



## **Martin Alexander**

February 4, 1930 – June 25, 2017

The Section of Soil & Crop Sciences in the School of Integrative Plant Science lost an esteemed colleague with the passing of emeritus professor Martin Alexander in Ithaca at age 87. Dr. Alexander was born on February 4, 1930 in Newark, New Jersey, and obtained degrees from Rutgers University and the University of Wisconsin (Ph.D. Bacteriology 1955, his mentor was P.W. Wilson).

He met Renee Wulf during his senior year at Rutgers, and they were married the summer after his graduation in 1951. Renee (Cornell Ph.D. 1958) served as senior lecturer in Cornell's Department of Biochemistry, and Molecular and Cell Biology. Martin and Renee were married for sixty-six years, and she survives him. Professor Alexander joined the Cornell faculty as a member of the Department of Agronomy in 1955, and over the course of his career, became world-renowned for his contributions to environmental science, soil microbiology, and toxicology. He was awarded a Liberty Hyde Baily distinguished professorship in 1977 and retired from Cornell in 2000.

For 45 years (1955-2000) Martin Alexander led the Cornell Laboratory of Soil Microbiology. This organization was a "beehive" of activity that attracted and supported graduate students, undergraduates, and postdoctoral scholars from around the world (countries included Belgium, Australia, Taiwan, Ethiopia, Mexico, England, Nigeria, Japan, China, Israel, France, Germany, the US, and others). The central research topic was environmental microbiology (especially soil microbiology). The central research questions have always been: "What microbial communities live on our planet? And how can understanding these microbial communities help humanity?" The productivity of Dr. Alexander's research program was truly impressive, with more than 500 technical papers and scientific articles published over the course of his career.

The detailed research efforts in his laboratory focused on the role of microorganisms (those that dwell in soil and water) in determining environmental quality, agricultural productivity, and ecologically important processes. Specific topics included biological nitrogen fixation, the ecology and biochemistry of other nitrogen-cycling processes, environmental impacts of acid rain, ecological interactions between microorganisms (e.g., predation, parasitism, lysis), and biodegradation and fate of pesticides (e.g., DDT, herbicides) and other toxic organic and inorganic chemicals.

For decades, the standing crop of researchers in his laboratory numbered from 10 to more than 20—each with one or more projects...and each contributing to an overall collective culture that pursued scientific excellence. Thus regarding scientific training, there was an immense cumulative output from Alexander's laboratory: approximately 100 scholars (direct scientific progeny of Martin Alexander). Many of these became outstanding leaders at universities across the US (e.g., Cornell, Harvard, Michigan State University, University of Virginia, University Colorado, University of California, Penn State, etc.) and in many other countries around the world (Belgium, Germany, Australia, Mexico, Japan, Venezuela, Costa Rica, Taiwan, etc.). Thus, Martin Alexander's scientific legacy is immense. His intellectual progeny ("children" and "grandchildren") continue to push forward the science of environmental microbiology. It can be argued that his basic questions ("What microbial communities live on our planet? And how can understanding these communities help humanity?") form the basis for the highly successful National Institutes of Health (NIH)-sponsored program on the Human Microbiome (and its many medical and public health implications). These fundamental questions also have led to an understanding of the microbial processes in soil and water that control greenhouse gas emissions and that underlie ongoing global climate change.

Six years after arriving at Cornell, Martin completed a textbook: "Introduction to soil microbiology (1961; John Wiley; later revised in 1977). With this and two other college-level outreach textbooks [Microbial ecology (1971), and Biodegradation and Bioremediation (1994, 1999)], Martin had an immense impact on students in classrooms across the nation and, indeed, the world.

In addition to advancing his discipline through individual scientific papers, books, and training others, Professor Alexander participated in many US government (and international) panels and committees, sponsored by agencies such as the National Academy of Sciences, USEPA, the White House, US Army, NASA, NIH, UNESCO, and the United Nations Environment Program. In this capacity, Professor Alexander directly contributed beyond his research specialty to topics that include Recombinant DNA policy, hazardous waste management, air pollution control, monitoring aquatic and terrestrial environments, oil spill bioremediation, safe drinking water, interactions between atmosphere and biosphere, review of ecotoxicology methodologies, quarantine of extraterrestrial materials, a joint Soviet-American working group on scientific cooperation, military pollution abatement, and many others.

In May 2003, an international gathering of more than 60 people converged on Washington DC for a celebration of Professor Alexander's long and illustrious career. Also celebrated at this event was Renee, whose contributions (direct and indirect) to the scientific and cultural

atmosphere of Cornell's Soil Microbiology Laboratory were major. A portfolio of testimonial comments contributed by laboratory alumni was compiled. Selected excerpts appear below. "As I look back on my years at Cornell, I can point to many principles and styles I learned from Martin. I think role model best describes what you have meant to me. You were always very positive to and concerned about all your students, providing the environment for each to grow in knowledge and gain confidence in what they can achieve".

"Martin, you are a marvel of consistent, daily, unfailing dedication to scientific inquiry. Dedication to clear writing, to word-craft, to logic, to knowing the current literature in many fields. Dedication to the professional academic efforts upon which this all resides: teaching, grantsmanship, and service on and off campus. Dedication to family and to your people. Thanks!"

"You have sown many seeds of knowledge in a large group of disciplines. The fruits of these efforts are written in a vast, ever-expanding, and diverse literature. There may be some facets of this body of knowledge that, individually we do not know. But we can recognize the ideas, the common threads in the fabric of our scientific lives. Today, we are happy to celebrate this legacy with you."

"You taught us how to ask the right questions, to organize our thoughts and experimental approaches, and how to summarize our results to capture the high points and report results in a meaningful and succinct manner. The education we received under your tutelage has played an important role in the success that many of us achieved in science and society. Thanks again for teaching us how to conduct a science that can make a difference to the world around us."

Martin was predeceased by his brothers, George and Seymour. Surviving are his spouse, Renee, and two children: Miriam (spouse: Josh Hurewitz) and Stan (spouse: Catherine Grossman). Martin has grandchildren in various parts of the country: Anna and Maya Alexander raised in West Lafayette, Indiana and Laura, Jeremy, and Jonathan Hurewitz raised in Baltimore, Maryland. His great-grandchildren are Elisheva and Avigayil.

*Written by Murray McBride and Eugene Madsen*