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Rhabdom Pattern in the Eye of *Acorynus latirostris* (Anthribidae)

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Abstract Rhabdom pattern in the compound eye of *Acorynus latirostris* of the family Anthribidae is investigated by using electron microscopic technique. The rhadbom is of open type, and the peripheral rhabdomeres of six cells encircle the two central rhabdomeres. The peripheral rhabdomeres are small and separated from the neighboring ones.

The compound eyes of beetles widely vary in their configuration among various groups, and various types are also seen according to difference in activities. The fine structure of beetle eyes has been reported by many authors. However, detailed structure of the eyes of the Anthribidae has not been examined by electron microscope. In this paper, pattern of the rhabdom of an ommatidium in *Acorynus latirostris* (SHARP, 1891) which is considered completely diurnally active species is reported. It has large compound eyes. A full description of the ultrastructure of compound eyes in the species will be given in other papers.

The anthribid used for this observation was collected at Shiobara, Tochigi Prefecture. The eye was embedded in Poly/Bed 812 following conventional preparation methods. Ultra-thin sections were double stained with uranyl acetate and lead citrate, and were examined with a JEM-100 CX electron microscope.

An ommatidium of *Acorynus latirostris* eye contains eight retinular cells (Fig. 1). Each of them develops a rhabdomere, composed of tubular protrusions of the cell membrane (microvilli). All rhabdomeres together are called the rhabdom. In insects, rhabdom can be divided into closed- and open-types. In the latter case, central rhabdomeres of two retinular cells are separated from peripheral ones by larger or smaller distances. In *Acorynus latirostris*, the two central retinular cells are surrounded by six peripheral ones (Fig. 1). The peripheral rhabdomeres are small and separated from neighboring ones and attenuate toward the basement membrane. They encircle the central rhabdomeres, each oval in form, and its major and minor axes are ap-

proximately 1.3–2.2 and 0.8–1.2 μm, respectively. However, two central retinular cells have apparently formed one rhabdomere (Figs. 1 & 2). The microvilli of the central rhabdomeres converge in one central cell (R2) and diverge in other cell (R1), so that the orientation of the microvilli shows three subregions in transverse section (Fig. 2).

This rhabdom type is often termed "insula-pattern" (*e.g.*, SCHMITT *et al.*, 1982). Such an arrangement of rhabdomeres has been reported in Chrysomelidae, Cerambycidae and Bruchidae in the Coleoptera (TOMINAGA & KABUTA, 1975; GOKAN & HOSOBUCHI, 1979; SCHMITT *et al.*, 1982). In diurnally active species of longicorn beetles, especially in the groups active under the bright sunshine, the peripheral rhabdomeres are small and separated from the neighboring ones. On the contrary, they are large in nocturnally active species (GOKAN & HOSOBUCHI, 1979). As the result of the present study, it can be concluded that the rhabdom of *Acorynus latirostris* clearly belongs to the former group.

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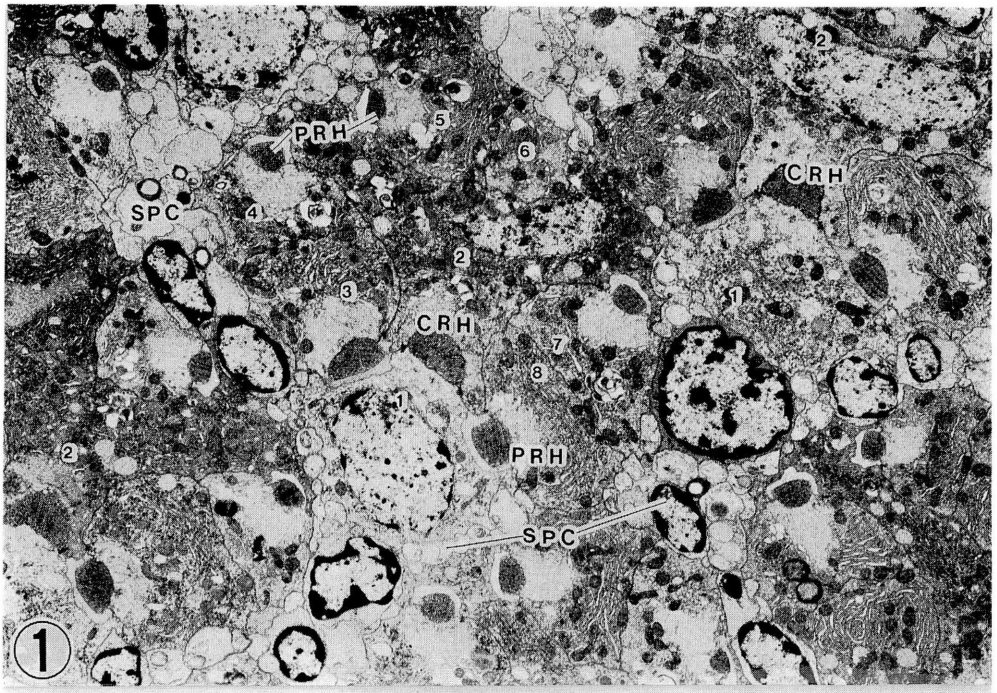
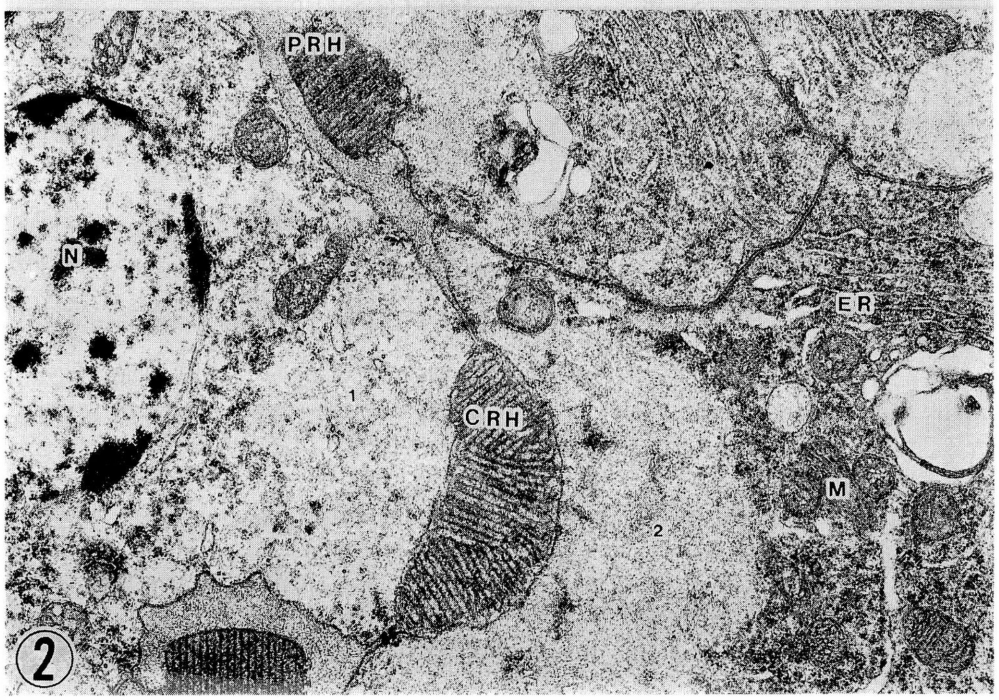
要　約

長島孝行・妹尾俊男：チャマダラヒゲナガゾウムシのラブドムの構造.—— 昆虫類の複眼におけるラブドム（感桿）の構造が，活動性や系統を反映させていることを示唆している報告は多く知られている．著者らは今回，ヒゲナガゾウムシ科のチャマダラヒゲナガゾウムシのラブドムのパターンについて，電子顕微鏡を用いた観察を行なった．本種は，典型的な昼行性のヒゲナガゾウムシであることが，経験的に知られている．ラブドムは分散型で，2つの視細胞からなる中央ラブドメアー（感桿分体）と，その周りの6個からなる周辺ラブドメアーで構成されている．本種ではその周辺ラブドメアーが小さく，それぞれが離れているという特徴をもち，ハムシ科，カミキリムシ科，マメゾウムシ科のいくつかのものに知られているラブドムによく似ている．同時にこれらの特徴は，カミキリムシ科においては典型的な昼行性のものにみられ，本種も同様であることを構造的にも表しているものと考えられる．

Figs. 1–2. —— 1. Low magnification electron micrograph of several ommatidia of *Acorynus latirostris* in transverse section, showing an ommatidium composed of eight retinular cells and peripheral rhabdomeres isolated from one another. CRH, Central rhabdomere; PRH, peripheral rhabdomere; SPC, secondary pigment cell. ×3,440. —— 2. Electron micrograph of an ommatidium of the same species in transverse section, showing central rhabdomeres (CRH) of cells R1 and R2. ER, Endoplasmic reticulum; M, mitochondria; N, nucleus of retinular cell; PRH, peripheral rhabdomere. ×15,680.


PRH
SPC
CRH
CRH
PRH
SPC
1


PRH
N
ER
CRH
M
2

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ハナバチヤドリキスイのカムフラージュ

西 川 正 明

Masaaki NISHIKAWA: Cryptic Colour and Posture of *Antherophagus nigricornis* (Cryptophagidae)

筆者は今年，北海道でハナバチヤドリキスイ *Antherophagus nigricornis* (FABRICIUS) を採集したが，その際，若干の知見を得たので報告する．データは次のとおり．

4♂♂4♀♀，北海道渡島支庁七飯町鳴川林道，29-VII-1990.

本種は，マルハナバチ類の巣に寄生するとされているが，上記の8頭はともに日向のエゾニュウの花上から採集された．日蔭のものや，ほかの花からは発見できなかった．エゾニュウは複合散形花序を呈するが，本種は下向きに，その1本の茎に静止し，体の後半は，ほかの花との間隙にあった．発見されたもののすべてが，この姿勢をとっていた．

ところで，図鑑に示されている本種の標本写真は，生時の色彩を表現していない．生時の体色は，記憶によれば，黄白色で上翅の中央よりやや下方に淡赤色にみえる部分がある（この部分は斑紋ではなく，先方が暗色の後翅が透けてみえることによるようである）が，死後には全体が黄褐色に変色する．

さて，花上の本種の姿勢と色彩は，黄白色のエゾニュウの花に散見される，一部淡赤色の蕊とまぎらわしいという効果を与えた．

HATCH (1961, The Beetles of the Pacific Northwest, part 3, p. 209) によれば，成虫はときに，飛行中のマルハナバチの肢にすがりついているという．当日は，もちろんほかのハチもいたが，マルハナバチの1種も多く訪花していた．採集されたハナバチヤドリキスイは，花上で寄主の訪花を待ちうけていたものと思われる．そうだとすれば，このカムフラージュは，寄主から存在を隠し，花上で乗り移り，そして巣に運ばれる機会をより多くする役に立っているのだろう．