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Restore Vision & Clarity

MIRA-2 Phase 3 Trial Results Conference Call

March 15, 2021

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Agenda and Participants

First Phase 3 Trial Topline Readout as Planned in 1Q21

- Topline MIRA-2 Phase 3 Clinical Trial Results for Nyxol in Reversal of Mydriasis
- Reversal of Mydriasis Market Opportunity
- Future Milestones
- Q&A

Participants

Mina Sooch, MBA, President and CEO

Jay Pepose, MD, Medical Advisory Board

Susan Benton, MBA, Corporate Board Member

Mitch Brigell, PhD, Head of Clinical Development

Charlie Hoffmann, MBA, VP of Corporate Development and Operations

Amy Rabourn, MBA, VP of Finance

Ocuphire Pipeline & Upcoming Milestones

Multiple Phase 3 & Phase 2 Clinical Data Readouts Anticipated Over the Next Year

	Product Candidate	Indication	Development Stage				Anticipated Milestones
			Pre-clinical	Phase 1	Phase 2	Phase 3	
Ocuphire-Focused Development	0.75% Nyxol® Eye Drop	Dim Light or Night Vision Disturbances (NVD)					Initiated Phase 3 LYNX-1 trial 4Q2020; Data expected in 3Q21 (n=160)
	0.75% Nyxol® Eye Drop	Reversal of Mydriasis (RM)			Enrollment Complete/Data Readout		Initiated Phase 3 MIRA-2 trial 4Q2020; Topline data reported in 1Q21 (n=185)
	0.75% Nyxol® + Low-Dose 0.4% Pilocarpine Eye Drops	Presbyopia (P)					Initiated Phase 2 VEGA-1 trial 1Q2021; Data expected in 2Q21 (n=152)
	APX3330 Oral Pill	Diabetic Retinopathy (DR)/ Macular Edema (DME)					Initiate Phase 2 ZETA-1 trial 1Q2021; Data expected by early 2022 (n=100)
Partnering-Focused Development	APX2009 Intravitreal	DME, Wet Age-Related Macular Degeneration (wAMD)					Next steps: IND enabling studies (with partner funding)
	Combo (0.75% Nyxol® + Latanoprost) Eye Drops	Glaucoma (16 to 24 mmHg)					Next steps: 2nd line add-on Phase 2 trial (with partner funding)

Note: 0.75% Nyxol (Phentolamine Ophthalmic Solution) is the same as 1% Nyxol (Phentolamine Mesylate Ophthalmic Solution)

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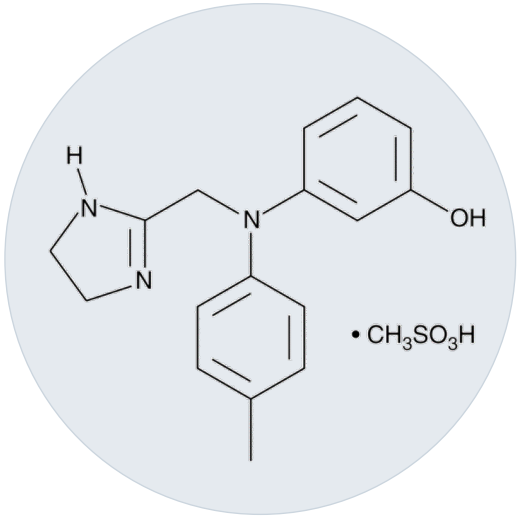
Nyxol®

NVD Night Vision Disturbances

RM Reversal of Mydriasis

P Presbyopia



Phentolamine Mesylate

Topline MIRA-2 Phase 3 Results

Randomized, Parallel Arm, Double-Masked, Placebo-Controlled Study of the Safety and Efficacy of Nyxol (0.75% Phentolamine Ophthalmic Solution) to Reverse Pharmacologically-Induced Mydriasis in Healthy Subjects

RM

Objectives and Key Eligibility Criteria

MIRA-2 (OPI-NYX-RM-301) Phase 3 Trial Evaluating Reversal of Mydriasis with Nyxol or Placebo

Key Objectives

PRIMARY

- To evaluate the efficacy of Nyxol to expedite the reversal of pharmacologically-induced mydriasis across multiple mydriatic agents

KEY SECONDARY

- To evaluate the safety of Nyxol
- To evaluate multiple secondary endpoints for the reversal of pharmacologically-induced mydriasis across mydriatic agents and iris color

Key Eligibility Criteria

- Inclusion
  - Healthy ≥ 12 years of age
- Exclusion
  - Clinically significant ocular disease
  - Ocular trauma, ocular surgery or non-refractive laser treatment within the 6 months prior to screening.
  - Use of any topical prescription or over-the-counter (OTC) ophthalmic medications of any kind within 7 days of screening
  - Recent or current evidence of ocular infection or inflammation in either eye
  - History of any traumatic (surgical or nonsurgical) or non-traumatic condition affecting the pupil or iris

Clinical trial NCT#04620213

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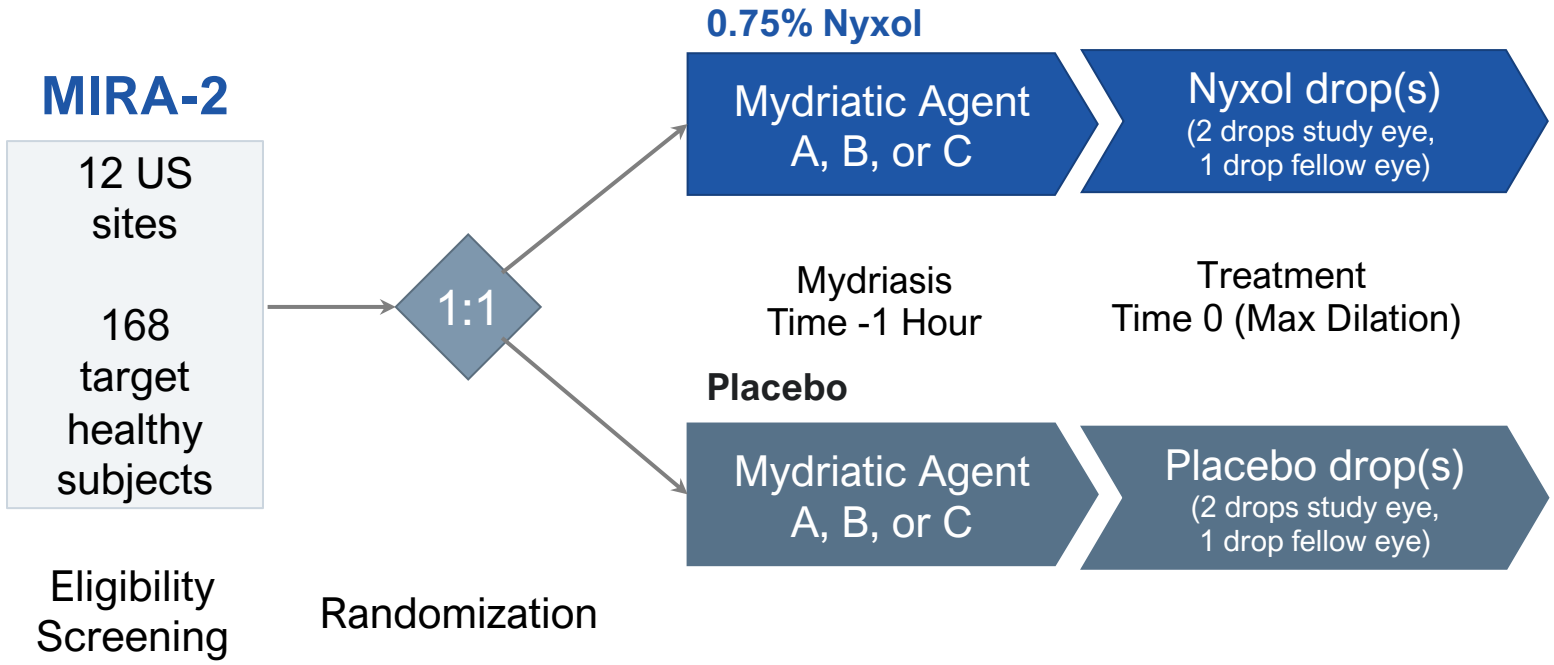
RM MIRA-2 Phase 3 Registration Design

Randomized, Double-Masked, Placebo-Controlled, Parallel, One-Day Trial



Started and Completed Enrollment in 4Q20 – 185 Subjects

Topline Results Expected in 1Q21 – Reported on 3/15/21

Endpoints

Primary: % of subjects (study eye) returning to baseline (within 0.2 mm) pupil diameter (PD) at 90 min

Secondary:

- % of subjects returning to baseline at 30min, 1h, 2h, 3h, 4h, 6h, 24h (overall, by mydriatic agent, by iris color)
- Mean change in pupil diameter from mydriatic max at all timepoints (overall, by mydriatic agent, by iris color)
- Accommodation (Tropicamide/Paremyd)
- Safety and tolerability (redness)

Mydriatic Agents 3:1:1 – 2.5% phenylephrine (alpha 1 agonist), 1% tropicamide (cholinergic blocker), Paremyd® (combination)

RM

Demographics (mITT Population)

Treatment and Placebo Arms Were Balanced in this Phase 3 Registration Trial

	Nyxol n=94	Placebo n=91	Total n=185
Demographics			
Age (years): Median (Range)	31 (12-70)	30 (13-73)	31 (12-73)
Sex: Male n (%) **Female** n (%)	36 (38%) 58 (62%)	36 (40%) 55 (60%)	72 (39%) 113 (61%)
Race: White n (%) **African American** n (%) **Asian** n (%) **Other^** n (%) *^includes American Indian or Alaska Native; Native Hawaiian or Other Pacific Islander*	70 (75%) 17 (18%) 6 (6%) 2 (2%)	74 (81%) 16 (18%) 3 (3%) 1 (1%)	144 (78%) 33 (18%) 9 (5%) 3 (2%)
Dark Iris Color: n (%)	49 (52%)	46 (51%)	95 (51%)
Light Iris Color: n (%)	45 (48%)	45 (50%)	90 (49%)

Note: 14 pediatric subjects 12-17years old were enrolled in the trial; Race is more than 100% given subjects could check more than one category.

Source: MIRA-2 TLR table #14.1.2.3 modified Intent To Treat (mITT)

RM

Baseline Characteristics Study Eye (mITT Population)

Treatment and Placebo Arms Were Balanced Across These Ocular Measurements

Baseline Characteristic	Nyxol n=94	Placebo n=91	Total n=185
Baseline Pupil Diameter Mean (mm)	5.09	5.18	5.13
Max Dilated Pupil Diameter Mean (mm)	7.21	7.20	7.20
Accommodation Median (diopters)	7.28	7.41	7.41
BCDVA letters *55 letters = 20/20*	57	59	58
DCNVA letters *70 letters = 20/20*	58	61	59
IOP (mmHg)	15.3	15.1	15.2

Source: MIRA-2 TLR table #14.1.2.3 (mITT)

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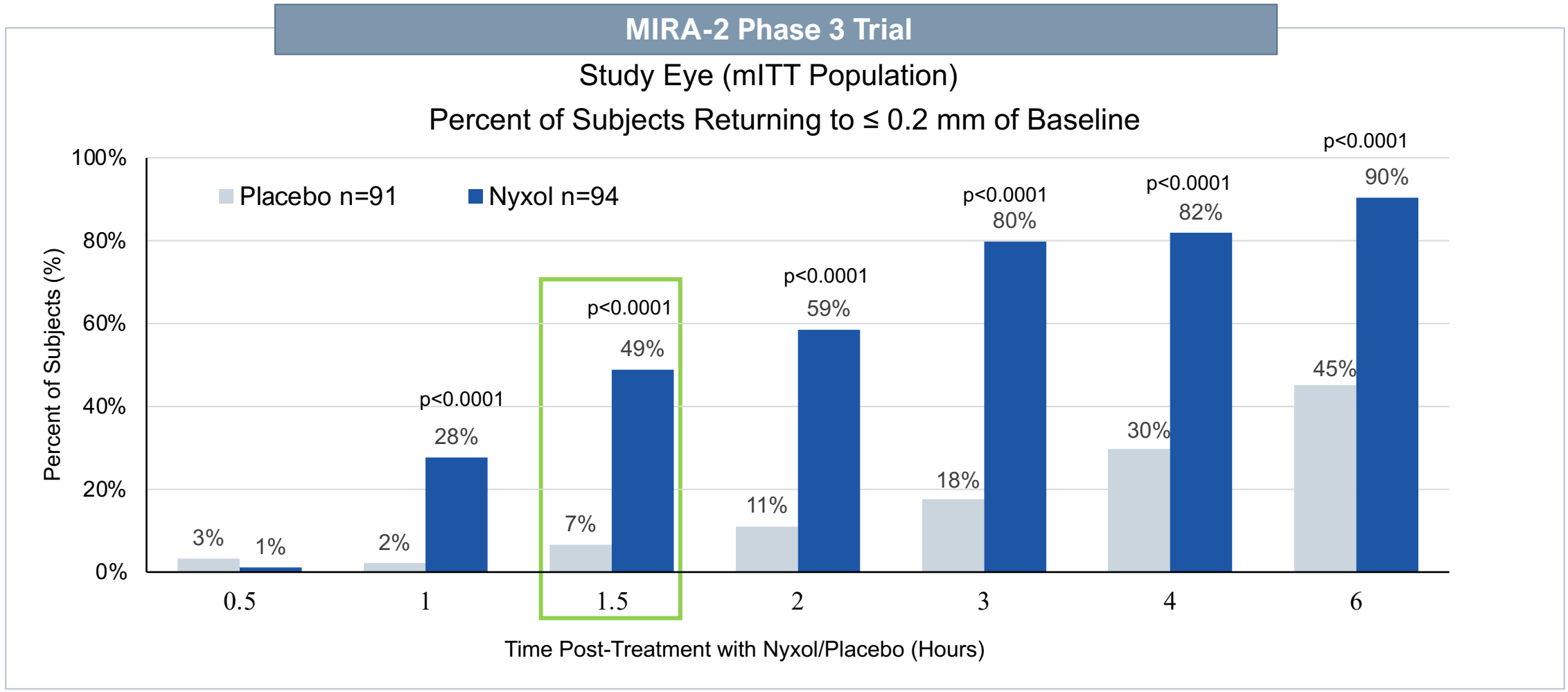
Primary Endpoint: % of Subjects Study Eye Returning to Baseline PD at 90 Min

Nyxol Met the Primary Endpoint at 90 Min; Additionally at 60 Min and All Subsequent Timepoints



Source: MIRA-2 TLR table #14.2.1.1 (mITT). Data include all three mydriatics (Phenylephrine, Tropicamide, Paremyd)

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Secondary Endpoint: % of Subjects Returning to Baseline PD by Mydriatic Agent

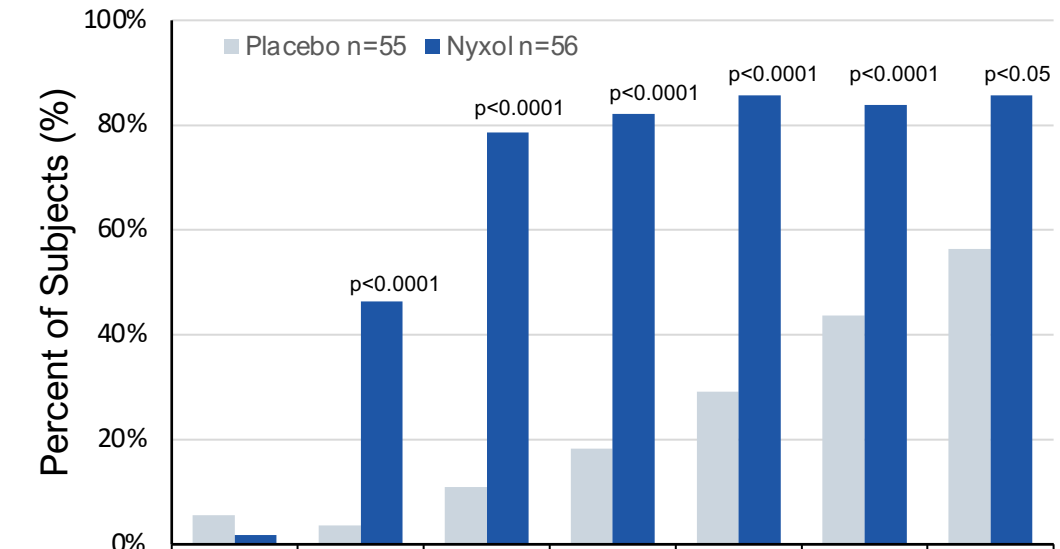
Subjects Dilated with Phenylephrine had a Faster Response to Nyxol than Tropicamide/Paremyd

MIRA-2 Phase 3 Trial

Study Eye (mITT Population)

Percent of Subjects Returning to ≤ 0.2 mm of Baseline by Mydriatic Agent

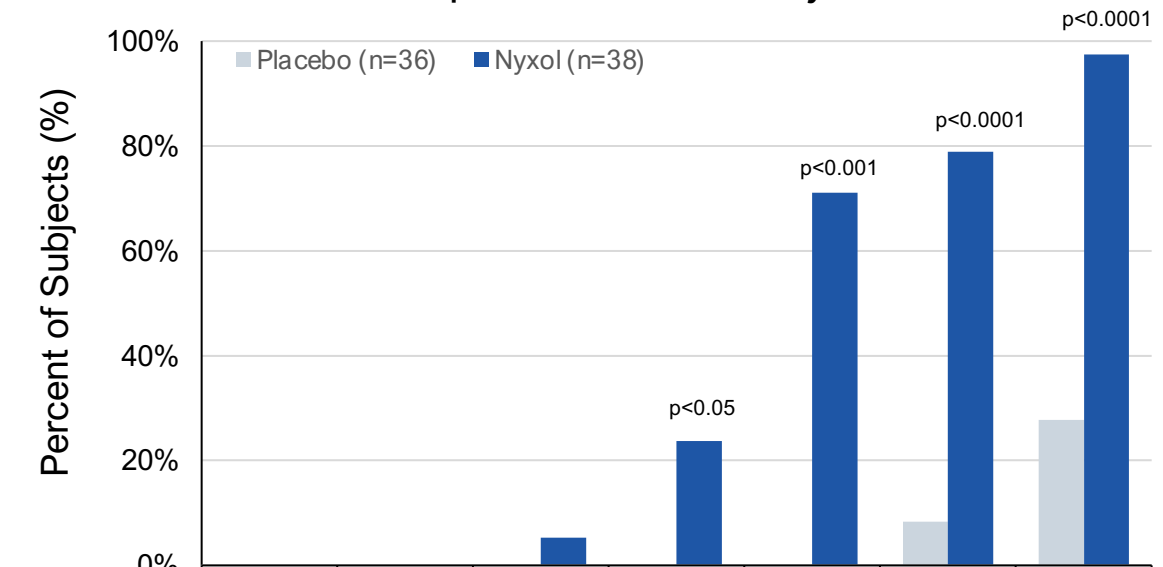
Phenylephrine



	0.5	1	1.5	2	3	4	6
Placebo n=55	6%	4%	11%	18%	29%	44%	56%
Nyxol n=56	2%	46%	79%	82%	86%	84%	86%

Time Post-Treatment with Nyxol/Placebo (Hours)

Tropicamide or Paremyd



	0.5	1	1.5	2	3	4	6
Placebo (n=36)	0%	0%	0%	0%	0%	8%	28%
Nyxol (n=38)	0%	0%	5%	24%	71%	79%	97%

Time Post-Treatment with Nyxol/Placebo (Hours)

Source: MIRA-2 TLR table #14.2.1.4 (mITT)

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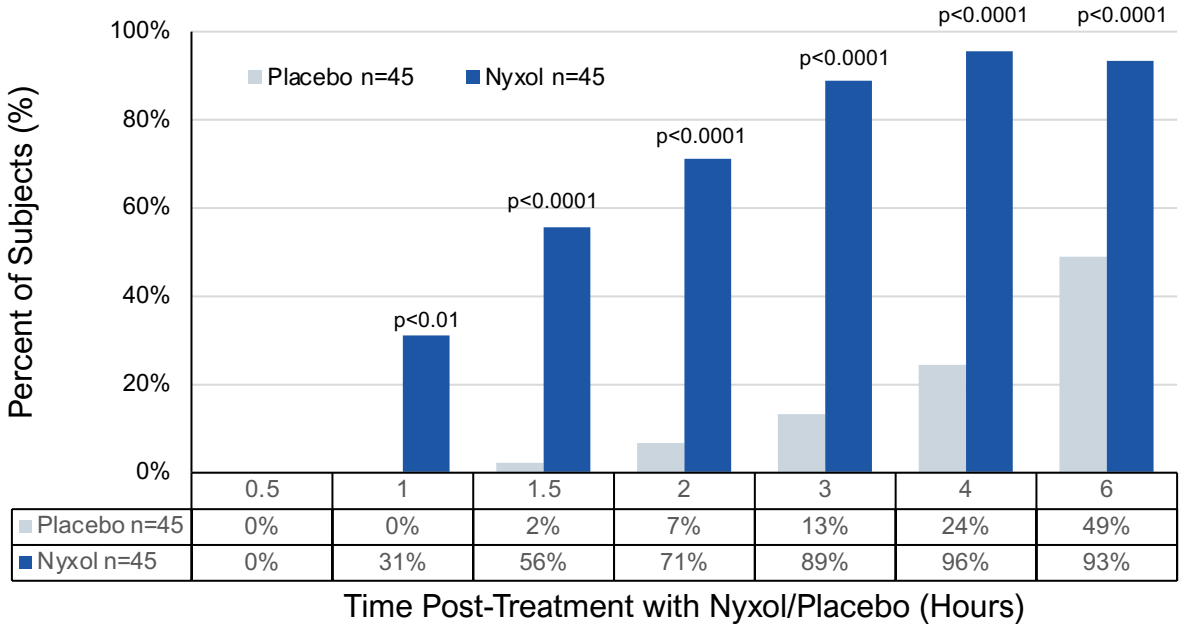
Secondary Endpoint: % of Subjects Returning to Baseline PD by Iris Color

Evidence of Efficacy in Subjects with Both Light and Dark Irides, with a More Vigorous Response in Light Irides

MIRA-2 Phase 3 Trial

Study Eye (mITT Population)
Percent of Subjects Returning to ≤ 0.2 mm of Baseline by Iris Color

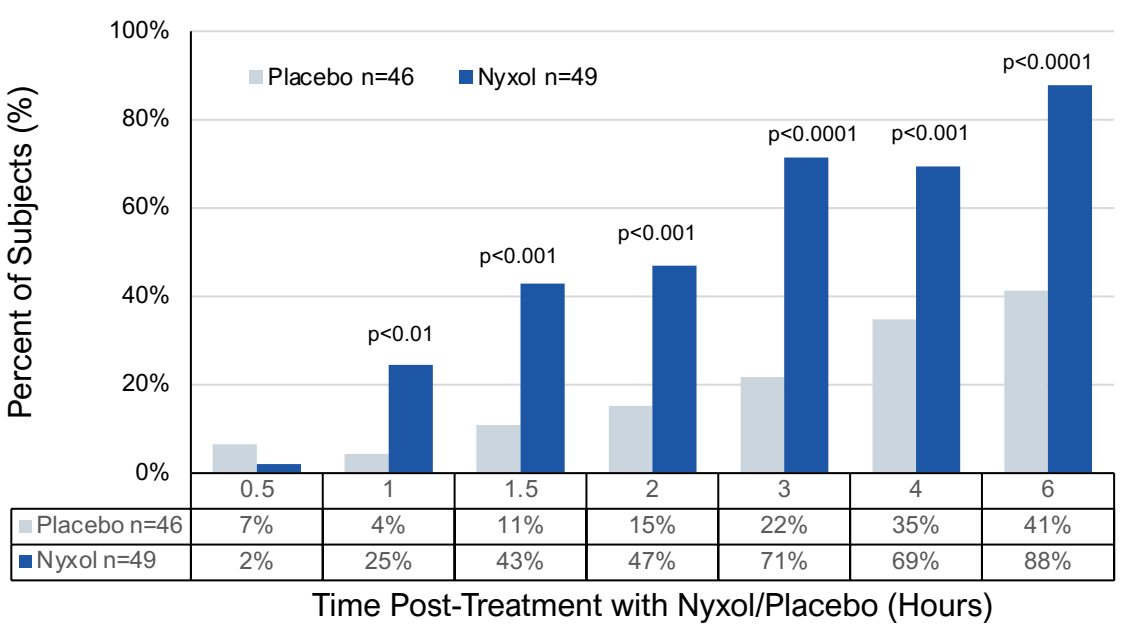
Light Irides



	0.5	1	1.5	2	3	4	6
Placebo n=45	0%	0%	2%	7%	13%	24%	49%
Nyxol n=45	0%	31%	56%	71%	89%	96%	93%

Time Post-Treatment with Nyxol/Placebo (Hours)

Dark Irides



	0.5	1	1.5	2	3	4	6
Placebo n=46	7%	4%	11%	15%	22%	35%	41%
Nyxol n=49	2%	25%	43%	47%	71%	69%	88%

Time Post-Treatment with Nyxol/Placebo (Hours)

Source: MIRA-2 TLR table #14.2.1.6 (mITT). Data includes all three mydriatics (Phenylephrine, Tropicamide, Paremyd)

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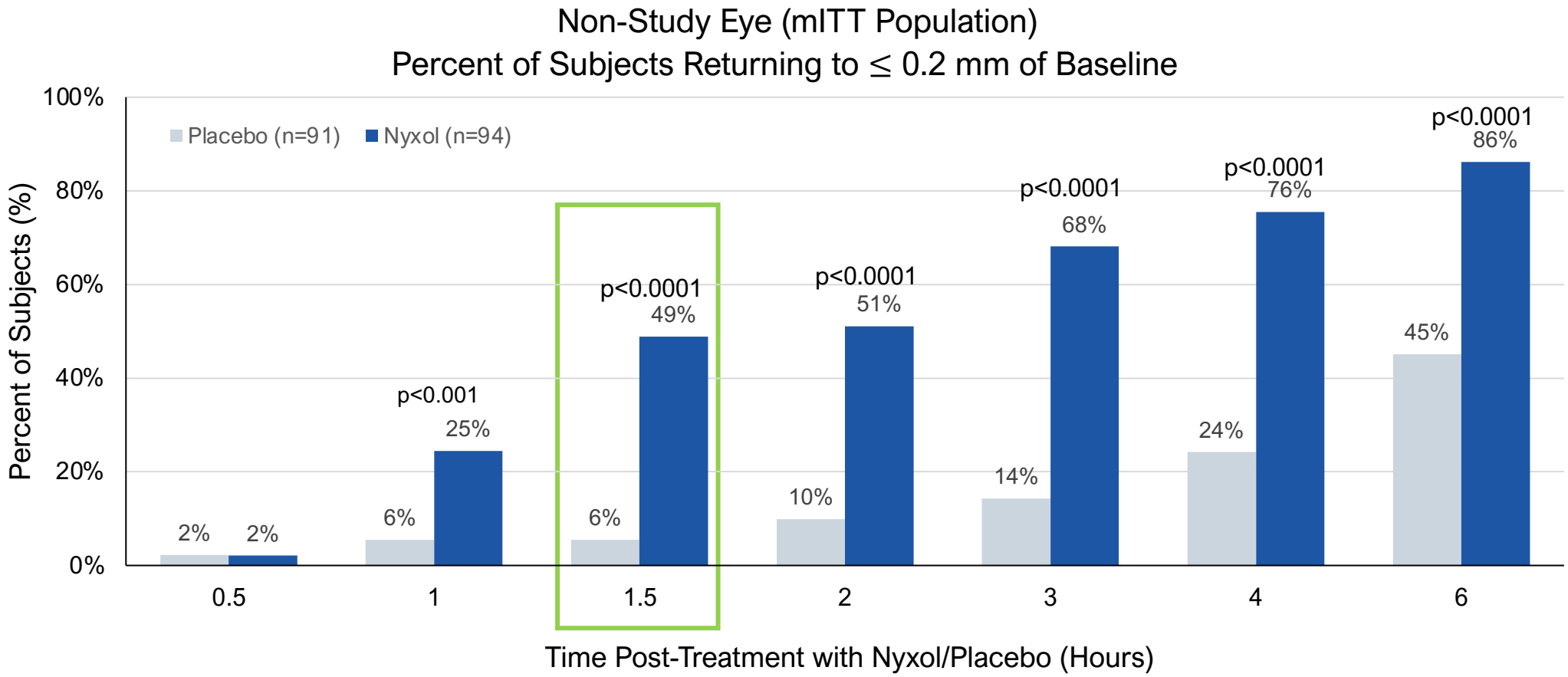
Secondary Endpoint: % of Subjects Non-Study Eye Returning to Baseline PD

A Similar Significant Effect was Obtained with a Single Drop of Nyxol in the Non-Study Eye

MIRA-2 Phase 3 Trial



Source: MIRA-2 TLR table 14.2.1.2 (mITT). Data includes all three mydriatics (Phenylephrine, Tropicamide, Paremyd)

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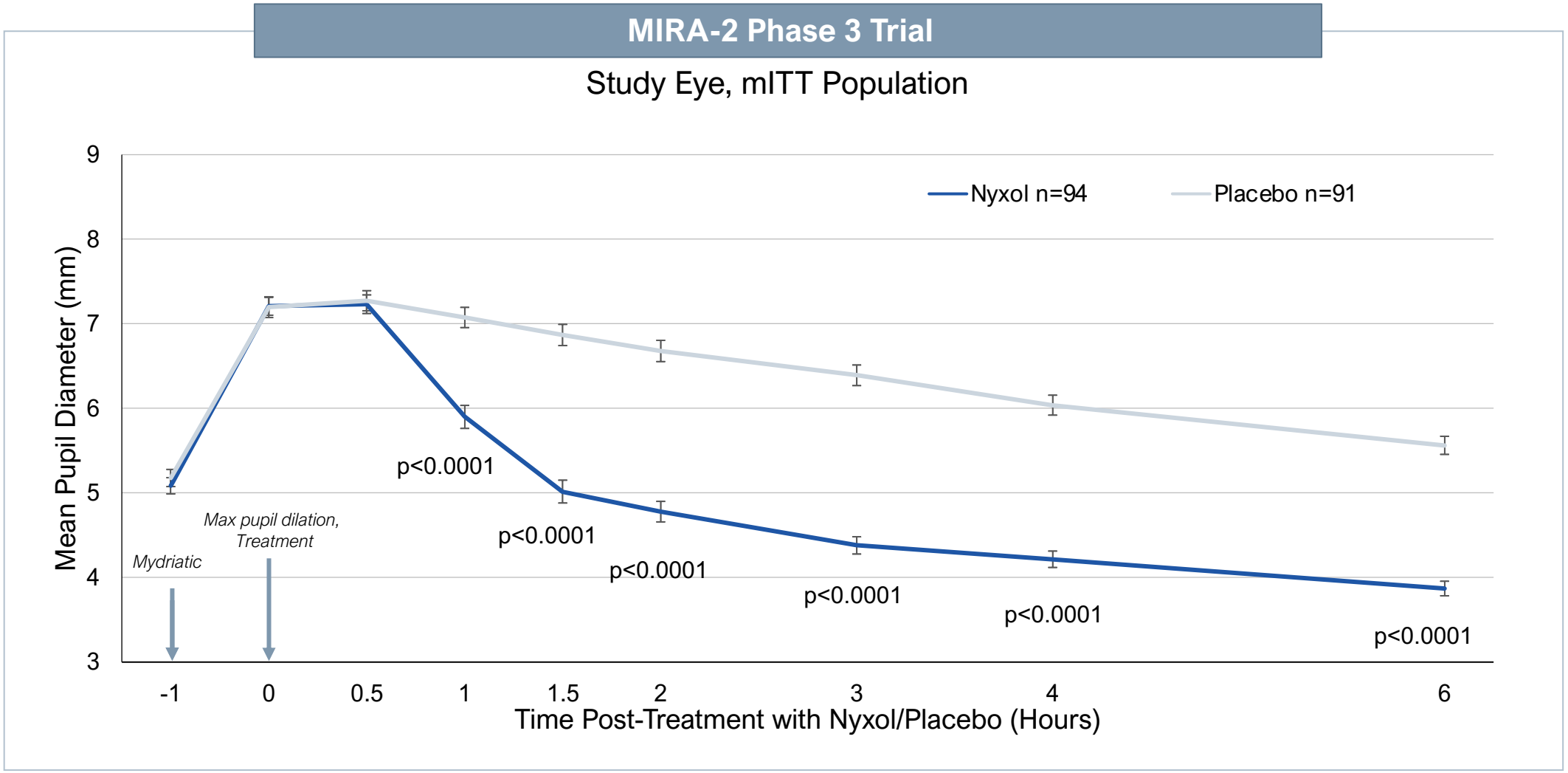
Secondary Endpoint: Mean Pupil Diameter Over Time

Nyxol Treatment Significantly Reduced PD Starting at 1 Hour Post-Dose through 6 Hours



Source: MIRA-2 TLR table #14.2.2.1 (mITT). Standard Error bars are shown. Data includes all three mydriatics (Phenylephrine, Tropicamide, Paremyd)

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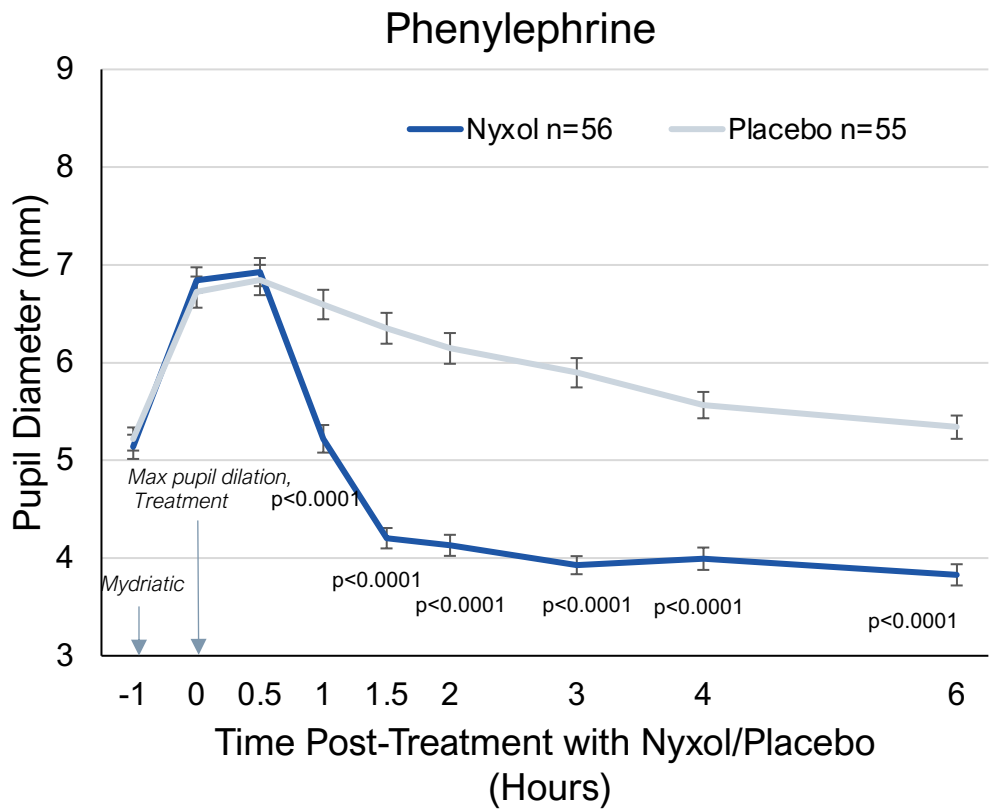
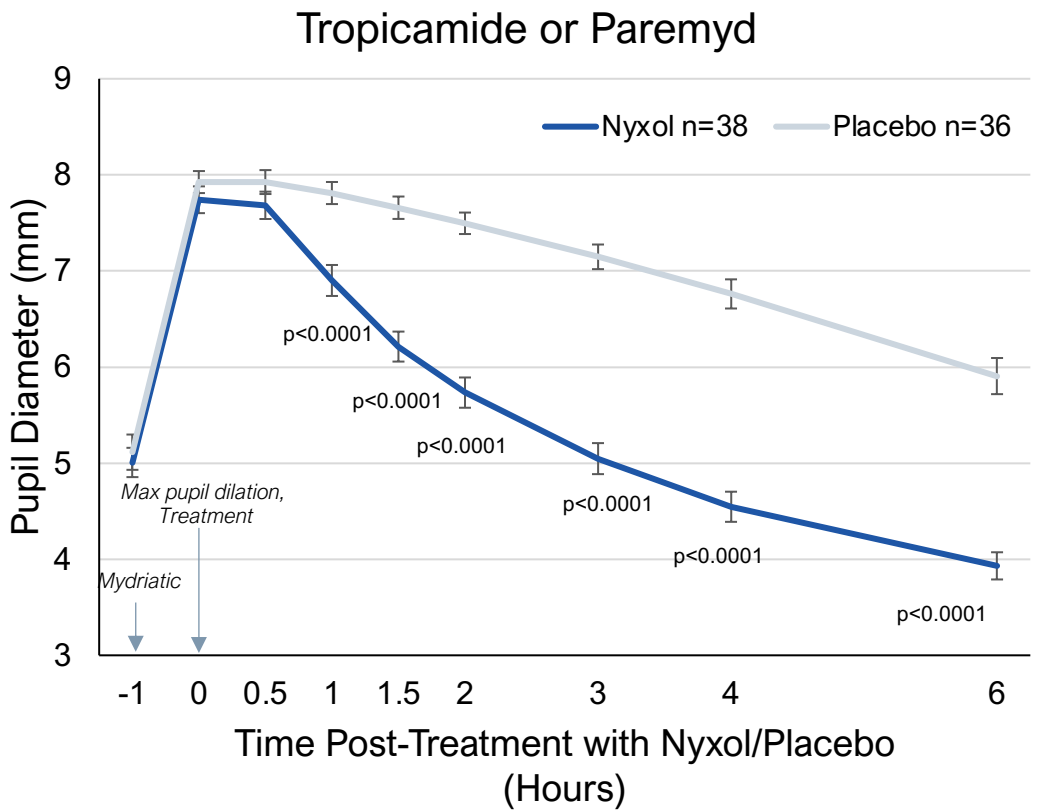
Secondary Endpoint: Mean Pupil Diameter Over Time by Mydriatic Agent

Nyxol Reduced Pupil Diameter With All Mydriatic Agents; More Rapidly with Phenylephrine as Expected

MIRA-2 Phase 3 Trial

Study Eye, mITT Population





Source: MIRA-2 TLR table #14.2.2.3 (mITT). Standard Error bars are shown.

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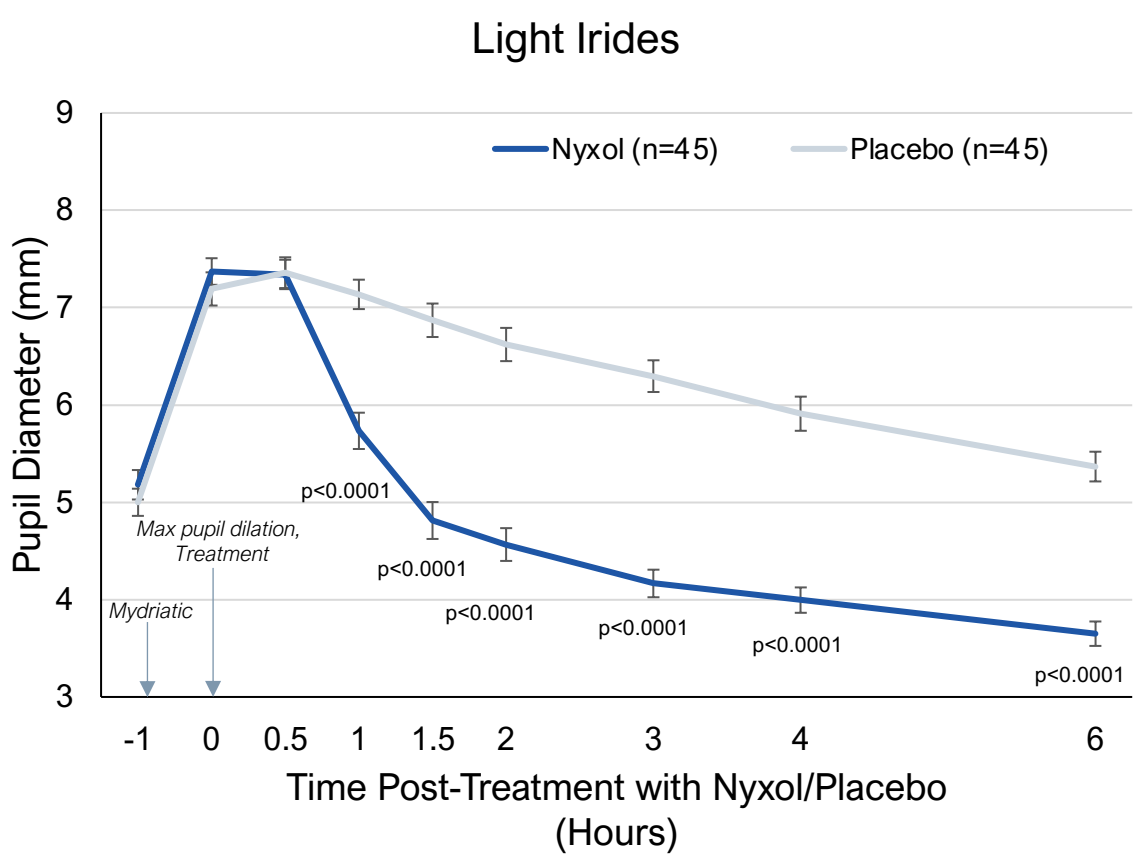
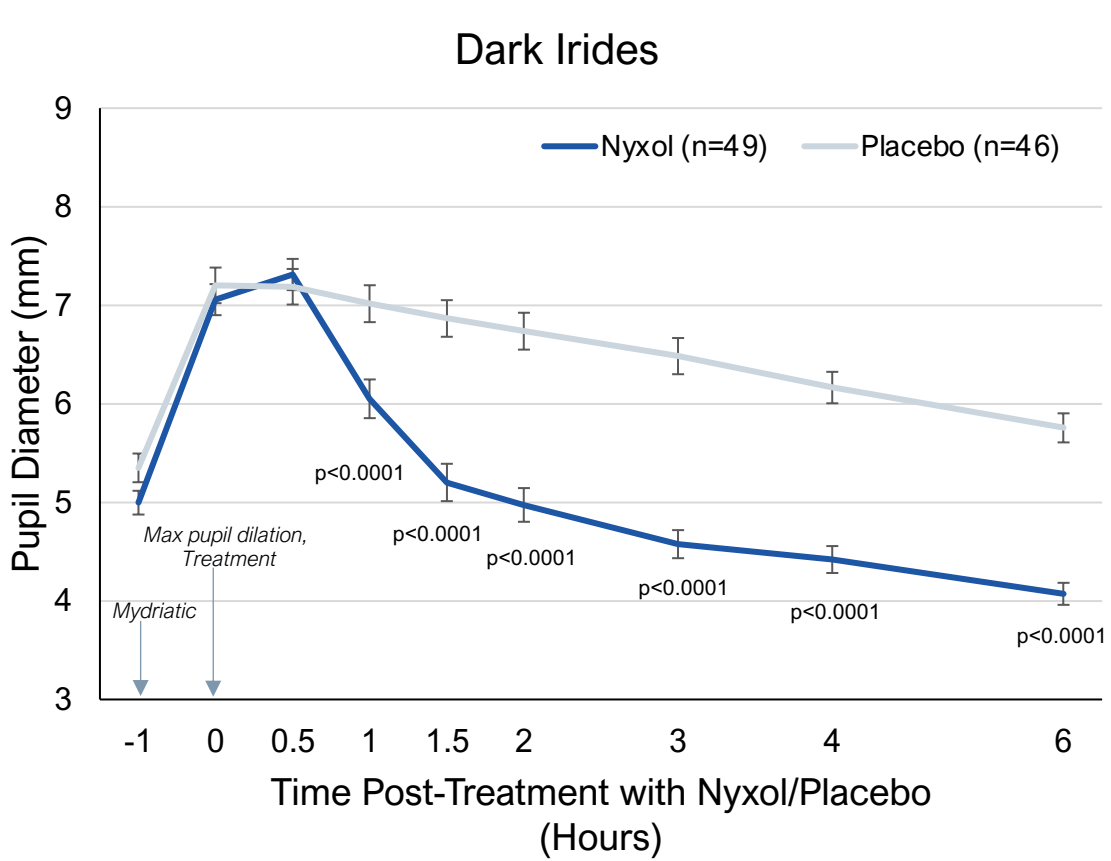
Secondary Endpoint: Mean Pupil Diameter Over Time by Eye Color

Nyxol Reduced Pupil Diameter More Rapidly in Both and Light Dark Irides

MIRA-2 Phase 3 Trial

Study Eye, mITT Population





Source MIRA-2 TLR table #14.2.1.5. Standard Error bars are shown. Data includes all three mydriatics (Phenylephrine, Tropicamide, Paremyd)

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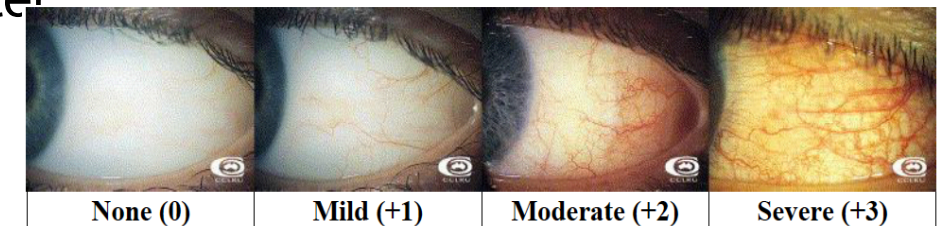
Secondary Endpoint: Safety Findings

Nyxol was Well Tolerated with a Favorable Safety Profile

- There were no deaths, serious AEs, or withdrawals due to AEs
- Only AEs, occurring in ≥ 5% of subjects treated with Nyxol, were instillation site discomfort (38% Nyxol vs. 9% placebo) and conjunctival hyperemia (13% Nyxol vs. 0% placebo)
    - 94% of the AEs in the Nyxol group were mild
- Conjunctival hyperemia was observed to be mild and transient
    - From a baseline mean of 0.7, the mean hyperemia score increased by approximately 1.0 unit (on a 4-point scale) at 60 minutes post-dose and decreased steadily thereafter



- Visual acuity was not adversely affected by Nyxol

Source MIRA-2 Safety Population TLR table 14.3.1.1.; MIRA-2 table 14.3.1.2.2 System Organ Class; MIRA-2 table 14.3.3.2 Hyperemia Score by Time Point

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Summary of Positive MIRA-2 Phase 3 Results for Nyxol Eye Drops

Sustained Efficacy with a Favorable Safety Profile in Reversing Mydriasis with Nyxol

- **Met primary endpoint at 90 minutes with high statistical significance with 2 drops of Nyxol**
- **Met all key secondary endpoints with high statistical significance**
  1. Efficacy for all 3 mydriatic agents – phenylephrine, tropicamide, and Paremyd®
  2. Efficacy in both light and dark iris colors
  3. Efficacy with only one Nyxol drop in non-study eye
- **Favorable safety profile**
  - Mild, transient conjunctival hyperemia reported in the first hour and declined steadily thereafter
  - No serious AEs, no drop-outs from AEs, no systemic AEs were observed in ≥ 5% of subjects
- **Validates Nyxol mechanism of action, therapeutic effect, and safety profile in the other two indications of presbyopia and night vision disturbances**

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Next Steps For Nyxol RM Indication for NDA

NDA Submission Expected Early 2023

- Perform a second Phase 3 RM registration trial (MIRA-3)
  - Planned 330 subjects randomized 2:1 to Nyxol or Placebo
    - In addition to confirming efficacy, this trial will satisfy the regulatory requirement for number of subjects (300 or more) exposed for approval for acute use (24 hours)
    - Limited pharmacokinetic sampling will be obtained in a small subset of subjects
  - Results anticipated 1Q2022
- Perform a small (20-30 subjects) pediatric RM trial (age 3 – 17 years) to satisfy pediatric research plan regulatory requirement
- Manufacture and complete one-year stability on three registration batches for Nyxol single unit dose Blow-Fill-Seal vials

Proposed Indication

The treatment of pharmacologically induced mydriasis produced by adrenergic (e.g. phenylephrine) or parasympatholytic (e.g. tropicamide) agents, or a combination thereof.

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Reversal of Mydriasis Market Opportunity

Nyxol Product Candidate Profile

Novel Alpha 1/2 Blocker Eye Drop for Refractive Indications (505(b)(2) Pathway)

Nyxol: Phentolamine 0.75% Ophthalmic Solution
Preservative Free, EDTA Free, and Stable

Efficacy Data

Improving Vision

- ↓ Pupil Size (moderate miotic)
- ↑ Contrast Sensitivity (night)
- ↑ Near Visual Acuity (light/dark)
- ↑ Distance Visual Acuity

Safety Data

No Systemic Effects
- No Changes in Blood Pressure
- No Changes in Heart Rate

Tolerated Topical Effects
- Mild / Transient / Reversible Eye Redness

IOP Unchanged or Decreased
- ↓ Intraocular Pressure (IOP) at Normal Baseline

Chronic daily dosing of Nyxol at bedtime demonstrated
no significant daytime redness** and durability of effects for more than **24 hours

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Reversal of Mydriasis (RM) – Acute Treatment

Annual Exams and Specialty Visits Involve Dilation to Monitor Eye Health

The Problem

- At many annual eye exams and specialty visits, pupils are pharmacologically dilated, impairing vision for 6-24 hours
- Dilated eyes:
  - heightened sensitivity to light
  - inability to focus
  - reading, working, and driving are difficult
  - halos and glare

> *"I have to stay indoors. They say it only lasts a few hours, but it lasts all day, and it is very annoying."*
>
> *RM Patient, Aged 51*

No Current Commercially Available Treatments

~100M eye exams / year in US

Source: GlobalData Market Research Report, 2020

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Reversal of Mydriasis (RM) – Acute Treatment

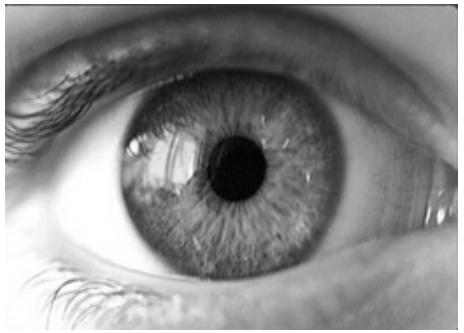
Single Use Indication Leveraging a Precedent Approval Pathway

Nyxol's Potential Differentiated Solution

- **Regulatory Precedent** with Rev-Eyes (an alpha 1 blocker), approved by the FDA in 1990 but shortly thereafter discontinued (not for safety or efficacy reasons)
- **Clinical Effect** to potentially reduce pupil size and counteract the effect of mydriatic drugs (alpha agonists and cholinergic blockers) used to dilate the pupil
- **Convenient** eye drop given at the office that may allow vision to return to normal sooner
- **Tolerable** with a minimal side effect profile (unlike cholinergic agonists such as pilocarpine)

Before

After



Seeking Treatment Findings	
Patients likely to request reversal of dilation	45%
Eye care providers likely to use reversal drops	40%

Source: GlobalData Market Research Report, 2020

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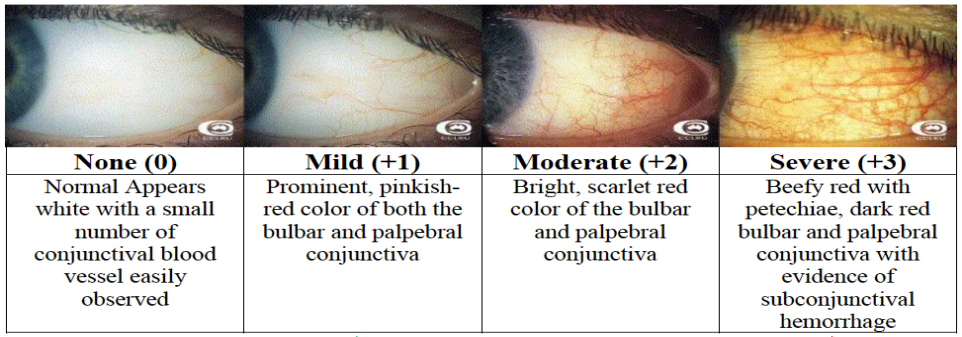
Nyxol Comparison to Rev-Eyes

Nyxol has a Distinct Commercial Advantage to Rev-Eyes

	Nyxol	Rev-Eyes
Tolerability	• Mild hyperemia	• Severe hyperemia (80%)
Comfort	• Mild discomfort (38%), erythema (4%), or instillation pain (3%)	• Burning/Stinging (50%)
Side effects	• None reported	• 40% (ptosis - droopy eyelids)
Commercial Product Presentation	• Stable • Preservative-free • Sterile • Single-unit dose packaging • Normo-osmolar solution	• Requires aseptic technique for reconstitution and mixing at physician office • Stable for 21 days after product is reconstituted • Contains preservative • Hyperosmolar solution
No. of drops instilled	• 1-2 drops/eye	• 4 drops/eye (2 drops, followed 5 minutes later by 2 additional drops)



None (0)	Mild (+1)	Moderate (+2)	Severe (+3)
Normal Appears white with a small number of conjunctival blood vessel easily observed	Prominent, pinkish-red color of both the bulbar and palpebral conjunctiva	Bright, scarlet red color of the bulbar and palpebral conjunctiva	Beefy red with petechiae, dark red bulbar and palpebral conjunctiva with evidence of subconjunctival hemorrhage

Nyxol

Rev-Eyes

Source: Rev-Eyes (Dapiprazole HCL) Eyedrops 0.5% Summary Basis of Approval

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Summary of RM Market Opportunity

A Substantial Revenue Opportunity for Nyxol in Reversal of Mydriasis

- ~100M comprehensive and specialty eye exams in US per year
- No current commercially available treatment for reversing dilation
  - Optomap ultra-wide field camera used for a retinal evaluation without the need for dilation; ~$40 – $65 cost to patient[1]
- Findings from recent US market research[2]:
  - Over 65% patients report moderate to severe negative impact of dilated exams
  - Cash pay price range surveyed $5-$20 per patient treatment
  - 45% patients said they would likely request a dilation reversal drop

Estimated US Market Opportunity- $325M- $1B+

- Eye exam market posted a 3.3% growth to $6.39B[3]
- Given the efficacy of Nyxol to reverse dilation regardless of eye color, there are additional markets outside of the US for potential commercialization

1. Corcoran Consulting Group FAQ for Optomap imaging 01/2021
2. GlobalData market research report
3. Vision Care Market Grows 2.4 Percent in 12-Months Ending September 2019. Vision Monday, January 20, 2020.

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Future Milestones

2021 to 2022 Ocuphire Cadence of Milestones

Multiple Data Catalysts on Path to NDA(s)

2018/2019

- ✓ NVD Podium Presentation at AAO 2018
- ✓ Initiate/Report Phase 2b Data for ORION-1
- ✓ Initiate/Report Phase 2b Data for MIRA-1
- ✓ Expand Patent Estate

1H 2020

- ✓ Completion of APX3330 License
- ✓ ARVO 2020 Presentation for MIRA-1
- ✓ ARVO 2020 Presentation for ORION-1
- ✓ FDA EOP2 Meeting May 2020

2H 2020

- ✓ Announced Ocuphire Reverse Merger and PIPE Financing (Co-Led by Cantor and Canaccord)
- ✓ Completion of Transaction (Nasdaq: OCUP)
- ✓ Initiate Phase 3 RM Trial
- ✓ Initiate Phase 3 NVD Trial
- ✓ Complete Nyxol Market Research
- ✓ Journal Publications

1H 2021

- ✓ Enrollment of Phase 3 RM Trial
- ✓ Initiate Phase 2 Presbyopia Trial
- ✓ **Report Positive Phase 3 Data for RM**
- ❑ Initiate Phase 2 DR/DME Trial
- ❑ Enrollment of Phase 2 Presbyopia Trial
- ❑ **Report Phase 2 Data for Presbyopia**
- ❑ New Patent Claims

2H 2021

- ❑ Enrollment of Phase 3 NVD Trial
- ❑ **Report Phase 3 Data for NVD**
- ❑ Enrollment of Phase 2 DR/DME Trial
- ❑ Industry Conferences & Publications
- ❑ Complete 6-month Rabbit Tox Study
- ❑ Registration Batches for Nyxol Blow-Fill-Seal Eye Drops
- ❑ **Initiate 2nd P3 RM & Ped RM trial for NDA**

2022

- ❑ **Report 2nd Ph3 RM**
- ❑ **Report Phase 2 Data for DR/DME**
- ❑ Initiate 2 Phase 3 Presbyopia Trials
- ❑ Initiate 2nd P3 NVD
- ❑ Initiate Chronic Ph3 NVD Safety Trial
- ❑ Report 2nd P3 NVD
- ❑ Report Phase 3 Data for Presbyopia
- ❑ Initiate Phase 3 DR/DME Trial(s)
- ❑ Registration Batches for APX3330 tablets

Ongoing partnering discussions with leading ophthalmic companies (including European and Asian players)

Nyxol NDA filing for RM and/or NVD in early 2023

Ocuphire PHARMA

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Restore Vision & Clarity

Q&A

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