Jinan Behnan, PhD

Marie Curie-Fellow

Positions:

Position: Assistant Professor, Department of Neurosurgery, Department of Microbiology & Immunology, Albert Einstein College of Medicine

Research interests:

Our aim is to characterize the tumor stroma in Glioblastoma (GBM), the most aggressive and treatment-resistant brain tumor. We were the first in the world to report the recruitment of endogenous Mesenchymal stem cells (MSCs) in glioma (Behnan et al. Stem Cells, 2014) and to characterize the mesenchymal subtype in GBM patients (Behnan et al. Oncogene, 2017). Our observation indicated that the Mesenchymal subtype is divided into two subgroups: one induced by recruited cells and microenvironment, and another tumor cell per se expressing Mesenchymal properties, suggesting that brain derived MSCs/perivascular cells may be the tumor origin (Behnan et al. Brain 2019; Behnan et al. Oncogene, 2017). Our particular focus is on understanding the biology of recruited noncancerous cells to the tumor, primarily the immune cells and mesenchymal stem cells/perivascular progenitors in different GBM subtypes, and to define the origin of different recruited cell populations, and their interaction with cancerous cells to solve the complexity and heterogeneity of this devastating tumor. Simultaneously, we are working on establishing a translational therapeutic treatment for GBM through combining immunotherapy with other target therapy to change the immunosuppressive microenvironment and eradicate cancer cells. With our extensive knowledge in human Glioma stem cells (Behnan et al. Sci Rep, 2016), we aim to establish a drug screening library to test the specificity of drug response among different GBM subtypes. We will be using immune competent glioma mouse models, transgenic models utilizing different techniques including flow cytometry, confocal microscopy, 2 photon microscopy, and low threshold ultrasound. We are looking for collaborative integrative approaches with other investigators to reach innovative treatment and achieve our ultimate goal of developing treatments for brain tumor patients.

Current Grant Funding

Recent publications (selected):

1. Hu Y et al. Neural network learning defines glioblastoma features to be of neural crest perivascular or radial glia lineages. Sci Adv. 2022 Jun 10;8(23):eabm6340. doi: 10.1126/sciadv.abm6340. Epub 2022 Jun 8.
2. Guo M et al. SFRP2 induces a mesenchymal subtype transition by suppression of SOX2 in glioblastoma. Oncogene (2021). https://doi.org/10.1038

3. Behnan J*et al. The Landscape of Mesenchymal Signature in Brain tumors. Brain: a journal of neurology 2019 142;4 847-866*Corresponding author

4. Behnan J* et al. Identification and Characterization of New Source of Adult Human Neural Progenitors. Cell Death and Disease (2017) 8, e2991; doi:10.1038/cddis.2017.368. *Corresponding author

5. Behnan J* et al. (2017). Differential propagation of stroma and cancer stem cells dictates tumorigenesis and multipotency. Oncogene, 36 (4), 570-584. PubMed 27345406. *Corresponding author

6. Behnan J*, (2016). Ultrasonic Surgical Aspirate is a Reliable Source For Culturing Glioblastoma Stem Cells Sci Rep, 6, 32788. PubMed 27605047. *Corresponding author

7. Behnan J*, (2014)Recruited brain tumor-derived mesenchymal stem cells contribute to brain tumor progression Stem Cells, 32 (5), 1110-23. PubMed 24302539. *Corresponding author