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SHP-2 to success-targeting the novel *PTPN/SHP2* gene in EGFR mutated and EGFR wild type glioblastoma

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Glioblastoma multiforme or GBM is the most common primary brain tumor in the US with a devastating prognosis. There is a lack of targeted therapy for this disease. The Src homology region 2-containing protein tyrosine phosphatase 2 (*Shp2*) encoded by the *ptpn11* gene is associated with breast cancer, leukemia, lung cancer, and other cancers. SHP-2 modifies the phosphorylation of receptor tyrosine kinases, notably epidermal growth factor receptor (EGFR) and the "undruggable" *Ras* oncogene promoting the growth of glioblastoma cells. The first phase of the study involved silencing the *Shp2* gene with a pre-optimized configured siRNA in the U87, U87 mutant EGFR v111, and the U87 wild type EGFR GBM cell lines. The second part involved the use of different concentrations of a small molecule specific *Shp2* inhibitor II-B08. All three transfected cell lines showed morphologic changes within 48 hours and significant reduction in cell proliferation at 7 days indicating a therapeutic role for short interference RNA to the *Shp2* protein. Furthermore, all three inhibitor treated cell lines showed decreased cell proliferation on an anchorage independent soft agar colony formation assay, the gold standard for detecting cellular transformation. These results have novel implications for therapy using siRNA and small molecule inhibitors to the *Shp2* in this deadly disease.

Biography

Nithya Krishnamurthy is a rising junior at Canyon Crest Academy in San Diego. She is currently an Intern at the Salk Institute having done earlier internships at the Scripps Translational Science Institute. She has written a review paper on liquid biopsy and other research papers in Oncology which are submitted for publication this year. Her interests are in Molecular Biology, Oncology, and Immunology.

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