

### **Supplemental data 1**

Video sequence of the growth cone shown in Fig. 9 injected with control IgG.

Frames are 2 s apart.

### **Supplemental data 2**

Video sequence of the growth cone shown in Fig. 9 injected with anti-dynein

function-blocking antibody. Frames are 2 s apart.

### **Supplemental data 3**

Immunoblotting of E18 mouse hippocampal neurons using antibodies directed against cytoplasmic dynein intermediate chain, p150<sup>Glued</sup>, and LIS1.

### **Supplemental data 4**

Reduction of LIS1 expression in hippocampal cells treated with LIS1 RNAi. A)

Immunofluorescence microscopy of rat hippocampal neuron transfected with pRNAT-LIS1 cDNA (arrowhead) shows reduced protein by day 3 (arrowhead)

relative to a non-transfected control cell (arrow). B. Coexpressed GFP identifies

RNAi knockdown cell.