**Cell Reports, Volume *36***

## Supplemental information

# Disassembly and rewiring of a mature converging excitatory circuit following injury

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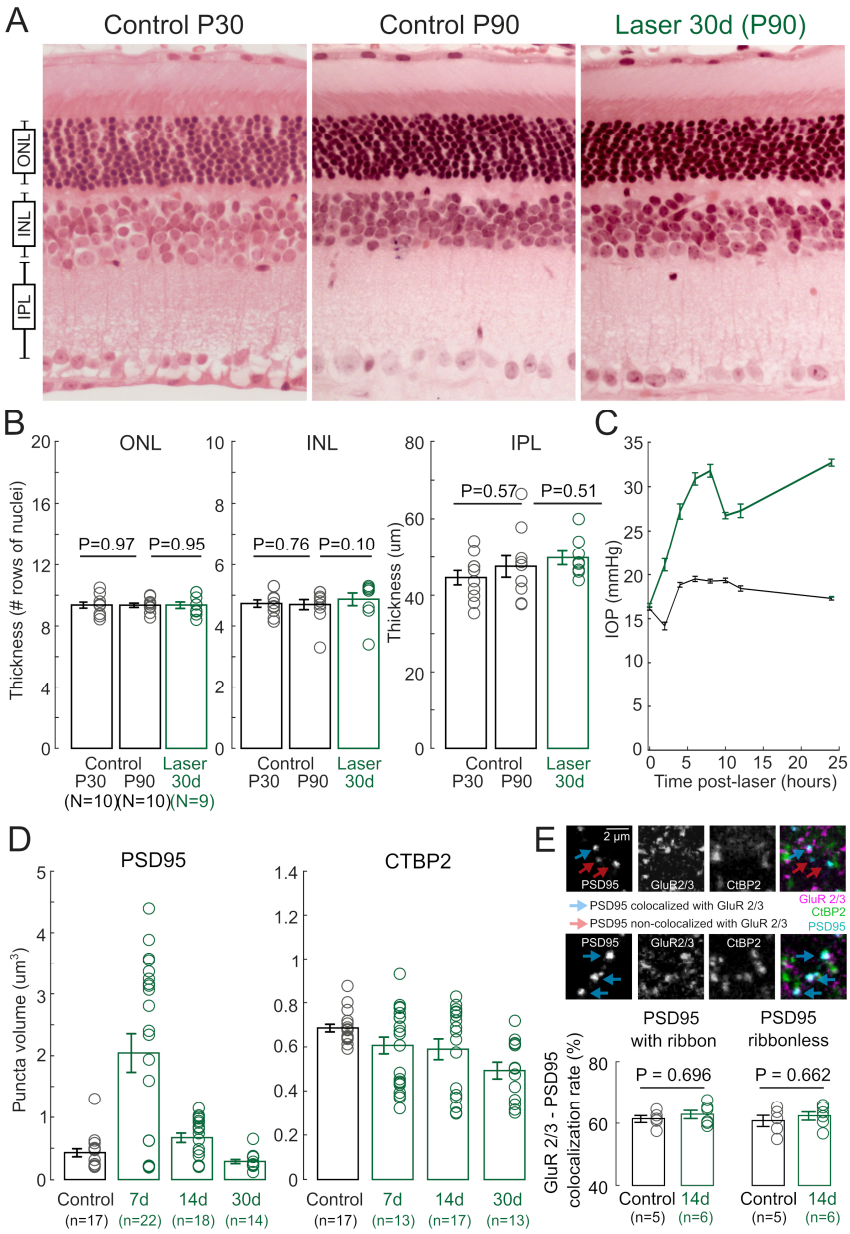


**Figure S1. Characterization of the LIOH model, Related to Figure 1**

**A:** Representative vertical sections from control retinas at P30 (left), P90 (middle) and after 30 days from laser (age P90, right) labelled with Hematoxylin-Eosin. ONL (outer nuclear layer, INL (inner nuclear layer) and IPL (inner plexiform layer) limits are delineated next to the sample images.
**B:** Thickness of nuclear layers (ONL, INL) and synaptic layer (IPL). N = number of animals.
**C:** Intraocular pressure profile in the first 24 hours following laser induced ocular hypertension. Lasered eyes (green) versus contralateral control eyes (black). N=8 animals.
**D:** Volume of PSD95 puncta expressed by $A_{ON\text{-}S}$ RGCs (left panel) and volume of CtBP2 puncta in the corresponding IPL sublamina. n=number of $A_{ON\text{-}S}$ RGCs analyzed from N=13 animals per group.
**E:** Colocalization rates of ribbon-apposed and ribbonless PSD95 with GluR 2/3 receptors in individual AON-S RGCs from control retinas and after 14 days from laser. n = number of cells from N = 5 animals. Top panels: example of individual PSD95 puncta either colocalized (blue arrow) or non-colocalized (red arrow) with GuR 2/3. Bar plots: mean±SEM. Circles: Individual values. P-values: Rank-sum comparisons between groups indicated by lines.

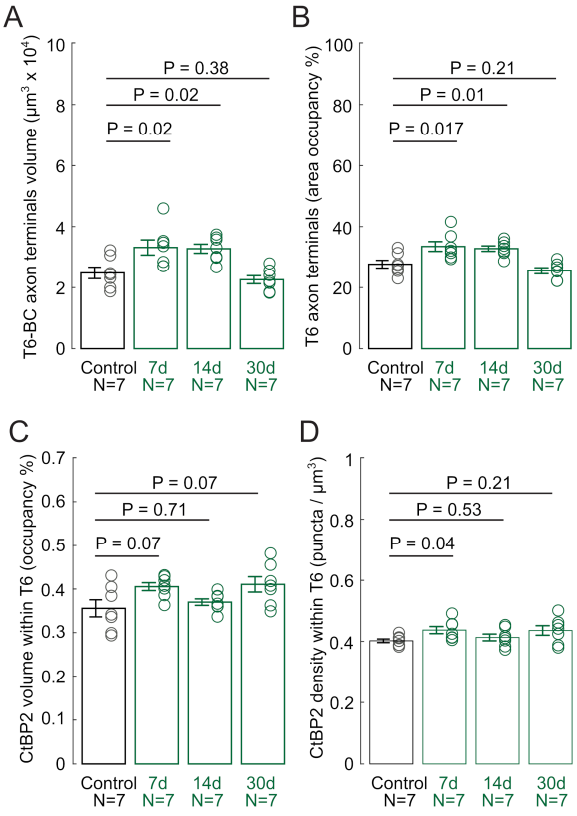


**Figure S2. Axon terminals of T6-BCs, Related to Figure 2**

**A:** T6-BC cell axon terminal volume within a 200x200µm IPL region of the whole mount retina. N=number of animals.
**B:** T6-BC axon terminal area occupancy within a 200x200µm IPL region (projection along IPL depth) of the whole mount retina. N=number of animals.
**C:** Volume occupancy of CtBP2 within T6-BC axon terminals. N = number of animals.
**D:** Density of CtBP2 within T6-BC axon terminals. N = number of animals.
Bar plots: mean±SEM. Circles: Individual values. P-values: Rank-sum comparisons between groups indicated by lines.

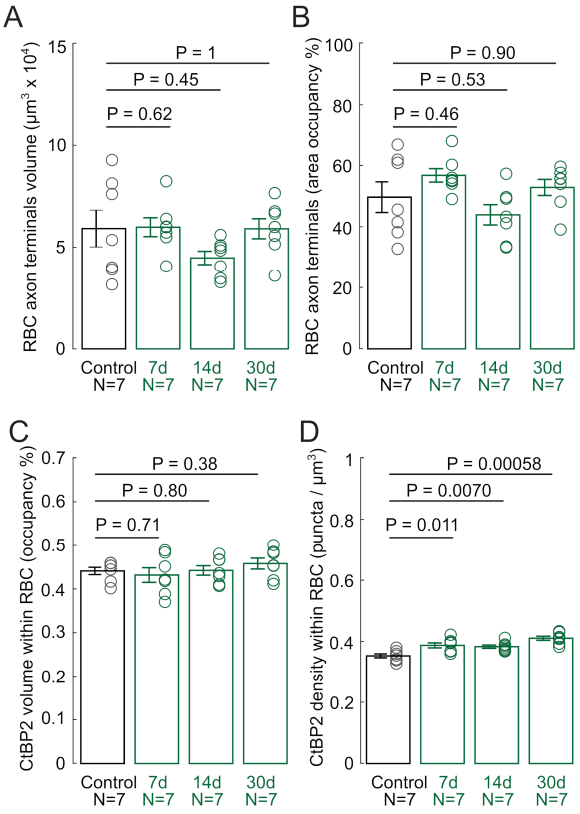


**Figure S3. Axon terminals of RBCs, Related to Figure 3**

**A:** RBC axon terminal volume within a 200x200µm IPL region of the whole mount retina. N=number of animals.
**B:** RBC axon terminal area occupancy within a 200x200µm IPL region (projection along IPL depth) of the whole mount retina. N=number of animals.
**C:** Volume occupancy of CtBP2 within RBC axon terminals. N=number of animals.
**D:** Density of CtBP2 within RBC axon terminals. N=number of animals.
Histograms: mean±SEM. Circles: Individual values. P-values: Rank-sum comparisons between groups indicated by lines.

**Table S1. PSD95 density on $A_{ON\text{-}S}$ RGCs, Related to Figure 1.**

Absolute number of PSD95 puncta per $A_{ON\text{-}S}$ RGC for each experimental group. Related to Figure 1.

| | **PSD95 density per unit-length dendrite (puncta/$\mu$m; mean±SEM)** |
|---|---|
| **Control** | 0.507±0.026 |
| **LIOH 7d** | 0.264±0.034 |
| **LIOH 14d** | 0.288±0.045 |
| **LIOH 30d** | 0.373±0.038 |

**Table S2. Intensity-response values for $A_{ON\text{-}S}$ RGCs peak currents across rod and cone-mediated light levels, Related to Figure 4.**

Light levels and peak response currents measured in whole-cell voltage-clamp recordings of $A_{ON\text{-}S}$ RGCs at -60mV to isolate excitatory currents.

| **CONTROL** | | **LIOH** | |
|---|---|---|---|
| **Rod intensities (Rh*/rod = isomerizations per rod; mean±SEM)** | **Peak current (pA; mean ± sem)** | **Rod intensities (Rh*/rod = isomerizations per rod; mean±SEM)** | **Peak current (pA; mean±SEM)** |
| 0.002±1.9e-05 | 26.33±6.20 | 0.002±0 | 15.56±5.05 |
| 0.007±6.39e-04 | 346.19±166.94 | 0.007±0.001 | 67.52±35.28 |
| 0.018±1.52e-04 | 616.25±338.96 | 0.017±0.001 | 35.97±12.67 |
| 0.055±0.005 | 890.67±265.43 | 0.061±0.004 | 151.16±26.32 |
| 0.221±0.020 | 1157.18±289.23 | 0.19±0.014 | 249.02±39.87 |
| 0.588±0.005 | 1259.63±431.77 | 0.514±0.033 | 301.54±39.30 |
| 1.18±0.01 | 1318.58±428.06 | 1.91±0.14 | 372.06±51.68 |
| | | 5.35±0.11 | 425.57±97.21 |
| **Cone intensities (P*/cone = isomerizations per S cone ; mean±SEM)** | **Peak current (pA; mean±SEM)** | **Cone intensities (P*/cone = isomerizations per S cone; mean±SEM)** | **Peak current (pA; mean±SEM)** |
| 0.016±0.001 | 15.66±2.86 | 0.015±0.002 | 7.50±1.26 |
| 0.065±0.006 | 63.23±16.76 | 0.08±0.005 | 12.42±2.45 |
| 0.17±0.002 | 375.73±73.72 | 0.18±0.002 | 20.30±5.64 |
| 0.52±0.048 | 1139.61±155.96 | 0.53±0.03 | 71.81±20.69 |
| 2.07±0.19 | 1896.46±212.34 | 2.12±0.14 | 242.73±62.91 |
| 5.51±0.06 | 2152.06±347.91 | 5.46±0.07 | 357.19±121.33 |
| | | 17.24±1.26 | 497.21±102.96 |
| | | 45.97±0.45 | 518.42±152.90 |