

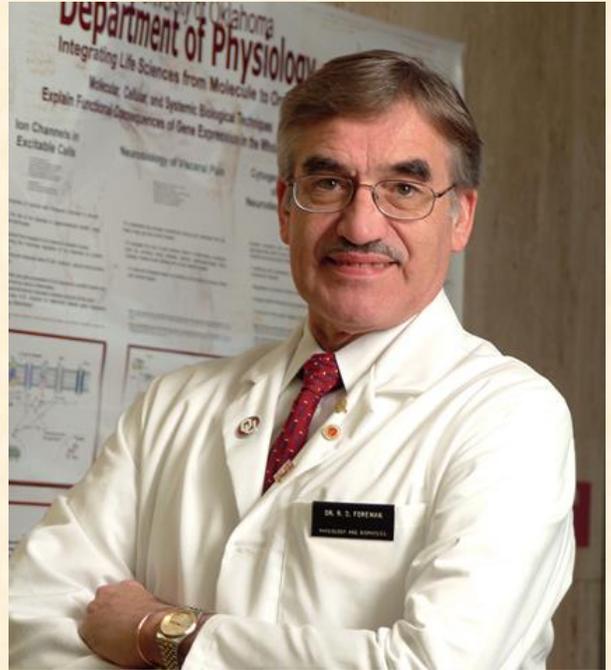


OUHSC Physiology Newsletter

*An update on the people and research activities of
the Department of Physiology
University of Oklahoma Health Sciences Center,
Oklahoma City, OK*

Issue no. 5 Spring 2017

SPECIAL ISSUE
with
Dr. Robert Foreman



Dr. Robert D. Foreman is the George Lynn Cross Research Professor in the Department of Physiology at OUHSC. He served as Interim Chair from November 1984 to December 1985, and Chair from January 1986 to January 2010 in the Department. During his career, Dr. Foreman was awarded the Provost's Research Award, Samuel Roberts Noble Foundation Presidential Professorship and George Lynn Cross Research Professorship from the University of Oklahoma. He also received Chairman's Award from the Department of Anesthesiology. Dr. Foreman's research and teaching was wide-ranging and focused on Neuro-Humoral Mechanisms of Visceral Dysfunction. Throughout his active teaching and research programs, Dr. Foreman received national and international recognition for his research accomplishments, including continuous funding by the National Institute of Health from 1975 to 2010 and a Distinguished Service Award from the North American Neuromodulation Society in 2013. Please join us in our heartiest congratulations to Dr. Foreman on his long and industrious career at OUHSC and our celebration of his new endeavors following his retirement.

*Dr, Foreman, your footprints will stay
always in the Department of Physiology.*



Transformation of the Heart: from Farming to Science

Robert D. Foreman, Ph.D.

George Lynn Cross Research Professor

Adjunct Professor of Anesthesiology

Planning to retire gives me pause to reflect on my career as a professor and scientist. Stating that I am a scientist goes completely counter to the desires of my childhood. I grew up as a farm boy and a young person who operated tractors, especially John Deeres, and large machinery; so farming was in my “heart.” Furthermore I heartily disliked school, and especially science. I maintained a B average in high school for only one reason; to remain eligible for playing basketball.

So what happened in my life that led me to become a scientist that especially focused on the heart and nervous system? Three major events steered me in that direction. The first event was a severe accident. As a 19 year old I had a job at a paint factory in Orange City, Iowa driving a forklift to load pallets of paint onto trucks. One morning the brakes failed and rolled over the edge of the loading dock, dropped four feet, and fell on me. It crushed my upper arm and skinned my chest. Only blood vessels and nerves and a little bit of muscle remained attached to the forearm. The arm remained on the ground until I picked it up. Gratefully, a very skilled orthopedic surgeon reattached the arm with steel plates, screws and bone grafting. Needless to say I spent a year in and out of the hospital. During that time contact with doctors and nurses stimulated an interest in science and medicine. And what else could I do with an arm in a sling for a year but go to school. That predicament led me to start college and receive a Bachelor’s Degree with a major in Biology from Central College in Pella, Iowa.

The second event dramatically affecting my career was mentors. During my senior year at Central College I had scheduled a meeting with my college mentor, Dr. Donald Huffman, to tell him that I had been offered a job as a paint chemist at the paint factory where I was injured. Dr. Huffman looked at me for a brief moment and then said, “Bob, you’re going to graduate school.” I applied to two universities. I was accepted as a graduate student in the Department of Physiology at Loyola University Stritch School of Medicine in Chicago. Dr. Robert D. Wurster was my mentor who significantly influenced the development of my career. His inspiration and example guided my attitude and future goals as a neurophysiologist. I wrote my dissertation on research that on focused spinal control of cardiac function and earned my Ph.D in 1973.

The third event that impacted the career and the focus of my research was my dad suffering from angina pectoris and undergoing subsequent coronary bypass surgery. After completing my PhD I was invited to join the laboratory of Dr. William D. Willis at the University of Texas Medical Branch (UTMB) in Galveston in 1973 as a postdoctoral fellow. Dr. Willis had begun a major research program on pain especially focused on the spinal cord and specifically the spinothalamic tract, which is the major pathway for transmitting nociceptive information from the site of injury to the thalamus and then areas of the brain that interpret the signals as pain. This research stimulated my interest in pain. In 1975, I was

recruited to be an Assistant Professor in Physiology at UTMB. So now I needed to develop my own research program. I spent time contemplating how to combine my experience in pain research with research on spinal control of the heart. Early in 1976 I received a call that my father was scheduled for coronary bypass surgery at the University of Iowa Medical Center. So my wife, Charlotte, and I drove to Iowa City to be with my father during the surgery. When we met with his cardiologist and cardiovascular surgeon, I asked them why my Dad's chest hurt when the heart was the diseased organ. Neither of them could specifically answer the question. Very shortly thereafter I decided to devote my scientific career to my father by exploring neural mechanisms that would explain the symptoms of angina pectoris. In addition to my research program with Dr. Willis, I also joined the research program of Dr. Lowell Stone that was focused on neural control of the heart during exercise and during arrhythmias. I was awarded my first two NIH grants and two American Heart Association-Texas Affiliate grants that focused on Central Organization of Cardiac Neural Control while at UTMB.

Approximately 40 years ago, in the fall of 1977, Dr Lowell Stone was recruited from the UTMB at Galveston to become Chair of this department. He invited me and two other scientists to join the faculty with him. Prior to this move I made up my mind that I would stay at OUHSC for five years and then consider seeking employment at another institution. This decision was based on the experience of driving with Charlotte through Oklahoma City to visit my family in Northwest Iowa. We both agreed that Oklahoma City was not a place where we wanted to call home. Obviously these thoughts of moving after a short tenure in this department never developed into reality.

So what attracted Charlotte and me to stay in Oklahoma and this department for so many years? One of the magnets was the recruitment of faculty who brought exciting research programs that overlapped or related to my research program and possessed very good teaching skills. Their presence stimulated effective productivity of our research programs. One colleague is Dr. Jay Farber with whom we worked together throughout our careers. In fact, we published 32 articles together of which one is currently under review. The second colleague is Dr. Bob Blair who conducted his postdoctoral fellowship research with me. After completing his postdoctoral fellowship, he became an Assistant Professor in this department. Together we published 19 articles, but in addition he developed skills as an outstanding teacher. His teaching skills encouraged me to improve my teaching ability. The third colleague who provided a reason to stay here and expand my research program into brain-gut research is Dr. Beverley Greenwood-Van Meerveld with whom I published 11 articles. A second magnet for keeping me in the department was collegiality. In the midst of our extremely busy schedules we shared life together through birthday parties, Halloween parties, Christmas parties, and competitive parties such as chili cooking competition and softball games. A third magnet for keeping me here was my family. In 1982 we began the process of adopting children from South Korea. At that time the adoption agency in Oklahoma that worked with Eastern Christian Orphanage in Seoul, Korea was placing their children only with families in Oklahoma and New York. Through a two year process we adopted two sons, Matthew Jin and Nathan Jon. This experience also connected us with families in our church who were adopting children from South Korea and in the United States. The magnet of friendship was a big factor to remain in Oklahoma.

A radical change in my career came in the fall of 1984, near Thanksgiving. Dr. Stone had just successfully competed for a Program Project Grant of which I was one of the Principal Investigators. To celebrate this milestone, he and one of his cardiology friends from France decided to go hunting for deer in the mountains of Montana. At the same time our family drove to visit relatives in Orange City, Iowa over the Thanksgiving holiday. It needs to be pointed out that Dr. Stone had suffered a heart attack approximately seven years prior to his arrival in Oklahoma. Nevertheless, his mindset was that he was determined to push his body to the limit in his work as well as his extracurricular activities. Sadly, he suffered a massive heart attack and passed away while doing what he thoroughly enjoyed, and that was hunting. Of course, his passing cast a pall over the department and a vacuum for Chair. About two days after this tragedy, I received a call from Dean Charles McCall of the College of Medicine asking me to serve as Interim Chair. In 1986 I was asked to serve as Chair of the department. I served in that capacity from 1986-2010. During my career I was awarded the Provost's Research Award, Samuel Roberts Noble Foundation Presidential Professorship and George Lynn Cross Research Professorship from the University of Oklahoma. I also received Chairman's Award from the Department of Anesthesiology.

My teaching and research program was wide-ranging and focused on Neuro-Humoral Mechanisms of Visceral Dysfunction that expanded our knowledge base and translated these findings into adequate treatment of patients who are suffering from visceral diseases. I enjoyed the privilege of training 15 graduate students and 19 postdoctoral fellows as well as residents, medical students, visiting research scientists, and high school teachers and students to help discover the interplay between visceral organs and the nervous system. All this activity was possible because of the exceptional contributions of my colleague and friend, Dr. Chao Qin, who collaborated with me in my laboratory for 14 years, and with whom I published 63 articles. To understand the clinical implications of this research, I organized an International Working Group on Neurocardiology composed of clinical and basic scientists from Sweden, The Netherlands, Canada and the United States. This group worked together for more than 20 years to provide new insights about normal processing of cardiovascular sensory information that are important to the coordinated performance in each region of the heart. In addition, these studies yielded new information to understand the complex mechanisms underlying such devastating conditions such as refractory angina pectoris, cardiac arrhythmias, ventricular ischemia and heart failure.

Through my active teaching and research programs, I received national and international recognition for these research accomplishments. I was funded continuously by the National Institutes of Health from 1975 to 2010. Early in my career, I received a Research Career Development Award from the National Heart, Lung, and Blood Institute. With the help of superb students, fellows, and colleagues, I published more than 220 articles in highly regarded, peer reviewed journals, and contributed 37 chapters in books. I have been invited to give approximately 200 seminars in Europe, Asia, Australia, and North America. I was invited to give the Carl Ludwig Distinguished Lectureship of Neural Control and Autonomic Regulation Section of the American Physiological Society. I also received the Alumni Achievement Award from his *alma mater*, Central College of Pella, Iowa. I served as President of the North American Neuromodulation Society and Treasurer of the International Neuromodulation Society. In addition I received the Distinguished Service Award from the North American Neuromodulation Society in 2013. Presently I am Section Editor in Basic Science for the journal *Neuromodulation: Technology at the Neural Interface*.

In conclusion, I want to express wholehearted thanks and appreciation to my wife, Charlotte, who supported me continuously throughout my career. Her words of encouragement and gift of organization carried us through the pleasurable as well as challenging times of my career.

About the newsletter

We hope you have enjoyed reading the OUHSC Physiology newsletter. This publication is intended to share with everyone the latest events and developments within the Department. We welcome articles, thoughts and suggestions for our future issues. Please do so by emailing Dr. Hui-Ying Lim (hlim@ouhsc.edu). Thank you!