Stanley Cohen Biography

Stanley Cohen

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Biography

Stanley Cohen has devoted his career to the study of the growth factors, hormone-like substances that are produced by individual cells rather than by organs. He shared the 1986 Nobel prize in physiology or medicine with the Italian-American biochemist Rita Levi-Montalcini (1909-) for their joint and individual growth factor discoveries.

Cohen was born in Brooklyn, New York, to Russian immigrant parents. His father was a tailor. Encouraged by his parents, Cohen concentrated on intellectual accomplishments and music during his teen years after recovering from polio. He received his bachelor's degree in 1943 from Brooklyn College, majoring in biology and chemistry, and his master's degree in zoology in 1945 from Oberlin College. His Ph.D. in 1948 from the University of Michigan included research on 5,000 earthworms that he hand-collected from the campus lawn.

Cohen began working in 1953 with Levi-Montalcini at Washington University in St. Louis. She had already discovered that mouse tumor extracts could stimulate growth of the fibrous axons that connect brain cells in chick embryos. Cohen purified the protein, which was named nerve growth factor (NGF), and determined its amino acid structure. He also developed antibodies that inhibit nerve growth and discovered NGF's presence in snake venom and in mouse saliva.

Earlier, while testing the mouse saliva extract on newborn mice, Cohen found that it speeded up development of their eyelids and corneas. Their eyes opened after one week instead of two, and their teeth also appeared earlier than normal. Cohen believed that it was a different substance than NGF, and named it epidermal growth factor (EGF). In 1962 Cohen, working at Vanderbilt University, isolated the factor. He later purified it and determined EGF's amino acid sequence in both mice, in 1972, and humans, in 1975. EGF has been used to grow skin for burn treatments and, because it is the same as one of the stomach hormones, to reduce stomach acid production.

Cohen's identification of EGF's receptor molecule and its method of binding was important in improving scientific understanding of the numerous growth factors that have since been discovered. His work also led him to discover the technique of DNA cloning in 1973 when he worked with Herbert Boyer from the University of California, sparking worldwide interest in genetic engineering. He is the recipient of several honors and awards including the National Medal of Science, the National Medical of Technology and the Albert Lasker Basic Medical Research Award.