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Force, Development, and Neoplasia: Development from Another Perspective as Illustrated through a Study of in vitro Plant Development from Neoplasm

Abstract. *Differentiation from the neoplastic state can be a dynamic adaptation to the localized stress of increasing cohesive forces in tissue. Repulsive forces, occurring within and between cells, are seen as leading to de-differentiation into the neoplastic state or neoplasm. During early development, especially where and when mitosis occurs frequently, cohesive and repulsive forces may necessarily co-exist in oscillating degrees. Correspondingly, cohesive-force and repulsive-force generating metabolites may co-exist in oscillating concentrations. Cancer or neoplasia occurs, according A. Szent-Gyorgyi, when cohesiveness breaks down locally, probably thru the conversion of methylglyoxal into lactic acid. Cancer may also occur due to the accumulation of such putatively, repulsion-generating factors as lactic acid. Plant tumors in vitro respond adaptively to cohesion-generating chemicals, such as ascorbic acid and methylglyoxal, by generating buds, embryos, and plantlets.*