

## NOTABLE CANCER CENTER MEMBER

Richard Longnecker, PhD



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An academic scientist's success is measured not only by his own accomplishments, but also "by what those he's trained have gone on to do," says Richard Longnecker, PhD. Longnecker, John Edward Porter Professor of Biomedical Research and past Director of the Integrated Graduate Program at Northwestern University's Feinberg School of Medicine and Director of the Viral Oncogenesis Basic Science Program at the Robert H. Lurie Comprehensive Cancer Center of Northwestern University, says training new scientists and mentoring them in their careers has been one of the most rewarding aspects of his work.

Longnecker's own career path began at the University of Michigan in Ann Arbor where he earned a bachelor's degree in cellular and molecular biology with honors in 1982, but he credits his mother, Jo, in encouraging him in his early "scientific experiments." At Michigan, he worked on the yeast cell cycle and was mentored by Professor John Pringle. It was at Michigan that Longnecker got interested in the regulation of cell growth and its relationship to cancer. Longnecker then went on to perform graduate work at the University of Chicago with Dr. Bernard Roizman working on Herpes Simplex Virus (HSV), taking a brief hiatus from cancer research, and earned his PhD in virology in 1987. His post-doctorate work (from 1988 to 1993) was performed at Harvard under yet another mentor, Dr. Elliott Keiff. At Harvard, Longnecker worked on Epstein-Barr virus, the first human virus associated with cancer. Thus, he was able to combine his love of virology with that of oncology. Longnecker credits his

early mentors with making him a better scientist and guiding him in his career.

Since joining Northwestern in 1993, Longnecker's primary research focus has been on the Epstein-Barr virus (EBV), which is associated with a variety of human cancers such as Burkitt's Lymphoma, Hodgkin's Lymphoma, and nasopharyngeal carcinoma. Research in the Longnecker laboratory focuses on several aspects of EBV pathogenesis. First, his laboratory is interested in the cancer association. Specifically, research is being conducted to understand the molecular basis of the ability of EBV to be an important part in the transition of a normal cell into a cancer cell.

Second, the laboratory is interested in understanding the ability of the virus to persist and remain latent in the human host. In this regard, the laboratory is developing animal models for EBV latent infections. These studies will be important in understanding the unique ability of EBV to remain latent in the human host and the disease syndromes associated with these latent infections. EBV, like all herpes viruses, is able to establish lifelong infections usually associated with this disease.

Finally, the Longnecker laboratory is investigating viral entry, assembly, and cellular genes that are required for viral entry. Overall, Longnecker hopes his studies will provide insight for the development of novel therapeutics for the treatment of EBV-related malignancies, an understanding of the virus life cycle, and an understanding of signal transduction and cell growth regulation in lymphocytes. Work on these fundamental aspects of EBV biology in his laboratory is supported by multiple NIH grants from both the National Cancer Institute (NCI) and the National Institute of Allergy and Infectious Disease (NIAD).

Dr. Longnecker also heads a research project to develop novel therapeutics for EBV-associated cancers, for which he recently won a NCI grant. Longnecker is working with Lurie Cancer Center members, Drs. Leo Gordon and Andrew Evens, to find treatments for a variety of hematopoietic cancers associated with EBV, such as EBV-associated Hodgkin's lymphoma and B cell proliferative disorders associated with HIV infection or immune suppression.

While Longnecker clearly loves delving into the how's and why's of basic science, he appreciates the opportunity his work with the Lurie Cancer Center has provided him to apply scientific

discoveries to clinical practice and make a contribution to patient care. "It's gratifying to be able to extend scientific understanding to therapies that may directly benefit others," he says.

When he's not researching or teaching, Longnecker likes to spend time with his family. He and his wife, Megan McNerney, an MD-PhD, in the Department of Pathology at the University of Chicago, have a 12 month-old daughter, Elizabeth. While Longnecker says he used to spend his free time sailing, fishing, or playing tennis and golf, since Elizabeth arrived, he prefers spending time with her and his wife. "My daughter is my hobby now," he says.

In addition to the accomplishments noted above, some of Longnecker's other achievements include being a Regents Alumni Scholar at the University of Michigan; a Fellow, Special Fellow, and Scholar of the Leukemia Society of America; and an editorial board member for several journals including the *Journal of Virology*. He has served on multiple advisory committees, including those that review private foundation grants, as well as numerous NIH grant review committees. Despite his many personal accomplishments, however, Longnecker says it is his students' success that he is most proud of.

"My students and post-docs have done everything," he says. "Some are academic scientists, some work in the pharmaceutical industry, one runs a venture capital fund for biotechs, and others are actively involved in teaching at the high school and college levels getting young people excited about science." Longnecker emphasizes that careers in academia are no longer the only successful outcome for those pursuing a scientific occupation. "For one thing, there probably aren't enough positions for everyone," he says. "But, as long as they are using the skills they've gathered while working in the lab, there's a wide range of successful outcomes for them."

Though his student days are behind him, Longnecker says he is still learning, and still benefiting from mentors like Drs. Steve Rosen and Pat Spear at Northwestern. "Becoming a successful scientist requires nurturing throughout one's career," he says. "Whether it's helping you think about a question in a new way, working with you to finish a paper, or someone like Steve Rosen pointing you in the direction of new research opportunities. Mentorship means being a little bit of everything, even being just a friend."