93. Glyoxysome-Lipid Body Complex in Watermelon Cotyledons: An Ontogenetic Phenomenon for Glyoxysome Formation in Germinating Oil Seeds.[1] E. L. Vigil. Department of Botany, University of Maryland, College Park, MD

Germination of watermelon seeds involves conversion of stored lipid in cotyledons into sucrose by several metabolic pathways present in glyoxysomes. Few glyoxysomes exist in the dry seed. This condition changes dramatically during germination, as numerous glyoxysomes arise de novo. The pattern(s) of glyoxysome biogenesis in germinating watermelon seeds is the focus of this report. Cotyledonary tissue from 4 day-old seedlings grown in the dark was fixed in glutaraldehyde under green light and processed either for enzyme cytochemistry for the marker enzyme catalase or freeze-fractured after cryoprotection in glycerol and sucrose. Distribution of catalase in mesophyll cells of the cotyledon is limited to glyoxysomes, small segments and vesicles of ER and the lumen of a membrane appendix attached to lipid bodies. The appendix is a derivative of ER involved in forming lipid bodies during seed ripening. Cross-sectional views of the appendix-lipid body complex show membrane confluence between the outer leaflet of the unit membrane of the appendix and the outer leaflet of the lipid body. Examination of freeze-fracture replicas confirmed this pattern and provided information on the distribution of membrane particles. The protein layer surrounding the lipid body consists of small tightly packed particles similar in appearance to the outer leaflet or P-face of the appendix and ER. The E-face of the appendix, like that of the ER and glyoxysomes, contains larger particles in a more dispersed array. These data confirm the ER origin of glyoxysomes and direct attention to the complexity and diversity of this process. The physical association between forming glyoxysomes and lipid bodies is of functional significance for lipid utilization via a direct route of transport for triglycerides or fatty acids from the lipid body to the glyoxysome.

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94. Use of Human Monoclonal Antibodies for the Detection of Antigenic Heterogeneity in the Population of Breast Carcinoma Cells.
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Human-mouse hybrids were obtained by fusing lymphocytes from lymph nodes of patients with metastatic breast carcinomas. Hybrids were grown in culture and were found to secrete human monoclonal antibodies. Most of these hybrids, after being cloned, continued to secrete antibodies of either IgG or IgM classes. These hybrid cells appear stable both in growth and secretion of immunoglobulins up to seventy days in tissue culture conditions. The human monoclonal antibodies were screened for binding activity against mammary epithelial cells employing immunocytochemical staining technique in tissue sections. Monoclonal antibody, derived from a clone was selected for its strong binding to malignant breast epithelial cells. The antibody showed binding to the malignant cells of all breast cancer cases studied. Under this condition, lymphocytes, erythrocytes, myoepithelial cells and stromal cell in breast tissues did not stain. The monoclonal antibodies failed to react with cells from salivary glands, thyroid glands and colon from both normal and malignant tissues. Approximately 40-60% of the tumor cells in any given breast-tissue-section reacted with the antibody, indicating antigenic heterogeneity in the tumor cell population. The presence of such a heterogeneity in the tumor cell population may have an implication in the treatment of breast carcinomas. Currently, the human monoclonal antibody is being investigated for its ability to detect mammary carcinoma cells in metastatic lymph nodes and in distant sites. (NCI CA-24645).