September 2024



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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, 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 successfully manufacture our drug substances and product candidates for preclinical use, for clinical trials and on a larger scale for commercial use, if approved; the ability and willingness of our third-party strategic collaborators to continue research and development activities relating to our development candidates and product candidates; our ability to commercialize our products, if approved; our ability to obtain funding for our operations necessary to complete further development and commercialization of our product candidates; 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; our financial performance; our expected cash runway into the second half of 2026; and the implementation of our business model, including strategic plans for our business and product candidates.

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 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.

Clinical pipeline across multiple solid tumor indications

Program	Preclinical	Phase 1	Phase 2	Phase 3	Planned milestones
Ocular oncology					
Primary uveal melanoma					2024 – Phase 3 enrollment ongoing
Metastases to the choroid Multiple primary cancers with metastasis to the choroid, e.g., breast and lung					2024 – Phase 2 initiation YE 2024 – Initial phase 2 data
Ocular surface cancers					
Other solid tumors	:		:	:	
Bladder cancer Non-muscle-invasive (NMIBC) and muscle-invasive (MIBC)					October 2024 – Early phase 1 NMIBC data
Other mHSPG-expressing tumors ^a					



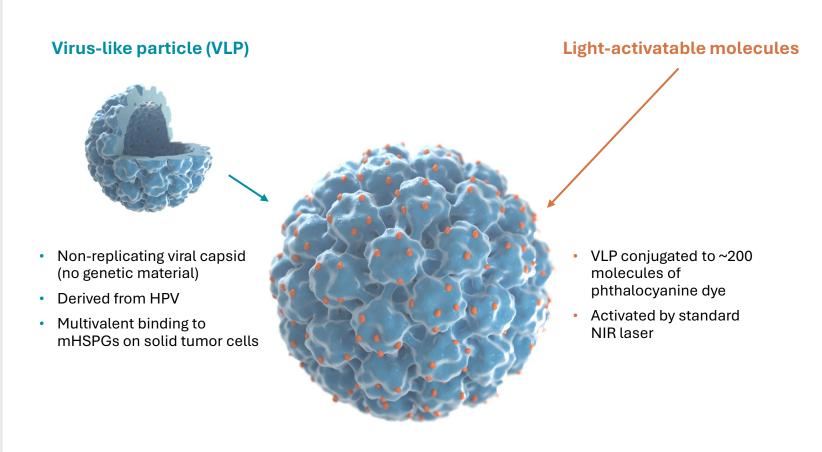
Bel-sar is a potential first-in-class therapy for multiple solid tumors



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

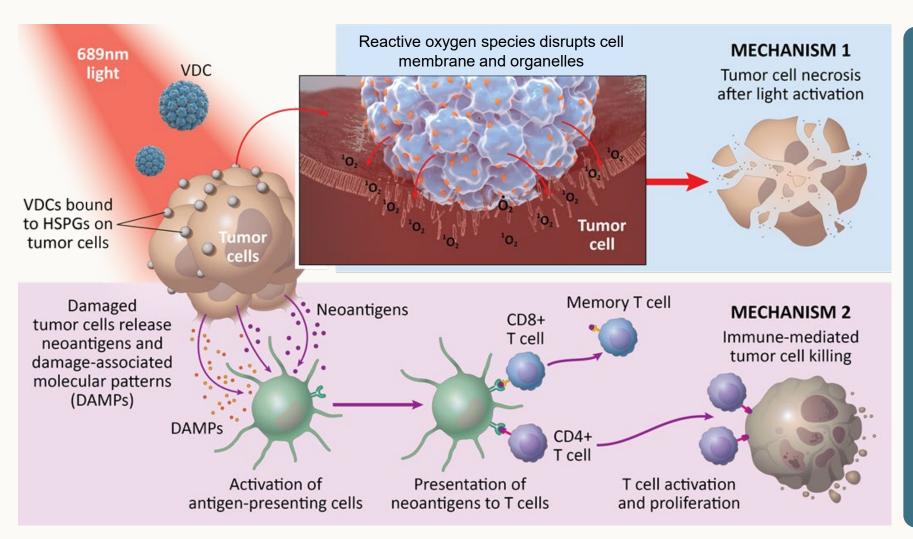


Bel-sar (AU-011)

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. Bel-sar (AU-011) is an investigational product candidate. The effectiveness and safety of bel-sar have not been established, and bel-sar is not approved for use in any jurisdiction.

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

Ocular Oncology

Bel-sar target indications:

Primary uveal melanoma | Metastases to the choroid | Ocular surface cancers

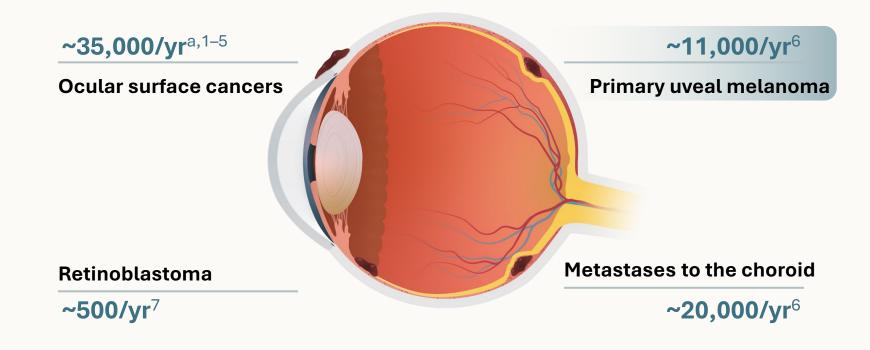


Bel-sar opportunities in ocular oncology represent a multibillion-dollar addressable market

 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)



alncludes 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.

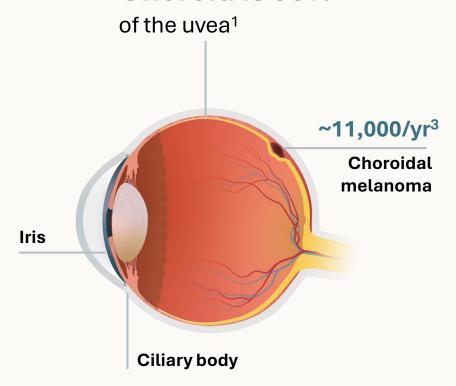
Bel-sar (AU-011) is an investigational product candidate. The effectiveness and safety of bel-sar have not been established, and bel-sar is not approved for use in any jurisdiction.



Bel-sar is in phase 3 for primary uveal melanoma, the most common primary intraocular cancer in adults

- Primary uveal melanoma is a high unmet medical need
- With no approved visionpreserving therapies, the current standard-of-care is radiotherapy – treatment that leads to legal blindness^{4,5}

Choroid is 90%



Uvea: Choroid, ciliary body and iris

Most common primary intraocular cancer in adults^{2,3}

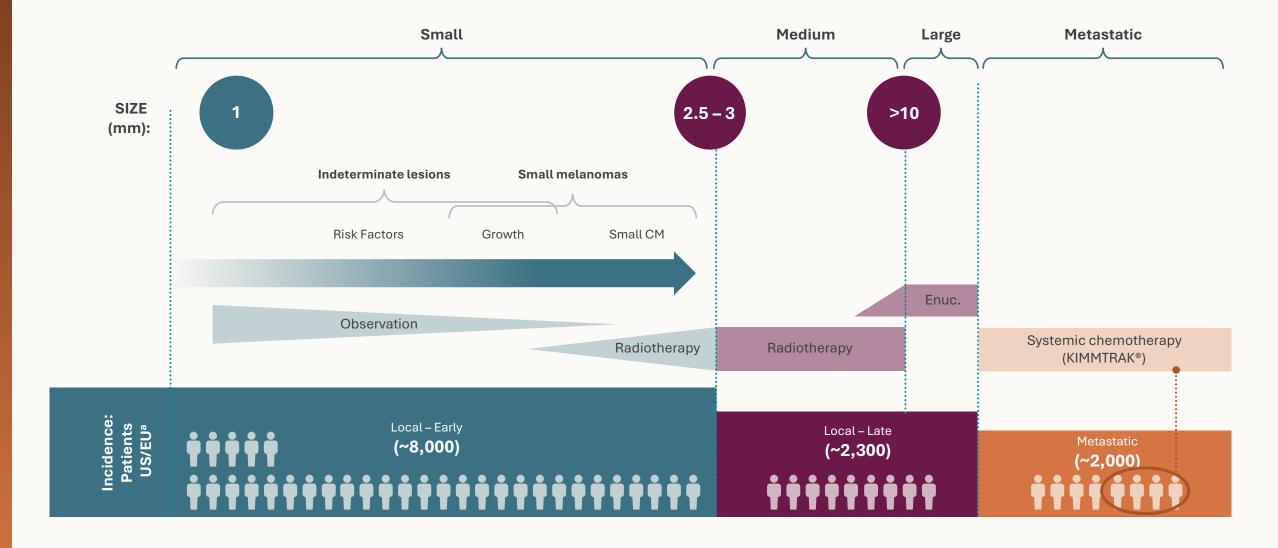
~80% of patients diagnosed with early-stage disease³

50% of patients **develop metastasis** within 15 years (metastatic uveal melanoma)²

Bel-sar has the potential to provide a treatment option that preserves vision

1. Heiting, G. Iris/uvea of the eye. Available at: https://www.allaboutvision.com/en-gb/resources/uvea-iris-choroid/. Accessed Oct. 3, 2023. 2. Kaliki S and Shields CL. *Eye (Lond)*. 2017;31(2):241-257. 3. Epidemiology analysis for choroidal melanoma and choroidal metastasis by ClearView Healthcare Partners and Putman. 4. Jarczak J, Karska-Basta I, Romanowska-Dixon B. Deterioration of visual acuity after brachytherapy and proton therapy of uveal melanoma, and methods of counteracting this complication based on recent publications. Medicina (Kaunas). 2023;59(6):1131. 5.. Tsui I, Beardsley RM, McCannel TA, Oliver SC, et al. Visual acuity, contrast sensitivity and color vision three years after jodine-125 brachytherapy for choroidal and ciliary body melanoma. Open Ophthalmol J. 2015;9:131-5.

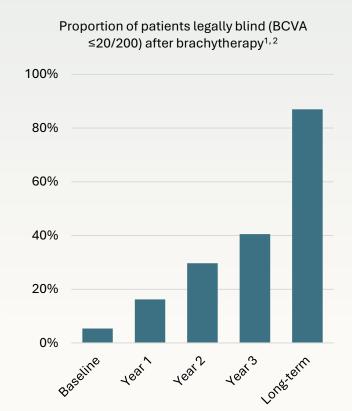
Current treatment paradigm for primary uveal melanoma

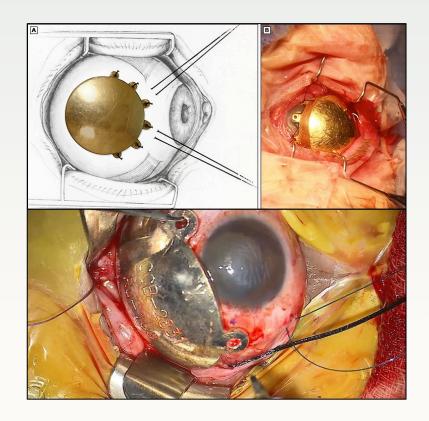




High morbidity associated with current standard of care

Up to 87% of primary uveal melanoma patients become legally blind over time in the eye treated with radiotherapy^{1,2}





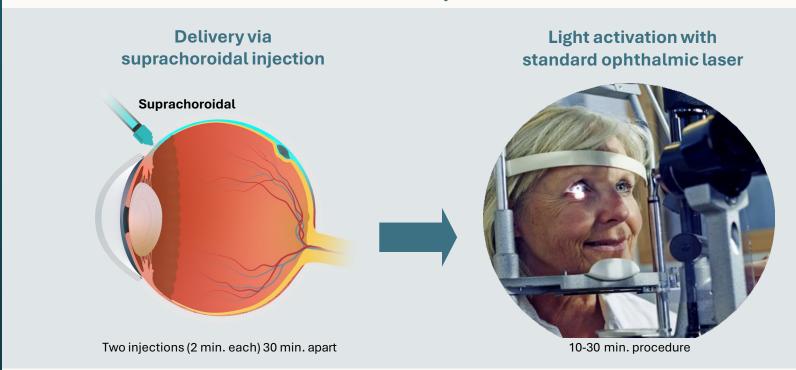
	Radiotherapy ^{3–6}			
Adverse Event				
Surgeries secondary to AEs (e.g., cataracts)	40%+			
Radiation retinopathy	40%+			
Neovascular glaucoma	10%			
Dry eye syndrome	20%			
Strabismus	2%+			
Retinal detachment	1–2%			
Vision loss (≥15 letters)	~70%			
Long-term legal blindness (≤20/200)	~90%			
Serious Adverse Event				
Scleral necrosis	0–5%			
Enucleation/eye loss	10–15%			
Severe vision loss (≥30 letters) in HRVL	~90%			

^{1.} Jarczak J et al. Medicina (Kaunas). 2023;59(6):1131. 2. Tsui I, et al. Open Ophthalmol. 2015;9:131–5. 3. Shields CL, et al. Arch Ophthalmol. 2000;118(9):1219–1228. 4. Peddada KV, et al. J Contemp Brachytherapy. 2019;11(4):392–397. 5. Shields CL et al. Curr Opin Ophthalmol. 2019;30(3):206–214. 6. Kaliki S, Shields CL. Eye. 2017;31(2):241–257. AE, adverse event; BCVA, best-corrected visual acuity; HRVL, high-risk for vision loss.

Bel-sar has the potential to be the first approved vision-preserving therapy in primary uveal melanoma



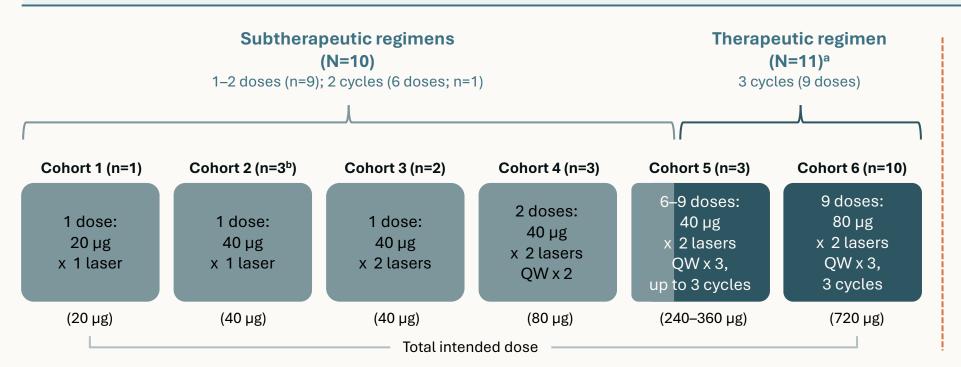
In-office procedure



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



Baseline characteristics

All study participants

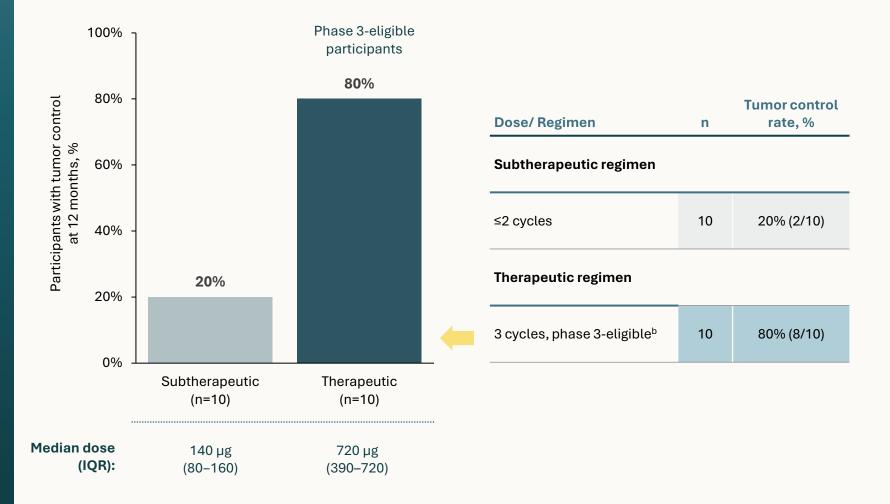
	All patients (n=22)		
Female (%)	54.5		
White, not Hispanic or Latino (%)	100		
Subretinal fluid at screening (%)	100		
Orange pigment at screening (%)	86.4		
Documented growth prior to screening (%)	86.4 (100% of therapeutic group)		
Mean age at screening (years, ± SD)	59.2 (±16.5)		
Mean baseline BCVA 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)		



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

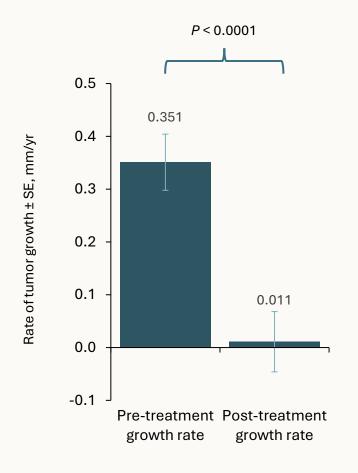


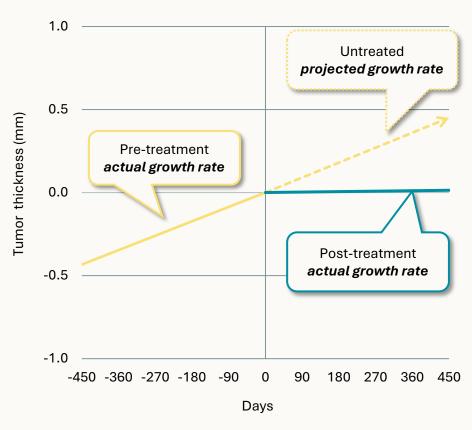
^aLocal complete response, or CR, in early-stage choroidal melanoma is described as tumor control and complete arrest of tumor growth by ocular oncologists. ^bOne participant with circumpapillary tumor that did not meet phase 3 criteria is not included. **LBD,** largest basal diameter. ClinicalTrials.gov 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)

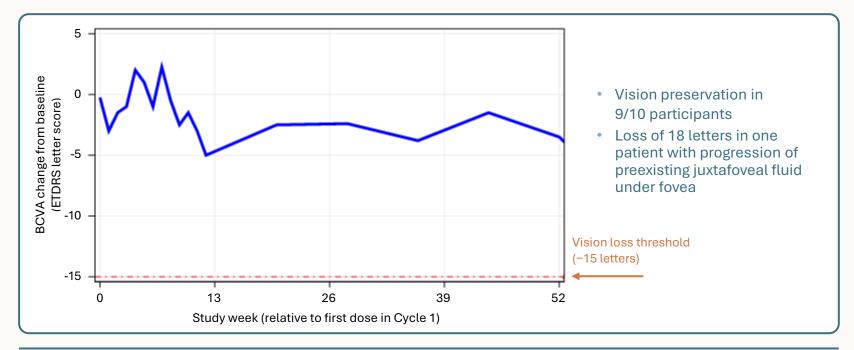




Visual acuity was preserved in 90% of phase 3-eligible patients receiving a bel-sar therapeutic regimen

- 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



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%	

^aOne participant with circumpapillary tumor that did not meet phase 3 criteria is not included. ^bVision 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 favorable safety profile

- No posterior inflammation
- No treatment-related SAEs
- No grade 3–5 treatmentrelated 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%)	

^{**}Median duration 6 days (IQR: 3–10 days); All resolved with no or minimal treatment; If topical steroids given, median treatment duration 6 days



^{*} 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; IQR, interquartile range 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

80 µg bel-sar treatment arm (n=40)**Participants** 15-month with small 40 µg bel-sar primary choroidal Randomize treatment arm efficacy 2:1:2 melanoma or analysis indeterminate lesions Sham control arm (n=40)

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

≥15 decrease in OR 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

Phase 2 final data represented using planned phase 3 endpoints

Kaplan-Meier analysis simulation of time-to-event

Time to tumor progression

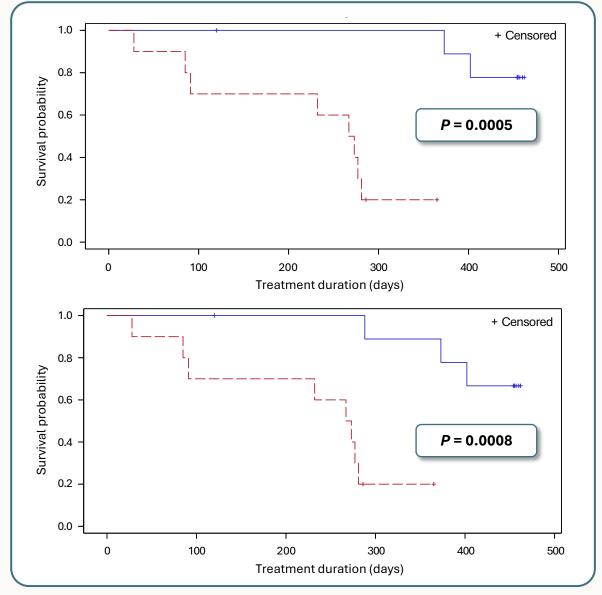
Change from baseline in thickness ≥0.5 mm; or in LBD ≥1.5 mm confirmed by at least one repeat assessment

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

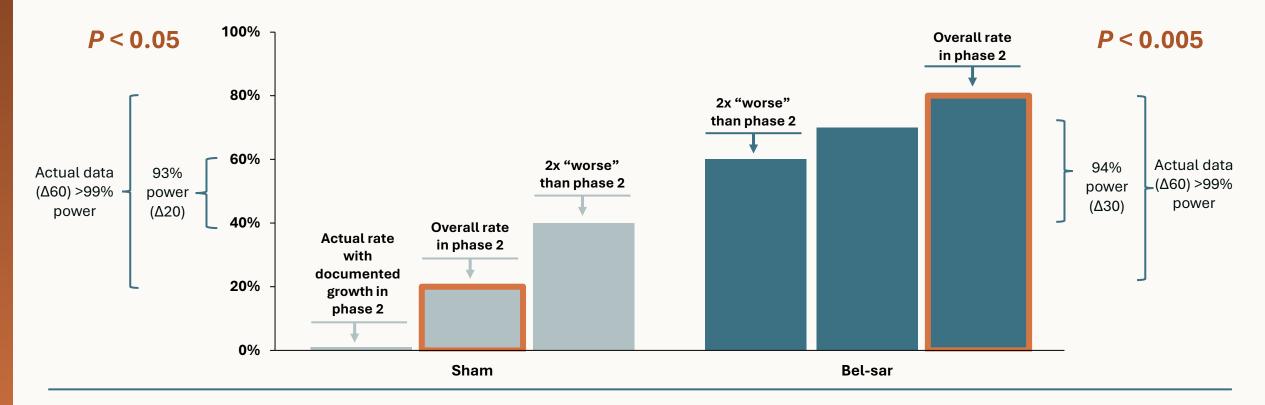


Study duration 12 months. Participants either had an event or were censored at the last visit; some had their Week 52 visit after 365 days. Any events at the final visit are assigned to the actual time of that visit. Log-rank test *p*-value based on unsimulated original Kaplan-Meier curves. **BCVA**, 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).

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Phase 2 data support phase 3 assumptions

Robustness analysis of tumor control rates



Phase 3 trial design

Same dose, regimen, route of administration, range of tumor sizes, and reading center as phase 2 trial

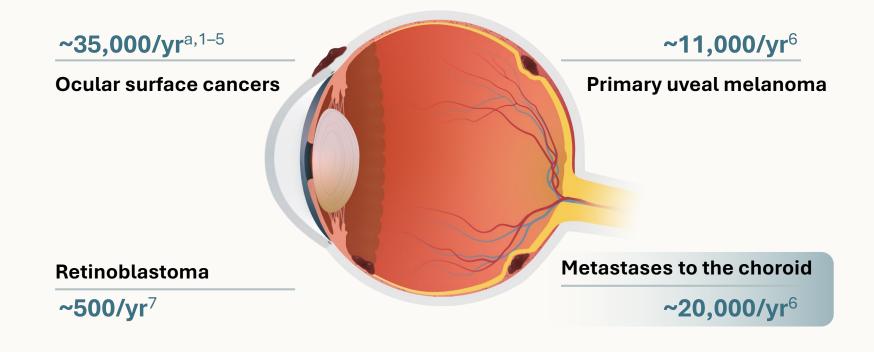
- Similar population to phase 2 participants receiving the therapeutic regimen
- Enriching for early documented growth; phase 3 randomization stratified by growth rate

Bel-sar opportunities in ocular oncology represent a multibillion-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)



alncludes 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.

Metastases to the choroid: Phase 2 trial expected to begin in 2024

Planned Study Design (n=12*)



Study Objectives

- Safety/dose-limiting toxicity
- Efficacy
 - Change in tumor size
 - Change in vision letter score

Study Population

- Patients with unilateral, unifocal metastases to the choroid
- Breast or lung primary
- No changes in concurrent systemic medications planned

Highlights: Primary endpoint at one-month post-treatment; possibility to see tumor shrinkage and vision improvement

Urologic Oncology

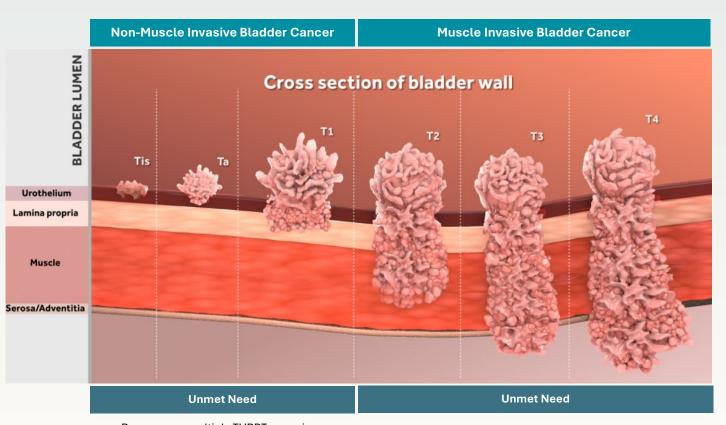
Bel-sar target indications:

Non-muscle-invasive bladder cancer | Muscle-invasive bladder cancer



Bladder cancer is a global high unmet medical need

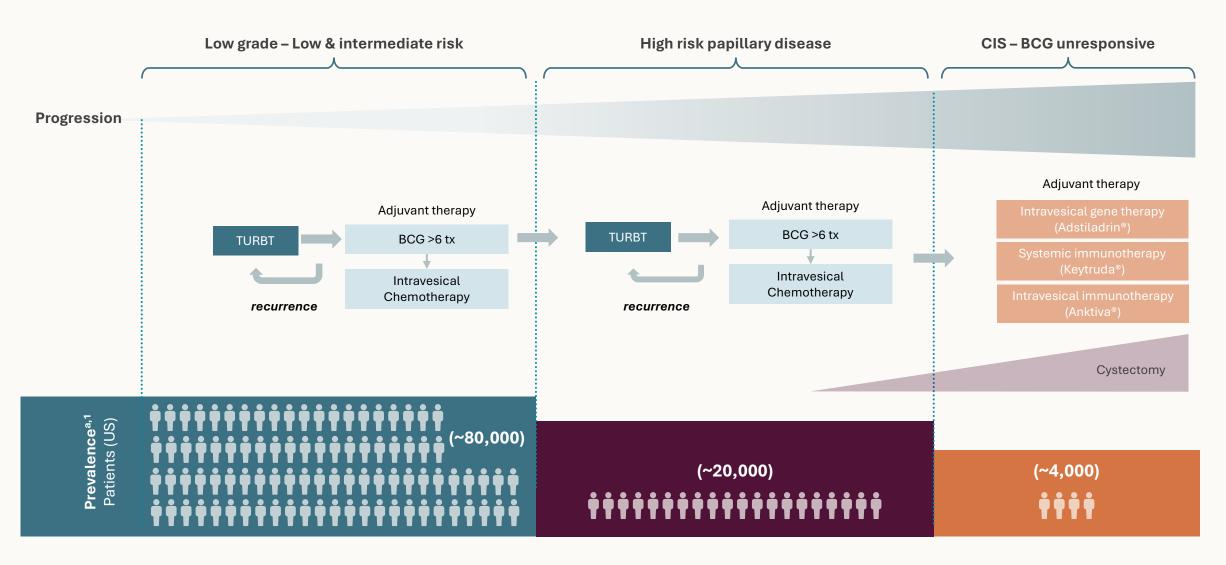




Recurrence, multiple TURBT surgeries, progression of disease, loss of bladder/cystectomy

Progression of disease, loss of bladder/cystectomy, metastasis and survival

Current treatment paradigm for bladder cancer



^aEach figure represents 1000 persons.

Bel-sar has the potential to be a front-line therapy

Bel-sar can potentially decrease risk of recurrence, reduce need for chemotherapy, and prevent bladder loss

Treatment Goals

Focal treatment with direct tumor cell killing

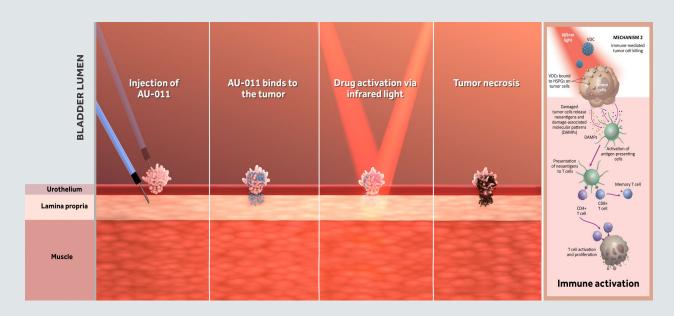
Stimulate antitumor specific T cell response

Reduce risk of recurrence

Avoid TURBT / operating room

Improvement in safety and quality of life

In-office procedure



Local administration and light activation with standard cystoscope



Bel-sar as potential front-line therapy in NMIBC may be optimized for in office-based procedure

Bel-sar has a dual mechanism of action and its local administration is aligned with clinical practice

Bel-sar's local administration aligned with current urologic oncology practice







Goals of treatment with bel-sar

Focal treatment with direct tumor cell killing

Stimulate anti-tumor specific t-cell response

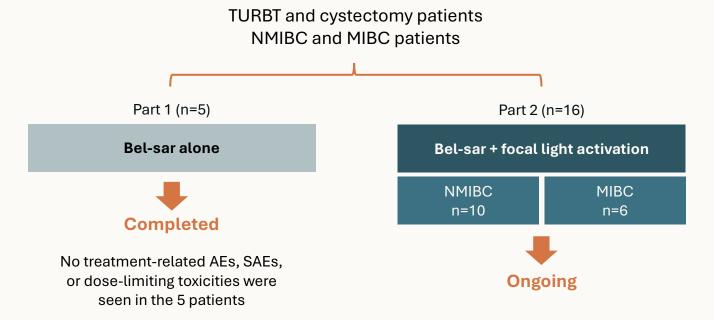
Reduce risk of recurrence

Avoid TURBT / operatingroom



Phase 1 trial for bladder cancer designed to evaluate safety, feasibility, and MoA

21 participants



Study objectives

Safety & doselimiting toxicity Feasibility of technique

Focal distribution of bel-sar

Focal necrosis

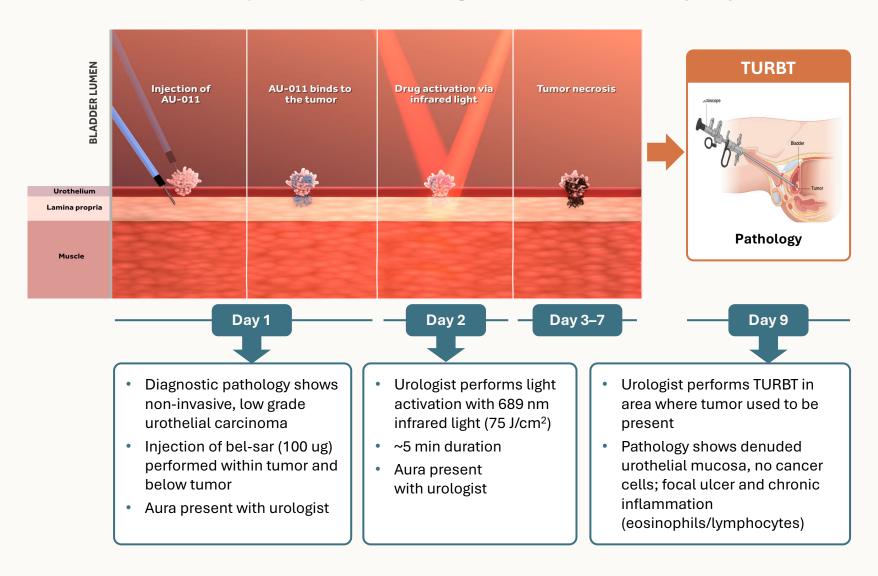
Markers of immune activation

AE, adverse event; MIBC, muscle invasive bladder cancer; MoA, mechanism of action; NMIBC, non-muscle invasive bladder cancer; SAE, serious adverse event; TURBT, transurethral resection of bladder tumor.

Clinicaltrials.gov identifier: NCT05483868; AU-011-102.

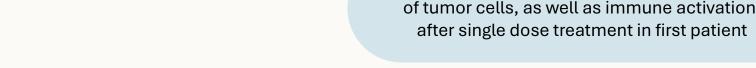
Clinical complete response with immune activation after single dose confirmed by histopathology

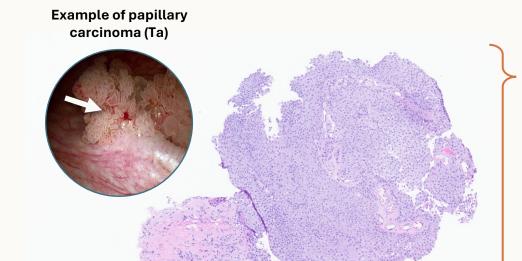
Phase 1 preliminary data: Light-activated cohort (n=1)



Clinical complete response with immune activation after single dose confirmed by histopathology (part 2; first patient)

Evidence of complete response by absence of tumor cells, as well as immune activation, after single dose treatment in first patient





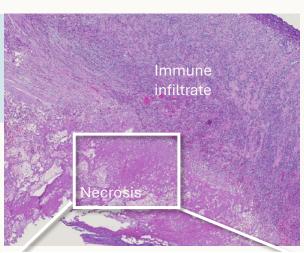
H&E stain

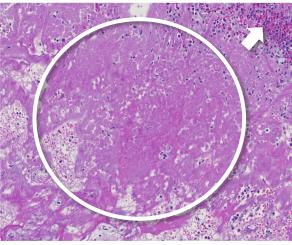
Pre-injection bladder biopsy demonstrating low-grade papillary urothelial carcinoma; non-invasive

Papillary urothelial carcinoma

7 days after bel-sar treatment

Post-treatment TURBT demonstrating necrosis, inflammatory infiltrate, and no residual carcinoma. Circled region shows area of necrosis; arrow indicates edge of inflammatory infiltrate.





Company highlights



Corporate

- Strong cash position expected to fund operations into 2H 2026
- Experienced leadership team across functions



Urologic Oncology Therapeutic Area

- Phase 1 trial clinical complete response in first patient with single dose
- Company expects to present early NMIBC data from ongoing phase 1 trial at a urologic oncology investor event in October 2024



Ocular Oncology Therapeutic Area

Primary uveal melanoma

- Global phase 3 CoMpass trial actively enrolling
- Special Protocol Assessment (SPA)agreement with FDA
- Phase 3 assumptions supported by phase 2 data

Metastases to the choroid

- Phase 2 trial planned to initiate in 2024
- Second ocular indication potentially doubles market opportunity¹
- Initial data expected by year end 2024