Obituary Notice: Andrew Benson: World-Renowned Scripps Plant Biochemist

Twentieth-century pioneer in deciphering pathway of carbon fixation in photosynthesis

Jan 23, 2015

Andrew Alm Benson, a distinguished emeritus professor of biology at Scripps Institution of Oceanography, UC San Diego, and renowned as one of the world's leading plant scientists of the twentieth century, died peacefully from natural causes on Jan. 16, 2015, at UC San Diego's Thornton Hospital. He was 97.

A member of Scripps Oceanography's Marine Biology Research Division since 1962, Benson authored hundreds of research papers, chapters, reviews, and a host of other publications and was honored with several national and international scientific awards.

His broad interests ranged from the chemistry of photosynthesis to the stimulation of plant growth by alcohols, the chemical composition of plant cell membranes, the chemistry of waxes made by copepods, and the use of salmon as a model animal for studying hormone-activated aging.

"For more than half a century, Andy Benson was an example of the pioneering spirit of discovery that has been the foundation of Scripps's excellence in science," said Scripps Director Margaret Leinen. "I'm very proud that Scripps was home to such a prominent scholar and world-renowned scientist for so many decades."

As a member of chemist Melvin Calvin's laboratory at UC Berkeley, Benson was the principal scientist who discovered the pathway used in photosynthesis to make sugars out of carbon dioxide, water, and sunlight. In a series of 30 publications, Benson and his colleagues worked out the complete pathway of carbon fixation in photosynthesis, which became known as the Calvin-Benson cycle (which some now reference as the Benson-Calvin cycle based on Benson's pioneering contributions to this research).

Benson was the first to apply radiolabeled carbon dioxide to plants; discovered phosphoglyceric acid, the first product of photosynthesis; discovered and identified ribulose bisphosphate; designed new laboratory instruments and tools; and developed cutting-edge chromatographic technologies.

“Andy Benson was a giant in plant biochemistry in the 1940s and ’50s,” said Victor D. Vacquier, a distinguished emeritus professor of biology at Scripps Oceanography. “He was the principal person who discovered the mechanism of carbon fixation in photosynthesis.”

Most recently Benson and his Scripps colleague Arthur Nonomura had been contributing to a series of scientific investigations in “The Path of Carbon in Photosynthesis” publications and other major biochemical pathways with implications for agriculture, mariculture, and forestry.

“Andy was an amazing guy and a legend. Being around him made you think higher and more creatively,” said Scripps alumnus John Patton, Benson’s former PhD student and now CEO of Dance Biopharm and a member of the Scripps Director’s Council. “He was a towering, eccentric figure and at the same time he had a gentle personality. He was deeply loved by so many people. He had devoted friends all over the world, including Native American fisherman in British Columbia, scientists in Japan, and people on every continent.”

“Andy Benson embodied the Scripps mission as he brought together scientists of diverse skills. The result was great science and an enduring group of friends who admired this briliant and generous gentleman,” said Barry Holtz, a postdoctoral researcher at Scripps with Benson and his friend of 40 years.

Benson joined Scripps in 1962 as professor of biology after being recruited by Francis Haxo and Roger Revelle. He served as chairman of the Marine Biology Research Division from 1965 until 1969. From 1966 to 1970 he served as associate director of Scripps with responsibilities for coordinating biological research and teaching. From 1970 to 1976, he was director of Scripps’s Physiological Research Laboratory. Under his direction, Hubbs Hall was proposed, planned, and, in 1977, constructed.

Born and raised in Modesto, Calif., Benson attended UC Berkeley where he received a BS in chemistry in 1939. He then attended Caltech and received a PhD in chemistry in 1942.

His long list of awards include: the Sugar Research Foundation Award for discovering how table sugar (sucrose) is synthesized (1950); a Fulbright Lecturer fellowship spent at the Agricultural College of Norway (1951-52); the U.S. Department of Energy’s E.O. Lawrence Memorial Award in Nuclear Science (1962); a Phil.D. honoris causa, University of Oslo, Norway (1965); elected Fellow, AAAS (1965); the Stephen Hales Award, American Society of Plant Physiologists (1972); the Senior Queen’s Fellow in Oceanography, Australian National University, Australian Institute of Marine Science (1979); Fellow, American Academy of Arts and Sciences (1981); Fellow, American Academy of Arts and Letters (1984); Fellow of the Norwegian Society of Arts and Letters (1984); Supelco/AOCS Research Award, American Oil Chemists Society (1987); Lifetime Achievement Award of the Rebeiz Foundation for Basic Biology (2008); and election to the U.S. National Academy of Science (1972).

Benson was a member of the American Chemical Society, American Association for the Advancement of Science, American Society of Biological Chemists, Japanese Society of Plant Physiologists, and American Society of Plant Physiologists.

He is survived by Dee Benson, his wife of 45 years, of La Jolla.

Arrangements for memorial services are pending.