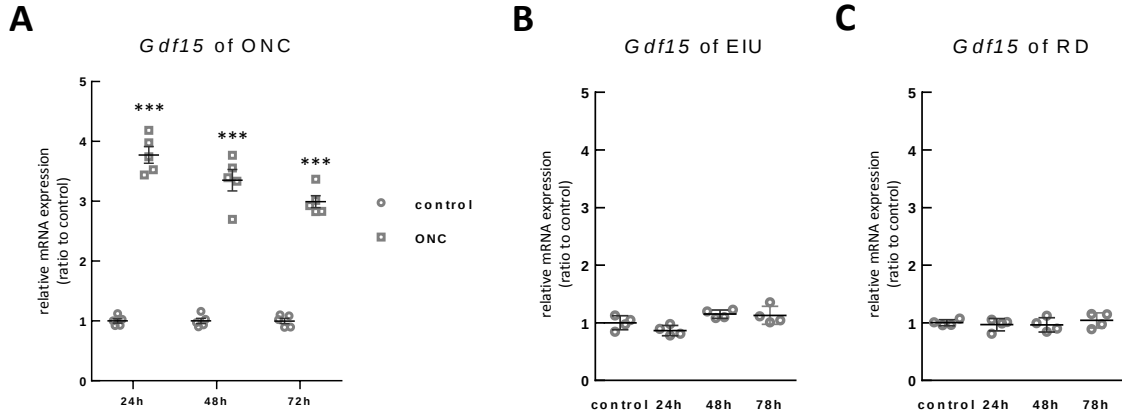


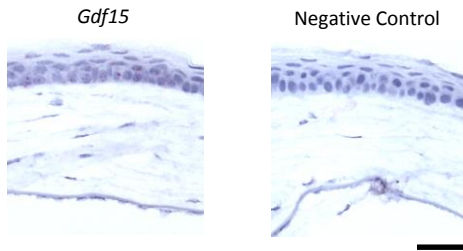
Supplemental Figure 1



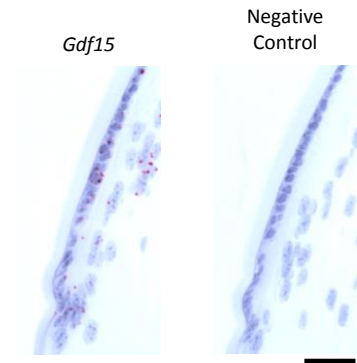
Supplemental Figure 1. *Gdf15* expression in the retina at different time points of ONC, EIU, and RD. (A) *Gdf15* expression in the retina of ONC (n=5 per group). (B) *Gdf15* expression in the retina of EIU (n=4 per group). (C) *Gdf15* expression in the retina of RD (n=4 per group). Values are mean $\pm$ SD. ***p<0.001 by two-tailed unpaired t-test.

Supplemental Figure 2

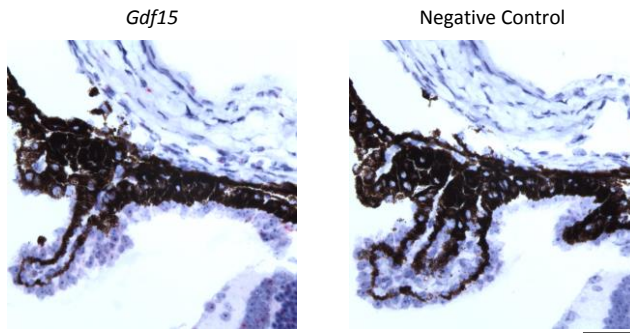
A



B



C

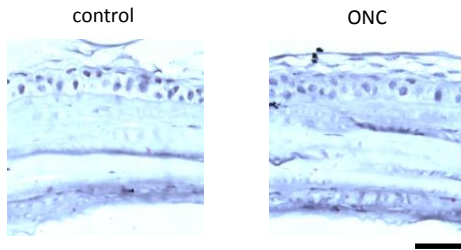


Supplemental Figure 2. *Gdf15* expression in the eye. *In situ* hybridization of *Gdf15* in (A) Cornea, (B) lens, and (C) ciliary body and ciliary processes of C57BL6/J mice (n=3 per group, representative pictures are shown).

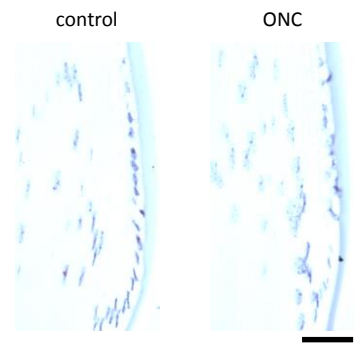
Scale bars 50 μ m.

Supplemental Figure 3

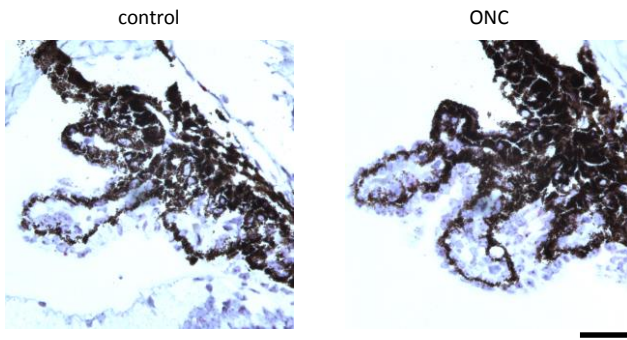
A



B

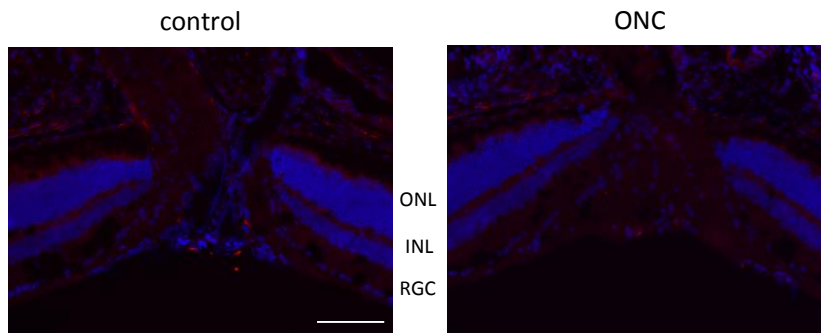


C



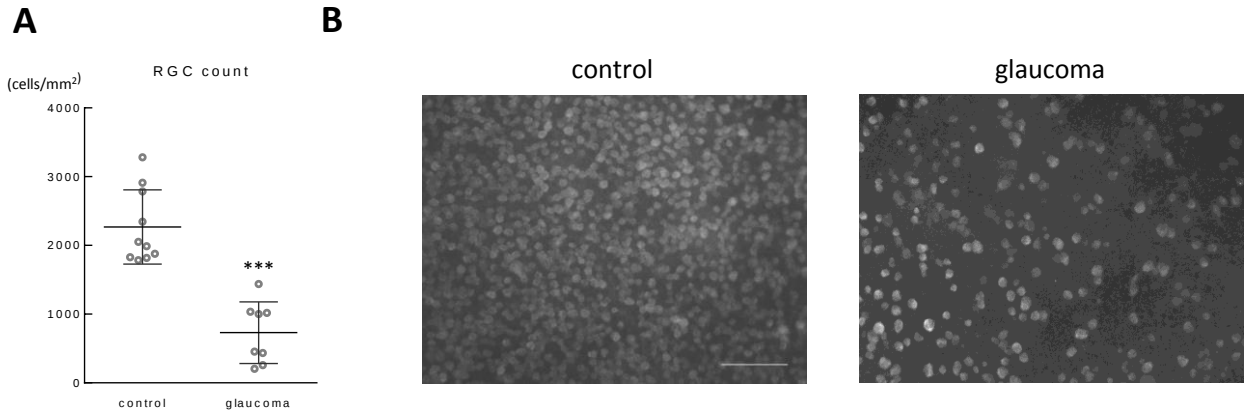
Supplemental Figure 3. *Gdf15* expression in the eye 24 hours after ONC. *In situ* hybridization of *Gdf15* in (A) Cornea, (B) lens, and (C) ciliary body and ciliary processes of C57BL6/J mice 24 hours after ONC (n=4 per group, representative pictures are shown). Scale bars 50 μ m.

Supplemental Figure 4



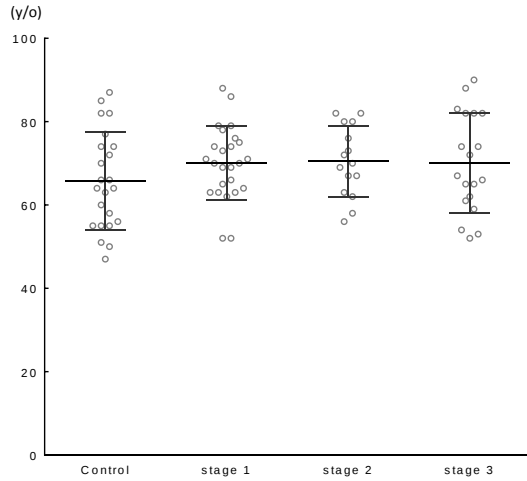
Supplemental Figure 4. F4/80 expression in the retina 24 hours after ONC. IHC for F4/80 (red) and DAPI (blue) in the retina 24 hours after ONC (n=6 per group, representative pictures are shown). Scale bars 100 μ m.

Supplemental Figure 5



Supplemental Figure 5. Ganglion cell counts of DBA2/J mice. (A) Ganglion cell counts of control and glaucoma group (control: n=10, glaucoma: n=8). (B) Representative pictures of flat mounted retina IHC for RBPMS. Control group includes 3-month-old DBA/2J mice, and glaucoma group includes 1-year-old DBA2/J mice. Scale bars 100µm. Values are mean $\pm$ SD. ***p<0.001 by two-tailed unpaired t-test.

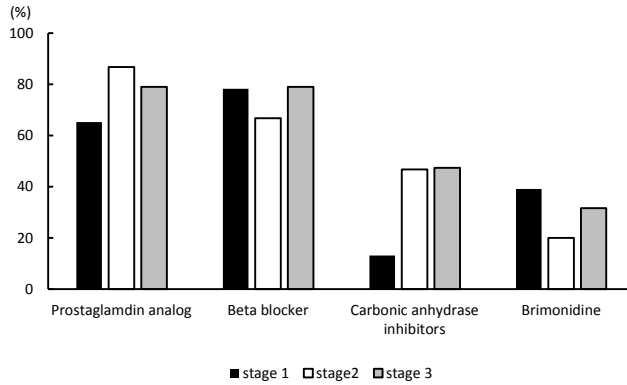
Supplemental Figure 6



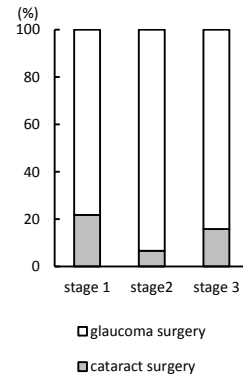
Supplemental Figure 6. Age distribution of human patients. There were no significant differences in age among the different groups (control: n=23, POAG stage 1: n=23, stage 2: n=15, and stage 3: n=19) by one-way ANOVA. Values are mean $\pm$ SD.

Supplemental Figure 7

A

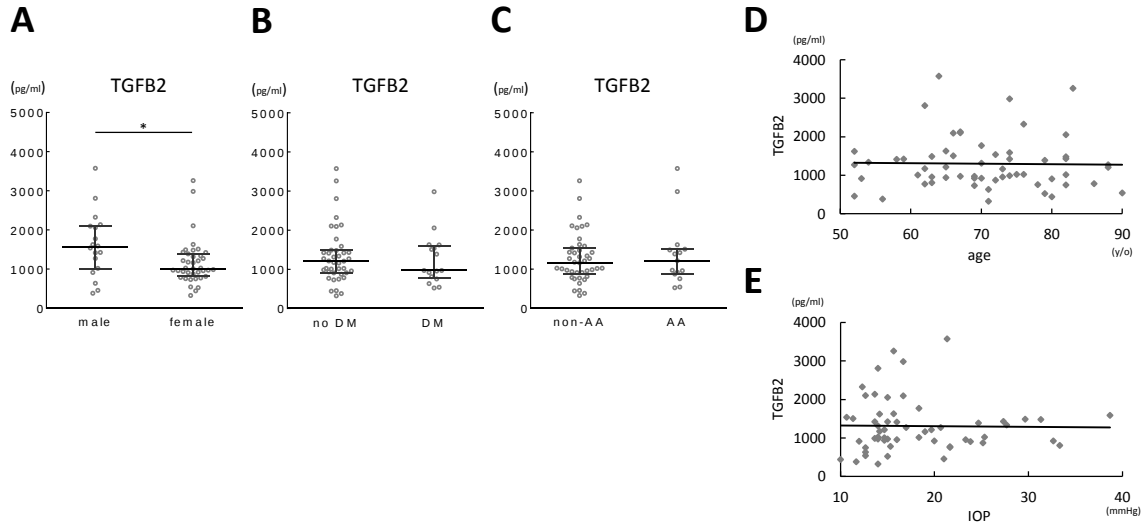


B



Supplemental Figure 7. Characterization of topical glaucoma medications and types of surgery for primary open angle glaucoma (POAG) patients. (A) Characterization topical glaucoma medications for POAG patients. No significant differences between different severity groups by chi-square test. (B) Characterization of type of surgery for POAG patients at the time of sample collection. No significant differences between different severity groups by Fisher's exact test.

Supplemental figure 8



Supplemental Figure 8. TGFβ2 level in aqueous humor (AH) of primary open angle glaucoma (POAG)

patients. (A-C) Analysis of TGFβ2 protein level in AH of POAG patients for (A) Gender: male (n=18) vs female (n=39) (B) Status of Diabetes: patients without DM (no DM: n=41) vs with DM (DM: n=16) (C) Race: Caucasian (CC: n=42) vs African American (AA: n=15). *p<0.05 by Mann Whitney U test. (D) Correlation between age and TGFβ2 protein level in AH of POAG patients (n=57, Pearson Correlation Coefficient = -0.015, 95% CI: -20.0 to 17.9, p=0.911). (E) Correlation between average IOP and TGFβ2 protein level in AH of POAG patients (n=57, Pearson Correlation Coefficient = -0.013, 95% CI: -30.3 to 27.6, p=0.925). Values are median with interquartile range.

Supplemental table 1

	ONC		EIU		RD	
	p-value	fold-change	p-value	fold-change	p-value	fold-change
Group 7						
(downregulated in ONC)						
N/A						
group 8						
(downregulated in EIU)						
<i>Aimp1</i>	0.085	0.987	0.020	0.988	0.223	0.693
group 9						
(downregulated in RD)						
<i>Il15</i>	0.111	1.686	0.143	1.327	0.020	0.500
<i>Il18</i>	0.060	0.987	0.149	1.486	0.020	0.494
<i>Il25(II17e)</i>	0.366	1.345	0.549	1.163	0.007	0.318
<i>Vegfa</i>	0.983	0.992	0.371	1.139	0.019	0.492
<i>Vegfc</i>	0.993	0.997	0.550	1.195	0.024	0.620
<i>Bmp5</i>	0.391	1.327	0.418	1.126	0.019	0.492
<i>Bmp7</i>	0.981	0.993	0.375	1.138	0.012	0.424
<i>Inhba</i>	0.381	1.333	0.213	1.987	0.027	0.394
<i>Tnfsf12</i>	0.973	0.990	0.139	1.329	0.019	0.492
<i>Tnfsf8</i>	0.127	1.494	0.435	1.120	0.023	0.564

Supplemental Table 1. Down-regulated genes in retinal cytokine/growth factor focused PCR array.

Supplemental table 2

mouse primer	
<i>Il1b</i>	Mm00434228_m1
<i>Tgfb2</i>	Mm00436955_m1
<i>Gdf1</i>	Mm00433562_m1
<i>Gdf3</i>	Mm00433563_m1
<i>Gdf6</i>	Mm01222341_m1
<i>Gdf7</i>	Mm00807130_m1
<i>Gdf9</i>	Mm00433565_m1
<i>Gdf10</i>	Mm01220860_m1
<i>Gdf11</i>	Mm01159973_m1
<i>Gdf15</i>	Mm00442228_m1
<i>F4/80 (Adgre1)</i>	Mm00802529_m1
<i>Actb</i>	Mm00607939_s1
<i>Gapdh</i>	Mm99999915_g1
Rat primer	
<i>Gdf15</i>	Rn00570083_m1
<i>Tgfb2</i>	Rn00676060_m1
<i>Actb</i>	Rn00667869_m1

Supplemental Table 2. The list of taqman probes used for real-time PCR.

Supplemental table 3

Interleukins		TNF superfamily		Growth Factors	
<i>Il1a</i>	Mm00439620_m1	<i>Cd40lg</i>	Mm00441911_m1	<i>Cntf</i>	Mm04213924_s1
<i>Il1b</i>	Mm00434228_m1	<i>Cd70</i>	Mm00441914_m1	<i>Csf1(MCSF)</i>	Mm00432686_m1
<i>Il2</i>	Mm00434256_m1	<i>Fasf</i>	Mm00438864_m1	<i>Csf2(GM-CSF)</i>	Mm01290062_m1
<i>Il3</i>	Mm00439631_m1	<i>Lta</i>	Mm00440228_gH	<i>Csf3(GCSF)</i>	Mm00438334_m1
<i>Il4</i>	Mm00445259_m1	<i>Ltb</i>	Mm00434774_g1	<i>Fgf10</i>	Mm00433275_m1
<i>Il5</i>	Mm00439646_m1	<i>Tnf</i>	Mm00443258_m1	<i>Lefty1</i>	Mm03053915_s1
<i>Il6</i>	Mm00446190_m1	<i>Tnfrsf11b</i>	Mm00435454_m1	<i>Lif</i>	Mm00434762_g1
<i>Il7</i>	Mm01295803_m1	<i>Tnfsf4</i>	Mm00437214_m1	<i>Osm</i>	Mm01193966_m1
<i>Il9</i>	Mm00434305_m1	<i>Tnfsf8</i>	Mm00437153_m1	<i>Thpo</i>	Mm00437040_m1
<i>Il10</i>	Mm01288386_m1	<i>Tnfsf9</i>	Mm00437155_m1	<i>Vegfa</i>	Mm00437306_m1
<i>Il11</i>	Mm00434162_m1	<i>Tnfsf10</i>	Mm01283606_m1	<i>Vegfb</i>	Mm00442102_m1
<i>Il12b</i>	Mm01288989_m1	<i>Tnfsf11</i>	Mm00441906_m1	<i>Vegfc</i>	Mm00437310_m1
<i>Il13</i>	Mm00434204_m1	<i>Tnfsf12</i>	Mm02583406_s1	<i>Figf(Vegfd)</i>	Mm01131929_m1
<i>Txlna(Il14)</i>	Mm01185793_m1	<i>Tnfsf13</i>	Mm03809849_s1	<i>Pgfb(Plgf)</i>	Mm00435613_m1
<i>Il15</i>	Mm00434210_m1	<i>Tnfsf13b</i>	Mm00446347_m1	Interferons	
<i>Il16</i>	Mm00516039_m1	<i>Tnfsf14</i>	Mm00444567_m1	<i>Ifna2</i>	Mm00833961_s1
<i>Il17a</i>	Mm00439618_m1	<i>Tnfsf15</i>	Mm00770031_m1	<i>Ifna4</i>	Mm00833969_s1
<i>Il17b</i>	Mm01258783_m1	<i>Tnfsf18</i>	Mm00839222_m1	<i>Ifnb1</i>	Mm00439552_s1
<i>Il17c</i>	Mm00521397_m1	TGFB superfamily		<i>Ifng</i>	Mm01168134_m1
<i>Il17f</i>	Mm00521423_m1	<i>Bmp1</i>	Mm00802220_m1	Chemokines	
<i>Il18</i>	Mm00434226_m1	<i>Bmp2</i>	Mm01340178_m1	<i>Ccl2</i>	Mm00441242_m1
<i>Il19</i>	Mm01288324_m1	<i>Bmp3</i>	Mm00557790_m1	<i>Ccl19</i>	Mm00839967_g1
<i>Il20</i>	Mm00445341_m1	<i>Bmp4</i>	Mm00432087_m1	Others	
<i>Il21</i>	Mm00517640_m1	<i>Bmp5</i>	Mm00432091_m1	<i>Adipoq</i>	Mm00456425_m1
<i>Il23a</i>	Mm00518984_m1	<i>Bmp6</i>	Mm01332882_m1	<i>Aimp1</i>	Mm01320868_m1
<i>Il24</i>	Mm00474102_m1	<i>Bmp7</i>	Mm00432102_m1	<i>Ctf1</i>	Mm00432772_m1
<i>Il25(Il17e)</i>	Mm00499822_m1	<i>Gdf2</i>	Mm00807340_m1	<i>Mif</i>	Mm01611157_gH
<i>Il27</i>	Mm00461162_m1	<i>Gdf5</i>	Mm00433564_m1	<i>Scgb3a1</i>	Mm01284345_g1
		<i>Mstn(Gdf8)</i>	Mm00433565_m1	<i>Spp1</i>	Mm00436767_m1
		<i>Gdf9</i>	Mm00439683_m1	Internal control	
		<i>Gdf15</i>	Mm00442228_m1	<i>Actb</i>	Mm00607939_s1
		<i>Inha</i>	Mm00434339_m1		
		<i>Inhba</i>	Mm01254559_m1		
		<i>Tgfb1</i>	Mm01178820_m1		
		<i>Tgfb2</i>	Mm00436955_m1		

Supplemental Table 3. The list of taqman probes used for retinal cytokine/growth factor-focused PCR array.