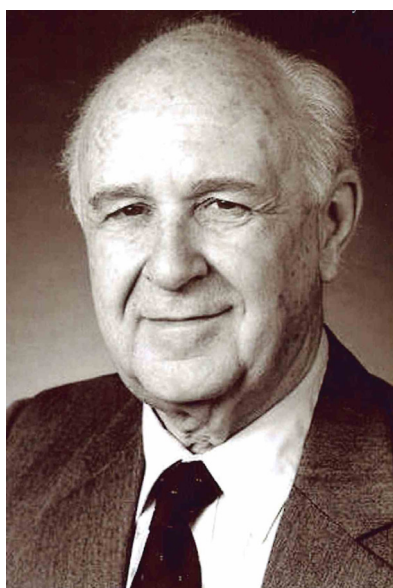


The presented volume of *Acta Biochimica Polonica* is dedicated to the outstanding Polish scientist Professor Waclaw Tadeusz Szybalski on the 100th anniversary of his birth



Professor Waclaw Szybalski

Professor Waclaw Szybalski was born in Lwów on the 9th of September, 1921. He passed away peacefully in Madison (USA) in his sleep on 16th of December, 2020, at the age of 99 years old. He loved Lwów, the city of his youth, and this love has lasted till the final days of his life. He was a perfect student and a passionate sailor; he flew on gliders and parachuted out of airplanes. He has spent the interwar period in Lwów and endured there the years of two occupations, first by the Soviets and then by the Nazis. During World War II, he has received his education at the Institutes of Technology in Lwów and completed his bachelor degree in chemical engineering in 1944. During this extremely difficult period, he was involved in production of the typhus vaccine at the institute of Professor Rudolf Weigl, at the University of Jan Kazimierz in Lwów. Later on in 1945 he obtained recognition of his previous degree at the Technical University of Silesia in Gliwice. Next, he moved to the Tricity area, and begun to work as a scientist at the Gdansk University of Technology where he finally obtained his PhD degree in chemistry in 1949.

Dr. Szybalski emigrated to the United States through Denmark and quickly re-started his career in science. He started working at the pharmaceutical company, Wyeth, and then in 1951 to 1955 he conducted research at the Cold Spring Harbor Laboratory, NY. This was an exciting time and place to be working in the early golden age of molecular genetics, in the company of future Nobel Prize winners, such as Professor James Watson (1962), Professor Max Delbrück (1969), Professor Alfred Hershey (1969), Professor Salvador Luria (1969), and Pro-

fessor Barbara McClintock (1983). Dr. Szybalski then worked with Professor Salman Waksman (Nobel Prize winner in 1952) at the Institute of Microbiology at Rutgers University in New Brunswick, NJ., and then settled permanently at the University of Wisconsin–Madison. For the majority of his life he served as a Professor of Oncology and Genetics at the McArdle Laboratory for Cancer Research at the University of Wisconsin–Madison, United States. He was a pioneer of modern molecular biology and is known to many generations of scientists all over the world.

Professor Szybalski carried out ground-breaking research in genetics and molecular biology. He published over 250 scientific papers, covering many areas of biology, including bacterial genetics, mechanisms of drug resistance, radiosensitization, mutagenesis, function of antibiotics, multi-drug therapy, molecular biology of bacteriophages (particularly of phage lambda), genetic engineering, gene therapy, and DNA biochemistry/sequencing. Waclaw Szybalski made major contributions to our understanding of molecular biology and genetics. His research in the United States began with genetic studies of drug resistance that led to the use of multi-drug therapy that is now widely used to treat bacterial and viral infections and cancer. His studies of the antibiotic-producing soil microorganism, *Streptomyces*, yielded information that was useful in designing effective therapeutics for treating tuberculosis.

Professor Waclaw Szybalski and his wife Dr. Elizabeth Szybalski were the first researchers to perform gene transfer into mammalian cells (using the HAT medium) and to introduce the ground-breaking idea that treatment for human genetic diseases could be made possible through gene therapy. The discovery of these methods has led Professor Szybalski to formulate the principles of gene therapy, and subsequent work enabled production of specific monoclonal antibodies that are of incredible importance to the diagnosis and treatment of many diseases. Articles presented in this volume by prof. Józef Dulak and prof. Jacek Bigda are describing a later development of Professor Szybalski's scientific ideas and indicate that he was always a visionary and years ahead of his time in foreseeing the future of molecular genetics. He also established the basis of synthetic biology, which permitted the creation of molecules of life and new organisms. For this reason, Professor Szybalski is often referred to as the father of synthetic biology, a term for this field of science that he coined in 1974. According to Professor James Watson, his work laid the foundations for several Nobel Prizes won by others.

Professor Szybalski founded and served as the Editor-in-Chief of the *Gene* journal, from 1976–1996. He remained Honorary Editor of *Gene* until his recent passing in 2020. During his lifetime, he contributed to the journal as an editor, reviewer, author and reader. Of the 260 papers published by prof. Szybalski, as many as 82 were

published in Gene and were cited nearly 2,000 times. All of his papers were cited about 13,000 times reflecting the major impact that he had on the field of molecular genetics.

For his extraordinary achievements, Professor Szybalski has received the Order of *Polonia Restituta*, First Class, the highest honour awarded in Poland, a number of international awards, and honorary doctorates from five Polish universities (the Maria Curie-Skłodowska University, the University of Gdańsk, the Medical University of Gdańsk, the Gdańsk University of Technology, and the Jagiellonian University). He was a member of the Polish Academy of Art and Science, a foreign member of the Polish Academy of Sciences and a honorary member of the Committee for Biotechnology PAS.

Waclaw Szybalski always emphasized his Lwów Polishness on the international scene, and he has always maintained strong ties with Poland. Many young Polish scientists came through his laboratories. He funded a number of scientific projects in Gdańsk, and in the United States, e.g. he funded a spacious Annex to the famous historical Carnegie Library at the Cold Spring Harbor Laboratory, and equipped scientific laboratories at the Intercollegiate Faculty of Biotechnology, University of Gdansk and Medical University of Gdańsk, and also at the Faculty of Chemistry, Technical University of Gdańsk. About 20 Polish postdocs and professors completed scientific internships in his laboratory at the McArdle Laboratory for Cancer Research at Madison, Wisconsin, among them professors: Zbigniew Lorkiewicz, Edward Borowski, Karol Taylor, Anna Podhajska, Józef Kur, Tadeusz Kaczorowski, Marian Sęktas and Piotr Skowron.

I hope that this special volume of *Acta Biochimica Polonica* will encourage you to read his biography entitled “*Professor Waclaw Szybalski on Lwów, genes, the essence of life, and Nobel laureates*” written by an eminent Polish novelist Jarosław Abramow-Nowak and published by the University of Gdansk Publishing House and the Professor Waclaw Szybalski Foundation. This book shows us how one can live with a passion for science, make great discoveries, be fascinated by science and art, and continue to cross-country ski throughout his entire life, even at the very mature age of over ninety years old. The book is complemented by a film about Waclaw Szybalski, entitled “*The Essence of Life*”, directed by Anna Ferens. The film was made in 2014 and had its Polish premiere during a special exhibition organized by the Professor Waclaw Szybalski Foundation, at the Gdańsk Shakespeare Theatre, on the 11th of March, 2015.

I have met Waclaw Szybalski for the first time at Madison in 1986 when I arrived for my postdoc at the Department of Phytopathology, University of Wisconsin-Madison, and his numerous works have fascinated me throughout my scientific career. Apart from scientific occasions, I have met him later on a lot of times at different places across Poland and the United States. We have always had very interesting conversations, from which I learned about his extraordinary life and his innovative scientific ideas. I am grateful to him not only for inspiring my scientific career but also for instilling in me a passion for downhill skiing. One of the outcomes of our friendship and trust was entrusting me with the function of the President of the Board of his Foundation, which co-financed publication of this special volume of *Acta Biochimica Polonica*.

Ewa Łojkowska
President of the Committee of Biotechnology Polish Academy of Sciences
President of the Board of the Professor Waclaw Szybalski Foundation