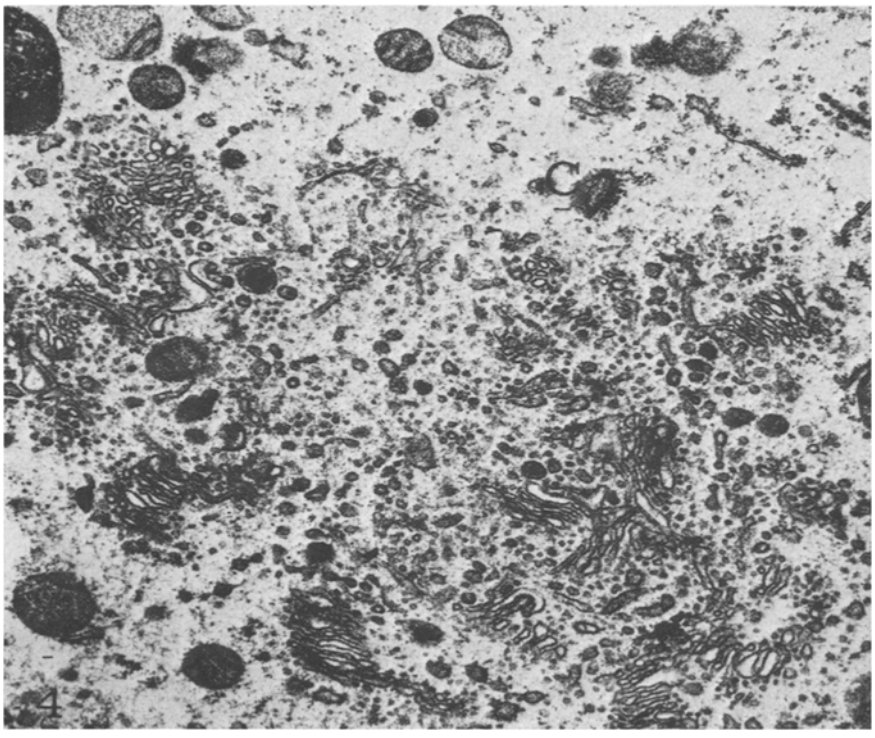

Fig. 4. A developed corpus balbiani in a guinea-pig ovocyte with centrosome (C). × 18,000.

and WURZELMANN[5] report similar observations on ovocyte of African lungfish.

The ovogonia of guinea-pig embryos (*Cavia cabaya*) at the age of 33, 35 and 40 days, as well as the ovogonia of human embryos in III and IV l.m., were studied. The ovogonia were in the prophase of the first meiotic division.

The material was fixed in precooled 4% glutaraldehyde in 0,1 *M* cacodylate (pH 7.2) buffer for 1 h, and postfixed in 1% osmium tetroxide in the same buffer for 1 h. Ovaries were parallel fixed in phosphate buffered 1% OsO_4 (MILLONIG[6]). Following dehydration and 2 changes in propylene oxide, the tissues were embedded in Durcupan ACM. The sections were cut on a Reichert OM-U_2 ultramicrotome. All sections were stained with lead acetate (MILLONIG[7]) and examined with a Hitachi Hu-11A electron microscope.

Both in man and guinea-pig, the ovogonia were clustered in cords and were always accompanied by darker cells, entirely surrounding the ovogonium. The ovogonia were light and oval. Their nuclei contained chromosomes in the prophase of the first meiotic division. Myelin-like bodies were often observed in the nucleus. In some of them, these bodies approached the nuclear membrane, which protruded at this site (Figure 1). In other ovogonia, they were observed in the cytoplasm (Figure 2).

In other cases, the ovogonium contained 4–5 myelin-like bodies oriented round the centrioles (Figure 3). Most likely this represents as early phase of corpus balbiani formation. In the ovogonia, which had already entered the last diploid phase of meiotic prophase, this structure was well developed (Figure 4).

Our observations suggest that the myelin-like formation in the ovogonia of man and guinea-pig plays some role in cell differentiation and deserves attention.

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Melanogenic Melanocytes in Human Sebaceous Glands

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Summary. Electron microscopic observations revealed for the first time a small number of active melanocytes synthesizing distinctive melanin-containing organelles (melanin granules) in the ducts and acini of human sebaceous glands.

At present, elucidation of the possible distribution of melanocytes within skin appendages and of their pathogenetic significance for skin pigmentation is one of the intriguing subjects for investigation in the field of pigment cell biology. In the course of our electron microscopic study of human sebaceous glands, melanocytes actively synthesizing melanin-containing organelles were observed for the first time, which is reported in this paper.

Materials and methods. Biopsy specimens were obtained from 3 Japanese adult males and 6 newborn babies of either sex, less than 6 days of age. The materials were

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fixed for 2 h in 4% glutaraldehyde with 0.1 *M* cacodylate buffer at pH 7.4. After washing, they were postfixed for 2 h in 1% osmium tetroxide adjusted to pH 7.4 with cacodylate buffer. The specimens were dehydrated in increasing concentrations of ethanol, passed through propylene oxide and embedded in Epon 812. Ultrathin sections cut on a Porter-Blum Ultramicrotome MT-2 were stained with uranyl acetate and lead citrate solutions. They were examined in a Hitachi HS-8E or HU-12A electron microscope.

Results. Of more than 30 blocks subjected to electron microscopy, 5 blocks, 3 from adult males and 2 from babies, showed a small number of melanogenic melanocytes in the sebaceous ducts and at the periphery of the sebaceous acini (Figure 1). These melanocytes were ovoid in shape and the plasma membrane was devoid of desmosomal attachments. They were located between undifferentiated and differentiating sebaceous cells, in the first or the second row above the basal lamina. The contour of nuclei was slightly irregular with shallow indentations. When compared with interfollicular melanocytes, their melanin-containing organelles were fewer in number and smaller in size, exhibiting a low degree of melanization (Figure 2). Melanocytic dendrites which contained a small number of melanin granules were rarely encountered between the sebaceous cells. On rare occasions, the melanin granules that had transferred into the surrounding sebaceous cells were noted as being confined within phagocytic vacuoles.

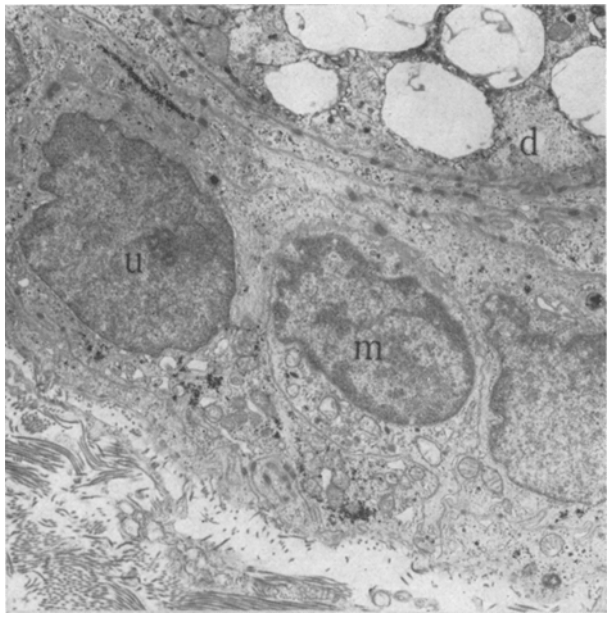

Fig. 1. Electron micrograph showing a melanocyte (m) in suprabasal layer of human sebaceous acinus. Neonatal chest skin. u, undifferentiated sebaceous cell; d, differentiating sebaceous cell. × 5,500.

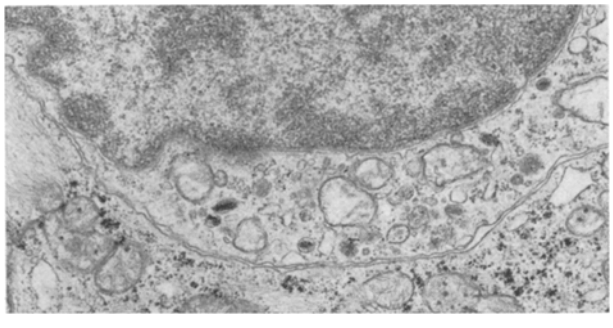

Fig. 2. Higher magnification of pericaryon of melanocytes illustrated in Figure 1. Note a small number of melanin-containing organelles in low developmental stages. × 16,000.

Discussion. Earlier extensive studies on histology, especially in relation to dendritic cells of the sebaceous glands, reported that a variable number of melanocytes could be seen in several subhuman primates[4–6]. Recently numerous melanocytes in large sebaceous glands in the nipples and areolae of woman's breasts were demonstrated[7–9]. Although much work has been done in the past concerning the ultrastructure of the sebaceous glands, the occurrence of melanocytes has not been documented in the literature[10–15]. To the best of our knowledge, this electron microscopic observation of the melanogenic melanocytes in the sebaceous glands may be the first demonstration of the presence of the cells in man, as well as in subhuman primates.

Not only scarcity of melanin granules in the melanocytes, but also scarcity of tonofilaments in the sebaceous cells, seems to make it hard to distinguish the two types of the cells in the sebaceous glands. In addition, the melanocytes observed were so few in number that the cells may have escaped earlier attention.

It is well established that the only obvious function of the melanocytes in human skin is synthesis and donation of melanin-containing organelles. However, structural and functional importance of the melanocytes distributed in human sebaceous glands is obscure. It is not certain if the minimal amount of melanin granules in the sebum plays a role in screening human skin against solar radiation.

At present, definite information for frequency of the melanocytes within the sebaceous glands is difficult to assess until more is known, but the foregoing results may suggest that the melanocytes could be one of the stable and constant cellular constituents for the sebaceous glands. How such factors as sex, age, and the area of the body tested, relate to the distribution and the incidence of the melanocytes in the sebaceous glands has to be investigated.

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