

Discussion and conclusion: The diploid number observed for the two species were also observed in some species from the same genus. On the other hand, the quantity of MACs and MICs and chromosomal morphologies differs between species, suggesting chromosomal reorganization in the genus. It is evident in the two species studied here, in which the number of chromosomes of group A and B are different. For wild animals, the cytogenetics analysis reflect a more descriptive aspect describing chromosomal number and morphology, identification of possible chromosomal markers and applications of staining techniques. The present study revealed that it is possible to study the karyotype of chelonians using economical and viable protocols without harming the animal and preserving it in its own habitat. However, in programs aimed at the reproduction of these animals, it is necessary to identify the species correctly, in such a way that their genetic patrimony could be preserved and not decharacterized by hybridization.

References

- CABRAL-DE-MELLO, D. C.; MOURA, R. C.; MARTINS, C. Chromosomal mapping of repetitive DNAs in the beetle *Dichotomius geminatus* provides the first evidence for an association of 5S rRNA and histone H3 genes in insects, and repetitive DNA similarity between the B chromosome and A complement. *Heredity*, London, v. 104, n. 4, p. 393-400, 2010.
- Ijdo, J.W. *et al.* Improved telomere detection using a telomere repeat probe (TTAGGG)_n generated by PCR. *Nucleic Acids Research*, London, v. 19, n. 17, p. 4780, 1991.
- JACKSON, J. T. **Demography and population structure of a Rio Grande endemic Emydid the big bend slider.** 2010. 92 f. Dissertation (Doctor of Philosophy) – Texas State University, San Marcos, 2010.
- MOORHEAD, P. S. *et al.* Chromosome preparations of leukocytes cultured from human blood. *Experimental Cell Research*, New York, v. 20, n. 3, p. 613- 616, 1960.
- POUGH, F. H.; HEISER, J. B.; MCFARLAND, W. N. **A vida dos vertebrados.** 2. ed. São Paulo: Atheneu, 1999.
- RUFAS, J. S. *et al.* Chromosome organization in meiosis revealed by light microscope analysis of silver-stained cores. *Genome*, Ottawa, v. 29, n. 5, p. 706-712, 1987.
- SAMBROOK, J.; RUSSEL, D. W. **Molecular cloning: a laboratory manual.** 3. ed. New York: Cold Spring Harbor Laboratory Press, 2001.
- SCHWEIZER, D. *et al.* Cytogenetics of the parthenogenetic grasshopper *Warramaba virgo* and its bisexual relatives. X. Pattern of fluorescent banding. *Chromosoma*, Berlin, v. 88, n. 3, p. 227-236, 1983.
- SIQUEIRA, C. A. F.; SILVA, J. A. S.; MORAL, F. A. F. Análise de marcadores morfológicos efetivos na diferenciação de espécies de *Geochelone* (Fitzinger, 1835) no criadouro Univap. In: ENCONTRO LATINO DE INICIAÇÃO CIENTÍFICA, 8.; ENCONTRO LATINO DE PÓS-GRADUAÇÃO, 4., 2004, São José dos Campos. **Anais...** São José dos Campos: Univap, 2004. p. 124-126.
- SUMNER, A. T. A simple technique for demonstrating centromeric heterochromatin. *Experimental Cell Research*, New York, v. 75, n. 1, p. 304-306, 1972.

CRIMINALISTICS IN VETERINARY MEDICINE. CLASS WITH GRADUATE STUDENTS

FRIEDRICH, N. O.¹; JIMENEZ LUCENA, M. A.²; MIÑO, T.³

¹ Mg Sp Médica Veterinaria. Titular Cátedra Medicina Veterinaria Legal (Legislación) de la Facultad de Ciencias Agropecuarias, carrera Medicina Veterinaria. Universidad Católica de Córdoba (UCC), Argentina. E-mail: noe655@yahoo.com.ar.

² Mg Lic. en Derecho. Adjunta Cátedra Medicina Veterinaria Legal (Legislación) de la Facultad de Ciencias Agropecuarias, carrera Medicina Veterinaria. Universidad Católica de Córdoba (UCC), Argentina.

³ Médico Veterinario. Prof. invitado Cátedra Medicina Veterinaria Legal (Legislación) de la Facultad de Ciencias Agropecuarias, carrera Medicina Veterinaria. Universidad Católica de Córdoba (UCC), Argentina.

Introduction: The Chair of Legislation of the Catholic University of Cordoba, Argentina, in the unit: Veterinary Legal, implemented as an organizational teaching modality: practical classes carried out in the field, on the theme scene of crime scene. The purpose of these classes is to contribute and to obtain competences in academic knowledge related to the forensic sciences and their ethical application in legal causes; instruct the veterinarian to act as an expert in the face of judicial or extrajudicial requirements, incorporate

basic legal, legislative concepts; notions of criminology, tanatology, entomology and lesionology; acquire: skills and abilities, intellectual, interpersonal communication, organization and personal management; attitudes, values of development and professional commitment. **Materials and Methods:** The equipment consists of: 1) Clothing and elements of biosafety. 2) Writing, signaling, measuring and sampling elements. 3) Optical, light, image and sound pickup devices; instrumental and basic tools. The teaching method is previous expository. The organizational modality gives preference to cooperative learning. We work in groups with an assigned case. The resource used is the assignment of roles. Adequate elements are provided to simulate a criminal event with the presence of anatomical remains and simulated biological evidence. Guidance documentation is available to make sense of the chain of custody. On the assigned day the number of students is considered. The working groups are formed. It determines the roles that each one will fulfill and their functions.

Table 1 - Roles and number of students.

Order number	Roles	Quantity	Quantity	Quantity
1	Group coordinator	1	1	1
2	Security Officer-Police	1	2	2
3	Attorney / Judge	1	1	1
4	Veterinarian	1	1	1
5	Criminalist / ballistics	1	1	1
6	Criminalist / traces and footprints	1	1	1
7	Fotógrafo forense	1	1	1
8	Planímetra	1	1	1
9	Forensic Laboratory	1	2	2
10	External Assistant	1	1	2
11	Witnesses	2	2	2
	Total per group	12	14	15

Source: Noemi O. Friedrich.

The teacher acts as general coordinator. The task: 1. Determination of crime scene. 2. Site protection. 3. Assurance. 4. Initial acts. 5. Adoption of measures in case of injured or deceased animals. 6. Methods by patterns, advised to enter the place and search for traces, traces or signs. 7. Eye inspection. 8. Methods of fixation: written description, sketches, plans, photography. 9. Collection of items, footprints, traces or signs. Chain of custody. 10. Marking and registration. 11. Manipulation

of common articles of organic and inorganic evidence. Packaging. Labeled. Preservation. 12. Liberation of the place. The participation of the students is supervised from the beginning, the course and the end of the task, using the score from 1 to 10. A direct observation of attitudes and behaviors is carried out. In turn, a general review is made by means of photography and filming. It is considered: 1. Use of appropriate clothing and biosecurity elements. 2. Predisposition for teamwork. 3. Skills demonstrated. 4. Answers to relevant questions. 5. Attitudes of respect and tolerance. In the evidence collected, it is considered: presentation, conservation and disposal of consignments to specific assumptions; preparation and presentation of minutes, sample forms, graphs, drawings, diagrams and reports requested in a timely manner. **Results and Discussion:** It was verified that students prefer to wear their own protective clothing, they are adapted to the requirement of the use of protection elements, (Figure 1). Predisposition for teamwork (Figure 2). Take measurements, draw sketches and maps, take photographs. They demonstrate interest and skill in the proposed tasks (Figure 3).



Figure 1



Figure 2



Figure 3



Figure 4



Figure 5



Figure 6

Source: Noemi O. Friedrich.

In the evidences collected, the presentation, lifting (Figures 4 and 5), conservation and disposal of samples (Figure 6) are respected. Preparation and presentation of minutes, forms, samples, graphs, drawings, diagrams and reports requested in a timely manner. Attitudes of respect among peers, Discussion: of the techniques to be used and joint

decisions. Questions pertinent to the tasks. Advantages: 1. It allows the student to carry out controlled activities in which he must apply to specific situations both the knowledge he possesses and, in this way, to secure them and acquire others, such as to put into practice a series of basic and procedural skills related to the subject matter Study that would not be possible to develop in other modalities. 2. It facilitates the training in the resolution of concrete problems and establishes a first connection with the reality and with activities that arise in the professional work. 3. Depending on its typology and approach, both self-employment and group work are promoted. Inconveniences to consider: 1. Organizational issues, it is necessary to have groups that work simultaneously. 2. It requires specific spaces, adequate equipment and auxiliary personnel. 3. The planning and evaluation of students' work and activities are an extra task for the teacher. 4. When dealing with activities developed in controlled environments and linked to a subject, artificial situations arise.

Conclusion: In this type of practical classes, in addition to the characteristics common to all of them, in terms of their organization and development, they usually have a certain peculiarity in terms of their programming since they can be developed in sessions of several hours. The common characteristics is the formation of groups of medium or small size require the presence of the teacher and the students working in unison. Competence in basic academic knowledge related to the forensic sciences, with the intervention of juridical concepts, notions of criminology, tanatology, entomology and lesionology, is acquired, specific skills are acquired at each stage of the process. It is important to emphasize the incentive to interpersonal communication, to the organization and personal management; to the generation of attitudes, values of development and professional commitment.

References

- ALBARRACIN, R. **Manual de criminalística**. 2. ed. Buenos Aires: Editorial Policial, 1975.
- ALONSO TAPIA, J. ¿Qué podemos hacer los profesores universitarios para mejorar el interés y el esfuerzo de nuestros alumnos por aprender? In: ESPANHA. Ministerio de Educación y Cultura. **Premios nacionales de investigación educativa**, Madrid: Secretaría General Técnica, 1998. p. 151-187. (Colección Investigación, 142).
- ARGENTINA. Ministerio de Justicia y Derechos Humanos de la Nación. **Manual de procedimiento**

para la preservación del hecho y la escena del crimen: Programa Nacional de Criminalística. Buenos Aires: Comisión de Trabajo en Criminalística, 2014. 63 p.

OLIVA, A. Insectos de interés forense hallados en Buenos Aires, Argentina. **Revista del Museo Argentino de Ciencias Naturales**. Entomología, Buenos Aires, v. 7, n. 2, p. 13-59, 1997.

RAFFO, O. H. **La muerte violenta**. Buenos Aires: Universidad de Buenos Aires, 2006. 240 p.

ANIMAL CRUELTY IN CAT: CASE REPORT

MONTEIRO, J. H.¹; MATSUI, A.²; CUEVAS, S. E.³; HONRADO, S. A.⁴; VASCONCELOS, R. O.⁵; MOREIRA, P. R. R.⁵

¹ Veterinary Anatomic Pathology Resident, Faculdade de Ciências Agrárias e Veterinária (FCAV), Universidade Estadual Paulista (Unesp). E-mail: julio_edward@hotmail.com.

² Postgraduate Student, Veterinary Pathology Department, FCAV, Unesp.

³ Postgraduate Student, Faculdade de Medicina Veterinária e Zootecnia (FMVZ), Universidade de São Paulo (USP).

⁴ Medicine Veterinary Student, Faculdade de Medicina Veterinária de Lisboa (FMV).

⁵ Professor in Veterinary Pathology Department, FCAV, Unesp – Campus de Jaboticabal/SP.

Acts of cruelty against animals are considered a crime according to the Environmental Crimes Law, art. 32 (BRASIL, 1998). Abuse of cats is common and is practiced mainly by intentional exogenous intoxication and also by traumas (MARLET; MAIORKA, 2010; SIQUEIRA *et al.*, 2012), in which blunt injuries are the most commonly observed (MUNRO; MUNRO, 2008; MCEWEN, 2012; CUEVAS *et al.*, 2016). Forensic veterinary pathology is extremely important in cases of animal cruelty, not only to determine the animal's cause of death, but also to help to differentiate between accidental and non-accidental lesions (MERCK *et al.*, 2013). This is an important tool of forensic veterinary medicine, due to the legal potential of these types of cases. Therefore, this study aims to describe the lesions found in a cat killed in a cemetery, called "Cemitério da Saudade", in Ribeirão Preto/SP, Brazil, with suspected abuse. A female, uncastrated, mixed breed cat and black