator. Doctor Go's work was fundamental for the understanding of the neuro-hormonal control of gastrointestinal and pancreatic function and metabolism. Additionally, he contributed enormously to the pancreatic community by being one of the founders of the American Pancreatic Association and also co-founder of the journal *Pancreas.* He trained a large number of fellows and junior faculties, many of whom now are national and international opinion leaders in gastroenterology and pancreatology. In this interview, Doctor Go gives us his views and shares his professional experiences in pancreatic research.

M.F.-Z.: What prompted you to work in pancreas research in the first place?

V.L.W.G.: I'm an 'overseas Chinese', born in Ozamis City and raised in the Philippines. At the age of nine I learned how to cook, and since that time have been fascinated by what happens to food after it is eaten. This interest led to my lifetime focus on digestion, nutrition and metabolism. In college and then medical school, I discovered that the pancreas is the key organ in digestion and metabolism of food constituents. With encouragement and guidance from Augustine Liboro from the University of Santo Tomas, Philippines, I was accepted to the internal medicine residency and gastroenterology fellowship at the Mayo Clinic in Rochester, and pursued research in both the exocrine and endocrine pancreas. There, William Summerskill and Alan Hofmann became my first mentors in basic and clinical research at the gas-

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troenterology unit. Both encouraged me to pursue the quantification of pancreatic exocrine functions and gastric secretions utilizing gastrointestinal perfusion methodology and set up the assay techniques for pancreatic enzymes. Robert Ryan from endocrine research and Irving Fritz from Banting and Best Institute at the University of Toronto were my mentors in endocrinology, and helped guide my research interest in gastrointestinal endocrinology by developing the radioimmunoassay techniques for gastrointestinal hormones and polypeptides. Subsequently, and together with my colleagues Eugene DiMagno, Juan Malagelada, Sidney Phillips and Keith Kelly as well as the postdoctoral fellows and students at the Gastroenterology Unit, I was able to pursue both of my research interests by studying the regulation of pancreatic and gastrointestinal functioning in response to meals and food constituents, and the role of gastrointestinal hormones and neuropeptides in regulating pancreatic and gut function in health and disease. In addition to the mentors and colleagues just noted, other professors and colleagues at the Mayo Clinic also influenced my academic career development significantly. These include Earl Gambill, William Dearing, William Sauer, Charles Moertel, Joe Szurszewski, J. Aidan Carney, F. John Service and Tony Yaksh. I am also grateful to my colleagues and fellows at the National Institutes of Health (NIH) and at the University of California at Los Angeles for expanding my research horizon to include dietary factors and nutrition in cancer prevention and metabolism, and their implications in public health.

M.F.-Z.: You have pioneered pancreas research in so many directions. At the end of the day, what has given you most personal satisfaction?

V.L.W.G.: This question can be answered from three separate perspectives. First, from a scientific perspective. For nearly four decades, my collaborative associations with colleagues, fellows and students at Mayo Clinic, NIH and UCLA have provided me with abundant opportunities to pursue my quest to understand what happens to the foods that you and I eat. With these opportunities presented, I aimed to investigate the key roles that the endocrine and exocrine pancreas play in regulating digestion and metabolism – as well as their interaction with other organ systems, such as the brain and autonomic nervous system – and in the development and progression of pancreatic diseases. Our scientific pursuits combined pancreatology, gastrointestinal hormones, nutrition and metabolism, and culminated in studying the role of dietary factors (i.e. food and food constituents) in health promotion and disease prevention (that is, cancer, diabetes mellitus, obesity and metabolic syndrome). Most of our combined research efforts and results were then translated into public health strategies. Therefore it was indeed a rare privilege to be jointly appointed to the 13-member Dietary Guidelines Advisory Committee in 2004 by the US Department of Health and Human Services and the US Department of Agriculture. Our committee was charged with 'reviewing and analyzing the most current dietary and nutritional information and incorporating this into a scientific evidence-based report' [available at www.health.gov/dietaryguidelines/dga2005/report], and our report formed the basis for developing the *Dietary Guidelines for Americans 2005* [available at www.healthierus.gov/dietaryguidelines]. It has been a very gratifying journey from the science to public policy!

Second, from an academic perspective. My research and educational activities have provided the platform for my academic career. The honor and privilege to have co-founded the American Pancreatic Association in 1969, established the Mayo Gastrointestinal Hormone Assay Laboratory in 1970 and co-established the NCI Serum Immunodiagnostic Bank at the Mayo Clinic in 1978 are among some of my academic achievements. In addition, I also initiated the textbook *The Exocrine Pancreas: Biology, Pathobiology, and Disease, First Edition*, and the journal *Pancreas* in 1984. Furthermore, at the federal level I was involved in the reorganization of the Division of Digestive Diseases and Nutrition at the National Institute of Diabetes and Digestive and Kidney Diseases. I helped to establish a specific research program in gastrointestinal hormones and regulating peptides in the pancreas from 1985 to 1988, and aided in the revision of the 10th edition of the *Recommended Dietary Allowances.* More recently, in Los Angeles I co-founded the UCLA Center for Human Nutrition in 1996, and the LA BioMed Center for the Study of Metabolic Regulation in 2004. I was also appointed to chair the Scientific Advisory Board of the Hirshberg Foundation for Pancreatic Cancer Research in 2004. Most recently, my Asian colleagues invited me to co-found the Asian-Oceanic Pancreatic Association in 2005, and I realized that I have come full circle.

Lastly, there is the personal perspective. I am truly blessed with a wonderful, loving and very supportive family. Fortuitously, through my career I have gained a very stimulating extended professional family, too, and have made lifelong friendships with my fellow students, colleagues and staff in the editorial, clinical, and research realms.

M.F.-Z.: Based on your experience as trainee and mentor, can you comment on the value of mentorship for the development of a new investigator?

V.L.W.G.: Mentors are role models and advisors. Mentoring is essential in establishing a personal relationship for the purpose of professional instruction, guidance, and enhancement. Providing mentorship encourages protégés to set and attain short- and long-term goals, and additionally encourages the development of vision and the impetus to reach one's fullest potential. I was fortunate to have had superb mentors during my academic career who were very generous in their guidance, and in return I have been able to emulate my mentors to provide this same kind of nurturing to other fellows and students, who have become my life-long friends.

M.F.-Z.: What advice can you give to young investigators starting in the field of pancreatology?

V.L.W.G.: Establish your short- and long-term goals first. Be visionary; form your hypotheses. Maintain appropriate motivation that allows for some risk taking. Be sure to identify your mentors early, and work to establish a mutually participatory mentor-protégé relationship. Be grounded in your solid scientific discipline, and learn the economics necessary to fund your research. It is important to be part of a team, so take the knowledge you gained from your experience and mentorship to build your own team. In this post-genomic era, teamwork is essential in both basic and clinical research as well as in education. My advice is learn to laugh, remain focused, appreciate disappointment, learn from your mistakes and enjoy as well as be thankful for your colleagues' support. Also, love your family, and involve them in your career plans. Most of all, in your pursuit of knowledge, be mindful to enjoy this experience, while keeping it educational and applicable. The NIH have been encouraging investigators to pursue pancreatic research, particularly since the funding for pancreatic research will be increased beyond the current <0.1% of NIH's total budget.

M.F.-Z.: What do you think are the big questions that need to be answered in pancreatology?

V.L.W.G.: During the last three decades, we have witnessed major advances in the diagnosis as well as surgical and medical management of pancreatic diseases. We have also gained a better understanding of the biology and pathobiology of the pancreas. We are now entering the post-genomic era of research, where high-throughput groups of technologies, genomics, proteomics and metabolomics can measure and analyze DNA sequences, RNA transcripts, proteins, enzymes and nutrient-metabolic fluxes in a single experiment. Therefore, a new framework must be developed logically, using multi-disciplinary approaches to reduce the burden of pancreatic inflammatory and malignant diseases, with a primary focus on prevention. For example, one future research direction in conquering pancreatic cancer is to investigate the complex multi-step processes of carcinogenesis involving mutations in cellular proto-oncogene and tumor-suppressing genes, as well as their interactions with dietary, environmental and lifestyle factors that can lead to genomic instability, dysplasia and eventually carcinoma. This process, from intraepithelial neoplasia to invasive carcinoma, takes years to develop, and provides golden opportunities to develop cancer prevention strategies. The *Dietary Guidelines for Americans 2005*, for instance, provides science-based advice to promote health and reduce the risk for major chronic disease, including pancreatic cancer and diabetes mellitus, by encouraging a balanced diet and greater physical activity. Increased intake of fruits and vegetables that contain bioactive phytonutrients can help inhibit carcinogenesis; a decreased intake of saturated fats and less physical inactivity to prevent obesity are highly recommended. A better understanding of the complex interactions among genetic, dietary, lifestyle and environmental factors must be the current research goal. Also, with the advent of the post-genomic era, biological and medical research will revolutionize our clinical practice from current evidence-based medicine to genomic-based medicine.

M.F.-Z.: What do you think is the major need that the *Pancreatology* needs to fill?

V.L.W.G.: I congratulate the new editorship of this fine journal! You are doing well, and I urge you to keep on course with your work and spirit. Thank you for giving me this opportunity to participate in this new section of *Pancreatology.*

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