

DIPARTIMENTO DI
MEDICINA VETERINARIA



SECTION OF NORMAL ANATOMY

**BIOSAFETY AND RISK PREVENTION MANUAL
FOR ANATOMY, MICROSCOPY AND HISTOLOGY LABORATORIES**

This manual has been prepared by all the Heads of the Research and Teaching activities of the Department of Veterinary Medicine (DIMeV) and the Department of Precision and Regenerative Medicine and Ionian Area (DiMePre-J) who carry out activities in the normal anatomy classroom, microscopy laboratory, and histology laboratory.

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This document is intended for all structured personnel (professors and researchers, technical staff) and unstructured personnel (support staff for teaching activities such as fellows, doctoral students and associates, students, graduates, interns, thesis students, occasional visitors, etc.) who, in approaching their work and training path, need to be aware of the potential risks associated with practical teaching and research activities.

In relation to the specific nature of the planned activities, it is necessary to define the specific risks associated with the provided services, the operational procedures to be adopted to minimize and prevent them, and the measures, understood as correct practices to be implemented and adhered to, for the management of such risks.

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1. INTRODUCTION

1.1 CLASSROOM OF NORMAL ANATOMY

This classroom is primarily used for educational activities. Specifically, practical exercises are conducted involving the handling and observation of bones from small and large animals, the study of anatomical models, and dissections of animals and organs unaffected by pathologies.

1.2 CLASSROOM OF MICROSCOPY

This classroom is primarily used for educational activities, conducting practical exercises involving the use of microscopes for the study of histological specimens.

1.3 LABORATORIES OF HISTOLOGY

These laboratories are used for research, study, and educational activities. In general, the laboratories are dedicated to techniques for preparing histological samples, section cutting with a microtome, histological staining, and observation under a light microscope. The most commonly used equipment includes ovens, chemical and laminar flow hoods, microtomes, microscopes, measurement tools (balances, pH meters), and refrigerators.

2. RISK ANALYSIS AND PREVENTIVE MEASURES

2.1 ANATOMY CLASSROOM

The work associated with the activities carried out in the classroom involves the handling of individual bones, anatomical models, carcasses of small animals unaffected by pathologies, and dissection using scalpels of animals and organs unaffected by pathologies. Therefore, the area is subject to electrical, cutting, and biological material contact risks.

RISK MANAGEMENT

Immediately inform the Laboratory Manager and the tutor present in the classroom, reporting what happened, and strictly follow the instructions they provide.

Preventive measures

- Use disposable gloves.
- Wear fabric lab coats.
- Wear rubber boots when observing or dissecting organs or carcasses
- Thoroughly wash hands with detergent when removing gloves.
- Use disposable blades.
- At the end of activities involving fresh anatomical material, dispose of disposable blades and needles in the special waste container. Clean and disinfect workbenches.

Emergency management in case of cuts with scalpels:

- Thoroughly wash the wound with soap and water, if possible.
- Use an antiseptic from the first aid kit.
- Cover the wound with antiseptic materials (band-aids, etc.).

Emergency management in case of eye contact with biological substances:

- Rinse the eyes thoroughly for several minutes.
- Remove any contact lenses if possible and continue rinsing.

Emergency management in case of organic material spillage:

- Wear disposable nitrile gloves.

- Remove the biological material using absorbent materials and dispose of it in a disposable container for hazardous infectious solid waste.
- Clean and disinfect the area with disinfectant detergents.

2.2 MICROSCOPY CLASSROOM

The activity carried out in this classroom involves the observation and study of histological specimens under the microscope. Therefore, it involves the manipulation of glass slides and the use of microscopes. Users are exposed to electrical and cutting risks.

RISK MANAGEMENT

Immediately inform the Laboratory Manager and the tutor present in the classroom, reporting what happened, and strictly follow the instructions they provide.

Emergency management in case of glass cuts:

- Thoroughly wash the wound with soap and water.
- Use an antiseptic from the first aid kit.
- Cover the wound with antiseptic materials (band-aids, etc.).

2.3 HISTOLOGY LABORATORIES

The work carried out in these laboratories involves the processing of biological material for the preparation of histological samples, which includes the use of laboratory equipment and chemicals. Users are exposed to electrical, chemical (contact or inhalation), biological, and cutting risks.

RISK MANAGEMENT

Immediately inform the Laboratory Manager and the tutor present in the laboratory, reporting what happened, and strictly follow the instructions given by them.

Preventive measures for chemical risk:

- Use disposable gloves.
- Carefully observe the pictograms on individual products.
- Handle substances under a fume hood.
- Store hazardous substances in an aspirated cabinet, separating them by shelves for toxic, irritant, and corrosive materials.
- Store flammable/oxidizing substances in designated cabinets.
- Wash hands before and after using any substance.

If using ethanol, xylene, histological dyes, and various reagents:

- Use protective goggles.
- Use them under a fume hood.

Emergency management for chemical risk:

In case of an emergency related to chemical risk, consult the safety data sheets (SDS) for the substances used.

SUBSTANCE	WHEN	WHAT TO DO
Formalin	Following INHALATION	Transport the individual to the open air. In case of respiratory arrest, proceed with artificial respiration. If breathing is difficult, administer oxygen.
	Following SKIN CONTACT	Rinse with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Seek medical attention.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes, keeping the eyelid wide open. Consult an ophthalmologist.

	Following INGESTION	Rinse the mouth with water if the person is conscious. Do not drink water. Do not induce vomiting. Move to a well-ventilated area. Seek medical attention.
	Following a SPILLAGE	Do not inhale vapors/aerosols. Ensure the supply of fresh air in enclosed spaces. Absorb with soil, sand, or inert absorbent material (e.g., Chemizorb). Dispose of according to regulations. Clean the affected area.
Ethanol	Following INHALATION	Transport the individual to fresh air. In the event of respiratory arrest, proceed with artificial respiration.
	Following SKIN CONTACT	Immediately wash the skin with soap and abundant water. Remove contaminated clothing.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes, keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Rinse the mouth with water if the person is conscious. Consult a doctor.
	Following a SPILLAGE	Evacuate the area. Extinguish all sources of ignition. Wear heavy rubber boots and gloves. Transfer the spilled material into closed containers using tools that do not produce sparks, and take it outside. Ventilate the area and wash the contaminated area where the product leaked after fully recovering it.
Xilene	Following INHALATION	Transport the individual to fresh air. In the event of respiratory arrest, proceed with artificial respiration. If breathing is difficult, administer oxygen if possible.
	Following SKIN CONTACT	Immediately wash the skin with soap and plenty of water. Remove contaminated clothing.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	If symptoms of discomfort persist, consult a doctor. Symptoms of poisoning may appear after several hours, which is why medical monitoring is necessary in the 48 hours following the incident.
	Following a SPILLAGE	Evacuate the area. Turn off all ignition sources. Wear rubber boots and rubber gloves. Place the spilled substance in closed containers using tools that do not produce sparks and transport it outdoors. Ventilate the area and wash the contaminated area where the spilled product was fully recovered.
Hematoxylin	Following INHALATION	Transport the individual to fresh air.
	Following SKIN CONTACT	Rinse with plenty of water for at least 15 minutes. Remove contaminated clothing and shoes. Consult a doctor.

	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Immediately consult a doctor. Induce vomiting ONLY on the advice of a doctor. Do not administer anything orally if the person is unconscious or without authorization from a doctor.
	Following a SPILLAGE	Avoid the formation of dust by spraying the product with water, if there are no contraindications. Collect the spilled product and dispose of the residue with water jets. Ensure sufficient ventilation of the area affected by the spillage.
Eosin	Following INHALATION	Transport the individual to fresh air.
	Following SKIN CONTACT	Immediately wash the skin with soap and plenty of water. Remove contaminated clothing. Consult a doctor.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Rinse the mouth with water if the person is conscious. Consult a doctor.
	Following a SPILLAGE	Avoid the formation of dust by spraying the product with water if there are no contraindications. Collect the spilled product and dispose of the residue with water jets. Ensure sufficient ventilation of the area affected by the spillage.
Pertex	Following INHALATION	Transport the person to the open air. In the event of breathing cessation, perform artificial respiration. If breathing is difficult, administer oxygen if possible.
	Following SKIN CONTACT	Immediately wash the skin with soap and plenty of water. Remove contaminated clothing.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	If symptoms of discomfort persist, consult a doctor. Symptoms of poisoning may appear after several hours, which is why medical monitoring is necessary in the 48 hours following the incident.
	Following a SPILLAGE	Evacuate the area. Turn off all ignition sources. Wear rubber boots and rubber gloves. Place the spilled substance in closed containers using tools that do not produce sparks and transport it outdoors. Ventilate the area and wash the contaminated area where the spilled product was fully recovered.
	Following INHALATION	Transport the person to the open air. Consult a doctor.
	Following SKIN CONTACT	Immediately wash the skin with plenty of water. Consult a doctor.

Peroxidase Substrate Kit (3,3'-diaminobenzidina)	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Do not induce vomiting. If the person is conscious, rinse the mouth thoroughly with water. Consult a doctor.
Tunel dilution buffer	Following INHALATION	Transport the person to the open air. Consult a doctor.
	Following SKIN CONTACT	Immediately wash the skin with plenty of water or use a shower.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Immediately consult a doctor.
In Situ Cell Death - AP	Following INHALATION	Transport the person to the open air. Consult a doctor.
	Following SKIN CONTACT	Immediately wash the skin with plenty of water or use a shower.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Immediately consult a doctor.
	Following a SPILLAGE	Fire hazard. Evacuate the area. Remove all contaminated clothing. Turn off all ignition sources. Ventilate the area and wash the contaminated area where the product has spilled.
Picric Acid	Following INHALATION	Transport the individual to fresh air. Call for medical assistance. If the person is unconscious, carefully place them in a stable side position to aid breathing. The rescuer should wear personal protective equipment.
	Following SKIN CONTACT	Wash thoroughly with water and soap. Seek medical assistance.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Induce vomiting and call a doctor.
Alizarin Red S	Following INHALATION	Transport the person to the open air. In case of respiratory arrest, perform artificial respiration. Seek medical assistance.
	Following SKIN CONTACT	Wash thoroughly with water and soap. Consult a doctor.
	Following EYE CONTACT	Immediately rinse the eyes with plenty of water for 15 minutes while keeping the eyelid wide open. Consult an ophthalmologist.
	Following INGESTION	Do not administer anything to unconscious individuals. Rinse the mouth with water. Consult a doctor.

Preventive measures for biological risk:

- Use disposable nitrile gloves.
- Wear fabric lab coats.
- Thoroughly wash hands with antibacterial disinfectant soap after removing gloves.
- When in direct contact with fresh anatomical material not affected by diseases, use disposable blades and needles.
- After activities involving contact with fresh anatomical material not affected by diseases, dispose of disposable blades and needles in a designated special waste container. Clean and disinfect work surfaces.

Emergency management in case of biological risk

WHEN	WHAT TO DO
In case of CUT or PUNCTURE WITH A NEEDLE	Thoroughly wash the wound with water and soap. Disinfect the wound with hydrogen peroxide and denatured alcohol. Cover the wound with antiseptic material (band-aids, etc.).
In case of SPILLAGE OF BIOLOGICAL MATERIAL	Remove the biological material with absorbent materials and dispose of it in a single-use container for hazardous infectious solid waste. Clean and disinfect the area using disinfectant cleaners.

3. GENERAL BEHAVIORAL RULES

Anyone accessing the Normal Anatomy classroom, Microscopy classroom, and Histology Laboratories, based on their role and responsibilities, including students in educational programs, must be aware of and comply with the health and safety provisions for laboratory activities as per the received training and specific instructions outlined in the relevant Standard Operating Procedures (SOPs). Failure to comply with any of the instructions outlined in this document will result in denied access to the laboratory.

3.1 ANATOMY CLASSROOM

All users are required to observe the following general recommendations:

- Access the designated areas following the assigned pathways and always be accompanied by the instructor and/or a responsible person.
- Do not perform any activities in the classroom in the absence of the instructor or responsible person.
- Do not use instruments (e.g., scalpels) for which you have not been trained and/or authorized.
- Take utmost care of the premises, materials, and equipment, ensuring they are properly cleaned after use.
- Wear appropriate clothing, including a lab coat and Personal Protective Equipment (PPE) authorized by the Classroom Supervisor.
- The mandatory authorized PPE includes lab coat, disposable gloves, and waterproof boots.
- Do not use personal protective devices other than those authorized by the Safety Supervisor or their designated representative.
- Always consult the Safety Supervisor or their designated representative for any doubts regarding

activities or the use of good practices. If work instructions are unclear, do not hesitate to ask questions. Inform the tutor of any incidents, even if they seem minor.

- After removing gloves, thoroughly wash hands with disinfectant soap.
- Dispose of disposable PPE in the designated containers for Medical Waste.
- Dispose of disposable blades and needles in the special waste container.
- Remove any biological residues with absorbent material and dispose of them in the appropriate containers designated for disposal.
- Place used lab coats in the designated containers.
- Clean and disinfect work surfaces.
- Eating, drinking, smoking, storing food, applying makeup, wearing rings, and bracelets are prohibited in the classroom. If you have long hair, tie it back. The use of contact lenses is not recommended; glasses are preferable.

3.2 MICROSCOPY CLASSROOM

All users are required to observe the following general recommendations:

- Always access the classroom accompanied by the instructor and/or a responsible person.
- It is not allowed to perform any activities in the classroom in the absence of the instructor or responsible person.
- Use the equipment in the classroom (microscopes) only after being trained by authorized personnel.
- If work instructions are not clear, students should not hesitate to ask for clarification.
- In case of equipment malfunction, do not intervene directly but promptly report the malfunction to the Classroom Supervisor or tutor.
- Inform the Classroom Supervisor or tutor of any incidents that occur, even if considered minor.
- Always wear appropriate attire; students without protective footwear (no sandals) or lab coats are not allowed.
- Eating, drinking, and smoking are prohibited in the laboratory.
- Take utmost care of the premises, materials, and equipment, ensuring they are properly organized at the end of the activity.

3.3 HISTOLOGY LABORATORIES

All users are required to observe the following general recommendations:

- Use the equipment in the laboratory only after receiving training from authorized personnel who are knowledgeable in the use of the specific instrumentation in the laboratory.
- Do not use substances and products that are not specified in the Standard Operating Procedures (SOPs) for the laboratory exercises and thesis procedures.
- If work instructions are not clear, students should not hesitate to ask for clarification.
- Students must inform the Laboratory Supervisor or tutor of any incidents that occur, even if considered minor.
- Always wear appropriate attire; students without protective footwear (no sandals) or lab coats are not permitted. Cell phones should not be used during laboratory activities.
- Do not bring bags, backpacks, or outerwear into the laboratories.
- Do not place personal cell phones, tablets, or laptops on the laboratory workbenches.
- Always wear the required Personal Protective Equipment (PPE): lab coat, disposable gloves.

- Do not use Personal Protective Equipment (PPE) other than what is authorized by the Laboratory Supervisor or designated person.
- Thoroughly wash hands with detergent at the end of each activity.
- Eating, drinking, smoking, storing food, applying makeup, wearing rings and bracelets are prohibited in the laboratory. If hair is long, it should be tied back. The use of contact lenses is not recommended; glasses are preferred.
- Always refer to the tutor for any safety-related doubts concerning oneself or others.
- Adhere to the instructions received for waste management.

During all activities of thesis and practice lessons, students must adhere to the instructions provided in the laboratory's internal procedures for the safe use of the following equipment:

- Chemical hoods
- Paraffin oven
- Paraffin dispenser
- Refrigerators and freezers
- Small benchtop instruments (stirrers, balances, micropipettes, microscopes, pH meters)
- Chemical storage cabinets

Furthermore, students are required to observe the following general recommendations:

- Access the laboratory after carefully reading this document.
- Enter the laboratory only when accompanied by the teacher and/or authorized personnel.
- Working alone in the laboratory is prohibited: it is not allowed to operate in the laboratory without a supervisor available in the same building.