(NASDAQ: OCUL)

OCULAR THERAPEUTIX

Building a new strategic in ophthalmology

OTX-TKI Phase 1 U.S. Clinical Trial
10-Month Interim Analysis Study Results

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FORWARD LOOKING STATEMENTS

Any statements in this presentation about future expectations, plans, and prospects for the Company, including the commercialization of DEXTENZA® or any of the Company's products or product candidates; the development and regulatory status of the Company's product candidates, such as the Company's development of OTX-TKI for the treatment of retinal diseases including wet AMD and diabetic retinopathy; the Company's plans to advance the development of OTX-TKI; the ongoing development of the Company's extended-delivery hydrogel depot technology; the potential utility of any of the Company's product candidates; the size of the potential market for OTX-TKI; the Company's ability to fund the planned and future clinical development of its product candidates whether through strategic alliances or other fundraising; the Company's ability to enter into and perform its obligations under collaborations; the sufficiency of the Company's cash resources; and other statements containing the words "anticipate," "believe," "estimate," "expect," "intend", "goal," "may", "might," "plan," "predict," "project," "target," "potential," "will," "would," "could," "should," "continue," and similar expressions, constitute forward-looking statements within the meaning of The Private Securities Litigation Reform Act of 1995. Actual results may differ materially from those indicated by such forward-looking statements as a result of various important factors. Such forward-looking statements involve substantial risks and uncertainties that could cause the Company's preclinical and clinical development programs, future results, performance or achievements to differ significantly from those expressed or implied by the forward-looking statements. Such risks and uncertainties include, among others, the timing and costs involved in commercializing DEXTENZA or any product or product candidate that receives regulatory approval, including the conduct of post-approval studies, the ability to retain regulatory approval of DEXTENZA or any product or product candidate that receives regulatory approval, the ability to maintain and the sufficiency of product, procedure and any other reimbursement codes for DEXTENZA, the initiation, timing, conduct and outcomes of clinical trials, whether interim clinical trial data such as the data reported in this presentation will be indicative of the results of the trial upon its completion or subsequent clinical trials in this and other indications, availability of data from clinical trials and expectations for regulatory submissions and approvals, the Company's scientific approach and general development progress, the sufficiency of cash resources, the Company's existing indebtedness, the ability of the Company's creditors to accelerate the maturity of such indebtedness upon the occurrence of certain events of default, the severity and duration of the COVID-19 pandemic including its effect on the Company's revenues and relevant regulatory authorities' operations, the Company's ability to enter into strategic alliances or generate additional funding on a timely basis, on favorable terms, or at all, the Company's ability to recruit and retain key personnel, and other factors discussed in the "Risk Factors" section contained in the Company's quarterly and annual reports on file with the Securities and Exchange Commission. In addition, the forward-looking statements included in this presentation represent the Company's views as of the date of this presentation. The Company anticipates that subsequent events and developments will cause the Company's views to change. However, while the Company may elect to update these forward-looking statements at some point in the future, the Company specifically disclaims any obligation to do so, whether as a result of new information, future events or otherwise, except as required by law. These forward-looking statements should not be relied upon as representing the Company's views as of any date subsequent to the date of this presentation.

This presentation discusses investigational products in development. Their efficacy and safety profiles have not been established, and they have not been approved for marketing by the FDA.

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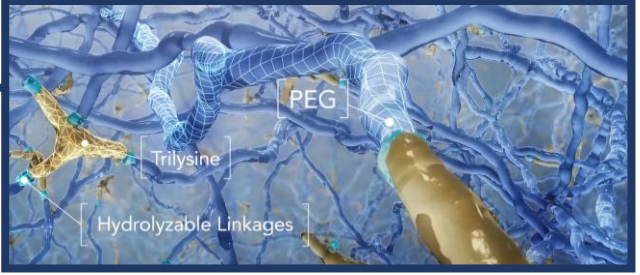
OTX-TKI: HYDROGEL DELIVERY OF AXITINIB

HYDROGEL DELIVERY PLATFORM

BIORESORBABLE, TARGETED, SUSTAINED DRUG DELIVERY

OTX's proprietary bioresorbable polymer matrix, a polyethylene glycol (PEG) hydrogel is a versatile platform for localized sustained drug delivery



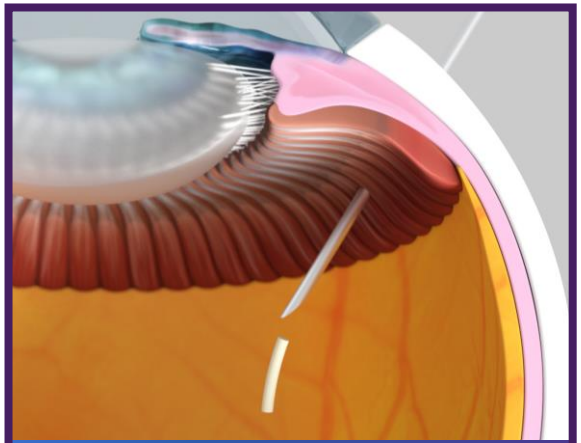
AXITINIB

MULTI-TARGET TYROSINE KINASE INHIBITOR FOR RETINAL VASCULAR DISEASES

Axitinib is a highly selective inhibitor of all VEGF and PDGF receptors with high affinity and low solubility compared to other ocular TKIs[1]

Drug	Inhibitory Concentrations for VEGFR2/KDR (IC_{50} in nM) (lower values indicate higher affinity)
Axitinib[2]	**0.2**
Sunitinib[3]	40
Vorolanib[3]	64

OTX-TKI: AXITINIB IN A HYDROGEL INTRAVITREAL IMPLANT[4]



- Single implant
- Completely bioresorbable
- Target release for 6-12 months
- Administered by a 25G or smaller needle

References: 1. Zhao Y, et al. *Oncologist*. 2015;20(6):660-673. **2.** Gross-Goupil M, et al. *Clin Med Insights Oncol*. 2013;7:269-277. **3.** Liang C, et al. *Mol Ther Oncolytics*. 2022;24:577-584. **4.** Blizzard CD, Driscoll A, El-Hayek R, et al. Ocular implant containing a tyrosine kinase inhibitor. Published online September 13, 2022. Accessed September 26, 2022. Patent
KDR=kinase insert domain receptor; PDGF=platelet-derived growth factor; VEGF=vascular endothelial growth factor

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U.S. WET AMD PHASE 1 STUDY DESIGN

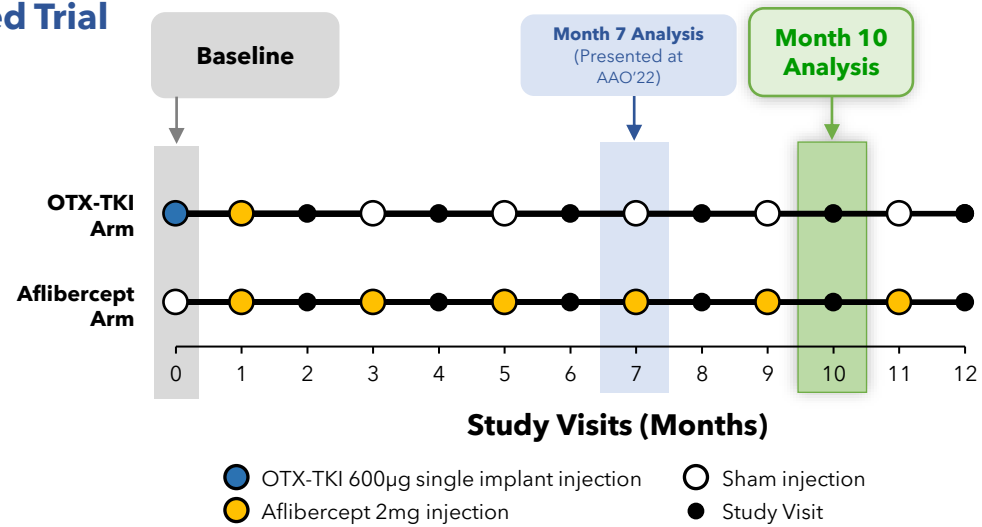
Multicenter, Randomized, Double-masked Trial

Screening

Key Inclusion Criteria

- Sub foveal neovascularization secondary to AMD
- **Controlled fluid**
- **Previously treated with anti-VEGF injections**

Randomization 3:1
OTX-TKI:Aflibercept



Rescue Anti-VEGF Injection Criteria:

- Loss of ≥10 letters from best previous BCVA due to AMD with current BCVA worse than baseline, or
- Evidence of ≥75µm CSFT increase from previous best value and ≥5 letters loss from best previous BCVA, or
- New macular hemorrhage

AAO=American Academy of Ophthalmology; AMD=age-related macular degeneration; BCVA=best corrected visual acuity; BL=baseline; CSFT=central subfield thickness; AMD=age-related macular degeneration; VEGF=vascular endothelial growth factor

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BASELINE CHARACTERISTICS

Baseline Characteristic	OTX-TKI (N=16)†	Aflibercept (N=5)
Mean (SD) Age, Years	76 (8)	84 (8)
Male, n (%) **Female, n (%)**	8 (50) 8 (50)	3 (60) 2 (40)
Mean (SD) Months since wet AMD diagnosis	18 (12)	18 (12)
Mean (SD) Number of anti-VEGF Injections within 12 Months Prior to baseline*	8 (3)	8 (4)
Mean (SD) BCVA in ETDRS Letters	70.9 (17.7)	73.8 (9.0)
Mean (SD) CSFT, µm	273.8 (43.0)	240.6 (29.6)

*Annualized data
† Includes one subject not treated per protocol who has been removed from efficacy analysis as subject incorrectly received aflibercept instead of sham injection at Month 3 and 5 visits

Interim review: data cut off December 12, 2022
BCVA=best corrected visual acuity; CSFT=central subfield thickness; ETDRS=Early Treatment Diabetic Retinopathy Study; AMD=age-related macular degeneration; SD=standard deviation; VEGF=vascular endothelial growth factor

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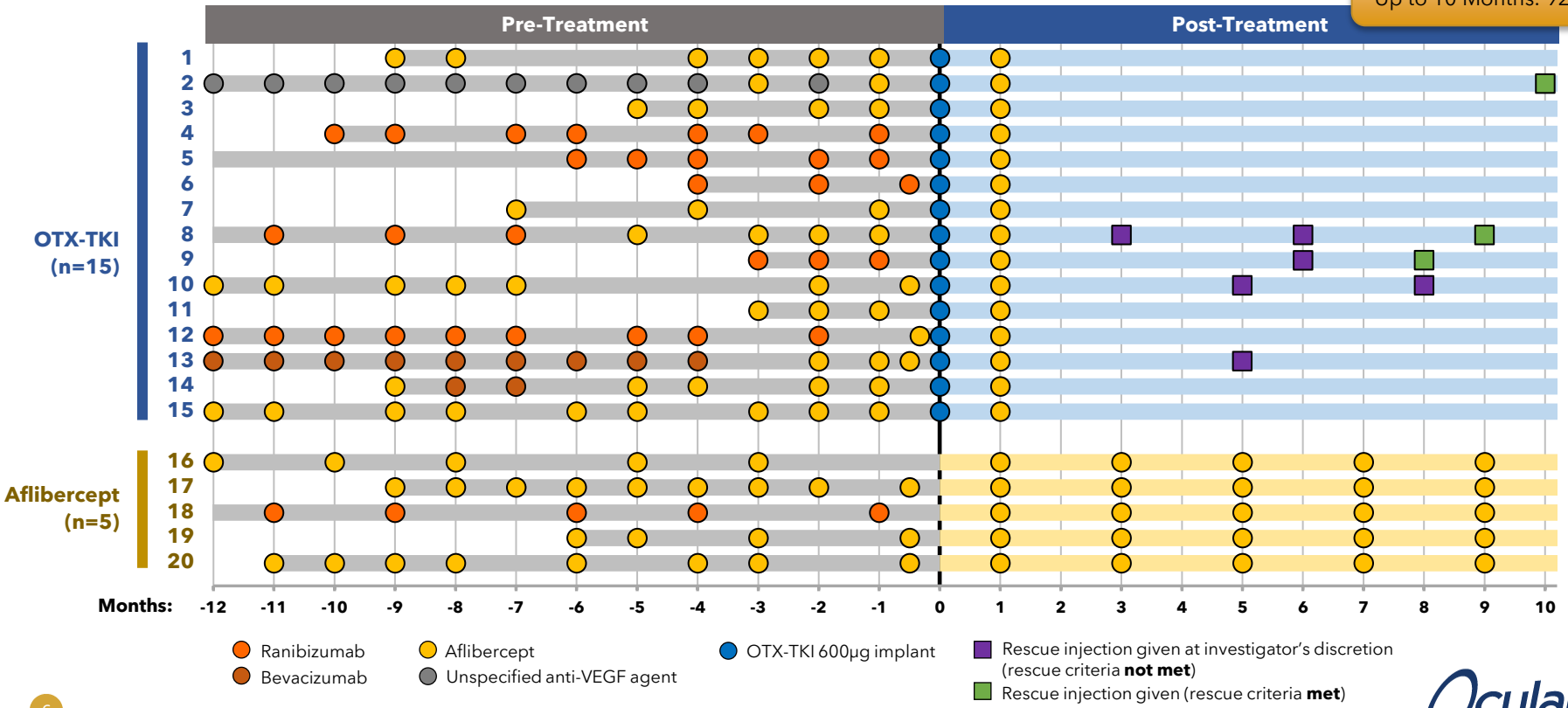
REDUCTION IN ANTI-VEGF INJECTIONS FOLLOWING OTX-TKI UP TO MONTH 10

Treatment Reduction
Up to 10 Months: 92%



Interim review: data cut off December 12, 2022; per protocol analysis
Reduction in treatment burden calculation includes all rescue injections up to Month 10
Sham injection was given at Month 0 in the Aflibercept Arm and at Month 3, 5, 7 and 9 in the OTX-TKI Arm (not shown).

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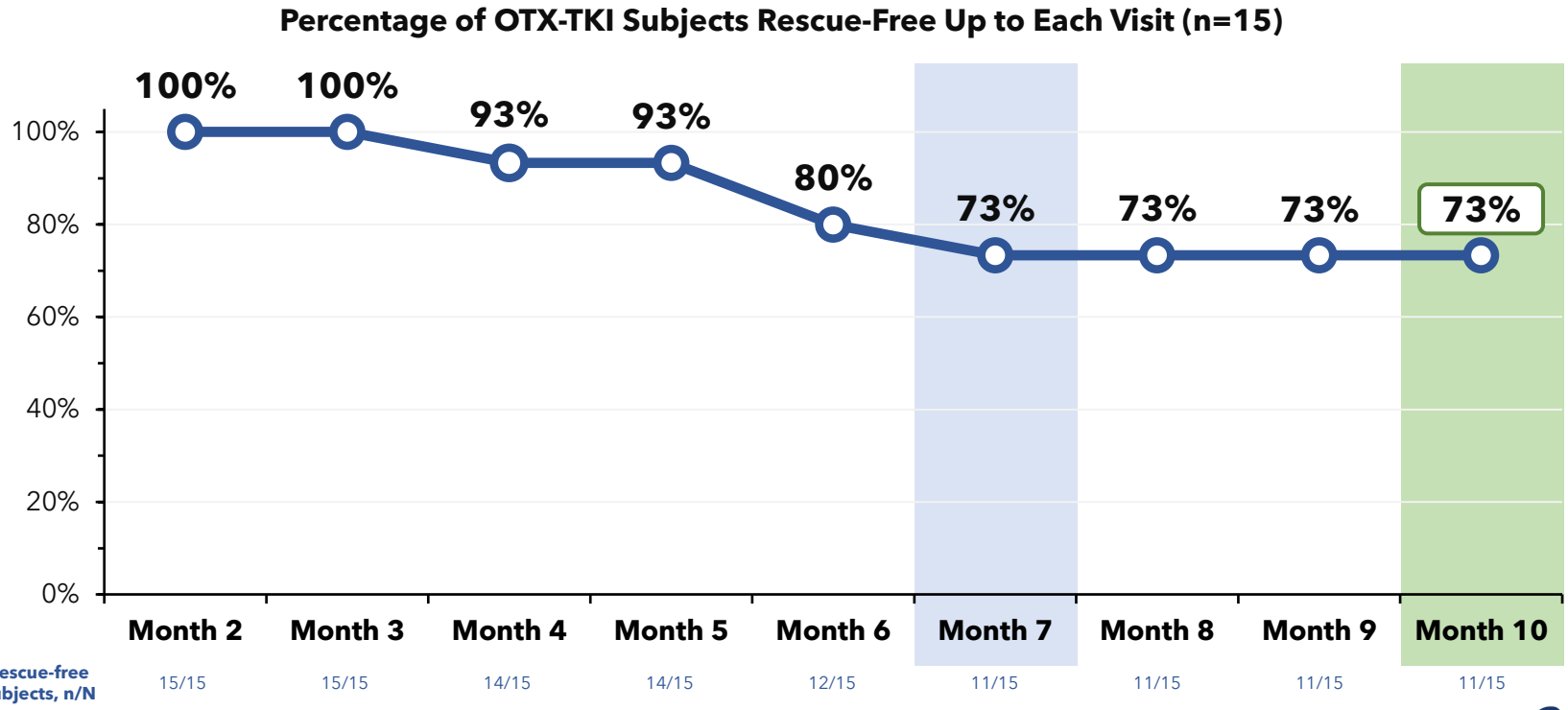
OTX-TKI DEMONSTRATED EXTENDED DURATION OF ACTION WITH 73% OF SUBJECTS RESCUE-FREE UP TO 10 MONTHS



Interim review: data cut off December 12, 2022
Rescue-free rate calculations: If subjects received rescue anti-VEGF therapy at a study visit, those were reflected to the count at the following study visit in the graph above

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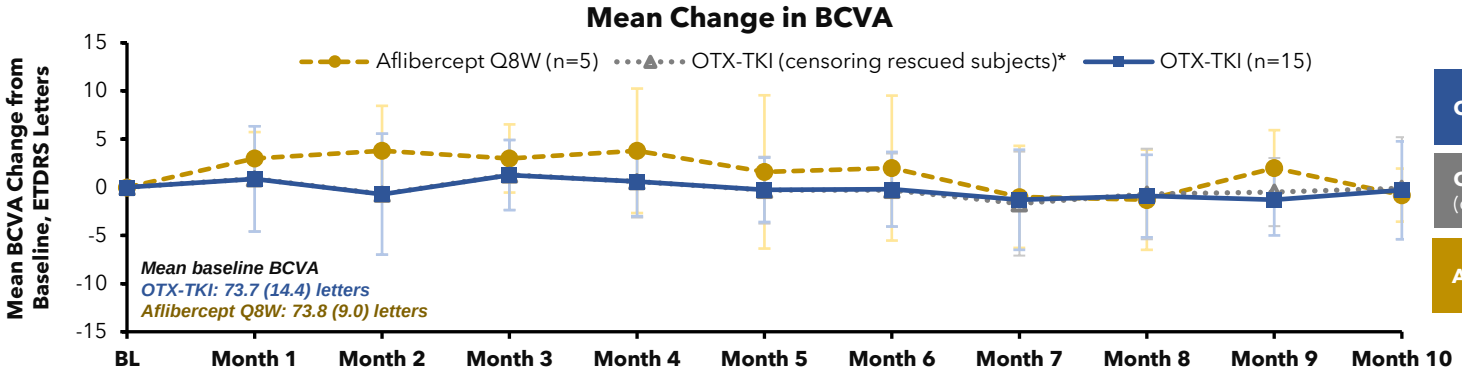
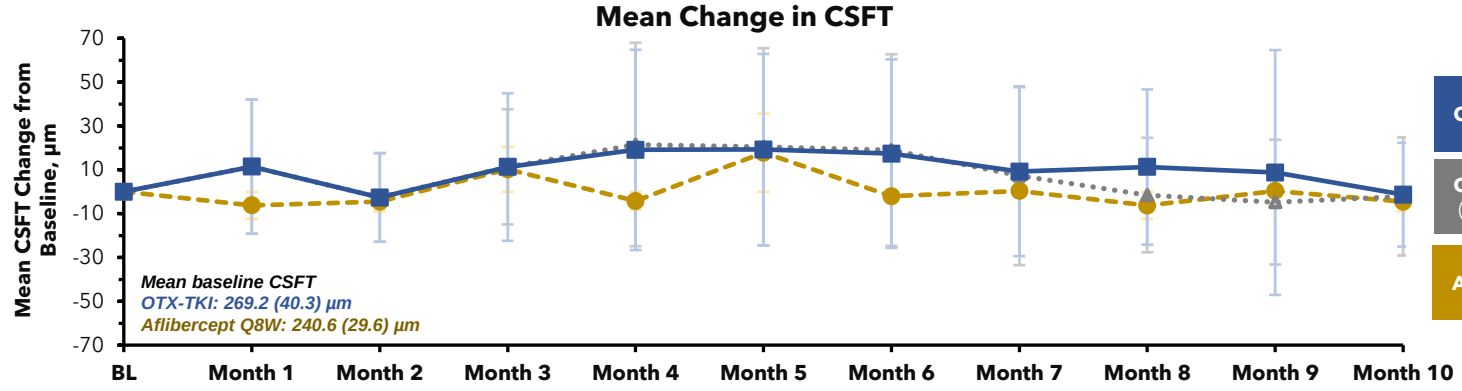
VISION AND CSFT WITH OTX-TKI WERE COMPARABLE TO AFLIBERCEPT Q8W UP TO MONTH 10



Mean (SD) change in BCVA from baseline to Month 10:

- **OTX-TKI: -0.3 (5.1) letters**
- **OTX-TKI: -0.1 (5.3) letters** (censoring rescued subjects)
- **Aflibercept Q8W: -0.8 (2.8) letters**



Mean (SD) change in CSFT from baseline to Month 10:

- **OTX-TKI: -1.3 (23.7) µm**
- **OTX-TKI: -2.1 (26.9) µm** (censoring rescued subjects)
- **Aflibercept Q8W: -4.5 (4.4) µm**

Interim review: data cut off December 12, 2022
Error bars represent standard deviation; n=14 in OTX-TKI arm at Months 2 and 7 due to missed visits
**Sample size for OTX-TKI (censoring rescued subjects): n=15 at Baseline and Months 1 and 3; n=14 at Month 2 (missed visit) and Months 4 and 5; n=12 at Month 6 and n=11 at Month 7, 8, 9, and 10*
BCVA=best corrected visual acuity; BL=baseline; CSFT=central subfield thickness; ETDRS=Early Treatment Diabetic Retinopathy Study

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SAFETY SUMMARY UP TO MONTH 10: OTK-TKI WAS GENERALLY WELL TOLERATED

- No reports of drug-related ocular or systemic SAEs in either arm
- One event of acute endophthalmitis in OTX-TKI arm which occurred following mandated aflibercept injection at Month 1
  - Reported as moderate
  - Injection procedure related
  - Unrelated to the study drug
  - Resolved after intravitreal antibiotic injection, with vision returning to baseline
- All events were mild except
  - Acute endophthalmitis SAE (moderate and resolved) and worsening of cataract (moderate) in OTX-TKI arm
  - Elevated IOP in aflibercept arm (moderate and resolved)

Subjects with Adverse Events in the Study Eye	OTX-TKI n=16	Aflibercept n=5
Elevated IOP	0	1**
Retinal detachment	0	0
Retinal vasculitis	0	0
Implant migration into the anterior chamber	0	NA
Acute Endophthalmitis	1*	0
Subjects with Ocular Adverse Events Reported by Severity		
Ocular AEs	16	3
Mild	14	2
Moderate	2*	1**
Severe	0	0
Serious AEs	1*	0

*Moderate and serious ocular AE in OTX-TKI arm was Acute Endophthalmitis 6 days after mandated aflibercept injection at Month 1
**Moderate AE in Aflibercept arm was Elevated Intraocular pressure

Interim review: data cut off December 12, 2022
IOP=intraocular pressure; SAE=serious adverse event

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INTERIM RESULTS UP TO MONTH 10 DEMONSTRATED OTX-TKI HAD EXTENDED DURABILITY IN PATIENTS WITH WET AMD IN U.S. PHASE 1 TRIAL

Phase 1 randomized, controlled US clinical trial in previously treated wet AMD patients with a single OTX-TKI implant showed safety, tolerability, and biological activity comparable to aflibercept administered every 2 months in this 10-month interim analysis

Safety

- OTX-TKI was generally well tolerated
- No reports of drug-related ocular or systemic SAEs in either arm
- No reported adverse events such as elevated IOP, retinal detachment, retinal vasculitis, or implant migration into the anterior chamber in the OTX-TKI arm
- No subject drop-outs in either arm

Efficacy

- 80% of subjects were rescue-free up to 6 months & 73% of subjects were rescue-free up to 10 months following a single OTX-TKI implant injection
- At 10 months, vision (-0.3 letters) and CSFT (-1.3 µm) were stable with OTX-TKI and comparable to aflibercept Q8W (-0.8 letter; -4.5 µm)
- Clinically meaningful reduction in treatment burden observed up to 10 months post-treatment with OTX-TKI

Next Steps:

- Study is ongoing and follow-up will continue through Month 12 per protocol
- Phase 1 study evaluating OTX-TKI in subjects with Diabetic Retinopathy - initiated in December 2022

Interim review: data cut off December 12, 2022; Conclusions based on limited number of subjects OTX-TKI: n=16 and Aflibercept: n=5

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THANK YOU

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