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**Thoracic scent efferent system of Pentatomoidea
(Hemiptera: Heteroptera):
a review of terminology**

PETR KMENT¹⁾ & JITKA VILÍMOVÁ²⁾

¹⁾Department of Entomology, National Museum, Kunratice 1, CZ-148 00 Praha 4—Kunratice, Czech Republic.
E-mail: sigara@post.cz

²⁾Charles University in Prague, Faculty of Science, Department of Zoology, Viničná 7, CZ-128 44 Praha 2, Czech Republic.
E-mail: vilim@natur.cuni.cz



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PETR KMENT and JITKA VILÍMOVÁ

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Abstract

The terminology used for structures constituting the thoracic scent efferent system is reviewed and discussed, with the emphasis on the Pentatomoidea. The most suitable terms are selected and suggested for a general use, i.e., scent gland system, metathoracic scent apparatus, thoracic scent efferent system, internal scent efferent system, internal orifice, vestibule, vestibular furrows, external scent efferent system, ostiolar plate, metepimeral pseudosuture, ostiole, ostiolar groove, periostiolar depression, vestibular scar, peritreme, supporting projection, median furrow, auricle, spout, (peritremal) groove, (peritremal) ruga, (peritremal) disc, peritremal lobes, terminal lobe, pseudoperitremal structures, pseudoperitreme, evaporatorium, evaporatory channel, gyrfication, mycoid microsculpture, mycoid surface, mushroom body, stem, cap, bridge, alveole, trabeculae, peritremal microsculpture, peritremal surface. The traditional terminology describing the external scent efferent system (especially peritreme) in Cydnidae is discussed and reinterpreted. All the suggested terms are illustrated by scanning electron micrographs and an extensive synonymic list is given for most of them.

Key words: Heteroptera, Pentatomoidea, morphology, terminology, metathoracic scent glands

Introduction

The insect order Heteroptera is explicitly characterized by autapomorphic existence of unique pattern of repellent scent glands (Schuh & Slater 1995, Weirauch 2006a,b). The dorsal abdominal scent glands (hereinafter just DAGs) are developed in the larvae and are often persistent in adults (most recently summarized by Weirauch 2006b). The metathoracic scent glands (hereinafter just MTGs) are developed in the adults. The names of glands clearly express their localization on a heteropteran body.

Dufour (1833) as first author identified MTGs as a source of repellent secretion in heteropteran adults. Subsequently, Künckel d'Herculais (1866) described scent glands in quite different position in larvae. While the DAGs developed as serially homologous structures located in heteropteran ancestor between all abdominal terga (Cobben 1968), the MTGs originated as integumentary invaginations (Carayon 1971). Generally, the condition represented by a single gland with a single opening ventrally on thorax is accepted as the plesiomorphy (Carayon 1971). Štys (1996) suggested quite opposite hypothesis, the paired origin of MTGs, however, his supporting evidence still awaits publishing.

The MTGs and particularly other structures associated with proper glands, internal as well as external, and their function were often studied (e.g. Brindley 1930; Gupta 1961; Carayon 1971; Cobben 1978; Dazzini Valcurone & Pavan 1978; Staddon 1979,1986; Pavis 1987; Aldrich 1988; Moraes *et al.* 2008). All these structures cooperate on main glands' function, rapid evaporation of the repellent secretion and protection of the specimen against toxicity of its own secretion (Remold 1962, 1963; Filshie & Waterhouse 1969; Staddon 1979, 1986; Aldrich 1988; Carver 1990). Carayon (1971) supposed that external scent efferent system of

TABLE 3 (continued)

TERM	TAXA AND REFERENCES
mycelia-like ridges	Pentatomidae—Carver (1990)
pleat(es)	Pentatomidae—Hasan (1990a), Hasan & Kitching (1993)
ridge(s)	Lygaeidae, Pyrrhocoridae, Pentatomidae—Johansson & Bråten (1970)
surfaces [...] folded in an intricate manner	Heteroptera—Staddon (1979)
trabeculae (pl.) (Lat.; sg. trabecula) [= little beam]	Anthocoridae—Carpintero & Dellapé (2006); Dinidoridae - Tsai & Yang (2005); Pentatomidae—Carver (1990), Tsai & Yang (2005); Tessaratomidae—Kment & Vilímová (2010)
trabecule(s) (Eng.)	Coreidae—Durak & Kalender (2007a); Pentatomidae—Durak (2008), Durak & Kalender (2007c, 2009a,b); Scutelleridae—Durak & Kalender (2007b)
trabécule(s) (Fr.)	Heteroptera—Carayon (1971); Cydnidae—Dethier (1974)
vermiculate threads	Coreoidea—Hepburn & Yonke (1971)

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