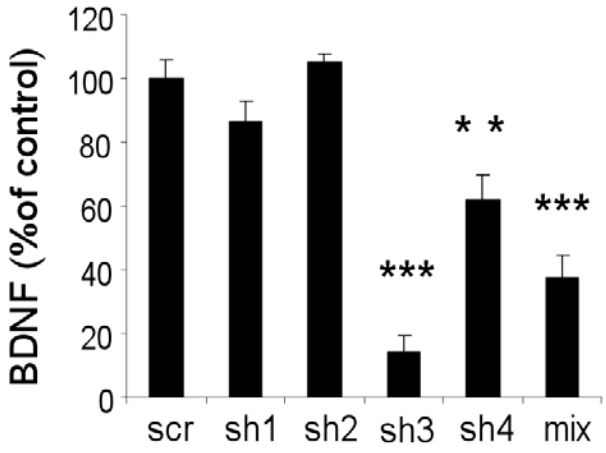
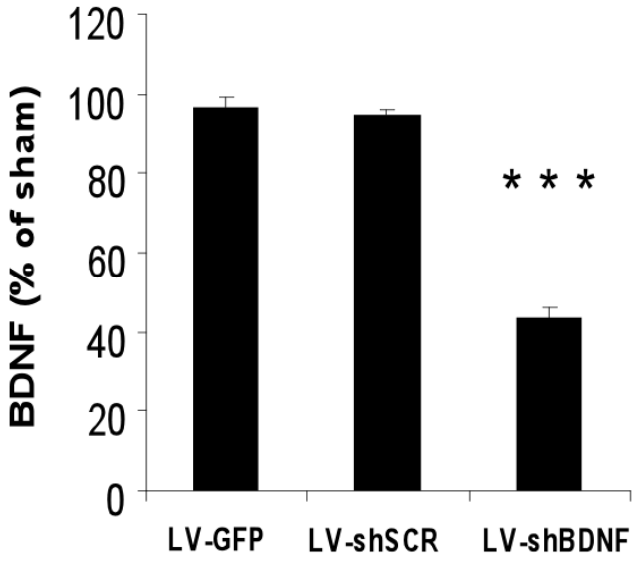
Supplementary Figure 1



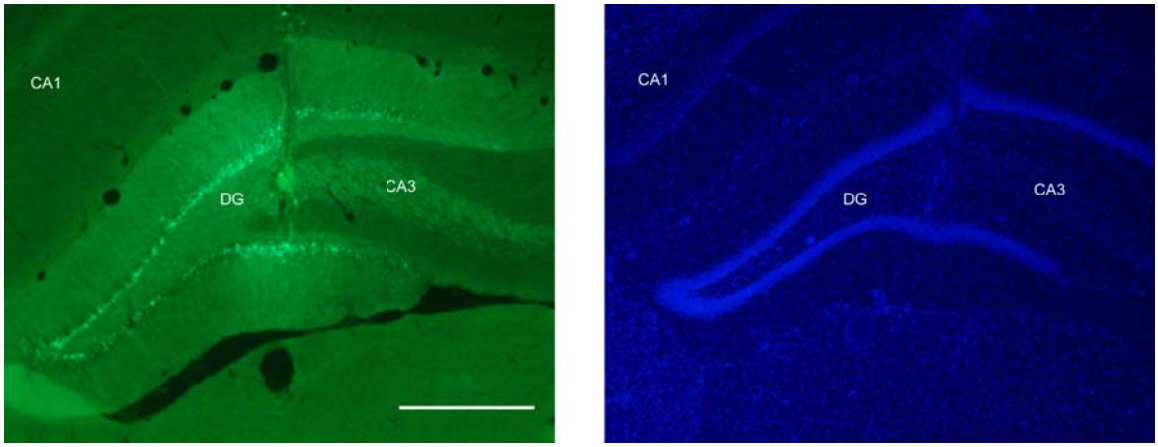
BDNF expression in 293T cells transfected with various shRNA sequences. 293T cells were transfected with a plasmid expressing the coding sequence of the rat BDNF gene together with shRNAs complementary to unique regions of the BDNF coding sequence, or with scrambled (scr) shRNA. The shRNA sequences were either transfected individually and labeled sh1, sh2, sh3, and sh4 or transfected as a mixture of the four shRNAs and labeled "mix". 293T cells that were transfected with a plasmid expressing BDNF gene and a plasmid with no shRNA sequence served as controls. BDNF protein levels in the medium were measured 48h after the transfection. One way ANOVA shows a significant main effect of treatment ($F(6,30)=24.243$, $P<0.001$). Differences between control and shRNA treated cells were assessed by the Fisher post hoc analysis (n =5 to 6 per treatment). Values are expressed as mean $\pm$ SEM (** $P<0.01$, *** $P<0.001$).

Supplementary Figure 2



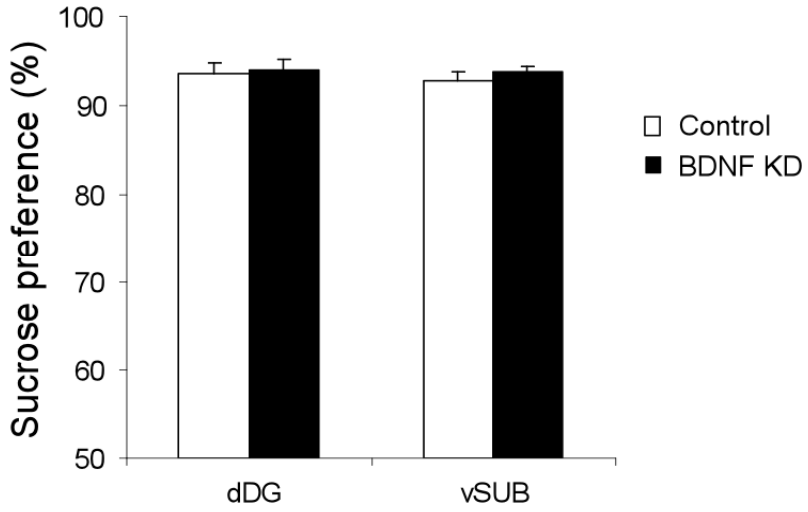
Effect of infection with LV on BDNF protein levels in C6 cells. BDNF protein expression was measured in a C6 rat glioma cell line in response to infection with LV expressing either GFP only (LV-GFP), scrambled shRNA (LV-shSCR) or shRNA complementary to the coding axon of the rat BDNF gene (LV-shBDNF). Total protein was extracted and BDNF concentration was measured and normalized to the total protein concentration (measured by Bradford assay). BDNF protein level is expressed as a percent of control measured in C6 cells not infected with any of the described LVs. One way analysis of variance (ANOVA) shows a significant main effect of BDNF expression in response to the different LV infections ($F(3,9)=326.929$, $P<0.001$). Differences between control and treated cells were assessed by Fisher post hoc analysis (n=3 to 4 per treatment).

Supplementary Figure 3



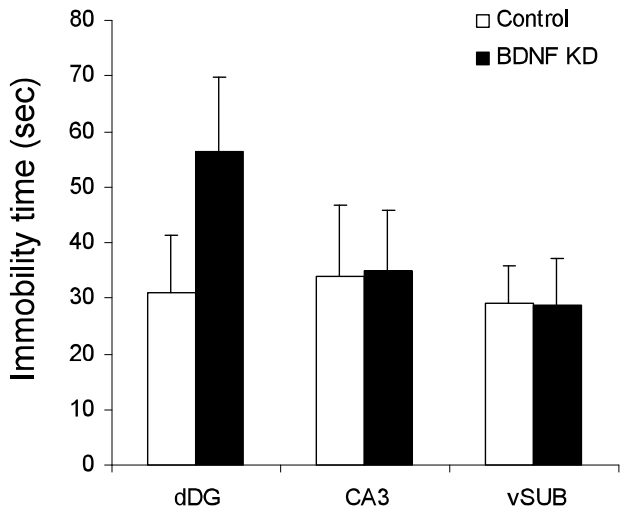
LV infection spread within the dorsal hippocampus. Representative micrographs of slices from the dorsal hippocampus of rat injected with LV expressing GFP. The micrograph in the left panel presents the infection spread based on the GFP expression (green) within the section. LV infection was restricted primarily to the dentate gyrus (DG) of the hippocampus, with a minor infection of the tip of the CA3 sub-region, and with no infection at the CA1 sub-region. Cell nuclei were visualized using Hoechst staining (right panel), and hippocampal sub-regions are presented. Scale bar = 500μm.

Supplementary Figure 4



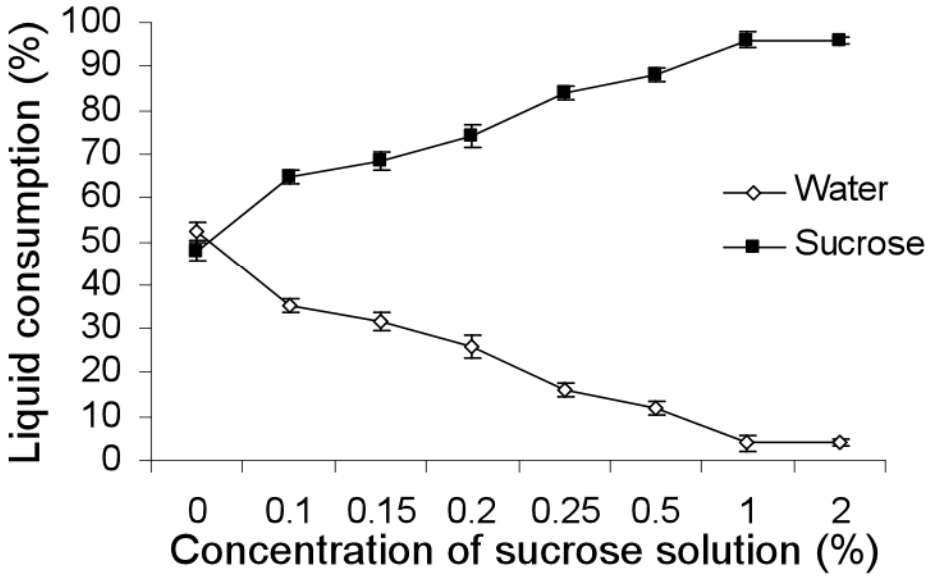
Sucrose preference in rats subjected to BDNF knockdown in the dorsal dentate gyrus (dDG) or ventral subiculum (vSUB). The experimental setup permitted rats to freely choose between a **2%** sucrose solution and water (conditions were identical to those described for figure 2, but the sucrose concentration was **high** – see supplementary figure 5). Rats were injected with either LV-shBDNF (BDNF KD) or LV-shSCR (control) into either the dDG or the vSUB.

Supplementary Figure 5



Immobility time in the FST after BDNF KD in the dDG, CA3 or vSUB. The FST was videotaped for each rat of the groups receiving injections of LV-shBDNF (BDNF KD) or LV-shSCR (control) into the dDG, CA3 or vSUB. Immobility time was measured manually using a stopwatch, by a trained observer blinded to the experimental groups.

Supplementary Figure 6



Dose-response curve of sucrose preference. The experimental setup permitted rats to freely choose between water and a sucrose solution. Each group of rats was subjected to one concentration of sucrose for 10 days. Sucrose consumption relative to the total fluid consumption was measured and presented as mean + SEM for each sucrose concentration. This dose-response curve was created in order to determine the optimal concentrations which would allow for detection of significant changes in sucrose preference when rats have free access for the sucrose in their home cage.