Poster
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# KITE-363: a Phase 1 Study of an Autologous Anti-CD19/CD20 Chimeric Antigen Receptor T-Cell Therapy in Patients With Relapsed/Refractory B-Cell Lymphoma

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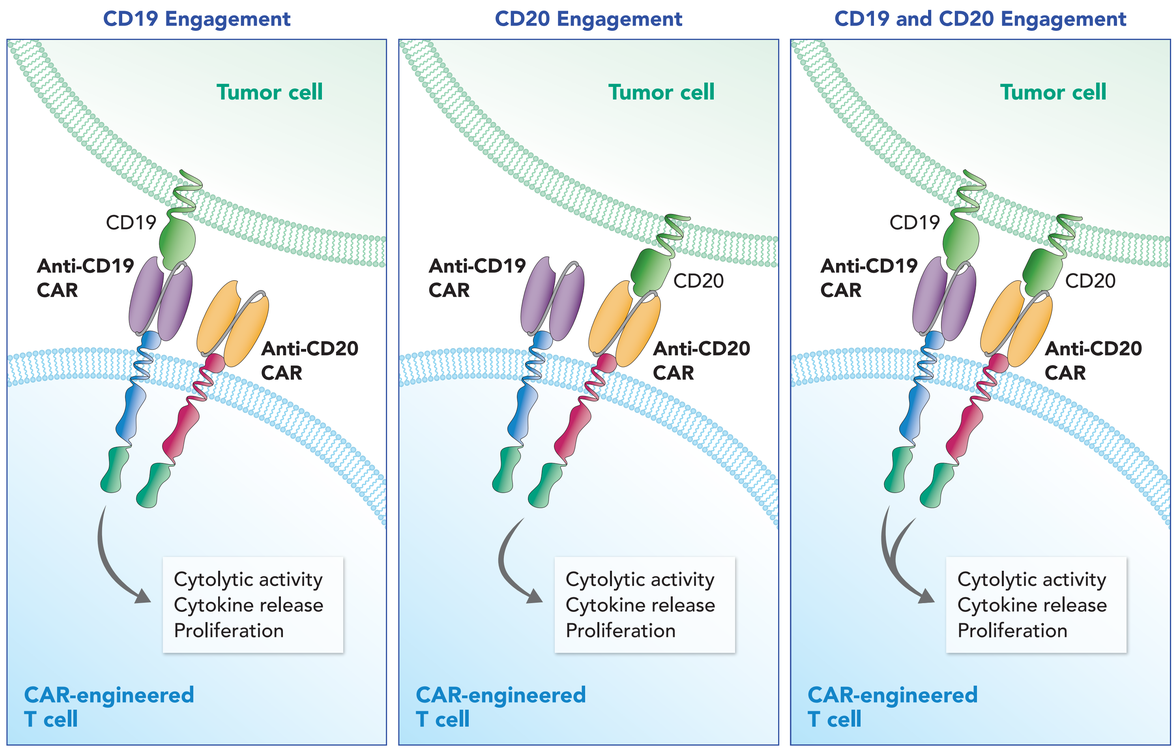
## BACKGROUND

- Durable responses can be achieved with autologous anti-CD19 chimeric antigen receptor (CAR) T-cell therapy in patients with relapsed/refractory (R/R) B-cell lymphomas (BCL)[1-3]
- However, a subset of patients relapse following CAR T-cell therapy; one mechanism by which B-cell tumors can resist the effects of CD19-targeted CAR T-cell therapy is through loss of CD19 expression on the cell surface (antigen escape)[4]
  - Recent analyses of patients with large B-cell lymphoma (LBCL) found that up to approximately 60% of relapses after infusion of CAR T-cell therapy were CD19 negative[5-7]
- Therapies that can prevent or mitigate CD19 antigen loss are needed given the paucity of effective therapies for patients who relapse after CD19 CAR T-cell therapy[8]
- CD20 is often co-expressed with CD19 on B-cell tumors, and a recent analysis showed that upon CD19-negative relapse following anti-CD19 CAR-T therapy, CD20 expression was preserved on the cell surface of several relapse biopsies[5]
- KITE-363 is an autologous bicistronic CAR T-cell therapy that targets CD19- and/or CD20-expressing B-cell malignancies
  - The anti-CD19 CAR contains a CD28 signaling domain
  - The anti-CD20 CAR contains a 4-1BB signaling domain
- In preclinical studies, KITE-363 recognized and eliminated tumor cells expressing CD19 and/or CD20
- Upfront dual-antigen targeting with KITE-363 may improve the durability of response compared with single antigen-targeting therapies by minimizing antigen escape
- This Phase 1, first-in-human, open-label, multicenter study will evaluate the safety and preliminary efficacy of KITE-363 in patients with R/R BCL

### Figure 1. KITE-363 Structure and Mechanism of Action



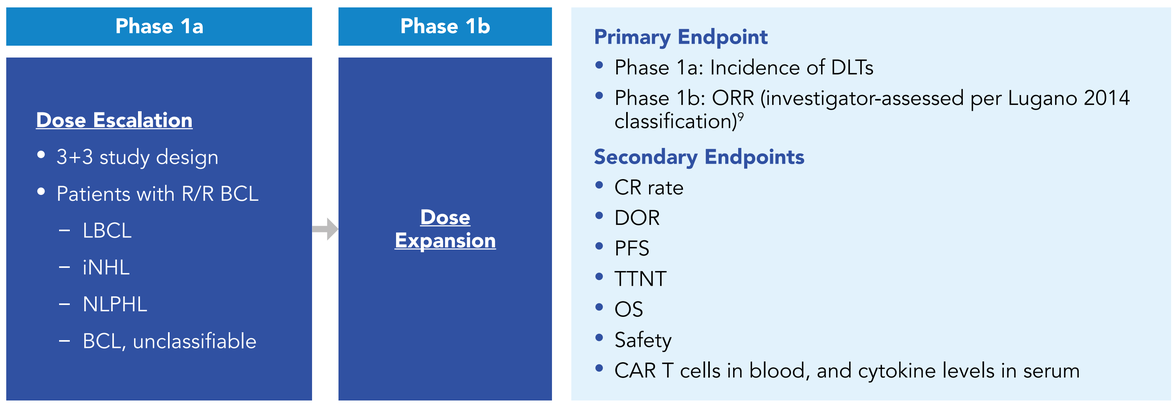

CAR, chimeric antigen receptor.

## KEY STUDY OBJECTIVES

- **Phase 1a:** to evaluate the safety of KITE-363 in patients with R/R BCL and to determine the dose level(s) for Phase 1b dose expansion
- **Phase 1b:** to evaluate the efficacy of KITE-363 as measured by the objective response rate

## STUDY DESIGN AND ENDPOINTS

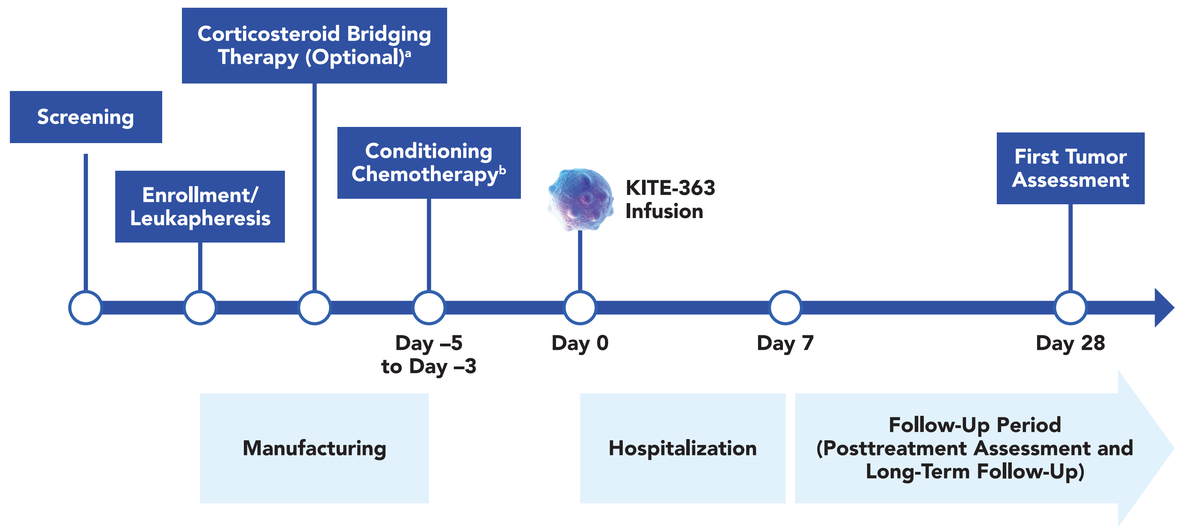
### Figure 2. KITE-363 Study Design




BCL, B-cell lymphoma; CAR, chimeric antigen receptor; CR, complete response; DLT, dose-limiting toxicity; DOR, duration of response; iNHL, indolent non-Hodgkin lymphoma; LBCL, large B-cell lymphoma; NLPHL, nodular lymphocyte-predominant Hodgkin lymphoma; ORR, objective response rate; OS, overall survival; PFS, progression-free survival; R/R, relapsed/refractory; TTNT, time to next treatment.

## TREATMENT SCHEMA

### Figure 3. KITE-363 Treatment Schema (Phase 1a and Phase 1b)




[a] Corticosteroid bridging therapy will be administered at the discretion of the investigator. [b] Conditioning chemotherapy consists of cyclophosphamide (300 mg/m$^2$/day) and fludarabine (30 mg/m$^2$/day).

## PATIENT ELIGIBILITY

### Table 1. KITE-363 Key Inclusion Criteria and Exclusion Criteria

| Key Inclusion Criteria | Key Exclusion Criteria |
|---|---|
| • Aged ≥18 years<br>• Histologically confirmed R/R B-cell lymphomas (defined by WHO criteria[10]) after ≥2 lines of systemic therapy<br>– LBCL (including transformed iNHL) and Grade 3b FL<br>• Primary refractory LBCL is also eligible<br>• Prior therapy must have included an anti-CD20 mAb and an anthracycline-containing chemotherapy regimen<br>– iNHL (Grades 1, 2, or 3a FL; nodal, extranodal, or splenic MZL)<br>– NLPHL<br>– B-cell lymphoma, unclassifiable (with features intermediate between DLBCL and cHL)<br>• At least 1 measurable lesion<br>• ECOG PS 0 or 1<br>• Adequate bone marrow, renal, hepatic, pulmonary, and cardiac function | • Richter transformation<br>• CNS involvement from lymphoma<br>• Active infection including hepatitis B and C<br>• Clinically significant CNS disorder, autoimmune disease, or cardiac disease |

cHL, classical Hodgkin lymphoma; CNS, central nervous system; DLBCL, diffuse large B-cell lymphoma; ECOG PS, Eastern Cooperative Oncology Group performance score; FL, follicular lymphoma; iNHL, indolent non-Hodgkin lymphoma; LBCL, large B-cell lymphoma; mAb, monoclonal antibody; MZL, marginal zone lymphoma; NLPHL, nodular lymphocyte-predominant Hodgkin lymphoma; R/R, relapsed/refractory; WHO, World Health Organization.

## STATUS

- The study opened to accrual in August 2021 and is currently recruiting participants at 3 sites in the United States
  - MD Anderson Cancer Center, Houston, TX
  - Greenebaum Comprehensive Cancer Center, Baltimore, MD
  - Stanford University School of Medicine, Stanford, CA

## REGISTRATION

- This study is registered at ClinicalTrials.gov (NCT04989803)

## REFERENCES

1. Locke FL, et al. *Lancet Oncol*. 2019;20:31-42.
2. Jacobson CA, et al. ASH 2021. Abstract 1764.
3. Neelapu SS, et al. ASH 2021. Abstract 93.
4. Neelapu SS, et al. ASH 2019. Abstract 203.
5. Plaks V, et al. *Blood*. 2021;138:1081-1085.
6. Spiegel JY, Dahiya S, et al. *Blood*. 2021;137:1832-1835.
7. Spiegel JY, et al. *Nat Med*. 2021;27:1419-1431.
8. Logue LM, Chavez JC. *Curr Treat Options Oncol*. 2021;22:112.
9. Cheson BD, et al. *J Clin Oncol*. 2014;32:3059-3068.
10. Swerdlow SH, et al. *Blood*. 2016;127:2375-2390.

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## DISCLOSURES

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