

8. LABORATORIES, ANIMAL FACILITY AND CLINICAL SKILLS TRAINING CENTRE

Poster 11 summarizes the instructions that students must follow whenever they have practical classes in teaching, research OR service-provision laboratories, and in the animal facility. Copies of this poster are displayed on the entrance door of the laboratories.

Poster 11

Instructions for students on the Standard Operating Procedures for Biosecurity in force during practical classes in the Laboratories and in the Animal Facility



LABORATORIES AND ANIMAL FACILITY

INSTRUCTIONS FOR STUDENTS

- 1 - Place your personal belongings (e.g., coat and backpack) on a shelf in the cabinet located in the corridor opposite the Laboratory.
- 2 - The use of shorts or skirts without leggings or tights is not permitted.
- 3 - Always wear closed-toe shoes.
- 4 - Put on your white cotton lab coat.
- 5 - Tie back long hair.
- 6 - Bring only 1 notebook and 1 pen, or a tablet.
- 7 - If you bring a water bottle, place it on the bench located outside next to the Laboratory entrance door.
- 8 - Disinfect your hands and enter the Laboratory, respecting the entry route.
- 9 - Wait for instructions from the teaching staff regarding the need to put on additional PPE.
- 10 - Respect the Laboratory entry and exit routes.
- 11 - When the class ends, disinfect your hands and leave the Laboratory, respecting the exit route.
- 12 - Take your water bottle with you.
- 13 - Remove your personal belongings from the cabinet located opposite the Laboratory.
- 14 - Leave the cabinet open.
- 15 - If you have doubts, read the QR Code on the poster to consult more detailed information.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

- A. White cotton lab coat, personal and clean.
- B. The remaining PPE, e.g., gloves, is provided by FMV.
- C. In practical classes in Microbiology, due to the biological risk, cotton lab coats are provided by FMV.
- D. In practical classes in Parasitology and Infectious Diseases, whenever there is biological risk, disposable gowns will be provided by FMV.

Poster 12 summarizes the instructions that students must follow whenever they have practical classes or carry out autonomous training sessions at the Clinical Skills Training Centre. This poster is displayed next to the Centre door.

Poster 12

Instructions for students on the Standard Operating Procedures for Biosecurity in force at the Clinical Skills Training Centre



CLINICAL SKILLS TRAINING CENTRE

INSTRUCTIONS FOR STUDENTS

- 1 - Place your personal belongings (e.g., coat and backpack) in a locker in the General Changing Room.
- 2 - Put on your white cotton lab coat.
- 3 - Lock the locker with your padlock.
- 4 - The use of shorts or skirts without leggings or tights is not permitted.
- 5 - Wear closed-toe shoes.
- 6 - Tie back long hair.
- 7 - Bring only 1 notebook and 1 pen, or a tablet.
- 8 - Follow the Centre entry and exit routes.
- 9 - Step on the footbath mat placed at the entrance to the Centre.
- 10 - Disinfect your hands when entering and leaving the Centre.
- 11 - If you have doubts, read the QR Code on the poster to consult more detailed information.

PERSONAL PROTECTIVE EQUIPMENT (PPE):

- A - White cotton lab coat, personal, clean.
- B - The remaining PPE, e.g., gloves, is provided by FMV.

CLINICAL PATHOLOGY LABORATORY

8.1. Introduction

- The Clinical Pathology Laboratory, named Professor Manuel Braço Forte Clinical Analysis Laboratory (LACPMBF), performs clinical analyses for the Teaching Hospital (HE) and for external Veterinary Medical Care Centres (CAMV), namely complete blood counts, clinical biochemistry, including ionograms, urinalysis, analysis of effusion fluids, transtracheal and



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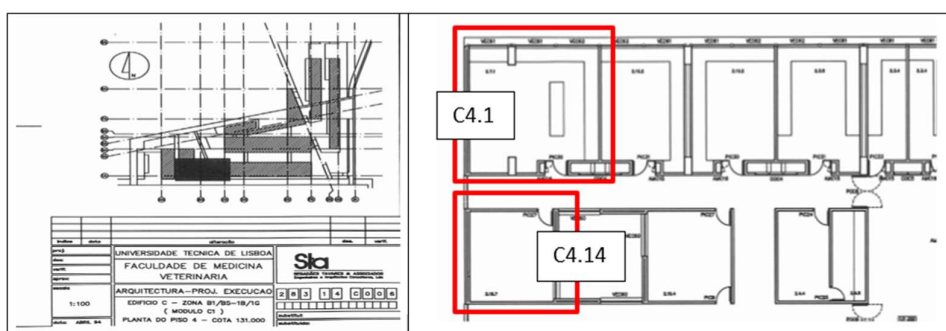
bronchoalveolar lavage fluids, cerebrospinal and synovial fluids, as well as various cytologies and myelograms.

- The species from which samples originate include not only standard veterinary species but also exotic companion animals (birds, small mammals, and reptiles) and wildlife and zoo species.
- Biological fluids and solid materials handled in the LACPMBF may constitute sources of contamination. The facilities are classified as Biosafety Level 2, associated with the relative hazards of infectious microorganisms handled there belonging to Risk Group 2 (moderate individual risk, low community risk).
- The Laboratory operates from Monday to Friday from 9:00 a.m. to 9:00 p.m.

8.2. Summary description of spaces and their location

- The LACPMBF is located on the 4th floor of Building C of FMV. It comprises two spaces: the analysis laboratory C4.1 and the laboratory support office C4.14 (Figure 9). This office houses the archive, computers and printers for issuing reports and general administrative work (test requests, documentation), and the lockers of the technical staff.

Figure 9
Clinical Analysis Laboratory



8.3. Identification of biological risks

- In general, the prevention of risks specific to each area of the LACPMBF follows the general rules of Good Laboratory Practice.
- Biological materials received and handled in this laboratory include biological samples from the different animal species mentioned above (blood, urine, other body fluids, and cytology smears).

8.4. Equipment requiring prior training

- The use of all equipment allocated to the laboratory requires prior training of potential users, provided by the technicians working in the laboratory.
- In more specific cases requiring advanced and autonomous training, this is ensured by the equipment representatives.
- The use of the different clinical pathology instruments is exclusively reserved for technical staff properly trained for this purpose.



8.5. Protective equipment

8.5.1. Collective protective equipment

- In room C4.1:
 - Emergency shower
 - Eyewash station.
- In room C4.14:
 - First aid kit.

8.5.2. Equipamentos de proteção individual

- Personal protective equipment:
 - Lab coats
 - Disposable gloves
 - Disposable masks
 - Protective goggles.

8.6. Access rules to the LACPMBF

- Access to laboratory room C4.1 is permitted only to assigned personnel, including faculty members, veterinarians, and auxiliary staff of the HE. Access by unauthorized persons is not permitted.
- Access to the laboratory support office C4.14 is open to clients, students, and staff during operating hours and in the presence of laboratory personnel.
- Each technician has a set of keys providing access to both areas. Opening and closing are performed by the technician on duty during their respective shift

8.7. Safety officer

- The person responsible for the LACPMBF laboratory, for the purpose of ensuring compliance with Safety, Hygiene and Health procedures, is Professor José Duarte Correia (zeca@fmv.ulisboa.pt).

LABORATORY OF ANTIBIOTIC AND BIOCIDES RESISTANCE

8.8. Introduction

- The facilities associated with this Laboratory include a laboratory and a storage room, used for research activities, diagnostic services, service provision, and practical classes of the elective



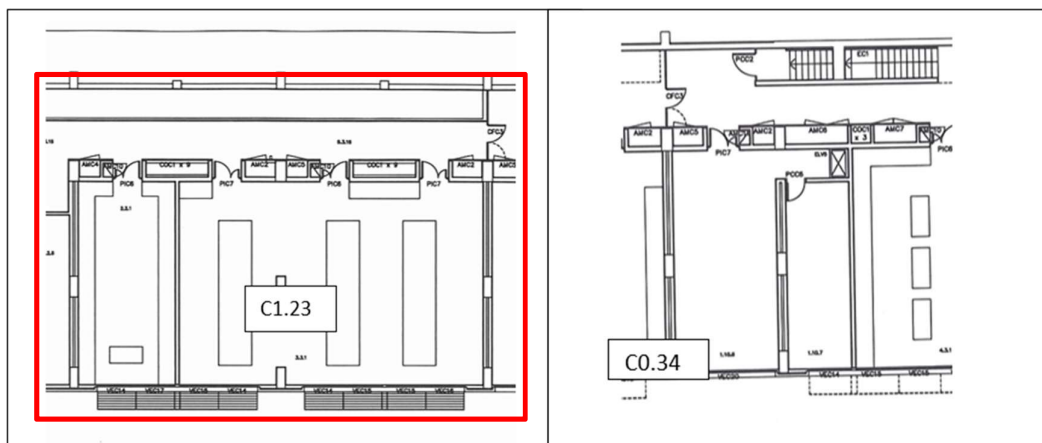
course “Antibiotherapy Strategies in Veterinary Medicine” of the Integrated Master’s Degree in Veterinary Medicine (MIMV).

- The diagnostic and service activities include:
 - performing antibiotic susceptibility testing using minimum inhibitory concentration determination and disk diffusion methods requested by the HE and by external entities;
 - performing biocide susceptibility testing requested by the HE and by external entities;
 - detection and identification of bacterial agents and resistance genes using molecular biology techniques.
- The laboratory conducts research activities in bacteriology — antibiotic and biocide resistance — using culture methods and molecular biology methods

8.9. Summary description of spaces and their location

- The Laboratory of Antibiotic and Biocide Resistance operates in the following areas on Floor 1 of Building C (Figure 10):
 - C1-23 - Practical class laboratory with benches and microscopes. Routine techniques laboratory and research laboratory;
 - C0.34 - Storage room for plastic consumables, powdered culture media, refrigerated culture media, and bacterial isolates stored in preservation medium at -20°C .

Figure 10
Laboratory of Antibiotic and Biocide Resistance



8.10. Identification of biological risks

- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- Safety precautions must be part of routine laboratory work, just like aseptic techniques and safe microbiological practices.
- Together with good practices and procedures, the use of safety equipment will help reduce risks when facing hazards inherent to biological safety.



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- Prevention of these risks requires proper use of collective protective equipment in each laboratory (forced ventilation and fume hoods, showers, and eyewash stations), including compliance with rules regarding waste management in accordance with the FMV Integrated Waste Management System. Protection also includes mandatory use of personal protective equipment according to task specifications and biological risk class.
- The biological risk of the Laboratory of Antibiotic and Biocide Resistance is Class 3 (infectious diseases caused by bacteria multiresistant to antimicrobials or moderately transmissible and/or potentially zoonotic infectious diseases). These cause diseases for which effective treatment and preventive measures exist.
- The following rules are established for the Antibiotherapy Strategies classes:
 - The person responsible for the class is tasked with selecting the bacterial agents to be handled;
 - While classes are in progress, students are required to use personal protective equipment and may not wear sandals in the laboratory;
 - When working with a Bunsen burner, users with long hair must tie it back;
 - At the end of classes, students are required to wash and disinfect their hands;
 - At the end of class, the entire laboratory must be properly tidied and cleaned.

8.11. Prior Training

8.11.1. Training in biological protection

- Training in laboratory biological protection and laboratory biological safety is provided to all personnel. This training is delivered by the Laboratory Supervisor.
 - Personnel training always includes information on safe methods for high-risk situations that laboratory staff frequently face, namely:
 - Inhalation risks (during aerosol generation, for example) when using inoculating loops, performing inoculations, pipetting, making smears, opening culture bottles, collecting blood/serum samples, and centrifuging;
 - Risks of accidental ingestion when handling samples, smears, and cultures;
 - Risks of skin puncture when using syringes and needles;
 - Biological risks in handling blood and other potentially contaminated materials;
- Biological and chemical risks in the decontamination and disposal of infectious material.

8.11.1. Equipment training

- All equipment used in the laboratories has User Manuals available in Laboratory C1.23 in a dedicated folder.
- The use of the following equipment may also require specific training:
 - Microscopes (training provided by the Laboratory Supervisor);
 - Pipettes and pipetting techniques (training provided by the Laboratory Supervisor);
 - Bunsen burners (training provided by the Laboratory Supervisor);



- Autoclave (training provided by the Laboratory Supervisor);
- Microwave oven (training provided by the Laboratory Supervisor);
- Hot plate and magnetic stirrer (training provided by the Laboratory Supervisor);
- PCR equipment (training provided by the Laboratory Supervisor);
- Biological Safety Cabinets (training provided by the Laboratory Supervisor);
- Water bath (training provided by the Laboratory Supervisor);
- Centrifuges (training provided by the Laboratory Supervisor);
- Refrigerators and freezers (training provided by the Laboratory Supervisor).

8.5. Protective Equipment

8.5.1. Collective protective equipment

- Fume hood with HEPA filter
- Forced ventilation
- Biological safety cabinets
- Air conditioning
- Emergency shower
- Eyewash station

8.5.2. Personal protective equipment

- All users are required to wear a lab coat.
- All users must wear appropriate gloves for all work involving direct or accidental contact with blood, body fluids, or potentially infectious materials. After use, gloves must be discarded in the appropriate container, and hands must be thoroughly washed and disinfected.
- Staff must wash and disinfect their hands after handling infectious material and before leaving laboratory work areas.
- All users must wear safety goggles, face shields, or other protective devices whenever it is necessary to protect the eyes and face from splashes, impacts from objects, or ultraviolet radiation.
- All users are prohibited from wearing protective clothing outside the laboratory.
- Storing or consuming food and beverages in laboratory work areas is prohibited.
- Written documents that may leave the laboratory must be protected from contamination inside the laboratory.
- All technical procedures must be performed in a way that minimizes the formation of aerosols and droplets.
- All procedures where aerosols and droplets may be generated must be carried out using disposable materials (pipettes and loops).
- Work surfaces must be decontaminated after any spill of potentially hazardous material and at the end of each working day.



- The laboratory must be kept tidy, clean, and free of materials not relevant to its activities.

8.5.3. Essential biological safety equipment

- Pipetting devices – pipettes and manual pipettors and automatic single-channel and multi-channel micropipettes.
- Biological safety cabinets, to be used whenever infectious material is handled. This material may be centrifuged in the laboratory if sealed safety centrifuge cups are used and if they are loaded and unloaded inside a biological safety cabinet, when there is an increased risk of airborne infection or when procedures with high aerosol-generation potential are used.
- Disposable plastic inoculating loops.
- Tubes and bottles with screw caps.
- Disposable plastic Pasteur pipettes, whenever available, to avoid glass.
- Biological safety cabinets are validated using appropriate methods at periodic intervals, according to the manufacturer's instructions.

8.6. Laboratory access rules

- The international biohazard symbol and sign are displayed on the laboratory entrance door.
- Only authorized personnel may enter laboratory work areas.
- Laboratory doors remain locked when unattended.
- Children are not allowed in laboratory work areas.
- No animals may enter the laboratory.
- Access to the laboratory is exclusively controlled by the Laboratory Supervisor and Researchers, through keys issued to them. Access to storage room C0.34 is via keys kept on a key holder in laboratory C1.23.
- The last user of each day is responsible for ensuring that all doors are locked

8.7. Safety officer

- The person responsible for the Laboratory of Antibiotic and Biocide Resistance, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor Constança Pomba (cpomba@fmv.ulisboa.pt).

ENDOCRINOLOGY LABORATORY

8.8. Introduction

- The Endocrinology Laboratory provides services in the field of endocrine diagnostics, including:

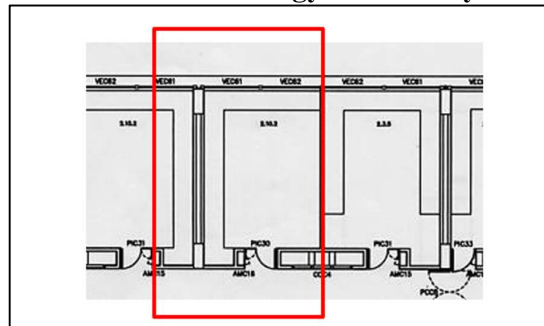


- Performing endocrine analyses requested by the HE and by external entities;
- Performing endocrine analyses associated with research projects

8.9. Summary description of spaces and location

- The Endocrinology Laboratory operates on the 4th floor of Building C, room C4.3 (Figure 11).

Figure 11
Endocrinology Laboratory



8.10. Identification of biological risks

- Considering the activities carried out, the existence of specific biological risks is anticipated, associated with the handling of animal serum.
- Prevention of these risks requires the use of gloves when handling serum samples. After analysis, the sample must be discarded in accordance with the FMV Integrated Waste Management System (Chapter 11 “Waste management and disposal”)

8.11. Prior training

- All equipment used in the laboratory has User Manuals available in Laboratory C4.3 in a dedicated folder.
- Training in the use of equipment is provided by the faculty member responsible for the Laboratory

8.12. Protective equipment

8.12.1. Collective protective equipment

- Emergency shower
- Eyewash station

8.12.2. Personal protective equipment

- All laboratory users are required to wear a clean, personal white cotton lab coat.
- All users must wear gloves when handling biological samples and kit components



8.13. Laboratory access rules

- The room is always kept locked and is only opened by the faculty member and authorized senior technicians.

8.14. Safety officer

- The person responsible for ensuring compliance with General Safety, Hygiene and Health Procedures in the Workplace is Professor Teresa Villa Brito (tbrito@fmv.ulisboa.pt).

PHARMACOLOGY AND TOXICOLOGY LABORATORIES

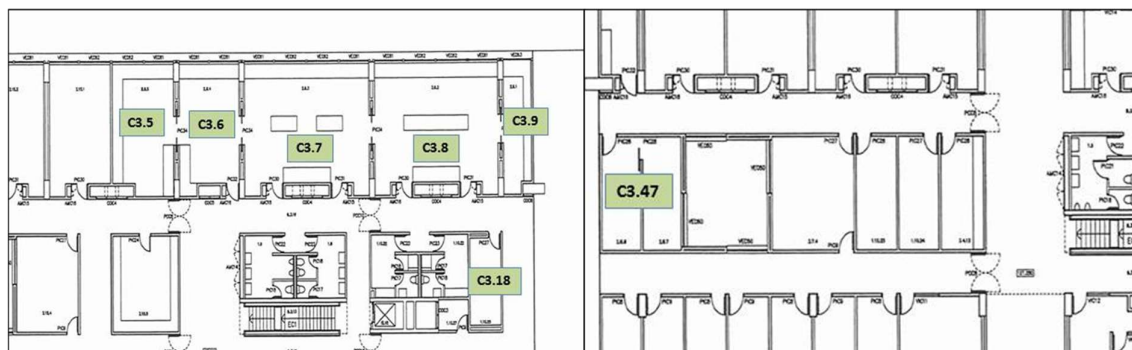
8.15. Introduction

- The facilities associated with the Pharmacology and Toxicology Laboratory (LFT) include a laboratory (with five contiguous and interconnected rooms) and two storage rooms. These facilities are used for research activities, diagnostic services, service provision, and practical classes of the courses “Pharmacology, Pharmacy and Pharmacotherapy” and “Toxicology and Veterinary Forensic Medicine.”
- The diagnostic and service activities include:
 - Toxicological diagnosis requested by the HE and external entities;
 - Pharmacological diagnosis requested by the HE and external entities;
 - Preparation of materials for allergological diagnostic testing at the HE;
 - Preparation of specific immunotherapies requested by the HE.
- The laboratory develops research activities in the fields of Pharmacology and Toxicology

8.16. Summary description of spaces and location

- The LFT operates on the 3rd floor of Building C in the following areas (Figure 12).
 - C3-5 - Research and service laboratory.
 - C3-6 - Research and service laboratory.
 - C3-7 - Research and service laboratory.
 - C3-8 - Research, service, and teaching laboratory.
 - C3-9 – Washing room.
 - C3-47- Storage room for various consumables and chemical reagents.
 - C3-18- Storage room for various consumables and chemical reagents.

Figure 12
Pharmacology and Toxicology Laboratory



8.17. Identification of biological risks

- The risks expected to be present in the areas used by the LFT include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- Safety precautions must be part of routine laboratory work, just like aseptic techniques and safe microbiological practices.
- Together with good practices and procedures, the use of safety equipment will help reduce risks when dealing with hazards inherent to biological safety.
- Prevention of these risks requires proper use of each laboratory's collective protective equipment (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with rules related to waste management.
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and the biological risk class.
- The biological risk level of the Pharmacology and Toxicology Laboratory is Class 1 and 2.
- The following rules apply to practical classes in Pharmacology and Therapeutics and Toxicology:
 - While classes are in progress, students must use personal protective equipment. Sandals are not allowed in the laboratory.
 - At the end of classes, students must wash their hands.
 - At the end of class, the entire laboratory must be properly tidied and cleaned

8.18. Prior training

- Training in biological and/or chemical protection in the laboratory, and training in biological and/or chemical safety in the laboratory, must be provided to all personnel.
- Personnel training must always include information on safe methods for high-risk situations, namely:
 - Inhalation risks (e.g., during aerosol production) when handling chemicals, manipulating blood/serum samples or organs and/or tissues for diagnosis, and centrifuging;



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- Risk of ingestion when handling various samples;
- Risks of skin puncture when using syringes and needles;
- Handling blood and other potentially hazardous pathological materials;
- Decontamination and disposal of infectious and/or toxic material.
- This training is provided by the Laboratory Supervisor.
- Equipment used in the laboratories has User Manuals available in Laboratory C3.8 in a dedicated folder or located next to the equipment itself.
- Equipment that may require training includes:
 - Balances – Training provided by the Laboratory Supervisor and Supervisor;
 - Hot plate and magnetic stirrer – Training provided by the Laboratory Supervisor and senior technicians;
 - Plate shaker – Training provided by the Laboratory Supervisor and Supervisor;
 - Water bath – Training provided by the Laboratory Supervisor and Supervisor;
 - Centrifuges – Training provided by the Laboratory Supervisor and Supervisor;
 - Incubators – Training provided by the Laboratory Supervisor and Supervisor;
 - Muffle furnaces – Training provided by the Laboratory Supervisor and Supervisor;
 - Ultrasonic bath – Training provided by the Laboratory Supervisor and Supervisor;
 - Rotary evaporator – Training provided by the Laboratory Supervisor and Supervisor;
 - Vacuum pump – Training provided by the Laboratory Supervisor and Supervisor;
 - Maintenance and use of refrigerators and freezers – Training provided by the Laboratory Supervisor and Supervisor;
 - Gas chromatography equipment – Training provided by the Laboratory Supervisor and Supervisor;
 - HPLC equipment – Training provided by the Laboratory Supervisor and Supervisor;
 - UV-VIS spectrophotometer – Training provided by the Laboratory Supervisor and Supervisor;
 - Atomic absorption spectrophotometer – Training provided by the Laboratory Supervisor and Supervisor;
 - Inverted optical microscope – Training provided by the Laboratory Supervisor and Supervisor;
 - Magnifying lenses – Training provided by the Laboratory Supervisor and Supervisor;
 - UV reader – Training provided by the Laboratory Supervisor and Supervisor;
 - Protein purifier – Training provided by the Laboratory Supervisor and Supervisor;
 - Biological Safety Cabinet – Training provided by the Laboratory Supervisor and Supervisor;
 - Fume hood – Training provided by the Laboratory Supervisor and Supervisor



8.19. Protective equipment

8.19.1. Collective protective equipment

- The laboratory is equipped with:
 - Fume hood with HEPA filter (C3.8)
 - Forced ventilation
 - Class IIB Biological Safety Cabinet (C3.5)
 - Emergency shower (C3.8)
 - Eyewash stations (C3.5 to C3.8)
 - Bucket of sand for fires or hazardous chemical spills
 - Cabinets for chemical substances
 - Fire blanket
 - Spill response kit

8.19.2. Personal protective equipment

- All users must wear a clean, personal white cotton lab coat.
- All users must wear appropriate gloves for all tasks involving direct or accidental contact with blood, body fluids, organs and/or tissues, or potentially toxic materials. After use, gloves must be removed and hands thoroughly washed.
- The use of a disposable apron is recommended depending on the type of task performed.
- Handwashing is mandatory after handling contaminated material and before leaving laboratory work areas.
- All users must wear safety goggles, face shields, or other protective devices whenever necessary to protect the eyes and face from splashes, impacts, ultraviolet radiation, or contact with highly toxic substances.
- Users are prohibited from wearing laboratory protective clothing outside the laboratory.
- Storing food and beverages in laboratory work areas is prohibited.
- All technical procedures must be performed in a way that minimizes the formation of aerosols and droplets.
- Work surfaces must be decontaminated after any spill of potentially hazardous material and at the end of each working day.
- The laboratory must be kept tidy, clean, and free of materials not relevant to its activities.

8.20. Laboratory access rules

- Safety signage, in accordance with European harmonization standards, is displayed on the entrance door of Laboratory C3.8.
- Only authorized personnel may enter laboratory work areas.



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- Only properly equipped personnel may enter laboratory work areas.
- Laboratory doors must remain closed when unattended.
- Children are not allowed in laboratory work areas.
- No animals may enter the laboratory.
- Access to the laboratory is exclusively controlled by the Laboratory Supervisor, Researchers, and other laboratory users through keys issued to them. Access to storage rooms C3.47 and C3.18 is via keys kept on a key holder in laboratory C3.09.
- The last user of each day is responsible for ensuring that all doors are closed.

8.21. Safety officer

- The person responsible for the LFT, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor Berta Braz (bsaobraz@fmv.ulisboa.pt).

MICROBIOLOGY AND IMMUNOLOGY LABORATORIES

8.22. Introduction

- Facilities associated with Microbiology and Immunology activities (Bacteriology, Mycology, and Virology/Immunology) include laboratories allocated to the FMV Diagnostic Service, research laboratories and storage rooms, as well as a practical teaching laboratory.
- The laboratories within the Diagnostic Service provide services to the community in the field of microbiological diagnosis for all colleagues who request them. The current range of analyses offered covers the diagnosis of most infectious processes in the areas of bacteriology (aerobic and strict anaerobic), mycology, and virology. Antibacterial and antifungal susceptibility testing is also performed. The current range of analyses also includes molecular diagnosis of the most significant viral agents in companion animals, serological diagnosis of feline retroviruses, and assessment of the immune response of dogs and cats to specific viral agents.
- The Microbiology and Immunology laboratories also support teaching and research.
- In the teaching laboratories (C0.23, C0.23A), practical classes are held for the compulsory courses in Microbiology and Immunology of the Integrated Master's in Veterinary Medicine, and for the compulsory course in Food Microbiology of the Master's in Microbiology.

8.23. Summary description of spaces and location

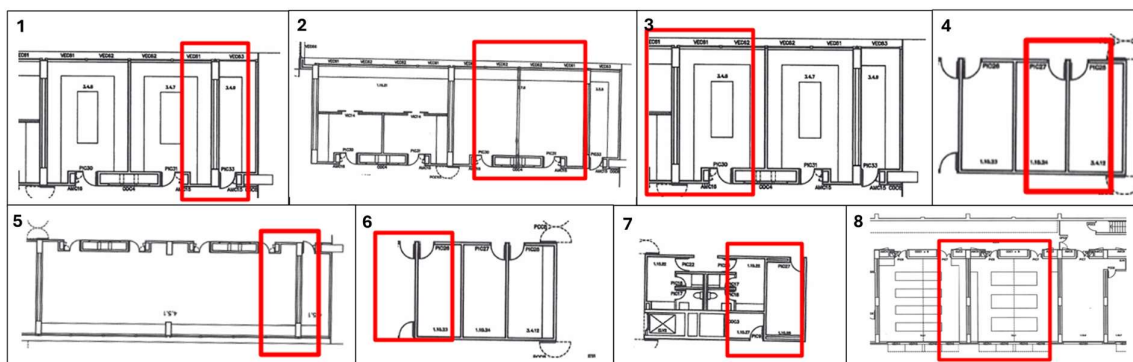
- At FMV there are two laboratories dedicated to Bacteriology and Mycology activities allocated to the Diagnostic Service:
 - C3.46 - Mycology Laboratory, 3rd floor, Building C (Figure 13.1).
 - C4.51 - Bacteriology Laboratory, 4th floor, Building C (Figure 13.2).
- There are also three laboratories associated with research activities:
 - C3.44 - Food Bacteriology Laboratory, 3rd floor, Building C (Figure 13.3).



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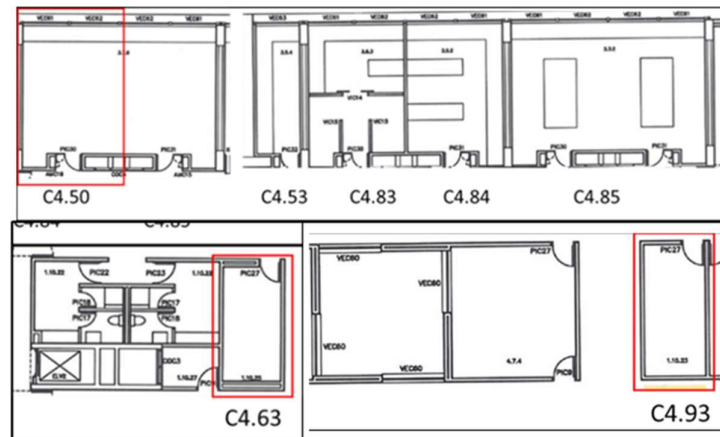
- C3.52 - Aseptic Room, 3rd floor, Building C (Figure 13.4).
- C3.75 - Cell Culture Laboratory, 3rd floor, Building C (Figure 13.5).
 - Associated with these laboratories there are two storage rooms for reagents and materials:
- C3.50 - Reagents Storage Room, 3rd floor, Building C (Figure 13.6).
- C4.63 - Storage Room, 4th floor, Building C (Figure 13.7).
- There is also one laboratory where practical classes take place:
- C0.23/23A - Practical Teaching Laboratory, 1st floor, Building C (Figure 13.8).
- Virology and Immunology activities are carried out in the following areas (Figure 14):
- C4.50 - Virology Laboratory, 4th floor, Building C.
- C4.85 - Molecular Biology Laboratory, 4th floor, Building C.
- Laboratory C4.85 is multidisciplinary and associated with the Interdisciplinary Research Centre in Animal Health (CIISA) of FMV. It is used by researchers from various areas for sharing equipment and resources. It operates under the coordination of a faculty member designated by the CIISA Coordinator.
- Associated with these laboratories there is a room for equipment (balances):
- C4.93 – Balances Room, 4th floor, Building C.

Figure 13
Microbiology Laboratory



1 - Mycology Laboratory C3.46, 3rd floor of Building C.; 2 – Bacteriology Laboratory C4.51, 4th floor of Building C.; 3 – Food Bacteriology Laboratory C3.44, 3rd floor of Building C.; 4 – Aseptic Room C3.52, 3rd floor of Building C.; 5 – Cell Culture Laboratory C3.75, 3rd floor of Building C.; 6 – Reagents Storage Room C3.50, 3rd floor of Building C.; 7 – Storage Room C4.63, 4th floor of Building C.; 8 – Practical Classes Laboratory C0.23/23A, floor 0 of Building C.

Figure 14
Virology and Immunology Laboratory



Virology Laboratory C4.50, Molecular Biology Laboratory C4.85, Reagents Storage Room C4.63, and Balances Room C4.93

8.24. Identification of biological risks

- The risks inherent to the facilities where Bacteriology, Mycology and Virology activities take place include biological risks.
- The laboratory facilities associated with Bacteriology and Mycology activities are Biosafety Level 1 and 2 laboratories. In the laboratories allocated to the Diagnostic Service (C3.46, C4.51), as well as those associated with research activities in Bacteriology and Mycology (C3.44, C3.52, C3.75) or teaching activities (C0.23/23A), only biological agents from Risk Groups 1 and 2 are handled (Decree-Law no. 84/97 of 16 April).
- The laboratory facilities associated with Virology activities are Biosafety Level 1 and 2 laboratories. In the laboratories allocated to the Diagnostic Service (C4.50, C4.85), as well as those associated with research activities (C4.85) or teaching activities (C0.23/23A), only biological agents from Risk Groups 1 and 2 are handled (Decree-Law no. 84/97 of 16 April).
- In these laboratories, biological agents from Risk Groups 3 and 4 are not handled, in accordance with the list of classification of biological agents (Ministerial Order no. 1036/98 of 15 December).
- In Storage Room C4.63 and in the Balances Room (C4.93), given the activities carried out there, specific biological risks are not anticipated.
- Prevention of these risks requires proper use of each laboratory's collective protective equipment and the mandatory use of personal protective equipment according to the specific tasks and the biological risk class.
- In the event of an accident, the emergency procedures set out in the Internal Emergency Plan (IEP) must be activated (<https://www.fmv.ulisboa.pt/uploads/2024/09/66f53535061d1.pdf>).



8.25. Prior training

- In the laboratories allocated to the Bacteriology, Mycology and Virology Laboratory, there is diverse specific equipment whose use requires prior training.
- Those responsible for providing this training are the Professors responsible for each laboratory or the most senior Laboratory Technician associated with it.
- In specific cases, training may be provided by the companies supplying the equipment.
- In Storage Rooms C3.50 and C4.63, there is no equipment that requires prior training.
- The equipment used in the laboratories has User Manuals available in the respective laboratory in a dedicated binder or in digital format (stored in a specific folder on the PC located in Laboratories C4.50 and C4.51).

8.26. Protective equipment

8.26.1. Collective protective equipment

- In all facilities, the following is ensured:
 - Restricted access to FMV staff, professors, postgraduate students, and the clinical staff of the Teaching Hospital. Public access is not permitted. MIMV students and Master's in Microbiology students only have access to laboratory C0.23/23A, which is not open to the public.
 - Unobstructed passageways and emergency exits. Fire extinguishers are easily accessible and appropriately signposted.
 - Windows sealed to the outside of the building and access doors opening to the corridor.
 - Walls, ceilings and floors made of smooth, impermeable materials resistant to the chemicals and disinfectants normally used in laboratories. The floor is made of non-slip material.
 - Benches and furniture that are impermeable and resistant to disinfectants, acids, alcohols, organic solvents and moderate heat. The space under benches and equipment is accessible for cleaning.
 - General gas shut-off valve.
 - Containers for the disposal of sharp and piercing materials.
 - Waste bins for disposal of Group I waste.
 - Impermeable containers for placing non-disposable material containing Group II waste, for subsequent washing in the Floor Preparation Room.
 - Waste bins for placing non-reusable disposable material containing Group II waste.
 - Impermeable containers with plastic bags suitable for autoclaving, for placing contaminated or potentially pathogenic Group III material. This material will subsequently be decontaminated in the autoclave in the Floor Preparation Room.
 - Containers for placing non-reusable disposable material containing Group IV waste. This material is disposed of in accordance with the FMV Waste Management and Disposal Plan (<https://www.fmv.ulisboa.pt/uploads/2024/09/66f53535061d1.pdf>. Chapter 11 “Waste management and disposal”).
 - Containers for placing hazardous liquid waste, separated according to category, for disposal in accordance with the FMV Waste Management and Disposal Plan



- Regarding storage areas, each laboratory has sufficient space to store routinely used material. In the Bacteriology Laboratory (C4.51) there is a refrigerator for storage of culture media and a refrigerator for storage of contaminated samples. In the Mycology Laboratory (C3.46) there is a refrigerator for storage of culture media and a chest freezer for storage of biological samples. In the Food Bacteriology Laboratory (C3.44) there is a refrigerator for storage of culture media. In the Practical Classes Laboratory (C0.23/23A) there is a refrigerator for storage of culture media and reagents used in practical classes. There are also two storage rooms located outside the laboratory area (C3.50, C4.63) with cabinets for storage of general materials and reagents and flammable reagents.
- Staff and other laboratory users have offices and changing rooms with lockers available to store clothing and personal belongings.

8.26.2. Specific collective protective equipment

- Mycology Laboratory, C3.46:
 - 1 autoclave for decontamination located in the dirty area of the preparation room C3.41/2 and another intended for preparation and sterilization of clean material located in the clean area.
 - Bacteriology Laboratory, C4.51:
 - Biosafety cabinet (Biological Safety Cabinet) level 2.
 - Eyewash station and emergency shower.
 - 1 autoclave for decontamination located in the dirty area of the preparation room C4.47/8 and another intended for preparation and sterilization of clean material located in the clean area.
- Food Bacteriology Laboratory, C3.44:
 - Biosafety cabinet level 2.
 - Eyewash station and shower.
 - 1 autoclave for decontamination located in the dirty area of the preparation room C3.41/2 and another intended for preparation and sterilization of clean material located in the clean area.
- Aseptic Room, C3.52:
 - Emergency shower and eyewash station nearby and easily accessible (C3.44).
 - 1 autoclave for decontamination located in the dirty area of the preparation room C3.41/2 and another intended for preparation and sterilization of clean material located in the clean area.
- Cell Culture Laboratory, C3.75:
 - Emergency shower and eyewash station nearby and easily accessible (C3.44).
 - 1 autoclave for decontamination located in the dirty area of the preparation room C3.41/2 and another intended for preparation and sterilization of clean material located in the clean area.
- Practical Classes Laboratory, C0.23/0.23A:
 - 2 biosafety cabinets level 2.
 - Emergency shower and eyewash station.



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- In the facilities associated with the Virology Laboratory, the following is ensured:
 - Exhaust hoods (fume hoods).
 - Laminar flow cabinets.
 - Emergency shower.
 - Eyewash station.
 - Various types of waste containers for waste disposal, including sharps.
- The laboratories allocated to the Diagnostic Service (Virology Laboratory C4.50) and to research activities (Molecular Biology Laboratory C4.85) have an eyewash station and emergency shower and have access to an autoclave for decontamination of material, located in the dirty area of the floor preparation room C4.46, and another intended for preparation and sterilization of clean material located in the clean area (C4.47/8).
- The research laboratory C4.50 (Virology Laboratory) has a Class II Type A/B3 biological safety cabinet.
- Staff and other laboratory users have offices and changing rooms with lockers available to store clothing and personal belongings.

8.26.3. Personal protective equipment

- In the laboratories allocated to the FMV Diagnostic Service (Mycology Laboratory C3.46, Bacteriology Laboratory C4.51, Virology Laboratory C4.50, Molecular Biology Laboratory C4.85), in the research laboratories (Food Bacteriology Laboratory C3.44, Aseptic Room C3.52, Cell Culture Laboratory C3.75), and in the Practical Classes Laboratory (C0.23/23A), biological risks are reduced through appropriate personal protective equipment.
- Wearing a white lab coat, to be used exclusively in these locations, is mandatory.
- When necessary, the use of gloves and masks is also предусмотрен/foreseen.

8.27. Access rules for Diagnostic and Research Laboratories

- Mycology Laboratory, C3.46: this laboratory may be accessed by the staff allocated to it as well as the laboratory head. Access is allowed to the Teaching Hospital clinical staff and to postgraduate students conducting research work in this area. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Bacteriology Laboratory, C4.51: this laboratory may be accessed by the staff allocated to it as well as the laboratory head. Access is allowed to the Teaching Hospital clinical staff and to professors and postgraduate students conducting research work in this area. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Virology Laboratory C4.50: this laboratory may be accessed by the staff allocated to it as well as the laboratory head. Access is allowed to the Teaching Hospital clinical staff and to postgraduate students conducting research work in this area. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Molecular Biology Laboratory C4.85: this laboratory may be accessed by the staff allocated to it as well as the laboratory head. Access is allowed to professors and postgraduate students conducting research work in this area. Public access is not permitted.



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- Food Bacteriology Laboratory, C3.44: this laboratory may be accessed by the staff allocated to it as well as the laboratory head. Access is allowed to professors and postgraduate students conducting research work in this area. Public access is not permitted.
- Aseptic Room, C3.52: this laboratory may be accessed by professors and postgraduate students conducting research work in this area. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Cell Culture Laboratory, C3.75: this laboratory may be accessed by professors and postgraduate students conducting research work in this area. Public access is not permitted. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Balances Room C4.93: this room may be accessed by professors and postgraduate students conducting research work in this area. Public access is not permitted.
- Storage Room C4.63 remains permanently locked, and copies of the keys are placed on a key holder located in the clean area of the floor preparation room C4.47/8. These areas are only accessible to staff allocated to diagnostic and research laboratories, as well as professors and postgraduate students conducting research work in this area.

8.28. Access rules for the Practical Classes Laboratory

- The Practical Classes Laboratory (C0.23/23A) may be accessed by professors, MIMV students and Master's in Microbiology students attending the curricular units "Microbiology" and "Immunology" (MIMV) and "Food Microbiology" (Master's in Microbiology), and by staff allocated to it. Public access is not permitted. The access key is kept in Storage Room C4.63.
- Entry procedures for the Microbiology practical classes laboratory:
 - Upon arrival, students must go to the locker located at the entrance of the laboratory.
 - They must store in the locker all personal belongings, including mobile phones, backpacks, coats and other non-essential items.
 - Next, they must put on a properly disinfected white cotton lab coat provided by FMV.
 - The use of shorts, skirts without tights, sandals or open footwear, rings, bracelets or other adornments on hands and wrists is strictly prohibited. Students with long hair must tie it back securely.
 - They must disinfect their hands with a 70% alcohol solution provided at the laboratory entrance. When there are wounds or cuts on the hands, the use of disposable gloves as additional personal protective equipment is mandatory.
 - Entry into the laboratory must be exclusively through the door indicated for that purpose. Students may only take with them the material strictly necessary for note-taking (e.g., notebook, pen).
 - Before the start of practical activities, each student must carefully disinfect their bench with a 70% alcohol solution.
- Exit procedures for the Microbiology practical classes laboratory:
 - At the end of the class, each student must again disinfect their bench with a 70% alcohol solution.
 - Next, they must carefully wash their hands at the sink using water and soap.
 - After washing, they must disinfect their hands with a 70% alcohol solution.



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- Exit from the laboratory must be exclusively through the door indicated for that purpose.
- Lab coats must be removed and placed back in the respective cabinet, unless they are visibly dirty. In the event of visible contamination, the lab coat must be placed in a specific collection container.
- Lab coats are collected by a staff member and transported to the FMV laundry twice per week, and extraordinary collections may occur whenever necessary.

8.29. Safety officer

- The person responsible for the Bacteriology and Mycology laboratories, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor Luís Tavares (ltavares@fmv.ulisboa.pt).

INFECTIOUS DISEASES LABORATORIES

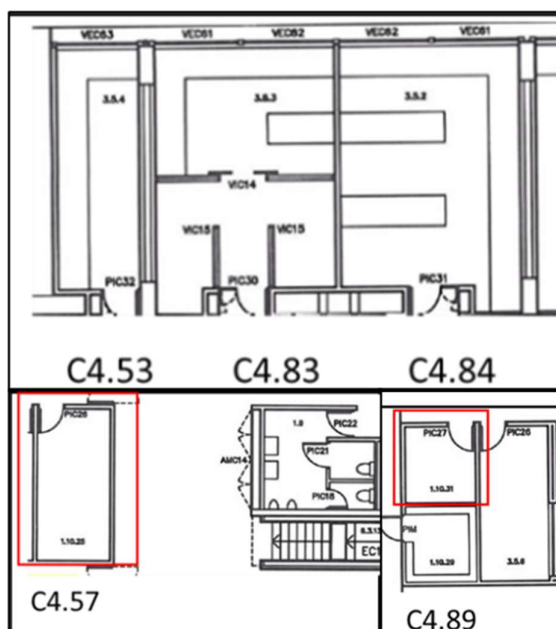
8.30. Introduction

- The facilities associated with Infectious Diseases activities include research laboratories and storage rooms, as well as two practical classes laboratories (Figure 13).
- In the teaching laboratories (C0.22 and C0.22A) the practical classes of the Infectious Diseases curricular unit take place

8.31. Summary description of the spaces and their location

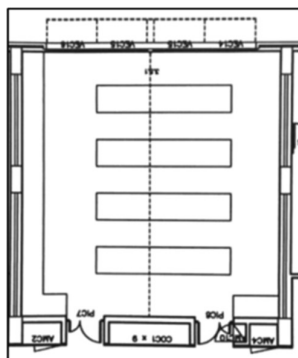
- Infectious Diseases activities are carried out in the following spaces (Figure 15):
 - C4.53- Cell Culture Laboratory, on the 4th floor of Building C.
 - C4.84 – General Laboratory, on the 4th floor of Building C.
- Associated with these laboratories there is a storage room for reagents and materials and a clean room:
 - C4.57 - Storage room for various laboratory materials, on the 4th floor of Building C.
 - C4.89 - Clean room, on the 4th floor of Building C.

Figure 15
Infectious Diseases Research Laboratories



- There is also a laboratory where practical classes take place (Figure 16):
- C0.22/22A – Infectious Diseases Practical Classes Laboratory, on floor 0 of Building C.

Figure 16
Infectious Diseases Practical Classes Laboratory



8.32. Identification of biological risks

- The risks inherent to the facilities where Infectious Diseases activities take place include biological risks.
- The laboratory facilities associated with Infectious Diseases activities are Biosafety Level 1 and 2 laboratories. In these laboratories, only biological agents from Risk Groups 1 and 2 are handled (Decree-Law no. 84/97 of 16 April).



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- The C4.83 laboratory, due to its use as a laboratory for handling virus-infected cells, is equipped with an autoclave and with a forced air exhaust system through HEPA filters. All material handled in the laboratory is sterilised before leaving the laboratory.
- In these laboratories, biological agents from Risk Groups 3 and 4 are not handled, in accordance with the list of classification of biological agents (Ministerial Order no. 1036/98 of 15 December).
- In Storage Room C4.57 and in the clean room (C4.89), given the activities carried out there, specific biological risks are not anticipated.
- Prevention of these risks requires proper use of each laboratory's collective protective equipment and the mandatory use of personal protective equipment according to the specific tasks and the biological risk class.
- In the event of an accident, the emergency procedures set out in the IEP must be activated (<https://www.fmv.ulisboa.pt/uploads/2024/09/66f53535061d1.pdf>).

8.33. Prior training

- In the laboratories allocated to Infectious Diseases activities there is specific equipment whose use requires prior training.
- Those responsible for providing this training are the Professors responsible for each laboratory or the most senior Laboratory Technician associated with it.
- In Storage Room C4.57 there is no equipment that requires prior training.
- The equipment used in the laboratories has User Manuals available in the respective laboratory in a dedicated binder or in digital format.

8.34. Protective equipment

8.34.1. Collective protective equipment

- In all facilities, the following is ensured:
 - Exhaust hoods (fume hoods).
 - Laminar flow cabinets.
 - Emergency shower.
 - Eyewash station.
 - Various types of waste containers for waste disposal, including sharps
- The laboratories allocated to Infectious Diseases activities (Cell Culture Laboratory C4.53, General Laboratory C4.84) have an eyewash station and emergency shower and have access to an autoclave for decontamination of material, located in the dirty area of the floor preparation room C4.46, and another intended for preparation and sterilisation of clean material located in the clean area (C4.47/8).
- The Cell Culture Laboratory C4.53 has Class II Type A/B3 biological safety cabinets.
- Staff and other laboratory users have offices and changing rooms with lockers available to store clothing and personal belongings



8.34.2 Personal protective equipment

- In the Cell Culture Laboratory C4.53 and in the General Laboratory C4.84, the use of appropriate personal protective equipment is mandatory, such as a white lab coat to be used exclusively in these locations.
- The use of gloves and a mask is also mandatory, namely when using liquid nitrogen containers and whenever justified.
- In the Cell Culture laboratories (C4.53), the use of disposable lab coats, for exclusive use in those spaces, is mandatory.
- In laboratories C0.22/C0.22A reserved for teaching activities, wearing a lab coat is mandatory.

8.35. Access rules for the Laboratory

- Cell Culture Laboratory, C4.53: these laboratories may be accessed by the staff allocated to them as well as the laboratory heads. Access is allowed to professors and postgraduate students conducting research work in this area, with authorisation from the person responsible. Public access is not permitted. Copies of the access keys are kept on a key holder in room C4.101.
- Clean Room C4.89: this laboratory may be accessed by professors and postgraduate students conducting research work in this area and with authorisation from the person responsible. Public access is not permitted. Copies of the access keys are kept on a key holder in room C4.101.
- The Reagents Storage Room C4.57 remains permanently locked, and copies of the keys are placed on a key holder in room C4.101. This space is only accessible to staff allocated to diagnostic and research laboratories, as well as professors and postgraduate students conducting research work in this area.
- Practical Classes Laboratory (C0.22 / 22A): this laboratory may be accessed by professors, MIMV students attending the Infectious Diseases curricular unit, and staff allocated to it. Public access is not permitted. This laboratory remains permanently locked, and copies of the access keys are kept in office C4.101.

8.36. Safety officer

- The person responsible for the Infectious Diseases laboratories, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor Fernando Boinas (fboinas@fmv.ulisboa.pt).

PARASITOLOGY AND PARASITIC DISEASES LABORATORIES

8.37. Introduction

- The facilities associated with Parasitology and Parasitic Diseases include practical class laboratories in these subject areas, which are also used for practical classes in Infectious Diseases and in the MIMV optional curricular units “Forensic Sciences in Veterinary Medicine” (Forensic



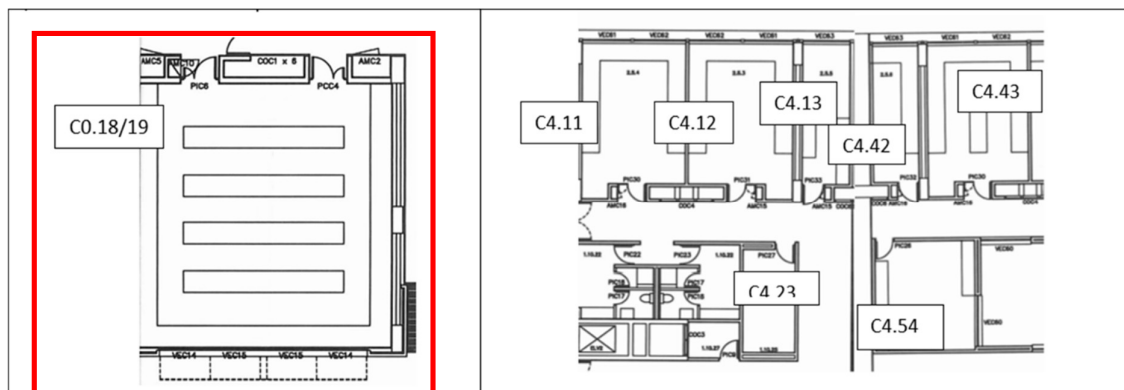
Entomology), “Tropical Infectious and Parasitic Diseases”, “Apiculture Health”. They are also used by the Master’s in Environmental and Human Biology (FCUL), the Master’s in Animal Science Engineering, the Master’s in Microbiology, parasitological diagnostic service laboratories, a fluorescence microscopy room, research laboratories, the tick collection (carraçoteca) and a storage room.

- The parasitological diagnostic services include:
 - Analyses for the detection and identification of protozoa, helminths and arthropods requested by the Teaching Hospital (HE) and by external entities, using serological, haematological, coprological, molecular techniques and morphological identification.
 - Analyses requested by various entities, including entomological diagnosis in support of forensic necropsies requested by the Public Prosecutor’s Office.
 - The service laboratories associated with Parasitology and Parasitic Diseases also support research activities.

8.38. Summary description of the spaces and their location

- The Parasitology and Parasitic Diseases teaching laboratories operate in the following spaces in Building C (Figure 17):
 - Floor 0:
C0.18/19 - Practical classes laboratory with benches and microscopes.
 - Floor 4:
C4.11 – Tropical Animal Health and Production Laboratory.
C4.12 – Diagnostic laboratory.
C4.13 – Tick collection (Carraçoteca).
C4.42 – Fluorescence microscopy and molecular biology room.
C4.43 – Research laboratory.
C4.54 – Research laboratory.
C4.23 – Storage room for frequently used materials.

Figure 17
Parasitology and Parasitic Diseases Practical Classes Laboratories





8.39. Identification of biological risks

- The risks anticipated to be present in the spaces used by Parasitology and Parasitic Diseases include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- The specific risks for each space are:
 - C0.18/19 – Practical classes laboratory with benches and microscopes – handling parasites preserved in 70% alcohol, handling reagents in demonstration classes of various parasitological techniques (in blood samples, faeces and endo/ectoparasites) and also the occasional use of parasites and anatomical specimens preserved in fixative fluids.
 - C4.11 – Animal Health and Production Laboratory – risks associated with processing samples within the scope of research.
 - C4.12 – Service laboratory (routine techniques for preparing samples for parasitological analysis) – risks associated with processing samples received for parasite detection and identification.
 - C4.13 – Tick collection (Carraçoteca) – risks associated with sample handling.
 - C4.42 – Fluorescence microscopy and molecular biology room – risks associated with sample handling.
 - C4.43 – Research laboratory – risks associated with processing samples within the scope of research.
 - C4.54 – Research laboratory – risks associated with processing samples within the scope of research.
- Prevention of biological risks requires proper use of each laboratory's collective protective equipment (forced ventilation, Class II laminar flow cabinets and fume hoods, emergency showers and eyewash stations), including compliance with the rules regarding management of the waste produced.
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and the biological risk class.
- The biological risk level of the Parasitology and Parasitic Diseases laboratories is Class 1 and 2, mitigated by the fact that parasites preserved in 70% and 96% alcohol are frequently handled.

8.40. Prior training

- All equipment in use in the laboratories has User Manuals available in the respective laboratories in a dedicated binder.
- The following equipment may require specific training:
 - C4.11 – Tropical Animal Health and Production Laboratory:
 - Telstar laminar flow cabinet (Class II) – training provided by the direct supervisors (PhD holders) of the ongoing research.
 - Microflow laminar flow cabinet (Class II) – training provided by the direct supervisors (PhD holders) of the ongoing research.



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Heal Force HF151UV CO2 incubator – training provided by the direct supervisors (PhD holders) of the ongoing research.

Eppendorf 5810R centrifuge – training provided by the direct supervisors (PhD holders) of the ongoing research.

Eppendorf 5415R microcentrifuge – training provided by the direct supervisors (PhD holders) of the ongoing research.

VWR MicroStar 17R microcentrifuge – training provided by the direct supervisors (PhD holders) of the ongoing research.

Olympus CH30 microscope – training provided by the direct supervisors (PhD holders) of the ongoing research.

Olympus CKX41 inverted microscope – training provided by the direct supervisors (PhD holders) of the ongoing research.

ELISA plate washer Labsystems WellWash 4 MK2 – training provided by the direct supervisors (PhD holders) of the ongoing research.

- C4.12 – Routine techniques laboratory for preparation of samples for parasitological analysis:

Memmert incubators – training provided by the Parasitology and Parasitic Diseases technician.

Hettich EBA 85 and P Selecta Centronic centrifuges – training provided by the Parasitology and Parasitic Diseases technician.

Microscopes: Olympus CX31, Olympus BX40, Olympus CH30 and Micros, as well as a CETI stereomicroscope – training is provided by the teaching staff and the senior technician of Parasitology and Parasitic Diseases.

Fume hood – training provided by the Parasitology and Parasitic Diseases technician.

- C4.13 – Tick collection (Carraçoteca):

Reptile max 60, used for maintenance of ixodid colonies.

Euromex stereomicroscope – training is provided by the teaching staff, researchers and the senior technician of Parasitology and Parasitic Diseases.

- C4.42 – Fluorescence microscopy and molecular biology room:

Olympus BX50 immunofluorescence microscope with digital microphotography system – training is provided by the teaching staff and the senior technician of Parasitology and Parasitic Diseases. A summary of the most important points is available next to the microscope on which the system is mounted. There is a logbook for recording users.

Molecular biology equipment – Eppendorf thermocycler - Mastercycler Gradient, Hoefer MacroVue UV-25 transilluminator and high-speed agitation homogeniser (TissueLyser II). Training provided by the teaching staff and researchers with experience in molecular biology.

- C4.43 – Research laboratory:

2 ISCO FDT 250 vertical incubators and 1 WTC Binder bench incubator. Training provided by the teaching staff, laboratory technician and researchers.

Sigma 3K10 centrifuge. Training provided by the teaching staff, laboratory technician and researchers.



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Vacuum pump Vacum Pump GE Motors. Training provided by the teaching staff, laboratory technician and researchers.

Sonorex Super RK 106 sonicator. Training provided by the teaching staff, laboratory technician and researchers.

3 electrophoresis power supplies: Bio-Rad, Pharmacia Biotech EP45 3500, Consort E431. Training provided by the direct supervisors (PhD holders) of the ongoing research.

3 electrophoresis tanks. Training provided by the direct supervisors (PhD holders) of the ongoing research.

Julabo F25 water bath. Training provided by the teaching staff, laboratory technician and researchers.

- C4.54 – Research laboratory:

Olympus microscope, model CH30RF200. Training provided by the teaching staff, laboratory technician and researchers with experience in microscopy.

Olympus SZ51 stereomicroscope. Training provided by the teaching staff, laboratory technician and researchers with experience in microscopy

8.41. Protective equipment

8.41.1. Collective protective equipment

- The spaces listed below are equipped with:

- C0.18/19 – Practical classes laboratory:

Ventilation through windows to the outside.

Emergency shower.

Eyewash station.

- C4.11 – Tropical Animal Health and Production Laboratory:

Fume hood with forced ventilation.

- C4.12 – Laboratory for preparation of samples for parasitological analysis:

Fume hood with forced ventilation.

Emergency shower.

Eyewash station.

- C4.43 – Research laboratory:

Forced ventilation.

Emergency shower.

Eyewash station.

8.41.2. Personal protective equipment

- All laboratory users are required to wear a lab coat.



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- The use of a personal, clean, white cotton lab coat is mandatory in practical classes in laboratories C0.18/19.
- In classes involving handling of biological samples for parasitological analysis and preserved parasites, the use of disposable gloves is mandatory.
- The use of an apron, generally disposable, is optional.

8.42. Laboratory access rules

- Access to all laboratories and the microscopy room is made using keys kept on a key holder/in a drawer in laboratory C4.12 and in storage room C4.23.
- The last user each day is responsible for ensuring that all doors are closed and that the respective keys are on the key holder.
- Access to the classrooms is exclusively by the teaching staff and the technician who assists with setting up the classes, using keys kept in the lecturers' offices and on the key holder of Laboratory C4.12.

8.43. Safety officer

- The person responsible for the Parasitology and Parasitic Diseases laboratories, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor Isabel Fonseca (ifonseca@fmv.ulisboa.pt).

HISTOLOGY AND EMBRYOLOGY, GENERAL PATHOLOGY AND ANATOMICAL PATHOLOGY LABORATORIES

8.43. Introduction

- The facilities associated with Histology and Embryology, General Pathology and Anatomical Pathology activities include practical class laboratories in these subject areas.
- They also include anatomical pathology diagnostic service laboratories, a microscopy room, a necropsy room, archives and storage rooms.
- Due to its specific characteristics, the Necropsy Room is addressed in a separate chapter (Chapter 7 – Anatomy and Anatomical Pathology).
- The Anatomical Pathology diagnostic services include:
 - The performance of necropsies requested by various entities, including forensic necropsies requested by the Public Prosecutor's Office.
 - Cytological and histopathological analyses requested by the Teaching Hospital and by external entities.
 - The performance of immunohistochemistry techniques.



- The service laboratories associated with Anatomical Pathology also support research activities.

8.45. Summary description of the spaces and their location

- The Histology and Embryology, General Pathology and Anatomical Pathology teaching laboratories operate in Building C, in the following spaces (Figure 18):

- Floor 1:

C1-17 - Practical classes laboratory with benches and microscopes.

C1.18 - Practical classes laboratory with benches and microscopes.

C1.19 - Storage room for specimens fixed in formalin or for use in practical classes.

- Floor 3

C3.12 Microscopy observation room, microphotography room and slide archive.

- Floor 4

C4.4 – Routine techniques laboratory for preparing samples for histopathological and cytological analysis.

C4.5 – Room housing the automatic tissue processor, storage of specimens under processing and preparation of fresh samples for fixation.

C4.6 – Room for analysis registration, archive of requests and reports and secretarial support.

C4.7 – Immunohistochemistry laboratory.

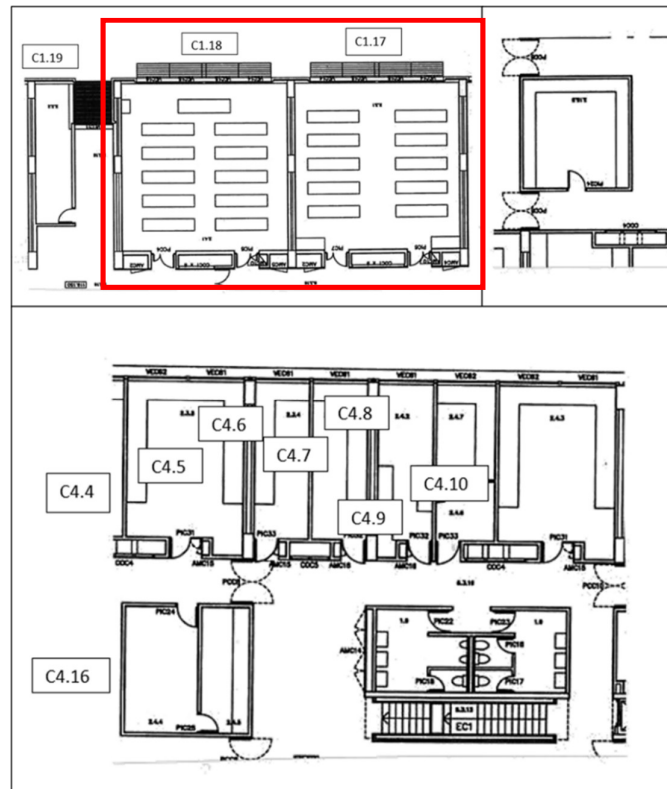
C4.8 – Multi-purpose room and special stains storage.

C4.9 – Ultramicrotome room.

C4.10 - Routine techniques laboratory for preparing samples for histopathological analysis.

C4.16 – Slide and block archive.

Figure 18
Histology and Embryology, General Pathology and Anatomical Pathology Practical
Classes Laboratories



8.46. Identification of biological risks

- The spaces used by Histology and Embryology, General Pathology and Anatomical Pathology may be associated with biological risks.
- Adequate training in the use of the facilities and compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- Specifically:
 - C1.18 – Practical classes laboratory with benches and microscopes – embryology classes using fresh animal-origin material (eggs).
 - C4.4 – Routine techniques laboratory for preparation of samples for histopathological and cytological analysis – processing organ and tissue samples for histological analysis.
 - C4.5 – Room with the automatic tissue processor, storage of specimens under processing and preparation of fresh samples for fixation – processing organ and tissue samples for histological analysis.
 - C4.10 – Routine techniques laboratories for preparing samples for histopathological analysis – processing organ and tissue samples for histological analysis.
- Prevention of biological risks requires proper use of collective protective equipment in each laboratory (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with waste management rules.



- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and the biological risk class.
- The biological risk level of the Histology, General Pathology and Anatomical Pathology laboratories is Class 1 and 2, mitigated by the fact that tissues handled are fixed in 10% formalin.

8.47. Prior training

- All equipment in use in the laboratories has User Manuals available in the rooms where they are used.
- Equipment that may require training includes:

- C3.12

Microscopy observation room, microphotography room, slide archive. Olympus digital microphotography system, model DP21 – training is provided by the Anatomical Pathology teaching staff and senior technicians. A summary of the most important points is available next to the microscope on which the system is mounted. A logbook is available to record users. A digital version of the complete instruction manual is installed on the room computer.

White light optical microscopes (Olympus and Leica) – training provided by the Anatomical Pathology teaching staff and senior technicians.

Sliding microtome, Leica – training provided by the Anatomical Pathology technician.

Water bath – training provided by the Anatomical Pathology technician.

Memmert incubators – training provided by the Anatomical Pathology technician.

Kunz Instruments embedding station (CPL4, WD4 and TM1) – training provided by the Anatomical Pathology technician.

Removable filter fume hood – training provided by the Anatomical Pathology technician.

Automatic tissue processor, Leica, model TP1020 – training provided by the Anatomical Pathology technicians.

Gas exhaust system vented outdoors connected to specimen storage cabinets and flammable liquids cabinet – training provided by the Anatomical Pathology technicians.

Pressure cooker – training provided by the Anatomical Pathology technician.

Microwave – training provided by the Anatomical Pathology technician.

pH meter – training provided by the Anatomical Pathology technician.

Hot plate and magnetic stirrer – training provided by the Anatomical Pathology technician.

Sonicator – training provided by the Anatomical Pathology technician.

Manual Sequenza system for immunohistochemistry – training provided by the Anatomical Pathology technician.

Leica ultramicrotome, Reichert Ultracut S model – training provided by the Anatomical Pathology teaching staff.

Leica/Reichert knifemaker – training provided by the Anatomical Pathology teaching staff.

Leica Minot microtomes – training provided by the Anatomical Pathology technician.



Memmert incubators – training provided by the Anatomical Pathology technician.

8.48. Protective equipment

8.48.1. Collective protective equipment

- Laboratories C4.4 and C4.10 are equipped with:
 - Fume hood
 - Forced ventilation
 - Emergency shower
 - Eyewash station
- Laboratory C4.5 is equipped with:
 - Forced ventilation system with exhaust chimney over the processor
 - Eyewash station
 - Removable filter fume hood
- Laboratories C4.7, C4.8, C4.9 are equipped with eyewash stations.
- Laboratories C1.17 and C1.18 are equipped with:
 - Forced ventilation
 - Emergency shower
 - Eyewash station
 - Fume hood
- Room C1.19 has forced ventilation.

8.48.2. Personal protective equipment

- All laboratory users are required to wear a lab coat.
- Wearing a lab coat is mandatory in practical classes in laboratories C1.17 and C1.18.
- In classes involving handling of specimens preserved in formalin, the use of disposable gloves and masks is mandatory.
- The use of an apron, generally disposable, is optional.

8.49. Laboratory access rules

- Access to all laboratories, storage rooms and the microscopy room is made using keys kept on a key holder in laboratory C4.4.
- The last user each day must ensure that all doors are closed and that the respective keys are on the key holder.
- Access to the classrooms and room C1.19 is exclusively by teaching staff and technicians who assist in preparing the classes, using keys kept on the key holder of Laboratory C4.4.

8.50. Safety officers

- The persons responsible for the Histology and Embryology, General Pathology and Anatomical Pathology laboratories, for ensuring compliance with Safety, Hygiene and Health procedures, are Professor Mário Pinho (Histology and Embryology – mpinho@fmv.ulisboa.pt) and Professor Jorge Correia (Anatomical Pathology – jcorreia@fmv.ulisboa.pt).

BIOCHEMISTRY LABORATORY

8.51. Introduction

- The facilities associated with Biochemistry include the “Biochemistry, Cellular and Molecular Biology” laboratory of the Integrated Master’s in Veterinary Medicine (C1.21) and the animal-origin product quality research laboratory, where research activities and laboratory services to the community are carried out (C4.45), as well as an archive (C4.56).

8.52. Summary description of the spaces and their location

- The Biochemistry teaching, research and service laboratories operate in the following areas of Building C (Figure 19):

- Floor 1:

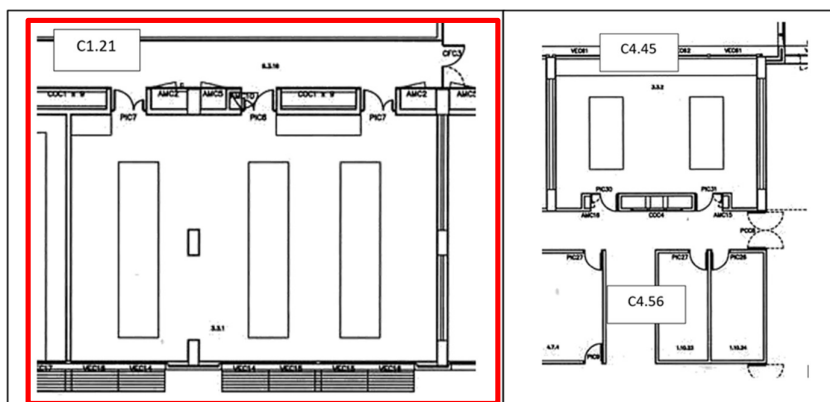
C1-21 - Practical classes laboratory with benches.

- Floor 4:

C4.45 – Research and service laboratory in the area of biochemistry and food chemistry.

C4.56 – Archive of various materials.

Figure 19
Biochemistry Laboratory





8.53. Identification of biological risks

- The risks that may be present in spaces used for Biochemistry, Cellular and Molecular Biology include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- During experiments or work involving cultures and microorganisms (C1.21), access to the laboratory must be restricted to authorized personnel only, in accordance with procedures implemented by the laboratory supervisor.
- A lab coat must always be worn.
- Hands must be washed with soap/disinfectant and water before and after handling biological materials, whenever gloves are removed, and before leaving the laboratory.
- Sharp and piercing materials must be used according to their respective protocols.
- Work must be carried out in a way that minimizes or avoids aerosol formation.
- Work surfaces must be decontaminated at a minimum before starting work and whenever finishing, using an appropriate disinfectant, and whenever a small spill of biological material occurs (70% alcohol).
- At the end of each class, benches must be left properly organized and clean.
- Prevention of these risks requires proper use of collective protective equipment in each laboratory (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with waste management rules.
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and biological risk class.

8.54. Prior training

- All equipment in use in the laboratories has User Manuals available in Laboratories C1.21 and C4.45 in dedicated folders.
- Specific equipment that may require training:

- C1.21 – Practical classes laboratory:

Thermo Spectronic spectrophotometer – training provided by teaching staff, researchers and the Biochemistry senior technician.

Gallenkamp Junior educational gas chromatograph coupled to a nitrogen cylinder – training provided by teaching staff, researchers and the Biochemistry senior technician.

Heittich Rotofix II centrifuge – training provided by teaching staff, researchers and the Biochemistry senior technician.

Analytical balance and single-pan balance (Mettler Toledo) – training provided by the Biochemistry technician.

Sotel incubator – training provided by the Biochemistry technician.

Memmert and Grant water baths – training provided by the Biochemistry technician.

Whirlpool microwave – training provided by the Biochemistry technician.



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Orion potentiometer – training provided by teaching staff, researchers and the Biochemistry senior technician.

Ika hot plates and stirrers – training provided by teaching staff, researchers and the Biochemistry senior technician.

- C4.45 – Research and service laboratory (biochemistry and food chemistry):

Gas exhaust system vented outdoors connected to specimen storage cabinets and flammable liquids cabinet – training provided by teaching staff, researchers and the Biochemistry senior technician.

Gas installation certified by Air Liquide – training provided by teaching staff and the Biochemistry senior technician.

HP6890A gas chromatograph (GC) – training provided by teaching staff and the Biochemistry senior technician.

Agilent 1100 High Performance Liquid Chromatograph (HPLC) – training provided by teaching staff, researchers and the Biochemistry senior technician.

Agilent 1200 HPLC – training provided by teaching staff, researchers and the Biochemistry senior technician.

Fast Protein Liquid Chromatography system (FPLC) – training provided by teaching staff, researchers and the Biochemistry senior technician.

Kjeltec digestion and distillation system – training provided by teaching staff, researchers and the Biochemistry senior technician.

Pharmacia spectrophotometer – training provided by teaching staff, researchers and the Biochemistry senior technician.

Kontron Instruments densitometer – training provided by teaching staff, researchers and the Biochemistry senior technician.

Heraeus Labofuge 400 and Biofuge 28RS centrifuges – training provided by teaching staff, researchers and the Biochemistry senior technician.

GFL 1083 water bath – training provided by teaching staff, researchers and the Biochemistry senior technician.

Melag incubators – training provided by teaching staff, researchers and the Biochemistry senior technician.

Radiometer PHM 92 potentiometer – training provided by teaching staff, researchers and the Biochemistry senior technician.

Grant MXB14 ultrasonic bath – training provided by teaching staff, researchers and the Biochemistry senior technician.

Heidolph heating plate and stirrers – training provided by teaching staff, researchers and the Biochemistry senior technician.

Gibertini E42 analytical balance – training provided by teaching staff, researchers and the Biochemistry senior technician.

Stuart concentrator – training provided by teaching staff, researchers and the Biochemistry senior technician.



IKA rotary evaporator – training provided by teaching staff, researchers and the Biochemistry senior technician.

- The analytical methodologies performed using this equipment are included in a file entitled “Analytical Techniques” on the Biochemistry intranet.

8.55. Protective equipment

8.55.1. Collective protective equipment

- Laboratory C1.21 is equipped with:
 - 2 fume hoods
 - Forced ventilation
 - Emergency shower
 - Eyewash station
- Laboratory C4.45 is equipped with:
 - Fume hood
 - Forced ventilation
 - Emergency shower
 - Eyewash station

8.55.2. Personal protective equipment

- All users of laboratories C1.21 and C4.45 are required to wear a lab coat.
- Gloves, filter masks and protective goggles are also available.

8.56. Laboratory access rules

- Access to all laboratories and the storage room is made using keys kept on the key holder in laboratory C4.45.
- The last user each day must ensure that all doors are closed and that the respective keys are on the key holder.

8.57. Safety officer

- The person responsible for the Biochemistry, Cellular and Molecular Biology laboratory, for ensuring compliance with Safety, Hygiene and Health procedures, is Professor José Prates (japrates@fmv.ulisboa.pt).

SECTION OF ANIMAL PRODUCTS TECHNOLOGY

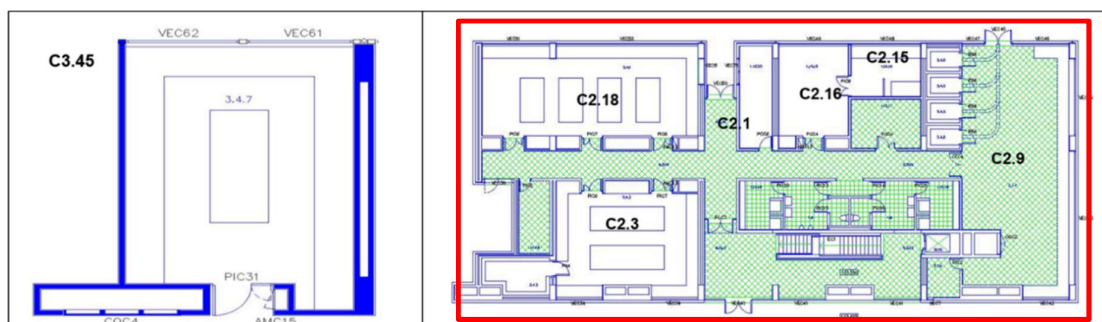
8.58. Introduction

- The Section of Animal Products Technology (STPA) has a Safety Manual whose purpose is to define and plan preventive measures known as Good Laboratory Practices, which must be implemented and followed by the entire laboratory team, including academic and non-academic staff, researchers, students, trainees and visitors.
- A copy of the Safety Manual is available at STPA for consultation. This manual must be read by all staff members as well as by students carrying out temporary work in the laboratories. Confirmation that it has been read and that its rules have been accepted and understood must be documented by signing the Internship Registration Form

8.59. Descrição sumária dos espaços e sua localização

- STPA laboratory facilities are located in Building C and include (Figure 20):
 - Molecular Biology and Research Laboratory (C3.45).
 - Food Microbiology Laboratory (C2.3 and C2.3A).
 - Food Chemistry Laboratory (C2.18, C2.18A and C2.18B).
 - Technological Workshop (C2.9).
 - Preparation Rooms (C2.15, C2.16).
 - Technical Support Office (C2. 17).
- All these laboratories operate under Biosafety Levels 1 and 2.

Figure 20
Laboratories of the Section of Animal Products Technology



8.60. Identification of biological risks

- STPA activities are associated with biological risks.
- Biological risks specific to each area:



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- Microbiology Laboratory (C2.03) – Research/handling/storage of Group 1 and 2 microorganisms.
- Molecular Biology Laboratory (C3.45) – Research/handling/storage of Group 1 and 2 microorganisms.
- Preparation Rooms (C2.15, C2.16 and C2.17) – Decontamination of potentially contaminated materials coming from the Microbiology Laboratory.
- Risk prevention requires compliance with all basic Safety and Hygiene rules implemented at FMV.
- As a specific rule in the Technological Workshop, the use of jewelry and adornments is prohibited, including watches, earrings, piercings and artificial nails. Painted nails are not allowed; in such cases, the use of gloves is recommended. The use of makeup is not recommended.
- In order to minimize risk, STPA has implemented a cleaning, disinfection and sterilization plan in accordance with the table below.

Table 8
Cleaning, disinfection and sterilization plan in STPA

Location	Washing	Remarks	Disinfection	Sterilization (UV)
Microbiology Laboratory (C2.03)	Walls, ceilings, light fixtures, hard-to-reach areas	Annual	Not applicable	Every 2 months and whenever justified
	All benches and incubators	Twice a year	Not applicable	
	Work benches	Before and after use	Before and after use with Trisan / 70% alcohol	
Molecular Biology Laboratory (C3.45)	Walls, ceilings, light fixtures, hard-to-reach areas	Annual	Not applicable	Not applicable
	All benches and incubators	Twice a year	Not applicable	
	Work benches	Before and after use	Before and after use with Trisan / 70% alcohol	
Chemistry Laboratory (C2.18)	Walls, ceilings, light fixtures, hard-to-reach areas	Annual	Not applicable	Not applicable
	All benches and incubators	Twice a year		
	Work benches	Before and after use		
Preparation Rooms (C2.15, C2.16 and C2.17)	Walls, ceilings, light fixtures, hard-to-reach areas	Annual	After use with bleach	Not applicable
	Sinks, tables and benches	Before and after use		
Technology Workshop (C2.09)	Walls, ceilings, light fixtures, hard-to-reach areas	Annual	Before and after use according to the ECOLAB hygiene plan	Not applicable
	All benches and machines	Twice a year		
	Work benches and machines	Before and after use		
Cold Rooms	Walls, ceilings, shelves, door and floor	Twice a year	Cleaning vinegar	Not applicable
	Shelves, floor	Whenever justified		
Laminar Flow Cabinet	Interior	Before and after use	Before and after use with Trisan / 70% alcohol	Before and after use



8.61. Prior Training

- All STPA equipment is recorded in folders labeled “Equipment”, which are available for consultation on the shelf in the technical office C2.17.
- Files E001 – E019 include an initial list called “Equipment List (E)”, containing all equipment in this section’s laboratories in alphabetical order, with the following information: Reference – corresponding to the equipment’s entry number (Exxx); Equipment name; Brand; Model; Acquisition date; Location within the section.
- Each individual equipment file contains an “Intervention Record Sheet” and an Instruction Manual.
- The Intervention Record Sheet is used to record breakdowns, repairs, and calibrations/verifications carried out.
- All equipment assigned to this section requires training, as these are laboratory instruments. Training is provided by the section’s technical staff and teaching staff.
- Whenever equipment is used frequently and by different operators, an Operating Procedure (OP Exxx) is made available next to the equipment. This document includes basic rules for use, checks and/or calibrations, and a usage log, in accordance with Table 9.

Table 9
Operating Procedure of the Section of Animal Product Technology

Equipment	Operating Procedure	Rules for Use	Calibration Rules	Usage Log
pH Meter 9025	PO E035	×	×	×
pH Meter 99163	PO E036	×	×	×
Laminar Flow Cabinet	PO E029	×		×
Hygrometer	PO E040	×	×	×
Smart	PO E050	×		
Colorimeter	PO E031	×	×	
Hettich Centrifuge	PO E043	×		
Eppendorf Centrifuge	PO E018	×		
Texture Analyzer	PO E077	×	×	×

8.62. Protective Equipment

8.62.1. Common Structural Protection Features

- Laboratories and the workshop have no direct connection with common access areas. Restricted-access entry points are through doors equipped with security and fire-resistant systems opening into the common corridor.
- Doors providing access to laboratories and the workshop open toward the corridor.
- Laboratories and the workshop are spacious areas, allowing activities to be carried out safely, as well as facilitating cleaning and maintenance.
- Walls, ceilings, and floors are smooth, easy to clean, impermeable, and resistant to the chemicals and disinfectants normally used in laboratories.
- Floors are non-slip.



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- Lighting is adequate for all activities carried out.
- Windows face the outside of the building and are sealed.
- Furniture is sturdy, and the space between and beneath benches and equipment is accessible for cleaning.
- Benches are impermeable and resistant to disinfectants, acids, alcohols, organic solvents, and moderate heat.
- Storage space is appropriate for keeping routinely used materials.
- There is a cold room for storage of culture media.
- There is a long-term storage area located outside the laboratory work area, designated as the reagent room, with cabinets for storage of general reagents, flammable reagents, and another for volatile reagents equipped with an extraction system.
- Facilities are available outside laboratory work areas for storing clothing and personal belongings (offices and changing rooms with lockers).
- Passageways and emergency exits are unobstructed, and fire extinguishers are properly signposted.

8.62.2. Collective Protective Equipment

- Includes:
 - Class II biological safety cabinet — Food Microbiology Laboratory (C2.3 and C2.3A).
 - Fume hood — 3 in the Food Chemistry Laboratory (C2.18, C2.18A and C2.18B); 1 in the Molecular Biology Laboratory (C3.45).
 - Eyewash station — 1 in the Food Microbiology Laboratory (C2.3 and C2.3A); 1 in the Food Chemistry Laboratory (C2.18, C2.18A and C2.18B); 1 in the Molecular Biology Laboratory (C3.45).
 - Emergency shower — 1 in the Food Microbiology Laboratory (C2.3 and C2.3A); 1 in the Food Chemistry Laboratory (C2.18, C2.18A and C2.18B); 1 in the Molecular Biology Laboratory (C3.45).
 - Autoclave — Preparation rooms (C2.15 and C2.16).
 - First aid kit — Preparation room (C2.17).

8.62.3. Personal Protective Equipment (PPE)

- Includes:
 - Na entrada da Oficina Tecnológica (C2.9) são colocadas toucas e luvas.
 - O uso de bata branca e touca é obrigatório neste espaço.
 - Class II biological safety cabinet — Food Microbiology Laboratory (C2.3 and C2.3A).
 - Lab coat — Available in the user's personal locker. Disposable lab coats are available for visitors.



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- Gloves, caps, safety goggles, masks — Drawer labeled “PPE” in the Food Chemistry Laboratory (C2.18, C2.18A and C2.18B), Food Microbiology Laboratory (C2.3 and C2.3A), and Molecular Biology Laboratory (C3.45).

- At the entrance to the Technological Workshop (C2.9), caps and gloves are provided.
- Wearing a white lab coat and cap is mandatory in this area

8.63. Laboratory Access Rules

- The Animal Products Technology Section is used by teaching and non-teaching staff, students, trainees, and visitors when accompanied by staff assigned to the section.
- All staff assigned to the STPA have a key to the main entrance door (C2.000) and a key ring containing all remaining keys providing access to laboratories, storage rooms, preparation rooms, and the workshop. Opening and closing of these doors are the responsibility of the first and last user, respectively.
- Except for scheduled and duly authorized activities, children are not allowed to enter laboratories or the workshop.
- Entry of animals into the section is prohibited

8.63. Safety Officer

- The person responsible for ensuring compliance with Safety, Hygiene, and Health procedures in the Animal Products Technology laboratories is Professor Maria João Fraqueza. mjoaofraqueza@fmv.ulisboa.pt).

ANIMAL PRODUCTION AND NUTRITION LABORATORY

8.64. Introduction

- Facilities associated with Animal Production and Nutrition activities include a laboratory for research activities, sample preparation and routine analyses, and practical classes for optional courses of the Master’s Degree in Food Safety.
- They also include the practical class laboratory C1.28, which is used for teaching two courses in the Integrated Master’s in Veterinary Medicine, “Animal Husbandry, Agriculture and Environment” and “Nutrition and Feeding,” and is also used for service provision and research support activities.

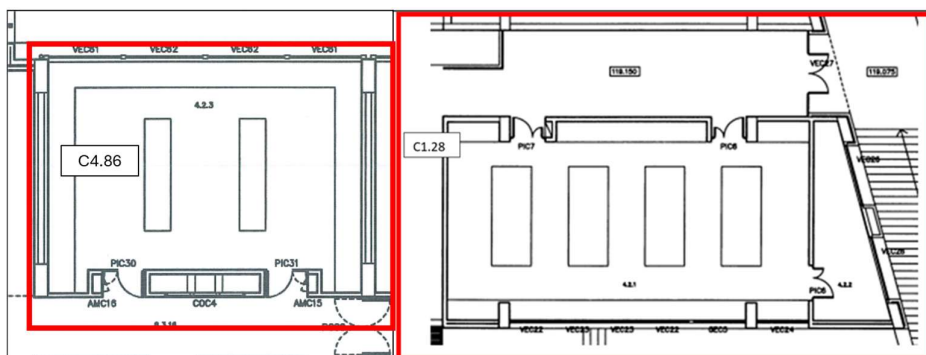
8.65. Summary Description of Spaces and Location

- The Animal Production and Nutrition Laboratory operates on Floor 4 of Building C as a research, sample preparation, and routine analysis laboratory (C4.86) (Figure 21).



- The practical class laboratory for “Animal Husbandry, Agriculture and Environment” and “Nutrition and Feeding” is located in room C1.28 of Building C, Floor 1 (Figure 21).

Figure 21
Laboratories of Animal Production, Agriculture and Environment, and of Nutrition and Feeding



Research laboratory for sample preparation and routine analyses (C4.86). Practical class laboratory for “Animal Husbandry, Agriculture and Environment” and “Nutrition and Feeding” (C1.28, Building C, Floor 1)

8.66. Identification of Biological Risks

- The risks expected to be associated with the activities of the Animal Production and Nutrition Laboratories C1.28 and C4.86 include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- In the Animal Production and Nutrition Laboratory, safety procedures, laboratory techniques implemented in the laboratory, as well as hazard symbols and safety data sheets for the chemicals available in the laboratory, are accessible for consultation.
- Biological risks associated with the activities of the Animal Production and Nutrition Laboratory include handling biological samples of animal origin (digestive contents, plasma, feces). They also result from the use of reagents in various analytical procedures, equipment use, and the performance of assays in biological material.
- Prevention of biological risks requires the correct use of collective protective equipment in each laboratory (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with the rules for management of produced waste according to FMV’s Integrated Waste Management System (Chapter 11 “Waste management and disposal”).
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and biological risk class.
- The biological risk classification of the Animal Production and Nutrition Laboratories C1.28 and C4.86 is Class 1.

8.67. Prior Training

- All equipment located in laboratories C1.28 and C3.76 that presents risks associated with its use has User Manuals available in the respective laboratories in dedicated folders.



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- For designated equipment, users must record their usage.
- Equipment requiring specific training includes:
 - Gas chromatograph with flame ionization detector — Advanced training provided by the responsible Professors or Researchers.
 - Gas chromatograph coupled to a mass spectrometer — Advanced training provided by the responsible Professors or Researchers.
 - Gerber centrifuge — Basic training provided by the responsible Professors or Researchers.
 - SPE vacuum manifold — Basic training provided by the responsible Professors or Researchers.
 - Nitrogen stream evaporator — Basic training provided by the responsible Professors or Researchers.
 - Monza analyzer — Advanced training provided by the responsible Researchers.
 - Ultrasonic bath — Basic training provided by the responsible Professors or Researchers.
 - Bomb calorimeter — Training provided by lecturers and senior technicians of the Nutrition sector. A summary of the most important points is available near the equipment. A user logbook is provided. A complete version of the instruction manual is available next to the device.
 - Soxhlet apparatus — Training provided by lecturers and senior technicians of the Nutrition sector.
 - Muffle furnace — Training provided by lecturers and senior technicians of the Nutrition sector. It is located in one of the fume hoods in this laboratory.
 - Kjeldahl apparatus — Training provided by lecturers and senior technicians of the Nutrition sector. It is located in one of the fume hoods in this laboratory.

8.68. Protective Equipment

8.68.1. Collective Protective Equipment

- Facilities associated with Animal Production and Nutrition activities are equipped with:
 - Fume hood
 - Forced ventilation
 - Emergency shower
 - Eyewash station

8.68.2. Personal Protective Equipment (PPE)

- All laboratory users must wear a clean, personal white cotton lab coat.
- All handlers of chemical reagents are required to use:
 - Lab coat
 - Disposable gloves
- Wearing a lab coat is mandatory during practical classes in Laboratory C1.28.



- The use of safety glasses and masks depends on the risk associated with the biological substance being handled.

8.69. Laboratory Access Rules

- Access to Laboratories C1.28 and C4.86 is by keys provided to users duly authorized by the laboratory supervisor, or available from the faculty member responsible for the laboratory.
- The last user each day must ensure that all doors are closed and keys returned to the key holders.

8.70. Safety Officer

- The person responsible for ensuring compliance with Safety, Hygiene, and Health procedures in the Animal Production and Nutrition Laboratory is Professor Rui Bessa (rjbbessa@fmv.ulisboa.pt).

GLYCOBIOLOGY AND STRUCTURAL ENZYMOLOGY LABORATORY

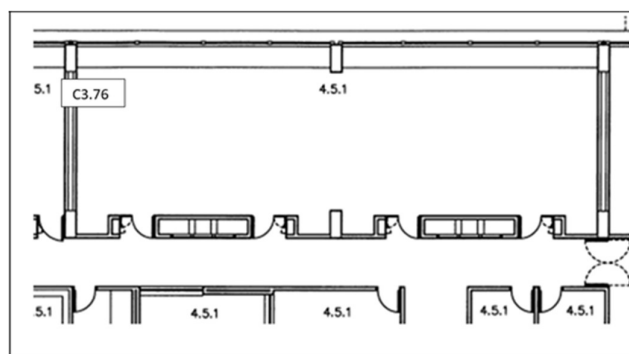
8.71. Introduction

Facilities associated with the activity of the Glycobiology and Structural Enzymology Laboratory include research laboratory C3.76, which is restricted to research activities and project development.

8.72. Summary Description of Spaces and Location

The Glycobiology and Structural Enzymology research laboratory operates in room C3.76 of Building C, Floor 3 (Figure 22).

Figure 22
Glycobiology and Structural Enzymology Laboratory





8.73. Identification of Biological Risks

- The risks expected to be present in Laboratory C3.76 include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- Risks arise from the use of reagents in various analytical procedures, equipment operation, and the performance of assays on biological material.
- Prevention of biological risks requires the correct use of collective protective equipment in each laboratory (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with the rules regarding waste management in accordance with FMV's Integrated Waste Management System.
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and biological risk class.
- The biological risk classification of the Glycobiology and Structural Enzymology Laboratory is Class 1.

8.74. Prior Training

- All equipment located in Laboratory C3.76 that presents risks associated with its use has User Manuals available in the laboratory in a dedicated folder.
- Equipment requiring prior training includes:
 - Isothermal titration calorimeter — Training provided by faculty members and senior technicians working in this laboratory. A summary of key points is available next to the equipment. A user logbook is provided. A full instruction manual is available beside the device.
 - FPLC chromatography system — Training provided by faculty members and senior technicians working in this laboratory. A summary of key points is available next to the equipment. A user logbook is provided. A full instruction manual is available beside the device.
 - Nucleic acid and protein electrophoresis systems — Training provided by faculty members and senior technicians working in this laboratory.
 - Microwave oven — Training provided by the laboratory technician.
 - pH meter — Training provided by the laboratory technician.
 - Sonicator — Training provided by the laboratory technician.
 - Spectrophotometer — Training provided by the laboratory technician.
 - Orbital incubators — Training provided by the laboratory technician.
 - Centrifuges — Training provided by the laboratory technician.

8.75. Protective Equipment

8.75.1. Collective Protective Equipment

- Laboratory C3.76 is equipped with:
 - Fume hood



- Forced ventilation
- Emergency shower
- Eyewash station

8.75.2. Personal Protective Equipment (PPE)

- All laboratory users must wear a clean, personal white cotton lab coat.
- All handlers of nucleic acids, proteins, and other chemical reagents must use:
 - Lab coat
 - Disposable gloves
- The use of safety glasses and masks depends on the risk associated with the biological substance being handled.

8.76. Laboratory Access Rules

- Access to Laboratory C3.76 is restricted exclusively to faculty members, researchers, and technicians of the Glycobiology and Structural Enzymology Laboratory, using personal keys.
- The last user each day must ensure that all doors are closed and keys returned to the key holders.

8.77. Safety Officer

- The person responsible for ensuring compliance with Safety, Hygiene, and Health procedures in the Glycobiology and Structural Enzymology Laboratory is Professor Pedro Bule Gomes (pedrobule@fmv.ulisboa.pt).

PHYSIOLOGY LABORATORY

8.78. Introduction

- Facilities associated with Physiology include practical class laboratories and two adjoining research laboratories where microscopes are also used to provide anatomopathological diagnostic services for mare endometrium, as well as a storage room.

8.79. Summary Description of Spaces and Location

- Physiology teaching laboratories operate in the following spaces in Building C (Figure 23):
 - C0.26-27, Floor 0 - Practical class laboratory with benches, microscopes, and water bath.
 - C4.87-88, Floor 4 – Research laboratories.
 - C4.87, Floor 4 – Laboratory for processing genital tracts collected at slaughterhouses from mares considered by veterinary inspection to be in perfect health for human consumption. Samples are

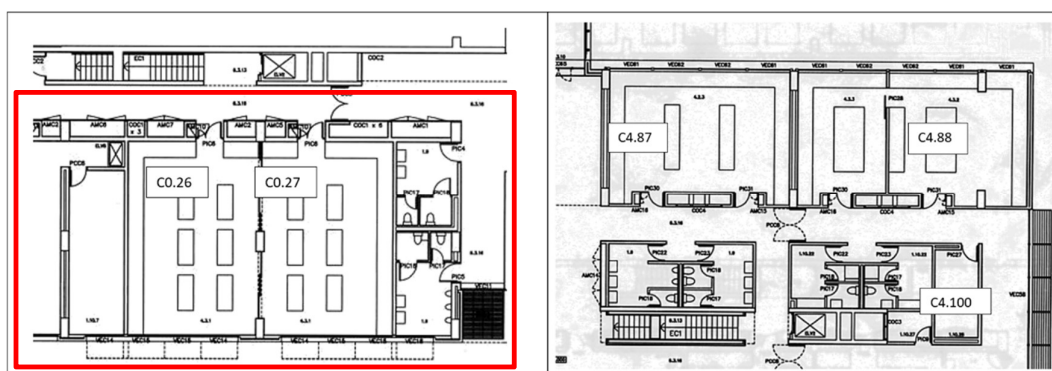


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used for explant culture, cell isolation, fixation in buffered formalin for subsequent histopathological analysis (Histology Laboratory), and various determinations using molecular biology techniques (qPCR, Western Blot, zymography, immunohistochemistry). Plasma/serum separation by centrifugation for endocrinological analyses. Archive of slides and paraffin blocks. Storage of biological samples in an ultra-freezer (-80°C).

- C4.88, Floor 4 – Cell and tissue culture laboratory, immunohistochemistry, and molecular biology techniques. Cryostat room (Leica CM3050S). Special immunohistochemistry stains and disposable materials.
- C4.100, Piso 4 – Storage room for reagents kept at room temperature and disposable materials.

Figure 23
Physiology Laboratory



8.80. Identification of Biological Risks

- The risks expected to be present in the areas used by Physiology include biological risks.
- Compliance with all basic Safety and Hygiene rules implemented at FMV is mandatory.
- The risks are associated with the processing of organ and tissue samples.
- Prevention of these risks requires the proper use of collective protective equipment in each laboratory (forced ventilation and fume hoods, emergency showers and eyewash stations), including compliance with the rules regarding the management of generated waste.
- Protection also includes the mandatory use of personal protective equipment according to the specific tasks and biological risk class.
- The biological risk classification of the Physiology laboratories is Class 2, due to the handling of tissues collected from slaughterhouses.

8.81. Prior Training

- All equipment used in the laboratories has User Manuals available in Laboratory C4.87 in a dedicated folder.
- Equipment that may require training includes:
 - Memmert incubators
 - Ultra-freezer (-80°C) used for storage of biological samples



- Western Blot equipment
- Refrigerated centrifuge
- pH meter
- Laminar flow cabinet and respective O₂ cylinders
- Inverted microscope
- Light microscope
- Two CO₂ incubators
- Spectrophotometer
- Shaker plates
- Hot plate and magnetic stirrer
- Leica ultramicrotome, Reichert Ultracut S model
- With the exception of the ultramicrotome (training provided by Physiology faculty), training for proper equipment use is provided by the Head of the Physiology Laboratory

8.82. Protective Equipment

8.82.1. Collective Protective Equipment

- The laboratories are equipped with:
 - Fume hood
 - Forced ventilation
 - Emergency shower
 - Eyewash station

8.82.2. Personal Protective Equipment (PPE)

- All laboratory users must wear a clean, personal white cotton lab coat.
- During practical classes involving handling of preserved specimens, the use of disposable gloves is mandatory.
- The use of an apron, generally disposable, is optional

8.83. Laboratory Access Rules

- Access to all laboratories, storage rooms, and the microscopy room is controlled by keys held by their direct users.
- The last user each day is responsible for ensuring that all doors are closed and the respective keys are returned to the key holders. A key to Laboratory C4.87 is kept in a location known only to authorized users.



8.91. Safety Officer

- The person responsible for ensuring compliance with Safety, Hygiene, and Health procedures in the laboratories is Professor Graça Ferreira Dias (gmlfdias@fmv.ulisboa.pt).