

Lens card corresponding to the SimVis Gekko Simulation:

SimVis Gekko Lens Code: SimPO_1SPLG1901_Pup34

Reference Documents Lens name: AcrySof PanOptix

DATA ORIGIN

The **SimPO** is based on figure 11a “PanOptix (Alcon Laboratories, Inc.): Experimental chromatic through-focus curves for the intraocular lens at a 3.0 mm aperture” of Loicq & Gatinel’s 2019 publication (Loicq et al., 2019) and simulated from literature-based through focus MTF curves at 15 cycles per degree for the three channels (RGB) (Sawides et al., 2021). The SimPO simulation provides 3 useful focal distances (@IOL Plane): 0.0 D for far-vision, +2.17 D addition for intermediate-vision and +3.25 D addition for near-vision.

DISCLAIMER

The SimPO lens could not represent all the features of a specific IOL but the best estimation of its through focus visual Strehl ratio. This lens has passed the three phases of the protocol for annexing a lens in the SimVis Gekko.

- Computer simulation performed by L. Sawides
- On bench validation of SimVis simulations with high speed fociometer performed under the supervision of L. Sawides.
- Clinical validation on patients wearing the SimVis Gekko, performed at the VioBio Lab facilities under the supervision of X. Barcala.

Source Data

Through focus lens performance:

- Through focus MTF at 50lp/mm (15cpd) for three different wavelengths (R=650nm, G=546nm and B=480nm) extracted from *figure9a of Loicq & Gatinel’s 2019 [publication](#) (Loicq et al., 2019)

- Pupil diameter = 3mm (@IOL plane)

* Figure11a – PanOptix (Alcon Laboratories, Inc))

Power Base 20.5D, measured with PMTF (λ), ISO 11979, model cornea free of SA, pupil diameter on IOL = 3mm; pupil-independent up to 4.5mm according to (Rampat & Gatinel, 2021)

SimVis Simulation

SimVis Lens performance validated on bench:

- Estimated SimVis Through Focus Visual Strehl ratio, Estimated SimVis TFVS**, compared to experimental SimVis TFVS measured with a high speed fociometer.
- Pupil Diameter = 3.4mm (@Corneal Plane)
- On bench validation supervised by L. Sawides, 2EyesVision PER AREA

**using method described in Sawides et al., 2021.

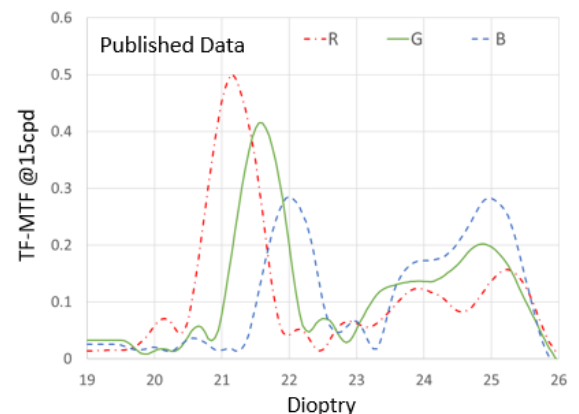


Figure 1. TF-MTF at 15cpd for the three wavelengths RGB, extracted from figure11a of Loicq et al. 2019 publication

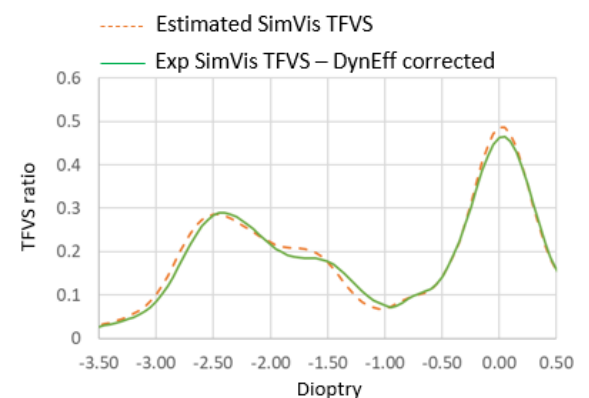


Figure 2. On-bench validation. Estimated SimVis TFVS versus experimental SimVis TFVS measured with a high speed fociometer.

Clinical Validation

Binocular through focus visual acuity TFVA:

- **PREOP TFVA measured in patients wearing the SimVis Gekko with the SimPO simulation (n=11).**
- **POSTOP TFVA measured in patients implanted with the Panoptix IOL and reported in literature according to Ribeiro & Ferreira, 2020 (n=15, 3mo post-op); (Lapid-Gortzak et al., 2020) (n=86, 4-6mo post-op) and (FDA Document - AcrySof IQ PanOptix, 2019) (n=127, 6mo post-op).** For homogeneous comparisons across measurements, TFVA were normalized to Far VA and cross-correlation calculated as a curve shape similarity metric.

Preop binocular TFVA through SimVis Gekko simulation falls within literature data for postop binocular TFVA curves measured in patients binocularly implanted with the Panoptix IOL, although to a lesser extent for (Ribeiro & Ferreira, 2020) whose TFVA measurements could have been performed for a smaller patient pupil's diameter.

Clinical validation supervised by X. Barcala, 2EyesVision CLI AREA

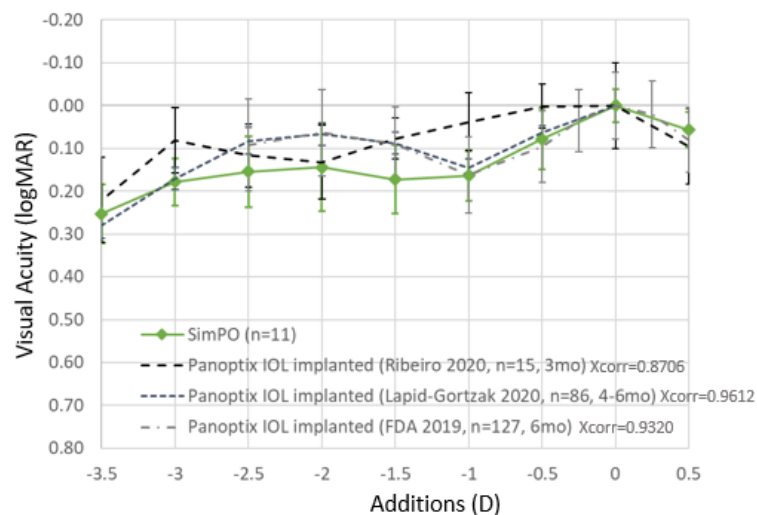


Figure 3. Clinical validation. Binocular defocus VA curves measured in patients through SimPO simulation with SimVis Gekko, compared to binocular TFVA in patients with implanted Panoptix IOLs.

REFERENCES FOR THE SIMULATION

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OTHER REFERENCES ABOUT THE LENS

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