ROGER P. HANGARTER

Distinguished Professor and
Class of 1968 Chancellor's Professor of Biology, College of Arts + Sciences

Distinguished Professor and Class of 1968 Chancellor's Professor of Biology Roger Hangarter is retiring [May 31, 2023] following an illustrious career. In addition to his groundbreaking work on plant growth and development, Roger has been a great communicator of science to the lay public through his nature photography and videos, art installations, and his message that people urgently need to find ways to live in better harmony with the environment.

Roger was born and raised in Long Island, New York. He credits his grandmother with kindling his interest in nature and science. His grandmother's house was only a few blocks from school and was a frequent destination after classes ended. She armed Roger with butterfly nets and jars for catching insects, along with the knowledge of where to look for particular creatures and why they lived in those environments. His grandmother also helped develop Roger's memory, deductive reasoning, and strategy (all critical skills for a scientist) through a rather non-academic approach: cards, specifically canasta. At age 9, his grandmother took Roger to Manhattan to play in a canasta tournament as her partner. The unusual duo must have earned some chuckles and second glances when they arrived, but any laughter stopped when they won the tournament. Roger got first pick of the prizes and his choice foreshadowed his scientific career: a dracaena plant.

Roger received his B.S. in biology from SUNY Geneseo. He then moved to Michigan State University, where he earned an M.S. in horticulture and a Ph.D. in plant physiology. His Ph.D. was performed under the mentorship of Norman Good and focused on hormone signaling in plants. One important plant hormone is auxin, which plays key roles in many aspects of growth and development. If you've ever pruned a plant to make it grow bushier or tipped over a potted plant and seen it reorient its growth to the new up direction, those are effects of auxin signaling. For hormones to do their jobs, they must be produced at the proper time and location and, importantly, they must be removed when their job is done. Roger's thesis work showed that the conjugation to other molecules is an important pathway for the degradation of the auxin.

He went on to do postdoctoral research on photosynthesis with Don Ort at the University of Illinois Urbana-Champaign. Roger began his faculty career as an assistant professor of botany at Ohio State in 1986 and was promoted to associate professor before moving to IU in 1995.

Roger's laboratory has focused on the physiological and molecular mechanisms by which plants perceive and respond to environmental stimuli. As sessile organisms, plants do not have the option to move from a less suitable environment to a better

one (hence the adage “bloom where you are planted”). They can, however, customize their growth and development to give them the best chance for success. Roger’s research has made great contributions to our understanding of how plants integrate the information from these environmental stimuli, such as light and gravity, to adapt their growth and development to best suit their environment. One example is chloroplast movement. Chloroplasts convert light energy into chemical energy. So, on the one hand, they need light to do their jobs. On the other, light of too high an intensity can be damaging. To compound the problem, light levels are not constant throughout the day. Roger’s research helped to illuminate the molecular mechanisms by which plant cells change the position of chloroplasts in response to changing light conditions, placing them on the cell surface in moderate light, but moving them to the relatively shady cell periphery under high light.

Roger’s work has been funded by the National Science Foundation, the Department of Energy, and NASA, and he has served as a Program Officer for the National Science Foundation, USDA, and DOE grant programs. He also served numerous leadership roles in the American Society of Plant Biologists, including the Society’s President. He is a Fellow of the American Association for the Advancement of Sciences (AAAS) and Fellow of the American Society of Plant Biologists (ASPB).

In addition to his many research accomplishments, Roger’s love of nature, art, and photography has made him a tremendously effective communicator of science to the general public. His photography and time-lapse movies have been exhibited in various museums and galleries in the U.S. and internationally. Roger’s Plants in Motion website gathers over a million views per year and his sLowlife exhibit opened at the U.S. Botanic Garden and toured for 10 years, ultimately being visited by over 3 million people. For his work, he earned a MERLOT Award for Exemplary Online Learning Resources, the Science & Engineering Visualization Challenge Award from the NSF and AAAS, and Teaching Awards from the ASPB and the Botanical Society of America. He also received an Emmy Award for his photography in the PBS documentary “The Natural Heritage of Indiana.” In retirement, Roger plans to spend more time outdoors observing and documenting biology in action.

Scott Michaels