THE NOTOCHORD AND ASSOCIATED ELEMENTS IN *LEPIDOSIREN* (PISCES: DIPNOI). *Arratia, G., and Casciotta, J. Humboldt-Universität, Berlin, Germany; Museo de La Plata, Argentina*

Ontogenetic series of *Lepidosiren paradoxa* show that the bony elements of the vertebral column originate from the dorsal and ventral arcualia that surround the notochord and its membranes. The notochordal epithelium bears large poledric cells, and no vacuoles are observed along the notochord at any stage. The elastica externa is a conspicuous refringent sheath that has perforations occurring in front of the bases of the arches; perforations are missing in regions between arches. The elastica media, or fibrous membrane, increases its thickness tremendously during ontogeny, but it never produces chordacentra, unlike in other dipnoans; in addition to the fibrous tissue, the elastica media bears mesenchymatous or cartilaginous cells that have migrated from mesenchymatous or cartilaginous tissues positioned outside the elastica externa; these cells move and spread inside the elastica media; the number of cartilaginous cells increases during growth. The adult vertebral column includes the notochord which ends at the beginning of the postcaudal region, bony elements such as dorsal and ventral archocentra, median neural and haemal spines, supraneurals and interhaemals, and the postcaudal region formed by the postcaudal cartilages. The vertebral centra are formed by arcocentra only. The ribs, unlike in other dipnoans, are fused with the small haemal arcocentra.

MORPHOLOGICAL STRUCTURE OF REGENERATING SKELETAL MUSCLE OF RATS AFTER X-RAY AND HELIUM-NEON LASER RADIATION. *Azarova, V.S. A. N. Severtzov Institute of Ecology and Evolution, Moscow, Russia*

The effect of low-energy helium-neon laser irradiation is based on activation of metabolic and regenerative functions: acceleration of phagocytosis and cell proliferation which promotes healing of wounds and ulcers. The aim of the present work is to examine the effect of He-Ne laser on transected rat gastrocnemius muscle under 20 or 30 Gy X-ray irradiation. The recovery of damaged muscle under influence of 20 Gy red light (wavelength 632.8 nm, power 2.5–3 mW/cm^2) occurs owing to active inflammatory reaction and myogenesis in the injured ends of irradiated myofibres. The area of trauma is filled with muscle tissue to a considerable extent. When the irradiation dose was increased to 30 Gy only faint signs of regeneration were observed in the muscle: the rare muscle buds looks like accumulations of sarcoplasm, with some nuclei forming on irradiated traumatized ends of muscle fibres, and as a result the fibrous scar connects the muscle stumps. Laser therapy decreases the number of ulcers on the shin. Thus, the influence of a determined regime of He-Ne laser on irradiated damaged rat skeletal muscle is sufficiently effective after X-ray exposure with 20 Gy. Supported by Grant RFFI 95–04–11457a.

PTEROSAUR 'HAIR'. *Bakhurina, N.N., and Unwin, D.M. University of Bristol, Bristol, UK*

Despite more than two centuries of research, many aspects of pterosaurs, Mesozoic flying reptiles, remain controversial. A long-standing debate concerns the evidence for a 'hair-like' covering, the distribution of 'hair' and its possible significance. 'Hair-like' structures have long been claimed in Upper Jurassic pterosaurs from the Solnhofen limestone, Germany, but the best evidence is found in *Sordes pilosus* from the Upper Jurassic of Middle Asia. In this pterosaur 'hairs' can be distinguished from wing fibres (with which they have sometimes been confused) because they taper, and are shorter (only 5–10 mm long), thicker, and more tightly curved. In *Sordes* the 'hairs' appear to arise directly from the surface of the integument. Pits, interpreted as hair follicles, have been reported in some Solnhofen pterosaurs, but were not observed in *Sordes*. Available evidence indicates that 'hairs' were sparsely distributed on the head, neck and torso, but did not occur on the wings. 'Hair' is consistent with an elevated metabolic rate in pterosaurs, predicated on the grounds of flapping flight energetics, but cannot be advanced as primary evidence for this type of physiology.

STRUCTURE AND FUNCTION OF THE AVIAN OVIDUCT: A REVIEW. *Bakst, M. R. Agricultural Research Service, USA*

This review will address the role of the oviduct in the reproductive stragegy of the bird, with emphasis placed on poultry. Five anatomically and functionally distinct segments are discernable; in craniocaudal order these are the infundibulum (grasps ovulated ovum and is the site of fertilization), magnum (albumen synthesis), isthmus (shell membrane formation), shell gland (uterus) and vagina (sperm storage site). The secreted proteinaceous materials are products of the luminal surface epithelium and subepithelial tubular glands found in each of these segments. Abovarian transport of the egg is accomplished by contraction of smooth muscle and possibly by the activity of the dorsal and ventral ligaments. Alternatively, adovarian transport of sperm appears to be accomplished primarily by ciliary activity. After semen deposition, sperm are subjected to an intense selection process orchestrated by the vagina. 'Selected' sperm enter the sperm-storage tubules, which are tubular invaginations localized at the cranial aspect of the vagina. Here sperm reside until exiting and ascending to the site of fertilization. If fertilized, the first cleavage furrow is evident in 6–8 h, while the egg mass is in the isthmus or shell gland. The role of oviducal secretions relative to the oviducal phase of embryonic development has yet to be investigated in birds.