

GOVINDJEE, MR. PHOTOSYNTHESIS

Photosynthesis is a complex chemical process essential to all aerobic life on our planet. It's also a key component of the plant biology department in the School of Integrative Biology—and a subject that leading researcher Govindjee has studied for more than a half century.

Govindjee, professor emeritus of biochemistry, biophysics, and plant biology, first became interested in photosynthesis as a student at Allahabad University in India. While earning his master's degree there, he began a correspondence with photosynthesis pioneer Robert Emerson. He soon moved to the United States to work under Emerson at the University of Illinois. After earning his PhD in biophysics, under Eugene Rabinowitch, in 1960, he joined the faculty in 1961 and has been a central figure at the university ever since.

Over the course of his career, Govindjee's research has encompassed many aspects of photosynthesis, especially the initial events of the process. In one of his most famous breakthroughs, he discovered that bicarbonate/carbonate not only produces sugar during photosynthesis, but also plays a critical role in photosystem II, providing protons at a key step in photosynthesis.

He has also made important strides in chlorophyll fluorescence and thermoluminescence research. Since he developed a method of measuring the lifetime of fluorescence, which is independent of chlorophyll concentration, scientists have been better able to understand the relationship between chlorophyll and photoprotection.



These discoveries—only a small sampling of Govindjee's work—have led to over 300 research publications, many in leading journals like *Nature*, *Science*, and *PNAS*. As founding editor of the series "Advances in Photosynthesis and Respiration," Govindjee has helped publish thirty

three volumes that comprehensively address photosynthesis. Volume 34 (*Photosynthesis*), in the Series, published in 2012, has been aptly dedicated to him. Furthermore, students continue to turn to *Photosynthesis*, a book that he co-authored with Eugene Rabinowitch in 1969, for



a comprehensive introduction to the subject. He has edited or co-edited many other books, and his three articles for *Scientific American* helped bring photosynthesis into popular discourse. He edited the journal *Photosynthesis Research* for over 25 years, creating a space for researchers to share their latest finds with collaborators worldwide.

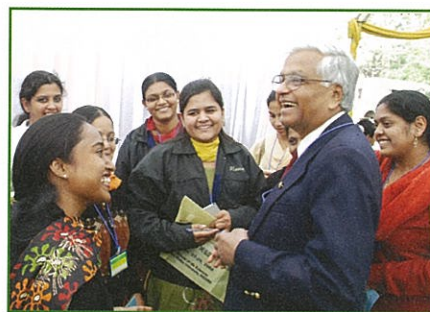
Govindjee's accomplishments have attracted the attention of many institutions and award bodies. A fellow of the American Association of Advancement of Science as well as the National Academy of Sciences of India, he has also served as the president of the American Society of Photobiology. He is the first recipient of the Lifetime Achievement Award of the Rebeiz Foundation for Basic Biology (2006) and the 2007 recipient of the prestigious Communication Award of the International Society of Photosynthesis

Research. He has received accolades from colleagues, some of whom organized a 2008 conference in his honor. "Photosynthesis in the Global Perspective" held in Indore, India, brought researchers from around the world together to present their recent photosynthesis research in the context of global issues. A book *Photosynthesis*, honoring Govindjee, will be released in 2012 in New Delhi, where he will be a visiting professor.

Closer to home, Govindjee received the Lifetime Alumni Achievement Award from the University of Illinois College of Liberal Arts and Sciences in 2009. The award, granted by the Alumni Association Board of Directors following a written nomination, is a testament to Govindjee's impact on photosynthesis research and his influence on the Illinois community.

These days, Govindjee continues to research and publish despite his retirement. In recent years, he has put out publications in numerous peer-reviewed journals, including three articles in a single 2011 issue of the *Journal of Photochemistry*

and *Photobiology*. Many of these articles focus on fluorescence lifetime measurements in photosystem II. Govindjee also remains passionate about the history of photosynthesis research, a subject that has interested him since he created



the "Historical Corner" section of *Photosynthesis Research* in 1986. His latest 2011 book *The Maximum Quantum Yield Controversy: Otto Warburg and the Midwest Gang*

deals with the exciting history that took place right on our campus in the Natural History Building. He continues to collaborate with scientists at the university as well as with research groups in Europe and in Asia. (See his web site <http://www.life.illinois.edu/govindjee/> for his multifarious activities.)