nature portfolio

https://doi.org/10.1038/s41586-022-05450-1

Supplementary information

Kinase signalling in excitatory neurons regulates sleep quantity and depth

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SI Guide

Kinase signalling in excitatory neurons regulates sleep quantity and depth

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Extended Data Fig.3a of RT-PCR amplified mRNA from *Hdac7*^{SA} (+/+, n = 3; *SA/+,* n = 3) and *Hdac9*^{SA} mice cortical tissues (+/+, n = 3; *SA/+,* n = 3, *SA/SA,* n = 3) using target-specific primers. The black rectangle marks the cropped boundary. Hrt, heart; Ctx, cortex; Hyp hypothalamus.

SI Figure 3 | Uncropped immunoblots from Extended Data Figures. a, Immunoblots for Extended Data Fig.1d from brain lysates of *Hdac4*^{Slp2} mice (+/+, n = 3; *SA/+*, n = 3). **b,** Representative immunoblots for Extended Data Fig.3m from brain lysates of ad lib slept and sleep deprived (6 h) mice (*ad lib*, n = 3; sleep deprived*,* n = 3). **c,** Immunoblots for Extended Data Fig.3p showing decreased HDAC4 phosphorylation at serine 245 and 629 residues in HG9-91-01 treated PC12 cells. **d,** Immunoblots for Extended Data Fig.7j from brain lysates showing the SIK3 knockout by Cre recombinase in *Nestin*$^{Cre/+}$*; Sik3*$^{flox/flox}$ mice (+/+, n = 2, *flox/flox*, n=2). Proteins were detected by Western blotting using the indicated antibodies. The black rectangle marks the cropped boundary. Cyto, cytoplasmic fraction; Nucl, nuclear fraction.

SI Table 1 | The number of nuclei in each cluster

The number of nuclei in each cluster (Glut, GABA, Astro, Oligo, oligo progenitor, Microglia, Vascular endothelial) of AAVSIK3 (Fig.6a) and sleep (Fig.6b), and the number of WPRE-positive cells in each cluster of AAVSIK3.

SI Table 2 | Full gene lists for each cluster for AAV-SIK3 transduction

Full gene lists with adjusted p values for each cluster (Glut, GABA, stro, Oligo, oligo progenitor, Microglia, Vascular endothelial) of the primary motor areas in comparison of transduction with AAV-SIK3 and AAV-SIK3(SLP), excluding genes detected in less than 10 % of nuclei. Genes for the glutamatergic (Fig.6d) and GABAergic (Extended Data Fig.10f) clusters were plotted as volcano plots.

SI Table 3 | Full gene lists for each cluster for sleep deprivation

Full gene lists with adjusted p values for each cluster (Glut, GABA, Astro, Oligo, oligo progenitor, Microglia, Vascular endothelial) of the primary motor area in comparison of Sleep Deprived (SD) and ad lib sleep at ZT6, excluding genes detected in less than 10 % of nuclei. Genes for the glutamatergic (Fig.6e), GABAergic (Extended Data Fig.10g), astrocyte (Extended Data Fig.10h), oligodendrocyte (Extended Data Fig.10i), and microglia (Extended Data Fig.10j) clusters were plotted as volcano plots.

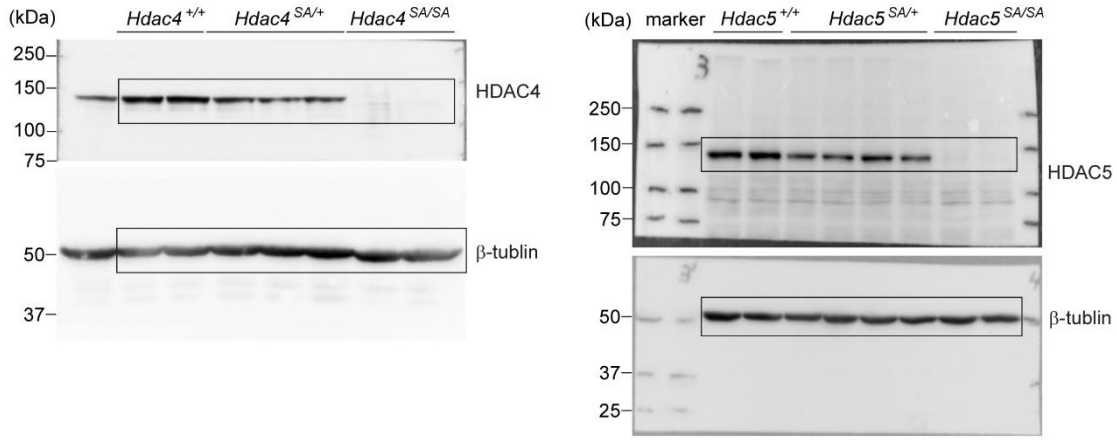
SI Table 4 | Upregulated and downregulated DEG lists for each group in the Venn diagram.

SI Table 5 | Gene Ontology analysis using DEGs common between AAVSIK3 transduction and sleep deprivation.

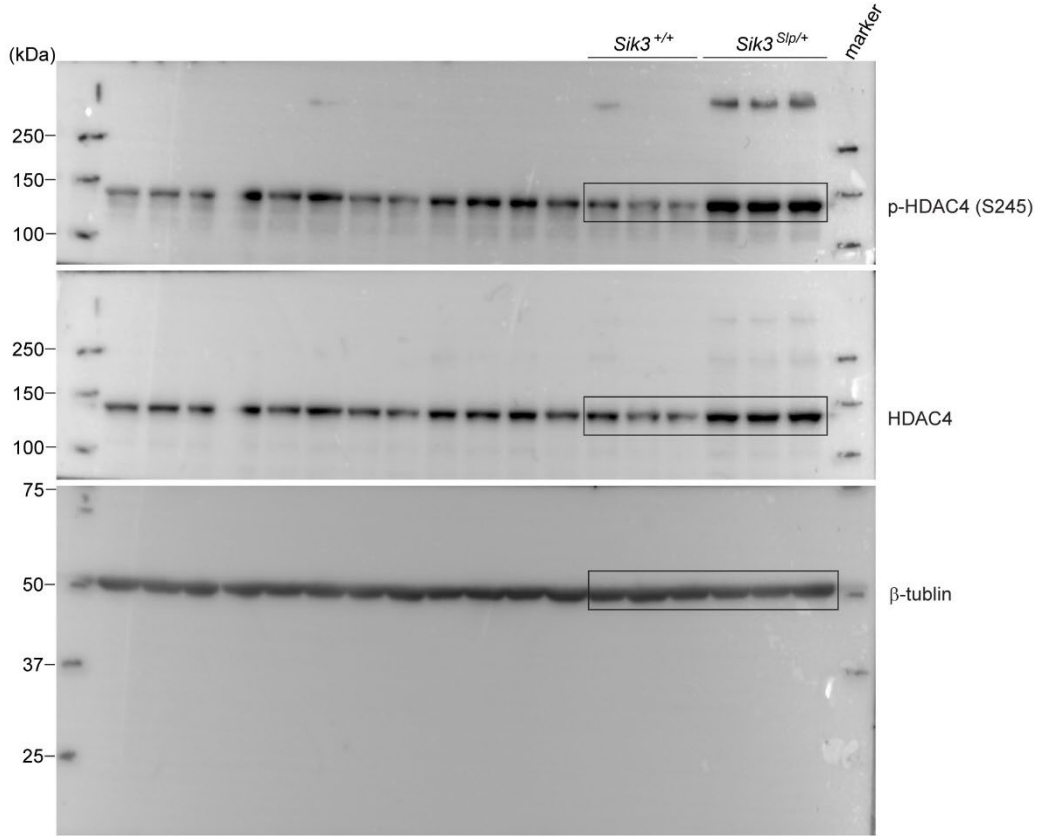
SI Table 6 | Summary of statistics for sleep and behavioral studies

Kim et al., SI Figure 1 Uncropped immunoblots for main figures

a. Figure 1c

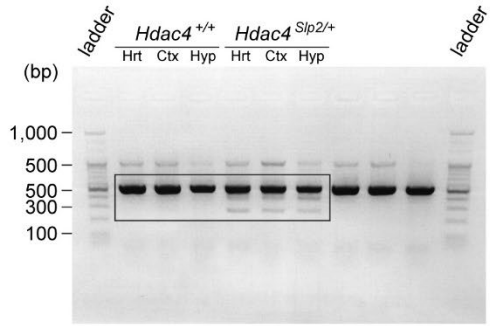


b. Figure 2g

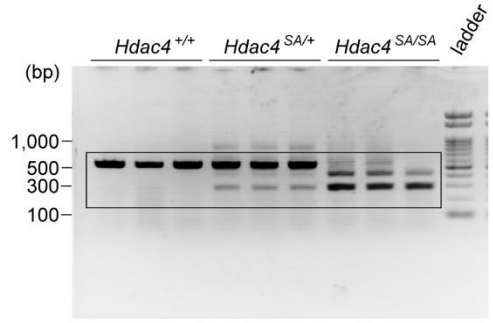


Kim et al., SI Figure 2 Uncropped gel blot images for extended figures

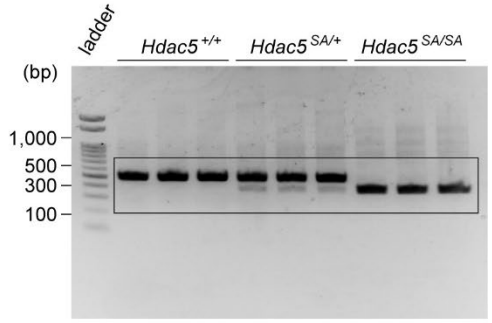
a. Extended Figure 1c



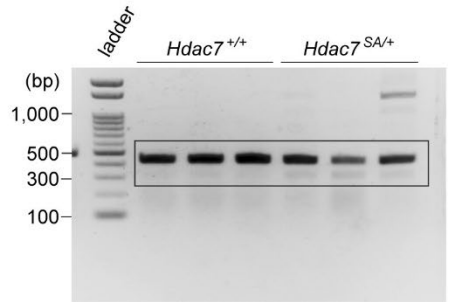
b. Extended Figure 1g

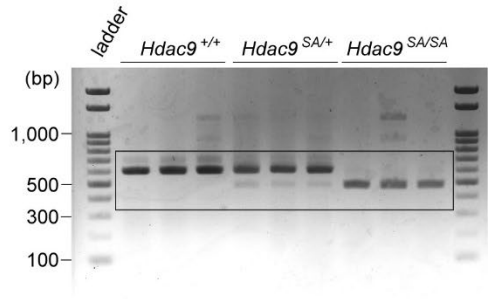


c. Extended Figure 1h



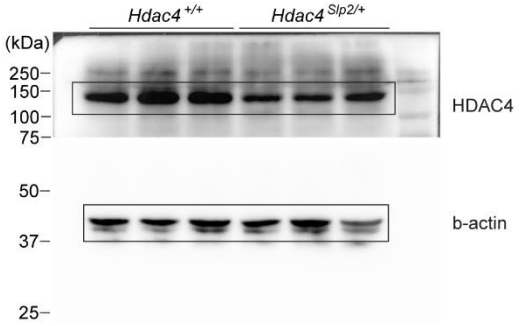
d. Extended Figure 3a



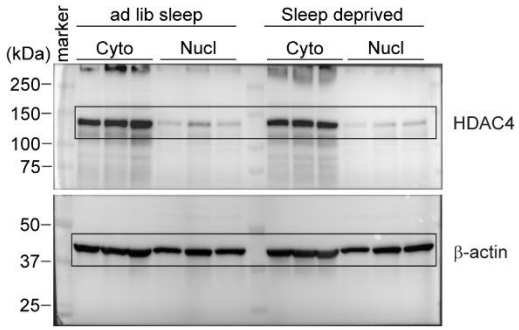


Kim et al., SI Figure 3 Uncropped immunoblot images for extended figures

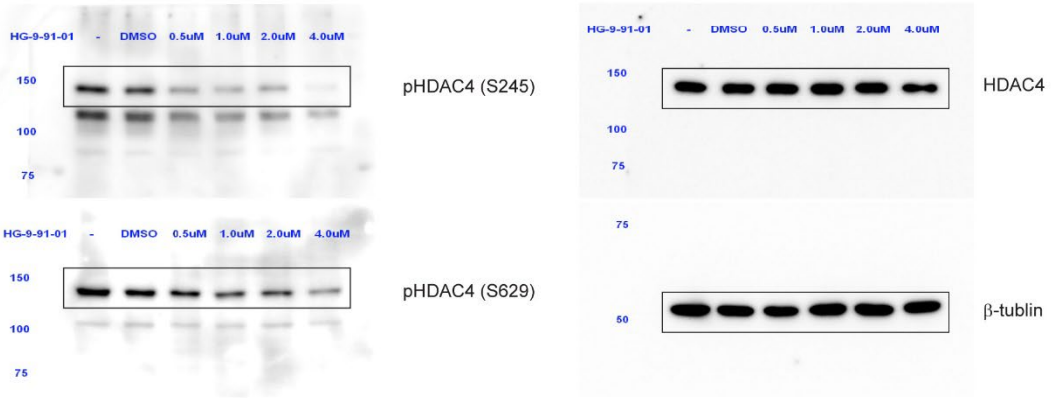
a. Extended Figure 1d



b. Extended Figure 3m



c. Extended Figure 3p



d. Extended Figure 7j