

# **IX NATIONAL CONGRESS OF MORPHOLOGICAL SCIENCES**

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Abstracts

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ARGENTINA



### 1. MORPHOMETRY OF MUSCLE FIBER TYPES IN MUSCLES OF A BURROWING MAMMAL (*Ctenomys talarum*)

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The purpose of this study was to analyze the morphology and proportion of the different muscle fiber types in two forearm muscles (*triceps lateralis* and *teres major*) of the subterranean digging rodent *Ctenomys talarum* (Caviomorpha: Octodontidae).

The fibers were classified as SO (slow-twitch/oxidative), FOG (fast-twitch/oxidative/glycolytic) and FG (fast-twitch/glycolytic) types according to differences in reactivity for myosin-ATPase (after preincubation at pH 4.35, 4.5 and 10.2), SDH and PAS. The cross-sectional diameter of fibers were measured and the proportion and relative area of each fiber type were calculated. Differences were tested for significance by mean of the X test and ANOVA. Both muscles exhibited a heterogeneous population of fiber types (SO: 4.45 and 5.33, FOG: 55.0 and 75.53, FG: 38.55 and 19.14 for the *triceps lateralis* and *teres major* respectively), being the proportions of type FOG significantly higher ( $p < 0.005$ ). Differences between mean fiber diameters were highly significant ( $p < 0.0001$ ), fiber sizes ranged as  $FG > FOG > SO$ . The relative area of FG type was higher than its proportion whereas the relative areas of types FOG and SO were correspondingly lower. The muscles of *Ctenomys talarum*, with its heterogeneous composition of types of muscle fibre, would allow them to face up to different functional demands (digging, aboveground locomotion, handling food) for which they must contract with varying degrees of strength. In the most specialized diggers; in contrast, the muscles tend to be more homogeneous in their fiber types composition.

### 3. IMMUNOCYTOCHEMICAL LOCALIZATION OF GASTRIN AND SECRETIN IN THE STOMACH OF THE LAMA (*Lama glama*)

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Chromogranins A have been identified in different regions of the stomach of the lama (proximal, intermediate and distal). The chromogranins has been used in other species as a marker to all the endocrine cells. The aim of the present work was to demonstrate gastrin and secretin in those cells of the distal compartment that were positive to chromogranin. The samples were taken from three lamas coming from the Department of Anatomy of the FCV - UBA. The tissues were selected in four different regions of the distal compartment. They were fixed during 48 h in Bouin solution, embedded in paraffin and serially cut at 5 µm thick sections. Immunostaining was conducted with polyclonal anti-gastrin and anti-secretin, both of them at a 1/1000 dilution. A peroxidase based avidin/biotin method was employed. Gastrin positive cells were detected in three proximal areas of the distal compartment. All cells were negative to secretin. The gastrin positive cells were aleatorily distributed in the mucous membrane. They presented a polyhedral shape, a clear central nucleus and a granular cytoplasm. It can be concluded that the stomach of the lama presents positive cells to gastrin in certain regions being completely negative to secretin.

### 2. IMMUNOCYTOCHEMICAL STUDY OF THE DISTRIBUTION OF DIFFERENT ISOSPECIES OF TUBULIN IN THE BOVINE PARS TUBERALIS

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The *Pars tuberalis* (PT), is a region of the vertebrates' adenohipophysis of undetermined function. It have been postulated that it is involve in the ontogenic development, the regulation of other regions of the hypophysis and a transducer of the melatonin signal. The morphology of its cells, very well developed RER and Golgi, suggests a secretory activity although their product has not still been identified. It is known that the microtubules (MT) participate in the secretion process. Their post transduction modifications would participate in their different functions. The aim of the present work was to determine the distribution of the MT in the PT of bovine using immunocytochemistry with monoclonal antibodies anti tubulin ( $\alpha$ ,  $\beta$ ,  $\gamma$ , tyrosinated, and acetylated). The PTs were fixed in Bouin, embedded in paraffin, serially section at 5 µm and mounted on gelatinized glasses. It was observed that  $\alpha$ , and  $\beta$  tubuline were diffusely present in the cytoplasm of practically all the cells of the PT. In the case of tyrosinated tubuline the staining was similar but restricted to a low number of cells. On the other hand, the immunodetection of  $\gamma$  tubulin was very weak being negative for acetylated tubulin. These studies are being used to contribute in the understanding of the functionality of this particular region of the adenohipophysis.

### 4. COLLAGEN FIBERS TYPE I AND III IN BOVINE MUSCLES OF CRIOLLA ARGENTINA BREED FROM PATAGONIA

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Collagen is the most abundant protein in mammals and is part of the connective tissue. Fibers containing collagen type I (collagen fibers), and fibers rich in collagen type III (reticular fibers) are part of the extra cellular matrix around the skeletal muscle fibers. A high amount of them affects the tenderness as well as the biological value of the meat protein. The goal was to characterize and determine *in vivo*, the type and quantity of collagen and reticular fibers in bovine muscles of the *Criolla Argentina* breed, pure descendants of the first animals of this type brought to the country by the Spanish. Male, thirteen months of age (n=5) and female, ten months of age (n=4) were selected, all of which were subjects to two muscles biopsy (*Longissimus dorsi* and *Gluteus medius* muscles). Histological cuts were evaluated by picosirius-red technique under polarized light microscope with a reticular device and 200X. Collagen fibers found in the *Longissimus dorsi* muscle aren't different neither in males nor in females, while reticular fibers are present in a higher amount in the last group. Collagen fibers in *Gluteus medius* muscle are present in a higher amount in males than in females, while reticular fibers are present, too in higher values in males than in females. In the studied muscles young animals of this breed show collagen and reticular fibers distributed in a different way in relation to sex and muscle, therefore it is interesting to continue the research in older animals.

**5. BOAR SPERM CHROMATIN RESPONSE TO COOLING SEMEN IN THREE COMMERCIAL EXTENDERS**

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Previous studies on breeding animals have compared the effects upon sperm behavior using different extenders. The objective of this study was to compare nuclear sperm parameters on fresh boar semen samples and on sperm stored at 17°C during 96h in Sperm Plus®, Porci Star® or Acromax® extenders. Two ejaculates from two fertile pigs were used in this study. Feulgen reaction and Toluidine Blue (TB) stain were performed in order to study chromatin quality, sperm nuclear morphology were evaluated by Feulgen reaction. The Qwin Pro Leica 2.8 Program was used to determine different parameters, such as sperm area, perimeter, maximum and minimum diagonal. The percentage of normal morphology was similar in fresh and storage samples (number of nuclei per sample > 170). No significant differences on the frequency of vacuoles and crests or on the degree of chromatin condensation were observed with none of the three different extenders. Nevertheless, morphometric determinations indicated that Acromax® seemed to induce a significant reduction on the analyzed parameters. Since morphometric studies of sperm nuclei appeared to be more sensitive than other parameters to analyze chromatin changes. It would be important to deep into the study of these parameters when evaluating the response of diluted semen samples.

**7. HIPERTEXTUAL ATLAS : IMPACT IN TEACHING AND LEARNING PROCESS OF MORPHOLOGICAL SCIENCES**

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Impact of the use of hipertextual atlas was analyzed in Morphological Sciences of teaching and learning process in the biological area of the knowledge. These resources were developed in PowerPoint® by Animal Morphology department of Biology School (UNC). Valuation was carried out by users of different educational contexts. It was interviewed a population formed for university students of first and second year of two different careers, university teachers-researchers of diverse disciplines of Morphological Sciences and secondary students of specialization cycle of Córdoba school city. 120 surveys were received, the data were processed to obtain the percentages in each item. The users indicated that atlas is a good complementary for other curricular materials. They used them with more frequency to teach, to revise and to complete concepts. Images had a facilitating function for the understanding and they found coherence between the message and the graphic representation. It allowed the users to carry out cognitive operations and to the develop multiple strategies to understand, to integrate and to transfer. These results indicate that the use of these educative resources has had a favorable impact among the different group and educational context, because it offer the acquisition of meaningful knowledges with a participative and attractive methodology that favors learning of concepts of Morphological Sciences.

**6. CHRONIC STRESS EFFECTS ON APOPTOSIS RAT ADRENAL CORTEX DURING THE SECOND HALF OF GESTATION**

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The aim of the present study was to characterize quantitatively the apoptotic phenomenon in adrenal cortex in gestating rats under chronic stress conditions. Control pregnant group (CR) and stressed pregnant rats (SR) by IMO/ 45 min., were sacrificed after 12, 17 and 21 days gestation. The TUNEL technique was performed to mark apoptotic nuclei (AN) and contrasted with methyl green for normal nuclei (NN). Images from serial sections, were quantitatively analysed with the SPSS statistical program. In SR the AN in the glomerular zone (GZ) it presented a significant increase ( $p < 0.05$ ) between days 12 and 21, and 17 and 21. In the fascicular zone (FZ) there was a significant increase in the three analyzed ages, and in the reticular zone (RZ) it was observed a significant increase between days 12 and 17, and 12 and 21. The NN in SR in GZ there was a significant decrease between days 12 and 17, and 12 and 21. In FZ and RZ there was a significant decrease in the three ages studied. When comparing CR and SR in GZ the AN presented a significant increase in SR after day 21. In FZ the AN presented a significant decrease in SE after day 12, and a significant increase after day 21 while NN presented a significant decrease at day 21. In RZ there were no significant differences between CR and SR in any of the ages studied. In the inter-group analysis the stress increases the apoptosis at the end of gestation while in the second half there is a reduction of it. This would explain, the adrenal hypertrophy and later normalization of adrenal weights at the end of gestation, which might be due to maternal stress and the risen of glucocorticoids.

**8. MORPHOLOGICAL AND FUNCTIONAL MATURATION OF CHEWER MUSCLES FIBERS ASSOCIATED TO THE MANDIBULAR CONDYLE**

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In this work morphological changes of chewer muscles fibers associated to the mandibular condyle in human fetuses were evaluated by means of optic and electronic microscopy. Clinically, these muscles have functionality been valued in normal newborns. In previous studies we observed that at 24 gestation weeks the articular structures features are similar to newborn ones and would be qualified to carry out specific biomechanic activities. Chewer muscles samples from 10 human fetuses of 11 to 37 weeks were processed with techniques for optic and electronic transmission microscopy. We were carried out valuations about muscular forces exercised during suckling in newborns of ten days of life using a specific suction pressure bisensor. In fetuses of 11 to 16 weeks, lateral pterygoid muscular fibers inserted on condilar osseous surface were formed by secondary myotubes displaying wavy path, associated to small nervous fascicles. These fibers contained scarce myofibrils formed by regular sarcomeres with bands I, A and Z line. From 24 weeks, muscular fibers gradually acquired the typical structure of mature striated cells. In normal neonates records of suction forces showed 6 to 7 cycles in one minute with maxima and minima pressure values that alternated with high, intermediate and low pauses in the suction. These finding suggest that pterygoid fibers acquire their functional capacities previous to birth, what allows to carry out mandibular movements for the alimentation.

**9. BEHAVIOUR OF CERTAIN LECTINS IN THE IDENTIFICATION OF GLYCOCONJUGATES IN THE DUODENUM OF HORSE FOETUS**

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In the last few years, the application of lectins for the glycoconjugates identification has become an important tool by the property they have to recognize and join together, with specificity, to carbohydrate present in the glycoconjugates. The objective of this work is to study the behaviour of certain lectins in the identification of glycoconjugates in the duodenum of horse foetus. Histologic sections of duodenum fixed in 10% buffered formol and embedded in paraffin were used. Different lectins were used as markers: *Pisum sativum* (glucose/mannose), *Solanum tuberosum* (N-acetyl glucosamine), *Dolichus biflorus* (N-acetyl galactosamine/galactose) and *Ulex europeaus-I* (L-fucose). Developing was done with streptavidin-peroxidase complex and diaminobenzidine. Marking with *Pisum sativum* was weakly positive in some enterocytes and lightly positive reaction in the brush border. *Solanum tuberosum* behaved in a similar way. *Dolichus biflorus* had a positive reaction in brush border and enterocytes; *Ulex europeaus-I* was a negative. It is concluded that lectins different used in Duodenum let us identify glucose/mannose; N-acetyl glucosamine and N-acetyl galactosamine/galactose in the enterocytes and brush border with degree different of reactivity.

**11. MORPHOLOGY AND ANUAL CHANGES IN THE OVIDUCT OF EUPHRACTINI (XENARTHRA, DASYPODIDAE) FROM BUENOS AIRES PROVINCE**

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Oviduct's morphology of *Chaetophractus villosus*, *C. vellerosus* and *Zaedyus pichiy* was studied. Samples were fixed in Bouin's fixative and processed by standard methods. Ampulla, isthmus and intramural portion were described. The wall has: Mucosa, made up of epithelium and corion of loose connective tissue, has longitudinal folds whose height, number and complexity decrease to the uterus. The columnar simple epithelium is formed by different cellular types, columnar ciliated cells (CC), columnar no ciliated or secretory (SC) and cells of the bottom of the folds (CBF). Muscular, of smooth muscle fibers, increase in wide to the uterus. In the ampulla, an inner circular layer and outer longitudinal one predominate. In the isthmus there is a wide circular. The intramural portion has no own muscular. Serosa, made up of a thin coat of connective tissue, covered by mesothelium. The histological annual changes of different portions of the oviduct, respond to a common pattern in the three species studied. It is noticeable the presence of CC with cilia, which increase in number towards the isthmus around the time of ovulation, but in *C. villosus* cilia were never observed in the fimbriae. The SC have apical cytoplasmatic protrusions in the ovulatory phase, but in the isthmus they are less numerous and without protrusions during the entire year. The CBF, absent in fimbriae, have cilia in relation with the ovulatory phase in ampulla and isthmus.

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**10. THE ROLE OF THE MONONUCLEAR PHAGOCYtic SYSTEM IN CHICKEN THROMBOCYTE SEQUESTRATION**

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Thrombocytes kinetic in birds is a poorly known process. By three different methods we studied the role of chicken mononuclear phagocytic system of liver, spleen, bone marrow, lung and kidney in the destruction of circulating thrombocytes. 1: Thrombocytes were *in vivo* labeled by endovenose injection of indian ink in 4 one month age chicken. After sacrifice, liver, spleen and bone marrow samples were processed and observed by light microscopy for detection of labeled thrombocytes into phagocytic cells. For bone marrow we also made smears stained with May- Grunwald- Giemsa. 2: Isolated chicken thrombocytes were labeled with <sup>111</sup>indio -oxinate and injected in two chicken in order to search the participation of different organs in thrombocyte uptake by direct observation in a gamma chamber at 15 min and 24 hs after the injection. 3. Four chicken injected with <sup>111</sup>indio -oxinate labeled thrombocytes were sacrificed after 24 hs and liver, spleen, bone marrow, lung and kidney samples were measured in a scintillation-counter for recovered radioactivity. In sections of tissues and bone marrow smears we could observe thrombocytes into phagocytic cells. The gamma chamber observation showed strong uptaking in liver and spleen zone. The measure of recovered radioactivity showed that uptaking in the total liver were 30 time higher than in the spleen. Uptaking by gr. of tissue also showed a liver predominance.

**12. MITOTIC AND APOPTOTIC ACTIVITY IN THE ES13 HEPATOCARCINOMA**

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Malignant neoplasms are characterized by unlimited growth and lack of response to normal controls. Nevertheless, in some experiments, circadian variations in the mitotic activity of certain tumors have been found. Apoptosis is also a process that regulates tumoral growth. With the aim of evaluating the mitotic and apoptotic activity variations in the ES13 hepatocarcinoma, C3HS adult male mice standardized for periodicity analysis and grafted with the tumor in the subcutaneous tissue were used. The animals were grouped and killed every 4 hours after intraperitoneal colchicine injection. Tumors samples were fixed in 10% buffered formalin and routinely processed. For mitotic quantification, micro sections were stained with Hematoxilin and Eosin and for apoptosis detection the slides were immunostained with TUNEL technique (Apoptag plus, Intergen, NY, USA). An average of 3000 cells of each animal were controlled, registering the metaphases images in all microscopic fields. For TUNEL technique similar procedure were performed and immunostained nuclei were registered far away necrotic areas. Circadian mitotic and apoptotic index variations were observed. The highest mitotic and apoptotic values were placed between 12:00 and 16:00h and the lowest values at 04:00h. (p<0,05). This preliminary study suggests that in this tumor mitotic as well as apoptotic activities could show similar circadian variations, indicating certain degree of tumor cell response to normal growth controls.

**13. IMMUNOLocalIZATION OF IGF-I AND PCNA IN MAMMARY TISSUE OF COWS TREATED WITH AN IMMUNOMODULATOR AT THE END OF LACTATION**

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The expression of insulin-like growth factor I (IGF-I) and cellular proliferation detected by presence of PCNA (proliferation cell nuclear antigen) was evaluated by immunohistochemistry (IHC) during the involution of bovine mammary glands treated with an immunomodulator. Six Holstein cows at the end of lactation were used. Animals were randomly assigned to each of three treatment groups. Two groups were infused intramammarily in all quarters with an immunomodulator containing 0.45 and 0.73  $\mu$ moles of lipopolysaccharide (LPS) of *Escherichia coli*, whereas two cows remained as uninfused controls. Milking was interrupted after infusion and animals were slaughtered 11 days post-inoculation. Tissue samples were taken from two zones in each quarter and were fixed in 10% neutral buffered formalin. IGF-I and PCNA were detected by IHC using the streptavidin-peroxidase method. Image analysis was performed using Image Pro-Plus 4.1.0.1®. At 11 days of involution, significant differences in the percentage (%) of immunostaining areas for IGF-I among control and treated groups with different dose of LPS were observed, with a larger % in controls. Index of cellular proliferation analysis was expressed as percentage of PCNA intensely positive cells. No differences in expression of PCNA among control and treated groups were detected. We conclude that the application of the intramammary immunomodulator at drying-off was associated with a decrease in the IGF-I expression (antiapoptotic factor) and did not interfere with mammary epithelial cell proliferation.

**15. QUANTIFICATION OF THE CELLULAR PROLIFERATION IN THE OVINE MAMMARY GLAND DURING LACTATION AND PREGNANCY**

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The cellular proliferation was evaluated by PCNA (*proliferation cell nuclear antigen*) expression. This protein associated to delta polymerase is expressed in multiplying cells from final stage of phase G1 to phase M. The biopsies were carried out in sheep at 10 prepartum days and 5, 15, 25, 70, 90, 120 postpartum days. The "quoin" incising technique was used. The samples were fixed in 10% buffered formaline into accord to routine protocols. Immunohistochemical methods were used for PCNA detection (streptavidin-peroxidase). Images were analyzed with Image Pro-Plus 4.1.0.1® program. Statistical analysis was assessed by ANOVA and Duncan Pos-test. Alveolar epithelial cells that showed strong nuclear stain (3+) were counted and the results were expressed as the intensely stained cells percentage. The biggest percentages of PCNA positive cells were observed at 10 prepartum days and 5, 15, 25 postpartum days, showing significant differences ( $p < 0.01$ ) with regard to the other groups. Into accord with our results, we can conclude that the biggest cellular replacement in the ovine mammary gland occur during advanced pregnancy and lactation, and coincide with the maximal milk production as well as with functional differentiation.

**14. QUANTIFICATION OF IGF-I EXPRESSION IN OVINE MAMMARY GLAND DURING LACTATION AND PREGNANCY**

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The insulin-like growth factor I (IGF-I) is growth stimulating of mammary epithelial cells *in vivo* and *in vitro*, and in synergism with mammogenic hormones, IGF-I regulates the mammary development. The aim of this study was to identify and quantify IGF-I using immunohistochemistry in ovine mammary glands during lactation and pregnancy, and to establish differences in IGF-I expression. The biopsies were carried out in sheep at 10 prepartum days and 5, 15, 25, 70, 90, 120 postpartum days. The samples were fixed in 10% buffered formaline into accord to routine protocols. Immunohistochemical methods were used for IGF-I detection (streptavidin-peroxidase). Images were analyzed with Image Pro-Plus 4.1.0.1® program. The IGF-I expression was mainly associated with the secretory epithelium of mammary gland. The highest percentage (%) of reaction was observed during lactogenesis and galactopoiesis with a distinct immunoreactivity for IGF-I in lactocytes (days 1 to 25 of lactation). The lowest expression of IGF-I was found in ewes with more than 120 days of lactation, and differed significantly ( $p < 0.05$ ) with the % of IGF-I expression obtained during early lactation and advanced pregnancy. The results lead us to conclude that the IGF-I expression may play a role in mammary development and remodeling in ovine mammary gland during advanced pregnancy, lactation and involution.

**16. IMMUNOHISTOCHEMISTRY DETERMINATION OF MOTILIN IN THE INTESTINAL TRACT OF HORSE FOETUS**

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Gastrointestinal hormones are peptides produced for endocrines cells of the gastrointestinal mucous associated with the secretion, mobility and growth of the digestive system. The aim of this study was determined the presence of motilin hormone in the intestinal tract of horse foetus. Samples of duodenum, yeyunum-ileum and coecal of horse foetus, fixed in 10% buffered formol were used. The presence of motilin was determined using the immunohistochemical technique with rabbit policlonal antibody (1:1000). Developing was done with streptoavidin-peroxidase complex and diaminobenzidine. Motilin-positive cells were observed in the duodenum; Yeyunum-ileum showed a marked reduction in motilin positive-cells; Coecal showed a negative reaction. It is concluded that the ditribution of the motilin hormone is different in relations of the reaction grade throughout the tract intestinal: greater in the duodenum, least in the yeyunum-ileum and negative in the coecal.

**17. HISTOLOGICAL AND HISTOCHEMICAL STUDY OF SALIVARY GLANDS OF *Helix aspersa* (Mollusca, Gasteropoda)**

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The Gasteropoda Class include molluscan known like snails. *Helix aspersa* belong to Helicidae family and is one of the more searching individual production due to its quality meat, being fundamentally an exportation product. The aim of this work is to know the morphological structure of some portions of digestive tract, in this case the salivary glands of this snail to contribute with the biology with application in the scientific-productive area. These glands are present surrounded the stomach although its conduct empty buccal cavity. The samples was obtaining by breeders of the south of Cordoba and were fixed in 10% buffered formaldehyde and stained using haematoxylin-eosine, blue alcian pH 0,4% and pH 2,5%. With haematoxylin-eosine was observed that this glands are constitute by little lobules with different forms and include with basophilic cells, acidophilic cells and brightness cells. Also was observed ducts of cubic simple epithelium. Morphology these cells are large with polyhedral forms, the nucleus are large also, central and the cytoplasm are stained red, blue and without colour. With alcian blue was evident the presence of acid mucoproteins at pH 0,4% in the brightness cells. With pH 2,5% was observed less than the other.

**19. GLYCOCONJUGATES IN THE GILLS OF *Odontesthes bonariensis* (TELEOSTEI, Atherinopsidae)**

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The purpose of this study is to analyze histochemically the GCs from the mucosecretory cells located in the gills of the *Odontesthes bonariensis* collected from Lake Los Padres (General Pueyrredón district, Buenos Aires province). The material was processed according to the classical histological methodology. Sections were subjected to histochemical techniques for the identification and visualization of epithelial glycoconjugates (GCs): 1) Alcian Blue (AB) pH 2.5: GCs with carboxyl groups and/or with sulfate esters, 2) AB pH 1.0: GCs with O-sulphate esters, 3) AB pH 0.5: very sulphated GCs, 4) AB 0.06 M: GCs with carboxyl groups and/or with sulfate esters, 5) AB 0.30 M: strong and weak sulphated GCs, 6) AB 0.50 M: strong sulphated GCs, 7) PAS: GCs with oxidizable vicinal diols, 8) PA\*S: sialic acid and some of their chain variants (C7 and/or C9), 9) PA/Bh/KOH/PAS: sialic acid residues with O-acetyl substitution at C7, C8 or C9 and O-acetyl sugars, 10) KOH/PA\*/Bh/PAS: neutral GCs with oxidizable vicinal diols, 11) KOPH/PA\*S: total sialic acids. The mucous cells showed: O-acetyl sugars, neutral sugars, GCs with carboxyl groups and strong and weak sulphate esters. Scarce GCs were found with oxidizable vicinal diols or sialic acids. The GCs elaborated and secreted by the mucous cells would be important for different functions. Sulphate CGs have been particularly associated to a lubricating role. The fact that water chemistry is related to mucous cells secretion, specially in euryhaline fish, can be mostly responsible for the mucosubstances produced in *O. bonariensis* gills, as this species is, in its natural habitat, an euryhaline fish.

**18. PECTORAL FINS OF *Micropogonias furnieri*: ONE ULTRASTRUCTURAL STUDY**

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Among the teleost there is a wide variations both in movements and muscular organization. The pectoral fins in the most advanced teleost, have a lateral high position and they are used as a break. The subcarangiform mode of swimming displayed by the white croaker *Micropogonias furnieri* (Pisces, Perciformes, Sciaenidae) undulates the posterior one half or one-third of the body. The aim of the present work was to study the pectoral fins musculature of *M. furnieri*. This is based on transmission electron microscopic (TEM) investigations of the superficial zone (ZS), medium zone (ZM) and deep zone (DZ) of the pectoral fins of the *M. furnieri*. The fibres of the ZS zone are small with a large number of subsarcolemmal mitochondria, scarce intermyofibrillar mitochondria and a well-developed sarcoplasmic reticulum. The myofibrils are arranged polygonally throughout the whole area. In the ZM zone the fibres are bigger than in the ZS zone, the miofibrils are densely packed, the mitochondria prevailed under the sarcolemma and the sarcoplasmic reticulum is not abundant. The fibres of the ZP zone are the biggest, show ribbon-shaped myofibrils and a few number of mitochondria. The intercellular space is very abundant and capillaries and nervous terminations are frequently observed. The results suggest that (a) fibres of ZS zone are tonic used for slow continuous swimming, (b) fibres of the intermediate ZM zone are recruited after the tonic fibres and (c) fibres of the ZP zone are fast and used for bursts of rapid activity.

**20. TOXIC EFFECTS OF CADMIUM ON THE RAT LIVER**

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Cadmium is an industrial and environmental pollutant. Chronic exposure to Cadmium results in accumulation of the metal in the liver and kidney. Acute exposure leads to accumulation in the liver that it is the target organ. The manifestations of acute Cd intoxication include hepatocyte swelling, fatty degeneration, necrosis and apoptosis. In this study, the effect of the administration of one dose of CdCl<sub>2</sub> to pregnant rats on their livers histoarchitecture was evaluated. Four groups of pregnant Wistar rats were used. They were injected subcutaneously with 10 µg Cd/g BW at the following days of pregnancy: group I, day 7; group II, day 9 and group III, day 11. The group IV (control) received saline solution. At the 20 day of pregnancy, all the rats were sacrificed; their livers were removed and they were fixed with buffered formal, dehydrated with alcohol and embedded in paraffin. Sections of 5µ were stained with H/E. The histological studies showed, only in Cd treated groups, the presence of vacuolization of cytoplasm and disorganization of hepatocytes with loss of epithelial line. Chromatin margination and apoptotic bodies in the liver cells are observed.

**21. HISTOLOGY OF THE SALIVARY GLANDS IN EUPHRACTINI (MAMMALIA, XENARTHRA)**

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In this work we describe the comparative histology of the salivary glands of *Chaetophractus villosus*, *C. vellerosus* and *Zaedyus pichiy*. Pieces were fixed in Bouin's fluid and were processed according to routine techniques. Three pairs of salivary glands are distinguished in the three species: submaxillary, parotid and sublingual. They are compound tubuloacinar glands surrounded by a capsule of dense connective tissue, which penetrates toward the interior of the glands. Septa of this connective tissue, divide the glands in lobes and lobules. Parotid glands are composed of serous acini. Two histologically different parts or lobes compose the submaxillary gland. The anterior part, with secretory portions containing mucous acini capped by large serous demilunes and serous acini. The posterior part is bigger and composed by seromucous acini with small serous demilunes and occasionally serous acini. There is a salivary bladder related with the anterior submaxillary gland. It is covered by epithelium and the major portion of the wall is composed of striated skeletal muscle. The sublingual gland is composed predominantly of mucous acini. The myoepithelial cells are associated with the acini and their ducts. Histologically, salivary glands are similar in the three species. The submaxillary gland composed of two lobes and the presence of a salivary bladder, coincide with the reported in other Xenarthra.

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**23. THE OVARY OF THE PLAIN VISCACHA (*Lagostomus maximus maximus*): ANATOMO-HISTOLOGICAL AND MORPHOMETRIC ASPECTS**

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The plain viscacha is a rodent of the suborder Hystricognati, with exceptional reproductive characteristic like polyovulation and a high early embryonic mortality. Our goal was to perform an anatomical description of their ovary and to analyze histological and morphometric aspects of their ovarian follicles and related structures in different reproductive periods. Thirty mature females were captured in their natural habitat. The ovaries were fixed in 10% buffered formalin. The samples were processed by the conventional method for inclusion in paraffin. Five microns serial sections were stained with Hematoxylin and Eosin, Masson's Tricomic, Von Kossa and PAS. Digital image analysis was employed for morfometric determinations. The ovaries are smoothed and irregular and tortuous cords form them. Their cortex present primordial follicles forming nests, primary, multilaminar primary, secondary or antral, tertiary and atresic follicles. Primary and accessory corpora lutea can be distinguished. The latter arise as a consequence of the luteinization of non-ovulated follicles. Secondary follicles with apoptotic bodies can be frequently observed. Calcification of follicles of diverse size are also observed. The marrow contains tortuous tubes covered by a single epithelium that represents the epoofo. The marrow does not present muscular fibers except an the hilum. It was shown that the ovary of the plain viscacha possesses some characteristic that are similar to that of other mammals but others that are particular for this specie.

**22. HISTOLOGY OF THE CLOSER MUSCLE OF *Chasmagnathus granulatus* AND *Cyrtograpsus angulatus***

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In this work we study the histological structure of the closer muscle in the clan of *Chasmagnathus granulatus* and *Cyrtograpsus angulatus*. Adult males crabs were caught off the Mar Chiquita lagoon (Buenos Aires, Argentina). Animals were maintained in acuaria for ten days. Crabs were cold anesthetized and claws were removed. The material was processed according to the classical histological methodology. Sections were subjected to the following techniques: haematoxylin-eosin, Masson and Mallory's trichromes stain, Gomori reticulum stain and Periodic acid-Schiff. We observed striated muscles fibers with elongated nuclei, more abundant in *Chasmagnathus angulatus*. Spongy connective tissue among muscle fibers consists of cells and fibers embedded in an amorphous matrix. They include agranular hemocytes, granulocytes, fibroblasts, collagen and reticulum fibers. We found many haemolymphatic sinuses intimately tied to elements of the nervous system. Crustacean muscles have an important function in the relationship of individuals with environment, and are characterized by their anatomical diversity. The preliminary results of this work, will allow us to identify the anatomical and functional relationship of the closer muscle of this crab species.

**24. COMPARATIVE SPLENIC STRUCTURE OF EUPHRACTINI FROM BAHIA BLANCA ZONE**

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The spleen is a myeloid organ interposed in the systemic circulation. From Agnates, where it is essentially myeloid, the structure has been remodelate because of the evolutive pressure and adaptation to diverse environments. Mammals are excellent models for different structural patterns and Dasypodidae show a splenic morphology that reflects not only their phylogenetic position but also their biology. In this work we compare the histology and cytology of the spleen of *Chaetophractus villosus*, *C. vellerosus* and *Zaedyus pichiy*. The material comes from adult healthy animals. The spleen was collected, weighted and processed according routine techniques. Results show that these species have some basic similitude as an extensive capsulo-trabecular system, the typical pulp segregation and the persistence of myelopoietic activity in adults. Principal differences are focused in the quantity and functionality of ellipsoids, in the presence of isolated contractile cells located between filtrant beds and in the activity degree of mielopoiesis. The splenic architecture of Euphractini here exposed, agrees with the one of other ancestral mammals, but with some adaptative patterns.

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**25. NEUROTROPHINS RECEPTORS EXPRESSION IN BROILERS' (*Gallus domesticus*) THYMUS**

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Neurotrophins are a family of growing factors that take part in differentiation, development and maintenance of some neuronal populations. **NGF** (Nervous Growing Factor), **BDNF** (Brain Derived Nervous Factor), **NT-3**, **NT 4-5** neurotrophins were found in birds and mammals. The purpose of the present work was to detect high affinity neurotrophins receptors in broilers' thymus. Twenty thirty days old broilers' thymus were fixed in Bouin and buffered formaldehyde and histological routinely processed. The sections were stained with H/E. LSAB method were used to detect Trk proteins using polyclonal rabbit antibodies (Santa Cruz, Biotechnology, CA, USA). Some samples were processed by western-blot. Results showed that TrkA was immunoreactive (*ir*) around Hassall corpuscles in medullar zone and capsule. TrkB was *ir* in dendritic cells localized in medullar zone, while TrkC was negative. Western-blot analysis showed 140 and 90 KDa bands which correspond to TrkA and TrkB, respectively. We conclude that TrkA and TrkB are localized in stromal cells of the broiler's thymus, while TrkC was not identified. Lymphocytes were *ir* negative for these proteins. Epithelial bird thymus' cells with these receptors would modulate the nervous growing factor which is essential to the thymus development.

**27. ANATOMY OF THE THYMUS OF THE RABBIT (*Lepus cuniculus*) BASES FOR THEIR DIDACTIC, PRODUCTIVE AND INDUSTRIAL APPLICATION**

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This work was carried out with productive, didactic, industrial and export purposes. For this project, 10 male New Zealand rabbits were used. They were 90 days old, with an average corporal weight of 1.76 (X± d.e.) 0.38 kg. from the Bioterio of the Veterinary Sciences Faculty, UNICEN. The thymus reaches its maximum development at three or four months of age. The obtained measures were: Average size 28.6 (X± d.e.) 2.68 mm x 23.6 (X± d.e.) 2.28 mm x 14.6 (X± d.e.) 1.10 mm; average weight 1.96 (X± d.e.) 0.42 gr. The organ is entirely thoracic. The left lobe is thicker than the right one. They are separated by a very deep interlobular fissure. It has the form of a smooth cone from side to side. The base, supported by the pericardium is less oblique than it is in the carnivores. The border flow of the left lobe is located between the third rib and the third intercostals space. The apex is located between the first couple of ribs, three or four millimeters ventral to the trachea and satellite blood vessels. The ventral border is in connection with the breastbone and the dorsal face and responds to the cranial cava vein, the brachycephalic trunk and the satellites nerves.

**26. NEUROTROPHINS RECEPTORS IN LLAMA (*Lama glama*) LYMPHATIC SYSTEM**

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Neurotrophins are structural and functionally related peptides, they favour survival and phenotypic differentiation of neuronal subpopulations in peripheric nervous system during embryonic development and its support during adult life. In this work it has been researched Trk cellular proteins location in *Lama glama* adults specimens lymphoid organs (thymus, spleen, lymphonodules, Peyer plaques, palatine tonsil). Samples were fixed in buffered formaldehyde, routinely included in paraffin, LSAB method was used to detect Trk proteins (polyclonal rabbit antibodies (Santa Cruz, Biotechnology, CA, USA). They are specific for each Trk and map intracitoplasmatic domain. Immunoreactive (*ir*) Trk cells were identified together with dendritic and macrophages cells epithelial markers. Lymphocytes Trk proteins were not *ir*. TrkA was located in thymus epithelial cells and red spleen pulp macrophages. TrkB was *ir* in thymus and spleen stroma monocytic macrophages and TrkC was *ir* in macrophages and connective tissue surrounding lymphoid organs. Results suggest that llama lymphatic stromal cells (epithelial, dendritic and macrophages) are positive to high affinity neurotrophins receptors.

**28. PROJECTION OF THE ABDOMINAL VISCERA OF THE RABBIT (*Lepus cuniculus*) RIGHT ABDOMINAL WALL**

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The aforementioned work was carried out for three essential reasons: Didactic purposes. Productive activities. Industrial exportation ends. In this work 10 male New Zealand rabbits were used at the age of 90 days old with an average corporal weight of 1.76 (X± d.e.) 0.38 kg, from the Bioterio of the Veterinary Science Faculty of UNICEN. The abdominal cavity is long; the lumbar region is composed of seven lumbar vertebrae with lengthened bodies. The muscles that surrounded these vertebrae are very strong and considerably exceed the transversal processes that are strongly inclined in a ventral – cranial direction. The muscles of ventral – lateral wall; on the contrary, are very thin easily pressed and make the internal organs visible. The intestinal mass is very voluminous in this species, in relation to the corporal size of the rabbit. The cecum and the colon occupied the almost 2/3 of the abdomen together with stomach, which is also voluminous, determine the topography of all the other organs. The main part of this side is filled with the cecum accompanied by the ascending colon and the more deeply, by the ileum, dorsally shaped by descending portion of the duodenum. The jejunum regroups their abundantly circunvolutions of the cecum and ventrally to the transversal portion of the duodenum. The topography of these viscera vary due to the repletion state of the cecum and, to a less extent, of the stomach. Our description makes reference to a middle situation.

**29. PROJECTION OF THE ABDOMINAL VISCERA OF THE RABBIT (*Lepus cuniculus*) LEFT ABDOMINAL WALL**

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This work was carried out with productive, didactic, industrial and export purposes. Ten male New Zealand rabbits were used for this work. They were 90 days old with an average corporal weight of 1.76 (X± d.e.) 0.38 kg, from the Bioterio of the Veterinary Science Faculty of UNICEN. By means of a dissection in level of the left abdominal wall we were observe the projection of the abdominal viscera. The abdominal cavity is long, the lumbar region consist of seven lumbar vertebrae with lengthened bodies. The muscles that surrounded these vertebrae are very strong and considerably exceed the transversal processes that are strongly inclined in a ventral – cranial direction. The muscles of ventral – lateral wall; on the contrary, are very thin and make the internal organs visible. The intestinal mass is very voluminous in relation to the corporal size. Almost all the left side is occupied by the circunvolutions of the jejunum. Dorsal – caudally they intersect between the transversal duodenum and the sygmoideus colon. The descending colon fixed through the connections of its meso with the duodenum, is always found in a deep position in the middle level. In the ventral part of the region the middle part of the cecum, this is related to the grip of the descending colon. The area occupied by the large intestine varies according the level of repletion of the cecum; its volume increase when it is full and it decreases when it is quite empty. The jejunum is in direct contact with the abdominal wall, without any interposition of the greater omentum.

**31. EFFECT OF THE DIET FORAGE SHAPE ON THE ANATOMICAL DEVELOPMENT OF THE STOMACH OF LAMBS**

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This study was carried out to evaluate the anatomical rumen, reticulum and omasum development, in lambs feeded with diets of different particles size and shape of forage. Twenty lambs (Frisona x Corriedale), divided in two groups of ten, and pound bred from 45 to 90 days old were used. Diets supplied were: diet 1 (D1), forage in pellets with particles from 1 to 0,06 mm, and diet 2 (D2), chopped forage with particles from 10 to 0,06 mm. For anatomical evaluating, empty and full organs and ingesta contents weights were registered, and macroscopical observations of the stomachs walls were made, on the 0, 23 and 48 days of treatment. Data were analyzed by means of a factorial arranged model and the PROC GLM SAS V8 (SAS, 1989). Full complete stomach, full rumen-reticulum and stomach contents weights, were greater (p<0,05) in lambs feeded with D2. Empty complete stomach and compartment weights were not statistically significative (p>0,05). Macroscopic differences about papillary color and distribution on the stomach walls, between both groups, were not observed. These results indicate that stomach contents, complete stomach and full rumen-reticulum weights were influenced by forage shape but empty organs weights were not affected.

**30. HISTOCHEMICAL AND ULTRASTRUCTURAL STUDY OF THE OVARIAN INTERSTITIAL TISSUE OF VISCACHA: PROBABLE ROLE IN THE PREGNANCY**

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The interstitial tissue of the mammalian ovary possesses ultrastructural and histochemical feature of steroid-secreting cells. However, its function in the complex ovarian physiology is not established totally. Our laboratory studies reproductive aspects of the viscacha (*Lagotomus maximus maximus*). Due to its morphology, the ovarian interstitial tissue of this rodent is an appropriate model for its study. The purpose of the present investigation was to study the ultrastructural and histochemical properties of the interstitial tissue of the viscacha ovary that permit to infer its role during the pregnancy. We carried out histochemical techniques, ultrastructural observations and measurements of relative area of interstitial tissue. Lipids and cholesterol-positive and its esters were observed in non-pregnant female. The cholesterol was scarce in pregnant female. During the half of pregnancy, the interstitial cells showed features that suggest steroidogenic activity. The relative areas of interstitial tissue were greater in the non-pregnant female than in the pregnant female. The results suggest that the cholesterol and its esters are produced during the non-pregnancy in advance to the probable pregnancy, and then the cholesterol is used like precursor in the synthesis of necessary hormones for the pregnancy.

**32. DIFFERENTIAL EFFECT OF TWO MICROTUBULE POISONS ON THE MOUSE DUODENAL CRYPT**

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Paclitaxel (Taxol®) and colchicine are two microtubule poisons that induce apoptosis *in vivo* and *in vitro*. In previous work we demonstrated that colchicine induces cell death in the duodenal crypts while this agent's effect displays daily variations. Taxol is a drug employed for the treatment of a variety of tumors. In this communication we present the results of paclitaxel' effect on the duodenal crypts along a complete circadian period. For this purpose 57 male adult mice under standarized conditions were used. Starting at mid-night until the end of a circadian period, lots (n=4-6) were sacrificed, having been injected IP paclitaxel (20 µg/g body weight) or saline four hours before. Duodenal samples were processed to assess apoptotic index. Values of each lot were expressed as mean±SEM. The statistical analysis was performed by ANOVA and Student's t test. Results demonstrated that, under the present conditions, paclitaxel does not induce enterocytic apoptosis. This differs to the effect of colchicine treatment that enhances the number of apoptotic cells.

**33. ARCHITECTURAL DESIGN OF THE ACROMIAL PARTS OF THE DELTOIDES MUSCLE IN LLAMA (*Lama glama*)**

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The aim of this study has been find a relationship between muscle architectural design and fibre muscle population. The pars acromialis of the deltoides muscle from ten llamas were immersed into a 25% nitric acid for carry out the structural muscle design. Contralateral muscle samples were frozen in liquid nitrogen. Serial sections were typified by miofibrillar adenosine triphosphatase activity and reacting against myosin heavy chain monoclonal antibodies. Oxidative capacity was evidenced by dinucleotide adenine nicotine tetrazolium reductase. An isolectine was used as a marker of capillaries. The belly muscle was covering by strong lateral and medial fascias. Muscle fibres have 30mm length and 25° to 40° pinnation angles, took insertion between both fascias and a intermediate septum. The fibre type composition shows: I, 40.71%, IIA 19.10%, IIX 28.45%, IIB 0.44%, IIXB<sup>a</sup> 6%, IIXA<sup>a</sup> 5.16%. Types I and IIA had highest oxidative capacity and the number of capillaries in contact with each fibre type is larger in I and IIXA types (P< 0.05). Results suggest that this muscle part is adapted to static isometric function, additioning paralell sarcomeres in accordance with their higher pinnation angles. This has relation with fibre type distribution, which presents high percentage of slow I fibre type together IIA, which are additioning fatigue resistance. In correspondence it also exists low percentage of anaerobic fast IIB –IIX fibres. It could conclude that this muscle part increases isometric tension between muscle fascias, performing as a joint elastic container structure.

**35. HISTOPATHOLOGICAL CHARACTERIZATION OF THE CFM 27 TUMORAL LINE OBTAINED BY SYNGENEIC PASSAGES**

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Tumors obtained by induction in Wistar rats with n'itroso n'methyl urea (NMU), demonstrated an histopathological pattern corresponding to an alveolar mammary adenocarcinoma. Those originated in mice only treated with medroxiprogesterone (MPA) were ductal mammary carcinomas. Inductions with NMU in mice Balb/c did not reproduce the tumorigenic effect. The induction and later promotion with MPA in mice Balb/c generated an alveolar mammary adenocarcinoma. After several syngeneic passages of tumoral fragments obtained by induction and promotion a tumoral line with different histopathologic character was established. Mice of 5 weeks were induced with three doses of NMU (50 mg/kg) and three doses of MPA (40 mg). Two months after induction tumors were developed and detectables by palpation. These were transplanted in syngeneic form to female mice without immunosuppression. They were carried out 29 successive passages *in Vivo* and samples were frozen at -120°C to repeat passages starting from the same one. With a latency of 7 days they were developed tumors locally, differing from the original pattern to a sarcoma of small cells. With the histological routine Trichomics were carried out and the cellular pattern was determined by immunohistochemistry, using membrane markers like Cadherin E, N, Cytoqueratin P8 and Pan cytoqueratine. The expression of receptor of hormon-dependence was evaluated with Progesterone monoclonals anti receptor of and anti protein P29. Up to now the CFM-27 line maintains its histopathologic pattern without changes in successive passages, being able to be a tumoral model repetible for the study of different biological aspects of neoplasia.

**34. INTESTINAL AUERBACH PLEXUS STRUCTURE IN MODEL ANIMALS OF SPONTANEOUS DIABETIC RATS**

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In animal models of rat diabetes Auerbach plexus structure were studied with NADH technique. Male rats of 12 months old were chosen: 1.- Wistar (control). 2.- eSS (diabetic at 6 months), 3.- eSMT (diabetic at 3 months). 4.- β (diabetic at 8 months). All of them were fed *ad libitum* with balanced chow. Rats were euthanased with ether at 12 months: gut was removed out and flushed with PBS, weighed and lengths were measure. Segments of small intestine (I), proximal (PC) and distal colon (DC) were processed with NADH technique. In Wistar rats typical mesh-like structure could be observed with some signs of ageing. In eSS rats zones of DC were muddy and hypocoloured neurons were observed. In eSMT and β rats zones of mesh-like disrupted zones with isolated neurons, more arteries are seen. So, in spontaneous diabetic rat model: modifications in Auerbach plexus structures could be observed: more severe in small intestine. In eSMT and β rats (obesity and hyperinsulinemia, previous to diabetic syndromes) are more affected. Modifications of Auerbach plexus might be one of the reason of intestinal dismotility in diabetics.

**36. IMMUNOHISTOCHEMICAL SCREENING OF CADHERIN MOLECULES DURING FOLLICULO GENESIS IN BOVINE OVARY**

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Cadherin molecules integrate a super family which participate in cell adhesion processes. Epithelial, neural and placental are classic cadherin molecules. Epithelial (E-CAM) and neural (N-CAM) molecules were the most frequently found in embryonic and adult cells. Studies of E-CAM expression in porcine ovaries have shown remarkable decrease during the ovary ontogeny. Actually there are not any reports about their expression related folliculogenesis in porcine and bovine ovaries. The aim of this work was to study the localization of E-CAM in the different follicular stages and their possible role in the follicular atresia. The E-CAM expression was screening by immunohistochemistry (LSAB) using monoclonal anti-E-CAM 1:1600 on heifer ovary sections. The ovaries (n=120) included different developing follicular stages. The molecular expression was also determined in primary cultures of granulose cells by immunohistochemistry and western blot. E-cadherin was localized in the granulose cells of the antral wall of the pre-ovulatory and antral follicles while primordial and pre-antral follicles were immuno-negative independently their atretic or healthy conditions. The thecal and interstitial cells showed E-CAM immunoreactivity which could indicate the expression would not restricted to cells of epithelial origin. Intense and homogeneous immunoreactivity was found in surface ovary epithelium in contrast the observations reported by other authors. In granulose primary cultures some clusters showed positive immunoreactivity while the most population resulted immuno-negative.

**37. MORPHOGENESIS AND DIFFERENTIATION OF *Triatoma infestans*' OVARIES DURING EMBRYO DEVELOPMENT**

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Employing classical TEM techniques, carefully *in vivo* fixation with Karnowsky, poly – bed araldite embedding, semithin 1µm – 2µm section for optical microscopy (methylene blue – azul II stained) plus 60nm – 50nm sections for TEM, the starting cell population, morphogenesis, development and differentiation of *T. infestans*' ovaries have been analyzed. Hemiptera telotrophic ovaries show complex organization, development and differentiation. After this study, the proper time in embryo genesis when the first gonad tissue can be distinguished has been set up. Also the embryo "age" when male and female gonads start to differentiate has been established. As far as the ultra structure of the developing ovary is concerned, the presence of intercellular bridges, sincicial regions, specific inter-cell junctions allow to point the functional state of each cell type during development. Pos-embryo differentiation deserves clear cut steps for the structural regions of the ovarioles - the functional units of the ovaries - which has been described in early nymphal stages. For the first time the whole development is known for *T. infestans*. Now appears that some descriptions and concepts, extrapolated from other species, were not right. The regulatory processes that occur can be sketched by the ultra structure analysis of the cells, their junctions and their relationships with sincicial systems.

**39. RELATION BETWEEN THE FOLLICULO-STELLATE CELLS AND HYPOPHYSEAL ACTIVITY OF THE *Lagostomus maximus maximus***

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Folliculo-stellate (FS) cells has been investigated in several vertebrates for elucidate their function. The purpose of this work was study the role of adenohipofyseal FS cells with respect to the hypofyseal endocrine activity from adult male viscachas (*Lagostomus maximus maximus*). The following antisera were used anti-protein S100, this protein was used as a FS cell marker cells, anti-βLH, anti-βFSH, anti-βTSH, anti-PRL, anti-ACTH and anti-αMSH. FS cells were extended around pituitary follicles and their cytoplasmatic processes were found between neighbouring endocrine cells. All the types of hormone-producing cells were localised near the pituitary follicles, mainly MSH, TSH and LH cells. Ultrastructural study of the FS cells showed irregular nucleus, moderate numbers of mitochondria, scarce rough endoplasmic reticulum and absence of secretory granules. In the lateral membranes were found junctional complexes and desmosomas. In the apical membranes were found microvilli. These results suggest that the FS cells have an important role in the endocrine activity. The proximity of endocrine cells to follicular structures and the material coloidal immunopositive, support our hypothesis about role functional like hormonal deposit of this structures. Moreover, the FS cells to establish a network of intrahypofyseal communication and may be involved in the modulation of the adenohipofyseal endocrine activity.

**38. PRENATAL STRESS AFFECTS THE STRUCTURE OF ADRENAL GLANDS**

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Important economic losses are generating by stress who is one of the factors that diminish the production in the domestic animals. More affected animals are those breeding under intensive conditions. Such production conditions do not affect alone the adults animals, but also the offspring prenatal stress female increasing their susceptibility to contract illnesses. The objective of the present work was to determine, in rats, that is a model for the study of the stress accepted worldwide, the alteration of axis hypothalamic-pituitary-adrenal activity in the adults offspring through the modification of the size of the adrenals glands and their cortex/medulla relationship. It was used adults offspring of Wistar rats prenatally stressed, by immobilization, The adenosomatic index and the cortex/medulla relationship were determined, as indicators of chronic stress, in slides with hematoxiline-eosin. The adenosomatic index did not show significant differences prenatally stressed animals between the adults stress offspring and its controls. However, the cortex/medulla relationships were significantly bigger in the prenatally stressed animals. These results are correlated with the plasmatic levels of corticosterone (p<0.05), which confirm the hyperactivity of the axis of the prenatally stressed offspring. They also have relationship with the number of leukocytes and the blood lymphocytes and neutrophils percentage. In conclusion the hyperactivity of the axis could be related with an immunological alteration in the response of these offspring.

**40. HISTOLOGICAL STUDY OF THE INTESTINE OF *Helix aspersa* (Mollusca, Gasteropoda)**

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The snail *Helix aspersa* belongs to the Helicidae Family. It present a head where are the sensorial organs; the foot, wide, ventral, slither and with a dorsal visceral mass which its protected by the shell. Inside this mass its situated the digestive system, which begin in the mouth with the tongue inside. Following next a short oesophagus and a stomach surround with salivary glands, and at least the intestine that ends in the anus. The objective of this work is to describe the histological structure of the intestine. The samples were obtaining by breeders of Río Cuarto and fixed in 10% buffered formaldehyde, embedded in parafin and stained using haematoxiline-eosine. At the microscopic observation there was threotunic characteristics of the digestive system, it is not present the submucosa tunic. The mucous membrane it is lining by a pseudostratified cylindrical epithelium with goblets cells, underneath is the lamina propia of connective tissue without muscle mucous. The muscle tunic it is divided in two layers, the inner one present circular arrangement and the other have a longitudinal disposition. At last the adventicia tunic of connective tissue with fat cells.

**41.**  
 **$\alpha$ -ACTIN IMMUNOSTAINING OF MYOEPIHELIAL CELLS IN RAT MAMMARY GLAND**

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The objective of the present work was to determine the presence of myoepithelial cells in the ducts mammary gland during the prepuberal and puberal stages by immunostaining with  $\alpha$ -actin. This method allowed us to know the moment of the development in that myoepithelial cells appear. Six groups of 10 rats each of 1, 7, 14, 21, 28 and 35 days old were used. They were sacrificed with overdose of ethylic ether. The mammary glands were dissected and fixed in 10% buffered formalin for 12 hours at room temperature and washed in buffer saline phosphate (PBS). The samples were processed into accord with routine protocols. Monoclonal antibody against  $\alpha$ -smooth muscle actin (clon- $\alpha$ -sm1, 1:50 dilution; Novocastra Laboratories) was used. Negative and positive controls were included. In the negative controls the primary antibody was replaced by normal serum of the same specie. We considered the muscular tunic of arteries as positive controls. Alfa-smooth muscle actin isoform was detected in the myoepithelial cells in all stages studied. We concluded that these cells are present in very early stages during the development of the rat mammary gland.

**43.**  
**COMPARATIVE STUDY OF BOAR AND WILD BOAR SPERMATOZOEA MORPHOLOGY**

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The aim of this paper was to develop a digital technique to compare images of spermatozoa morphology of fresh and frozen boar and wild boar semen. Fresh semen was obtained by "glove hand" technique (boar) or by electroejaculation (wild boar). The samples of frozen semen were obtained from straws prepared "ad hoc". The semen analyzed was dyed with Feulgen and observed under phase contrast microscopy (1000X). Spermatozoa that presented morphological abnormalities as swollen acrosome, narrow or piriform heads, cytoplasmic droplet and spiral tail were discarded. The digitalization was realized with a CCD chamber connected to the microscope and to a PC trough an image acquisition plaque "Miro DC30 plus". Area, perimeter and major diagonal of the spermatozoa head were measured. The detection of head edges was carried out with own criteria, and there were developed algorithms based on MATLAB software to measure the parameters. The system was calibrated with an image of a hair measured by diffraction methods. The ANOVA analysis determine that all the cases studied (frozen vs. fresh boar semen, frozen vs. fresh wild boar semen, fresh boar vs. wild boar semen, frozen boar vs. wild boar semen) differed significantly ( $p < 0,05$ ).

A precise and reliable technique ( $CV < 0,08$ ) has been developed that allow to compare different spermatozoa morphology. This technique allow us to detect differences between spermatozoa of animals of the same species related evolutionarily, and, identify modifications in morphology between fresh and frozen spermatozoa.

**42.**  
**MORPHOMETRY OF CERVICAL SEGMENTS GREY MATTER IN THE MALE RAT SPINAL CORD**

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The cervical portion of the spinal cord is an area frequently affected by alterations of medical and veterinary importance. Since there is scarce quantitative anatomical data on this region, we undertook a morphometric study of the grey matter of all segments of the 12-month-old Sprague-Dawley male rats cervical spinal cord in order to generate reference patterns to be used in future experimental studies. Using image analysis software the spinal cord length and grey and white matter area of each segment was recorded. Average length of the spinal cord up to the *conus medullaris* (C1-L2) was  $90,2 \pm 4,1$  mm. Segments C1-C3 had similar whole section area ( $\sim 5$  mm<sup>2</sup>) but an abrupt reduction occurred from C4 to C8 (3.2 mm<sup>2</sup>). The morphometric characteristics of neurones present en each of the 10 laminae in which the grey matter of cervical segments is divided were established. Neurones were classified as of small, medium and large size according to its area, major and minor axis, aspect, perimeter and roundness. A comparison was made between neurones belonging to each lamina at every cervical segment. Total number of neurones present in cervical segments was stereologically estimated ( $\sim 0,26 \times 10^6$  cells). The data obtained will be used as a neuroanatomic reference that might help in the understanding of physiological and neuropathological features affecting this area of the CNS in the rat.

**44.**  
**CHRONIC STRESS EFFECT ON PLACENTARY LACTOGEN AND THE PROTEIN LINKED TO PLACENTARY PROLACTINE**

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The aim of the presents study was to determine if chronic stress produces changes in the concentrations of prolactines PLII and PLP-A in the placental tissue. Control (C) and stressed rats (S) by immobilization in plates (IMO) during 45 min, were sacrificed by decapitation after 12, 17 and 21 days gestation. The placental tissue were processed for immunohistochemical techniques to detect PL-II and PLP-A. Homogenates of placental tissues were prepared and Westernblot techniques was carried out according to Campbell and col. Bands images were run with an AGFA scanner integrated to a PC. Sigma-Gel™ program was used. Two factors ANOVA test was used (n=8). Data obtained from PLII and the concentrations of both PLP-A of 33kDa or 29kDa of placental homogenates between groups C and S showed no statistically significant differences between mean values ( $\pm$  SEM with  $p < 0,05$ ) between C and S. PL-II and PLP-A was localization in the cytoplasm and nuclei of giant trophoblastic and spongio-trophoblastic cells. Hormones production and another factors liberated from hypothalamus, pituitary, ovary, uterus and fetus in an arranged manner, regulate the organization and differentiation of trophoblastic cells and modulate the expression and synthesis of both placental prolactine to maintain homeostasis mother-fetus to carry out pregnancy successfully.

**45. IMMUNOHISTOCHEMICAL DETECTION OF ALLATOTROPIN IN GASTRIC CAECA OF MOSQUITO LARVAE**

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Insects represent a very important group affecting human populations in many different ways. From this point of view, some mosquito species have a high incidence acting as vectors of several diseases like malaria and dengue. Mosquito larvae, which grow in small bodies of water, are exposed to drastic osmotic changes by increment or desiccation of water in the puddle where they are growing. We have recently detected that an antibody developed against *Aedes aegypti* Allatotropin, a neuropeptide originally isolated on the bases of its effect on JHs synthesis in different species, is also expressed in Malpighian Tubes of mosquito larvae and kissing-bugs. We are now communicating the presence of Allatotropin immunoreactive material in cells of the Gastric Caeca (GC) of *Culex pipiens* mosquito larvae. Immunohistochemical images suggest the presence of secretory granules in cells located in the anterior region of larvae GC (secretory cells) and also in the microvilli of ion transporting cells at the posterior region of the caeca. Despite that Allatotropin is considered a neuropeptide, some authors have found the expression of mRNA for this hormone in Malpighian Tubes of the lepidoptera *Manduca sexta*. Furthermore, the treatment with this peptide in other species, specifically induces the activity of enzymes associated with Na<sup>+</sup>/K<sup>+</sup> pump in the same tissue. Finally, production of Allatotropin in secretory cells of GC could be related with a paracrine function on ion transportin cells.

**47. MORPHOLOGIC CHANGES OF NIGROSTRIATAL AND MESOLIMBIC SYSTEMS DURING AGING**

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Dopaminergic (DA) neurons of the mesolimbic and nigrostriatal systems are particularly vulnerable to aging. Both systems possess most neuronal bodies located within the substantia nigra (SN) and the ventral tegmental area (VTA). It was therefore of interest to quantitate the changes induced by age in the DA neurons of these areas. Young (6 mo), old (24 mo) and senescent (32 mo) Sprague-Dawley female rats were used. Brains were fixed and coronal (40-µm) sections obtained. Sections were processed for immunohistochemistry using an antibody against tyrosine hydroxylase (TH). Measurement of the immunolabeled areas and de number of TH immunoreactive (TH+) neurons was achieved by image analysis. Age differences were assessed by ANOVA. The number of TH+ neurons decreased progressively with age. While this trend did not achieve significance between young and old animals a sharp fall in DA neuron number occurred from 24 to 32 months in both SN (44%) and VTA (30%). Old rats revealed an increase in the size of the TH immunolabeled area as compared with the other groups. Our animal model revealed that mesencephalic DA neuron populations show a slight reduction in numbers between young and old age associated with a compensatory hypertrophy of the remaining DA neurons. However, the rate on DA neuron loss increases markedly from old age to senescence.

**46. GAL1R IMMUNOREACTIVE PROTEIN EXPRESSION IN MOSQUITO LARVAE UNDERGOING OSMOTIC STRESS**

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Insects represent a very successful group affecting human populations. Better comprehension of the mechanisms controlling basic physiological processes will allow us to develop new approaches to insect control. In rats, Galanin 1 Receptor (Gal1R) when overexpressed in colonic epithelia, induces an increment of water and ions movement to the lumen. Mosquito larvae, which grow in small bodies of water, are exposed to drastic osmotic changes. By homology with *Drosophila melanogaster* Allatostatin (AST) receptor, the putative receptor for this hormone was found in *Anopheles gambiae* genome. The same gene was detected by homolgy with rat-Gal1R sequence. Results showed the presence of immunoreactivity against rat-Gal1R antibody in *Culex pipiens* larvae Malpighian Tubes. By the use of immunoblots, changes in the immunoreactivity against this antibody in larvae undergoing osmotic stress were evaluated. One group of larvae was maintained in breed water (Control), a second one was maintained in distilled water for 10 min undergoing an osmotic shock. Finally, a third group suffering a similar treatment was restored to control conditions for 7 hs. Three different proteins increased their expression during osmotic stress, returning to normal conditions after larvae were restored to control conditions. One of these proteins showed a MW rounding 31 kDa, which match with the molecular weight of the putative AST receptor of *A.gambiae*. The present results suggest that AST receptor or some homologous protein could be involved in control of water and mineral balance in insects.

**48. SEXUAL DIMORPHISM IN CHAETOPHRACTUS VELLEROSUS BASED ON THE PELVIC GIRDLE MORPHOMETRY**

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A morphological and morphometrical study of the pelvic girdle of *Chaetophractus vellerosus* was done, with the objective of investigate a possible sexual dimorphism. We used six females and six males, all adults, collected in Bahía Blanca area. Ten pelvic dimensions were measured (maximum length and breadth, dorsoventral and rostrocaudal diameter of the obturator and ileoschiatic foramen, dorsoventral and transversal diameter of the pelvic aperture and distance between anterior and posterior projections). Two morphological features would be used for discrimination. One is the direction of the posterior projections of the ischium, which support the carapace; they are displaced out in females, while in males they are vertical. Another feature is the orientation of the pubic symphyses, which is caudally displaced in females and rostrally displaced in males. Also, the pelvic girl of females is longer and wider than that of males (p<0.05) and the pelvic aperture is higher and narrowed (p<0.01). So, the pubic symphysis is lower in females. These results are coincident with those previously obtained by us in *C. villosus*.

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49.

**COMPARATIVE STUDY OF DNA SYNTHESIS AND NUCLEOLAR ORGANIZER REGIONS OF SINUSOID LITTORAL CELLS IN REGENERATING LIVER***Surur JM, Martín CA, García MN, Corrons F, Badrán AF.**Instituto de Embriología e Histología. Facultad de Ciencias Médicas. UNLP. Calle 60 y 120. (1900) La Plata, Prov. de Buenos Aires. Argentina. E-mail: jmsurur@yahoo.com*

Variations of DNA synthesis (DNAS) and Nucleolar Organizer Regions (NORs) were studied in littoral cell population from regenerating liver of C3HS inbred mice standardized for periodicity analysis. Immunohistochemical detection of Bromodeoxyuridine (BrdU) with a monoclonal antibody and silver staining of NORs (AgNORs) were assessed by means of a digital image analysis system in histological sections. Tissue samples were obtained every four hours from the 30th to the 54th hours after partial hepatectomy. The results showed, in both parameters, a gradual increment of the values during the studied period, with the highest value (DNAs  $107.7 \pm 16.1$ ; AgNORs  $77.30 \pm 3.4$ ) located at 16:00/54 Time of Day / Hours Post-Hepatectomy (TD/HPH) significantly different ( $p < 0.001$ ) from the value of the first point time controlled sample (DNAS  $38.10 \pm 9.5$ ; AgNORs  $27.34 \pm 1.0$ ) at 16:00/30. Our observations demonstrate the existence of a strong correlation of DNA synthesis measured by BrdU incorporation and AgNORs numbers in sinusoid littoral cells from mouse regenerating liver.

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Affricano O	26	<b>G</b>		<b>P</b>	
Affricano NO	33	Galíndez EJ	24	Pastor R	41
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Bozzini JP	37	Goldemberg L	18	Rodríguez E	31
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Castro AN	27, 28, 29	Guimarey PC	46	<b>S</b>	
Celaya G	7	<b>H</b>		Salveti N	41
Cirone GR	48	Hisano N	34	Salveti NR	13, 14, 15
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Corrons FJ	12	Landi H	31	Sona LA	9, 16
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<b>D</b>		Longo MV	22	Soñez C	6, 44
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Dauría PG	9	Lupidio M	3	<b>T</b>	
de la Cruz J	3, 17, 40	<b>M</b>		Tissera J	17, 40
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Ferraris ME	8	Oliva G	26		
Filippa V	39				
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Fischman M	5				