



# Dipartimento di Scienze Veterinarie

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## Università di Pisa



# Self-Evaluation Report

## ANNEX 6

Department of Veterinary Sciences

University of Pisa

EAEVE, 2022

## Annex 6. Equipment in the VEE premises

**Premises for practical work**

| Site location/Building code | Premise                              | Description of equipment   |
|-----------------------------|--------------------------------------|--|
| PiB/B22 (0)                 | Computer room                        | 20 computers (plus the Master one), the number of seats is twice, so that 2 students can use the same computer, if necessary. This is a University TEST CENTER SAI.  |
| PiB/B23 (1)                 | Veterinary Anatomy Museum            | See the relevant website ( <a href="#">🌐</a> ).  |
|                             | Microscopy laboratory 1              | 20 microscopes, 20 sets of histological slides, 20 sets of microscopic anatomy slides, 1 microscope connected to a video-camera by which the slides can be projected on a screen, 1 video-recorder, 1 projector for digital images, which can be connected to a lap-top computer. Students have the chance, both during and after the course, also to use the microscopy room autonomously twice a week for the entire academic year (except August).  |
| PiB/B24 (0)                 | Anatomy dissection room              | 8 dissection table for bone, skeleton and model study. In this room, students perform dissections on organs, SA cadavers, parts of LA and SA carcasses. Hand and e sinks are present in the room.  |
|                             | Necropsy room & adjoining facilities | 2 small sized animal dissection tables, 2 medium sized animal dissection tables, 2 freezers, 1 electric hoisting system, 1 live video-projecting system, 1 digital scale, post-mortem instruments including jars for tissue formalin fixation and large buckets for discarded tissue. Additional dissection tables are placed outside the necropsy room and moved inside when necessary. A LA dissection table is hosted by an independent contractor to deliver LA for necropsy and transport for disposal after the necropsy. The post-mortem refrigerator room is external to the necropsy room and has a volume of 36.3 m3. Separate changing rooms for students and personnel, an emergency shower room and tissue sampling laboratory (provided with a biohazard hood for fixation and sampling of fixed tissue) are contiguous to the necropsy room. Two security storage cabinets for formalin fixed tissue storage are also available. The live video-projecting system allows a higher number of students to observe a post-mortem examination since video recording and voice comments by the teacher can be transmitted via streaming using a learning platform. The audio system also allows each student to ask questions. |
| PiB/B25 (0)                 | Microscopy laboratory 2              | 8 binocular microscopes, 7 stereo-microscopes, 1 microscope connected with a video-camera to project samples on a TV set, 2 TV sets, 1 video projector, modular structures which can be dismantled for Anatomy and Botany's training.  |
| SPB/B27 (0)                 | Biology/Chemistry laboratory         | 2 multiple-station microscopes, 4 binocular microscopes and 4 stereoscopes, connection to a digital image acquisition system that can be transmitted to a TV or projector, 3 chemical hoods, 1 biological hood, precision scales, eppendorf centrifuges, spectrophotometer, set of variable volume micropipettes, glassware, laboratory materials.   |
| SPB/G28-1 (0)               | Room for practical clinical training | 8 inox tables for work on organs or cadavers, sink, freezer, phantoms for surgery and obstetrics (OHE, male castration, bovine gravid uteri, equine and bovine ovaries).   |

**Premises for study and self-learning**

| Site location/Building code | Premise                      | Description of equipment  |
|-----------------------------|------------------------------|---|
| SPB/G28-1 (1)               | Radiology self-study corners | 2 PCs, each with X-Ray repository and learning resources. The X-rays can also be consulted from home (One Drive Storage). |
|                             | Reading room                 | Tables, chair, microwave, access to terrace.  |
|                             | Reading room                 | Table, chair.   |

**Research laboratories**

| Site location/Building code | Premise   | Description of equipment  |
|-----------------------------|---|---|
| PiB/B22 (0)                 | Food inspection (FishLab)                           | Chemical and laminar flow hoods, electrophoresis apparatus for DNA samples and PCR (end point and real time), spectrophotometer, UV transilluminator for post electrophoresis DNA and PCR products visualisation, pH meters, thermostated baths, equipment for the automate digestion of meat and fish samples for parasite detection (Trichineasy®).   |
|                             | Genetic biotechnologies                             | Refrigerators, freezers, centrifuges, refrigerated centrifuge, laboratory shakers, pH meter, Thermostatic water bath, laboratory analytical balance, spectrophotometer, electrophoresis apparatus (agarose gel) for DNA samples, UV Transilluminator and dedicated photography apparatus, chemical hood, 2PCR Apparatus and ABI PRISM® 310 Genetic Analyzer automated system for sequencing, STR Allelic sizing, and DNA analysis and quantification.                                       |
|                             | Biochemistry and proteomic                          | Chemical hood, two bidimensional electrophoresis, instruments for western blotting, two spectrophotometers, an electrophoresis apparatus for DNA samples, a fluorimeter for the quantification of protein concentration, a refrigerated centrifuge, HPLC for detection of protein and non-protein a.a present in bee food matrices; enzymatic assays and electrophoresis for activities, PCR, scales, pH meters, thermostated baths, incubators, chillers, chemical and laminar flow hoods. |
| PiB/B22 (1)                 | Physico-chemical analysis of foods of animal origin | Spectrophotometer UV-Vis, HPLC system with UV-Visible detector, Kjeldahl, Soxhlet, Ultraturrax homogeneizator.  |
|                             | Food microbiology                                   | Class 2 safety laminar flow cabinets, chemical hood, Stomacher paddle blender, thermostated bath, incubators, thermocycler, electrophoresis chamber, transilluminator, centrifuge, microcentrifuge, optical microscopes.  |
|                             | Meat quality  | pH meters, colorimeter, spectrophotometer, homogenizer, stove, scales, agitators, refrigerators, freezers, meat mincer, thermostated bath, hydraulic press, thermocouple thermometer, Instron equipment for the determination of meat tenderness, digester system.  |
| PiB/B24 (0)                 | Milk quality and animal feed                        | UV-Vis spectrophotometer, gas chromatograph equipped with FID, fluorescence optical microscope, atomic absorption with graphite furnace, calorimetric bomb, Kjeldahl, Soxhlet, Ankom Fiber Analyzer, precision balance scale, agitators, refrigerators, freezers, pH meters, centrifuge, chemical hood, optical microscope, rotary evaporator, thermostated stoves, thermostated bath.  |

| Site location/Building code | Premise  | Description of equipment  |
|-----------------------------|--|---|
|                             | Physiology and ethology                                    | HPLC systems with UV and fluorimetric detector for determination of amino acids, serotonin, antioxidants, etc. in animal biological liquids; Microplate spectrophotometer with filters for ELISA methods; phase contrast and inverted microscope; blood cell counting machine; video analysis software.   |
| PiB/B24 (1)                 | Micology   | Incubators, optical microscopes, bio-safety cabinet, centrifuge, refrigerator and freezers, fan assisted cabinet.   |
|                             | Parasitic diseases serology                                | Incubators, fluorescence microscope, refrigerators and freezers.  |
|                             | General parasitology 1                                     | Incubator, 3 optical microscopes, 2 stereomicroscopes, bio-safety hood, 3 refrigerators with 3 freezers, fan-assisted cabinet.  |
|                             | General parasitology 2                                     | Two optical microscopes, bio-safety hood, centrifuge, refrigerator with freezer, chemical-hood.   |
|                             | Histology  | Equipment for the preparation and morphological and ultrastructural analysis of biological samples, including molecular investigations (rotary and cryostat microtomes, ultramicrotome, chemical hoods, precision balance scales, pH meter, thermostated water bath, histology lab equipment).  |
|                             | Histopathology   | Equipment for processing and preparation of histological tissue samples, histological, histochemical, histoenzymatic, immunohistochemical and ultrastructural analyses of nervous and muscular tissue samples (automated vacuum tissue processor, rotary microtome, chemical hood, precision balance scale, pH meter, thermostatic water bath, histology lab equipment, 2 paraffin embedding systems and tissue processor inside chemical hoods).                         |
|                             | Bacteriology   | Laminar flow hood, incubators, water bath, optical microscope, stereoscope, refrigerator.   |
|                             | Avian pathology  | Laminar flow hood, incubator, optical microscope, refrigerator, freezer.  |
|                             | Molecular bacteriology                                     | Thermocycler, electrophoresis system, PFGE system.  |
|                             | Serology   | Laminar flow hood, incubator, optical microscope, refrigerator, freezer.  |
|                             | Sterilization, culture media preparation and -80°C storage | Vertical autoclaves, steriliser with forced air circulation, precision balances, water purification system, microwave oven, hob, industrial dishwasher, refrigerators/freezers, ultrafreezer (-80°C), centrifuges, incubator, safety cabinet for flammable reagents.  |
| PiB/B24 (1-2)               | Molecular virology   | Electrophoresis apparatus for DNA samples and generators, Electrophoresis apparatus for protein and generators, Blotting apparatus, fluorimeter, micro centrifuges, incubator, 2 PCR and real time PCR instruments, refrigerators and freezer, UV light transilluminator. Freezer, PCR laboratory bench.  |
|                             | Virology   | Microplate spectrophotometer with filters for ELISA methods, laminar flow hood, electrophoresis apparatus for DNA samples and generators, fluorimeter, micro centrifuges, pH meter, thermostatic baths, incubators and CO2 incubator, microscope and inverted microscope, tissue homogenizer, refrigerators and freezer.  |
| PiB/B27 (0)                 | Biochemistry and apidology                                 | Experimental apiary (20 families), a breeding of standardised queen bees of the ligustica breed, a breeding of Osmia cornuta and Osmia rufa, six observation hives, ten "hoarding cages" for the observation and treatment in controlled conditions of farmed Apoidea, incubator, stereo microscope and tessovar apparatus equipped with photographic and video recording system. Instrumental insemination apparatus equipped with system for anaesthesia of queen bees. |

| Site location/Building code | Premise                     | Description of equipment   |
|-----------------------------|-----------------------------|--|
| SPB/G28-1 (0)               | Pharmacology and toxicology | Chemical hoods, HPLC systems (UV-Vis, DAD, fluorescence detectors, autosampler, Peltier system), ultrasonicator, potentiostat/galvanostat (electrochemical sensor), incubator room temperature-55°C, refrigerated centrifuge, microcentrifuge, HPLTLC system.  |
|                             | Ecotoxicology               | Bio-safety cabinet, luminometer microtox, spectrophotometer, microplate reader (UV/VIS, spectrofluoremeter, luminometer), pH meter, analytical scale/electronic scale, light, optical and stereo microscopes, cooled incubator/refrigerated thermostat, oxygraphic system Oxytherm, 37°C incubator.  |
|                             | Clinical pathology          | 1 chemical hood, 2 analysers for biochemical parameters, 2 blood cell counters, 1 automatic coagulometer, 1 automatic stainer, light microscope, 2 bench centrifuges, 1 veterinary laser cell-counter, 1 fibrinometer for coagulation assays, 2 automatic UV-VIS spectrophotometer for wet chemistry and immunoturbidimetric assays, 1 urine strip reader, 1 electrolyte analyser, 1 ELISA plate reader, 1 special refrigerator for blood transfusion products, 3 freezer at -25°C and 1 at -25°C, 1 thermostatic water bath set at 37°C, 1 high temperature stoves, 1 automatic system for protein electrophoresis, 1 fluoro-immunoassay equipment, 1 automatic device for blood typing and cross match, 1 centrifuge for cytological stain, 1 centrifuge for cytological specimen. |
|                             | Hematology/Cytology         | 1 chemical hood, 5 high grade microscopes for cytology and hematology, all equipped with an external screen for lecturing to small groups of trainees or students, 1 floor centrifuge for high volume load or for blood transfusion products, 2 scales for gross and accurate weight, 1 equipment for distilled water.   |
|                             | Reproduction Technologies   | Bio-safety cabinet, CO2 incubator, stereomicroscopes and imaging system, LN containers, thermostat, phase contrast microscope, waterbath, centrifuge, refrigerators and freezer, sperm motility analyser.  |
| QuB/G28-1 (0)               | Avian reproduction          | Digital precision scale, cooled centrifuge, water-bath with stirrer, spectrophotometer, extractor hood, cryogenic containers, refrigerator and freezer.  |

### Clinical facilities for Small Animals

| Site location/Building code | Premise                       | Description of equipment   |
|-----------------------------|-------------------------------|--|
| Pisa/B24 (0)                | Pets' behavior consulting lab | Video recording system of 4 video cameras placed in different points of the room (including the ceiling). There are also 2 fenced areas of 50 m2 and 300 m2, respectively.   |
| SPB/G28-1 (0)               | Ophthalmology                 | 1 electroretinography, 2 slit lamps, 1 applanation tonometer and 2 rebound tonometers, 2 indirect ophthalmoscopes, 1 cryo unit for surgery, 1 NDYAG laser for surgery, Melan 100 pupil light reflex stimulator, corneal crosslinking device, Algher brush for corneal debridement, surgical microscope, clear view optical imaging system, I-pen tear osmolarity system. |
|                             | Reproduction                  | 1 ultrasound machine: Aplio 400 Model: UZRI-A500A (Toshiba Medical Systems Europe, Zoetermeer, Netherlands) with ultrasound probes (microconvex 7 Mhz and linear 12 Mhz) equipped with Doppler.  |
|                             | Ultrasound                    | 1 ultrasound machine: Aplio a Model: CUS-AA000 (Canon Medical Systems Europe, Zoetermeer, Netherlands), with ultrasound probes (convex 6 Mhz, microconvex 7 Mhz and linear 12 Mhz), equipped with Doppler, system for storage and evaluation of images, 1 anaesthesia machine, 1 multiparametric monitor.  |
|                             | Surgery/Orthopedics           | Inox table, bone models for demonstrations, Instrument for electromyography.   |

| Site location/Building code | Premise  | Description of equipment   |
|-----------------------------|--|--|
|                             | Radiology  | 3 x-ray machines: MAXIVET 400 HF with direct digital radiographic system (Wireless Flat Panel Detector, Model: X-DR XL WI-FI), COSMOVET 300, FCR capsula X as image reader, 1 anaesthesia machine, 1 multiparametrical monitor.  |
|                             | CT   | 1 Computer Assisted Tomography unit, 1 anaesthesia machine with ventilator.  |
|                             | Anaesthesia, preparation   | 2 induction rooms and 1e recovery room with cages, oxygen supply, 2 anaesthetic machines, 4 multiparametric monitoring systems, 2 ultrasound machines, 1 nerve stimulator, 1 oxygen concentrator, 2 bear huggers, 2 non-invasive blood pressure monitors, 1 inox motorised table.  |
|                             | Auxiliary premises for operating room (in common with Large Animals) | Changing and scrubbing area, rooms for storage of surgical instruments and material.   |
|                             | Surgery  | 2 idraulic inox surgical tables, 6 serving inox tables, 2 inox motorised surgical table, 4 anaesthesia workstations with ventilators, 1 laser-machine, 3 endoscopy/laparoscopy towers (Storz, in common with LA, Olympus and Fujinon), 6 sets of endoscopies, one surgical microscope, 2 surgical lamps with camera, instruments for soft tissue and orthopedy.  |
|                             | Sterilisation (in common with Large Animals)                         | 2 autoclaves, automatic washing tank for endoscopes, sealing machine.  |
|                             | Hematology   | Inox table, no specific instruments, except for blood collection bags and material for bone marrow sampling.   |
|                             | Nephrology   | 1 inox motorised table.  |
|                             | Gastroenterology   | Inox table, weighter, endoscopes are in the surgery facilities.  |
|                             | Dermatology  | Inox table, otoscope.  |
|                             | Cardiology and echo-cardiography                                     | 1 ultrasound machine equipped with 2 phased array probes and 1 transesophageal probe for M-mode, 2D, Doppler, tissue Doppler and Strain echocardiography (with a DICOM storage system for post-processing analysis). 1 ECG machine for 12-lead electrocardiography. 2 Holter ECG monitors for 24-48h recordings. 1 digital high definition oscillometric blood pressure monitor.   |
|                             | Emergency and Intensive care unit                                    | Cages, visiting room, rest room, emergency laboratory (in common with Large Animals) (Blood gas analysis, haematological and biochemical analysis machines, a bench centrifuge), three multiparametric monitors, two non-invasive blood pressure monitors, one ultrasound machine, two bear huggers, four oxygen concentrators, infusion pumps (15 volumetric and 8 syringe), two weight scales, one inox motorised table. |
|                             | Clinical pathology   | See <i>Research laboratories</i>   |
|                             | Hematology/Cytology  | See <i>Research laboratories</i>   |
|                             | Pharmacology and toxicology  | See <i>Research laboratories</i>   |
|                             | Dialysis   | 1 dialysis room, 1 inox table, 1 inox motorised table, 1 crash trolley, 1 bear hugger, 1 portable oxygen concentrator, 1 ACT analyser, 1 oscillometric blood pressure monitor, 1 multiparametric monitor, 1 CritLine   |

| Site location/Building code | Premise                        | Description of equipment  |
|-----------------------------|--------------------------------|---|
|                             |                                | monitor, 1 CRRT Diapact dialysis machine, 1 intermittent Dialog+ dialysis machine, 1 CRRT VetSmart machine for continuous hemofiltration, 1 centralised reverse osmosis water system. |
|                             | Chemotherapy                   | Safe cabinet hood for chemotherapy drug preparation, 2 Infusion pumps.  |
| SPB/G28-O                   | Whelping room SA               | Whelping box, inox cages, one with oxygen door.   |
| SPB/G28-L                   | Canine artificial insemination | Endoscope for transcervical AI, inox table.   |

### Clinical facilities for Large Animals

| Site location/Building code | Premise  | Description of equipment   |
|-----------------------------|--|--|
| SPB/G28-1 (0)               | Visiting room/standing surgery/radiology                           | 1 stock, 3 portable endoscopies (1.0 cm, 1.80 cm and 300 cm) and an image capturing system, 3 sets of portable ultrasonography machines, Portable x-ray generator, GIERTH HF100 M, Ultra Leicht with direct digital radiographic system (Wireless Flat Panel Detector, Model: X-DR XL WI-FI).  |
|                             | Equine embryo transfer visiting room/Standing reproductive surgery | 2 stocks, pressurised oxygen and nitrogen plug in, 1 tower for laparoscopy (shared with SA), sink.   |
|                             | Embryo Transfer lab  | Horizontal laminar flow hood, 2 stereomicroscopes for embryo manipulation, system for images acquisition, CO2/O2 incubator.  |
|                             | Andrology lab  | LN tanks, waterbath, contrast phase microscope with heated stage, LN tanks.  |
|                             | Operating suite  | Hoist to locate the horse on the operating table, automatic operating and overhead lights, emergency lighting, pressurised oxygen and nitrogen, room air–exchange–ventilation system, operating tables, storage cabinets and draining system for feces originating from enterotomies etc. anaesthesia monitor and machine, 1 endoscopy tower (Stortz®, in common with SA). |
|                             | Anaesthesia, induction and recovery room                           | Paddled room, hoist to lift the horse.   |
|                             | Equine semen production centre                                     | Phase contrast and fluorescence microscope, fotometer, waterbath, cooler, programmable freezer, phantom for semen collection, facilities for sterilisation of glassware, LN tanks.   |
|                             | High-speed treadmill room  | High-speed treadmill.  |
| SPB/Wooden boxes            | Equine gynaecology visiting room                                   | 3 stocks, 2 sets of portable ultrasonography machines.   |