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Eugene Vigil

Gene Vigil (pronounced, Vee hil') has devoted over three decades of his scientific career to supporting the advancement in biological sciences for women and minority faculty and students. Now as an NIH program director, he is in a position to further his strong desire and personal commitment to see an increase in underrepresented minorities in biomedical science on a national level.

Vigil's father was of Navajo and Hispanic heritage; his family homesteaded in northeastern New Mexico early in this century, raising grain and livestock, as well as laboring as migrant workers to supplement the family income. His mother was a Ukrainian emigré who settled in Toledo. Vigil grew up in Chicago, one of eight children. His father started his own electrical repair business where Eugene learned practical aspects of electricity, how to repair small appliances and do residential and commercial electrical construction. While both his parents valued knowledge and acquired skills, his mother was most interested in seeing that the children receive a good education and aspire to professional careers where they could make a contribution to society. Eugene's eldest brother became an electrical engineer and patent attorney, three sisters are teachers, and his younger brother became a physicist before taking over the family electrical-construction business.

While his mother believed Eugene should become a doctor, Vigil decided on a career in botany after taking his first botany course as an undergraduate. His interest in basic research began with an independent senior project at Loyola University where he received his undergraduate education. Upon reflection, Vigil is grateful for the positive encouragement of his parents in going into science. His mother often pointed out to him that knowledge was indispensable, noting that "you can acquire and lose wealth and material possessions quickly, but you can not lose the knowledge you've gained from education."

In the early 1960's Vigil attended Loyola University as a biology major. He became interested in cytology through a senior research project on lateral root development under his advisor, Walter Hudson, who had a great influence on Vigil's career as a botanist. This was Vigil's first introduction to the beginning of a career in microscopy at a time when many discoveries were being made on the structure and function of cell organelles. After graduating from Loyola in 1963, Vigil moved to Iowa for graduate studies, leading to his Ph.D. in Botany. His dissertation under Robert Muir was on cellular fine structure of expanding cells under the influence of plant growth hormones. He spent his postdoctoral years at the University of Wisconsin and the University of Chicago with Eldon Newcomb and Hewson Swift, respectively. It was Swift who sponsored Vigil for membership in ASCB in 1970. During this period, Vigil had the opportunity to do fine structural and cytochemical studies on glyoxysomes and peroxisomes and their development during cell maturation and seed germination. This led to the finding, reported in The Journal of Cell Biology, that glyoxysomes were present in castor bean endosperm throughout seed germination, undergoing rapid development in association

with ER cisternae followed by selective destruction in lysosomal-like vacuoles. This was the first report on glyoxysome development and degradation in a tissue essential for seed germination. Vigil was also able to develop a number of new methods for EM localization of heme proteins involved in oxidative reactions important to intermediary metabolism and photoelectron transport.

This initial training and research experience, especially with combining electron microscopy and enzyme cytochemistry, made it possible for Vigil to establish peroxisomes as a new constituent organelle of plant cells. This work was extended to mammalian cells where Vigil and Zdenek Hruban at the University of Chicago established peroxisomes as a constituent organelle. The sensitivity of enzyme cytochemistry for heme proteins with substrates like diaminobenzidene made it possible to detect discrete sites of enzyme activity or redox reactions within membranes of mitochondria and chloroplasts. This opened up new avenues for studying mitochondria and chloroplast.

This was an area Eugene pursued further when he moved to Marquette in 1971 to begin his academic career. His early findings led to collaboration with Charles Arntzen at Illinois on localization of photoelectron transport reactions in leaf and algal chloroplasts, Jim Morre at Purdue on plasma membrane NADH oxido-reductase in rat liver, Dariush Fahimi in Heidelberg on distributional change in intramembrane particles of glyoxysomes/peroxisomes of greening cotyledons and Roland Theimer and Gerhard Wanner in Munich on ontogeny of glyoxysomes in cotyledons of germinating seeds. In 1979 Vigil moved to the University of Maryland where he focused entirely on plant cell biology. Vigil's interest in plant research continued full time in 1988 when he joined the U.S. Department of Agriculture in Beltsville, Maryland as a Plant Physiologist to pursue studies on the effect of drought stress on cotton seed and fiber maturity. Vigil discovered a temporal window to drought stress that led to a new paradigm for seed and fiber maturation. Seeds entering the maturation phase of development were most sensitive to drought stress, but lost this sensitivity after approximately 10 days of further development. These findings allowed Vigil to form a national task force with other USDA and university scientists with a mission to determine causes for immature fiber and seed, a costly problem to the cotton industry.

Underlying his current professional responsibilities at NIH was a personal commitment to minority advancement as an active participant on ASCB's Minority Affairs Committee (MAC). A member of the MAC since 1991, Vigil believes that this country has a wealth of strength and potential to be developed in the minority community. Making opportunities available to all citizens, especially those groups who are poorly represented in science, is of major interest to Vigil. He remembers as a child watching his father struggle to be accepted in Chicago, but not being able to free himself of a permanent sense of being different. The younger Vigil's background never left him, and these experiences formed lasting impressions.

Vigil's goal as a member of the ASCB MAC is to help ensure that others have the same opportunities that he believed he had. He is deeply committed to working with minorities,

and through his own experiences, has recognized that everyone has talents and gifts worthy of development and recognition within the scientific community.

Vigil believes that to be more effective in meeting the mission of the ASCB and the MAC there is a need for additional support from Society members to provide laboratory experiences and to serve as mentors for minority students and beginning faculty. While this will give minority students a better chance to succeed, Vigil recognizes that there is also a need for a "continuum and connection" where a student not only gets good training, but is also able to move forward with proper mentoring at every stage with open professional opportunities. Support for the ASCB for some of these activities is now possible from a recent grant from the Minorities Access to Research Careers (MARC) program at NIGMS. Vigil sees his role with MAC and the ASCB to build greater minority representation in the Society and to help bridge, where possible, those links important to future success between students and top researchers in the biomedical research community.

Vigil also serves as Chair of the Minority Affairs Committee of the American Society of Plant Physiologists, and is active in the minority community as a member of the American Indian Science and Engineering Society and the Society for the Advancement of Chicanos and Native Americans in Science(SACNAS). Vigil and his brother have established two awards in memory of their parents for SACNAS' annual meeting to recognize students presenting the best research in biology and in physical science.

Vigil's longtime pursuit of and dedication to minority causes inevitably led him to leave the bench for a position as Program Director in the Minority Biological Research Support program at NIGMS. He felt it was time to give back something that he had achieved and believed that moving to the NIH to help minorities was an opportunity and responsibility he could not pass up.

Vigil hopes that his role at NIH is to provide a good voice and to "help make things happen." He currently has program responsibility for schools in Arizona, California, Guam, Hawaii and Puerto Rico. He believes that his influence on minority affairs is far greater as a NIH Program Administrator than it could be from the bench.

Vigil has three married children who have entered into accounting, art history and real estate careers. He was recently married to Marcia Holden, a plant molecular biologist. Vigil is not single-minded in purpose: he does enjoy hiking, gardening, and has a particular love of music-classical, jazz, and folk music from blues to contemporary. He is active in Rotary and has a keen interest in the history of science.