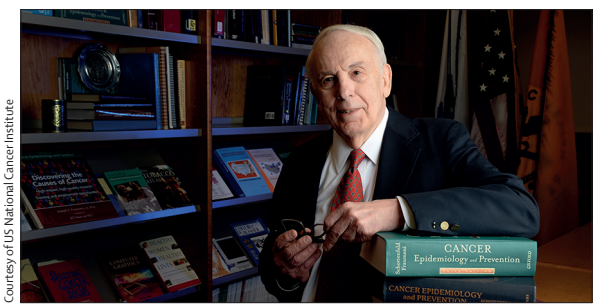

Courtesy of US National Cancer Institute

Joseph F Fraumeni, Jr

Pioneer of molecular epidemiology and long-serving Director of the Division of Cancer Epidemiology and Genetics at the US National Cancer Institute. Born in Boston, MA, USA, on April 1, 1933, he died in McLean, VA, USA, on June 22, 2026, aged 93 years.

In 1969, with colleague Frederick P Li, Joseph Fraumeni described an unusual clustering of cancers in four families. Each had two children with soft-tissue sarcoma and other young adults with various cancers. At the time, understanding of inherited risk was limited to cancers of a particular organ or type. "The brilliance of it was in recognising clusters of multiple different cancers among these families", said Stephen J Chanock, Director of the Division of Cancer Epidemiology and Genetics (DCEG) at the US National Cancer Institute (NCI) in Bethesda, MD, USA.

This discovery came to be known as Li-Fraumeni syndrome (LFS) and, years later, was found to be caused by rare variants of tumour suppressor gene *TP53*. But the 1969 account predated modern genetics and relied on careful clinical observation and meticulous classification. These hallmarks of Fraumeni's approach were combined with the far-sightedness that prompted the collection of biological samples from family members. Fraumeni "had true vision. He really was one of the founders of molecular epidemiology. He saw that technologies were going to emerge that would permit us to ask questions that hadn't been thought of when the biospecimens were collected", said Chanock.

LFS was only one strand of Fraumeni's long career at the NCI. In the 1970s, he worked on county-by-county, colour-coded maps of the USA that revealed hot spots of cancer deaths and helped to, for example, link lung cancer to asbestos exposure. The maps developed into the *US Atlas of Cancer Mortality* and led to policy changes to protect people from environmental pollutants such as asbestos and arsenic. Intriguingly, Fraumeni considered cancer to be "100% genetic and 100% environmental", Chanock said, and at DCEG he emphasised collaboration between scientific specialties. Crucially, "he foresaw that epidemiology was not only about accurate collection of information on lifestyle and environmental exposures, but that these data could be merged with genetic data to evaluate risk. He was among the first to recognise the importance of studying genetic–environmental interactions and is rightfully considered a pioneer of modern cancer epidemiology techniques", said Margaret Spitz, Founding Chair of the Department of Epidemiology at MD Anderson Cancer Centre and Professor Emeritus at the Department of Medicine, Baylor College of Medicine, TX.

Fraumeni took his first degree from Harvard College, MA, and graduated in medicine from Duke University, NC, in 1958. After residencies at Johns Hopkins Hospital, MD, and Memorial Sloan-Kettering Cancer Center, NY, he joined the NCI in 1962, and worked there for 50 years. He established himself in the Epidemiology Branch and, in 1995, became Founding Director of the DCEG, remaining in post until he was in his late 70s. Fraumeni stepped down as Director in 2012 but continued to work as a Senior Investigator and was granted Scientist Emeritus status on his full retirement in 2017. Alongside his NCI roles, Fraumeni was Rear Admiral of the US Public Health Service, and Assistant Surgeon General until 1999. An author on hundreds of papers, Fraumeni co-edited the first three editions of the influential textbook *Cancer Epidemiology and Prevention*.

Otis Brawley, Bloomberg Distinguished Professor of Oncology and Epidemiology at Johns Hopkins University, Baltimore, MD, said Fraumeni's influence will continue through the many students he trained: "Before Joe, epidemiology was White and male. He brought diverse groups of people into the field, and many are leaders in epidemiology today." Brawley added that Fraumeni "taught us to be orthodox to the science, and not stray too far from a conservative interpretation". Thoughtful, yet scientifically demanding, Fraumeni "would always tell you to read more and think about the long game", said Chanock. Spitz also recalls a great mentor: "Joe was kind and understanding and he created a nurturing environment. Successful leadership depends on your willingness to help your people achieve the most they can without taking credit for yourself. Joe always did this." Fraumeni was "truly a gentle giant who commanded tremendous respect. I never heard him raise his voice. He had no real ego and would not talk people down, he would just listen and then quietly explain", said Chanock.

Patricia D'Arcy, Fraumeni's wife of 48 years, died earlier this year. Fraumeni is survived by brother Arthur, and nieces and nephews. Niece Holly Fraumeni, Vice President and Chief Executive Assistant to the President of patient advocacy group, the LFS Association, said he attended its medical board meetings up to 2024: "He had a great sense of humour, a wonderful and warm demeanour, he was level-headed and witty. His questions were full of wisdom, and when he spoke, people listened."

Helen Saul