September 12, 2024

Innovating the future of cancer care to cure patients and preserve organ function

aura

Legal disclosure

This presentation contains forward-looking statements, all of which are qualified in their entirety by this cautionary statement. Many of the forward-looking statements contained herein can be identified by the use of forward-looking words such as "may", "anticipate", "believe", "could', "expect", "should", "plan", "intend", "estimate", "will", "potential" and "ongoing", among others, although not all forward-looking statements contain these identifying words. These forward-looking statements include statements about the initiation, timing, location, progress, results and cost of our research and development programs and our current and future preclinical studies and clinical trials, including statements regarding the timing of initiation and completion of studies or trials and related preparatory work, the period during which the results of the trials will become available and our research and development programs; statements regarding our expectations for an improved quality of life of patients after treatment with bel-sar; our ability to obtain and maintain regulatory approval of our product candidates; the size and growth potential of the markets for our product candidates and our ability to serve those markets; and our expected cash runway into the second half of 2026.

Except as otherwise noted, these forward-looking statements speak only as of the date of this presentation, and we undertake no obligation to update or revise any of such statements to reflect events or circumstances occurring after this presentation. Because forward-looking statements are inherently subject to risks and uncertainties, some of which cannot be predicted or quantified and some of which are beyond our control, you should not rely on these forward-looking statements as predictions of future events. For a discussion of these and other risks and uncertainties, and other important factors, any of which could cause our actual results to differ from those contained in the forward-looking statements, see the section entitled "Risk Factors" in our most recent Annual Report on Form 10-K and Quarterly Report on Form 10-Q filed with the Securities and Exchange Commission (SEC), as well as discussions of potential risks, uncertainties, and other important factors in our other subsequent filings with the SEC, which are available on the SEC's website at www.sec.gov. The events and circumstances reflected in our forward-looking statements may not be achieved or occur and actual results could differ materially from those projected in the forward-looking statements. We caution you not to place undue reliance on the forward-looking statements contained in this presentation.

This presentation discusses product candidates that are under preclinical or clinical evaluation and that have not yet been approved for marketing by the U.S. Food and Drug Administration (FDA) or any other regulatory authority. Until finalized in a clinical study report, clinical trial data presented herein remain subject to adjustment as a result of clinical site audits and other review processes. No representation is made as to the safety or effectiveness of these product candidates for the use for which such product candidates are being studied.

This presentation shall not constitute an offer to sell or the solicitation of an offer to buy, nor shall there be any sale of these securities in any state or other jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such state or other jurisdiction.

Well positioned with multiple near-term clinical catalysts

Precision therapy platform

Developing a novel class of drugs called virus-like drug conjugates (VDCs)

Direct tumor cell killing and immune activation

Focal treatment approach to deliver durable response

Late-stage clinical development

Phase 3 in primary uveal melanoma ongoing

FDA SPA agreement

Large market opportunity in areas of unmet need

Ocular oncology
>60,000 patients/yr (US/EU)[1–7]

Urologic oncology
~500,000 patients/yr (globally)[8]

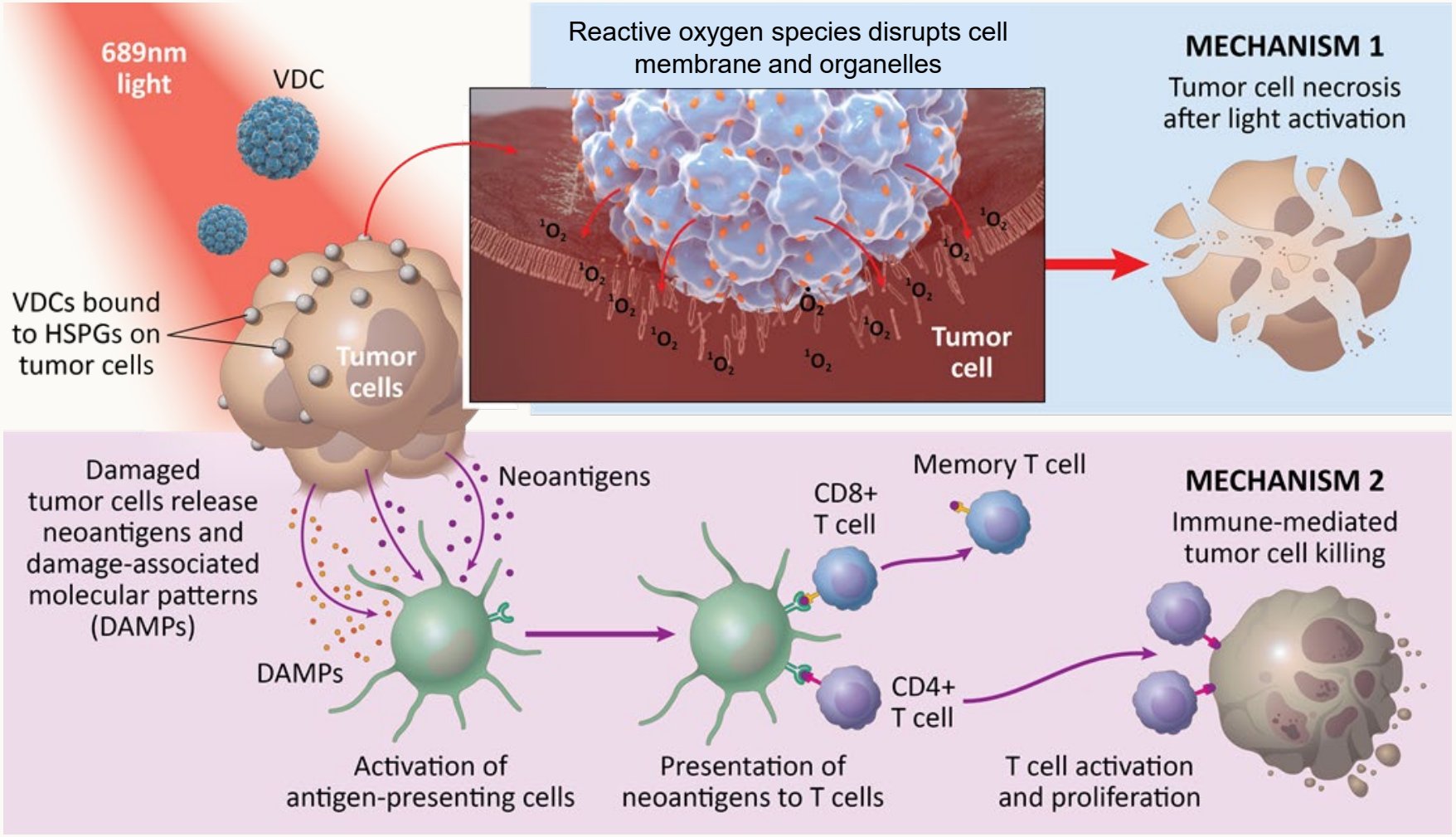
Key upcoming catalysts

Multiple clinical data readouts expected within next 6–12 months, including early phase 1 bladder data

Cash expected to fund operations into 2H 2026

1. Yu G-P et al. *Am J Ophthalmol.* 2003;135(6):800-6. **2.** Triay E et al. *Br J Ophthalmol.* 2009;93(11):1524-8. **3.** Newton R et al. *Lancet.* 1996;347(9013):1450-1. **4.** Dalvin LA. *Br J Ophthalmol.* 2018;102(12):1728-1734. **5.** Sun EC et al. *Cancer Epidemiol Biomarkers Prev.* 1997;6(2):73-7. **6.** Epidemiology analysis for choroidal melanoma and choroidal metastasis by ClearView Healthcare Partners and Putman. **7.** American Cancer Society. Key statistics for retinoblastoma. Available at: https://www.cancer.org/cancer/types/retinoblastoma/about/key-statistics.html. Accessed Sept 5, 2024. **8.** Bladder cancer. Putnam & Assoc. Epidemiology Analysis.
FDA, United States Food and Drug Administration; **SPA**, Special Protocol Assessment.

Bel-sar has a novel dual mechanism of action



Disruption of tumor cell membrane and pro-immunogenic cell death by necrosis

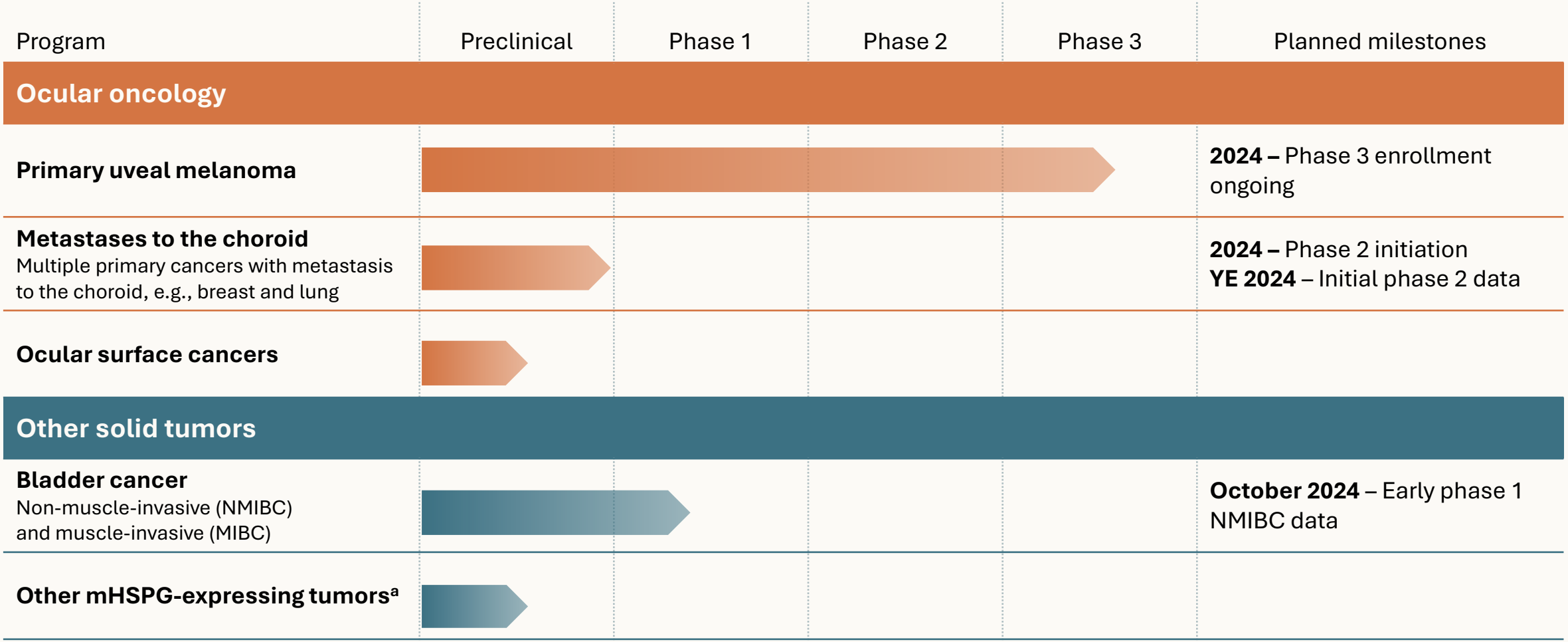
T cell activation and immune-mediated tumor cell killing

Potential key differentiation:

- Genetic mutation-agnostic
- Binding and potency across multiple cancer cell types from different tissue origins

Kines RC, et al. *Int J Cancer.* 2016;138(4):901–11. Kines RC, et al. *Mol Cancer Ther.* 2018;17(2):565–74. Kines RC, et al. *Cancer Immunol Res.* 2021;9:693–706.
DAMPs, damage-associated molecular patterns; **HSPG**, heparan sulfate proteoglycan; **VDC**, virus-like drug conjugate.

Clinical pipeline across multiple solid tumor indications



*Virus-like drug conjugates (VDCs) bind to a subset of modified tumor associated glycosaminoglycans (GAGs) that are part of the heparan sulphate chain of heparan sulfate proteoglycans (HSPGs).[1]

1. Kines RC, and Schiller JT. *Viruses.* 2022;14(8):1656. **mHSPG**, modified heparan sulphate proteoglycan; **MIBC**, muscle invasive bladder cancer; **NMIBC**, non-muscle-invasive bladder cancer; **YE**, year-end.

Bel-sar opportunities in ocular oncology represent a multi-billion-dollar addressable market

- With only ~100 ocular oncologists in the US/EU, a global launch may be accomplished with a small (<20) field-based team

~66,000 patients/year

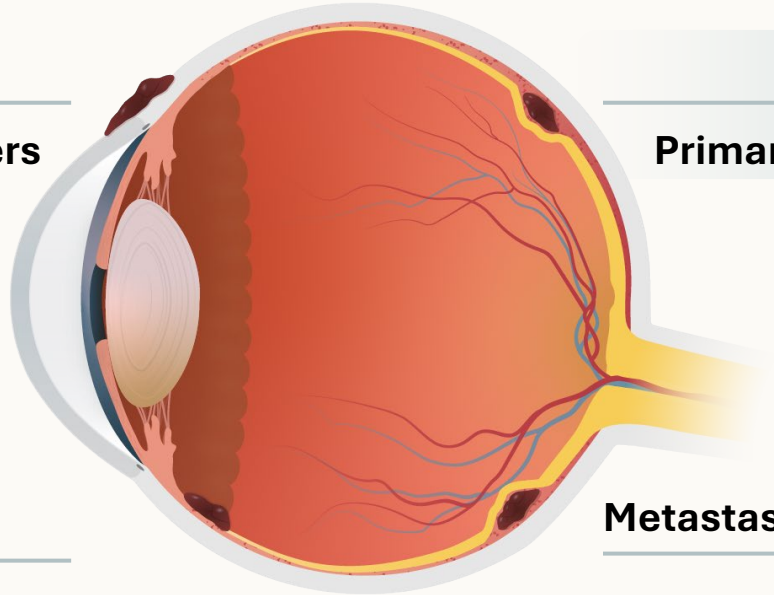
Ocular oncology franchise total addressable market (US/EU)

~35,000/yr[a,1–5]

Ocular surface cancers

~11,000/yr[6]

Primary uveal melanoma



Retinoblastoma

~500/yr[7]

Metastases to the choroid

~20,000/yr[6]

[a]Includes conjunctival melanoma, primary acquired melanosis, squamous cell carcinoma and ocular surface squamous neoplasia.[1-5]

1. Yu G-P et al. *Am J Ophthalmol.* 2003;135(6):800-6. **2.** Triay E et al. *Br J Ophthalmol*. 2009;93(11):1524-8. **3.** Newton R et al. *Lancet*. 1996;347(9013):1450-1. **4.** Dalvin LA. *Br J Ophthalmol*. 2018;102(12):1728-1734. **5.** Sun EC et al. *Cancer Epidemiol Biomarkers Prev.* 1997;6(2):73-7. **6.** Epidemiology analysis for choroidal melanoma and choroidal metastasis by ClearView Healthcare Partners and Putman. **7.** American Cancer Society. Key statistics for retinoblastoma. Available at: https://www.cancer.org/cancer/types/retinoblastoma/about/key-statistics.html. Accessed Sept 5, 2024.

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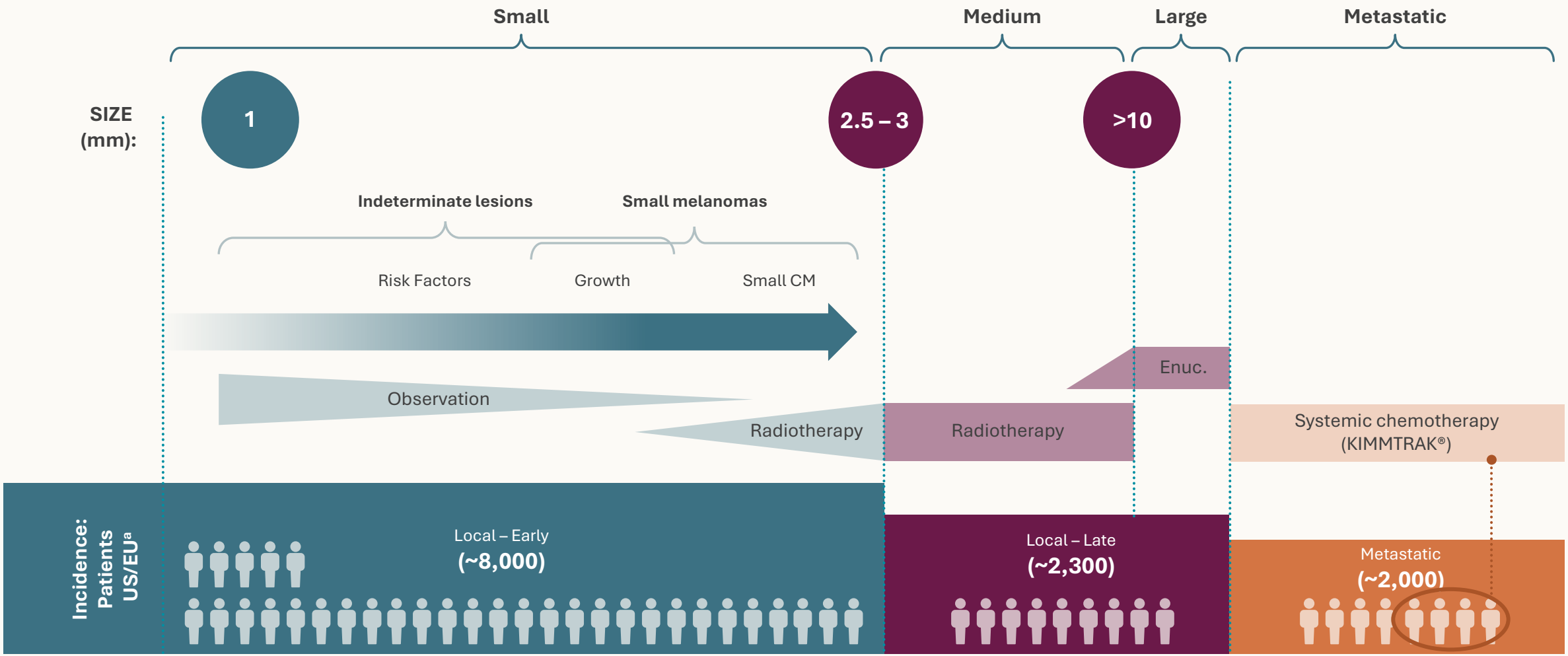
Current treatment paradigm for primary uveal melanoma



[a]Each figure represents ~250 persons.

Shields CL et al. Choroidal and ciliary body melanoma. Available at: https://eyewiki.aao.org/Choroidal_and_Ciliary_Body_Melanoma Accessed September 9, 2024. Singh AD, et al. *Ophthalmology.* 2005;112(10):1784–89. Epidemiology analysis for choroidal melanoma and choroidal metastasis by ClearView Healthcare Partners and Putman. **CM**, choroidal melanoma; **Enuc.**, enucleation.

Participants on today's call

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Final Results of a Phase 2 Trial of Suprachoroidal Administration of Belzupacap Sarotalocan (bel-sar, AU-011) for Choroidal Melanoma

Ivana K. Kim, MD, MBA

On behalf of the bel-sar phase 2 investigators

Director Ocular Melanoma Center
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Massachusetts Eye and Ear
Harvard Medical School

Retina Society 57th Annual Meeting

September 2024

Mass General Brigham
Mass Eye and Ear

HARVARD MEDICAL SCHOOL | DEPARTMENT OF Ophthalmology

Disclosures

Presenter Disclosures

- Allergan (Research support)
- Genentech (Consultant)
- Kodiak Sciences (Consultant)

Study Disclosures

The study was conducted and funded by Aura Biosciences, Inc.

Third-party medical writing support was funded by Aura Biosciences, Inc. and provided by Dionne Turnbull, PhD, of Koahana, Inc.

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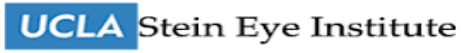

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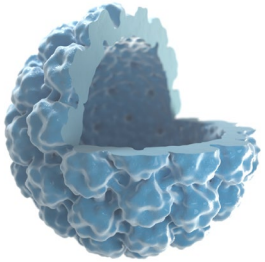
We would like to thank all patients who participated in the phase 2 clinical trial of bel-sar for choroidal melanoma

Bel-sar (AU-011) is a VDC designed with dual specificity to reduce potential for off-target effects:

- Selectively binds to tumor cells (not to local healthy tissue)
- Activated only at site of laser administration

Virus-like drug conjugates (VDCs) are a novel technology platform

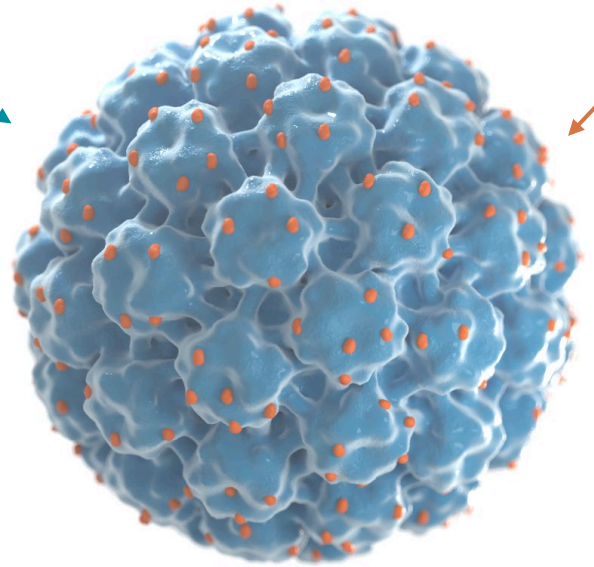
Virus-like particle (VLP)



- Non-replicating viral capsid (no genetic material)
- Derived from HPV
- Multivalent binding to mHSPGs on solid tumor cells

Light-activatable molecules

- VLP conjugated to ~200 molecules of phthalocyanine dye
- Activated by standard NIR laser



Bel-sar (AU-011)

VDCs selectively deliver direct tumor cell killing and immune activation

Fleury MJJ et al. *Mol Biotechnol.* 2014;56(5):479-86. Kines RC, et al. *Int J Cancer.* 2016;138(4):901–11. Kines RC, et al. *Mol Cancer Ther.* 2018;17(2):565–74. Kines RC, et al. *Cancer Immunol Res.* 2021;9:693–706. **HPV**, human papillomavirus; **mHSPG**, modified heparan sulphate proteoglycan; **NIR**, near infrared; **VDC**, virus-like drug conjugate; **VLP**, virus-like particle.

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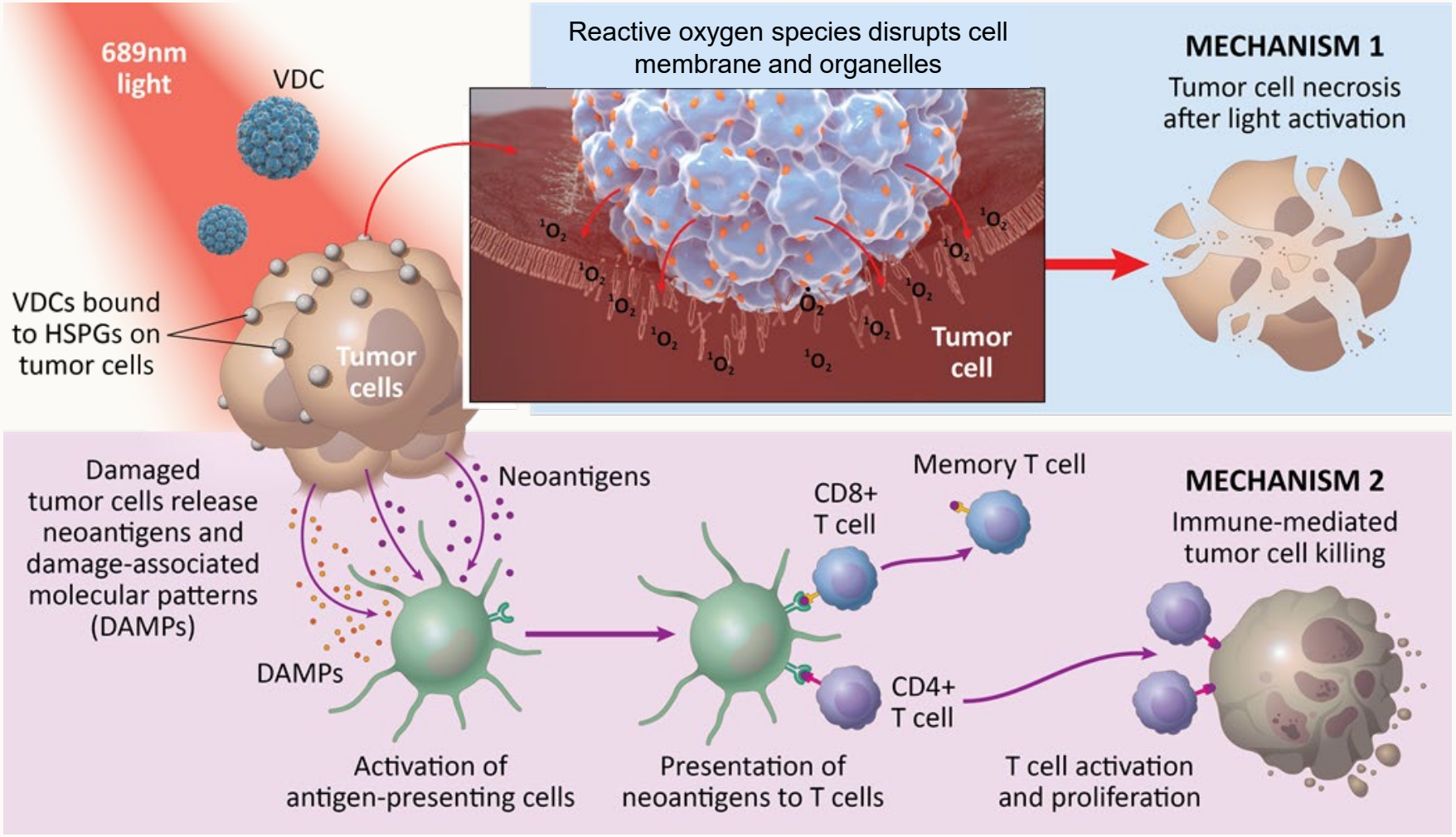
Bel-sar has a novel dual mechanism of action



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DAMPs, damage-associated molecular patterns; **HSPG**, heparan sulfate proteoglycan; **VDC**, virus-like drug conjugate.

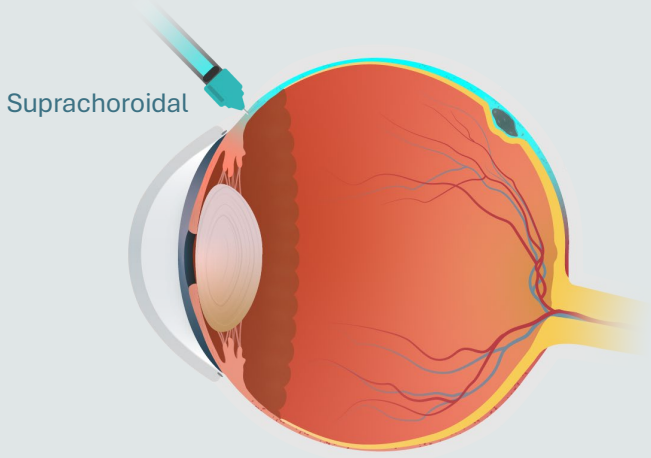
Bel-sar is in phase 3 clinical development for the treatment of choroidal melanoma

Goals of Treatment

- Local tumor control
- Preservation of vision
- No radiation-related morbidity
- Opportunity to treat early and reduce risk of metastasis
- Improvement in safety and quality of life

In-office procedure

Bel-sar is delivered by simple suprachoroidal injection



Two ~2-minute injections
(30 minutes apart)

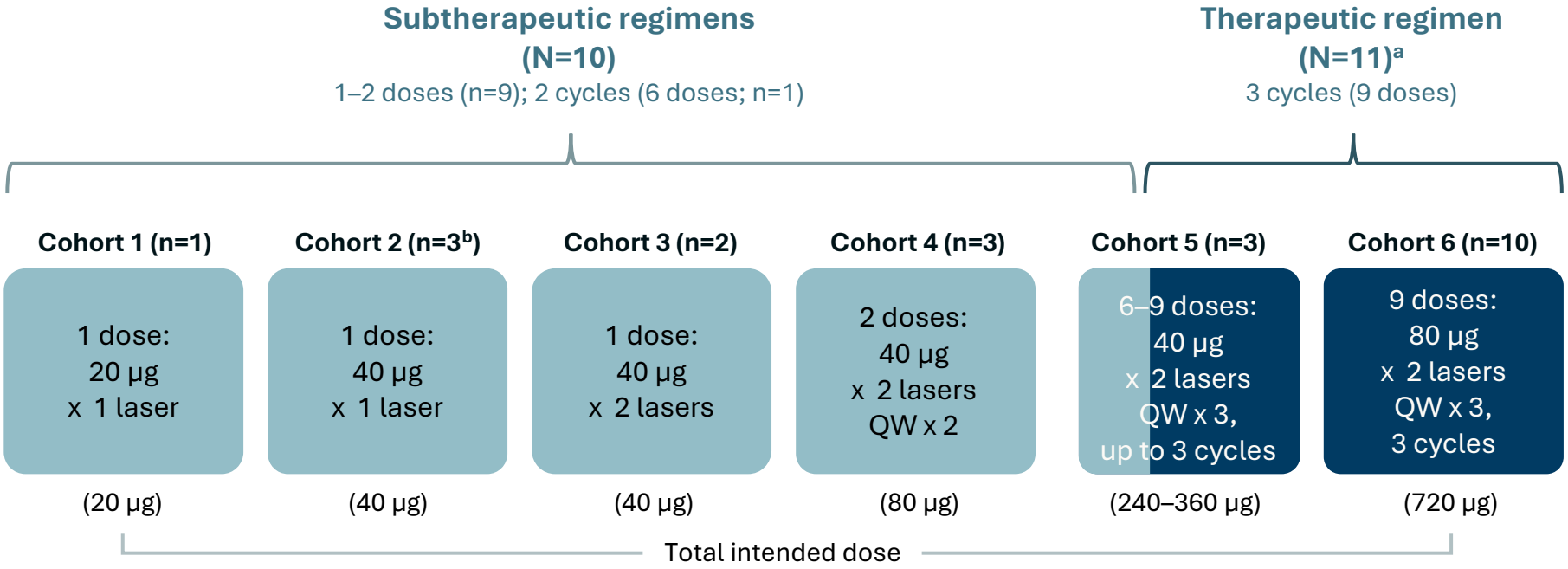
Light activation with standard ophthalmic laser

Two ~5-minute lasers
(10–15 minutes apart)

Phase 2 trial of bel-sar for choroidal melanoma: Open-label, dose-escalation with suprachoroidal administration

Trial design – 22 participants enrolled

Patient population representative of early-stage disease: Small choroidal melanoma and indeterminate lesions



Endpoints

Tumor progression
Growth in tumor height ≥0.5 mm or ≥1.5 mm in LBD relative to baseline

Visual acuity loss
≥15 letters decrease from baseline

Tumor thickness growth rate
Change in rate of growth of tumor thickness

Goal: To determine safety, optimal dose and therapeutic regimen with suprachoroidal administration

One cycle = Doses on days 1, 8, and 15.
[a]12 patients enrolled, 1 patient who discontinued after 1 cycle due to unrelated SAEs is not included in data analysis (n=11). [b]Cohort 2: 2 participants were planned; third participant was additionally enrolled due to dose error in 1 participant.
LBD, largest basal diameter; **QW,** every week; **SAE,** serious adverse event. ClinicalTrials.gov Identifier, NCT04417530: AU-011-202. **Data on file, Aura Biosciences.**

Baseline characteristics

All study participants

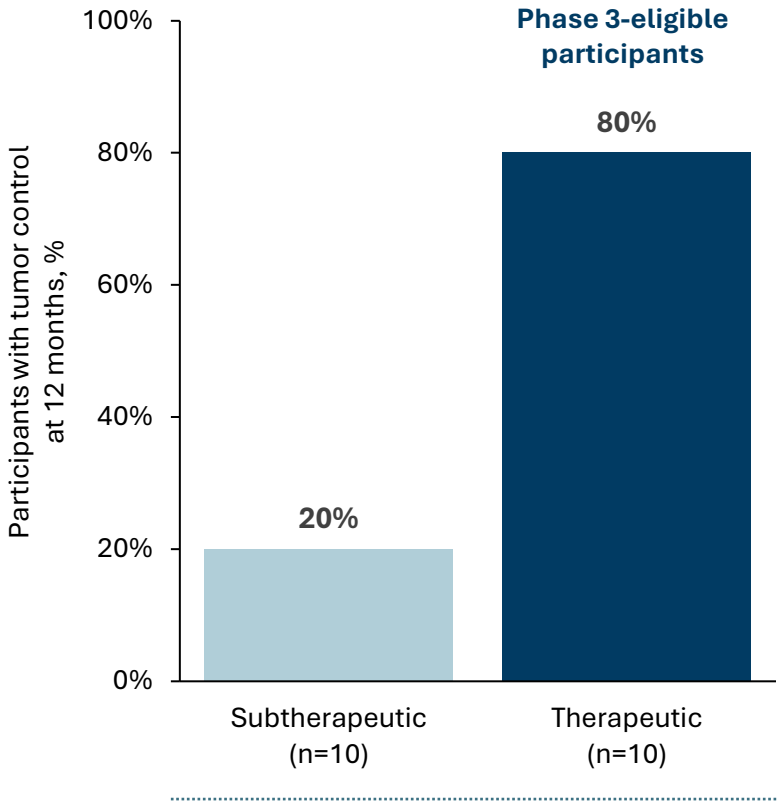
	All patients (n=22)
Female (%)	54.5
White, not Hispanic or Latino (%)	100
Subretinal fluid at screening (%)	100
Orange pigment at screening (%)	86.4
Documented growth prior to screening (%)	86.4% *(100% of therapeutic group)*
Mean age at screening (years, ± SD)	59.2 (±16.5)
Mean baseline BCVA in study eye (ETDRS letters, ± SD)	83.2 (±7.2)
Mean baseline LBD (mm, ± SD)	8.5 (±1.4)
Mean baseline tumor thickness (mm, ± SD)	2.0 (±0.5)
Mean tumor distance to closest vision-critical structure at screening (mm, ± SD)	2.0 (±2.3)
Tumors at high risk for vision loss (%)[a]	73% *(80% (8/10) of therapeutic group)*

[A] High risk for vision loss defined as tumor edge within either 3 mm of foveal center or 3 mm of optic disc edge.
BCVA, best-corrected visual acuity; **ETDRS**, Early Treatment Diabetic Retinopathy Study; **LBD**, largest basal diameter.

High local complete response rate at 12 months follow-up

80% tumor control rate[a] at 12 months among the 10 phase 3-eligible patients in the 3-cycle cohorts

High Tumor Control Rates with Therapeutic Regimen in Phase 3-Eligible Patients with Active Growth

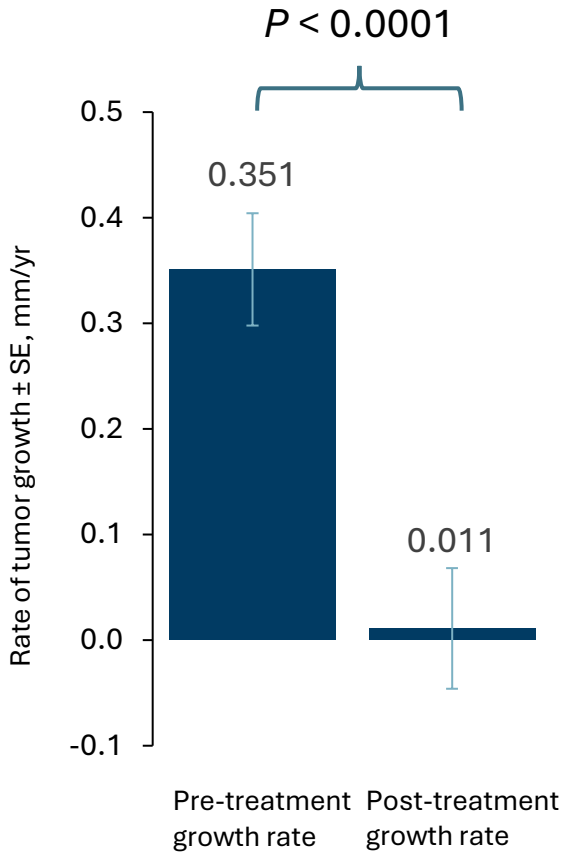


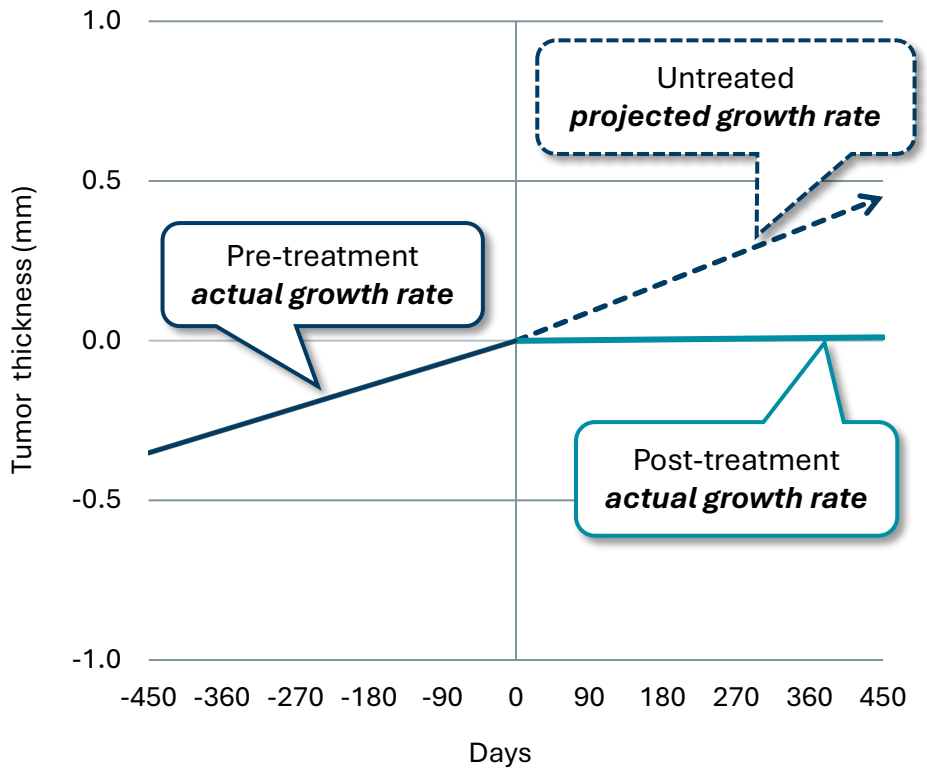
Dose/ Regimen	n	Tumor control rate, %
Subtherapeutic regimen		
≤2 cycles	10	20% (2/10)
Therapeutic regimen		
3 cycles, phase 3-eligible[b]	10	80% (8/10)

[a]Local complete response, or CR, in early-stage choroidal melanoma is described as tumor control and complete arrest of tumor growth by ocular oncologists.
[b]One participant with circumpapillary tumor that did not meet phase 3 criteria is not included.
LBD, largest basal diameter. ClinicalTrials.gov Identifier, NCT04417530: AU-011-202. **Data on file, Aura Biosciences.**

Rate of tumor growth with bel-sar treatment

In phase 3-eligible patients, the 3-cycle regimen resulted in cessation of growth among responders (N=8)



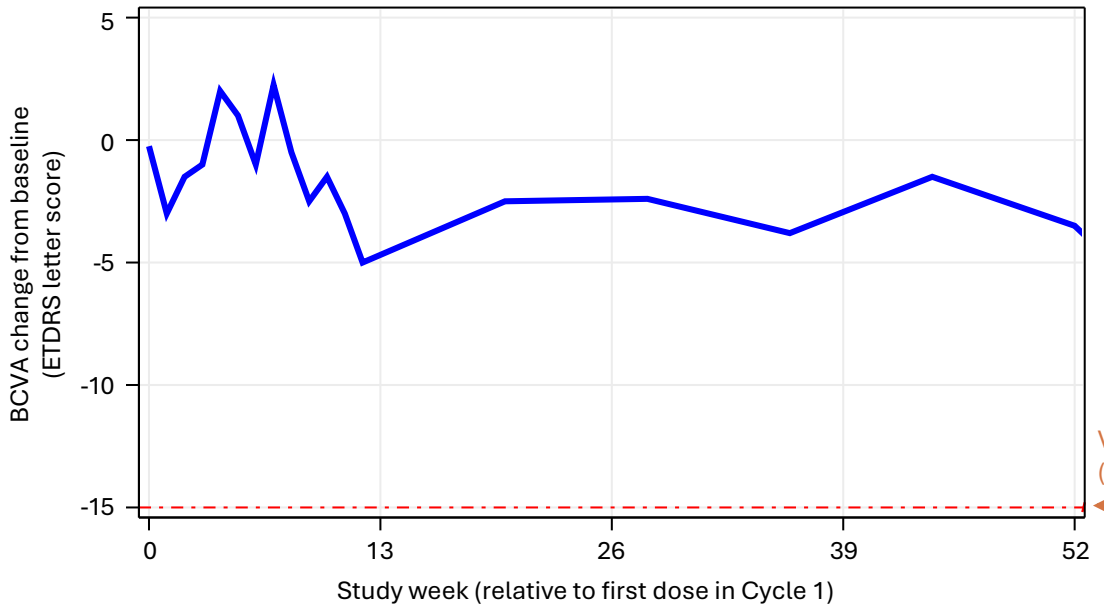


Tumor thickness growth rates/slopes estimated using Mixed Models for Repeat Measures (MMRM); random intercept and slope model for Historical and Study periods. ClinicalTrials.gov Identifier, NCT04417530: AU-011-202. **Data on file, Aura Biosciences.**

Visual acuity was preserved in 90% of Phase 3-eligible patients receiving a bel-sar therapeutic regimen

- 80% were at high risk of vision loss with tumors < 3 mm to the fovea or optic nerve
- 90% visual acuity preservation supports the potential for bel-sar to be a front-line therapy for early-stage disease

Median change in BCVA in phase 3-eligible participants with therapeutic regimen (N=10)[a]



- Vision preservation in 9/10 participants
- Loss of 18 letters in one patient with progression of preexisting juxtafoveal fluid under fovea

Populations	Patients (n)	Vision failures[b] (n)	Vision preservation rate (%)
All dose cohorts			
All treated patients	22	1	95%
Subtherapeutic			
≤2 cycles	10	0	100%
Therapeutic			
3 cycles and phase 3-eligible[a]	10	1	90%

[a]One participant with circumpapillary tumor that did not meet phase 3 criteria is not included. [b]Vision acuity loss defined as ≥15 letters decrease from baseline in ETDRS BCVA letter score.
BCVA, best-corrected visual acuity; **ETDRS,** Early Treatment Diabetic Retinopathy Study.
ClinicalTrials.gov Identifier, NCT04417530: AU-011-202. **Data on file, Aura Biosciences.**

Bel-sar treatment had a highly favorable safety profile

- No posterior inflammation
- No treatment-related SAEs
- No grade 3–5 treatment-related AEs

Phase 2 safety outcomes (bel-sar/laser-related)

	All treated participants (n=22)			
Drug/laser-related adverse events	**Grade I**	**Grade II**	**Grade III-V**	**Total**
Anterior chamber inflammation	4 (18.2%)	0	0	4 (18.2%)
Anterior chamber cell	2 (9.1%)	0	0	2 (9.1%)
Eye pain	2 (9.1%)	0	0	2 (9.1%)
Anisocoria	1 (4.5%)	0	0	1 (4.5%)
Conjunctival edema	1 (4.5%)	0	0	1 (4.5%)
Cystoid macular edema	1 (4.5%)	0	0	1 (4.5%)
Pupillary reflex impaired	1 (4.5%)	0	0	1 (4.5%)
Salivary gland enlargement	0	1 (4.5%)	0	1 (4.5%)

Table presents participants with AEs related to bel-sar or laser by severity and overall; participants with >1 AE are counted in the highest severity group

AE, adverse event; **SAE,** serious adverse event.
ClinicalTrials.gov Identifier: NCT04417530; AU-011-202. **Data on file, Aura Biosciences.**

Bel-sar treatment had a highly favorable safety profile

- No posterior inflammation
- No treatment-related SAEs
- No grade 3–5 treatment-related AEs

Anterior chamber inflammation/cell was the most common treatment-related adverse event

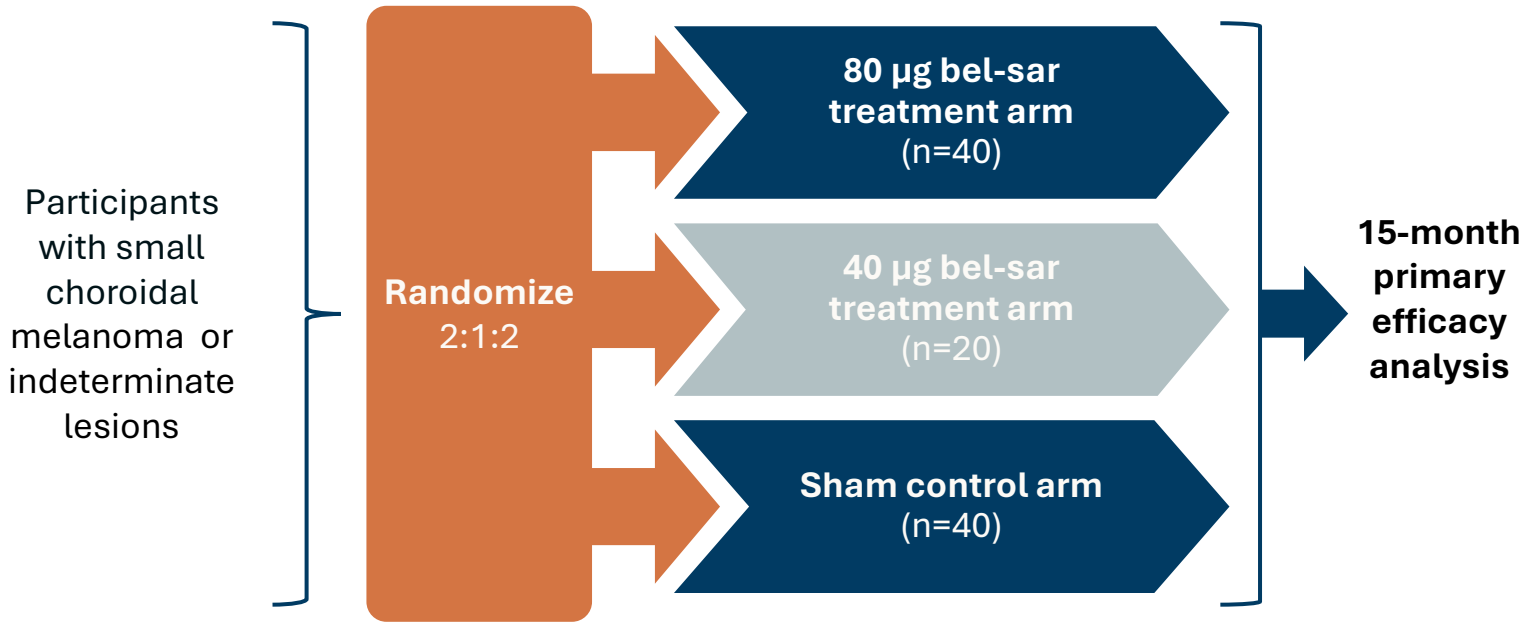
- **Most were “trace”/Grade 1**
- Median duration 6 days (IQR: 3–10 days)
- All resolved with **no or minimal treatment**
  - If topical steroids given, median treatment duration 6 days
- Not all patients who developed anterior chamber inflammation continued to do so with subsequent treatments

AE, adverse event; **SAE,** serious adverse event.
ClinicalTrials.gov Identifier: NCT04417530; AU-011-202. **Data on file, Aura Biosciences.**

Bel-sar for small choroidal melanoma or indeterminate lesions: Global Phase 3 CoMpass trial now enrolling

Target enrollment ~100 participants globally

Anticipated sites in North America, Europe, Middle East and Asia-Pacific Regions



Primary endpoint

Time to tumor progression

Increase in tumor thickness ≥0.5 mm or ≥1.5 mm in LBD

First key secondary endpoint

Time to composite endpoint: Tumor progression or visual acuity failure

Increase in tumor thickness ≥0.5 mm or ≥1.5 mm in LBD OR ≥15 decrease in ETDRS-BCVA letter score from baseline

Received **fast track** and **orphan drug designations**

An **SPA agreement** indicates concurrence by the FDA that the design of the trial can adequately support a regulatory submission

BCVA, best-corrected visual acuity; **ETDRS,** Early Treatment Diabetic Retinopathy Study; **LBD**, largest basal diameter; **SPA**, Special Protocol Assessment.
ClinicalTrials.gov Identifier: NCT06007690; AU-011-301.

Phase 2 final data represented using planned phase 3 endpoints

Kaplan-Meier analysis simulation of time-to-event

Time to tumor progression

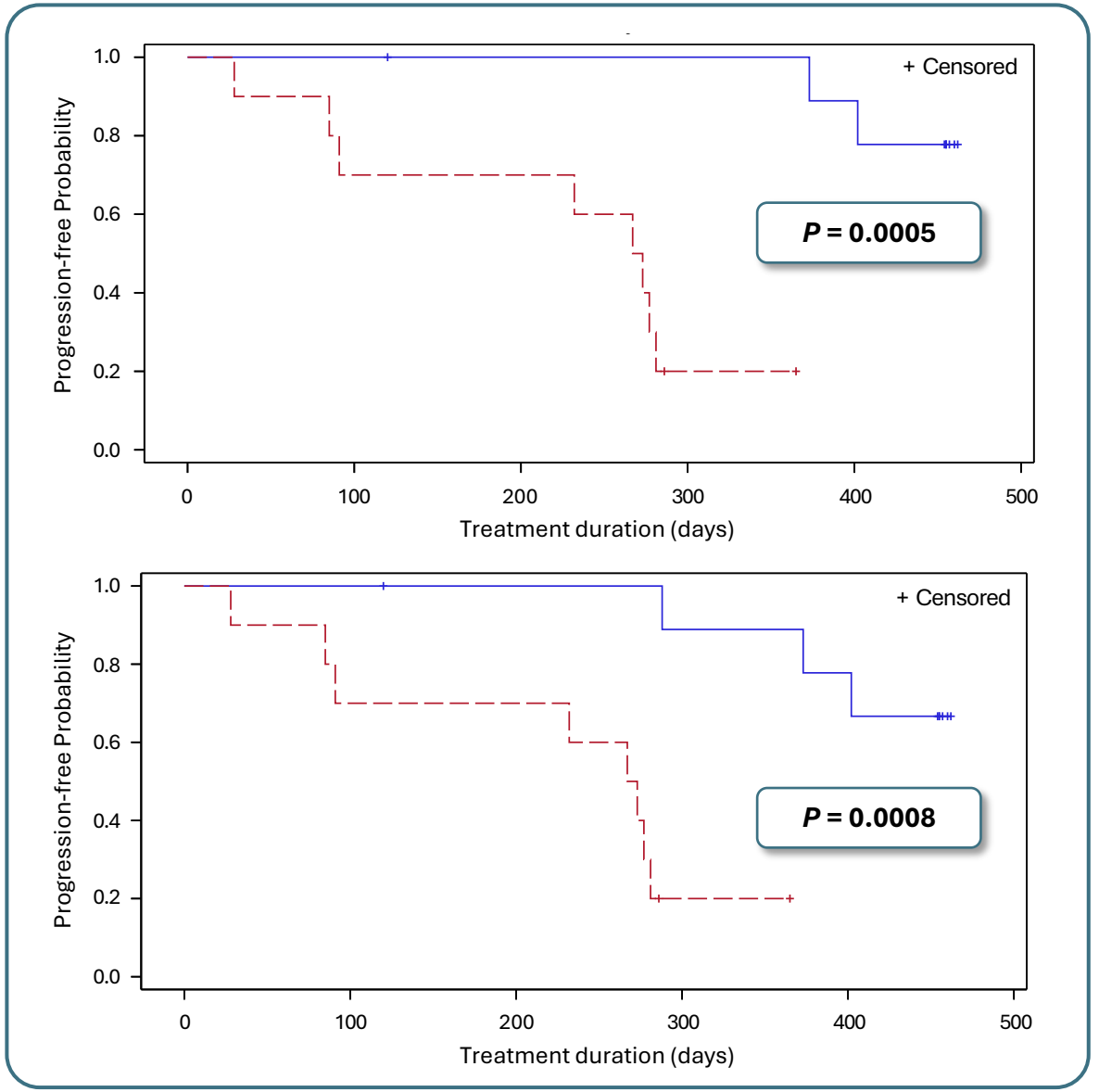
Change from baseline in thickness ≥0.5 mm; or in LBD ≥1.5 mm confirmed by at least one repeat assessment

Therapeutic n=10

Subtherapeutic n=10

Time to composite endpoint

Time to tumor progression or vision acuity failure (≥15 letter loss in ETDRS-BCVA), whichever occurs earlier



Study duration 12 months. Participants either had an event or were censored at the last visit; some had their Week 52 visit after 365 days. Any events at the final visit are assigned to the actual time of that visit. Log-rank test *p*-value based on unsimulated original Kaplan-Meier curves. **BCVA,** best-corrected visual acuity; **ETDRS,** Early Treatment Diabetic Retinopathy Study; **LBD,** largest basal diameter. ClinicalTrials.gov Identifiers: NCT04417530; AU-011-202 (phase 2); NCT06007690; AU-011-301 (phase 3).
Data on file, Aura Biosciences.

Summary

In the therapeutic group (n=10), bel-sar demonstrated:

80% tumor control rate

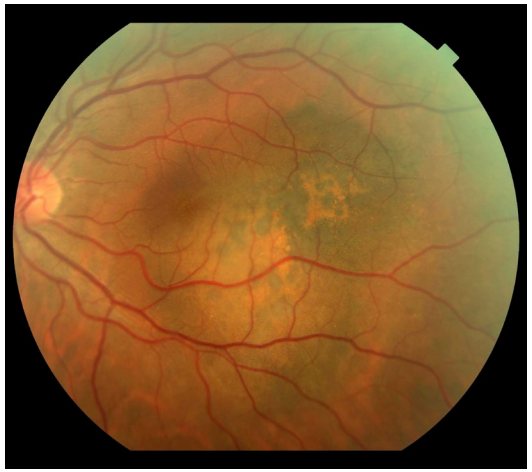
- Cessation of growth among responders

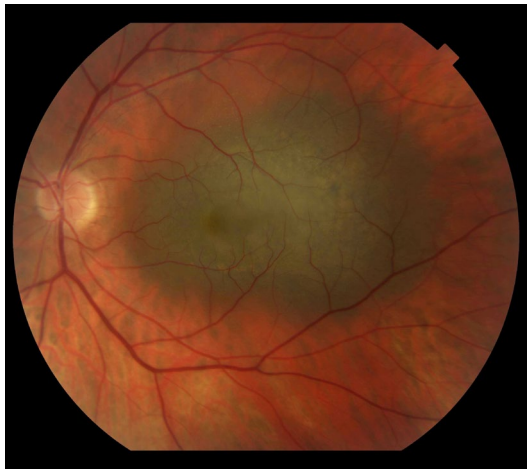
90% vision preservation

- 80% of tumors were juxtafoveal/juxtapapillary

Highly favorable safety profile

- No treatment-related systemic or ocular SAEs
- All treatment-related ocular AEs were grade 1, resolved quickly, most without treatment





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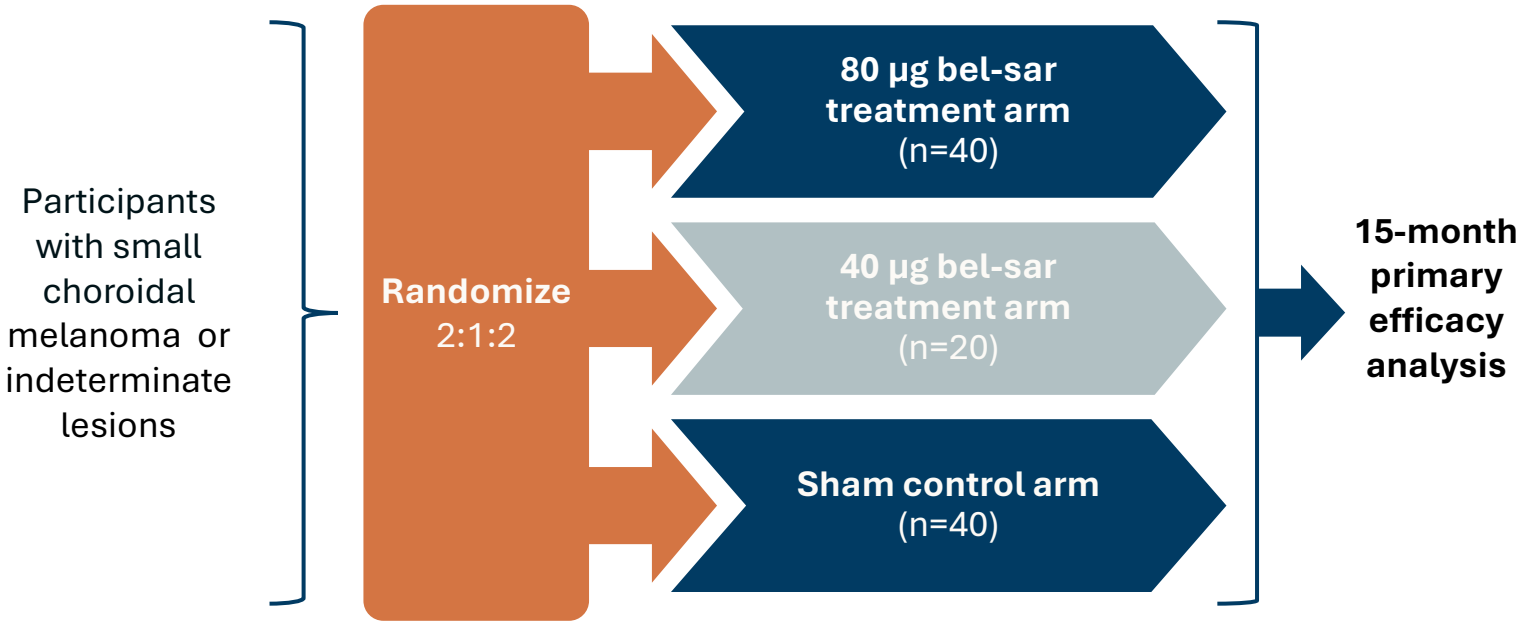
Bel-sar for small choroidal melanoma or indeterminate lesions: Global Phase 3 CoMpass trial now enrolling

Target enrollment ~100 participants globally

Anticipated sites in North America, Europe, Middle East and Asia-Pacific Regions



Primary endpoint

Time to tumor progression

Increase in tumor thickness ≥0.5 mm or ≥1.5 mm in LBD

First key secondary endpoint

Time to composite endpoint: Tumor progression or visual acuity failure

Increase in tumor thickness ≥0.5 mm or ≥1.5 mm in LBD OR ≥15 decrease in ETDRS-BCVA letter score from baseline

Received **fast track** and **orphan drug designations**

An **SPA agreement** indicates concurrence by the FDA that the design of the trial can adequately support a regulatory submission

BCVA, best-corrected visual acuity; **ETDRS,** Early Treatment Diabetic Retinopathy Study; **LBD**, largest basal diameter; **SPA**, Special Protocol Assessment.
ClinicalTrials.gov Identifier: NCT06007690; AU-011-301.