

On the biography of Fyodor Fyodorovich Talyzin

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This article presents the biography of the outstanding biologist Fyodor F. Talyzin (1903–1980), one of the leading Russian parasitologists of the 20th century, a corresponding member of the Academy of Medical Sciences of the USSR, a talented teacher and a populariser of science. Among Professor Talyzin's numerous achievements are his participation in the elimination of infectious outbreaks (plague, tick-borne rickettsiosis), the discovery of a new species of tapeworm in humans and the study of this type of parasite, the study of the effects of tapeworm on the human body in experiments with self-contamination, the development of a method for manufacturing anti-ophidic serum, participation in the creation of poliomyelitis vaccine production, and the creation of teaching aids for medical students. Particular attention is paid to Talyzin's work during World War II: stopping an outbreak of recurrent typhus in Iran, eliminating an outbreak of bubonic plague on the banks of the Tigris River and preventing schistosomiasis on the Euphrates. The authors draw attention to the versatile interests of the renowned professor that were instilled in him during his childhood by his parents. Talyzin was a gifted man, who had a talent for painting, wrote poetry and stories and knew several languages. He used his pedagogical skills masterfully – in the 1950s, 1960s, and 1970s he topped the list of the best teachers of the 1st Moscow Medical Institute (MMI). The tremendous work he conducted as the director of the 1st MMI allowed the institute to occupy a leading position among medical universities. Talyzin was a medical advisor to the Soviet representation at the United Nations, and he worked in India and Mexico on behalf of WHO. Overall, Talyzin made a significant contribution to the development of Russian biology and medicine.

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F.F. Talyzin's professional formation

Fyodor Fyodorovich Talyzin was born in 1903 in Nerchinsk. His family was of noble lineage.¹ Young Fyodor was greatly influenced by the atmosphere at home. From his mother Alexandra Petrovna and his grandfather, the boy inherited a beautiful voice, just like his elder brothers,² Vladimir and Nikolai. Through their mother's efforts, the boys read extensively and learned to play the piano and speak fluent English and French. Fyodor wrote a book (*The Adventures of the Brave Soldier Semechkin*, the last name is a play on the word for "edible seeds") about World War I, which was going on at the time and made his own binding and illustrations for it. This first literary work was highly appreciated by his teacher, V. Kamansky: "Who knows, maybe starting with this, he will start to write other books, for it's a gift" [2]. Later, when seriously engaged in scientific activity, F.F. Talyzin wrote poetry and drew in his spare time. His drawings on protozoology are widely used in medical university textbooks. F.F. Talyzin's father, Fyodor Nikandrovich, taught physics and mathematics, loved nature, often traveled around his native land, and was an avid collector. He was a role model for his son, who was keenly interested in travel: he read and spent a great deal of time talking with the teacher A.P. Bekhterev about new discoveries. Often they went hiking together in the countryside. Another mentor, his teacher Kargopoloviy, instilled in him a love for collecting by showing him his own collection of old coins and advising him where he could find interesting specimens. Together with his peers,

¹ Apparently, F.F. Talyzin had Tatar roots, which, according to some researchers, influenced him: "The birth of talented people – a thing that is unmanageable and unpredictable, but it is noticed that their appearance is often preceded by heterosis" [1].

² The Talyzin family was very close and spent a lot of time together. When it was necessary to call all the children, the parents used the word "Vokofe!", which was formed from parts of the three boys' names: Volodya, Kolya and Fyodor.

the future scientist conducted excavations in search of antiques. They accumulated a whole collection, which he later transferred to his hometown museum.

Fyodor received an excellent home education and entered the Irkutsk Real School. He continued to read extensively and remained interested in natural science. From the magazine *Nature and People* he learned about the French scientist Louis Pasteur and the creation of the rabies vaccine. In the magazine *Golden Childhood* he found material about N.A. Kholodkovsky [2]. However, his fate changed after his father's trip to Shushenskoye. On the way home they had an important conversation about the purpose of life and personal calling. Fyodor decided that he would become a doctor. His desire only grew stronger after his brother's death. After completing his studies at the Irkutsk School, in 1922 F.F. Talyzin entered the Medical Faculty of Irkutsk University. Its rector was



Fyodor Talyzin (the 60s).
From the archive of the Biology
Department, Sechenov University

N.D. Bushmakin,³ who read anatomy. Surgery was taught by V.S. Levite, children's diseases by A.M. Popov. One of the most eminent scientists working at the university at the time was Vladimir Timofeyevich Shevyakov. He taught zoology, comparative anatomy and parasitology, and was instrumental in opening the Zoological Museum.⁴ This leading Soviet specialist in biology had a tremendous influence on his student. Freshman F.F. Talyzin offered V.T. Shevyakov his help in designing illustrations for his scientific research. The professor agreed. A year later he became an assistant to the preparator, and in 1925 an employee of the department. Talyzin kept warm memories of his work with the renowned professor: "Meeting with V.T. Shevyakov and working at his department left an indelible mark on my soul for life. It was him who taught me

³ N.D. Bushmakin was the rector of the Irkutsk State University from 1920 to 1929.

⁴ Having headed the Department of Zoology and Parasitology of the Medical Faculty, in a few years V.T. Shevyakov created a zoological museum and accumulated the necessary instructional collections [3].

diligent work in the laboratory, got me interested in parasitology, instilled in me the love of science” [1]. During the experiments they spent a great deal of time together, and Shevyakov used some tables made by Talyzin in his lectures. The following excerpt is from V.T. Shevyakov’s letter to V.A. Dogel: “Dear Valentine Alexandrovich! This letter is given to you by Fyodor Fyodorovich Talyzin, a 5-th year medical student, who works at my department starting from the first year and whom I propose to leave at the university. I’ve known him for five years. During my trip abroad he lived in my apartment. He is a very nice and well-bred young man, please treat him nicely. He’s going to Saint Petersburg on a research trip with a group of medical students from Irkutsk University. They are 29 people and they must examine the various training and technical facilities. Some are interested in zoology (many of them). Kindly show them the zoology room and direct them where necessary so that they can inspect the physics room, the chemical laboratory, and also the Zoological Museum of the Academy of Sciences” [2]. At the university Talyzin met his future wife, Nina Nikolaevna.

In 1927, Talyzin graduated from the university with a degree in medicine and biology and soon became a junior researcher at the Irkutsk East Siberian Biogeographical Research Institute.

Despite his busyness with his main occupation, he was an outside doctoral student at the department which was headed by his teacher, V.T. Shevyakov. During the period of their joint work, guided by his advisor, he studied the focus of diphyllbothriasis on Lake Baikal. An expedition to Buryatia, to the island of Olkhon, brought him great success in the study of tapeworms, which was mentioned in the works of E.N. Pavlovsky. F.F. Talyzin discovered and described a new type of tapeworm that caused type B diphyllbothriasis (later he called it “narrow”).⁵ On behalf of the Commissariat of Health of Buryatia, during this expedition F.F. Talyzin was also to identify any remaining leprosy patients.⁶ An important result of this expedition was the creation of the only sample of minor tapeworm ribbon at the time [2]. It

was a rare find, preceded only by the work of the zoologist Kholodkovsky, whose preparations had been ruined by improper storage.

F.F. Talyzin’s special merit in medicine was his help in eliminating the outbreak of the plague in the Aginsky Buryat district and typhus in the Krasnoyarsk region. He also worked selflessly during the outbreak of tick-borne rickettsiosis in Transbaikalia and studied and conducted an analysis of the number of mosquito populations in Bratsk. In addition, he continued his own scientific research, continued working on the preparation of samples, prepared teaching aids for students and played music and drew in his spare time.

Changes in the direction of scientific activity

In the early 1930s two people died whom Talyzin held very dear: his father, F.N. Talyzin, and his teacher, V.T. Shevyakov. After their deaths F.F. Talyzin moved with his family to Leningrad. His new scientific adviser was the well-known zoologist and entomologist Eugene Nikanorovich Pavlovsky, who became his personal friend. Under the influence of his new teacher, he began to study the poison of snakes, scorpions, green toads. From 1926 to 1930 Talyzin participated in several expeditions to capture poisonous snakes in Central Asia and the Caucasus.

At the All-Union Institute of Experimental Medicine, together with his colleagues, he created an innovative “antigurza” serum, which, unlike similar preparations, retained its properties even in hot climates and had a shelf life of 10 years. Work in this direction was expanded after E.N. Pavlovsky’s relocation⁷ to Moscow, and although herpetology became the main field of Talyzin’s activity, he did not abandon either helminthology or acarology.

After moving to Leningrad Talyzin worked a great deal: in the field, in expeditions and in writing a monograph on poisonous snakes in the south of the USSR.⁸ In the late 1930s, despite the political situation in the country, F.F. Talyzin

⁵ The results of his research are set forth in his work “On the question of the morphological characteristics of the strobila among *Diphyllbothrium minus Chol*” [4].

⁶ One such patient was found on the outskirts of the island.

⁷ E.N. Pavlovsky helped publish more than 20 experimental works.

⁸ This work was published in 1939 under the title “A Search for Poisonous Snakes in the South of the USSR” [5].

with the aid of his adviser Pavlovsky worked with his colleagues on studying the natural foci of infectious and parasitic diseases [6]. Thus the Russian school of military epidemiologists was forming. In 1935, F.F. Talyzin was awarded a Ph.D. in Biology with no doctoral thesis submitted.

Before the start of World War II in the Soviet Union, Talyzin tackled the pathogenesis of helminths. This topic was highly relevant, since it was not known how the parasites affected humans. The pathogenesis of helminths was also studied abroad [7], but the main results in this area were obtained by Talyzin: the discovery and study of new species of human tapeworm and experiments with self-contamination to study the influence of tapeworm on the human body. Having started work with helminths, the professor decided to test their influence on himself to exclude possible errors. On February 24, 1941, he brought six bovine tapeworm samples from a cow killed at the Moscow meat factory to the VIEM lab where he worked. After checking their viability, he rolled two of them into pieces of bread and swallowed them. Later in his diary he wrote: "The experience of self-poisoning by the taenia was carried out by me in a therapeutic clinic. A detailed study of the onset of qualitative changes in the secretion of the stomach and the motor functions of the small intestine before and after infection allowed us to obtain answers to all questions posed at the beginning of the experiment" [2]. At the front line, F.F. Talyzin continued to monitor his own condition and described in detail all the changes. When both helminths were expelled, their length was 9 m 80 cm.

During World War II

F.F. Talyzin went to the front at the beginning of the war. In the first battles he was wounded and received a concussion, but soon returned to the ranks. As a military doctor, Major F.F. Talyzin dealt with the sanitary-epidemiological protection of the Red Army. The scientist's "star" rose in 1943.

Military actions were accompanied by epidemiological diseases, which were also biological weapons. For example, in 1942, with the Soviet troops that had participated in the offensive against Kharkov withdrawn from Iran, cholera was brought in, which killed hundreds of thousands of soldiers.

In 1943, an epidemic of recurrent typhus began among the soldiers deployed from Iran. The situation was further complicated by the refusal of the British to have any contacts with the Red Army to exclude the possibility of infection. Soviet troops needed supplies of spare parts for imported tanks, aircraft and artillery weapons. Then, on the initiative of E.N. Pavlovsky, who oversaw the sanitary and epidemiological services, it was decided to strengthen the epidemiological units, replenishing them with staff members who had previously served on the Eastern Front.

The division in which Talyzin served was transferred to Rasht, near the Caspian Sea. The scientist found out that the source of the disease was spirochetes, which had existed for some time in Iran [8]. Talyzin's knowledge, obtained in Siberia under E.N. Pavlovsky, made it possible to control the focus of the epidemic. This case became the basis for Talyzin's 1944 manual "To the epidemiology of tick-borne recurrent typhus in Iran".

Before his demobilization in 1945, F.F. Talyzin took part in the elimination of the outbreak of bubonic plague on the banks of the Tigris, the prevention of schistosomiasis on the Euphrates and the study of visceral leishmaniasis and Pappataci fever in the Dasht desert and the Zubeir region. After demobilization in November 1945, he continued to work in the newly created Academy of Medical Sciences of the USSR. His services during WWII were not forgotten.

Major-General Shafransky wrote in his order: "Comrade F.F. Talyzin, being a biology specialist, has mastered practical epidemiology and gave all his energy, strength and knowledge to protect the troops from diseases. A sensitive, responsive but demanding supervisor, Comrade F.F. Talyzin, as a highly disciplined officer, worked hard to educate and train epidemiologists. All scientific conferences in the forces, all research and literary work were held with the active participation of Comrade Talyzin. For fruitful work for the benefit of the Red Army, I declare my gratitude to the major of the medical service Comrade F.F. Talyzin, and wish him further fruitful work" [1].

Post-war period

After the war, F.F. Talyzin headed one of the laboratories at the N.F. Gamaleya Institute of Epidemiology and Microbiology at the Academy

of Medical Sciences of the USSR. On June 23, 1947, the Academic Council of the Military Medical Academy in Leningrad awarded him a postdoctoral degree in medicine for his work "On the toxic effect of parasitic worms on the function of the digestive tract". Talyzin was elected the secretary of the Party organization at the Gamaleya Institute.

From 1949 to 1950, Talyzin, at the invitation of Lomonosov Moscow State University Board, read lectures on zoological parasitology to the 4th-year students of the Faculty of Biology. In April 1952 he was invited to work in the 1st Moscow Medical School (MMS) as head of the Department of Biology. The 1st MMS had been going through hard times: the leading specialists of the institute had been dismissed and convicted (D.D. Pletnev, convicted for 25 years, was shot in 1941; V.V. Parin was also sentenced for 25 years for "cooperation with US special services"). The institute suffered the heaviest blow in the late 1940s in connection with the Jewish Anti-Fascist Committee. On the wave of spy mania, another case of "plotting doctors" was fabricated. As a result, the heads of the departments of psychiatry, infectious diseases, surgery and general biology, as well as the director of the 1st MMS, were dismissed. In 1952, it was decided to appoint a neutral person as the head of the school – F.F. Talyzin.

F.F. Talyzin actively continued his scientific work.⁹ In the journal *Reports of the USSR Academy of Sciences*, a series of articles authored by him and his colleagues was published on the study of the biochemical properties of snake venoms and the cessation of their toxic effects in the presence of specific antibodies. In 1952, Talyzin published the book *Across Iran and Iraq; notes of an epidemiology doctor* [8], based on his military diaries. The book was illustrated by his own drawings. It aroused wide interest and was soon translated into Polish, German and Czech. In 1951, F.F. Talyzin was awarded the Order of the Red Banner of Labor.

F.F. Talyzin's organizational and pedagogical activity

During his time at the 1st MMS, F.F. Talyzin proved himself to be an excellent leader and teacher. In many ways, it was thanks to him that

the university resumed its leading position in the field.

Talyzin's unquestioned merit lay in establishing an effective educational process. F.F. Talyzin paid special attention to the selection of the pedagogical staff. To take the post of the head of the Department of Histology at the 1st MMS, the school invited Professor V.G. Eliseev, a specialist in the field of connective tissue and blood and an opponent of hypotheses popular in the 1950s about the reproduction of cells from extracellular matter. The Department of Infectious Diseases was headed for 30 years by Associate Professor K.V. Bunin, who subsequently defended his postdoctoral dissertation on the "Functional state of the cardiovascular system during acute infectious diseases". Running the Department of Tuberculosis was delegated to the corresponding member of the USSR Academy of Medical Sciences, Director of the Moscow Regional Institute of Tuberculosis, Professor F.V. Shebanov [12], after the appointment of whom the 1st MMS joined the leading phthisiatric establishments of the USSR.¹⁰ The issue of replacing chairmen of departments was approached by Talyzin very carefully and tactfully. Often, remembering the years of his work as director, he referred to the case of A.I. Abrikosov, who until the age of 80 was in charge of the Department of Pathological Anatomy. At the time it was thought possible to hold such a post up to 65 years. The Ministry of Health decided that it was time for Abrikosov to respectfully retire, and he should be informed so by the director, i.e. Talyzin. When he met with Abrikosov, F.F. Talyzin could not bring himself to tell him about his dismissal. The academician helped him out of the predicament: he gave F.F. Talyzin his notice for retirement.

During Talyzin's employment at the school, the quality of its teaching also remained at a very high level. Talyzin's lectures were so popular that the students who came to listen to him could not fit even in large lecture halls but had to stand in the corridors. The professor presented his thoughts clearly and concisely. When students made errors, he corrected them, but always tactfully. The atmosphere that developed in his classes invited cooperation. In the 1950s, 1960s and 1970s, the list of the best teachers at the 1st MMS, compiled

⁹ Talyzin also authored a variety of books. See [9–11].

¹⁰ Sechenov University still holds that position to this day.

from students' votes, was invariably headed by F.F. Talyzin [2].

His success as a teacher was noted by his colleagues as well. For example, Member of the Medical Academy of the USSR V.V. Kovanov wrote: "Fyodor Fyodorovich Talyzin. He was in charge of the Department of Biology and General Genetics. For this man in science there was nothing frozen, he saw it in motion, development, and before the beginning of a lecture, as a rule, he devoted several minutes to new discoveries. A great tradition! Needless to say, it is important to instill in the future doctor a sense for all things new, a taste for it, a thirst for constant replenishment of knowledge" [2].

F.F. Talyzin regretted having to give a bad grade. When he grew tired of giving an oral exam, he invited "good" students to talk with him: he was interested not so much in biology as in the students' views, their attitudes towards discipline, science and their future professions in general. The principles of working with students laid down by F.F. Talyzin are realized to this day at the Sechenov University [13, 14].

Everyone who studied during that time at the 1st MMS was aware of the musical, artistic and dramatic abilities of the school's director. His varied interests contributed to the university's development of not only scientific activity, but also art and sports.¹¹

In 1956, F.F. Talyzin transferred leadership of the institute to his academic deputy, Professor V.V. Kovanov, and the department was handed over to Assistant Professor P.B. Hoffman-Kadoshnikov, as Talyzin was going to New

¹¹ For example, when four students of the institute became USSR champions in the 4- to 100-meter relay race, the Directorate arranged a reception for all members of the track and field athletics section of the sports club. In addition, every month they had students' skit nights, frequented by their professors.

York to work for the UN. This working trip enabled him to take a fresh look at the World Health Organization. His personal contacts with American virologists Salk and Sabin helped organize the production of poliomyelitis vaccine in the USSR. As a result, the Soviet Union was able to supply millions of doses of this vaccine through the Red Cross to third-world countries. During his time in the UN, F.F. Talyzin authored a variety of works, one of which is "Cities of the USA" [15].

After leaving the rectorship of the 1st MMS, F.F. Talyzin remained at the Department of Biology. He managed to fulfill the instructions of WHO, to travel to India and Mexico as well as other countries and in 1963, on behalf of the Soviet Peace Committee, to visit the countries of the Balkan and the Apennine Peninsulas.

Talyzin's organizational talent shone during the founding of the Department of Biology at the People's Friendship University of Russia (International University). Its members cherish the memories of their colleague and are proud that he helped establish the department. F.F. Talyzin not only conducted administrative work but also gave lectures, which were met with the great success he usually enjoyed. A student from India, Ashok Thakar, wrote in the "Friendship" newspaper of the People's University named after P. Lumumba on February 12, 1966: "Doctor F. Talyzin, who reads general biology and parasitology, became a role model for me in many ways. He skillfully engages his audience, works the students' imagination, and opens up new horizons of knowledge. Talent, experience, the extent of his knowledge – this is the basis of his authority as a teacher. He speaks excellently and in a convincing manner. In addition, he's a talented artist and has a rich facial expression". F.F. Talyzin's students included N.V. Chebyshev, M.V. Dalin and many others.

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