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E. coli CD-expressing Genetically Modified Neural Stem Cells

National Cancer Institute

Source

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Genetically-modified neural stem cells (NSCs) transfected with the Escherichia coli (E. coli) suicidal gene cytosine deaminase (CD), with potential antineoplastic adjuvant activity. Upon intracerebral injection, E. coli CD-expressing genetically modified NSCs express the E. coli cytosine deaminase, an enzyme that catalyzes the intracellular conversion of the nontoxic prodrug 5-fluorocytosine (5-FC) into the cytotoxic 5-fluorouracil (5-FU). Co-administration of this agent with 5-FC and upon local activation of 5-FU in the brain tumor, 5-FU disrupts DNA synthesis in tumor cells thereby impeding cellular proliferation with minimal systemic exposure and toxicity.