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## Antagonism between the RNA binding protein Musashi1 and miR-137 and its potential impact on neurogenesis and glioblastoma development

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In the last decade, an ever-growing number of connections between microRNAs (miRNAs) and RNA-binding proteins (RBPs) has uncovered a new level of complexity of gene expression regulation in cancer. Our lab has been studying Musashi1 (Msi1), an RBP expressed in undifferentiated neural stem/precursor cells during both, embryonic and adult stages (Sakakibara et al. 1996). High levels of Msi1 have been reported in different tumors, including glioblastoma (GBM) (Ma et al. 2008). We are also interested in a small group of miRNAs that include miR-137 that induces neuronal differentiation of stem cells and inhibit proliferation of GBM cell lines (Santos et al. 2016). Vo et al. (2011) previously shown that Msi1 is regulated by several tumor suppressor miRNAs (Vo et al. 2011) and that they have opposite roles in neurogenesis and glioblastoma development. Here, we unveil a novel aspect of this antagonistic relationship. In the particular case of Msi1 and miR-137 our results prove that both share a large number of interconnected target genes implicated in functions critical to neurogenesis and glioblastoma growth. We put forward a model in which Msi1 and miR-137 regulate this network of targets in opposite directions (activation vs. repression) to contribute to cell fate decisions (self-renewal, differentiation, tumorigenesis) in glioblastoma.

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