Ocuphire PHARMA

Corporate Presentation
July 2024

Disclosures and Forward-Looking Statements

This presentation contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. Such statements include, but are not limited to, statements concerning anticipated timing of the ZETA-2 Phase 2/3 trial, the efficacy of APX3330 in slowing the progression of diabetic retinopathy, the End-of-Phase 2 meeting with the FDA to align on late-stage registration endpoints and study parameters, the launching of RYZUMVI, the continued development of PS and LDP, our partnership with Viatris, the strength of our cash position, and the potential of APX3330 as an oral treatment for patients with non-proliferative diabetic retinopathy. These forward-looking statements relate to us, our business prospects and our results of operations and are subject to certain risks and uncertainties posed by many factors and events that could cause our actual business, prospects and results of operations to differ materially from those anticipated by such forward-looking statements. Factors that could cause or contribute to such differences include, but are not limited to, those described under the heading "Risk Factors" included in our Annual Report on Form 10-K and subsequent filings with the U.S. Securities and Exchange Commission (SEC). Readers are cautioned not to place undue reliance on these forward-looking statements, which speak only as of the date of this presentation. In some cases, you can identify forward-looking statements by the following words: "anticipate," "believe," "continue," "could," "estimate," "expect," "intend," "may," "ongoing," "plan," "potential," "predict," "project," "should," "will," "would" or the negative of these terms or other comparable terminology, although not all forward-looking statements contain these words. We undertake no obligation to revise any forward-looking statements in order to reflect events or circumstances that might subsequently arise. These forward-looking statements are based upon Ocuphire's current expectations and involve assumptions that may never materialize or may prove to be incorrect. Actual results and the timing of events could differ materially from those anticipated in such forward-looking statements as a result of various risks and uncertainties, including, without limitation: the success and timing of regulatory submissions and pre-clinical and clinical trials, including enrollment and data readouts; regulatory requirements or developments; changes to or unanticipated events in connection with clinical trial designs and regulatory pathways; delays or difficulties in the enrollment of patients in clinical trials; substantial competition and rapid technological change; our development of sales and marketing infrastructure; future revenue losses and profitability; our relatively short operating history; changes in capital resource requirements; risks related to the inability of Ocuphire to obtain sufficient additional capital to continue to advance its product candidates and its preclinical programs; domestic and worldwide legislative, regulatory, political and economic developments; employee misconduct; changes in market opportunities and acceptance; reliance on third-parties; future, potential product liability and securities litigation; system failures, unplanned events, or cyber incidents; the substantial number of shares subject to potential issuance associated with our Equity Line of Credit arrangement risks that our partnership with Viatris, or our other licensing arrangements, may not facilitate the commercialization or market acceptance of Ocuphire's product candidates; future fluctuations in the market price of our common stock; the success and timing of commercialization of any of Ocuphire's product candidates; and obtaining and maintaining Ocuphire's intellectual property rights.

The foregoing review of important factors that could cause actual events to differ from expectations should not be construed as exhaustive. Readers are urged to carefully review and consider the various disclosures made by us in this presentation and in our reports filed with the SEC that advise interested parties of the risks and factors that may affect our business. All forward-looking statements contained in this presentation speak only as of the date on which they were made. Ocuphire undertakes no obligation to update such statements to reflect events that occur or circumstances that exist after the date on which they were made.

Highly Experienced Team with Meaningful Expertise

George Magrath, MD, MBA, MS
Chief Executive Officer

Nirav Jhaveri, MBA
Chief Financial Officer

Ash Jayagopal, PhD, MBA
Chief Scientific & Development Officer

Joseph Schachle, MBA
Chief Operating Officer

Kim Morris, MSM
Vice President, Medical Affairs

Sharon Goldbach
Manager, Human Resources

Ophthalmic Experts

- Over 75 years of proven clinical, commercial, and transaction experience
- Involved in the research, development, and approval of numerous ophthalmic products:

VABYSMO™ faricimab-svoa injection 6 mg
SYFOVRE® (pegcetacoplan injection)
Ryzumvi™ (phentolamine ophthalmic solution) 0.75%
INVELTYS® (loteprednol etabonate ophthalmic suspension) 1%
EYSUVIS® (loteprednol etabonate ophthalmic suspension) 0.25%
Miebo® (perfluorohexyloctane ophthalmic solution)
oxervate® (cenegermin-bkbj ophthalmic solution) 0.002% (20 mcg/mL)
xiidra® (lifitegrast ophthalmic solution) 5%

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Positioned to Transform the Treatment of Diabetic Retinopathy

Diabetic retinopathy market is large and underserved

- DR is the **leading cause of blindness** in working age adults, **impacting 10M patients in the US**[1,2]
- Most patients have early-stage disease (non-proliferative diabetic retinopathy), which is generally **untreated and represents a $6B market**[3]

Oral APX3330 targets earlier-stage DR via multiple pathways

- Current therapies are invasive, often reserved for advanced DR, and **do not address multiple disease pathways**
- APX3330 may represent a promising oral option for **slowing DR progression** by inhibiting Ref-1, simultaneously **addressing angiogenesis, oxidative stress, and inflammation**

Phase 2 efficacy of APX3330 in slowing DR progression

- **Fewer APX3330-treated subjects experienced DR worsening** compared to placebo, demonstrating efficacy on the FDA-confirmed endpoint of ≥ 3 step worsening on the binocular DRSS person-level scale
- Fewer APX3330-treated subjects developed proliferative diabetic retinopathy (advanced DR) compared to placebo

Primed for upcoming pivotal Phase 2/3 study

- **End-of-phase 2 meeting completed** with FDA alignment on primary endpoint
- **SPA submitted** to secure alignment on study design and statistical analysis plan

Proven development team

- **Over 75 years** of combined Ophthalmology experience
- Senior management involved in the **research, development, and approval of numerous ophthalmic products,** including Vabysmo®, Syfovre®, Miebo™, Oxervate®, Ryzumvi™, Xiidra®, Eysuvis®, and Inveltys®

Revenue-generating partnership

- In partnership with Viatris, **Ryzumvi™ launched in April 2024** for reversal of pharmacologically-induced mydriasis
- **Two Phase 3 studies** in decreased visual acuity under low light conditions and presbyopia are **funded and ongoing**
- Provides for potential **double-digit royalties and milestone payments**

NPDR market calculated based on total DR market size of 8.9B in 2023 and NPDR revenue share of 70.38% in 2023.
AMD, age-related macular degeneration; DR, diabetic retinopathy; DRSS, Diabetic Retinopathy Severity Scale; FDA, Food & Drug Administration; GA, geographic atrophy; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy; SPA, Special Protocol Assessment.
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1. Flaxel CJ, et al. Diabetic retinopathy preferred practice pattern®. *Ophthalmology*. 2020;127:66-145. **2.** Prevalence of diabetic retinopathy. Centers for Disease Control and Prevention. Accessed December 21, 2023. https://www.cdc.gov/visionhealth/vehss/estimates/dr-prevalence.html **3.** Data on file.

APX3330 is the Foundation of Retina Pipeline

PRODUCT CANDIDATE	INDICATION	PRE-CLINICAL	PHASE 1	PHASE 2	PHASE 3	REGULATORY APPROVAL	MILESTONES
APX3330 Oral pill	Diabetic Retinopathy						• **EOP2 meeting** ✓ • **SPA submission** ✓
APX2009	Geographic Atrophy						• Preclinical proof-of-concept
APX2014	Retina						• Select drug delivery technology and evaluate target disease
Ryzumvi™ (phentolamine ophthalmic solution) 0.75% Eye drop **Licensed to Viatris**	Reversal of pharmacologically-induced mydriasis						• Approved (Sept 2023) ✓ • U.S. commercial launch (April 2024) ✓
	Presbyopia						• VEGA-2 Ph 3 topline data (Q4 2023) ✓ • VEGA-3 Ph 3 study
	Decreased visual acuity under low light (mesopic) conditions						• SPA agreement ✓ • LYNX-2 Ph 3 study

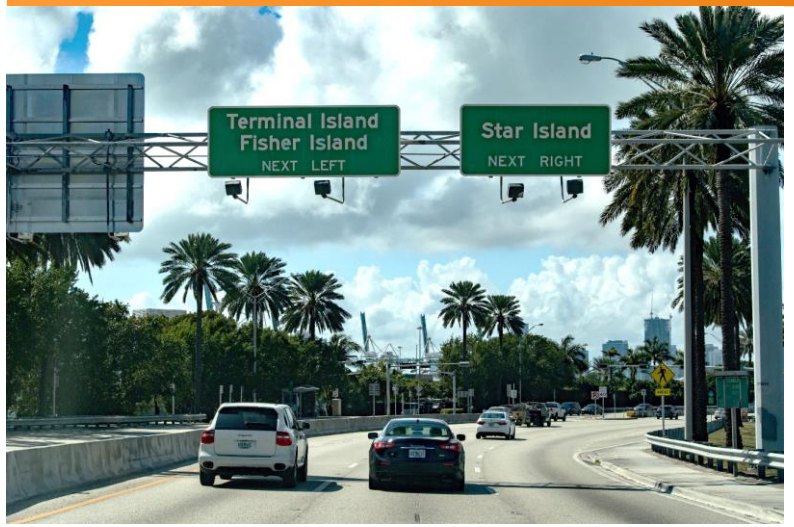
RYZUMVI™ is indicated for the treatment of pharmacologically-induced mydriasis produced by adrenergic agonists (e.g., phenylephrine) or parasympatholytic agents (e.g., tropicamide).

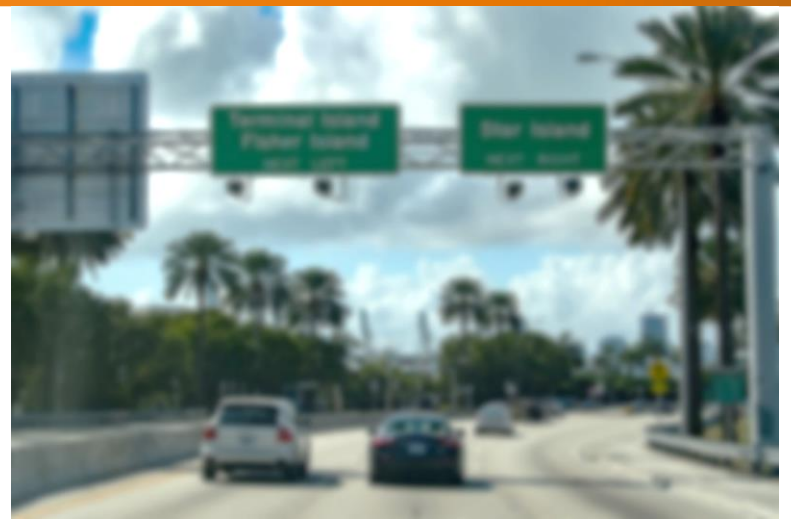
EOP, end of Phase; SPA, Special Protocol Assessment.

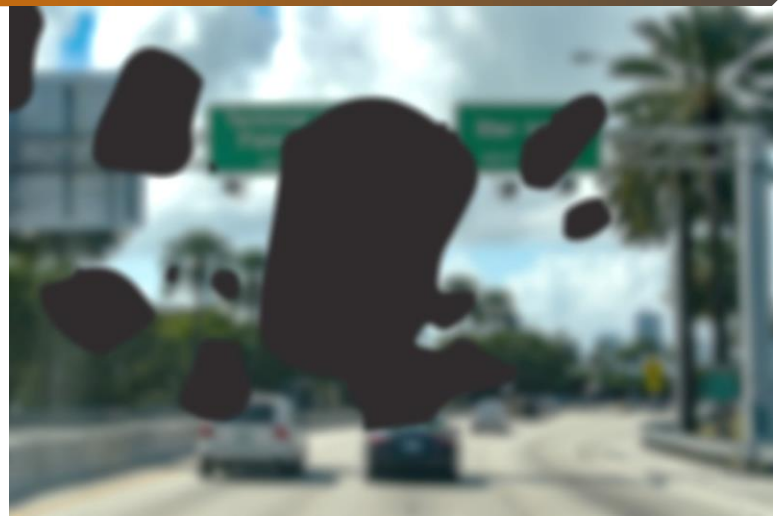
DR Progression Can Have a Significant Impact On Functional Vision

NPDR
Minimal visual disruption

PDR
Significant vision loss







~50% of patients with severe NPDR will progress to PDR in **1 year**[1]

Treating diabetic retinopathy early can **reduce the risk of blindness by 95%**[2]

NOTE: The severity of vision loss varies between individuals with DR
DR, diabetic retinopathy; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.
1. [No authors listed]. ETDRS report number 12. *Ophthalmology.* 1991;98:823-833. **2.** Diabetic Eye Disease. National Institute of Diabetes and Digestive and Kidney Diseases. https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-eye-disease#:~:text=Diabetic%20retinopathy%20is%20the%20most,of%20blindness%20by%2095%20percent. Accessed on March 5, 2024.

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Diabetic Retinopathy is the Leading Cause of Vision Loss in Working-Age Adults in the US

Common complication of diabetes, and results from **damage to blood vessels in the retina,** progressively leading to vision loss and impaired quality of life

	NPDR Non-proliferative Diabetic Retinopathy	**PDR** Proliferative Diabetic Retinopathy
CLINICAL PRESENTATION	Blood vessels weaken, bulge, close off, or leak into the retina	Growth of new abnormal blood vessels in the retina (neovascularization), vitreous hemorrhage, and scar tissue
COMMON SYMPTOMS	Asymptomatic (early stages) Floaters, blurry vision, dark spots (later stages)	Vision loss, blindness
TREATMENT	"Watch and wait" is standard of care IVI anti-VEGF injections (advanced disease)	IVI anti-VEGF injections Panretinal laser photocoagulation Vitrectomy surgery

anti-VEGF, anti-vascular endothelial growth factor therapy; DR, diabetic retinopathy; IVI, intravitreal injection; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy; SoC, standard of care.

1. Diabetic Eye Disease. National Institute of Diabetes and Digestive and Kidney Diseases. https://www.niddk.nih.gov/health-information/diabetes/overview/preventing-problems/diabetic-eye-disease#:~:text=Diabetic%20retinopathy%20is%20the%20most,of%20blindness%20by%2095%20percent. Accessed on March 20, 2024. **2.** Diabetic retinopathy: Causes, symptoms, treatment. American Academy of Ophthalmology. Accessed on December 22, 2023. https://www.aao.org/eye-health/diseases/what-is-diabetic-retinopathy **3.** Flaxel CJ, et al. *Ophthalmology.* 2020:P66-P145.

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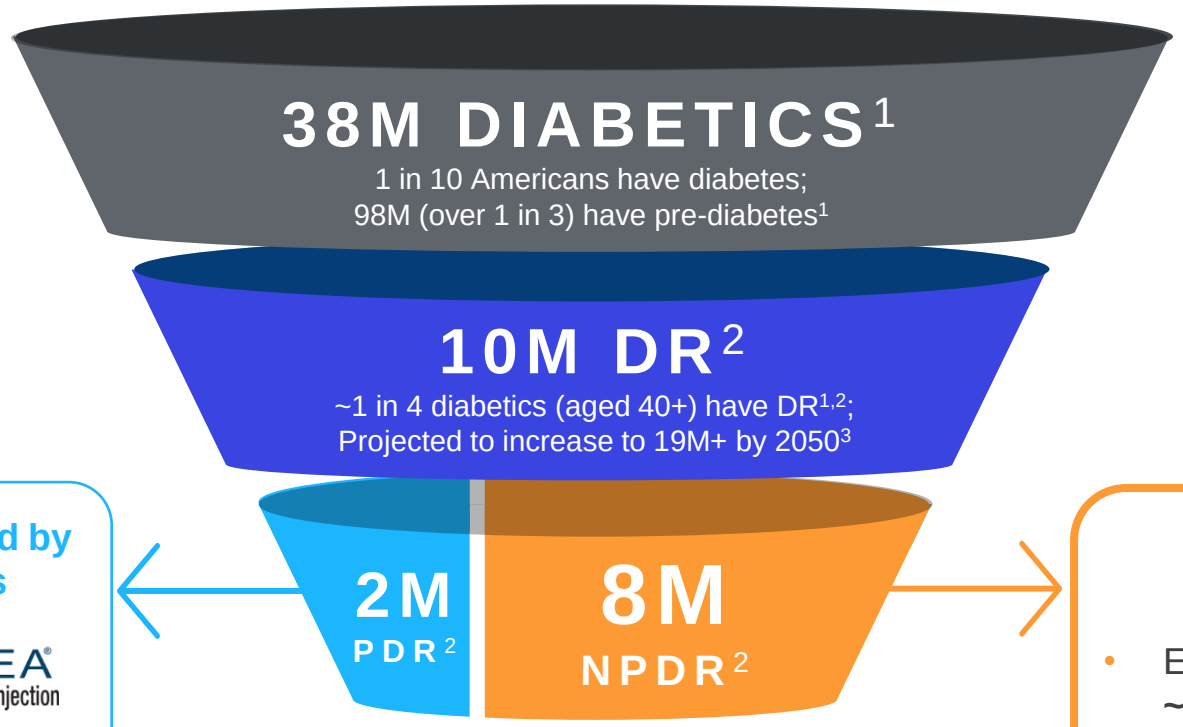
NPDR Represents a Large Segment of the Growing DR Market



PDR market is addressed by 3 approved therapies

LUCENTIS® RANIBIZUMAB INJECTION

EYLEA® (aflibercept) Injection

VABYSMO™ faricimab-svoa injection 6 mg

APX3330 target market opportunity is $6B[4]

- Expected to grow at CAGR of **~6% by 2030[4]**
- APX3330 is the **most advanced oral candidate** in development for NPDR

NPDR market calculated based on total DR market size of 8.9B in 2023 and NPDR revenue share of 70.38% in 2023.[4]
CAGR, compound annual growth rate; DR, diabetic retinopathy; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.
Lucentis® is a registered trademark of Genentech, Inc; Eylea® is a registered trademark of Regeneron Pharmaceuticals, Inc.; Vabysmo® is a trademark of Genentech, Inc.

1. Diabetes. A report card. Centers for Disease Control and Prevention. Accessed December 21, 2023. https://www.cdc.gov/diabetes/library/socialmedia/infographics/diabetes.html **2.** Prevalence of diabetic retinopathy. Centers for Disease Control and Prevention. Accessed December 21, 2023. https://www.cdc.gov/visionhealth/vehss/estimates/dr-prevalence.html **3.** Lundeen EA, et al. *JAMA Ophthalmol.* 2023;141(8):747-754. **4.** Data on file.

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APX3330 Market Research Reveals a Multi-Billion Dollar Opportunity

	HCP and Payer Research	HCP Research
TYPE	1:1 interviews	Online
N	27	137
SPECIALTY	Endocrinologist, PCP, Optometrist, General Ophthalmologist, Retinal Specialist, & Payer	Endocrinologist, PCP, Optometrist, General Ophthalmologist, & Retinal Specialist

KEY INSIGHTS	• **APX3330 profile rating** by specialty was **5.4-7.0** on scale of 1 (least favorable) to 7 (most favorable)
	• **Average adoption,** regardless of provider type, ranged from **53-75%** across severity levels, with **moderate to severe NPDR patients being the most likely candidates**
	• **~$400-750 per month** (~$5K-9K annual) price point will likely **enable broad access** (based on payer anticipated management at various tested price points)
		• Would treat:
		  • **48%** of all NPDR patients with APX3330
		  • **40%** of all PDR patients with APX3330
		  • **69%** of patients either first-line with DR diagnosis or on progression to moderate to severe NPDR
		• **Reduction of worsening** on DRSS scale was **most important attribute**

DRSS, Diabetic Retinopathy Severity Scale; HCP, healthcare professional; NPDR, non-proliferative diabetic retinopathy; PCP, primary care physician; PDR, proliferative diabetic retinopathy.

APX3330 has the Potential to be the First Oral Treatment for DR

Non-invasive therapies

COMPANY	DRUG	PHASE	TARGET	ROA
Ocuphire Pharma	**APX3330**	**Phase 2/3**	**Ref-1 inhibitor**	**Oral**
Bayer	Runcaciguat	Phase 2	Guanylate cyclase activator	Oral
Valo	OPL-0401	Phase 2	ROCK 1/2 inhibitor	Oral
Vantage	VX-01	Phase 2	AOC-3 inhibitor	Oral
Roche	*RG7774*	*Discontinued*	*CB2 receptor (cannabinoid)*	*Oral*
OcuTerra Therapeutics	*OTT166*	*Discontinued*	*Integrin inhibitor*	*Eye drop*

Invasive therapies (IVT/suprachoroidal)

COMPANY	DRUG	PHASE	TARGET	ROA
REGENERON	Eylea® (aflibercept)*	Commercial	VEGF-A/B; PIGF	Intravitreal
Genentech, A Member of the Roche Group	Lucentis® (ranibizumab)†	Commercial	VEGF-A	Intravitreal
KODIAK	Tarcocimab tedromer	Phase 3	VEGF	Intravitreal
EyePoint Pharmaceuticals	Duravyu™ (EYP-1901)	Phase 2 *Missed efficacy endpoint*	Voloronib (TKI)‡	Intravitreal
Boehringer Ingelheim	BI 764524	Phase 2	Anti-Sema3A	Intravitreal
Ocular Therapeutix	Axpaxli™ (OTX-TKI)	Phase 1	Axitinib (TKI)‡	Intravitreal
REGENXBIO	ABBV-RGX-314	Phase 2	AAV8 VEGF	Suprachoroidal (gene therapy)

AAV8, adeno-associated virus 8; AOC-3, Amine oxidase copper-containing 3; CB2, cannabinoid receptor 2; DR, diabetic retinopathy; PIGF, placental growth factor; Ref-1, reduction-oxidation effector factor-1; ROCK, rho kinase; Sema3A, semaphorin3A; TKI, tyrosine kinase inhibitor; VEGF, vascular endothelial growth factor.

Eylea® is a registered trademark of Regeneron Pharmaceuticals, Inc.; Lucentis® is a registered trademark of Genentech, Inc; Duravyu is a trademark of EyePoint Pharmaceuticals; Axpaxli™ is a trademark of Ocular Therapeutix, Inc.

Note: Two Tyrosine Kinase and a Plasma Kallikrein Inhibitors failed as orals in Phase 2 due to dose limiting adverse events (e.g., liver and cardiovascular).

*Trials to support approval: Panorama clinical trial; †Trials to support approval: Protocol I & T and Rise & Ride; ‡ Failed as oral/systemic treatments in retina due to dose limiting toxicity

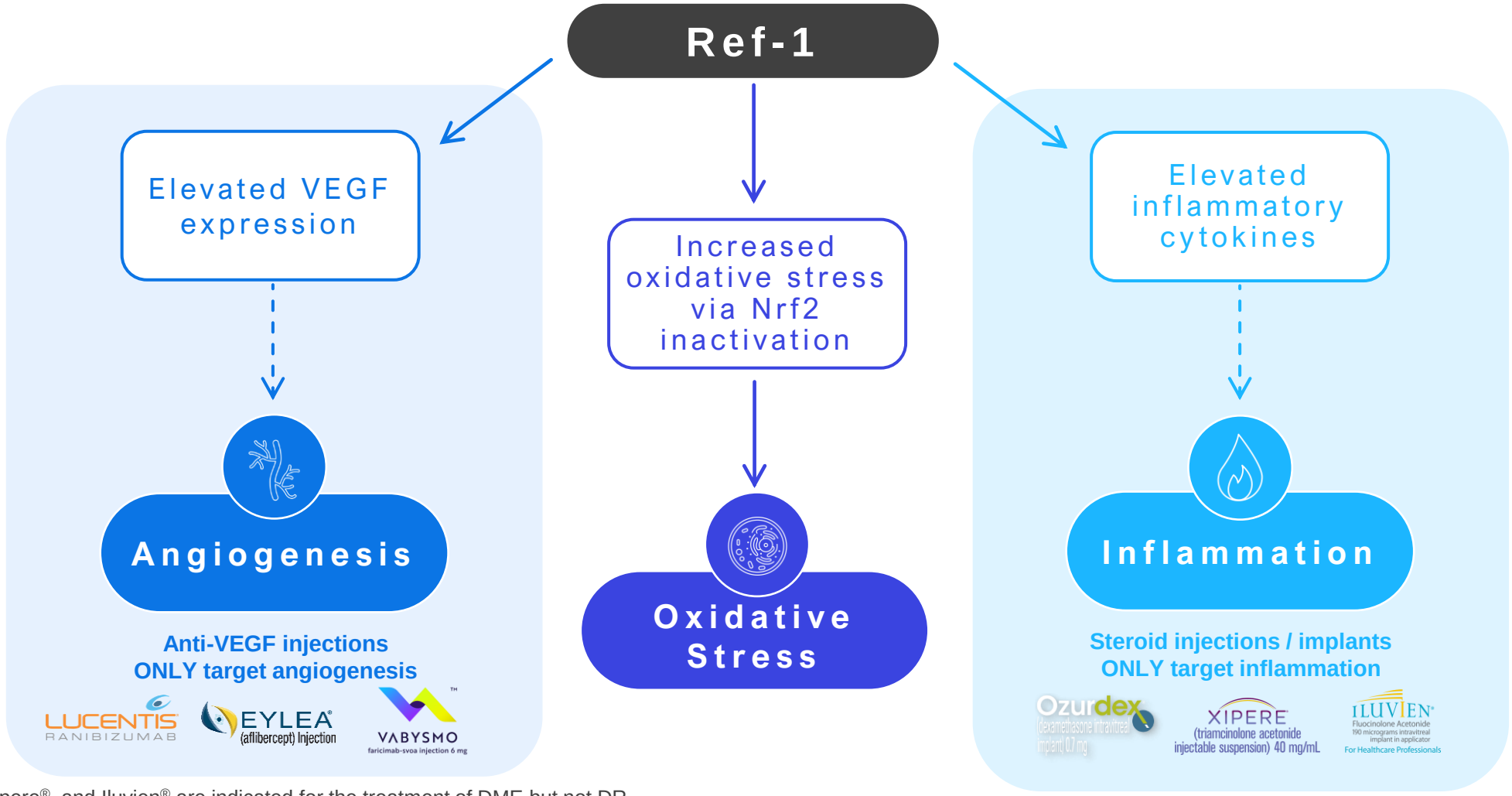
Sources: Company websites and www.clinicaltrials.gov

APX3330

The most advanced oral program currently in development for diabetic retinopathy

Ref-1 Mediates Multiple Pathways Involved in DR

Current Invasive Treatments Only Target a Single Pathway



NOTE: Ozurdex®, Xipere®, and Iluvien® are indicated for the treatment of DME but not DR.

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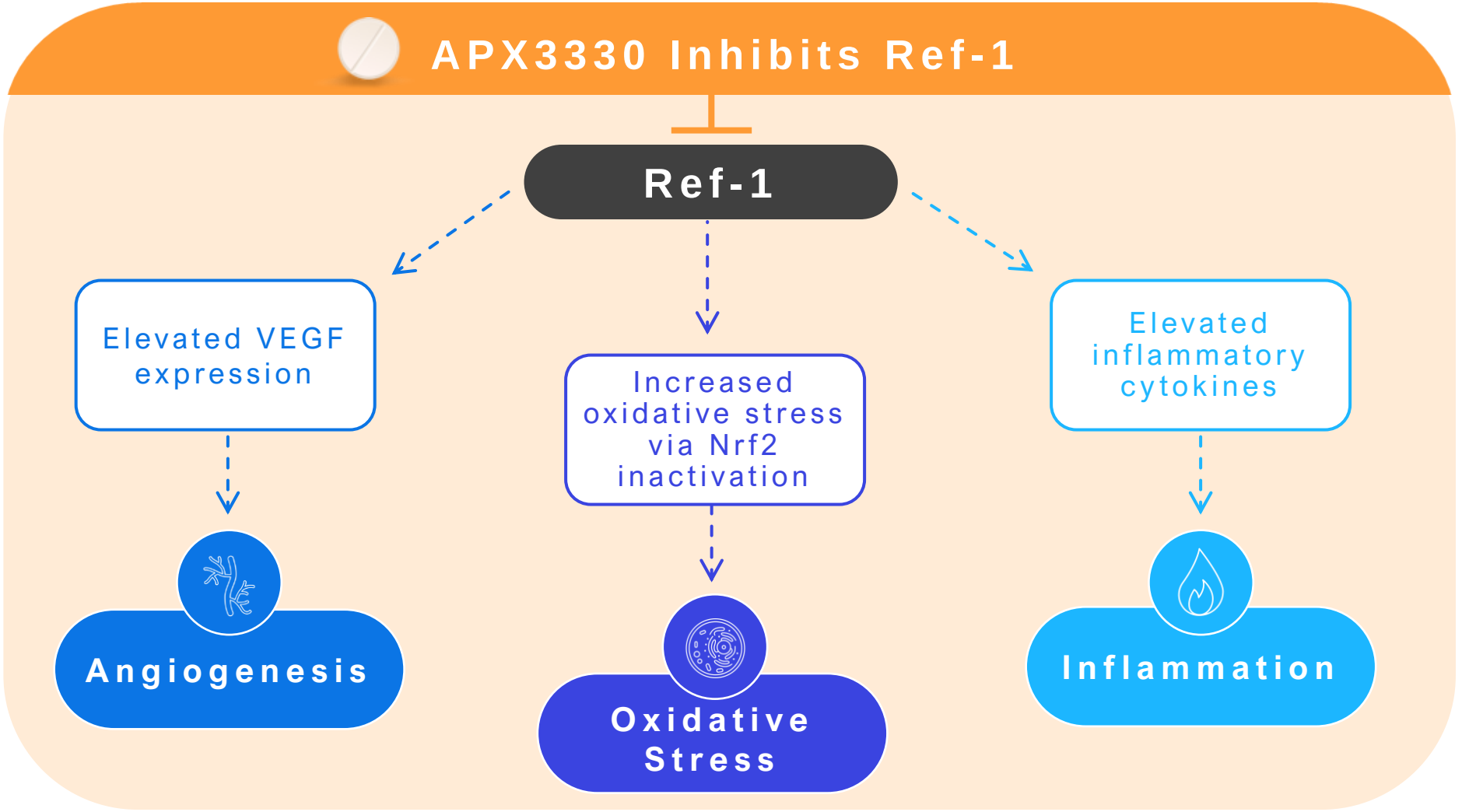
Nrf2, nuclear factor erythroid 2–related factor 2; Ref-1, reduction-oxidation effector factor-1; VEGF, vascular endothelial growth factor.

1. Logsdon DP, et al. *Sci Rep.* 2018;8:13759. **2.** Li Y, et al. *Redox Biology 2.* 2014;485-494.

APX3330 Inhibits Ref-1-mediated Angiogenesis, Oxidative Stress, and Inflammation

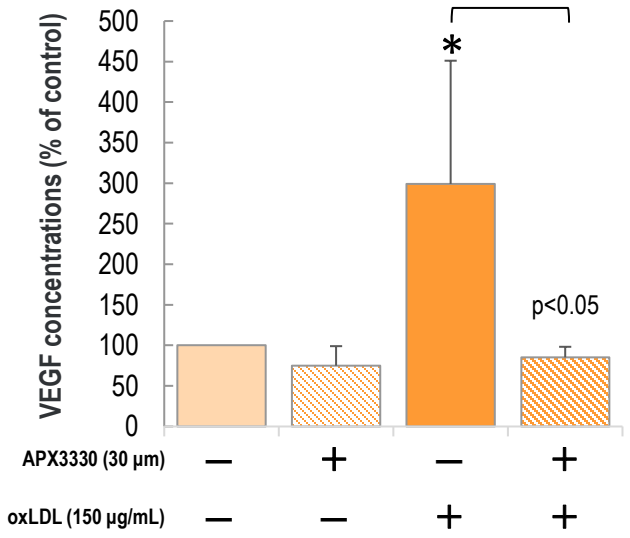


Nrf2, nuclear factor erythroid 2–related factor 2; Ref-1, reduction-oxidation effector factor-1; TNF-α: tumor necrosis factor alpha; VEGF, vascular endothelial growth factor.

1. Logsdon DP, et al. *Sci Rep.* 2018;8:13759. **2.** Li Y, et al. *Redox Biology 2.* 2014;485-494.

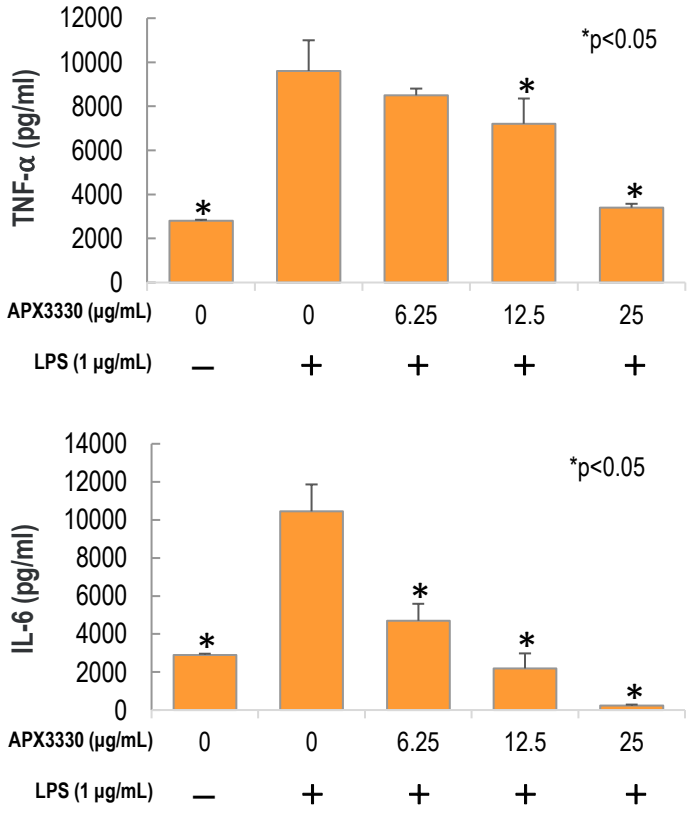
In vitro Data Validates Three Clinically Meaningful Pathways in DR

1 APX3330 restores physiologic VEGF levels[1]

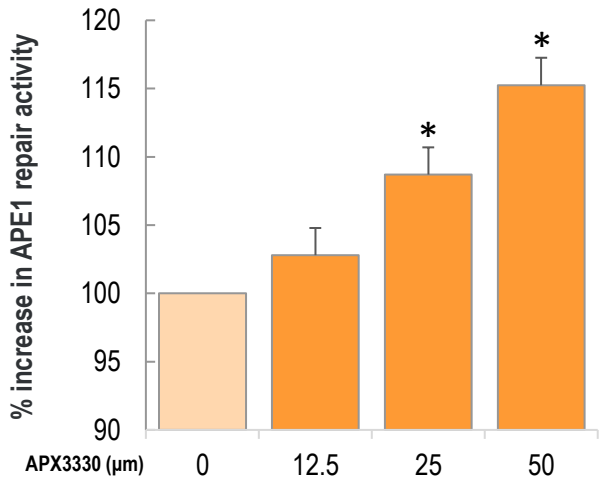


Restoration of physiologic VEGF treats pathologic disease while allowing a favorable tolerability profile

2 APX3330 reduces pro-inflammatory cytokines (in macrophages)[2]



3 APX3330 increases DNA oxidative repair and neuronal protection[3]



Reduced oxidative stress should improve integrity of the neurovascular unit

APE-1, apyrimidinic endonuclease 1; ARPE, spontaneously arising retinal epithelial cell line; LPS, lipopolysaccharide; oxLDL, oxidized low density lipoprotein, TNF-α, tumor necrosis factor-alpha; IL-6, interleukin 6; VEGF, vascular endothelial growth factor.

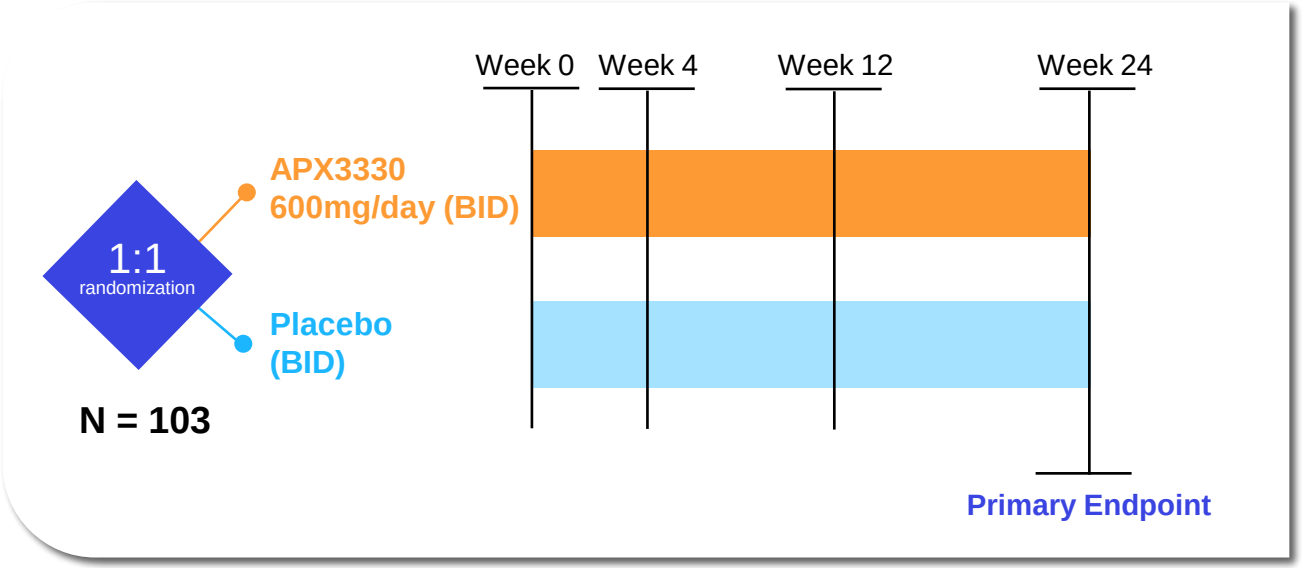
1. Li Y, et al. *Redox Biology 2.* 2014;485-494. **2.** Jedinak A, et al. *Anticancer Research.* 2011;379-386. **3.** Kelley MR, et al. *PLoS One.* 2014;9:e106485.

ZETA-1 Clinical Trial

A Phase 2 Randomized, Placebo-Controlled, Double-Masked Study of APX3330 in DR is Complete

ZETA-1 Phase 2 Study Design and Demographics

- **Primary endpoint:** % of subjects with a **≥ 2 step improvement in monocular ETDRS DRSS at week 24**
- **Study eye:** DR graded moderately severe to severe NPDR or mild PDR (monocular DRSS 47, 53, or 61)
- **Fellow eye:** No exclusion*

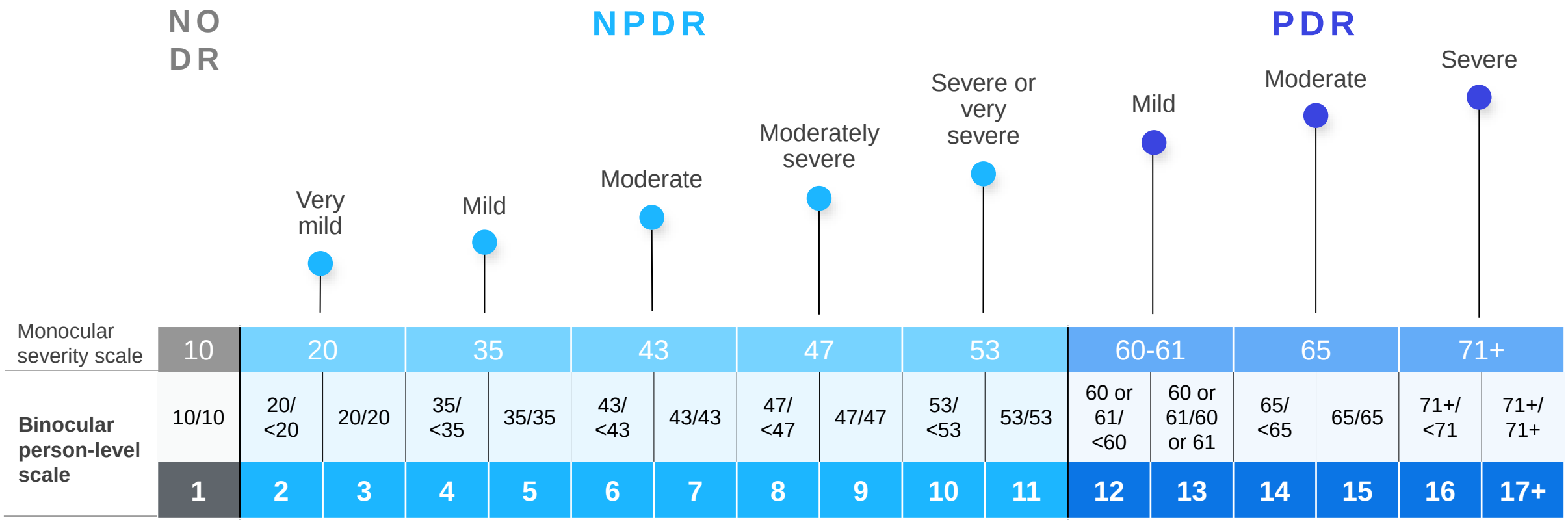


Baseline DRSS Scores		APX3330 (n=51)	Placebo (n=52)
DRSS Score – Study Eye			
47	Moderately severe NPDR	22 (43%)	18 (35%)
53	Severe or very severe NPDR	25 (49%)	28 (54%)
61	Mild PDR	4 (8%)	6 (12%)
DRSS Score – Fellow Eye			
43 or Lower	Mild to moderate NPDR or better	15 (29%)	12 (23%)
47	Moderately severe NPDR	15 (29%)	22 (42%)
53	Severe or very severe NPDR	14 (28%)	11 (21%)
61	Mild PDR	1 (2%)	4 (8%)
65 or Higher	Moderate to severe PDR	4 (8%)	3 (6%)

Note: 15 fellow eyes had CST>320 microns (center-involved DME)

*Two APX3330 subjects did not have available DRSS scores in the fellow eye at screening.
BID, twice-daily; CST, central subfield thickness; DME, diabetic macular edema, DRSS, Diabetic Retinopathy Severity Scale; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.
Source: ZETA-1 Table 14.1.2.1

Binocular DRSS is a Validated and Well-Established Scale to Evaluate Systemic Therapies



Monocular severity scale	10	20		35		43		47		53		60-61		65		71+	
Binocular person-level scale	10/10	20/ <20	20/20	35/ <35	35/35	43/ <43	43/43	47/ <47	47/47	53/ <53	53/53	60 or 61/ <60	60 or 61/60 or 61	65/ <65	65/65	71+/ <71	71+/ 71+
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17+**

- Endpoint accepted by the FDA for systemic treatments
- ≥ 3 step worsening is considered clinically meaningful

Subjects graded based on fundus photographs (images of the retina taken with a fundus camera).

DR, diabetic retinopathy; DRSS, Diabetic Retinopathy Severity Scale; ETDRS, Early Treatment Diabetic Retinopathy Study; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.

1. Chew EY, et al. *N Engl J Med.* 2010;363:233-44.

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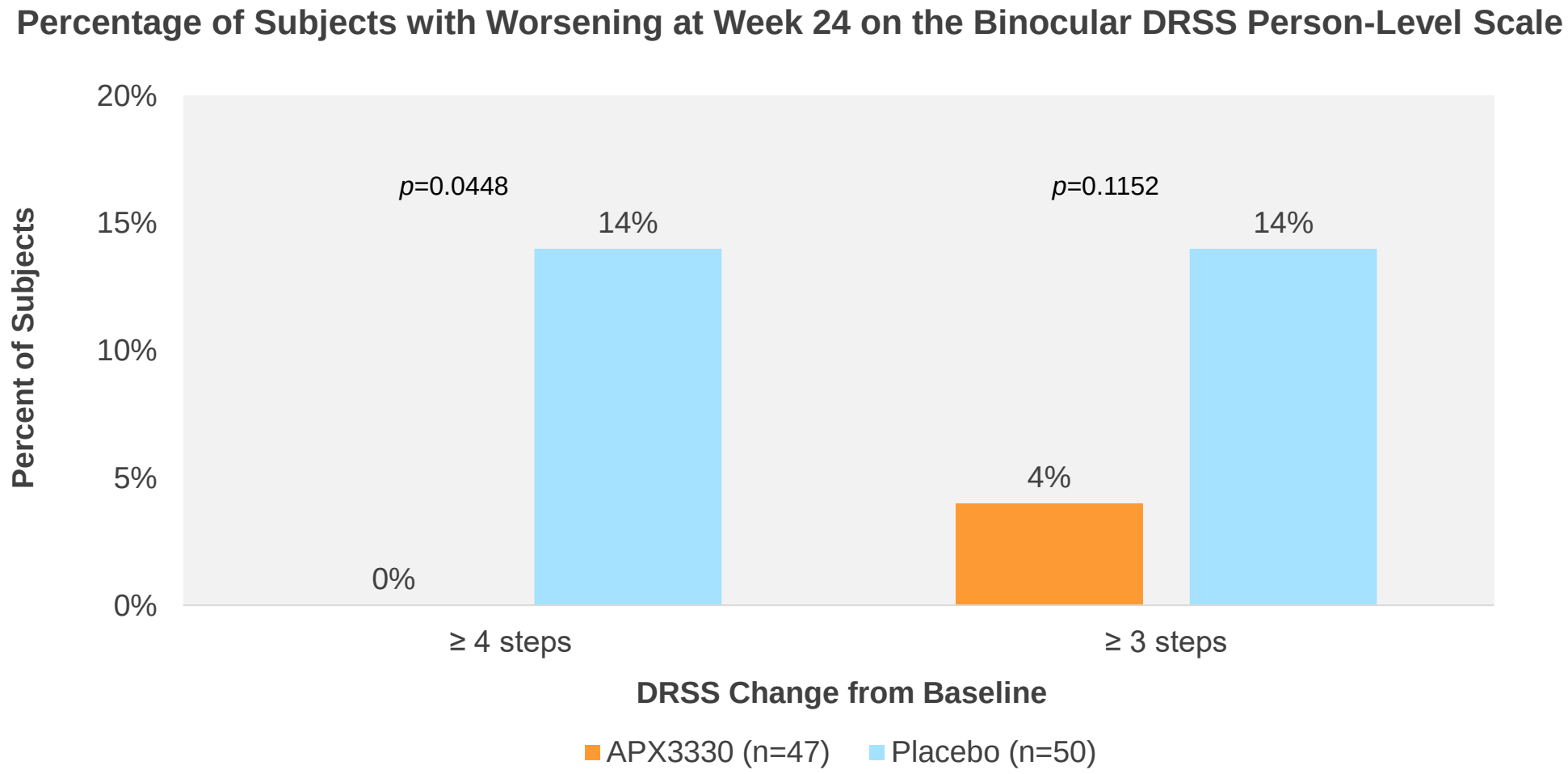
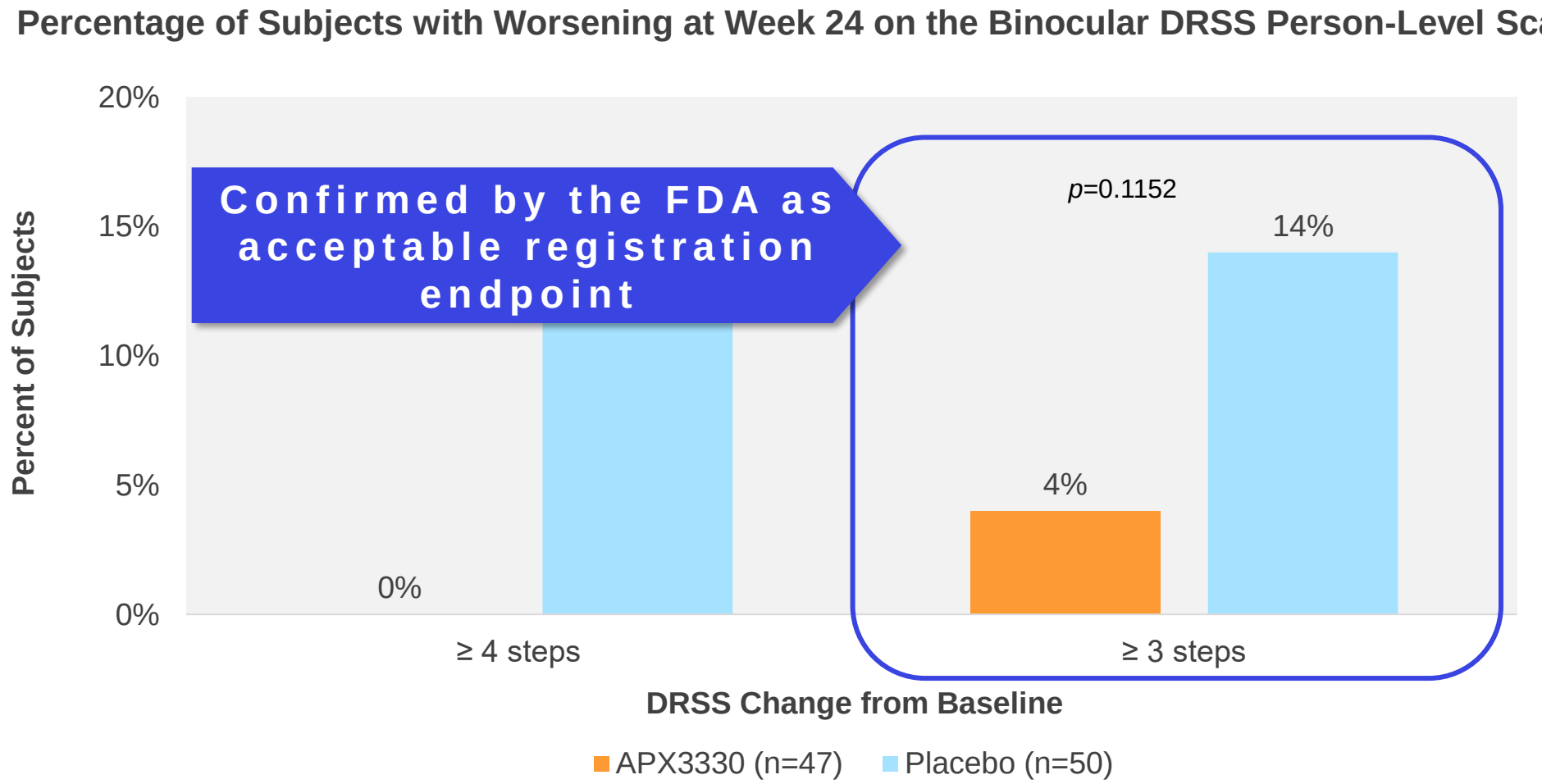
ZETA-1 Analysis: Fewer APX3330-treated Subjects Worsened



Observed differences between groups were not statistically significant.
DRSS, Diabetic Retinopathy Severity Scale.
Observed cases: Subjects with DRSS scores at week 24.
Source: ZETA-1 Table 14.2.2.7.3

ZETA-1 Analysis: Fewer APX3330-treated Subjects Worsened



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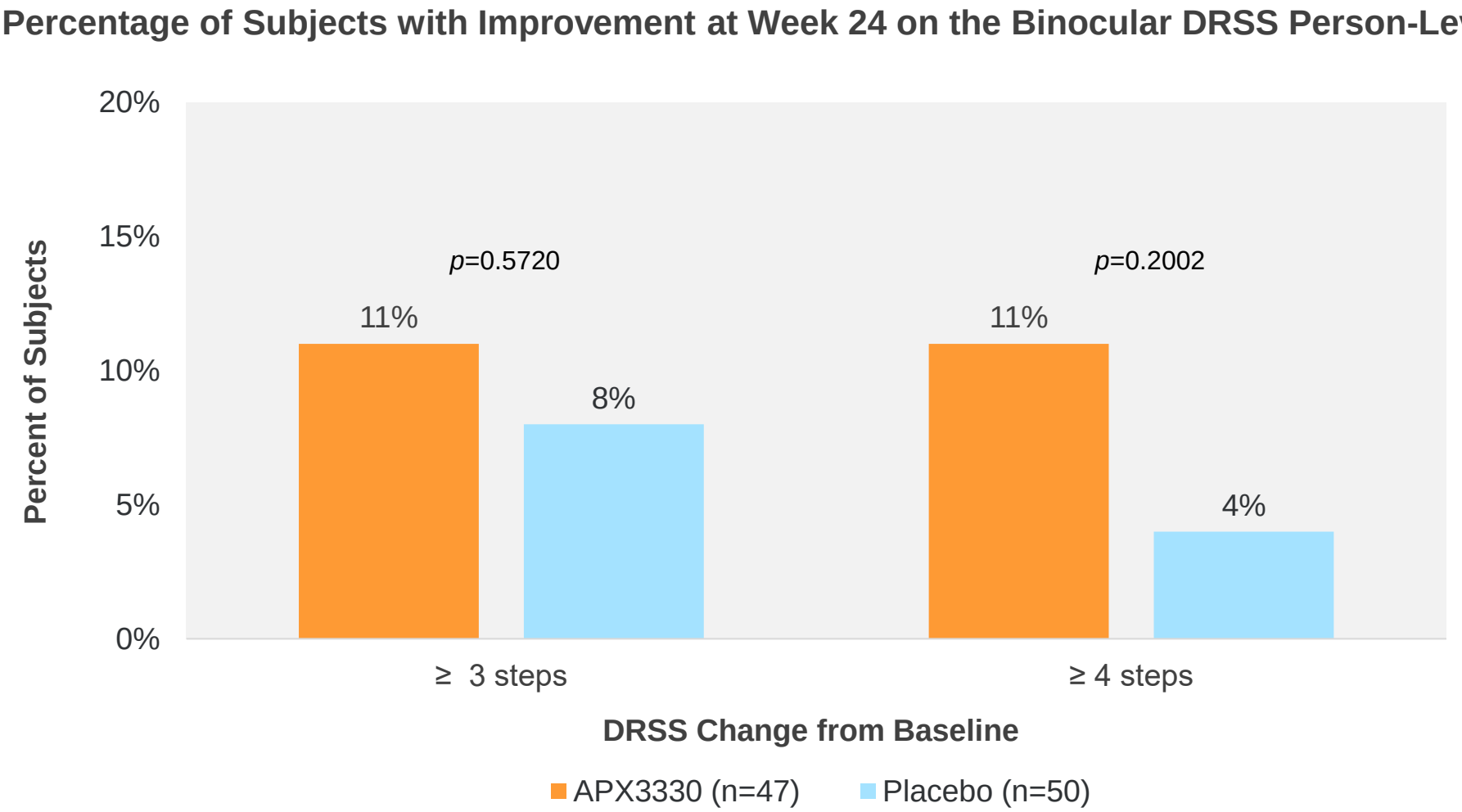
DRSS, Diabetic Retinopathy Severity Scale.
Observed cases: Subjects with DRSS scores at week 24.
Source: ZETA-1 Table 14.2.2.7.3

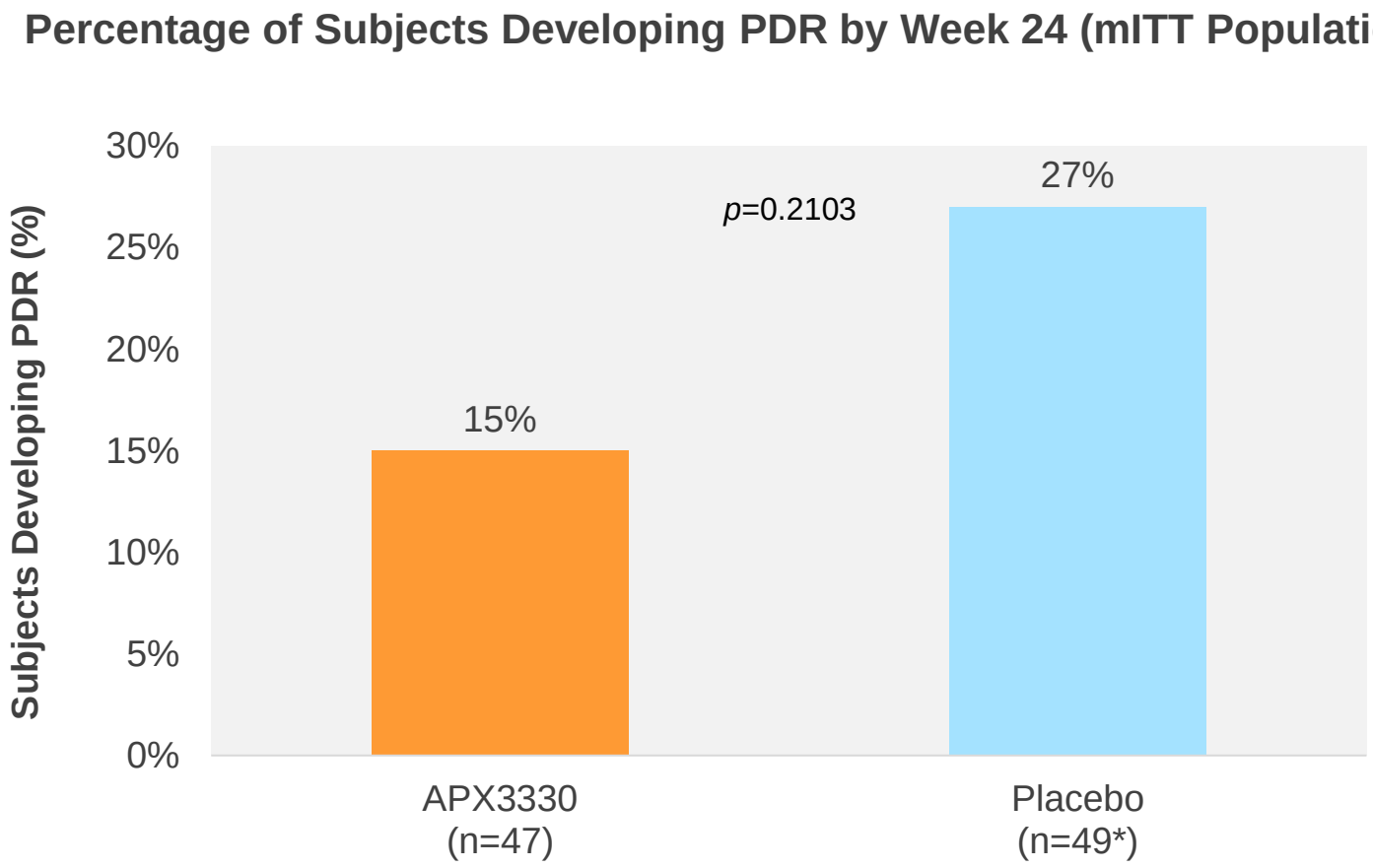
ZETA-1 Analysis: More APX3330-treated Subjects Improved



Observed differences between groups were not statistically significant.
DRSS, Diabetic Retinopathy Severity Scale.
Observed cases: Subjects with DRSS scores at week 24.
Source: ZETA-1 Table 14.2.2.7.3

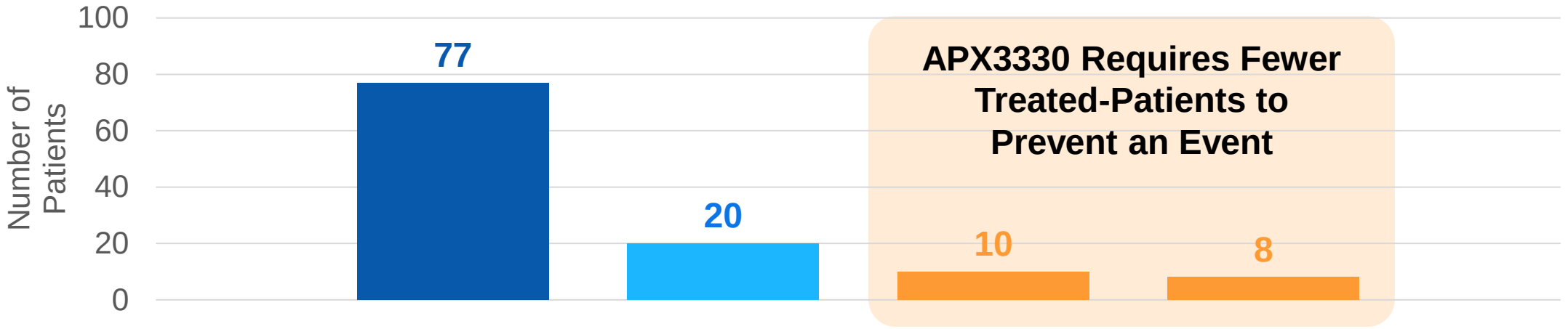
APX3330 Decreased Rates of Developing PDR

APX3330 prevented progression of structural retinal abnormalities



Observed differences between groups were not statistically significant.
BCVA, best-corrected visual acuity; mITT, modified intention-to-treat; PDR, proliferative diabetic retinopathy.
Observed cases: Subjects with DRSS score at week 24.
*One placebo subject did not have evaluable post-baseline data due to discontinuation of study drug.
Source: ZETA-1 Table 14.2.6.7.3

Number Needed to Treat to Prevent an Event



	Statin[1]	IOP-lowering drops[2]	APX3330	APX3330
Absolute Risk Reduction	4.7% vs 3.4% = 1.3%	9% vs 4% = 5%	14% vs 4% = 10%	27% vs 15% = 12%
Number Needed to Treat	77 patients treated 5 yrs	20 patients treated 5 yrs	10 patients treated 6 mos	8 patients treated 6 mos
Morbidity Prevented	1 patient developing coronary heart disease	1 patient developing glaucoma	1 patient ≥ 3 steps on DRSS person-level scale	1 patient converting to PDR

DRSS, Diabetic Retinopathy Severity Scale; PDR, proliferative diabetic retinopathy.

1. Taylor FC, et al. *JAMA* 2013; 310: 2451-2452. **2.** Kass MA, et al. *Arch Ophthalmol.* 2002 Jun;120(6):701-713.

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APX3330 was Well-Tolerated in ZETA-1

	APX3330 (n=51)	Placebo (n=52)
Total AEs	91	120
Total treatment-related AEs	14	14
Subjects with treatment-related AEs	10 (19%)	10 (20%)
Withdrawals due to treatment-related AEs	1 (2%)	1 (2%)

AEs in >5% of Subjects

	All AEs		Treatment-related AEs	
	APX3330 (n=51)	Placebo (n=52)	APX3330 (N=51)	Placebo (n=52)
Ocular AEs				
DME	2 (4%)	5 (10%)	0	1 (2%)
DR	1 (2%)	6 (12%)	0	1 (2%)
Vitreous detachment	0	3 (6%)	0	0
Cataract	3 (6%)	1 (2%)	0	0
Non-ocular AEs				
Pruritus (itching)	6 (12%)	1 (2%)	3 (6%)	1 (2%)
Rash	3 (6%)	1 (2%)	2 (4%)	1 (2%)
COVID-19	1 (2%)	5 (10%)	0	0
SARS CoV-2 test positive	0	3 (6%)	0	0

APX3330 Safety Profile

- Ocular AEs similar between APX3330 and placebo
- Pruritis and rash were typically mild and self-limited
- Participants with DR continued routine medications to manage comorbid conditions

AE, adverse event; DME, diabetic macular edema, DR, diabetic retinopathy.
Source: ZETA-1 Tables 14.3.1.1, 14.3.1.7, 14.3.1.10, and 16.2.7

ZETA-2 Clinical Trial

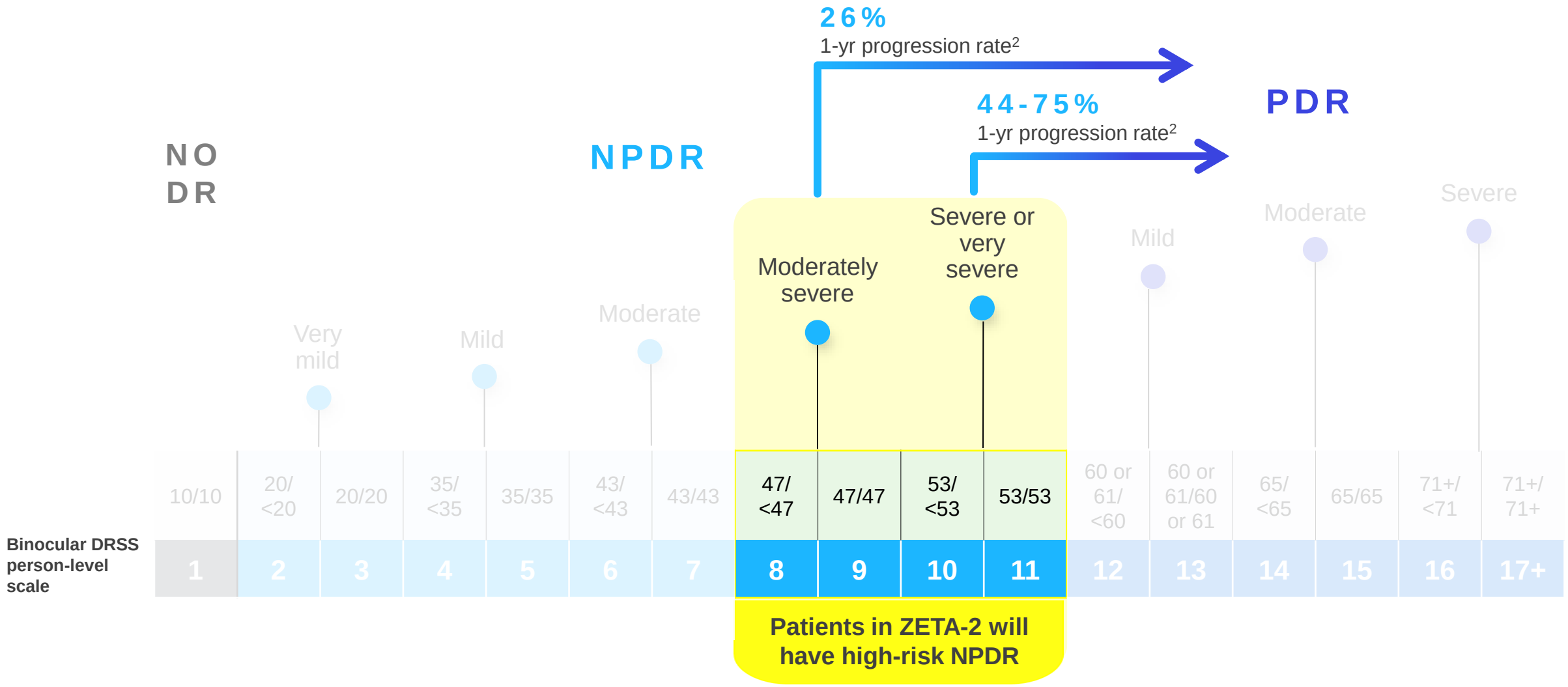
A Phase 2/3 Randomized, Placebo-Controlled, Double-Masked Study of APX3330 in NPDR is Planned

Optimizing ZETA-2 for Success

	Phase 2 ZETA-1	Phase 2/3 ZETA-2
Duration	24 weeks (6 months)	48 weeks (12 months)
Eligibility	Study eye (1 eye)	Binocular (2 eyes)
Sample size	N=103	N=300
Primary endpoint	≥ 2 step DRSS improvement in the study eye	≥ 3 step DRSS worsening on a binocular person-level scale
Baseline DRSS score	47, 53, 61 in study eye; Fellow eye no exclusion	47 or 53 in one eye; Fellow eye 43, 47, 53
Key exclusion	DME in study eye	PDR or DME in either eye

DME, diabetic macular edema; DRSS, Diabetic Retinopathy Severity Scale; PDR, proliferative diabetic retinopathy.

High-Risk NPDR Patients are More Likely to Progress Thereby Providing an Enriched Study Population for ZETA-2



DR, diabetic retinopathy; DRSS, Diabetic Retinopathy Severity Scale; ETDRS, Early Treatment Diabetic Retinopathy Study; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.

1. Chew EY, et al. *N Engl J Med.* 2010;363:233-44. **2.** [No authors listed]. ETDRS report number 12. *Ophthalmology.* 1991;98:823-833.

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Observed Rates of Progression Increase as DR Severity Increases

Based on Landmark NEI ETDRS Study of Over 3,700 Patients

Placebo progression rate ≥ 3 steps correlates with PDR development

Binocular DRSS person-level		1-year progression rate to ANY PDR[1]	1-year progression rate to HIGH-RISK PDR[2]
43	Moderate NPDR	12%	3%
47	**Moderately severe NPDR**	**26%**	9%
53a to d	**Severe NPDR**	**44 – 51%**	15%
53e	**Very Severe NPDR**	**75%**	45%
61	Mild PDR	–	22%
≥65	Moderate PDR	–	46%

In ZETA-1, **13% of placebo patients worsened by ≥ 3 steps at 6 months**, consistent with observed rates in this landmark study[3]

DR, diabetic retinopathy; DRSS, Diabetic Retinopathy Severity Scale; NEI, National Eye Institute; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.

1. [No authors listed]. ETDRS report number 12. *Ophthalmology.* 1991;98:823-833. **2.** ETDRS report number 9. *Ophthalmology.* 1991;98:766-785. **3.** Data on file.

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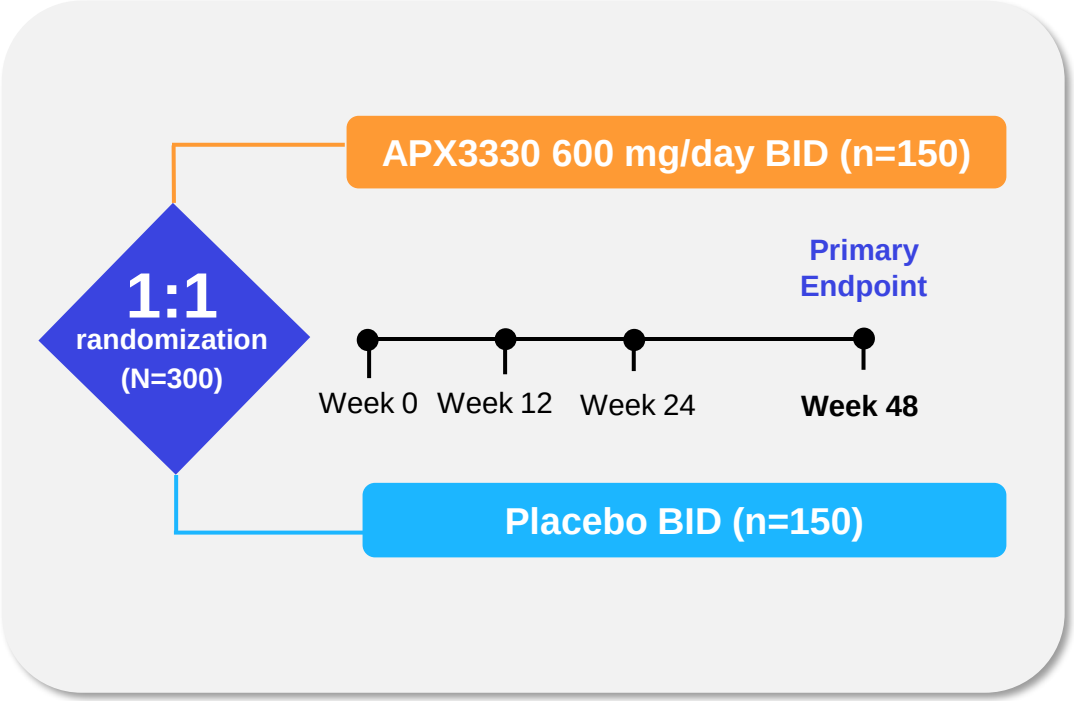
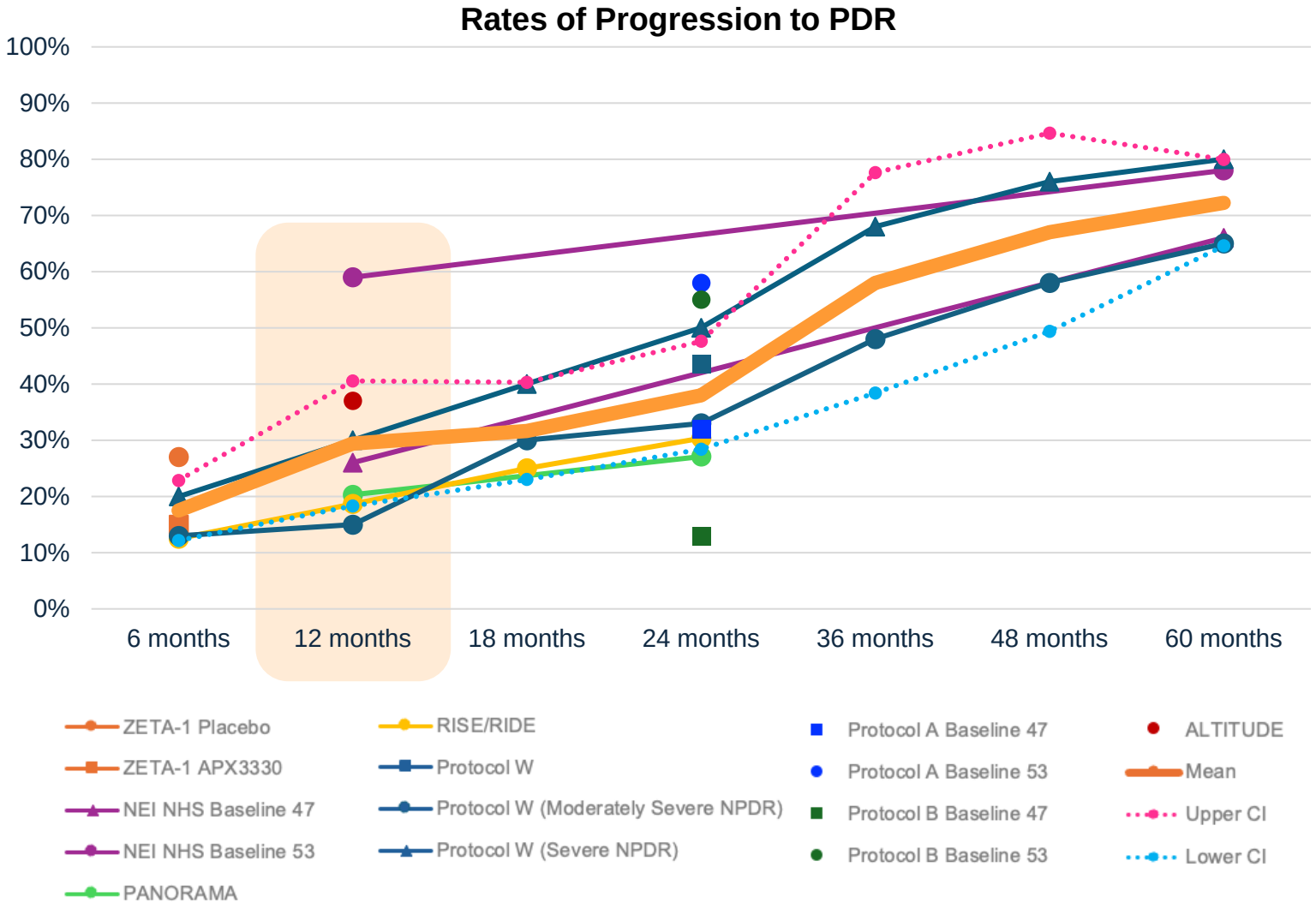
Optimized Study Design Positions ZETA-2 for Success



- **Enriched patient population** of high-risk NPDR progressors
- **≥3 step worsening** is associated with a higher likelihood of PDR progression in the proposed study population
- **Significant placebo progression rates expected** due to duration and population
- **Study is powered above 80%** to detect delta between APX3330 and placebo, similar to ZETA-1

BID, twice-daily; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.

Experience Supports ZETA-2 Primary Endpoint Powering



29%

Average 1-year rate of progression to PDR

Based on these data, ZETA-2 will be powered using a **placebo progression rate of 20-30%**

1-year mean conversion = 29%;

95% CI = 18-41%

PDR, proliferative diabetic retinopathy.

Key Actions to Improve Placebo Progression Rate

Based on Findings from Prior Trials with Low Progression Rates

1	**Stratify to ensure at least 50% of patients are DRSS 53 at baseline** - Recent trials weighted only ~35% of 53 patients vs 47
2	**Remove inclusion of mild NPDR eyes in study (DRSS 43)** - Both eyes must be 47 or 53 for enrichment of progressors
3	**Stratify high-risk severe NPDR patients at screening using peripheral vascular leakage biomarkers** - Each 10 mm^2 area of leakage on angiography confers 2.2-fold increased additional risk of severe DR complications
4	**Identify patients at screening with peripheral NV and nonperfusion, which are predictive of fast progression in NPDR** - Each 1 mm^2 area of nonperfusion on angiography confers 1.4-fold increased additional risk of severe DR complications
5	**Exclude patients with 47A and only allow 47B-D** - Patients in DRCR Protocol W exhibited progression rates of 10% for DRSS 47A, but 20% for DRSS grades 47B-D (sub-stratification in DRSS score has impact on progression; this has not applied in recent NPDR trials)
6	**Introduce interim placebo progression analysis to inform study duration (increase follow up to 18 months if not progressing as expected)** - Interim analysis possible without statistical consequences for trial, enabling early analysis of efficacy data
7	**Control for genetic predisposition, diabetes duration, diabetes control (e.g. A1C)** - Recent trials did not capture diversity and heterogeneity of NPDR and lifestyle factors

DR, diabetic retinopathy; DRCR, Diabetic Retinopathy Clinical Research; DRSS, Diabetic Retinopathy Severity Scale; NPDR, non-proliferative diabetic retinopathy; NV; neovascularization; PDR, proliferative diabetic retinopathy.

NPDR Subset Analysis Evaluated APX3330 in Slowing DR Progression Using a Binocular DRSS Person-Level Scale

Baseline Characteristics for ZETA-1 and NPDR Subset Analysis

	ZETA-1 Actual (n)	NPDR Subset (n)
Population with both eyes evaluable for DRSS[1]	**97[1]**	**59**
Subjects with PDR	22	0
Subjects with DME	15	0
Subjects with PDR or DME[2]	35	0
Subjects with one eye better than 43 and no DME	3	0

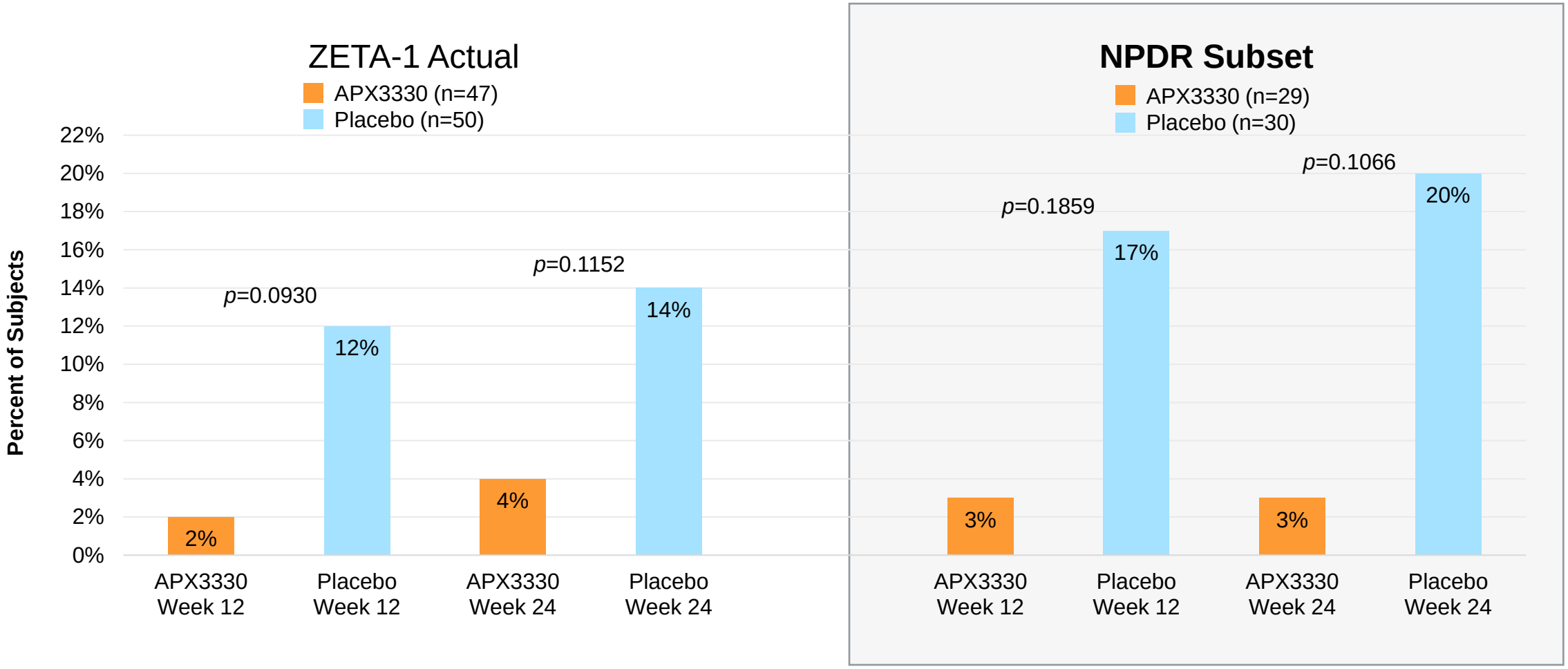
38 subjects excluded; NPDR subset includes subjects at high risk for progression to PDR

NPDR Subset Analysis

- Explores potential treatment benefit in NPDR patients at high risk for PDR progression
- Represents the planned population for a Phase 2/3 study

[1] One subject did not have DRSS evaluation in the fellow eye at baseline.
[2] Two subjects had PDR and DME at baseline.
BCVA, best-corrected visual acuity; CI-DME, center-involved diabetic macular edema; DME, diabetic macular edema; NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.
Source: ZETA-1 Table 16.2.6.1 and Table 16.2.6.2

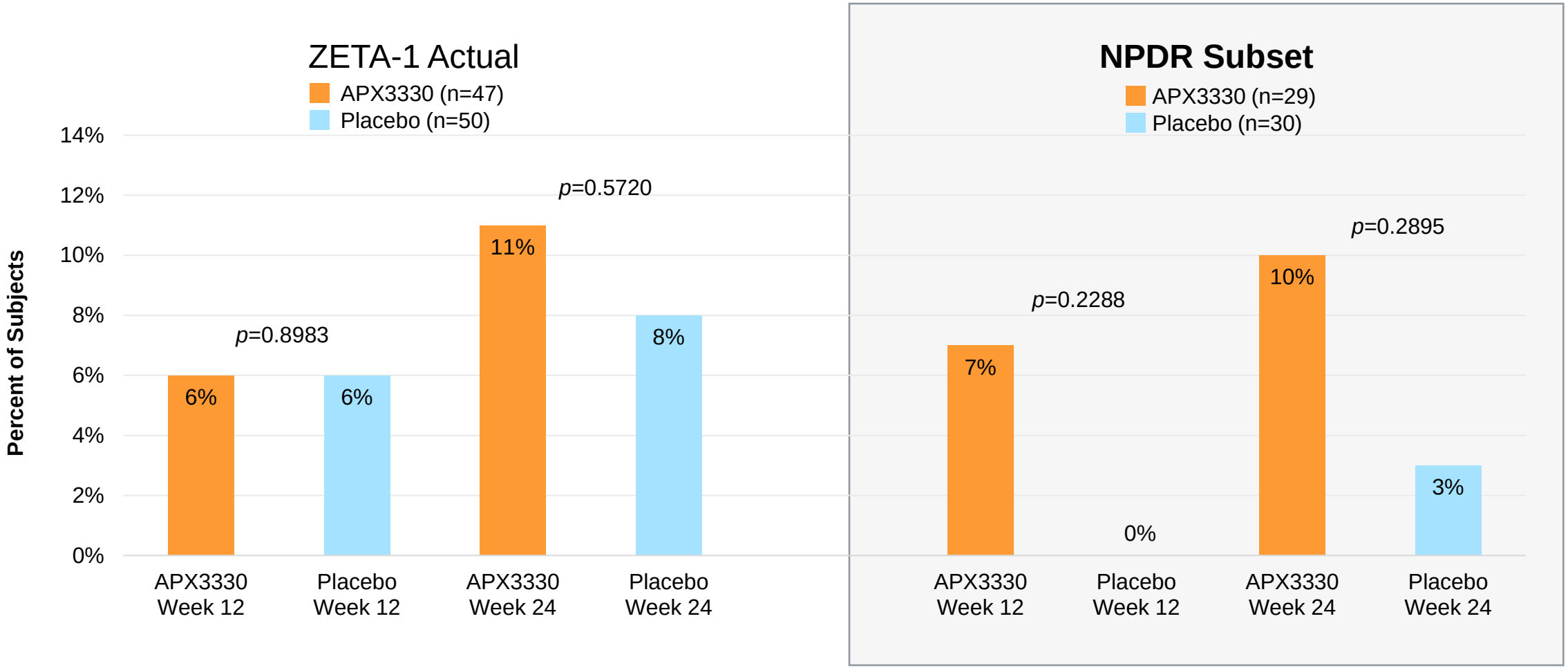
NPDR Subset Amplifies 3 Steps or Greater Worsening on the Binocular DRSS Person-Level Scale



≥ 3 Step Worsening from Baseline on Binocular DRSS Person-Level Scale

DRSS, Diabetic Retinopathy Severity Scale; NPDR, non-proliferative diabetic retinopathy.
Source: ZETA-1 Table 14.2.2.7.3 and Table 14.2.2.7.6

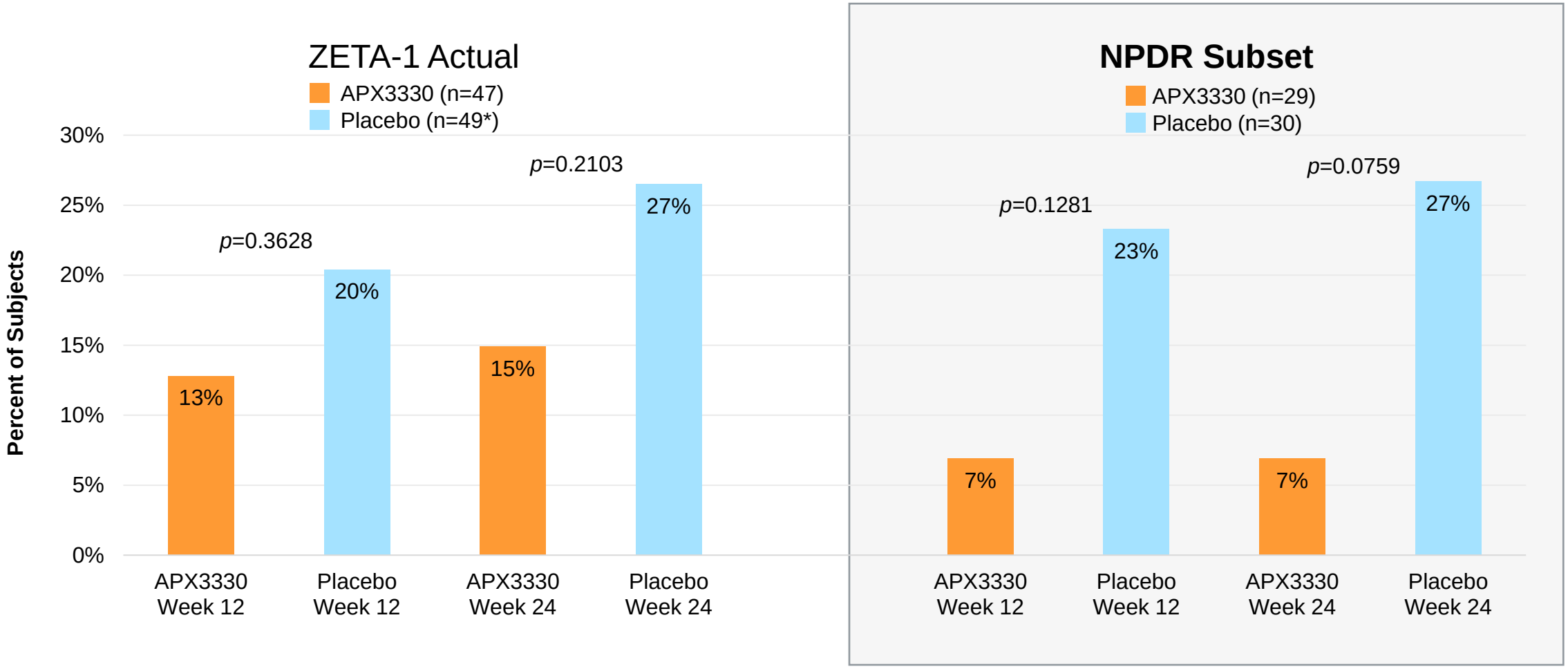
NPDR Subset Amplifies 3 Steps or Greater Improvement on the Binocular DRSS Person-Level Scale



≥ 3 Step Improvement from Baseline on Binocular DRSS Person-Level Scale

DRSS, Diabetic Retinopathy Severity Scale; NPDR, non-proliferative diabetic retinopathy.
Source: ZETA-1 Table 14.2.2.7.3 and Table 14.2.2.7.6

NPDR Subset Demonstrates Enhanced Treatment Effect with Fewer APX3330 Subjects Developing PDR Compared to Placebo



Development of PDR in Either Eye (DRSS ≥ 61 after Baseline)

NPDR, non-proliferative diabetic retinopathy; PDR, proliferative diabetic retinopathy.
*One placebo subject did not have evaluable post-baseline data due to discontinuation of study drug.
Source: ZETA-1 Table 14.2.6.7.3 and Table 14.2.6.7.5

Globally Recognized Retina Specialists Support APX3330 Development

"If ZETA-1 results are repeated in Phase 3, I would **place virtually all of my diabetic patients on oral APX3330** and treat locally only as needed."

Jeff Heier, MD
Ophthalmic Consultants of Boston

"Ref-1 biology targets three pillars of diabetic eye disease: **angiogenesis, inflammation, and oxidative stress**. This is promising in the quest to provide non-invasive, early options for patients."

Peter Kaiser, MD
Cleveland Clinic

"I enjoy working with the team to develop an **innovative protocol design to enroll the patients most likely to have progressive disease** while keeping the study practical to help enrollment."

Arshad Khanani, MD
Sierra Eye Associates

Partnership with Viatris

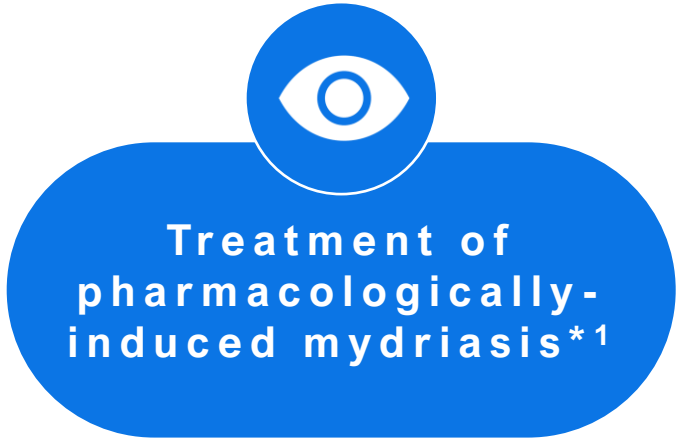
Ryzumvi™ (phentolamine ophthalmic solution) 0.75%

Global Partnership with Viatris for Ryzumvi™

- Ryzumvi™ approved for the reversal of pharmacologically-induced mydriasis and launched in April 2024
- Licensing agreement provides funding for 2 additional indications, with Viatris responsible for commercialization
- Two Phase 3 studies ongoing in presbyopia and decreased visual acuity under low light conditions
- Received $35M upfront cash payment upon licensing agreement
- $120M in potential regulatory and commercial milestone payments → first $10M milestone met for Ryzumvi™ approval
- Potential for tiered double-digit royalties

*RYZUMVI™ is indicated for the treatment of pharmacologically-induced mydriasis produced by adrenergic agonists (eg, phenylephrine) or parasympatholytic agents (eg, tropicamide).

All 3 Indications Have Sizeable Potential US Patient Populations

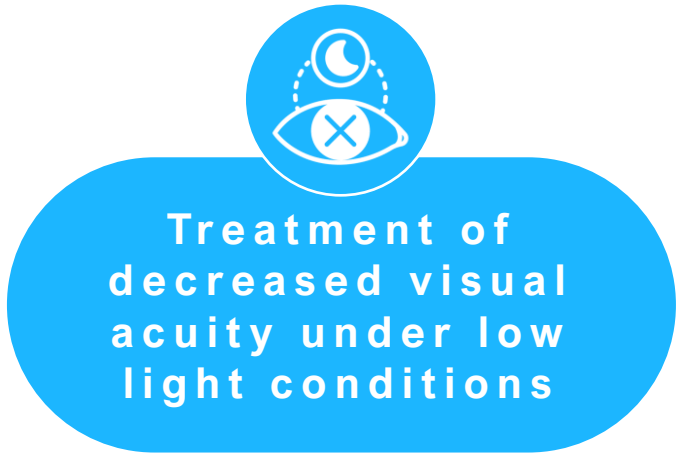


100M

eye dilations conducted every year[2]

133M

presbyopes[3]



600-700K

laser vision correction procedures per year[4]

35% of LASIK patients report dim light disturbances[5]

*RYZUMVI™ is indicated for the treatment of pharmacologically-induced mydriasis produced by adrenergic agonists (eg, phenylephrine) or parasympatholytic agents (eg, tropicamide).

RYZUMVI™ is a trademark of Ocuphire Pharma, Inc.

1. Ryzumvi. Prescribing Information. Ocuphire Pharma, Inc.; 2023. **2.** Wilson FA, et al. J Ophthalmol. 2015;2015:435606. **3.** Berdahl J, et al. *Clin Ophthalmol.* 2020;14:3439-3450. **4.** Lindstrom RL. Millennials will be the next target for laser vision correction. Ocular Surgery News. April 1, 2019. Accessed December 12, 2023. https://www.healio.com/news/ophthalmology/20190329/millennials-will-be-the-next-target-for-laser-vision-correction **5.** Mamalis N. *J Cataract Refract Surg.* 2014;40:343-344.

Ocuphire is Positioned to Transform the Treatment of Diabetic Retinopathy

- Extensive understanding of large, underserved DR market
- Addressing unmet needs by targeting multiple DR pathways with oral treatment
- Demonstrated efficacy in slowing DR progression in completed Phase 2 study
- Primed for pivotal Phase 2/3 study with FDA-confirmed endpoint
- Proven development team with decades of Ophthalmic expertise
- Revenue-generating partnership strengthens cash position

DR, diabetic retinopathy; FDA, Food and Drug Administration.