WaveFront Evidence Alignment

Mapping WaveFront's energy output and session design to published human PBM evidence across macular health, ocular surface disease, and peri-ocular gland dysfunction.

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WaveFront Device Parameters

- **Wavelengths:** 670 nm + 810 nm
- **Irradiance:** ~ 5 mW/cm² (low-level, non-thermal)
- **Session Time:** 16 min (eyes open) / 21 min (eyes closed)
- **Total Energy:** ~ 4.8 J/cm² per session (within PBM therapeutic window)

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Key Clinical Evidence

- Grewal 2020 – 670 nm, ~4 J/cm² × 14 sessions → Improved rod function, contrast sensitivity
- Albarracin 2011 – 670 nm exposures → Reduced retinal inflammation, preserved photoreceptors
- Kim 2023 – 670 nm daily sessions → Reduced macular thickness, safe in DME
- Park 2022 – 633 nm mask × 4 sessions → Improved TBUT, corneal staining
- Antwi 2024 – 633 nm mask × 3 visits → ↑ lid temperature, ↑ tear stability
- Stonecipher 2019 – 633 nm sessions → 92% chalazia resolution, avoided surgery
- Solomos 2021 – IPL + LLLT weekly × 4 → Improved gland structure, TBUT
- Goo 2023 – Multi-wavelength PBM → ↓ IL-6, TNF-α, improved tear film stability

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Safety Evidence & Summary

- **Safety Evidence:**
- • Koev 2018 – 5-year AMD follow-up: sustained VA gains, no adverse effects
- • Ivandic 2008 – 203 AMD patients: improved VA, no adverse events (3–36 months)
- • Grewal 2020 – 14-day PBM tolerated, consistent functional gains
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Summary: *WaveFront's dual-wavelength output (670 + 810 nm) and low-level fluence (~4.8 J/cm²) place it squarely within the clinically validated PBM window. Evidence shows mitochondrial activation, reduced inflammation, and restoration of ocular physiology — all without thermal damage.*

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