

**Stem Cell Reports, Volume 10**

**Supplemental Information**

**Retinal Ganglion Cell Diversity and Subtype Specification from Human  
Pluripotent Stem Cells**

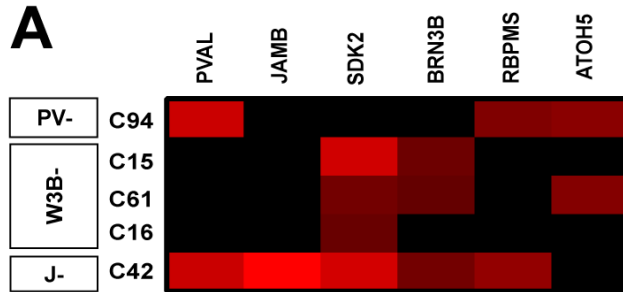
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<b>Table S1: Major RGC Subtype Classes, their molecular makers, and their function</b>		
Retinal Ganglion Cell Subtype	Molecular Markers	Function
ON-OFF Direction Selective-RGCs	CART, CDH6, MMP17, DRD4, HB9, THRH, BD	Respond to preferred directional motion of bright and dark stimuli
ON Direction Selective-RGCs	HOXD10, FSTL4	Respond to preferred directional motion of bright stimulus
Alpha-RGCs	SPP1, KCNG4, CB2, SMI32	Differentially respond to bright and dark stimuli
Intrinsically photosensitive-RGCs	Melanopsin, TBR2	Respond to light to regulate circadian rhythms and pupillary reflex
W3B-RGCs	SDK2, TYW3	Respond to stimuli that fall within the center of the receptive field.
J-RGCs	JAMB	Respond to directional movement of stimuli from soma-to-dendrite
PV-RGCs	PVALB	Transient responses with small receptive fields and strong surrounds.

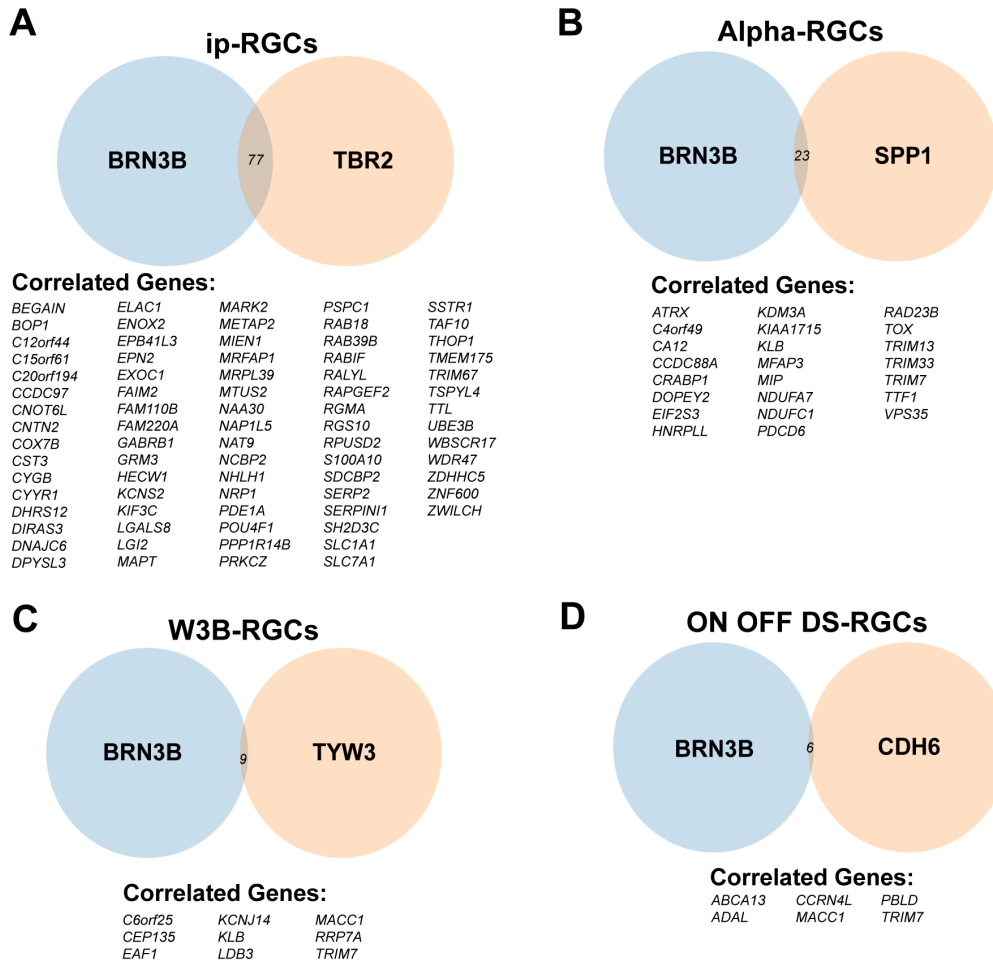
**Table S1:** This table indicates the major classes of RGC subtypes, previously identified molecular markers for each class, and their physiological function in the visual transmission. Related to Figures 3-7.

<b>Table S2: Primary Antibody Information</b>			
Primary Antibodies	Company	Catalog Number	Dilution
BRN3	Santa Cruz	SC-15375	1:200
$\beta$ III-Tubulin	Covance	PRB-435P/802001	1:1000
CART	Phoenix Pharmaceuticals	H-003-62	1:100
CB2	R&D Systems	MAB3655	1:50
CDH6	Sigma-Aldrich	HPA007047	1:100
DCX	Santa Cruz	SC-271390	1:50
FSTL4	Novus	91913	1:200
HUC/D	Molecular Probes	A-21271	1:200
ISLET1	DSHB	40.2D6	1:200
MAP2	Santa Cruz	SC-20172	1:200
MELANOPSIN	ThermoScientific	PA1-781	1:500
SMI-32	Calbiochem Millipore	NE1023	1:500
SPP1	Abcam	Ab91655	1:50

**Table S2:** Antibodies used in this study, related to Figures 1, 3, 4, 5, and 7.



**Figure S1: Single cell qRT-PCR reveals expression of markers for other RGC subtypes.** A variety of other subtypes were characterized using single cell qRT-PCR. (A) PV-, W3B-, and J-RGCs were identified through the expression of PVALB, SDK2, and JAMB respectively, in addition to their combinatorial expression with a variety of other RGC-associated markers.



**Figure S2: Single cell RNA-seq analyses indicate correlative genes for major RGC subtype classes.** Single cell RNAseq analyses of numerous subtypes reveals closely correlated genes. (A-D) SRCCA for BRN3B using the top 1000 correlating genes was combined with SRCCA for subtype specific markers and revealed correlated genes. For ip-, Alpha-, W3B-, and ON OFF DS-RGCs 77, 23, 9, and 6 genes were found closely correlated within the top 1000 genes.