

Figure S1. The sequences of overexpression METTL3 and YTHDF2

METTL3 (Gene ID: 56335, NM 019721.2)

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YTHDF2 (Gene ID: 213541, NM 145393.4)

[illegible]

Figure S2. Quantitative Results of Perls' Prussian blue staining, Fluoro-Jade B Staining and Immunofluorescence Staining of Neuronal Marker (NeuN) in Brain Sections from TBI-Induced Brain Injury. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. $n = 3$ for each group.

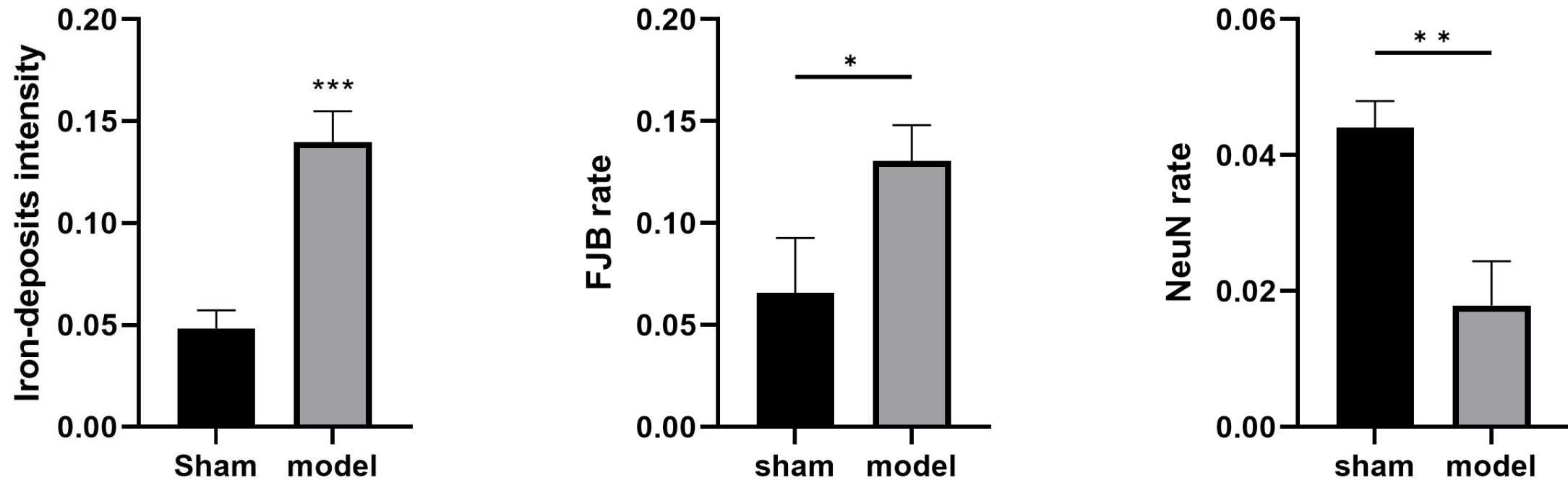


Figure S3. Quantitative Results of Immunofluorescence Staining for GPX4 and METTL3 in Brain Sections from TBI-Induced Brain Injury. * $p < 0.05$, ** $p < 0.01$. $n = 3$ for each group.

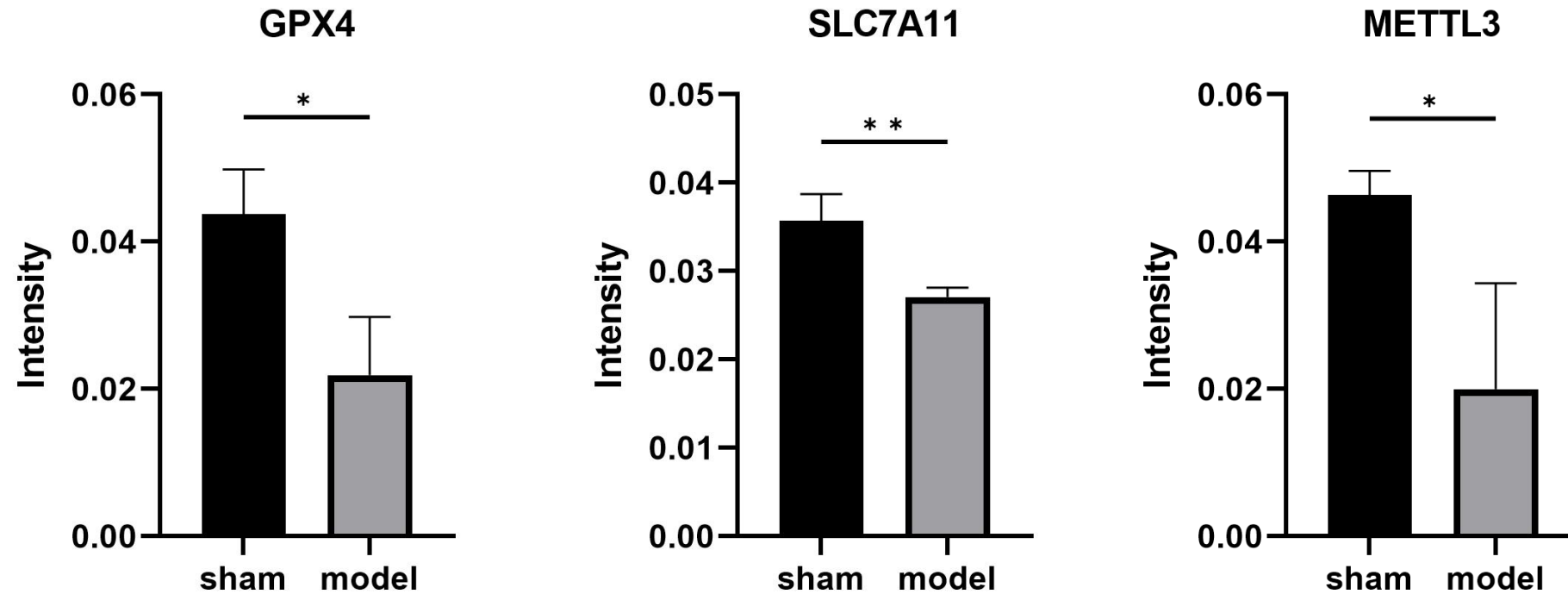


Figure S4. Quantitative Results of Immunofluorescence Staining for METTL3 in Brain Sections from TBI-Induced Brain Injury. * $p < 0.05$, ** $p < 0.01$. $n = 3$ for each group.

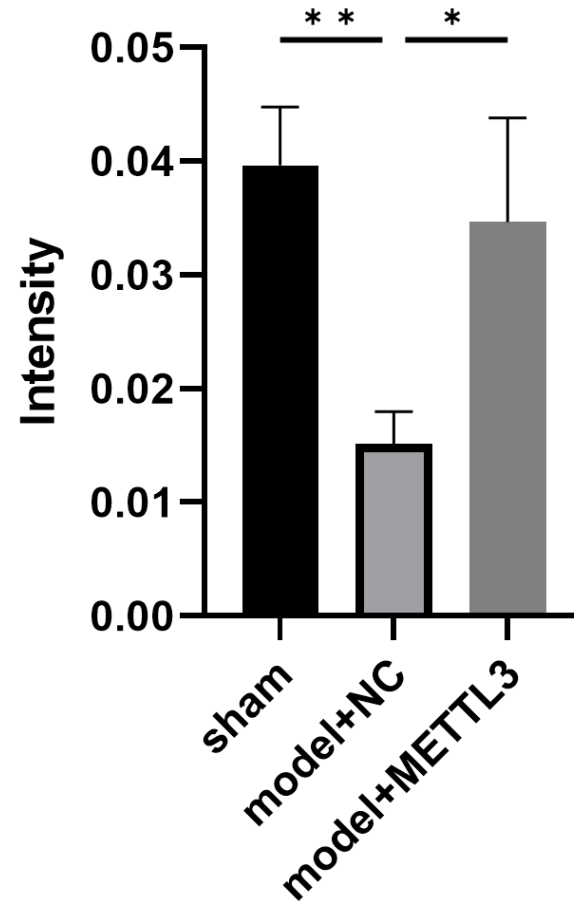


Figure S5. Quantitative Results of Perls' Prussian blue staining, Fluoro-Jade B Staining and Immunofluorescence Staining of Neuronal Marker (NeuN) in Brain Sections from TBI-Induced Brain Injury. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

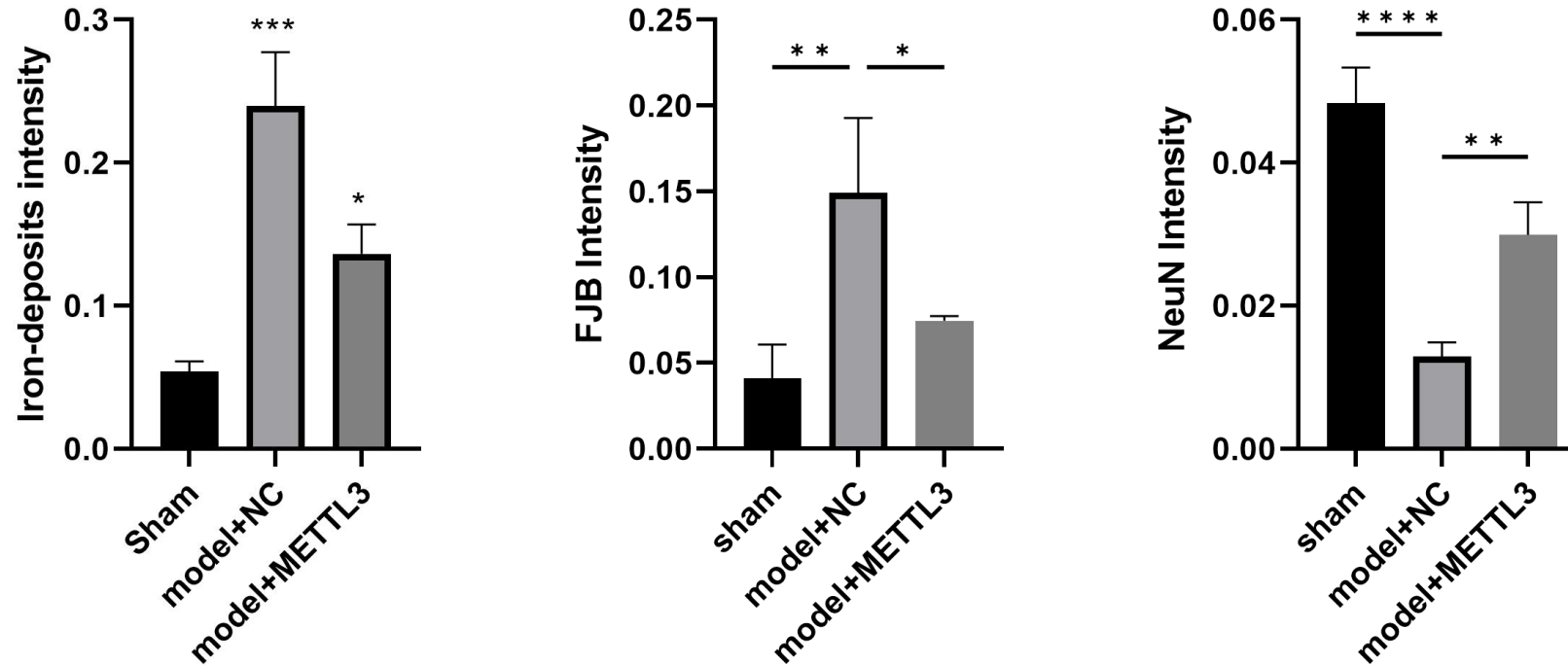


Figure S6. The protein levels of IL-6, TNF- α , and IL-1 β in cortex tissues of TBI mice were measured western blot. *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

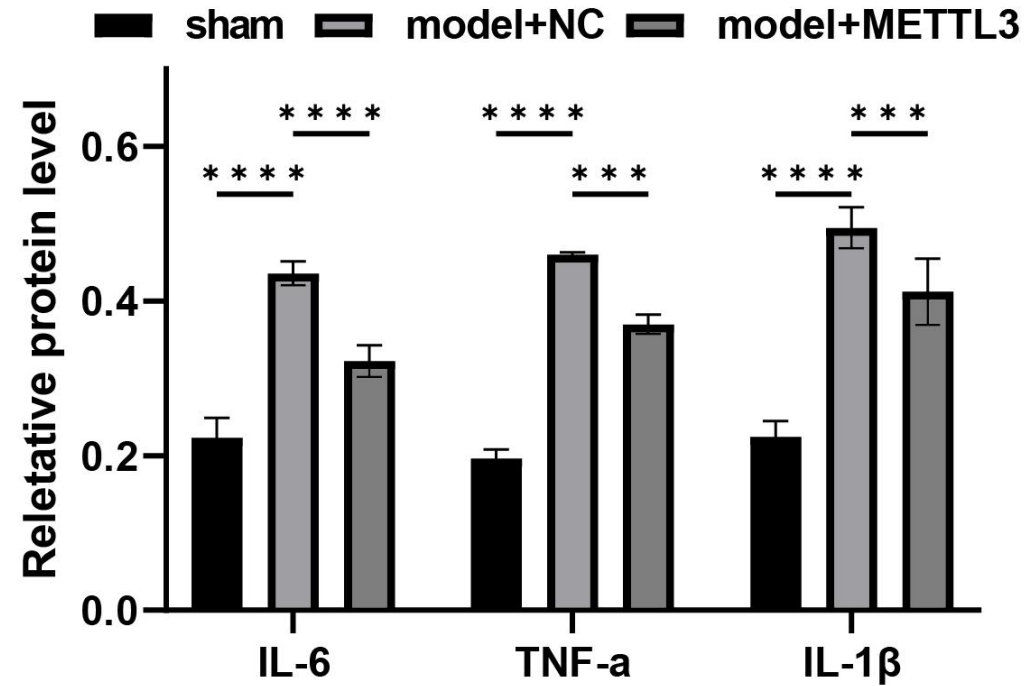


Figure S7. Quantitative Results of Immunofluorescence Staining for Iba-1, GFAP, GPX4 and SLC7A11 in Brain Sections from TBI-Induced Brain Injury. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

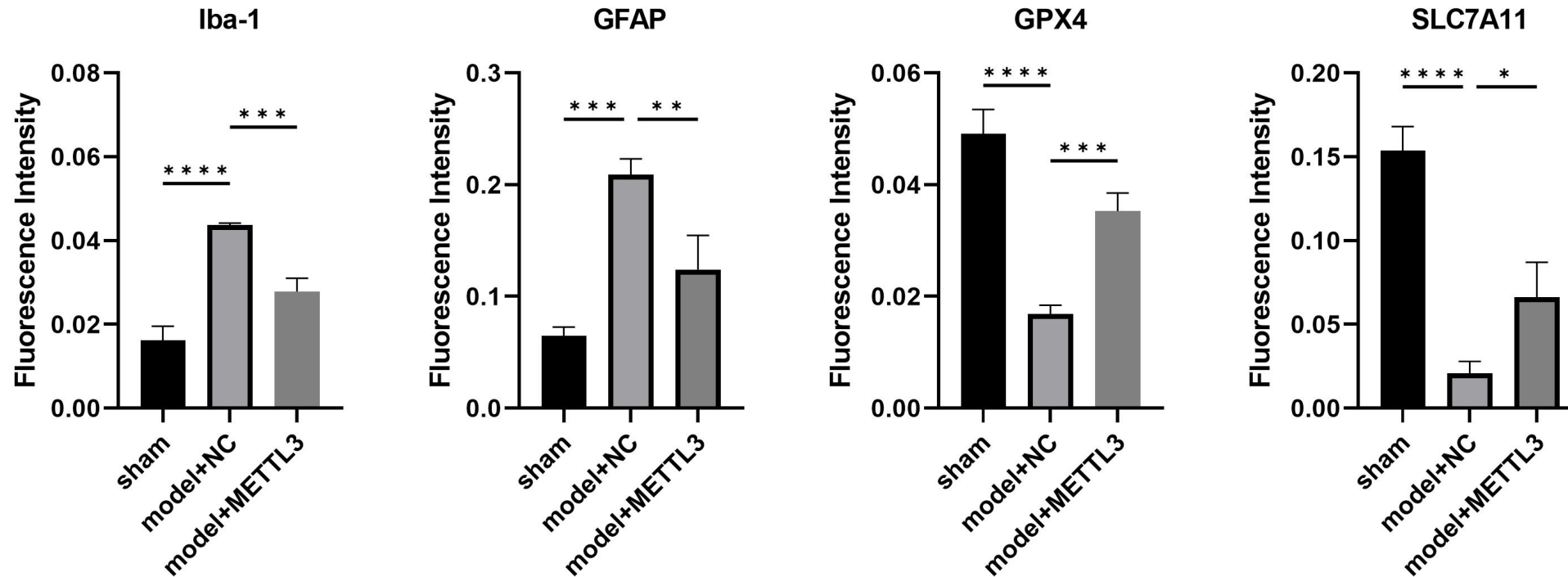


Figure S8. The protein levels of GPX4 and SLC7A11 in cortex tissues of TBI mice were measured western blot. **** $p < 0.0001$. $n = 3$ for each group.

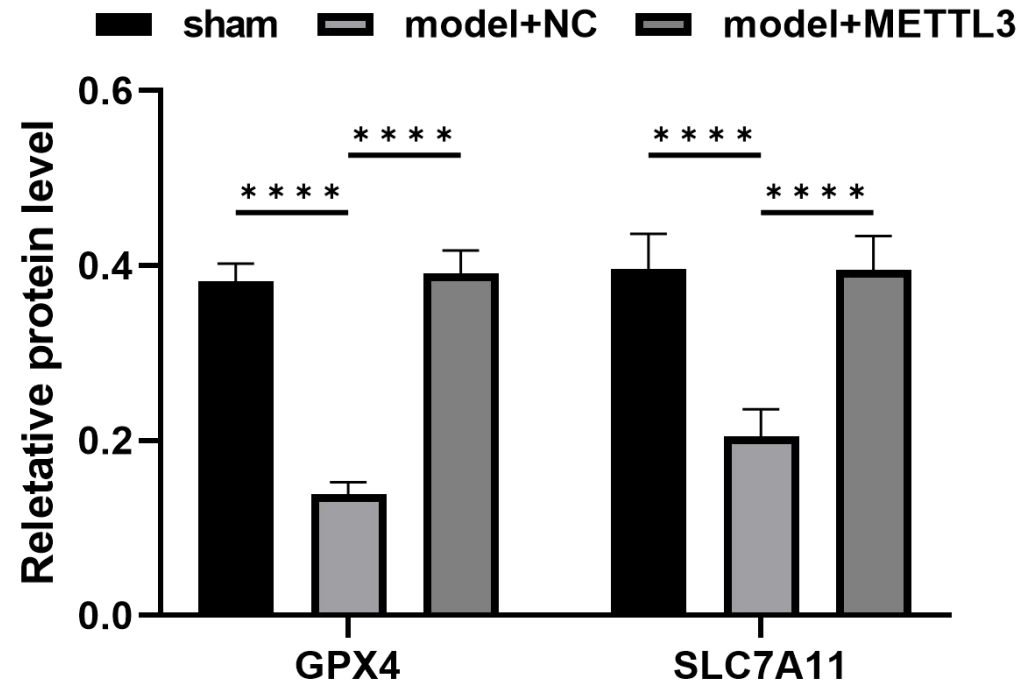
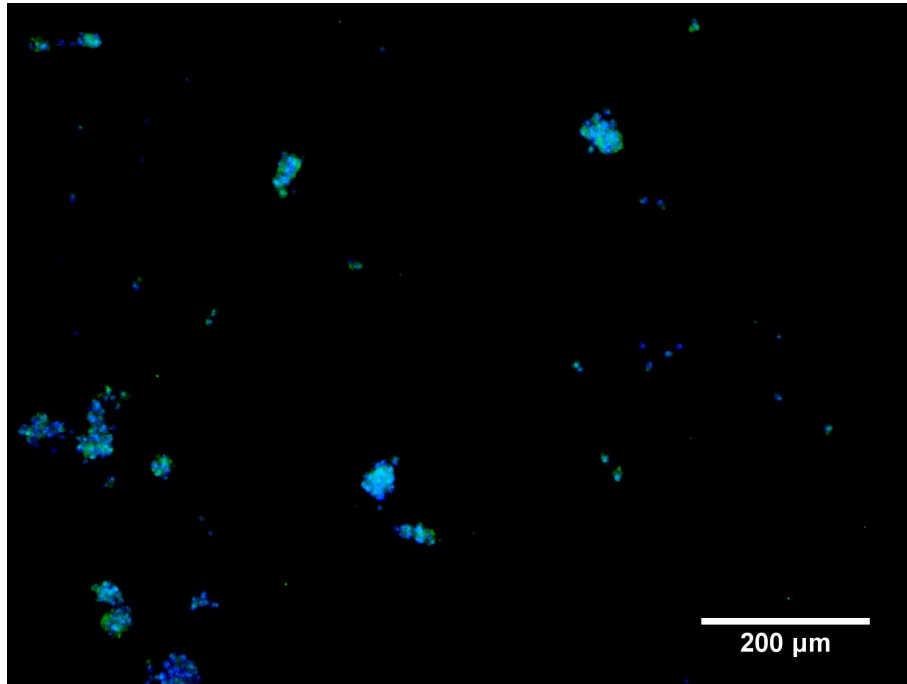
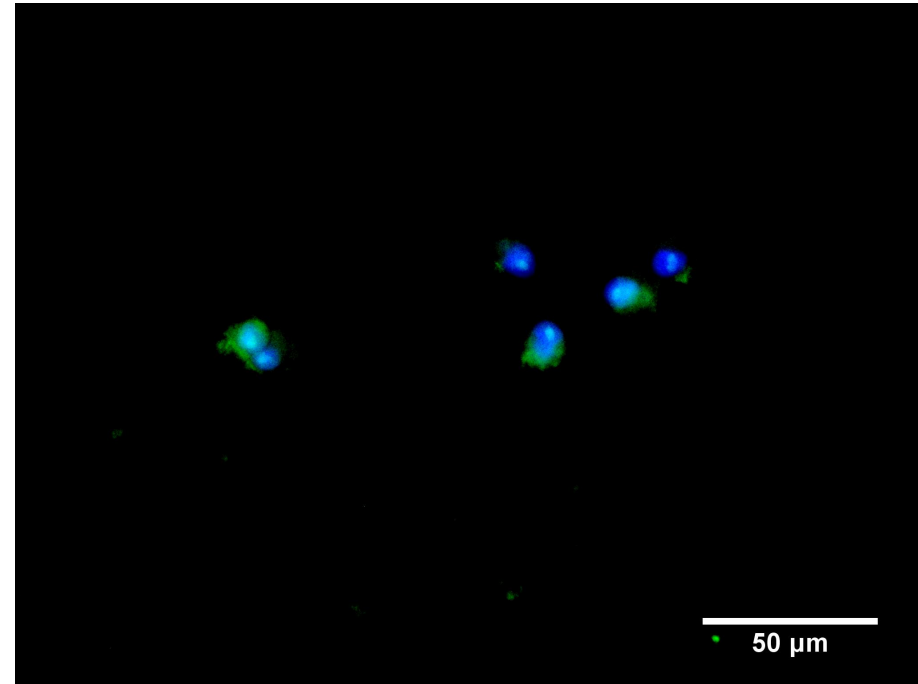


Figure S9. Immunofluorescence for NeuN on primary cortical neurons. Scale bars = 200 μm .



100X



400X

Figure S10. The protein expression of GPX-4 and SLC7A11 in cells was determined by immunofluorescence staining. ** $p < 0.01$, *** $p < 0.001$. $n = 3$ for each group.

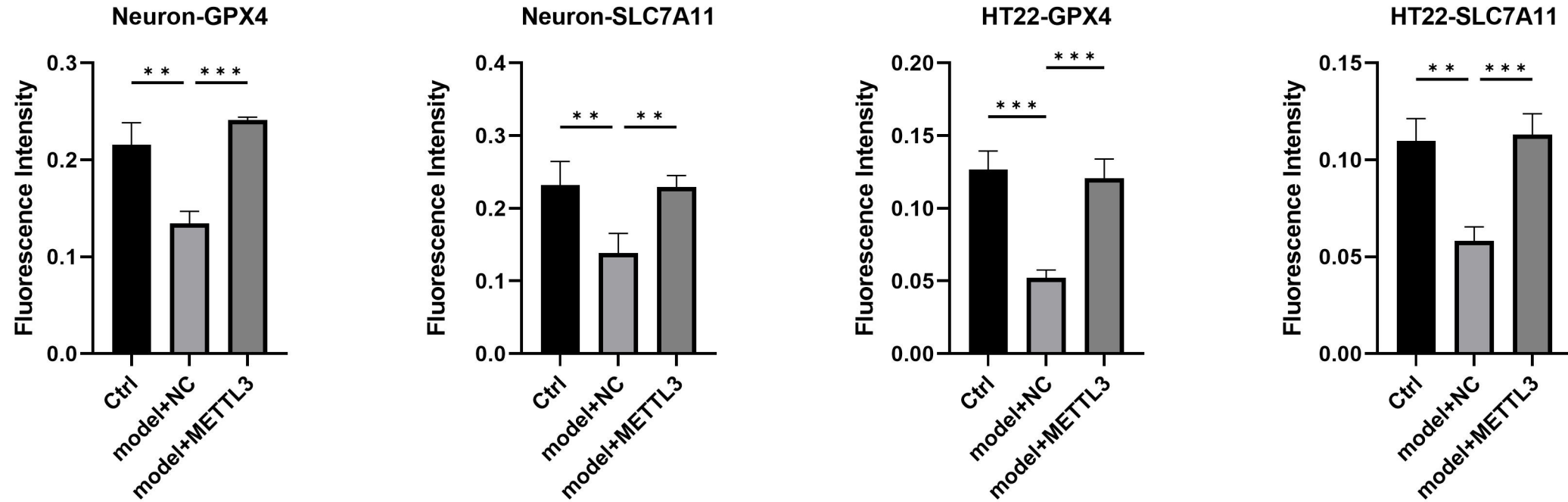


Figure S11. Neurons and HT22 cells were transfected with siYTHDF2, and the protein levels of YTHDF2 and GPX4 were measured by western blot assay. **** $p < 0.0001$. $n = 3$ for each group.

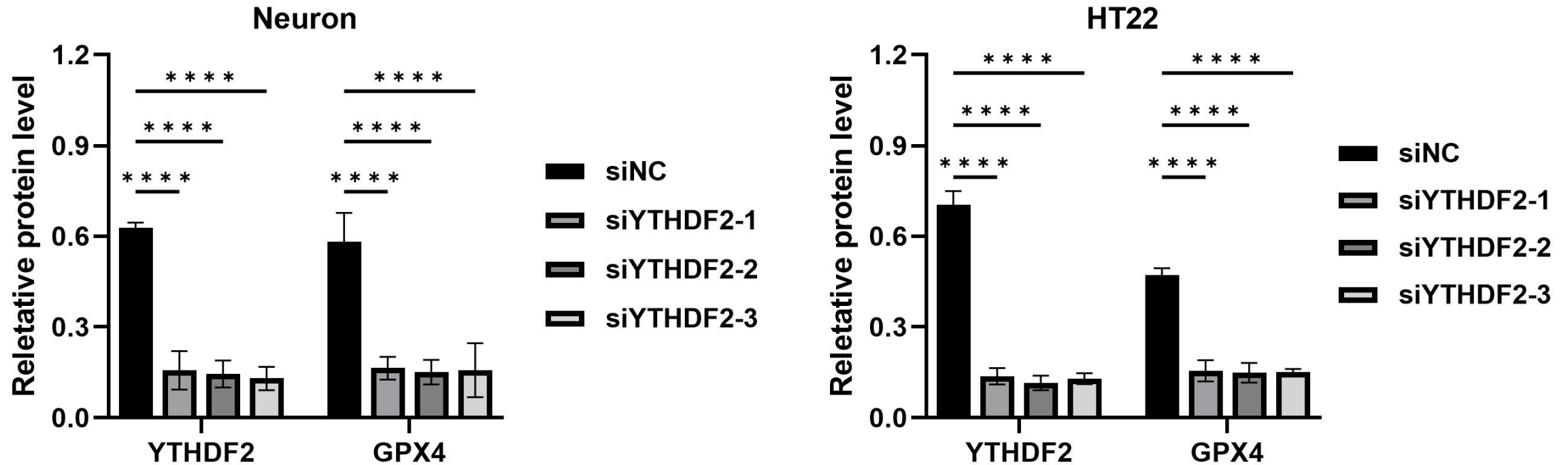


Figure S12. Neurons were transfected with YTHDF2 overexpression vectors, and the mRNA and protein level of YTHDF2 was measured by qPCR assay and western blot assay. * $p < 0.05$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

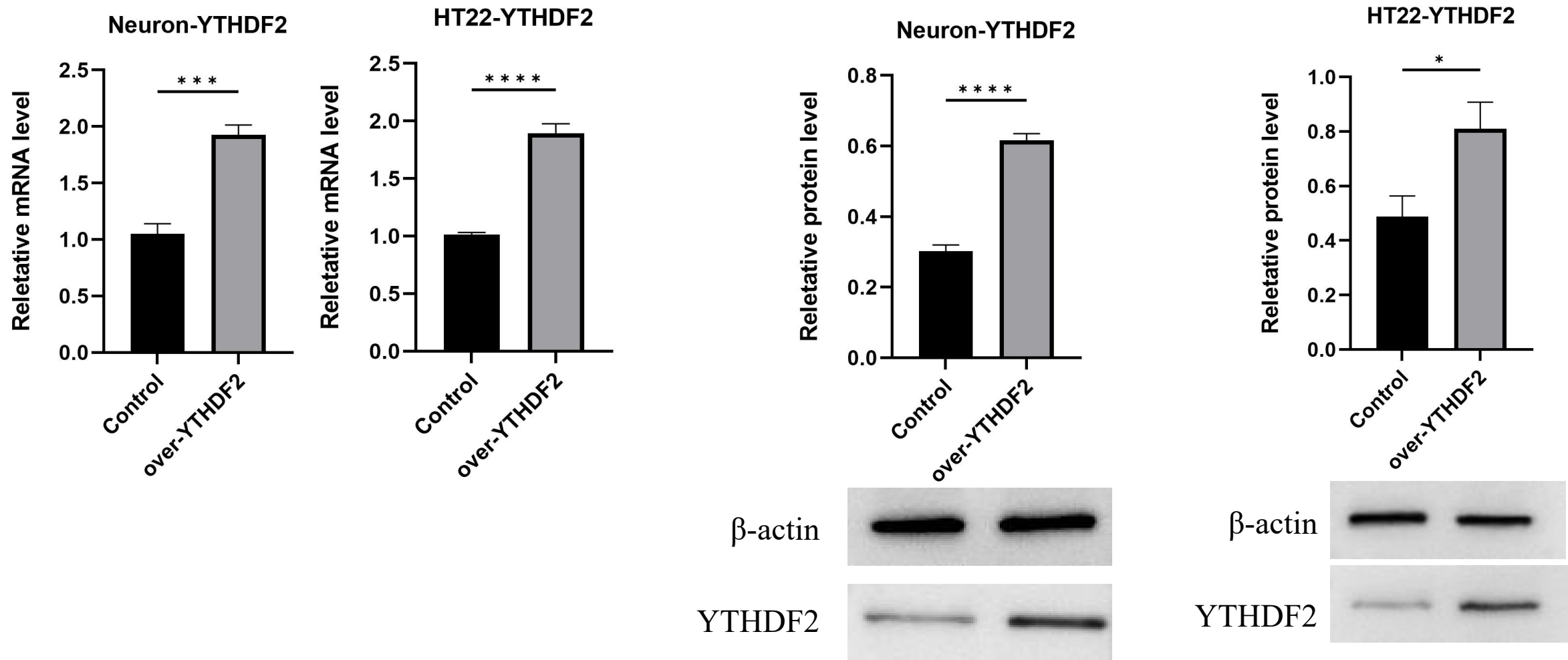


Figure S13. Neurons and HT22 cells were transfected with siMETTL3, and the protein levels of GPX4 were measured by western blot assay. *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

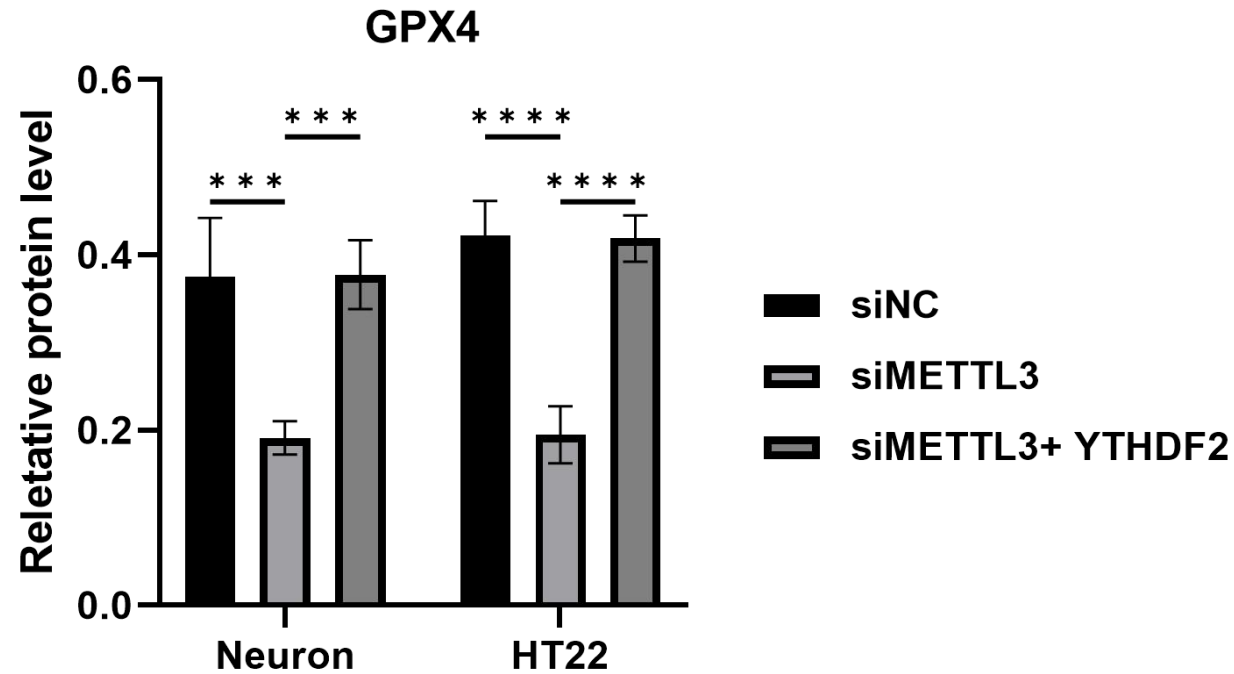


Figure S14. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. The protein levels of METTL3, GPX4 and SLC7A11 were measured by western blot. ns>0.05, *p < 0.05, **p < 0.01, ***p < 0.001, ****p < 0.0001. n = 3 for each group.

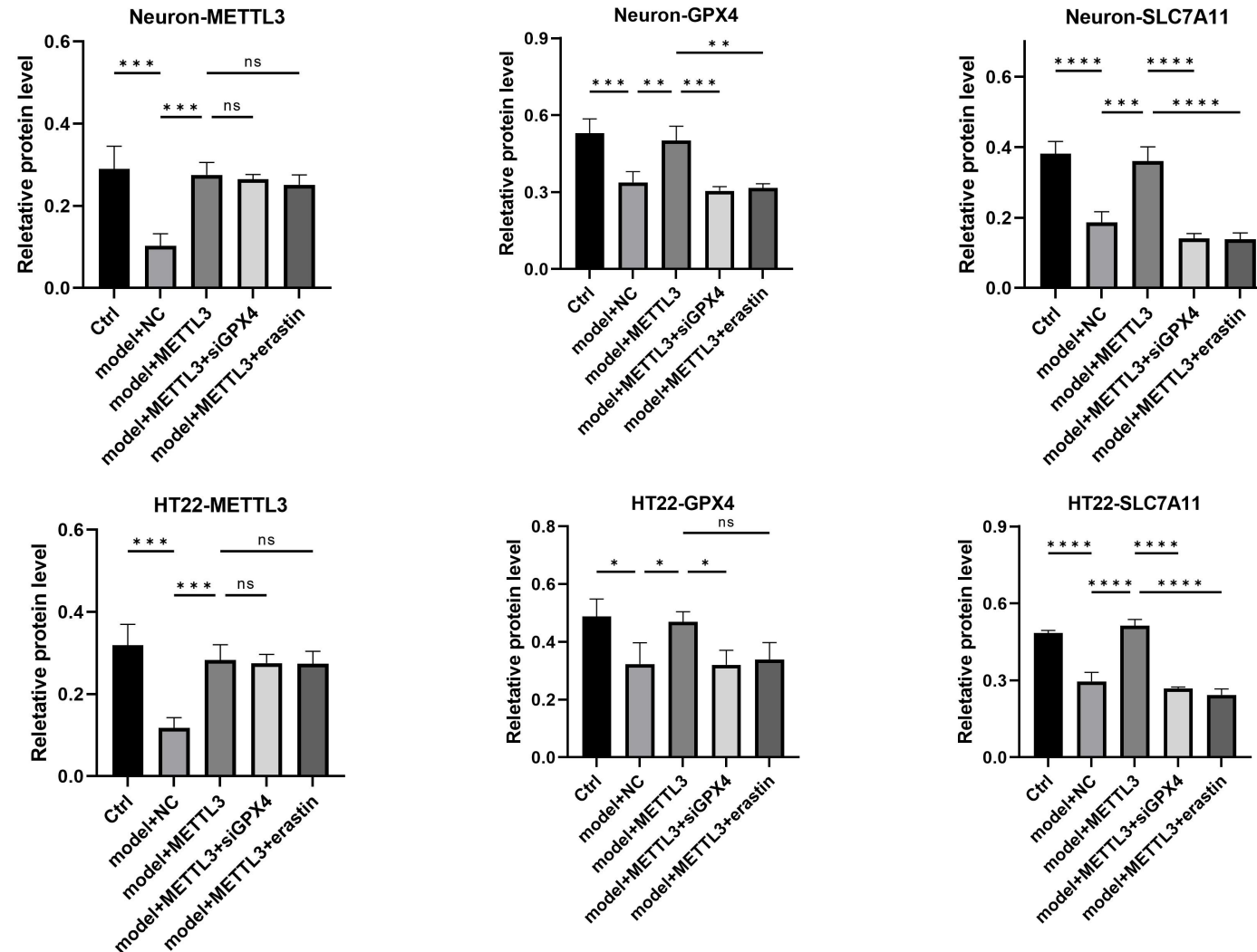


Figure S15. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. Quantitative results of immunofluorescence staining for GPX4 and SLC7A11. ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

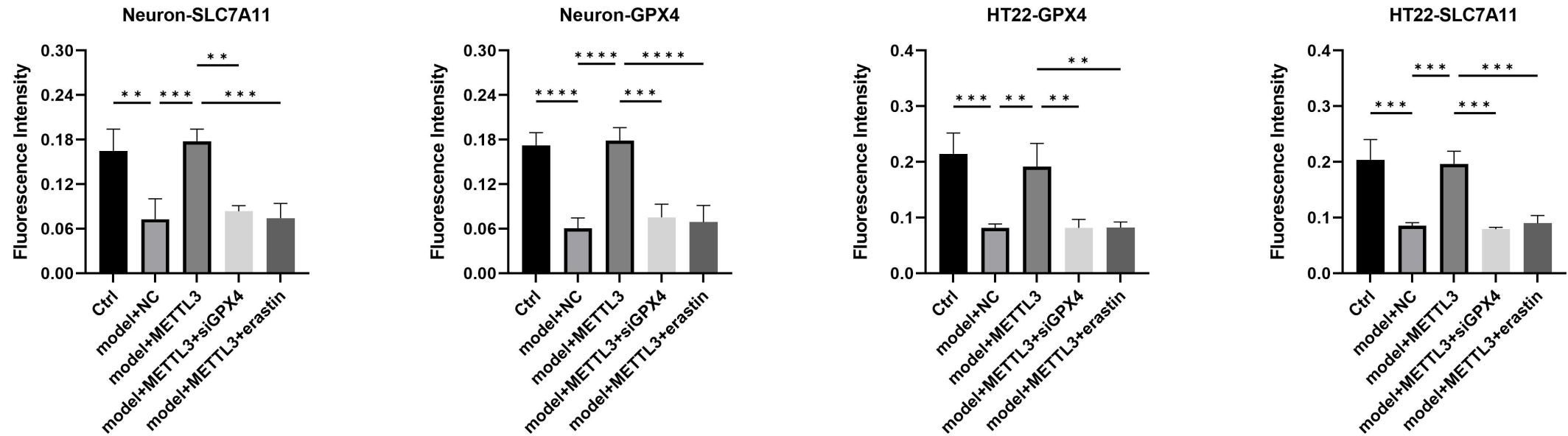


Figure S16. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. Quantitative Results of Perls Staining, Fluoro-Jade B Staining and Immunofluorescence Staining of Neuronal Marker (NeuN). * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

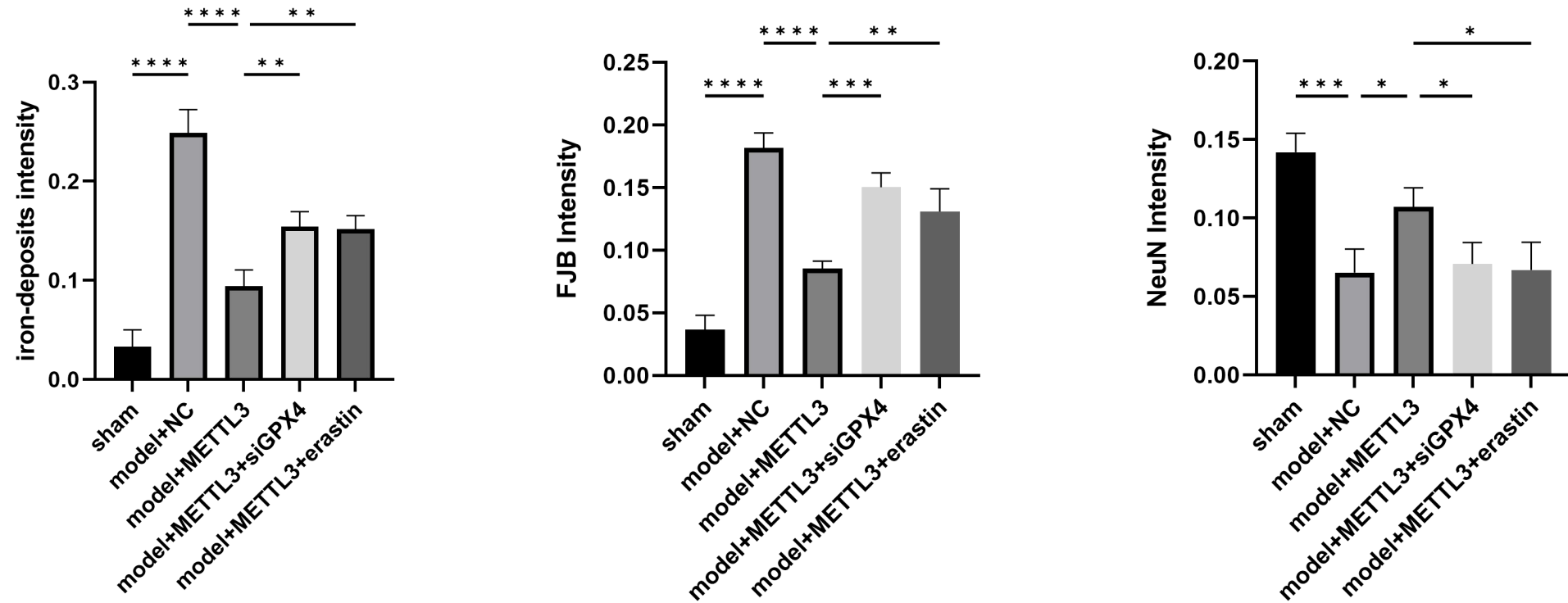


Figure S17. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. The protein levels of IL-6, TNF- α , and IL-1 β were measured by western blot assay. ** $p < 0.01$, *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

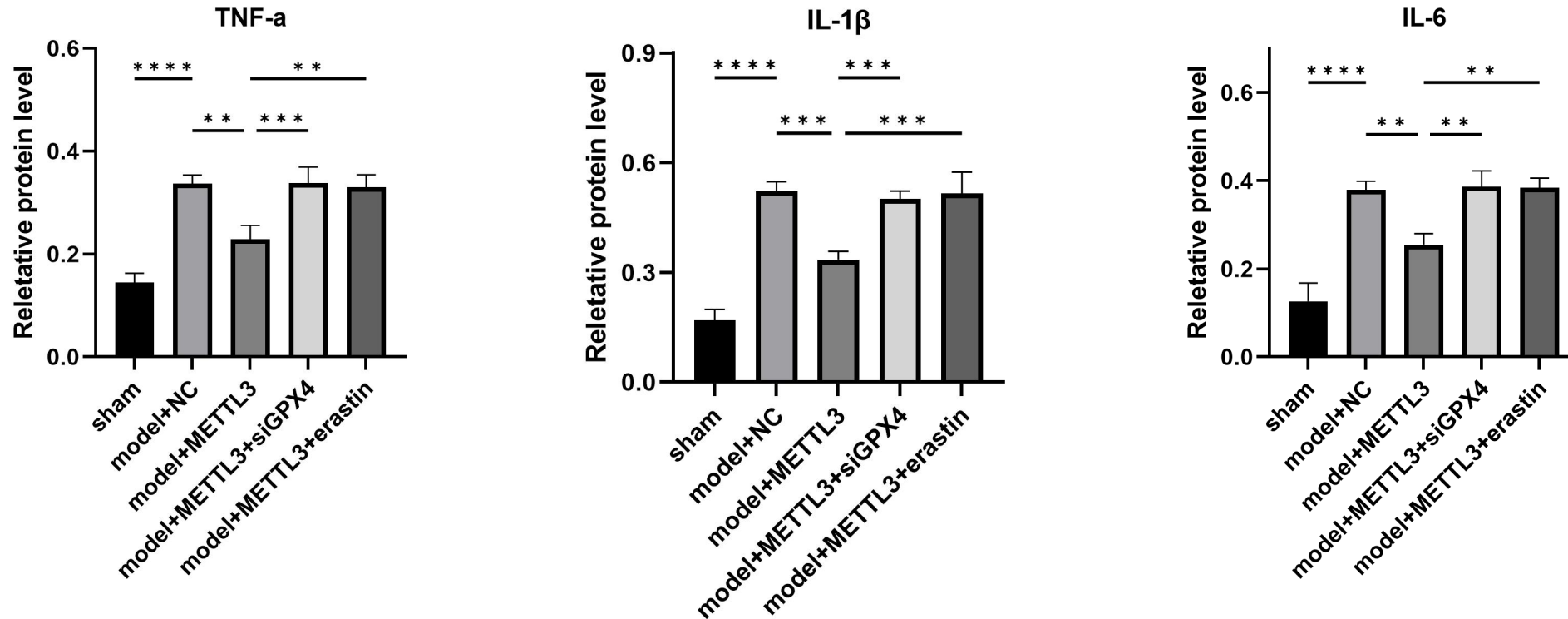


Figure S18. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. The protein levels of GPX4 and SLC7A11 were measured by western blot assay. *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

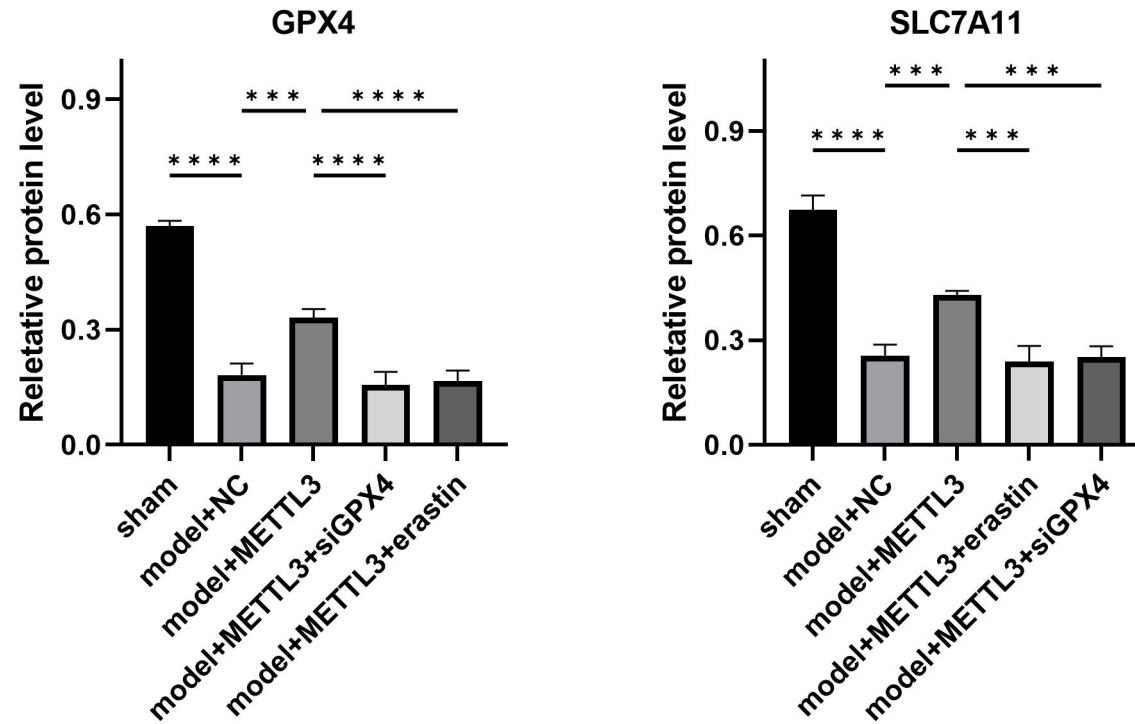


Figure S19. Primary neurons and HT22 cells were induced with mechanical damage and treated with METTL3 overexpression, siGPX4, and erastin. Quantitative results of immunofluorescence staining of GPX4 and SLC7A11. *** $p < 0.001$, **** $p < 0.0001$. $n = 3$ for each group.

