

Supplementary data:

Table S-1: Associations between Δ IOP and scleral strains measured at different inflation pressures.

| Strain Type | Inflation Pressure (mmHg) | | | | | | | | | | |
|----------------------------|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 9 | 10 | 12.6 | 14.6 | 20.6 | 24.6 | 30.6 | 34.6 | 40.6 | 44.6 |
| Circumferential Tangential | R² | 0.484 | 0.532 | 0.477 | 0.521 | 0.536 | 0.545 | 0.578 | 0.593 | 0.587 | 0.601 |
| | p-value | 0.005 | 0.002 | 0.005 | 0.003 | 0.002 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 |
| Meridian Tangential | R² | 0.420 | 0.451 | 0.478 | 0.543 | 0.529 | 0.541 | 0.567 | 0.568 | 0.579 | 0.589 |
| | p-value | 0.011 | 0.007 | 0.005 | 0.002 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 | 0.001 |
| Circumferential Radial | R² | 0.427 | 0.398 | 0.355 | 0.319 | 0.392 | 0.415 | 0.431 | 0.420 | 0.405 | 0.383 |
| | p-value | 0.010 | 0.014 | 0.022 | 0.032 | 0.015 | 0.011 | 0.009 | 0.011 | 0.013 | 0.016 |
| Meridian Radial | R² | 0.287 | 0.318 | 0.318 | 0.337 | 0.360 | 0.344 | 0.373 | 0.363 | 0.371 | 0.359 |
| | p-value | 0.045 | 0.033 | 0.033 | 0.027 | 0.021 | 0.025 | 0.018 | 0.020 | 0.019 | 0.021 |

Table S-2: Associations between Δ IOP and the fitting coefficients. Each scleral strain vs inflation pressure curve was fit to the three-parameter oblique asymptotic function (Strain = $a + b \cdot \text{IOP} + c/\text{IOP}$)¹.

| Strain Type | | <i>a</i> | <i>b</i> | <i>c</i> |
|----------------------------|----------------------|----------|----------|----------|
| Circumferential Tangential | R² | 0.419 | 0.044 | 0.453 |
| | p-value | 0.012 | 0.470 | 0.008 |
| Meridian Tangential | R | 0.411 | 0.208 | 0.455 |
| | p-value | 0.013 | 0.102 | 0.008 |
| Circumferential Radial | R² | 0.088 | 0.174 | 0.143 |
| | p-value | 0.300 | 0.137 | 0.183 |
| Meridian Radial | R² | 0.274 | 0.335 | 0.312 |
| | p-value | 0.055 | 0.030 | 0.038 |

1. Fazio et al, SBC2013- 14748, Age-related changes in the nonlinear mechanical strain response of human peripapillary sclera.