

Safety and Efficacy of Topical Lotilaner 0.25% for the
Treatment of *Demodex* Blepharitis:
Results of the Saturn-1 Ph 2b/3 FDA-Pivotal Trial

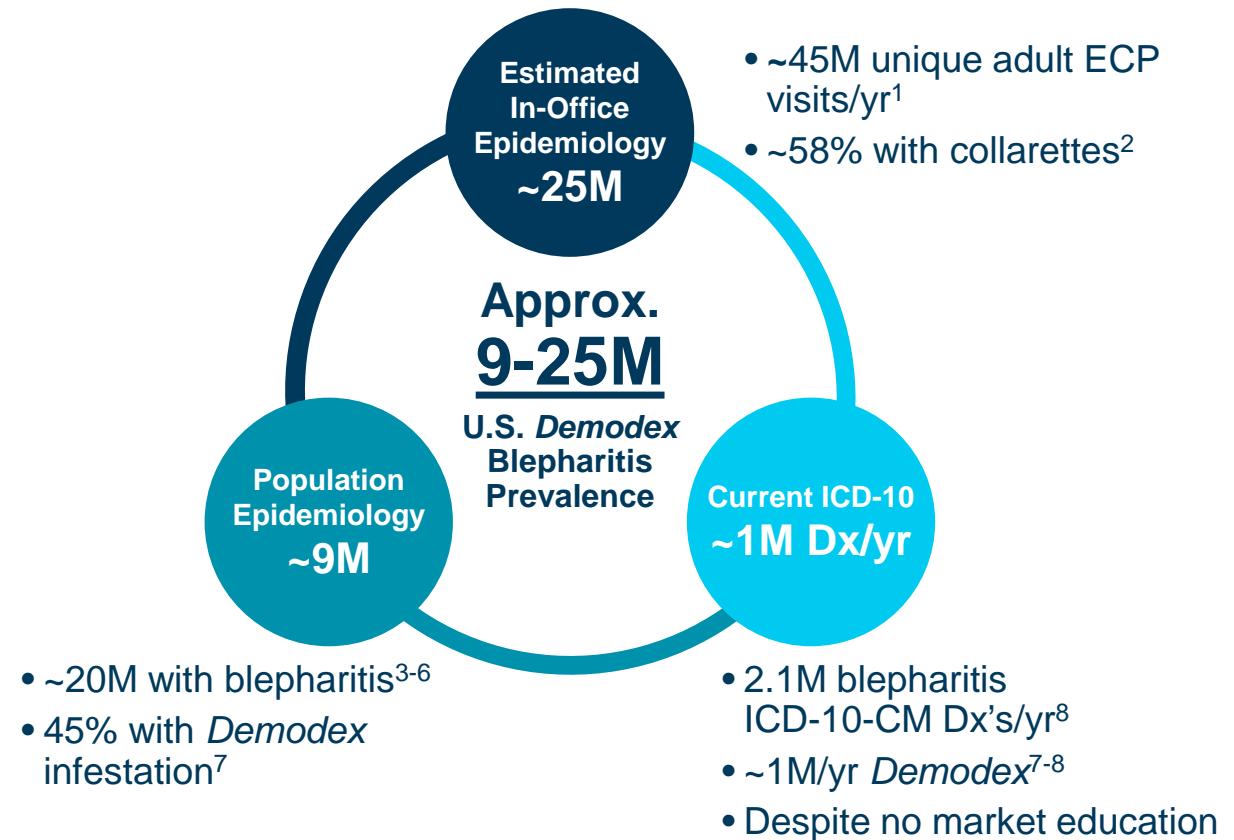
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Stephanie Baba, OD
Mark Holdbrook
David Wirta, MD

Disclosures

- Elizabeth Yeu, MD - Alcon, Allergan, Aureon, Avedro, Bausch & Lomb, Beaver Visitec, BioTissue/Tissue Tech, BlephEX, Bruder, CorneaGen, Dompe, Expert Opinion, Expert Opinion, EyePoint Pharm., Glaukos, Guidepoint, Ivantis, J&J Vision, Kala Pharm., LENSAR, Melt, Merck, Novartis, Ocular Science, Ocular Therapeutix, Ocusoft, Omeros, Science Based Health, Sight Sciences, Sun Pharm., Surface, Tarsus Pharm., TearLab Corp., Thea, TopCon, Zeiss
- David Wirta, MD – Allergan, Eyenovia, Novartis, Orasis
- Mark Holdbrook and Stephanie Baba, OD are employees of Tarsus Pharmaceuticals, Inc.

Epidemiology of *Demodex* blepharitis

Despite the high prevalence of patients with *Demodex* blepharitis, there are no FDA-approved therapeutics for this condition.



Saturn-1 investigates TP-03 vs. vehicle

Safety and efficacy of TP-03

(lotilaner ophthalmic solution, 0.25%; Tarsus Pharmaceuticals)
for the treatment of *Demodex* blepharitis

Primary Endpoint

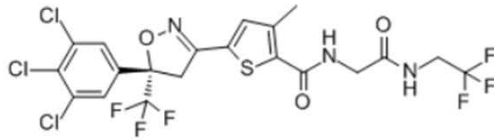
- Patients reaching **complete collarette cure (0-2 collarettes)** based on their collarette score of the upper eyelid of the analysis eye at **Day 43**

Secondary Endpoints

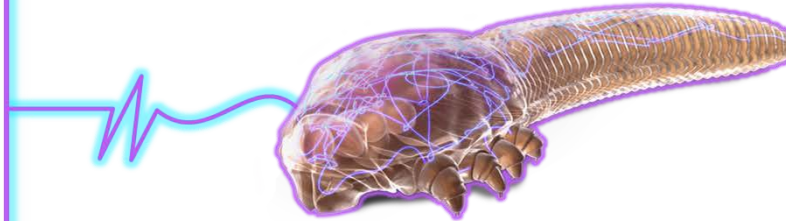
- **Mite eradication** of the analysis eye at Day 43
- Patients achieving **complete composite cure** based on a composite of collarette and erythema scores of the upper eyelid of the analysis eye at Day 43

Saturn-1 investigates TP-03 vs. vehicle

Lotilaner



- Potent non-competitive antagonist of insect and arachnid GABA-Cl channels
- Highly lipophilic molecule



MOA
Paralysis and death of
***Demodex* mites**

Patient selection criteria:

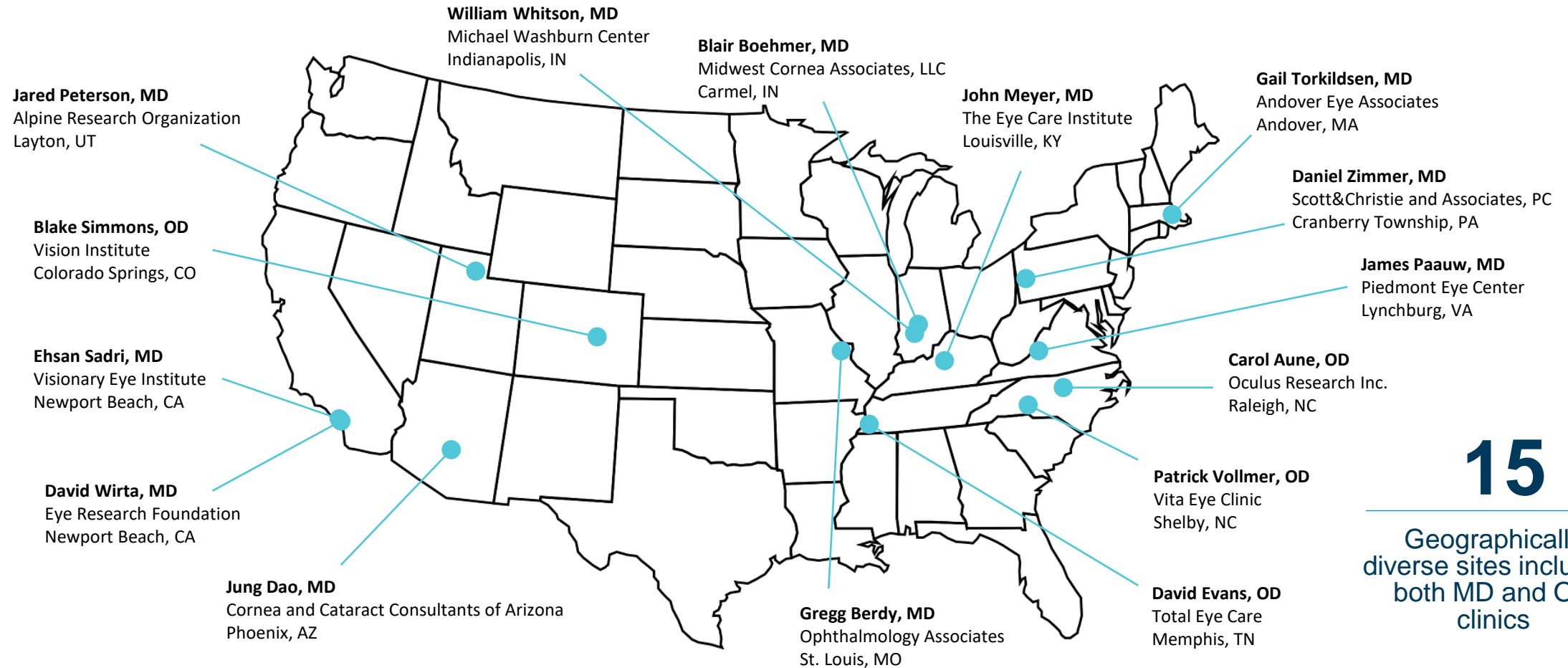
18 years of age or older

At least one eye had to have all of the following:

- >10 upper lid lashes with collarettes
- ≥ 1.5 mites/lash on upper/lower lids combined for at least one eye
- mild or worse lid margin erythema

Patients using lid hygiene or other treatment for blepharitis within 14 days of screening were excluded

Study design | Saturn-1 clinical research sites



15

Geographically diverse sites including both MD and OD clinics

Study design | enrollment

43

Days

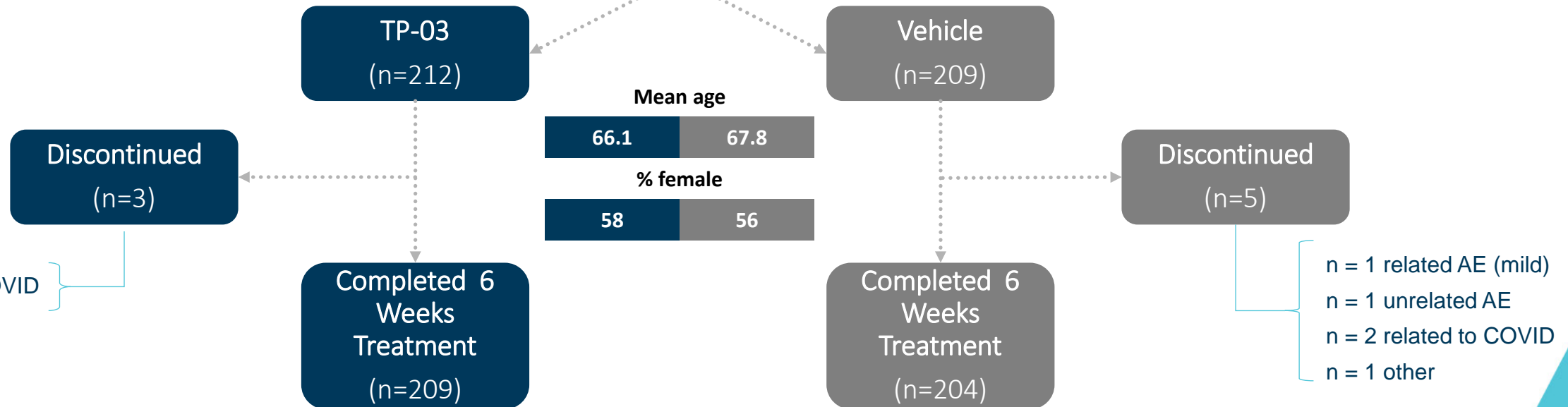
BID

Dosing

421

Patients randomized

**Randomized, controlled,
double-masked study**



Study design | timeline

	Day 1	Day 8	Day 15	Day 22	Day 43
Procedures					
Drop comfort	X	X	X	X	X
Corrected distance visual acuity (CDVA)	X	X	X	X	X
Slit lamp biomicroscopy	X	X	X	X	X
Collarette grading; erythema	X	X	X	X	X
Corneal staining	X	X	X	X	X
Intraocular pressure	X				X
<i>Demodex</i> count	X		X	X	X

Collarette grading

Collarette grade (non-linear)

0 (cure)

1

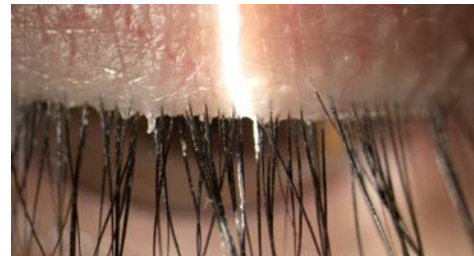
2

3

4

Clinically meaningful

Average baseline = 2.8



0-2

3-10

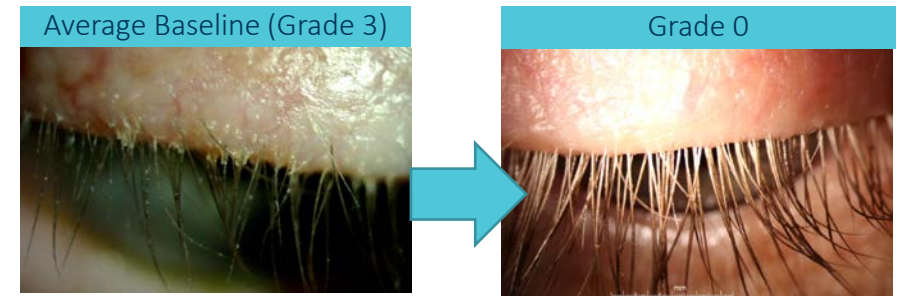
**10 – 1/3 of total
(~50)**

**1/3-2/3 of total
(~100)**

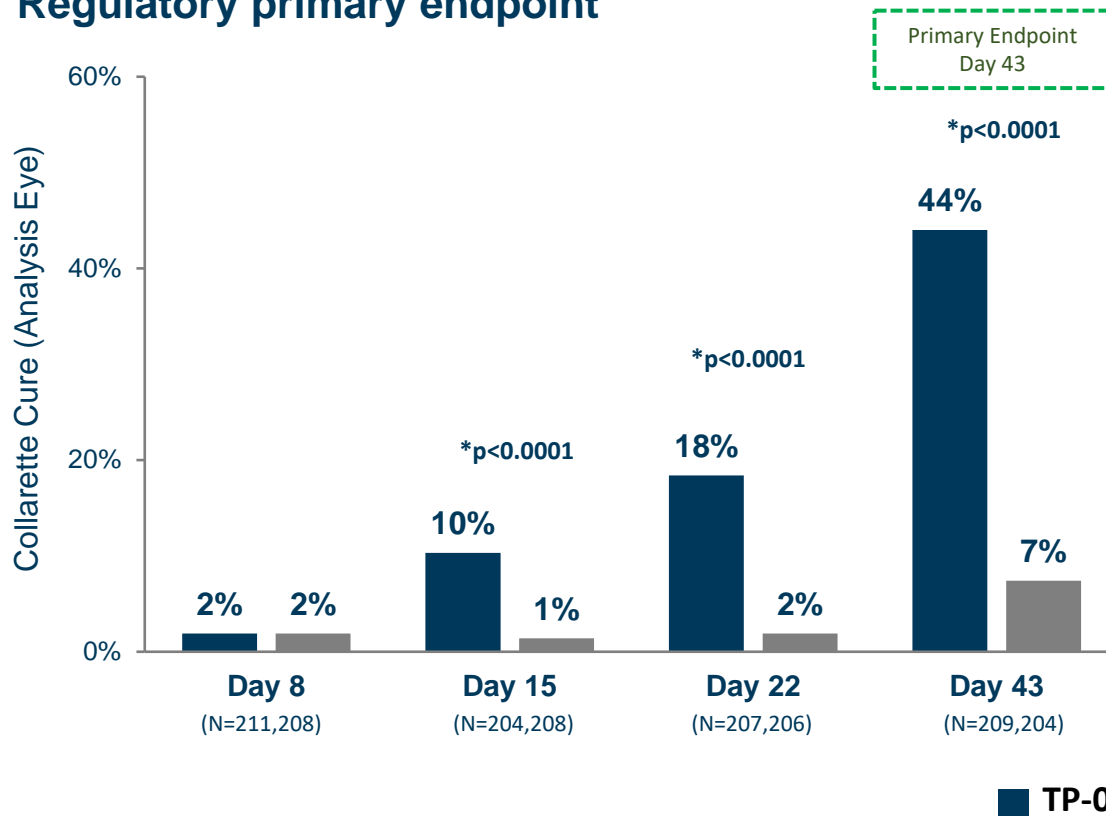
**2/3+ of total
(~150)**

Collarettes per eyelid

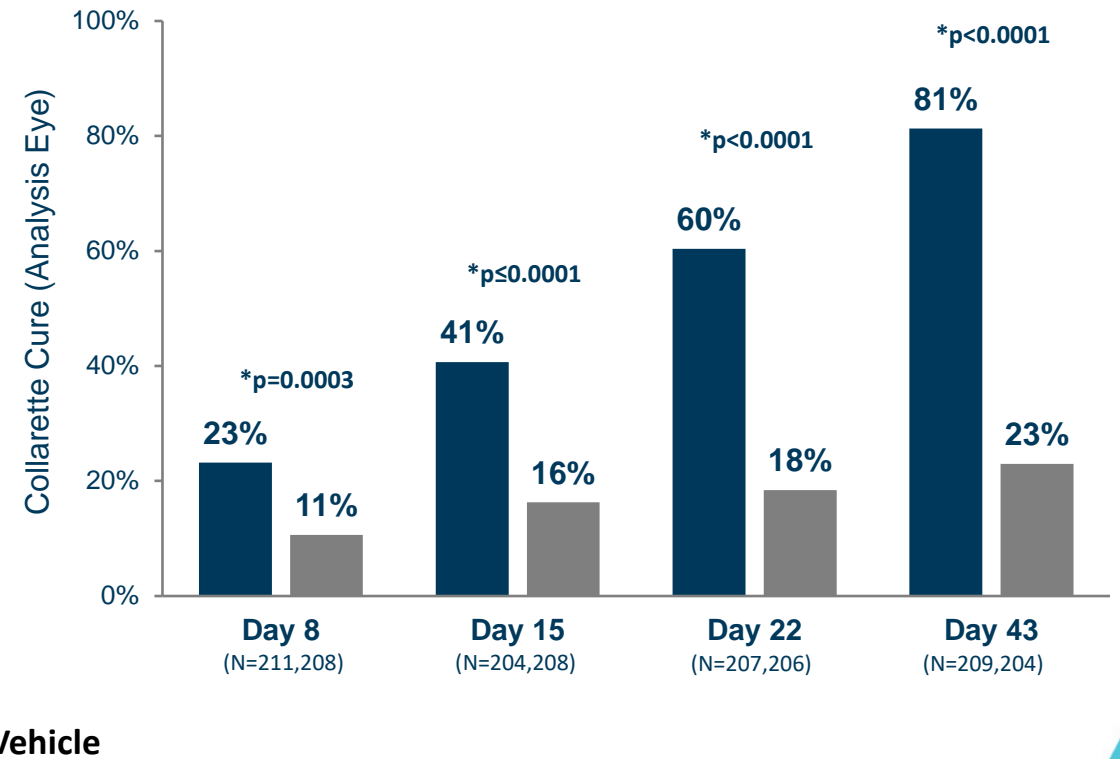
Results | Collarette cure



Complete Collarette Cure Grade 0 (no more than 2 collarettes) Regulatory primary endpoint

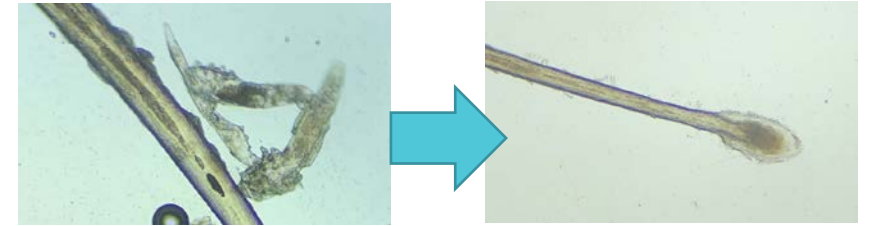


Clinically Meaningful Collarette Cure Grade 0-1 (no more than 10 collarettes)

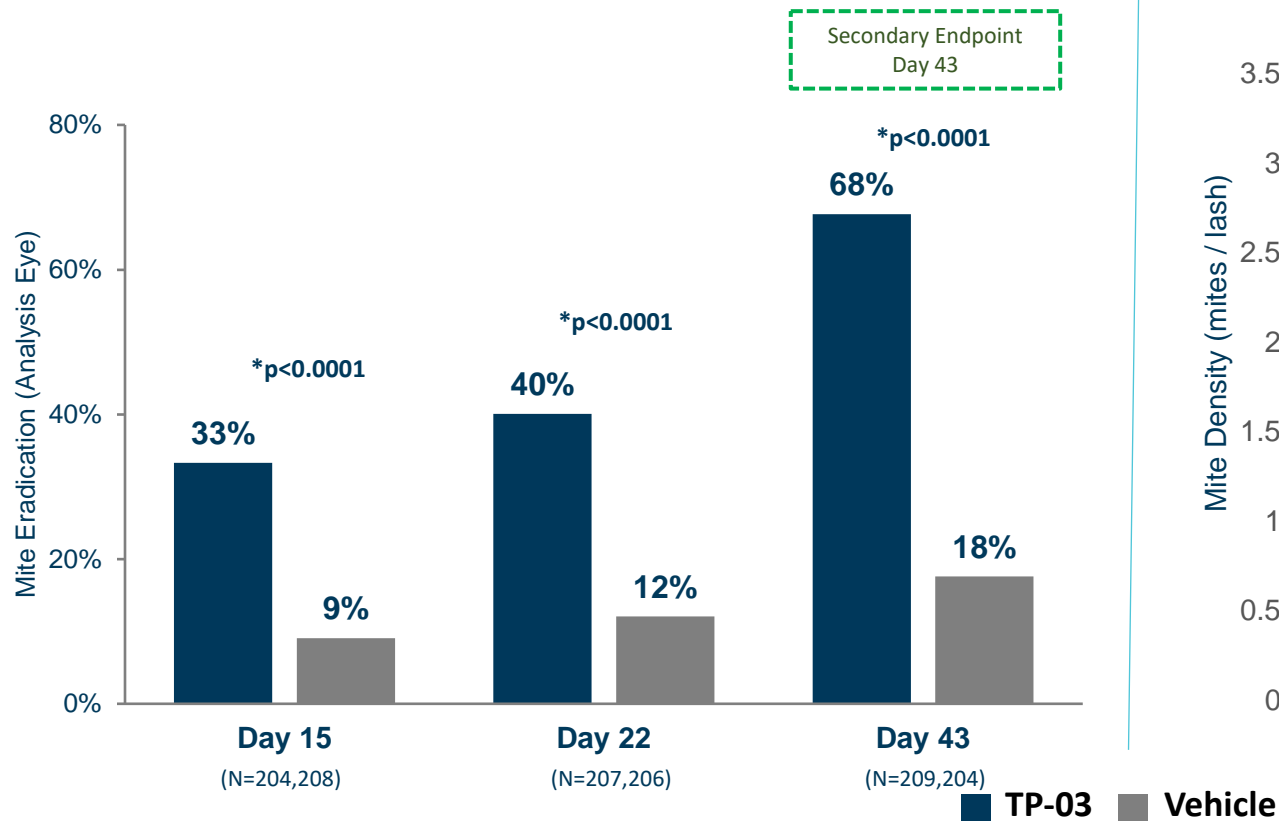


Average baseline collarette grade = 2.8 in both TP-03 and vehicle groups

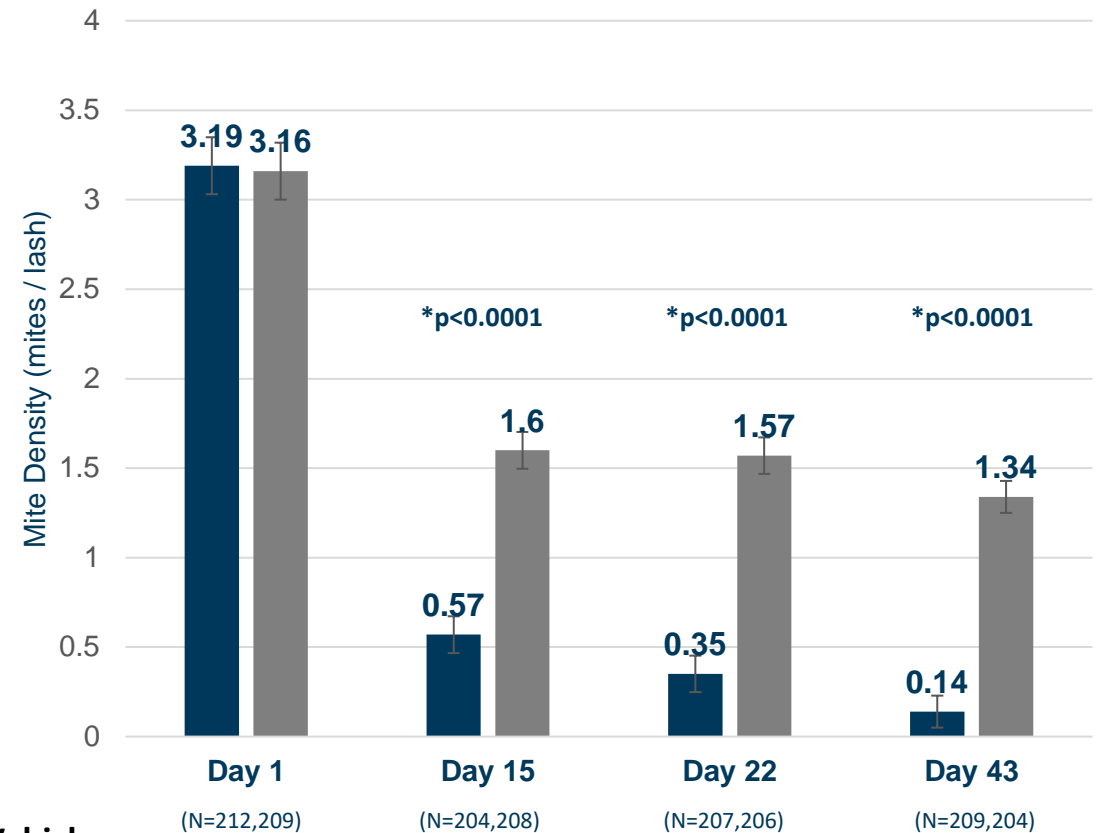
Results | Mite eradication



Mite Eradication (0 mites)

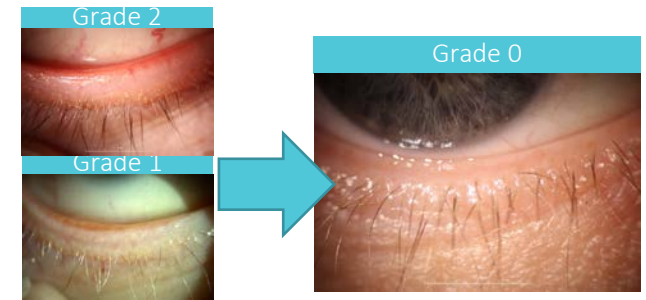


Mean mite density

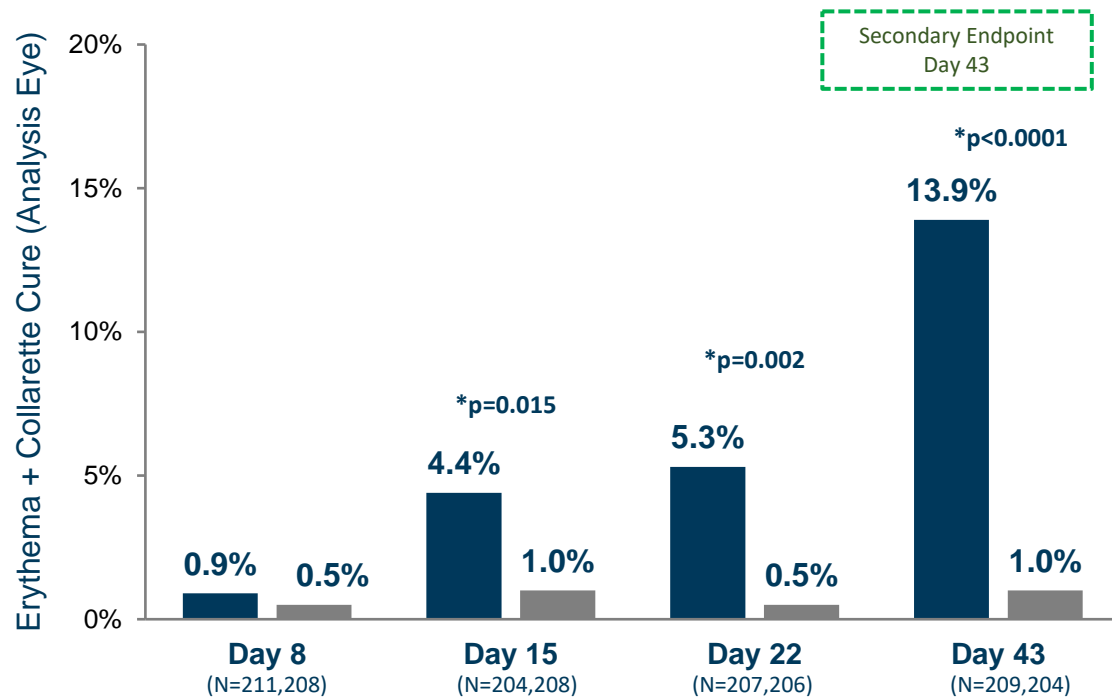


Baseline = 3.2 mites/lash in both TP-03 and vehicle groups

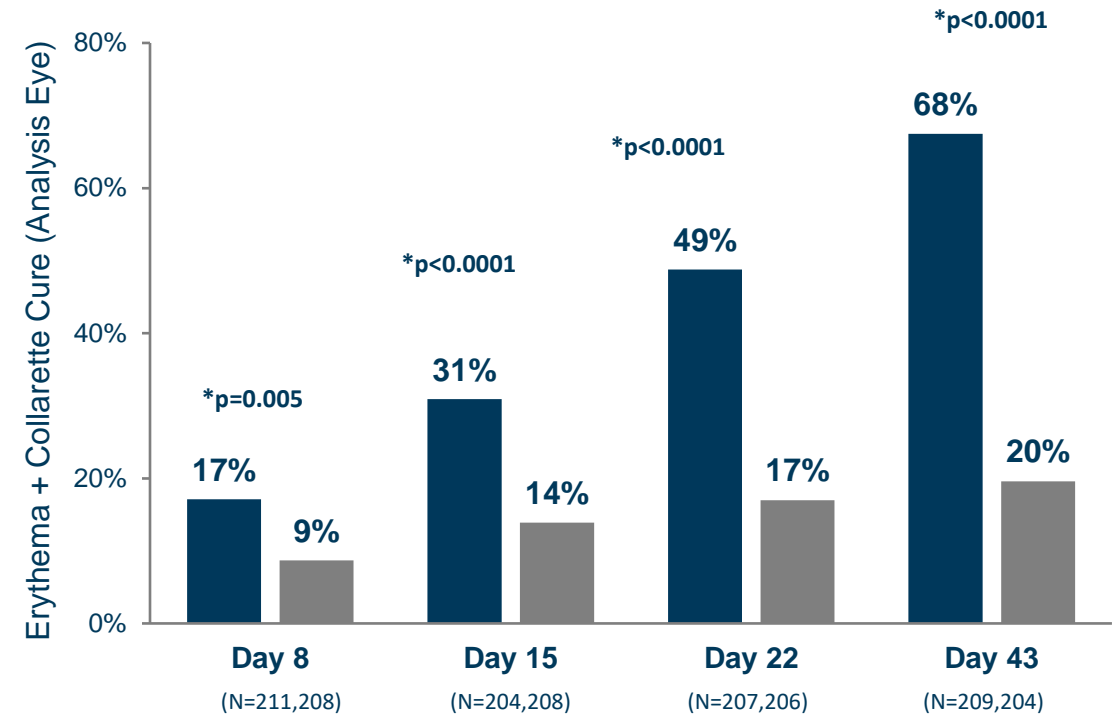
Results | Composite cure



Complete Composite cure: Collarette and erythema grades of 0

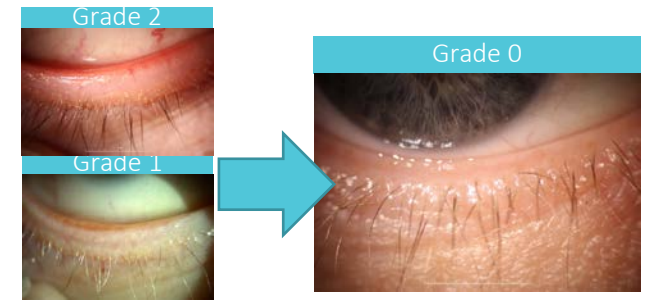


Clinically Meaningful Composite Cure Collarette and erythema grades 0-1

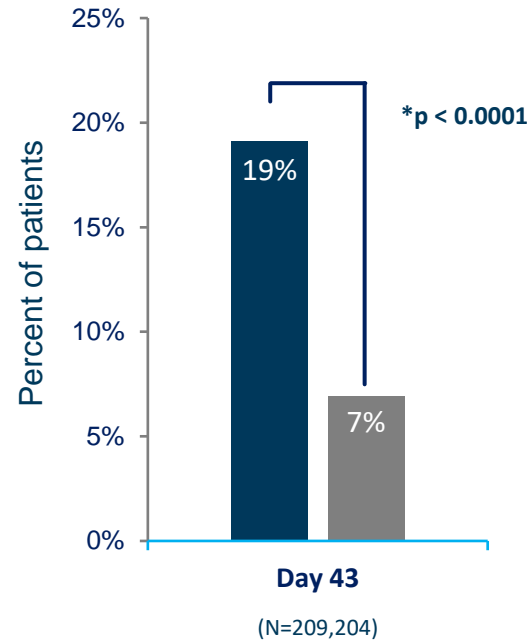


■ TP-03 ■ Vehicle

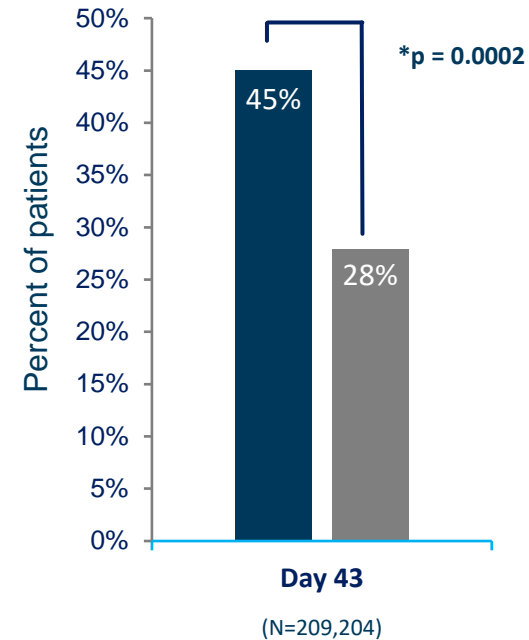
Results | Erythema cure



Grade 0 erythema
Erythema cure



At least 1 grade erythema improvement
Erythema improvement

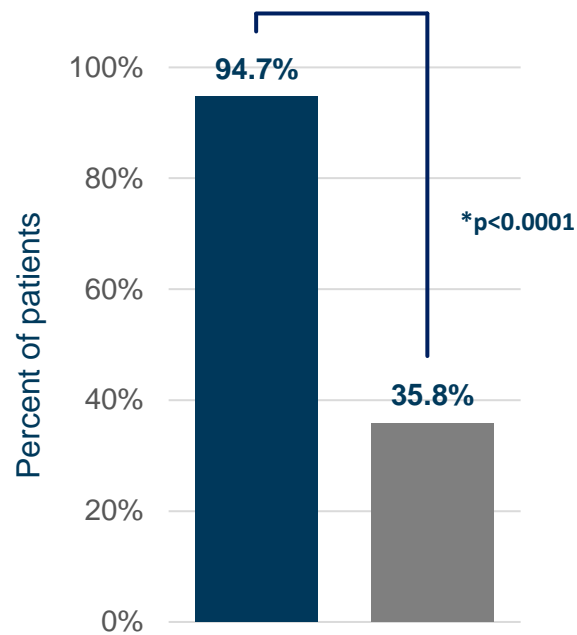


■ TP-03 ■ Vehicle

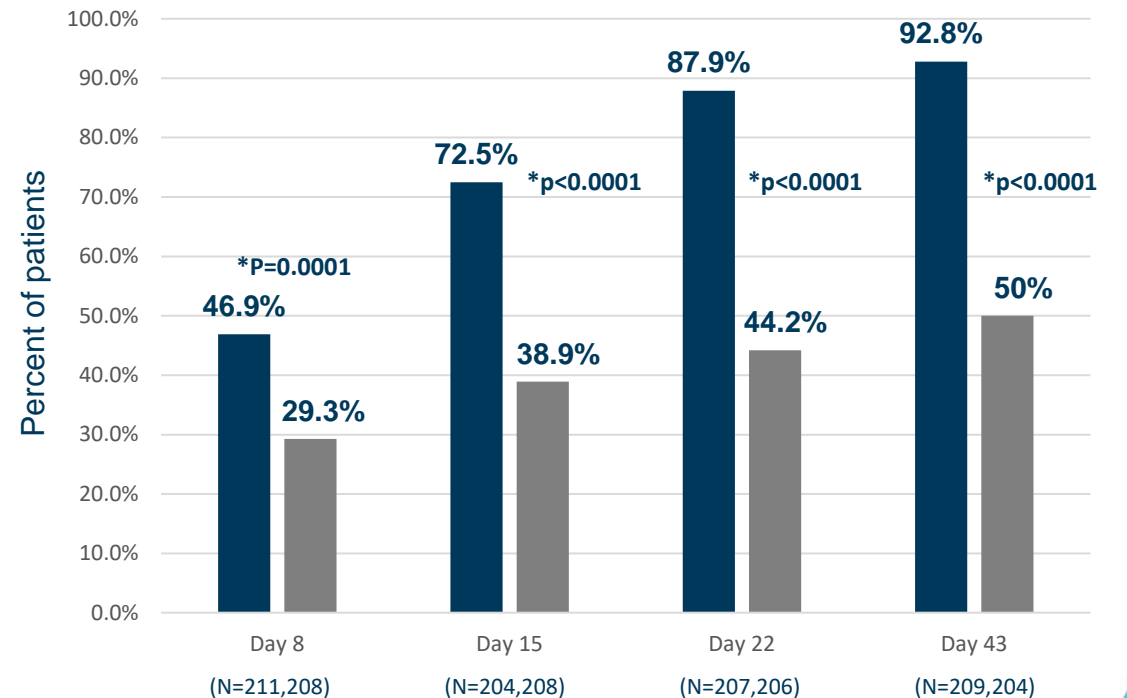
Baseline erythema score = 1.5

Results | Responder analysis

Patients achieving ≤ 0.5 mites / lash at day 43



Patients improving by ≥ 1 collarette grade at each timepoint



Safety

92%

Patients that reported that TP-03 was neutral to very comfortable

- No treatment-related serious adverse events
- No patients in TP-03 group discontinued treatment due to an adverse event
- Minimal change from baseline to day 43 for both eyes and both treatment groups for mean total corneal staining (<0.5) and IOP (<0.1mmHg)
- Among 21 subjects from one site with endothelial cell results, change from baseline in endothelial cell density at day 43 was less than 1.2%
- No clinically significant changes on biomicroscopy and fundus exam

Summary of adverse events $\geq 1\%$ occurring at any time during the trial

	TP-03 (n=212)	Vehicle (n=209)
Instillation site pain/burning/stinging	25 (11.8%)	16 (7.7%)
Instillation site pruritis	3 (1.4%)	7 (3.3%)
Visual acuity reduced	3 (1.4%)	5 (2.4%)
Eye pain	3 (1.4%)	2 (1.0%)
Eye discharge	3 (1.4%)	1 (0.5%)
AE Severity	All Mild	One moderate AE All other AEs mild

Conclusions

- The results of this study demonstrate that lotilaner ophthalmic solution, 0.25% is an effective and safe treatment for *Demodex* blepharitis
- All primary and secondary endpoints were met with high statistical significance
 - TP-03 resulted in reduction of collarettes and mite density with high statistical significance
 - Erythema cure and improvements demonstrated with high statistical significance
- Effects seen within 2 weeks across endpoints
- Clinically meaningful cure seen in 81% of patients
- 96% of patients achieved ≤ 0.5 mites/lash and 93% of patients improved at least 1 collarette grade
- TP-03 was well tolerated, had a good safety profile, and 92% of patients rated neutral to very comfortable

Saturn-1 results demonstrate that TP-03, if approved, may be a safe and effective treatment for *Demodex* blepharitis

Thank you