Systematic Identification of Oncogenic Protein-RNA Interaction Sites for GBM Treatment

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Abstract: Glioblastoma multiforme (GBM) is one of humankind's most deadly cancers, affecting 55,000 individuals per year, with an average life expectancy from the time of diagnosis of just over one year. This grim prognosis comes despite decades of research, which has established the value of intervention (surgery, radiation, and chemotherapy) over natural history (where diagnosis to death was measured in months), but has yet to take advantage of modern molecular knowledge and technologies. Here we propose to explore an entirely new approach to identify drug targets that relate to an unexplored Achilles heel—RNA dysregulation in GBM. We will develop new nextgeneration methods to screen oncogenic protein-RNA interactions transcript-wide with a high degree of accuracy and single-nucleotide resolution. We will then explore novel classes of antisense oligonucleotide (ASO) drugs capable of "pinpoint" blocking an oncogenic protein-RNA interaction.