INTRODUCTION

CAR-T therapy is effective for treatment of patients with relapsed/refractory B-NHL, but only 30-40% of DLBCL patients have durable remissions with CD19 CARs and there is limited follow-up for MCL and FL patients treated with CD19 CARs. CD20-targeted CAR-T is another potential adoptive immunotherapy option that could be utilized instead of in sequence with CD19 CAR-T. We present interim results of our ongoing phase I/II clinical trial investigating safety and efficacy of a CD20 CAR-T for high-risk B-NHLs (NCT03277729).

METHODS

Single institution phase I/II study

- **Eligibility:** CD20+ B-NHLs
  - Large cell lymphoma after 2 lines of treatment (including anthracycline and an anti-CD20 antibody)
  - FL and MCL after at least 1 prior line of treatment
  - CLL: Prior BTKi or Venetoclax failure (progression or intolerance)
  - Other previously treated B-NHLs
  - Prior treatment with a CD19 CAR is allowed after recovery of normal B cells ($\geq 20$ B cells/μL)
- **Lymphodepletion (LD):**
  - Cyclophosphamide and Fludarabine (Cy-Flu)
- **Dose levels (DL):**
  - Dose level 0: $1 \times 10^5$ cells/kg
  - Dose level 1: $3.3 \times 10^5$ cells/kg
  - Dose level 2: $1 \times 10^6$ cells/kg
  - Dose level 3: $3.3 \times 10^6$ cells/kg
  - Dose level 4: $1 \times 10^7$ cells/kg

RESULTS

**Table 1: Baseline Information**

| N = 15 | Age, median (range) | 50 (43-83) | Female sex, n(%) | 9 (60%) | PD1224 | 8 (53%) | History of transformation | 3/15 (21%) | Prior lines of therapy median (range) | 4 (1-14) | Prior POK inhibitor | 4/11 (36%) | MCL (%) | 2 (13%) | Prior lines of therapy median (range) | 6 (0-7) | Prior ASCI | 1/2 (100%) | MCL (%) | 2 (100%) | Prior BTK inhibitor | 1/2 (100%) | CLL (%) | 1 (6.5%) | Complex karyotype | 1/1 (100%) | Prior Venetoclax | 1/2 (100%) | DLBCL n(%) | 1 (6.5%) | Transformed lymphoma | 3/1 (100%) | Prior lines of therapy | 5 |

**HIGHLIGHTS**

- Favorable Safety profile
  - CRS: only grade 1 (20%) and 2 (20%)
  - ICANS: only grade 2 (6.5%) – No ICANS in FL patients
- High Efficacy
  - High response rates in all B-NHLs – only CLL patient in CR and uMRD
  - FL cohort:
    - ORR (91%), CR (82%)
    - Dose levels 3 and 4: CR (100%)
  - Durable CRs – no relapse in CR patients – longest ~16 months (May 2021)
  - CAR-T persistence in all dose levels
    - Faster expansion with higher dose levels but comparable levels by day 28 between all dose levels

**SUMMARY**

- MB-106 is a 3rd generation CD20 targeting CAR-T with both 4-1BB and CD28 co-stimulatory domains
- In this single-institution study, we observed very favorable safety profile and high rate of complete and durable responses
- The current study is open to enrollment for all CD20+ B-NHLs and CLL including patients with prior treatment with CAR-T
- A multicenter study will be launched in the near future