

## NEWS

# In memoriam: Professor Roy Talmage

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A tribute to the life and work of Roy Talmage.

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Roy Talmage and those fortunate enough to have known him during his highly productive research of 30 or more years ago are aware of his important impact on the field of calcium and bone biology. He was a pioneer in establishing the physiology and pharmacology of the action of parathyroid hormone (PTH) in calcium homeostasis, as well as the biological actions of calcitonin (a hormone particularly active in rodents), the principal experimental animal system that Roy used.

Roy developed ingenious and complex experimental models to explore the actions of the hormones on calcium and phosphate metabolism and the critical role played by the skeleton. His work represents landmarks in the calcium/bone biology field. Important aspects of the skeletal actions of PTH remain unresolved today. Despite the availability of current tools of genetically modified rodents and specific blockers of osteoclast action (osteoprotegerin (OPG) and Denosumab), tools which Roy would have embraced with enthusiasm were they available to him, the field still has not answered some of the critical questions he posed.

Roy is the founder of our organization IBMS. He planned and directed the first Parathyroid Conference in Houston in 1960. Between 1960 and 1983, eight conferences were held with Roy having a major role as an organizer and editor of the subsequently published conference proceedings. With this effort, as well as that of many colleagues who joined him, the conferences gradually took on an international flavor, meeting in London in 1964, Montréal in 1967, England in 1974 and finally in Kobe, Japan in 1983. The conferences became known as the International Conferences on Calcium Regulating Hormones (ICCRH) and attracted the interest of investigators worldwide, becoming our current organization, the International Bone and Mineral Society (IBMS).

Roy's interest in the parathyroids and calcium homeostasis grew from his previous interests in endocrinology and research on relaxin when the U.S. Atomic Energy Commission made radioisotopes available for scientific and medical work. Roy pioneered the use of  $^{45}\text{Ca}$  and  $^{32}\text{P}$  in his studies of PTH, and then, when it was discovered, calcitonin (thyro-calcitonin). Talmage's studies from his first paper in the field written with Harald Frost and other colleagues in 1953 in *Endocrinology*

focused on the physiological mechanisms of action of PTH on calcium and phosphate metabolism. As he came to appreciate the complexities of unraveling the contribution particularly of bone versus kidney in these processes, he developed challenging experimental animal models. He used nephrectomized rats maintained on peritoneal lavage with their parathyroid and thyroid glands removed to pinpoint the actions of the hormones on skeletal calcium release. He studied the patterns of the release of  $^{45}\text{Ca}$  and total calcium from bone when varying the time of PTH administration after the initial radio calcium dose. He realized that with the passage of time after administration, the radioisotope would move from the bone surfaces to the deeper regions of bone.

He showed convincing data that osteoclastic bone resorption alone could not account for the complex kinetics of calcium release that he demonstrated. He further pointed to an initial effect of PTH to lower plasma calcium, an effect that preceded the subsequent rise. This observation was subsequently confirmed by the late John Parsons and colleagues. Roy's work clearly pointed to the role of different bone cells in the complex patterns of skeletal calcium release by PTH.

This better-known aspect of the life of Roy VanNeste Talmage tells only part of the story of this remarkable man, his background and his accomplishments. Roy was born in Moppo, Korea in 1917 as one of seven children of Presbyterian missionary parents. His education continued in Korea through high school until he moved to the United States in 1934 to attend Maryville College, a small Presbyterian College in Tennessee. He chose a career in biology and ultimately entered Harvard University in the PhD program in physiology in 1939. With the onset of World War II, his education was interrupted and he served for four years in the Army Air Corps.

He was trained as a bomber pilot and then served as an instructor for bomber crew members. In the last year of the war he was brought into active duty and served several combat missions in the Pacific Theater as bomber commander. He was awarded the Air Medal for his service. After the war he resumed his studies at Harvard and completed his PhD in 1947. He moved to Rice Institute (now Rice

University) in Houston where his remarkable scientific and scholarly career flourished. At Rice he served many important roles including that of Chair of the Department of Biology and Master of Weiss College.

In 1970, Roy accepted an invitation to move to North Carolina as the Director of the Orthopedic Research Laboratory and as Professor of Surgery and Pharmacology. After his retirement in 1984 he continued his interests in research, turning to human skeletal health utilizing bone density techniques to examine the effects of physical activity and nutrition.

Roy moved back to Texas and joined a retirement community where he maintained his many interests. He remained active in the Presbyterian Church which he served lifelong, with roles as deacon, choir member and church elder. But most of all, Roy treasured his time with his wonderful family—his wife of 70 years, Helena, his three children, 11 grandchildren and 12 great-grandchildren—until he passed away in December 2012.

**Conflict of Interest**

The author declares no conflict of interest.