

Supplementary Information

Histone H4 acetylation required for chromatin decompaction during DNA replication

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Running title: Histone H4 acetylation in *S. pombe*

Keywords: meiosis, DNA replication, chromatin, histone acetylation, fission yeast

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Table S1 Stain list

Figures	Strain names	Genotypes	Sources
Figure 1	AY278-11B	<i>h⁺ lys1-131 ura4-D18 his7⁺::lacI-GFP</i>	Ding <i>et al.</i> , 2006
	AY286-4A	<i>h⁻ ade6-216 leu1-32 ura4-D18 lys1⁺::taz1-GFP taz1Δ::ura4⁺ ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP</i>	Ding <i>et al.</i> , 2006
	AY278-6A	<i>h⁺ lys1-131 ura4-D18 rec8Δ::ura4⁺ his7⁺::lacI-GFP</i>	Ding <i>et al.</i> , 2006
	AY286-10C	<i>h⁻ leu1-32 ura4-D18 rec8Δ::ura4⁺ lys1⁺::taz1-GFP taz1Δ::ura4⁺ ade8⁺ [::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP</i>	Ding <i>et al.</i> , 2006
	RK539	<i>h⁻ ade6-216 leu1-32 ura4-D18 lys1⁺::taz1-GFP taz1Δ::ura4⁺ ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP ddb1Δ::hph</i>	This work
	RK540	<i>h⁺ lys1-131 ura4-D18 his7⁺::lacI-GFP ddb1Δ::hph</i>	This work
	RK901	<i>h⁻ ade6-216 leu1-32 ura4-D18 lys1⁺::taz1-GFP taz1Δ::ura4⁺ ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP csn1Δ::hph</i>	This work
	RK902	<i>h⁺ lys1-131 ura4-D18 his7⁺::lacI-GFP csn1Δ::hph</i>	This work
	RK907	<i>h⁻ ade6-216 leu1-32 ura4-D18 lys1⁺::taz1-GFP taz1Δ::ura4⁺ ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP csn1Δ::hph spd1Δ::nat^r</i>	This work
	RK908	<i>h⁺ lys1-131 ura4-D18 his7⁺::lacI-GFP csn1Δ::hph spd1Δ::nat^r</i>	This work
	RK1121	<i>h⁻ ade6-216 his2 leu1-32 lys1-131 ura4-D18 ade1⁺::kan^r-ura4⁺-lacOp] ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP aur1^r::htb1-mCherry</i>	This work
	RK1130	<i>h⁻ ade6-216 his2 leu1-32 lys1-131 ura4-D18 ade1⁺::kan^r-ura4⁺-lacOp] ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP aur1^r::htb1-mCherry csn1Δ::nat^r</i>	This work
	RK1228	<i>h⁻ leu1-32 ura4-D18 rec8Δ::ura4⁺ lys1⁺::taz1-GFP taz1::ura4⁺ ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP csn1Δ::nat^r</i>	This work
	RK1229	<i>h⁺ lys1-131 ura4-D18 rec8Δ::ura4⁺ his7⁺::lacI-GFP csn1Δ::nat^r</i>	This work
	RK1303	<i>h⁹⁰ ade6-210 leu1-32 ura4-D18 cdc10-129 lys1⁺::Padh15-skp1-AfTIR1-2NLS aur1^r::htb1-mCherry mst1⁺::IAA17-GFP-nat^r ade1⁺::kan^r-ura4⁺-lacOp] ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP</i>	This work
	RK1331	<i>h⁹⁰ ade6-210 leu1-32 ura4-D18 cdc10-129 lys1⁺::Padh15-skp1-AfTIR1-2NLS aur1^r::htb1-mCherry mst1⁺::IAA17-GFP-ura4⁺ ade1⁺::kan^r-ura4⁺-lacOp] ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP csn1Δ::hph</i>	This work
Figure 2	RK1085	<i>h⁻ pat1-114 ura4 lys1⁺::Padh15-skp1-AfTIR1-2NLS</i>	This work
Figure 3	RK1481	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1⁺::kan^r-ura4⁺-lacOp] ade8⁺::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r csn1Δ::hph hht3-hhf3Δ::nat^r hht2-hhf2K5R</i>	This work

	RK1482	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r csn1Δ::nat^r hht3-hhf3Δ::nat^r hht2-hhf2K12R</i>	This work
	RK1483	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ura4-D18 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r csn1Δ::hph hht3-hhf3Δ::nat^r hht2-hhf2K8R</i>	This work
	RK1484	<i>h⁹⁰ leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r csn1Δ::nat^r hht3-hhf3Δ::nat^r hht2-hhf2K16R</i>	This work
	RK1532	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r csn1Δ::nat^r hht3-hhf3Δ::nat^r</i>	This work
	RK1590	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r hht3-hhf3Δ::hph aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
	RK1591	<i>h⁹⁰ leu1-32 lys1-131 ura4-D18 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht2-hhf2K8R/K12R hht1-hhf1Δ::ble^r hht3-hhf3Δ::hph aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
	RK1597	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::ble^r hht3-hhf3Δ::hph hht2-hhf2K5R aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
	RK1598	<i>h⁹⁰ leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r hht3-hhf3Δ::hph hht2-hhf2K12R aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
	RK1599	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ura4-D18 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::ble^r hht3-hhf3Δ::hph hht2-hhf2K8R aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
	RK1600	<i>h⁹⁰ ade6-216 leu1-32 lys1-131 ade1[::kan^r-ura4⁺-lacOp] ade8[::kan^r-ura4⁺-lacOp] his7⁺::lacI-GFP hht1-hhf1Δ::kan^r hht3-hhf3Δ::hph hht2-hhf2K16R aur1^r:Pnda3-mCherry-pcn1⁺</i>	This work
Figure 4	RK1201	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht3-hhf3Δ::nat^r aur1^r:htb1-mCherry</i>	This work
	RK1202	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht2-hhf2K5R hht3-hhf3Δ::nat^r aur1^r:htb1-mCherry</i>	This work
	RK1206	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht2-hhf2K8R hht3-hhf3Δ::nat^r aur1^r:htb1-mCherry</i>	This work
	RK1281	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::Ppcn1-GFP-pcn1⁺ hht1-hhf1Δ::kan^r hht3-hhf3Δ::nat^r aur1^r:htb1-mCherry</i>	This work
	RK1320	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht2-hhf2K8/K12R hht3-hhf3Δ::nat^r</i>	This work
	RK1333	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht2-hhf2K12R hht3-hhf3Δ::nat^r aur1^r:htb1-mCherry</i>	This work
	RK1334	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r</i>	This work

		<i>hht2-hhf2K16R hht3-hhf3Δ::nat^r aur1^r::htb1-mCherry</i>	
	RK1335	<i>h⁹⁰ ura4-D18 leu1-32 lys1-131 hht1-hhf1Δ::kan^r hht2-hhf2K8/K12R hht3-hhf3Δ::nat^r aur1^r::htb1-mCherry</i>	This work
	RK1352	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::Ppcn1-GFP-pcn1⁺ hht1-hhf1Δ::kan^r hht2-hhf2K8/K12R hht3-hhf3Δ::nat^r aur1^r::htb1-mCherry</i>	This work
Figure S1	RK1577	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::htb1-GFP hht1-hhf1Δ::kan^r Dhht3-hhf3Δ::nat^r</i>	This work
	RK1243	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::htb1-GFP hht1-hhf1Δ::kan^r hht3-hhf3Δ::nat^r csn1Δ::hph</i>	This work
	RK1245	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::htb1-GFP hht1-hhf1Δ::kan^r hht2-hhf2K8R hht3-hhf3Δ::nat^r csn1Δ::hph</i>	This work
	RK1258	<i>h⁹⁰ ade6-216 ura4-D18 leu1-32 lys1⁺::htb1-GFP mes1::LEU2 hht1-hhf1Δ::kan^r hht2-hhf2K5R csn1Δ::hph hht3-hhf3Δ::nat^r</i>	This work
	RK1260	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::htb1-GFP hht1-hhf1Δ::kan^r hht2-hhf2K12R csn1Δ::hph hht3-hhf3Δ::nat^r</i>	This work
	RK1261	<i>h⁹⁰ ura4-D18 leu1-32 lys1⁺::htb1-GFP hht1-hhf1Δ::kan^r hht2-hhf2K16R csn1Δ::hph hht3-hhf3Δ::nat^r</i>	This work
Figure S2	RK478	<i>h⁹⁰ ade6-210 leu1-32 lys1-131 ura4-D18 hht1-mRFP-hph</i>	This work
	RK747	<i>h⁹⁰ ade6-210 leu1-32 lys1-131 ura4-D18 hht1-mRFP-hph rtt109Δ::kan^r csn1Δ::ura4⁺</i>	This work
	RK750	<i>h⁹⁰ ade6-210 leu1-32 lys1-131 ura4-D18 hht1-mRFP-hph mst2Δ::kan^r csn1Δ::nat^r</i>	This work
	RK753	<i>h⁹⁰ ade6-210 leu1-32 lys1-131 ura4-D18 hht1-mRFP-hph elp3Δ::kan^r csn1Δ::nat^r</i>	This work
	RK933	<i>h⁹⁰ hht1-mRFP-kan^r pht1Δ::nat^r csn1Δ::hph</i>	This work
	RK1309	<i>h⁹⁰ ade6-210 leu1-32 ura4-D18 lys1⁺::htb1-mCherry hat1Δ::hph csn1Δ::nat^r</i>	This work
	RK1310	<i>h⁹⁰ ade6-210 leu1-32 ura4-D18 lys1⁺::htb1-mCherry gcn5Δ::hph csn1Δ::nat^r</i>	This work

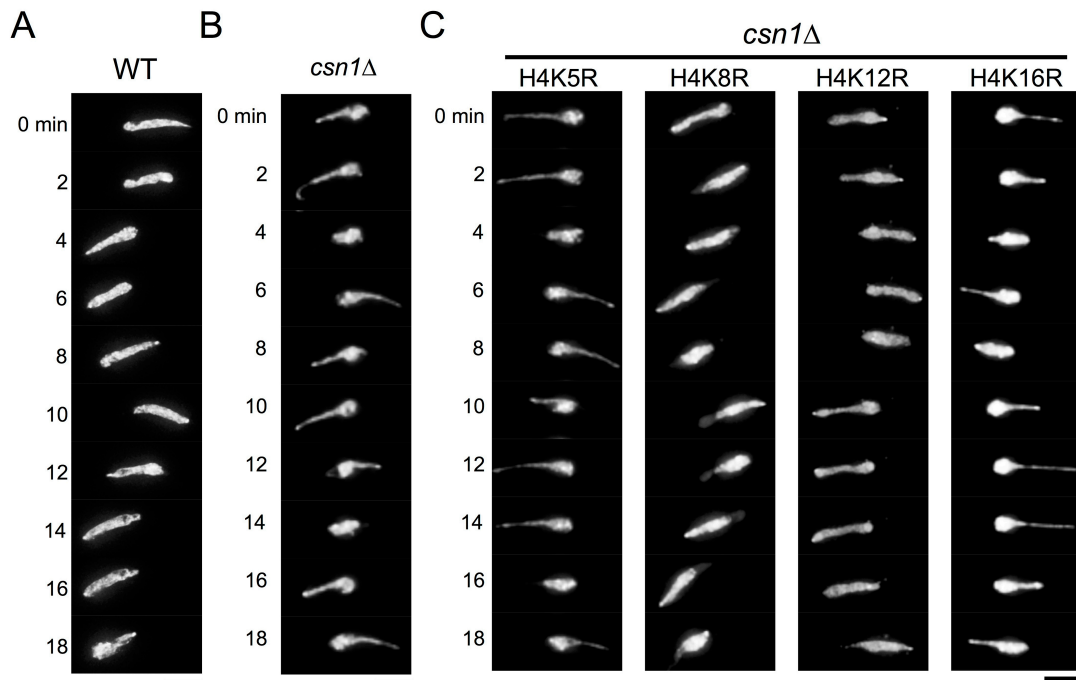


Figure S1. Morphology of the horsetail nucleus in *csn1Δ* cells expressing mutant histone H4

Time-lapse imaging of the horsetail nucleus. Chromatin was marked with Htb1 (histone H2B)-GFP. Numbers on the left indicate time in minutes. Scale bars indicate 5 μm . (A) Wild type, (B) *csn1Δ* expressing wild-type histone H4, and (C) *csn1Δ* expressing histone H4 mutants as indicated.

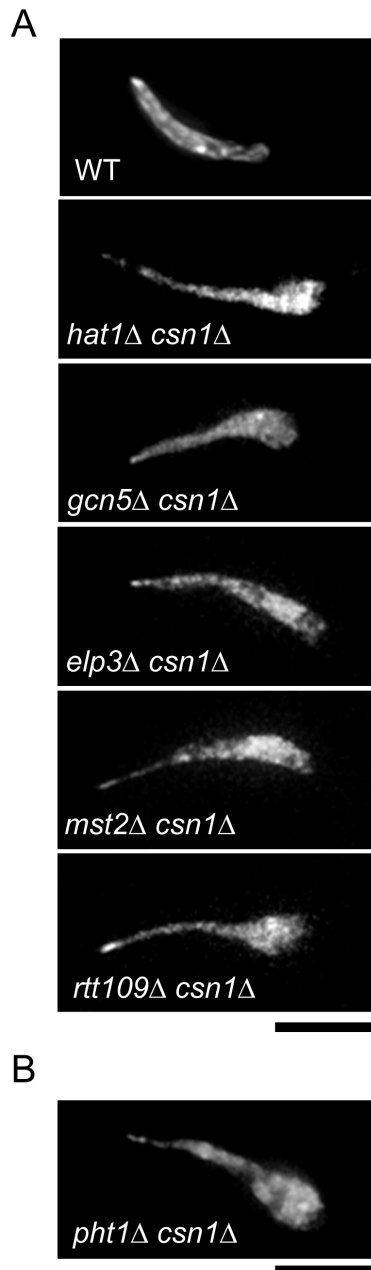


Figure S2. The stretched horsetail nucleus in HAT and H2A.Z mutants

(A) Morphology of the horsetail nucleus in the *csn1* Δ HAT double mutants. (B) Morphology of the horsetail nucleus in the *csn1* Δ *pht1* Δ double mutant. Chromatin was marked with Hht1 (histone H3)-mRFP. Scale bar indicates 5 μ m.