Eulogy for Professor Victor Nussenzweig

(São Paulo, 11 February 1928 – 11 August 2025)

Today, the scientific world bids farewell to Professor Victor Nussenzweig — a man whose intellect, intuition, and humanity shaped the course of modern parasitology and inspired generations of scientists.

Born in São Paulo in 1928, Victor's journey was defined by relentless curiosity and a deep conviction that science should serve humanity. His early scientific steps were taken at the University of São Paulo, under the guidance of Samuel Pessoa. But the military dictatorship in Brazil forced Victor and his beloved wife Ruth into exile — a painful departure that would eventually bring them to New York University, after a brief time in Paris, thanks to an invitation from Nobel laureate Baruj Benacerraf.

At NYU, Victor's career blossomed. In the early 1970s, in partnership with Celso Bianco, he made the groundbreaking discovery that B lymphocytes express complement receptors (C3), a finding that opened new avenues in immunology. His laboratory became a global reference in the biochemistry of proteases and in unraveling the complex mechanisms of complement activation and regulation — distinguishing the classical from the alternative pathways and characterizing membrane-bound regulatory proteins that protect the body's own cells from immune attack.

Victor's scientific curiosity brought him back to his roots in the mid-1980s, when he began studying the invasion mechanisms of *Trypanosoma cruzi*, the parasite that causes Chagas disease, exploring the parasite's remarkable survival strategies — mysteries that, as he liked to joke, *T. cruzi* was in no hurry to fully reveal.

At that time, Victor was already deeply involved in a collaboration with Ruth on her bold malaria vaccine project. At a time when many doubted its feasibility, Victor implemented at NYU the monoclonal antibody technology, producing protective antibodies that confirmed the antigenic target – the circumsporozoite protein (CSP) of the malaria parasite. This work was fundamental, laying the groundwork for two malaria vaccines that are being successfully implemented in Africa. Of enormous importance, data accumulated over the past few years with the pioneering RTS,S vaccine revealed a significant reduction in malaria deaths among children on the African continent, in areas where these vaccines are being introduced. In addition to these, a new vaccine, also based on the CSP, developed against the most prevalent *Plasmodium* species in Asia and the Americas, is moving towards human trials in Brazil.

Yet Victor's legacy extends far beyond his scientific achievements. He was contagious in his enthusiasm, injecting into the veins of his students and colleagues an unshakable passion for science. Every day in his lab was an invitation to imagine, to question, to await the outcome of

“the next experiment” with childlike anticipation. He mentored with rigor and warmth, leaving his mark on over a hundred young researchers across the globe.

Victor never sought fame, though his name is now etched in the history of global health. His integrity, humility, and generosity of spirit were as remarkable as his intellect. He leaves behind not just a body of transformative scientific work but a living legacy in the people he inspired and in the lives improved — and saved — through his research.

Rest in peace, Professor Nussenzweig. Your light will endure in the science you shaped, the ideals you upheld, and the hope you gave to millions.

By Julio Scharfstein

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