

## Supplementary information

Live imaging of H3K9 acetylation in plant cells

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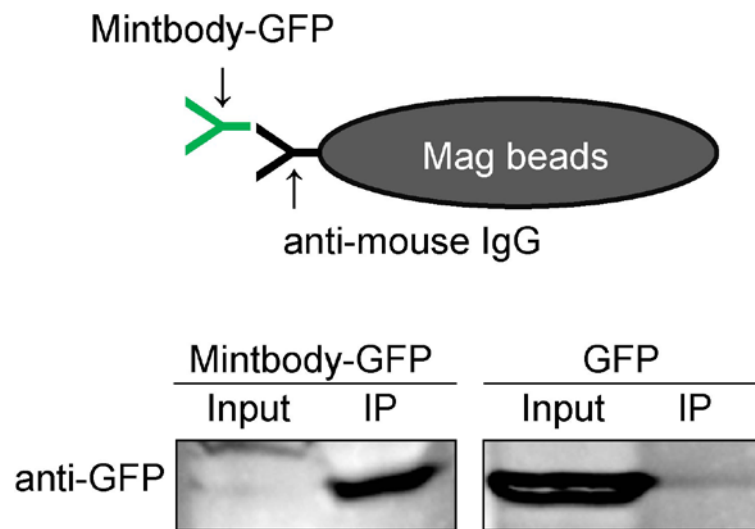
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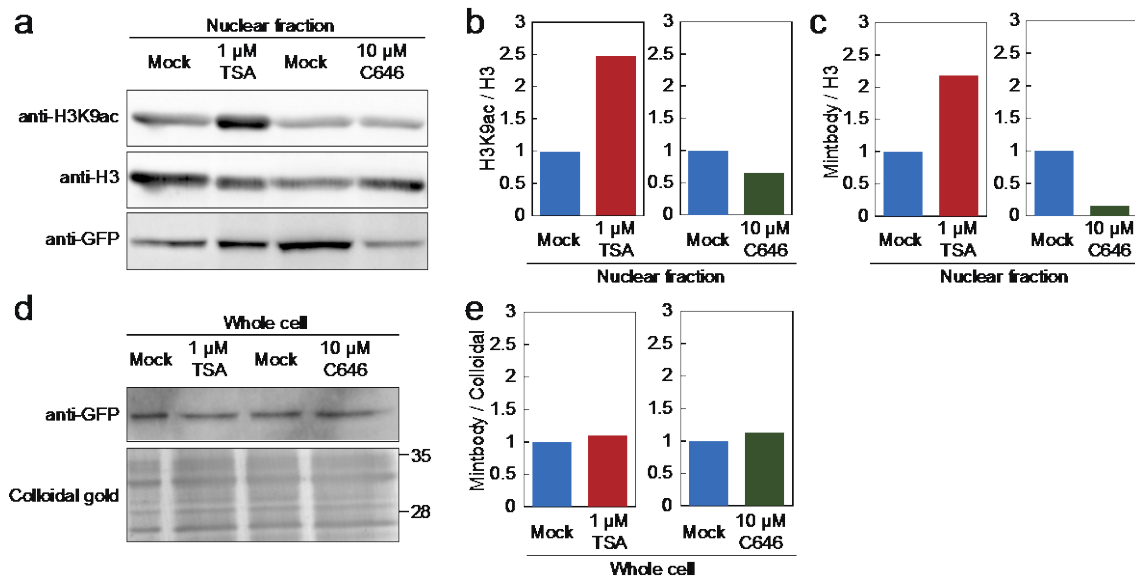
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**Supplementary Figure S1. H3K9ac-mintbody-GFP expressed in plant cells can bind to anti-mouse IgG.**

Whole cell extracts from H3K9ac-mintbody-GFP or GFP expressing tobacco BY-2 cells were subjected to immunoprecipitation with anti-mouse IgG antibody on magnetic beads. After the immunoprecipitation, H3K9ac-mintbody-GFP and GFP were detected by immunoblotting. Only H3K9ac-mintbody-GFP was immunoprecipitated with the anti-mouse IgG antibody. For the full-length western blots see Supplementary Fig. S5.



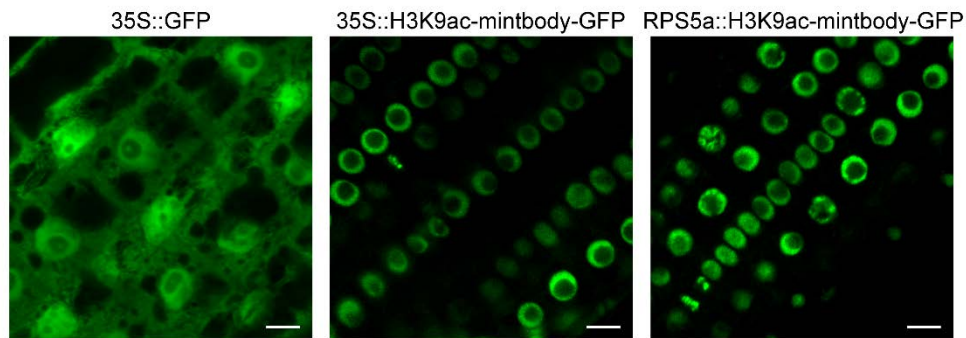
**Supplementary Figure S2. The amount of nuclear H3K9ac-mintbody-GFP was correlated with the amount of H3K9ac in tobacco BY-2 cells.**

(a) Immunoblotting analysis of H3K9ac, H3, and H3K9ac-mintbody-GFP in the nuclear fractions of tobacco BY-2 cells treated with 1  $\mu$ M TSA and 10  $\mu$ M C646. The H3 level was used as a loading control. For the full-length western blots see Supplementary Fig. S6a.

(b, c) Quantitative analysis of the levels of nuclear H3K9ac (b) and H3K9ac-mintbody-GFP (c). The intensity of each band shown in (a) was analysed with ImageJ. Each protein level was normalized to the H3 level.

(d) Immunoblotting analysis of H3K9ac-mintbody-GFP in whole cell fractions of tobacco BY-2 cells treated with 1  $\mu$ M TSA and 10  $\mu$ M C646. The loaded proteins were stained with colloidal gold. For the full-length western blots see Supplementary Fig. S6b.

(e) Quantitative analysis of the levels of whole cell H3K9ac-mintbody-GFP. The intensity of each band shown in (d) was analysed with ImageJ. Each protein level was normalized to the level of the proteins stained with colloidal gold.

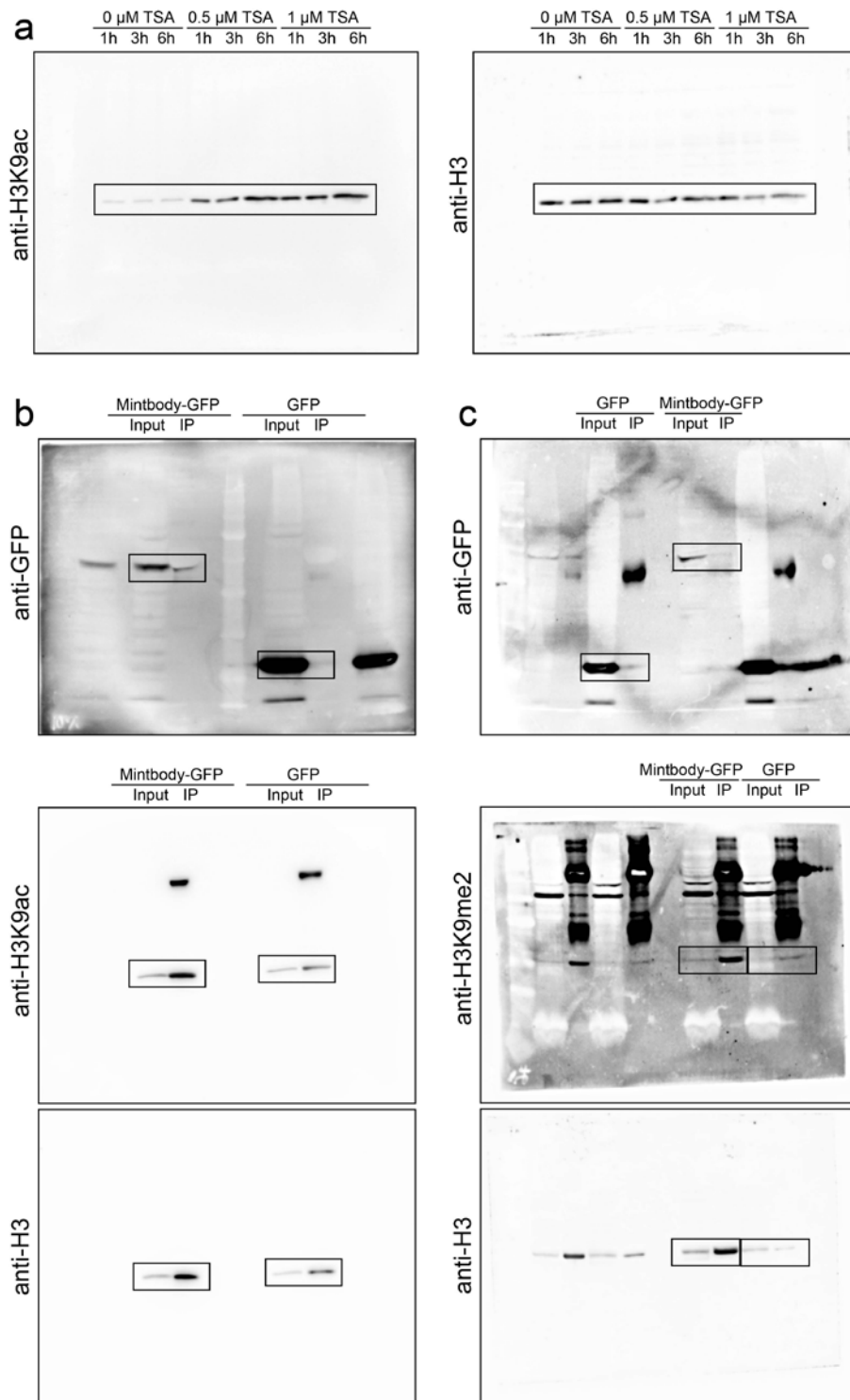


**Supplementary Figure S3. H3K9ac-mintbody-GFP is unlikely to be expressed in the cytoplasm under the control of the 35S or RPS5a promoter.**

Root cells of *A. thaliana* expressing GFP and H3K9ac-mintbody-GFP under the control of the 35S or RPS5a promoter were observed by confocal laser microscopy. T<sub>2</sub> plants were used for the H3K9ac-mintbody-GFP observations. Compared with GFP alone, H3K9ac-mintbody-GFP was not visible in the cytoplasm. Bars, 10  $\mu$ m.

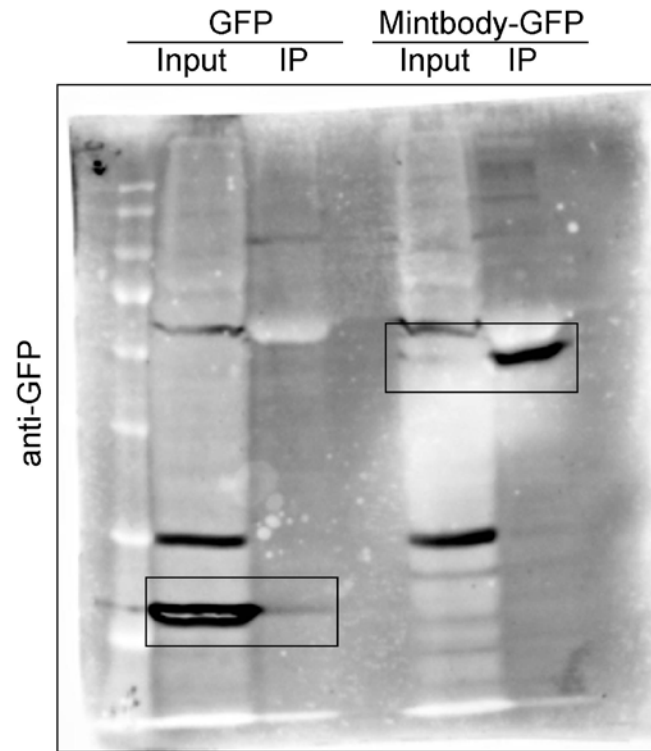
**Supplementary Table S1. Characteristics of Ky-2 and Ky-14.**

	R	composition	Mw	<i>in vitro</i> IC <sub>50</sub> inhibitory activity (±S.D.)		
				HDAC1	HDAC4	HDAC6
Ky-2	CONHOH	C <sub>26</sub> H <sub>37</sub> O <sub>6</sub> N <sub>5</sub>	515.60	0.00873 μM ± 0.00056	0.01997 μM ± 0.00217	0.16345 μM ± 0.01243
Ky-14	COCH <sub>2</sub> N(CH <sub>3</sub> ) <sub>3</sub>	C <sub>29</sub> H <sub>32</sub> O <sub>5</sub> N <sub>5</sub>	541.68	19.98 μM ± 3.16	17.86 μM ± 1.93	>100 μM



**Supplementary Figure S4. Full-length Western blots from Fig.1.**

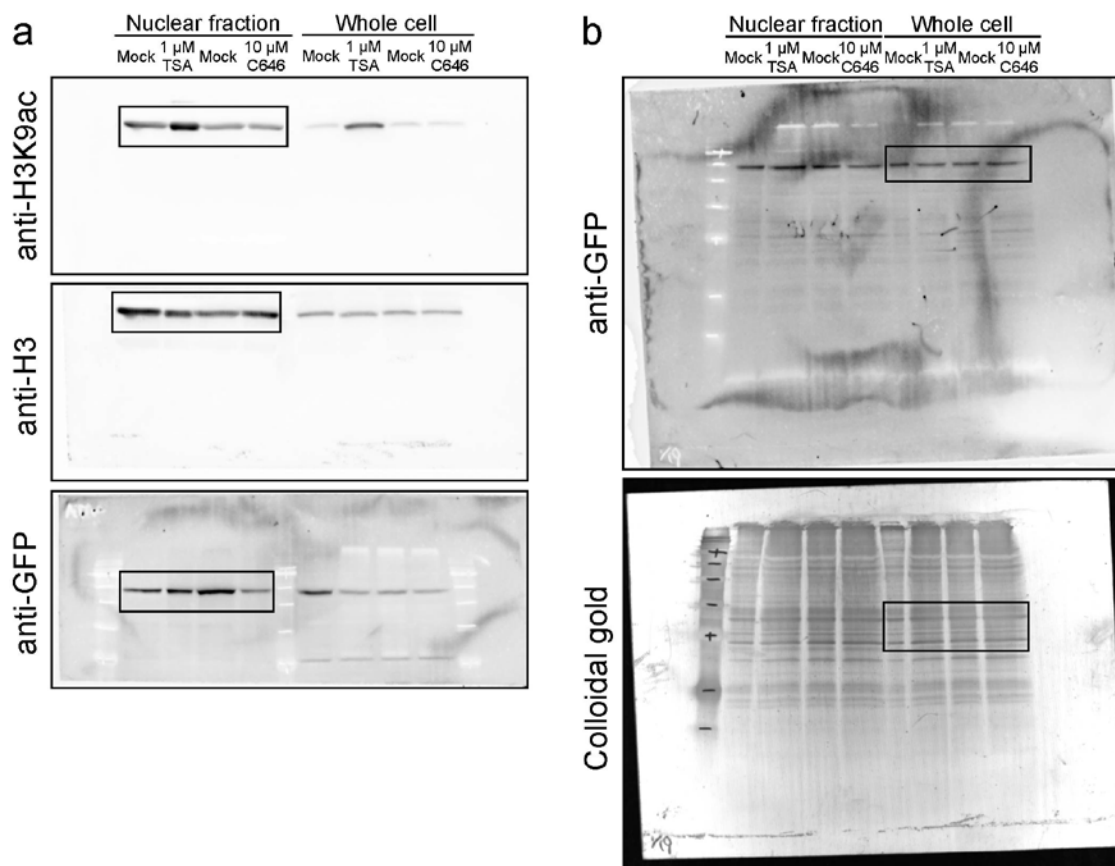
Full-length western blot shown in Figure 1a (a), in Figure 1b (b), and in Figure 1c (c). Lanes used are outline with a black rectangle.



**Supplementary Figure S5. Full-length Western blots from Supplementary Fig.S1.**

Lanes used are outline with a black rectangle.





**Supplementary Figure S6. Full-length Western blots from Supplementary Fig.S2.**

Full-length western blot shown in Supplementary Figure S2a (a), and in Supplementary Figure S2d (b). Lanes used are outline with a black rectangle.