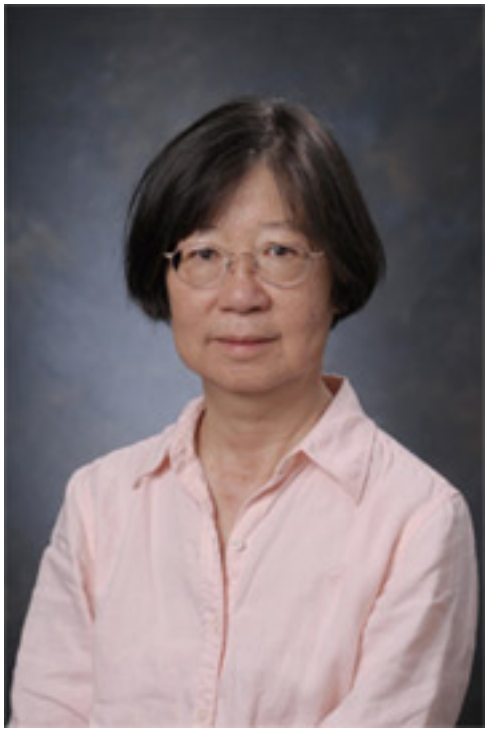
May 4, 2012

Louise T. Chow, Ph.D., professor of Department of Biochemistry and Molecular Genetics at the University of Alabama at Birmingham and senior scientist in the UAB Comprehensive Cancer Center has been elected a foreign associate of the National Academy of Sciences for her excellence in original scientific research. Membership in the NAS is one of the highest honors given to a scientist or engineer in the United States.



Chow's efforts as a pioneering scientist have drawn talented graduate students and junior faculty from across the nation and around the world to UAB to work and study with her. "Our

lab is excited, and I'm very pleased to be recognized by my colleagues and fellow scientists for my contributions to science to which I have dedicated my life," Chow says.

Chow, elected along with 84 new members and 20 other foreign associates, is the only member located in the state of Alabama and only the second elected from UAB. UAB's Max Cooper, M.D., was elected in 1988. There are 2,152 active NAS members. Among the NAS's renowned members are Albert Einstein, Robert Oppenheimer, Thomas Edison, Orville Wright and Alexander Graham Bell. Almost 200 living academy members have won Nobel Prizes.

"This is a singular honor for Dr. Chow's body of work, and all of us at UAB are very proud of her and this international recognition she has received," UAB President Carol Garrison says.

"This recognition has been a long time coming," says Tim Townes, Ph.D., chair of the Department of Biochemistry and Molecular Genetics. "Louise has a lifetime of excellent scientific work. The National Academy could not have elected a more deserving scientist or a better person."

As one of today's pre-eminent leaders in the study of the human papillomaviruses, the virus responsible for cervical cancer, Chow has been working on bacterial, animal and human viruses for more than 43 years.

Chow, who was born in China and came to the United States from Taiwan in 1965, obtained her graduate degree from the California Institute of Technology in Pasadena, Calif. As a post-doctoral fellow at the University of California-San Francisco, she investigated the presence of defective DNA of the monkey tumor virus SV40, beginning her career focusing on DNA tumor viruses.

In 1975, she and her husband, UAB Professor Thomas Broker, joined the Cold Spring Harbor Laboratory in Long Island, N.Y. Initially her work focused on the genetic organization, RNA transcription and DNA replication of human adenoviruses, which cause rather common respiratory and GI tract infections. While using an electron microscope to examine the structures of viral mRNA in a complex with the viral DNA, a relatively new method at the time, they and their colleagues determined the coordinates of all the early and late adenovirus mRNAs. In the course of this work, in 1977, she and her collaborators discovered the totally unexpected phenomenon of split genes and RNA splicing. This work became the foundation for understanding the human and the other eukaryotic genomes, the origin of most of their encoded proteins and the cause of many different genetic diseases.

“I remember being a graduate student in 1977 and reading Louise’s work. She had the cover of *Cell*. She was the first person to see RNA spliced,” Townes says. “A lot of her peers think she should have shared in the Nobel Prize for RNA splicing.”

Chow joined the University of Rochester in 1984 where the team concentrated on distinguishing the growing number of human papillomavirus genotypes and the spliced structures of their mRNAs. These viruses cause laryngeal papillomas, genital warts, cervical dysplasias and genital cancers as well as a significant fraction of head and neck cancers in

women and men. The team developed approaches to determine the patterns of HPV RNA expression and DNA amplification in the spectrum of patient lesions; from this they invented a novel strategy for detection of HPV in patient cells and tissues that has become a global standard for molecular diagnosis.

Chow and Broker joined UAB in 1993 and continued their work in understanding the pathobiology of the human papillomavirus. Culminating more than 25 years of research, at UAB she and her team developed a process to produce abundant infectious HPV-18, one of the dominant HPV types that causes cancers. The new method allowed researchers to reproduce the entire infection cycle of HPV-18. This discovery has further paved the way to study HPV pathobiology and to advance genetic analysis. Currently, their lab is investigating virus-host interaction, which is crucial for identifying potential therapeutic agents to treat benign infections prior to progression to cancers.

“Louise is a very valuable member of our department and a real feather in UAB’s cap,” Townes says. “She mentors faculty, teaches students and post-docs and works tirelessly.”

Ray Watts, M.D., dean of the UAB School of Medicine, says, “Dr. Chow is a preeminent scholar. Her contributions to science and medicine are vast; they touch the lives of millions of people around the world. We are indeed fortunate to have Dr. Chow and her husband and collaborator Dr. Tom Broker, at UAB.”

“Dr. Chow has made numerous influential discoveries in the replication of HPV and its carcinogenesis, and this is a well-deserved honor recognizing her significant contributions to the knowledge and understanding of HPV,” says Edward Partridge, M.D., director of the UAB Comprehensive Cancer Center. “Having this world-class scholar in our midst is a source of tremendous pride for the entire community, and we are thrilled that Dr. Chow’s work has been recognized with this rare honor.”