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OBITUARY

Ralph Siegel: in memoriam (1958–2011)

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Dr. Ralph Mitchell Siegel, a member of the Editorial Board of Brain Structure and Function and a researcher who studied the neurological underpinnings of vision, died September 2 at his home following a long illness. He had been a professor of neuroscience at Rutgers University, Newark, in the Center for Molecular and Behavioral Neuroscience.

As a trained neurophysiologist, Ralph was interested in basic mechanisms underlying visual motion and spatial perception, with the ultimate goal of developing applications to assist people who have visual processing disorders and neurological injuries. He performed pioneering work on parietal neurons and the influence of eye position and attention on perception. His laboratory became the first to perform optical imaging of parietal cortex in behaving non-human primates.

Siegel earned his B.S. in physics and his Ph.D. in physiology from McGill University in Montreal. After completing his graduate studies at McGill on the theoretical neuroscience of spike propagation in branched dendrites, Ralph moved to the Salk Institute in La Jolla, CA, where he began to focus on in vivo, behavioral neurophysiology of monkeys in the lab of then assistant professor Richard Andersen. Recalls Dr. Jim Gnadt, now at NIH, "Ralph was a vibrant and energetic member of a lab at the forefront of experimental studies to understand the neurophysiology of cognitive processes in primates in the early 1980s. He was an early contributor to the gain-field mechanisms of neuronal population encoding, and employed precise psychophysical methods to understand visual motion perception at the level of neuronal activity. From beginning to end, Ralph employed quantitative methods in his studies and conversed fluently in a range of topics from physics to psychophysics, to metaphysics. It was also during his time at the Salk that Ralph first made acquaintance with his mentor Francis Crick and his wife Jasmine, whom he married in 1988."

In 1987 Ralph began a postdoctoral position in the laboratory of Nobel Prize winner Torsten Wiesel at Rockefeller University. While at Rockefeller, Ralph nurtured a latent interest in theoretical studies of cortical visual processing. He also got his feet wet in the rapidly emerging field of optical imaging of cortex, through collaboration with a pioneering group led by Amiram Grinvald.

After being hired by Rutgers, but while waiting for his new laboratory at Rutgers, Newark, to be completed, Ralph took a position as a visiting scientist at IBM's Watson Laboratories in Yorktown Heights, where he happily

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cavorted with leading physicists and mathematicians of his day, such as Benoit Mandelbrot, and fully indulged his penchant for theoretical neuroscience. The impact of this early internship at IBM—particularly the insight Ralph gained concerning neuronal circuits as non-linear dynamical systems—was prominent throughout his career.

In 1991, Ralph moved into his laboratory at the newly established Rutgers Center for Molecular and Behavioral Neuroscience (CMBN), in Newark, New Jersey, where he was on the faculty for the remainder of his career. Ralph Siegel was one of the first faculty members to be recruited to the new CMBN. As Ralph's research spanned broadly from system neurophysiology to psychophysics to computational models of complex visual processing, he was an ideal faculty member for an integrative neuroscience center envisaged by the Co-directors, Paula Tallal and Ian Creese, when they moved from UCSD to Rutgers in the late 1980s. In his early years at Rutgers, Ralph continued his pioneering neurophysiological and behavioral work on the organization and functions of visual cortex in the parietal lobe. At the same time, he and Jasmine raised beautiful twins, Zoe and Dashiel. During this period, Ralph also maintained his scientific collaborations with his former colleagues at the Salk Institute, making annual summer visits to La Jolla over the next decade. A major feature of these collaborations, and of Ralph's evolving research program over the last decade of his career at Rutgers, was the use of optical microscopic techniques to monitor neuronal activity in the cerebral cortex. In collaboration with Ed Callaway (Salk) and Ehud Isacoff (Berkeley) Ralph began to develop tools that enabled optical monitoring of activity from neurons in behaving animals—tools that have since set the stage for a revolution in functional neurobiology.

Professor Tom Albright, a long-time friend and colleague at the Salk Institute, remembers Ralph this way, "From the earliest days of his scientific career, Ralph was an iconoclast—ever thinking outside the box, courageously questioning the perceived wisdom and pushing the boundaries of his field. At the same time, Ralph became known and loved far and wide for his extraordinarily passionate approach to science, family and friendship, his hearty joie de vivre and his generous spirit. Ralph thrived on his ability to excite, to provoke and to inspire those around him. He danced without pause through his short life."

Next year Siegel's first book and memoir, *Another Day in the Monkey's Brain*, will be published, by Oxford University Press, with the help of his life-long friend and colleague, Dr. Oliver Sacks. In memory, we will always picture Ralph with a sly grin, raised eyebrow, shock of red hair and a twinkle in his eye. He will be dearly missed.

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Letter

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