

THE ANATOMY OF THE LACHRYMAL GLANDS OF THE RAT

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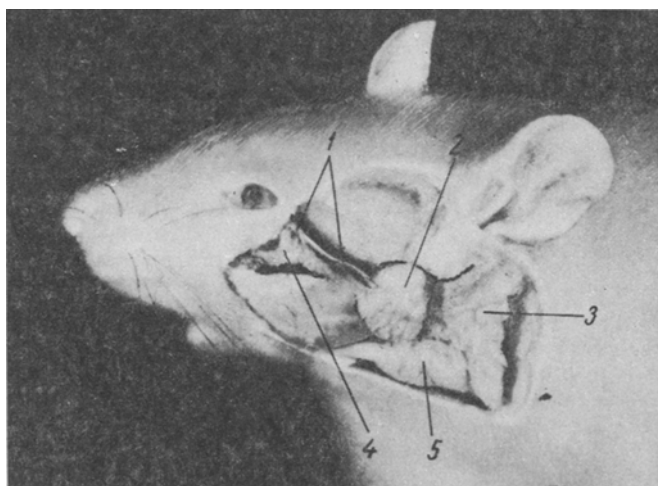
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In connection with the article by Babaeva and coauthors on "The Topography of the Salivary and Lachrymal Glands of the Rat" we considered it necessary to write the following.

In experiments on the parotid salivary gland of the rat, research workers have often made the mistake of using the external, orbital, lachrymal gland instead of the parotid gland. Similar mistakes have been made in home and foreign literature [1, 7]. The source of the errors appeared to lie in the inadequate knowledge of the detailed anatomy of the glands. Contributing to these errors was the fact that these details were not corrected in the textbook on the rat written by Gambaryan and DukeI'skaya [2]. This book contains no description or figure of the external, orbital lachrymal gland and Fig. 85 (page 150), portraying the salivary glands, is incorrect; it does not convey the true shape and dimensions of the parotid salivary gland. Moreover, the parotid gland in this figure is reminiscent of the shape of the external, orbital lachrymal gland, but the latter is situated, as is well known, to the front of the parotid gland, a fact which is not clear in the figure. All this leads the research worker into error. Thus, Babaeva [1] came to the conclusion that the authors took the external, orbital lachrymal gland for the parotid salivary gland.

Two lachrymal glands are found on each side of the head in the rat. One of them is situated near the parotid salivary gland, beyond the eye, the other in the posterior lower part of the eye socket. The secretory ducts of both glands unite into a common duct opening on the surface of the conjunctiva.



The lachrymal glands of the rat. 1) Lachrymal ducts; 2) external, orbital lachrymal gland; 3) parotid salivary gland; 4) subocular, lachrymal zygomatic gland; 5) subaxillary gland.

It was Kul'chitskii in 1898 [3] who first wrote that the lachrymal glands were located beyond the eyes (by the side of the parotid salivary gland). He named the gland *glandula lacrimalis praeparotidea*. Further, Kul'chitskii issued a number of communications about this gland, not only in the rat but in other animals as well [4, 5]. In the last of these articles he submitted a colored picture showing both the lachrymal and salivary glands and a part of the Harderian gland on the left side of the rat's head. Loewenthal [10] described the lachrymal glands of these animals in much greater detail. A diagrammatic figure of these glands was given by Loewenthal [10] and also by Franz [8] in a textbook on comparative anatomy. Besides this, Green gave a short description and figures in his book on "The Anatomy of the Rat" [9].*

Photographs of preparations of the lachrymal glands and descriptions of them are given in a dissertation by Kharitonova [6]. Baquiche [7], in his research work on the sexual differences in, and the effects of hormones on, these glands has quoted many various terms by which these glands have been known and also gave bibliographical data relating to them. However, all the material mentioned lacks a reference to the article by Kul'chitskii which should have confirmed the priority of this author in the dissection of the lachrymal glands of the rat.

We call the attention of our readers to the photograph of one of our preparations in which both lachrymal glands of the rat are seen; the preparotid (according to Kul'chitskii), or external orbital (according to Loewenthal), also the suborbital zygomatic gland and their canals.

SUMMARY

Some experiments have mistaken the external orbital lachrymal gland for the parotid gland. The external orbital lachrymal gland was described by Leventhal (1900), but the priority in its discovery belongs to N. K. Kulchitskii (1898), who named it the preparotid gland.

LITERATURE CITED

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5. N. Kultschitzky, *Arch. mikr. Anat.*, Bd. 78, S. 232 (1911).
6. V. L. Kharitonova, *The Glands of the Conjunctiva and Skin of the Eyelid in Man and certain Animals*. Diss. cand. Kharkov (1950).
7. M. Baquiche, *La glande orbitaire sus-parotidienne de Loewenthal chez le rat albinos, son dimorphisme sexuel*. Geneve (1958).
8. V. B. Franz, In book: L. Bolz et al., (Ed.) *Handbuch der vergleichenden Anatomie der Wirbeltiere*. Berlin Bd. 2, S. 989 (1934).
9. E. C. Green, *Anatomy of the Rat*. New York (1955).
10. N. Loewenthal, *Arch. mikr. Anat.*, Bd. 56, S. 535 (1900).

All abbreviations of periodicals in the above bibliography are letter-by-letter transliterations of the abbreviations as given in the original Russian journal. *Some or all of this periodical literature may well be available in English translation.* A complete list of the cover-to-cover English translations appears at the back of this issue.

*The salivary and lachrymal glands are described by Babaeva according to Green.