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SCIENTIFIC NOTE

MALAR GLAND: A NEW CEPHALIC GLAND IN *CERCERIS RYBYENSIS* L. (HYMENOPTERA: PHILANTHIDAE)

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IN A MORPHOLOGICAL investigation of the mandibular gland of *Cerceris rybyensis* (Ågren, in preparation), a new, undescribed gland close to the mandibular gland was found in the light microscopic serial sections. It empties its contents on the malar side (Fig. 3). Heselhaus (1922) has mentioned the presence of glands situated between the eye and the mandible in the head of *Vespa,* but in his pictures the cells look more scattered. He called all glands of this type "circumoral glands".

Males and females of *C. rybyensis* caught in June on the island of Öland in the southern Baltic, were used. Tissues were fixed in 1 % OsO_4, dehydrated in ethanol, embedded in Epon, sectioned 1 or 2 μm thick, stained with methylene blue or toluidin blue. A reconstruction of the gland was made in Styrofoam. The serial sections were photographed in a Leitz photo microscope.

The gland is made up of a number of cells, more in the females (20–30) than in the males (5–10). Each glandular cell has some accessory cells, as described by Lukoschus (1962). One single intracellular ductule of the secreting cell leads into an extracellar duct, which continues either to a reservoir or directly to the outside. The size of the glandular cell is about 30–40 μm.

The gland in the male is smaller than that of the female, having only one layer of cells that are aggregated close to the soft membrane of the malar side of the mandibular socket (Fig. 1). The extracellular ducts empty their contents one by one directly into the membrane, without first filling a reservoir. The group of gland cells lies free in the haemolymph with only thin strands of connective tissue surrounding it, and continuing with the epidermis.

The female gland cells drain in a small, cuticle-lined reservoir, which they encircle at the dorsal side (Fig. 2). A narrow common duct—also cuticle-lined—extends from the side of the reservoir toward the mandibular base in meandering fashion until it finally ends in the membrane of the mandibular hinge, just as in the male gland. The reservoir is oval, with its greatest length in dorsal–ventral direction. The whole gland is embedded in fat body, making it hard to distinguish it in fresh preparations. Other cells, ventral to those already described, have their ductules leading separately to the outside.

The gland is situated under the malar space and thus the name "malar gland" is suggested. Bordas (1895) has used the name "glande mandibulaire externe" for the real mandibular gland, and "glande mandibulaire interne" for what are currently known as the postgenal glands (Heselhaus, 1922). Therefore, I chose the name malar gland.

The function of the gland can only be guessed at this stage. No glandular secretion was found in the reservoir. Its most probable function is to provide lubrication for the mandibular hinge laterally, but there is no explanation of why it should be so much larger in the female. The female does not use her mandibles in the handling of prey (Grozdanic and Vasic, 1968).

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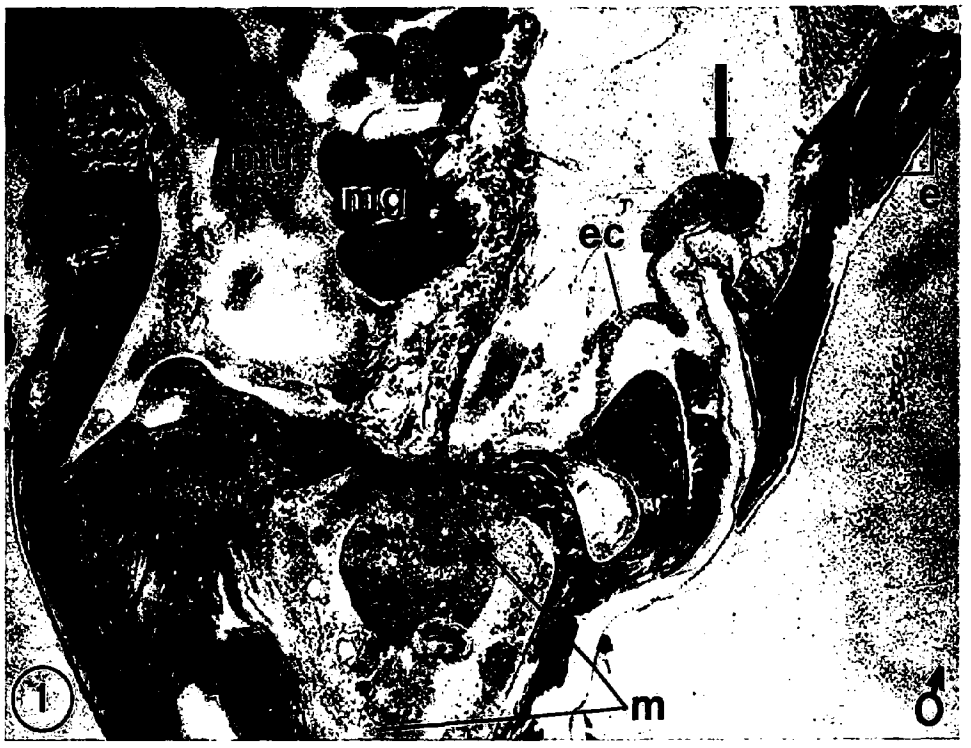
mg
ec
e
m
1
♂


e
m
mg
2
♀

FIG. 3. Schematic drawing of head of *C. rybyensis* female. Malar gland is indicated by hatching. Position of gland in male is indicated by arrow.

FIG. 1. Section through head of *C. rybyensis* male. Arrow shows glandular cells of malar gland. Note narrow extracellular ductule to outside and lack of fat body around gland. e =compound eye; ec =epithelial cells; m =mandible; mg =mandibular gland cells; mu =muscular tissue. ×195

FIG. 2. Section through head of *C. rybyensis* female. Gland has reservoir from which a common duct leads to outside. Solid arrow shows glandular cells of malar gland around reservoir, open arrow shows common duct. Also note abundance of fat body around gland. e =compound eye; f =fat body; m =mandible; mu =muscular tissue; r =reservoir of malar gland. ×180