Life Devoted to Viruses and Interferon: Charles Chany (1920–2013)

Pierre Lebon¹ and Paula M. Pitha-Rowe²

CHARLES CHANY, WHO PASSED AWAY this April, had a passion for biology and devoted most of his life to its study. While the beginning of his scientific career focused primarily on viral detection and identification, his interest later was in the analysis of virus pathogenicity and virus–host interactions. He was one of the pioneers in this field in France, since he started his studies before cell culture techniques and molecular approaches were fully developed.

Charles was born in 1920 in Budapest, and after he received his baccalaureate, he wished to continue his studies in medicine. However, in Hungary in 1938, the admission of Jews to graduate schools was very limited, and thus he was unable to enter the faculty of medicine. Then came the Second World War, which was a very difficult time for young Charles. His mother disappeared to an unknown German labor camp, and Charles was deported to a labor camp in the copper mines in Bor, Yugoslavia. Near the end of the war, in 1944, Charles walked with the other prisoners (900 km) to the Buchenwald camp, and was one of few who survived this journey (Charles described all these events in a book titled *From the Steps of Death to the Life Sciences*). After the liberation of the camp by the American troops, in 1945, he was taken by the Red Cross to France, where he chose to stay for the rest of his life, and he became a proud Frenchman.

Charles went to medical school in Paris, and after finishing his education, he chose to study viruses. He was a trainee at the Institut Pasteur in the laboratory of Professor Pierre Lépigne, and at the same time, he was associated with the Department of Pediatrics in the hospital St. Vincent de Paul. This allowed him to create a fertile interface between research and clinic. He was the first person to isolate the adenovirus in France in 1955–1956. He then spent a year in the laboratory of Dr. Wallace Rowe (discover of the adenovirus) at the National Institute of Health (NIH) in Bethesda, Maryland.

After his return to France, he started his own laboratory at the hospital St. Vincent de Paul, which first served as a diagnostic laboratory. Here, Charles isolated the first parainfluenza 3 virus in France (at about the same time as Dr. Chanock at NIH). He and his collaborators also described the first epidemics of syncytial respiratory virus and adenovirus in France. In his thesis of medicine, he described for the first time the pulmonary lesions caused by adenovirus infection.

His studies on the auto interference of the parainfluenza 3 virus¹ drew his attention to the possible role of interferon

(IFN) in viral infection. Later, his work mainly focused on IFN. Together with Ion Gresser, Jacqueline and Edward de Maeyer, and Rebecca and Ernesto Falcoff, they were the leaders in the IFN field in France. Charles was very involved in the Interferon Society, which was formed at about this time. He organized a very successful IFN meeting in Portugal in 1973. He regularly attended the yearly meetings of the Interferon Society, always excited to present recent results from his laboratory.

His research group was later changed to a research unit—Inserm—where he assembled a group of very gifted students, fellows, and investigators who focused on different aspects in the IFN field. Among other findings, they showed an inhibitory effect of IFN on the oncogenic properties of the polyomavirus² and the IFN-induced phenotypical reversion of Moloney sarcoma virus (MSV) transformed cells. A significant contribution to the IFN field was the development and use of human–mouse hybrid cells.³ Using these hybrid cells, Charles together with J. de Grouchy located the human type I IFN genes to chromosome 9.⁴ Another interesting finding was the existence of spontaneous IFN production in the placenta during pregnancy.⁵ This observation was confirmed recently by the discovery of expression of IFN ϵ in mouse placenta.

One of Charles' major goals was the possible clinical application of IFN. With the assistance of the Institut Pasteur in 1980, his group produced IFNs from leukocytes for therapeutic testing. Treatments for measles encephalitis SSPE, multiple sclerosis, and cancers were initiated. However, these treatments were short term; the levels of IFN used were low, and thus the IFN treatment did not show any significant effects in these studies.

Charles did, however, make a significant clinical contribution outside the IFN field. Together with the team of Pierre Tiollais, who had cloned the genome of the hepatitis B virus (HBV), they express the S antigen of HBV *in vitro*.⁶ This work led to the development of the current HBV vaccine.

¹Hôpital Cochin-Saint Vincent de Paul, Assistance-Publique-Hôpitaux de Paris (AP-HP), Paris, France.

²The Johns Hopkins University School of Medicine—Oncology Center, Baltimore, Maryland.

After his retirement, Charles donated his royalties from the HBV vaccine patent to the University of Paris 5 and installed his laboratory there. Here, he and his wife Françoise Chany Fournier continued to study the natural inhibitors able to regulate the IFN action *in vivo*.⁷⁻⁹ Here, Charles was a leader in the field, since the inhibition of the detrimental effects of IFN in autoimmune disease and inflammation is presently a priority.

Thus collectively, while Charles' initial work contributed to the development of medical virology, he later made seminal contributions to the IFN field. The laboratory that he created at the hospital St. Vincent de Paul continues to function now at the Cochin hospital. In addition to his hospital work and his research, Charles also conveyed his interest in the IFN field to several generations of medical students and the great number of graduate students he trained. His talks on IFN always raised many questions from the audience. I (P.L.) had the privilege of taking one of his lectures given within the framework of "the great" course series in the Pasteur Institute. His enthusiasm for research and his willingness to share his time with students encouraged me to work with him for more than 20 years. He leaves us with the memory of an impassioned researcher, kind teacher, and generous man.

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