

UI HEMATOLOGY/ONCOLOGY

Connections

News from the University of Iowa Hematology/Oncology Fellowship Program

Fall 2019

Former Iowa Fellow Follows the Genes to a Rewarding Career

It can be said that one's genes pave the way in life. Michael Lenardo, MD, followed a molecular path from high school onward that landed him at the pinnacle of biomedical research – the National Institutes of Health, where he is director of the Clinical Genomics Program and chief of the Molecular Development of the Immune System Section. Dr. Lenardo was elected in May to the National Academy of Sciences, one of the highest honors accorded a scientist in the United States.

As a high school student in the 1970s, Lenardo did a senior project at a hospital that had a unit for chromosome analysis in babies. He was fascinated to learn that missing a part of a chromosome or having an extra chromosome could dramatically affect a person's health. He then pursued genetics research as an undergraduate at Johns Hopkins University. There he worked in a laboratory within the Department of Medical Genetics at the medical school. "I had exposure to the many effects of genetics on health, but at that time we didn't have much insight into the molecular causes," he said. He continued his research at medical school at Washington University - St. Louis, where there was a great emphasis on science, and was introduced to molecular biology through virus research.

After graduating, he married a medical school classmate, Lesley Furlong. The pair sought an institution favorable for couples to match for residency – she in OB-GYN, he in internal medicine. Iowa was a good fit. However, while they both came to Iowa in 1981 for clinical training, fate once again pushed Lenardo in a different direction. During his internship, he learned about an open training slot for research in oncology. He earned the slot and was fast tracked into fellowship, leading him to spend one day a week in the clinic and the remainder in the laboratory.



Michael Lenardo, MD

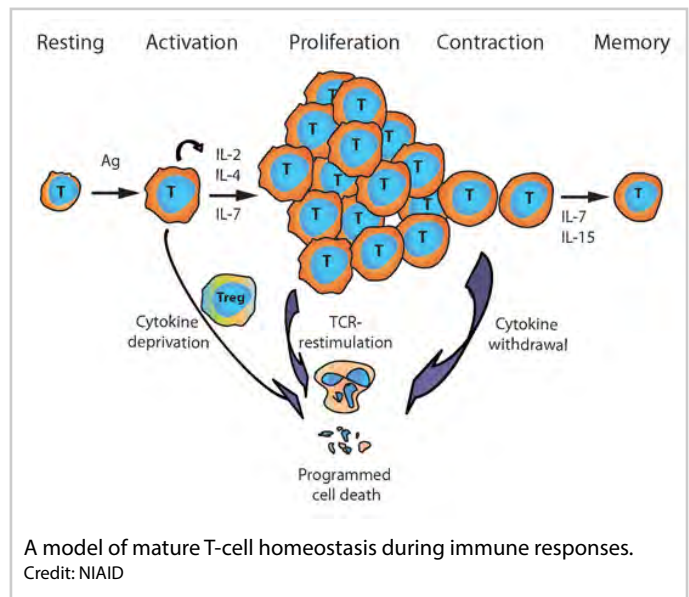
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“At the time I wanted to learn molecular biology, which I foresaw would have a huge impact on genetics and medical research,” Lenardo said. It was a professor in the Biochemistry Department, John Donelson, who had studied under Frederick Sanger at the University of Cambridge and participated in the development of the technique for sequencing DNA, who gave him the chance. In Donelson’s lab, Lenardo carried out laboratory work in molecular biology. “One of the amazing things about that fellowship was the cooperation and coordination between the different departments at Iowa. Here I was a clinical fellow but I worked in the Biochemistry Department at the same time,” Lenardo said.

Building on his previous experiences, his interests took his research to the molecular level and he learned how to manipulate and sequence DNA. Rather than just look at a whole chromosome, he could now analyze individual gene sequences. “It gave me a much more powerful approach to do medical science,” he said. “From that point onward, it was pretty clear in my mind that I wanted to be involved in medical research rather than be a clinician.” This led to a search for a biomedical area of research where he could apply his knowledge of molecular biology.

With the foundation he received at Iowa, he decided to pursue additional training in immunology. He accepted a postdoctoral position from Dr. David Baltimore, a Nobel laureate who was working at the Massachusetts Institute of Technology. Baltimore had newly formed the Whitehead Institute for Biomedical Research. “He was looking for people like me who came from a medical background, had experience in molecular biology, and wanted to tackle important problems. In particular, we were trying to understand how genes are regulated in different blood cells.” They focused mainly on lymphocytes in the immune system. They identified several factors that bind to DNA and developed a good molecular understanding of how they worked. This was a highly successful training experience in molecular studies of the immune system and it led to an independent principal investigator position at NIH.

On the Bethesda campus of NIH, Lenardo formed a laboratory that studies children with hematological and oncological problems revolving mainly around



the immune system. They tackle undefined diseases by attempting to decipher the causative gene abnormalities and understand the molecular pathogenesis of the disease. “The really exciting thing about that is that when you define the diseases molecularly, it allows you, in a surprising number of cases, to actually intervene and do something new for the patient that no one would have thought of doing before you made that discovery, he said. “In some cases it’s tantamount to a cure.”

He continued, “By studying rare diseases, our hope is that these kinds of genetic explorations could give new insights into treating more common, complex diseases in the future, yielding new therapies that people wouldn’t have expected to be effective.”

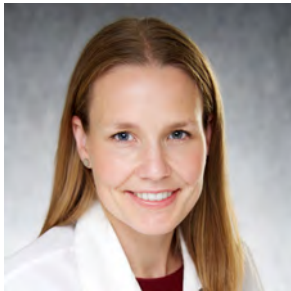
Lenardo suggests that any current fellows interested in research should strive to get the best basic science background they can and become experienced at the lab bench. Over the years, he has found research to be an enjoyable and rewarding way to pursue a medical career.

Dr. Lenardo expresses enormous gratitude to the University of Iowa, and especially the Division of Hematology-Oncology “for giving me a really fabulous opportunity at what was a very formative stage in my life. It helped launch my career and gave me really strong, enthusiastic support. I will always be enormously grateful for that opportunity.”

New Fellows



Adithya Chennamadhavuni, MBBS
 Medical School: Osmania Medical College
 Residency: Gunderson Health System



Gudbjorg Jonsdottir, MD
 Medical School: University of Iceland Faculty of Medicine
 Residency: University of Iowa



Jennifer Keiser, MD
 Medical School: University of Illinois College of Medicine
 Residency: University of Illinois at Chicago



Travis Snyders, MD
 Medical School: University of Iowa
 Residency: University of Iowa

Departing Fellows



Najla Itani, MD
 Conway Medical Center
 Myrtle Beach, South Carolina



Muhammad Saqlain, MD
 Beacon Medical Group, Oncology
 Elkhart, Indiana



Umang Swami, MBBS
 Huntsman Cancer Institute,
 University of Utah



Will Zeitler, MD
 University of Iowa Hospitals and Clinics

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