Supplementary Figure 1
A. Acute Treatment:
- 30 min
- 45 min
- 2 hrs

B. Chronic Treatment:
- 7d
- 2 hrs
- 24 hrs

C. Graph showing the number of BrdU-positive cells in the SGZ/GCL. The x-axis represents different conditions, and the y-axis represents the number of cells. The graph includes bars for Control, Clonidine, Yohimbine, and Yohimbine + Clonidine. The bars are labeled with symbols indicating statistical significance: * and #.

D. Graph showing the number of PCNA-positive cells in the SGZ/GCL. The x-axis represents different conditions, and the y-axis represents the number of cells. The graph includes bars for Vehicle and Clonidine. The bars are labeled with symbols indicating statistical significance: *.

E. Graph showing the number of BrdU-positive cells in the SGZ/GCL. The x-axis represents different conditions, and the y-axis represents the number of cells. The graph includes bars for Vehicle, Guanabenz, and Clonidine. The bars are labeled with symbols indicating statistical significance: *.

F. Graph showing the number of BrdU-positive cells in the SGZ/GCL. The x-axis represents different conditions, and the y-axis represents the number of cells. The graph includes bars for Vehicle, Clonidine, and Yohimbine. The bars are labeled with symbols indicating statistical significance: *.
Supplementary Figure 2
Supplementary Figure 3
A

\[ \text{BrdU} \quad \text{Y+1 7 days} \quad \text{S} \]

B

\text{BrdU/Calretinin}

C

<table>
<thead>
<tr>
<th></th>
<th>% Colocalization</th>
</tr>
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<tbody>
<tr>
<td>Vehicle</td>
<td>0%</td>
</tr>
<tr>
<td>Yohimbine</td>
<td>0%</td>
</tr>
<tr>
<td>Imipramine</td>
<td>0%</td>
</tr>
<tr>
<td>Yohimbine + Imipramine</td>
<td>6.45±2.48%</td>
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**Supplementary Figure 1.** α2-adrenoceptor stimulation decreases the proliferation of adult hippocampal progenitors. In the acute treatment paradigm (A) rats received pretreatment with the α2-adrenoceptor antagonist yohimbine or vehicle prior to administration of the α2-adrenoceptor agonist clonidine, as described in Materials and Methods. Pretreatment with the α2-adrenoceptor antagonist yohimbine prevented the clonidine-induced decrease in proliferation (B). The decline in progenitor proliferation following acute clonidine treatment was also observed using an endogenous marker of cell proliferation, Proliferating Cell Nuclear Antigen (PCNA) (C). Shown is a schematic representation of the experimental design to assess the influence of chronic (D) treatments with α2-adrenoceptor agonists and antagonist on adult hippocampal progenitor proliferation (S-timepoint for sacrifice). Quantitative stereological analysis revealed a significant decrease in the number of BrdU-positive cells in the subgranular zone (SGZ)/granule cell layer (GCL) following chronic treatment with the α2-adrenoceptor agonists guanabenz (E) and clonidine (F). Chronic treatment with the α2-adrenoceptor antagonist yohimbine did not alter the number of BrdU-positive cells in the SGZ/GCL (G). The results are expressed as the mean ± SEM number of BrdU-positive, or PCNA-positive, cells in the SGZ/GCL (n = 5-6 per group). *p<0.05 as compared to vehicle-treated controls; $p<0.05 as compared to yohimbine+clonidine (Student’s t-test - Experiments with two groups; ANOVA and Bonferroni post-hoc test - Experiment with four groups).

**Supplementary Figure 2.** α2-adrenoceptor stimulation does not affect the maturation of newborn hippocampal neurons. Drug naive animals received BrdU treatment followed by treatment with the α2-adrenoceptor agonist, guanabenz, for 7 days (A) as
described in Materials and Methods. Shown are representative confocal z-stack images of colocalization of BrdU-positive cells with DCX (B). Quantitative analysis revealed no significant change in the percent colocalization of BrdU with DCX following the guanabenz treatment (C). Results are expressed as the mean ± SEM percent colocalization of BrdU-positive cells with DCX in the SGZ/GCL (n= 4/group).

**Supplementary Figure 3.** Combined yohimbine and imipramine treatment influences the developmental progression of newborn hippocampal neurons. To address the influence on developmental progression of newborn neurons, drug naive animals received BrdU treatment followed by 7 days of combined yohimbine and imipramine treatment (A) as described in Materials and Methods. Shown are representative confocal z-stack images for colocalization of a BrdU-positive cell with calretinin (B). Quantitative analysis revealed a significant increase in the percent colocalization of BrdU with calretinin selectively in the SGZ/GCL of combined yohimbine and imipramine treated animals as compared to vehicle treated controls (C). Results are expressed as the mean ± SEM percent colocalization of BrdU-positive cells with calretinin in the SGZ/GCL (n= 5/group).*p<0.05 as compared to vehicle, #p<0.05 as compared to yohimbine, $p<0.05 as compared to imipramine (ANOVA and Bonferroni post-hoc test).