

**A Peculiar Lamellated Body Observed in the Cells of the Pigment Epithelium of the Retina of the Bat, *Pipistrellus abramus*.** BY EICHI YAMADA. (From the Department of Anatomy, School of Medicine, Kurume University, Kurume, Japan.)\*

During the course of a study of the fine structure of the retinal pigmented epithelium of the bat (1), a peculiar body showing a quite regular texture-like pattern was observed within the constituent pigment cells. The fine structure of this body seems to be noteworthy in several respects and is described here.

The eye of the bat was fixed with a modified buffered osmium tetroxide solution (Caulfield (2)). Prior to dissection, the bats were anesthetized with ether under conditions of dark adaption. The tissue was imbedded in *n*-butyl-methacrylate, and sections were cut with a Porter-Blum or JUM microtome. A JEM-3C microscope was used for the observations.

The pigment epithelial cell of the bat retina is flattened and cuboidal in shape. It shows many cell processes on the free surface. The basal cell border presents complicated plications and rests on the connective tissue layer of the choroid. The cell body is recognized as being filled with a dense network of tubular structures, the greater part of which is free from the particles of Palade. Hence, the structure may correspond to the so called "smooth surfaced endoplasmic reticulum." The rough surfaced endoplasmic reticulum and free particles of Palade are also recognizable in small amounts scattered about in the cytoplasm.

In Fig. 1, one can recognize a characteristic body somewhere near the center of the pigment cell. It presents a quadrangular profile  $1 \times 3 \mu$ . The long axis is almost parallel to that of the outer segment of the adjacent rod. At first glance, its peculiar structural pattern reminds us of a striped cloth or of a Japanese bamboo blind (*sudare*). Upon closer observation (Figs. 2 to 4), the structures corresponding to the woof appear to be composed of regularly and closely piled flattened membranous sacs. The over-all thickness of each

sac is about 140 A. The constituent individual membranes are about 40 A thick, and show some indication of a double nature. The interspaces of less opacity are about 60 A thick. The unit paired membranes are separated by spaces of lower density about 160 A thick. The paired membranes are arranged so as to show regular waves in phase with each other. As a consequence, longitudinal stripes are formed, running almost parallel. Slight dilatations are observed intermittently at the interspaces. Communications between each unit structure are not shown in these pictures.

At the periphery of the body, the arrangement of the paired membranes seems to be looser and is continuous with the system of smooth surfaced endoplasmic reticulum which surrounds the body within the cytoplasm. The density of the paired membranes is similar to that of the surrounding endoplasmic reticulum (Figs. 2 to 4).

These findings strongly suggest that the structure is a specialized component of the endoplasmic reticulum. Porter (3) described the myeloid body in the cell of the frog pigment epithelium as a similar lamellated structure. The body described in this paper is not yet identified. Although one encounters very closely packed portions of endoplasmic reticulum within cells of the pigmented epithelium, such regularly patterned structures as described above are not recognized so often as are myeloid bodies in the frog (3) and bird (1). Hence, the peculiar body observed in the bat pigment epithelial cell may represent a special structure different from the myeloid body.

## REFERENCES

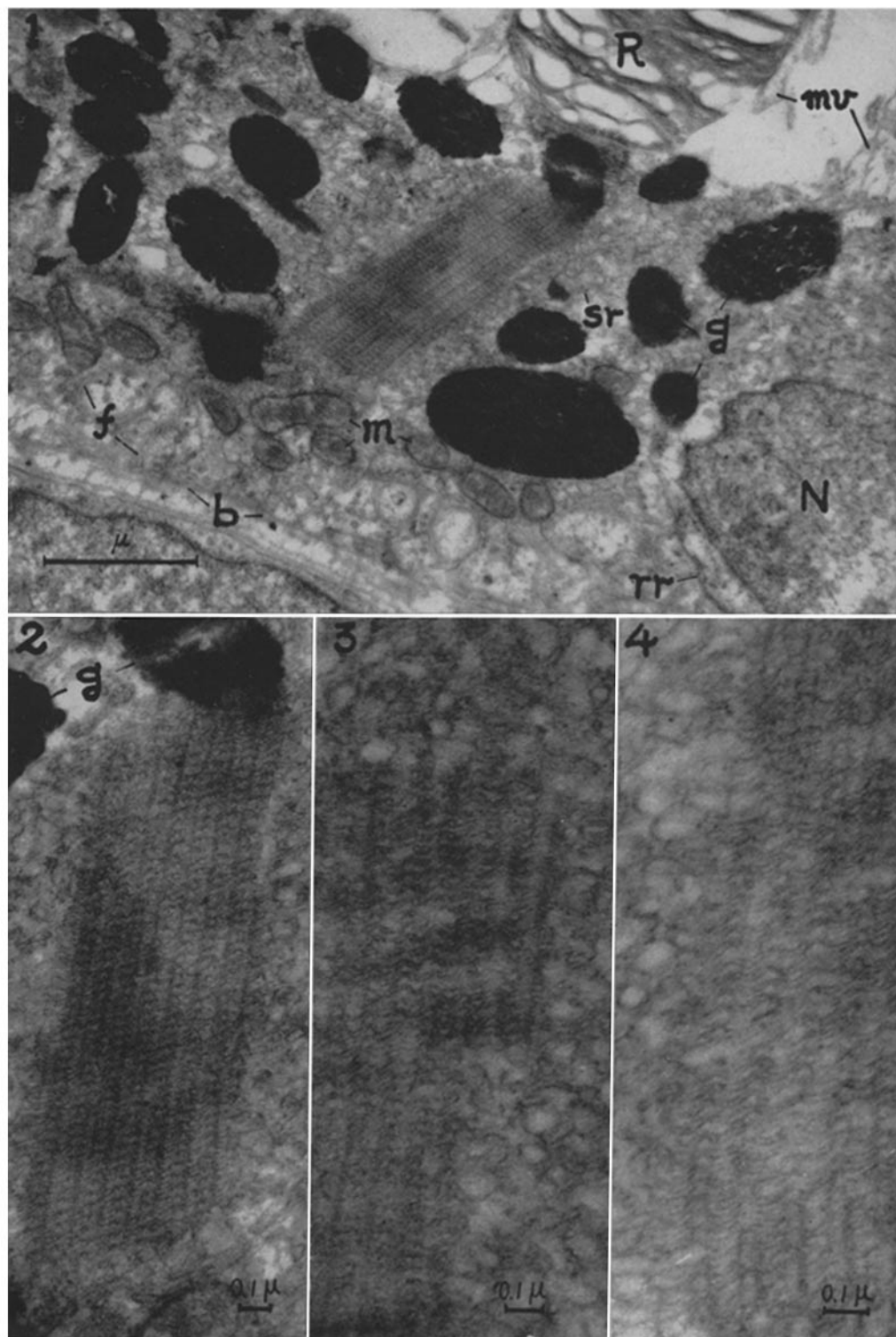
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## EXPLANATION OF PLATE 187

FIG. 1. A portion of a pigment epithelial cell from the retina of a bat. From the free surface of the cell, microvilli-like processes (*mv*) extend and embrace the outer segments of the rods (*R*). The basal plasma membrane shows deep folds (*f*), and rests on the basement membrane (*b*). Mitochondria (*m*) are observed mainly at the basal part of the cell body. Large ovoid melanin granules (*g*) are located in the upper two-thirds of the cytoplasm. The melanin granules show some granularity and high density. Most of the cytoplasm is occupied by a close network comprised of smooth surfaced endoplasmic reticulum (*sr*). Near the center of the picture a quadrangular body of peculiar pattern is recognized. *N*, nucleus; *rr*, rough surfaced endoplasmic reticulum.  $\times 23,000$ .

FIGS. 2 to 4. Three different consecutive sections of the same peculiar lamellated body. Fig. 2 is an enlargement of a part of Fig. 1. All figures demonstrate the characteristic arrangement of the unit paired membranes, and also the continuity of its membrane with those of the surrounding smooth surfaced endoplasmic reticulum. Fig. 2,  $\times 46,000$ . Fig. 3,  $\times 58,000$ . Fig. 4,  $\times 65,000$ .



(Yamada: Lamellated body in retinal cells of bat)