Fig. 1a

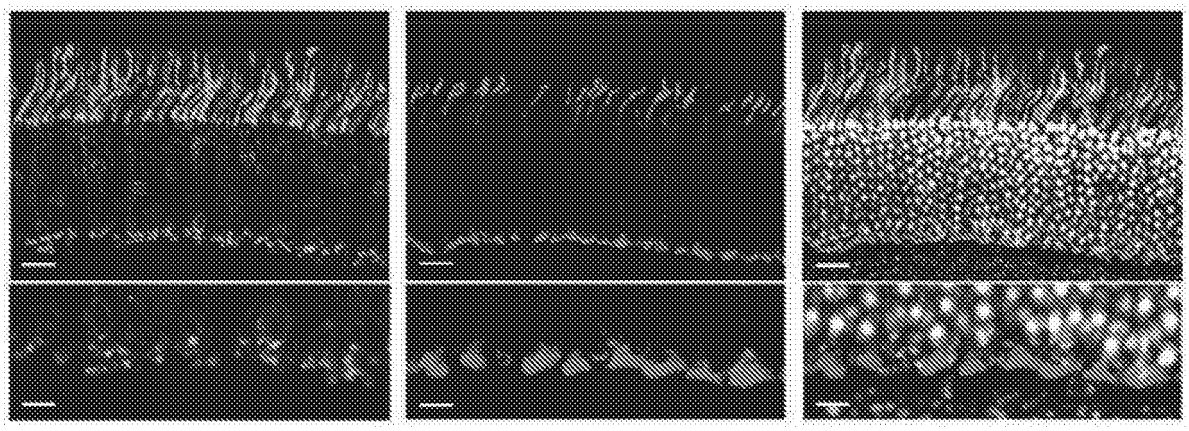


Fig. 1b

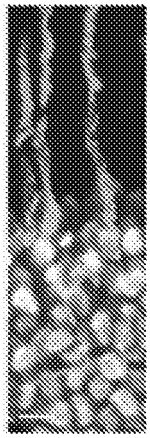


Fig. 1c

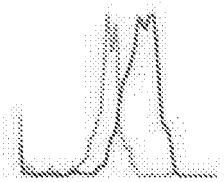


Fig. 1d

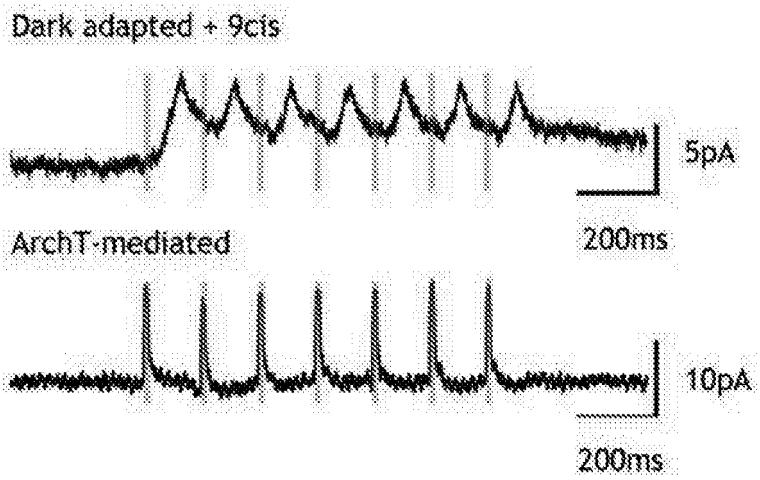


Fig. 2a

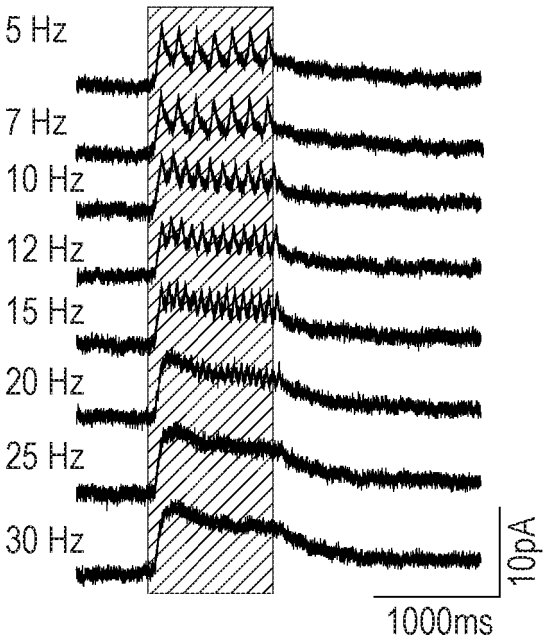


Fig. 2b

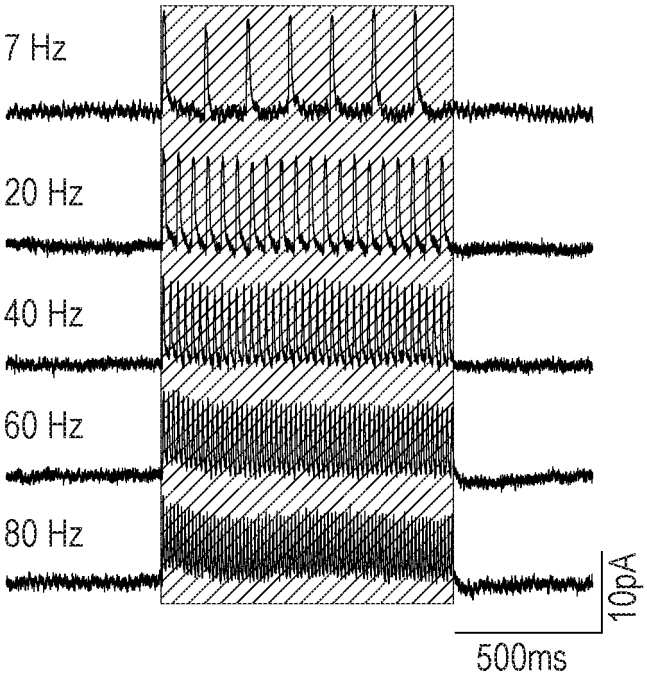


Fig. 2c

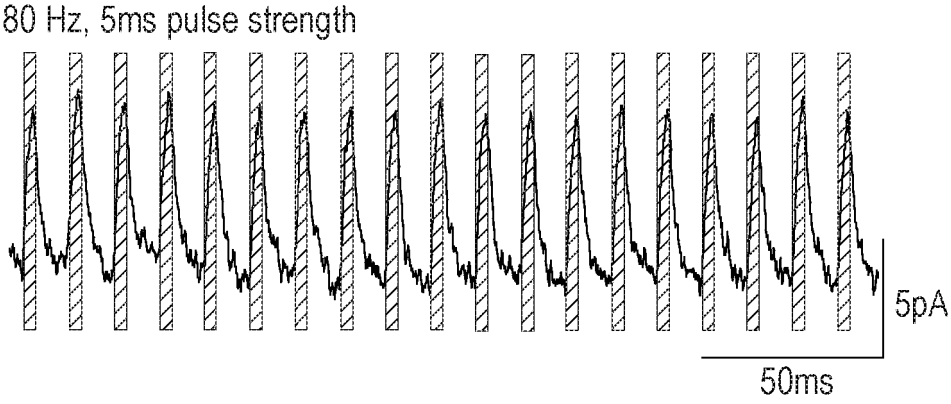


Fig. 2d

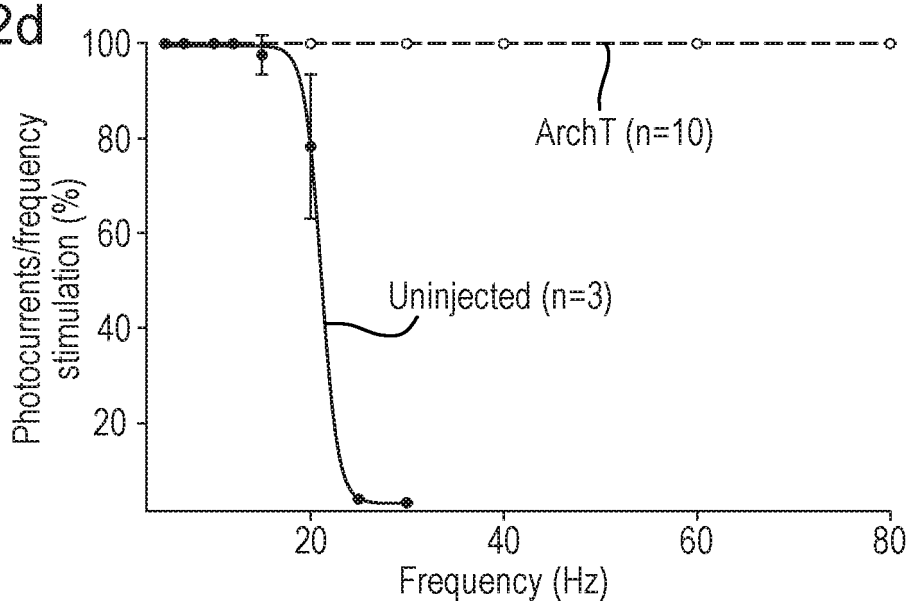


Fig. 2e

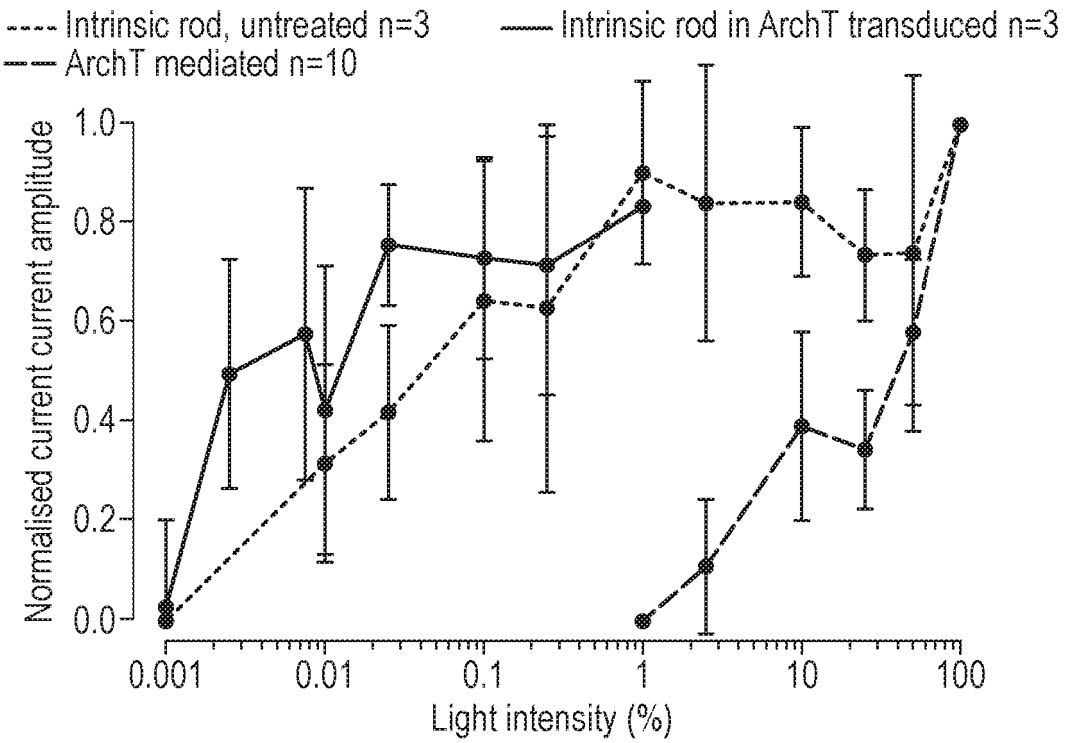

Intrinsic rod, untreated n=3
Intrinsic rod in ArchT transduced n=3
ArchT mediated n=10
Normalised current current amplitude
1.0
0.8
0.6
0.4
0.2
0.0
0.001
0.01
0.1
1
10
100
Light intensity (%)

Fig. 2f

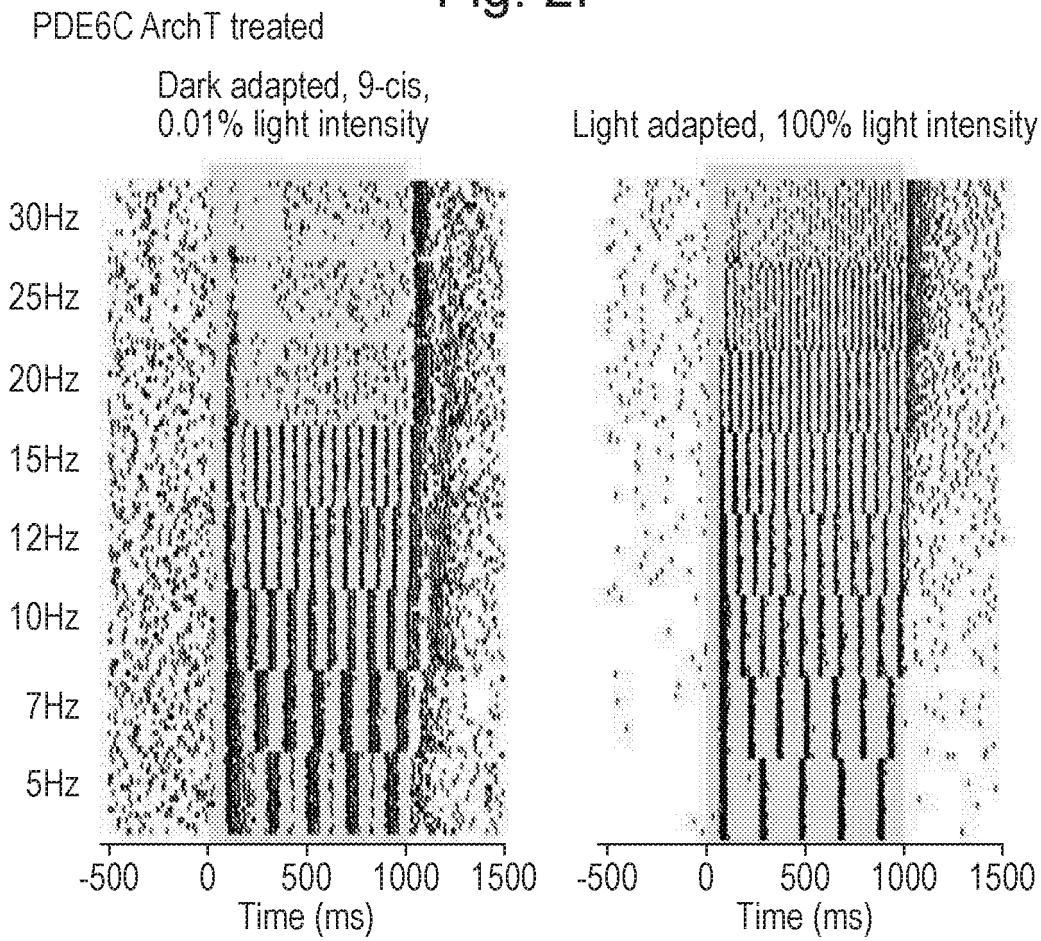

PDE6C ArchT treated
Dark adapted, 9-cis,
0.01% light intensity
Light adapted, 100% light intensity
30Hz
25Hz
20Hz
15Hz
12Hz
10Hz
7Hz
5Hz
-500
0
500
1000
1500
Time (ms)

Fig. 3a

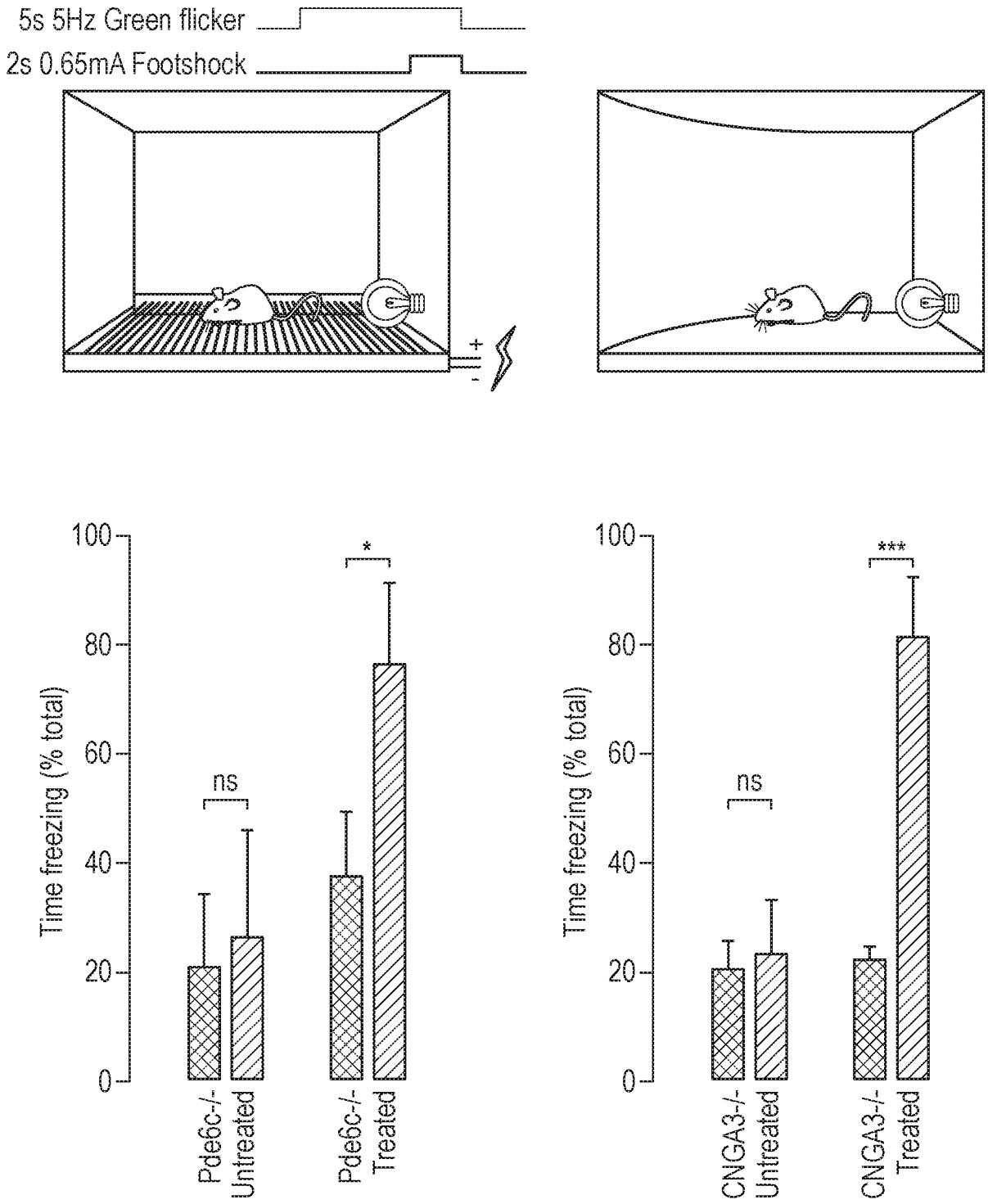
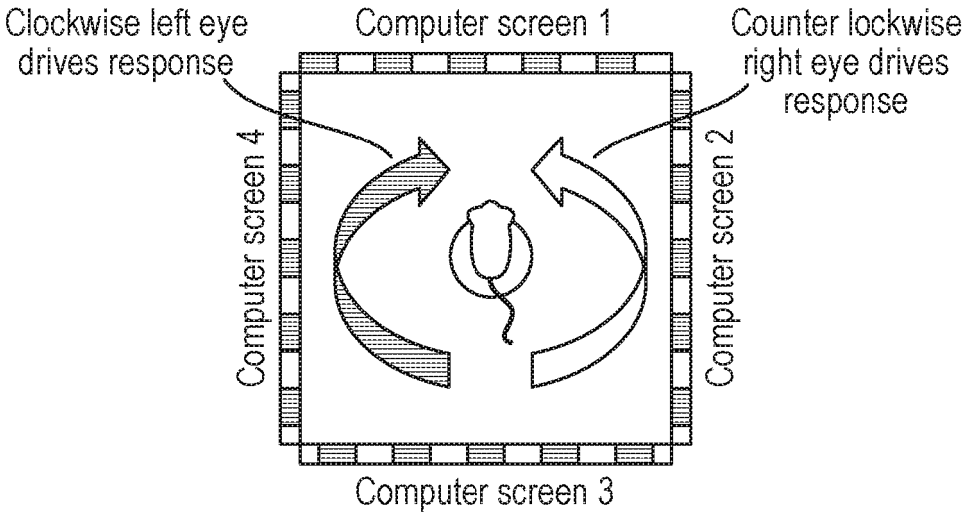

5s 5Hz Green flicker
2s 0.65mA Footshock
+
-
Time freezing (% total)
100
80
60
40
20
0
ns
*
Pde6c-/-
Untreated
Pde6c-/-
Treated
Time freezing (% total)
100
80
60
40
20
0
ns
***
CNGA3-/-
Untreated
CNGA3-/-
Treated

Fig. 3b


Clockwise left eye drives response
Computer screen 1
Counter lockwise right eye drives response
Computer screen 4
Computer screen 2
Computer screen 3

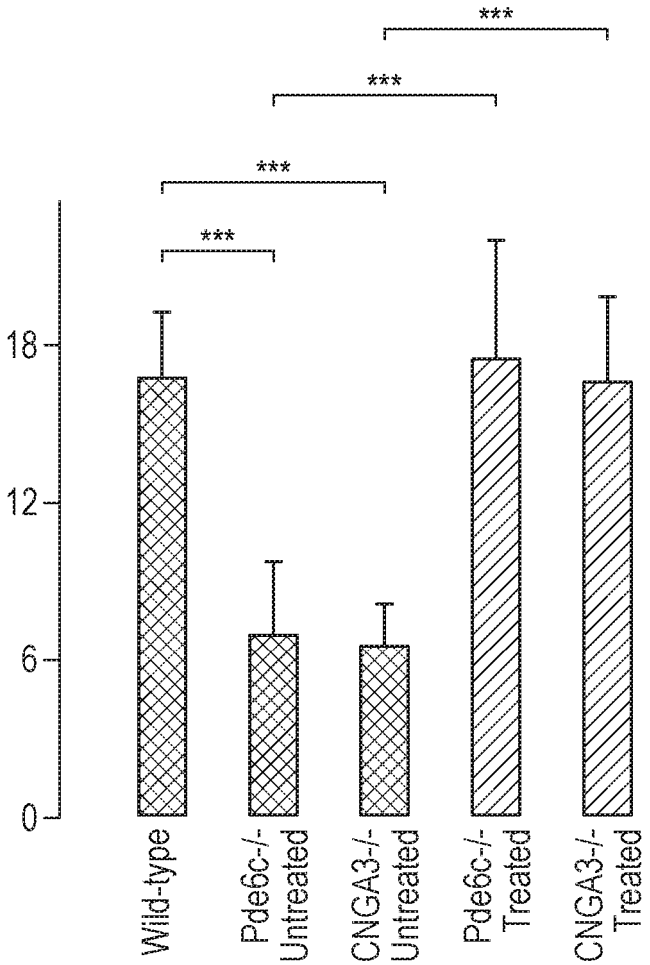

***
***
***
***
18
12
6
0
Wild-type
Pde6c-/- Untreated
CNGA3-/- Untreated
Pde6c-/- Treated
CNGA3-/- Treated

Fig. 4a

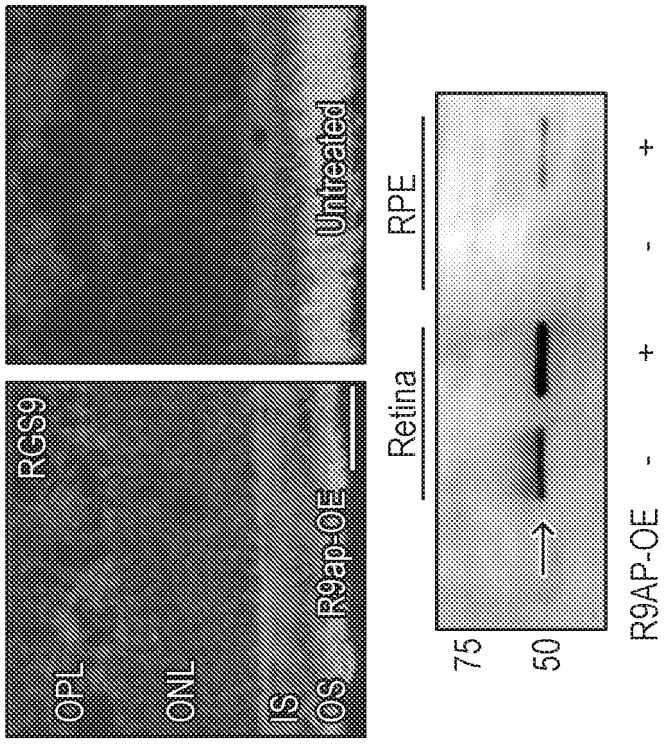

RGS9
R9ap-OE
Untreated
OPL
ONL
IS
OS
Retina
RPE
75
50
R9AP-OE - + - +

Fig. 4b

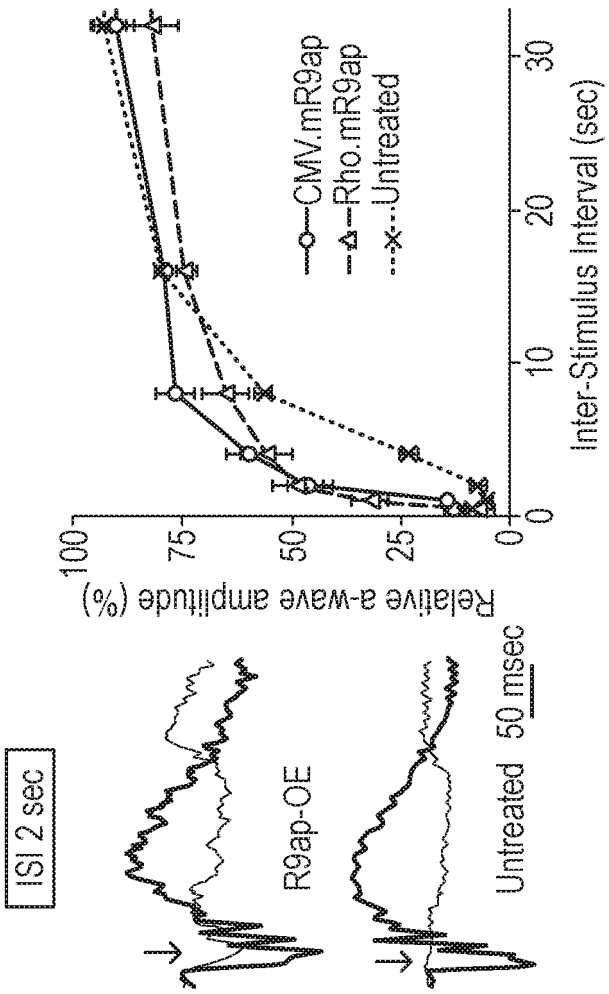

ISI 2 sec
R9ap-OE
Untreated
50 msec
Relative a-wave amplitude (%)
100
75
50
25
0
0
10
20
30
Inter-Stimulus Interval (sec)
CMV.mR9ap
Rho.mR9ap
Untreated

Fig. 5a

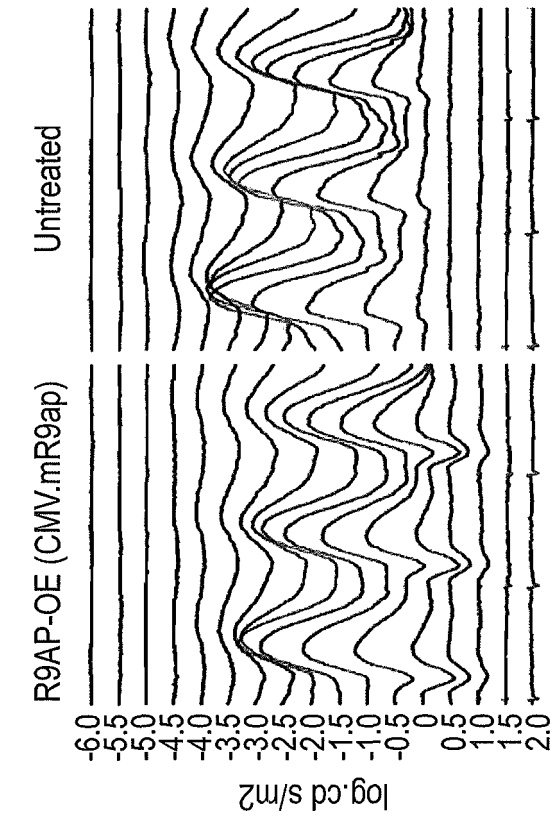


Fig. 5b

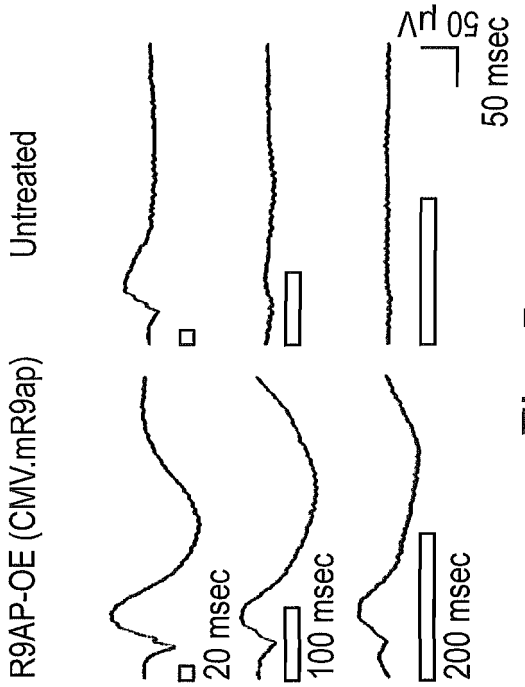


Fig. 5c

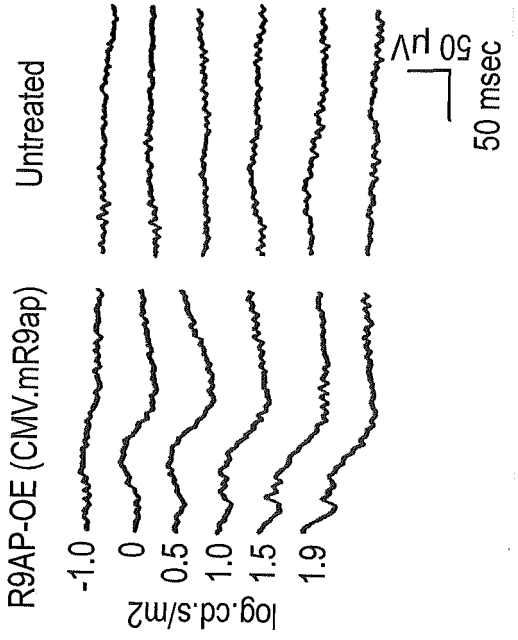


Fig. 6a

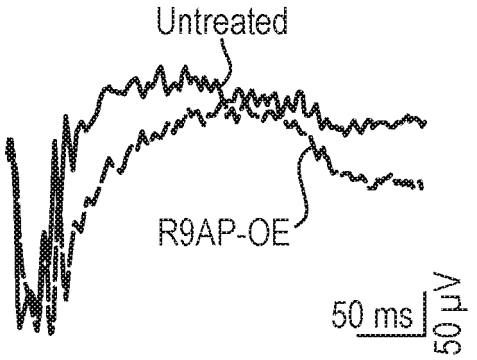


Fig. 6b

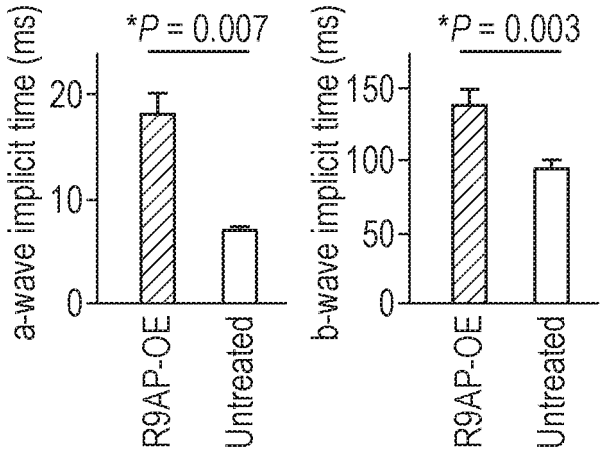


Fig. 6c

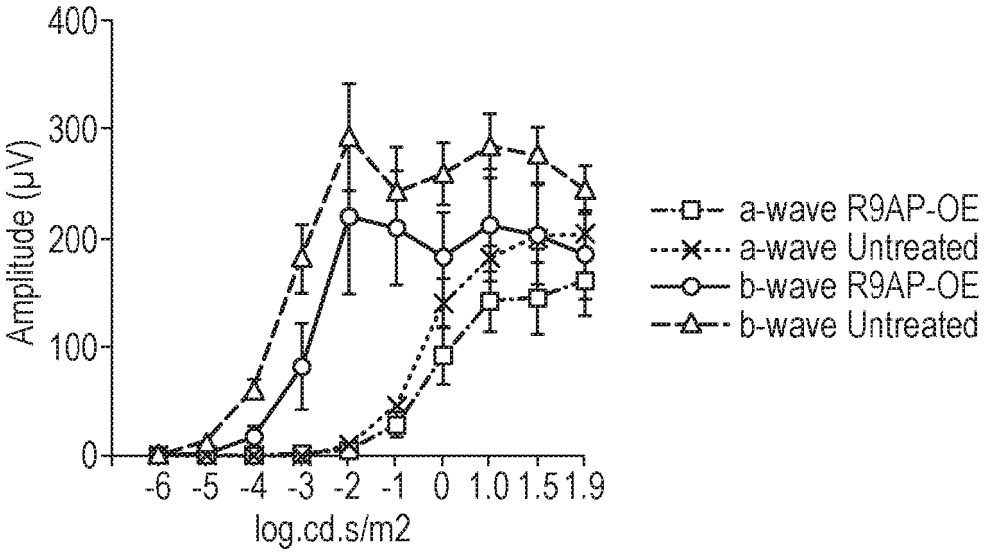


Fig. 7a

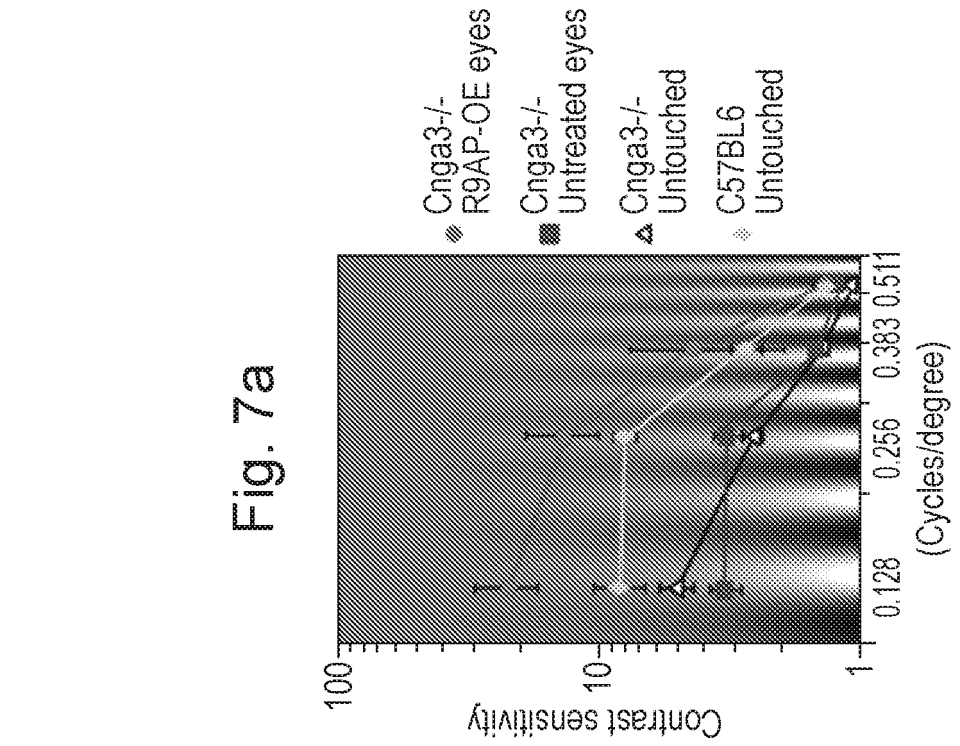

Contrast sensitivity
100
10
1
0.128
0.256
0.383
0.511
(Cycles/degree)
Cnga3-/- R9AP-OE eyes
Cnga3-/- Untreated eyes
Cnga3-/- Untouched
C57BL6 Untouched

Fig. 7b

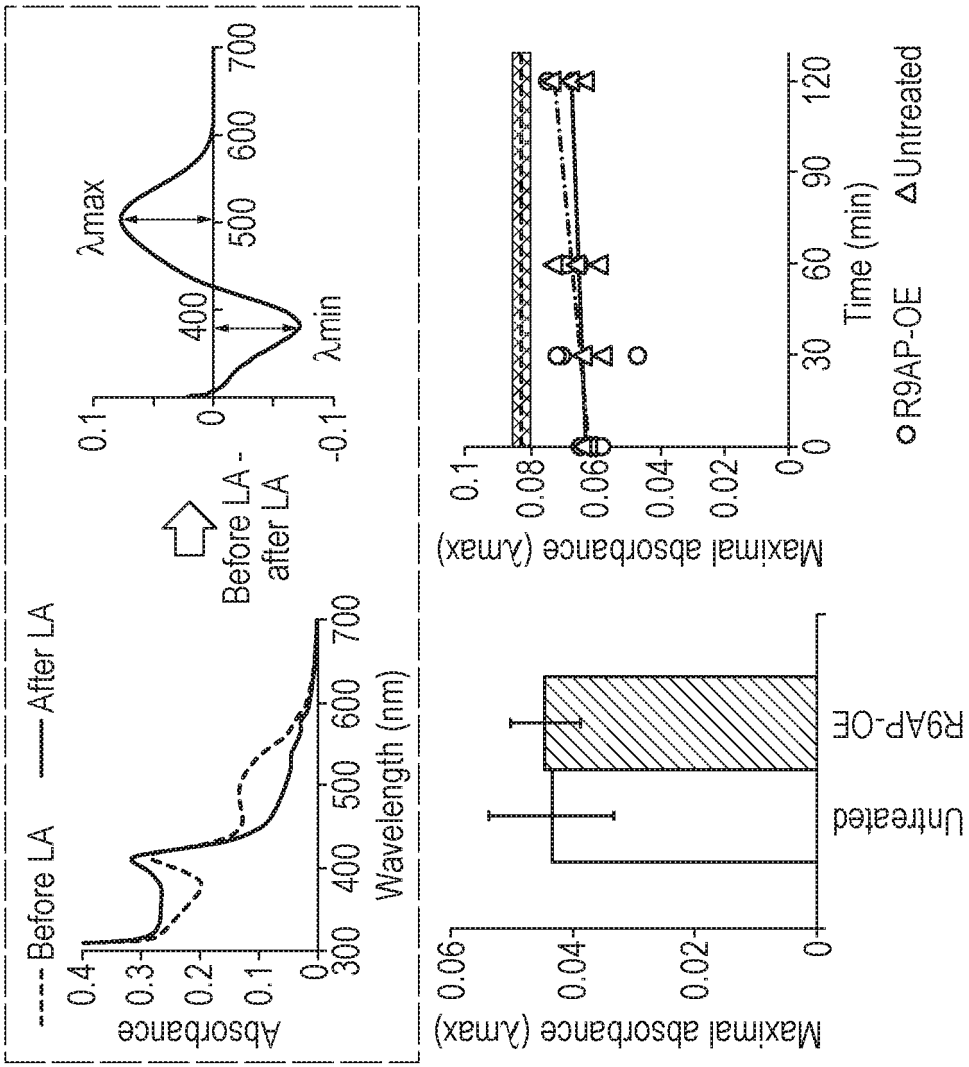

Absorbance
0.4
0.3
0.2
0.1
0
300
400
500
600
700
Wavelength (nm)
Before LA
After LA
Before LA - after LA
λmax
λmin
0.1
0
-0.1
400
500
600
700
Maximal absorbance (λmax)
0.1
0.08
0.06
0.04
0.02
0
0
30
60
90
120
Time (min)
R9AP-OE
Untreated
Maximal absorbance (λmax)
0.06
0.04
0.02
0
Untreated
R9AP-OE

Fig. 8

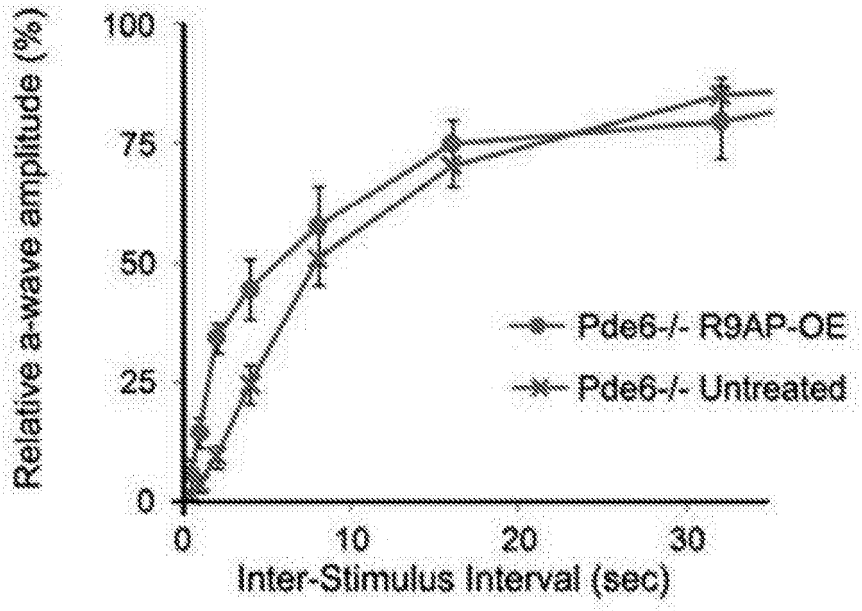

Relative a-wave amplitude (%)
100
75
50
25
0
0
10
20
30
Inter-Stimulus Interval (sec)
Pde6-/- R9AP-OE
Pde6-/- Untreated

Fig. 9

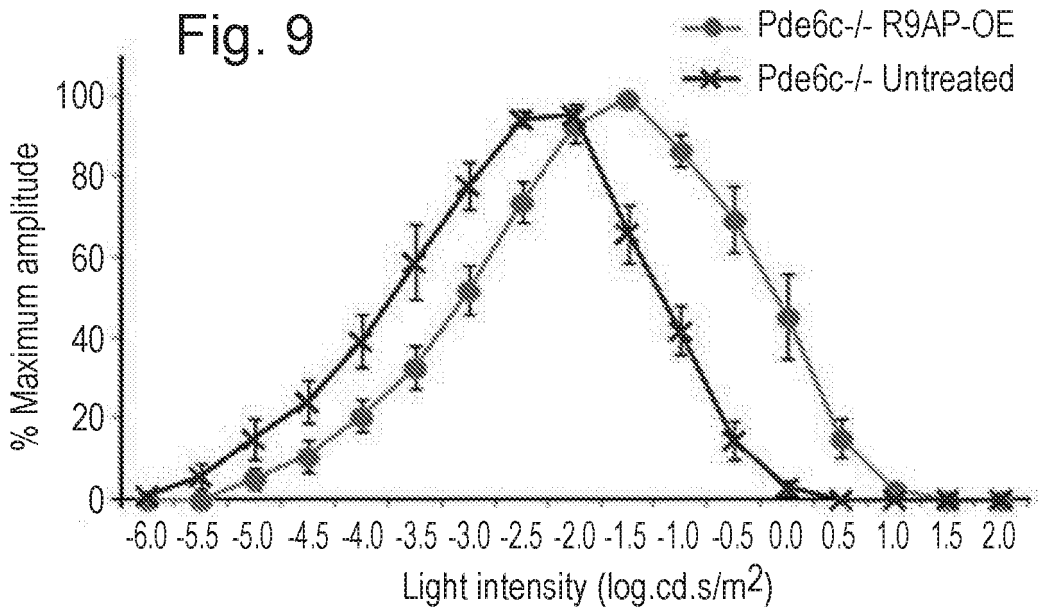
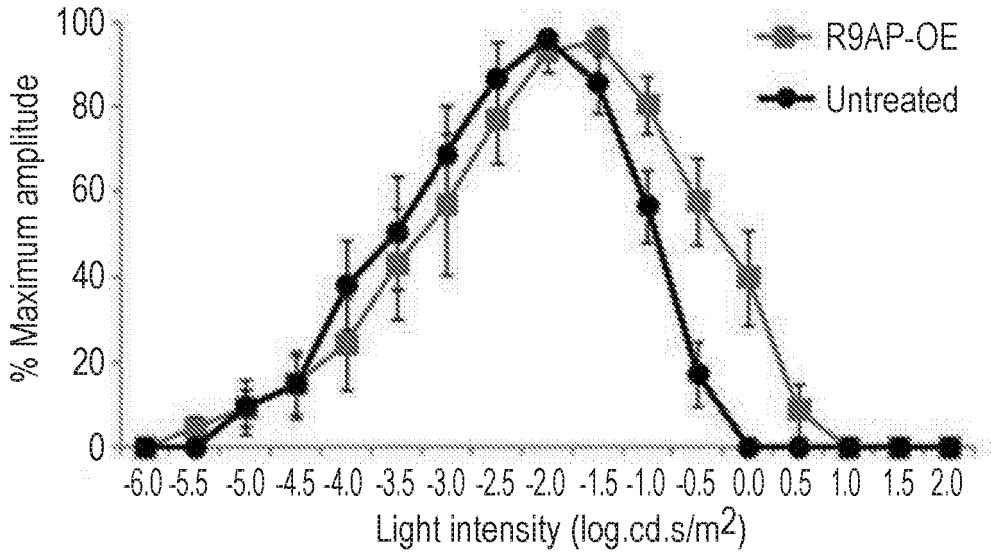

Pde6c-/- R9AP-OE
Pde6c-/- Untreated
% Maximum amplitude
100
80
60
40
20
0
-6.0 -5.5 -5.0 -4.5 -4.0 -3.5 -3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0
Light intensity (log.cd.s/m2)

Fig. 10


R9AP-OE
Untreated
% Maximum amplitude
100
80
60
40
20
0
-6.0 -5.5 -5.0 -4.5 -4.0 -3.5 -3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0
Light intensity (log.cd.s/m2)

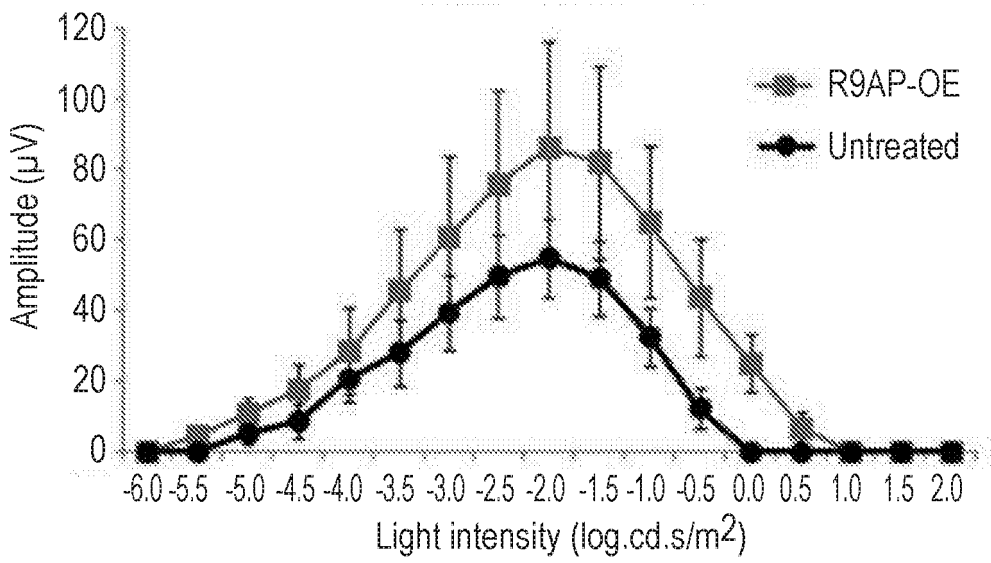

R9AP-OE
Untreated
Amplitude (µV)
120
100
80
60
40
20
0
-6.0 -5.5 -5.0 -4.5 -4.0 -3.5 -3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0
Light intensity (log.cd.s/m2)

Fig. 11

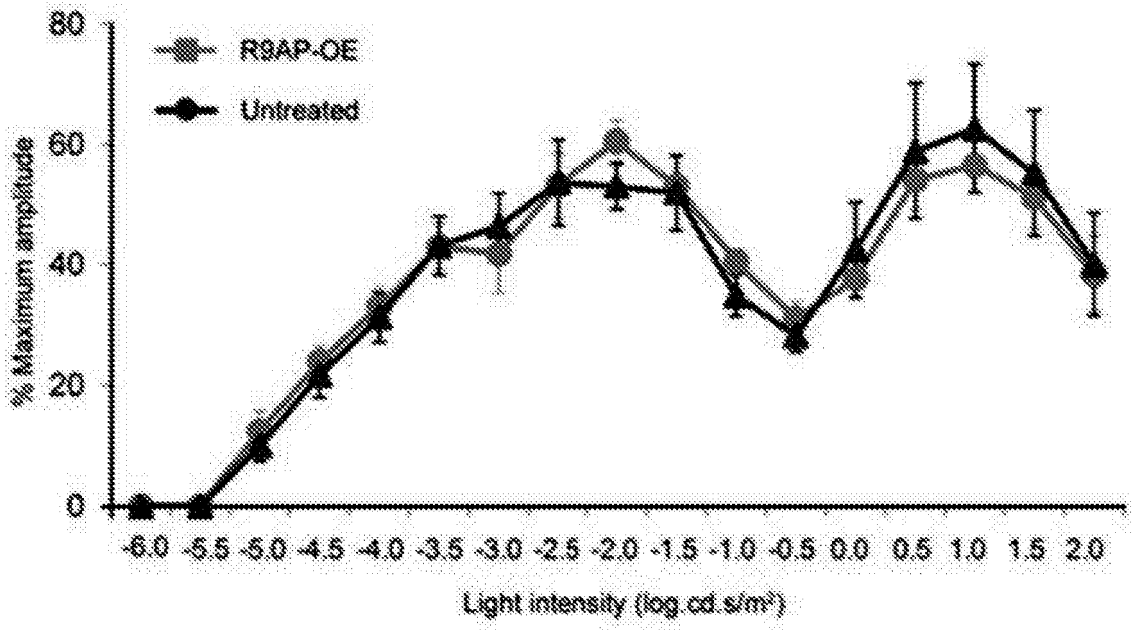
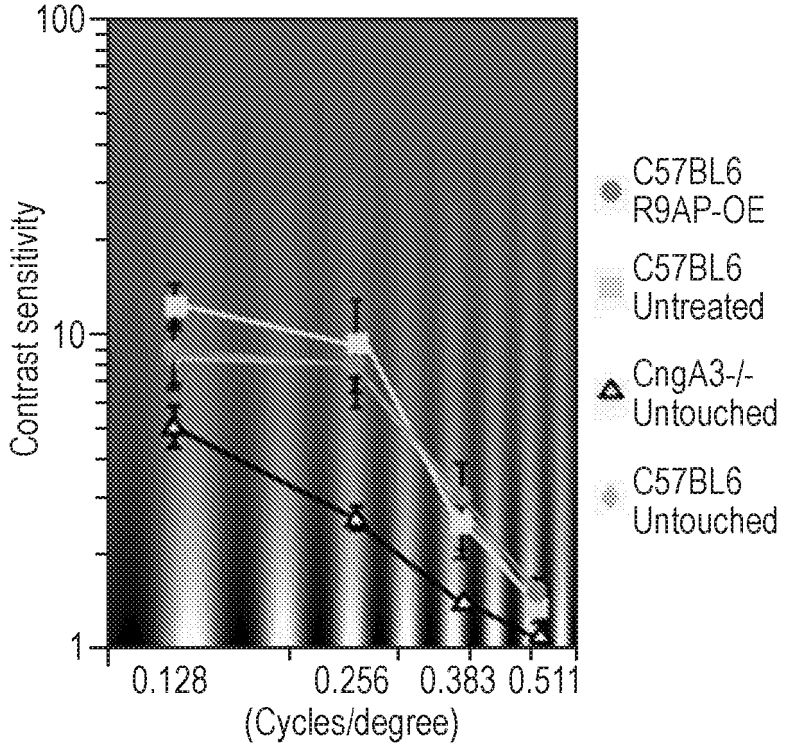

R9AP-OE
Untreated
% Maximum amplitude
80
60
40
20
0
-6.0 -5.5 -5.0 -4.5 -4.0 -3.5 -3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0
Light intensity (log cd.s/m²)

Fig. 12


100
10
1
Contrast sensitivity
0.128
0.256
0.383
0.511
(Cycles/degree)
C57BL6 R9AP-OE
C57BL6 Untreated
CngA3-/- Untouched
C57BL6 Untouched