Now, over fifty years later, Daniel Albert, MD, MS, is the Retina Research Foundation Emmett A. Humble Distinguished Director of the UW Eye Research Institute. His academic career began at Yale, where he served on the faculty for seven years; he then spent seventeen years as professor at Harvard University. In 1992, he was recruited to the University of Wisconsin to serve as chair of the department of Ophthalmology and Visual Sciences, where he continues as professor and chair emeritus.

During that half-century span, Albert became a world expert in cancer and ophthalmology, and has written over 600 peer-reviewed research publications and 25 textbooks. He is the recipient of numerous national awards, including the prestigious Lucien Howe Medal of the American Ophthalmological Society, the Fight for Sight/Mildred Weisenfeld Award for Lifetime Achievement in Vision Research, and the American Academy of Ophthalmology's Distinguished Service Award for his service as editor of the premier journal, Archives of Ophthalmology. Each facet of Albert's career has been shaped by educational experiences and his years of research in the laboratory.

Albert’s research career of nearly 40 years, which has produced significant contributions to the treatment and understanding of eye cancers, and in particular, has spurred his investigations of the use of vitamin D and other natural compounds to reduce tumor size. His many achievements have included participation in the team that first cloned the gene for retinoblastoma, a childhood eye tumor, and—harkening back to his Franklin and Marshall experiences—the development of the first “immortalized” line of retinoblastoma cells which could be grown indefinitely in a dish. Albert was also part of the group that designed the first lab mouse with retinoblastoma. By studying these genetically-modified mice, Albert and his colleagues can simulate the develop-

Daniel M. Albert, MD, MS, reviews and classifies the microscopic changes in tumor cells treated with natural chemotherapeutic compounds.
ment and progression of human disease and can create new treatment methods.

“Our research has found that a type of vitamin D helps to shrink tumors in mice,” says Albert. “Vitamin D also may prevent the spread of the tumor cells in retinoblastoma with a less toxic effect than traditional chemotherapy or radiation treatment.” These results are sufficiently promising that Albert is now initiating clinical studies in children with eye tumors at M.D. Anderson Cancer Center and, bringing his work full circle, at Memorial Sloan-Kettering. As is often the case in science, Albert’s research has implications for other types of cancer. The clinical trials in retinoblastoma are being extended to the treatment of children with neuroblastoma, a devastating tumor prevalent among infants and young children that carries a high mortality in its advanced form.

Vitamin D is a naturally-occurring vitamin, produced by the body and found in foods such as fish, liver, and egg yolks. Albert and Arthur Polans, PhD, Associate Director of the Eye Research Institute and professor of Ophthalmology and Visual Sciences, now collaborate on studies of another natural product for the treatment of an adult eye cancer, uveal melanoma. Albert was the first investigator to generate immortalized melanoma cell lines derived from this type of cancer.

Resveratrol, a non-toxic plant product with chemopreventive and chemotherapeutic potential, holds promise for the inhibition of the growth of melanoma and other cancer cells. Resveratrol is found in the skins of red grapes and in some berries and nuts.

Albert explains, “The addition of resveratrol to tumor cells in culture inhibits their proliferation. In addition to these effects, resveratrol also encourages tumor cell death in animal models of eye and other types of cancer. Our next steps are to learn exactly how the drug works within the cells, and in what ways we can add resveratrol to the treatment options for eye and skin melanoma patients and those with other cancers.”

Critical to this work was funding provided by David Mandelbaum, an attorney and real estate developer in New Jersey, and his brother, Nathan Mandelbaum, also an attorney. Known as the Mandelbaum Cancer Therapeutics Initiative, the project supported the testing of resveratrol derivatives in varying formulations and dosages to learn which might be most effective in therapy. These experiments provide the necessary data to prepare compounds that can then be given to human patients in clinical trials, and eventually, to secure FDA approval for commercial therapeutics.

“The support from the Mandelbaums allowed this project to move ahead much more quickly than otherwise possible,” says Albert. “Funding from the National Institutes of Health doesn’t arrive in an investigator’s account for at least nine months after a grant proposal is submitted. In that amount of time, the Mandelbaum funding allowed us to complete the dose-response testing, studies of the mechanism of drug action, and brought us to the point of deriving a purified compound ready for clinical trials. And every minute we save brings the possibility of a useful treatment closer to delivery to a cancer patient.”

And for Albert—whose career was shaped by his father’s encounter with cancer, reinforced by his early work and educational experiences in the laboratory, and accelerated by funding provided at a critical juncture—seeing his research come to fruition is extraordinarily gratifying. “I’m hopeful that my years of work in the laboratory will make a significant contribution to cancer research and treatment. And I like to think that my father would have been proud of the work he helped to inspire.”