

# CELL & STEM CELL RESEARCH

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### Receptor targeted engineered stem cells: Therapeutic application for cancer and beyond

Stem cell-based therapies are emerging as a promising strategy to tackle different disease types. We have identified different cell surface receptors on both tumor cells and tumor cell associated endothelial cells and engineered stem cells express bi-specific therapeutic agents that target these receptor types. Using our recently established invasive, recurrent and resection models of primary brain tumors (GBM) and breast and melanoma metastatic tumors in the brain that mimic clinical settings, we show that engineered human mesenchymal stem cells and neural stem cells expressing novel bi-functional proteins or loaded with oncolytic viruses target both the primary and the invasive tumor deposits and have profound anti-tumor effects. These studies demonstrate the strength of utilizing engineered stem cell based receptor targeted therapeutics for developing cancer therapeutics and have implications for developing innovative therapies for different diseases.

### Biography

Khalid Shah is an Associate Professor at Harvard Medical School and the Director of the Center for Stem Cell Therapeutics and Imaging at Brigham and Women's Hospital (BWH). He is also the Vice Chair of Research for the Department of Neurosurgery at BWH and a Principal Faculty at Harvard Stem Cell Institute in Boston. Since his move to BWH, he has started a joint Center of Excellence in Biomedicine with KACST and is also directing the new Center. He and his team have pioneered major developments in the stem cell therapy field, successfully developing experimental models to understand basic cancer biology and therapeutic stem cells for cancer, particularly brain tumors. These studies have been published in many high impact journals like *Nature Neuroscience*, *PNAS*, *Nature Reviews Cancer*, *JNCI*, *Stem Cells* and *Lancet Oncology*. Recently, his work has caught the attention in the public domain and as such it has been highlighted in the media world-wide including features on BBC and CNN. He holds current positions on numerous councils, advisory and Editorial Boards in the fields of Stem Cell Therapy and Oncology. In an effort to translate the exciting therapies developed in his laboratory into clinics, he has recently founded a biotech company, AMASA Technologies Inc. with main objective of clinical translation of therapeutic stem cells in cancer patients.

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