

## **Abstracts of the contributions presented in the 3<sup>rd</sup> congress of Afr A.V.A., Cairo 17-18 March 2012**

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### **Localization of cytokeratin and smooth muscle actin in the accessory genital glands of the one humped camel (*Camelus dromedarius*) during rutting and non-rutting seasons**

**Abd-Elmaksoud Ahmed<sup>1</sup>, Mahmoud Badran Shoab<sup>2</sup>**

<sup>1</sup> Department of Histology and Cytology, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt. <sup>2</sup> Department of Anatomy and Embryology, Faculty of Veterinary Medicine, Mansoura University, Mansoura, Egypt.

#### **Abstract**

The present study has disclosed for the first time the distribution of cytokeratin (CK) and  $\alpha$  smooth muscle actin ( $\alpha$ SMA) in the accessory genital glands of camel. In prostate, CK was localized in the cytoplasm of columnar cells of secretory acini and in the scanty cytoplasm of basal cells. Conversely, no expression was seen in the capsule, fibromuscular septa, and blood vessels. In the ampulla of ductus deferens, the CK reaction was found in the pseudostratified columnar epithelium of mucosa and in the secretory columnar epithelium of submucosal glands. However, no reaction was evident in the surrounding connective tissue. In the bulbourethral gland, CK reaction was exclusively observed in the pyramidal cells of type A and type C secretory units as well as in the lining epithelium of the duct system. No CK staining was however detected in the cuboidal cells of the type B secretory acini and in the surrounding connective tissue stroma. Generally, no  $\alpha$ SMA staining was evident within the lining epithelium of the secretory units of the accessory genital glands of camel either in rutting or non-rutting period.  $\alpha$ SMA was localized to the smooth muscle cells of the prostatic capsule, fibromuscular stroma and blood vessels. Nevertheless, no  $\alpha$ SMA was evident within the lining epithelium of the secretory units. In the ampulla,  $\alpha$ SMA reaction was seen in the smooth muscle of tunica muscularis, fibromuscular stroma and blood vessels. In the bulbourethral gland,  $\alpha$ SMA was only localized to the smooth muscle cells of the

capsule and blood vessels in both reproductive periods. Unexpectedly, neither the interlobular nor the intralobular connective tissue stroma was reacted to  $\alpha$ SMA. In conclusion, the glandular tissue and the CK positive staining of camel accessory genital glands were comparatively less prominent in the non-rutting period. The distribution of CK and  $\alpha$ SMA in the accessory genital glands of camel might point out to their roles in the male reproduction.

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## **A Review of the Craniofacial and Neurometric Data of the Nigerian Goat Breeds**

**James O. Olopade**

Comparative Anatomy, Environmental Toxicology and Neuroscience Unit  
Department of Veterinary Anatomy, University of Ibadan, Nigeria  
Email: [jo.olopade@ui.edu.ng](mailto:jo.olopade@ui.edu.ng)

### **Abstract**

Due to the relative low importance of goats in temperate regions of the world, research funding and interest in goats particularly basic research had been minimal. There has also been the common assumption that data from sheep could be extrapolated to tropical goats. Regional anatomy is directly concerned with the form and relationship of all organs present in particular parts or regions of the body. The unique aspects of the regional anatomy of the head of any animal are the skull typology and craniofacial indices of that animal. Such investigations will be useful in providing a database on the skull types of breeds, the morphophysiological interpretation of the biokinetics and biomechanics of mastication, the evaluation of the effect of the interaction of the environment and the animal on the skull typology and provide data on sexual dimorphism in skull profile. Most studies on the head of goats in Nigeria remain preliminary, relatively limited in scope and restricted to single breeds. This review therefore aims to compile recent information on the regional anatomy of the skull and other craniofacial and neurometric indices reported for goats in general and the three major breeds of goat in Nigeria, the West African Dwarf (WAD), Red Sokoto and the Sahel in particular.

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## **Comparative Craniometric Polymorphism and Variations in the Skull Bones of the African Cane Rat (*Thryonomys swinderianus*) and the African Giant Rat (*Cricetomys gambianus waterhouse*)**

**Samuel O. M.,<sup>1,2</sup> Nwogu C.I.<sup>3</sup> and Akpan M.O<sup>1</sup>**

<sup>1</sup>Department of Veterinary Anatomy, [University of Ibadan](#), Ibadan.

<sup>2</sup>Department of Veterinary Anatomy, University of Agriculture, Makurdi

<sup>3</sup>Department of Veterinary Anatomy, University of Nigeria, Nsukka.

E-mail, [apanobot@yahoo.com](mailto:apanobot@yahoo.com)

### **Abstract**

The African cane rat (*Thryonomys swinderianus*) also known as the grasscutter is a rodent found in sub-Saharan parts of Africa, while the African giant rat (*Cricetomys gambianus waterhouse*)(AGR) is smaller in size comparatively, both species inhabit similar ecological biome. These two members of the Order rodentia were observed to exhibit polymorphisms in some craniometric indices, their familiar phylogeny notwithstanding. Thirty adult rats were used for this survey consisting of 15 African cane rats and 15 African giant rats of the same age. The 12 craniometric variables considered included cranial volume found to be an average of  $8.80 \pm 17.34$ cc for cane rats and  $6.06 \pm 0.05$  cc for the African giant rats. The mean endocranial dimensions obtained for AGR were; lengths  $33.30 \pm 0.08$ mm, height  $13. \backslash$

$90 \pm 0.04$ mm and mean endocranial index was 41.74%. The mean whole skull length and height were  $6.32 \pm 0.06$ cm and  $2.98 \pm 0.05$ cm. The skull without the mandible in height was  $1.86 \pm 0.02$ cm and the skull index was  $28.41 \pm 0.58$ %. The mean skull height, width, length and the foramen magnum index in the ACR were  $3.56 \pm 0.23$ cm,  $2.66 \pm 0.18$ cm,  $7.58 \pm 0.26$  cm and  $85.58 \pm 5.17$ % respectively. The height of the skull was approximately half of the skull length in the African giant rat but about two-third in the cane rat. This study concludes that the craniometric variables of both species may not be extrapolated interchangeably for both clinical and anthropological procedures, it is postulated that the wide variations in the parameters studied within the taxa might be related to specific characters differentiating both species in terms of macromorphology and eoadaptation for survival in a similar eco-environment.

## **Gross and microscopic studies on the stomach of domestic duck (*Anas domestica*) and Domestic pigeon (*Columba livia domestica*)**

**Said A. Hassan, Eid A. Moussa**

Department of Anatomy and Embryology, Faculty of Veterinary Medicine, Suez Canal University, Ismailia, Egypt

### **Abstract**

The proventriculus was the last part of the foregut. It was cone-shaped in pigeon while it is tubular in duck and arose from the oesophagus with a distinct demarcation. The mucosal surface of the proventriculus has proventricular papillae over its entire surface with variable density between the two species. The ventriculus was biconvex lens in shape. It joined the proventriculus by cardiac sphincter and joined the hind gut by the pyloric sphincter. The thick muscular wall consisted of the crassus caudodorsalis, crassus cranioventralis muscles, tenuis craniodorsalis and caudoventralis. The inner aspect of the ventriculus in both species was lined by a hardened membrane, the cuticula gastrica, The proventriculus and ventriculus in both duck and pigeon have folds of the tunica mucosa lined by a simple prismatic or columnar epithelium. Simple tubular glands occupied the lamina propria of both chambers. These ventricular glands were lined by simple cuboidal cells represented by the chief cells and a few large basal cells. The proventricular glands were situated between the inner and outer layers of the lamina muscularis mucosae. Cells lining the tubulo-alveolar units of the proventricular glands showed a dentate appearance. Vacuoles were not observed. The tunica submucosa was very thin in the proventricular wall. In the ventriculus, it was not separated from the lamina propria due to the absence of any lamina muscularis mucosae. The tunica muscularis of the proventriculus was formed by a thick inner layer of circular smooth muscle fibres and a thin outer layer of longitudinal fibres. In addition to these layers, oblique muscle fibres formed the most internal layer of the tunica muscularis in the ventriculus.

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## **NPR-C is essential for viability of embryonic stem cells**

**Essam Mohamed Abdelalim**

Department of Cytology and Histology, Faculty of Veterinary Medicine, Suez Canal University, Ismailia, Egypt

## **Abstract**

Growth of embryonic stem (ES) cells as a pluripotent population requires a balance between survival, proliferation and self-renewal signals. Recently, we found that natriuretic peptides are expressed in ES cells and they play important roles in ES cell self-renewal. Here we report a novel role for natriuretic peptide receptor-C (NPR-C) in the survival of murine ES cells. We found that NPR-C was expressed in undifferentiated ES cells and down-regulated precisely during ES cell differentiation at both mRNA and protein levels. Furthermore, NPR-C was co-expressed with Oct-4 in the blastocyst inner cell mass (ICM). A small interfering RNA (siRNA)-based technique was employed to specifically knockdown NPR-C gene in the undifferentiated ES cells that were maintained in a feeder-free culture. Abrogation of NPR-C signaling had no effect on the undifferentiated status of the ES cells, as determined by morphologic examination and confirmed by measurements of alkaline phosphatase activity and the expression of the pluripotent ES cell markers (Oct-4 and nanog). However, knockdown of NPR-C resulted in apoptotic cell death, and induction of p53. Conversely, chemical inhibition of p53 significantly reduced apoptosis in NPR-C-deficient cells. Treatment of murine ES cells with a selective NPR-C ligand, prior to H<sub>2</sub>O<sub>2</sub> exposure conferred protective effect against oxidative stress-induced apoptosis in dose dependent manner. Activation of p53 by DNA damaging agents results in suppression of Nanog expression, which was blocked by the pretreatment with NPR-C agonist. These findings establish the presence of functional NPR-C in ES cells maintaining their survival through regulation of p53 levels. Thus, NPR-C is required to control DNA damage-induced p53 levels for sustainable ES cell self-renewal.

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## **Postnatal development and aging changes of the albino rats tongue papillae (Scanning electron microscopic study)**

**Mohamed kamal tawfik\*, Esam Salah Kamel \*\*, Nassar Ayoub Abdel-Latif \*\* and Hanaa Abdel-Sattar Abdel-Naeim\*\***

\*Anatomy department-Faculty of medicine-Ain shams Unoversity

\*\* Anatomy department-Faculty of medicine-Sohag Unoversity

Mobile :0123971396 [Esamkamel2000@yahoo.com](mailto:Esamkamel2000@yahoo.com)

### **Abstract**

Tongue papillae are the responsible organ for taste sensation. There is limited information about anatomical and functional development and ageing of the gustatory system, the aim of this work is to study the postnatal development and aging changes of the albino rats tongue papillae by scanning electron microscopy.

Twenty five albino rats were included in this study and were divided into groups 1, 14, 30 days), middle age (3 months) and old age (2 years). Tongue specimens were taken and processed to be examined by Scanning electron microscope. Our results revealed an increase in size of filiform and fungiform papillae, increase in depth of their circular furrows and increase in numbers of micropits and microridges on the surface epithelium of both the filiform and fungiform papillae,

Microvilli projecting from taste pores could be seen at adult age. Also Scanning electron microscope revealed, during aging, an increase in the size of the filiform and fungiform papillae, decrease in numbers of micropits and microridges on the surface epithelium of filiform and fungiform papillae. Taste pores couldn't be identified at some fungiform papillae confirmed absence of presumed underlying taste buds.

In conclusion, there were morphological changes in albino rat tongues during postnatal development also there were aging changes that may explain impairment of taste sensation in senility.

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## **Comparative anatomical studies on the muscular stomach (*Ventriculus*) of laughing dove and little owl with special reference to their type of food**

**S.M.M. El Nahla, T.O.M. El Mahdy and W.A.A. Basha**

Dept. of Anatomy and Embryology, Fac. of Vet. Med., Suez Canal Univ.

### **Abstract**

The present work had been achieved to study the anatomical structure of the muscular stomach (ventriculus) of laughing dove (granivorous bird) and little

owl (carnivorous bird) aiming to give adequate data about the relation between this part of the alimentary tract and the type of the food consumed by these birds. The ventriculus of the investigated birds was grossly described regarding the shape, position and relations with other viscera as well as with the bony skeleton of each bird. The weight, longitudinal and transverse diameters of the ventriculus were measured, recorded and statistically tabulated. Also, light and scanning electron microscopic examinations of the ventricular wall in the birds under study were performed.

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## **Development of the hyoid bone (*Os hyoideum*) in the one humped camel (*Camelus dromedarius*)**

**K.M. Shoghy and A.S. Saber**

Department of Anatomy & Embryology, Faculty of Vet. Med., Sadat City Branch, Menoufiya University, EGYPT

E-mail : [khaled.shoghy@yahoo.com](mailto:khaled.shoghy@yahoo.com)

### **Abstract:**

The hyoid bone can be divided into two parts. The first part support the tongue and larynx and is regarded as the hyoid apparatus, the second part is directed dorsally articulating with the temporal bone and is termed the suspensory apparatus. The anatomy and development of the hyoid bone was previously studied in most mammals; however, in the camel it is still obscure. Therefore, the aim of this study is to follow the development of the hyoid bone in the one humped camel (*Camelus dromedarius*) from the anatomical and embryological point of view. This result revealed that the hyoid bone develops from eight ossification centers; none of them complete its ossification before birth and there is no separate center for the basihyoid of the hyoid bone of the camel but it is formed by the union of the rostral ends of the thyrohyoids.

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## **Morphological studies on the ruminal glandular sacs of the stomach of the one-humped camel (*Camelus dromedarius*)**

Abdelmohaimen Moustafa. Saleh

*Faculty of Veterinary Medicine, Assiut University- Assiut, Egypt.*

### **Abstract**

The glandular sac regions of the dromedary stomach was studied grossly, histologically and by scanning electron microscope. There two regions of glandular sacs on the visceral surface of the rumen; one cranioventrally and the other medioventrally. These regions are separated from the non-glandular parts by muscular pillars, and each them was divided internally into ruminal cells by musculomembranous folds which are marked externally by groves. By light microscope, the mucosa at the bottom and lateral wall of the ruminal sacs was formed of simple tall columnar epithelium that invaginated in the lamina propria forming variably long funnel-shaped simple tubular glands. The interglandular tissue of the lamina propria presented lymphocytic aggregation and the tips of the pillars and mucosal folds were covered with stratified squamous epithelium. By scanning electron microscope, the mucosa of the glandular sacs was characterized by the presence of numerous glandular openings separated by net-shaped mucosal ridges. These openings are guarded by finger like processes that curve inward in a rosette-like pattern. They are present either above or below the level of the surrounding mucosal surface. The tips of the ruminal pillars and mucosal folds was non-glandular and appeared by scanning electron microscope scaly and micropllicated.