**Supplemental table 1.** *Analysis of the effect of age on progression rate for patients with retinitis pigmentosa monitored with structural measurements*

| Outcome | | Regression coefficient | Standard error | p-value |
|---|---|---|---|---|
| Ellipsoid zone (OD) | Intercept | 2617 | 477 | <0.001 |
| | Age (years) | 0.7 | 11 | 0.9 |
| | Times (years) | -117 | 24 | <0.001 |
| | Age*Time | -0.3 | 0.5 | 0.5 |
| Ellipsoid zone (OS) | Intercept | 2338 | 436 | <0.001 |
| | Age (years) | 5 | 10 | 0.06 |
| | Times (years) | -122 | 23 | <0.001 |
| | Age*Time | 0.1 | 0.5 | 0.8 |
| Horizontal diameter (OD) | Intercept | 4320 | 637 | <0.001 |
| | Age (years) | -14 | 17 | 0.4 |
| | Times (years) | -167 | 35 | <0.001 |
| | Age*Time | 0.6 | 0.9 | 0.5 |
| Horizontal diameter (OS) | Intercept | 4139 | 632 | <0.001 |
| | Age (years) | -8 | 17 | 0.6 |
| | Times (years) | -158 | 43 | <0.001 |
| | Age*Time | 0.1 | 1.1 | 0.95 |
| Vertical diameter (OD) | Intercept | 3257 | 546 | <0.001 |
| | Age (years) | -8 | 14 | 0.6 |
| | Times (years) | -135 | 34 | <0.001 |
| | Age*Time | 0.4 | 0.9 | 0.7 |
| Vertical diameter (OS) | Intercept | 2969 | 548 | <0.001 |
| | Age (years) | 2 | 15 | 0.9 |
| | Times (years) | -147 | 36 | <0.001 |
| | Age*Time | 0.7 | 1 | 0.6 |

This table summarizes six models. For each, the outcomes are ellipsoid zone, horizontal diameter, and vertical diameter. Units of the outcome are in µm. All models include age (in years), time (in years), and an interaction between age and time, as well as random intercepts and slopes for time for each subject. The inference of interest is on the interaction terms.

**Supplemental table 2.** *Analysis of the effect of sex on progression rate for patients with retinitis pigmentosa monitored with structural measurements*

| Outcome | | Regression coefficient | Standard error | p-value |
|---|---|---|---|---|
| Ellipsoid zone (OD) | Intercept | 2670 | 277 | <0.001 |
| | Female | -45 | 414 | 0.9 |
| | Times (years) | -117 | 14 | <0.001 |
| | Female*Time | -30 | 22 | 0.2 |
| Ellipsoid zone (OS) | Intercept | 2459 | 259 | <0.001 |
| | Female | 214 | 382 | 0.6 |
| | Times (years) | -104 | 13 | <0.001 |
| | Female*Time | -29 | 20 | 0.2 |
| Horizontal diameter (OD) | Intercept | 3903 | 378 | <0.001 |
| | Female | -174 | 572 | 0.8 |
| | Times (years) | -155 | 20 | <0.001 |
| | Female*Time | 18 | 30 | 0.5 |
| Horizontal diameter (OS) | Intercept | 3854 | 388 | <0.001 |
| | Female | 26 | 568 | 1 |
| | Times (years) | -149 | 26 | <0.001 |
| | Female*Time | -12 | 39 | 0.8 |
| Vertical diameter (OD) | Intercept | 2984 | 327 | <0.001 |
| | Female | -24 | 484 | 1 |
| | Times (years) | -118 | 20 | <0.001 |
| | Female*Time | -11 | 31 | 0.7 |
| Vertical diameter (OS) | Intercept | 2997 | 323 | <0.001 |
| | Female | 57 | 474 | 0.9 |
| | Times (years) | -126 | 20 | <0.001 |
| | Female*Time | 5 | 31 | 0.9 |

This table summarizes six models. For each, the outcomes are ellipsoid zone, horizontal diameter, and vertical diameter. Units of the outcome are in μm. All models include sex (in years), time (in years), and an interaction between sex and time, as well as random intercepts and slopes for time for each subject. The inference of interest is on the interaction terms.

**Supplemental table 3.** *Analysis of the effect of mode of inheritance on progression rate for patients with retinitis pigmentosa monitored with structural measurements*

| Outcome | | Regression coefficient | Standard error | p-value |
|---|---|---|---|---|
| Ellipsoid zone (OD) | Intercept | 2671 | 388 | <0.001 |
| | ARRP | 7 | 465 | 1.0 |
| | XLRP | -443 | 931 | 0.6 |
| | Time (years) | -108 | 19 | <0.001 |
| | ARRP*Time | -32 | 23 | 0.2 |
| | XLRP*Time | -25 | 55 | 0.6 |
| Ellipsoid zone (OS) | Intercept | 2649 | 359 | <0.001 |
| | ARRP | -109 | 430 | 0.8 |
| | XLRP | -344 | 841 | 0.7 |
| | Time (years) | -115 | 19 | <0.001 |
| | ARRP*Time | 1 | 23 | 1 |
| | XLRP*Time | -40 | 51 | 0.4 |
| Horizontal diameter (OD) | Intercept | 3772 | 520 | <0.001 |
| | ARRP | 186 | 636 | 0.8 |
| | XLRP | -604 | 1102 | 0.6 |
| | Time (years) | -115 | 26 | <0.001 |
| | ARRP*Time | -40 | 32 | 0.2 |
| | XLRP*Time | -146 | 64 | 0.03 |
| Horizontal diameter (OS) | Intercept | 3908 | 519 | <0.001 |
| | ARRP | 48 | 635 | 0.9 |
| | XLRP | -731 | 1069 | 0.5 |
| | Times (years) | -147 | 35 | 0.0001 |
| | ARRP*Time | -1 | 42 | 1.0 |
| | XLRP*Time | -126 | 79 | 0.1 |
| Vertical diameter (OD) | Intercept | 3029 | 423 | <0.001 |
| | ARRP | 18 | 527 | 1.0 |
| | XLRP | -760 | 921 | 0.4 |
| | Time (years) | -108 | 26 | <0.001 |
| | ARRP*Time | -27 | 33 | 0.4 |
| | XLRP*Time | 11 | 66 | 0.9 |
| Vertical diameter (OS) | Intercept | 3035 | 431 | <0.001 |
| | ARRP | 91 | 527 | 0.9 |
| | XLRP | -701 | 888 | 0.4 |

| | Time (years) | -118 | 27 | <0.001 |
|---|---|---|---|---|
| | ARRP*Time | -1 | 33 | 1.0 |
| | XLRP*Time | -94 | 64 | 0.1 |

This table summarizes six models. For each, the outcomes are ellipsoid zone, horizontal diameter, and vertical diameter. Units of the outcome are in μm. All models include mode of inheritance, time (in years), and an interaction between mode of inheritance and time, as well as random intercepts and slopes for time for each subject. The inference of interest is on the interaction terms.

ARRP = Autosomal recessive retinitis pigmentosa; XLRP = X-linked recessive retinitis pigmentosa

**Supplemental table 4.** *Analysis of the effect of size at baseline on progression rate for patients with retinitis pigmentosa monitored with structural measurements*

| Outcome | | Regression coefficient | Standard error | p-value |
|---|---|---:|---:|---|
| Ellipsoid zone (OD) | Intercept | 1760 | 146 | <0.001 |
| | >3000 µm | 2944 | 266 | <0.001 |
| | Times (years) | -115 | 12 | <0.001 |
| | >3000 µm *Time | -47 | 22 | 0.04 |
| Ellipsoid zone (OS) | Intercept | 1803 | 131 | <0.001 |
| | >3000 µm | 2766 | 248 | <0.001 |
| | Times (years) | -99 | 11 | <0.001 |
| | >3000 µm *Time | -63 | 22 | 0.006 |
| Horizontal diameter (OD) | Intercept | 2251 | 305 | <0.001 |
| | >3000 µm | 2203 | 373 | <0.001 |
| | Times (years) | -131 | 28 | <0.001 |
| | >3000 µm *Time | -21 | 35 | 0.6 |
| Horizontal diameter (OS) | Intercept | 2292 | 309 | <0.001 |
| | >3000 µm | 2085 | 374 | <0.001 |
| | Times (years) | -105 | 33 | 0.002 |
| | >3000 µm *Time | -68 | 40 | 0.09 |
| Vertical diameter (OD) | Intercept | 2119 | 191 | <0.001 |
| | >3000 µm | 2632 | 330 | <0.001 |
| | Times (years) | -89 | 16 | <0.001 |
| | >3000 µm *Time | -98 | 30 | 0.001 |
| Vertical diameter (OS) | Intercept | 2141 | 199 | <0.001 |
| | >3000 µm | 2382 | 323 | <0.001 |
| | Times (years) | -84 | 16 | <0.001 |
| | >3000 µm *Time | -111 | 28 | 0.002 |

This table summarizes six models. For each, the outcomes are ellipsoid zone line width, horizontal diameter, and vertical diameter. Units of the outcome are in µm. All models include size at baseline (split into groups by whether > 3000 µm), time (in years), and an interaction between size at baseline and time, as well as random intercepts and slopes for time for each subject. The inference of interest is on the interaction terms.