CLEARSIDE BIOMEDICAL

Corporate Presentation

August 2024

Forward-Looking Statements

This presentation contains forward-looking statements as defined in the Private Securities Litigation Reform Act of 1995, as amended. The words “may,” “will,” “could,” “would,” “should,” “expect,” “plan,” “anticipate,” “intend,” “believe,” “estimate,” “predict,” “project,” “potential,” “continue,” “target” or the negative of these terms and other similar words or expressions are intended to identify forward-looking statements, although not all forward-looking statements contain these identifying words. Clearside Biomedical, Inc.’s views as of the date of this presentation about future events and are subject to risks, uncertainties, assumptions, and changes in circumstances that may cause Clearside’s actual results, performance, or achievements to differ significantly from those expressed or implied in any forward-looking statement. Although Clearside believes that the expectations reflected in the forward-looking statements are reasonable, new risks and uncertainties may emerge from time to time, and Clearside cannot guarantee future events, results, performance, or achievements. Some of the key factors that could cause actual results to differ from Clearside’s expectations include its plans to develop and potentially commercialize its product candidates; adverse differences between preliminary or interim data and final data; Clearside’s planned clinical trials and preclinical studies for its product candidates; the timing of and Clearside’s ability to obtain and maintain regulatory approvals for its product candidates; the extent of clinical trials potentially required for Clearside’s product candidates; the clinical utility and market acceptance of Clearside’s product candidates; Clearside’s commercialization, marketing and manufacturing capabilities and strategy; Clearside’s intellectual property position; Clearside's ability to expand its pipeline; developments and projections relating to Clearside's competitors and its industry; the impact of government laws and regulations; the timing and anticipated results of Clearside's preclinical studies and clinical trials and the risk that the results of Clearside's preclinical studies and clinical trials may not be predictive of future results in connection with future studies or clinical trials and may not support further development and marketing approval; findings from investigational review boards at clinical trial sites and publication review bodies; Clearside's estimates regarding future revenue, expenses, capital requirements and need for additional financing; and Clearside’s ability to identify additional product candidates with significant commercial potential that are consistent with its commercial objectives. For further information regarding these risks, uncertainties and other factors you should read the “Risk Factors” section of Clearside’s Annual Report on Form 10-K for the year ended December 31, 2023, filed with the U.S. Securities and Exchange Commission (SEC) on March 12, 2024, and Clearside's subsequent filings with the SEC. Clearside expressly disclaims any obligation to update or revise the information herein, including the forward-looking statements, except as required by law. This presentation also contains estimates and other statistical data made by independent parties and by Clearside relating to market size and growth and other data about its industry. This data involves a number of assumptions and limitations, and you are cautioned not to give undue weight to such estimates. In addition, projections, assumptions and estimates of Clearside’s future performance and the future performance of the markets in which Clearside operates are necessarily subject to a high degree of uncertainty and risk.

Delivering on the Potential of the Suprachoroidal Space

- **Proven Leader in Suprachoroidal Delivery with Thousands of Injections Performed in the Clinic**
- **Validated Technology with Approved Product, Multiple Collaborations, and Comprehensive IP Portfolio**
- **Differentiated Clinical Program Targeting Multi-Billion Dollar Wet AMD Market with Phase 2b Trial Data Expected in Late Q3 2024**

Diverse Programs Using Clearside's Suprachoroidal Injection Platform

Clearside Developed Programs

THERAPEUTIC	TYPE	INDICATION	IND-ENABLING	PHASE 1	PHASE 2	PHASE 3	APPROVAL	PARTNER
CLS-AX (axitinib):	**Tyrosine Kinase Inhibitor**	**Wet AMD**			Phase 2b	ODYSSEY		
XIPERE®	Corticosteroid *(Triamcinolone Acetonide)*	Uveitic Macular Edema[1] *(U.S. & Canada)*						B+L BAUSCH+LOMB
XIPERE® / ARCATUS™	Corticosteroid *(Triamcinolone Acetonide)*	Uveitic Macular Edema[2] Diabetic Macular Edema[2] *(Asia Pacific ex-Japan)*				UME		arctic VISION
XIPERE® / ARCATUS™	Corticosteroid *(Triamcinolone Acetonide)*				DME			arctic VISION

SCS Microinjector® Partner Clinical Development Programs

THERAPEUTIC	TYPE	INDICATION	IND-ENABLING	PHASE 1	PHASE 2	PHASE 3	APPROVAL	PARTNER
Bel-Sar	Viral-like Drug Conjugate	Choroidal Melanoma				CoMpass		aura
ABBV-RGX-314	AAV Gene Therapy	Diabetic Retinopathy Diabetic Macular Edema			ALTITUDE			REGENXBIO abbvie
ABBV-RGX-314	AAV Gene Therapy	Wet AMD			AAVIATE			REGENXBIO abbvie
Avoralstat	Plasma Kallikrein Inhibitor	Diabetic Macular Edema						bio cryst

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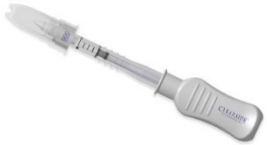
[1]XIPERE® (triamcinolone acetonide injectable suspension), for suprachoroidal use has received U.S. FDA Approval and is being commercialized by Bausch + Lomb.
[2]In China, Arctic Vision is responsible for clinical development of ARCATUS™ (triamcinolone acetonide injectable suspension), formerly referred to as ARVN001, and known as XIPERE® in the U.S.

Core Competencies in Delivery & Formulation Drive Patented Technology

KEY INTELLECTUAL PROPERTY COMPONENTS

1. **Comprehensive IP portfolio** that includes protection of: SCS delivery technology, proprietary SCS Microinjector®, treatment of various conditions with SCS administration of therapeutic products
2. **28 U.S. and >80 European and International issued patents** with multiple pending patent applications
3. Granted patents provide exclusivity for our delivery technology and product candidates to mid-2030s with pending applications **potentially extending exclusivity beyond 2040**

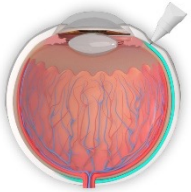


DEVICE PATENTS

- SCS Microinjector® features
- Methods of using SCS Microinjector® for drug delivery

DRUG PATENTS

- Administration of a variety of drugs to the suprachoroidal space by microinjection



DISEASE PATENTS

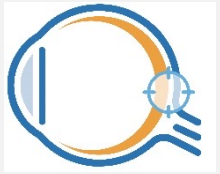
- Methods of treating ocular disorders by SCS administration

Suprachoroidal Delivery via SCS Microinjector®

Benefits for Patients and Physicians Using SCS Microinjector® Delivery

Enhanced Safety

Much lower risk of endophthalmitis as direct contact to immune system vs intravitreal injection

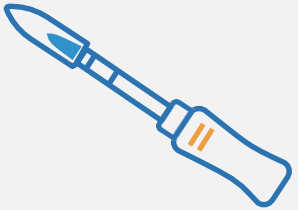


Injectate Flows to Back of the Eye

Reduced risk of floaters, snow globe effect, or other visual disturbances

No Implants or Devices in the Vitreous

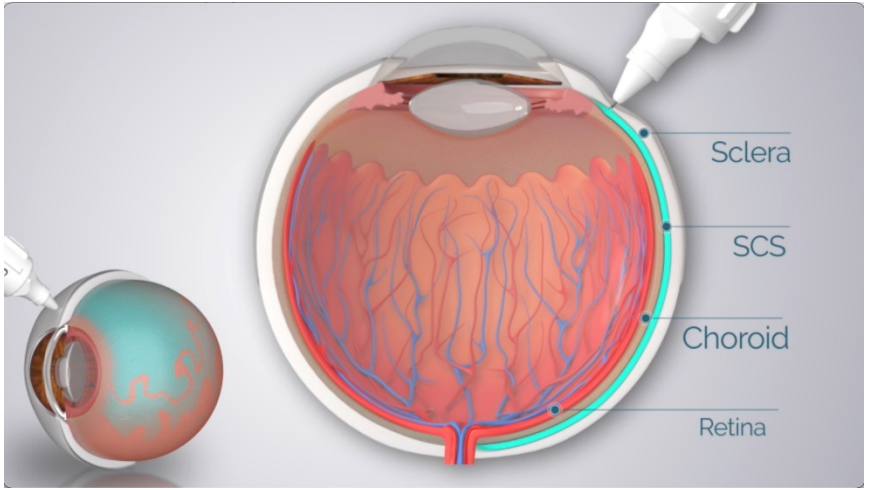
Can be easily re-dosed for potentially longer durability



Injection Similar to Intravitreal

Advanced technology requires only a few seconds longer for each injection

SCS Microinjector®: Drug/Device Combination with Proven Versatility



SUPRACHOROIDAL SPACE INJECTION

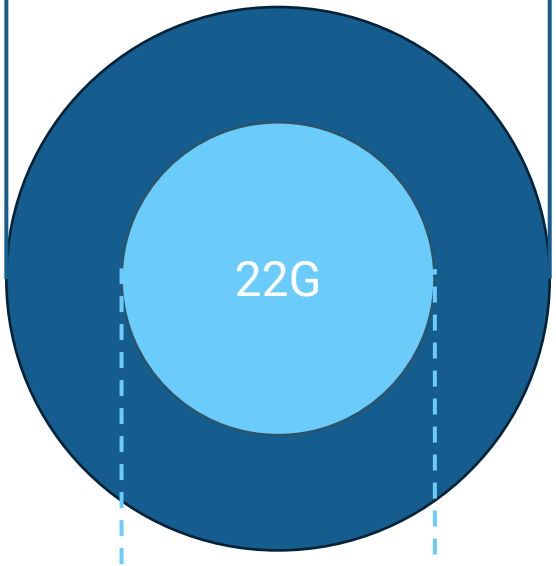
Novel SCS Microinjector® shows a demonstrated ability for precise delivery into the suprachoroidal space (SCS)

- **6 ongoing clinical trials with 4 potential therapies in 5 indications:**
  Wet AMD, UME, DME, DR, Choroidal Melanoma
- **Safety profile of SCS Microinjector comparable to intravitreal injections[1]**
- **Well-accepted by retinal physicians with thousands of injections performed to date**
- **30-gauge needle equivalent to most commonly used intravitreal injections**
  Smaller than TKI competitors in development

Sources: Clearside data on file | [1]Kurup, et. al, Macula Society 2021 *Safety of the Suprachoroidal Injection Procedure Utilizing SCS Microinjector® across Three Retinal Disorders.*

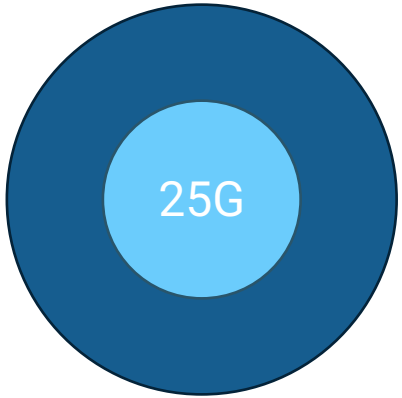
Competitive Advantage in Needle Gage Diameter

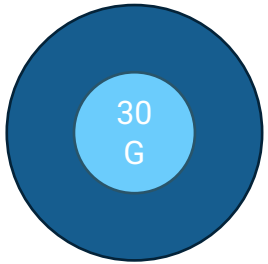
Outer Diameter of the Needle
Relative to the Ocular Tissue



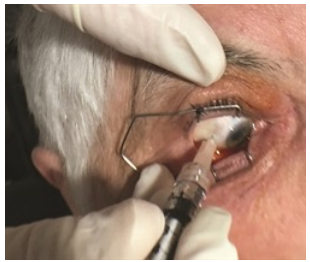
Inner Diameter of the Needle
Drug Product Passage

30G needle results in less damage to the ocular tissue
wound size to the ocular tissue is
>4x greater with 22G Needle
>2x greater with 25G Needle



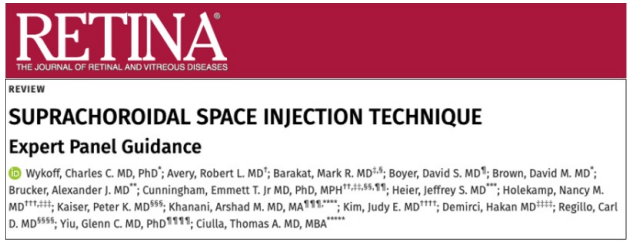


Clearside
SCS Microinjector®



Gustavo Barreto Melo, et al. Progress in Retinal and Eye Research. "Critical analysis of techniques and materials used in devices, syringes, and needles used for intravitreal injections". https://doi.org/10.1016/j.preteyeres.2020.100862

Straightforward Suprachoroidal Injection Technique



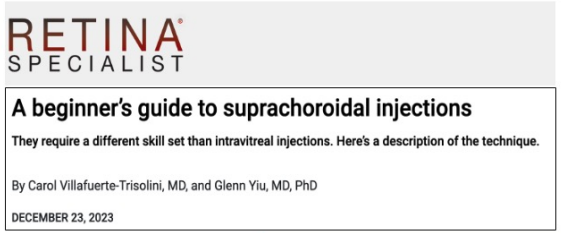
RETINA
THE JOURNAL OF RETINAL AND VITREOUS DISEASES

REVIEW

SUPRACHOROIDAL SPACE INJECTION TECHNIQUE

Expert Panel Guidance

Wykoff, Charles C. MD, PhD*; Avery, Robert L. MD†; Barakat, Mark R. MD‡,§; Boyer, David S. MD¶; Brown, David M. MD*; Brucker, Alexander J. MD**; Cunningham, Emmett T. Jr MD, PhD, MPH††,‡‡,§§,¶¶; Heier, Jeffrey S. MD***; Holekamp, Nancy M. MD†††,‡‡‡; Kaiser, Peter K. MD§§§; Khanani, Arshad M. MD, MA¶¶¶,****; Kim, Judy E. MD††††; Demirci, Hakan MD‡‡‡‡; Regillo, Carl D. MD§§§§; Yiu, Glenn C. MD, PhD¶¶¶¶; Ciulla, Thomas A. MD, MBA*****



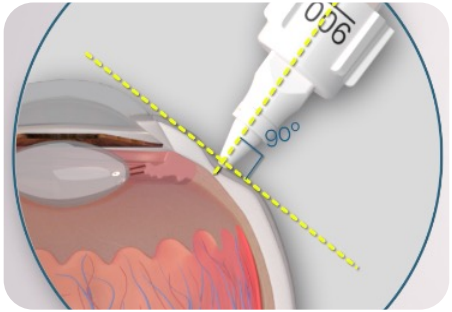
RETINA SPECIALIST

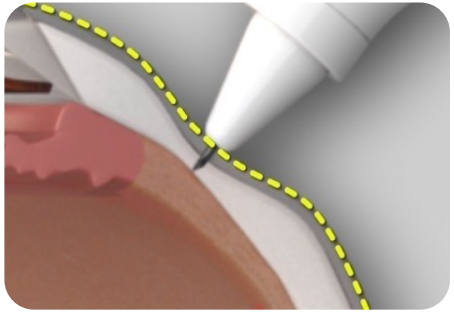
A beginner's guide to suprachoroidal injections

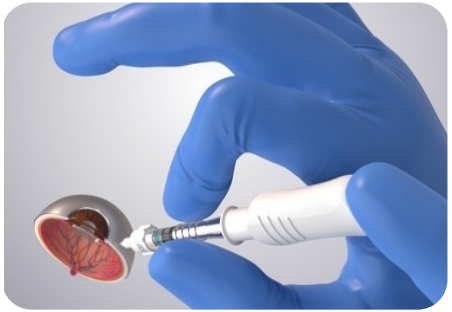
They require a different skill set than intravitreal injections. Here's a description of the technique.

By Carol Villafuerte-Trisolini, MD, and Glenn Yiu, MD, PhD

DECEMBER 23, 2023







Perpendicular

Hold the microinjector **perpendicular** to the ocular surface

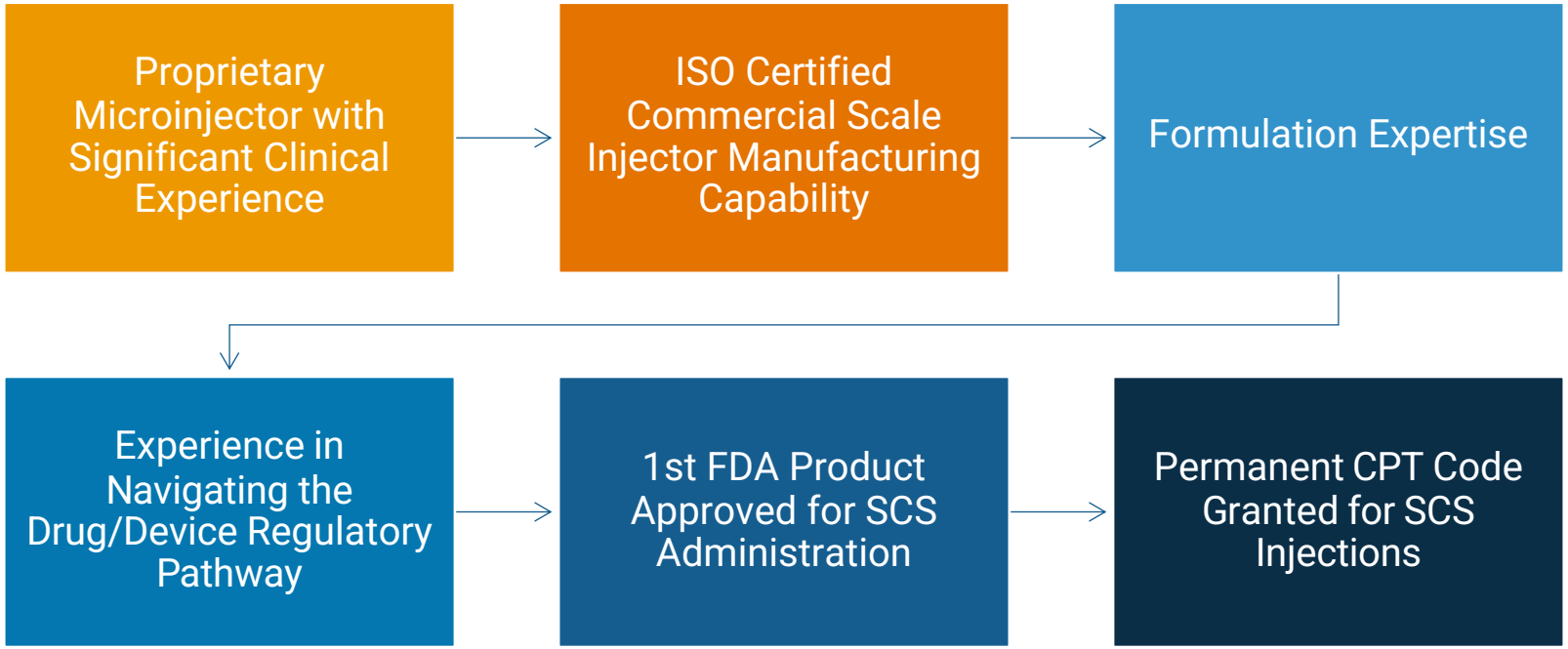
Dimple

Ensure firm contact with sclera by maintaining a **dimple** throughout injection

Slow

Inject **slowly** over 5 – 10 seconds

Proven Leader in Suprachoroidal Delivery



CLS-AX

(axitinib injectable suspension)

New mechanism of action with potential for longer duration of effect

Axitinib is a Highly Potent, Highly Selective Pan-VEGF Inhibitor

Inhibits ALL VEGF Receptors (VEGFR-1, VEGFR-2, VEGFR-3)

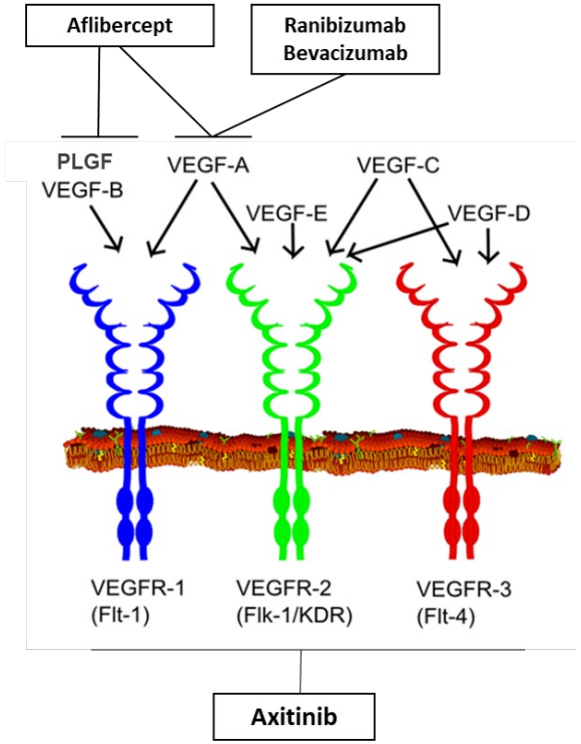
- Intrinsic pan-VEGF inhibition through receptor blockade
- More active than anti-VEGF-A in *in-vitro* angiogenesis model[1-2]
- Approved AMD treatments are focused VEGF-A inhibitors

Tyrosine kinase inhibitor (TKI) with the highest potency

- >10x more potent than other TKIs in in-vitro studies[3]
- Better ocular cell biocompatibility than other TKIs[4]
- More active than other TKIs for experimental corneal neovascularization in preclinical models

Small molecule formulated into suspension for SCS delivery

- Preclinical data showed regression of angiogenesis
- FDA-approved renal oncology treatment with established mechanism of action



VEGF Receptor-2 primarily mediates angiogenesis

Sources: 1. Cabral T et al. Bevacizumab Injection in Patients with Neovascular Age-Related Macular Degeneration Increases Angiogenic Biomarkers. Ophthalmol Retina. 2018 January ; 2(1): 31–37. doi:10.1016/j.oret.2017.04.004. | 2. Lieu et al. The Association of Alternate VEGF Ligands with Resistance to Anti-VEGF Therapy in Metastatic Colorectal Cancer. PLoS ONE 8(10): e77117. | 3. Gross-Goupil et al. Axitinib: A Review of its Safety and Efficacy in the Treatment of Adults with Advanced Renal Cell Carcinoma. Clinical Medicine Insights: Oncology 2013:7. | 4. Thiele et al. Multikinase Inhibitors as a New Approach in Neovascular Age-Related Macular Degeneration (AMD) Treatment: In Vitro Safety Evaluations of Axitinib, Pazopanib and Sorafenib for Intraocular Use. Klin Monatsbl Augenheilkd 2013; 230: 247-254. | Image by Mikael Häggström, used with permission. Häggström, Mikael (2014). "Medical gallery of Mikael Häggström 2014". WikiJournal of Medicine 1 (2). DOI:10.15347/wim/2014.008. ISSN 2002-4436. Public Domain.

Leveraging a Highly Potent Pan-VEGF Inhibitor with Suprachoroidal Delivery

01

Axitinib

High potency TKI with pan-VEGF inhibition

02

Proprietary CLS-AX Suspension Formulation

Clearside formulation expertise

03

Delivery via SCS Microinjector®

Compartmentalization may eliminate treatment related floaters, haze, and anterior segment side effects

Utilizes the same device as FDA-approved product XIPERE®

CLS-AX: Wet AMD Clinical Development Program

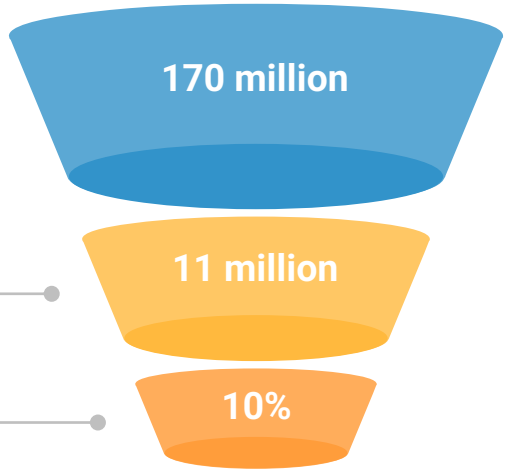
Age-Related Macular Degeneration (AMD)

A large and growing market opportunity

170 million AMD patients worldwide[1]

11 million U.S. AMD Patients[1]

~10% patients progress to wet AMD[2]



- AMD causes a progressive loss of central vision and is the most common cause of blindness in individuals over age 55[1]
- U.S. prevalence expected to increase to 22 million by the year 2050[1]
- Global prevalence expected to increase to 288 million by the year 2040[1]
- Current treatments require frequent injections and subset of patients with disappointing visual outcomes[2]
- **Over $12 Billion Market and Growing[3]**

Sources: [1] Pennington, Katie L and DeAngelis, Margaret M, Eye and Vision, Epidemiology of age-related macular degeneration (AMD): associations with cardiovascular disease phenotypes and lipid factors, Dec 22, 2016.
[2] Prall, F Ryan and Ciulla, Thomas A, Medscape: Exudative (Wet) Age-Related Macular Degeneration (AMD), June 16, 2022.
[3] Annual financial reports from Regeneron Pharmaceuticals, Inc. and Genentech/Roche.

Differentiated Approach to Targeting Wet AMD

CLS-AX target profile: maintain visual acuity without need for retreatment for potentially up to 6 months

Key CLS-AX Program Features	Potential CLS-AX Competitive Advantages
Opportunity for treatments that may have longer duration of action in multi-billion-dollar market	2 - 3x/year maintenance dosing compared to approved drugs*: LUCENTIS®: 12x/year | VABYSMO®: 3 - 6x/year EYLEA®: 6x/year | EYLEA HD®: 3 - 4x/year
Utilizes the same SCS Microinjector device as FDA-approved product XIPERE	Competitors' delivery devices differ from their approved products
Objective is to maintain efficacy and reduce the number of injections and required visits	Reduced treatment burden benefits patients, caregivers and payors with improved outcomes
Re-dosing incorporated in Phase 2b design to provide insight for Phase 3 program	Allowing re-dosing comparable to VABYSMO® and EYLEA HD® in real-world setting

*Dosing regimens are per respective product labels | EYLEA® and EYLEA HD® are registered trademarks of Regeneron Pharmaceuticals| LUCENTIS® and VABYSMO® are registered trademarks of Genentech/Roche

CLS-AX OASIS Phase 1/2a Extension Trial Demonstrated Excellent Safety Profile, Promising Durability and Biologic Effect

SAFETY DATA

- Excellent safety profile at all doses and timepoints
- No Serious Adverse Events
- No dose limiting toxicities
- No Adverse Events (AEs) from inflammation
- No AEs related to intraocular pressure

DURABILITY

- Patients not requiring additional therapy:
  - ≥ 3 Months: 11/12 (92%)
  - ≥ 4 Months: 10/12 (83%)
  - **≥ 6 Months: 8/12 (67%)**

BIOLOGIC EFFECT

- Stable mean Best Corrected Visual Acuity (BCVA)
- Stable mean Central Subfield Thickness (CST)
- On OCT, anatomical signs of TKI biologic effect observed in anti-VEGF treatment-experienced sub-responders

REDUCED TREATMENT BURDEN

- ≥72% reduction in treatment burden in OASIS, to 3 months:
- **77% to 85% reduction in treatment burden in Extension Study, to 6 months**

Source: Clearside data on file. Data from OASIS 3-Month and 6-Month Extension Data from Cohorts 3 & 4.

ODYSSEY Phase 2b Trial Topline Results Expected in Late Q3 2024

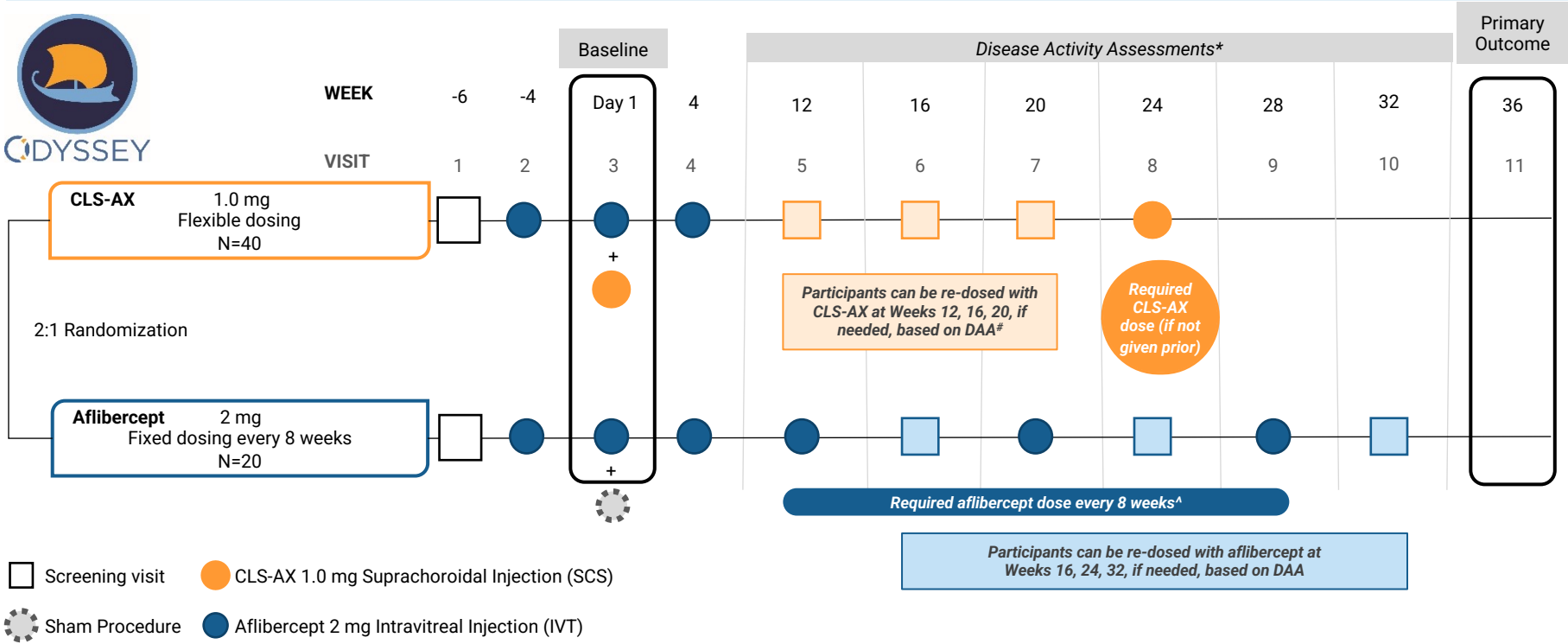
Trial Objectives:
Evaluate safety, efficacy & duration of CLS-AX in participants with wet AMD

- Primary Outcomes: Mean change in BCVA from Baseline to **Week 36**; safety & tolerability
- Secondary Outcomes: Other changes in visual function and retinal imaging; Need for supplemental treatment; Treatment burden as measured by total injections

Participant Profile:
60 Total with 2:1 Randomization (40 in CLS-AX arm & 20 in aflibercept arm)

- Treatment experienced participants with reading center confirmation of **persistent active disease**
- Protocol requires re-dosing with CLS-AX in study arm
  - Participants receive at least 2 doses of CLS-AX
  - Provides important data to plan Phase 3 in chronic disease

Multiple Dosing Requirement To Help Inform Phase 3 Development Program



#Participants can be re-dosed with CLS-AX up to every 12 weeks

* Disease Activity Assessments (DAA): Conducted at Week 12 through 32 to determine need for supplemental treatment.
# In CLS-AX arm, following 3 loading doses of aflibercept and initial dose of CLS-AX at Baseline, participants will receive CLS-AX at least every 24 weeks unless more frequently required based on DAA;
if disease is active and participant is <12 weeks since last CLS-AX injection, participant receives dose of aflibercept;
if disease is active and participant is >12 weeks since last CLS-AX injection, participant receives dose of CLS-AX.
^ In aflibercept arm, following 3 loading doses of aflibercept, participants will receive aflibercept on fixed dosing regimen every 8 weeks unless more frequently required based on DAA;
if disease is active, participant receives dose of aflibercept.

ODYSSEY Phase 2b Key Differences

Re-dosing with CLS-AX

Every patient in the CLS-AX group will be re-dosed at least once

36 Week Treatment Duration

Anticipated primary endpoint duration of Phase 3 wet AMD study based on FDA draft guidance

Other longer duration therapies (other TKIs, gene therapy) need rescue with anti-VEGF

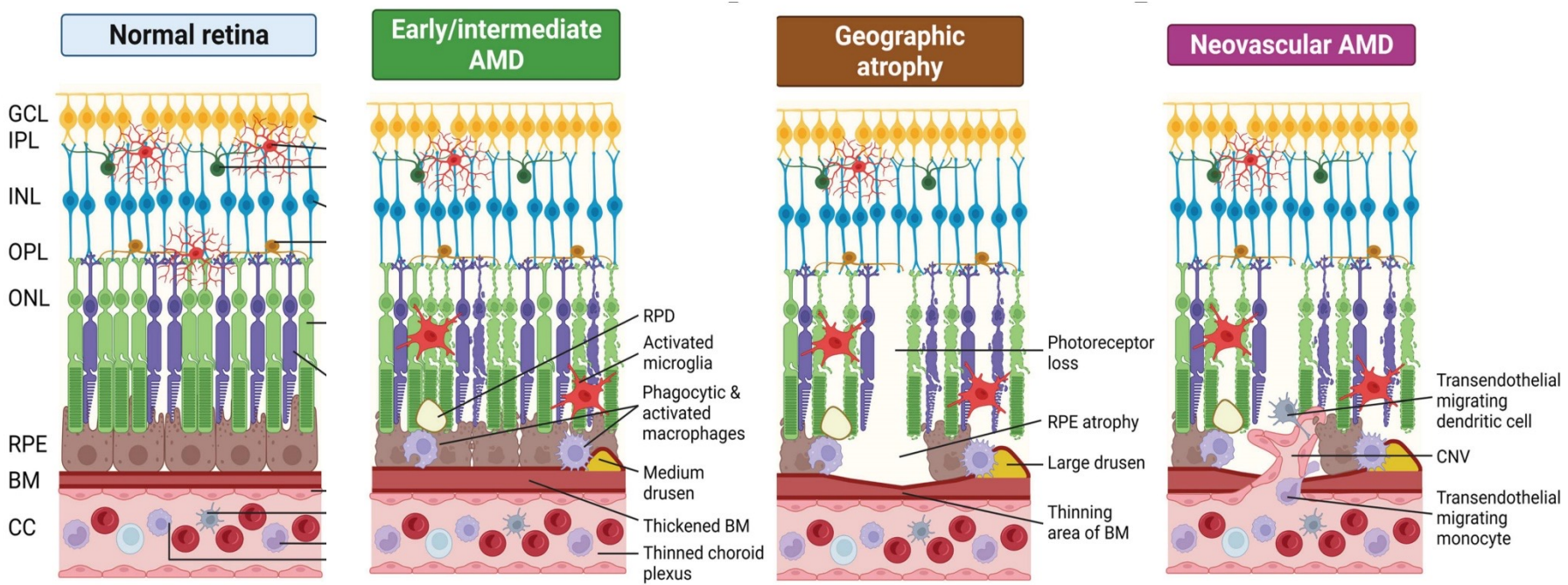
Harder to implement in clinical practice as patients do not want to come in for a scan every 4 weeks as in clinical trials

Our Target Success Measures for ODYSSEY

- No drug related ocular Severe Adverse Events
- Majority of participants reach Week 24 without re-treatment
- BCVA changes from baseline similar at all visits in particular at Week 24 and Week 36
- CST changes from baseline similar at all visits in particular at Week 24 and Week 36

Pipeline Expansion Opportunity in Geographic Atrophy

Pathology of Age-Related Macular Degeneration (AMD)

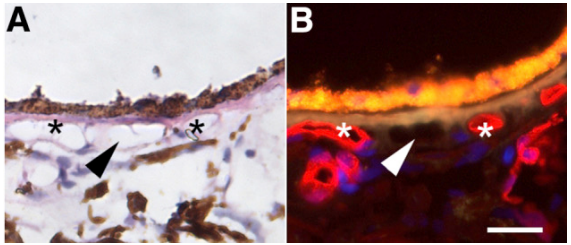


Wong JHC et al., Front Neurosci 16: 1009599

Geographic Atrophy is a Choroidal Disease

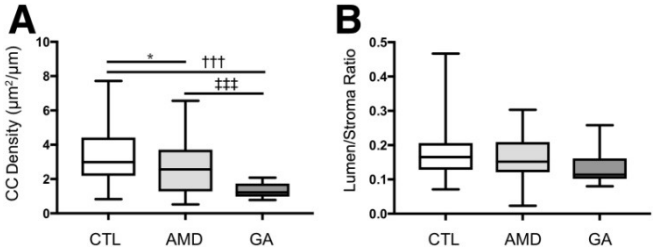
Choroidal Hypoxia Theory and Choriocapillaris are Damaged First

1



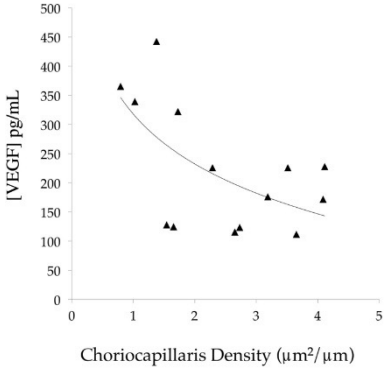
Choriocapillaris endothelial cells damage with ghost vessels before any significant RPE changes

2



- Choriocapillaris (CC) vascular density is significantly lower in GA donor
- No meaningful differences in vascular lumen area / stroma area

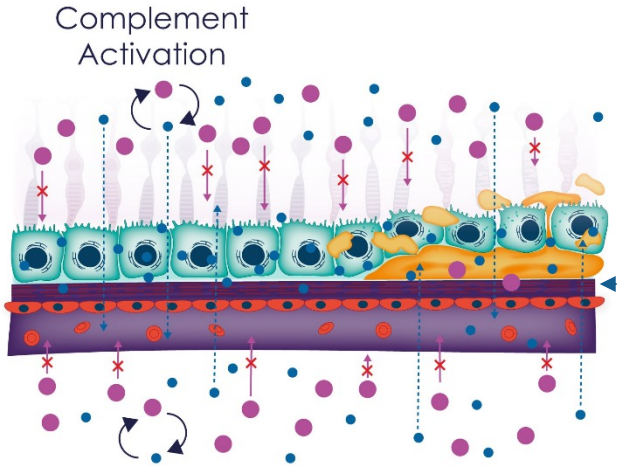
3



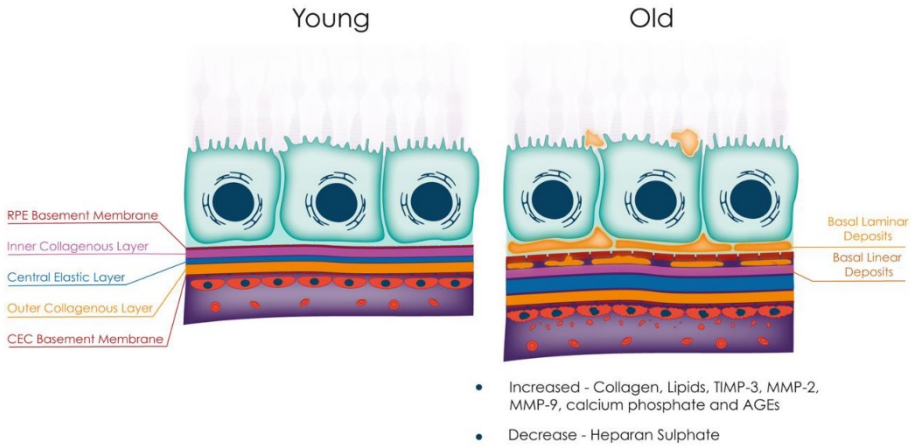
VEGF level increased with low vascular density support the choroidal hypoxia theory

RPE = Retinal Pigment Epithelium
Images modified from Sohn EH et al., Am J Path 2019: 189: 1473-80

Small Molecule Can Access the Diseased Area of the RPE and Choroid



Bruch's membrane



Larger molecules cannot get through Bruch's membrane

So, if given intravitreally, it can only treat the RPE side

Aging intensifies disease actions and even peptides might not be able to get through

Images modified from Hammadi et al JCM 2023, 12 (8), 2870

Potential Advantages of Suprachoroidal Delivery in Geographic Atrophy

Potential Target Product Profile (TPP) Aligns with SCS Suspension or SCS Gene Therapy

Able to reach the choroid first
- Fluid spreads circumferentially and posteriorly when injected within the suprachoroidal space, bathing the choroid, RPE, retina and adjacent areas with drug

Small molecules may have better efficacy than current therapies
- Potential to treat complement activation in both RPE and choroid

Suprachoroidal suspension/gene therapy may have longer duration (3 to 6 months)
- Intravitreal gene therapy may not achieve efficacy
- Subretinal has additional risks

Less invasive, in-office procedure
- Systemic therapy may be effective, but potential infection risks in this elderly population
- Local ocular therapy may have fewer adverse events

Targeted delivery compartmentalized to the posterior segment
- Potentially fewer adverse events

Strategic SCS® Collaborations & Catalysts

Multiple Validating Partnerships with Upcoming Catalysts

XIPERE® PARTNERS

BAUSCH + LOMB

Territory: U.S. and Canada

- ✓ **Q1 2024:** Granted Permanent U.S. CPT code

arctic VISION

Territory: Asia-Pacific

- ✓ **Q3 2024:** NDAs Accepted in Australia & Singapore
- ✓ **Q3 2024:** Positive Results from Phase 3 UME trial in China

SCS MICROINJECTOR DEVELOPMENT PARTNERS

REGENXBIO

Gene Therapy

ABBV-RGX-314: Conducting trials in wet AMD, DR, & DME

- **Q3 2024:** Enrolling new cohort at dose level 4 in P2 wet AMD
  Enrolling new cohort of DME patients in P2
- **1H 2025:** Initiate global pivotal trial in DR

aura

Ocular Oncology

Bel-sar: Ongoing Phase 3 trial in choroidal melanoma

- **2024:** Actively enrolling

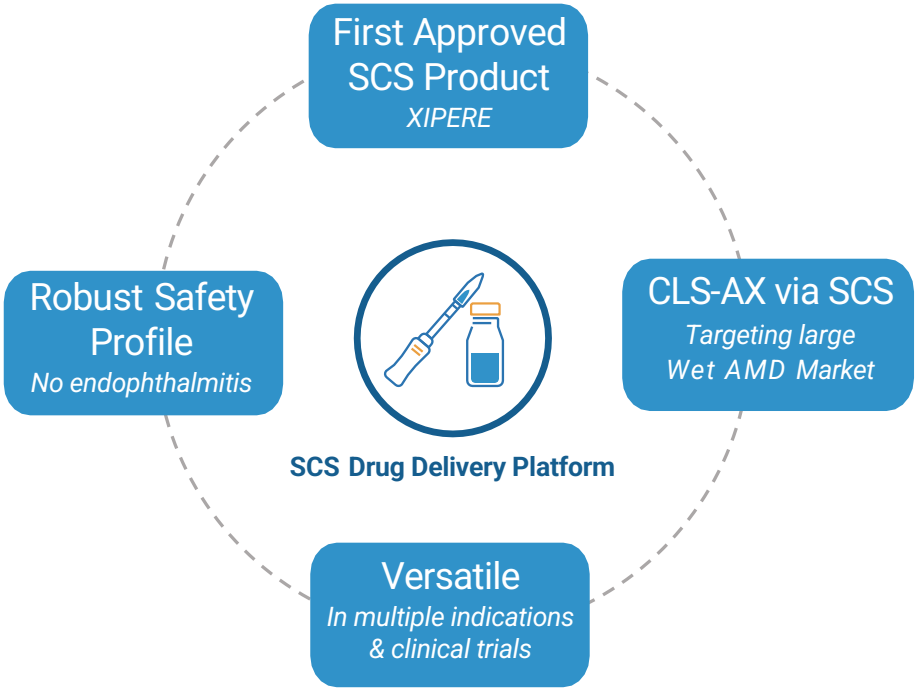
bio cryst®

Plasma Kallikrein Inhibitor

Avoralstat: Preclinical work ongoing in DME

- **2024:** Conduct formulation and nonclinical work
- **2025:** Begin clinical trials

Innovative and Experienced Leader in Suprachoroidal Drug Delivery



Upcoming Potential Catalysts

CLS-AX (axitinib injectable suspension)

Q3 2024: ODYSSEY Phase 2b Topline Results

H2 2024: Phase 3 Planning

Medical/Scientific meeting presentations

✓ **Q1 2024:** Macula Society; Next Generation Ophthalmic Drug Delivery Summit

✓ **Q2 2024:** Retina World Congress; Clinical Trials at the Summit

Q4 2024: AAO; Asia-Pacific Vitreo-Retina Society; Floretina

Publications

✓ **Q2 2024:** Expert panel practice guidelines on SCS® delivery in *Retina*

✓ **H2 2024:** OASIS Data in *Ophthalmology Science*

CLEARSIDE BIOMEDICAL

Nasdaq: CLSD

Appendix

ODYSSEY Trial Focused on Participants with Active Disease

Key Inclusion Criteria

- Diagnosed with neovascular AMD (wet AMD) within 36 months of screening
- History of 2 to 4 anti-VEGF treatments in 6 months before screening and response to prior anti-VEGF treatment for wet AMD
- **Reading center confirmation of persistent active disease**; BCVA of 20 to 80 letters#

Dosing Regimen

- **Participants in both arms will receive 3 aflibercept (2 mg) loading doses (2nd dose = Baseline visit)**
- **CLS-AX arm will receive one dose of CLS-AX (1.0 mg) at Baseline visit**
- Unless DAA requires more frequent dosing, **CLS-AX arm dosed at least every 24 weeks** & aflibercept arm dosed every 8 weeks

Disease Activity Assessments (DAA)

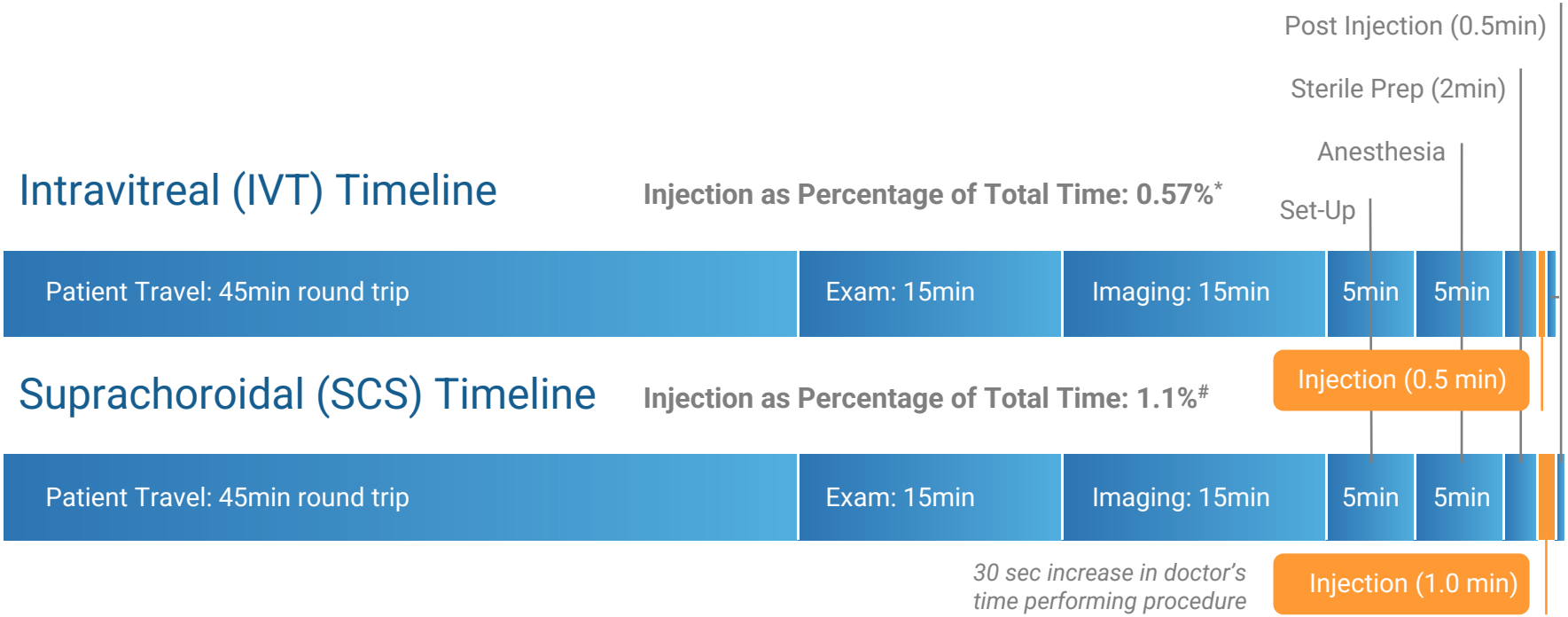
- **Monthly DAA: Weeks 12 through 32 in both arms** to determine if there is need for supplemental treatment
- Supplemental treatment criteria : Decrease in BCVA, increase in CST, or new or worsening vision-threatening hemorrhage due to wet AMD

Criteria for Supplemental Treatment

- BCVA reduction of >10 letters from Baseline measurement
- Increase in CST of >100 microns on SD-OCT from Baseline measurement
- BCVA reduction of > 5 letters from Baseline measurement AND increase in CST of >75 microns on SD-OCT from Baseline measurement
- Presence of new or worsening vision-threatening hemorrhage

Aflibercept is dosed via intravitreal injection (IVT); CLS-AX is dosed via suprachoroidal injection.
Using the Early Treatment Diabetic Retinopathy Study (ETDRS) measurement.
Abbreviations: BCVA (Best Corrected Visual Acuity) | CST (Central Subfield Thickness) | SD-OCT (Spectral Domain Optical Coherence Tomography).

IVT vs SCS Procedure Time Comparison in Optimized High-Volume Practice



*IVT Injection as % of Total Time: 0.5 min / (45 + 15 + 15 + 5 + 5 + 2 + 0.5 + 0.5) min = 0.57%

#SCS Injection as % of Total Time: 1.0 min / (45 + 15 + 15 + 5 + 5 + 2 + 1.0 + 0.5) min = 1.1%