



Tuesday, November 20, 2001

President's Colloquium focuses on the eye

By *Jennifer Charney, OU Staff Writer*

Nearly 6 million Americans suffer vision loss from some form of retinal disease such as macular degeneration, a breakdown of the center portion of the retina that makes central vision, the area in front of a person, possible.

Researchers don't fully understand what causes macular degeneration, and treatment options are limited. That's why Barry Winkler, professor of **Biomedical Sciences** at Oakland's **Eye Research Institute**, dedicates part of his research to understand the devastating disease.

Winkler explained this condition in his Tuesday, Nov. 13 lecture, "Understanding the Contribution of the Retina to Vision," the first President's Colloquium of the 2001-2002 academic year.

"The President's Colloquia are great opportunity to look at the fine work of our faculty," said OU President Gary Russi to the audience of more than 200 Oakland faculty, staff, students and friends of the university.

Jim Cipielewski, associate professor, Department of Reading and Language Arts, and chair of the university research committee, introduced Winkler.

Winkler joined the Oakland faculty in 1971 after attaining a Ph.D. in physiology from the State University of New York School of Medicine in Buffalo. He is the director of the Honors College and an adjunct professor in the Department of Cell Biology and Anatomy at Wayne State University School of Medicine.

"Winkler is an internationally renowned researcher," Cipielewski said. "His career in eye research began in graduate school where he was among one of the first groups of researchers to successfully develop techniques for maintaining the biochemical and electrophysiological activities of superfused mammalian retinas in an artificial environment. This model has served as the foundation of his studies on retinal metabolism and physiology during his many years at Oakland University."

Winkler has been awarded almost \$4 million in external support for research during his career at Oakland from organizations including the prestigious **National Eye Institute** of the National Institutes of Health, William Beaumont Hospital.

Using slides, Winkler lectured on the workings of the eye, the retina and its photoreceptor cells, and macular degeneration.

"As we get older, macular degeneration clearly is going to be the number-one problem facing us," Winkler said. "The central area of the retina, the macula or the fovea, accounts for our ability to have high spatial resolution."

If that part of the retina becomes detached, the patient loses sight of the area right in front of him.

"It's not very pleasant not be able to see faces, read newspapers or drive," Winkler said.

He described a self-test for macular degeneration. When looking at graph paper, the person who does not have macular degeneration sees the lines as straight - up and down and side to side. The lines will look wavy to people who have macular degeneration.

"For anyone over the age of 50, it's a simple test to do once a month," he said. "It does not work as a substitute for going to see an eye doctor, but it will give you a clue about potential problems."

Factors that accelerate macular degeneration are sunlight, high blood pressure and smoking, Winkler said. Genetics also may cause the disease. Another hypothesis is that the process of renewing photoreceptor cells may slow down when people reach their 70s.

Winkler also explained how the retina works, one of his areas of expertise.

The retina's first layer contains photoreceptor or light-absorbing cells, which consist of rods and cones.

"The middle layer of the retina consists of a number of cell types that receive information from the photoreceptors," he said. "The predominant cell type is the bipolar cell in this layer. The third layer of the retina is the ganglion cells, which give rise to long processes that eventually exit the eye, sweeping together to form the optic nerve, which goes to the brain."

The photoreceptor cells are rods and cones, he explained. Rods are primarily responsible for vision in dim light. Cones are responsible for color vision in bright light.

"For light to have any useful effect," he said, "the information contained in it must be translated into energy that is used by our photoreceptor cells and neurons. That energy is electrical energy. When the light is absorbed, that energy is converted to chemical events and then to an electrical signal. The signal must move down to the end of the photoreceptor cell and then affect its neighboring cell. The photoreceptor cell must make contact with the bipolar cell, which must contact with the ganglion cell and send its process to the brain. This is as exquisite a series of connections as you can get."

Marion Mercado of Rochester Hills said the lecture was helpful.

"I'm an RN. I taught nursing students. We dealt a lot with ocular problems with our patients. I wanted to understand the whole process of macular degeneration. I learned a lot from the lecture," she said.

The next President's Colloquium will be Feb. 7, when Jay Meehan, professor, Department of Sociology and Anthropology, will address racial profiling issues. To conclude the 2001-2002 series, Provost and Vice President for Academic Affairs Virinder Moudgil will present breakthroughs in his research on breast cancer. This event will be held in March to coincide with women's history month.

These events are open to the public, but reservations are required. To make a reservation, call (248) 370-4648.

SUMMARY

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