Obituary
Candace B. Pert, Ph.D.

Candace Pert passed away in Potomac, Maryland on September 12, 2013 at the age of 67. She was born in New York City in 1946 and received a B.S. in Biology from Bryn Mawr College in 1970 followed by graduate studies in pharmacology at Johns Hopkins University School of Medicine under Dr. Solomon Snyder. While a graduate student, she developed a receptor-binding assay that employed the antagonist naloxone, radiolabeled to high activity, to bind to and detect specific binding in brain homogenates, resulting in the 1973 publication by C.B. Pert and S.H. Snyder in *Science*, "Opiate receptor: demonstration in nervous tissue." This was the first demonstration of a receptor in brain, and it ushered in a new era of neuropharmacology and receptor identification in the brain.

After obtaining her Ph.D. in 1974, Candace moved to the National Institute of Mental Health (NIMH) Intramural Research Program, ultimately becoming the Chief of the Section on Brain Biochemistry in the Clinical Neuroscience Branch. During this time, she expanded her work on the pharmacology and receptor binding of opioid and other peptides and their localization in brain. In 1979, she was featured in a cover story called, "Brains and Ambition" in the Washington Post Magazine. She worked closely with us (Miles Herkenham, NIMH, developed an autoradiographic receptor localization method they published in 1980 and 1981, and Linda Brady came to Miles' lab in 1985 to work on opiate receptor regulation), and our close friendship endured from then on.

In the mid-1980s, Candace's work turned towards the role of neuropeptides in the immune system. A desire to understand and treat phenomena such as pain-induced inflammation and her father's small-cell lung cancer led her to investigate the roles of peptides and their receptors in the immune system and on cancer. Teaming with her husband, immunologist Dr. Michael Ruff, she first characterized peptide interactions with tumor cells and published several articles (*Science*, 1984, 1985) on the actions of peptides and other neuroactive molecules on cancer cells. She then began to ask whether peptides that interact with the HIV receptor on cell surfaces might be useful therapeutically. In 1987, Candace left the NIMH to form a company called Peptide Design in order to pursue the development of Peptide T, named for its high threonine content, for its ability to inhibit HIV infectivity. The peptide was tested in early phase clinical trials and beneficial effects on neurocognitive functions and reduced viral loads trials in AIDS patients were demonstrated and published in 1998, 2003, and 2006. She went on to found RAPID Pharmaceuticals to further develop the same peptide renamed DAPTA (D-ala-peptide T-amide), which was found to have antagonist activity at the chemokine CCR5 receptor, for treatment of AIDS and other indications. Candace found it immensely satisfying that her early work to find treatments for pain via the opiate receptor would reemerge many years later by identifying peptide antagonists targeting chemokine receptors that underlie inflammation and hyperalgesia.

Although Candace's scientific work was centered on the pharmacology of peptides and receptors, her achievements went beyond academia and drug development. A shift in her intellectual focus was evident in a 1985 publication in the *Journal of Immunology* in which she proposed that neuropeptides and

their receptors form a psychosomatic network throughout the brain and body. Internationally recognized, she began to lecture on neuropeptides and their receptors in the broader context of the "bodymind" in health and disease. She published several popular books, "Molecules of Emotion " (1997) and "Everything You Need to Know to Feel Go(o)d" (2006). Her books and lectures captured a large audience not only because of the scientific credibility she brought to the issues but also because of her dynamic personal strength, brilliance, and force of will. She was an outspoken champion of many issues, notably women in science. She will be remembered by those who knew her as ebullient, forthright, and caring. She leaves her three loving children—Evan Pert, Brandon Pert, and Vanessa Pert Haneburg, a new grandson Robert Haneburg, her sister Deane Beebe, former husband, scientist and close friend Agu Pert, and her adoring husband and scientific partner Michael Ruff. She touched the lives of many and will be fondly remembered.

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