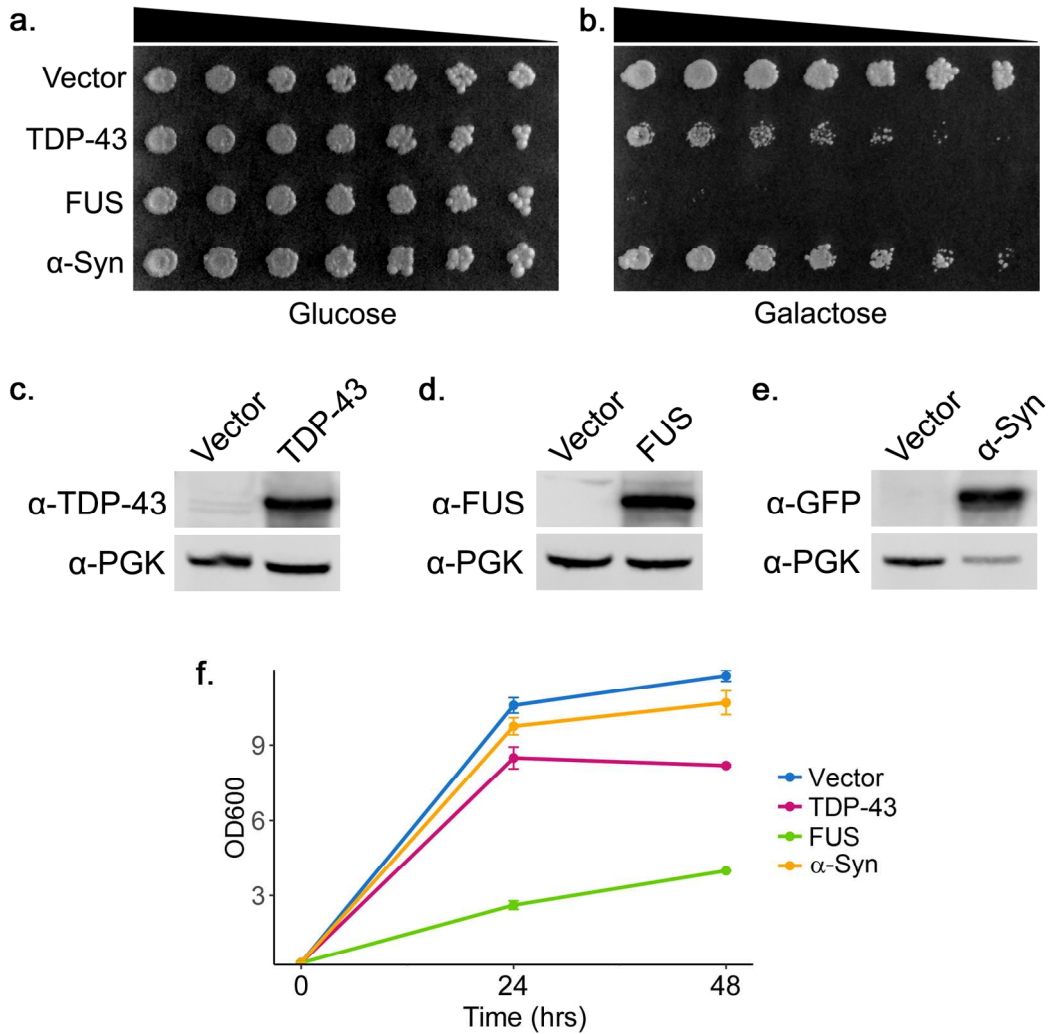


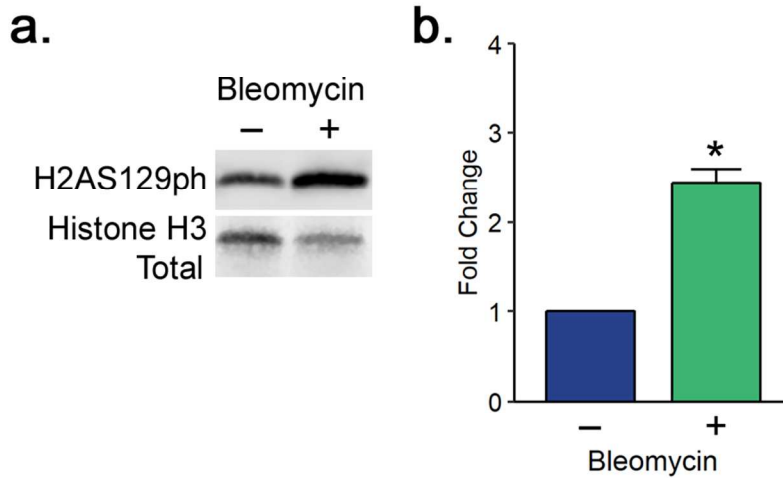
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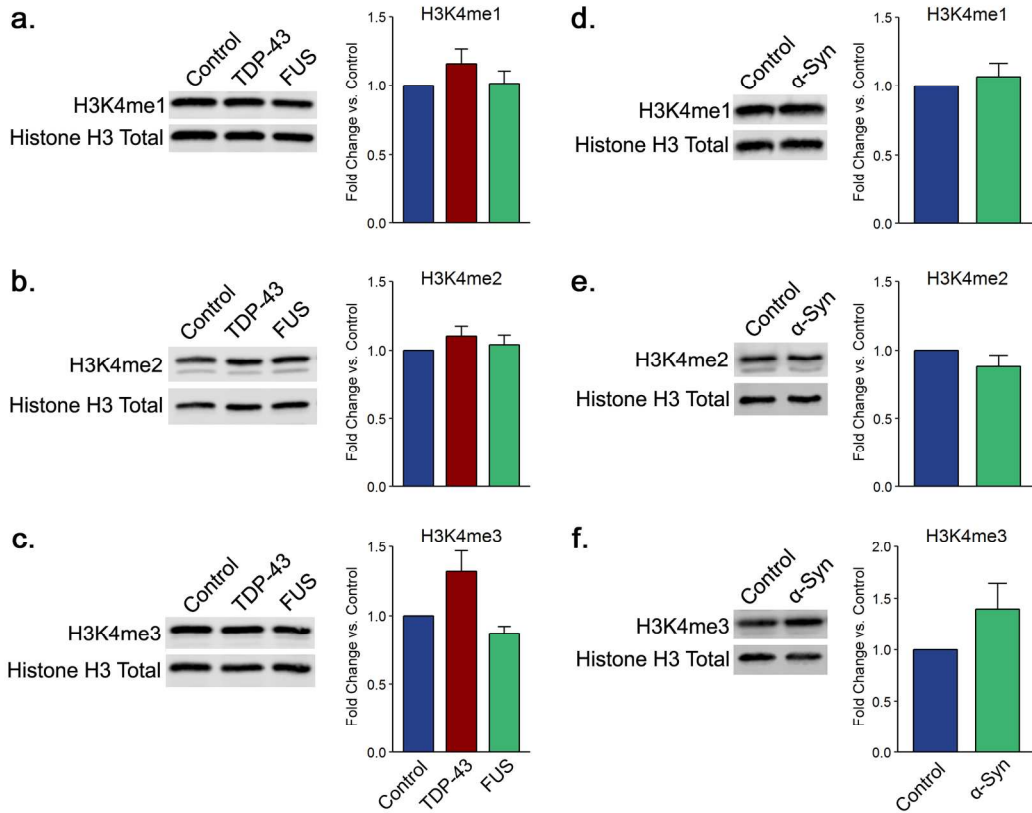
Supplementary Figure 1. Yeast expressing TDP-43, FUS, and α-Syn exhibit cytotoxic phenotypes. Spotting assays depict cell viability (a) without and (b) with galactose induced expression. Western blots confirm the expression of (c) TDP-43, (d) FUS, and (e) α-Syn-GFP in these cells. (f) Growth curve illustrating cell viability in liquid culture under galactose induction. Error bars indicate the +/- SEM. n=3 for each cell line.

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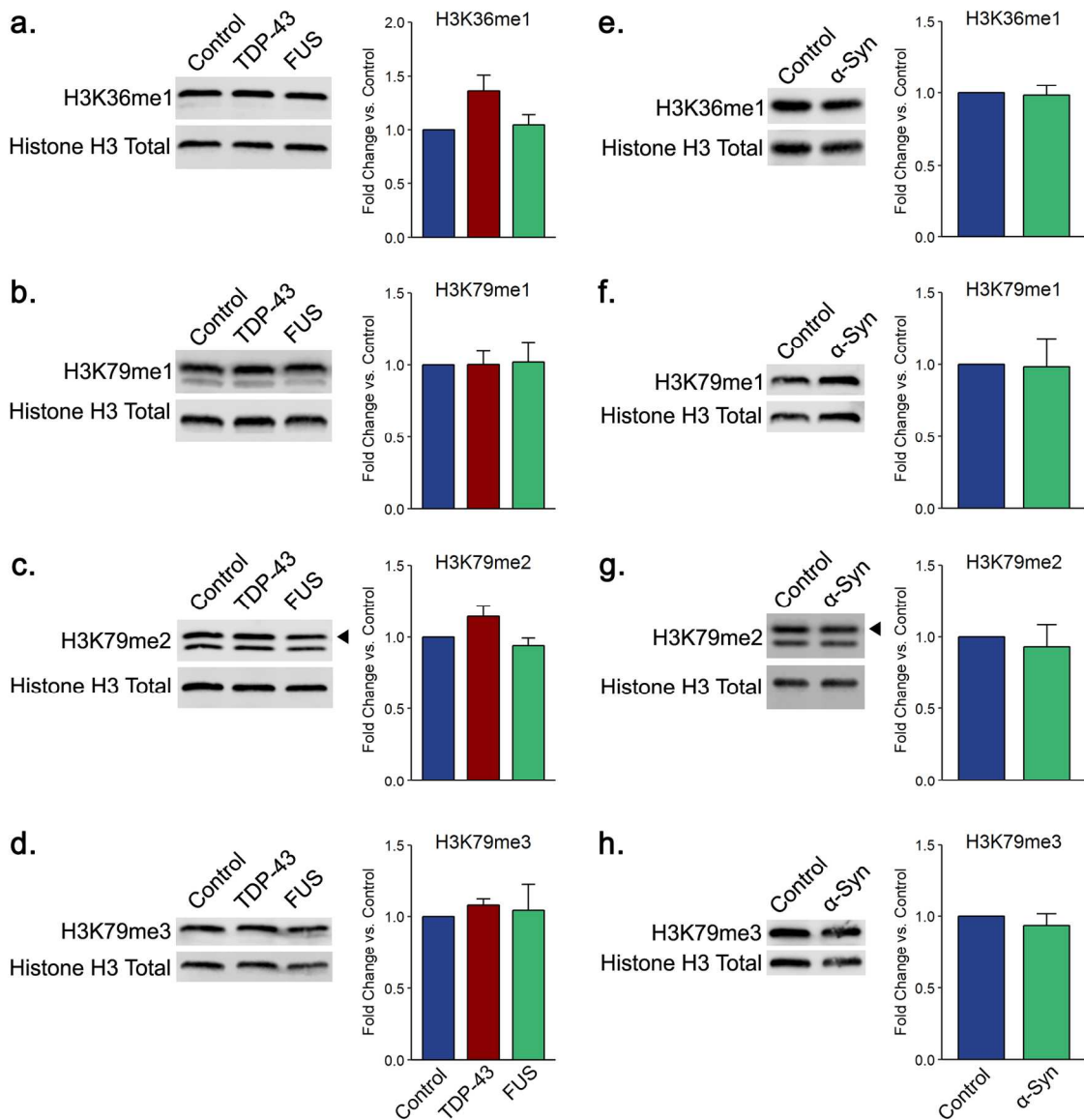
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Supplementary Figure 2. Levels of Histone H2A Phosphorylation Are Increased in Cells Treated with Bleomycin. (a) Representative immunoblots showing the levels of H2AS129ph in yeast cells treated with bleomycin. (b) Quantitation histogram compiling multiple biological replicates, Graph displays the mean fold change in modification levels for each group based on densitometric analysis of Western blots. Error bars indicate the +SEM. n ≥ 3. *p < 0.05.



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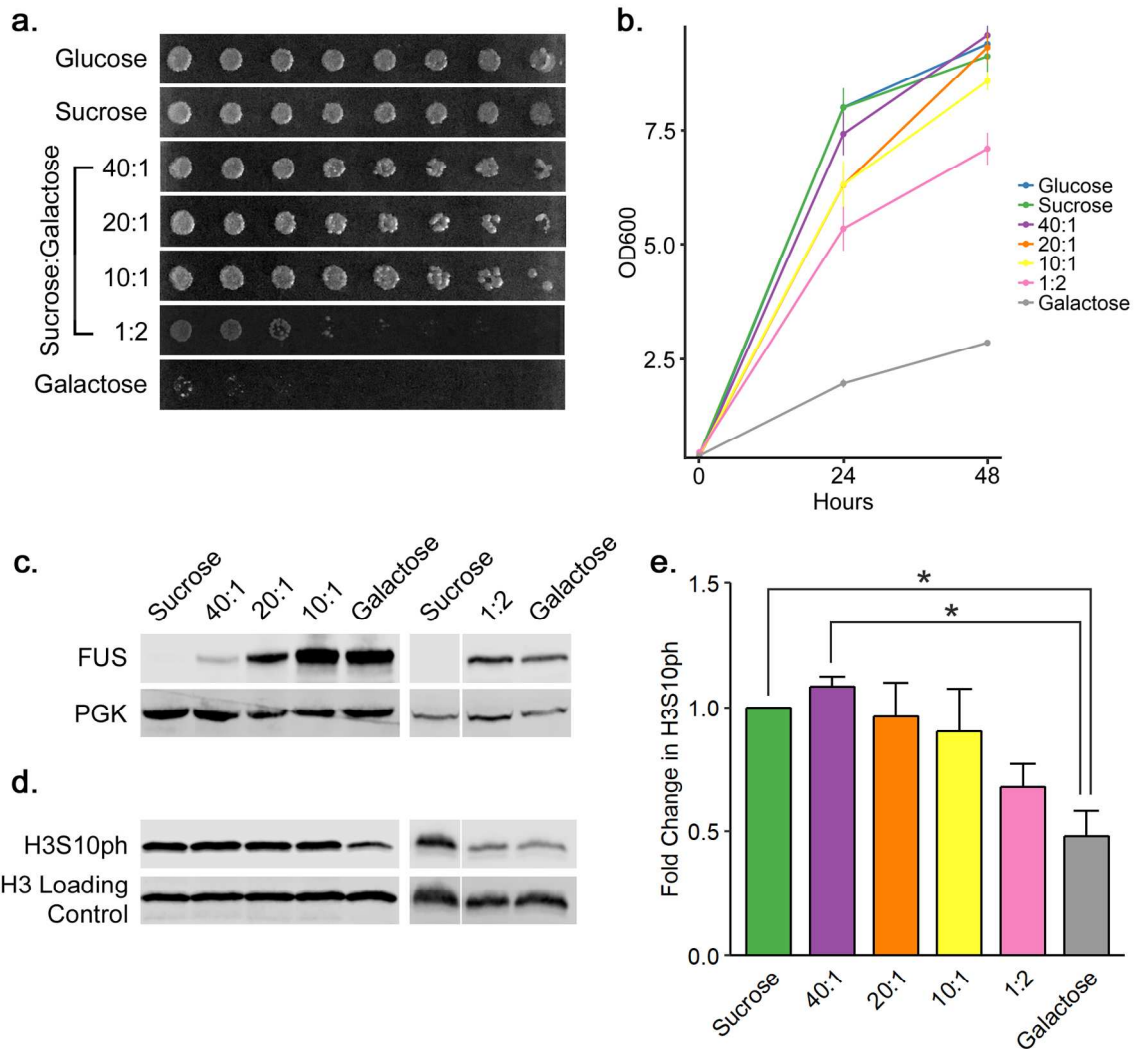
Supplementary Figure 3. Levels of Histone H3 Methylation on Lysine 4 Are Not Altered in Yeast Models of PD and ALS Proteinopathies. Representative immunoblots showing the levels of (a,d) H3K4me1, (b,e) H3K4me2, and (c,f) H3K4me3 for TDP-43 and FUS or α -synuclein yeast proteinopathy models, respectively. Quantitation histograms compiling multiple biological replicates are presented alongside blots. All graphs display the mean fold change in modification levels for each group based on densitometric analysis of Western blots. Error bars indicate the +SEM. $n \geq 3$ for each modification.



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Supplementary Figure 4. Levels of Histone H3 Monometylation on Lysine 36 And Methylation on Lysine 79 Are Not Altered In Yeast Models Of PD And ALS Proteinopathies. Representative immunoblots showing the levels of (a,d) H3K36me1, (b,e) H3K79me1, (c,f) H3K79me2, and (d,h) H3K79me3 for TDP-43 and FUS or α-synuclein yeast proteinopathy models, respectively. Quantitation histograms compiling multiple biological replicates are presented alongside blots. All graphs display the mean fold change in modification levels for each group based on densitometric analysis of Western blots. Error bars indicate the +SEM. n ≥ 3 for each modification.

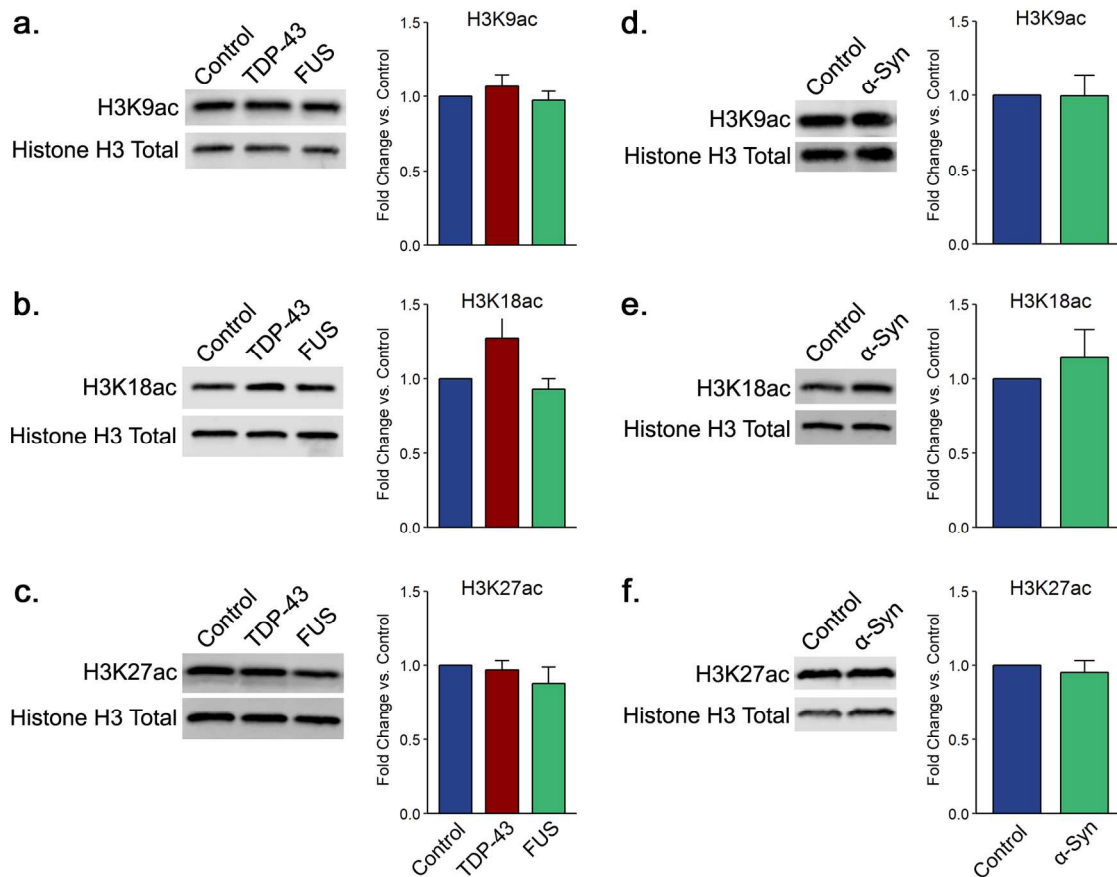
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Supplementary Figure 5. Levels of FUS Overexpression Correlate with the Magnitude of Alterations in Serine 10 Phosphorylation in Histone H3

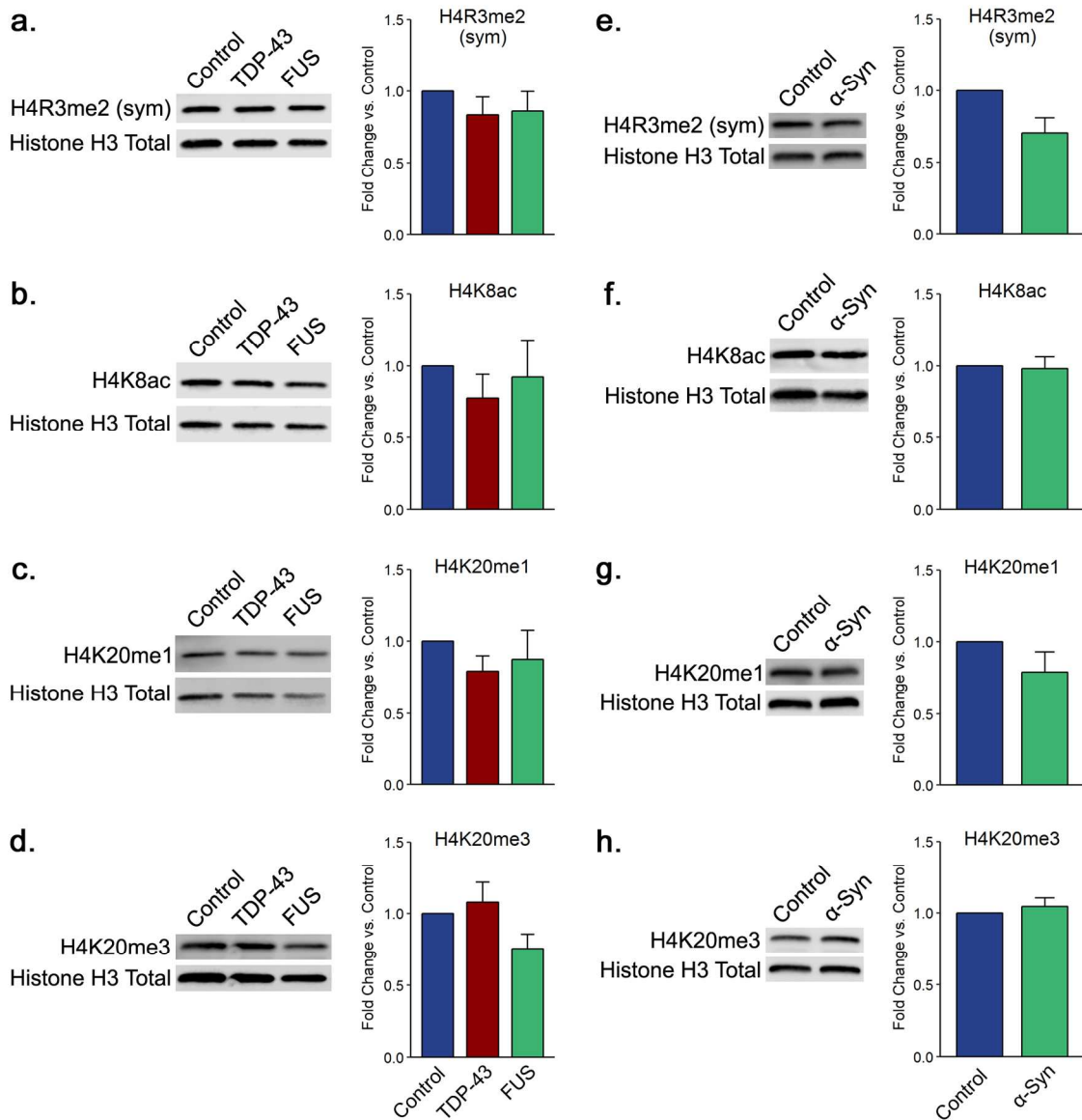
(a) Spotting assays depict cell viability in glucose, sucrose, galactose and various ratios of galactose and sucrose. (b) Growth curve illustrating cell viability in liquid culture in glucose, sucrose, galactose and various ratios of galactose and sucrose. Error bars indicate the +/- SEM. n=3 for each growth condition. (c) Western blots assess the expression of FUS in each growth condition. (d) Representative immunoblots showing the levels of H3S10ph in each growth condition. (e) Quantitation histogram compiling multiple biological replicates. Graph displays the mean fold change in H3S10ph levels for each growth condition based on densitometric analysis of Western blots. Error bars indicate the +SEM. n ≥ 3 for each condition. *p < 0.05.



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68 **Supplementary Figure 6. Levels of Histone H3 Acetylation on Lysine 9, Lysine 18**
 69 **and Lysine 27 Are Not Altered in Yeast Models of PD and ALS Proteinopathies.**

70 Representative immunoblots showing the levels of (a,d) H3K9ac, (b,e) H3K18ac, and
 71 (c,f) H3K27ac for TDP-43 and FUS or α -synuclein yeast proteinopathy models,
 72 respectively. Quantitation histograms compiling multiple biological replicates are
 73 presented alongside blots. All graphs display the mean fold change in modification levels
 74 for each group based on densitometric analysis of Western blots. Error bars indicate the
 75 +SEM. $n \geq 3$ for each modification.



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Supplementary Figure 7. Levels of several Histone H4 Marks Are Unchanged In

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Yeast Models Of PD And ALS Proteinopathies. Representative immunoblots showing

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the levels of (a,d) H4R3me2 (sym), (b,e) H4K8ac, (c,f) H4K20me1, and (d,h) H4K20me3

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for TDP-43 and FUS or α -synuclein yeast proteinopathy models, respectively.

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Quantitation histograms compiling multiple biological replicates are presented alongside

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blots. All graphs display the mean fold change in modification levels for each group

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based on densitometric analysis of Western blots. Error bars indicate the +SEM. $n \geq 3$

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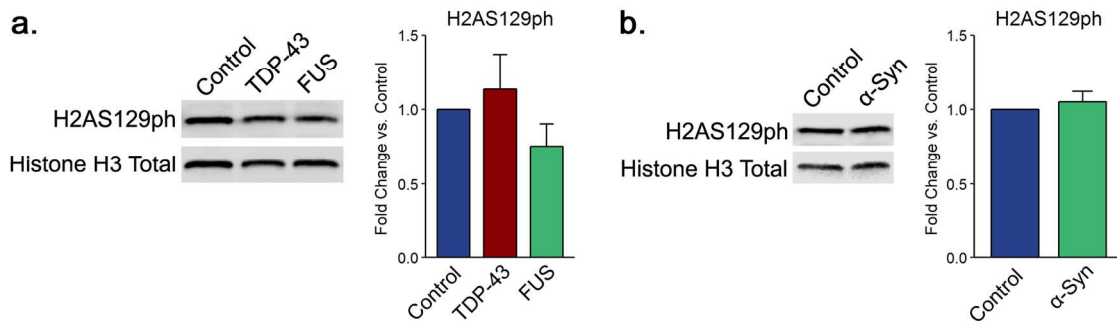
for each modification.

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Supplementary Figure 8. Levels of Histone H2A Phosphorylation Are Not Altered in ALS and PD Yeast Models. Representative immunoblots showing the levels of H2AS129ph for (a) TDP-43 and FUS or (b) α -synuclein yeast proteinopathy models. Quantitation histograms compiling multiple biological replicates are presented alongside blots. All graphs display the mean fold change in modification levels for each group based on densitometric analysis of Western blots. Error bars indicate the +SEM. $n \geq 3$ for each modification.