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Supplemental Information

An Artificial CTCF Peptide Triggers Efficient Therapeutic Efficacy in Ocular Melanoma

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Supplementary figure legends

Figure S1 Expression of dsCTCF and deCTCF

A-B: qPCR showed the dsCTCF and deCTCF expressed in both tumor and normal transfected cells.

C: Quantitative analysis of western blot verified that the dsCTCF expressed in both tumor and normal transfected cells.

Figure S2 Decoy CTCF suppress tumor proliferation

A-B: CCK8 assay demonstrated that deCTCF could significantly reduce the proliferation of transfected ocular melanoma.

C: Quantitative analysis of plate clone formation assay verified that dsCTCF or deCTCF could significantly reduce the proliferation of transfected ocular melanoma.

Figure S3 Decoy CTCF suppress tumor migration

A: Quantitative analysis of transwell migration assay showed that dsCTCF or deCTCF could significantly reduce the migration ability of ocular melanoma.

B: Scratch test suggested that dsCTCF or deCTCF could significantly reduce the migration ability of OCM1.

C-D: Quantitative analysis of scratch test also suggested that dsCTCF or deCTCF could significantly reduce the migration ability of ocular melanoma.

Figure S4 Decoy CTCF suppress tumorigenesis

A-B: Quantitative analysis of soft agar assay showed fewer colony number in dsCTCF or deCTCF expressed ocular melanoma cells.

Figure S5 Decoy CTCF suppress *SELL* expression

A: Searching for genes affected by decoy CTCF. **Left:** RNA-seq screening of upregulated genes in ocular tumor; **Right:** Locating of the wild type CTCF binding site.

B: Quantitative analysis of western blot showed that *SELL* was highly expressed in ocular melanoma cells.

C: Quantitative analysis of western blot showed the expression of *SELL* was significantly decreased in ocular tumor cells after shRNA interference.

Figure S6 SELL interference could suppress tumor proliferation and migration

A: Quantitative analysis of plate clone formation assay verified that the proliferation of *SELL*-interfered group was significantly reduced.

B: Quantitative analysis of transwell migration assay showed that *SELL* interference could significantly reduce the migration ability of ocular melanoma.

C-D: Quantitative analysis of soft agar assay investigated fewer and smaller colonies in *SELL*-interfered groups.

Figure S7 STRING protein interaction network of CTCF

A: STRING protein interaction (www.string-db.org) network identified the potential CTCF-binding proteins, such as EZH2 and EP300.

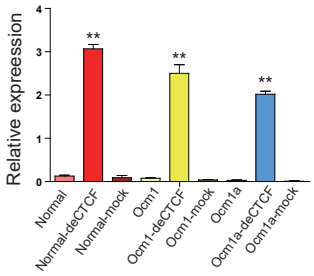
Figure S8 The antitumor effect of dsCTCF was not directed by DNA methylation

A: Genome-wide methylation microarrays showed that dsCTCF could only lead to a slight change of methylation levels near its binding sites.

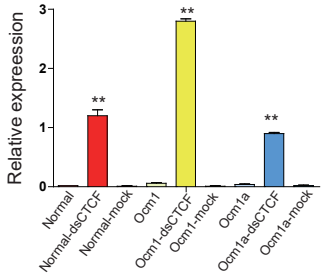
B: qPCR showed most of the methylation alteration could only affect gene expression

slightly and not consistent between cell types.

A



B



C

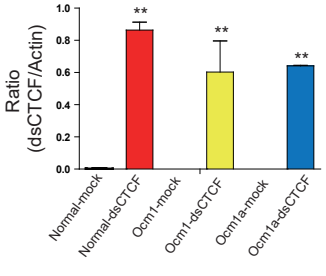


Figure S1

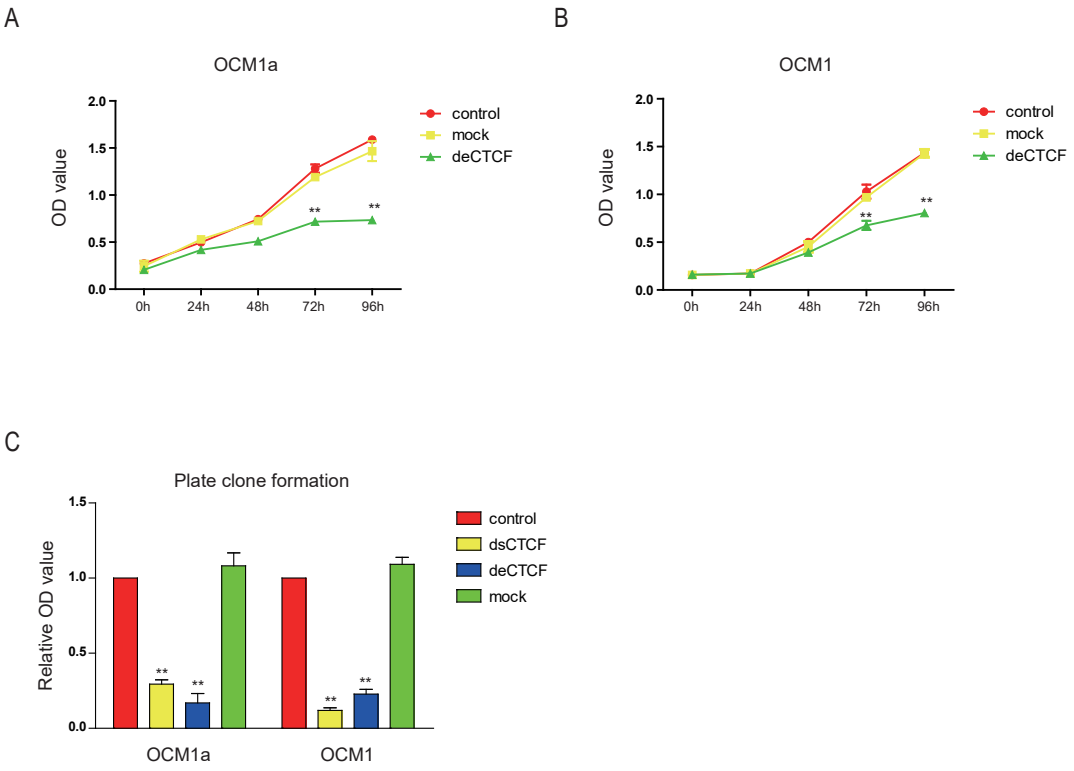
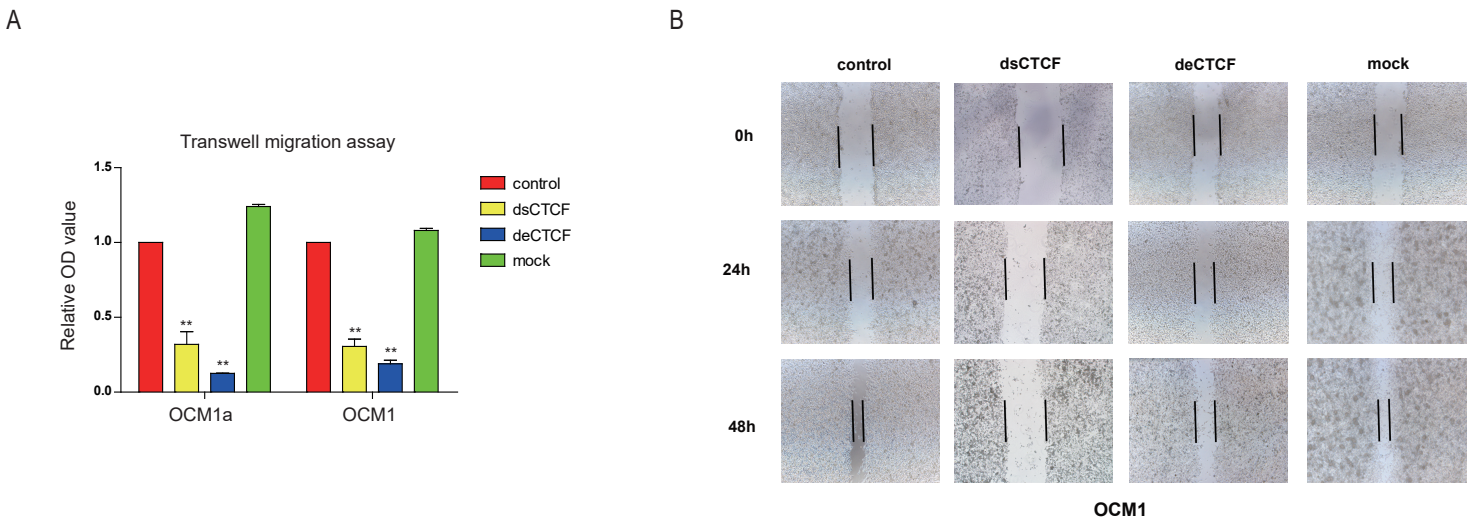

A
OCM1a
OD value
2.0
1.5
1.0
0.5
0.0
0h
24h
48h
72h
96h
control
mock
deCTCF
**
B
OCM1
C
Plate clone formation
Relative OD value
dsCTCF
OCM1a
OCM1

Figure S2


A
Transwell migration assay
Relative OD value
1.5
1.0
0.5
0.0
**
**
**
**
OCM1a
OCM1
control
dsCTCF
deCTCF
mock
B
control
dsCTCF
deCTCF
mock
0h
24h
48h
OCM1

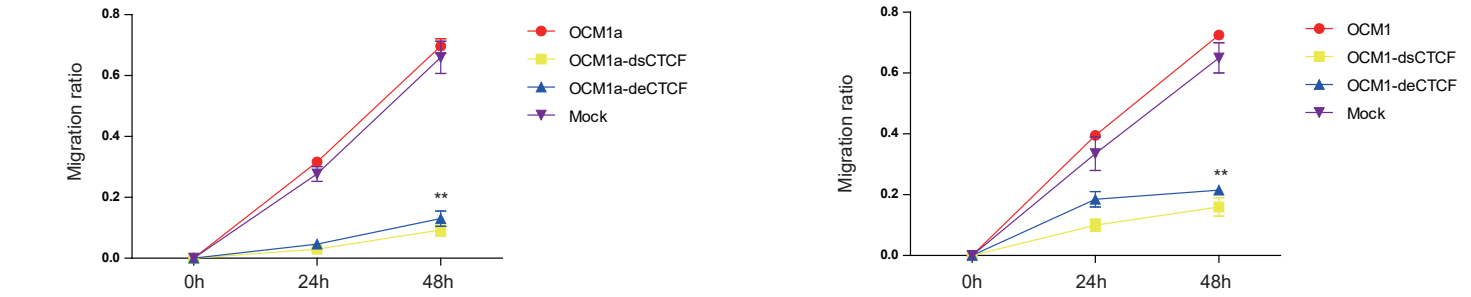
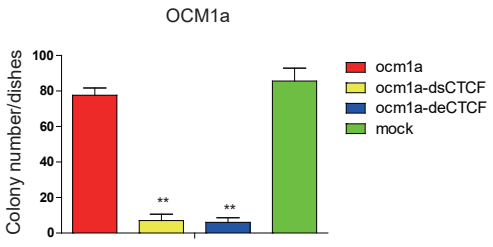

C
Migration ratio
0.8
0.6
0.4
0.2
0.0
**
0h
24h
48h
OCM1a
OCM1a-dsCTCF
OCM1a-deCTCF
Mock
D
Migration ratio
0.8
0.6
0.4
0.2
0.0
**
0h
24h
48h
OCM1
OCM1-dsCTCF
OCM1-deCTCF
Mock

Figure S3

A


OCM1a
Colony number/dishes
100
80
60
40
20
0
**
**
ocm1a
ocm1a-dsCTCF
ocm1a-deCTCF
mock

B

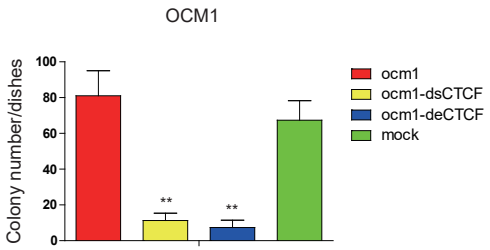
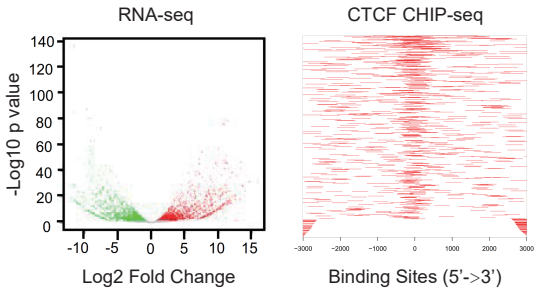

OCM1
Colony number/dishes
100
80
60
40
20
0
**
**
ocm1
ocm1-dsCTCF
ocm1-deCTCF
mock

Figure S4

A



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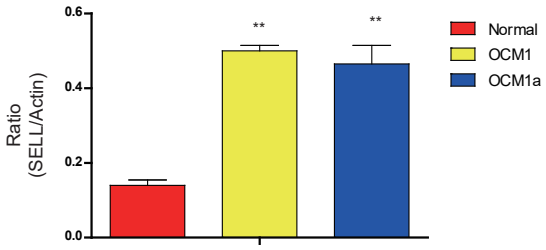

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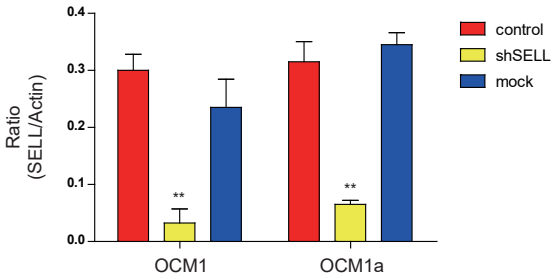
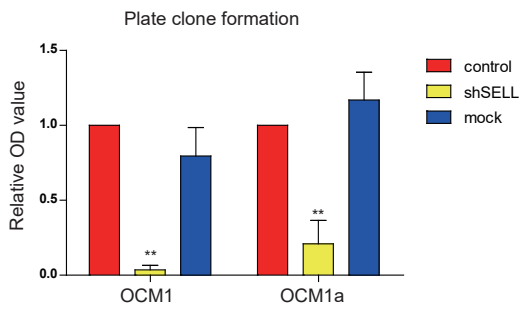


Figure S5

A



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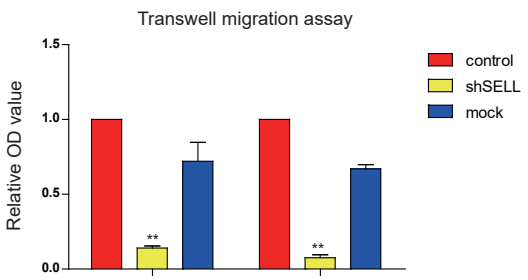

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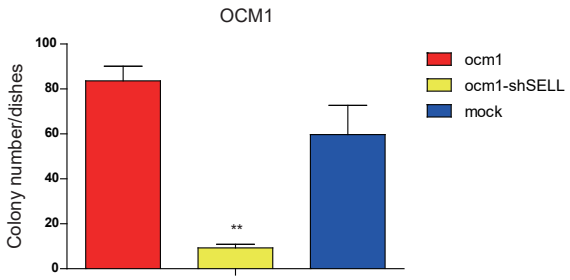


D

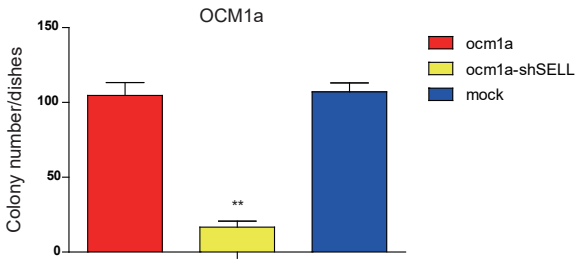


Figure S6

A

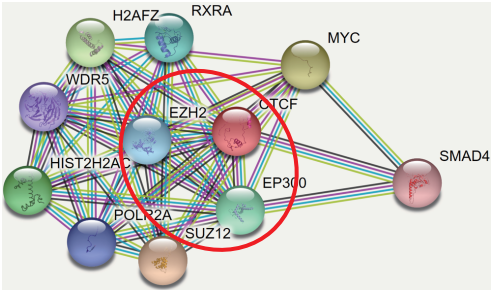
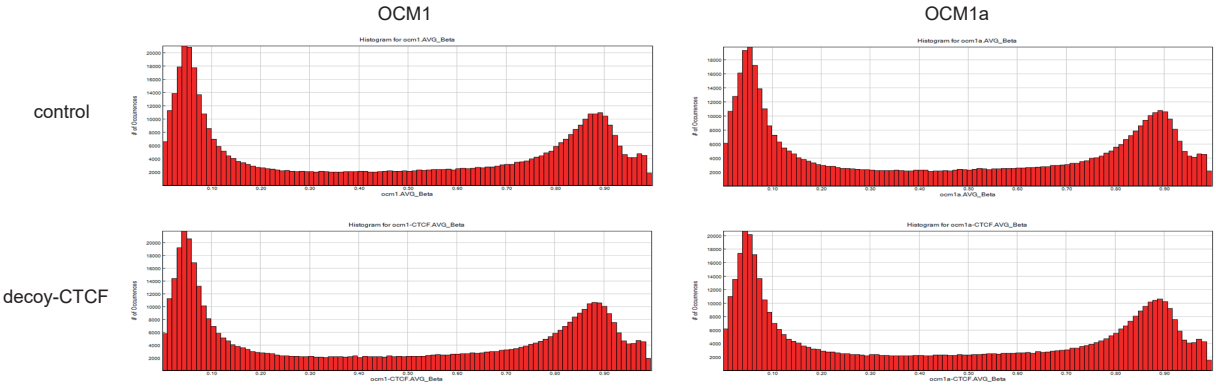

H2AFZ
RXRA
MYC
WDR5
EZH2
CTCF
SMAD4
HIST2H2AC
EP300
POLR2A
SUZ12

Figure S7

A


OCM1
OCM1a
control
decoy-CTCF

B

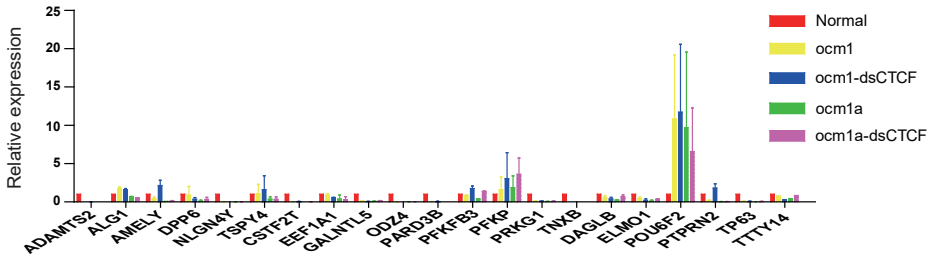

Relative expression
25
20
15
10
5
0
Normal
ocm1
ocm1-dsCTCF
ocm1a
ocm1a-dsCTCF
ADAMTS2
ALG1
AMELY
DPP6
NLGN4Y
TSPY4
CSTF2T
EEF1A1
GALNTL5
ODZ4
PARD3B
PFKFB3
PFKP
PRKG1
TNXB
DAGLB
ELMO1
POU6F2
PTPRN2
TP63
TTTY14

Figure S8