

May 6, 2012

Dear Emeriti Colleagues:

On behalf of the Ralph J. Berger family, we are saddened to report Ralph's death after a very brief bout with cancer, on March 13, 2012. Ralph's widow, Gunnela Berger has expressed Ralph's wishes, as follows: "Ralph, as a very modest and unassuming man, wanted neither obituary or memorial service. I do feel, however, that his many friends and colleagues of 40+ years might want to know of his untimely death."

Ralph joined the UCSC faculty in 1967. He was a Fellow of Cowell College. He was a Professor Emeritus of Ecology and Evolutionary Biology, with a B.A. and M.A. from Cambridge University. He received his Ph.D. at the University of Edinburgh. His former affiliations include the University of Edinburgh; the National Institute of Neurological Diseases and Blindness; the University of Puerto Rico; and UCLA.

Ralph Berger was interviewed in 2003, on NPR's Morning Edition by his former Ph.D. student, science correspondent Joe Palca (a recent honoree during Homecoming events at UCSC). Palca's entertaining report on the 50th anniversary of the discovery of REM sleep can be heard online at [NPR's web site](#).

Ralph was a Member of the UCSC Emeriti Association for at least the past 18 years, and will be sorely missed.

John Marcum

President, UCSC Emeriti Association

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Obituary for Ralph J. Berger (1937–2012)

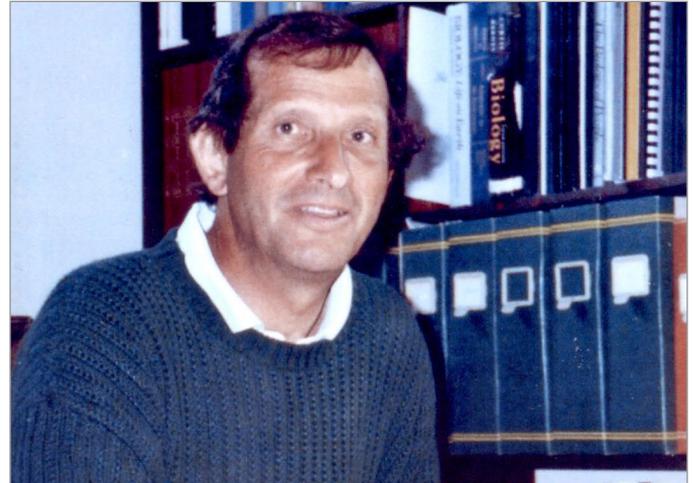
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Ralph Berger, a pioneer of modern sleep research, died of cancer in Santa Cruz, California on March 13, 2012. Ralph was born in Vienna on September 6, 1937. He and his family escaped to England the following year. There, he attended the Perse School, where, among other interests, he developed a lifelong interest in jazz. He served in the RAF where he trained as a radio operator. He was an instructor by the time he was discharged two years later. Ralph studied at Jesus College, Cambridge (BA 1960). He earned his PhD in 1963 at the University of Edinburgh with Ian Oswald, who also died recently (Sleep 35:1579). Ralph then joined the NIH Perinatal Center in Puerto Rico as a post-doc; where he documented the changes in monkey sleep EEG during the first year of life.¹ After further post-doctoral work at UCLA, Ralph joined the faculty at UC Santa Cruz as Assistant Professor of Psychology in 1968. He advanced rapidly to Professor of Psychology and Biology (1974) and remained in that position until his retirement as Emeritus Professor of Biology in 1994.

Ralph contributed a number of major observations. He demonstrated that visually active dreams had more profuse eye movements,² scrupulously noting that this finding contradicted his *a priori* hypothesis. Subsequently, Ralph and his student Moskowitz demonstrated that REM eye movement directions were not predictable from the imagery in dream reports.³ This finding corrected earlier, less rigorously controlled studies. In 1961 Ralph reported in *Science* that neck muscle tonus, easily recorded as EMG, dropped sharply during REM sleep in humans.⁴ He proposed that this change was probably homologous with the disappearance of nuchal muscle tone in cats during REM that had been described by Jouvet.⁵ After Ralph's report, recording of neck EMG became a standard component of human sleep studies. In 1962, Berger and Oswald published their classic paper showing the effects of 4 nights of sleep deprivation on subsequent sleep EEG.⁶ The results of this study remain a bedrock for current theories of the function of slow-wave sleep. Although published a half-century ago, Berger and Oswald's meticulous analyses of their deprivation data point to basic questions on the interrelation of NREM and REM sleep that could be profitably explored in further research.

Ralph had a deep appreciation of evolutionary biology. This led him to a series of studies on the relation of hibernation and torpor to sleep (reviewed in Berger and Phillips⁷). In general, this work demonstrated that hibernation is entered through slow wave sleep and is characterized by similar thermoregulatory mechanisms. The theoretical framework of these studies held that energy conservation was the earliest function of sleep upon which other functions were engrafted during the course of evolution. Ralph was also the first to propose that the evolutionary emergence of REM sleep was causally linked to the development of endothermy. Ralph was also deeply interested in problems of memory, consciousness and epistemology; his book *Psychosis: the circularity of experience*⁸ considers these issues.



Ralph J. Berger, PhD

Ralph was stimulated by Calvin Hall, one of the earliest modern students of dreaming, to study Proust, whom he read in the original French. Ralph's research skills, along with his focus on fundamental biological questions, underpin the enduring relevance of his scientific contributions. As my nearby colleague, Ralph was intellectually challenging and a helpful and loyal friend.

Ralph enjoyed life and loved and respected nature. He was a committed environmentalist and was active in protecting the habitat of the monarch butterfly, which overwinters near Santa Cruz before embarking on its astonishing transgenerational migration to Canada. Ralph and his wife Gunnela collaborated in the creation of a marvelously serene and beautiful garden at their Santa Cruz home. Ralph was dedicated to his family: to Gunnela, their sons Timothy and Michael, and to their grandchildren. With them he shared the outlook of a probing rationalist along with outdoor activities that included skiing, tennis and even Santa Cruz surfing, which he continued into his 70s.

REFERENCES

1. Meier GW, Berger RJ. Development of Sleep and Wakefulness Patterns in the Infant Rhesus Monkey. *Exp Neurol* 1965;12:257-77.
2. Berger RJ, Oswald I. Eye movements during active and passive dreams. *Science* 1962;137:601.
3. Moskowitz E, Berger RJ. Rapid eye movements and dream imagery: are they related? *Nature* 1969;224:613-4.
4. Berger RJ. Tonus of Extrinsic Laryngeal Muscles during Sleep and Dreaming. *Science* 1961;134:840.
5. Jouvet M, Michel F, Mounier D. [Comparative electroencephalographic analysis of physiological sleep in the cat and in man]. *Rev Neurol (Paris)* 1960;103:189-205.
6. Berger RJ, Oswald I. Effects of sleep deprivation on behaviour, subsequent sleep, and dreaming. *J Ment Sci* 1962;108:457-65.
7. Berger RJ, Phillips NH. Energy conservation and sleep. *Behav Brain Res* 1995;69:65-73.
8. Berger R. *Psychosis: The Circularity of Experience*. San Francisco: WH Freeman and Company, 1977.