IN MEMORIAM

Salvador Edward Luria

(1912–1991)

The movement towards the unification of modern biology, which came to be known as molecular biology, began in the early forties. At the heart of this movement was the realization that the nature of the gene and of gene action is the central problem of all biology. Microbial genetics, in particular the genetics of enteric bacteria and their viruses, called bacteriophage or simple phage, became the vehicle of a great intellectual revolution which led to the confluence of genetics and biochemistry. The phage group in the US, whose founders Salvador Luria, Max Delbrück and Alfred Hershey shared the Nobel prize for physiology or medicine in 1969, played a crucial role in the evolution of molecular biology. Luria died on 6 February 1991.

Salva Luria was born in a middle-class Jewish family of Turin in 1912. His father,
David Luria, managed a printing business. At the high school in Turin, Luria was influenced by the anti-Fascist and socialist inclinations of his teachers, who included the Marxist philosopher Antonio Gramsci and the liberal socialist and novelist Augusto Monti. From his teachers Luria acquired a liking for the academic life and a preference for intellectual pursuits over economic pursuits. His close friendship with Ugo Fano, who later became a professor of physics at Chicago, inculcated in Luria a liking for mathematics and physics. Fano introduced Luria to the exciting new ideas of Bohr, Heisenberg, Schrödinger and Fermi.

Luria joined the medical school at the University of Turin and graduated in 1935 with high honours. He was not inclined to practise medicine and was attracted by research. He tried radiology in the hope that it would bring him closer to biophysics but 'radiotherapy and diagnostic radiology turned out to be the dullest of subjects'. Finally, at the suggestion of his friend Ugo Fano, Luria transferred to Rome, where Fermi and his colleagues were active. Luria came to know Franco Rasetti and Eduardo Amaldi. The year in Rome among physicists was a critical point in Luria's career. It taught him to 'think a bit in the way the physicists do'. Rasetti introduced Luria to radiation biology and gave him a set of papers by the German physicist Max Delbrück. In these papers Delbrück had explored the question of the gene as a molecule. The seeds of the seminal collaboration that was to follow a few years later were thus sown in Rome. In the meanwhile, Luria met the bacteriologist Geo Rita. Rita introduced Luria to the world of bacteriophage, how to grow these invisible particles and how to enumerate them by counting plaques. Luria was greatly excited, for bacteriophages seemed to be objects with which one could do precise and quantitative experiments. Who knows, Luria wondered, these tiny objects could open the way to the holy grail of genetics that Delbrück was pursuing. The bacteriophage, the gene and Delbrück thus came together in Luria's mind by a remarkable coincidence of circumstances. Independently Delbrück had arrived at the same idea and was working at Caltech with phages.

In July of 1938 Luria received a fellowship from the Italian government to study radiation biology at Berkeley in the US. He immediately decided to change his plans and go to Pasadena to work with Delbrück. That, however, was not yet to be. On the 18th of July, Mussolini issued his 'racial manifesto', aligning Italy with Fascist Germany and excluding Jews from the 'pure Italian race'. Luria lost his fellowship and left Rome for Paris, where he worked for a short period with Fernand Holweck, an expert in high-vacuum physics and radiation biology. When the German armies entered France, Luria managed to escape on a bicycle 'just ahead of the Germans'. In September 1941 he landed in New York.

On Enrico Fermi's laconic recommendation 'I believe he will make good use of whatever help you may give him', Luria received a fellowship from the Rockefeller Foundation and joined a biophysics laboratory in the College of Physicians and Surgeons at Columbia University. In December 1940 Luria finally met Delbrück. They made plans for experiments, which began almost immediately, in January 1941, at Columbia and were continued the following summer at Cold Spring Harbor. During 1942 Luria joined Delbrück at Vanderbilt University where Delbrück was now teaching physics. In 1943 Luria was appointed to Indiana University, where he carried out his most significant piece of work, which appeared as the famous Luria–Delbrück paper of 1943.