

## DR. ĐORĐE JOANOVIĆ, THE FIRST SERBIAN ONCOLOGIST

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PRIMARY HEALTH CARE CENTER "NOVI BEČEJ", NOVI BEČEJ

**Summary:** Đorđe Joanović was born on June 16, 1871, in Vienna, to father Hariton and mother Marija. The Joanović family originates from the village of Beodra. He interrupted his scientific work and career at the University of Vienna and, after the end of World War I, moved to Belgrade out of a patriotic desire to help war-torn Serbia. Dr. Đorđe Joanović was a world-renowned scientist and one of the pioneers in laboratory research on oncological diseases and the epidemiology of carcinogenesis. He was the founder of the University of Belgrade Faculty of Medicine, the initiator of the establishment of the Institute of Pathology in Belgrade, founder and president of the Yugoslav Society for the Study and Suppression of Cancer, and dean of the Faculty of Medicine in Belgrade. Professor Dr. Đorđe Joanović was a corresponding member of the Royal Serbian Academy of Sciences, an honorary member of Matica Srpska in Novi Sad, permanent delegate of the Kingdom of Yugoslavia to the International Office of Public Hygiene in Paris, member of the German and Czech Oncology Committees for Cancer Control, member of the editorial boards of numerous medical journals, president of the Serbian Medical Society, president of the Yugoslav Medical Society, lecturer for the military medical service, and member of the Sanitary Council of the Army of the Kingdom of Yugoslavia. He was also president of the fund for assisting poor students, member of the Committee of the International Institute for Geographical Pathology, editor of the Serbian Archive of General Medicine, and representative of the Kingdom of Yugoslavia in the All-Slavic Medical Union. The Institute of Pathology in Belgrade, the elementary school in Novi Miloševo, and the General Hospital in Zrenjanin bear the name "Dr. Đorđe Joanović."

**Keywords:** Dr. Đorđe Joanović, Institute of Pathology, Belgrade – Oncology, Epidemiology of Carcinogenesis

### INTRODUCTION

Professor Dr. Đorđe Joanović is recognized as the founder of oncology and experimental pathology in Serbia. He holds the distinction of being the first Serbian oncologist. At his time, Dr. Joanović attained the highest academic rank and position among Serbs worldwide, with a particular focus on experimental oncology, pathology, oncological pathology, and pathological morphology. His contributions to the development of medicine, especially oncology in Serbia, are of immeasurable significance.

Professor Dr. Joanović's scientific work in experimental pathology and immunopathology was pioneering even on a global scale, earning him an impressive international reputation. He dedicated himself to experiments on oncological diseases and studied the epidemiology of carcinogenesis. With special interest, he conducted studies on pathological changes in tissues across various diseases, always giving careful and meticulous attention to pathological anatomy and histology.

Professor Joanović earned a reputation as one of the most important scientists globally, demonstrating through his work and actions the true meaning of patriotism and devotion to one's country.

### THE JOANOVIĆ FAMILY

Dr. Đorđe Joanović was born in Vienna to his mother Marija and father Harinton. His mother, Marija, née Vlahović, was originally from Veliki Bečkerek. His father, Harinton, was born in Beodra, which today is a settlement within the village of Novo Miloševo.

The Joanović family traces its ancestry to the southern Serbian province of Kosovo and Metohija. Đorđe Joanović's grandfather, Aksentije Joanović, was an Orthodox priest and parish priest of the Orthodox church community in Beodra. Aksentije was a close friend of Dionisije Jakšić, an Orthodox priest

from the neighboring village of Karlova. Dionisije Jakšić was the father of the renowned Serbian poet and painter Đura Jakšić.

The sons of Aksentije and Dionisije, Harinton Joanović and Đura Jakšić, grew up together and became close childhood friends.

**Figure 1.** Orthodox Priest Aksentije Joanović and Orthodox Priest Dionisije Jakšić



Aksentije sent his son Harinton to study in Vienna, where Harinton graduated in law and remained to live and work. The entire Joanović family visited their ancestral village of Beodra at least once a year. Harinton Joanović (1824–1884), a lawyer and senator, served as manager for the “Austrian Railway Magnate” Baron Sine in Vienna. In Vienna, Harinton married his wife Marija in 1868, and they had two sons: Đorđe and Simeon Joanović.

The Joanović household upheld family traditions, and both Đorđe and Simeon were raised in the patriarchal spirit of old Serbian customs. For the godfather of his sons’ baptisms, Harinton chose Baron Sine of Vienna. Đorđe’s father, Harinton, and mother, Marija, were remembered as generous benefactors. In 1852, the Serbian painter and poet Đura Jakšić came to Vienna to continue his art studies, and his childhood friendship with Harinton’s family from Beodra continued in Vienna. Đura Jakšić was provided with accommodation and meals in the Joanović household for an entire year.

Both of Harinton’s sons, Đorđe and Simeon, completed higher education in Vienna. Đorđe Joanović became a professor at the Medical Faculty in Vienna, while Simeon Joanović served as a consul of the Kingdom of Serbia in Vienna. Simeon Joanović (1868–1934) was the Austrian vice-consul in Belgrade (1885–1897), and from 1901, the civil commissioner of Austria-Hungary in Pljevlja, where Đorđe Joanović, as an Austro-Hungarian subject, was appointed in 1897 as the head of the newly built military hospital at Stažica in Pljevlja. After retiring, Simeon Joanović authored the multi-volume book “Novopazarski Sandžak 1878–1900.”

Simeon Joanović lived for extended periods in Belgrade and Zurich. Afterward, he returned with his wife Ana to the family estate in Beodra, where he was often visited by Dr. Đorđe Joanović. The Joanović family was respected and esteemed in their native village. Locals affectionately called Professor Dr. Đorđe Joanović “Doctor Đoka”.

**Figure 2.** Professor Dr. Đorđe Joanović

### **BIOGRAPHY OF DOCTOR ĐORĐE JOANOVIĆ**

#### ***Education of Dr. Đorđe Joanović***

Đorđe Joanović completed his primary education in Vienna and subsequently enrolled in the highly esteemed Vienna Gymnasium "Kaiser und König," where he graduated in 1889. He then entered the Medical Faculty in Vienna, graduating in 1895. Immediately after completing his studies, he was employed at the same faculty as an assistant from 1895 to 1899 in the Institute of Pathological Histology and Bacteriology. He later moved as an assistant to the Institute of General and Experimental Pathology, where he worked from 1899 to 1904.

During this period, he worked under the renowned pathologist Professor Paltauf (1858–1924), a student of Pasteur and Koch. Joanović was appointed as a docent in 1904. He became an associate professor of general and experimental pathology at the Vienna Medical Faculty in 1910 and a full professor in 1919. At that time, the rector of the University of Vienna was the famous pathologist and academician Carl von Rokitansky (1804–1878). The main rivals of the Vienna Medical School worldwide were Berlin, Paris, London, and to some extent St. Petersburg.

Dr. Joanović led the Department of General Medical Pathology in Vienna, conducting advanced experiments in prestigious laboratories of the Institute of Pathology. For the next twenty-five years, he remained a dedicated and respected collaborator. During this time, he held the highest academic rank and position among Serbs globally, with a particular focus on experimental oncology, pathology, oncological pathology, and pathological morphology.

#### ***Arrival of Dr. Joanović in Serbia***

After the end of World War I, Dr. Milan Jovanović-Batut and Dr. Vojislav Subotić invited Dr. Đorđe Joanović to come from Vienna to Serbia and contribute his expertise and organizational skills to the establishment of the Medical Faculty in Belgrade. Dr. Joanović accepted the invitation without hesitation. At the first session held on February 20, 1920, the inaugural assembly of professors of the Medical Faculty in Belgrade took place. Dr. Milan Jovanović-Batut was elected dean, and Dr. Đorđe Joanović was appointed full professor of general pathology.

At that time, Dr. Joanović made the decision to leave his scientific work in prestigious Viennese laboratories and his university career in Vienna. He moved to Belgrade on May 6, 1920, with a strong desire to contribute to the development of medicine in war-torn Serbia. He faced significant organizational challenges and obstacles, including some unjust opposition from certain individuals.

**Figure 3.** The first eight professors of the Medical Faculty in Belgrade; from left to right: Dr. Miloš Bogdanović, Dr. Richard Burian, Dr. Vladan Đorđević, Dr. Pavle Popović, Dr. Đorđe Joanović, Dr. Milan Jovanović-Batut, Dr. Milivoje Kostić, and Dr. Slobodan Kostić.



In 1924, Professor Richard Paltauf passed away in Vienna. About twenty esteemed German pathologists applied to fill his university chair, but the Faculty Council of the Medical Faculty in Vienna chose to invite Dr. Đorđe Joanović to return and occupy Paltauf's position. This was a significant recognition of Dr. Joanović's expertise and knowledge. Despite difficult working conditions in Belgrade, he declined the offer, wishing to complete the projects he had begun in Serbia.

After the founding of the Medical Faculty in Belgrade, Dr. Joanović worked on establishing the Oncology Service of the Kingdom of Serbs, Croats, and Slovenes and provided the initiative and detailed conceptual plans for the Institute of Pathology in Belgrade. The construction took three years, during which he actively participated, giving concrete advice. Based on his designs and ideas, the new Institute of Pathology building was completed and officially opened on April 22, 1926. At the opening, Dr. Joanović delivered the inaugural speech. The Institute quickly became a regional center for experimental pathology. His collaborators included Ksenofon Šahović (1898–1956), Dimitrije Tihomirov, Marija Višnjić, Živojin Ignjačev, and others. Dr. Joanović spent entire days in the laboratories, even converting his office into his living quarters.

Almost every day at 8 a.m., he attended autopsies; at noon, he delivered lectures, and in his free time—usually in the afternoons—he worked with colleagues on diagnosing histological samples. Twice a week, at the end of practical histology exercises, he personally explained the data for students using projections of histological specimens. Patients with neoplasms often requested consultations with him, which he always granted, providing comprehensive advice and frequently written recommendations.

In 1926, he became a corresponding member of the Serbian Royal Academy of Sciences. Dr. Joanović dedicated his life entirely to medical science and the fight against cancer. On September 27, 1927, he founded the Yugoslav Society for the Study and Suppression of Cancer, with K. Šahović as general secretary. At that time, this society was the fourth of its kind in the world, after Vienna (1910), Washington (1917), and Paris (1920). He represented Serbia and Yugoslavia at numerous medical congresses in Europe and the United States.

Professor Dr. Đorđe Joanović was the only dean of the Medical Faculty to be elected four times (1923/24, 1925/26, 1927/28, 1928/29). He also founded the Association of Yugoslav Physicians, serving as its honorary and lifelong president. He was president of the Serbian Medical Society and a close friend of medical students, elected as lifelong honorary president of the Yugoslav Medical Students' Union. In 1928, he was awarded the Order of Saint Sava, Second Class. He was the initiator of the idea to establish the Institute for Oncology and Radiology in Belgrade, which was completed in the autumn of 1939 under the patronage of Her Majesty Queen Maria, with Prince Pavle Karađorđević as the main donor.

Dr. Joanović brought his vast medical knowledge and university reputation from Vienna. He was known for his expertise, precision, and meticulousness. Privately, he loved music and art and was an accomplished violinist. He had a quiet and modest nature that charmed and won over his interlocutors.

Students and colleagues deeply respected, valued, and loved him, appreciating his support and advocacy for student autonomy at the university.

He was especially beloved as a professor who sought to understand and help students with their problems. However, his solidarity with students seeking university autonomy displeased city authorities, leading to significant difficulties. In 1929, during the proclamation of the Obznana and the introduction of the January dictatorship, the regime harshly targeted political opponents, including students. Although not politically active, he supported students and workers. According to some reports, on January 27, 1932, he had a heated dispute with Prime Minister General Petar Živković, which ended with the general slapping him.

Dr. Đorđe Joanović never married. When asked why, he answered similarly to Nikola Tesla: "When I began experiments in pathology, I realized that science requires a whole person." His brother Simeon Joanović was married to Ana but had no children, so the Joanović family line unfortunately ended..

### TRAGIC END OF PROFESSOR DR. ĐORĐE JOANOVIĆ

The epilogue of Dr. Joanović's life was tragic. In 1932, while organizing the annual St. Sava Students' Ball, medical students informed him that King Alexander I of Serbia was welcome to attend, but not his Prime Minister, General Petar Živković. General Živković summoned Dr. Joanović to his office, where they engaged in a bitter argument. Humiliated, Dr. Joanović stormed out and returned to his Institute of Pathology, to his room. On the morning of January 28, 1932, he was found hanged from a window latch, with his body lying in his armchair. A maid discovered the lifeless body and immediately called her husband, who worked as a janitor in the Institute building. He removed Dr. Joanović's body from the rope. Professor of Pathology Dr. Marija Višnjić-Frajnd reported that a large amount of ashes was found in the fireplace that morning, indicating that he had burned his personal files. The unexpected death of Professor Dr. Đorđe Joanović caused sorrow and surprise. The circumstances of his death remain unclear, and many suspect that he may have been murdered. His death provoked outrage among Belgrade intellectuals, as many immediately doubted that the professor had taken his own life.

The Medical Faculty Council decided to hold a brief memorial service in the amphitheater of the Institute of Pathology in Belgrade, while a religious ceremony would be conducted in his native village of Beodra. His remains were transported by train, accompanied by a large number of students, friends, and colleagues. Belgrade had never before witnessed such a massive and solemn procession to the railway station for a funeral. Several hundred students, mainly from the Medical Faculty, attended the burial, along with many prominent figures from the public life of the Kingdom of Yugoslavia. Dr. Joanović was interred at Beodra Cemetery on January 29, 1932. Although his death was suspected to be a suicide, Serbian Patriarch Varnava authorized a funeral service for the esteemed deceased.

On February 28, 1932, a politically motivated article titled "The Case of Professor Joanović" was published by his opponents, Dr. Svetozar Močanin and Dr. Dušan Petrović, claiming: "He came to Serbia to create, and therefore his principled views on the faculty morally and scientifically diverged diametrically from those of his opponents. Joanović came to teach students, not to seek titles, high salaries, or benefits from Belgrade sanatoriums and other political or financial advantages."

The article was met with condemnation from many contemporary intellectuals, students, and ordinary citizens. Dr. Dimitrije Tihomirov, assistant professor of general pathology and pathological anatomy at the University of Belgrade, wrote in *Glasnik za staleška i zdravstvena pitanja* (February 15, 1932):

"With feelings of profound and deep sorrow over this sudden, immense, and irreparable loss for the Medical Faculty and the Kingdom of Yugoslavia, I will attempt to give but a faint picture and brief characterization of the late teacher, who was simultaneously a Yugoslav and European scholar of great stature." Dr. Joanović's international reputation was evident from a letter of condolence from the International Office of Public Hygiene in Paris, addressed to the Minister of Social Policy and Public Health: "The news of Professor Joanović's death has caused us deep sorrow, for he was among the most highly esteemed scholars, and in his lectures, he was always most attentively listened to, despite being personally very modest."

Today, only words of admiration and respect remain for this great scientist and human being. Pharmacist Stevan Vukov from Zrenjanin, who has studied Dr. Joanović's life and work, commented: "For a time, I was closer to the conclusion that Dr. Joanović was the victim of a crime than that he committed

suicide. Those who take their own lives are denied a church funeral, yet he was buried with a priest present, according to all Serbian Orthodox Church customs. Over time, understanding more about Joanović's noble character and high moral principles, I became more inclined to believe that he ended his own life as an act of moral superiority, refusing to compromise his principles." — Politika, May 11, 2020.

After his death, a "Fund" was established in his name for the best annual topics in experimental pathology. On December 10, 2007, on the occasion of marking 80 years of the fight against cancer in Serbia, Professor Dr. Đorđe Joanović was posthumously awarded the Golden Medal of the Serbian Society for the Fight Against Cancer, presented to Academician V. Kanjuh..

### SCIENTIFIC CONTRIBUTIONS OF PROFESSOR DR. ĐORĐE JOANOVIĆ

#### *Contribution to Medicine and Oncology*

Professor Dr. Đorđe Joanović's contribution to medicine, particularly oncology in Serbia, is immeasurable. His scientific work in experimental pathology and immunopathology was pioneering on a global scale, earning him an impressive international reputation. He authored 58 significant scientific papers and collaborated with two of the most prestigious medical journals in Europe. The foundation of his work had been laid during his time in Vienna. He devoted himself to experiments on oncological diseases and studied the epidemiology of carcinogenesis. Professor Joanović paid special attention to pathological changes in tissues caused by various diseases, with a particular focus on pathological anatomy and histology.

The modern Vienna school of pathology was developed by Professor Richard Paltauf together with his closest collaborators, Professor Karl Stanberg and Professor Đorđe Joanović. Joanović's first scientific paper, published in 1899, addressed the origin and significance of plasma cells during pathological processes. From this early work, he turned to oncology, then a relatively new field, and began conducting experiments in advanced Viennese laboratories on oncological pathology.

#### *Work in Experimental Oncology and Oncological Pathology*

Dr. Đorđe Joanović was the first Serbian oncologist-scientist, starting his work in oncology in 1920. At that time, thanks to the Berlin pathologist Rudolf Virchow (1821–1902), the basic principles of oncological pathology were already recognized.

Professor Joanović focused extensively on the study of cancer, especially on factors influencing the growth of experimental carcinomas and sarcomas, including: diet, chronic anemia, various alkaloids, and extirpation of endocrine glands. He believed that predisposition, local changes, and general metabolic disturbances were critical in cancer development.

He investigated the pathological morphology of tumors, including bronchogenic carcinoma, cystic neck tumors, atheroma calcification and ossification, tumor development through irritation, and the multicentric origin of tumors within an organ. He studied tumor growth in vivo and in vitro using tumor tissue cultures.

Professor Joanović observed that castration and splenectomy promoted tumor growth, while rice also stimulated growth. Certain toxic substances, including small doses of morphine, cocaine, and quinine, as well as toluidinediamine intoxication, slowed tumor growth. He explored the immunological aspects of cancer therapy using fermentative extracts from tumor tissues of the same patients. Lymphectasia, plasma cell accumulation, and connective tissue proliferation with sequestration of carcinoma cells were indicative of tumor regression in experimental animals.

Considering that erysipelas infection could destroy skin carcinoma, he also experimented with bee venom in cancer therapy. His publications provide extensive reviews of experimental cancer research and the effects of radium. Dr. Joanović's overall insight into cancer etiology and pathogenesis offered authentic and relevant information about the state of oncology in his era.

#### *Work in Experimental Pathology and Pathological Morphology*

Dr. Đorđe Joanović is regarded as the founder of oncology and experimental pathology in Serbia. He also researched staining of microorganisms in pathological tissues, studied liver pathology, and

authored significant scientific papers in this area. His work on liver disease included studies on the pathogenesis of jaundice, recognized by the Belgian Royal Medical Academy.

His experimental studies demonstrated that jaundice induced by toluidinediamine disappeared after splenectomy, providing a foundation for therapeutic splenectomy in hemolytic jaundice. Of particular interest are his experimental studies on the liver and fat metabolism. Dr. Joanović's work in experimental pathology and pathological morphology covered various areas, including tetanus prophylaxis, anaphylactic shock, transplantation problems, and nutritional pathology. His scientific contributions laid the groundwork for modern pathology and oncology in Serbia and earned him international recognition as a pioneering researcher.

### ***Discoveries on Autoimmunity and Final Assessment of Professor Dr. Đorđe Joanović***

#### **Discoveries on Autoaggression (Autoimmunity)**

Professor Dr. Đorđe Joanović observed that soldiers with healed head and brain injuries from firearms sometimes suffered severe headaches and even died. Autopsies revealed multiple areas of softened brain tissue both near and distant from the healed injury site. Similar results were obtained in his experiments on white rats subjected to mechanical head injuries.

From these observations in humans and animals, he concluded that brain degradation products stimulate the immune system to produce antibodies not only against these products but also against similar substances in healthy brain cells, leading to widespread brain softening.

Joanović attempted to apply this original etiopathogenetic concept to therapy for superficial skin carcinoma and tuberculous granulomas in animals by injecting disintegrated carcinoma or granulomatous tissue (or digested Koch bacilli) under the skin of the same subjects. He also treated dermatoses, such as Trichophyton tonsurans infections, using disassociated products, and psoriasis using scarammas (scrapings). This method of treatment using coagulation products was successfully applied in psoriasis therapy. He presented these findings at the International Office for Hygiene in Paris in 1929, after which his institute further developed work using this approach.

Professor Joanović was a pioneer in identifying autoaggression processes in medicine. This discovery of autoaggression represents one of his most important scientific achievements, though it remains little known both in Serbia and abroad. He first presented his findings in 1920 before the Vienna Medical Society and published two papers that year in the Viennese clinical journal Vochenschrift: "Effect of Brain and Bacterial Products Obtained by Enzymatic Destruction", "New Views on the Origin and Therapy of Certain Diseases". Through his results in experimental oncology and the discovery of autoaggression in medicine, Dr. Joanović gained a reputation as one of the most significant scientists internationally. In recognition, the Belgian Royal Academy awarded him a prize in 1903 for his scientific work.

Additionally, Professor Joanović conducted experimental studies on tuberculosis, the effects of radioactive substances on pathological organ changes, and non-surgical treatment methods for cataracts.

### **CONCLUSION**

Professor Dr. Đorđe Joanović served for many years as head of the Institute of General Pathological Anatomy in Vienna. He was widely recognized as an exceptionally skilled specialist in pathological-anatomical diagnostics, a figure of great authority, trust, and esteem.

His contributions to medicine and especially oncology in Serbia are of immeasurable significance. His work in experimental pathology and immunopathology was pioneering even by global standards, earning him an impressive international reputation. Joanović possessed equal mastery of both the morphological and physiopathological aspects of his discipline, combined with a rare ability for acute observation, enabling him to reach correct conclusions quickly.

Professor Joanović devoted his entire life selflessly to science, spending full days at the Institute of Pathology. He was always approachable, remarkably attentive, and treated his students with fatherly care, explaining their errors patiently and supporting them, both morally and sometimes materially. His teaching extended beyond lectures and exercises; he used every opportunity to instruct and guide younger generations, exemplifying gentlemanly conduct, deep trust, and responsiveness.



In his interactions, Joanović demanded mutual trust and consensus. He was accessible to all students, physicians, and citizens. His kindness was well known to anyone who spoke with him or sought his counsel.

Professor Dr. Joanović was not only a great scientist but also a man of noble moral character. His imposing presence, calm demeanor, and composed behavior created the impression of a serene, steady, and approachable individual. By refusing to compromise on principles contrary to his values, he demonstrated moral superiority.

He was a man of rare virtues, devoted entirely to science, medical practice, and the dignity of his nation. A true patriot, he dedicated himself to the advancement of knowledge, the care of patients, and the service of his country, leaving a legacy of scientific brilliance and human nobility..

**Figure 4.** Primary School “Đorđe Joanović” Novo Miloševo, Beograd



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