Mongoose Bio

Delivering clinically proven epigenetically programmed memory TCR-T cells to fight cancer

May 2024

Revolutionizing the Treatment of Cancer

Mongoose Bio

Potential to Transform the Treatment of Cancer

- **Pioneering discoveries by Dr. Cassian Yee at MD Anderson Cancer Center (MDACC)**
- **Advancing two very important technologies:**
  - Epigenetic Reprogramming of T-cells: to generate active, long-lived Central Memory T cells (Tcm)
  - Immunopeptidome Discovery Platform: highly immunogenic, novel targets and their associated T-cell receptors (TCRs)
- **Pipeline of 4 unique and qualified programs for patients with common and rare solid tumors**
  - Ph1b to target gastric, esophageal and lung
  - IND submission expected in 12 months
- **Strong Financial Support**
  - Awarded $10.6 M in non-dilutive funding from the prestigious CPRIT Product Development award in 2023
  - Closing $3M in seed financing

The Principles

Scientific Founder
Cassian Yee, MD

- Endowed Professor and medical oncologist in the Division of Cancer Medicine, University of Texas MD Anderson
- Director, Solid Tumor Cell Therapy and TCR-based Therapeutics
- Professor, Dept of Melanoma Medical Oncology
- 25+ years experience in ACT
- Pioneered Endogenous T Cell (ETC) therapy, precursor to TCR-T therapy
- Holds > 15 Worldwide Patents on ACT, memory and Ag discovery
- 80+ publications, 16,000 citations in field of ACT and immunotherapy

President & CEO
Neil Warma

- Former CEO Genexine (Seoul, S. Korea)
- Former CEO/General Manager of I-Mab Biopharma U.S. (Shanghai, San Diego)
- Former President and CEO of Opexa Therapeutics (Houston)
- Former CEO of Viron, and President and Co-Founder of MedExact
- Senior management, Novartis Pharma, Basel, CH
- Member of Board of Directors of Biotechnology Innovation Organization (BIO) and ProMIS Neurosciences (Nasdaq:PMN)

T-Cell Receptor Therapy (TCR-T)

Reprogramming T-cells to deliver unprecedented coverage of common and rare solid tumors with long-lasting immunoprotection

Two Distinct Challenges

1) **Identifying and accessing novel and meaningful cancer targets**
2) **Persistence: Preventing exhaustion of T-cells, thereby preventing or delaying relapses**

Mongoose Bio has Overcome the Challenges:

1) Tumor Immunopeptidome Discovery Platform (IDP)

- We used mass spectrometry to identify immunogenic T cell target antigens
- We produced **> 2 million spectra from** common and rare tumors
  - **4 top scoring targets** that cover > 80% of Class I MHC (HLA) have been selected for the pipeline

2) Epigenetic T-cell Reprogramming

- We generated *bona fide* human central memory T cells (Tcm) *ex vivo*
- We consistently reprogrammed Tcm and demonstrated persistence *in vivo*
- We have demonstrated clinically proven durable anti-tumor responses

The Beauty of TCR-T Therapy

➢ **TCR-T therapy, or T-cell receptor-engineered T cell therapy**, is a form of adoptive cell therapy

- A cutting-edge approach where the patient's own T cells, (white blood cells) crucial for the immune response, are genetically modified to better recognize and attack cancer cells.
- Unlike **CAR-T (chimeric antigen receptor T-cell)** therapy, which targets cell surface antigens, TCR-T therapy recognizes a broader set of **intracellular antigen fragments** presented by **MHC (major histocompatibility complex)** molecules.

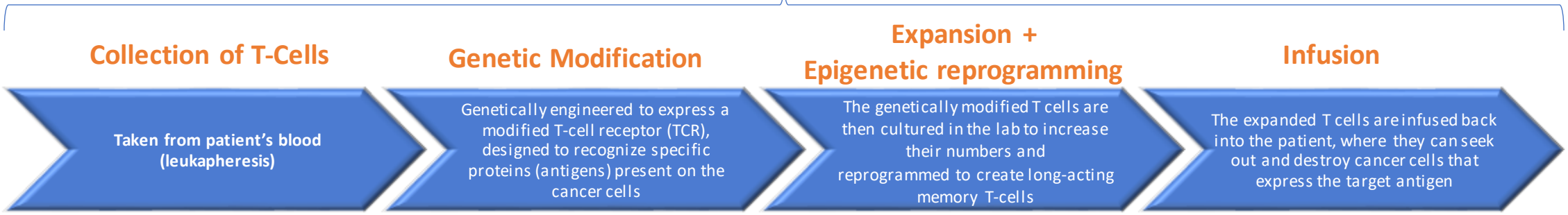
➢ **Advantages**:

- **Broad Antigen Recognition**: TCR-T cells can recognize a wider range of tumor antigens, including those within the cell.
- **High Antigen Sensitivity**: TCRs exhibit high sensitivity to antigens, enhancing tumor cell detection.
- **Near-Physiological Signaling**: TCR-T cells mimic natural T-cell responses.

➢ **Clinical Applications**:

- TCR-T therapies are being explored for various tumor antigen families.
- They hold promise for solid tumors, where CAR-T therapies have shown limited efficacy in solid tumors

Mongoose Process



Top 4 Reasons To Believe

1. **Highly Immunogenic Tumor Selective Native T Cell Receptor Targets**
   - Immunopeptidome Discovery Platform identifies and characterizes *bona fide* MHC-presented tumor derived peptides
     - 250 high value TCR target antigens have been empirically validated with an *ex vivo* workflow
     - 4 top scoring targets that cover > 80% of Class I MHC (HLA) already selected for the pipeline

2. **Native TCR Isolation Precludes Synthetic TCR Binding Optimization or Inappropriate CD28- / 41BB- Signaling**
   - High affinity MHC-restricted target specific patient derived CTL's identified
   - Bespoke TCRα & TCRβ chains sequenced and expressed in a characterized retroviral vector

3. **Clinically Proven Epigenetic Central Memory T Cell Reprogramming**
   - IL-21 and HDACi based protocols drive T cells into central memory state
   - Patients receiving target specific Tcm demonstrate complete and durable responses in clinical trails

4. **Autologous CTL-T Therapy Does Not Require Aggressive Lymphodepletion**
   - Several first-in-human clinical studies demonstrate long-term *in vivo* persistence of transferred central memory $CD8^+$ T cells without any requirement for high dose lymphodepletion
   - Favors therapy shaping by combinations with immuno-modulators (ex. anti-CTLA4, anti-PD1/PD-L1)

Addressing Significant Unmet Medical Need

Unmet Medical Need

- Mongoose Bio is developing novel and differentiated adoptive T cell therapies to address common and rare cancer indications
- **Bold**: Phase 1b cancer targets

Common	Rare
• Prostate	• Angiosarcoma
• Breast Cancer	• Anaplastic Thyroid
• **Lung**	• **Esophageal**
• Colorectal	• Chordoma
• Bladder Cancer	• **Gastric / Stomach**
• AML	• Glioblastoma
• Cervical	
• Lymphoma	
• Sarcoma	

Estimated New Cases

	Males			Females		
Prostate	248,530	26%		Breast	281,550	30%
Lung & bronchus	119,100	12%		Lung & bronchus	116,660	13%
Colon & rectum	79,520	8%		Colon & rectum	69,980	8%
Urinary bladder	64,280	7%		Uterine corpus	66,570	7%
Melanoma of the skin	62,260	6%		Melanoma of the skin	43,850	5%
Kidney & renal pelvis	48,780	5%		Non-Hodgkin lymphoma	35,930	4%
Non-Hodgkin lymphoma	45,630	5%		Thyroid	32,130	3%
Oral cavity & pharynx	38,800	4%		Pancreas	28,480	3%
Leukemia	35,530	4%		Kidney & renal pelvis	27,300	3%
Pancreas	31,950	3%		Leukemia	25,560	3%
All Sites	**970,250**	**100%**		**All Sites**	**927,910**	**100%**

Estimated Deaths

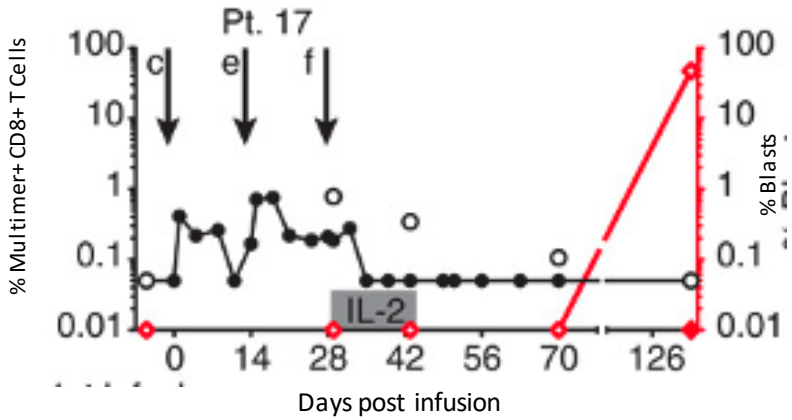
	Males			Females		
Lung & bronchus	69,410	22%		Lung & bronchus	62,470	22%
Prostate	34,130	11%		Breast	43,600	15%
Colon & rectum	28,520	9%		Colon & rectum	24,460	8%
Pancreas	25,270	8%		Pancreas	22,950	8%
Liver & intrahepatic bile duct	20,300	6%		Ovary	22,950	5%
Leukemia	13,900	4%		Uterine corpus	12,940	4%
Esophagus	12,410	4%		Liver & intrahepatic bile duct	9,930	3%
Urinary bladder	12,260	4%		Leukemia	9,760	3%
Non-Hodgkin lymphoma	12,170	4%		Non-Hodgkin lymphoma	8,550	3%
Brain & other nervous system	10,500	3%		Brain & other nervous system	8,100	3%
All Sites	**319,420**	**100%**		**All Sites**	**289,150**	**100%**

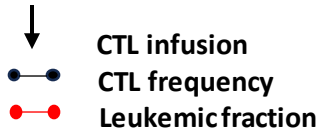
Siegel, RL, Miller, KD, Fuchs, H, Jemal, A. Cancer Statistics, 2021. CA Cancer J Clin. 2021: 71: 7-33. https://doi.org/10.3322/caac.21654

Clinical Evidence shows Epigenetic Tcm Reprogramming Prevents Recurrence of High-risk AML

Mongoose Bio

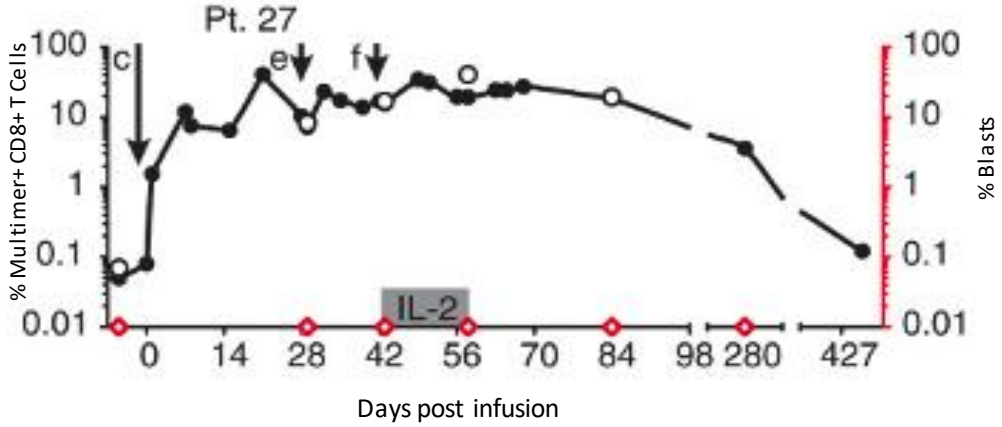
Untreated WT1-specific T_{eff} CTL





Patients receiving T_{eff} CTL for high-risk AML relapse when WT1-CTL do not persist

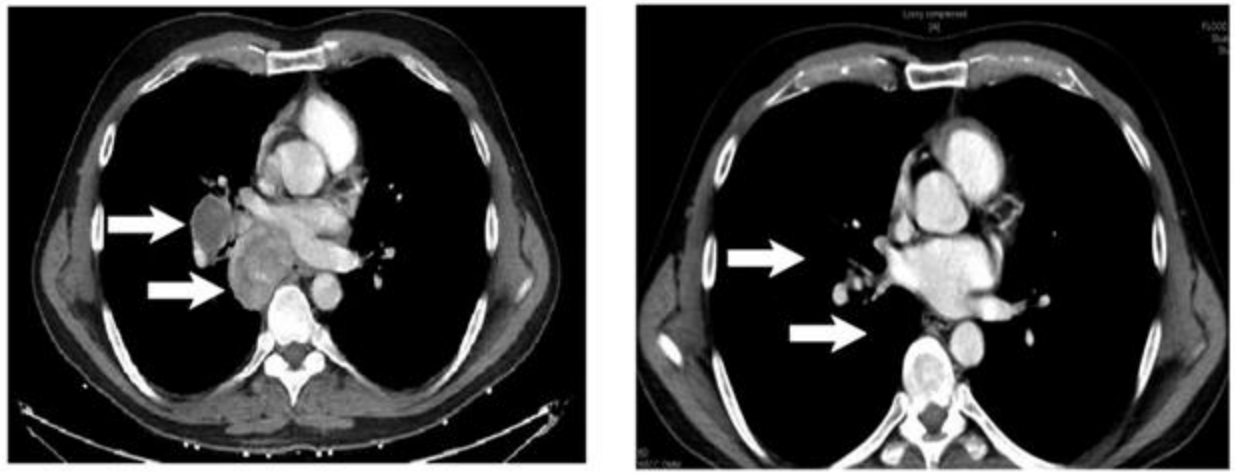
WT1-specific T_{cm} CTL

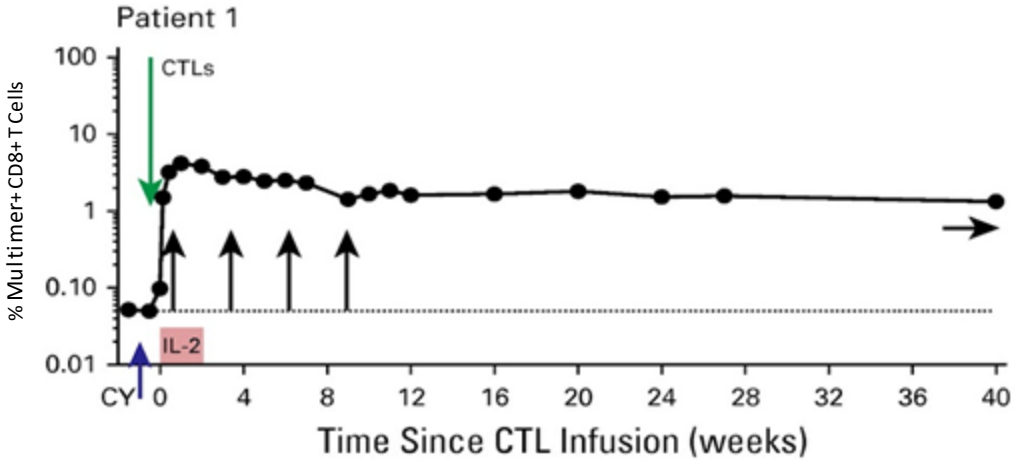


Patients receiving WT-1 specific Tcm CTL remain in CR; WT1-specific CTL persist

Epi-genetic reprogramming leads to persistence of T-cells and clinical benefit

Memory T cells in combination strategies eradicate metastatic cancer





Patient failing anti CTLA4 monotherapy, Rx with MART-1 specific Tcm + ICI complete ➡ response of intrathoracic metastases

MART-1 specific Tcm persist long term (> 40 weeks)

Chapuis A…Yee C *J. Clin Onc 2017*

Novel Pipeline of four novel Cancer targets

Antigen	HLA Epitopes Defined	Common Cancers	Rare Cancers	T Cell Lines	TCR-T Viral Vector
MGB-001	HLA-A2 HLA-A11	Lung HNSCC, Cervical, Bladder	Esophageal Gastric	YES	YES (pre-clinical)
MGB-002	HLA-A2 HLA-A24	Prostate, TNBC, Lung, Colorectal	Chordoma	YES	YES (pre-clinical)
MGB-003	HLA-A2 HLA-A3/A11	Breast Cancer		YES	YES (pre-clinical)
MGB-004	HLA-A2	AML, Bladder Cancer Breast, Cervical, Esophageal, Lymphoma, Sarcoma	Angiosarcoma. Anaplastic Thyroid Cancer Glioblastoma	YES	YES (pre-clinical)

- Lead program (targeting MGB-001) is available for both HLA-A2+ and HLA-A3/A11+ patients
- Targets MGB-002, MGB-003 and MGB-004 were selected for prevalence across tumor types, immunogenicity and functional upregulation in resistant tumors
- Targets MGB-002 and MGB-004 have been shown to display high intra-tumoral expression and high prevalence among rare cancer types

MGB-001 novel target, expressed on several tumors

MGB-001: Validated as a target, unexploited in solid organ treatment

- Lead candidate: MGB-001 is a classic cancer-testis antigen
  - Over 60% in breast cancer
  - Approximately 45% in prostate, lung, bladder, gastric, ovarian, head/neck cancers
  - Presented by both HLA-A2 and A3/A11 subtypes representing >60% of all Western & Asian cancer patients
- No previously known TCR targets
- Highly tumor selective and tumorigenic
- Associated with epithelial mesenchymal transformation (EMT) and DNA repair following radiation and chemotherapy
- Expressed at high levels across multiple common and rare cancers

Phase 1b Clinical Trial Design Considerations

- Phase IB basket trial targeting MGB-001-associated tumors
- An expansion cohort is planned that will include gastric, esophageal and non small cell lung cancers
- Combining gastric, esophageal, and lung cancers into one trial was done for several strategic reasons:
    1. Unmet need and global and sector prevalence
    2. Opportunity for a Breakthrough Designation
    3. High accrual rates and catchment area

Global New Cases and Deaths (2020)		
Site	New Cases (% of All Sites)	New Deaths (% of All Sites)
Lung	2,206,771 (11.4)	1,796,144 (18.0)
Gastric	1,089,103 (5.6)	768,793 (7.7)
Esophageal	604,100 (3.1)	544,076 (5.5)

- Gastric, esophageal and non-small cell lung cancers represent clinical unmet needs following 1st or 2nd line therapy as there are no standard treatment options
- Gastric and esophageal cancers are considered rare cancers in the US (< 40,000/yr) and effective therapies for rare cancer may receive 'Breakthrough Therapy' designation with the FDA
- Gastric and esophageal cancers are among the most lethal and prevalent cancers in SE Asia and globally
- Non small cell lung cancer is among the most lethal and prevalent cancers in US and globally
- The MD Anderson Investigational Cancer Therapeutics (ICT) Dept (PI David Hong) is designed for precisely this type of trial that includes more than one cancer type and receives feeder referrals from one of the largest cancer centers that sees patients with GI and thoracic malignancies

World class CMC and Clinical Support

Mongoose Bio

Experts ensure high likelihood of success in clinical trial and manufacturing execution

- **Phase 1b trial site: MD Anderson**
  - Largest cancer treatment center ion the world
  - Specializes in rare and common tumors, high enrolling site
  - Treated over 1000 patients with CAR-T and other cellular therapy regimens; more than any other academic institution in the world
  - Specialized inpatient unit: all patients receiving cell therapies who need to be admitted are allocated to a specialized floor G18 that has designated beds, nurses, and staff who are specifically trained and experienced in recognizing immunotherapy-linked syndromes CRS and ICANS

- **Principle Investigator: David Hong, M.D.**
  - Deputy Chair, Department of Investigational Cancer Therapeutics
  - Has managed and overseen multiple cellular therapy trials

- **cGMP Manufacturing (CDMO): CTMC**
  - Strong expertise in tech transferring, industrializing the process, interacting with the FDA to assure phase appropriate adherence to all specifications
  - CTMC has manufactured >100 GMP batches over the last 2 years

Goals

1. Close $3M Seed Round in 1H'24, ($1M has already been secured). This plus the $10.6M CPRIT award will enable us to
    - Complete IND preparation and submission
    - Hire key personnel, establish a physical presence in the TMC area
    - Initiate a Ph IB clinical trial with MGB-001 that targets an antigen in select solid cancers

2. Close $60M Series A financing in 2H 2025 to continue the clinical trial of MGB-001 and advance 3 additional proprietary TCR-T therapeutics

- *Our first clinical trial project will generate safety, toxicity, and efficacy data needed for FDA approval for patients with a number of advanced, recurrent/relapsed rare and common cancers*
- *Many of these patients fail 1st line standard of care therapy and often face few, if any, other meaningful treatment options*

Investment Thesis

- **Differentiated Foundational Research**
  - Mongoose Bio was borne out of 18 years of pioneering research that has been cited > 10,000 times
  - We are driven by first principles of memory and immunogenicity
- **Clinical Experience**
  - We have been growing memory T cells and treating patients with memory T cells for > 12 years
- **Strong Management Team**
  - In Clinical, Scientific, CMC and Operational ability
- **Deep Understanding of T cell Differentiation**
  - We have clear knowledge of the epigenetic mechanisms that lead to stable memory human T cells
- **Proprietary Reprogramming Technology**
  - Reproducibility in generating *bona fide* memory T cells
  - Clinical proven epigenetic reprogramming Tcm technology has produced durable clinical responses
- **Wide Aperture Discovery**
  - We have identified 250 immunogenic TCR targets
  - These highly immunogenic TCR targets broadly cover common (ex. lung, esophageal, gastric, breast, prostate) and rare (ex. chordoma) cancers
- **Natural TCR Selection**
  - Identify and prepare viral vectored natural human cognate HLA restricted TCRs for each of our highly immunogenic targets
- **Trial Design**
  - First clinical trial expected in 1H 25, targeting gastric, esophageal, lung cancers
  - PI, Dr. David Hong, leading specialist at MD Anderson Cancer Center

Thank You

info@mongoosebio.com

www.mongoosebio.com