

Introduction to this special issue on brain tumor cell invasion and metastasis: anatomical, biological and clinical considerations

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It is my privilege to introduce the readers to this special issue entitled "Brain tumor cell invasion and metastasis: anatomical, biological and clinical considerations". As cancer is a global epidemic which knows no borders, efforts to better understand biology and to control it should know no borders either. This issue contains a mixture of clinical and preclinical scholarly articles that have been written by scientists from America, Europe, and the Middle East. I hope that the fresh insights represented here will be appreciated by neuro-oncologists and brain cancer researchers across the translational spectrum.

The role of the PI3K/AKT/mTOR pathway in brain tumor metastasis

Alexandre Arcaro et al. (Switzerland)

This article is emphasizing the role of PI3K/AKT/MTOR pathway on glioma growth and metastasis with a specific focus on angiogenesis, glioma cell invasion and inflammation.

Dissecting brain tumor growth and metastasis *in vitro* and *ex vivo*

Martin Baumgartner et al. (Switzerland)

This article reviews the *in vitro* and *ex vivo* techniques used to study growth and dissemination of brain cancer cells including organotypic slice culture methods.

Tailored nanocarriers and bioconjugates for combating glioblastoma and other brain tumors

Mohamed I. Nounou et al. (Egypt)

This article reviews blood brain barrier hampered drug delivery and suggests new CNS therapeutics delivery

techniques by using tailored nanocarriers and bioconjugates.

Interdisciplinary management of central nervous system metastasis and neoplastic meningitis: recent developments and future perspectives

Ghazaleh Tabatabai et al. (Germany)

This article reviews advances in our understanding on the molecular mechanisms leading to invasion of tumor cells to the CNS and highlights the challenges and perspectives in the field of interdisciplinary management of CNS metastasis.

Brain tumor surgery: supplemental intraoperative imaging techniques and future challenges

Telmo Augusto Barba Belsuzarri et al. (Brazil)

This article discusses maximum safe brain tumor resection techniques including methods that are designed for a precise demarcation of brain tumors and their infiltration zones.

Brain infiltration by cancer cells: different roads to the same target?

Mayra Paolillo et al. (Italy)

This review illustrates recent findings of genes and cellular mechanisms that have been found to be involved in brain metastasis and describe the different cell types involved.

Effects of Gas1 on gliomas: a review on current preclinical studies

Jose Segovia et al. (Mexico)

This article reviews the potential therapeutic effect of the tumor suppressor Gas1 for treatment of GBM.

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Targeting cerebrospinal fluid for discovery of brain cancer biomarkers

Tarek Shalaby et al. (Switzerland)

This review examines potential and limitations of brain tumor biomarkers in the CSF.

Gemcitabine followed by radiotherapy in treatment of newly diagnosed high-grade gliomas

Maha El-Naggar et al. (Egypt)

This prospective single centre phase II study evaluated the

efficiency of gemcitabine as radiosensitizer in the treatment of newly diagnosed high-grade glioma patients.

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Conflicts of interest

There are no conflicts of interest.