KAPITEL 8 / *CHAPTER 8* [9]

SCIENTIFIC PROGRESS OF VETERINARY MEDICINE IN UKRAINE DURING THE 20TH CENTURY

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Introduction

Veterinary medicine has gone through the long-lasting stage of its evolvement from the understanding of the world, the accumulation of experience and knowledge to their analysis, systematization and the creation of scientific schools of thought. . In this regard, the period of the twentieth century, which is characterized by the rapid development of science, the information gain, especially in recent decades, is interesting and instructive. At the same time, Ukraine had its own specific conditions for the development of science, in particular veterinary medicine. The destruction caused by the First and Second World Wars and the consequences of the disaster at Chornobyl nuclear power plant had a negative impact. These conditions were also determined by the state system, which ensured the organization of scientific institutions at the national level. At the same time, scientists had to work within ideological requirements, their activities were under constant control, and they were deprived them of cooperation with foreign colleagues. The 1990s were marked by radical changes brought about by the proclaimed independence of Ukraine. This gave impetus to the integration of Ukrainian science into the world cultural space; and the positive results were seen already in the first decade of existence of independent Ukraine. Therefore, the analysis of the development of veterinary medicine in Ukraine under difficult and changing conditions during the twentieth century is relevant and necessary. This determines the importance of conducting a thorough analysis of this problem as one of the aspects of the development of veterinary medicine as a science in Ukraine.

At the beginning of the century, some areas of Ukraine were part of the Russian and Austro-Hungarian empires. During the revolutionary events of 1917–1921, the areas of Ukraine that were controlled by the Russian empire became part of the Soviet Union. In 1939, Western Ukraine became part of the USSR and was united with the Ukrainian Soviet Socialist Republic. Upon the establishment of Soviet power in Ukraine, the educational system underwent drastic changes, particularly in the veterinary medicine. In 1920, the Faculty of Veterinary Medicine was established as a

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part of Agricultural Department of Kyiv Polytechnic University. However, it did not operate for a long time. In 1921, it was separated as an independent Kyiv Veterinary and Zoological Institute, which became an important educational and scientific center. Directors of the Institute, Professors V. K. Lindemann, F. Z. Omelchenko and A. K. Skorohodko made a significant contribution into its organization and development. Famous scientists worked at the Institute, namely F. O. Tseshkovskyi, O. I. Cherniakhivskyi, S. O. Ivanov, S. M. Krashennikov, M. B. Delone, N. V. Shcherbina, V. P. Ustiantsev and others [20, s. 191]. In 1930, the Kyiv Veterinary and Zootechnical Institute was reorganized into two separate institutes – veterinary and zootechnical.

In the 1930s, the leading Ukrainian scientists were the professors of Kyiv Veterinary Institute M. P. Vashetko, F. M. Ponomarenko, S. P. Yaroslav, associate professors V. Y. Borysevych, K. F. Dmytriiev, O. S. Korotych, who at the time were engaged in studying the newly discovered disease stachybotriotoxicosis [20, s. 192]. The successors of scientific issues on zoohygiene were students of A. K. Skorohodko – A. S. Basov, O. L. Bedrata, M. S. Borshch, K. S. Yermolaieva, N. O. Karavanska, K. O. Levytskyi, G. F. Odoshkina, A. A. Shylov, who developed the issues of physiology, heat regulation and heat exchange in farm animals, studied the features of gas exchange and heat production in high-yielding cows, and substantiated the physiological and hygienic norms of raising young animals. Professor I. O. Povazhenko made a significant contribution in the development of veterinary surgery.

In 1948, a scientific school of veterinary toxicologists and mycotoxicologists was initiated by the Professor S. V. Bazhenov at the Kyiv Veterinary Institute. The scientist is rightly considered the founder of the national veterinary toxicology. Together with his colleagues, S. V. Bazhenov studied the toxicology of non-protein nitrogen compounds, which began to be widely used in agriculture, i.e. nitrogen fertilizers (nitrates) and as a feed additive (carbamide) when feeding ruminants. Within the framework of this scientific direction, the toxicological properties of carbamide, ammonium carbonates, isobutylidenediurea, nitrites and nitrosamines were investigated. In this regard, scientists developed methods for timely diagnosis of poisoning and proposed effective methods for animal treatment and the prevention of poisoning [4].

Kharkiv has been and still remains an important scientific center of Ukraine. Kharkiv State Zooveterinary Academy is the oldest higher educational institution

specializing in veterinary in Ukraine. The history of this educational institution began in 1851, when a veterinary school was established on the basis of Kharkiv University. The school was classified as an educational institution of the first category, i.e. a higher one. After the revolution of 1917 to 1922, the Department of Epizootology, which was one of the oldest, was headed by Professor O V Dediulin, after that by Professor M. D. Agali, and from 1925 to 1931 by Professor P. O. Ivanov. From 1931 Professor I. I. Lukashov was in charge of the Department; he created a scientific school of epizootologists [2, s. 4]. The staff of the department was actively involved in the elimination of infectious diseases, carried out extensive work to improve methods of epizootological analysis, bacteriological, allergic and pathological-anatomical diagnosis of tuberculosis, paratuberculosis and brucellosis. Simultaneously, they carried out work to prevent and eliminate the spread of diseases of pigs (plague, erysipelas, Aujeszky's disease), horses (glanders, strangles, encephalitis, infectious anemia), poultry (tuberculosis, pullorosis, smallpox, etc.) [21].

In 1930, the Kharkiv Zootechnical Institute began to operate. In 1960, the Zootechnical Institute was merged with the Kharkiv Veterinary Institute. One of the leading scientists of that time was Dr. habil. in Veterinary Science, Professor I. I. Lukashov, who developed methods for the diagnosis and prevention of animal diseases of tuberculosis, paratuberculosis, atrophic rhinitis, infectious equine encephalomyelitis, foot and mouth disease. During the time of his scientific work the outstanding scientist published 150 scientific works, including two textbooks on epizootology, three monographs. He also wrote the textbook *General and Special Epizootology* which has not lost its value to this day. Professor I. I. Lukashov was awarded the honorary title of Honored Scientist, and in 1956 he was elected a corresponding member of the All-Union Agricultural Academy [21].

The Kharkiv School of Veterinary Obstetricians of Professor D. D. Logvinov became famous in Ukraine and abroad. This talented scientist made a significant contribution to the development of obstetrics and the formation of the Department of Obstetrics and Gynecology, having worked there for 47 years since 1951. Dealing with the problems of animal reproduction D. D. Logvinov prepared 25 PhDs and 4 dr. habils in Veterinary Science and Obstetrics. Continuing the traditions of Professor D. D. Logvinov on the pathogenetic approach to the prevention and treatment of animals with pathology of the reproductive organs, in 1998-1999 the staff developed a closed technological system for the use of biologically active preparations in different periods of the reproductive cycle in cows [3, s. 14,15].

In 1923, the Ukrainian Institute for Scientific and Practical Veterinary Medicine (at present the Institute of Experimental and Clinical Veterinary Medicine) began operating on the basis of the bacteriological station of the Kharkiv Veterinary Institute; and Professor O. V. Dediulin became its director. According to the authors of the monograph *History of Veterinary Medicine of Ukraine*, "the leading topics of research of this institution were the development of measures to control glanders, the industrial production of melein, the study of equine encephalomyelitis and infectious anemia, cattle brucellosis" [20, s. 112]. Thus, Professor O. V. Dediulin is the author of more than 180 scientific papers. His research is devoted to the study of infectious diseases of farm animals and the development of measures to control them. The scientist is one of the founders of immunology: he studied the serodiagnosis and immunization of horses against glanders, developed a method of vaccination against foot and mouth disease and tuberculosis [7, s. 90].

In the western Ukraine in the early XX century, Lviv University and Lviv Veterinary Academy were the centers of veterinary medicine. Between the two world wars, the academy had a high international prestige during Polish times. Academicians and professors V. Morachevskyi, A. Klisetskyi, K. Shchudlovskyi, T. Olbricht, A. Travinskyi were well-known in Europe. In the autumn of 1939, Poland was occupied by Nazi Germany. As a result, the Lviv Academy of Veterinary Medicine became the Lviv Veterinary Institute. Professor I. Chinchenko, a well-known scientist and public figure, became the director of the Institute. The war and post-war years were difficult for the Academy. In order to reduce the quality of Slavic specialists, the German administration reduced the status of Lviv higher schools to professional courses, which issued certificates instead of diplomas. In 1944, after the liberation of Lviv, this educational institution resumed its activities as an institute. In 1949, a Zootechnical Faculty was opened, so the institute became known as Zootechnical and Veterinary Institute.

From the second half of the 1950s, more active development of scientific branches, in particular, veterinary medicine became noticeable. This was associated with a general improvement in economic development and agriculture as well. Kyiv, Lviv, and Kharkiv veterinary institutes continued to play the leading role in the development of veterinary medicine.

In 1952, a scientific school of veterinary obstetricians and gynecologists was founded at the Kyiv Veterinary Institute thanks to the doctor of veterinary sciences, professor I. S. Nahornyi. Under his guidance, mycotoxicosis of cattle was studied;

methods for treating animals with gynecological pathology were developed and methods for restoring the function of the mammary gland while inflammatory processes were worked out. A considerable contribution to the development of veterinary medicine was made by the doctor of veterinary sciences V. V. Nikolskyi, who began working as the Head of the Department of Microbiology and Virology at the Kyiv Veterinary Institute in 1956. V. V. Nikolskyi founded a scientific school on infectious pathology of animals on the basis of his department. The scientist started a new direction in studying the infectious pathology of animals, which was the study of the nature of infectious diseases on the basis of a deep analysis of the immunological reactivity of the animal organism under the influence of various environmental factors. Professor V. V. Nikolskyi was the first in Ukraine to uncover the etiology of mass gastrointestinal diseases of newborn pigs and calves, having established their viral etiology; he also developed means and methods for diagnosis and prevention. The scientist was the author of the monographs *Viral Gastroenteritis of Pigs*, *Infection and Immunity of Farm Animals*.

This study was continued by a representative of the scientific school founded by V. V. Nikolskyi, Dr. habil. in Veterinary Science, Professor V. G. Skybitskyi. The scientist investigated the microflora of the animal organism, the pathogens of infectious animal diseases, immunological reactivity of the animal organism, in particular the influence of the native and recombinant cytokines on the cellular immunity of the animal organism. He also developed the means and methods of laboratory diagnosis of infectious diseases of animals and means of preventing dysbiosis, namely probiotics. V. G. Skybitskyi was the author of monographs and textbooks, including *Veterinary Virology*, *Tutorial on Veterinary Virology*, *Veterinary Microbiology*, *Tutorial on Veterinary Microbiology* and others. V. I. Bilokon, V. A. Borzova, V. A. Bortnichuk, A. Ye. Halatiuk, V. M. Peknych, V. V. Stoliuk, and O. V. Yablonska became the successors of the scientific school of infectious animal pathology.

In 1957, the Kyiv Veterinary Institute was included in the Ukrainian Agricultural Academy (at present National University of Life and Environmental Sciences of Ukraine) as a separate veterinary faculty. The first dean of this faculty was Professor H. O. Himmelreich, a scientist in the field of comparative and evolutionary morphology of vertebrates. Biography of H. O. Himmelreich is a part of the history of the Faculty of Veterinary Medicine. Here he worked his way from a student to professor, the head of the department and the dean of the faculty. H. O. Himmelreich was the head of the scientific and pedagogical staff of the faculty between 1957 and

1977. His scientific works were published not only in Ukrainian scientific journals, but also in academic journals in Australia, Belgium, the Netherlands, Germany, France, and the USA [15, s. 8].

During this period, the Dr. habil. in Veterinary Science, Professor I. O. Povazhenko was among the leading scientists. He was the Head of the Department of Surgery from 1937 to 1977 (with a break for the time of the German-Soviet war, when he was a Lieutenant Colonel of the Veterinary Service on the front). Now this department is named after I. O. Povazhenko. In 1937, the scientist became the founder of the scientific school of veterinary surgeons. The main areas of his activity were the conduction and spinal anesthesia, pathology of the extremities and gastrointestinal tract in animals, pathology of lymph outflow, etc. [12, s. 48]. Professor I. O. Povazhenko is the author of 6 monographs, 3 textbooks on some issues of animal pathology, a co-author of many textbooks on surgery. Such publications as *Diseases of the Extremities of Animals* (1987) and *General Veterinary Surgery* (1991) are well-known about specialists. At present, this department is named after I. O. Povazhenko. Professors S. I. Bratiukha and V. B. Borysevych were successively heads of the scientific school of surgeons founded by I. O. Povazhenko [11].

And Dr. habil. in Veterinary Science, Professor H. O. Khmelnytskyi became the head of the scientific school of veterinary toxicologists and mycotoxicologists founded by S. V. Bazhenov. The main directions of scientific research were identified; they included the development of effective diagnostic methods and reliable means for preventing mycotoxicosis of animals, the investigation of the combined effect of mycotoxins on the organism of animals and poultry in order to study pathogenesis and develop effective means of treatment. An important area of scientific research was the study of mycotoxicosis of animals, which is becoming widespread in the world. In 1995, H. O. Khmelnytskyi initiated the creation of a scientific laboratory of animal mycotoxicosis at the Department of Pharmacology and Toxicology. The scientists proposed a comprehensive approach to fight against mycotoxicosis of animals, in particular, using effective enterosorbents and substances that accelerate the process of biotransformation of mycotoxins in the liver. According to the results of scientific research, H. O. Khmelnytskyi published more than 450 works, including 5 monographs, 20 copyright certificates and patents. He is the author of many textbooks and manuals, including *Veterinary Toxicology* (1987) and *Therapy of Animals in Case of Poisoning* (1990).

When the famous scientist D. Vasylenko was appointed for the position of the

Director of the Lviv Zooveterinary Institute, positive changes in the scientific activity of the educational institution became more noticeable. Professor S. V. Stoianovskyi, who became the head of the educational institution in 1965 and managed it until 1989, continued the scientific progress of the Lviv Zooveterinary Institute. During this period, scientific schools of D. Vasylenko, S. Gzhytskyi, Ye. Berkovych, G. Zvierieva, I. Holovatskyi, F. Palfii and S. Stoianovskyi were formed there.

Thus, Dr. habil. in Biological Science, Professor S. Z. Gzhytskyi became the founder of the Lviv School of Biochemistry of Farm Animals. Since 1955 he was the head of the laboratory of biochemistry at the Research Institute of Agriculture and Animal Husbandry of the Western Regions of Ukraine in Lviv. In 1960, the Ukrainian Research Institute of Physiology and Biochemistry of Farm Animals was established on the basis of this laboratory. S. Z. Gzhytskyi became the initiator and the first director of this institute. In the same year, 1960, Academician S. Z. Gzhytskyi was awarded the honorary title of Honored Scientist of Ukraine (he proposed insulin as a remedy in veterinary medicine). Scientific activity of S. Gzhytskyi had two directions: study of biochemical processes in farm animals due to various diseases and the study of metabolism in different species of animals in connection with their feeding, rearing and keeping in order to develop the basis for improving their productivity [5, s. 282-286].

Dr. habil. in Veterinary Science, Professor, Corresponding Member of the Academy of Agrarian Sciences of Ukraine, Honored Worker of Science and Technology G. V. Zvierieva made an invaluable contribution to the scientific achievements of the Lviv Academy of Veterinary Medicine. G. V. Zvierieva worked there for 52 years. Since 1949, G. V. Zvierieva was the head of the Department of Obstetrics and Artificial Insemination of Farm Animals; and she formed a school of veterinary obstetricians. In 1958, G. V. Zvierieva organized a laboratory of physiology of reproduction and artificial insemination of farm animals at the newly established Research Institute of Agriculture and Animal Husbandry of the Western Regions of Ukraine, and she managed the work of the institute until 1981. During 1960–1970 alone, 24 PhD and 3 doctoral dissertations were defended under her supervision [6, s. 46].

In 1992, the educational institution was received its previous name – Lviv Academy of Veterinary Medicine (since 2007 – Lviv National University of Veterinary Medicine and Biotechnology named after S. Z. Gzhytskyi), which is the oldest higher educational institution with such specialization in Ukraine and Europe (founded in 1457).

During the 1980s and 1990s, the number of higher education institutions, veterinary faculties and technical schools which trained veterinary specialists increased, and veterinary faculties were opened in Dnipropetrovsk (1980), Kamianets-Podilskyi (1983), Zhytomyr (1987), Crimean (1988), and Poltava (1992) agricultural institutes [20, s. 115].

Analyzing the Soviet period of development of veterinary science in Ukraine, it should be noted that Soviet veterinary science invented new methods and means of prevention, diagnosis and treatment of farm animals, which had positive results in reducing losses in animal husbandry. Dangerous infectious diseases such as infectious pneumonia and cattle plague, glanders and infectious anemia of horses were eliminated; there were fewer cases of cattle and ovine brucellosis, the incidence of helminthiasis in cattle decreased, and conditions were created for the complete eradication of swine fever, bird pest, and sheep posthitis. However, the intensification of the crisis in the Soviet economy in the second half of the 1980s, which indicated that the centrally-controlled economy had exhausted itself, had a negative impact on the general state of animal husbandry and veterinary medicine in the country [18, s. 33].

The revival of Ukrainian veterinary medicine and veterinary legislation took place only at the end of the 20th century. The proclamation of the independence of Ukraine led to changes in the state system, reformation of the branches of the national economy, including agribusiness and its particular divisions. On June 25, 1992, the Verkhovna Rada adopted the Law of Ukraine "On Veterinary Medicine". The emergence of scientific institutions, new educational institutions, veterinary faculties at existing higher educational institutions became a positive phenomenon. Ukrainian scientists received more scientific freedom, they established contacts with foreign scientists more actively, and it became possible to publish the results of their research in foreign periodicals.

Scientific support of veterinary medicine of Ukraine is mainly provided by four institutions of the Ukrainian Academy of Agrarian Sciences: Institute of Experimental and Clinical Veterinary Medicine (Kharkiv), Institute of Veterinary Medicine (Kyiv), Institute of Epizootology (Rivne) and Institute of Agricultural Microbiology (Chernihiv), as well as scientific faculties of veterinary medicine at higher educational institutions of 3rd and 4th levels of accreditation. During 1991–2000, more than 220 scientific developments were completed, most of which were integrated into production. Among them 42 vaccines, 42 diagnostic tools, 38 guidelines and instructions, 29 methods and recommendations, 52 therapeutic and prophylactic drugs,

10 nutrient media, 8 technologies for the manufacture of biological preparations, 5 disinfectants [19].

The most important domestic developments are vaccines against anthrax, diamond skin disease of pigs, rednose, rota- and coronavirus infection of cattle "Rokogen", rednose and parainfluenza-3 "Ripavak", leptospirosis of animals, necrobacteriosis of animals "Necrosan", actinomycosis "Actinosan", pneumoenteritis and mastitis of cattle "Pneumomastisan", colibacillosis of young animals based on pathogenic factors, labeled and inactivated concentrate – vaccine against Aujeszky's disease. A series of highly effective diagnostic kits were developed. During the last decade, the production of a number of developments has been created, tested and launched, namely a complex probiotic for the prevention and treatment of gastrointestinal diseases of young animals, drugs for the control of ectoparasites in animals, for the treatment of postpartum complications in animals, for the prevention of endemic goitre in cattle, therapeutic and prophylactic preparations created on the basis of medicinal plants. According to technical and economic indicators, most of the developments of the institutes, which were implementing the program, are not inferior to similar foreign models, and 12 developments are better than foreign ones. According to the results of scientific and technical programs, research institutions received 65 patents for inventions [10].

The Institute of Experimental and Clinical Veterinary Medicine in Kharkiv played an important role in the development of veterinary medicine in Ukraine at the end of the 20th century. The Institute is the main institution, coordination and methodological center for scientific support of veterinary medicine. Scientists of the institute worked on the study and improvement of methods of diagnosis and treatment of tuberculosis (O. M. Hovorov, Yu. Ya. Kassich, A. F. Kochmarskyi), brucellosis (A. N. Pashkovskyi, P. M. Zhovanik), foot and mouth disease (M. V. Reva, B. G. Petrenko, E. V. Andreiev, M. K. Oliinyk), leucosis (V. O. Busov), infectious pathology of poultry (I. M. Doroshko, M. G. Prokofieva, V. V. Herman, V. F. Babkin, V. V. Kirpych, P. P. Tsymokh). Specialists of the institute especially focus on the study of diseases of the digestive, respiratory and reproductive organs of cattle (V. I. Stytsenko, P. P. Foks, M. P. Chechetkina, P. M. Zhovanyk, V. A. Fortushnyi, A. M. Golovko, O. O. Tsymbal) [20, s. 262]. Based on their research, scientists developed diagnostic, treatment and prophylactic means, including the use of molecular genetic methods and recombinant biotechnology. Researchers developed mono- and associated vaccines against rednose, parainfluenza, rota- and coronavirus

infections, colibacillosis, and related diagnostic kits. As a result of investigation of the intestinal microbiocenosis, effective probiotics and vaccines for the treatment and prevention of bacterial infections of the gastrointestinal tract of calves and piglets were developed. This is the merit of such scientists as P. M. Zhovanyk, V. A. Fortushnyi, G. V. Gnatenko, P. P. Fuks, A. M. Holovko, K. Ye. Konarzhevskyi, V. O. Ushkalov, D. V. Hadzevych, O. V. Hadzevych, S. O. Guzhvynska. Probiotic therapy is the only alternative to antibiotics. The issue of rehabilitation, growth, development and productivity of farm animals by means of probiotics is very promising, but at the same time difficult. It still needs in-depth fundamental research [17, s. 28].

The Institute of Veterinary Medicine of the Ukrainian Academy of Agrarian Sciences organized in 1977 in Kyiv on the basis of the branch of the Ukrainian Scientific Research Institute of Experimental Veterinary Medicine became an important scientific center. A. I. Sobko was the Head of the Institute. The scientist established the work of laboratories of epizootiology and prognosis, mycology and bacteriology, as well as virology, immunology, pig disease, group animal treatment methods, veterinary examination, non-communicable diseases. The novelty of A. I. Sobko's works is confirmed by 50 copyright certificates for inventions and discoveries. Many studies were conducted in cooperation with scientists from Germany, the Czech Republic, Bulgaria and Russia. In total, he published 300 scientific papers in Ukraine and abroad, including 5 monographs and reference books. The scientist was an innovator; he created a school of infectious pathology, prepared 35 PhDs and 5 Dr. habils [14, s. 47]. A. I. Sobko initiated the creation of a unit that developed vaccines. In the 1990s, millions of doses of vaccine against infectious diseases and many diagnostic preparations were produced on the basis of this unit. Immunostimulating, treatment and prophylactic drugs were also in great demand. Scientists developed and organized the production of immunoglobulin for the preventive care and treatment of piglets, established the production of splenocytic interferon for pigs and cattle and other important drugs.

The Institute of Epizootology of the Ukrainian Academy of Agrarian Sciences holds a valuable place among the scientific institutions of Ukraine. The history of the Institute began in 1959. A. F. Kochmarskyi, a well-known Ukrainian epizootologist, an Honored Worker of Agriculture of Ukraine founded the Institute and headed it for thirty years. Well-known scientists have worked and are working at the Institute. The researchers of the Institute made a significant contribution to the study of veterinary medicine, especially in tuberculosis of cattle, pigs and poultry (A. F. Kochmarskyi,

F. D. Lukashenko, V. V. Andrushchenko, D. D. Chernyshov, M. V. Shevtsiv), gastrointestinal diseases of calves (D. Yu. Halla, F. D. Lukashenko), paramphistomatosis and other helminthiases of ruminants (A. Y. Mereminskyi, I. Ya. Gluzman, Yu. G. Artemenko, V. O. Kiseliov, V P. Martsynovskyi), anaplasmosis of cattle (O. I. Pogorilyi, L. P. Artemenko, L. K. Likhovoz), trichinosis and echinococcosis of pigs (Yu. G. Artemenko), leucosis of cattle (M. S. Mandygra, I. V. Stepaniak, S. A. Bialetskyi, O. B. Hrytsyk), endemic diseases of cattle (I. L. Nazarenko, V. L. Romaniuk) [9, s. 9].

The Faculty of Veterinary Medicine of the National University of Life and Environmental Sciences of Ukraine holds a valuable place among the leading higher education institutions which played the most important role in the development of veterinary medicine during the period of restored independence of Ukraine. Professors S. K. Rudyk and V. A. Yablonskyi are among well-known scientists in the field of veterinary medicine. S. K. Rudyk became a member of the World and European Associations of Veterinary Anatomists, the World Association of Historians of Veterinary Medicine, the European Association of Educational Institutions of Veterinary Medicine. The scientist is the author and co-author of more than 200 scientific papers, including fundamental research *History of Veterinary Medicine of Ukraine*, *History of Veterinary Medicine of Kyiv Region*, as well as textbooks *Anatomy of Farm Animals*, *Morphology of Farm Animals*, *Course of Lectures on Comparative Anatomy*. Professor, Corresponding Member of the National Academy of Agrarian Sciences of Ukraine V. A. Yablonskyi is the author of the first textbook in Ukraine *Biotechnology of Animal Reproduction*. The research interests of the scientist are focused on the problems of physiology, pathology and immunology of animal reproduction. Scientific activity at the Faculty of Veterinary Medicine was extensively carried out thanks to well-known scientists V. P. Lytvyn, V. K. Kostiuk, A. Y. Mazurkevych, D. O. Melnychuk, V. P. Onufriev, G. O. Khmelnytskyi, V. Yu. Chumachenko, A. F. Yevtushenko. Thus, in cooperation with scientists of the Ukrainian Academy of Agrarian Sciences, Dr. habil. in Veterinary Science, Professor V. P. Lytvyn has developed and integrated into production 24 biological and antimicrobial preparations, in particular, probiotics, as well as disinfectants and vitamin preparations. And in collaboration with Professor V. P. Ryzhenko he developed and integrated into production four associated vaccines against colibacillosis.

In the early 1990s, Professor S. I. Bratiukha was the head of one of the oldest

scientific schools in veterinary medicine of Ukraine – the scientific school of surgeons. S. I. Bratiukha developed and put into practice the method of potential anesthesia of animals, diagnosis and treatment of musculoskeletal system, developed a classification of animal injuries and proposed measures for their prevention. Since 1994, Professor V. B. Borysevich was the head of this scientific school. The scientist developed methods of percussive interventions and applied them in practice. The main directions of his scientific activity were etiology, pathogenesis, treatment and prevention of hoof deformities in cattle and other pathologies of the extremities in animals, eye diseases of animals, the effect of radioactive contamination on the skeleton of cattle, introduction of methods of treatment with the help of metal nanoparticles into surgery practice. Professor V. B. Borysevich became the author and co-author of a number of monographs, textbooks and manuals, in particular, *Veterinary Surgery, Orthopedics and Ophthalmology*, *General Veterinary Surgery*, *Special Veterinary Surgery*, *Surgery of Veterinary Medicine*.

In 1993, one of the youngest scientific schools in Ukraine was established – the school of experimental physiology and animal pathology. Its founder was Dr. habil. in Veterinary Science, Professor, Corresponding Member of NAAS of Ukraine A. Y. Mazurkevych. Being a successor of the scientific school of S. V. Bazhenov, he initiated its branch, thus forming a separate scientific school. Its main directions were the study of the mechanisms of nonspecific and immunological reactivity of animals with different types of higher nervous activity under the influence of physical, chemical and biological factors, the study of biological properties of stem cells in order to use them in cell therapy. Successors of this scientific school are V. B. Danilov, M. D. Zamazii, V. I. Karpovskyi, M. P. Nishchemenko, P. K. Solonii, N. M. Soroka, V. V. Chumachenko.

When Dr. habil. in Veterinary Science V. O. Busola, who was the head of the Department of Virology of the Institute of Experimental and Clinical Veterinary Medicine in 1997-1998, started working at the National University of Life and Environmental Sciences in 1998 to work, he continued the activities of the scientific school of epizootiology and infectious diseases of animals. Thanks to the scientists of this scientific school, new preparations were introduced into veterinary practice, in particular preparations for group prophylaxis and therapy of acute gastrointestinal and respiratory diseases of animals with the use of surfactants (aethonium, thione, piperedone, dodeconium), preparations from the group of bioxide metal and silicate compounds (vetozol, vodosol, sanapin), enterosorbents (envent-1, envent-2),

probiotics (bacterin SL, veterinary bifidobacterin, monosporin PK, sporolact). Successors of the scientific school of epizootology and infectious diseases of animals are A. F. Babkin, V. S. Bilokin, P. K. Boiko, M. S. Mandygra, B. T. Stegnii, O. A. Tkachenko, and others.

In the second half of the 1980s, there was an acute shortage of veterinary specialists in the Ukrainian Polissia (Zhytomyr, Volyn, and Rivne oblasts). The situation became more complicated after the Chornobyl disaster (1986). Then the training of veterinarians became an urgent problem. That is why in 1987 the Faculty of Veterinary Medicine was established at the Zhytomyr Agricultural Institute (at present Polissia National University) on the basis of the existing Department of Zoohygiene and Fundamentals of Veterinary Medicine at the Faculty of Veterinary Medicine [13]. Studies of scientists of the faculty, Professors G. M. Kalynovskyi, O. Ye. Galatiuk, L. P. Horalskyi, Yu. Yu. Dovgyi, which aimed at preventing animal diseases and protecting the population from diseases transmitted by them, are well known in the scientific world. A well-known scientist of veterinary medicine, a distinguished worker of education of Ukraine, an academician of the Academy of Sciences of the Higher Education of Ukraine, Dr. habil. in Veterinary Science, Professor G. M. Kalynovskyi was the dean of the faculty in the period 1996–2011. His research activity was aimed at studying the pathology of parturition and the postpartum period in cows based on rational prevention care of parturition, forecasting the reproduction of cattle in households located in the areas of radioactive contamination. In 1995, a scientific school "Environmental Problems of Veterinary Obstetrics and Gynecology" was initiated by G. M. Kalynovskyi to study the effects of radioactive contamination on the course of gestation, calving, and postpartum period in cows, the feasibility of using adsorbents and microelements to reduce the radioactive impact on the body of pregnant animals and fetal development [8]. The main scientific works of the scientist: textbooks – *Special Veterinary Surgery* (1991), *General Veterinary Surgery* (1992); reference books – *Diseases of Young Farm Animals* (1990), *Handbook of Veterinarians* (1990); monograph *Maternal Placenta and Retention of Afterbirth in Cows* (1999).The particular highlight of the faculty is the educational scientific and production clinic established in 1995 on the basis of the Department of Pathology of Small Animals, Fish and Bees. Dr. habil. in Veterinary Science V. P. Fasolia initiated the creation of the clinic and she was also its first head. The material base of the clinic gives students the opportunity to acquire up-to-date practical skills in the treatment of animals, to conduct research. The clinic also provides services to the population for veterinary care

for pets.

The Faculty of Veterinary Medicine opened on September 1, 1992 at the Poltava Agricultural Institute became one of the youngest in Ukraine. In 1993, the Department of Anatomy and Physiology of Farm Animals was formed on the basis of the Department of Feeding, Morphology and Physiology. Professor, Dr. habil. in Veterinary Science V. P. Berdnyk was the head of the department. He was also the founder and head of the Association of Veterinary Specialists of Poltava oblast. The research of the scientist was aimed at the preparation of mycoplasma antigens and corresponding antisera of pigs, development of specific techniques for prevention of mycoplasma infections in pigs, production of vaccine from mycoplasmas, improvement of means and methods of specific prevention of swine mycoplasmosis [1]. In 1994, the Department of Microbiology and Veterinary Medicine was reorganized into the Department of Infectious Pathology. Professor A. F. Karysheva was the head of the department. In 1977, A. F. Karysheva was awarded a special diploma and a Silver Medal of the L. Pasteur Institute (France) for scientific developments on the manufacture of vaccines using; for the first time in the world, laser irradiation, electropulse discharges and accelerated electrons were used for manufacture of vaccines. In 1978, A. F. Karysheva became an Honorary Member of the Prague Academy of Sciences, and in 1986 a Professor at the Higher Veterinary School in Brno. In 1989 and 1994, A. F. Karysheva was invited by the Free University of Berlin to give a course of lectures on infectious animal pathology for students and teachers. In the research interests of A. F. Karysheva were the problems of production of bacterial and viral biological preparations with the use of laser beams, electropulse discharges, electric current, and accelerated electrons. The scientist became the author of 278 scientific works, including 4 monographs, 9 textbooks, the author of 17 copyright certificates and 4 patents; she supervised 27 PhDs and 2 Dr. habils.

Conclusions

Despite the devastation caused by the First and Second World Wars and the consequences of the Chornobyl disaster, as well as the negative domestic political factors of the Soviet period and the economic difficulties of the first two decades of restored independence, veterinary medicine in Ukraine has made significant progress, and its further development is ensured by modern scientists. The formation of scientific schools and current areas of research have been highlighted; the research is being continued today on the basis of research and educational institutions. The research work of several generations of Ukrainian scientists made it possible to form a necessary

and important basis for its continuation on a new, modern level. Ukrainian scientists do fundamental research to study the variability and virulence of infectious diseases, their genetic changes. They also analyze ecology and phytogeography, immunobiological properties, features of long-term persistence on the immune background and latent forms of diseases. Modern and promising areas of scientific research are epizootological monitoring of major infectious and invasive diseases of farm animals; the study of the mechanism of immunity formation, substantiation of the scheme of correction of immunodeficiency states; the development and implementation of domestic means of diagnosis, prevention and treatment of infectious diseases of animals on the basis of modern biotechnology.