IOVANCE BIOTHERAPEUTICS

Corporate Overview

February 16, 2024

ADVANCING IMMUNO-ONCOLOGY

Forward-Looking Statements

Certain matters discussed in this press release are “forward-looking statements” of Iovance Biotherapeutics, Inc. (hereinafter referred to as the “Company,” “we,” “us,” or “our”) within the meaning of the Private Securities Litigation Reform Act of 1995 (the “PSLRA”). Without limiting the foregoing, we may, in some cases, use terms such as “predicts,” “believes,” “potential,” “continue,” “estimates,” “anticipates,” “expects,” “plans,” “intends,” “forecast,” “guidance,” “outlook,” “may,” “could,” “might,” “will,” “should,” or other words that convey uncertainty of future events or outcomes and are intended to identify forward-looking statements. Forward-looking statements are based on assumptions and assessments made in light of management’s experience and perception of historical trends, current conditions, expected future developments, and other factors believed to be appropriate. Forward-looking statements in this press release are made as of the date of this press release, and we undertake no duty to update or revise any such statements, whether as a result of new information, future events or otherwise. Forward-looking statements are not guarantees of future performance and are subject to risks, uncertainties, and other factors, many of which are outside of our control, that may cause actual results, levels of activity, performance, achievements, and developments to be materially different from those expressed in or implied by these forward-looking statements. Important factors that could cause actual results, developments, and business decisions to differ materially from forward-looking statements are described in the sections titled "Risk Factors" in our filings with the U.S. Securities and Exchange Commission, including our most recent Annual Report on Form 10-K and Quarterly Reports on Form 10-Q, and include, but are not limited to, the following substantial known and unknown risks and uncertainties inherent in our business: the risks related to our ability to successfully commercialize our products, including AMTAGVI, for which we obtain U.S. Food and Drug Administration (“FDA”), European Medicines Agency (“EMA”), or other regulatory authority approval; the risk that the EMA or other regulatory authorities may not approve or may delay approval for our biologics license application (“BLA”) submission for lifileucel in metastatic melanoma; the acceptance by the market of our products, including AMTAGVI, and their potential pricing and/or reimbursement by payors, if approved (in the case of our product candidates), in the U.S. and other international markets and whether such acceptance is sufficient to support continued commercialization or development of our products, including AMTAGVI, or product candidates, respectively; our ability or inability to manufacture our therapies using third party manufacturers or at our own facility may adversely affect our commercial launch; the results of clinical trials with collaborators using different manufacturing processes may not be reflected in our sponsored trials; the risk regarding the successful integration of the recent Proleukin acquisition; the risk that the successful development or commercialization of our products, including AMTAGVI, may not generate sufficient revenue from product sales, and we may not become profitable in the near term, or at all; the risk that future competitive or other market factors may adversely affect the commercial potential for AMTAGVI; the risks related to the timing of and our ability to successfully develop, submit, obtain, or maintain FDA, EMA, or other regulatory authority approval of, or other action with respect to, our product candidates; whether clinical trial results from our pivotal studies and cohorts, and meetings with the FDA, EMA, or other regulatory authorities may support registrational studies and subsequent approvals by the FDA, EMA, or other regulatory authorities, including the risk that the planned single arm Phase 2 IOV-LUN-202 trial may not support registration; preliminary and interim clinical results, which may include efficacy and safety results, from ongoing clinical trials or cohorts may not be reflected in the final analyses of our ongoing clinical trials or subgroups within these trials or in other prior trials or cohorts; the risk that enrollment may need to be adjusted for our trials and cohorts within those trials based on FDA and other regulatory agency input; the risk that the changing landscape of care for cervical cancer patients may impact our clinical trials in this indication; the risk that we may be required to conduct additional clinical trials or modify ongoing or future clinical trials based on feedback from the FDA, EMA, or other regulatory authorities; the risk that our interpretation of the results of our clinical trials or communications with the FDA, EMA, or other regulatory authorities may differ from the interpretation of such results or communications by such regulatory authorities (including from our prior meetings with the FDA regarding our non-small cell lung cancer clinical trials); the risk that clinical data from ongoing clinical trials of AMTAGVI will not continue or be repeated in ongoing or planned clinical trials or may not support regulatory approval or renewal of authorization; the risk that unanticipated expenses may decrease our estimated cash balances and forecasts and increase our estimated capital requirements; the effects of the COVID-19 pandemic; and other factors, including general economic conditions and regulatory developments, not within our control.

Global Leadership in Innovating, Developing and Delivering TIL Therapy for Patients with Cancer

Platform

700+
Patients Treated with Iovance TIL

2
Manufacturing Sites FDA Approved for Commercial Production

22-day
Proprietary Manufacturing Process

Portfolio

2 Commercial Products
AMTAGVI (lifileucel) Suspension for IV infusion
PROLEUKIN (aldesleukin)

7 Active Clinical Trials

5 Tumor Types in Clinic

3 Fast Track **1** BTD **1** RMAT
Designations

People & Assets

~$428M
Cash Position as of 9/30/23

60+
US and International Patents

500+
Employees

Partners & Collaborators

NIH NATIONAL CANCER INSTITUTE

The University of Texas MD Anderson Cancer Center

MOFFITT CANCER CENTER

Yale CANCER CENTER

cellectis EDITING LIFE

Abbreviations: BTD=Breakthrough Therapy Designation; FDA=U.S. Food and Drug Administration; RMAT=Regenerative Medicine Advanced Therapy Designation

Iovance Solid Tumor Portfolio Highlights

AMTAGVI™ (lifileucel) Suspension for IV infusion

Post-anti-PD-1 advanced melanoma
NOW APPROVED

PROLEUKIN® (aldesleukin) Recombinant IL-2

AMTAGVI treatment regimen
Advanced melanoma, renal cell carcinoma

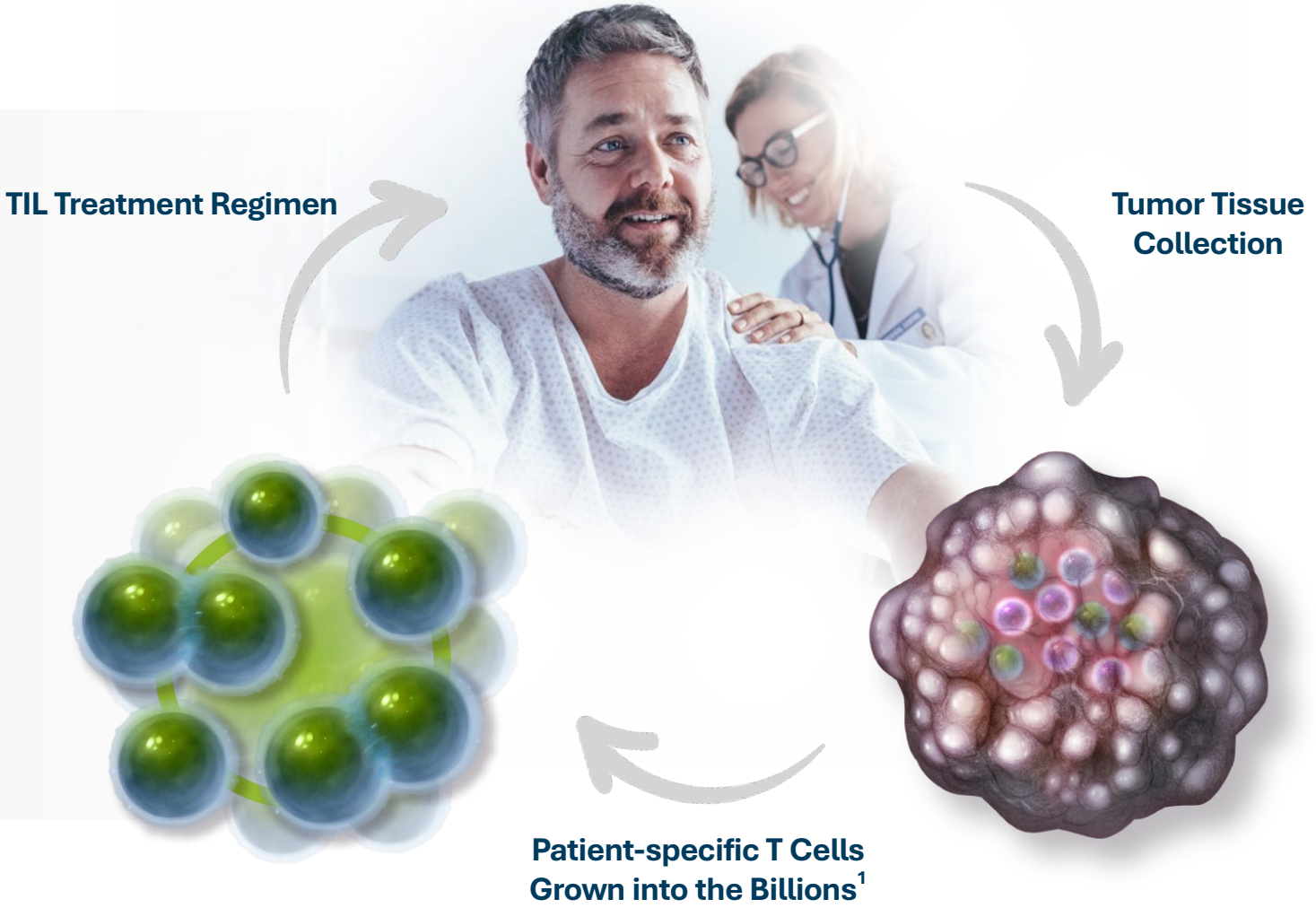
	CANDIDATE	INDICATIONS	PHASE 1	PHASE 2	PHASE 3
Registration-Directed	Lifileucel + pembro	Frontline advanced melanoma	TILVANCE-301 Phase 3		Confirmatory, FTD
	LN-145	2L post-chemo & post-anti-PD-1 advanced NSCLC	IOV-LUN-202: Cohorts 1&2		
	Lifileucel	Post-chemo & post-anti-PD-1 cervical	C-145-04: Cohort 2 BTD, ODD		
Additional Pipeline	LN-145 + pembro	1L chemo and anti-PD-1 naïve cervical	C-145-04: Cohort 3*		
	Lifileucel	2L post-chemo & post-anti-PD-1 endometrial	*Planned Phase 2*		
	LN-145, LN-145 + ICI	2-4L incl. post-anti-PD-1 advanced NSCLC	IOV-COM-202: Cohorts 3A, 3B*,3C		
	LN-145 + ICI	1L advanced melanoma	IOV-COM-202: Cohort 1A		
Next Generation	PD-1 Inactivated TIL (IOV-4001)	Post anti-PD1 advanced melanoma	IOV-GM1-201: Cohort 1		
	PD-1 Inactivated TIL (IOV-4001)	2-4L incl. post-anti-PD-1 advanced NSCLC	IOV-GM1-201: Cohort 2		
	LN-145 Gen 3 + core biopsy	2L post-chemo & post-anti-PD-1 advanced NSCLC	IOV-LUN-202: Cohort 3		

*Enrollment complete
Abbreviations: 1L=first line; 2L=second line; 4L=fourth line; BTD=Breakthrough Therapy Designation; FTD=Fast Track Designation; ipi/nivo=ipilimumab/nivolumab; NSCLC=non-small cell lung cancer; ODD=Orphan Drug Designation; PD-1=programmed cell death protein-1; RMAT=Regenerative Medicines Advanced Therapy; TIL=tumor infiltrating lymphocytes

Tumor Infiltrating Lymphocytes (TIL): Leading Cell Therapy Platform for Solid Tumors

TIL – Unique Proposed Mechanism of Action

- Individualized
- One-time therapy
- Deploys the patient's own T cells to fight cancer



1. AMTAGVI USPI

AMTAGVI™ (lifileucel): First and only one-time, individualized T cell therapy approved by FDA for a solid tumor cancer

IOVANCE BIOTHERAPEUTICS

Actor portrayal and not a real image of a T cell.

NOW APPROVED

AMTAGVI™ (lifileucel) Suspension for IV infusion

The first and only FDA-approved T cell therapy for previously treated advanced (unresectable or metastatic) melanoma[1]

AMTAGVI™ is a one-time treatment unique for each patient.[1]

Indication

AMTAGVI (lifileucel) is a tumor-derived autologous T cell immunotherapy indicated for the treatment of adult patients with unresectable or metastatic melanoma previously treated with a PD-1 blocking antibody, and if BRAF V600 mutation positive, a BRAF inhibitor with or without a MEK inhibitor.

This indication is approved under accelerated approval based on objective response rate (ORR). Continued approval for this indication may be contingent upon verification and description of clinical benefit in a confirmatory trial(s).

Important Safety Information

WARNING: TREATMENT-RELATED MORTALITY, PROLONGED SEVERE CYTOPENIA, SEVERE INFECTION, CARDIOPULMONARY and RENAL IMPAIRMENT

- Monitor patients for prolonged severe cytopenia and monitor for internal organ hemorrhage
- Administer filgrastim or a biosimilar product to patients beginning Day 1 after AMTAGVI and continuing daily until the absolute neutrophil count (ANC) is greater than 1000 per mm^3 for 3 consecutive days, or per institutional standard
- Treat severe infections
- Monitor cardiopulmonary and renal functions throughout the treatment course

Administer in an inpatient hospital setting. An intensive care facility and specialists skilled in cardiopulmonary or intensive care medicine must be available.

1. AMTAGVI USPI

U.S. Unmet Medical Need for Metastatic Melanoma Therapy

AMTAGVI is the First FDA Approved Treatment Option After Progression on ICI (Anti-PD-1) Therapy and BRAF/MEK inhibitors

15k

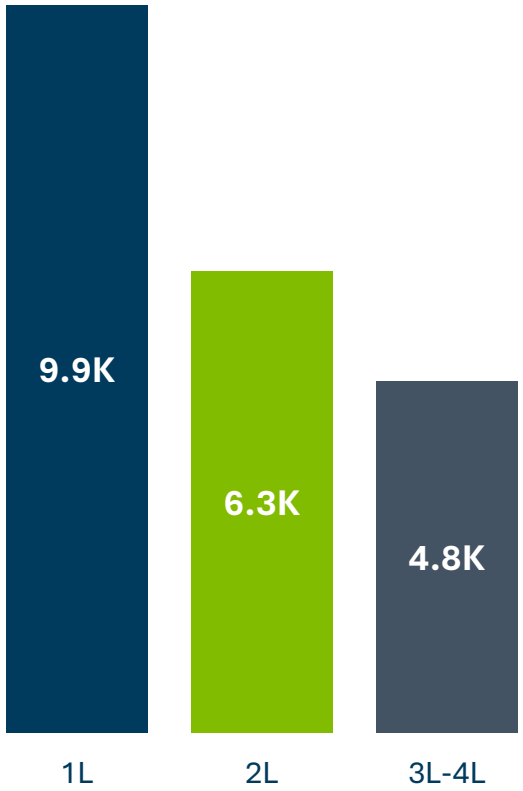
Annual new cases of advanced melanoma in U.S.[1]

8k

Annual deaths in U.S.[2]

Melanoma Drug-Treated Population in 2021

Unresectable / Metastatic (US)[3]



High unmet need for patients who progress after immune checkpoint inhibitors

More than half of patients progress **within 12 months** on current **1L ICIs**, regardless of BRAF mutation status[4]

1. Estimate of US incidence (2021) of unresectable or metastatic melanoma based on secondary and primary market research
2. National Cancer Institute Surveillance, Epidemiology and End Results (SEER) Program. 2023 Estimates. https://seer.cancer.gov accessed February 2024
3. Clarivate DRG Disease Landscape (2021)
4. Larkin et al, NEJM 2019; Robert et al, Lancet Oncology 2019; Tawbi et al, NEJM 2022

Abbreviations: 1L=first line therapy, 2L=second line therapy, 3L=third line therapy, 4L=fourth line therapy; ICI=immune checkpoint inhibitor; PD-1=programmed cell death protein-1

AMTAGVI™ Delivered Deep and Durable Responses

Cohort 4 Pivotal[1] (N=73)

ORR 31.5%
(95%CI: 21.1, 43.4)

mDOR Not Reached
18.6 months follow up
(Range: 1.4+, 26.3+; 95% CI: 4.1, NR)

Supportive Pooled Data[1] (n=153)

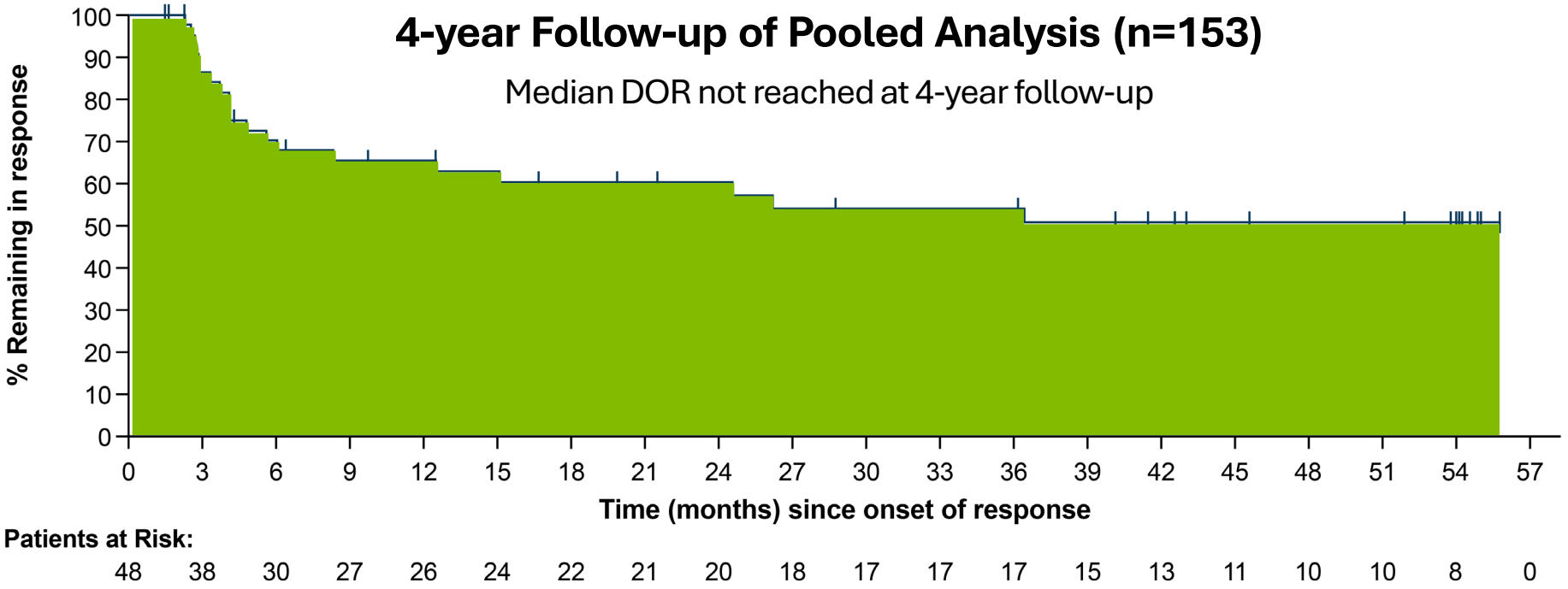
ORR 31.4%
(95%CI: 24.1, 39.4)

mDOR Not Reached
21.5 months follow up[2]
(Range: 1.4+, 45.0+)

1. AMTAGVI USPI
2. Data on file.

CI, confidence interval; mDOR, median duration of response; NR, not reached.

AMTAGVI™ C-144-01 4-year Follow Up



21.9% of patients were alive at 4-year follow-up

ORR **31.4%**
(95% CI: 24.1, 39.4)

mDOR **Not Reached**
(95% CI: 8.3, NR)

48.1 months follow-up

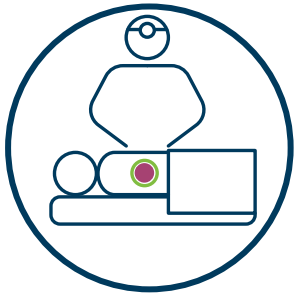
1. Medina et al, ESMO IO 2023.

AMTAGVI™ Patient Journey

AMTAGVI Autologous T Cell Therapy

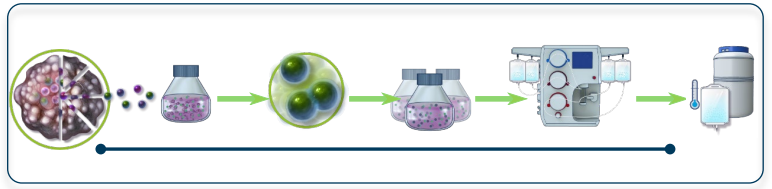
Treatment Decision & Reimbursement Approval

Scheduling & Tumor Tissue Procurement



AMTAGVI starts with a piece of the patient's tumor tissue

T Cell Therapy Manufacturing & Release Testing



TIL cells are grown into the billions in a manufacturing facility

Treatment Regimen & Monitoring

- Lymphodepletion
- **AMTAGVI™ (lifileucel)**
- Short-Course Proleukin®

Iovance Cell Therapy Center: *i*CTC

- Built-to-suit custom facility in Navy Yard Philadelphia
- Annual capacity for up to several thousand patients as built
- Expansion underway for additional capacity within iCTC over next few years
- Additional CDMO capacity
- Control to optimize capacity, quality & COGS

FDA-Approved Cell Therapy Manufacturing Facility Dedicated to Commercial and Clinical TIL Cell Therapies

IOVANCE BIOTHERAPEUTICS
CELL THERAPY CENTER

FOYA 2022
ISPE Facility of the Year Awards
CATEGORY WINNER
Honorable Mention

Iovance Cell Therapy Center (*i*CTC): Capacity Expansion Plans

Pre-Approval (Complete)

100s
of patients/year

Launch Prep
in core suites for commercial

4
separate flex suites for clinical

Today (as built)

up to **2,000+**
patients/year[1]

12
core suites for commercial

4
separate flex suites for clinical

Site Expansion (in progress)[2]

5,000+
patients/year

24
core suites for commercial

4
separate flex suites for clinical

***i*CTC + Future Site(s)**

10,000+
patients/year

***i*CTC**

Adjacent and new sites[3]

Automation

1. Ongoing staffing 2. Expansion within existing shell 3. Option to build on adjacent parcel

Proleukin® (aldesleukin) Strategic Benefits

Global Rights Acquired in May of 2023

- Significant revenue anticipated with AMTAGVI™ launch
- IL-2 supply chain secured for AMTAGVI regimen
- Lower clinical trial costs and COGS anticipated

PROLEUKIN®
(aldesleukin) Recombinant IL-2

Short course Proleukin® is administered after AMTAGVI® to promote T cell growth in the body

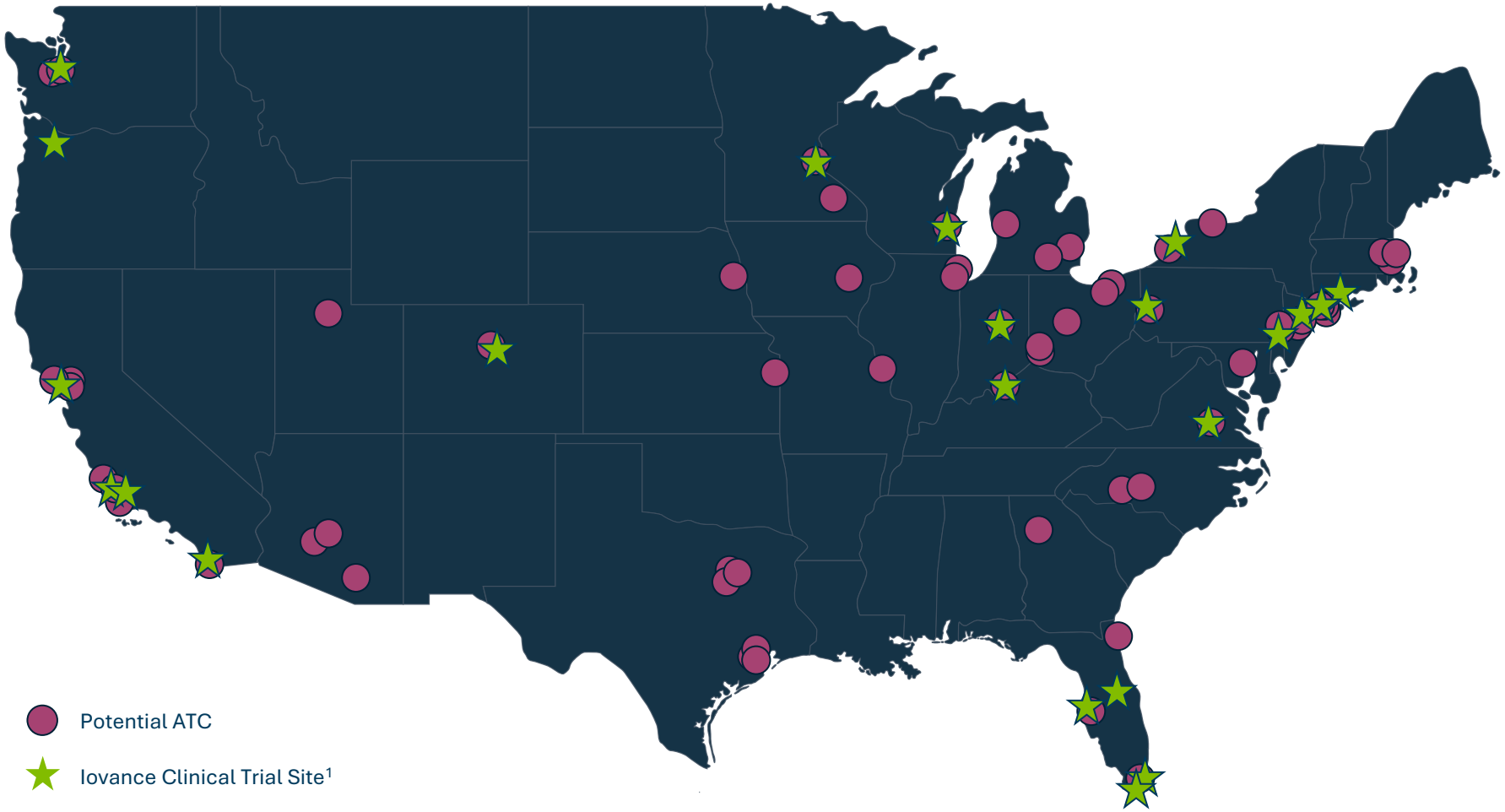
Key Transaction Figures

£167.7M Upfront investment

£41.7M Following first lifileucel approval

Targeting Potential Authorized Treatment Centers (ATCs)

~30 Active ATCs at Approval; ~50 ATCs Expected 90 Days Post-PDUFA



Targeting Considerations

- Patient volume
- NCCN status, KOLs
- Existing cell therapy / BMT
- Inpatient capacity
- Iovance clinical trial

Drive Demand

- Top account prioritization
- Community referrals

1. ClinicalTrials.gov

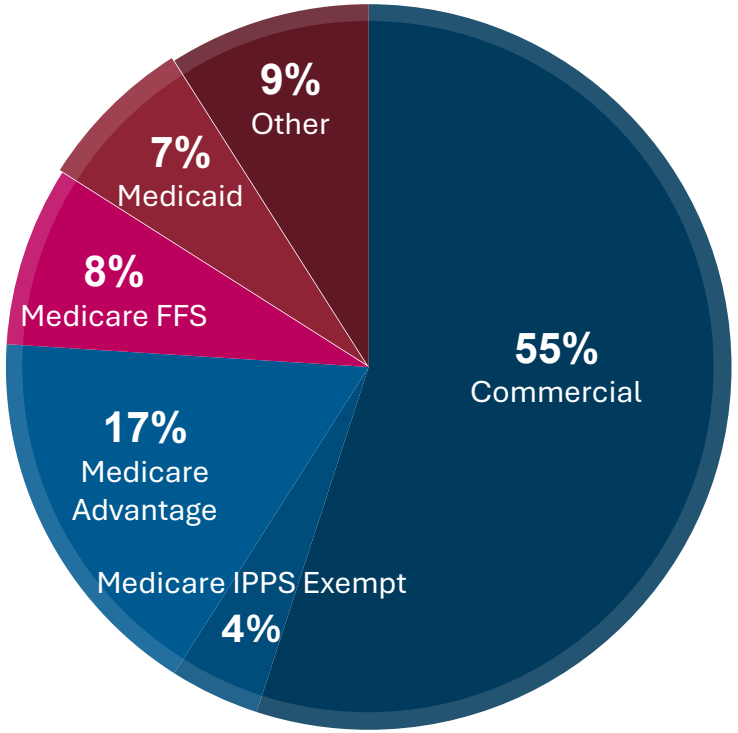
Abbreviations: ATC=Authorized Treatment Centers; NCCN=National Comprehensive Cancer Network; KOL=Key Opinion Leaders; BMT=Bone Marrow Transplant

Market Access

Payers appreciate the high unmet need, lack of treatment options, and AMTAGVI clinical value

Metastatic Melanoma Payer Mix[1]

All Treatment Settings and Lines of Therapy

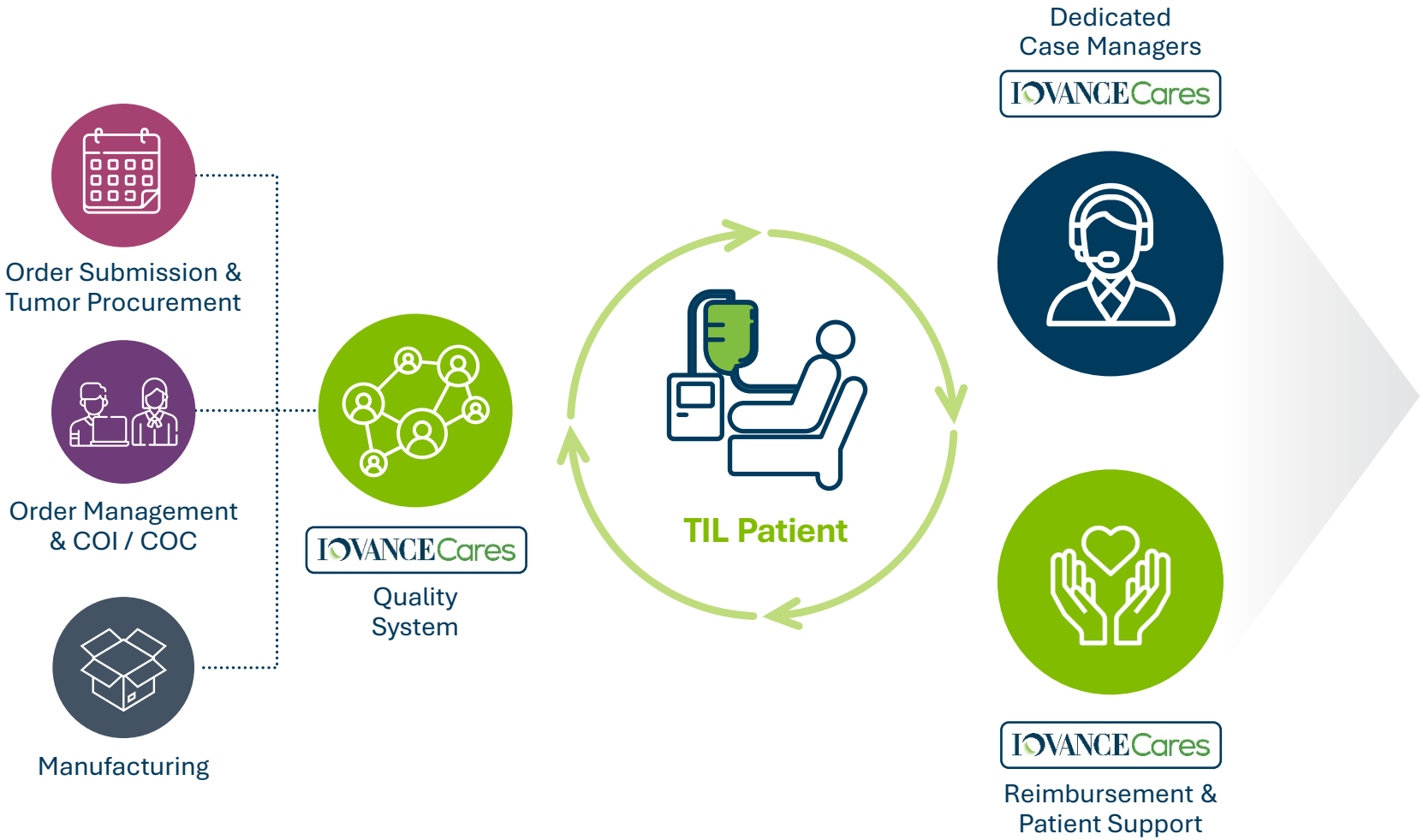


Anticipated Access

- Engagement with payers responsible for ~90% of covered lives
- Strong hospital reimbursement expected
  - Inpatient payment methodologies are established
  - Key payers expected to reimburse majority of provider costs
- Expect similar coverage to CAR-Ts

1. Metastatic Melanoma Insurance Claims Analysis, TIL-eligible patients treated in the ATC setting(1/1/2018 –6/30/2021). Medicaid is 6% Medicaid Advantage and 1% Medicaid Fee-For-Service;
For the 12% Medicare FFS lives, 11 PPS-exempt hospitals are reimbursed by Medicare FFS on a cost-basis (~4%), with the remaining Medicare FFS lives (~8%) reimbursed under DRG-018 payment methodology, NTAP/Outlier payments may add to the total Medicare reimbursement. Other segment includes cash, self-insured, VA, and other unidentifiable claims.
Abbreviations: FFS=Fee-For-Service; ICD-10 PCS=International Classification of Diseases, 10th Revision, Procedure Coding System; NTAP = New Technology Add-on Payment

Supporting Providers & Patients: IovanceCares™



Customer-Centric

- Patient management ecosystem
- Proprietary COI/COC
- Treatment center quality program

Patient-Centric

- Dedicated case managers
- Reimbursement support
- Patient support programs

Abbreviations: COI=Chain of Identity; COC=Chain of Custody

AMTAGVI™ Expansion Plans in Advanced Melanoma

Ex-U.S. Unmet Medical Need for Metastatic Melanoma Therapy

Expanding AMTAGVI™ launch ex-U.S. to double addressable patient population

Preparing for EU MAA and Additional Ex-U.S. Submissions in 2024

57k

Annual deaths worldwide[1]

15k

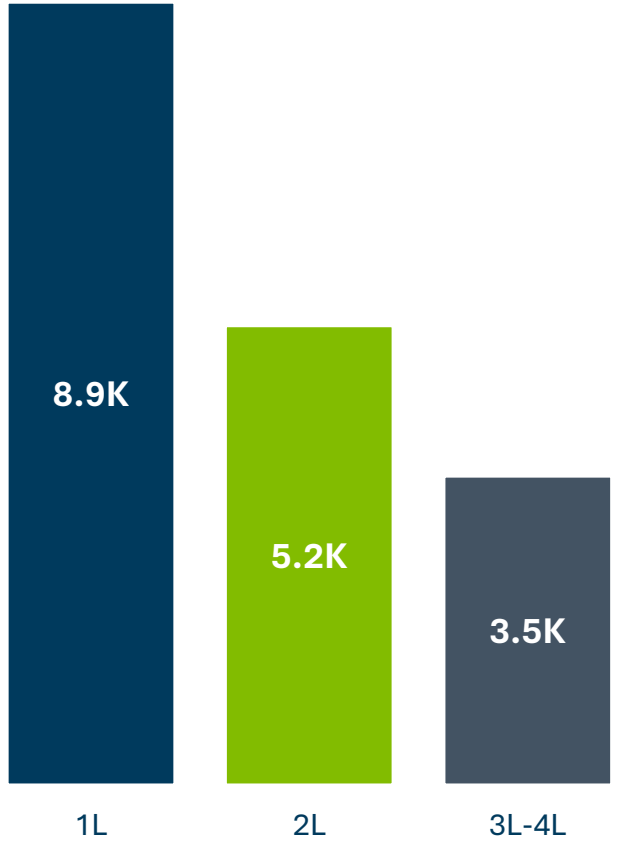
Annual deaths in ex-U.S. target markets[1]

Annual Deaths from Melanoma in Target Ex-U.S. Markets[1]

3.2K	Germany	**1.4K**	Australia
2.8K	UK	**1.2K**	Canada
2.2K	Italy	**1.1K**	Spain
2.1K	France	**0.9K**	Netherlands

Melanoma Drug-Treated Population in 2021[2]

Unresectable / Metastatic (EU5)



1. World Health Organization International Agency for Research on Cancer (IARC). GLOBOCAN 2020
2. Clarivate DRG Disease Landscape (2021)

Abbreviations: EU5=France, Germany, Italy, Spain and United Kingdom; 1L=first line therapy, 2L=second line therapy, 3L=third line therapy, 4L=fourth line therapy;

TILVANCE-301 Global Phase 3 and Confirmatory Trial

Randomized, multicenter study with optional crossover to offer all patients potential to receive lifileucel (NCT05727904)

Patient Population

Unresectable or metastatic melanoma; no prior therapy for metastatic disease
N=670

Arm A: lifileucel plus pembrolizumab

1:1 Randomization

Arm B: pembrolizumab alone

Long-term follow up

Option to crossover to lifileucel after BIRC-confirmed PD

Study Design with FDA Agreement

- Dual Primary Endpoints: ORR & PFS
- Registrational for frontline melanoma
- Confirmatory for full approval of AMTAGVI in post-anti-PD-1 melanoma
- First patient randomized 2Q23

Abbreviations: BIRC, blinded independent review committee; ORR=objective response rate; PD=progressive disease; PD-1, programmed cell death protein-1; PFS=progression free survival

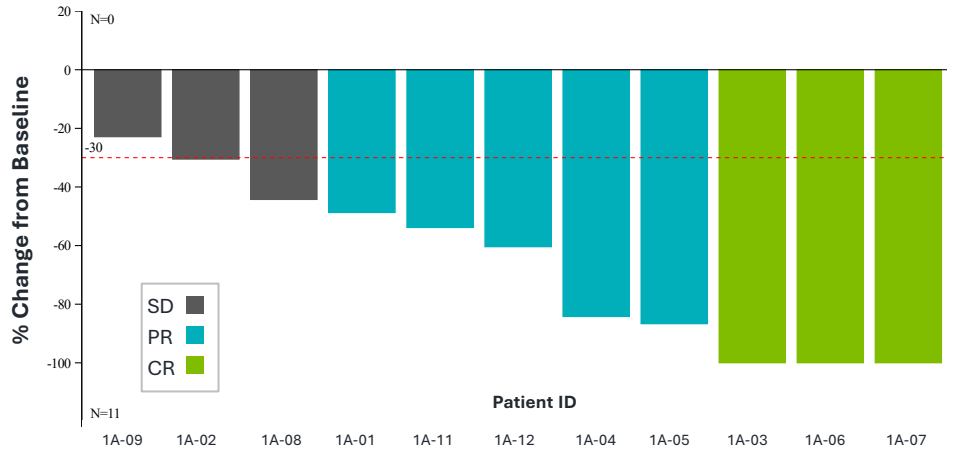
Iovance TIL Clinical Highlights in Combination with Pembrolizumab in Metastatic Melanoma

Lifileucel in combination with anti-PD-1/PD-L1 therapy in ICI-naïve patients
(IOV-COM-202 Cohort 1A, N=12)[1]

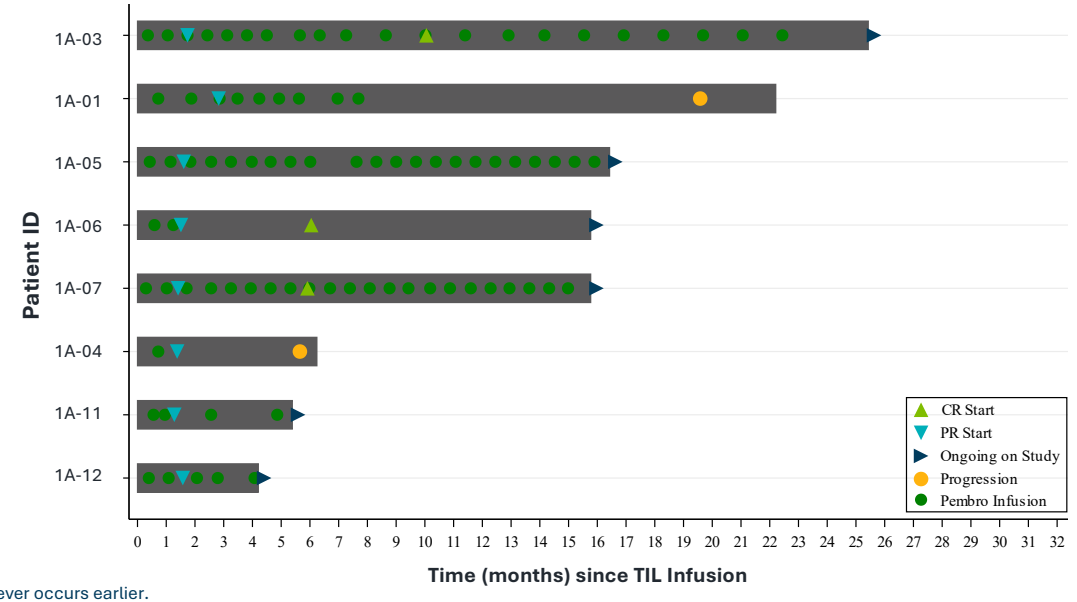
66.7% ORR

- 8 / 12 patients had a confirmed objective response per RECIST v1.1 (3 CRs & 5 PRs)
- 6 / 8 responders had ongoing response
- 5 responders had DOR >1 year
- FDA Fast Track Designation

Best Overall Response for Evaluable Patients



Time to Response for Responders[2]



1. As assessed by investigator using RECIST 1.1 (January 20, 2022 data cutoff)
2. Each bar is presented for each patient starting from date of TIL infusion up to date of new anti-cancer therapy, end of assessment, death, or data cutoff date, whichever occurs earlier.

Abbreviations: CR=complete response; ICI=immune checkpoint inhibitor; ORR=objective response rate; PR=partial response; SD=stable disease; pembro=pembrolizumab; RECIST=Response Evaluation Criteria in Solid Tumors

TIL Therapy Pipeline

Significant Market Potential in Solid Tumors and our Key Programs

91%

of all cancer cases are solid tumors[1]

1.8M

New cases of solid tumors in the U.S.[1]

Move into earlier line of therapy

Expand into other indications

	U.S. Deaths[1]	Global Deaths[2]
Melanoma	8K	57K
Lung & Bronchus	127K	1.8M
Cervical	4K	342K
Endometrial	13K	97K

1. National Cancer Institute Surveillance, Epidemiology and End Results (SEER) Program. 2023 Estimates. https://seer.cancer.gov accessed February 2024
2. World Health Organization International Agency for Research on Cancer (IARC). GLOBOCAN 2020

Potential Market for Advanced Non-Small Cell Lung Cancer (NSCLC)

Addressing a Substantial Unmet Need in Metastatic NSCLC

Iovance TIL clinical program:

- 6 cohorts across 3 trials
- Multiple treatment regimens
- Various populations and stages of disease

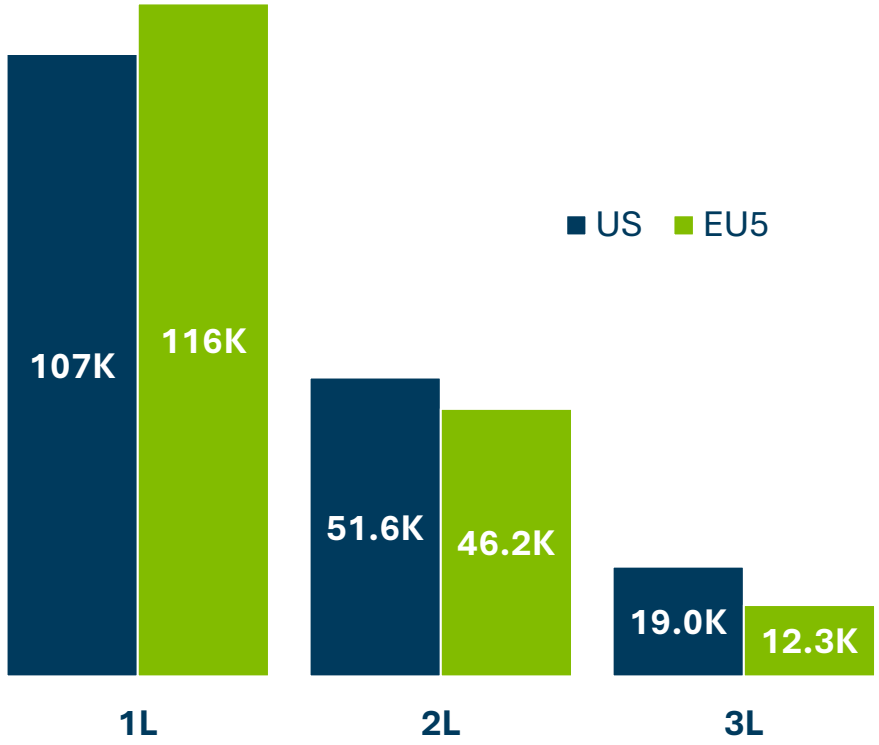
127K annual deaths in U.S.[1]

Leading cause of U.S. cancer deaths, accounting for ~1 in 5 cancer-related deaths[2]

9% 5-year survival rate[2] and real-world overall survival <6 months[3] in U.S.

NSCLC Drug-Treated Population in 2022

Stage IV (US and EU5)[4]



1. National Cancer Institute Surveillance, Epidemiology and End Results (SEER) Program. 2023 Estimates. https://seer.cancer.gov accessed February 2024
2. American Cancer Society, Lung Cancer. https://www.cancer.org/cancer/types/lung-cancer/about.html accessed July 2023
3. National Cancer Database, NSCLC survival from >1 million patients assessed. Lou Y et al. Survival trends among non-small-cell lung cancer patients over a decade: impact of initial therapy at academic centers. Cancer Med. 2018.
4. Clarivate DRG Disease Landscape (2021)

Abbreviations: EU5=France, Germany, Italy, Spain and United Kingdom; 1L=first line therapy, 2L=second line therapy, 3L=third line therapy, 4L=fourth line therapy; mOS=median overall survival

IOV-LUN-202 Trial Design

Phase 2 Multicenter Study of LN-145† in Patients Post-Anti-PD-1 NSCLC (NCT04614103)*

Patient Population

Unresectable or metastatic NSCLC with progression on or after prior anti-PD-1 treatment and chemotherapy

~40 sites and expanding in U.S., Canada, Europe

Registrational Cohorts

Cohort 1: NSCLC
Patients with < 1% or unknown TPS
LN-145

Cohort 2: NSCLC
Patients with ≥ 1% TPS
LN-145

Exploratory Cohorts

Cohort 3: Core Biopsy and Gen3††
LN-145

Cohort 4:
LN-145, pre-PD tumor harvest

Retreatment Cohort

IOV-LUN-202 is designed to enroll patients with advanced NSCLC with a high unmet medical need, but limited prior lines of therapy post anti-PD-1 treatment

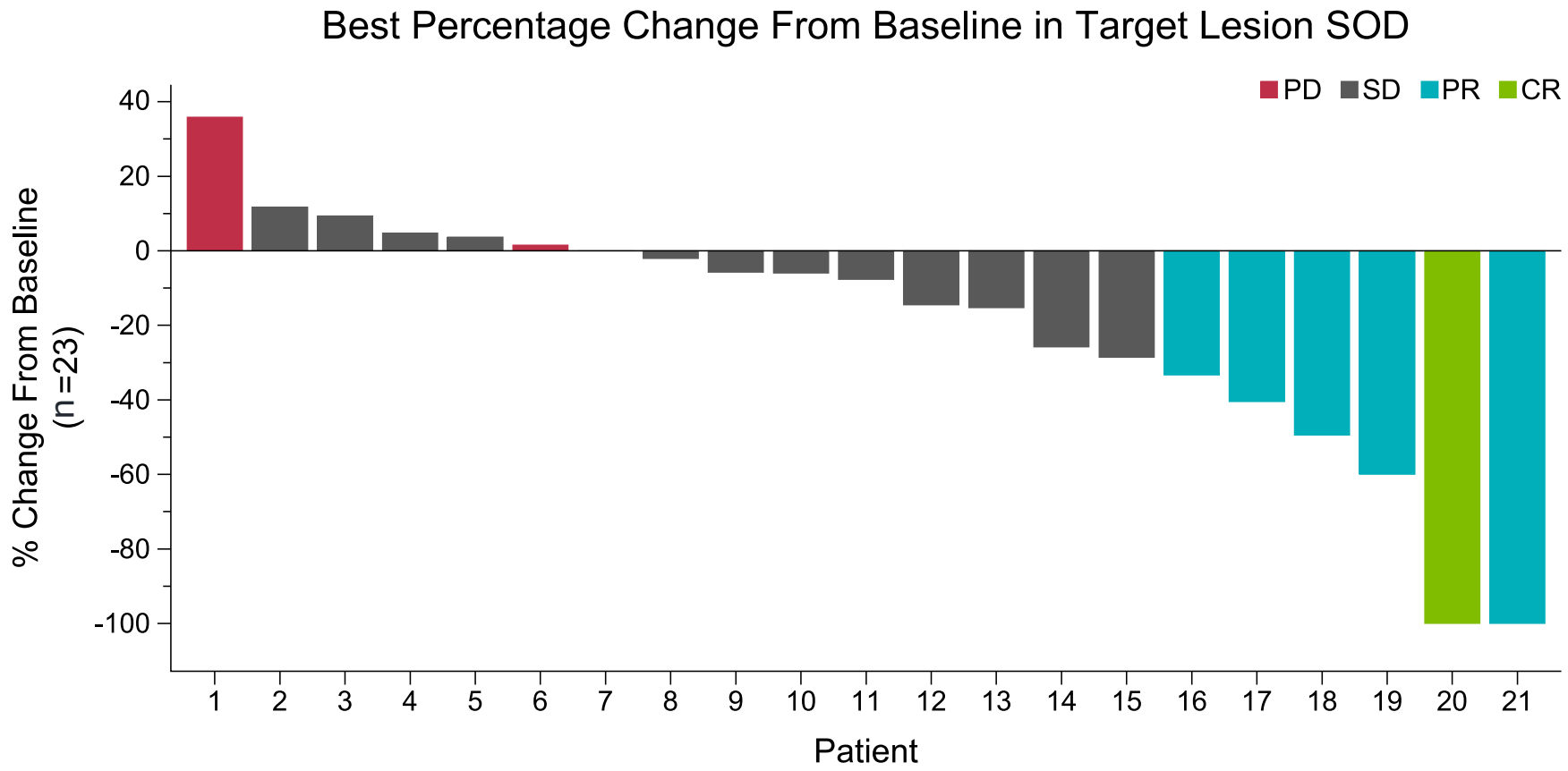
Endpoints

- Primary: ORR by IRC
- Secondary: Safety

* U.S. FDA placed a partial clinical hold on the IOV-LUN-202 trial on December 22, 2023. Enrollment for new patients is paused. Patients previously treated continue to be monitored and followed. Patients who have already undergone tumor resection will continue to receive the LN-145 TIL treatment regimen with additional precautions and risk mitigations..
†Gen 2 TIL product †† Cohort 3 patients unable to undergo surgical harvest, TIL grown from core biopsy
Abbreviations: Anti-PD-1, anti-programmed cell death inhibitor; IRC, independent review committee; NSCLC, non-small-cell lung cancer; ORR, objective response rate; TPS, tumor proportion score

Preliminary Clinical Results for IOV-LUN-202 Cohorts 1 and 2

Objective Response Rate of 26.1% by RECIST 1.1, Regardless of PD-L1 Status



Data cut: July 6, 2023. 21 evaluable patients for response.
Abbreviations: CR, complete response; NSCLC, non-small-cell lung cancer; PR, partial response; SD=stable disease; SOD, sum of diameters; TPS, tumor proportion score.

Preliminary Clinical Results for IOV-LUN-202 Cohorts 1 and 2

All Patients Progressed on or After Anti-PD-1 Therapy and Chemotherapy

	Cohort 1 + 2 (n=23)[2]
Objective Response Rate, n (%)[1]	6 (26.1)
(95% CI)	(10.2, 48.4)
Best overall response, n (%)	
CR	1 (4.3)
PR	5 (21.7)
SD	13 (56.5)
PD	2 (8.7)
NE	2 (8.7)

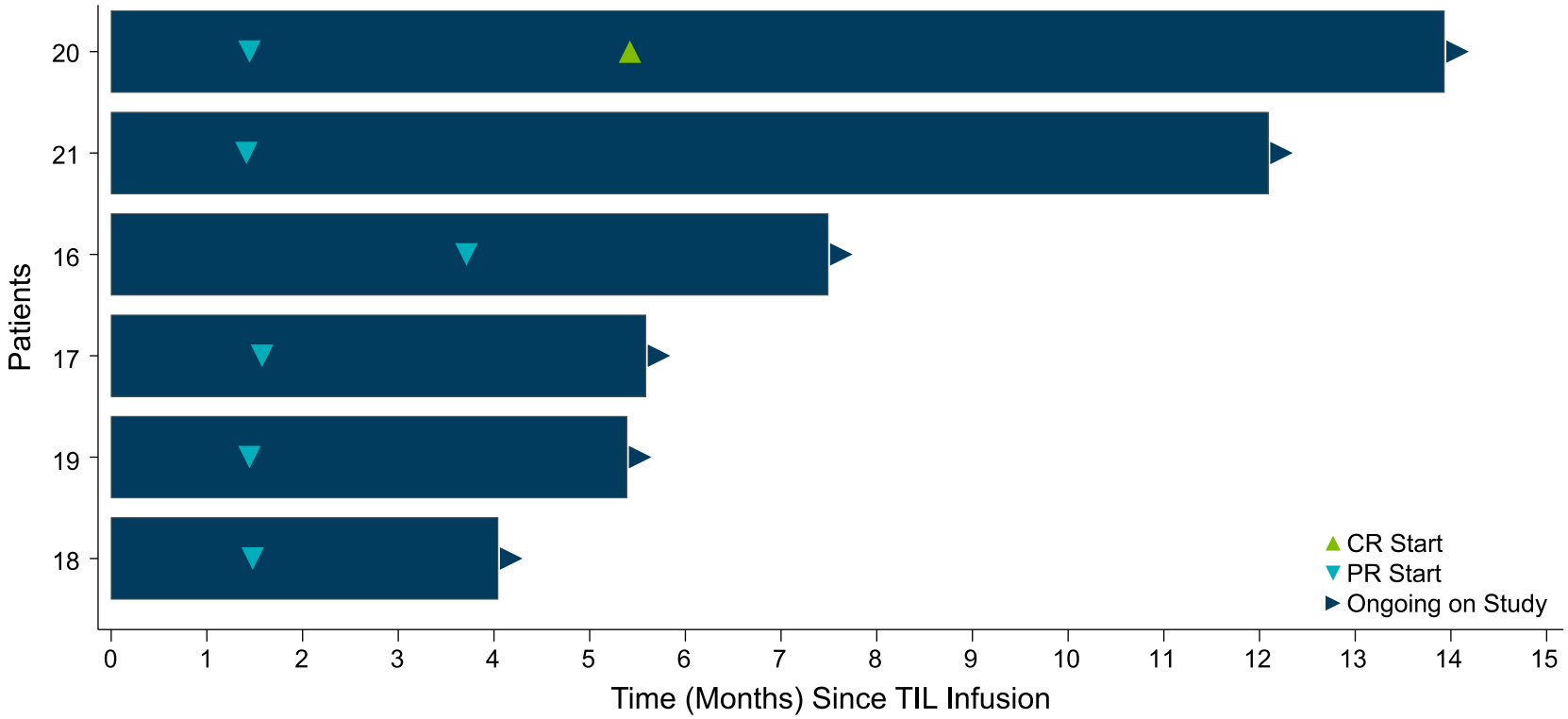
TEAEs were consistent with the underlying disease and known AE profiles of NMA-LD and IL-2

1. Data cut: July 6, 2023. Responses were assessed by investigator.
2. Patients who have progressed on or after chemotherapy and anti-PD-1 therapy for advanced (unresectable or metastatic) NSCLC without EGFR, ROS or ALK genomic mutations and had received at least one line of an FDA-approved targeted therapy if indicated by other actionable tumor mutations.

Abbreviations: AE, adverse event; CI, confidence interval; CR, complete response; ICI, immune checkpoint inhibitor; NE, not evaluable; NMA-LD, non-myeloablative lymphodepletion; NSCLC, non-small-cell lung cancer; ORR, objective response rate; PD, progressive disease; PR, partial response; SD, stable disease; TEAE, treatment-emergent AE.

Preliminary Clinical Results for IOV-LUN-202 Cohorts 1 and 2

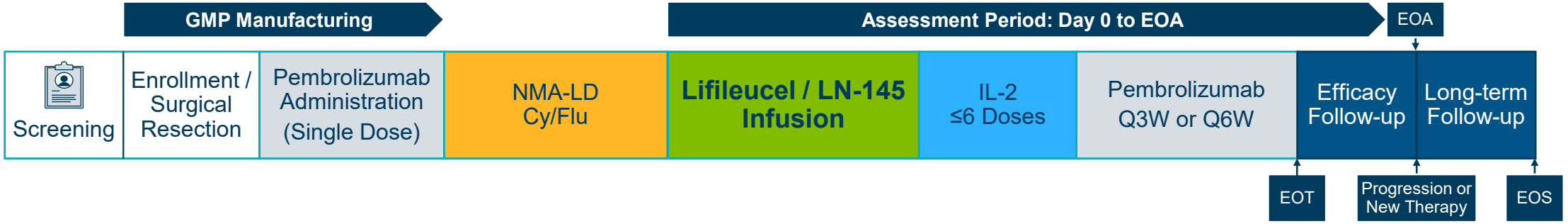
All Responses Remain Ongoing at Time of Data Cut



Data cut: July 6, 2023.
A bar is presented for each patient starting from date of LN-145 infusion up to date of new anti-cancer therapy, end of assessment, death, or data cutoff date, whichever occurs earlier.
Abbreviations: CR, complete response; DOR, duration of response; NSCLC, non-small-cell lung cancer; PR, partial response.

Cohort 3A Summary

Proof-of-Concept for TIL in ICI-Naïve NSCLC Regardless of PD-L1 Status



Clinical Activity at 18.2 Months of Follow Up[1]

- Activity across ICI naïve subgroups and TPS Scores
- 58.3% (7/12) ORR and 3 ongoing responses in NSCLC patients with $EGFR^{WT}$ disease
- Safety consistent with Iovance TIL combination studies
- Supports proposed registrational trial design in patients with $EGFR^{WT}$ disease in the frontline setting

Cohort 3A Results Support Adding TIL Therapy to Frontline Pembrolizumab + Chemotherapy Combination Regimens

1. Schoenfeld, et al. WCLC 2023

Abbreviations: cy/flu, cytarabine/fludarabine; EGFR, epidermal growth factor receptor; ICI, immune checkpoint inhibitor; IL-2, interleukin-2; NMA-LD, non-myeloablative lymphodepletion; TPS, tumor proportion score; WT, wild type

Frontline NSCLC Registrational Trial: Design Supported by Cohort 3A Data

Adding TIL Therapy to Standard-of-Care Therapy

Patient Population

Treatment naïve metastatic NSCLC

EGFR^{WT} Disease

All PD-L1 TPS Scores

SOC Chemo-IO Treatment*

SOC Maintenance Treatment +/- TIL

Long-Term Follow Up

Experimental Arm

Chemotherapy
Platinum Doublet

TIL

Pembrolizumab

Comparator Arm

Chemotherapy
Platinum Doublet

Pembrolizumab

- FDA meeting in 2024 to discuss frontline trial to be registrational in treatment naïve EGFR^{WT} NSCLC patients
- Confirmatory trial for accelerated approval in post anti-PD-1 NSCLC

Benchmarks	EGFR/ALK status	ORR	mDOR (mos)	mPFS (mos.)	Prior IO	Prior Chemo	PD-L1 (%)	SQ or NSQ
Keynote-189[1,2]	WT	48%	11.2	8.8	No	No	All	NSQ
PD-L1 <1 Subgroup[1,2]	WT	32%			No	No	<1	NSQ
Keynote-407[1]	N/A	58%	7.2	6.4	No	No	All	SQ

* SOC Chemo-IO is 4-6 cycles of pembro + platinum-based chemotherapy doublet

1. KEYTRUDA USPI
2. Ghandi et al, NEJM 2018

Abbreviations: EGFR, epidermal growth factor receptor; mDOR, median duration of response; NSCLC, non-small-cell lung cancer; NSQ, nonsquamous; platinum doublet, pemetrexed and cisplatin or carboplatin; PD-L1, programmed death ligand 1; PR, partial response; Pt, patient; SOC, standard of care; SQ, squamous; TPS, tumor proportion score; WT, wild-type

Phase 1/2 Open-Label First-in-Human Study: IOV-GM1-201

Genetically Modified, PD-1 Inactivated TIL Therapy IOV-4001 in Previously Treated Metastatic Melanoma and NSCLC (NCT05361174)

Patient Population

Adults with unresectable or metastatic melanoma or advanced NSCLC

N=53

Cohort 1: Unresectable or metastatic melanoma
Post-anti-PD-1/L1, post-BRAF/MEK inhibitor in patients with BRAF mutations

Cohort 2: Stage III or IV NSCLC
Post-anti-PD-1/L1 or post targeted therapy and either chemotherapy or anti-PD-1/L1

Endpoints

- Phase 1: Safety
- Phase 2: Objective Response Rate (ORR) per RECIST v1.1 as assessed by the investigator
- Secondary endpoints include complete response (CR) rate, duration of response (DOR), disease control rate (DCR), progression free survival (PFS), overall survival (OS), safety and tolerability, feasibility

Study Updates

- 3Q22: first patient treated

NSCLC=non-small-cell lung cancer

Trailblazing Next-Generation TIL Programs

Genetically modify TIL

Cellectis gene-editing TALEN® collaboration[1,2]

PD-1 and other immune checkpoint targets (single and multiple knockouts)

Cytokine-tethered TILs

Optimize TIL composition

PD-1+ selected TIL

CD39/69 double negative TILs[3]

Next-generation processes

Gen 3 (16-day) process

Core biopsy

Expand TIL into new regimens

IOV-3001 IL-2 analog licensed from Novartis: IND enabling studies

1. Ritthipichai et al., ESMO 2020
2. Natarajan, et al., AACR 2022
3. Cubas et al., ESMO IO 2021

Corporate Summary & Milestones

Well-Capitalized in Pursuit of TIL Commercialization

September 30, 2023	(in millions)
Cash, cash equivalents, investments, restricted cash	$427.8[1]
Common shares outstanding	255.8
Preferred shares outstanding	2.9[2]
Stock options and restricted stock units outstanding	23.1

Cash runway is sufficient into 2025*

** Includes anticipated revenue in 2024 from AMTAGVI™ and Proleukin®*

1. Includes Restricted Cash of $66.4 million as of September 30, 2023.
2. Preferred shares are shown on an as-converted basis

Anticipated 2024 Milestones

REGULATORY

- ☑ Obtain FDA approval for lifileucel in advanced melanoma (PDUFA date: February 24, 2024)
- ☐ Submit EMA regulatory dossier (1H24)
- ☐ Submit additional ex-US dossiers (2H24)
- ☐ Meet with FDA to discuss NSCLC registrational path/frontline study

PIPELINE

- ☐ Report clinical and pre-clinical data
- ☐ Resume enrollment in IOV-LUN-202
- ☐ Initiate Phase 2 trial in endometrial cancer
- ☐ Continue to enroll patients in clinical trials for advanced melanoma, NSCLC and gynecological cancers
- ☐ Advance new products toward clinic, including additional genetically-modified TIL therapies

MANUFACTURING

- ☐ Fulfill patient demand for commercial launch and clinical trials
- ☐ Further expand capacity to meet US and ex-US demand

COMMERCIAL

- ☐ Execute commercial launch (1Q24)
- ☐ On-board 50 ATCs within 90 days of PDUFA date

Corporate Highlights

Pioneering a Transformational Approach to Cure Cancer

Large Market Opportunity in High Unmet Need Cancers

- Initial focus in post-ICI solid tumors
- Expansion into combinations, earlier lines of therapy and genetic modifications
- Key late-stage trials in melanoma, NSCLC and cervical cancer
- First-in-human trial of genetically modified PD-1 inactivated TIL

First FDA Approved T Cell Therapy for a Solid Tumor Cancer

- FDA accelerated approval for AMTAGVI™ in advanced melanoma
- TILVANCE-301 Phase 3 confirmatory trial in frontline advanced melanoma (FTD)
- Defined registration strategy in NSCLC and cervical cancer (BTD)

Efficient and Scalable Proprietary Manufacturing Facility

- Iovance Cell Therapy Center (*i*CTC) in-house manufacturing
- Additional capacity with contract manufacturers
- Rapid 22-day Gen 2 manufacturing
- >700 patients treated with Iovance proprietary process

Fully-Integrated for Commercial Success

- Experienced cross-functional cell therapy team
- TIL service-line capabilities established with leading U.S. cancer centers
- IovanceCares™ proprietary platform

Abbreviations: BLA, Biologics License Application; BTD, breakthrough therapy designation; FTD, fast track designation; ICI, immune checkpoint inhibitor; NSCLC, non-small cell lung cancer; PD-1, programmed cell death protein-1; RMAT, Regenerative Medicines Advanced Therapy; TIL, tumor infiltrating lymphocytes.

IOVANCE BIOTHERAPEUTICS

Thank You

ADVANCING IMMUNO-ONCOLOGY