Glioma-Selective Polypeptides, Alone or Coupled to a Therapeutic/Diagnostic Agent, Compositions Comprising Same, and Uses Thereof

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Technology description

Summary

Primary brain tumors are an important cause of cancer mortality in the U.S., representing the leading cause of cancer-related death in children and the fourth leading cause of cancer-related death in young adults. Progress in the treatment of these tumors has been slow, since the demonstration of more than 20 years ago that fractionated radiotherapy could significantly extend survival. Although improved neurosurgical techniques have lessened the morbidity of extensive resections, the impact of such procedures on the overall survival of patients with the most malignant gliomas remains modest, at best, given the diffuse infiltrative nature of the tumor. Chemotherapy recently has been demonstrated to have some activity for specific subtypes of malignant gliomas, such as oligodendrogliomas and anaplastic astrocytomas. The effectiveness, however, of standard chemotherapy for the most common and malignant of the gliomas, glioblastoma, is marginal at best. Clearly, novel therapeutic approaches and novel drug targets are needed. In view of the foregoing, it is an object of the present invention to provide new agents and compositions that can be used in the diagnosis and treatment of glioma. This and other objects and advantages of the present invention, as well as additional inventive features, will be apparent from the detailed description provided in the patent application.

The present invention relates to glioma-selective polypeptides, which can be used alone or coupled to a therapeutic or diagnostic agent, in the diagnosis and therapy of glioma. Also provided by the present invention is a composition comprising the above-described polypeptide, desirably coupled to a diagnostic agent or a therapeutic agent, and a carrier.

Additionally, a method of diagnosing glioma in an animal is provided. The method comprises administering to the animal a polypeptide coupled to a diagnostic agent as described above, or a composition comprising same and a carrier therefore, and assaying for the presence of the diagnostic agent in the central nervous system (CNS). The presence of the diagnostic agent in the CNS is indicative of the presence of glioma in the animal.

A method of inhibiting the proliferation of a glioma cell in an animal having a glioma is also provided. The method comprises administering to the animal in an amount sufficient to inhibit the proliferation of the glioma cell in the animal a polypeptide coupled to a therapeutic agent as described above, or a

composition comprising the same and a carrier, whereupon the proliferation of the glioma cell in the animal is inhibited.

Institution

NIH - National Institutes of Health

联系我们

叶先生

电 话：021-65679356
手 机：13414935137
邮 箱：yeyingsheng@zf-ym.com