Supplemental Figure 1. Downregulation of SMN reduces SG formation under heat shock. P19 cells were incubated at 42°C for 30 min. A. Double-staining for SMN and TIA-1/R was carried out and monitored under a confocal microscope. The arrows indicate position of SGs. B. Cells containing SGs after heat shock treatment were counted. The number of cells with positive SGs is significantly lower in P19-SMNi cells than in P19-control cells ($p<0.01$). Scale bar: 20 μm.

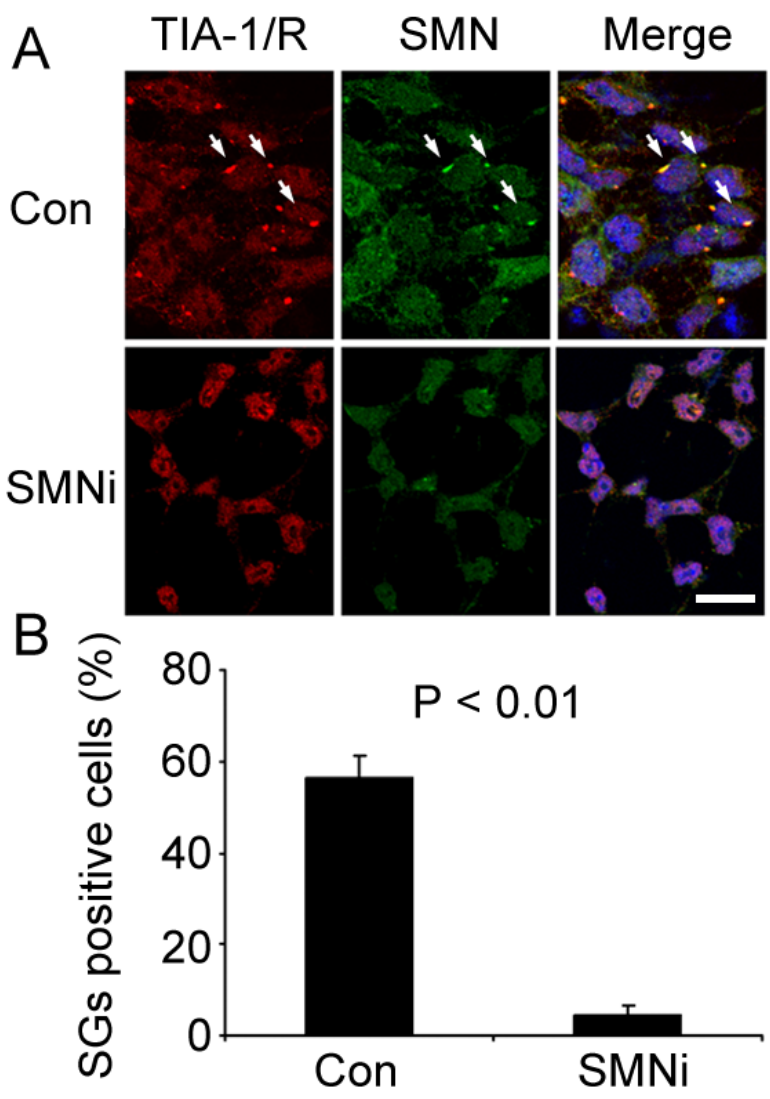
Supplemental Figure 2. Formation of SGs in response to sodium arsenite was delayed in PC12 cells with SMN deficiency. PC12 cells (Control and SMNi) were treated with 500 μM of sodium arsenite for 1 hour. A. Double-staining for SMN and TIA-1/R was carried out and monitored under a confocal microscope. Yellow represents co-localization. The arrows point to stress granules (SGs). B. SMN protein expression in PC12 transduced with control and SMN shRNA was analyzed by Western blotting with antibodies against SMN and α-tubulin C. Cells containing SGs after sodium arsenite treatment were counted. The number of cells with positive SGs is significantly lower in PC12-SMNi cells than in PC12-control cells. Three independent experiments were performed for each time point ($p<0.01$). Scale bar: 20 μm.

Supplemental Figure 3. Suppression of SMN in primary neurons impairs stress granule formation. Primary cortical neurons were cultured on coverslips coated with poly-D-lysine as described in Materials and Methods. A. Neurons were treated with or without 0.5 mM of sodium arsenite for 1 hour and immunostained for SMN and TIA-1/R. Formation of SMN/SGs was observed in neurons treated with sodium arsenite (SA). B. Cells containing SGs were counted. The number of cells containing SGs is significantly lower in untreated cortical neurons than in cortical neurons treated with sodium arsenite ($p<0.01$). C. Neurons were transduced with control shRNA (control) or SMN shRNA (SMNi) lentivirus and then treated with 0.5 mM of sodium

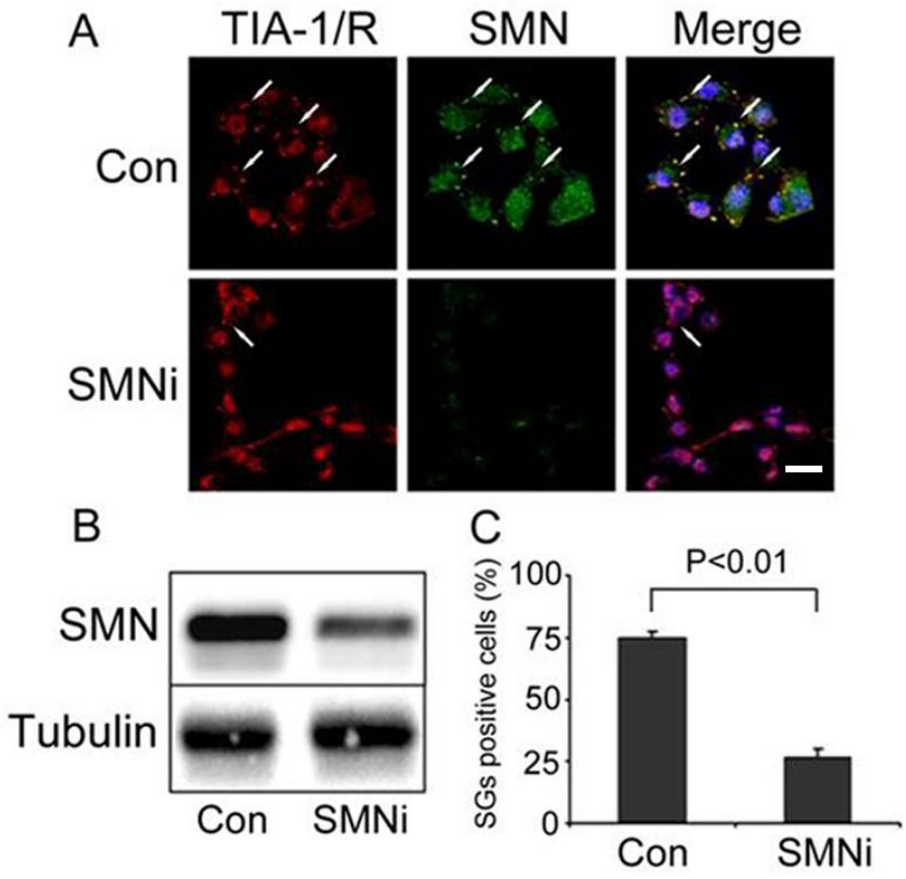
arsenite for 1 hour. Immunostaining with SMN antibody and TIA-1/R was performed. Arrows indicate SMN/SGs. Blue indicates Hoechst staining in the nucleus. D. Cortical neurons containing SGs were counted and analyzed. The student t-test indicated that fewer cells with SMN shRNA treatment contain SGs than cells with control shRNA treatment ($p<0.01$). Scale bar: 30 μm. E. SMN protein expression in cortical neurons transduced with control and SMN shRNA was analyzed by Western blotting with antibodies against SMN and α-tubulin.

Supplemental Figure 4. Emetine disperses SGs, resulting in cell death under stressed conditions. A. P19-Con and P19-SMNi cells were treated with 200 μM of arsenite with or without 10 μg/ml of emetine for 2 hours. Immunofluorescence analysis indicates that emetine significantly inhibited SG formation in both P19-Con and P19-SMNi cells. B. Trypan blue staining was carried out to examine cell death in P19-Con and P19-SMNi cells treated with 200 μM of arsenite in the presence or absence of 10 μg/ml of emetine for 12 and 24 hours (* $p<0.05$). Scale bar: 20 μm.

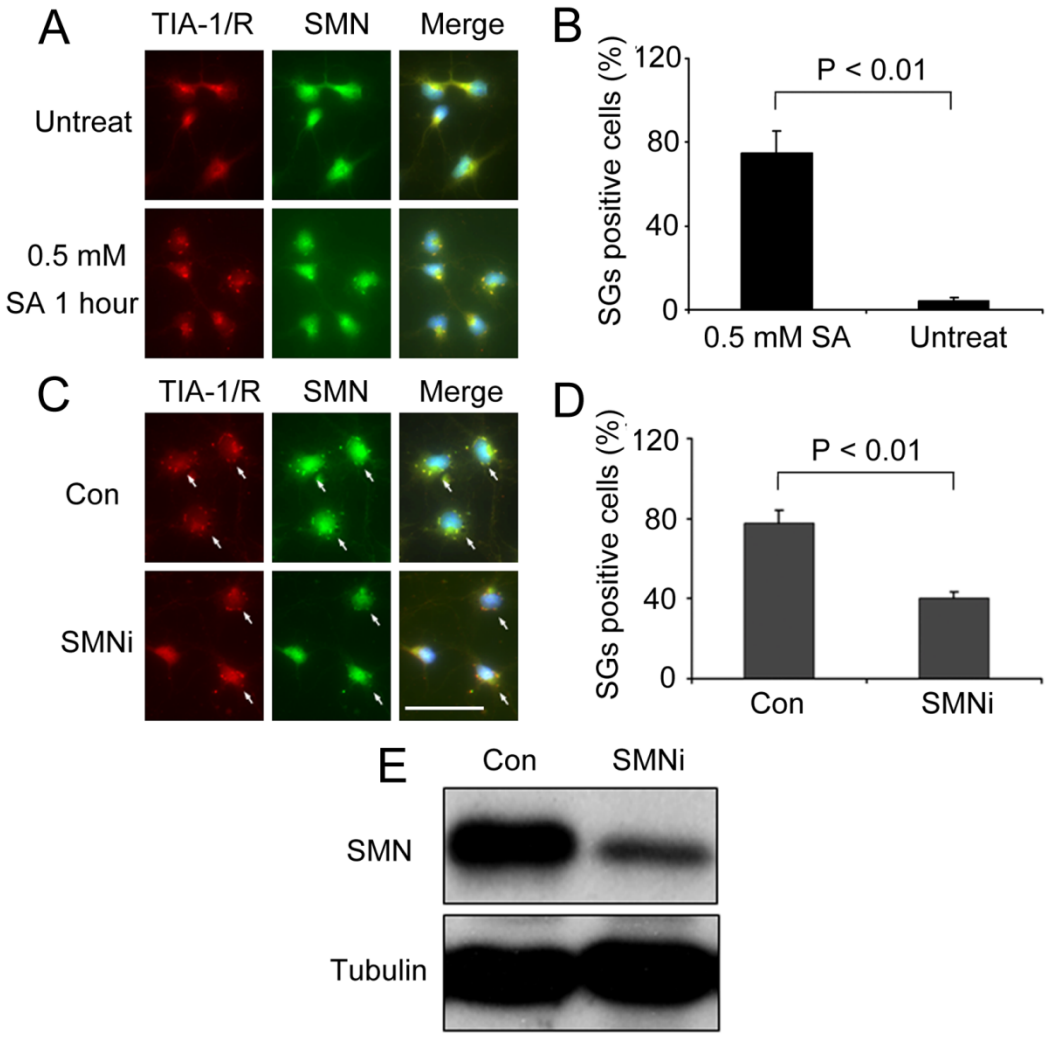
Supplemental Figure 1



Supplemental Figure 2.



Supplemental Figure 3.



Supplemental Figure 4.