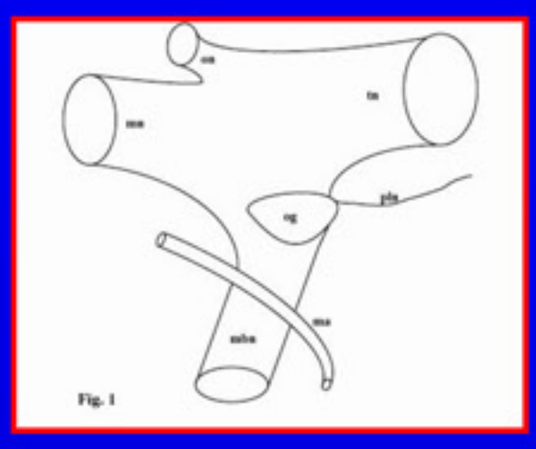
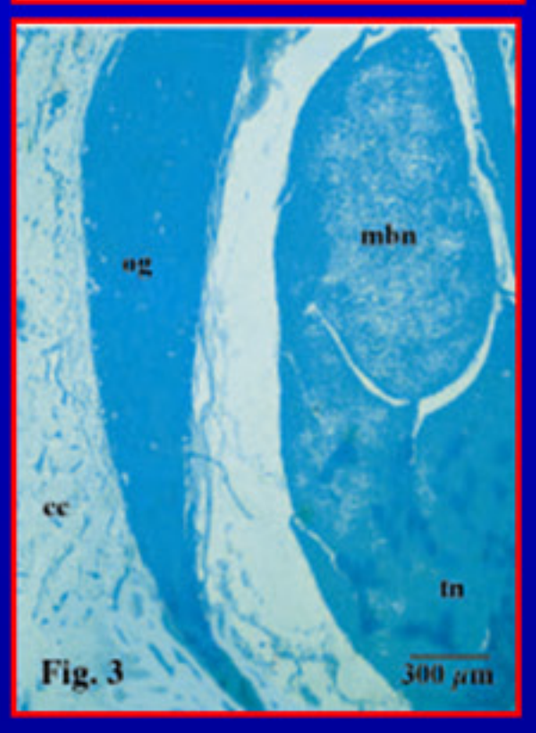
Morphology and immunohistochemical characreristics of the otic ganglion in the chinchilla (*Chinchilla laniger*, Molina).

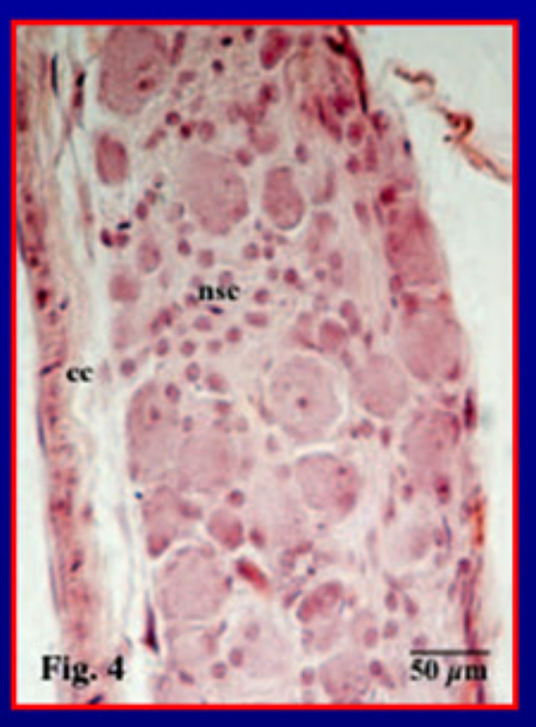
Waldemar Sienkiewicz[1], Aleksander Szczurkowski[2], Jacek Kuchinka[2] Agnieszka Dudek[1], and Jerzy Kaleczyc[1]

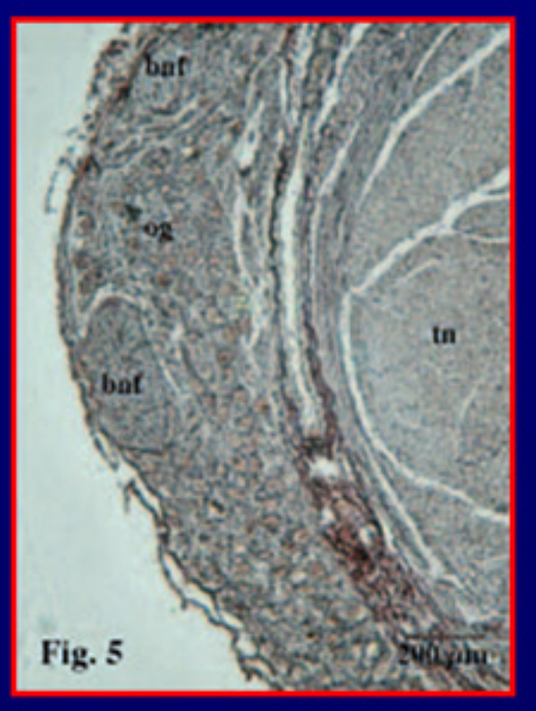
[1]University of Warmia and Mazury in Olsztyn, Faculty of Veterinary Medicine, Department of Animal Anatomy, Oczapowskiego 13 Bldg. 105J, 10-719 Olsztyn, Poland

[2]Jan Kochanowski University in Kielce, Institute of Biology, Department of Comparative Anatomy, 15 Swietokrzyska St., 25-406 Kielce, Poland

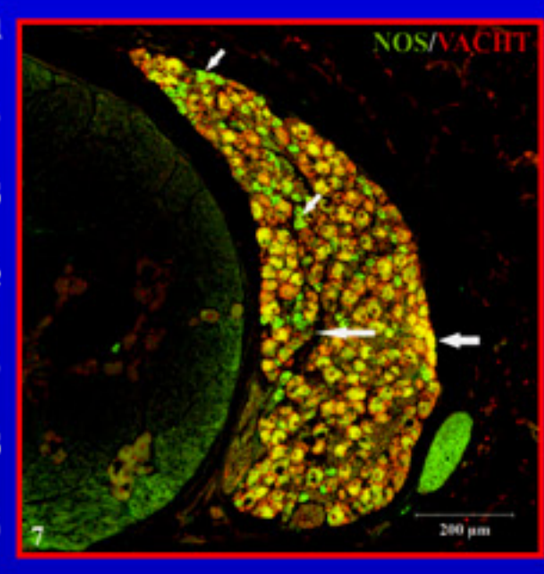


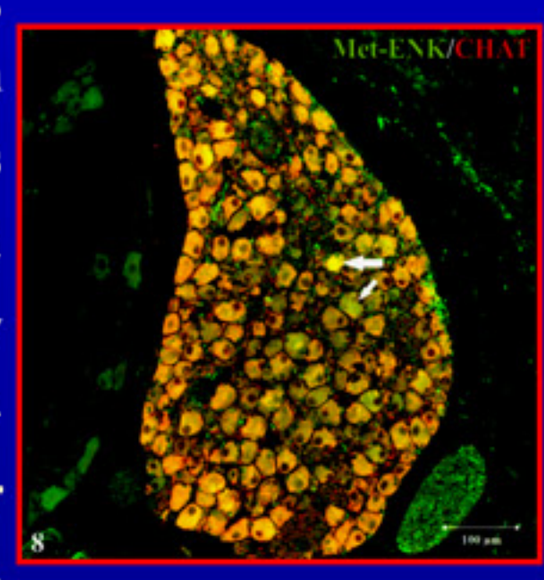


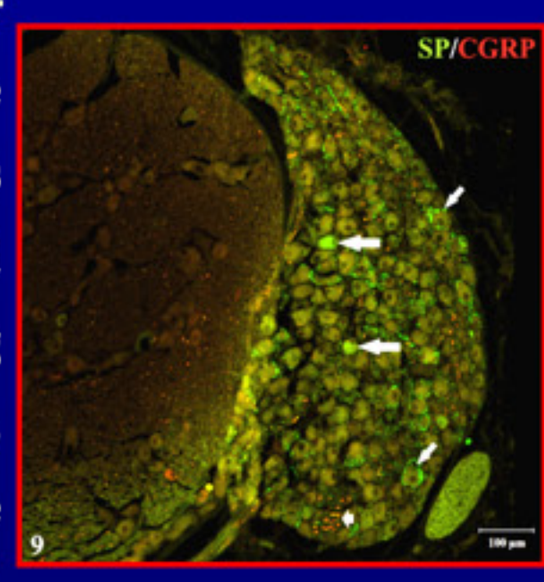




Anatomical observations conducted on mammals indicate that there is a clear relationship between the morphology, topography and immunohistochemical (IHC) characteristics of parasympathetic cephalic ganglia and systematic membership of animal species. Therefore, we decided to study the morphology and IHC properties of the otic ganglion in the chinchilla, an animal belonging to rodents - animals very differentiated in terms of their anatomy. Studies were performed on 10 chinchillas, 4 of them were used for macroscopic (tiocholine method) and histological (hematoxylin and eosin, methylen blue and also silver staining according Gomori method) investigations. 6 animals were used for IHC staining. The studied ganglion forms compact, oval cluster of nerve cells, located intracranially, on the medial surface of the mandibular nerve, just above the oval foramen. Its length was 3.0 - 5.0 mm, the width 2.0 - 3.0 mm and thickness about 0.6 mm. Immunohistochemical staining revealed that over 85% of the neurons were immunoreactive to VACHT or CHAT, whereas VIP+ perikarya amounted to 10% of the neurons. Double staining revealed that about 20% of the VIP-IR neurons were VACHT-. Within the ganglion a very dense network of VACHT+ nerve fibers surrounding all the neurons was observed. Double staining showed that about 16% of the neurons were VACHT/NOS+. The NOS+ only perikarya amounted to 45% of all the neurons. Staining against Met-ENK showed only single (3-4 per section) neurons immunoreactive for this peptide; 50% of them were simultaneously CHAT-positive. Leu-ENK-IR was found in single (1 or 2 per section) neurons, all were simultaneously VACHT+. GAL+ neurons were also solitary (3-4 per section), and they were CHAT+. Few SOM-positive only neurons were encountered. SP-positive nerves formed basket-like structures surrounding nerve cell bodies. CGRP-immunoreactivity was found within nerve fibers which were less numerous than those containing SP-IR. SP-IR was also found within single (1-2 per section) neurons. Single ganglionic neurons were (3-4 per section) TH-positive only. The results obtained are important contribution to the comparative anatomy of autonomic innervation in mammals.







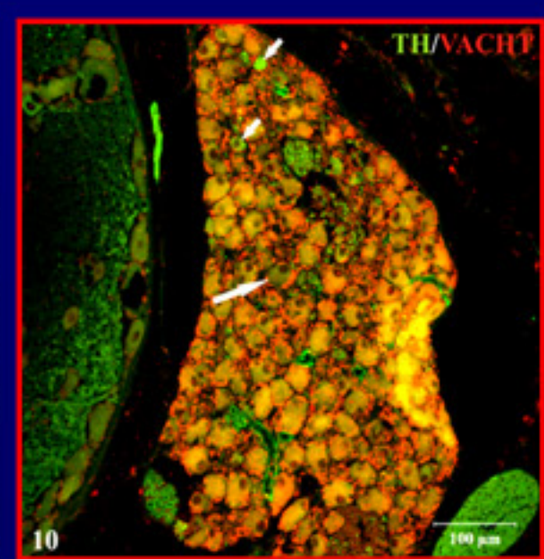


Fig. 1. Scheme of topography of the otic ganglion in chinchilla
Fig. 2. Morphology of the otic ganglion in chinchilla. Thiocholine method.
Fig. 3. Cross-section through the otic ganglion in chinchilla. Methylene blue staining.
Fig. 4. Cross-section through the central part of the otic ganglion in chinchilla. H&E method.
Fig. 5. Cross-section through the otic ganglion in chinchilla. Silver method.