Supplementary Table S1. RGC survival in intact uninjured animals and 24d after ONC with either siEGFP or siRTP801 in 2 independent initial studies. Adult male Wistar rats (at least n=4/group) underwent bilateral ONC and intravitreal injection of either siRTP801 (20µg) in combination with inactive control siEGFP (20µg, total siRNA 40µg/10µl/eye), control siEGFP alone (40µg/10µl/eye), or PBS at 0d, 8d and 16d post-ONC. Tissues were harvested at 24d for immunohistochemical analysis of βIII-tubulin+ RGC in a 250µm linear region of the GCL as described in the Methods section. siRTP801 was identified as a suitable candidate for further study, and used without combination in the main study (see text). Note that RGC survival analysis here was undertaken with βIII-tubulin, but superseded with Brn3a for the main study presented.

<table>
<thead>
<tr>
<th>RGC Survival</th>
<th>Intact</th>
<th>ONC + PBS</th>
<th>ONC + siEGFP</th>
<th>ONC + siRTP801</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study 1</td>
<td>21.7 ± 0.3</td>
<td>10.9 ± 0.4</td>
<td>12.1 ± 0.4</td>
<td>17.6 ± 0.4</td>
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<tr>
<td>Study 2</td>
<td>21.5 ± 0.5</td>
<td>10.9 ± 0.7</td>
<td>14.4 ± 0.9</td>
<td>16.7 ± 0.7</td>
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</table>
Supplementary Table S2. GAP43+ axons observed distal to the ONC site after siRTP801 in 2 independent initial in vivo studies. Adult male Wistar rats (at least n=4/group) underwent bilateral ONC and intravitreal injection of either siRTP801 (20µg) in combination with inactive control siEGFP (20µg, total siRNA 40µg/10µl/eye) or control siEGFP alone (40µg/10µl/eye) at 0d, 8d and 16 d post-ONC. Tissues were harvested at 24d for immunohistochemical analysis of GAP43+ regenerating axons in longitudinal ON sections as described in the Methods section. siRTP801 was identified as a suitable candidate for further study, and used without combination in the main study (see text).
**Supplementary Table S3.** GFAP⁺ Müller glial activation in an independent initial *in vivo* study. Adult male Wistar rats (n=4/group) underwent bilateral ONC and intravitreal injection of either siRTP801 (20µg) in combination with inactive control siEGFP (20µg, total siRNA 40µg/10µl/eye) or control siEGFP alone (40µg/10µl/eye) at 0d, 8d and 16 d post-ONC. Tissues were harvested at 24d for immunohistochemical analysis of GFAP⁺ Müller glial processes in a 250µm linear region of the IPL as described in the Methods section.

<table>
<thead>
<tr>
<th></th>
<th>Intact</th>
<th>ONC + siEGFP</th>
<th>ONC + siRTP801</th>
</tr>
</thead>
<tbody>
<tr>
<td>GFAP⁺ Müller glial</td>
<td>Study 1</td>
<td>0</td>
<td>5.9 ± 1.6</td>
</tr>
<tr>
<td>processes / 250µm IPL</td>
<td></td>
<td></td>
<td>21.9 ± 1.8</td>
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**Supplementary Table S4.** Primary and secondary antibodies used in immunohistochemistry (IHC) and immunocytochemistry (ICC).

<table>
<thead>
<tr>
<th>Antigen</th>
<th>Species</th>
<th>Dilution</th>
<th>Supplier</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brn3a</td>
<td>Goat</td>
<td>1:250 (IHC)</td>
<td>Santa Cruz (Heidelberg, Germany)</td>
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<tr>
<td>GAP43</td>
<td>Mouse</td>
<td>1:500 (IHC)</td>
<td>Invitrogen (Paisley, UK)</td>
</tr>
<tr>
<td>β&lt;sub&gt;III&lt;/sub&gt;-tubulin</td>
<td>Mouse</td>
<td>1:200 (ICC)</td>
<td>Sigma (Poole, UK)</td>
</tr>
<tr>
<td>GFAP</td>
<td>Mouse</td>
<td>1:250 (IHC), 1:200 (ICC)</td>
<td>Sigma (Poole, UK)</td>
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<tr>
<td>S100β</td>
<td>Mouse</td>
<td>1:250 (IHC), 1:200 (ICC)</td>
<td>Sigma (Poole, UK)</td>
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<tr>
<td>RTP801</td>
<td>Rabbit</td>
<td>1:100 (IHC &amp; ICC)</td>
<td>Abcam (Cambridge, UK)</td>
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<tr>
<td>Phospho-S6</td>
<td>Rabbit</td>
<td>1:75 (IHC) 1:100 (ICC)</td>
<td>Cell Signalling (Hitchin, UK)</td>
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<td>Laminin</td>
<td>Rabbit</td>
<td>1:500 (IHC)</td>
<td>Sigma (Poole, UK)</td>
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<tr>
<td>Secondary</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Goat IgG Fluor 488</td>
<td>Donkey</td>
<td>1:500 (IHC)</td>
<td>Molecular Probes (Paisley, UK)</td>
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<tr>
<td>Mouse IgG Fluor 488</td>
<td>Goat</td>
<td>1:500 (IHC), 1:400 (ICC)</td>
<td>Molecular Probes (Paisley, UK)</td>
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<tr>
<td>Rabbit IgG Fluor 594</td>
<td>Goat</td>
<td>1:500 (IHC), 1:400 (ICC)</td>
<td>Molecular Probes (Paisley, UK)</td>
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