pigmented macules (SM) on sun-exposed upper back and five specimens of light-protected buttock skin (LPS) from 12 non-psoriatic control subjects who had not received PUVA. Unlike SM, many PM were darkly and irregularly pigmented. In a blind histologic assessment using routine and L-dopa incubated tissue sections, both PM and SM were "lentigines." In contrast to solar lentigines and LPS, melanocytes in PUVA lentigines were more often hypertrophic and cytologically atypical. Transmission electron microscopy revealed melanocytes in PUVA lentigines to have longer and more numerous dendrites, more active melanogenesis, close apposition of Langerhans cells to melanocytes, and cytoplasmic and melanosomal alterations (including giant pigment granules). Compared to solar lentigines and LPS, there was a significant shift to large, predominantly single melanosomes in keratinocytes of PUVA lentigines.

In 1,380 psoriatic adults treated with PUVA and followed prospectively, buttock lentigines were noted in 53 percent of patients at the final examination (an average of 5.7 years after starting PUVA). The frequency and severity of buttock lentigines at the final examination was positively associated with the total number of PUVA treatments received and age at starting PUVA $\geq$ 35 years, and negatively associated with skin types V&VI. According to a regression analysis, buttock lentigines appeared to persist in some patients even after PUVA had been discontinued for one to two years or longer. Given that PUVA lentigines are characterized by proliferations of hypertrophic and sometimes cytologically atypical melanoytes, and that these lentigines may persist after PUVA is discontinued, it is recommended that individuals who develop pigmented macules while on PUVA be monitored continually for melanocytic dysplasias and melanoma.

A Transmission Electron Microscopical and Freeze-Etch Study of Malignant Melanoma in Fish. Rüdiger Riehl. Institut für Zoologie II, Universität Düsseldorf, Federal Republic of Germany Manfred Schartl. Genetisches Institut, Universität Giessen, Federal Republic of Germany

Melanotic malignant melanomas (MM) in *Xiphophorus* (Teleostei: Poesiliidae) were studied by transmission electron microscopy (TEM) and freeze-etching (FE). The conventional TEM technique showed clear advantage in the demonstration of internal architecture of organelles, whereas FE had considerable potentialities in respect to the visualization of membrane surface specializations.

MM of *Xiphophorus* exhibits tightly packed pigment cells with prominent dendritic processes and interdigitations of their plasma membranes. The most impressive feature of MM cells is the occurrence of large, lobulated nuclei with numerous nuclear pores and some nuclear pockets. Abundant spheroidal or ellipsoidal melanosomes (diameter 200–650 nm) and vesicular structures are distributed throughout the cellular dendrites, whereas the perinuclear cytoplasm is free of melanosomes. The membrane surrounding the melanosomes carries particles with a random distribution. A further characteristic feature of melanoma cells in fish is the occurrence of melanosome complexes ("compound melanosomes"). These melanosome complexes consist of a few to numerous melanosomes which are enveloped by a separate membrane. Pinocytotic vesicles could be demonstrated with distinct differences in frequency and distribution patterns, indicating differences in the metabolic activities of the cells in the same melanoma. Intercellular junctions are lacking in the MM cells.

Some Aspects of the Regulation of Melanogenesis in Cultured Melanocytes. P.A. Riley. University College School of Medicine, London, England

One of the consistent features both of primary and established cultures of melanocytes *in vitro* is the progressive loss of pigmentation among the proliferating cells. This phenomenon seems to be more prominent if the melanocytes are separated from other cells, such as keratocytes, with which, *in vivo,* they are normally in functional contact. Progressive amelanosis in pigment cell cultures may be due to interruption or modification of a number of stages involved in the synthesis and distribution of melanin or to loss of stimulating signals generated by complex processes in the interaction between melanogenic cells and the recipients of the pigment. The extent to which hypopigmentation in culture is the result of these factors will be reviewed.