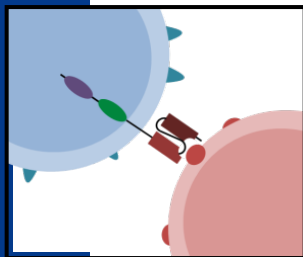


## CAR-T cells with enhanced 41BB co-stimulation



Moffitt investigators developed a chimeric antigen receptor (CAR) with enhanced costimulatory regions possessing mutated cytoplasmic domains of 41BB. The 41BB domain enhances nuclear factor kappaB (NFκB) signaling, which in turn increases CAR-T persistence and inflammation through the secretion of pro-inflammatory cytokines. Immune effector cells were engineered with this CAR co-expressed with Tumor necrosis factor Receptor-Associated Factor (TRAF). This increases anti-tumor efficacy and enhances CD28 co-stimulation. The costimulatory regions have been tested in vivo in CD19 CAR-T constructs in mouse models with proof of superior activity over controls.

### COMMERCIAL OPPORTUNITY

| Approved CAR-T | Company                | Target/Indication                                                                                                                                           | 2022 Drug Sales (worldwide) | Drug Price |
|----------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|------------|
| Kymriah        | Novartis               | Anti-CD19 CAR-T therapy for pediatric and young adults' acute lymphoblastic leukemia (ALL), diffuse large B-cell lymphoma (DLBCL), follicular lymphoma (FL) | \$536M                      | \$475,000  |
| Yescarta       | Gilead                 | Anti-cd19 Car-T treatment of adult patients with large B-cell lymphoma, high-grade B-cell lymphoma, DLBCL, or FL.                                           | \$1,160M                    | \$373,000  |
| Tecartus       | Gilead                 | Anti-CD19 CAR-T therapy for mantle cell lymphoma ("MCL") and relapsed/refractory B-cell precursor acute lymphoblastic leukemia.                             | \$299M                      | \$373,000  |
| Breyanzi       | BMS/Juno Therapeutics  | Anti-CD19 CAR-T treatment for adult patients with relapsed/refractory large B-cell lymphoma.                                                                | \$182M                      | \$410,300  |
| Abecma         | BMS/Bluebird Bio       | Anti-BCMA CAR-T therapy for multiple myeloma after four or more prior lines of therapy.                                                                     | \$388M                      | \$481,499  |
| Carvykti       | Legend Biotech/Janssen | Anti-BCMA CAR-T therapy for patients with relapsed/ refractory Multiple Myeloma.                                                                            | N/A                         | \$465,000  |

### TECHNOLOGY

Figure 1 shows that persistence of m19-humBBz CAR-T cells is required for optimal function in vivo. Data shows B cell percentages in the BM and irradiated and nonirradiated CAR-T cell numbers in the blood and BM 1 week after transfer. Data are from 1 experiment. Each data point indicates 1 mouse.

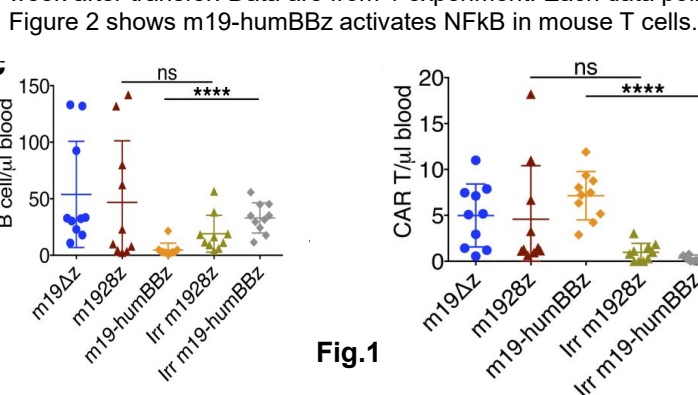


Fig.1

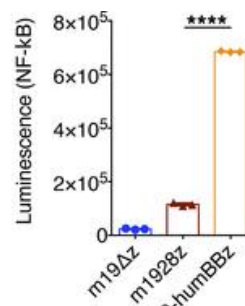


Fig.2

### PUBLICATION/PATENT

- Provisional Patent filed for Dr. Davila

### CONTACT

InnovationMarketing@Moffitt.org  
(813) 745-6828

### LICENSING OPPORTUNITY

