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THE COVER: “Spontaneous” melanoma development resulting from misguided regulation of gene expression and cell differentiation in Xiphophorus. Top row: Xiphophorus maculatus (left), X. helleri (right). Second row: F1 (left), X. helleri (right). Lower two rows: backcross generation (F1 × X. helleri), showing 50 percent segregants with melanoma and 50 percent without melanoma. Benign melanoma (in X. maculatus F1, and 50 percent of the segregants exhibiting melanoma) is due to the presence of a “differentiation gene” (Dif). Malignant melanoma (in the remaining 50 percent of the segregants) is due to the absence of this gene (see Linkage between a regulatory locus for melanoma cell differentiation and an esterase locus in Xiphophorus, page 403).