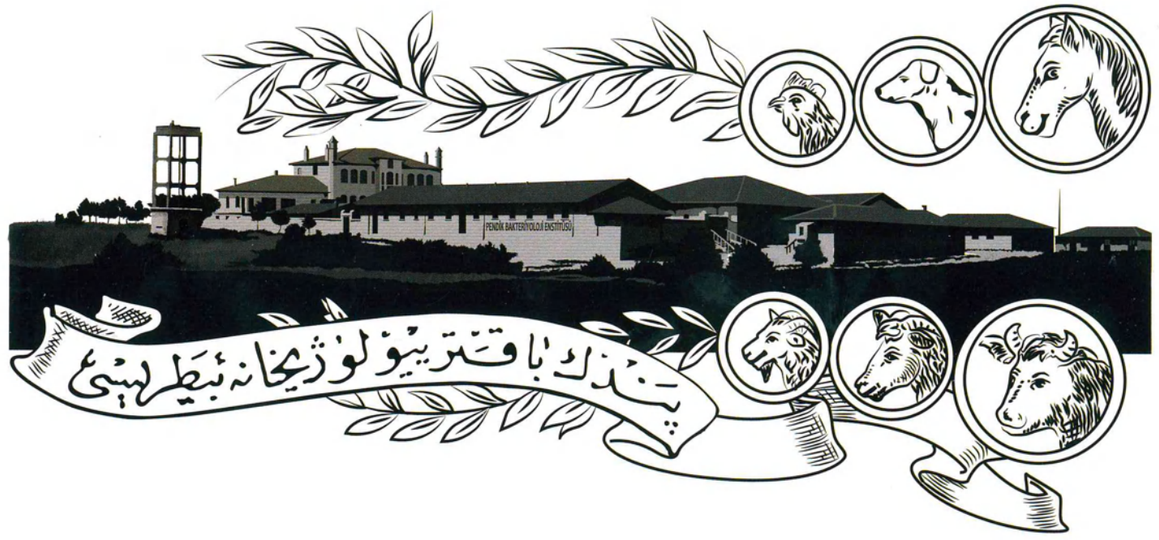
PENDİK VETERINARY CONTROL INSTITUTE

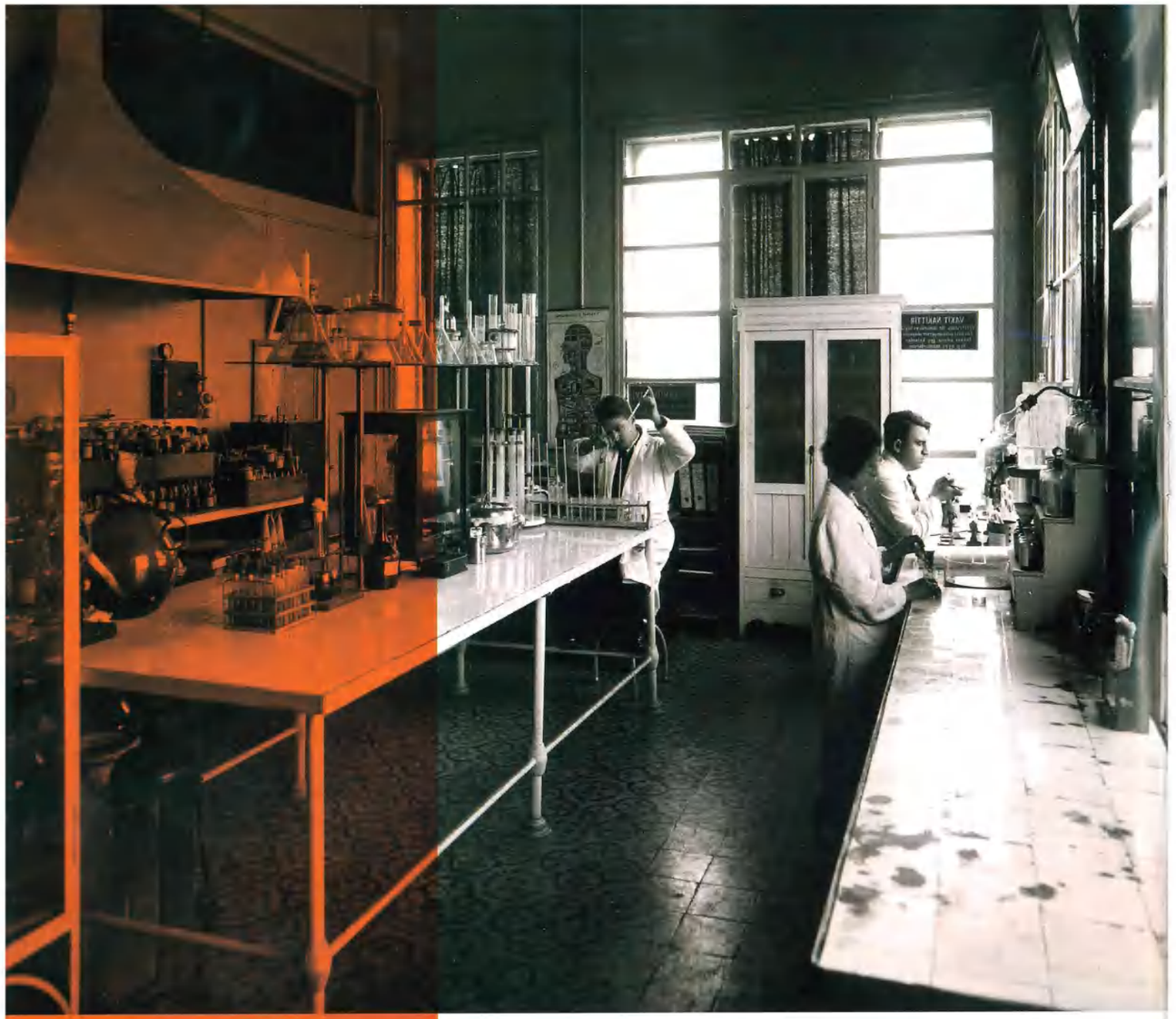
1901

115 Years of Experience
IN THE SERVICE OF ANIMAL AND PUBLIC HEALTH

REPUBLIC OF TURKEY
MINISTRY OF FOOD AGRICULTURE
AND LIVESTOCK



The first logo of the Institute which contains the sentence of
"Pendik Veterinary Bacteriology Institute"



115 Years of Experience

PREFACE

Our Institute, which started its activities within the Bakteriyolojihane-I Osmâni in 1894, became a separate institute in 1901 as Bakteriyolojihane-I Baytari under the direction of Dr. M. Adil ŞEHZADEBAŞI, and moved to its current location in 1914.

In accordance with the Institute's mission, production of the Rinderpest serum started in 1901, and continued forward with 44 additional biological products. Research and development activities for these products have been carried out at our Institute. Moreover, the Institute has adopted a historic mission for making these products available to both the private sector and our country's animal husbandry sector.

Today, our Institute offers diagnosis, pharmaceutical quality control and residues monitoring services through 21 laboratories, 4 support services units and 6 technical units/committees dedicated to each basic science with specialized personel and infrastructure at international quality standards. In addition, 20 vaccines that are important for fighting animal diseases and 24 biological agents (antigens and sera) are produced in its production laboratories. The Institute also offers 214 different analyses to the cities for which it is responsible and the whole country in relation to the issues for which it is a reference laboratory. With respect to its diagnostic work, the Institute is critically important as its area of responsibility includes Thrace and Marmara regions, which are neighboring areas to Europe, where border control for the crossing of animal diseases is of utmost importance. Our institution, continually and properly meets the needs of the cities for which it is responsible with its 44 accredited analyses and as being a National Reference on 39 themes.

Our work is important not only for animal health but also for human health. Producing vaccines for Brucellosis, which is an important zoonotic infection, our laboratory is also a national reference for this disease and is about to become an OIE International Reference. Our Residues Monitoring Laboratory conducts residue analyses on foods of animal origin, screening 51 sub category-chemicals that belong to nine different main category-chemicals. We also exclusively analyze almost 50 sub category-chemicals as part of national residue surveillance program.

The quality control of veterinary drugs produced in Turkey and imported from abroad subject to manufacturing and sales licence, and their follow-up field investigations are done by our Institute with authorization from the Ministry.

Being Turkey's second Doping Laboratory equipped with state of the art devices, all validated analyses have been offered since Ministry approval in September 2015.

The Institute also carries out important services in the fields of education, inspection, commission and control.

Having carried out its activities in its original location since its first day, our Institute has since then been a groundbreaker having trained distinguished scientists, and aims at continuing its services in animal health, and indirectly in human health, taking into account all developments around the world. I would like to pay my respects to our former staff, and commemorate the ones who are no longer with us.

Yours faithfully,

Dr. Fahriye SARAÇ
Director of the Institute

PENDİK VETERINARY CONTROL INSTITUTE 1901

Pendik Veterinary Control Institute Since 1901

Pendik Veterinary Control Institute is the very first Institute founded in Turkey. It was founded in 1894 as the Bakteriyolojihane-I Osmani with its first director Dr.Mourice Nicolle from France. The Veterinary Medicine Department of the Institute was separated from the main Institute in 1901, which continued its services in Sultan Ahmet as the Bakteriyolojihane-I Baytari under the leadership of Dr. M. Adil Şehzadebaşı.

Starting out with Rinderpest and Pasteurella Laboratories, the Institute's technical and scientific infrastructure was later improved to include an Anaerobe laboratory in 1926, a Contagious Caprine Pleuropneumonia Laboratory in 1946, a Gangrenea Emphysematosa and Diagnosis laboratory in 1947, a Pathology laboratory in 1949, a Parasitology laboratory in 1950, a Enterotoxaemia laboratory in 1954, a Brucellosis laboratory in 1957 and a Poultry Diseases laboratory in 1958. Pursuant to the agreement signed with the Food and Agriculture Organization of the United Nations (FAO) in 1965, 16 laboratories were established under the name of Sheep Diseases Research Laboratories, in which vaccines, sera and biological products with diagnostic purposes that will serve the needs of our country were developed and produced, and research and diagnostics activities were conducted. At that time, in addition to the newly-developed vaccines such as B. melitensis, M. agalactiae, Infectious Necrotic Hepatitis, Attenuated Sheep-Goat Pox, Attenuated Caprine Pleuropneumonia vaccines and Brucellosis S19, Black Leg, Enterotoxaemia, Botulism, Ecthyma vaccines which were already in production were improved. Moreover, production of diagnostic biological agents such as Clostridia conjugates, antitoxins and complement fixation test antigen started. Vaccines and biological products developed in the institute have increased in accordance with the needs of the country, reaching the number of 44. New developments have taken place at our Institute in parallel to the developing world. A bio safety level 3 (BSL3) laboratory was established with the support of the World Bank to diagnose zoonotic diseases like Avian Influenza, Rabies, Brucellosis and Anthrax. In addition to the foregoing, Residues Monitoring, Pharmaceutical Quality Control, Molecular Genetics and Doping Laboratories started their activities as a part of the Institute.

As of now, many different vaccines produced both in the private sector and in the other Institutes, some of the strains that these vaccines are produced with and all the products produced within our Institute have been developed by R&D done by the Institute's experts and brought into our Country's economy. Since then, our Institute has been a leading institution in the production of veterinary vaccines and other biological products.

Presently, our Institute serves through 21 laboratories, 4 support services units in a total area of 90.000 m2. We have 20.600 m2 of building space for research, vaccines and biological agents production, animal diseases diagnosis, pharmaceutical quality control and residues monitoring. As of 2016, we offer 214 different analyses to the cities for which we are responsible and to the whole country in relation to those issues for which we are a reference laboratory. We are accredited in 44 analyses, and serve as a National reference on 39 themes.

“21 Laboratories and 4 Service Support Units”

MISSION

Our mission is to operate under the General Directorate of Food and Control of Ministry of Food Agriculture and Livestock of Turkey for the protection and control of animal health. In accordance with this mission, we offer breeder therapy recommendations by performing infectious animal disease's diagnosis in a timely fashion and contribute to national economy by animal disease prevention and more importantly by virtue of preventing the zoonotic animal diseases to protect public health.

VISION

Our vision is to uphold high quality service standards and good professional practices in conducting the tests and analyses we are required to do by our mission under authorization by the Ministry and as demanded by our customers. In line with this purpose; our quality system is to assure quick, unerring and reliable service. Inperforming these activities, the fundamental principles of our quality policy are independency, impartiality and confidentiality.

OUR INSTITUTIONAL QUALITY POLICY

The Institute's mission, in accordance with affiliated Ministry of Food Agriculture and Livestock's policy is to protect and control the animal health, to ensure the animal welfare and to serve to the public health. In this context, our goals to uphold high quality service standards and good professional practices in conducting the tests and analyses We are required to do by our mission under authorization by the Ministry and as demanded by our customers. In line with this purpose; our quality system is to assure quick, unerring and reliable service. In performing these activities, the fundamental principles of our quality policy are independency, impartiality and confidentiality.

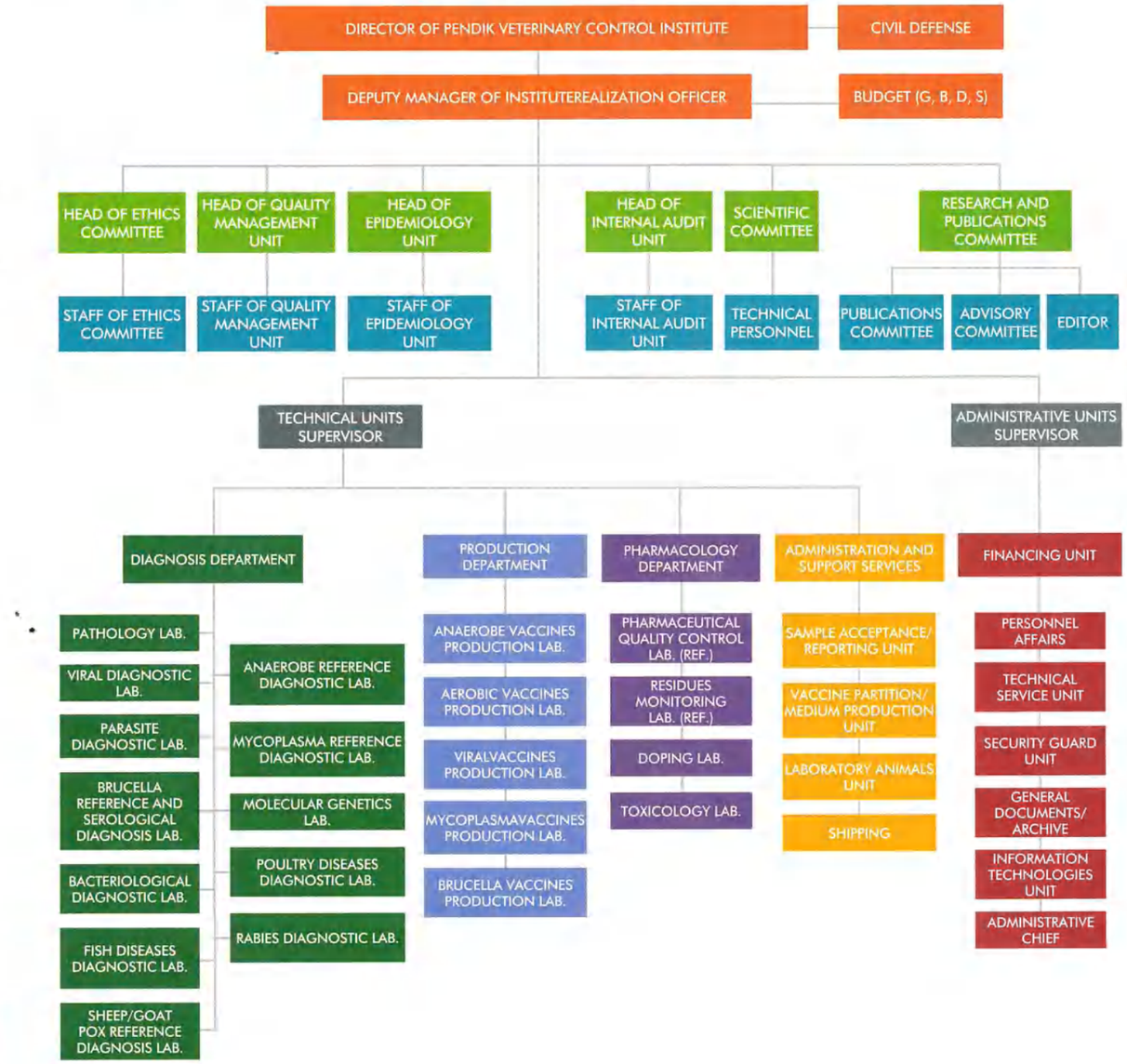
We assure to provide our test and analyze services through the quality system and documents situated in our quality manual by means of fulfilling the conditions of TS EN ISO/IEC 17025:2012, with verified and validated methods.

In order to fulfill quick, unerring and reliable testing and analysis with the goal of entrusting the whole responsible staff with up-to-date information by organizing training, learning quality documents and accordingly executing the activities of written policies, procedures and principles are going to be provided by executives.

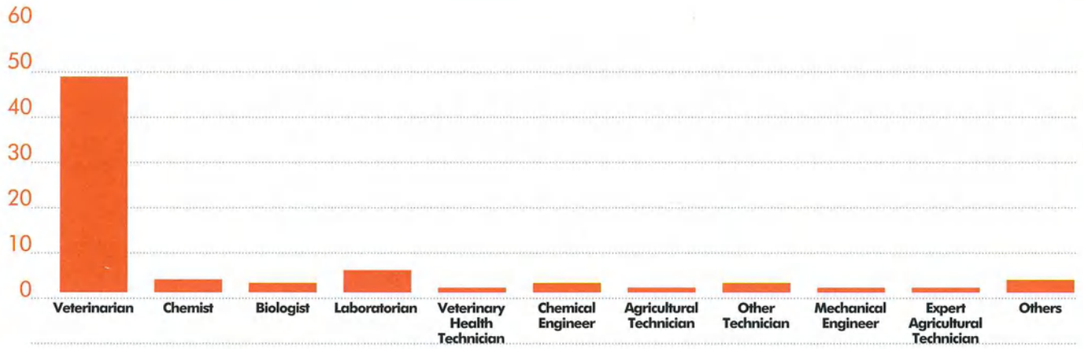
Our goal is to provide the customer satisfaction at the highest level by enhancing quality through continuous improvement. Accordingly, we will use state of the art equipment and software, and support responsible staff with training programs across our Institute.

> **"Quick, unerring and reliable service understanding, Independency, impartiality, confidentiality principles."**

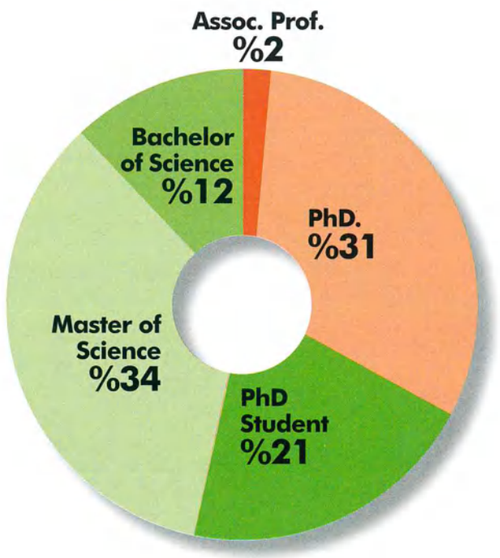
ORGANIZATIONAL STRUCTURE



Personnel Profile



Academic Profile



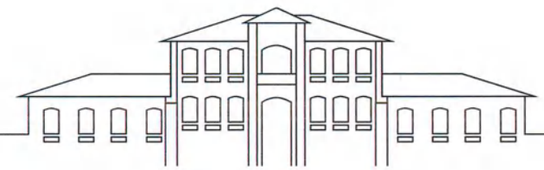
FIELDS OF ACTIVITY

Pendik Veterinary Control Institute is a public body working under the General Directorate of Food and Control of Ministry of Food Agriculture and Livestock of Turkey. The Institute provides services in relevant animal diseases in the referenced fields to whole cities, and in other diagnostic issues to 12 cities.

The Institute ;

- **Production**
- **Diagnosis**
- **Control**
- **Research, Publications & Education**
- **Training&Inspection**

carries out its activities and services in five areas including.



PRODUCTION

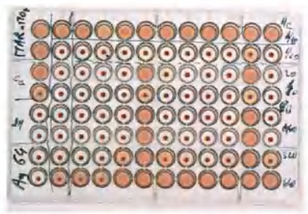
A large number of vaccines and biological diagnosis materials for infectious diseases (including zoonotic animal diseases) which affect animal health and thus directly affect the agricultural economy are produced. A significant part of manufactured vaccines are served free, public-funded and scheduled in order to be used nation wide struggle against diseases. Besides vaccine and antigens production, blood, hyper immune serum, strain, conjugate and toxin are produced as well. Research and development of all the manufactured products had been and is being done in our Institute. Moreover, a large number of vaccine strain that are manufactured by private sector is developed in our Institute. Although Institutions which are lack of the Good Laboratory Practice Certificate are not allowed to produce vaccine since 2015 by the law of "Regulation of Veterinary Medicinal Products", Brucella and Sheep-Goat Pox vaccines production is still continued with dispensation. If requested, whole vaccines can be produced and delivered to the overseas.

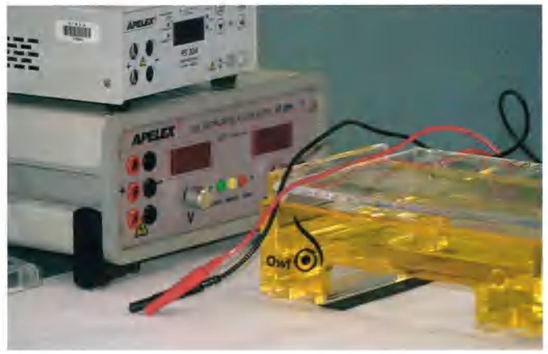
Vaccines and Antigens Manufactured at Our Institute

- Sheep and Goat Pox Vaccine, PENPOX-M
- EcthymaVaccine, PENORF
- Mycoplasma mycoides capri Vaccine, CAPRIPEN and
- Live contagious agalactia Vaccine, AGALAKSIPEN and
- Inactive Contagious agalactia Vaccine, AGALAKSİPEN Inactive
- Brucella abortusVaccine, BRUPEN A Conjunctival
- Brucella melitensis Vaccine, BRUPENM Conjunctival
- Brucella abortus S-19Vaccine (for young)
- Brucella abortusS-19Vaccine (for adult)
- Brucella melitensis Rev-1Vaccine (for young)
- Brucella melitensis Rev-1Vaccine (for adult)
- Enterotoxemia Vaccine, ENTEROPEN
- Infectious Necrotic Hepatitis Vaccine,NEKROPEN
- Bacillary Icterohemoglobinuria Vaccine, IKTEROPEN
- Botulismus Vaccine, BOTUPEN
- E.coli Vaccine for calves
- Salmonella abortus ovis Vaccine
- Haemorrhagic Septicemia Vaccine
- Theileria AnnulataVaccine-PENTAY
- BrucellaTube Agglutination Test Antigen
- Brucella Rose Bengal Plate Test Antigen
- Brucella Milk RingTest Antigen
- S. Pullorum Antigen
- Mycoplasma gallisepticum Plate Test Antigen
- Mycoplasma synoviae Plate Test Antigen
- Brucella Complement Fixation Test Antigen
- Monospesific Brucella A Anti Serum
- Monospesific Brucella M Anti Serum
- Brucella A+M Anti Serum
- Clostridial Conjugates
- Clostridial Sera and Toxins
- National Standard Anti-Brucella Abortus Serum
- Mycoplasma Hyperimmune Serum
- Mycoplasma gallisepticum HI Test Antigen

DIAGNOSIS

Disease suspected samples are sent to the reference diagnostic laboratories from all over the country and to the general diagnostic laboratories from 12 provinces, which are in the area of our responsibility. Necropsies are performed on animals sent with disease suspicion and according to the type of suspicion, laboratory routing is done. The suspected samples are examined by using bacteriological, virologic, serologic, parasitological, histological, molecular and toxicological methods. The remaining part of the samples are disposed of by incinerators. Besides animal disease diagnostic laboratory services, screening tests of the animals that are imported and poultry farms' official breeding and hatchery control activities are carried out. If required, experts of the Institute are assigned to investigate the unsolved cases of diseases in the field.





The Methods Used in Diagnostic Activities

- Bacteriological analyses: Classical isolation and identification, Vitek Automatic Identification System
- Virological analyses: Virus isolation in cell cultures
- Serological analyses: ELISA, FAT, IFAT, CFT
- Molecular biological techniques: PCR, RT-PCR, Real-time PCR, Multiplex PCR
- Biotyping with phages for the genus Brucella
- Histopathological analyses: İmmunohistochemistry techniques, histopathologic examination
- Toxin neutralization tests in mice
- Parasitological microscopic examination

National Reference Laboratories and Analyses

Our institute serves as a national reference laboratory in 39 diagnosis or analyses with its nine laboratories.

National Reference Laboratories	Diseases and Analyses
Anaerobe Reference Diagnosis Laboratory	Botulism, Enterotoxaemia, Blackleg
Bacterial Diagnosis Laboratory	Listeriosis, Q-Fever, Chlamydeous
Brucella Reference and Serological Diagnosis Laboratory	Bovine Brucellosis, Ovine Brucellosis, Tularemia
Poultry Disease Diagnosis Laboratory	Infectious Bronchitis, Avian Leucosis, Marek's Disease
Sheep Pox and Goat Pox Reference Diagnosis Laboratory	Sheep Pox and Goat Pox, American Foulbrood, Lumpy Skin Disease (LSD), Ecthyma, Swine Vesicular Disease, African Swine Fever, Akabane Disease
Mycoplasma Reference Diagnosis Laboratory	Contagious Bovine Pleuropneumonia, Contagious agalactia, Avian Mycoplasmosis, Contagious Caprine Pleuropneumonia
Parasite Diagnosis Laboratory	Small Hive Beetle, TropilaelapsClareae, Babesiosis, Cryptosporidiosis, Theileriosis, Toxoplasmosis, Trichomoniasis, Leishmaniasis, Cysticercosis
Viral Diagnosis Laboratory	Scrapie, Equine Encephalomyelitis, Vesicular Stomatitis, Rift Valley Fever
Residues Monitoring Laboratory	Nitrofurans, Nitroimidazoles (Group A6), Anthelmintics (Avermectins, Benzimidazoles) (Group B2a), Anticoccidials (Group B2b), NSAIDs (Group B2e), Fumagillin in Honey (Group B2f)

“National Reference on 39 subjects Accreditation on 44 methods”

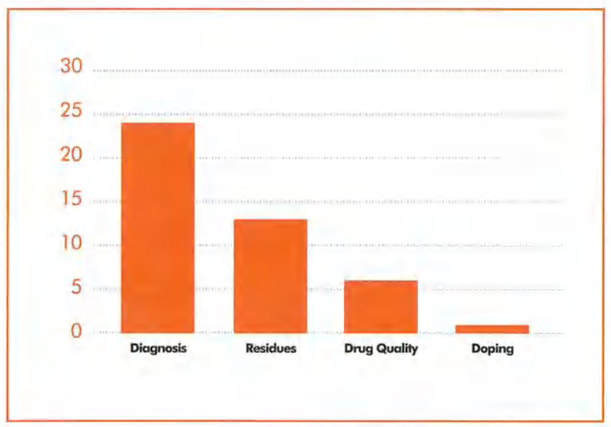
Accreditation

Our institute is accredited by TURKAK (Turkish Accreditation Agency) since the year 2008 according to Standard TS EN ISO/IEC 17025 and has passed re-accreditation audit in the year 2012. Today, 13 of our laboratories and 44 analyses are accredited.

Accredited Laboratories	Accredited Diseases and Analysis
Bacterial Diagnosis Laboratory	Listeriosis, Anthrax
Brucella Reference and Serological Diagnosis Laboratory	Brucellosis
Poultry Disease Diagnosis Laboratory	Salmonellosis, Chronic Respiratory Disease (serological)
Sheep Pox and Goat Pox Reference Diagnosis Laboratory	Lumpy Skin Disease (LSD), Sheep Pox and Goat Pox
Rabies Diagnosis Laboratory	Rabies
Mycoplasma Reference Diagnosis Laboratory	Chronic Respiratory Disease (bacteriological)
Parasite Diagnosis Laboratory	Anaplasmosis, Babesiosis, Theileriosis, Varroainfestation
Pathology Laboratory	Tuberculosis, Leptospirosis, Mycoplasma bovis pneumonia
Viral Diagnosis Laboratory	Infectious Bovine Rhinotracheitis / Infectious Pustular vulvovaginitis (IBR/IPV), PPR, Avian Influenza
Doping Laboratory	Quantitative determination of central nervous system stimulants in horse urine
Pharmaceutical Quality Control Laboratory	Determination of moisture content in liquid and powder drugs, Determination of pH in liquid drugs, Determination of density in liquid drugs, Quantitative determination of fluoroquinolones in liquid and powder drugs, Quantitative determination of tetracyclines in liquid and powder drugs, Quantitative determination of penicillin in liquid and powder drugs

Accredited Laboratories	Accredited Diseases and Analyses
Residues Monitoring Laboratory	Analyses of levamisole and benzimidazoles residues in muscle tissue, Analyses of nitroimidazoles residues in muscle tissue, Analyses of nitrofurans residues in muscle tissue, Analyses of levamisole and benzimidazoles residues in milk, Quantitative determination of avermectin residues in milk, Quantitative determination of nitroimidazoles residues in milk, Quantitative determination of nitrofurans residues in milk, Quantitative determination of nitroimidazoles residues in fish tissue, Quantitative determination of nitrofurans residues in fish tissue, Quantitative determination of nitrofurans residues in honey, Quantitative determination of anticoccidials residues in egg, Quantitative determination of nitroimidazoles residues in egg, Quantitative determination of nitrofurans residues in egg.
Toxicology Laboratory	Quantitative determination of pesticide residues in honey and honeycomb

Accredited Analysis Groups



TÜRKAK TURKISH ACCREDITATION AGENCY

COPY OF THE ACCREDITATION CERTIFICATE

As a Testing Laboratory,

T.C. GIDA, TARIM VE HAYVANCILIK BAKANLIĞI
Pendik Veteriner Kontrol Enstitüsü Müdürlüğü
Batı Mah. Erol KAYA Cad. No:1 Pendik
34890 ISTANBUL / TURKEY

is accredited in accordance with TS EN ISO/IEC 17025:2012 standard within the scope given in Annex following the assessment conducted by **TURKAK**.

Accreditation Number	: AB-0158-T
Accreditation Date	: 8 September 2008
Revision Date / Number	: 30 July 2015 / 07

This certificate shall remain in force until **10 February 2017**, subject to continuing compliance with the standard **TS EN ISO/IEC 17025:2012**, related regulations and requirements.

Dr. H. İbrahim ÇETİN
Secretary General

CONTROL

"Quality Control for Approvement of the Whole Veterinary Pharmaceuticals"

Control activities carried out on pharmaceutical, residue and doping are;

- Veterinary drug residue analysis in animal products used for human consumption in the scope of National Residue Monitoring Plan,
- Quality control analysis of veterinary drugs subject to manufacturing and sales license,
- Doping agents analysis in blood and urine of race horses.

RESEARCH, PUBLICATIONS AND EDUCATION

Our Institute tasked with R&D activities, continually carries out research studies and scientific activities. The main research fields are identifying new specific vaccine strains for the diseases seen in our country and developing new vaccines with these strains, adapting to the developing world technology in vaccine production techniques, doing epidemiological studies about epidemics, creating modern diagnostic techniques and new diagnostic methods for diagnosing and controlling diseases. In this context, in collaboration with international organizations such as European Union, International Atomic Energy Agency, World Organisation for Animal Health (OIE), APHA, IZS and also national organizations such as Universities, Ministry of Development, TÜBİTAK(The Scientific and Technological Research Council of Turkey), TAGEM (General Directorate of Agricultural Research and Policies) many projects are completed or ongoing.

Scientific studies carried out by our researchers are presented in national and international congresses and they are published in domestic and foreign scientific journals.

Our institute organizes in-service trainings about topics which it is a reference laboratory for; to standardize relevant diagnostic methods and to harmonize techniques, to determinate standard test methods, to provide these methods to be used in public and private laboratories and to improve laboratory staff competence. Various scientific and technical trainings are organized for private sector and university employees and for the foreign researchers visiting our Institute, if requested.

AUDIT

Institute's auditors and commission members carry out;

- GMP audits of domestic and foreign drug and vaccine production facilities,
- Private and universities' veterinary diagnostic and analysis laboratory audits,
- Laboratory animals unit audits,
- Vaccine and drug application file reviews,
- Biological product storage audits and compliance certification preparations, activities.

DIAGNOSTIC LABORATORIES

Bacterial Diagnosis Laboratory

Bacterial Diagnosis Laboratory, which is serving for the benefit of Nation's Livestock since the foundation of Pendik Veterinary Control Institute within Anaerobe Laboratory, has continued to study as a separate laboratory since 1946. In its field, the laboratory is the first Bacteriology Laboratory in Turkey. Isolation, identification, molecular and serological diagnosis of bacteria that cause zoonotic animal diseases such as Brucellosis, Anthrax and Listeriosis that are of great importance to animal and human welfare are being done by using international methods. The laboratory contributes to the struggle against diseases diagnosed with bacterial activityby antimicrobial sensitivity tests and by giving protection and control advices.

Parasite Diagnosis Laboratory

The Laboratory is originated, within Pendik Bacteriology Institute in 1950, to conduct diagnosis, struggle and treatment activities for parasitic diseases in Marmara and Thrace Region. It has started collaboration with Sheep Disease Helminthology Laboratory of Sheep Disease Research Laboratory within FAO in 1965. In the laboratory, the diseases caused by helminths, arthropods and protozoa are diagnosed by OIE's standard methods.

Poultry Diseases Diagnosis Laboratory

Poultry Diseases Diagnosis Laboratory founded in 1957, by making ante mortem and post mortem examinations of poultry from the field that are dead or alive, conducts bacteriological, virologic, serological, molecular and parasitological diagnosis of the disease agents listed in the laboratories analyze list and helps to struggle with diseases by giving necessary information about the treatments by using antibiotic susceptibility tests. The Laboratory is responsible for making routine health screening of the hatcheries and poultry breeding farms that are in the responsibility area of our Institute, required by the 16.01.2014 dated and 28884 numbered "Regulation for Egg Hatcheries and Poultry Breeding Farms", producing Salmonella pulorrum-gallinarum plate antigen and controlling imported turkey and chicken hatching eggs in terms fertility rate and Salmonella.

Viral Diagnosis Laboratory

Viral diseases diagnosis formerly being done in Viral Vaccines Production Unit, with the establishment of Viral Diagnosis Laboratory in 1988, is now being done in this laboratory. In the Laboratory, 36 analyses including Avian influenza, Bovine leucosis, Pestivirus, IBR/IPV, Bluetongue disease, Bovine Spongiform Encephalopathy, Schmallenberg, Maedi/Visna, Bovine Rinderpest, Bovine Ephemeral Fever are done.

Anaerobe Reference Diagnosis Laboratory

Anaerobe Laboratory has started operating in 1926 and separated in to two sections, naming, Blackleg and Bradsot. These sections have united with the Anaerobe Laboratory which was established in 1965 within the scope of Sheep Diseases Research Project supported by FAO in 1985. The laboratory is responsible for the diagnosis of Clostridial infections. Isolation and identification are done with classical bacteriological methods besides Toxins neutralization, ELISA and Fluorescence antibody tests. Standardization of sera for diagnosis, clostridial toxins and conjugates are also conducted.

Sheep/Goat Pox Reference Diagnosis Laboratory

Sheep/Goat Pox Reference Diagnostic Laboratory, considering the importance of Sheep/Goat Pox disease in our country, was founded within Sheep Diseases Laboratories of FAO in 1965. The laboratory studies virus isolation of suspicious materials, serum neutralization and diagnostic studies by using advanced molecular techniques.

Brucella Reference Diagnosis Laboratory

Brucella Reference Diagnosis Laboratory is responsible of producing polyserum and monospecific antiserum, biotyping and tracing the Brucella types in our country circulating in the field and diagnosing Brucellosis serologically.

Mycoplasma Reference Diagnosis Laboratory

Founded in 1965 as Mycoplasma Laboratory within Sheep Diseases Laboratories of FAO, Mycoplasma Reference Diagnostic Laboratory is responsible of making isolation, identification, molecular and serological diagnosis of Mycoplasma agents by using international methods that creates infection on animals in our country especially sheep, goats, cattle and poultry. The laboratory identifies isolated Mycoplasma spp. and verifies suspicious or positive blood serums sent by other institutes and produce hyper-immune serum and antigens essential for disease diagnosis.

Rabies Diagnosis Laboratory

Rabies diagnosis formerly was being made by Hıfzısıhha, is now being done in our Institute with the foundation of Pathology Laboratory in 1965. Separating from the Pathology Laboratory, Rabies Diagnostic Laboratory was founded in 2001. In our institute, diagnosis of Rabies is made by using Sellers stain, FAT stain and mouse inoculation test in a BSL-3 laboratory.

Pathology Laboratory

Founded in 1950, Pathology Laboratory is responsible of performing necropsy of sick or dead animals that are sent to our Institute for diagnosis and by concerning the suspicious diseases distributing the necropsy samples to the relevant laboratories. Hematoxylin, Eosin and immunohistochemical staining methods are used for histopathological diagnosis on tissue samples.

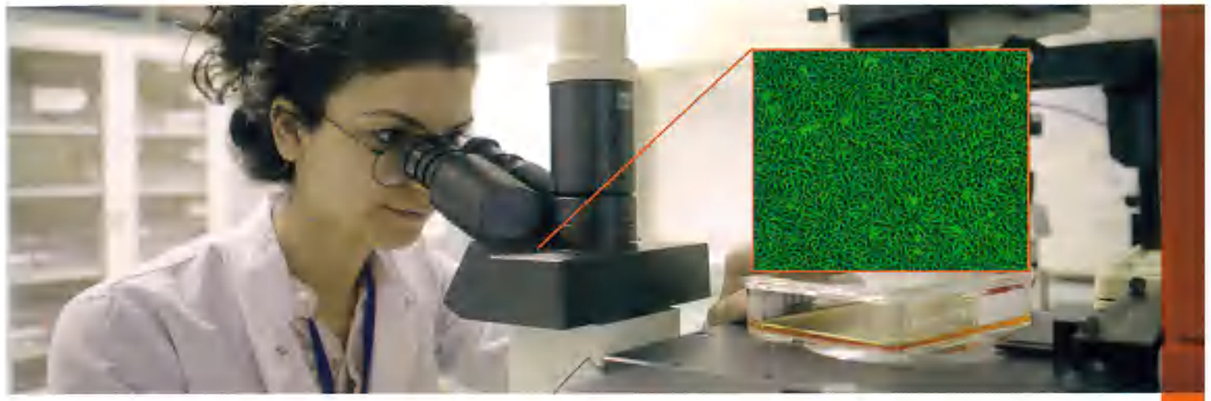
Molecular Genetic Laboratory

Founded in 2009, Molecular Genetics Laboratory studies on diagnosis of miscellaneous animal diseases with DNA sequencing and verifying the diagnosis with cultural and other molecular methods and determination of viruses and bacteria's genetic diversities with molecular identification methods such as genome sequencing, mutation and phylogenetic analysis by fragment analysis and characterization of epidemic diseases.

Fish Diseases Diagnosis Laboratory

Aquaculture Resources and Fish Diseases Diagnosis Laboratory has established for the purpose of diagnosing and treating the bacterial diseases of cultured freshwater and saltwater fishes in 1994. It conducts studies of microbiological quality control of imported aquaculture products. The laboratory also makes total and fecal coliform counting tests.

PRODUCTION LABORATORIES



Brucella Vaccines Production Laboratory

Formerly, established as "FAO/WHO Middle East Brucellosis Center" within Etlik Veterinary Bacteriology Institute in 1951, has moved to Pendik Veterinary Bacteriology Institute under the name of Brucella abortus Laboratory in 1957. Brucellaabortus S19 vaccine has started to be produced in 1960.

Brucella MelitensisLaboratory has started its activities within FAO's Sheep Diseases Research Laboratories in 1965 and Brusellamellitensis Rev.1 vaccine has started to be produced in 1969. These two laboratories, merged in 1983, work as Brucella Vaccines Production Laboratory nowadays. Conjunctival Brucella vaccines developed by our experts in 2011 are produced and 100% of the vaccines are served programmed as required by our country under the scope of "Brucellosis Eradication Program" carried out by the Ministry.

- Brucella abortus vaccine, BRUPEN A Konjunctival
- Brucella mellitensis vaccine, BRUPEN M Konjunctival
- Brucella abortus S-19 vaccine (for young)
- Brucella abortus S-19 vaccine (for adult)
- Brucella mellitensis Rev- 1 vaccine (for young)
- Brucella mellitensis Rev- 1 vaccine (for adult)
- Brucella Tube Agglutinating Antigen
- Brucella Rose bengal Plate Test Antigen
- Brucella Milk Ring Test Antigen

Viral Vaccines Production Laboratory

The laboratory, founded as Sheep-Pox Laboratory and has started preparing hyperimmune sera against Sheep Pox disease in 1924 and inactive Pox vaccine in 1929, has merged with Virology Laboratory in 1965 which was established in the scope of FAO's Sheep Diseases Research Project. Within this period, attenuated Sheep Pox and Ecthyma vaccines were developed and produced. Currently, studying as Viral Vaccines Production Laboratory and producing Sheep, Goat Pox and Ecthyma vaccines, the laboratory developsnew vaccines for struggling against diseases that are major problem for national animal husbandry. In the scope of these studies, Lumpy Skin Disease Virus (LSDV) was isolated and vaccine development studies against LSD have started since late 2014.

- Sheep and Goat Pox vaccine , PENPOX M
- Ecthyma vaccine, PENORF

Mycoplasma Vaccines Production Laboratory

Mycoplasma Vaccines Production Laboratory, primarily established as "Contagious Caprine Pleuro pneumoniae Laboratory" in order to research the etiology and prophylaxis of Contagious Caprine Pleuropneumoniae, has started to produce the first Contagious Caprine Pleuropneumoniae vaccine in 1946. The Laboratory, united with the Mycoplasmosis Laboratory In 1985 which was established in the body of Food and Agricultural Organisation (FAO) in 1965, currently produces a live/attenuated vaccine, "Capripen, "against Contagious Caprine Pleuropneumoniae, a live/attenuated vaccine, "Agalaksipen live" and an inactive vaccine, "Agalaksipen inaktif" against Contagious Agalactiae, Mycoplasma gallisepticum plate test antigen used for the serological diagnosis of Chronic respiratory diseases of poultry caused by Mycoplasmas and Mycoplasma synoviae plate test antigen used for the serological diagnosis of Infectious synovitis. The laboratory continues its activities as Mycoplasma Vaccines Production Laboratory, since 2006.

- Mycoplasma mycoides capri vaccine, CAPRİPEN live
- Contagious Agalactia vaccine, AGALAKSİPEN live
- Contagious Agalactia vaccine, AGALAKSİPEN inaktive
- Mycoplasma gallisepticum Plate Test Antigen
- Mycoplasma synoviae Plate Test Antigen
- Mycoplasma gallisepticum HI Test Antigen
- Mycoplasma hiyperimmun sera

Aerobic Vaccines Production Laboratory

Being one of the first laboratories, as Pasteurellosis Laboratory at the time the Institute established in 1914, the Laboratory has continued its activities under several different names. The Laboratory, where several Aerobic bacteria vaccines are produced, emphasizes producing Calf septisemi sera, Esherichia coli vaccine, Salmonella abortusovis vaccine and Esherichia coli K99 antigen in recent years. Beside these services, the sterility tests of injectable veterinary drugs produced in Turkey are being done in the laboratory.

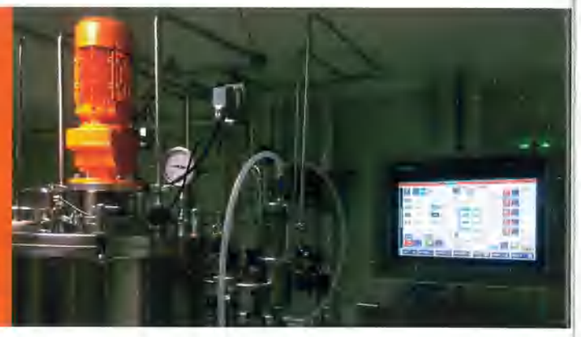
- E. coli vaccine for calves
- Salmonella abortus ovis vaccine
- Hemorrhagic septisemia vaccine

Anaerobe Vaccines Production Laboratory

Anaerobe Laboratory has started operating in 1926 and separated in to two sections, being, Blackleg and Bradsot. These sections have united with the Anaerobe Laboratory, which has established in 1965 within the scope of Sheep Diseases Research Project supported by FAO in 1985. The Laboratory is responsible of producing clostridial vaccines used against diseases caused by anaerobic microorganisms. Clostridial conjugate, diagnostic antisera and clostridial standard antitoxins used for vaccine potency tests are produced in this laboratory. The laboratory continues its activities as Anaerobic Vaccines Production Laboratory since 2006.

- Infectious Necrotic Hepatitis vaccine, NEKROPEN
- Baciller Icteroheamoglobinuria vaccine, İKTEROPEN
- Botulismus vaccine, BOTUPEN
- Enterotoxemia vaccine, ENTEROPEN
- Clostridial conjugates
- Clostridial sera and antitoxins

"With a mission for prevention and control of animal diseases by contributing to the national economy and struggling zoonotic diseases"



PHARMACOLOGY LABORATORIES

Doping Laboratory

The Laboratory was established with the authority of the High Commissioners' Association of the Ministry of Food, Agriculture and Livestock in 2010 to conduct analysis of the doping substances on blood and urine specimens of purebred British and Arabian race horses and to do researches on doping substances. Incoming samples are passed through different extraction stages according to their pharmacological and chemical structures and analyzed by GC-MS, LC-MS/MS instruments with regard to Prohibited-list of doping substances.

Pharmaceutical Quality Control Laboratory

Pharmaceutical Quality Control Laboratory is assigned for the quality control of the veterinary medicinal products. The Laboratory analyzes the quantity of active ingredients and physical properties of veterinary drugs subject to authorization and field investigation. The personnel who attend to the Veterinary Medicinal Products Commission also carries out investigations of the authorization and variation dossiers of drugs. The Laboratory not only analyzes the drugs that production companies request but also the ones sent from Provincial Directorates of Food, Agriculture and Livestock that are reported to cause problems or taken to court and prepares technical reports if requested.

Toxicology Laboratory

Toxicology Laboratory initially established as Physiology-Toxicology Laboratory, has continued to serve as Toxicology Laboratory since 1998. The mission of the laboratory is to investigate incoming samples in case of suspected poisoning with regard to substances may cause toxication in this purpose investigating for strychnine in cases of pet and farm animal poisoning, analyzing for mycotoxins in oily seeds and animal feed and conducting pesticides (organic phosphorylated, organic chlorinated and carbamate group) and heavy metal analysis. Additionally, physical and chemical analyzes (hardness, pH, free chlorine, chloride, calcium, magnesium, sulphate, carbonate, nitrite, nitrate, total solid matter, ammonia, organic matter, turbidity, manganese, iron) of drinking and spring waters are conducted by the Laboratory.

Residues Monitoring Laboratory

Residues Monitoring Laboratory has been appointed as National Reference Laboratory in order to monitor residues of veterinary drugs in food of animal origin and conducts studies since 2000.

The Laboratory is the only laboratory that analyzes Chloramphenicol, Nitrofurans, Nitroimidazoles, Avermectin, Benzimidazoles, Anticoccidials and Fumagillin residues of veterinary drugs on animal tissues in Turkey.

Group of drugs analyzed by the Residues Monitoring Laboratory

- Anthelmintic Drug Residues (Benzimidazoles, Imidazothiazoles, Avermectins)
- Anticoccidial Drug Residues (Ionophores, Nicarbazin, Nitroimidazoles, Nitrofurans)
- Nonsteroidal anti-inflammatory Drug Residues
- Antibiotic (Chloramphenicol) Residues
- Other Antibiotic Drug Residues (Fumagillin, Nitrofurans, Nitroimidazoles, Tetracyclines)
- Specially requested Analysis (Tetracyclines)

“Residue Evaluation and Control in Food of Animal Origin as a Reference at the National Level For 51 Analyses”

SUPPORT UNITS

Laboratory Animals Unit

The Laboratory Animals Unit has started its studies initially for the production of Rinderpest serum in 1897 and continued to work with 75 serum cattle after moving to its current location in 1914. The Laboratory has license since 2010 according to the changed legislation. Nowadays, the unit continues to work by housing laboratory animals including mice, rabbits, Guinea pigs, sheep and goats to meet the requirements of the Institute's diagnosis, research and production purposes.

Sample Acceptance and Reporting Unit

The Sample Acceptance and Reporting Unit was founded in 2006. Private and official diagnosis and control sample requests delivered by hand, post and cargo are approved and recorded by the unit. Accepted samples are sent to the related laboratories to be analyzed and analyze results including the analysis notification forms from the laboratories are turned in to report and sent to the relevant by the unit.

Shipping Unit

The Unit is responsible for handling and storage of the produced vaccines at required conditions, packaging them in the right equipment at the right temperature for dispatching to the requested locations and delivering them to the shipping companies.

Vaccine Partition and Medium Production Unit

Vaccine Partition and Medium Production Unit founded in 1914 as Vaccine and Serum Partition Laboratory is now responsible for producing medium and vaccine diluents. The Unit, moved to its current location in 1965, is in charge of the standardization and sterilization processes of the manufactured products in the Institute as well as mediums used internally.

- 5% Sheep Blood Agar
- Sabouraud Agar
- Mac Conkey Agar
- EMB Agar
- Endo Agar
- Plate Count Agar
- SS Agar
- Brillent Green Agar
- Müeller Hilton Agar
- Gassner Agar
- Hektoen Agar
- Baird-Parker Agar
- XLD Agar
- Rambach Agar
- XLT-4 Agar

OTHER TECHNICAL UNITS AND COMMITTEES

Quality Management Unit

TS EN ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories is the standard for which laboratories must hold accreditation in order to be deemed technically competent. A prerequisite for a laboratory to become accredited is to have a documented quality management system. Quality Management Unit determines policy regarding quality and is responsible for implementing, sustaining and auditing the requirements of the standard.

Internal Audit Unit

The Unit, required by Public Financial Management and Control Law No.5018, is responsible of the Internal Control System that aims the institutions to accomplish their goals and mission by minimizing the uncertainties along the way. In this manner, the Unit establishes the system, implements standards and reports activities.

Epidemiology Unit

The Unit is responsible for attending the National Epidemiological Survey and surveillance programs, designing epidemiologic field workshops, helping to investigate the impacts of the disease control strategies applied by the Ministry and contributing to the research projects prepared by laboratory staff in terms of epidemiology.

Research and Publication Committee

Committee is responsible of publishing activities including redaction of the books, brochures and magazines and coordinating national and international researches.

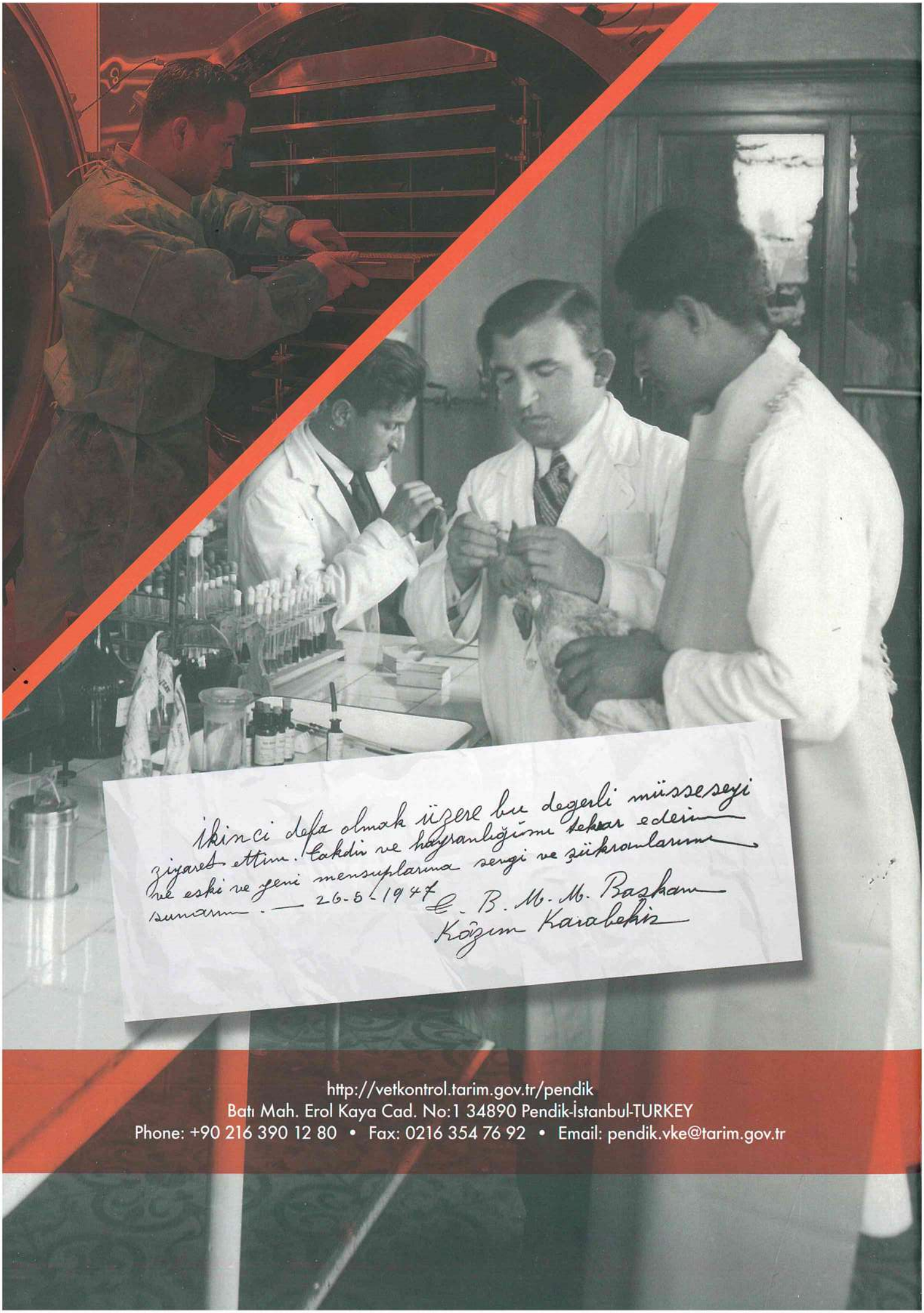
Ethics Committee

The Committee is legally established to ensure and control adherence to the standards during the use of laboratory animals for research, diagnosis and educational purposes. The laboratory animal studies within Institute can only be performed after the permission of the Ethics Committee.

Animal Welfare Unit

The Unit, founded as required by the "Directive for The Welfare and Protection of Animals Used for Experimental and Other Scientific Purposes", is responsible for giving information to the staff working with laboratory animals about how to obtain, maintain, shelter and use the animals. The Unit implements the principle of replacement, reduction and refinement and monitors, reports and traces activities involving animal welfare.

"Serve Under Animal Health, Welfare and Public Health With the Whole Personnel, Units and Councils"



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