Trial in progress: A Phase 2, multicenter study of autologous tumor-infiltrating lymphocyte (TIL, LN-145) cell therapy in patients with metastatic non-small cell lung cancer (IOV-LUN-202)

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Presenter DISCLOSURES

Ineligible Company (formerly: Commercial Interest)	**Relationship(s)**
AstraZeneca	Speakers Bureau
Janssen	Consultant
Lilly	Consultant, Speakers Bureau
Merck	Consultant, Speakers Bureau

Background

- Adoptive cell transfer (ACT) using autologous tumor-infiltrating lymphocytes (TIL) has been shown to be effective for the treatment of advanced metastatic melanoma, and other solid tumors with high tumor mutational burden[1,2]
- TIL cell therapy (lifileucel [LN-144], LN-145) has demonstrated efficacy and safety in clinical trials for several high unmet medical need patient populations; specifically unresectable and metastatic melanoma; relapsed, refractory or persistent cervical cancer; and head and neck squamous cell carcinoma (HNSCC)[3-5]
- Further, TIL cell therapy has shown evidence of efficacy in metastatic non-small cell lung cancer (mNSCLC) in a Phase 1 study in combination with nivolumab[6]

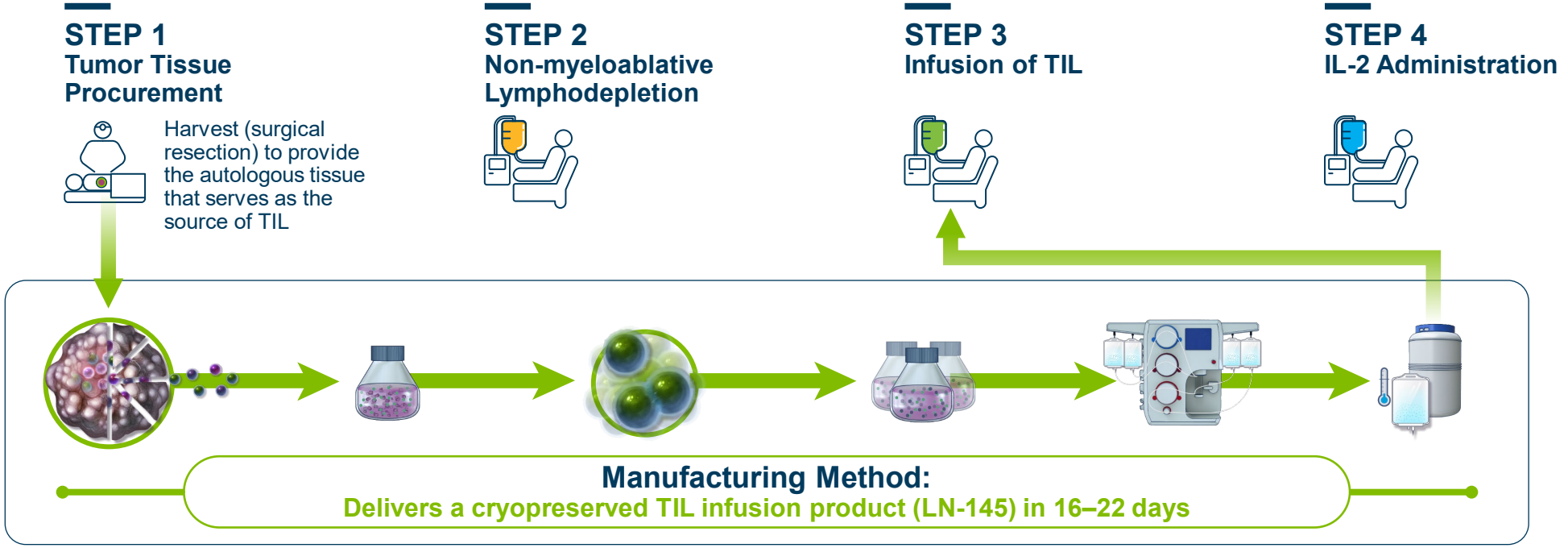
IOV-LUN-202

- **IOV-LUN-202 (NCT04614103)** is a prospective, open-label, multi-cohort, non-randomized, multicenter Phase 2 study evaluating TIL cell therapy with LN-145 in patients with mNSCLC without actionable driver mutation(s), who have progressed on or following a single line of approved systemic therapy consisting of combined immune checkpoint inhibitors (ICI) + chemotherapy ± bevacizumab

1. Goff SL, et al. JCO. 2016;34(20):2389-97.
2. Stevanović S, et al. Clin Can Res. 2019;25(5):1486-1493.
3. Sarnaik A, et al. JCO. 2020;38 (suppl; abstr 10006).
4. Jazaeri A, et al. JCO. 2019;37 (suppl; abstract 2538).
5. Jimeno A, et al. JITC. 2020;8 (suppl; abstract A378).
6. Creelan, B et al. Can Res. 2020;80:16 (suppl; abstract CT056).

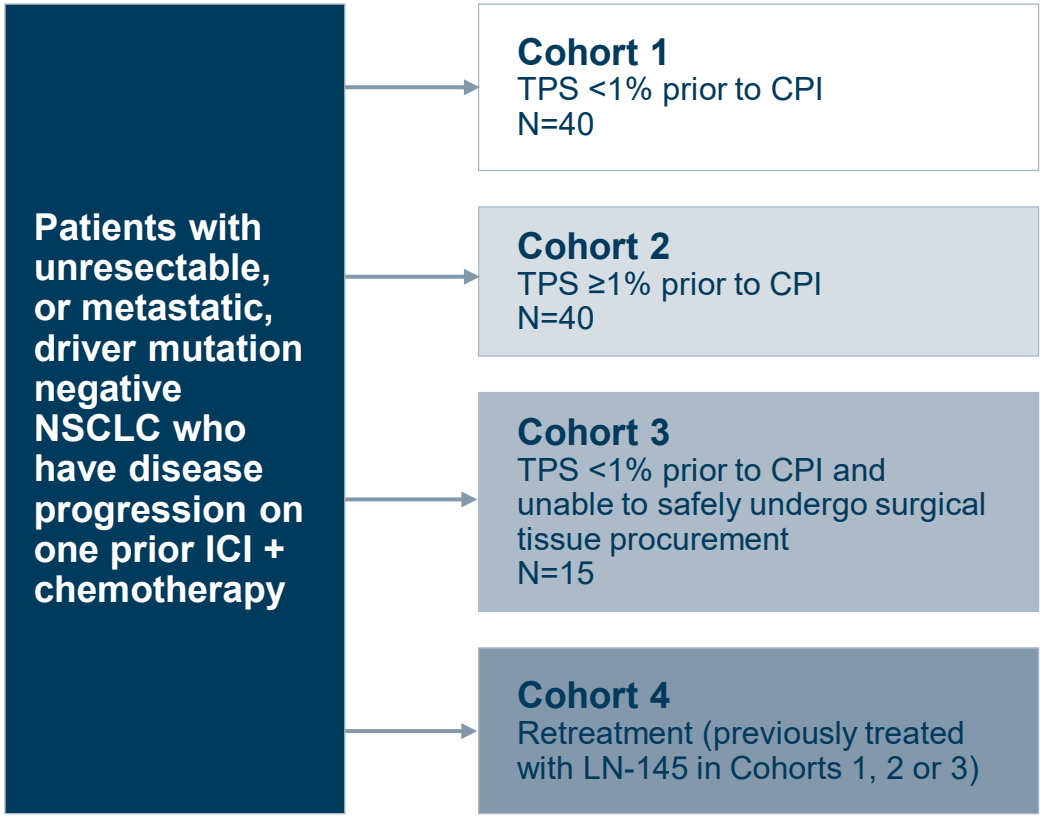
TIL Manufacturing and Patient Journey

- The one-time TIL cell therapy requires procurement of an ~1.5-cm sample of tumor tissue, which is shipped to a central GMP facility; outside of the suppressive tumor microenvironment, the TIL are reinvigorated and expanded to ~10^9–10^{11} cells
- LN-145 manufacturing is a 16–22-day process



Abbreviations: GMP, good manufacturing practice; IL-2, interleukin-2; TIL, tumor-infiltrating lymphocytes.

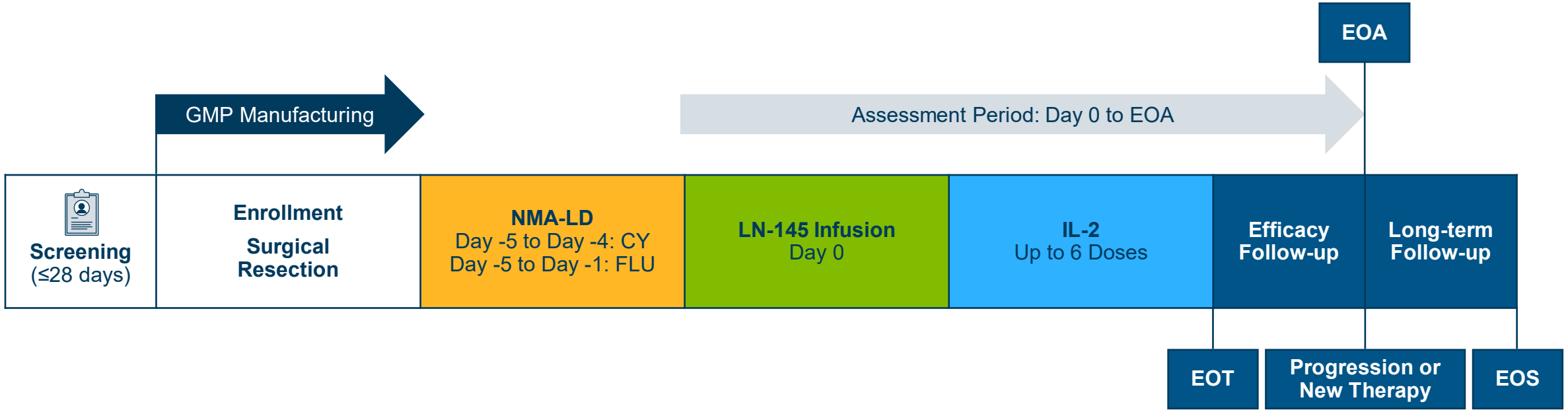
Study Overview, Design, and Endpoints



- A total of ~95 patients are planned to be infused with LN-145 in Cohorts 1, 2, and 3
- Primary endpoint
  - Efficacy: ORR per RECIST 1.1 as assessed by IRC (Cohort 1 and Cohort 2) or by investigator (Cohort 3 and Cohort 4)
- Secondary endpoints
  - Safety and additional efficacy parameters
  - Efficiency of generating LN-145 from tumor core biopsies (Cohort 3)
- Exploratory endpoints
  - Analyses of predictive and pharmacodynamic biomarkers of clinical activity of LN-145

Abbreviations: CPI, checkpoint inhibitors; ICI, immune checkpoint inhibitors; IRC, independent review committee; NSCLC, non-small cell lung cancer; ORR, objective response rate; RECIST, response evaluation criteria in solid tumors; TIL, tumor-infiltrating lymphocytes; TPS, tumor proportion score.

IOV-LUN-202 Patient Treatment Schema



Abbreviations: CY, cyclophosphamide; EOA, end of assessment; EOS, end of study; EOT, end of treatment; FLU, fludarabine; GMP, good manufacturing practice; IL-2, interleukin-2; NMA-LD, non-myeloablative lymphodepletion; TIL, tumor-infiltrating lymphocytes.

Key Inclusion and Exclusion Criteria

Inclusion Criteria

- Confirmed histologic diagnosis of NSCLC and documented PD-L1 expression status as measured by TPS prior to the ICI treatment
- Prior single line of systemic therapy that included ICI + chemotherapy with documented radiographic disease progression on or following this single line of prior systemic therapy
- Cohort 1 and Cohort 2: ≥1 resectable lesion; Cohort 3: single measurable lesion; or unable to safely undergo a surgical resection; and able to have tumor harvest via radiology guided core biopsy sufficient for TIL generation
- Remaining measurable disease as defined by RECIST 1.1
- ECOG performance status of 0 or 1, and an estimated life expectancy of ≥6 months
- Left ventricular ejection fraction >45%, New York Heart Association Class 1; cardiac stress test required
- FEV_1 >50% or FEV_1/forced vital capacity >0.7

Exclusion Criteria

- Known oncogene driver mutations (e.g., *EGFR*, *ALK*, *ROS*), which are sensitive to targeted therapies
- Symptomatic and/or untreated brain metastases
- Organ allograft or prior cell transfer within the past 20 years
- Receiving systemic steroid therapy ≥10 mg/day of prednisone or other steroid equivalent
- Any form of primary immunodeficiency
- Received a live or attenuated vaccination within 28 days prior to the start of treatment
- Active medical illness(es) that pose increased risk
- Participated in another interventional clinical study within 21 days of the initiation of treatment

Abbreviations: ECOG, Eastern Cooperative Oncology Group; FEV_1, forced expiratory volume in 1 second; ICI, immune checkpoint inhibitor; NSCLC, non-small cell lung cancer; RECIST, response evaluation criteria in solid tumors; TIL, tumor-infiltrating lymphocytes; TPS, tumor proportion score.

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