| Animal # | BD (Beam Diameter) (µm) | PD (Pore Diameter) (µm) | CTVF (Connective Tissue Volume Fraction) | CTV (Connective Tissue Volume) *($10^6 µm^3$)* | LV (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** |
| **BN1** | 17.8 / 19 / 1.3 / 7.1% | 30.7 / 28.4 / 2.3 / 8.2% | 0.388 / 0.443 / 0.055 / 14.2% | 62.39 / 65.51 / 3.13 / 5% | 160.68 / 146.84 / 13.85 / 9.4% |
| **BN2** | 19.1 / 18.4 / 0.7 / 4% | 32.6 / 30.7 / 1.9 / 6.3% | 0.357 / 0.378 / 0.02 / 5.7% | 56.79 / 67 / 10.22 / 18% | 159.94 / 177.08 / 17.14 / 10.7% |
| **BN3** | 14.2 / 14.6 /0.4 / 2.7% | 35.6 / 33.9 / 1.7 / 5% | 0.247 / 0.276 / 0.029 / 11.8% | 53.34 / 60.7 / 7.36 / 13.8% | 215.42 / 218.7 / 3.29 / 1.5% |
| **BN4** | 19.6 / 17.8 / 1.8 / 10.3% | 29.9 / 34 / 4.1 / 13.8% | 0.405 / 0.334 / 0.071 / 21.3% | 76.25 / 64.23 / 12.02 / 18.7% | 186.94 / 189.93 / 2.98 / 1.6% |
| **BN5** | 16.8 / 17.2 /0.4 / 2.5% | 30.5 / 32.2 /1.7 / 5.4% | 0.351 / 0.351 / 0 / 0% | 79.19 / 80.92 / 1.73 / 2.2% | 225.56 / 231.45 / 5.9 / 2.6% |
| **BN6** | 19.3 / 19.6 /0.2 / 1.1% | 25.3 / 29.6 / 4.3 / 16.8% | 0.455 / 0.409 / 0.046 / 11.3% | 76.19 / 78.26 / 2.07 / 2.7% | 166.57 / 189.92 / 23.35 / 14% |
| **Mean ± SD[2] (n=12 eyes)** | 17.8 ± 1.8 | 31.1 ± 2.8 | 0.366 ± 0.06 | 68.4 ± 9.4 | 189.1 ± 28.3 |
| **Inter-Eye Difference[3] Mean ± SD** | 0.8 ± 0.6 | 2.7± 1.2 | 0.037 ± 0.026 | 6.09± 4.42 | 11.09± 8.34 |
| **Inter-Eye% Difference[4] Mean ± SD** | 4.6% ± 3.4 | 9.3% ± 4.9% | 10.7% ± 7.3% | 10.1% ± 7.7% | 6.6% ± 5.4% |
| **PIPDmax** | 10.3% | 16.8% | 21.3% | 18.7% | 14.0% |

BN = Bilateral Normal ; SD = Standard Deviation ; *PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 BN Animals for a given parameter

[1] Data are presented as: R eye mean **/** L eye mean **/** | R – L Difference| **/** |R – L| / Minimum of L or R eye Mean

[2] The mean and standard deviation of the global values of all 12 eyes

[3] The mean and standard deviation of all 6 absolute inter-eye differences

[4] The mean and standard deviation of all 6 absolute percent inter-eye differences

**Supplemental Table 1. Full Thickness LMA Parameter and Inter-eye Difference Data for the 6 Bilateral Normal (BN) Animals.**

| Animal # | BD (Beam Diameter) (µm) | PD (Pore Diameter) (µm) | CTVF (Connective Tissue Volume Fraction) | CTV (Connective Tissue Volume) *($10^6 µm^3$)* | LV (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** |
| **BN1** | 15 / 17.6 / 2.6 / 17% | 29.8 / 24.9 / 4.9 / 19.9% | 0.328 / 0.453 / 0.125 / 38.1% | 15.55 / 21.13 / 5.58 / 35.9% | 45.53 / 45.34 / 0.19 / 0.4% |
| **BN2** | 18.2 / 14.5 / 3.7 / 25.1% | 35.3 / 31.2 / 4.1 / 13.2% | 0.279 / 0.268 / 0.011 / 4.2% | 15.35 / 13.16 / 2.19 / 16.6% | 50.06 / 47.39 / 2.67 / 5.6% |
| **BN3** | 11.5 / 12.7 / 1.2 / 10.9% | 38.4 / 38 / 0.4 / 1.2% | 0.177 / 0.214 / 0.037 / 21% | 11.89 / 14.12 / 2.23 / 18.8% | 66.7 / 63.65 / 3.05 / 4.8% |
| **BN4** | 16.7 / 15.2 / 1.5 / 9.9% | 29.8 / 34.2 / 4.4 / 14.7% | 0.319 / 0.267 / 0.052 / 19.3% | 19.97 / 18.98 / 0.99 / 5.2% | 56.77 / 59.58 / 2.81 / 4.9% |
| **BN5** | 13.7 / 12.2 / 1.5 / 12.4% | 33.6 / 39.9 / 6.3 / 18.7% | 0.251 / 0.19 / 0.061 / 32.5% | 19.5 / 15.16 / 4.34 / 28.6% | 72.82 / 63.6 / 9.22 / 14.5% |
| **BN6** | 17 / 17.4 / 0.4 / 2.3% | 24.5 / 32.6 / 8.1 / 32.7% | 0.411 / 0.31 / 0.101 / 32.7% | 21.72 / 19.01 / 2.71 / 14.3% | 51.49 / 60.25 / 8.76 / 17% |
| **Mean ± SD[2] (n=12 eyes)** | 15.1 ± 2.3 | 32.7 ± 4.9 | 0.289 ± 0.083 | 17.13 ± 3.3 | 56.93 ± 8.98 |
| **Inter-Eye Difference[3] Mean ± SD** | 1.8 ± 1.1 | 4.7 ± 2.5 | 0.065 ± 0.042 | 3.01 ± 1.66 | 4.45 ± 3.67 |
| **Inter-Eye% Difference[4] Mean ± SD** | 12.9% ± 7.6% | 16.7% ± 10.3% | 24.6% ± 12.4% | 19.9% ± 10.9% | 7.9% ± 6.4% |
| **PIPDmax** | 25.1% | 32.7% | 38.1% | 35.9% | 17.0% |

BN = Bilateral Normal; SD = Standard Deviation; *PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 BN Animals for a given parameter and depth

[1] Data are presented as: R eye mean **/** L eye mean **/** | R – L Difference| **/** |R – L| / Minimum of L or R eye Mean

[2] The mean and standard deviation of the inner layer values of all 12 eyes

[3] The mean and standard deviation of all 6 absolute inter-eye differences in inner layer

[4] The mean and standard deviation of all 6 absolute percent inter-eye differences in inner layer

**Supplemental Table 2. Inner LC Layer LMA Parameter and Inter-eye Difference Data for the 6 Bilateral Normal (BN) Animals.**

| Animal # | BD (Beam Diameter) (µm) | PD (Pore Diameter) (µm) | CTVF (Connective Tissue Volume Fraction) | CTV (Connective Tissue Volume) *($10^6 µm^3$)* | LV (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** |
| **BN1** | 19.6 / 20.9 / 1.3 / 6.8% | 25.6 / 23.5 / 2.1 / 9.1% | 0.488 / 0.537 / 0.049 / 10% | 27.72 / 27.18 / 0.54 / 2% | 55.9 / 50 / 5.9 / 11.8% |
| **BN2** | 20.7 / 20 / 0.7 / 3.6% | 27.3 / 24.4 / 2.9 / 12.1% | 0.463 / 0.495 / 0.032 / 6.8% | 25.95 / 31.7 / 5.75 / 22.2% | 56.45 / 63.39 / 6.94 / 12.3% |
| **BN3** | 14.6 / 15.7 / 1.1 / 7.2% | 32.5 / 28 / 4.5 / 16.2% | 0.273 / 0.344 / 0.071 / 25.9% | 20.92 / 26.53 / 5.61 / 26.8% | 76.61 / 78.09 / 1.48 / 1.9% |
| **BN4** | 21.8 / 19 / 2.8 / 14.8% | 26.1 / 29.8 / 3.7 / 14.3% | 0.518 / 0.416 / 0.102 / 24.4% | 33.14 / 24.96 / 8.18 / 32.8% | 63.48 / 58.69 / 4.79 / 8.2% |
| **BN5** | 18.3 / 18 / 0.3 / 1.8% | 25.7 / 26.9 / 1.2 / 4.6% | 0.439 / 0.428 / 0.011 / 2.6% | 34.2 / 34.61 / 0.41 / 1.2% | 78.58 / 79.6 / 1.02 / 1.3% |
| **BN6** | 21.8 / 21.8 / 0 / 0.3% | 22 / 22.8 / 0.8 / 3.8% | 0.547 / 0.54 / 0.007 / 1.4% | 30.65 / 37.52 / 6.87 / 22.4% | 55.82 / 69.79 / 13.97 / 25% |
| **Mean ± SD[2] (n=12 eyes)** | 19.4 ± 2.4 | 26.2 ± 3.0 | 0.457 ± 0.084 | 29.59 ± 4.82 | 65.53 ± 10.59 |
| **Inter-Eye Difference[3] Mean ± SD** | 1.0 ± 1.0 | 2.6 ± 1.4 | 0.045 ± 0.036 | 4.56 ± 3.3 | 5.68 ± 4.7 |
| **Inter-Eye% Difference[4] Mean ± SD** | 5.7% ± 5.2% | 10% ± 5.1% | 11.9% ± 10.8% | 17.9% ± 13.2% | 10.1% ± 8.7% |
| **PIPDmax** | 14.8% | 16.2% | 25.9% | 32.8% | 25.0% |

BN = Bilateral Normal ; SD = Standard Deviation ; *PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 BN Animals for a given parameter and depth

[1] Data are presented as: R eye mean **/** L eye mean **/** | R – L Difference| **/** |R – L| / Minimum of L or R eye Mean

[2] The mean and standard deviation of the middle layer values of all 12 eyes

[3] The mean and standard deviation of all 6 absolute inter-eye differences in middle layer

[4] The mean and standard deviation of all 6 absolute percent inter-eye differences in middle layer

**Supplemental Table 3. Middle LC Layer LMA Parameter and Inter-eye Difference Data for the 6 Bilateral Normal (BN) Animals.**

| Animal # | BD (Beam Diameter) (µm) | PD (Pore Diameter) (µm) | CTVF (Connective Tissue Volume Fraction) | CTV (Connective Tissue Volume) *($10^6 µm^3$)* | LV (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** | **R / L / Diff / % Diff[1]** |
| **BN1** | 15.9 / 16.4 / 0.5 / 3.2% | 35.9 / 34.2 / 1.7 / 4.8% | 0.299 / 0.314 / 0.015 / 5% | 19.12 / 17.21 / 1.91 / 11.1% | 59.26 / 51.49 / 7.77 / 15.1% |
| **BN2** | 14.7 / 16.2 / 1.5 / 10.2% | 35.1 / 34.6 / 0.5 / 1.3% | 0.268 / 0.312 / 0.044 / 16.8% | 15.49 / 22.15 / 6.66 / 43% | 53.42 / 66.29 / 12.87 / 24.1% |
| **BN3** | 14.8 / 13.9 / 0.9 / 6% | 35.6 / 36.4 / 0.8 / 2.1% | 0.275 / 0.25 / 0.025 / 10.2% | 20.52 / 20.05 / 0.47 / 2.4% | 72.11 / 76.97 / 4.86 / 6.7% |
| **BN4** | 17.4 / 15.2 / 2.2 / 14.5% | 33.3 / 38.5 / 5.2 / 15.7% | 0.334 / 0.262 / 0.072 / 27.3% | 23.14 / 20.29 / 2.85 / 14% | 66.69 / 71.66 / 4.97 / 7.5% |
| **BN5** | 16 / 16.6 / 0.6 / 3.8% | 32.1 / 31.8 / 0.3 / 0.8% | 0.338 / 0.346 / 0.008 / 2.3% | 25.49 / 31.14 / 5.65 / 22.2% | 74.16 / 88.25 / 14.09 / 19% |
| **BN6** | 17.6 / 17.2 / 0.4 / 2.4% | 28.4 / 30.9 / 2.5 / 9% | 0.394 / 0.362 / 0.032 / 8.7% | 23.82 / 21.74 / 2.08 / 9.6% | 59.26 / 59.88 / 0.62 / 1% |
| **Mean ± SD[2] (n=12 eyes)** | 16 ± 1.2 | 33.9 ± 2.8 | 0.313 ± 0.044 | 21.68 ± 4.06 | 66.62 ± 10.64 |
| **Inter-Eye Difference[3] Mean ± SD** | 1.0 ± 0.7 | 1.8 ± 1.9 | 0.033 ± 0.023 | 3.27 ± 2.38 | 7.53 ± 5.16 |
| **Inter-Eye% Difference[4] Mean ± SD** | 6.7% ± 4.8% | 5.6% ± 5.8% | 11.7% ± 9.1% | 17% ± 14.2% | 12.2% ± 8.6% |
| **PIPDmax** | 14.5% | 15.7% | 27.3% | 43.0% | 24.1% |

BN = Bilateral Normal ; SD = Standard Deviation ; *PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 BN Animals for a given parameter and depth

[1] Data are presented as: R eye mean **/** L eye mean **/** | R – L Difference| **/** |R – L| / Minimum of L or R eye Mean

[2] The mean and standard deviation of the outer layer values of all 12 eyes

[3] The mean and standard deviation of all 6 absolute inter-eye differences in outer layer

[4] The mean and standard deviation of all 6 absolute percent inter-eye differences in outer layer

**Supplemental Table 4. Outer LC Layer LMA Parameter and Inter-eye Difference Data for the 6 Bilateral Normal (BN) Animals.**

| Animal[1] # | BD[2] (Beam Diameter) (µm) | PD[2] (Pore Diameter) (µm) | CTVF[2] (Connective Tissue Volume Fraction) | CTV[2] (Connective Tissue Volume) *($10^6 µm^3$)* | LV[2] (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | **C / EG / Diff / % Diff** | **C / EG / Diff / % Diff** | **C / EG / Diff / % Diff** | **C / EG / Diff / % Diff** | **C / EG / Diff / % Diff** |
| **EG1** | 18.8 / 19.6 / 0.8 / 4% | 17.6 / 21.7 / 4.1 / 23.8% | 0.628 / 0.531 / -0.097 / -15.4% | 35.66 / 53.53 / 17.87 / **50.1%** | 56.57 / 99.7 / 43.13 / **76.3%** |
| **EG2** | 13.1 / 12.9 / -0.2 / -0.8% | 28.9 / 32.3 / 3.4 / 11.6% | 0.328 / 0.292 / -0.036 / -10.8% | 26.98 / 24.58 / -2.4 / -8.9% | 79.99 / 77.17 / -2.82 / -3.5% |
| **EG3** | 11.5 / 11.5 / 0 / 0.4% | 33.6 / 48 / 14.4 / **42.8%** | 0.222 / 0.142 / -0.08 / -36.2% | 7.86 / 6.8 / -1.06 / -13.5% | 35.83 / 49.97 / 14.14 / **39.5%** |
| **EG4** | 19.6 / 24.2 / 4.6 / 23.8% | 18.4 / 16.4 / -2 / -10.7% | 0.559 / 0.678 / 0.119 / 21.2% | 36.55 / 73.79 / 37.24 / **101.9%** | 62.33 / 101.82 / 39.49 / **63.3%** |
| **EG5** | 15.2 / 16.7 / 1.5 / 10.1% | 27.4 / 22 / -5.4 / -19.8% | 0.351 / 0.422 / 0.071 / 20.3% | 12.89 / 20.61 / 7.72 / **59.9%** | 36.36 / 43.58 / 7.22 / **19.9%** |
| **EG6** | 16.5 / 17.9 / 1.4 / 8% | 23.2 / 25.1 / 1.9 / 8.1% | 0.42 / 0.433 / 0.013 / 3.3% | 26.37 / 31.48 / 5.11 / 19.4% | 56.84 / 73.69 / 16.85 / **29.6%** |
| **EG7** | 19.8 / 12.1 / -7.7 / **-38.6%** | 18.6 / 31.4 / 12.8 / **69.1%** | 0.59 / 0.281 / -0.309 / **-52.4%** | 36.65 / 17.57 / -19.08 / **-52.1%** | 60.31 / 54.02 / -6.29 / -10.4% |
| **EG8** | 15.4 / 14.3 / -1.1 / -6.9% | 27.7 / 36.7 / 9 / 32.2% | 0.335 / 0.242 / -0.093 / -27.7% | 10.39 / 13.67 / 3.28 / 31.6% | 30.3 / 47.53 / 17.23 / **56.9%** |
| **EG9** | 18.1 / 18.6 / 0.5 / 3.1% | 27.1 / 30.1 / 3 / 10.8% | 0.44 / 0.382 / -0.058 / -13.2% | 30.25 / 32.89 / 2.64 / 8.7% | 71.15 / 90.47 / 19.32 / **27.1%** |
| **EG10** | 11.2 / 10.3 / -0.9 / -7.9% | 31.6 / 44.1 / 12.5 / **39.7%** | 0.215 / 0.149 / -0.066 / -30.8% | 9.45 / 10.83 / 1.38 / 14.6% | 40.88 / 57.44 / 16.56 / **40.5%** |
| **EG11** | 16.5 / 17.1 / 0.6 / 3.6% | 26.2 / 31.4 / 5.2 / 19.7% | 0.38 / 0.343 / -0.037 / -9.7% | 25.65 / 32.12 / 6.47 / 25.2% | 67.71 / 91.25 / 23.54 / **34.8%** |
| **EG12** | 13.7 / 15 / 1.3 / 9.3% | 22.6 / 18.2 / -4.4 / -19.6% | 0.408 / 0.538 / 0.13 / 31.8% | 18.16 / 20.19 / 2.03 / 11.2% | 45.12 / 38.67 / -6.45 / -14.3% |
| **EG13** | 22.6 / 25.6 / 3 / 13% | 25.3 / 29.1 / 3.8 / 14.8% | 0.507 / 0.474 / -0.033 / -6.5% | 44.19 / 83.12 / 38.93 / **88.1%** | 87.69 / 177.36 / 89.67 / **102.3%** |
| **EG14** | 12.7 / 12.1 / -0.6 / -5% | 31.1 / 33.4 / 2.3 / 7.3% | 0.253 / 0.233 / -0.02 / -7.7% | 14.57 / 22.01 / 7.44 / **51.1%** | 54.83 / 79.32 / 24.49 / **44.7%** |

[1] EG = Experimental Glaucoma. C = Contralateral Control Eye. EG animals are ordered by *PBMOTPV* % Difference
[2] Data are C eye mean / EG eye mean / (EG – C) eye Difference / (EG – C) /C % Difference
**Bold Red**: % Difference exceeds *PIPDmax* in positive direction (increase in EG eye compared to C eye value for that parameter)
**Bold Blue**: % Difference exceeds *PIPDmax* in negative direction (decrease in EG eye compared to C eye value for that parameter)
*PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 Bilateral Normal Animals for a given parameter and depth

**Supplemental Table 5. Inner Laminar Layer LMA Parameter Data for the 14 unilateral Experimental Glaucoma (EG) Animals.**

| Animal[1] # | BD[2] (Beam Diameter) (µm) | PD[2] (Pore Diameter) (µm) | CTVF[2] (Connective Tissue Volume Fraction) | CTV[2] (Connective Tissue Volume) *($10^6 µm^3$)* | LV[2] (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff |
| **EG1** | 25.7 / 22.7 / -3 / -11.8% | 18 / 22.7 / 4.7 / **26.1%** | 0.713 / 0.604 / -0.109 / -15.3% | 44.69 / 40.04 / -4.65 / -10.4% | 62.72 / 65.93 / 3.21 / 5.1% |
| **EG2** | 16.6 / 16.3 / -0.3 / -1.9% | 22.8 / 25.6 / 2.8 / 12.2% | 0.494 / 0.437 / -0.057 / -11.6% | 39.38 / 34.33 / -5.05 / -12.8% | 78.42 / 76.16 / -2.26 / -2.9% |
| **EG3** | 14.9 / 14.5 / -0.4 / -2.8% | 26.8 / 31.8 / 5 / **18.4%** | 0.397 / 0.322 / -0.075 / -18.7% | 16.82 / 18.66 / 1.84 / 10.9% | 42.19 / 56.81 / 14.62 / **34.7%** |
| **EG4** | 24.6 / 26.3 / 1.7 / 6.9% | 19.6 / 18.1 / -1.5 / -7.7% | 0.665 / 0.691 / 0.026 / 3.9% | 39.24 / 44.17 / 4.93 / 12.6% | 58.75 / 63.21 / 4.46 / 7.6% |
| **EG5** | 20.5 / 21.3 / 0.8 / 4.3% | 20.8 / 22.4 / 1.6 / 7.4% | 0.605 / 0.573 / -0.032 / -5.2% | 25.07 / 20.68 / -4.39 / -17.5% | 41.71 / 35.81 / -5.9 / -14.1% |
| **EG6** | 21.4 / 24.7 / 3.3 / **15.3%** | 24 / 22.7 / -1.3 / -5.6% | 0.549 / 0.607 / 0.058 / 10.5% | 34.3 / 52.56 / 18.26 / **53.2%** | 61.89 / 86.37 / 24.48 / **39.6%** |
| **EG7** | 24.1 / 15.6 / -8.5 / **-35.4%** | 19.7 / 26.3 / 6.6 / **33.3%** | 0.687 / 0.465 / -0.222 / **-32.3%** | 28.29 / 23.19 / -5.1 / -18% | 41.43 / 50.57 / 9.14 / 22% |
| **EG8** | 15.4 / 15.8 / 0.4 / 2.8% | 24.3 / 30.9 / 6.6 / **27.5%** | 0.401 / 0.342 / -0.059 / -14.6% | 12.51 / 18.77 / 6.26 / **50%** | 31.26 / 50.68 / 19.42 / **62.1%** |
| **EG9** | 18.1 / 20.3 / 2.2 / 12.1% | 28.9 / 28.6 / -0.3 / -1% | 0.429 / 0.446 / 0.017 / 3.9% | 27.69 / 40.2 / 12.51 / **45.2%** | 66.36 / 91.35 / 24.99 / **37.7%** |
| **EG10** | 16.1 / 14.6 / -1.5 / -9.2% | 22.2 / 29.6 / 7.4 / **33.5%** | 0.468 / 0.358 / -0.11 / -23.6% | 21.23 / 23.1 / 1.87 / 8.8% | 44.53 / 64.3 / 19.77 / **44.4%** |
| **EG11** | 17.2 / 18.4 / 1.2 / 7.1% | 25.2 / 28.6 / 3.4 / 13.6% | 0.435 / 0.409 / -0.026 / -5.9% | 26.24 / 34.66 / 8.42 / 32.1% | 61.02 / 87.02 / 26 / **42.6%** |
| **EG12** | 19.5 / 20.1 / 0.6 / 3% | 14.8 / 18.6 / 3.8 / **25.6%** | 0.697 / 0.65 / -0.047 / -6.7% | 37.48 / 34.2 / -3.28 / -8.7% | 53.87 / 52.55 / -1.32 / -2.5% |
| **EG13** | 22.7 / 26.6 / 3.9 / **17.2%** | 25.7 / 30.2 / 4.5 / **17.4%** | 0.525 / 0.482 / -0.043 / -8.1% | 43.91 / 92.45 / 48.54 / **110.5%** | 83.51 / 199.06 / 115.55 / **138.4%** |
| **EG14** | 19.3 / 15.7 / -3.6 / **-19%** | 21 / 29.3 / 8.3 / **39.5%** | 0.547 / 0.379 / -0.168 / **-30.6%** | 35.72 / 41.69 / 5.97 / 16.7% | 65.05 / 110.14 / 45.09 / **69.3%** |

[1] EG = Experimental Glaucoma. C = Contralateral Control Eye. EG animals are ordered by *PBMOTPV* % Difference

[2] Data are C eye mean / EG eye mean / (EG – C) eye Difference / (EG – C) /C % Difference

**Bold Red**: % Difference exceeds *PIPDmax* in positive direction (increase in EG eye compared to C eye value for that parameter)

**Bold Blue**: % Difference exceeds *PIPDmax* in negative direction (decrease in EG eye compared to C eye value for that parameter)

*PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 Bilateral Normal Animals for a given parameter and depth

**Supplemental Table 6. Middle LC Layer LMA Parameter Data for the 14 unilateral Experimental Glaucoma (EG) Animals.**

| Animal[1] # | BD[2] (Beam Diameter) (µm) | PD[2] (Pore Diameter) (µm) | CTVF[2] (Connective Tissue Volume Fraction) | CTV[2] (Connective Tissue Volume) *($10^6 µm^3$)* | LV[2] (Laminar Volume) *($10^6 µm^3$)* |
|---|---|---|---|---|---|
| | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff | C / EG / Diff / % Diff |
| **EG1** | 23 / 19.4 / -3.6 / **-15.8%** | 26.1 / 27.4 / 1.3 / 5% | 0.554 / 0.498 / -0.056 / -10.1% | 35.67 / 27.02 / -8.65 / -24.2% | 63.21 / 56.12 / -7.09 / -11.2% |
| **EG2** | 17.5 / 16.7 / -0.8 / -4.3% | 24.9 / 28.4 / 3.5 / 14.1% | 0.515 / 0.448 / -0.067 / -13.2% | 40.81 / 40.95 / 0.14 / 0.3% | 78.98 / 90.13 / 11.15 / 14.1% |
| **EG3** | 13.9 / 14.1 / 0.2 / 1.5% | 28.7 / 30 / 1.3 / 4.8% | 0.378 / 0.36 / -0.018 / -4.6% | 13.39 / 17.8 / 4.41 / 32.9% | 37.46 / 50.89 / 13.43 / **35.9%** |
| **EG4** | 21.7 / 23.2 / 1.5 / 6.6% | 23.2 / 19.5 / -3.7 / **-15.8%** | 0.567 / 0.66 / 0.093 / 16.4% | 45.06 / 34.97 / -10.09 / -22.4% | 75.62 / 52.4 / -23.22 / **-30.7%** |
| **EG5** | 18.5 / 20.3 / 1.8 / 9.7% | 25.9 / 26 / 0.1 / 0.4% | 0.495 / 0.533 / 0.038 / 7.8% | 18.72 / 24.02 / 5.3 / 28.3% | 37.69 / 44.17 / 6.48 / 17.2% |
| **EG6** | 21.1 / 21.8 / 0.7 / 3.5% | 26.5 / 28.6 / 2.1 / 8% | 0.526 / 0.505 / -0.021 / -4.1% | 40.39 / 39.97 / -0.42 / -1% | 72.11 / 78.77 / 6.66 / 9.2% |
| **EG7** | 20.7 / 14.8 / -5.9 / **-28.7%** | 24 / 26.8 / 2.8 / 11.8% | 0.583 / 0.455 / -0.128 / -21.8% | 24.65 / 28.75 / 4.1 / 16.6% | 41.93 / 61.22 / 19.29 / **46%** |
| **EG8** | 13.1 / 14.7 / 1.6 / 12.3% | 26.4 / 28.6 / 2.2 / 8.1% | 0.344 / 0.355 / 0.011 / 3.1% | 14.19 / 25.36 / 11.17 / **78.7%** | 40.74 / 68.65 / 27.91 / **68.5%** |
| **EG9** | 17.7 / 19.1 / 1.4 / 8% | 29.8 / 29.9 / 0.1 / 0.2% | 0.244 / 0.345 / 0.101 / **41.7%** | 9 / 20.22 / 11.22 / **124.6%** | 38.27 / 59.15 / 20.88 / **54.6%** |
| **EG10** | 15.5 / 14.9 / -0.6 / -4% | 28 / 33.2 / 5.2 / **18.8%** | 0.382 / 0.326 / -0.056 / -14.8% | 17.53 / 24.27 / 6.74 / 38.4% | 44.54 / 72.34 / 27.8 / **62.4%** |
| **EG11** | 15.7 / 17.2 / 1.5 / 9.4% | 26.6 / 32.7 / 6.1 / **23%** | 0.271 / 0.284 / 0.013 / 4.9% | 7.56 / 19.14 / 11.58 / **153.2%** | 28.19 / 65.43 / 37.24 / **132.1%** |
| **EG12** | 19.2 / 19.4 / 0.2 / 0.9% | 20 / 23.6 / 3.6 / **18.1%** | 0.612 / 0.561 / -0.051 / -8.3% | 30.7 / 36.08 / 5.38 / 17.5% | 50.07 / 63.93 / 13.86 / **27.7%** |
| **EG13** | 19.4 / 25.3 / 5.9 / **29.9%** | 28.1 / 33.1 / 5 / **17.9%** | 0.304 / 0.38 / 0.076 / 25.2% | 12.68 / 54.1 / 41.42 / **326.6%** | 41.3 / 145.18 / 103.88 / **251.5%** |
| **EG14** | 18.8 / 16.6 / -2.2 / -11.5% | 28.7 / 37.8 / 9.1 / **31.4%** | 0.45 / 0.342 / -0.108 / -24.1% | 29.08 / 46.34 / 17.26 / **59.3%** | 62.07 / 129.78 / 67.71 / **109.1%** |

[1] EG = Experimental Glaucoma. C = Contralateral Control Eye. EG animals are ordered by *PBMOTPV* % Difference

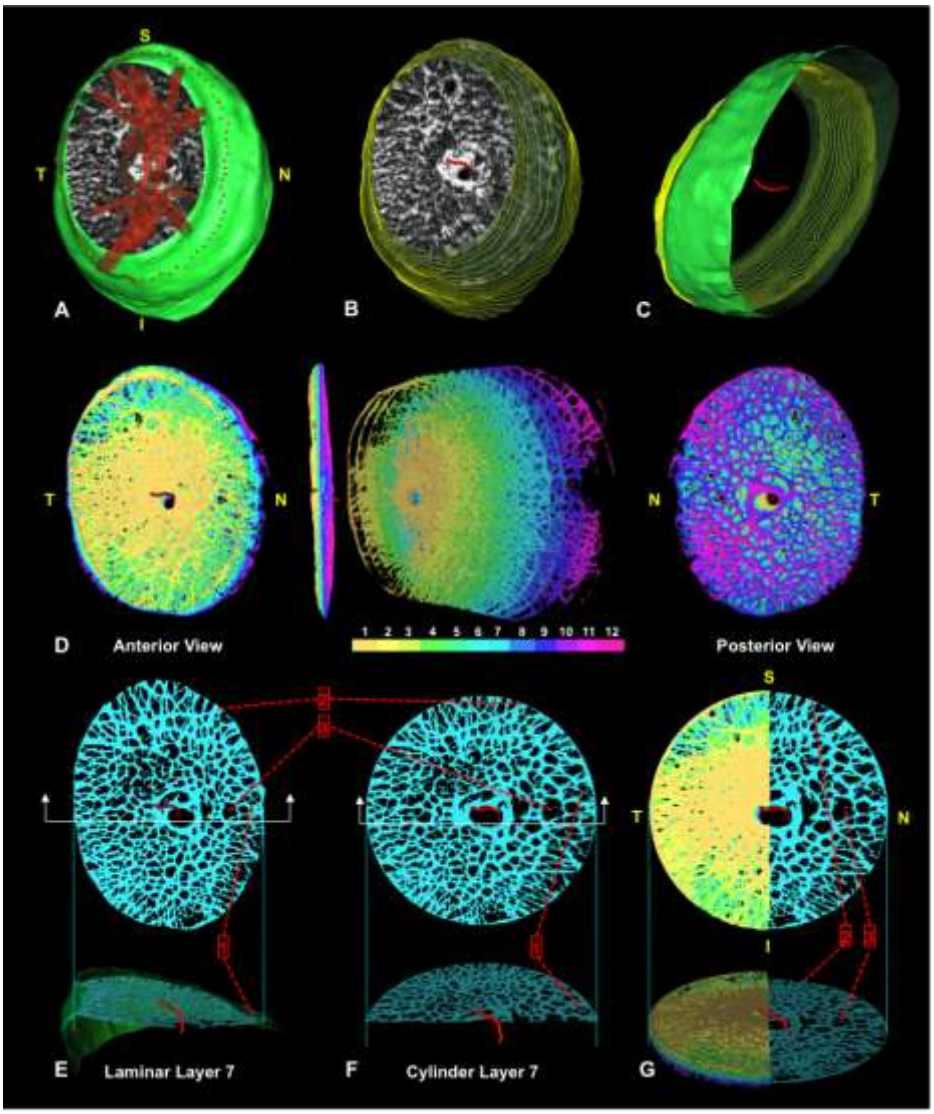
[2] Data are C eye mean / EG eye mean / (EG – C) eye Difference / (EG – C) /C % Difference

**Bold Red**: % Difference exceeds *PIPDmax* in positive direction (increase in EG eye compared to C eye value for that parameter)

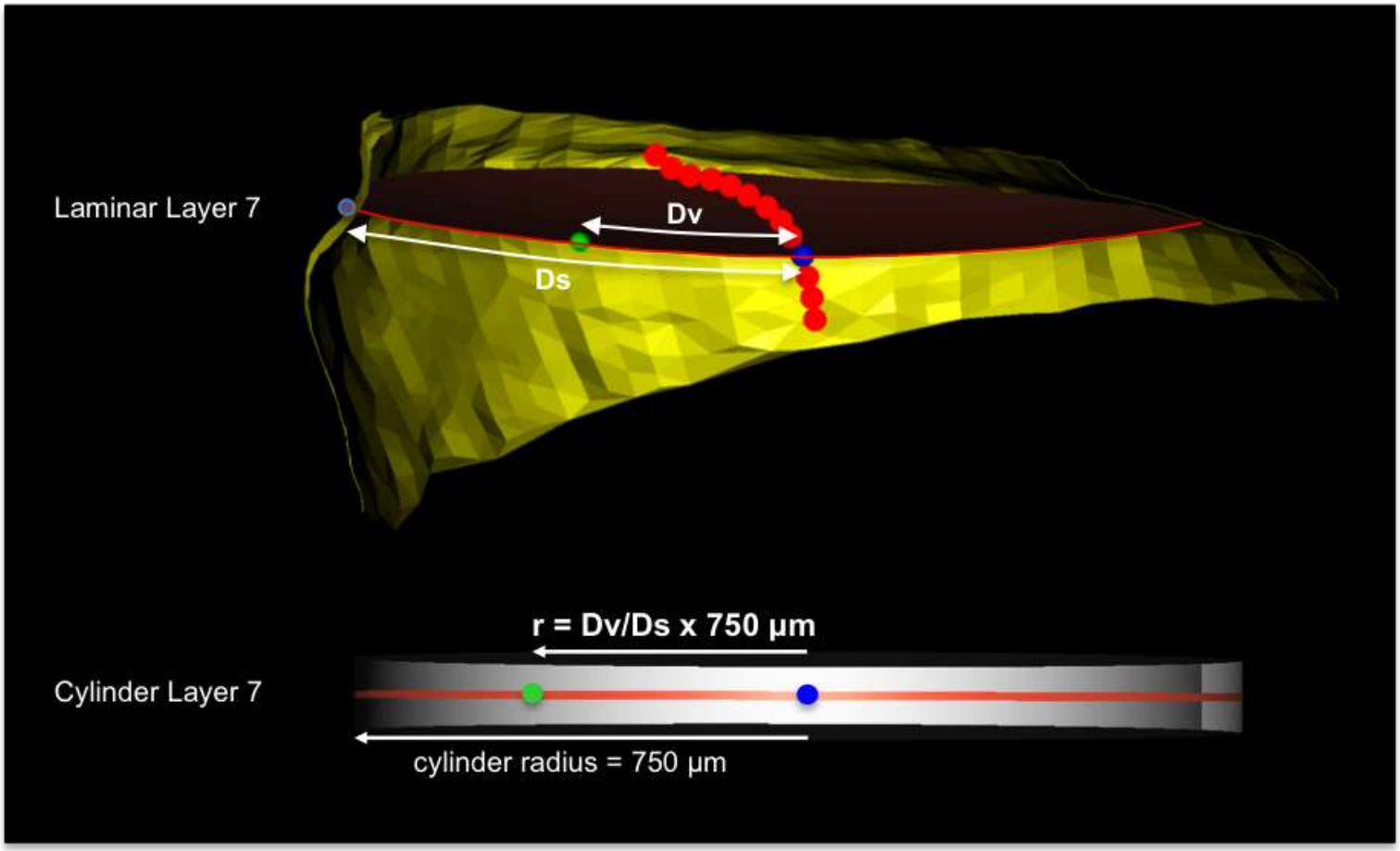
**Bold Blue**: % Difference exceeds *PIPDmax* in negative direction (decrease in EG eye compared to C eye value) for that parameter)

*PIPDmax* = the maximum physiologic inter-eye percent difference (PIPD) among the 6 Bilateral Normal Animals for a given parameter and depth

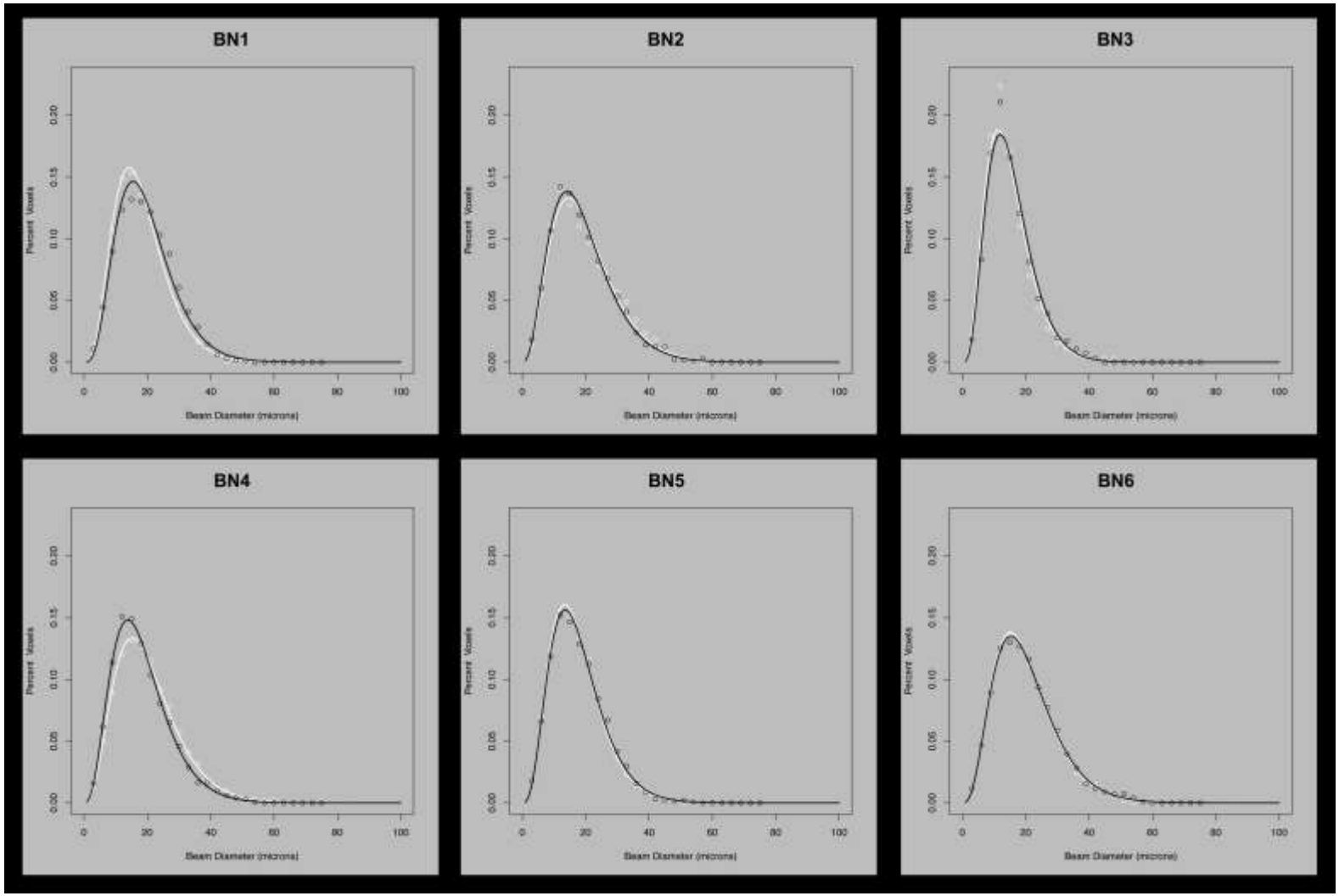
**Supplemental Table 7. Outer LC Layer LMA Parameter Data for the 14 unilateral Experimental Glaucoma (EG) Animals.**



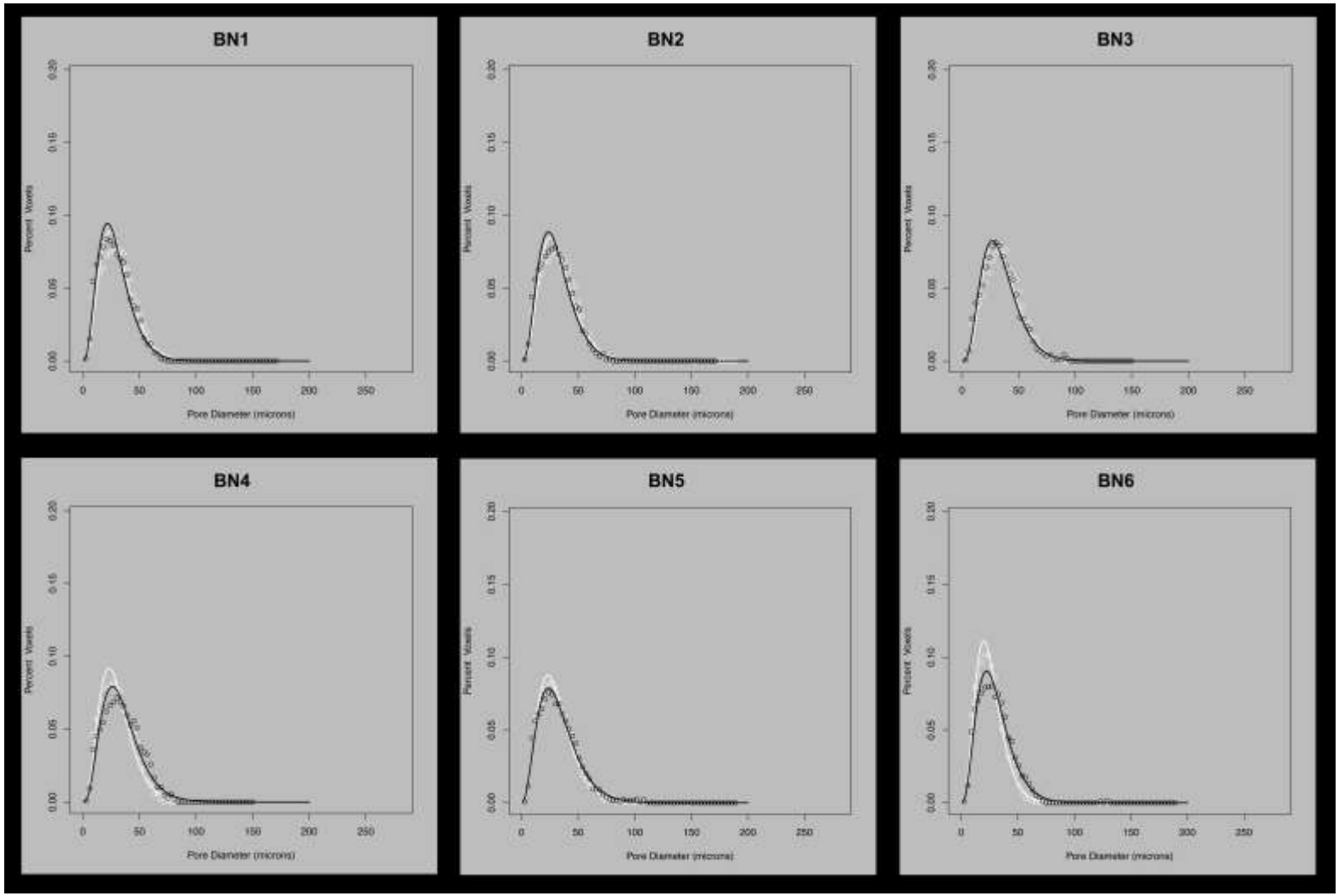

**Supplemental Figure 1. Transformation of Each Lamina Cribrosa Voxel to a Common Cylinder.** Panels A-G are screen captures of live data from control eye of Study Animal 11 during cylinderization. **(A)** Isolated LC segmentation and vessel tree with its neural boundary surface (green). The delineated anterior LC insertion (ALI) points are shown in red along the neural boundary surface. **(B)** Vessel tree removed to reveal the anterior neural boundary centroid spline (red) and neural boundary contours projected as faint yellow lines through the neural boundary surface. **(C)** View from the underside with the LC removed to reveal the posterior extent of the neural boundary centroid spline relative to the inner neural boundary surface (contours again shown in yellow). The centroid spline passes through the center of mass of each neural boundary contour. **(D)** To cylinderize the data, each LC voxel is assigned to one of 12 layers. Anterior (left), side (middle left), exploded (middle right) and posterior (right) views are shown. **(E)** Layer 7 voxels in pre-cylinder orientation depicting specific voxel locations within the LC structure using pointers 1, 2, and 3. Below the corresponding side cutout view is shown with pointer 1 identifying three pores along the border of the nasal neural boundary. **(F and G)** Layer 7 voxels after cylinderization. Supplemental Figure 2, below explains the voxel specific calculations that underlie this transformation. Note the location of 3 corresponding individual voxel locations shown with pointers in (E), (F) and (G). Note that the central and peripheral location of voxels pre-cylinderization remain after they are cylinderized. **(G)** All 12 layers of cylinderized LC voxels are shown to the left of the superior/inferior axis. Layer 7 is isolated to the right. Below is a side view of the same rendering. Note that every beam or pore voxel has a diameter assigned (Figure. 4) prior to cylinderization that is retained throughout the cylinderization process. Voxel size is not modified. Only voxel locations are modified during cylinderization. In polar coordinates (r, theta), theta is held constant while r is adjusted as depicted in Supplemental Figure 2.



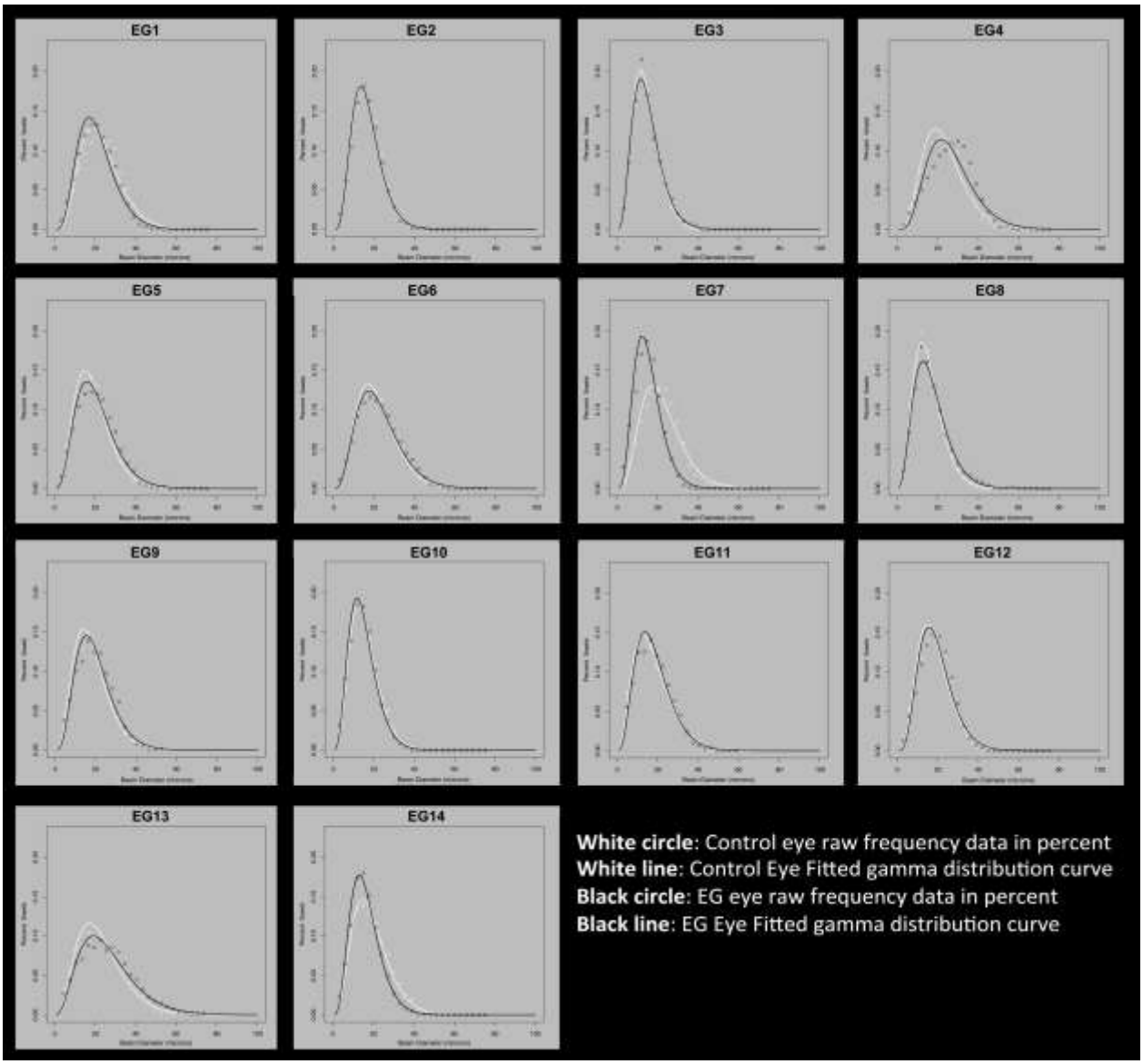

**Supplemental Figure 2. Cylinderization of a Representative LC Voxel Assigned to Layer 7 of control eye of Study Animal 11. (Upper)** All LC voxels within LC layer 7 of the pre-cylinderized LC are assigned a polar coordinate (Dv, theta) where Dv is the distance along the mid-layer reference surface (red) from the neural boundary centroid spline (red dots) centroid (blue dot) and Ds is the radial distance along the surface of the mid-layer reference surface from the centroid to the neural boundary (yellow). **(Lower)** Within cylinder layer 7, theta is held constant, but r is proportionally adjusted using the precylinder ratio of Dv/Ds and the cylinder radius of 750 um. Distances Dv and Ds are calculated along a pre-cylinderized reference layer surface contour (curve) that is obtained for every LC voxel. It is not a straight-line measurement in a plane.



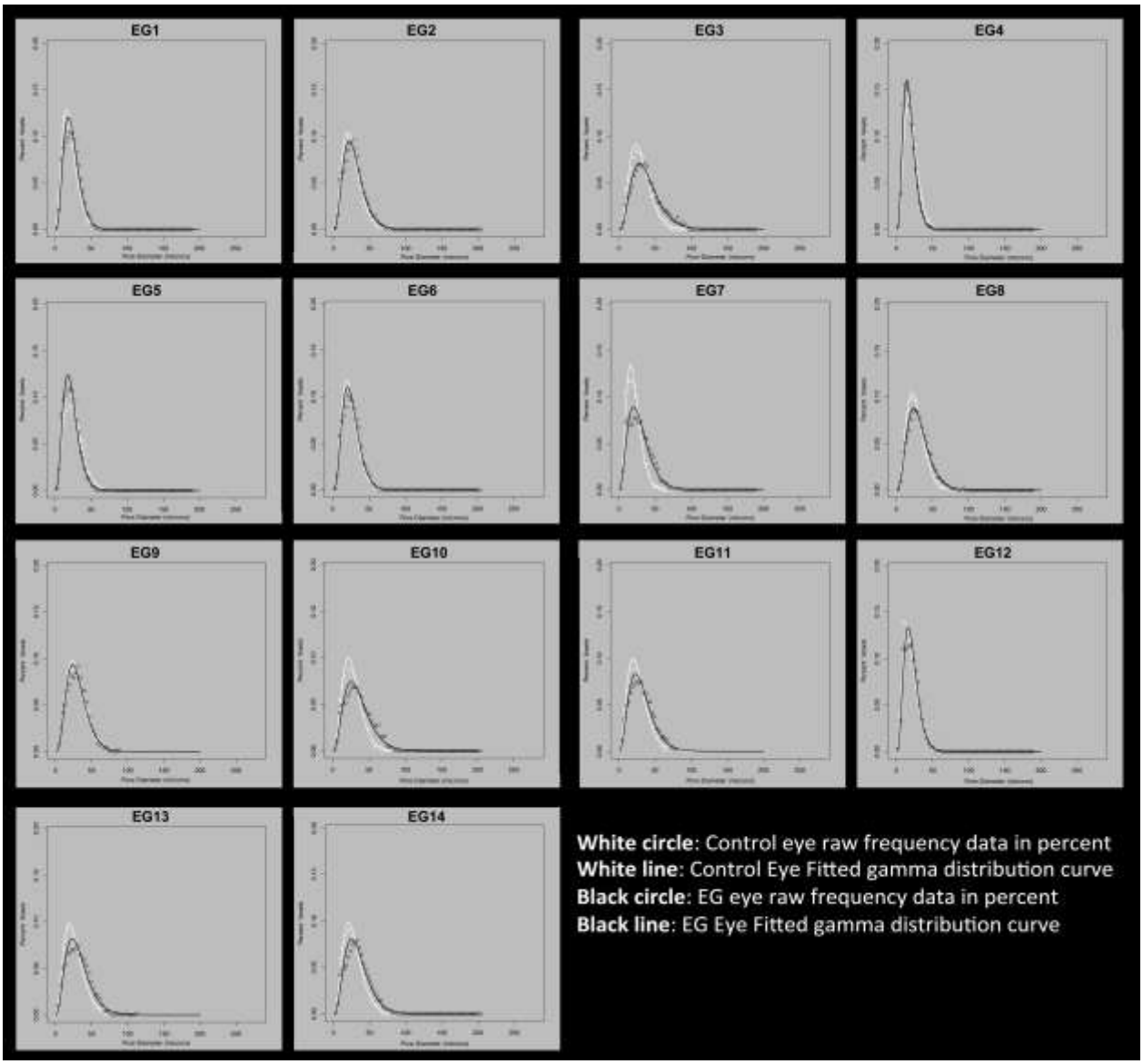

**Supplemental Figure 3. Beam Diameter Distribution Plots for 6 Bilateral Normal Monkeys.** Beam diameter frequency distribution data (normalized to percent data), for the right (white open circles) and left (black open circles) eyes of each animal were fit to a Gamma distribution (white or black line). White circle: Right eye raw frequency data in percent; White line: Right eye fitted gamma distribution curve; Black circle: Left eye raw frequency data in percent; Black line: Left eye fitted gamma distribution curve.




**Supplemental Figure 4. Pore Diameter Distribution Plots for 6 Bilateral Normal Monkeys.** Pore diameter frequency distribution data (normalized to percent data), for the right (white open circles) and left (black open circles) eyes of each animal were fit to a Gamma distribution (white or black line). White circle: Right eye raw frequency data in percent; White line: Right eye fitted gamma distribution curve; Black circle: Left eye raw frequency data in percent; Black line: Left eye fitted gamma distribution curve.




**Supplemental Figure 5. Beam Diameter Distribution Plots for 14 Early Experimental Glaucoma (EG) Monkeys.** For each animals, the Control (white data) and EG (black data) eye frequency distribution data (normalized to percent data, white or black circle) were fit to a Gamma distribution (white or black line).




**Supplemental Figure 6. Pore Diameter Distribution Plots for 14 Early Experimental Glaucoma (EG) Monkeys.** Each eye the pore diameter frequency distribution data (normalized to percent data, white or black circle) were fit to a Gamma distribution (white or black line). White circle: Control eye raw frequency data in percent; White line: Control eye fitted gamma distribution curve; Black circle: EG eye raw frequency data in percent; Black line: EG eye fitted gamma distribution curve.