ESCAPE FROM CONTACT INHIBITION AS A RESULT OF A SIGNAL TRANSDUCTION DISORDER

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The majority of non-transformed cell lines growing in monolayer tissue culture become quiescent when reaching confluence, as a result of a mechanism descriptively called contact inhibition. The inhibition of growth of confluent cultured cells can be seen even in the presence of growth factors. Thus, it may be speculated that growth inhibition of confluent non-transformed cells may result from a lack of precise coordination between the signals generated from adhesion molecules and growth factor receptors.

Interaction between cells and the extracellular matrix (ECM) mainly takes place at sites called focal adhesion plaques, which contain various tyrosine kinases including focal adhesion kinase (FAK), which is activated upon the binding of the cell to a extracellular matrix.

The transformed cells produced multilayer colonies, which strongly suggest that their surface is attractive for their counterparts and generates proliferative signals.

In the performed experiments, C3H10T1/2 fibroblasts were stably transfected with genes coding a fragment of fibronectin. The transfected cells displayed several biological functions that differentiate them from their non-transformed counterparts. Also, the activation of ERK1/2 was found to be different in transfected cells, not requiring the presence of growth factor in the media.

In conclusion, the results obtained bring new elements to contact inhibition theories that placed adhesion molecules as crucial in signal transduction leading to density dependent growth inhibition.