

**Supplementary information**

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**Histone modifications regulate pioneer transcription factor cooperativity**

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In the format provided by the authors and unedited

# Supplementary Information

# Supplementary Figure 1

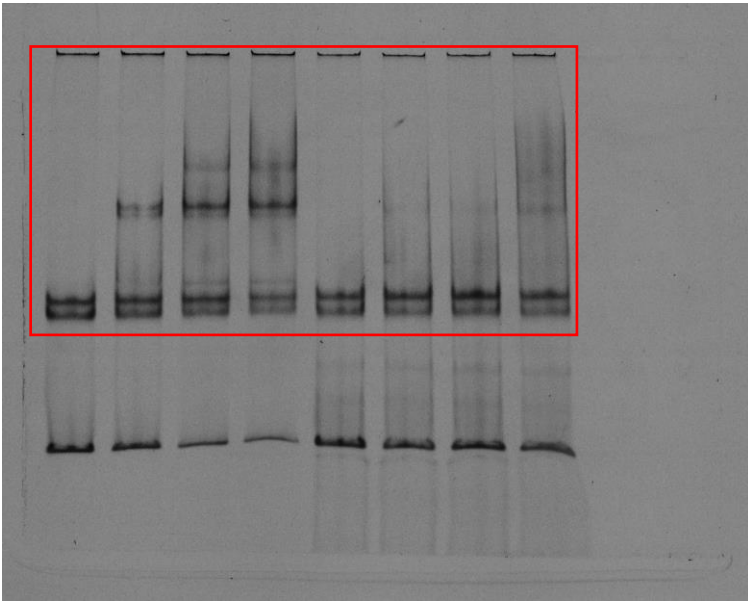


Figure 3b

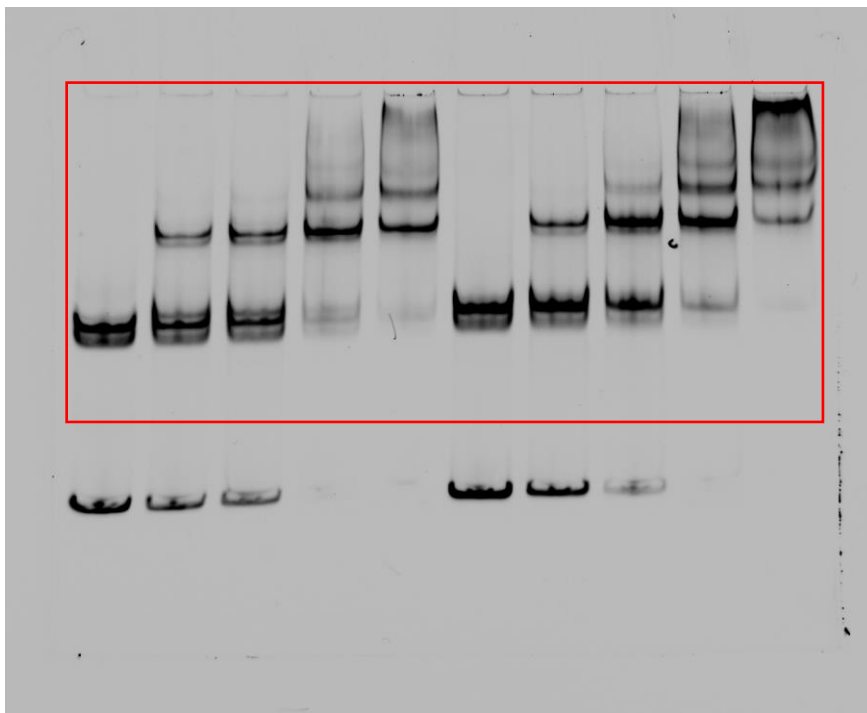


Figure 3e

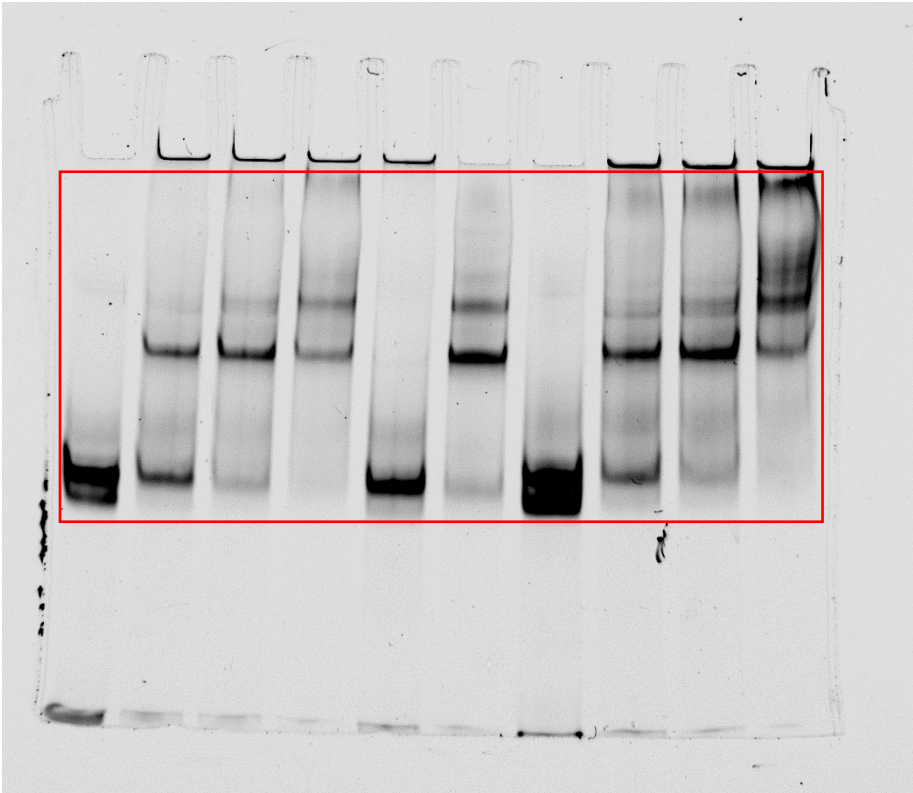


Figure 4a

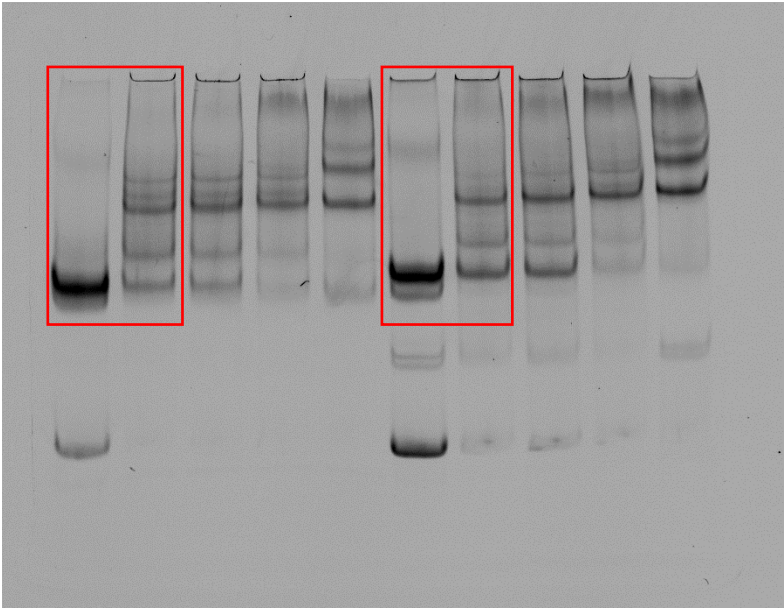


Figure 4b

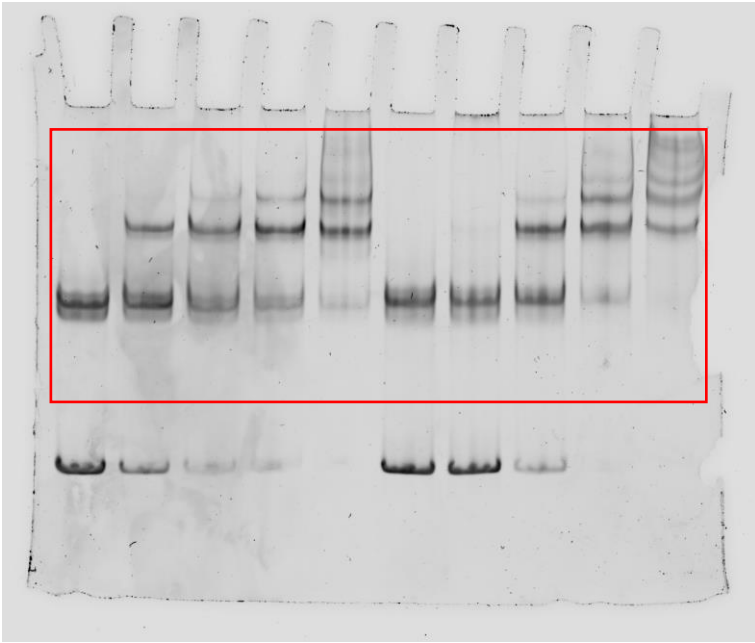


Figure 5c

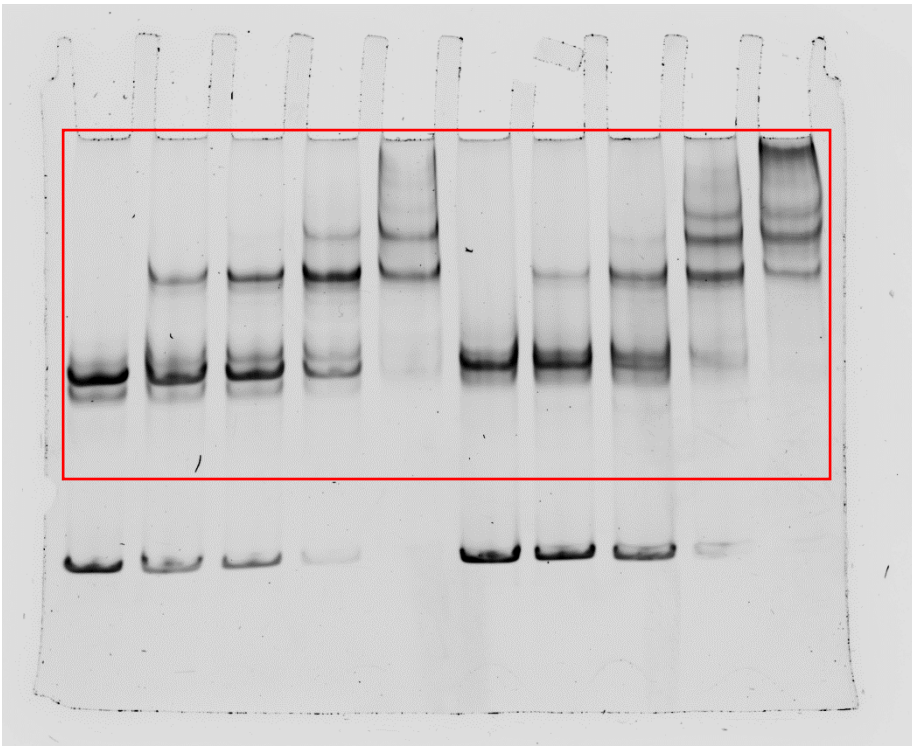
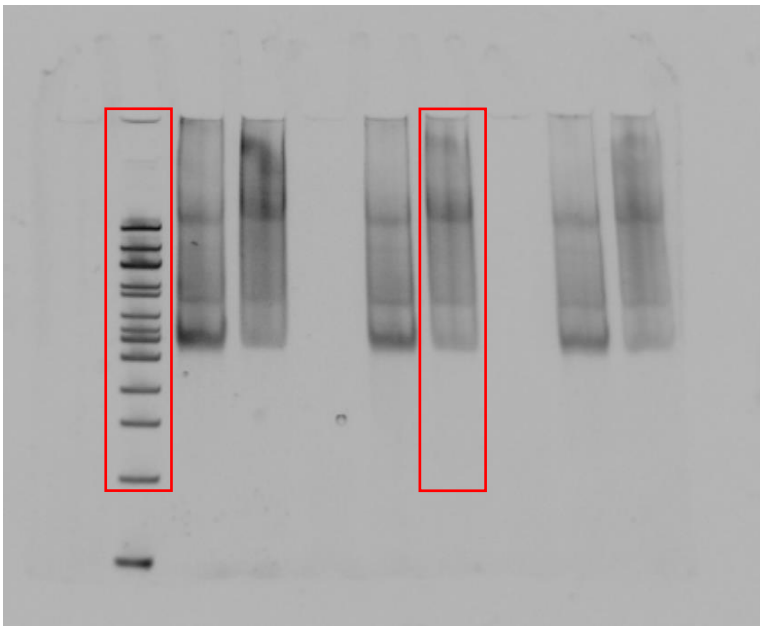
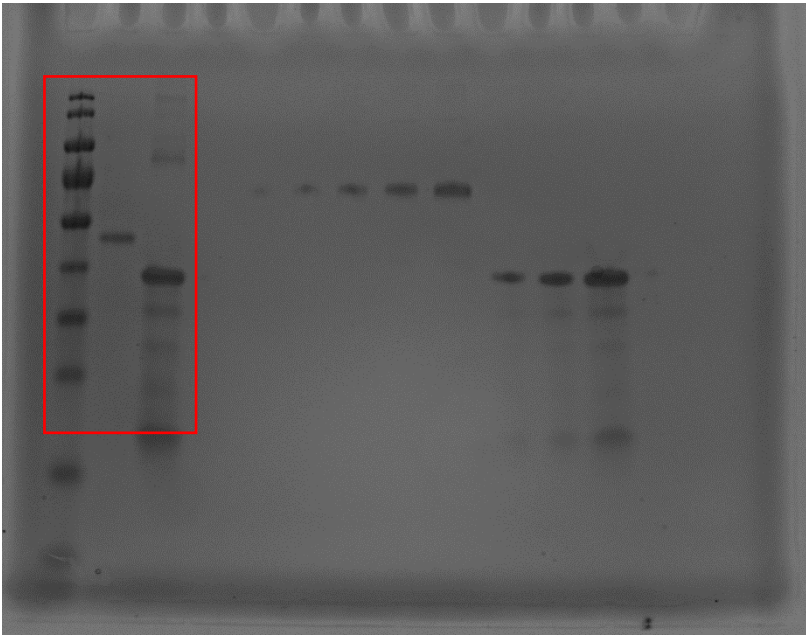
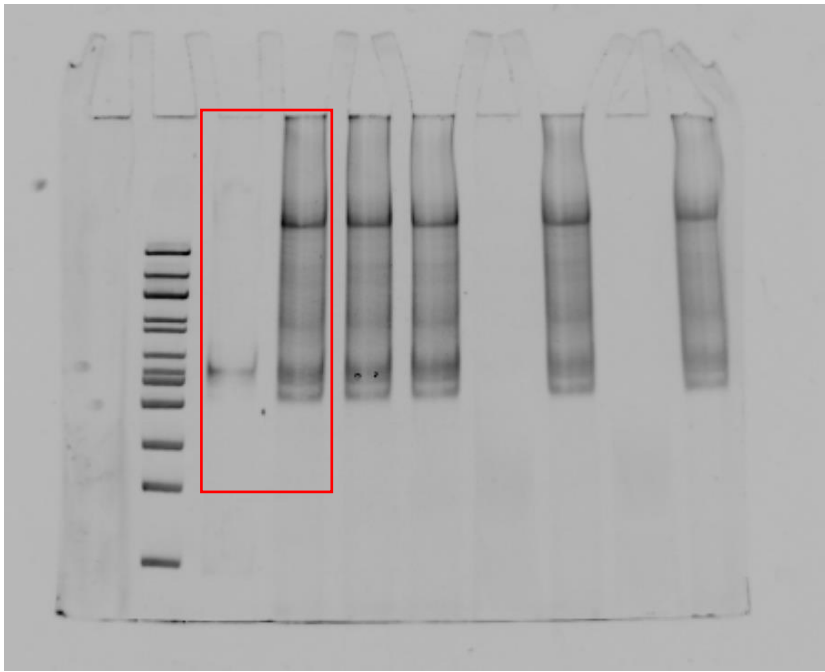


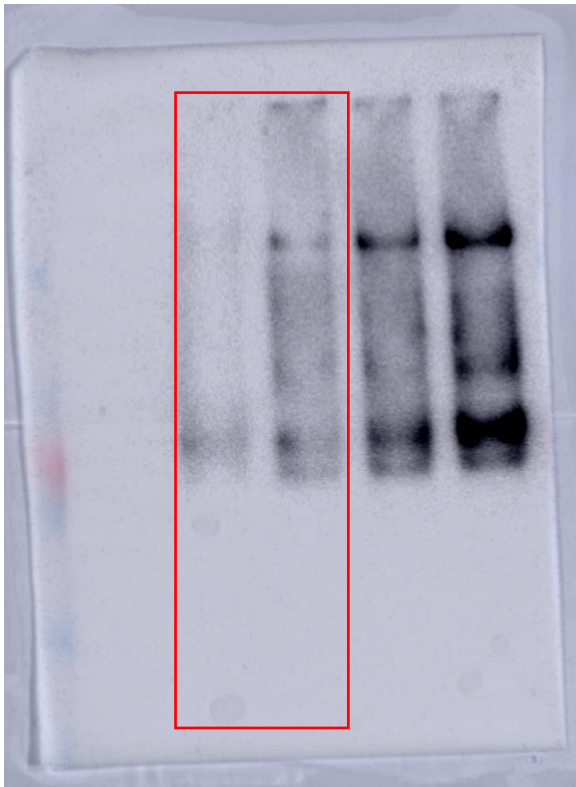
Figure 5d



Extended Data 1a



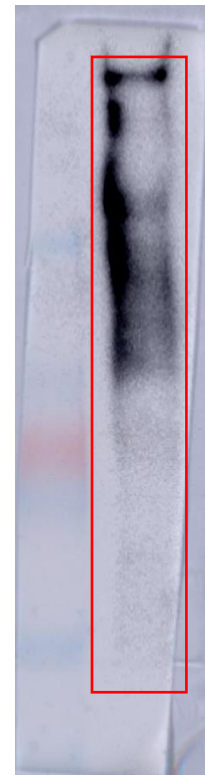
DNA



Anti-H3

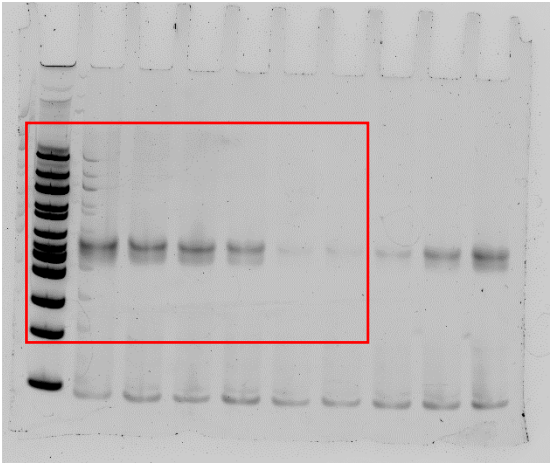


anti-Oct4

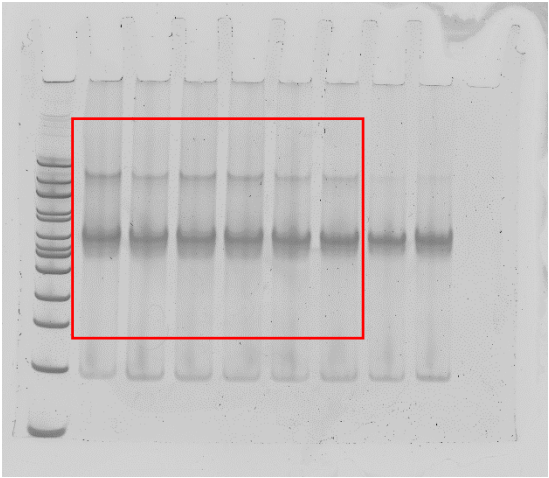


anti-Sox2

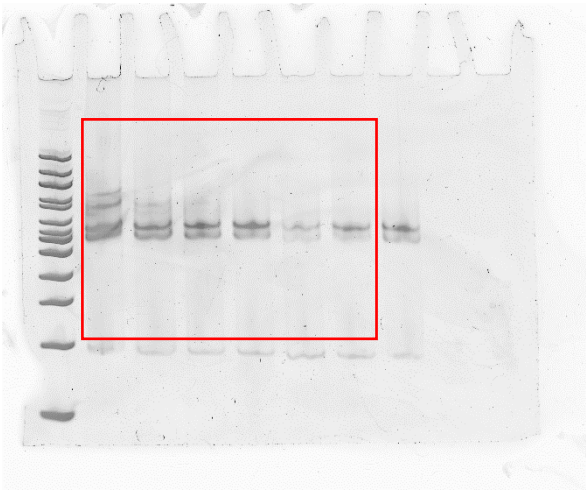
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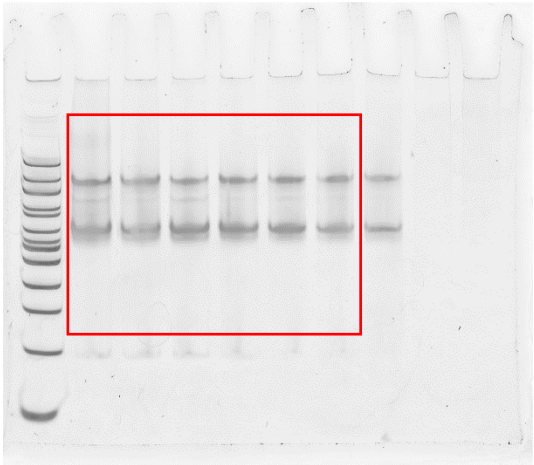
nucleosome



Oct4



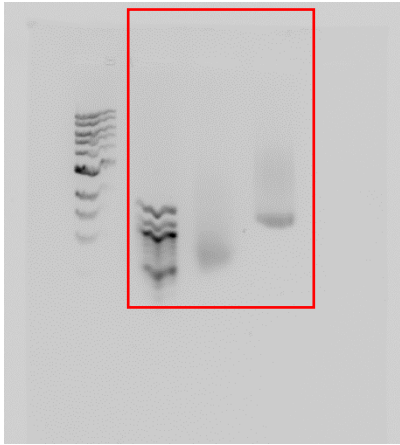
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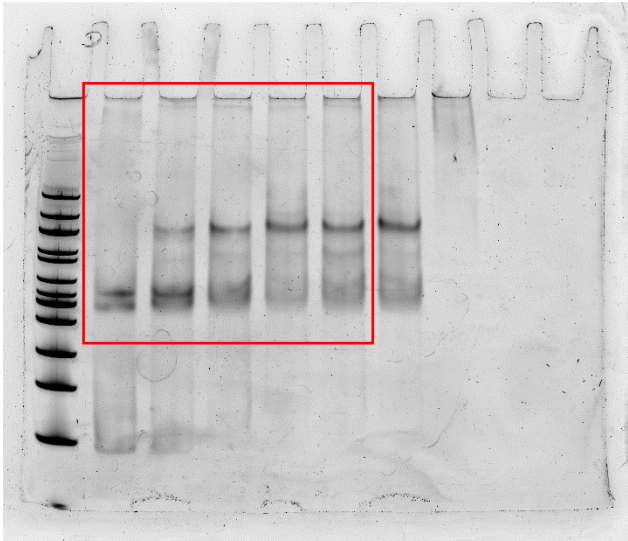
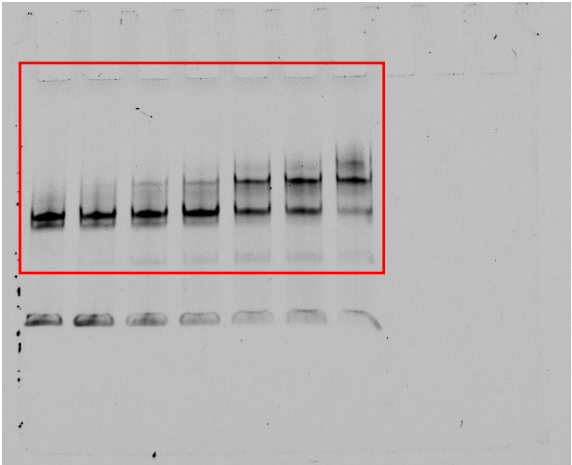
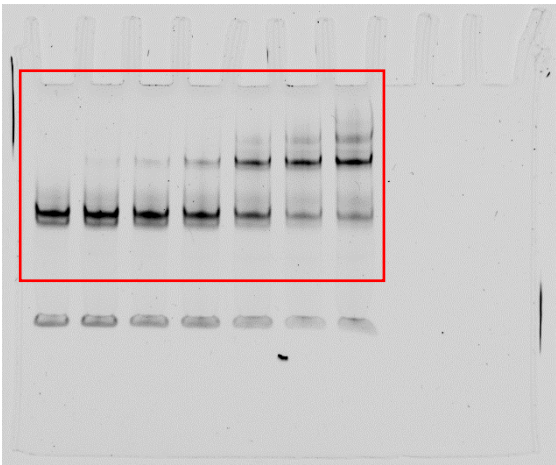
Oct4ΔCtail

Extended Data 5a

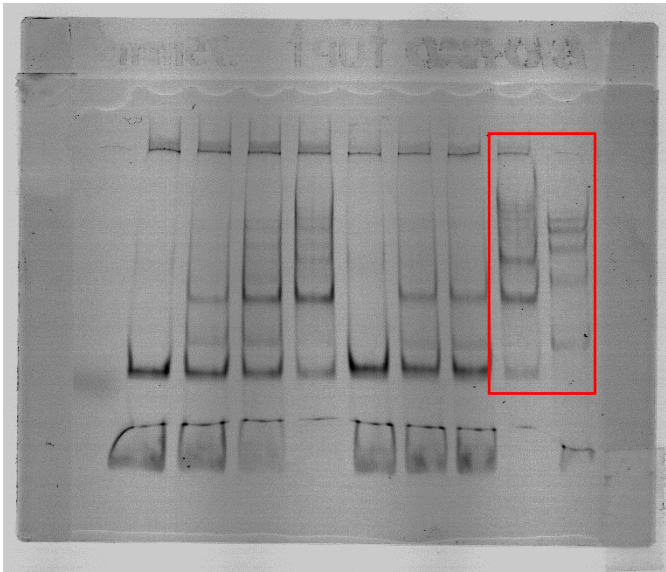




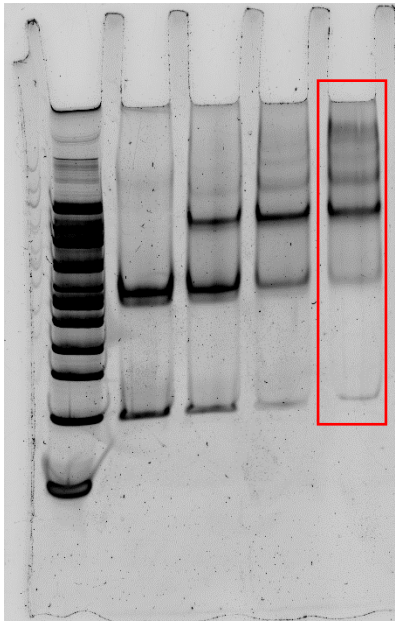
Extended Data 5b



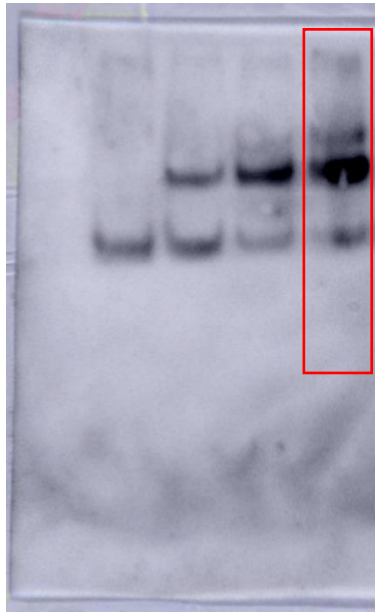
Extended Data 5d



Extended Data 5f

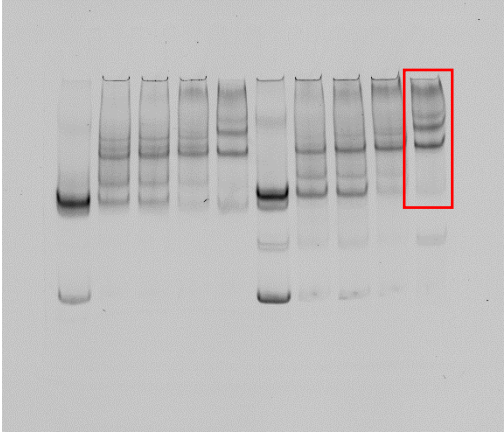


DNA

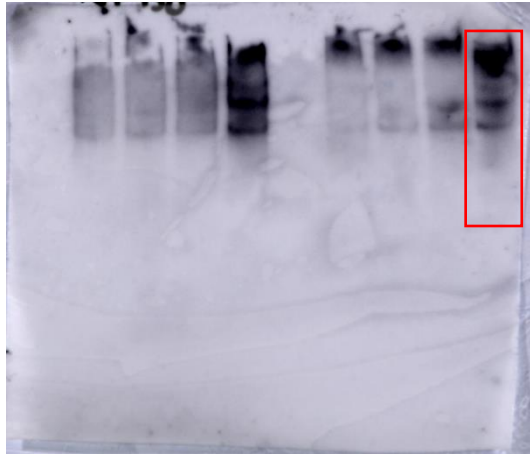


Anti-H3

Extended Data 5g

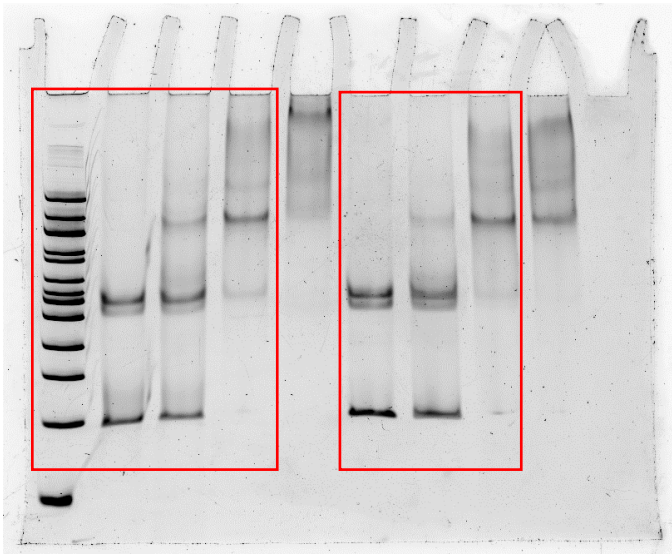


DNA



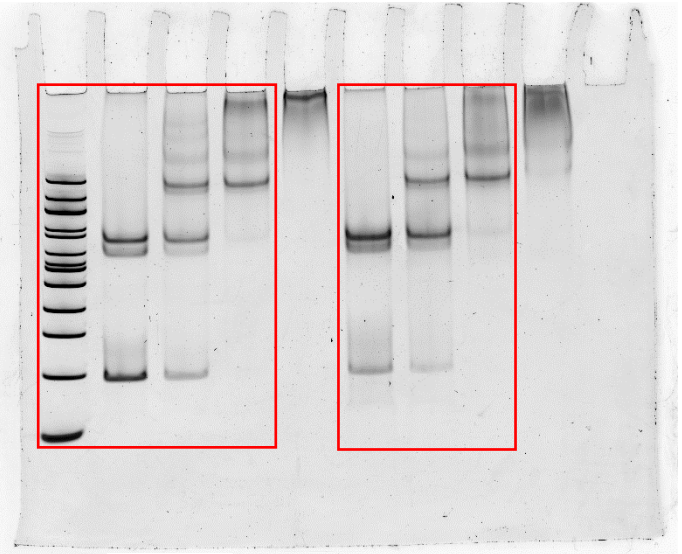
anti-Oct4

Extended Data 5g



LIN28B

LIN28B\_2M

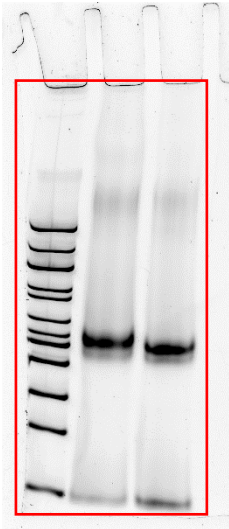


LIN28B

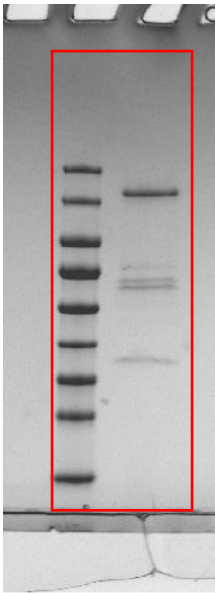
LIN28B\_3M

Extended Data 5h

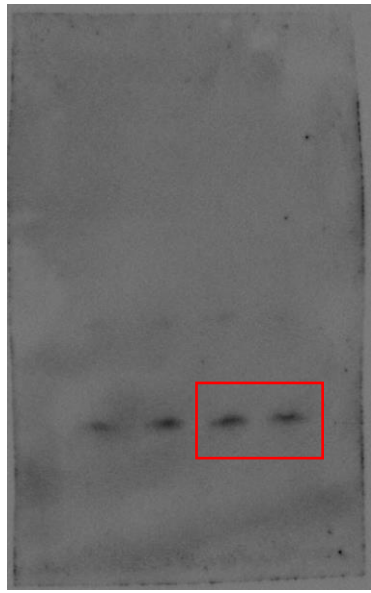
Extended Data 5i



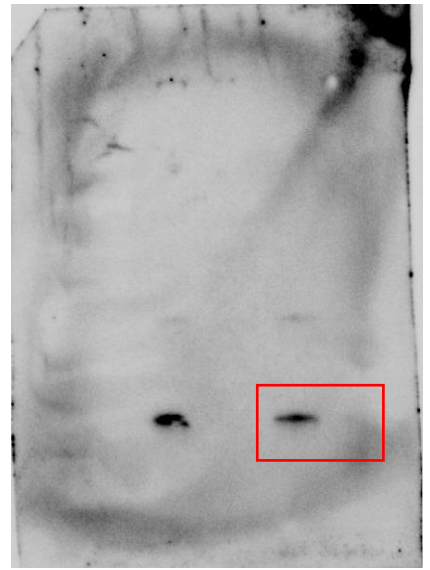
Extended Data 6a



MIDAC

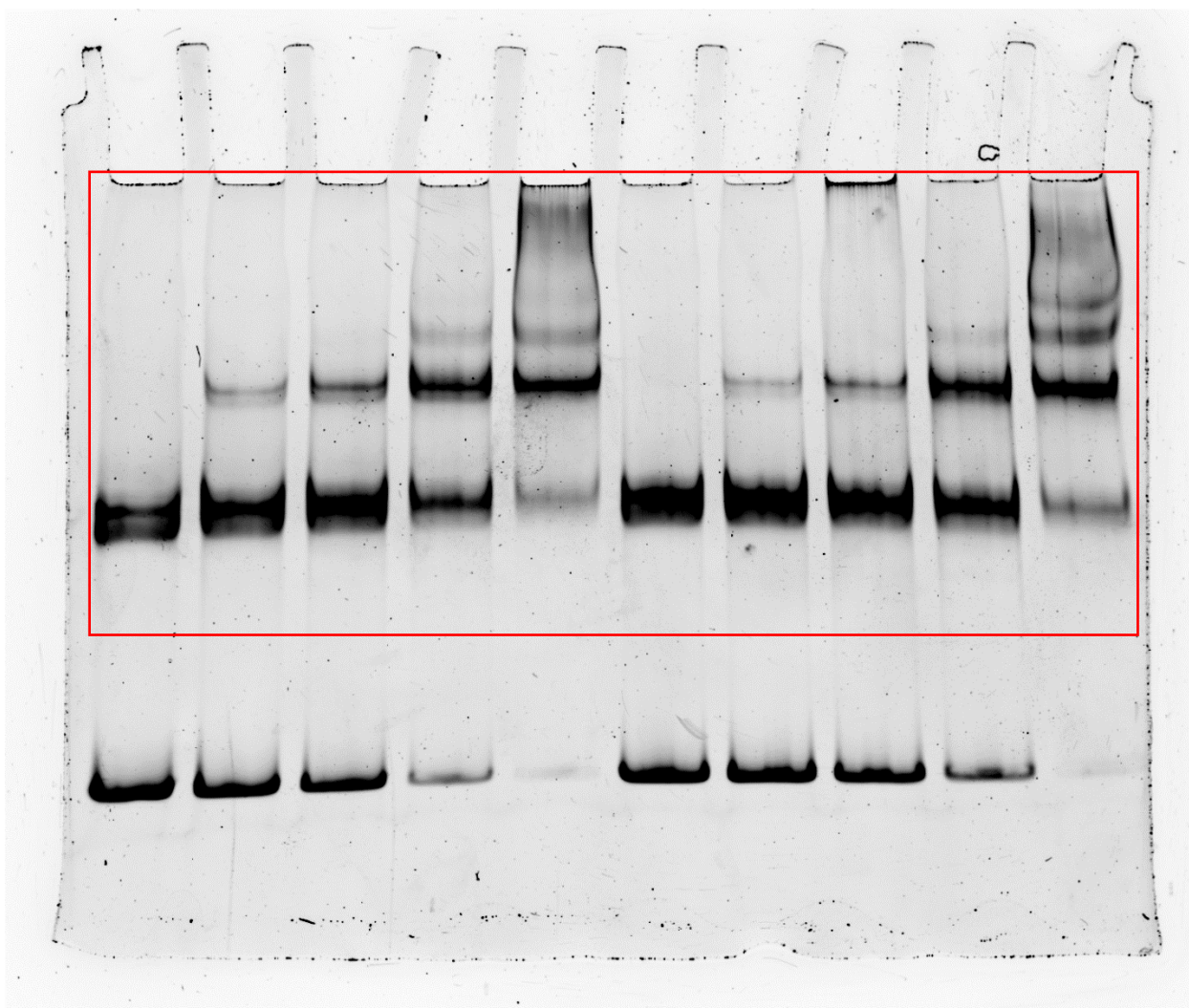


anti-H3

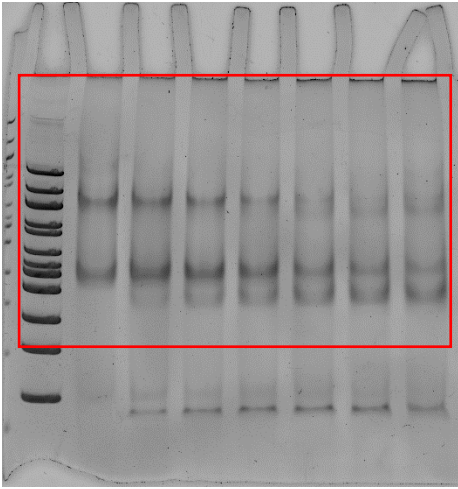


anti-H3K27ac

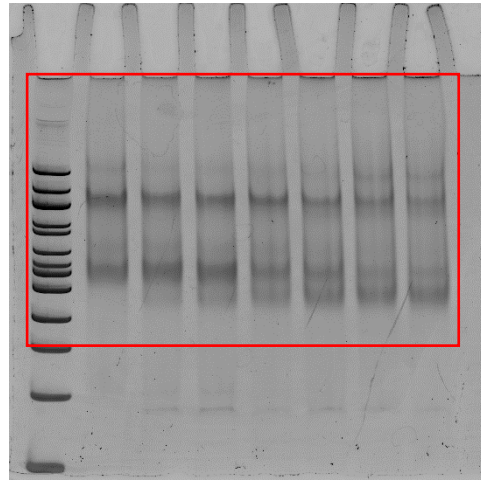
Extended Data 6b



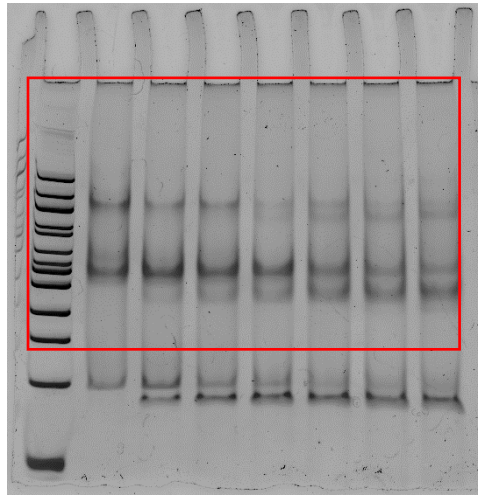
Extended Data 6c



Oct4\_Lin28B

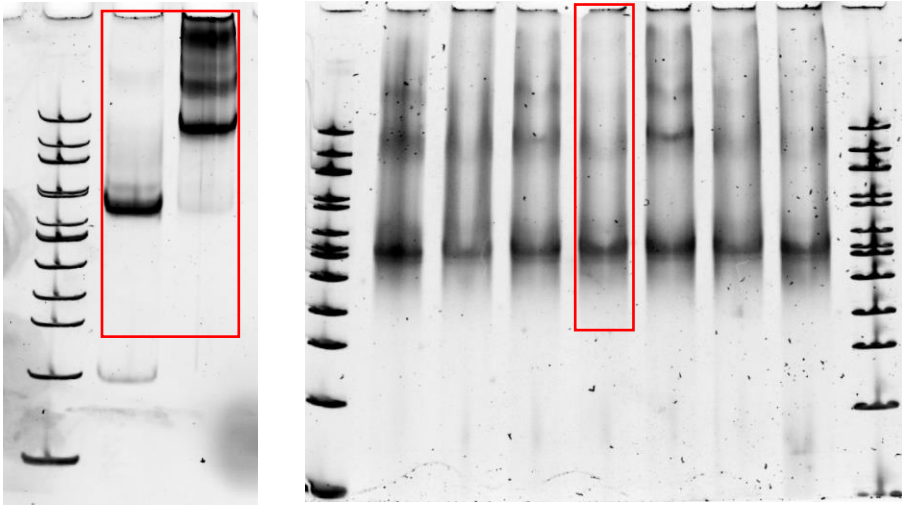


Oct4\_Lin28B-H3K27ac

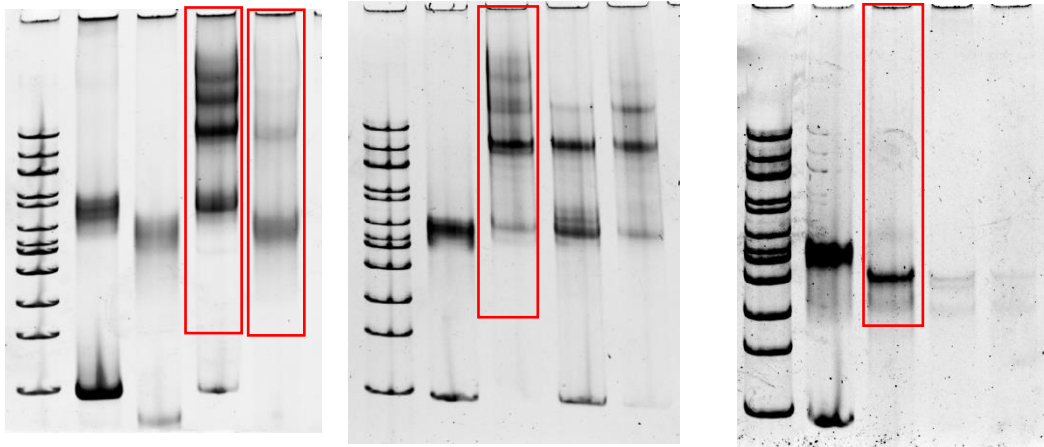


Oct4\_Lin28B-H3Kme3

Extended Data 6d



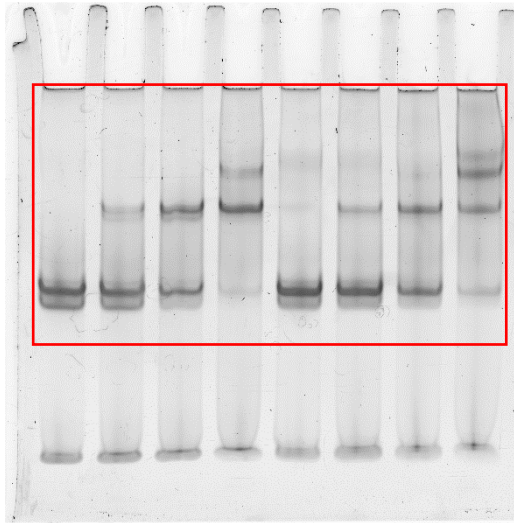
LIN28B



LIN28B H3K27ac

LIN28B H3K27me3

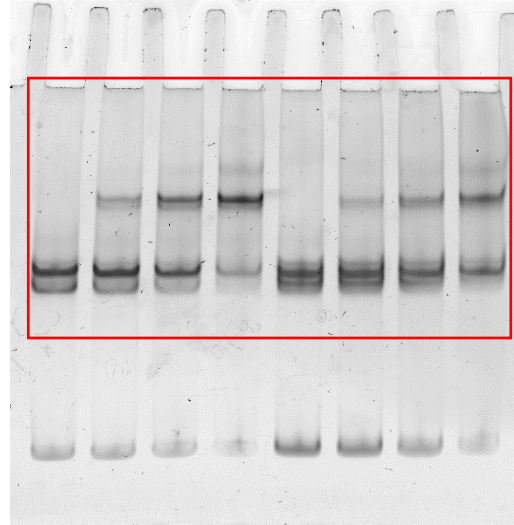
Extended Data 6d



LIN28B

LIN28B\_OSO+1

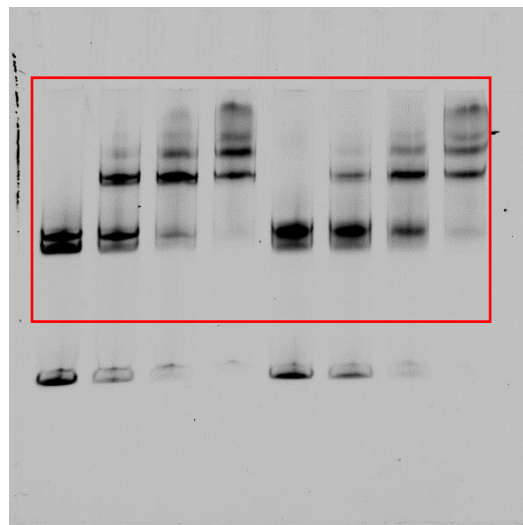
Extended Data 6h



LIN28B

LIN28B\_OSO+2

Extended Data 6i

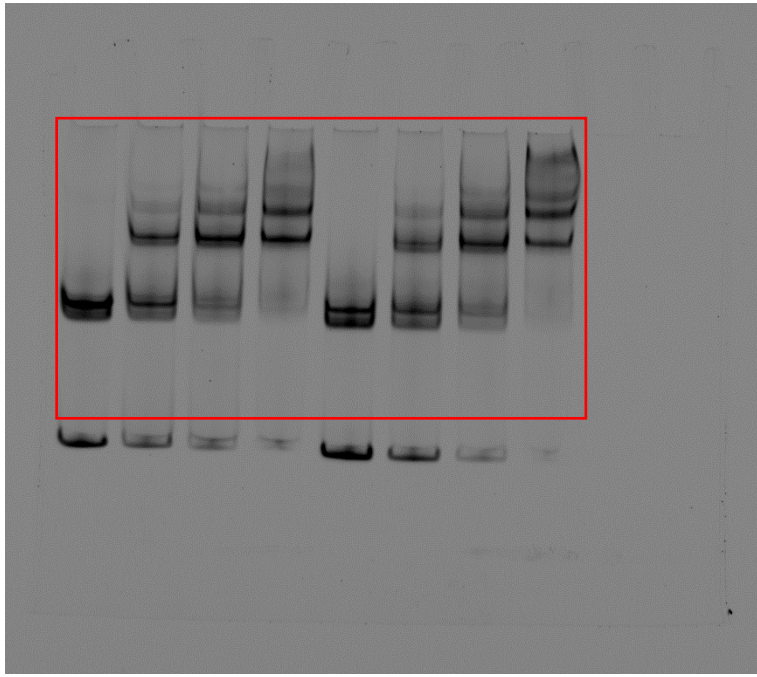


LIN28B

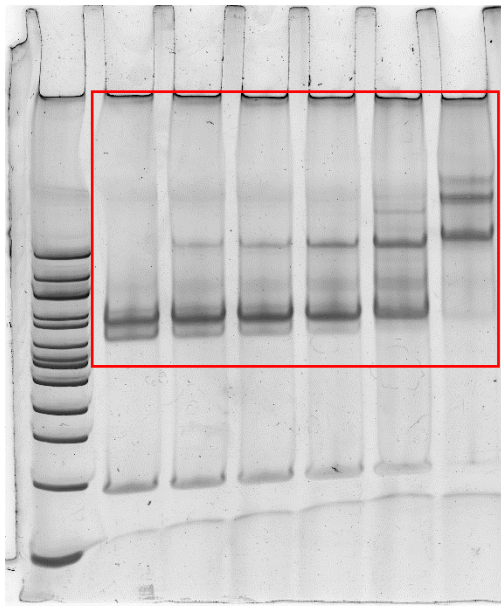
LIN28B\_H3K27ac OSO+1

Extended Data 6J

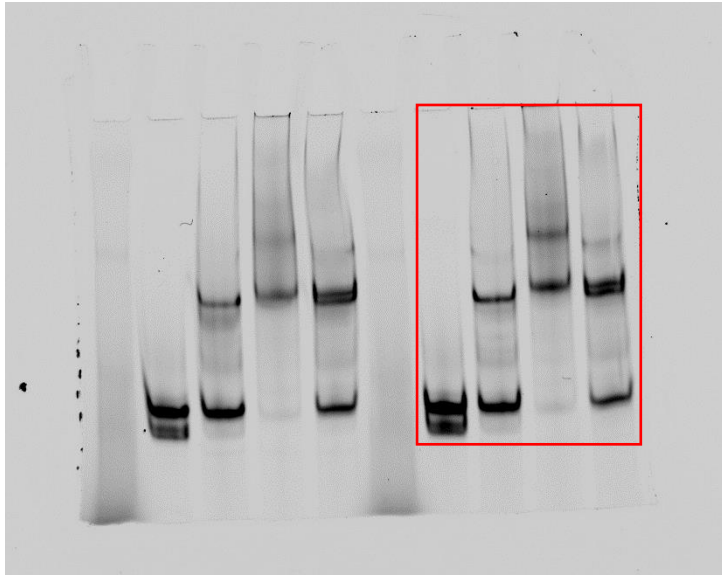




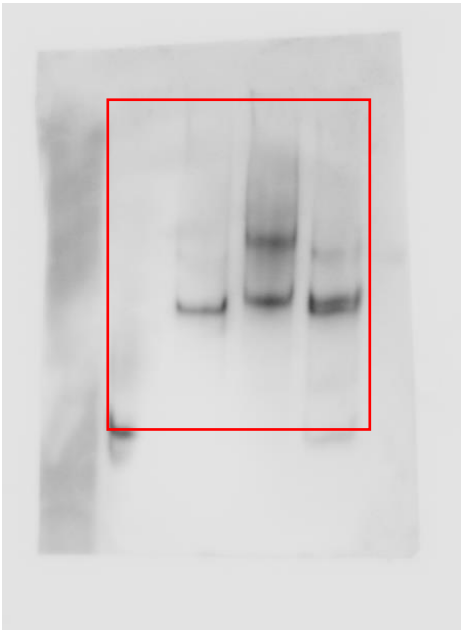
Extended Data 7a



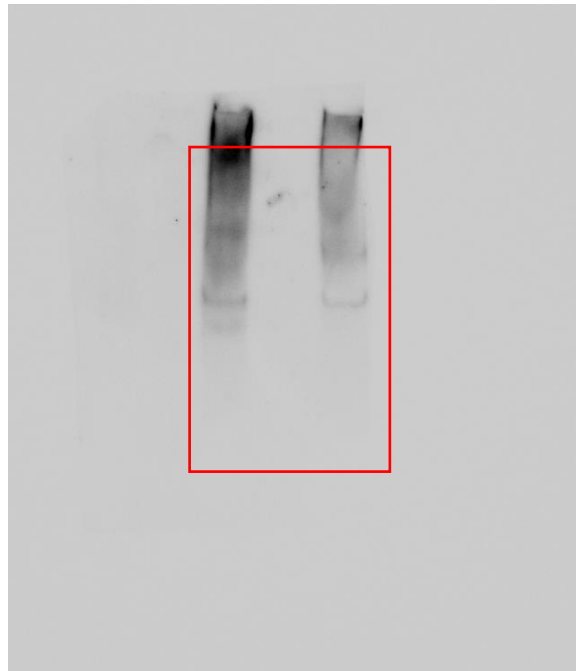
Extended Data 7e



DNA

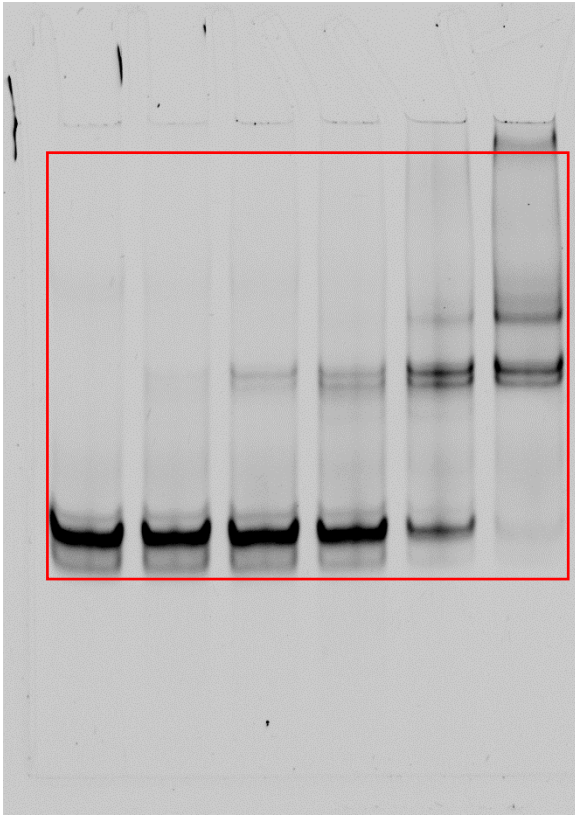


anti-H3

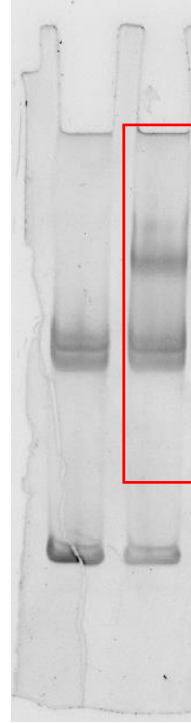


anti-Sox2

Extended Data 7f



Extended Data 7g



Extended Data 8a

**Supplementary Table 1: List of oligonucleotides used in the study**

Oligonucleotides	Sequence
<b>LIN28 amplification primers</b>	
LIN28B 1010 Forward primer	GCATAAGTTAAGT GGT ATT AAC ATA TCC TCA GTG GTG
LIN28B 1010 Reverse primer	ATGAAGTATGTGT CTT TAT TCA CAA GCT TGC ACA A
LIN28B_1M Forward primer	GCATAAGTTAAGT GGT GCGTCG ATA TCC TCA GTG GTG
LIN28B_1M Reverse primer	ATGAAGTATGTGT CTT TAT TCA CAA GCT TGC ACA A
LIN28B 1010 Forward primer - Biotinylated	/5Biosg/GATAT CAG TTG GAG CAT AAG TTA AGT GGT ATT AAC ATA
Forward primer for LIN28B genomic array DNA	TATTATGATATTTAATGCATCTGTG
Reverse primer for LIN28B genomic array DNA	GGCCAATTTAAAGAACTCAATAG
nMatn1_F	ACATGCACACATGCTAATATATG
nMatn1_R	TGCATGTATGTGTATGCATATGC
<b>Primers for Oct4 mutagenesis</b>	
Oct4_delN_For	CAGGACATCAAAGCTCTG
Oct4_delN_Rev	CATCGAATTCGGATCCCGAC
Oct4_delC_For	CCCATGCATTCAAAGTGA
Oct4_delC_Rev	TGATCGCTTGCCCTTCTG
<b>DNA sequences</b>	
Lin28B	5': <u>GCAT AAG TTA</u> AGT GGT ATT AAC ATA TCC TCA GTG GTG AGT ATT AAC ATG GAA CTT ACT CCA ACA ATA CAG ATG CTG AAT AAA TGT AGT CTA AGT GAA GAA AGA AGG AAA GGT GGG AGC TGC CAT CAC TCA GAA TTG TCC AGC AGG GAT TGT GCA AGC TTG TGA ATA AAG ACA <u>CAT ACT TCA T</u> ;3'
Lin28B locus	TATTATGATATTTAATGCATCTGTGGCTTAACACTTGTGAGAGTTAC CAGCTTGAAAATGATGGTGTGACTACCTCTTGAATCACATCTATC AACCCTGGCACCTACCACCAAGCTGGCTTCAATTAGTATGTGTT GCTTTTTGGTATTAACAACCTAACCCTACTAGAGACCAAAGTGAAC CCTGATTTTTATATGTCTTTAATAATGGTGTGTTTATCTAGTGTGTTTA AATTATCCTGTGTAGTATTTAGATTACCTCATTGTCCATTTTGACTC ATGTTGTTTACAAGTGAAAATAAAAAACACTTGAAGTGTATGTTTTTA AAAGACAAAAAAGGGGTAGATGTTTGAATGCGTTTCACTCGCAT GCAGTCATCTGGAGGGACTGAAGCACTGTTTGCCTTTCTGTACA CTCTGGGTTTTATATTCTCATTTCATGCCTAATGTCTTATTCTGTCA ATTATGGATATGTTGAGGTTTAAAAAATACTTGATTAATAAAAA CATATAACGTTGGCATTATGATGGGTTTTGGAGATTTTTTATGATG

	<p>TGTGTTCTTACTAAGTTAAGTGAAAGGATAAAAGGCCATTTAGGCA  GTGTTTTACATCAGTTGGAGCATAAGTTAAGTGGTATTAACATATC  CTCAGTGGTGAGTATTAACATGGAACCTTACTCCAACAATACAGA  TGCTGAATAAATGTAGTCTAAGTGAAGGAAGAAGGAAAGGTGG  GAGCTGCCATCACTCAGAATTGTCCAGCAGGGATTGTGCAAGC  TTGTGAATAAAGACACATACTTCATGTAGTCAGAAGAGTGGTCT  GAAGCAAAATATTCAAAGCCTATTGAAGAAATCATTTTAGAATTTTT  CTACAAGTTTTTTCTAATAAAGAATTTGAAAAGGGCAAATTTTATCA  GTACCAAATATCTAAAATACGAATGTAGATTTATCAAACCATGAATG  CAGTATTGATGTACTGTAACAAACGATTTGGTAAAACCTATTGAGTT  CTTTAAATTGGCC</p>
OBS (+) 1 bp DNA:	<p>GCAT AAG TTA AGT GGT ATT AAC ATA TCC TCA GTG GTG AGT  <u>A</u> ATT AAC ATG GAA CTT ACT CCA ACAATA CAG ATG CTG  AATAA TGT AGT CTA AGT GAA GAA AGA AGG AAA GGT GGG  AGC TGC CAT CAC TCAGAA TTG TCC AGC AGG GAT TGT GCA  AGC TTG TGA ATA AAG ACA CAT ACT TCA T</p>
OBS (+) 2 bp DNA:	<p>GCAT AAG TTA AGT GGT ATT AAC ATA TCC TCA GTG GTG AGT  <u>AA</u> ATT AAC ATG GAA CTT ACT CCA ACAATA CAG ATG CTG  AATA TGT AGT CTA AGT GAA GAA AGA AGG AAA GGT GGG  AGC TGC CAT CAC TCAGAA TTG TCC AGC AGG GAT TGT GCA  AGC TTG TGA ATA AAG ACA CAT ACT TCA T</p>
SBS (-) 5 bp DNA	<p>GCAT AAG TTA AGT GGT ATT AAC ATA TCC TCA GTG GTG AGT  ATT AAC AT G GAA C TT AACAATA ACT CC CAG ATG CTG AA T  AAA T GT AGT CTA AGT GAA GAA AGA AGG AAA GGT GGG AGC  TGC CAT CAC TCAGAA TTG TCC AGC AGG GAT TGT GCA AGC  TTG TGA ATA AAG ACA <u>CAT ACT TCA T</u></p>
nMatn1	<p>ACATGCACACATGCTAATATATGCACACAATGCACACAGGTTAATA  TATACACATACACACACATGCACACACACGTGCACACATATATGCA  CATGCATGCACACACGTATATGCACACACATGCACATGCATGCGC  ACATAGTCACACACATGCACACATTAGCATATGCATACACATACAT  GCA</p>

**Supplementary Table 2: Plasmids used in this study**

SJ131	pDeuet-LIN28B
SJ134	pET28-Oct4 N-terminus deletion mutant
SJ135	pET28-Oct4 C-terminus deletion mutant

**Supplementary Table 3: Table with quantification of data**

**Figure 3b**

	normalized to input nucl	binding to OBS2/3
<b>Lin28B</b>		
input nucleosome (black)	1	
nucl. with 1 Oct4 (red)	0.32	ratio [2 Oct4/1 Oct4]
nucl. with 2 Oct4 (blue)	0.11	0.34
<b>Lin28B_1M</b>		
input nucleosome (black)	1	ratio [1 Oct4/nucleosome]
nucl. with 1 Oct4 (red)	0.07	0.07

**Figure ED 7g**

	normalized to input nucl	binding to OBS2/3
input nucleosome (black)	1	ratio [Sox2/nucleosome]
Sox2 (grey)	0.13	0.13
1_Oct4 (red)	0.23	ratio [1 Oct4_Sox2/1_Oct4]
1_Oct4_Sox2 (orange)	0.11	0.48