The immune-related microRNA miR-146b is upregulated in glioblastoma recurrence

SUPPLEMENTARY MATERIALS

Supplementary Table 1: Patient, tumor, and treatment characteristics. See Supplementary Table 1

Supplementary Table 2: All statistically significant differentially-expressed genes in recurrent GBM. See Supplementary Table 2

Supplementary Table 3: GSEA oncologic gene sets enriched in recurrent GBM

<table>
<thead>
<tr>
<th>Gene set</th>
<th>Description</th>
<th>ES</th>
<th>NES</th>
<th>P-value</th>
<th>FDR</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEK</td>
<td>Genes down-regulated by MEK upregulation</td>
<td>0.42</td>
<td>1.83</td>
<td>&lt;0.001</td>
<td>0.187</td>
</tr>
<tr>
<td>KRAS</td>
<td>Genes down-regulated by Ras upregulation</td>
<td>0.49</td>
<td>1.64</td>
<td>0.026</td>
<td>0.242</td>
</tr>
<tr>
<td>NOTCH</td>
<td>Genes up-regulated by Notch down-regulation</td>
<td>0.43</td>
<td>1.62</td>
<td>0.021</td>
<td>0.180</td>
</tr>
<tr>
<td>SRC</td>
<td>Genes up-regulated by Src down-regulation</td>
<td>0.41</td>
<td>1.61</td>
<td>0.019</td>
<td>0.179</td>
</tr>
<tr>
<td>ALK</td>
<td>Genes down-regulation by ALK down-regulation</td>
<td>0.46</td>
<td>1.61</td>
<td>0.016</td>
<td>0.169</td>
</tr>
<tr>
<td>RAF</td>
<td>Genes up-regulated by Raf up-regulation</td>
<td>0.45</td>
<td>1.61</td>
<td>0.021</td>
<td>0.157</td>
</tr>
<tr>
<td>P53</td>
<td>Genes down-regulated by P53 down-regulation</td>
<td>0.44</td>
<td>1.59</td>
<td>0.020</td>
<td>0.148</td>
</tr>
<tr>
<td>AKT</td>
<td>Genes up-regulated by AKT up-regulation</td>
<td>0.42</td>
<td>1.57</td>
<td>0.026</td>
<td>0.156</td>
</tr>
<tr>
<td>VEGF</td>
<td>Genes up-regulated by VEGF up-regulation</td>
<td>0.41</td>
<td>1.51</td>
<td>0.061</td>
<td>0.196</td>
</tr>
<tr>
<td>WNT</td>
<td>Genes down-regulated by Wnt up-regulation</td>
<td>0.37</td>
<td>1.50</td>
<td>0.040</td>
<td>0.200</td>
</tr>
<tr>
<td>CYCLIN D1</td>
<td>Genes down-regulated by Cyclin D1 down-regulation</td>
<td>0.36</td>
<td>1.50</td>
<td>0.031</td>
<td>0.195</td>
</tr>
<tr>
<td>PTEN</td>
<td>Genes down-regulated by PTEN down-regulation</td>
<td>0.37</td>
<td>1.51</td>
<td>0.026</td>
<td>0.206</td>
</tr>
</tbody>
</table>

Abbreviations: ES - enrichment score, NES - normalized enrichment score, FDR - false discovery ratio, GSEA - gene set enrichment analysis.
### Supplementary Table 4: Select miR-146b target gene differential expression from RNA-seq analysis

<table>
<thead>
<tr>
<th>miR-146b target</th>
<th>Ratio (R/P)</th>
<th>p-value</th>
<th>Known function</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRSF6</td>
<td>0.72</td>
<td>0.008</td>
<td>mRNA splicing, negative regulation of cell death</td>
</tr>
<tr>
<td>NOVA1</td>
<td>0.55</td>
<td>0.033</td>
<td>neuron-specific RNA-binding protein, tumor suppressor in astrocytoma</td>
</tr>
<tr>
<td>KCTD15</td>
<td>0.60</td>
<td>0.002</td>
<td>neural crest development</td>
</tr>
<tr>
<td>HNRNPD/AUF1A</td>
<td>0.69</td>
<td>0.003</td>
<td>nuclear ribonucleoprotein, mRNA stability, NF-κB pathway, IL expression</td>
</tr>
<tr>
<td>SNX22</td>
<td>0.75</td>
<td>0.047</td>
<td>intracellular trafficking, CD4 cell surface expression</td>
</tr>
<tr>
<td>NSI-BP</td>
<td>0.63</td>
<td>0.026</td>
<td>c-Myc transcriptional control</td>
</tr>
</tbody>
</table>

Ratio R/P refers normalized gene expression value in recurrence divided by normalized gene expression value in the initial tumor. *p*-value calculated using a Student’s *T*-test.

### Supplementary Table 5: Cox regression analysis of association of miR-146b with clinical outcomes

<table>
<thead>
<tr>
<th></th>
<th>HR (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time to local recurrence</td>
<td>1.592 (1.007–2.516)</td>
<td>0.047</td>
</tr>
<tr>
<td>Time to salvage therapy</td>
<td>1.684 (1.056–2.686)</td>
<td>0.028</td>
</tr>
<tr>
<td>Time to death</td>
<td>1.321 (0.856–2.037)</td>
<td>0.208</td>
</tr>
</tbody>
</table>

HR - hazard ratio, CI - confidence interval.