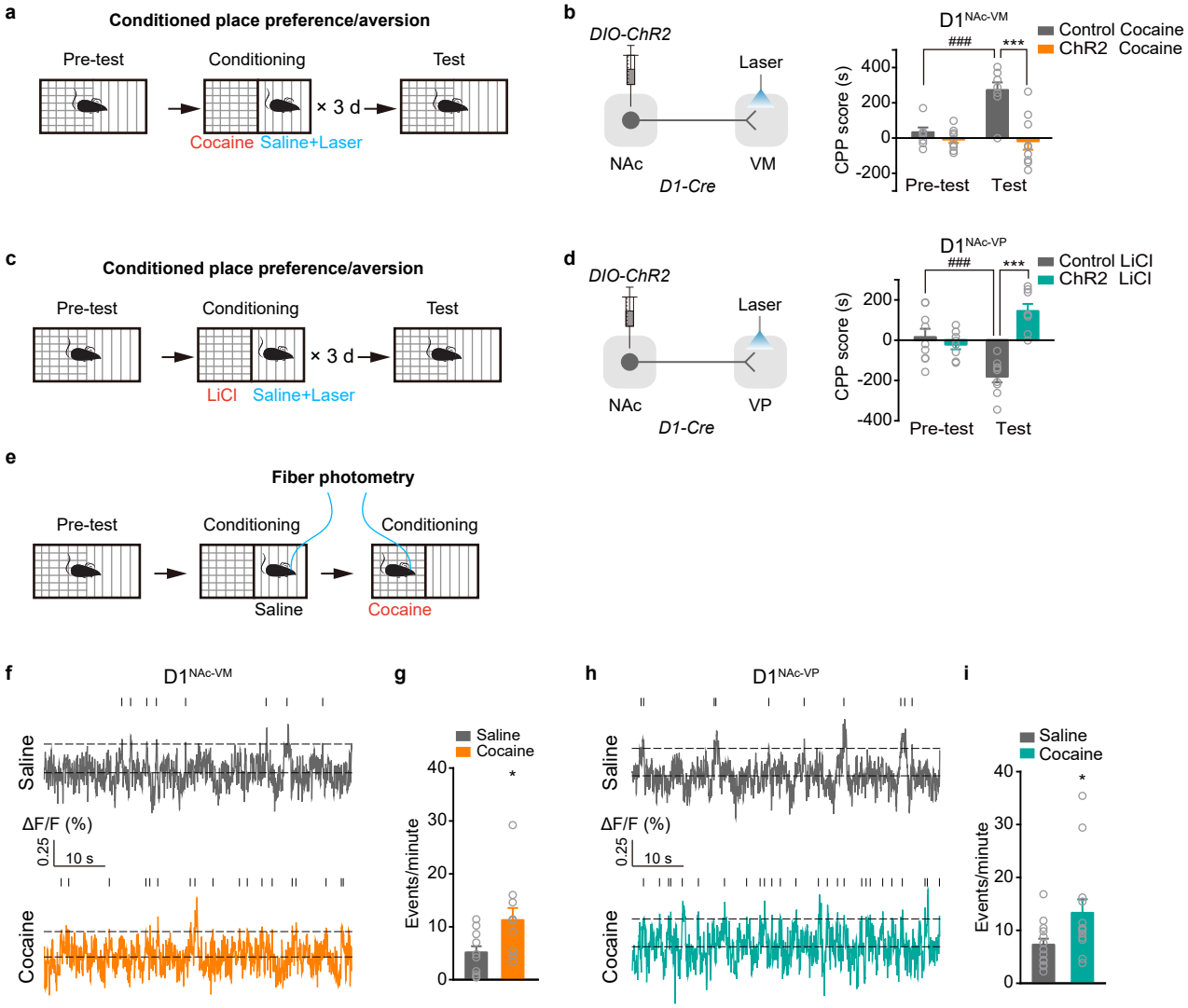
a
Conditioned place preference/aversion
Pre-test
Conditioning
Test
× 3 d
Cocaine Saline+Laser
b
DIO-ChR2
Laser
NAc
VM
D1-Cre
D1NAc-VM
Control Cocaine
ChR2 Cocaine
###
***
CPP score (s)
400
200
0
-200
Pre-test
Test
c
Conditioned place preference/aversion
Pre-test
Conditioning
Test
× 3 d
LiCl Saline+Laser
d
DIO-ChR2
Laser
NAc
VP
D1-Cre
D1NAc-VP
Control LiCl
ChR2 LiCl
###
***
CPP score (s)
200
0
-200
-400
Pre-test
Test
e
Fiber photometry
Pre-test
Conditioning
Conditioning
Saline
Cocaine
f
D1NAc-VM
Saline
ΔF/F (%)
0.25
10 s
Cocaine
g
Saline
Cocaine
Events/minute
40
30
20
10
0
*
h
D1NAc-VP
Saline
ΔF/F (%)
0.25
10 s
Cocaine
i
Saline
Cocaine
Events/minute
40
30
20
10
0
*

Supplementary information, Fig. 3 Cocaine conditioning increases frequency of Ca2+ transient events in both $D1^{NAc\text{-}VM}$ and $D1^{NAc\text{-}VP}$ projections.

a,c, Schematic of experimental design. *AAV_9-EF1α-DIO-hChR2-mCherry* or *AAV_9-EF1α-DIO-mCherry* was injected into the NAc of *D1-Cre* mice, and optical fibers were bilaterally implanted over the VM or VP. Laser stimulation was presented during saline conditioning. Cocaine and LiCl was conditioned in the other side. After three-day conditioning, the CPP/A test was performed. b,d, Bar graphs of CPP score. [Two-way RM ANOVA, VM: Control n = 8, ChR2 n = 9, $F_{\text{treatment}\times\text{session}}(1, 33) = 11.258$, $p = 0.004$; VP: Control n = 8, ChR2 n = 9, $F_{\text{treatment}\times\text{session}}(1, 33) = 31.94$, $p < 0.001$.] $^{***}p < 0.001$. e, Schematic of experimental design. *AAV_9-EF1α-DIO-GCaMP6m* was injected into the NAc of *D1-Cre* mice, with optical fiber implanted over the VM or VP. f,h, Representative photometry signal traces of D1-MSN axonal terminals in the VM (f) and VP (h) during saline and cocaine conditioning. Tick marks indicate events above threshold. g,i, Frequency of Ca^{2+} transient events in $D1^{NAc\text{-}VM}$ (g) and $D1^{NAc\text{-}VP}$ (i) terminals was calculated during 5-10 min after saline or cocaine treatment [Two-tailed *Student's t*-test, n = 11, $t(20) = -2.336$, $p = 0.0282$; Mann-Whitney U test, n = 13, $Z = 2.052$, $p = 0.0387$.] $^{*}p < 0.05$. Related to Figure 3.