Drawings

1/11

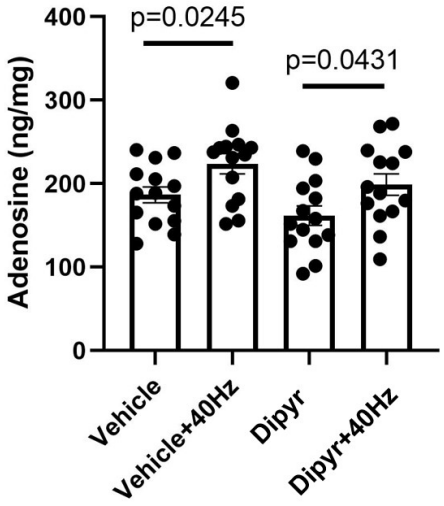


FIG. 1

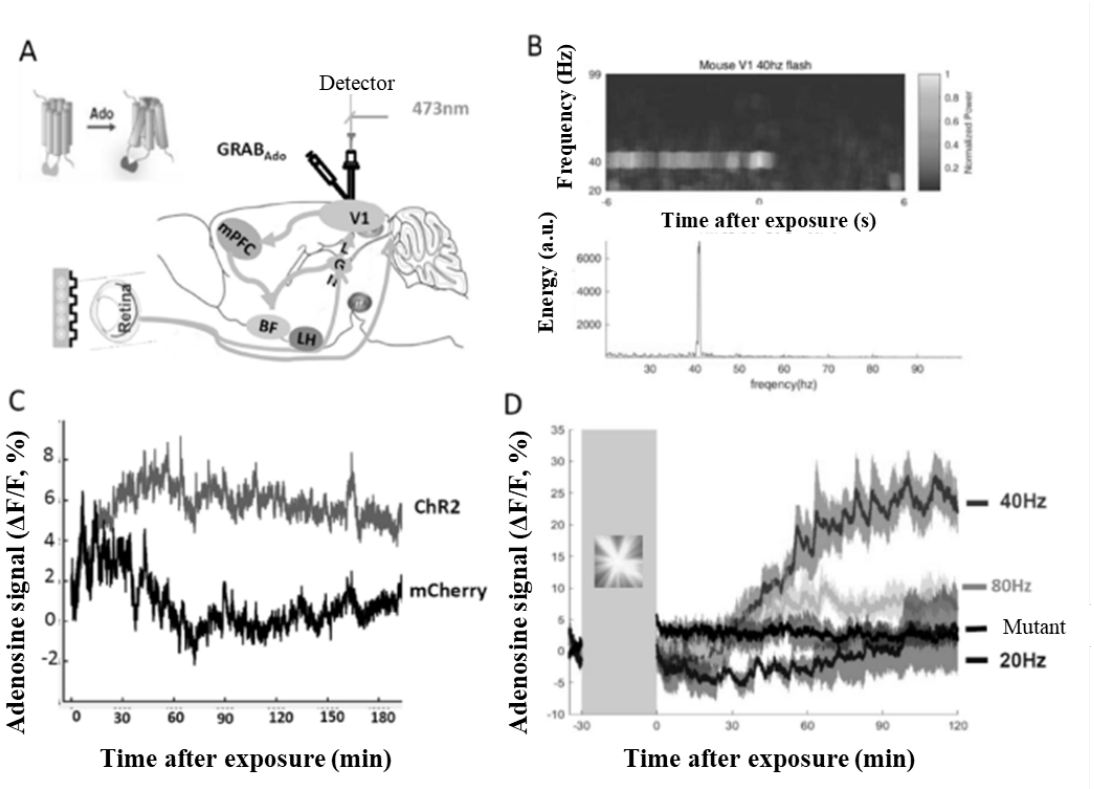


FIG. 2

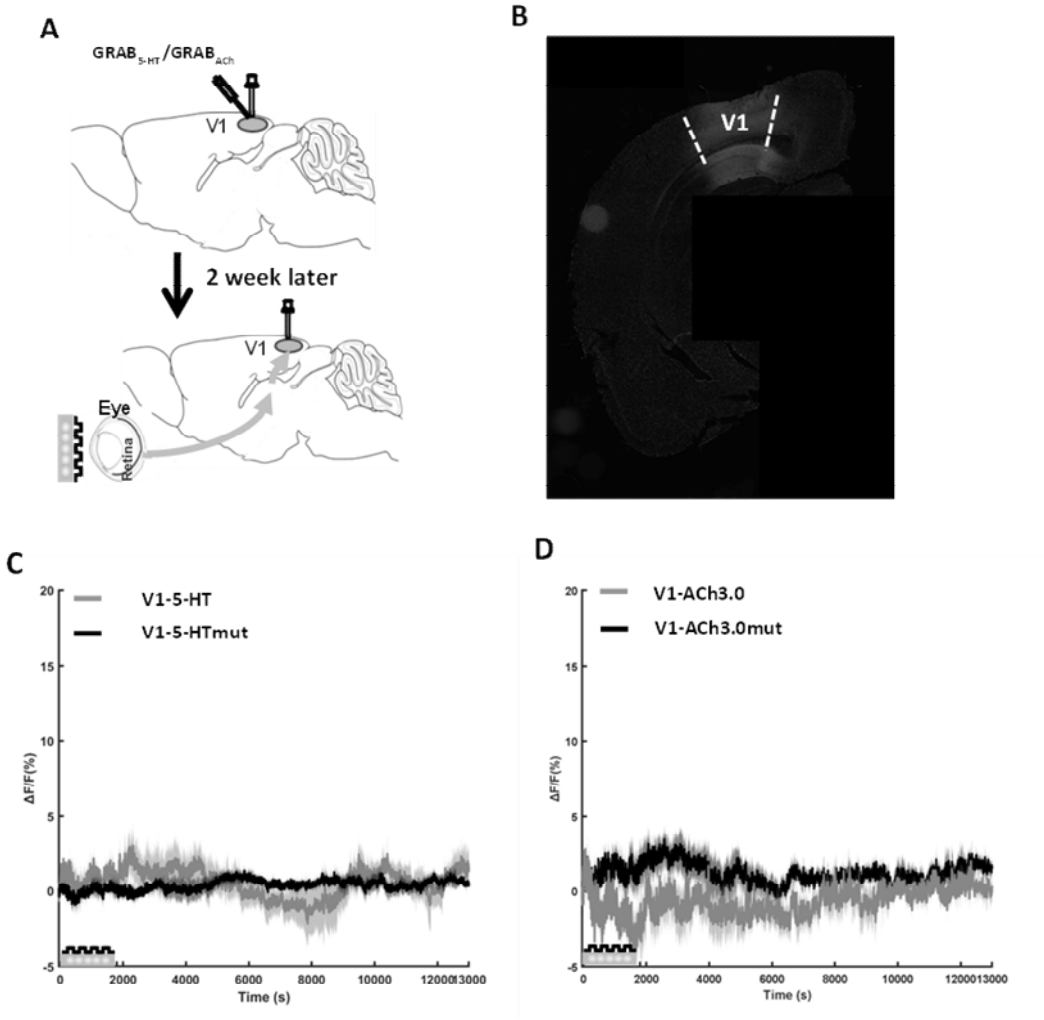

A
GRAB5-HT/GRABACh
V1
2 week later
V1
Eye
Retina
B
V1
C
V1-5-HT
V1-5-HTmut
ΔF/F(%)
Time (s)
D
V1-ACh3.0
V1-ACh3.0mut
ΔF/F(%)
Time (s)

FIG. 3

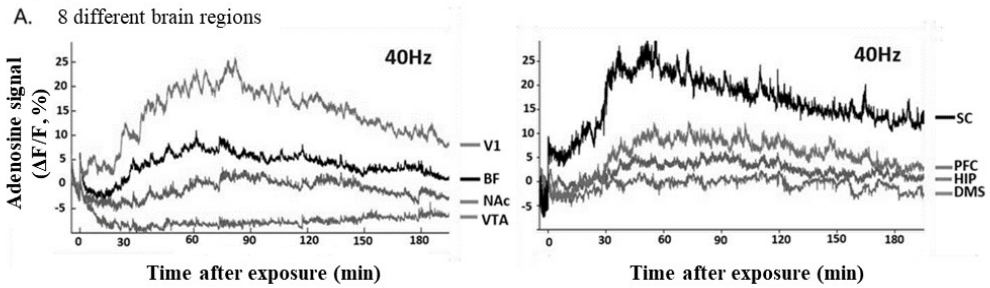


FIG. 4

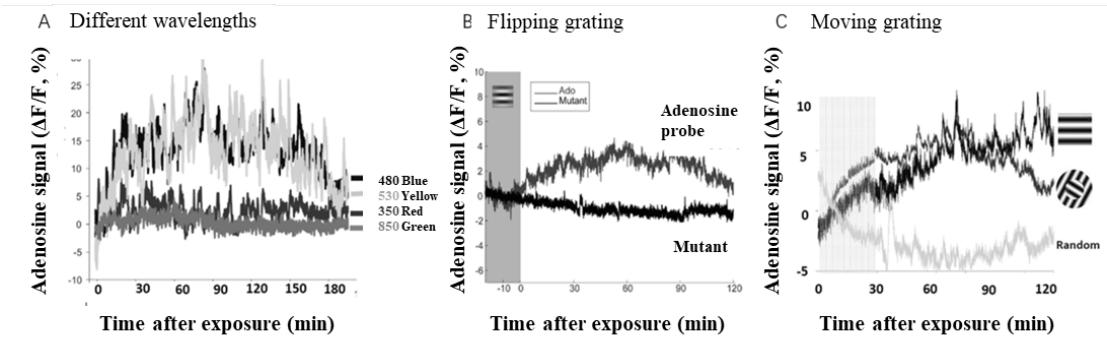


FIG. 5

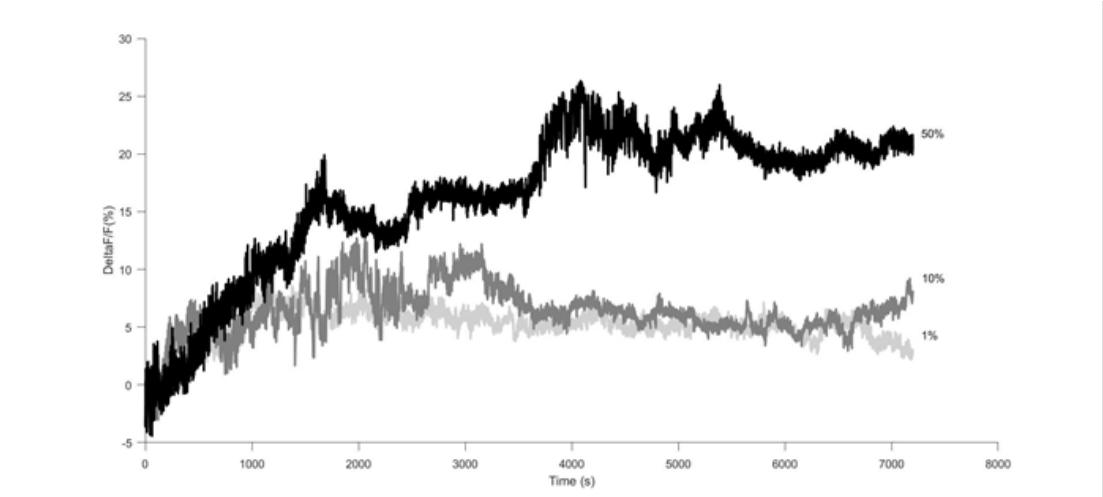


FIG. 6

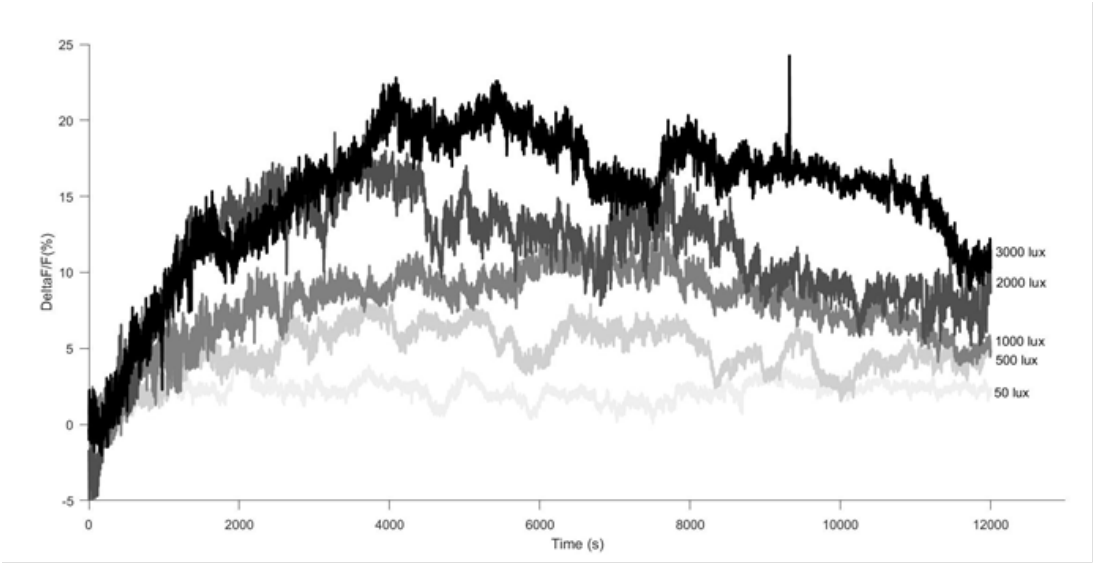

DeltaF/F(%)
Time (s)
3000 lux
2000 lux
1000 lux
500 lux
50 lux

FIG. 7

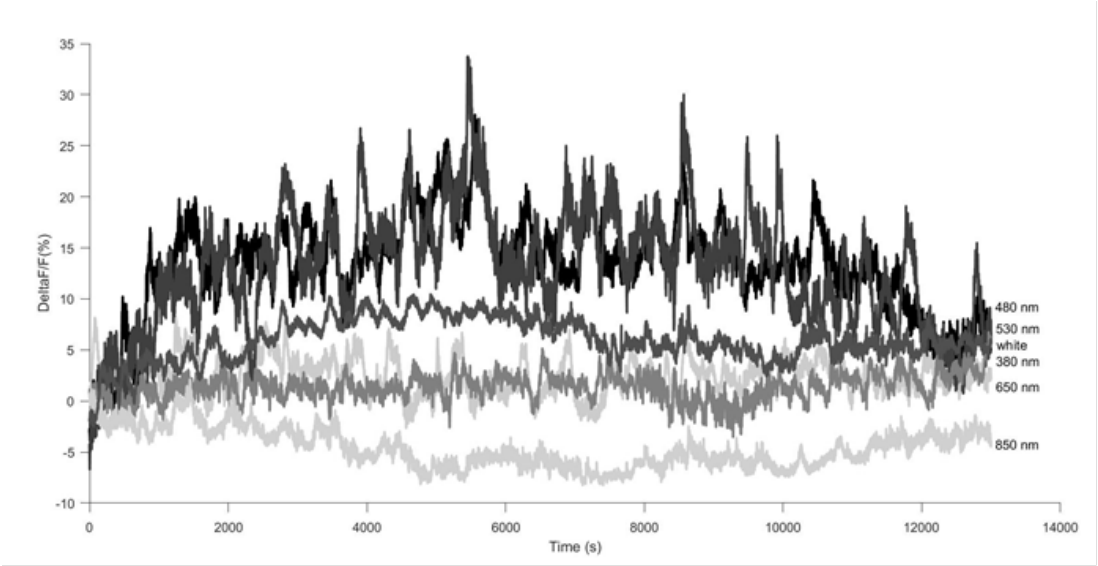

DeltaF/F(%)
Time (s)
480 nm
530 nm
white
380 nm
650 nm
850 nm

FIG.8

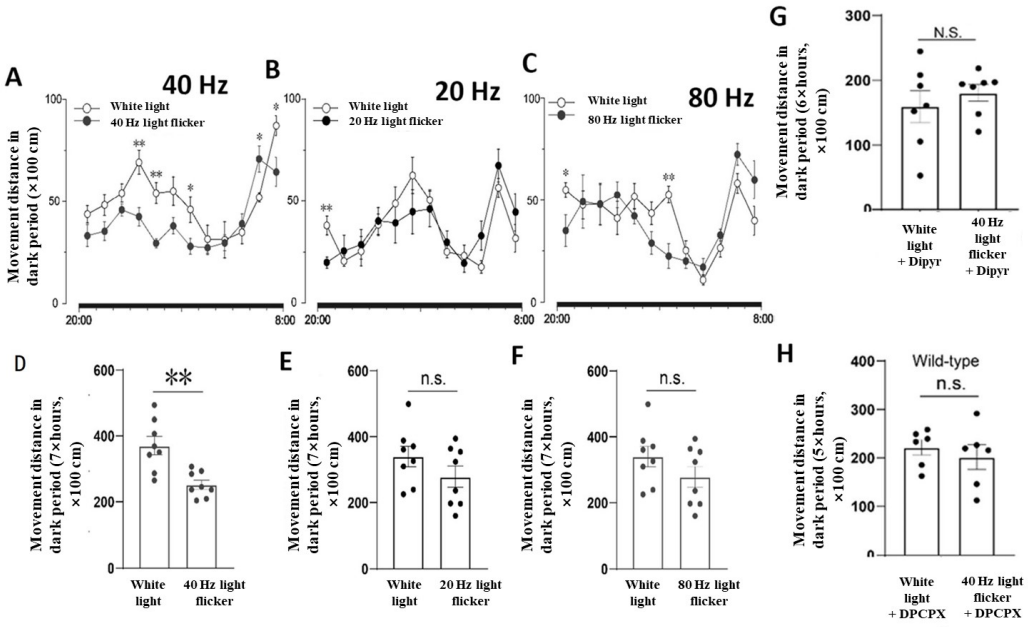

A
40 Hz
White light
40 Hz light flicker
Movement distance in dark period (×100 cm)
B
20 Hz
White light
20 Hz light flicker
C
80 Hz
White light
80 Hz light flicker
20:00
8:00
G
Movement distance in dark period (6×hours, ×100 cm)
N.S.
White light + Dipyr
40 Hz light flicker + Dipyr
D
Movement distance in dark period (7×hours, ×100 cm)
**
White light
40 Hz light flicker
E
n.s.
White light
20 Hz light flicker
F
n.s.
White light
80 Hz light flicker
H
Wild-type
n.s.
Movement distance in dark period (5×hours, ×100 cm)
White light + DPCPX
40 Hz light flicker + DPCPX

FIG. 9

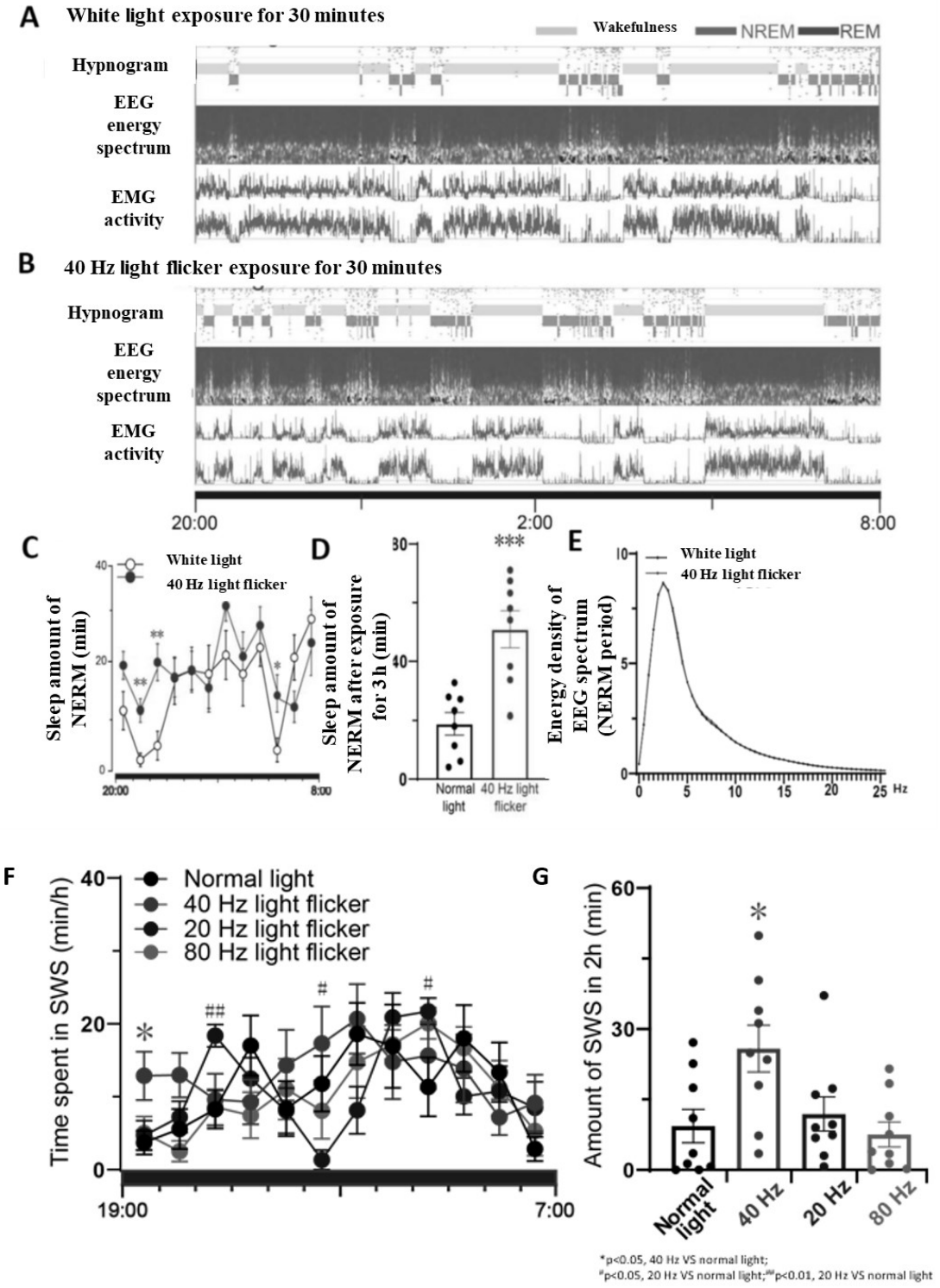

A
White light exposure for 30 minutes
Wakefulness
NREM
REM
Hypnogram
EEG energy spectrum
EMG activity
B
40 Hz light flicker exposure for 30 minutes
Hypnogram
EEG energy spectrum
EMG activity
20:00
2:00
8:00
C
White light
40 Hz light flicker
Sleep amount of NERM (min)
20:00
8:00
D
Sleep amount of NERM after exposure for 3 h (min)
***
Normal light
40 Hz light flicker
E
White light
40 Hz light flicker
Energy density of EEG spectrum (NERM period)
Hz
F
Normal light
40 Hz light flicker
20 Hz light flicker
80 Hz light flicker
Time spent in SWS (min/h)
19:00
7:00
G
Amount of SWS in 2h (min)
Normal light
40 Hz
20 Hz
80 Hz
*p<0.05, 40 Hz VS normal light;
#p<0.05, 20 Hz VS normal light;##p<0.01, 20 Hz VS normal light

FIG. 10

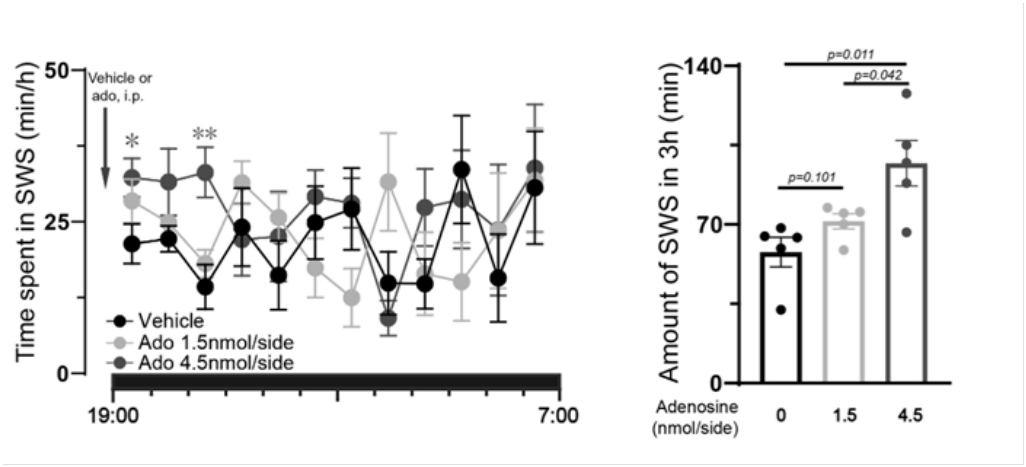

Time spent in SWS (min/h)
50
25
0
Vehicle or ado, i.p.
*
**
Vehicle
Ado 1.5nmol/side
Ado 4.5nmol/side
19:00
7:00
Amount of SWS in 3h (min)
140
70
0
p=0.011
p=0.042
p=0.101
Adenosine (nmol/side)
0
1.5
4.5

FIG. 11

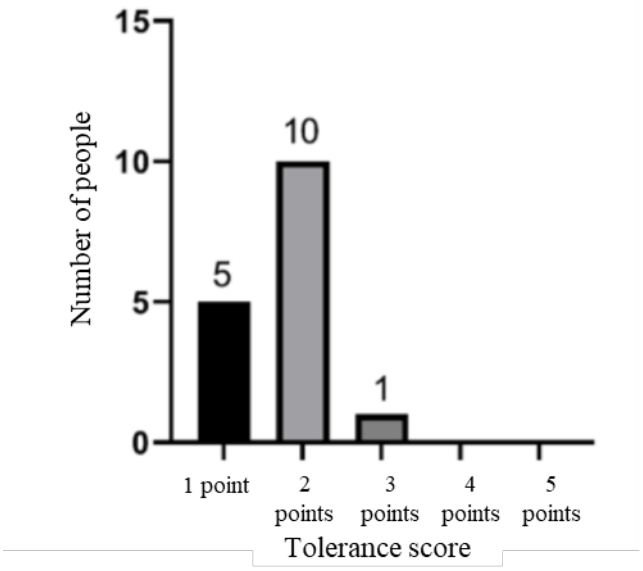

Number of people
15
10
5
0
5
10
1
1 point
2 points
3 points
4 points
5 points
Tolerance score

FIG. 12

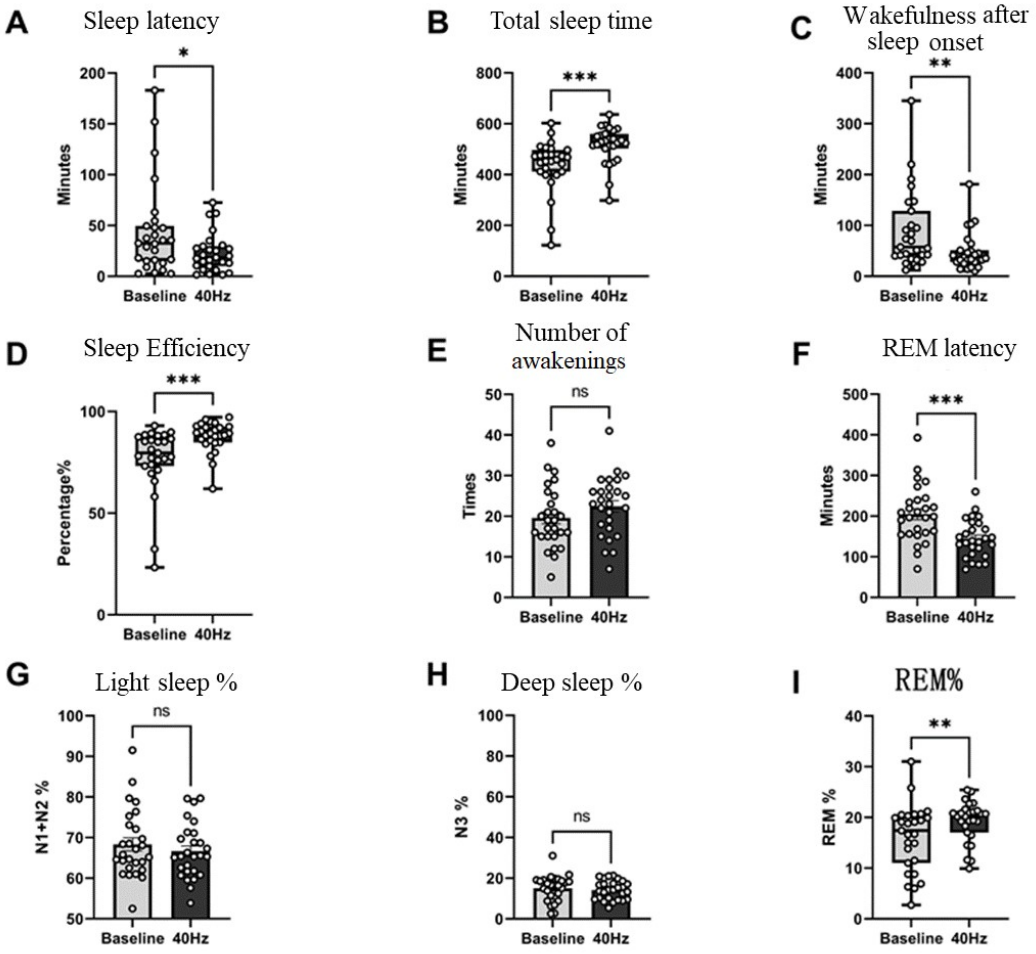

A
Sleep latency
*
Minutes
200
150
100
50
0
Baseline 40Hz
B
Total sleep time
***
Minutes
800
600
400
200
0
Baseline 40Hz
C
Wakefulness after sleep onset
**
Minutes
400
300
200
100
0
Baseline 40Hz
D
Sleep Efficiency
***
Percentage%
100
50
0
Baseline 40Hz
E
Number of awakenings
ns
Times
50
40
30
20
10
0
Baseline 40Hz
F
REM latency
***
Minutes
500
400
300
200
100
0
Baseline 40Hz
G
Light sleep %
ns
N1+N2 %
100
90
80
70
60
50
Baseline 40Hz
H
Deep sleep %
ns
N3 %
100
80
60
40
20
0
Baseline 40Hz
I
REM%
**
REM %
40
30
20
10
0
Baseline 40Hz

FIG. 13

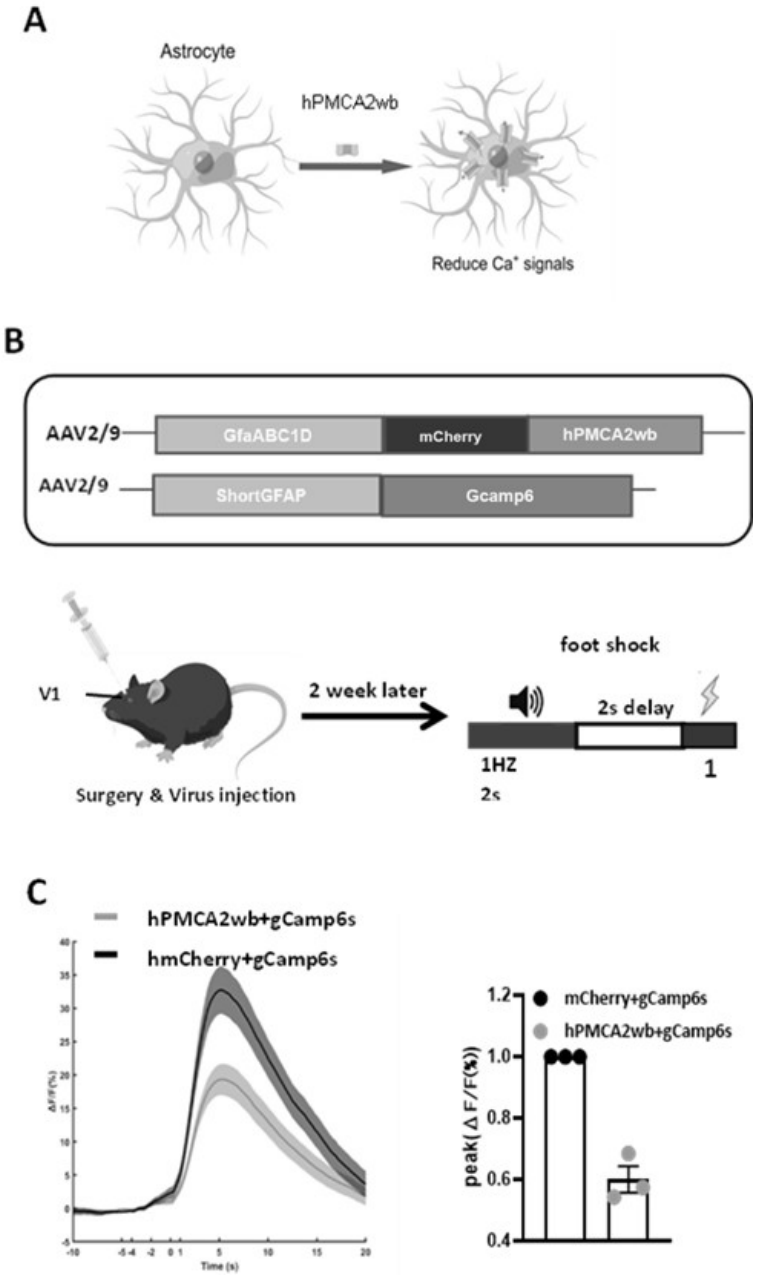

A
Astrocyte
hPMCA2wb
Reduce Ca+ signals
B
AAV2/9
GfaABC1D
mCherry
hPMCA2wb
AAV2/9
ShortGFAP
Gcamp6
V1
Surgery & Virus injection
2 week later
foot shock
2s delay
1HZ
2s
1
C
hPMCA2wb+gCamp6s
hmCherry+gCamp6s
Time (s)
mCherry+gCamp6s
hPMCA2wb+gCamp6s
peak(ΔF/F(%))

FIG. 14

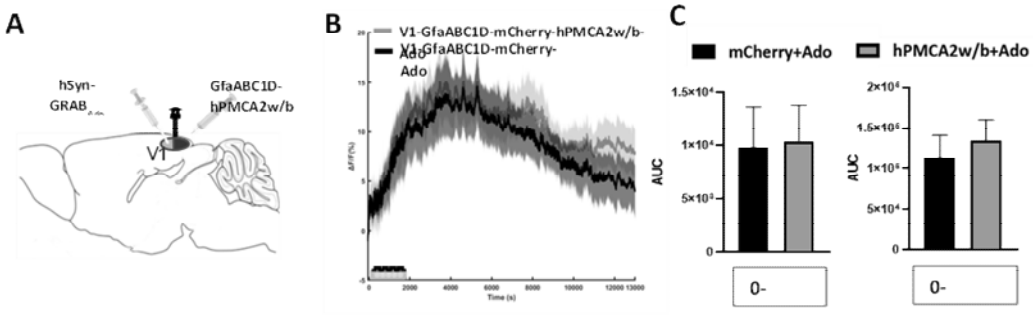

A
h5yn-
GfaABC1D-
hPMCA2w/b
V1
B
V1-GfaABC1D-mCherry-hPMCA2w/b-Ado
V1-GfaABC1D-mCherry-Ado
Time (s)
C
mCherry+Ado
hPMCA2w/b+Ado
AUC
AUC
0-
0-

FIG. 15

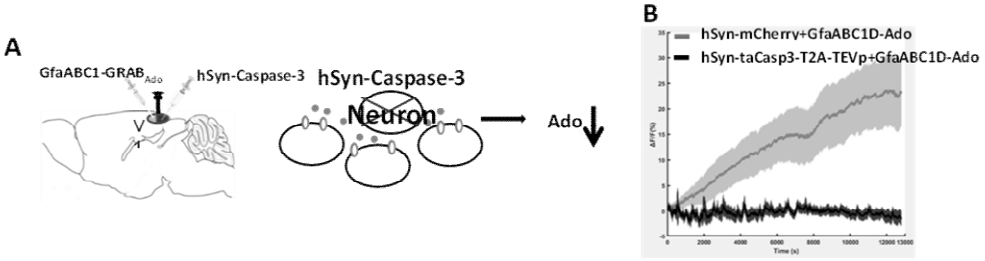


FIG. 16

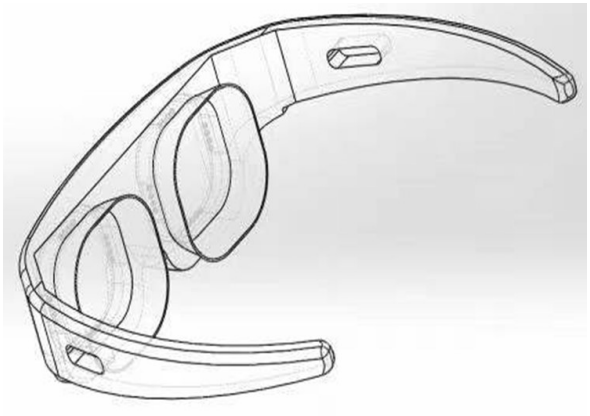


FIG. 17

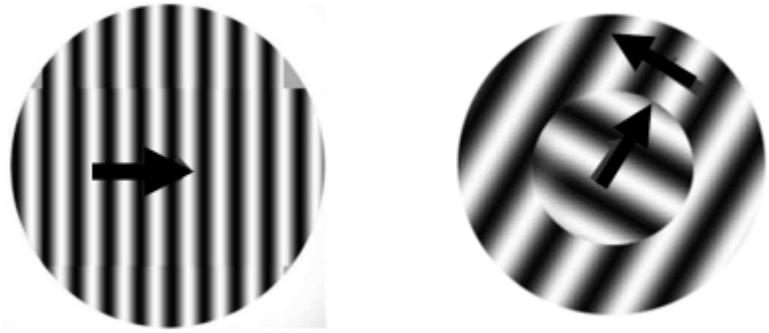


FIG. 18

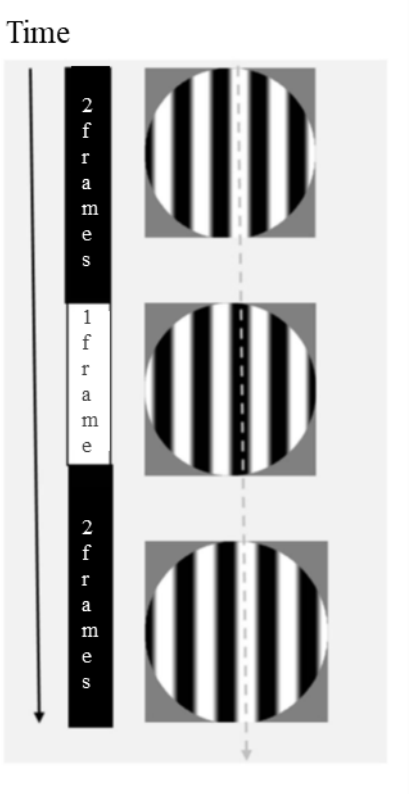


FIG. 19

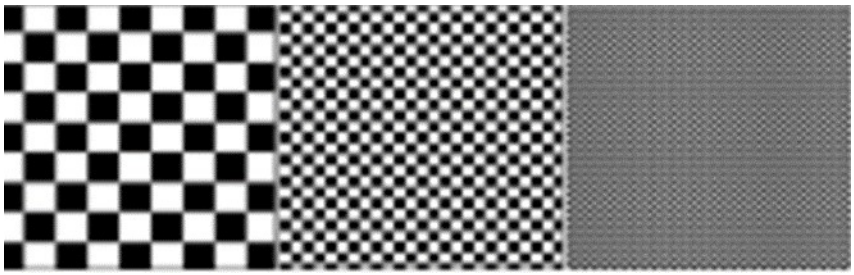


FIG. 20