



Piotr Slonimski  
Photo provided by Joel Prince.

**P**IOTR Slonimski, one of the forebears of yeast molecular genetics, died in Paris, France April 25, 2009. He was 86 years old. His exceptional personality and scientific contributions made him so well known among the international genetic community that his first name, Piotr, was usually sufficient to identify him in conversation. During the early 1970s, Slonimski was one of the principal founders of mitochondrial genetics, and for many years had a considerable impact on this field of research. In the last two decades, he became a prominent advocate for genomics and published original work in this field until just two months before his death. To those who believe that efficiency in science necessitates carefully planned projects, a hierarchical organization, and clear, short-term objectives, the successful career of Slonimski illustrates the opposite. His continuous scientific activity over 62 years demonstrates that intellectual curiosity, imagination, intuition, and an unconventional touch combine to form recipes for discoveries, if applied with scientific rigor and tenacity. His major legacy to the many students he has trained is to concentrate on unexpected results and, when faced with the choice between a plausible hypothesis and a more original one, to always favor the latter.

Slonimski was born in Warsaw, Poland on November 9, 1922. He studied medicine in clandestinity during the Second World War and, according to his own accounts, discovered genetics by accident when, engaged in an act of sabotage of the Polish inner army, he found a German book among the ruins of a police station. The book briefly mentioned the recent transplantation experiments performed on *Drosophila* larvae by the American scientist George Beadle and the Russian-born French scientist Boris Ephrussi. Their results indicated how genes, whose molecular nature was unknown at the time, determine the phenotype of the transplanted eyes through a combination of intermediate substances, yet

## In Memoriam

### Piotr Slonimski (1922–2009)

#### The Unconventional Yeast Geneticist

also of unknown nature. In 1947, having obtained his medical doctorate from the University Jagellone in Krakow, Poland, Slonimski arrived in Paris and knocked at the door of the laboratory of Boris Ephrussi at the Institut de Biologie Physico-Chimique. Soon afterward, he embarked on the study of the nature and the role of genes.

This laboratory had just discovered the *petite* mutants of the yeast *Saccharomyces cerevisiae*. Those mutants were unconventional in many aspects. They did not follow the Mendelian rules of inheritance of nuclear genes that were, by then, solidly established. Instead, the *petite* mutants suggested the existence of a novel source of inheritance, located in the cytoplasm. With the help of a fellowship from Centre National de la Recherche Scientifique (CNRS), Piotr Slonimski demonstrated that this novel source of inheritance was necessary for the formation of respiratory enzymes and obtained his Ph.D. in 1952. “*Cytoplasmic inheritance*,” as it was then called in genetics textbooks, was in fact a conglomerate of very different phenomena, as we now know. But at the time, as Boris Ephrussi once joked, there were two kinds of inheritance: *nuclear* inheritance and *unclear* inheritance. Piotr Slonimski naturally opted to study the second one. And so, a few years later, mitochondrial genetics was born.

By that time, DNA was identified as the genetic material, and in the 1950s CNRS decided to group the French laboratories of genetics in modern buildings constructed on the woody slopes of the Vallée de Chevreuse in Gif-sur-Yvette, southwest of Paris. The discovery by Slonimski and his collaborators’ discovery that *petite* mutants resulted from extensive alteration of their mitochondrial DNA opened the route to the study of this novel genome. A few years later, as research accelerated, CNRS built the Centre de Génétique Moléculaire in Gif-sur-Yvette, a larger and more modern research facility that Piotr Slonimski directed from 1971 to 1991. With

new mitochondrial mutants, conferring resistance to various inhibitors of mitochondrial functions, the first rules of inheritance and recombination of mitochondrial genes were established—thanks to the clear-cut operational methods that Piotr Slonimski set up for this emerging field bound to offer us many subsequent surprises. With these methods, hundreds of novel respiratory-deficient mutants (called *mit<sup>-</sup>*) clarified the genetic content of the yeast mitochondrial genome, but reserved novel surprises. With the help of his collaborators and the numerous foreign visitors that came to the laboratory, Slonimski disentangled the complex regulatory relationship between major mitochondrial genes and discovered their mosaic organization, solely by genetic methods, before introns were discovered. This led him to the concept of “*maturase*” when molecular methods showed the protein-coding capacity of some mitochondrial introns. Other surprises emerged from these introns, and we now know much more about them. But the originality of Slonimski’s work and the impact it had on the scientific community in 1985 found him being awarded the CNRS gold medal, the highest scientific distinction in France, for his elucidation of the genetic content and mode of organization and function of the yeast mitochondrial genome.

Piotr Slonimski played an immense role in the development of genetics. In 1966, along with Madeleine Gans, also a professor at the University Pierre and Marie Curie, Paris, he created a popular graduate course, and subsequently trained several generations of geneticists in France and abroad. Slonimski was a founding member of the International Conference on Yeast Genetics and Molecular Biology, and for several years he was president (also called “the Pope”) of its international committee. During the past half century, hundreds of participants from all parts of the world have gathered in different locations to build a strong and collaborative scientific community that has played a crucial role in the development of yeast as a major model organism in biology.

In the late 1980s, Slonimski’s influence contributed to André Goffeau’s efforts in convincing the European

Commission to sequence the yeast genome, making *S. cerevisiae* the first completely sequenced eukaryote in 1996. Slonimski enthusiastically participated in this large international project and, although more senior than almost all the other participants, was often the more future-oriented one. He was the most impatient to discover the function of so many novel genes discovered for the first time. Meanwhile, he was also involved in supporting the development of genomics in France. When others often saw genomics only as a tool for rapid applications, he clearly understood its fundamental impact and long-term consequences for all biological fields. Over the last 15 years, he analyzed the genome sequences of various organisms, trying to identify what he called “genomic laws,” *i.e.*, intrinsic properties of genomes and sequences revealing functional and evolutionary forces not yet understood.

For his scientific achievements, Slonimski was well noted both in France and abroad. He was a member of the French Academy of Sciences, the Academia Europaea, the International Academy of Science, the European Molecular Biology Organization, and an associate of scientific academies in Poland, Belgium, and Bavaria. He was a *doctor honoris causa* from the universities of Louvain-la-Neuve, Warsaw, and Wrocław. In addition to his scientific career, he was also a patriot and a great believer and defender of democracy. Forced to emigrate out of Poland after the war, he became a true French citizen and helped restore democracy in Poland as a cofounder and president of the French-Polish *Solidarnosc* association. In recognition of his exceptional role, the president of the Polish Republic designated Slonimski a great officer of the Polonia Restituta Order, comparing him to Frederic Chopin, “Polish by heart and citizen of the world by talent.” The genetics community of the world has lost a true artist of science and one of its greatest and most original personalities.

BERNARD DUJON