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Clonal analysis of neural stem cells grown in a novel polymeric hydrogel

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The biomedical application of neural stem cells (NSC) depends critically on the ability to control their growth and differentiation *in vitro*. Clonal analysis represents the gold standard for assaying the characterization and differentiation potential of stem cells *in vitro*. In the present study, we obtain clonal neurospheres by growing single cells immobilized in novel polymeric hydrogel. Growing cells in this hydrogel offers a number of advantages including; (i) This hydrogel is innocuous to living cells and do not affect the phenotype and genotype of cells; (ii) Neurosphere cloning efficiency is significantly higher (141.9/1 000cells). (iii) Differentiation of cells from hydrogel grown colonies had significantly higher percentage of neurons than normal bulk culture of neurospheres. (iv) Cell differentiation in this hydrogel can be induced directly via changing the cell-growing environment. The hyrdrogel may also be useful as a supporting media for the NSC transplantation into animal models of central nerve system (CNS) disorders.

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