

Retinal Damage, Protection, and Repair

Introduction

Donald R. Bergsma

Department of Ophthalmology, Louisiana State University Health Sciences Center, New Orleans, LA

On November 20, 2002, a workshop on “Retinal Degeneration and Repair” was held at the Louisiana State University Health Sciences Center in New Orleans in recognition of the twentieth anniversary of the Ernest C. and Yvette C. Villere Chair for the Study of Retinal Degeneration at this institution. I am pleased to introduce this special issue of *Molecular Neurobiology* that includes several presentations made at that workshop.

The Ernest C. and Yvette C. Villere Chair for the Study of Retinal Degeneration was established in 1981 at the Eye, Ear, Nose and Throat Hospital, New Orleans, and occupied by Dr. Nicolas G. Bazan, who has been actively involved in retinal research for over 30 years and is recognized as an expert in the field of retinal degeneration and neuroscience. In addition to his work on retinitis pigmentosa (RP) and the biochemistry of the retina, Dr. Bazan also studies neuronal survival and its implications for neurodegenerations.

Mr. Ernest C. Villere’s dedication and untiring efforts toward the establishment and advancement of retinal research led to the endowment of the Villere Chair. Mr. Villere’s keen insight and sensitivity helped him to recognize the fact that retinal degenerations are a leading cause of blindness, and that the only way to conquer these blinding diseases is through research. The

findings from this research may lead to the development of effective treatments, and perhaps even to preventive regimens and cures for these devastating diseases. The family of Mr. and Mrs. Villere have continued to support the Chair over the years. Through their enthusiastic pursuit of funding for this program, as well as the family’s own generous donations, significant advancements in this field have been made.

In this Issue, Drs. Sugino, Wang, and Zarbin show how wound-healing processes in retinal pigment epithelium (RPE) determine the success of surgery to remove choroidal new vessels in patients with age-related macular degeneration. They describe the experimental Bruch’s membrane organ-culture model, which may offer improved RPE resurfacing and restoration of vision. Drs. Lewis, Sethi, Linberg, Charteris, and Fisher describe the ability of long-term retinal reattachment to reverse the molecular changes and photoreceptor remodeling that result from retinal detachment. The continual remodeling of retinal cells that occurs after reattachment involves many retinal cell types, and explains why visual recovery may take years following reattachment surgery. Drs. Rajala and Anderson describe the role of insulin receptors in the retina, whose function is not presently understood. Light-dependent phosphorylation of these receptors may activate neuroprotective,

anti-apoptotic protein cascades. Drs. Wilson and Wensel review patterns of genetic dominance in rhodopsin mutation and describe current efforts to supplement wild-type rhodopsin in cases of dominant-negative mutations. This new gene-therapy strategy may offer hope for patients with RP resulting from rhodopsin mutations. Drs. Marc and Jones describe the complex remodeling of retinal cell types during degeneration, which is similar to the remodeling that occurs after detachment, and which may preclude recovery of visual signal processing. An understanding of this general retinal reaction to challenge is essential for the success of retinal transplantation and implantation. Drs. Cortina, Gordon, Lukiw, and Bazan describe DNA-repair mechanisms and timing in photoreceptors exposed to damaging light. This repair appears to represent a retinal neuroprotective strategy that might become a therapeutic target for preventing the progression of retinal degenerations. Drs. Kofuji and Connors describe the distribution of inwardly rectifying potassium ion channels in retinal glial cells. New knowledge of these cells is fundamental to understanding the function and survival of photoreceptors and other cells of the retina.

Although neurodegenerations—including many retinal degenerative diseases—were among the first to be described and characterized in the early days of descriptive genetics, there was a substantial time lag in our understanding of the pathophysiologic mechanisms that caused these conditions. The spectacular advances in this field in the past few years, as illustrated by the work presented at the Workshop on “Retinal Degeneration and Repair,” give hope to the patients and families afflicted by these diseases, that effective prevention and therapy may yet be achieved within their lifetimes. I hope the readers will enjoy reading about these exciting discoveries in this very special issue of *Molecular Neurobiology* as much as I have.

About Mr. And Mrs. Villere

Ernest Caliste Villere was born in New Orleans in 1904. After attending Tulane Univer-

sity, he worked for Burroughs Adding Machine Company as a salesman. In 1927, he joined St. Denis J. Villere and Company, an investment counseling firm founded by his father in 1911. He became a partner a year later, and remained there until his death at age 82 in 1986. Mr. Villere married Yvette Chequelin, and they raised two sons and a daughter—St. Denis, George, and Mathilde—who gave them 13 grandchildren and 4 great-grandchildren.

Mr. Villere, who was Vice President and served on the Board of Directors of the Historic New Orleans Collection, was an avid New Orleans historian, and the Villere family played a major role in the establishment and growth of New Orleans. His great-great-great-grandfather, Etienne Roy de Villere accompanied Pierre Le Moyne, Sieur d'Iberville, on his first voyage to the Mississippi River in 1699, and his great-great-grandfather, Jacques Philippe Villere, was Louisiana's first native Governor. The Governor's son, after seeing troops approaching from the family plantation in Chalmette, warned General Andrew Jackson in New Orleans that the British were approaching the city.

Mr. Ernest Villere was instrumental in obtaining for the Historic New Orleans Collection the papers of Pierre Clement de Laussat, the French administrator who helped to transfer the Louisiana Territory from France to the United States in 1803. Mr. Villere was also a member of the Society of the Founders of New Orleans, the Society of the War of 1812, and the Society of the Sons of the American Revolution.

Throughout his lifetime, Mr. Villere served on numerous educational and governmental boards and committees, and was very active in the Roman Catholic church. He was the founder and first President of the Financial Analysts of New Orleans; a member of the New York Society of Financial Analysts; a founder and treasurer of Valencia, Inc., a social club for teenagers; a treasurer of the Sierra Club; a founder and director of the Public Affairs Research Council and the Bureau of Governmental Research; a director of the Metropolitan Area Committee, the Information Council of America, and St. Mary's Dominican College; and a trustee of the Holy Name of Jesus Parish.

His philanthropic activities were continually acknowledged, and he received many commendations and awards for service rendered to these various groups, including the *Pro Ecclesia et Pontifice* medal, an award for service to the Church and the Papacy, and the Order of St. Louis IX, King of France, for his work in the Archdiocese. He was the Vice-Chairman of the fund-raising drive for Hôtel Dieu Hospital, a trustee of the Alton Ochsner Medical Foundation and the Libby-Dufour Foundation, and a board member and secretary of the Eye, Ear, Nose, and Throat Hospital. He reigned as Rex, King of Carnival, in 1968. Mr. Villere died on November 1, 1986, at the age of 82.

Yvette Chequelin Villere, a volunteer for numerous charitable organizations, was a lifelong resident of New Orleans. She attended the University of Wisconsin and graduated from Newcomb College in 1928. She studied social work at Tulane University in 1929 and partici-

pated in a summer program at the University of Sorbonne in Paris in 1931. She taught French at the Newcomb Nursery School and the Metairie Park Country Day School from 1930–35. She was a medical volunteer at Touro Infirmary Clinic, a volunteer social worker for the Bureau of Transients and Homeless, a board member and founding member of Valencia, chairwoman of the Women's Division Community Chest in 1942, and a volunteer chairwoman for the Tulane and Newcomb Foreign Students Hospitality organization. She ran the Junior League Thrift Shop in 1934; headed the summer play session for the Junior League Community Center; led the Junior Series for the Junior League, and the Mercy Hospital fund drive; and developed a Cub Scouts organization at Holy Name School, a Junior Girls Scouts (Brownie) organization at Sacred Heart Academy and the Friday night square dances at Holy Name School. Mrs. Villere died on April 23, 1991, at the age of 83.