

Professor Mieczysław Chorąży and His Works

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Photography 1. Mieczysław Rajmund (Ray) Chorąży.

ABSTRACT

This essay is in memoriam of Professor Mieczysław Chorąży (1925–2021). Eminent Man, outstanding scientist, soldier of the Warsaw Uprising, moral authority for generations of fellow researchers and an exceptionally warm person. His character and life works are recalled here against the background of the times he lived in.

HISTORICAL BACKGROUND

When a young man, Mieczysław Rajmund (Ray) Chorąży (Phot. 1), began his lifelong adventure with science times were tough. Poland was just a few years after the devastating World War II – the country was ruined, depopulated, and the pre-war elite severely decimated.

In the aftermath of the decision taken at the Yalta Conference in 1945 by the “Big Three” (Churchill, Roosevelt, and Stalin), Poland’s borders moved west, and the Soviet Union annexed most of the country’s pre-war eastern lands. This forced the relocation of scores of Poles, including staff of academic institutions. Poland found itself under the strict control of the Soviet Union, ruled by the communist party headed by Stalin. This meant the brutal introduction of an alien political system and isolation from the mostly democratic Western world. The communist system was particularly oppressive towards the pre-war intellectual elites and state officials, officers, scientists as well as soldiers of the underground Home Army. Some people managed to move abroad soon after the war, many others were persecuted, imprisoned, or eliminated. As the result, many Polish specialists, engineers, and scientific staff were lost for science. Soon after the war borders were closed to both people and goods, and contacts with the Western world were essentially severed. Conducting scientific research in such circumstances was a great challenge. The most essential things had to be organized from scratch – workspace, resources, etc. For such times Mieczysław Chorąży was an almost providential person.

His personality and character were shaped primarily by his family home, from where he gained a love for the Homeland and respect for hard work and nature. What also shaped this talented, ambitious young man, very firm in achieving his goals was also the Polish pre-war education system and scouting activities, which taught him responsibility and care for the country.

This essay is a remembrance of a unique man, his character, and his life works.

EARLY YEARS

Mieczysław Chorąży was born on August 31, 1925, in Janówka, a small village in the Podlasie district in north-eastern Poland. He finished primary school in the nearby village of Piszczac, and in 1938 he started secondary school in Biała Podlaska. His education was interrupted by the outbreak of World War II. His parents were indirect victims of the war – his mother contracted typhus and both parents died in 1941. Having witnessed his mother's death, the adolescent boy decided to become a doctor.

His further education was taken care of by his sister-in-law, Anna Chorążyna (nickname Hanka), who was a local activist in the people political movement. She also got him involved in activities of the Polish underground during the German occupation. From 1941, he continued his education at secret classes in Łowicz and later in Warsaw. In 1944, he graduated from the underground Adam Mickiewicz Memorial State Junior High School and Secondary School. While in Warsaw, he joined the underground Home Army which fought against the German occupiers and he graduated from the Cadet School. In 1944 he took part in the Warsaw Uprising (*nom de guerre* Grom). As a B-1 Company of the Baszta Regiment Group soldier, he fought mainly in the Mokotów district. Having been wounded twice he was in danger of losing an arm. After the fall of the Uprising, he was interned by the Germans in Stalag XIA in Altengrabow, Germany. He was released on May 3, 1945. After returning to Poland in October 1945, he began studies at the Faculty of Medicine of the University of Warsaw and the Medical University of Warsaw, from which he graduated in 1951. During his college stay, he worked as a junior assistant under the supervision of Professor Grzegorz Bagdasarian in the Chemical and Bacteriological Laboratory of the Tuberculosis Institute in Warsaw. He also met his future wife, Kazimiera (Kasia), née Karkucińska, from Skierniewice, who worked there as a laboratory technician.

Despite the aspirations of a young college graduate to stay in the capital city of Warsaw, where he began his adventure with science and where he had all his friends, he was ordered, due to his Home Army insurgent past, to relocate and start work in a provincial city in southern Poland. On October 15, 1951, Mieczysław Chorąży became an employee of the National Anti-Cancer Institute in Gliwice (Państwowy Instytut Przeciwrakowy).

THE BEGINNINGS: WORK IN GLIWICE

For the first year and a half, young Mieczysław Chorąży worked as a clinician, but very early he understood that without basic research there would be no progress in the treatment of cancer patients. Therefore, he decided to turn to research in the field of cancer biology and moved to the Department of Tumour Biology, then headed by Professor Kazimierz Dux. His first scientific research work concerned nitrogen metabolism in cancer-burdened rats. For his research, he designed and built a special cage that enabled analyzing metabolic products and the nitrogen balance in experimental animals. He described the findings in his first research paper [1]. This result has become the basis of his

doctoral thesis. The degree of a doctor in medical sciences was conferred to him by the Scientific Council of the Institute of Oncology in Warsaw in 1958.

Today, in the era of molecular research conducted at the level of single cells, such research may not seem to be a great scientific achievement. However, it should be noticed that until the 1980s, animals were the main source of biological material for biochemical and molecular research around the world. This was often hard for aspiring scientists who had no choice but to sacrifice scores of mice and rats or even visit slaughterhouses to obtain, e.g., bovine kidneys to isolate DNA and protein for research.

FIRST INTERNSHIP ABROAD

To the great relief of mankind, the Soviet despot Stalin died in 1953. This began a slow process of change in Poland, at a high price, though. In June 1956, the first mass protest of Polish workers against the communist regime took the life of at least 58 people in Poznań. Some changes at the top of the ruling Polish United Workers' Party and a political thaw started in the fall of 1956. This led to greater opportunities for contact with researchers in the Western world and some young scientists, including Mieczysław Chorąży, were given the opportunity to pursue internships abroad.

At the turn of the 1950s and 1960s, Ray gained extensive scientific experience in renowned foreign research centers. As a Rockefeller Foundation scholarship holder, he completed two internships in the USA. Between 1959 and 1960 he worked at the McArdle Memorial Laboratory for Cancer Research at the University of Wisconsin in Madison. There, he investigated whether eukaryotic cells could incorporate foreign nucleic acids [2-5]. After returning to Gliwice, Ray continued this research theme (Phot. 2), and his results became the basis of a habilitation thesis entitled "Studies on the incorporation of deoxyribonucleic acid in Ehrlich ascites tumor cells". In 1961, he was conferred a habilitation degree by the Silesian Medical Academy. In recognition of his research, Ray received an award from the Scientific Council of the Minister of Health in 1962. Then, between 1961 and 1963, Ray completed an academic internship at the Sloan-Kettering Institute for Cancer Research in New York where, under the supervision of Dr. Dorris J. Hutchison, he worked together with Arnold J. Bendich on the method of isolating



Photography 2. Mieczysław Chorąży and Pulfrich modified photometer (around 1960).

metaphase chromosomes from murine leukemia cells. Their joint work describing this method attracted the attention of the scientific community and became a widely recognized contribution to molecular biology [6-7].

ORGANIZING THE DEPARTMENT OF TUMOR BIOLOGY IN GLIWICE

In 1958, Professor Kazimierz Dux, the long-time Head of the Department of Tumour Biology at the Gliwice Institute, moved to Warsaw. In 1961 the management of the Department was entrusted to Mieczysław Chorąży.

Experience gained in American research establishments gave the young Dr. Chorąży research ideas, as well as tips on how to build a research team and organize laboratories. When he became Head of the Tumour Biology Department, he started recruiting chemistry and biology graduates from various Polish universities to join his team. At the same time, he was relentlessly searching for financial resources to acquire modern laboratory equipment. It is important to keep in mind that Polish currency was non-convertible at that time, causing shortages of funds for purchasing world-class research equipment, and reagents and limiting access to scientific literature. At the time research units throughout the country were allocated foreign currency to purchase reagents, but the amounts were negligible. Purchase orders had to be sent to the proper ministry at least a year (!) in advance. It was never known which reagents would ultimately be purchased and which ones would run out of funds in a given year. Under such conditions, many Polish universities dealt exclusively with teaching, and many institutions were "scientific" only in name. But not at the Department of Tumour Biology in Gliwice! Professor Chorąży's ingenuity and his approach "knock (here and there) and it will be opened to you" helped him to complete such tasks. This meant also seeking support from foreign friends and foundations. His extensive international contacts, established during foreign scientific trips, helped him later to gain financial resources for purchasing equipment and consumables. This included major equipment and also such gadgets as glass micropipettes (almost no one remembers them today, but they were a valuable novelty at the time) and, later, things like automatic pipettors and petty but useful lab gadgets like permanent markers. American, Swedish, Danish, German, and Canadian friends of Ray supported the Department, even by covering the costs of subscribing to scientific journals, which made knowledge accessible to other researchers.

It is worth adding that Mieczysław Chorąży was exceptionally gifted with making personal contacts. This was partly due to his curiosity for other people's way of thinking and goals. Regardless of their position or education, he treated them with equal attention.

Professor Chorąży's quests, both in Poland and abroad, for funds necessary to purchase expensive specialized equipment, dozens of letters sent, and visits paid to decision-makers finally yielded funds for an electron microscope, ultracentrifuges, spectrophotometers, and many other pieces of equipment.

Moreover, his extensive contacts allowed several employees of the Cancer Biology Department to participate in international conferences and receive training/scholarships in leading foreign research centers, a unique opportunity in a country officially professing communist ideology.

Among dozens of his foreign research collaborators, especially worth mentioning are: Curtis C. Harris (Laboratory of Human Carcinogenesis, NCI, NIH, Bethesda, MD, USA), Anthony Dipple (Laboratory of Comparative Carcinogenesis, NCI, NIH, Frederick, MD, USA), Frederica P. Perera (Columbia Center for Children's Environmental Health Sciences, Columbia University Mailman School of Public Health, New York, USA), Kari Hemminki (Center for Nutrition and Toxicology, Karolinska Institute, Huddinge, Sweden), Aage Haugen (National Institute of Occupational Medicine, Oslo, Norway), Federico Welsh (Deputy Director, NCI, NIH, Bethesda, MD, USA), Harald zur Hausen (German Cancer Research Center (DKFZ), Heidelberg, Germany, 2008 Nobel Prize winner) and Hilary Koprowski (Wistar Institute, Jefferson Institute, Philadelphia, PA, USA).

Thanks to the Professor's efforts in the 1970-1990 period, the Department of Tumour Biology became one of the top laboratories in Poland conducting research in the field of cell ultrastructure and molecular biology.

MAIN RESEARCH TOPICS

Initially, research conducted at the Department of Tumour Biology was dominated by biochemical and biophysical issues and focused on the properties of various chemotherapy agents; some papers were very well published [8-11].

In the 1970s research topics shifted to issues of cell ultrastructure, structure and function of nucleic acids, repetitive DNA sequences, and chromatin [12-19]. Later studies focused on the mechanisms of DNA transcription and changes in the activity of selected genes in regenerating rat liver and under heat shock conditions [20-22].

In the 1980s, Professor Chorąży and his team pursued together research in a very challenging area: environmental mutagenesis. He was among the first researchers ever to demonstrate the link between air pollution and severe biological effects.

At that time, the Upper Silesia region was the most polluted area of Poland and in the entire world. Maps of lung cancer incidence drawn among the most polluted regions at that time at the Institute of Oncology blatantly demonstrated that most cases occurred in counties with the highest air pollution. On the initiative of Professor Chorąży, a Laboratory of Environmental Mutagenesis was established in Gliwice, with extensive international cooperation and financing from various sources, including grants from NCI, NIH (Bethesda), National Institute of Environmental Health Sciences, and the United Nations Development Program. Professor Chorąży organized the logistics of sample collection from employees of four coking plants in the region. He

visited some of these places in person, which was very well received, and helped to convince employees to participate in this research project.

These were the first population studies in Poland that showed changes in the genetic material caused by air pollution.

The most important achievement of the Environmental Mutagenesis Laboratory and the international team was a paper published in 1992 in *Nature* [23], with editorial commentary by Colin Garner. Air pollution has been shown to cause chromosome damage and increased levels of DNA adducts [24-31]. The number of adducts was evidenced to correlate with the degree of air pollution, which in turn depended on residence location (industrial or rural areas), as well as the time of year (summer or winter, i.e. the heating season [32-35]). Chemical analyses of airborne particles have shown that they carry a large number of harmful compounds, including carcinogens [36-39]. These results aroused widespread interest around the world as they highlighted serious health risks caused by air pollution [40,41]. Professor Chorąży had been recognized as an authority in this field.

Professor Chorąży was also the initiator of research on the genetics of lung cancer [42-44]. The team he led showed differences in the spectrum of p53 mutations between residents of Upper Silesia and residents of less polluted regions. Another aspect of studies in this field was the search for individual differences (polymorphisms) in genes determining a person's sensitivity to carcinogens (CYP1A1, CYP2D6, CYP2E1, and GST genes) and the effectiveness of DNA repair.

In his later years, Professor Chorąży became passionate about systems biology, analyzing the complexity of living organisms, the self-organization of matter, the impact of chaos and determinism, and the emergence of life on Earth [45,46].

SCIENTIFIC MEETINGS

Creative discussions, and exchanging ideas and experiences all stimulate research as much as cooperation between various laboratories. Professing this, Mieczysław Chorąży was very active in organizing scientific meetings. He was a member of organizing committees of several international conferences, including: "Nucle(ol)ar Workshops" (currently known as Wilhelm Bernard Workshops), FEBS, "Polish-German Oncology Workshops", and others. He was also the initiator of scientific meetings of international scope held in Gliwice (Phot. 3). Initially called "Autumn Scientific Meetings" they were held between 1966 and 1978 on an irregular basis. Then, after a decade-long break, they were resumed in 1989 with the 13th Scientific Meetings in Gliwice. Its main animators and organizers were Professors Joanna Rzeszowska and Zdzisław Krawczyk (at the time doctors and collaborators of Professor Chorąży). Since 1997, these annual meetings have been known as "Gliwice Scientific Meetings". They are sponsored and organized by the Association for the Support of Cancer Research (ASCR),



Photography 3. Gliwice 1995. From the left: Mieczysław Chorąży, Hilary Koprowski – inventor of the polio vaccine, and Robert Gallo – discoverer of the HIV virus.

established for this purpose. The 27th edition of this international conference was held in 2023. Since the Professor left us forever in 2021, Gliwice Scientific Meetings begin with two special events – *in memoriam* plenary lecture and winner announcement of the Professor Mieczysław Chorąży scholarship contest for young scientists, founded by the ASCR.

LIFETIME SCIENTIFIC ACHIEVEMENTS

Professor Chorąży's achievements include over 140 publications, many in leading scientific journals such as *Nature*, *Cancer Research*, *Journal of Cell Biology*, and *Nucleic Acid Research*. He supervised 18 doctoral theses, and five of his doctoral students were later appointed as professors. Professor gave his students a great deal of freedom in developing their own scientific interests and establishing research teams. He also supported them in setting up international contacts and applying for degrees and scientific titles. Over twenty researchers from the Department of Tumor Biology gained renown and recognition while continuing their scientific careers in foreign institutions. Among them are: Professor Jan Filipiński, INSERM Director of Research at the Jacques Monod Institute in Paris; Drs. Małgorzata Hanausek and Zbigniew Wałaszek, both biochemists, professors affiliated with the University of Texas system; Dr. Jan Wiśniewski, a biotech specialist in Canada and NCI and an expert in advanced microscopy techniques; Dr. Zenon Stęplewski, an oncologist at the Jefferson University, Philadelphia and Professor Andrzej Vorbrodt, a long-time researcher at the Institute for Basic Research on Mental Disabilities in New York. Others include Jerzy Jurka, a computational and molecular biologist who served as assistant director of research at the Linus Pauling Institute prior to founding the Genetic Information Research Institute in California. Last but not least, Dr. Jan Szeliga and Dr. Sabina Groebner have been active in the pharma industry, respectively in the United States and Germany.

HELPING FRIENDS IN THE EAST

In the 1990s, when the overhaul of the political system in Poland triggered gradual improvement of finances and academic freedom, Professor Chorąży lobbied to help young scientists from countries of the former Eastern Block, especially the former Soviet republics. Thanks to his efforts, young researchers from Ukraine, Belarus, Russia, and Lithuania were able to complete research internships and/or doctoral theses at the Institute of Oncology in Gliwice. These scholarships were supported by the European Association for Cancer Research, the Polish Committee for UNESCO Scholarship Programme, NCI-NIH (Bethesda), and the Association for the Support of Cancer Research. Support for scientific internships in Gliwice lasted until 2011, and by then the program had helped several dozen researchers from Eastern Europe.

BEYOND SCIENCE

Professor Chorąży was a great organizer and activist, an articulate voice for the improvement of the world around us. In everyday life, he always paid attention to the proper organization of the workplace and efficient use of resources. He drew the attention of his fellow employees to these matters. Very often he intervened with city and state authorities, pointing out what could be improved around for the benefit of all.

Based on his own observations made abroad, Professor Chorąży wrote numerous analyses and guidelines for successive directors of the Institute of Oncology, governmental authorities, including the Ministry of Health, as well as for the Polish Academy of Sciences. He tirelessly commented in mass media on how to prevent cancer, care for cancer patients, and how anticancer research should be properly organized. In his endeavors, he was inspired by the American National Cancer Institute Act of 1937 and the National Cancer Act of 1971 as model solutions. He translated them into Polish and gave guidance to successive health ministers for many years. Professor Chorąży was an ardent supporter of establishing the National Institute of Oncology in Poland resembling its US counterpart. A step in this direction was made in 2020, when the Institute of Oncology in Warsaw, together with its branches in Gliwice and Kraków, formed the National Research Institute of Oncology (NRIO). In Professor Chorąży's vision, the next step should be the shift in the mission carried out by the NRIO and increased emphasis on cancer biology research.

Professor Chorąży was very much worried by inadequate teaching on the subject of oncology at Polish medical universities. He lobbied for increased teaching hours in this field. To deepen the knowledge of cancer biology among medical professionals, he wrote, together with Professor Kazimierz Dux "Introduction to Cancer Biology" [47]. First published in 1973, this handbook became for a long time a staple work on the subject.

Numerous efforts and initiatives of Professor Chorąży in the area of cancer prevention included translating into Polish and publishing a user guide "Cancer Education in

Schools: Guidelines for Teachers" (edited by the International Union Against Cancer, UICC, Geneva, Switzerland). The Polish edition was published by the Polish Committee for the Fight against Cancer in Gliwice, with the support of the National Cancer Program [48].

Professor Chorąży's long-standing efforts to preserve awareness of the Institute's past as well as a memory of the people who laid its foundations are a wonderful testimony of respect and great concern for heritage. He authored several publications on this subject [49-51]. Professor always showed keen interest in the later paths of employees who had left the Department of Cancer Biology and pursued their own careers elsewhere around the world.

His respect for the past included also efforts to protect vestiges of Upper Silesia industrial heritage. Professor Chorąży was always deeply disturbed by senseless acts of demolishing unique monuments of the gone industrial glory of the region. Professor cared very much about Nature, the protection of green areas, historic tree stands, and sound development of urban spaces. The professor was also a talented painter and Nature dominated in his watercolor works. Several of these and crayon sketches can be seen today in the main hall of the Institute in Gliwice.

Last but not least: Professor Chorąży was a truly brave man. Already as an adolescent boy, he risked his life by acting in the Polish underground during the Nazi occupation. Then he fought in the Warsaw Uprising. Not surprisingly, in his later life, he often showed civil courage. A dramatic illustration of his civil fearlessness is his action preventing a rape of a terrified young girl by an armed militiaman, as this could have had possibly devastating consequences, the least risk of imprisonment for opposing the representative of communist power structures. Likewise, many of his moves and professional activities during the dark era of the Polish People's Republic show courage, persistence, and wisdom, as even reasonable criticism could have brought unpredictable and serious consequences, passport confiscation, and travel ban being among the milder ones.

In the 1980s, during the imposed martial law rule in Poland, Professor Chorąży acted to protect from repression members of the anti-communist opposition, including Dr. Bogusław Choina, a surgeon from the Institute of Oncology, who was arrested for anti-communist activities.

After the disaster at the Chernobyl nuclear power plant in 1986 people in Poland, like people in the Soviet Union, were not informed for several days about this catastrophe and increased levels of radioactivity in the surroundings. Acting on hints, Professor Chorąży, together with his colleagues from the Institute, conducted measurements of street dust radioactivity and found it extremely high, exceeding the range maximum of a lab radioactivity counter. He then made immediate appeals to the local mass media to broadcast a warning to the population. As he met with no response, he intervened with the Head of the Communist party in Katowice, a bold and risky move, but ultimately this led to the dissemination of the warning about the danger by the mass media.

RECOGNITION AND AWARDS

Mieczysław Chorąży received the title of associate professor in 1970 and became full professor in 1983. In 1971 he was appointed a corresponding member of the Polish Academy of Sciences, and in 1986 a full member; for some time he was also a member of the Presidium of the Polish Academy of Sciences. He became an honorary doctor of medical universities in Białystok (2000) and Katowice (2007). He was also a member of the scientific councils of several research establishments: Institute of Oncology in Warsaw, Institute of Immunology and Experimental Therapy in Wrocław, Institute of Human Genetics of the Polish Academy of Sciences in Poznań, Center of Polymer and Carbon Materials in Zabrze and BioMedTech Silesia Center of Excellence and the Regional Fund for Doctoral Studies.

Since 1973, Professor Chorąży was a long-term member of the Central Commission for Academic Titles and Degrees; between 1975 and 1985 he was a member of the Team coordinating the “Combating Cancer” government program. He also served as vice-chairman of the Katowice Branch of the Polish Anti-Cancer Committee. Professor was also among the animators of the Silesian Science Festival (first edition, 2000).

Mieczysław Chorąży belonged to several organizations and scientific societies, including the Polish Biochemical Society, the American Association for Cancer Research, the European Association for Cancer Research, the Polish Oncological Society, of which he was president (1974-1978), the Polish Committee for UNESCO, and the Polish Academy of Skills (Polska Akademia Umiejętności, PAU)

Professor Mieczysław Chorąży received numerous state awards and distinctions in recognition of his lifetime achievements: scientific excellence, participation in the Warsaw Uprising (Phot. 4), and many social merits. He was twice-awarded the Cross of Valor (1944), the Gold Cross of Merit and the Silver Cross of Merit with Swords (1944), the Knight's Cross (1976), the Officer's Cross (1987), Medal for Warsaw 1939-1945, Warsaw Uprising Cross (1997),

Home Army Cross, the Commander's Cross with Star of the Military Order, Order of Polonia Restituta (2002) and, the Medal of the 100th Anniversary of Regaining Independence (2019). He also received the Alfred Jurzykowski Foundation Award (1983) and the “Allianz – Culture, Science, Media” (Nike) award in Science (2001).

In 2017, Mieczysław Chorąży was awarded the highest Polish distinction – the Order of the White Eagle.

In recognition of keeping strong ties to the region of his provenance, Professor Chorąży became in an Honorary Member of the Biała Podlaska Circle (2005) and The Honorary Citizen of Biała Podlaska (2012).

In recognition of his merits for the local Silesian community Professor Chorąży became “2014 Man of the Gliwice Land” (Gliwiczus 2014) for, among other things, initiating and running for over ten years a series of popular science lectures (Wszechnica PAU) for Gliwice residents. In 2018, he received the *Lux ex Silesia* prestigious award for those who made lasting contributions to the culture of Upper Silesia demonstrating high moral values in their scientific or artistic endeavors. Receiving this distinction, he touchingly said: “I am grateful to the people of Silesia for accepting me when painfully experienced by the war, I was desperately looking for a path in my life”.

Remembering Professor Chorąży, one cannot overemphasize how much importance he attached to family values and social relationships, and how much they shaped his personality. Particularly important in his life was his Wife Kazimiera (Phot. 5). For many years she relieved her science-devoted husband of most of his daily responsibilities, yet when her health failed in later years, Professor paid off his life debt to her; when time came he cared about her and steadfastly fought for her well-being to the end (2018), like a soldier he was.



Photography 4. Mieczysław Chorąży during anniversary of the Warsaw Uprising (2013).



Photography 5. Mieczysław Chorąży with his Wife Kazimiera (around 2000).

Professor Chorąży works from the Institute of Oncology in Gliwice span 70 years. He headed the Department of Tumor Biology for almost 40 years. He had been professionally active until the end of his life. Just a month before, Professor was still at his desk, took part in a research seminar, and vividly discussed with the invited lecturer...

After Professor Mieczysław Chorąży left us for eternity, his body was laid to rest with military assistance at the Powązki Military Cemetery, next to his beloved wife Kasia and sister-in-law Anna Chorążyna and close to his comrades from the Warsaw Uprising, with whom he fought so dearly, arm in arm, against Nazi invaders. Grateful Silesia also bid him a final farewell; a solemn tribute was paid to Professor by men in formal mining uniforms and scores of visitors.

Professor Mieczysław Chorąży was an extraordinary Man, respected by everyone who met him. He was an eminent Polish scientist, but also the true Teacher of proper life attitudes. We miss him a lot...

Much more information about the Professor's life and the history of the Department of Tumor Biology at the Institute of Oncology in Gliwice can be found in the autobiography: "FROM JANÓWKA INTO THE WORLD. Memories 1925-1995"

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