ATARA BIO®

Investor Presentation

May 6, 2020

Nasdaq: ATRA

Forward-Looking Statements

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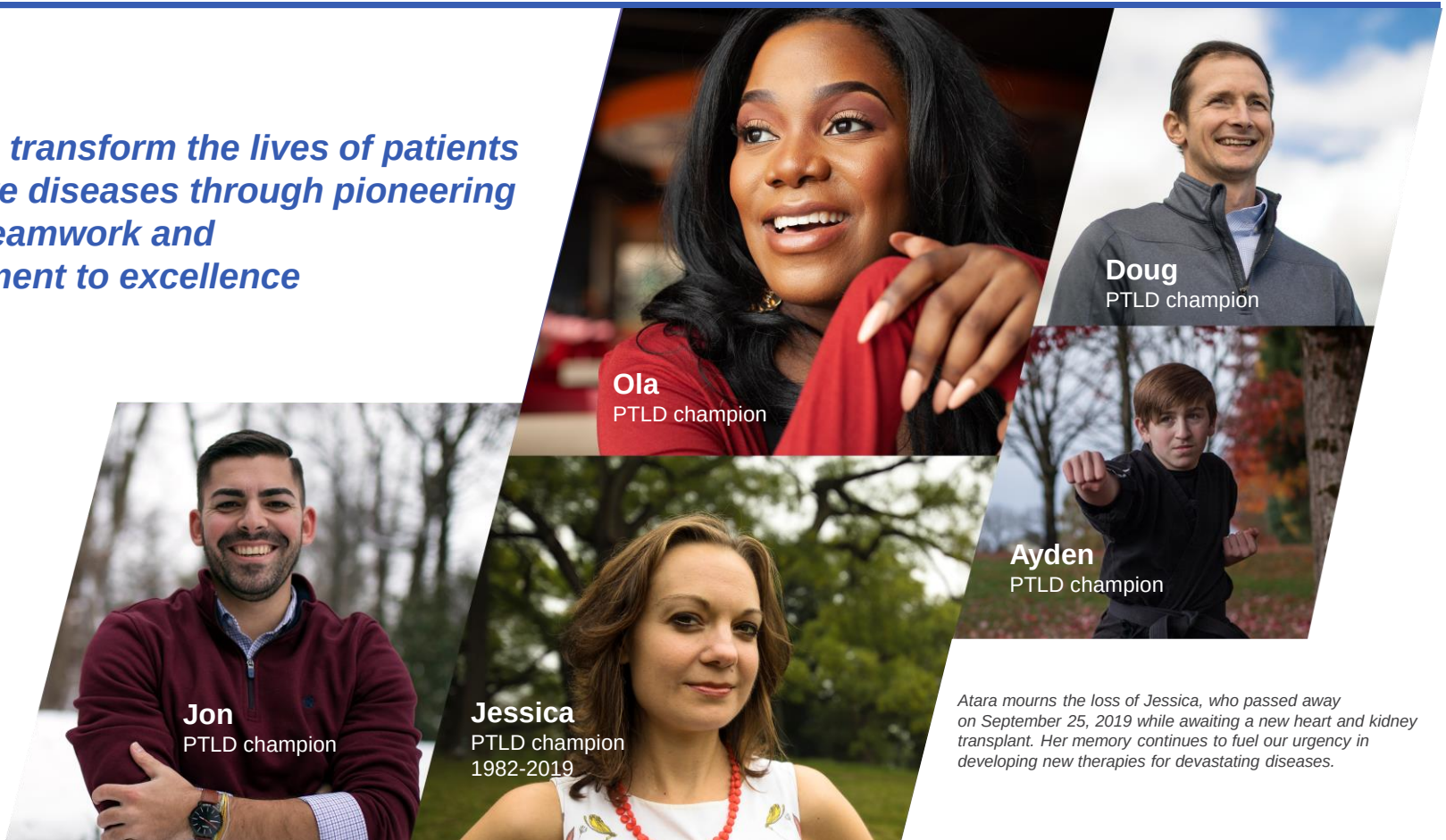
Pioneering Off-the-Shelf, Allogeneic T-cell Immunotherapies

Mission to transform the lives of patients with severe diseases through pioneering science, teamwork and a commitment to excellence



Atara mourns the loss of Jessica, who passed away on September 25, 2019 while awaiting a new heart and kidney transplant. Her memory continues to fuel our urgency in developing new therapies for devastating diseases.

ATARA BIO®

Most Advanced Allogeneic T-cell Company Demonstrating the Feasibility of Delivering Off-the-Shelf T-Cell Immunotherapies to Patients

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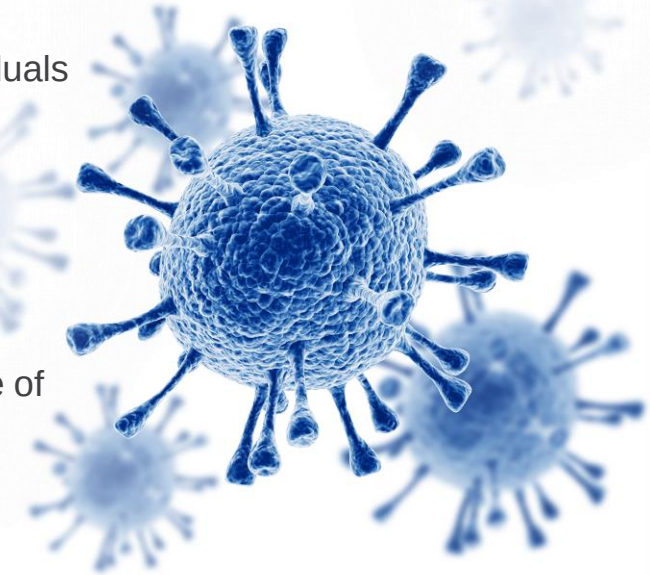
Improving patients' lives is our mission and we will never stop working to bring transformative therapies to those in need

- Clinically validated platform with over 300 patients treated
- Favorable safety and efficacy profile in EBV-associated diseases based on Atara and academic experience
- Robust, scalable manufacturing process and ability to deliver product from inventory to patients in ~3 days
- Completing commercial manufacturing validation while increasing yields to bring margins in range of biologics
- Leading-edge research, development and manufacturing facility
- Pipeline focused on EBV-associated diseases, as well as other solid tumors and hematological malignancies

Overview of Epstein-Barr Virus (EBV) [1]

Background

- Present in >95% of individuals by age 40
- Persistent lifelong, asymptomatic infection
- Infects B cells and epithelial cells
- Implicated in a wide range of cancers and autoimmune diseases



EBV-associated diseases

- Infectious mononucleosis (mono)
- Post transplant lymphoproliferative disease (PTLD)
  - Other hematologic malignancies: PID/AID-related lymphomas[2]
- Nasopharyngeal carcinoma (NPC)
  - Other solid tumors: leiomyosarcoma, gastric cancer
- Growing evidence for role in the pathogenesis of multiple sclerosis (MS)

EBV T cells also provide an attractive allogeneic platform for engineered T-cell therapy

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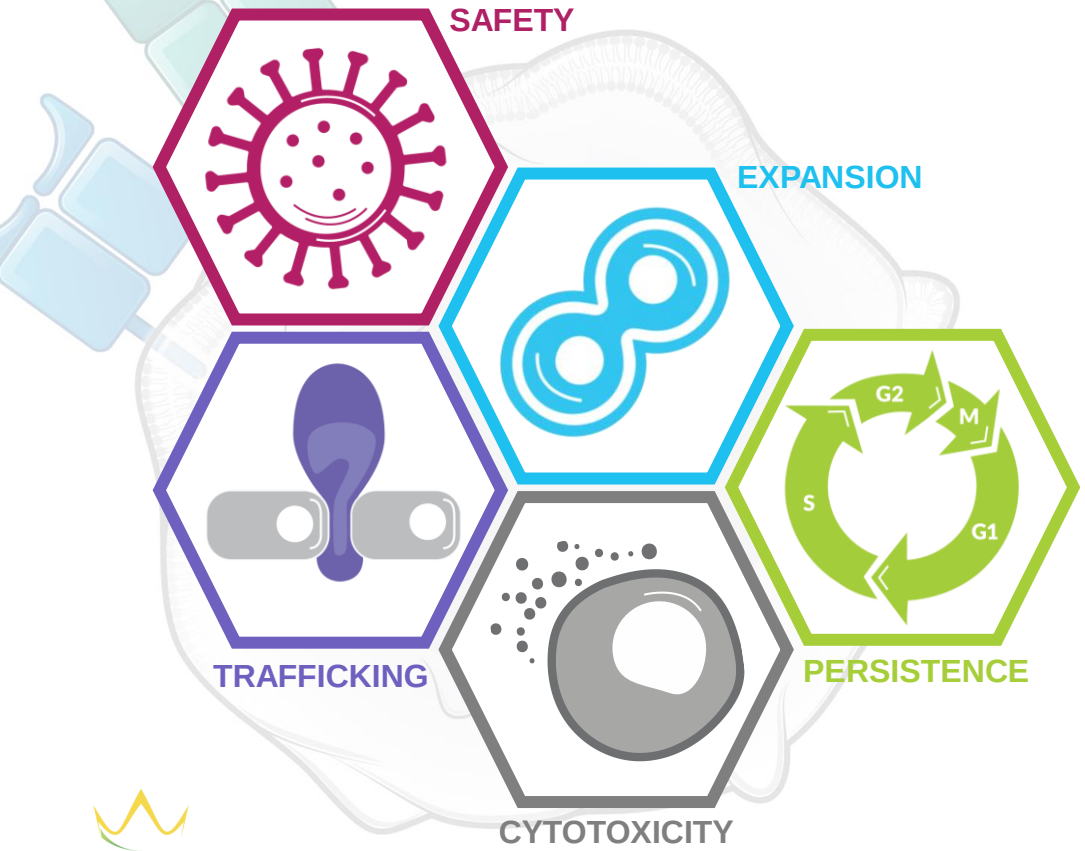
(1) Young LS, Rickinson AB. Epstein-Barr virus: 40 years on. *Nat Rev Cancer*. 2004 Oct;4(10):757-68.
(2) PID/AID-related lymphomas: EBV+ primary immunodeficiency lymphoproliferative disease (EBV+ PID LPD), EBV+ acquired immunodeficiency-associated LPD (EBV+ AID LPD)

EBV T cells are Alpha Beta T cells that Offer Numerous Advantages as the Basis of an Allogeneic Platform



SAFETY
Reduced ability to harm normal cells (GvHD)

EXPANSION
Proliferation with memory phenotype

TRAFFICKING
Homing and penetrating target lesions including solid tumors

CYTOTOXICITY
Produce multiple cytokines and potent killing of target cells

PERSISTENCE
Sufficient for durable clinical response

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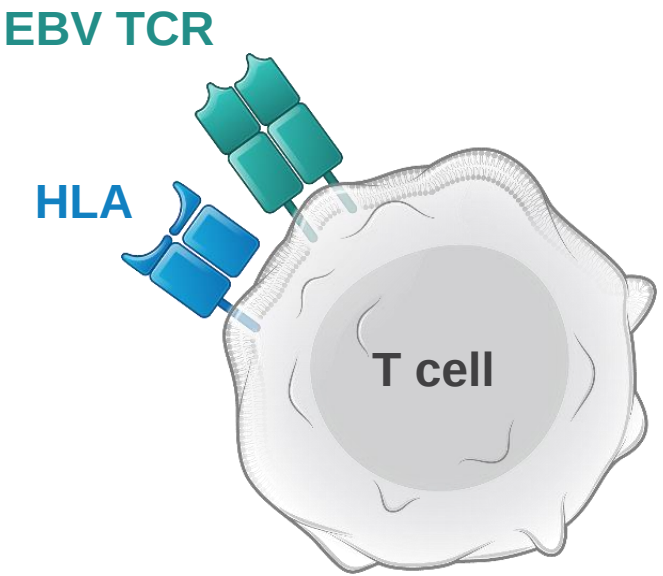
Atara Allogeneic Platform Maintains the Natural Biology of EBV T cells By Selecting the Most Appropriate HLA Alleles for a Patient



- We select product from inventory that shares a minimum of two HLA alleles with the patient
  - For EBV-associated diseases, one of the alleles must be the restricting allele that provides cytotoxicity
  - For CAR programs, cytotoxicity is triggered through the antibody portion of the CAR
- Reduces the ability for the patient's immune system to recognize the EBV T cells as foreign
- This approach allows EBV T cells to maintain their natural characteristics
- Avoids the need for HLA gene editing

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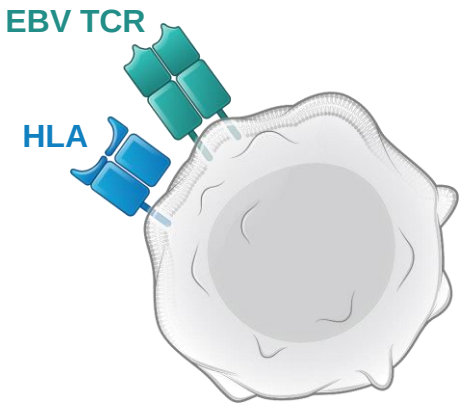
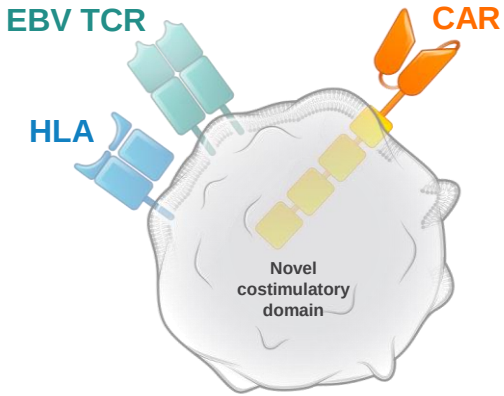
Atara Allogeneic Platform Has the Capability to Treat a Wide Range of EBV-Associated Diseases or Hematological / Solid Tumors Through an Engineered CAR or TCR

EBV-associated Diseases



- Tab-cel®
- ATA188

Other Hematological or Solid Tumors



- ATA3219 (Allo CD19)
- ATA3271 (Allo MSLN)
- Other CAR programs

We are including next generation technologies in our engineered T-cell programs that complement the core characteristics of our platform

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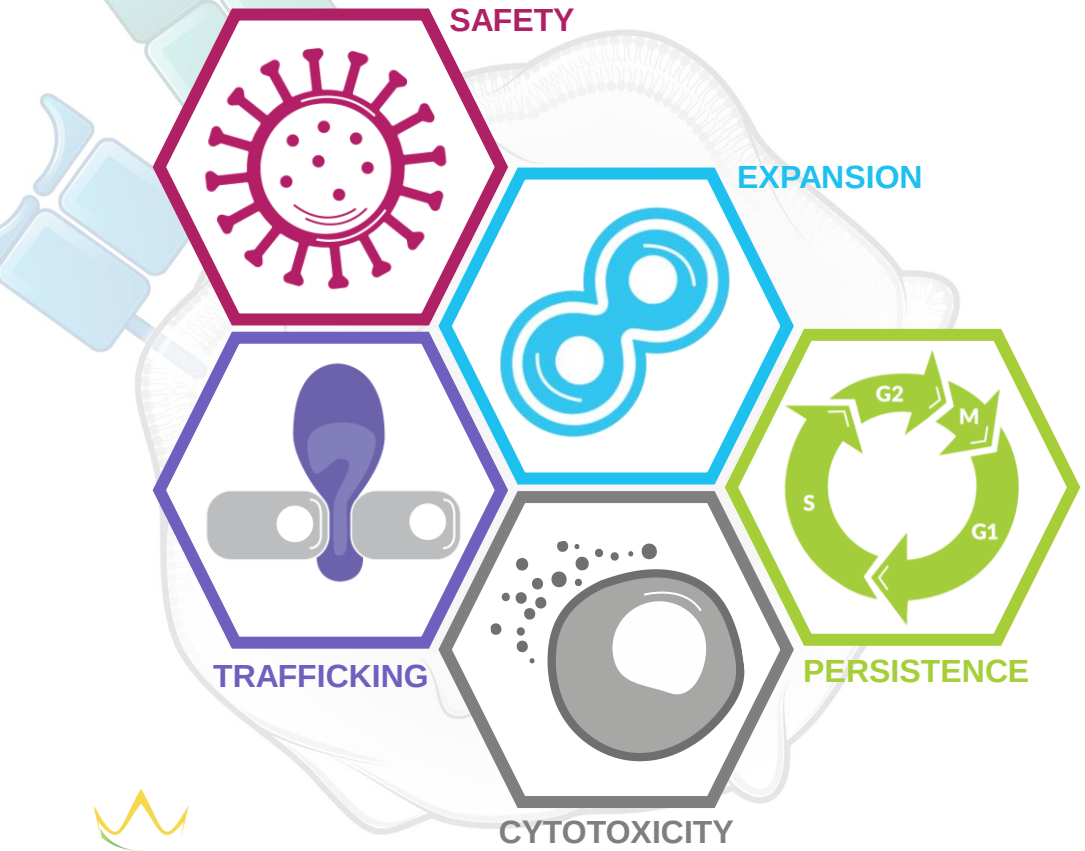
Atara Off-the-Shelf, Allogeneic EBV T-Cell Platform



- Ability to modify with engineered CAR or TCR
- Retreatment capability
- Scalable bioreactor manufacturing
- Proprietary cell selection and logistics
- Delivery to patient from inventory within 3 days
- Global development & regulatory experience
- Biologics-like cost of goods profile

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Four Strategic Priorities to Create Value

Tab-cel® (tabelecleucel)

ATA188

ATA2271
ATA3271

ATA3219

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Robust T-Cell Immunotherapy Pipeline

Program	Indication	Target	Preclinical	Phase 1	Phase 2	Phase 3	Registration
Tab-cel® (tabelecleucel)	RR EBV+ PTLD following HCT	EBV	ALLELE Study				
	RR EBV+ PTLD following SOT	EBV	ALLELE Study				
	Nasopharyngeal carcinoma(1)	EBV					
	EBV+ cancers(2)	EBV					
ATA188	Progressive MS	EBV(3)					
ATA2271	Autologous CAR T **Solid tumors**(4,5)	Mesothelin					
ATA3271	Off-the-shelf, allogeneic CAR T **Solid tumors**(4)	Mesothelin					
ATA3219	Off-the-shelf, allogeneic CAR T **B-cell malignancies**	CD19					
Other CAR T	**AML, B-cell malignancies, solid tumors & inf diseases**	Various					

These investigational agents are not approved by any regulatory agencies. Efficacy and safety have not been established.
EBV+ PTLD: EBV-Associated Post-Transplant Lymphoproliferative Disease; RR: rituximab relapsed/refractory; HCT: allogeneic hematopoietic cell transplant; SOT: solid organ transplant
Other programs: ATA2321 (AML), ATA2431 (B-cell malignancies), ATA230 (CMV), ATA368 (HPV), ATA520 (WT1) and ATA621 (BK/JCV)

(1) Phase 1b/2 study in combination with anti-PD-1 therapy, KEYTRUDA® (pembrolizumab), in patients with platinum-resistant or recurrent EBV-associated NPC.
(2) Phase 2 multi-cohort study planned with possible indications including EBV+ PTLD with CNS involvement, EBV+ PID/AID LPD, EBV+ LMS and other potential EBV-associated diseases
(3) Targeted antigen recognition technology
(4) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer
(5) MSK investigator-sponsored Phase 1 study (NCT02414269) of a mesothelin-targeted CAR T immunotherapy is ongoing; Atara's CAR T collaboration with MSK will focus on development of a next-generation, mesothelin-targeted CAR T using novel 1XX CAR signaling and PD-1 dominant negative receptor (DNR) checkpoint inhibition technologies.

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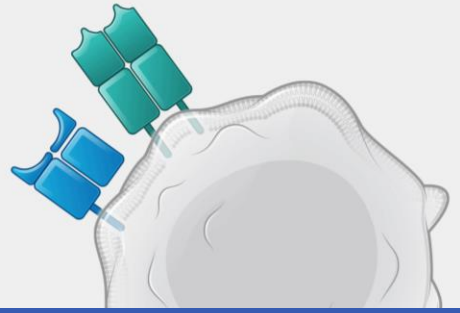
Four Strategic Priorities to Create Value

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation & EMA PRIME for EBV+ PTLD



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EBV-Associated Post-Transplant Lymphoproliferative Disease
Aggressive, Often Deadly Cancer with No Approved Therapy

Rare B-cell lymphoma that occurs in immunosuppressed patients after transplant

- Average age under 40 years vs. around 65 years for NHL
  - **Bone marrow transplant (HCT)**
    EBV+ PTLD risk up to recovery of immune system (~1 year)
  - **Solid organ transplant (SOT)**
    Chronic risk of PTLD from immunosuppression; Highest risk within ~1 year of transplant(1)
- High mortality in rituximab ± chemo relapsed/refractory patients
  - **Median survival**
    HCT: under 1 month(2)
    SOT: 3-12 months(1,3)

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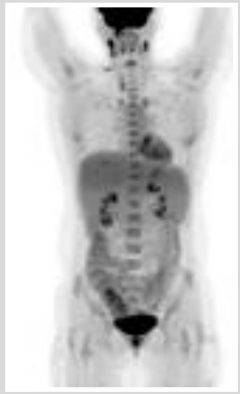
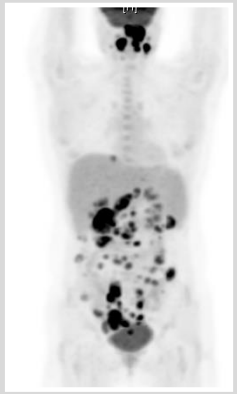
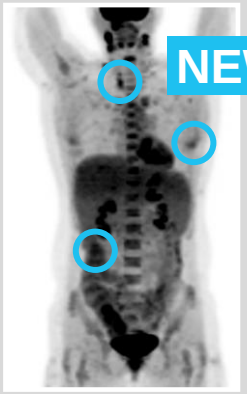
NHL: Non-Hodgkin Lymphoma

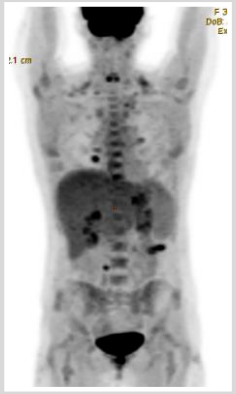
(1) Dierickx D, Habermann TM. *N Engl J Med*. 2018 Feb 8;378(6):549-562.
(2) Atara estimated 1-year survival based on analysis of Ocheni S, et al. 2008 Aug;42(3):181-6; Fox CP, *et al.* 2014;49(2):280-6.
(3) Choquet S, et al. 2007 Aug;86(8):599-607; Zimmermann, H, *et al.* Abstract PF719, EHA 2019.

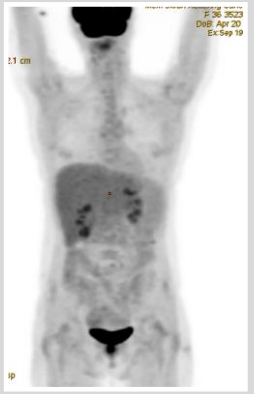
Tab-cel® – Off-the-Shelf, Allogeneic T-Cell Immunotherapy with Potential to Transform Treatment of EBV+ PTLD

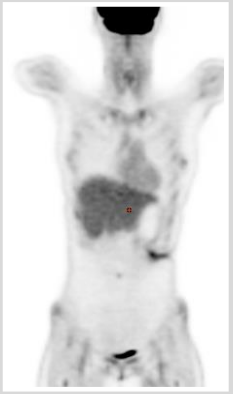












Week -10	Week -4	Week 0	Week 10	Week 15	Week 29
36-year-old with Fanconia anemia diagnosed with EBV+ PTLD	Increase in tumor burden	Disease progression after 3 cycles of rituximab	Tab-cel® response: rapid decrease of tumor burden	Continued decrease of tumor burden	Complete response (CR) after 4 cycles of tab-cel®

Expected survival **after rituximab failure: 16-56 days** in EBV+ PTLD following HCT(1)

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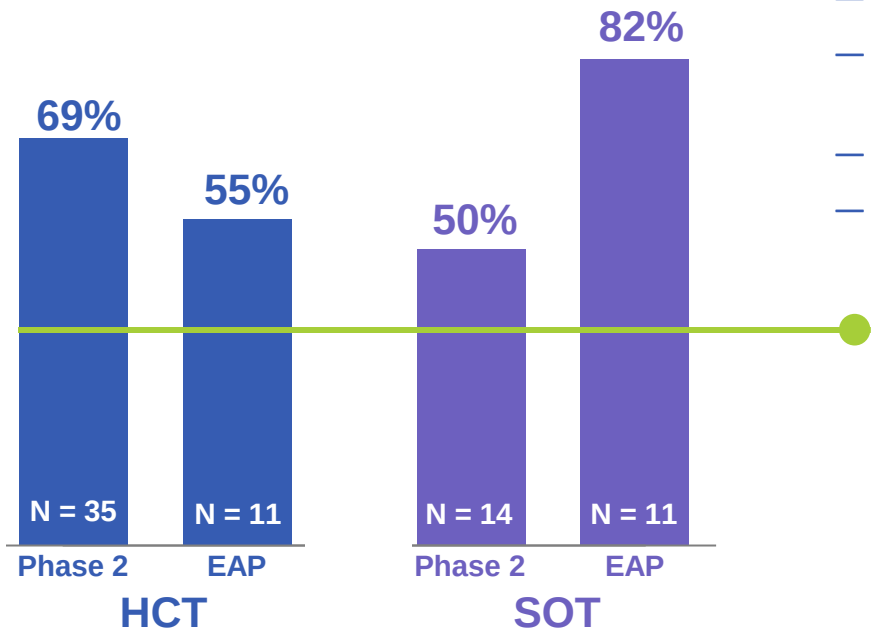
Prockop S, et al. Proc AACR 2015; 36 year-old woman with Fanconi anemia; Radiographic results from Phase 2 clinical study patient provided for illustrative purposes only to show how the clinical parameters above may correlate to the clinical presentation of a patient.

(1) Expected median survival for patients with EBV+ PTLD following HCT who have failed rituximab first line therapy is 16 to 56 days; Atara estimated 1-year survival based on analysis of Ocheni S, *et al.* EBV reactivation and post transplant lymphoproliferative disorders following allogeneic SCT. *Bone Marrow Transplantation*. 2008 Aug;42(3):181-6; Fox CP, *et al.* EBV-associated post-transplant lymphoproliferative disorder following in vivo T-cell-depleted allogeneic transplantation: Clinical features, viral load correlates and prognostic factors in the rituximab era. *Bone Marrow Transplant*. 2014;49(2):280-6.

Tab-cel® – Ongoing Studies for Patients with EBV+ PTLD

Phase 2 and EAP ORR(1)

for EBV+ PTLD patients who failed rituximab



- Updated protocol for ongoing Phase 3 study(2)
  - Global, multicenter, open-label
  - Single Phase 3 study with two EBV+ PTLD patient cohorts (HCT and SOT)
  - Approximately 33 patients per cohort
  - Interim analysis prespecified in protocol

37% ORR – primary Phase 3 endpoint threshold(3)

EAP: Expanded Access Protocol; HCT: allogeneic hematopoietic cell transplant; SOT: solid organ transplant; Overall response rate (ORR) = complete response (CR) + partial response (PR)

(1) Prockop, S., *et al.* EHA 2018 (NCT00002663 and NCT01498484); Prockop, S., *et al.* ASH 2019 (NCT02822495), EAP results from a subgroup who would have likely met eligibility criteria for ongoing tab-cel® Phase 3 studies.

(2) Atara has combined the two ongoing tab-cel® Phase 3 clinical studies (MATCH and ALLELE) into a single study (ALLELE) that now consists of a hematopoietic cell transplants (HCT) cohort with approximately 33 EBV+ PTLD patients who have failed rituximab and a single solid organ transplant (SOT) cohort for approximately 33 EBV+ PTLD patients who have failed rituximab with both chemotherapy and non-chemotherapy prior treatment experience. As part of the amended ALLELE protocol, Atara plans to conduct an interim analysis prior to initiating the BLA submission. Cohorts enroll concurrently and are not comparative.

(3) The ALLELE protocol is designed to rule out 20% ORR as the null hypothesis. For example, assuming anticipated enrollment of 33 patients in ALLELE, an ORR above approximately 37% would be expected to meet the primary endpoint. To demonstrate substantial efficacy and meet the primary endpoint with a lower number of enrolled patients, such as an interim analysis, a higher ORR statistical hurdle would be expected.

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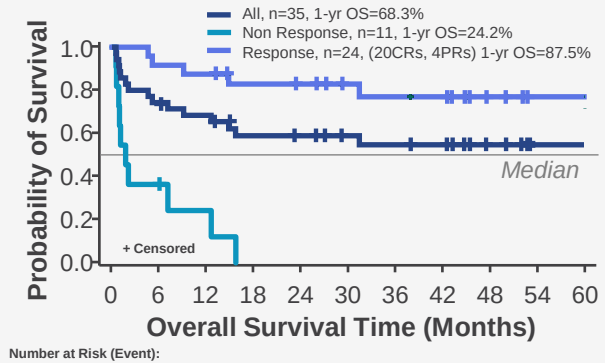
Tab-cel® – Long-Term Outcomes for Patients with EBV+ PTLD in Phase 2 and EAP Studies[1,2]

Phase 2 HCT



Number at Risk (Event):

All	35 (0)	26 (9)	23 (11)	18 (14)	17 (14)	14 (14)	13 (15)	12 (15)	6 (15)	3 (15)	3 (15)
Non Response	11 (0)	4 (7)	2 (8)	0 (10)							
Response	24 (0)	22 (2)	21 (3)	18 (4)	17 (4)	14 (4)	13 (5)	12 (5)	6 (5)	3 (5)	3 (5)

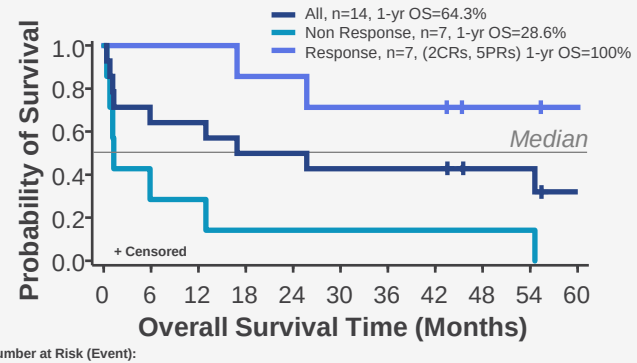
Phase 2 overall survival at 2 years in responders

83%

EAP overall survival at 2 years for all patients[3]

79%

Phase 2 SOT



Number at Risk (Event):

All	14 (0)	9 (5)	9 (5)	7 (7)	7 (7)	6 (8)	6 (8)	6 (8)	4 (8)	4 (8)	2 (9)
Non Response	7 (0)	2 (5)	2 (5)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	1 (6)	0 (7)
Response	7 (0)	7 (0)	7 (0)	6 (1)	6 (1)	5 (2)	5 (2)	5 (2)	3 (2)	3 (2)	2 (2)

Phase 2 overall survival at 2 years in responders

86%

EAP overall survival at 2 years for all patients[3]

81%

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Few treatment-related serious adverse events (SAEs): 12 possibly related Serious Adverse Events (SAEs) among 173 patients: no infusion related toxicities, no CRS (cytokine release syndrome) and three possibly related graft vs. host disease (GvHD); Safety data on file as of December 2017.

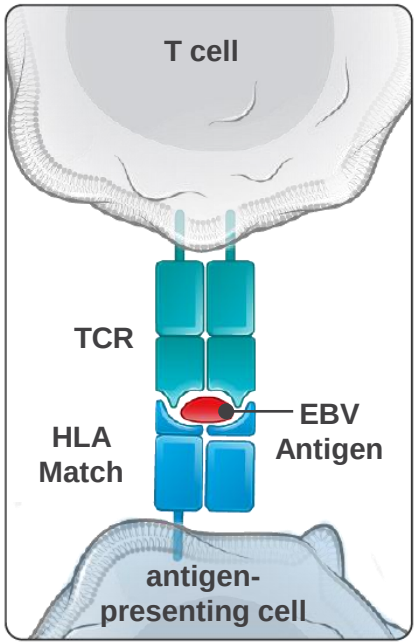
(1) NCT00002663 and NCT01498484; Prockop, S., *et al.* EHA 2018.

(2) Prockop, S., *et al.* Abstract 4071, ASH 2019.

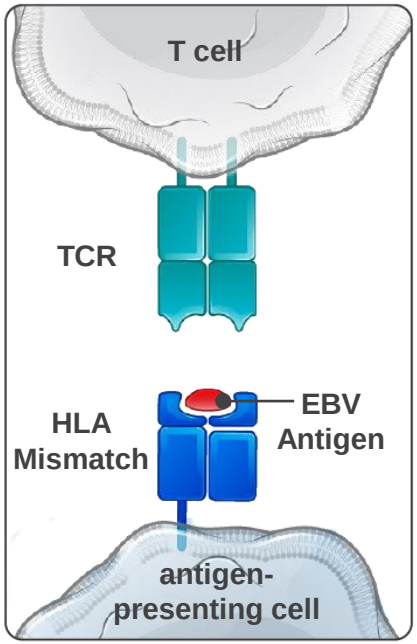
(3) In a subgroup of 22 patients who would have likely met eligibility criteria for Atara's ongoing tab-cel® Phase 3 studies

Proprietary Algorithm Used to Select Tab-cel® from Inventory for Each Patient Based on Appropriate HLA Restriction and Allele

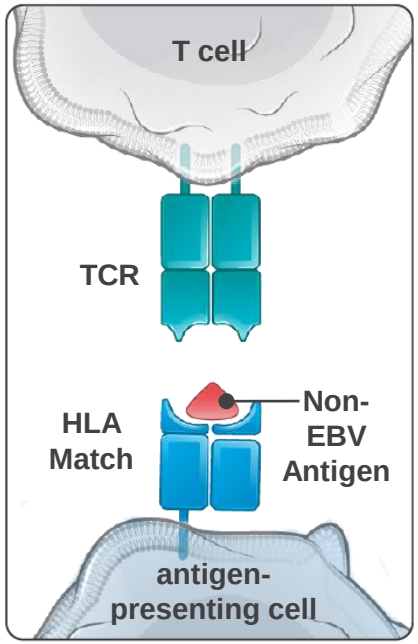
RECOGNITION
HLA and Antigen Match



NO RECOGNITION
HLA Restriction Mismatch



NO RECOGNITION
Antigen Restriction Mismatch



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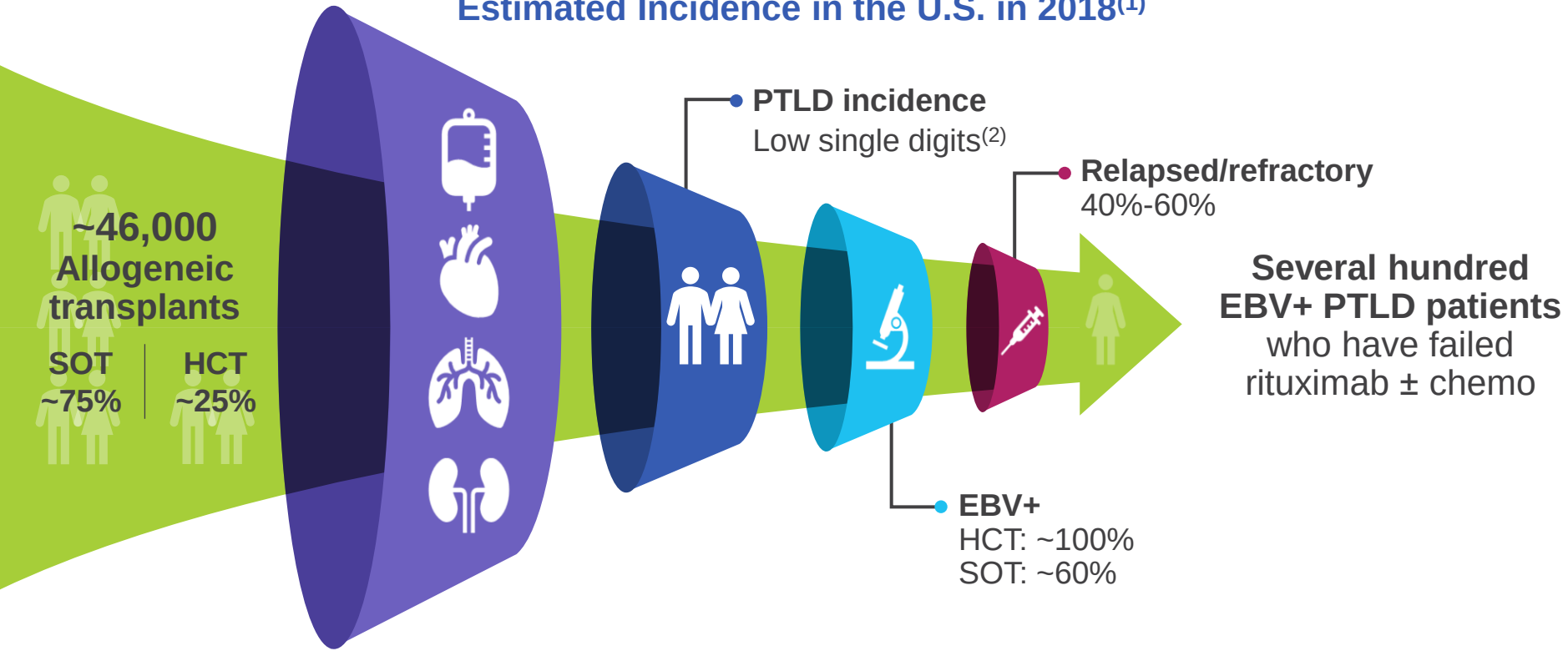
Adapted from Immunobiology 6th Edition Garland Science

EBV+ PTLD – Attractive Ultra-Rare Disease Market

Estimated Incidence in the U.S. in 2018(1)



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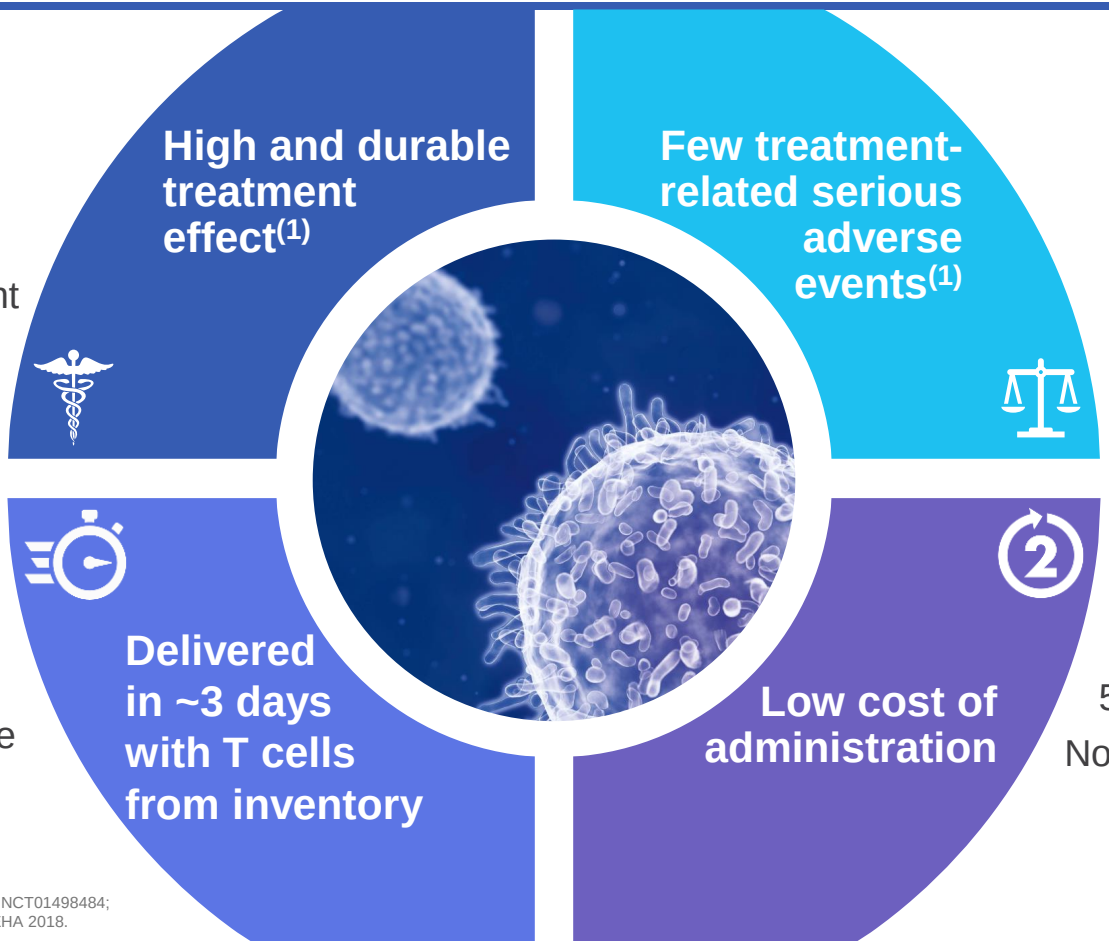
(1) Atara market research
(2) In SOT segment, there is significant variation by organ type. In HCT segment, variation is driven by conditioning regimens, EBV monitoring and prophylactic treatment.

Tab-cel® – Compelling Value Proposition for EBV+ PTLD Patients and Healthcare System

50%-82% ORR

>80% survival at 2 years in responders

No approved treatment



No CRS observed

No treatment-related mortality

Providing tab-cel® to patients in need today

Most of the current 40 Phase 3 sites available for enrollment

Two-hour monitoring

5-10 minute IV infusion

No pretreatment required

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(1) NCT00002663 and NCT01498484; Prockop, S., *et al.* EHA 2018.

Attractive Future Tab-cel® Commercial Opportunity Despite Current Clinical Study Constraints

CLINICAL	COMMERCIAL
PTLD is an ultra-rare disease	Potential transformative profile supports compelling value proposition
Clinical study available at ~10% of US transplant centers	Expect ability to deliver to patients in need at any US transplant center
Clinical study requirements in a rapidly progressing disease	Rapid delivery to patients from inventory (~3 days) following order
Competing clinical studies	Anticipate HCP and patient preference for use of an approved product

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Tab-cel® – EBV-Associated Metastatic Nasopharyngeal Carcinoma (EBV+ NPC)

Head & neck solid tumor that is primarily EBV-associated

- No approved targeted agents

Standard treatment:
platinum-based chemo ± targeted therapy

5-11 months median overall survival with standard treatment(1)

Encouraging tab-cel® Phase 1 monotherapy results in metastatic/2L+ NPC(2)

- 21% ORR with 1 complete response and 2 partial responses (N=14)
- Few treatment-related SAEs

84% 2-year overall survival

Ongoing Phase 1b/2 study in combination with KEYTRUDA®

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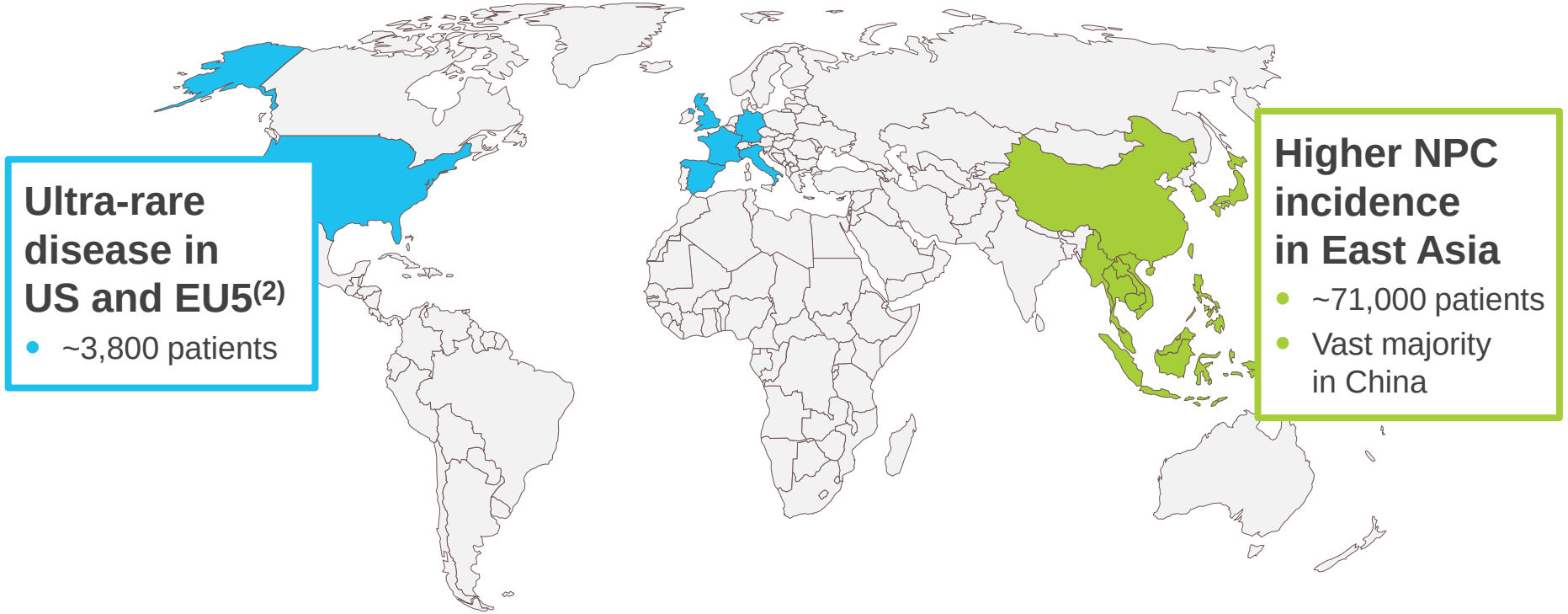
(1) Ma, et al. Cancer Sci. 2008 Jul;99(7):1311-8; Hsu OncLive conference coverage, 2015 European Cancer Congress
(2) Prockop, S, et al., Proc ASCO 2016

Tab-cel® – NPC Incidence in US, EU5 and East Asia(1)



Ultra-rare disease in US and EU5(2)

- ~3,800 patients

Higher NPC incidence in East Asia

- ~71,000 patients
- Vast majority in China

Ongoing Phase 1b/2 study in platinum pre-treated, recurrent/metastatic (2L+) EBV+ NPC patient subpopulation

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(1) Estimated incidence in 2018; GLOBOCAN 2012; Atara market research
(2) EU5: United Kingdom, France, Germany, Italy and Spain

Tab-cel® – Addressing Other Ultra-Rare EBV-Associated Patient Populations in High Need

In immunocompromised patients EBV can cause lymphoproliferative disorders (LPD)

- Heterogenous group of ultra-rare diseases
- Many patients have a poor prognosis and limited treatment options

Phase 2 multi-cohort study in patients with EBV+ cancers planned

- PTLD with CNS involvement
- Primary/Acquired immunodeficiency LPDs
- Leiomyosarcoma
- Other EBV+ diseases to be considered

Seek to broaden tab-cel® value to patients

- Transformative T-cell immunotherapy
- Ultra-rare EBV-associated cancers with high unmet need

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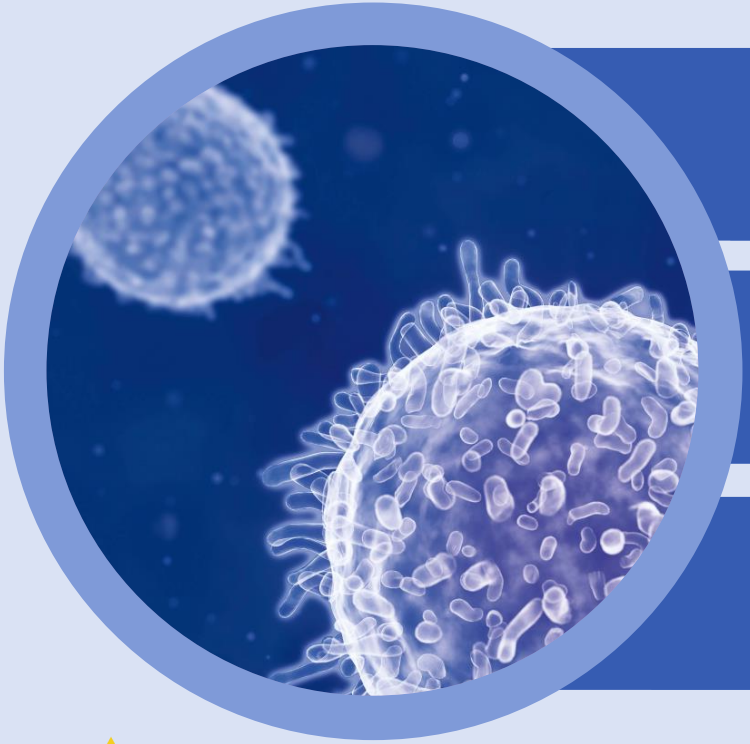
Tab-cel® – Ultra-Rare Disease Pipeline in a Product



EBV+ PTLD

Phase 3 study with HCT & SOT cohorts ongoing

EBV+ NPC

Phase 1b/2 with KEYTRUDA® ongoing(1)

EBV+ cancers

Phase 2 multi-cohort study planned(2)

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(1) Phase 1b/2 study in combination with anti-PD-1 therapy, KEYTRUDA® (pembrolizumab), in patients with platinum-resistant or recurrent EBV-associated NPC.
(2) Phase 2 multi-cohort study planned with possible indications including EBV+ PID/AID LPD, EBV+ LMS and other EBV-associated diseases

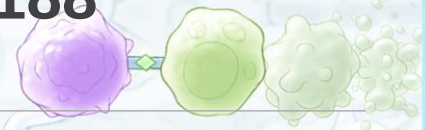
Four Strategic Priorities to Create Value

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation & EMA PRIME for EBV+ PTLD

ATA188



EBV T-cell immunotherapy for progressive multiple sclerosis (MS)

ATA2271
ATA3271

ATA3219

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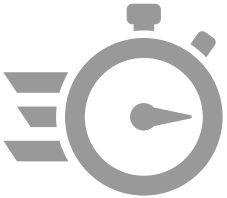
What is ATA188?

ATA188 is an off-the-shelf, allogeneic, EBV T-cell immunotherapy being studied in a Phase 1 clinical trial in progressive forms of MS



Off-the-shelf T cells **delivered from inventory**

No pretreatment required in the clinical trial protocol

Precision targeting to select EBV antigens limits off-target activity

Two-hour monitoring following 5-10 minute IV infusion

Administered as an **outpatient therapy**

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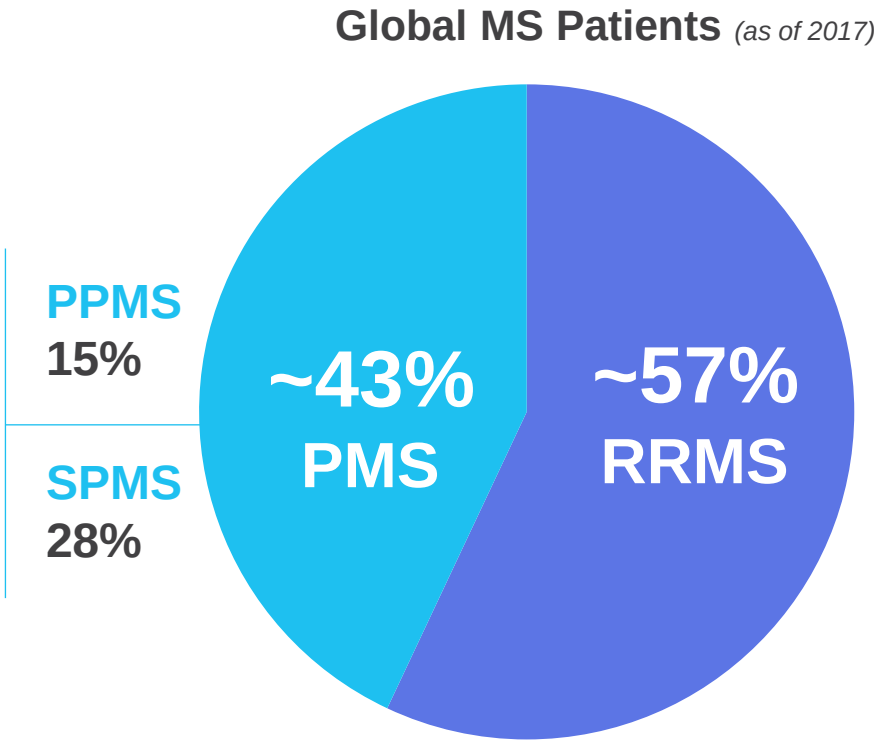
High Unmet Need Remains for Patients with Progressive MS

- **~43%** of MS patients have a progressive form of the disease (PMS)
- **~80%** of patients initially diagnosed with relapsing remitting MS (RRMS) are expected to transition to secondary progressive MS (SPMS)
- Limited treatment options
- Continual clinical decline is expected

New approaches with novel mechanisms of action are needed to improve outcomes in PMS



PMS: progressive multiple sclerosis; PPMS: primary progressive multiple sclerosis; RRMS: relapsing-remitting multiple sclerosis; SPMS: secondary progressive multiple sclerosis

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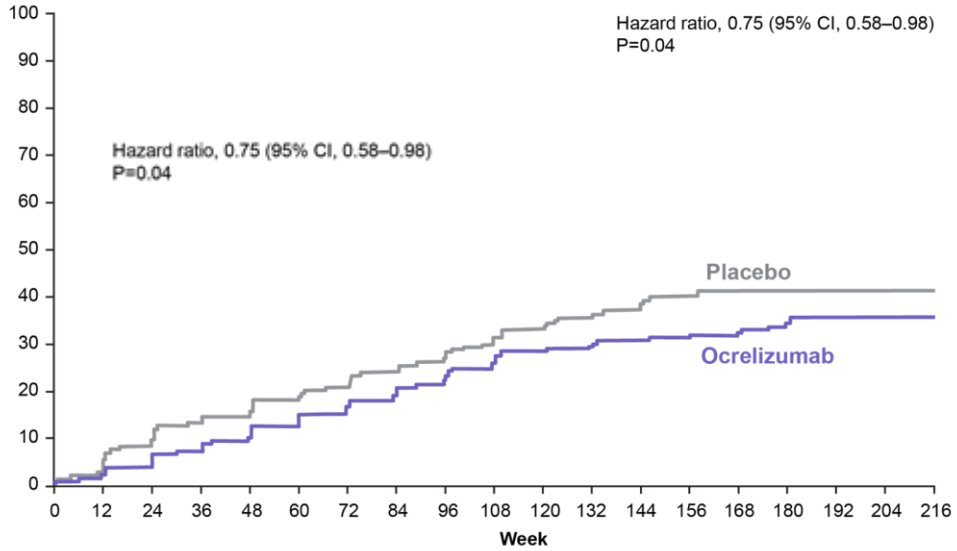
(1) https://n.neurology.org/content/92/10/e1029
(2) https://www.msif.org/about-us/who-we-are-and-what-we-do/advocacy/atlas/atlas-of-ms-faqs

Non-Specific B Cell Depletion Treatment in Progressive MS: Slows Disability Progression, but Does Not Improve Clinical Symptoms

Ocrelizumab Phase 3 PPMS study(1)

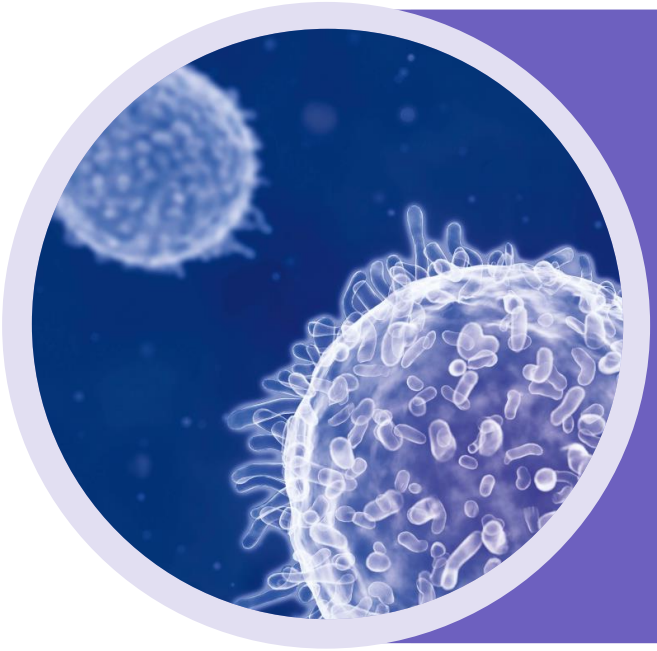
Cumulative probability of 24-week disability progression (%)



PPMS: Primary Progressive Multiple Sclerosis

(1) Montalban *et al.* Ocrelizumab versus Placebo in Primary Progressive Multiple Sclerosis. *N Engl J Med.* 2017 Jan 19;376(3):209-220. doi: 10.1056/NEJMoa1606468. Epub 2016 Dec 21; Median EDSS 4.5.

A Novel Approach for Progressive MS: Off-the-Shelf, Allogeneic T-Cell Immunotherapy Targeting EBV-Infected B Cells



ATA188 off-the-shelf, allogeneic

Phase 1a dose-escalation study ongoing[1]

- First patients retreated in the open label extension (OLE) portion of the Phase 1a study

Cohort 3 dose selected to initiate randomized, double-blind, placebo-controlled Phase 1b

- Decision based on achieving in cohort 3 of the Phase 1a study pre-determined criteria:
  - Continued well-tolerated safety profile and
  - 50% (3 of 6) patients with clinical improvement from more than one clinical study site[2]
- Activation of clinical study sites at leading MS centers in the U.S. and Australia is ongoing

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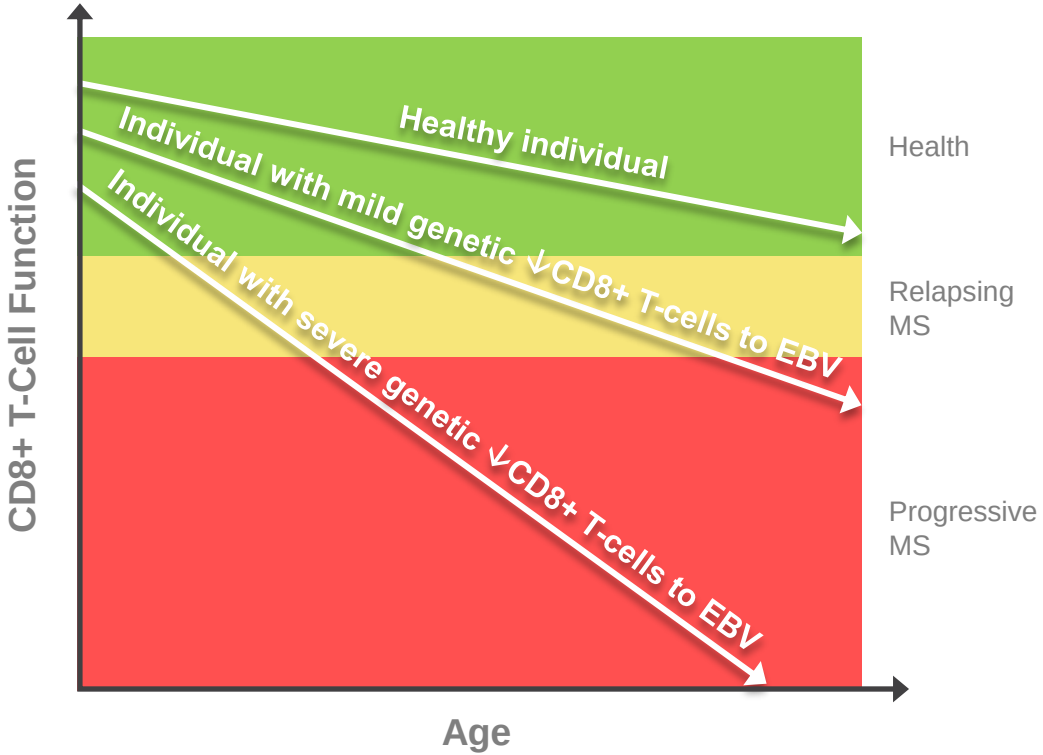
(1) ClinicalTrials.gov: NCT03283826.
(2) Using the criteria defined at ECTRIMS 2019

Growing Evidence that EBV Has a Major Role in the Pathogenesis of Multiple Sclerosis

- Prior EBV infection is required for a patient to develop MS [1]
- MS may be mediated by B cells that are infected with EBV [2]
- As MS progresses, patient's ability to mount cell-mediated immune response against EBV decreases and is worst in patients with progressive MS [3]



Adapted from: Pender, "The Essential Role of EBV in the Pathogenesis of MS", *The Neuroscientist,* 2011

1. Ascherio A et al, *Nat Rev Neurol*. 2012;8:602-612. Endriz, J. et al., Neurol. Neuroimmunol. Neuroinflamm. (2017) 4, e308
2. Harley et al, Nature Genetics 2018
3. Pender et al, Clin Transl Immunology. 2017;6(1):e126. Cencioni et al, Immunology. 2017;152:660–676

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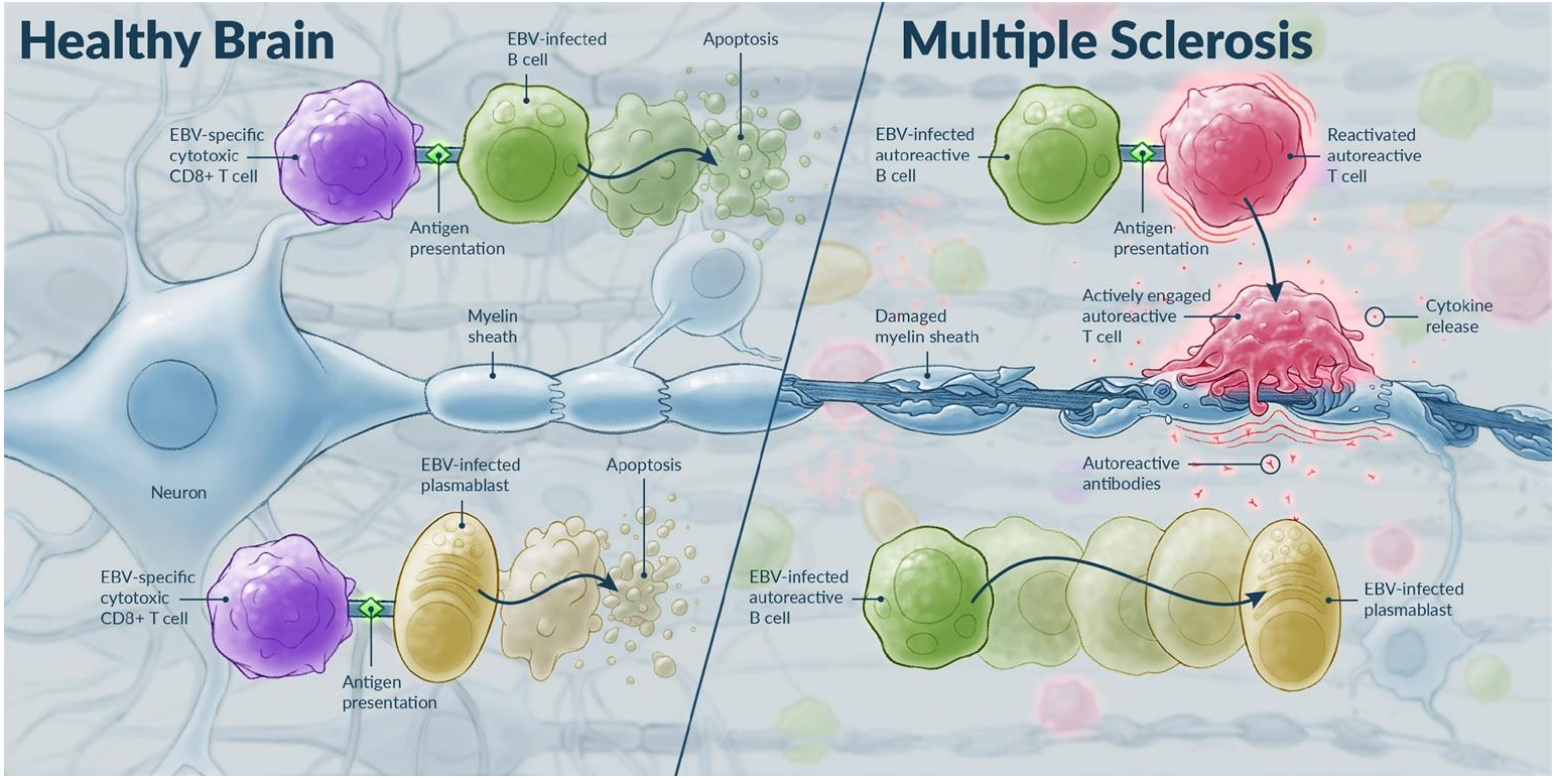
Auto-reactive EBV-Infected B cells and Plasma Cells Normally Controlled by EBV T Cells



Adapted from Pender MP. *Neuroscientist* 2011; 17:351-367.

Optimal Characteristics of a Progressive MS Treatment

Well-tolerated

Reverses disability progression

Penetrates CNS

Targets specific B cells and plasma cells

Addresses underlying biology

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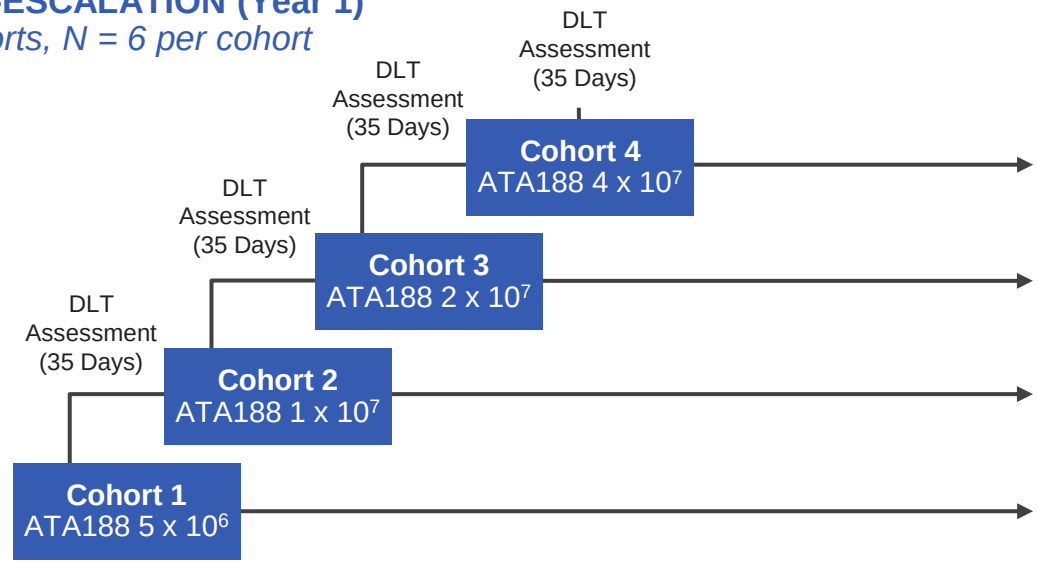
ATA188: Early Findings of Potential Efficacy from Phase 1 Study in Patients with Progressive MS Presented at ECTRIMS 2019

Part 1 Study Schema

DOSE-ESCALATION (Year 1)
4 Cohorts, N = 6 per cohort



PRIMARY ENDPOINTS

Safety and identification of the recommended Phase 2 dose

CLINICAL EFFICACY CRITERIA

- EDSS
- MS Impact Scale-29
- Fatigue Severity Scale
- 12-Item MS Walking Scale
- Timed 25-foot Walk
- 9-hole Peg Test
- Visual Acuity

Enrollment in the fourth and final Phase 1 dose escalation cohort completed

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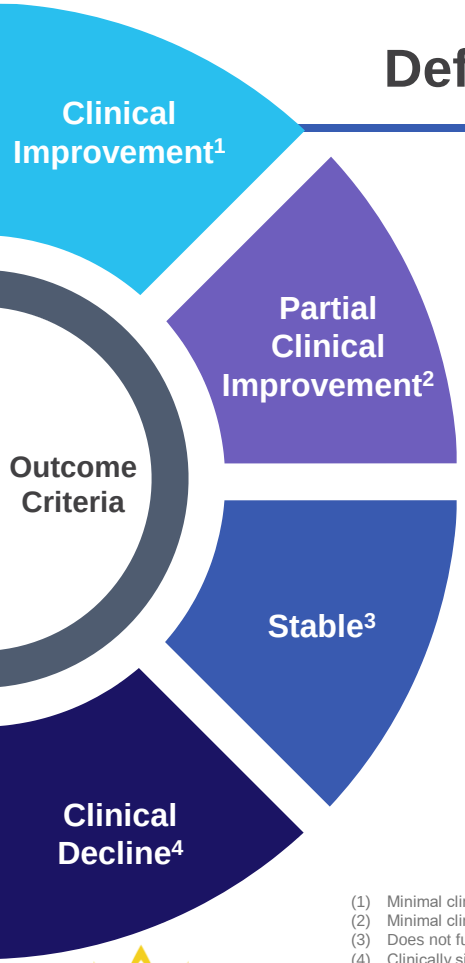
Definition of Outcome Criteria (Clinical Response)



Clinical Efficacy Criteria

assessment with clinically significant improvement

Fatigue Severity Score	MS Impact Scale-29 (physical)	T25FW[5]	9-hole peg test
-0.7	-8	-20%	-20%

MSWS-12[6]	EDSS[7]	VA (logmar)[8]
-8	-1 (EDSS 3-5) -0.5 (EDSS 5.5-7.0)	≥ -0.1 decrease in either eye

(1) Minimal clinically significant improvement or greater on 2 evaluations compared to baseline sustained over ≥ 2 consecutive timepoints compared to baseline
(2) Minimal clinically significant improvement or greater on ≥ 2 evaluations compared to baseline at ≥ 1 post-baseline timepoint
(3) Does not fulfill criteria for decline or improvement
(4) Clinically significant decline in ≥ 2 scales at ≥ 1 timepoint; clinical decline takes precedence over improvement
(5) Timed 25-Foot Walk
(6) 12-Item Multiple Sclerosis Walking Scale
(7) Expanded Disability Status Scale
(8) Visual acuity

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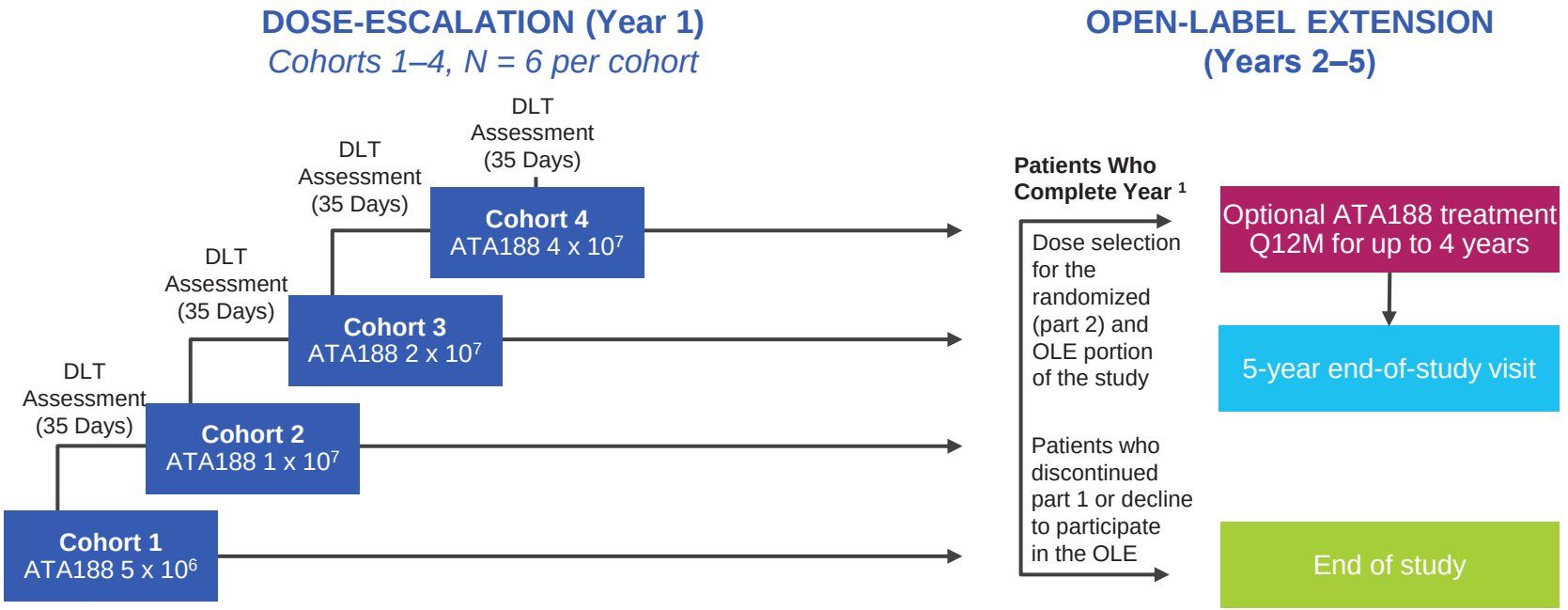
Phase 1 Study of ATA188, an Allogeneic EBV-Targeted T-Cell Therapy for the Treatment of Progressive MS

Part 1 Study Schema



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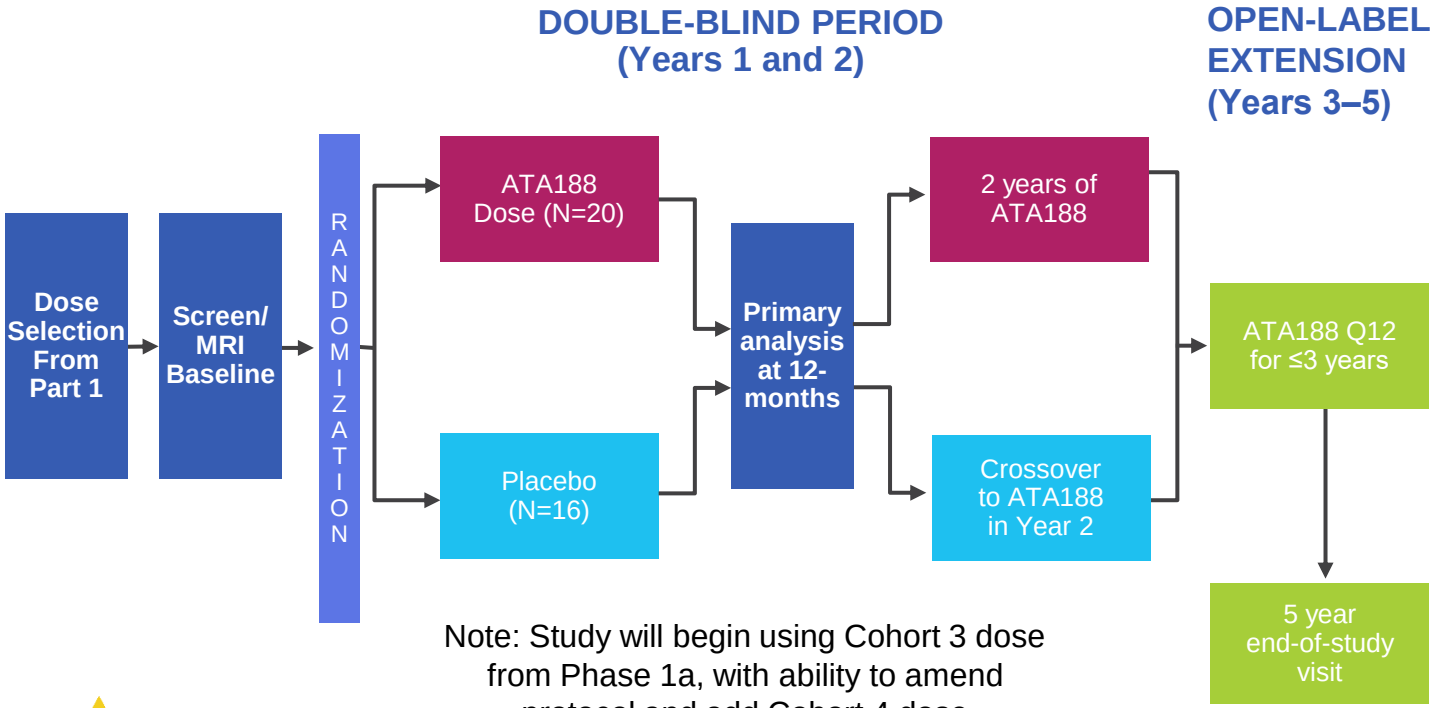
We Also Initiated the ATA188 Phase 1b Randomized, Placebo-Controlled Study in at Least 36 Progressive MS Patients

Part 2 Study Schema



Note: Study will begin using Cohort 3 dose from Phase 1a, with ability to amend protocol and add Cohort 4 dose

ENDPOINTS

- CSF, blood – IgG, oligoclonal bands, RNAseq, NFL
- MRI volumes (c-spine, whole brain), MTR, T1 & T2 lesions
- Clinical endpoints (EDSS, T25FW, 9HPT, MSFC, SDMT, Fatigue scales, activity measures, etc.)

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Four Strategic Priorities to Create Value

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation & EMA PRIME for EBV+ PTLD

ATA188

EBV T-cell immunotherapy for progressive multiple sclerosis (MS)

ATA2271
ATA3271

Mesothelin CAR T for solid tumors

ATA3219

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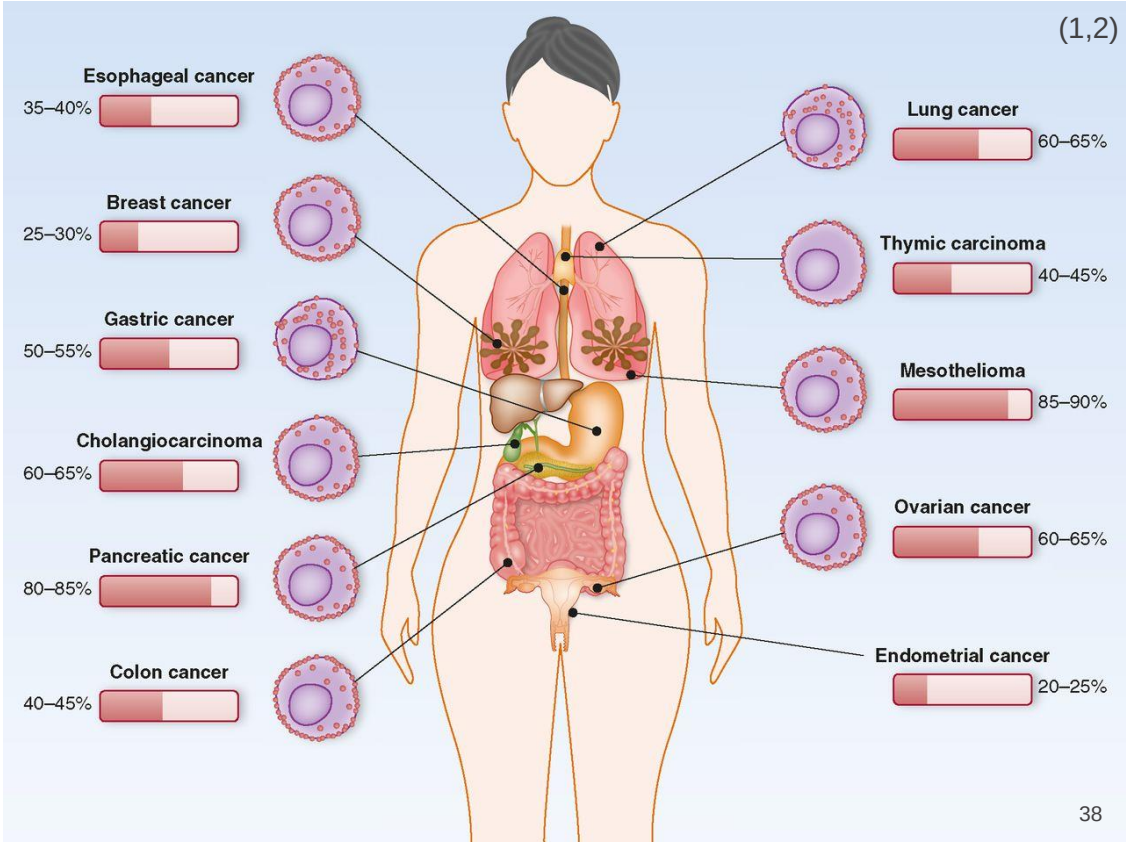
Exclusive License to Mesothelin-Targeted CAR T Immunotherapy for Solid Tumors from MSK

Mesothelin is an attractive target associated with aggressive solid tumors

- Aberrant mesothelin expression promotes cancer cell proliferation and confers resistance to apoptosis
  - Associated with mesothelioma, triple-negative breast cancer and non-small cell lung cancer
- Mesothelin-associated cancers(1)
  - Incidence: ~340,000 patients
  - Prevalence: ~2 million patients



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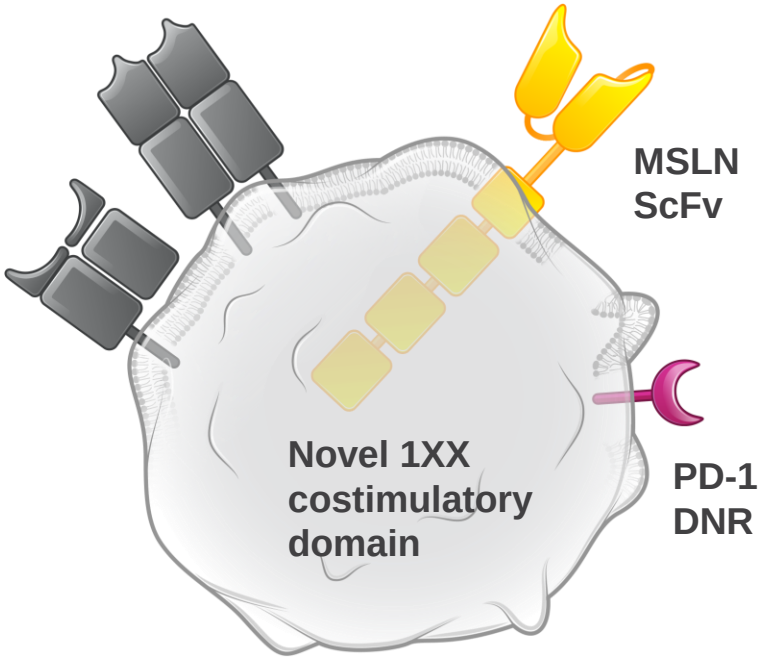
(1) Morello A, Sadelain M, Adusumilli PS. Mesothelin-Targeted CARs: Driving T Cells to Solid Tumors. *Cancer Discov.* 2016 Feb;6(2):133-46; U.S. incidence/prevalence.

(2) Frequency and distribution pattern of the mesothelin protein in solid malignancies.

ATA2271 – Developing Autologous Mesothelin-Targeted CAR T Program in Solid Tumors with Partners at MSK



- Mesothelin is an attractive target associated with aggressive solid tumors that is supported by academic data
- Maintains ScFv that binds to mesothelin above cancer threshold
- Incorporates next-gen CAR T technologies
  - Novel 1XX costimulatory domain may offer greater persistence and more physiologic T cell signaling
  - PD-1 Dominant Negative Receptor (DNR) designed to provide intrinsic checkpoint inhibition and unlock the solid tumor microenvironment
- ATA3271: off-the-shelf, allogeneic EBV mesothelin CAR T preclinical development ongoing

Expect to submit IND for patients with advanced mesothelioma in Q2/Q3 2020

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Four Strategic Priorities to Create Value

Tab-cel® (tabelecleucel)

Investigational T-cell immunotherapy for EBV-associated ultra-rare diseases

FDA breakthrough designation & EMA PRIME for EBV+ PTLD

ATA188

EBV T-cell immunotherapy for progressive multiple sclerosis (MS)

ATA2271
ATA3271

Mesothelin CAR T for solid tumors

ATA3219

EBV CD19 CAR T
Off-the-shelf, allogeneic
platform clinical proof-of-concept

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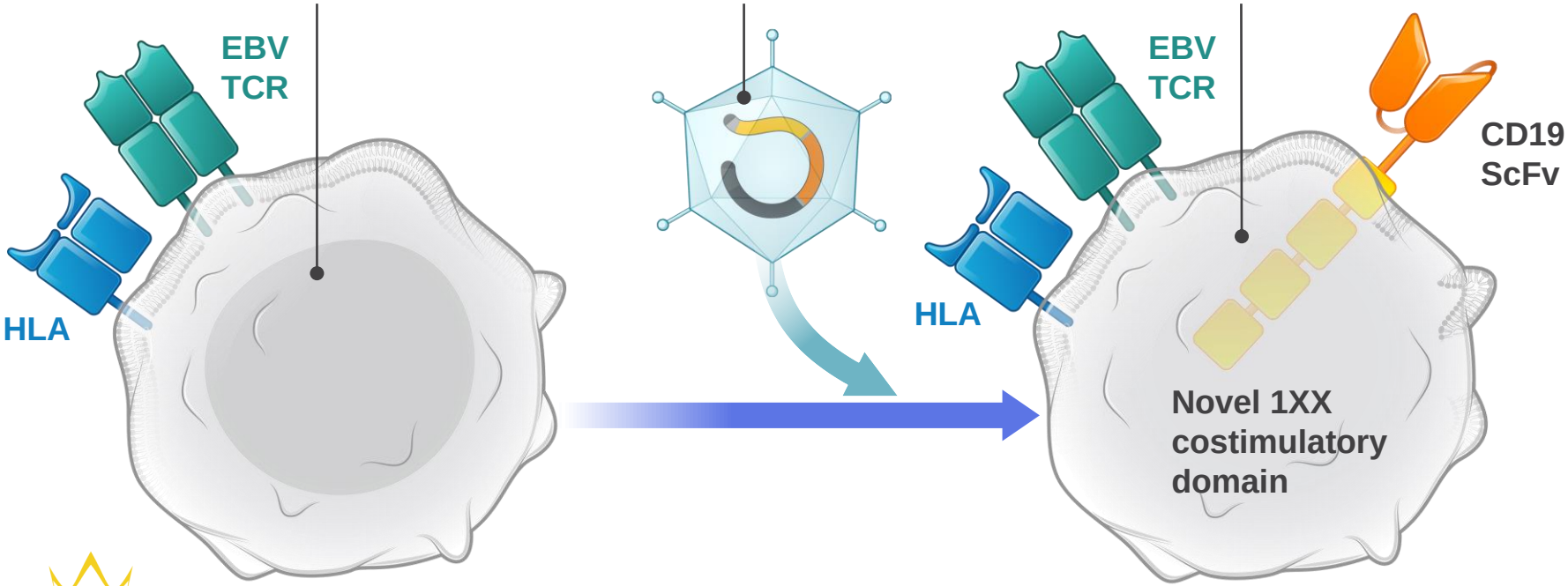
ATA3219 – Off-the-Shelf, Allogeneic CD19 CAR T Platform

1 Off-the-shelf, allogeneic EBV T cell platform

2 Next-generation CAR technologies

3 Off-the-shelf CAR T with broad applications



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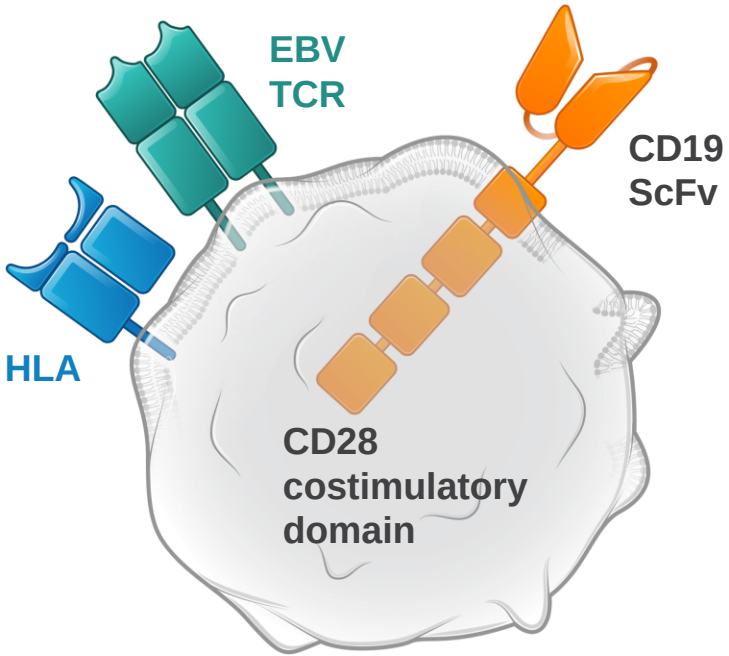
Academic Off-the-Shelf, Allogeneic EBV CD19 CAR T Clinical Proof-of-Principle for Patients with R/R B-Cell Malignancies



- EBV T-cell platform has potential to generate off-the-shelf, allogeneic CAR T with high and durable responses with low risk of toxicity(1)
- Durable CR with median follow up of 26.9 months for 83% (5/6) of R/R B-ALL, NHL and CLL patients who received partially HLA matched EBV CD19 CAR T cells manufactured from third-party donors
  - 100% (4/4) response in patients with NHL
  - 100% (1/1) response in patient with CLL
- No dose-limiting toxicities were observed post-infusion with multiple EBV CD19 CAR T doses administered
  - No CRS or neurotoxicity above Grade 2
  - No confirmed GvHD in patients who received partially HLA matched third-party donor EBV CD19 CART cells

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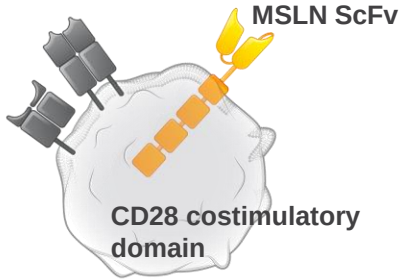
R/R: Relapse/Refractory; NHL: Non-Hodgkin Lymphoma; B-ALL: B-Cell Acute Lymphoblastic Leukemia; CLL: Chronic Lymphocytic Leukemia; CRS: cytokine release syndrome

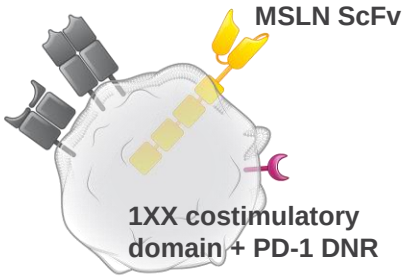
(1) Curran KJ, *et al.* 2020 Transplantation and Cellular Therapy (TCT) Meetings. Durable Remission Following "Off-the-Shelf" Chimeric Antigen Receptor (CAR) T-Cells in Patients with Relapse/Refractory (R/R) B-Cell Malignancies. Abstract 120, Thursday, February 20, 2020; 3:45 p.m. - 4:00 p.m. EST, Orlando.

Atara Development of Off-the-Shelf, Allogeneic EBV CAR T

Autologous – Mesothelin CAR T Clinical Proof-of-Concept

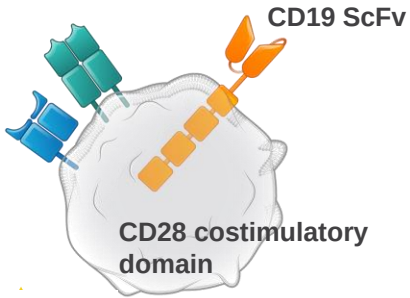


MSK MSLN CAR T
(NCT02414269, NCT02792114)

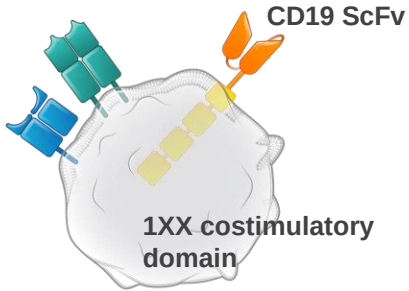


ATA2271
IND in 2020

Off-the-shelf, allogeneic – EBV CAR T Platform Proof-of-Concept

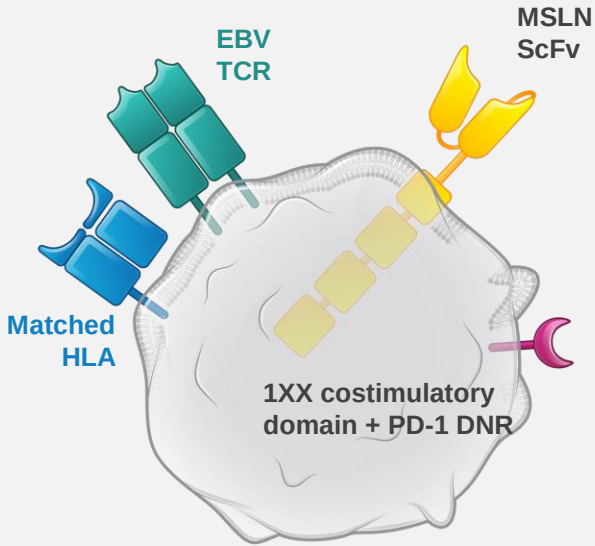


EBV CD19 CAR T
NCT01430390



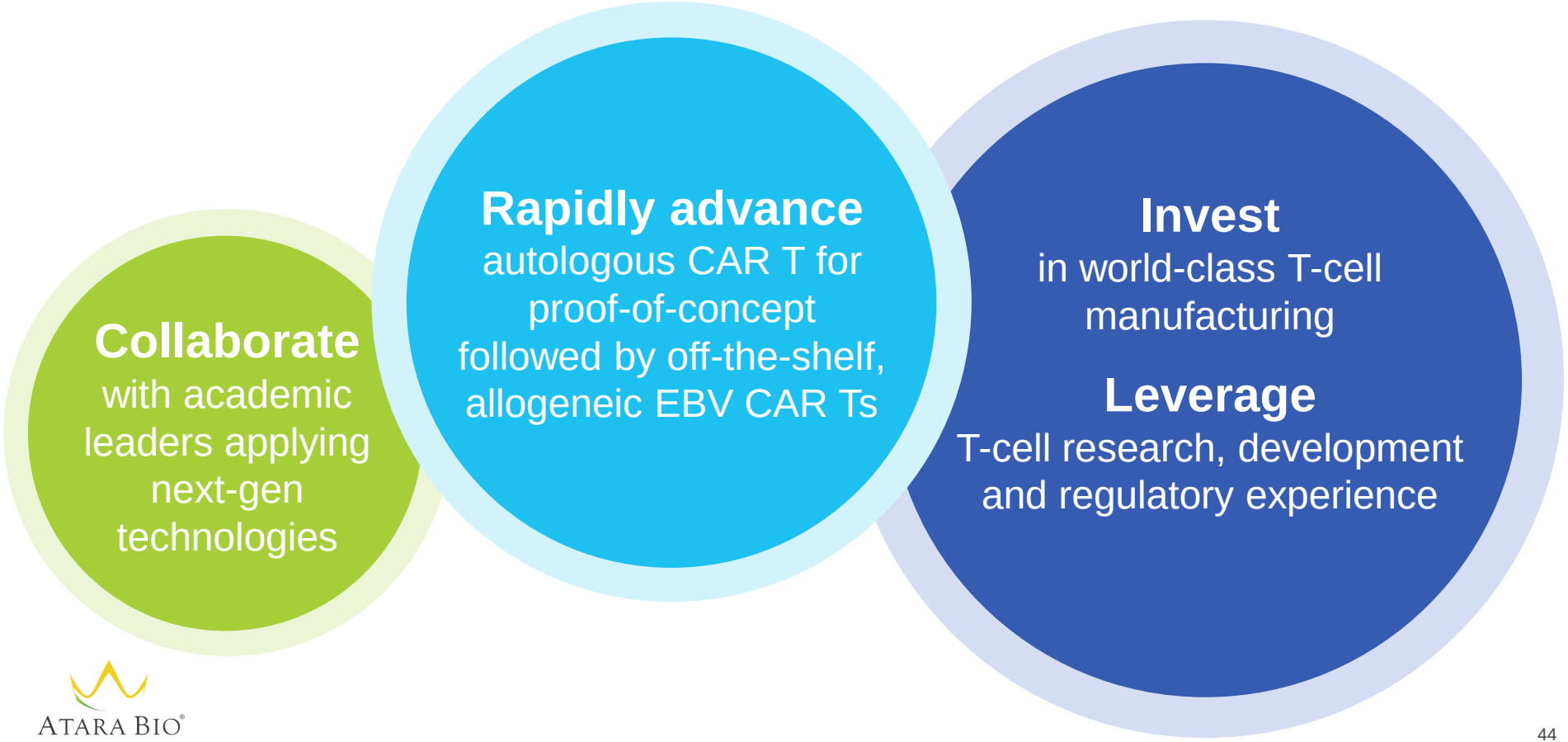
ATA3219

Off-the-shelf, allogeneic EBV Mesothelin CAR T



ATA3271

Atara Off-the-Shelf, Allogeneic CAR T Immunotherapy Strategy



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Atara CAR T Pipeline – Applying Next-Generation Technologies in Collaboration with Academic Leaders

	Indication	Target	CAR T Technologies	
ATA2271	Autologous **Solid tumors**(1)	**Mesothelin**	**PD-1 DNR** **1XX co-stimulation**	Memorial Sloan Kettering Cancer Center
ATA3271	Off-the-shelf, allogeneic **Solid tumors**(1)	**Mesothelin**	**PD-1 DNR** **1XX co-stimulation**	ATARA BIO®
ATA3219	Off-the-shelf, allogeneic **B-cell malignancies**	**CD19**	**1XX co-stimulation**	ATARA BIO®
ATA2321	Autologous **AML**	**Dual-targeted undisclosed**	**Mut06 co-stimulation**	MOFFITT CANCER CENTER
ATA2431	Autologous **B-cell malignancies**	**CD19-CD20**	**Mut06 co-stimulation**	MOFFITT CANCER CENTER
Other CAR T	**Solid tumors & infectious diseases**	**Undisclosed**	**1XX co-stimulation**	Memorial Sloan Kettering Cancer Center

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AML: acute myeloid leukemia; DNR: Dominant Negative Receptor

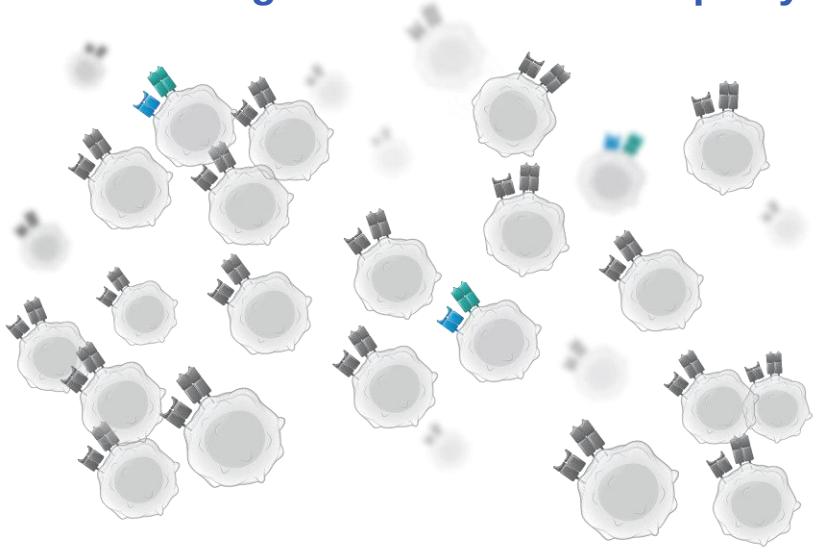
(1) Mesothelin is expressed at high levels on the surface of cells in aggressive solid tumors including mesothelioma, triple-negative breast cancer, esophageal cancer, pancreatic cancer and non-small cell lung cancer

Dedicated State-of-the-Art T-Cell Manufacturing Capacity

- Dedicated, expandable T-cell manufacturing facility in Thousand Oaks, CA
- Flexibility to produce multiple T-cell and CAR T immunotherapies
- Highly integrated cross-functional CMC support to enable rapid development
- Designed to meet global regulatory standards
- Qualified to support clinical development
- Commercial manufacturing validation activities progressing well

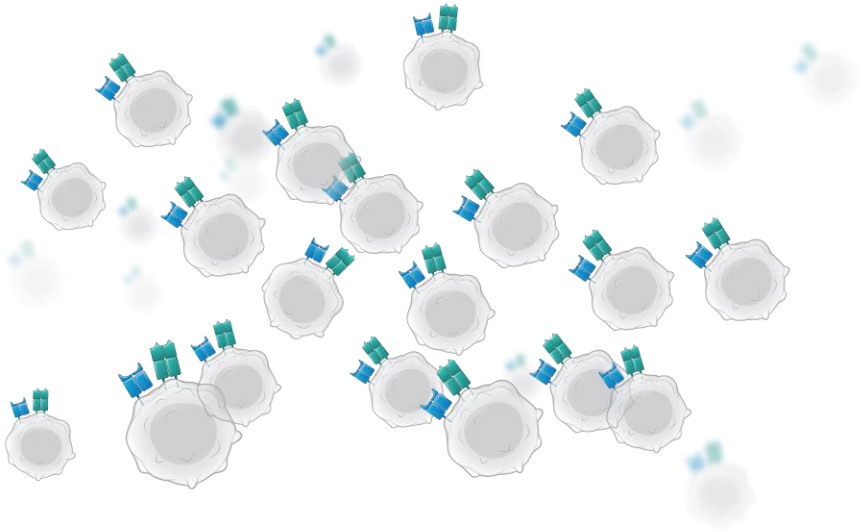
Scalable EBV T-Cell Manufacturing

Single EBV+ donor leukopak yields approximately 400 tab-cel® doses(1)



HETEROGENEOUS DONOR T CELLS

EBV+ donor leukapheresis includes small population of T cells with EBV-specific TCR (shown in green)



EBV T CELL SELECTION AND EXPANSION

T cells exposed to cells that present EBV antigens, stimulating and selectively expanding EBV T cells

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(1) Yield based on tab-cel® manufacturing in 2019

The Design Principles Built Into Our Allogeneic Manufacturing Platform Serve Us Well As We Approach Tab-cel® Commercial Launch

Efficient Manufacturing

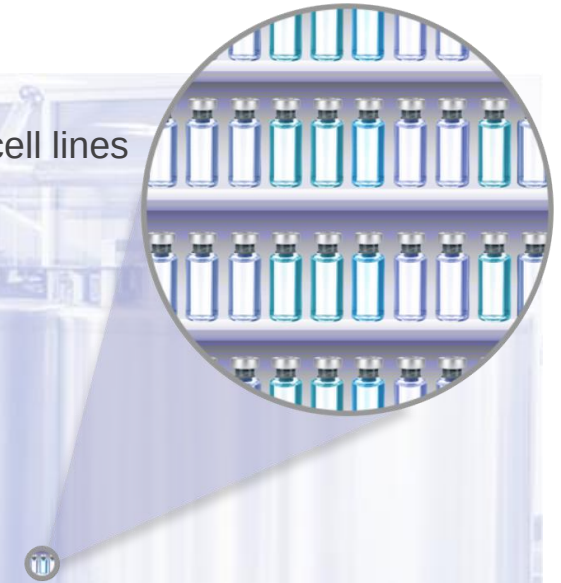
- We can serve >95% of patient population with ~40 strategically selected cell lines
- Our manufacturing process is robust

Flexible Supply Chain

- Ability to manage all aspects of supply chain to serve global patient need
- Product delivered rapidly to patients from finished product inventory

Scalable Platform

- Establishing commercial scale for Tab-cel®
- Leveraging Tab-cel® experience across our allogeneic T-cell pipeline



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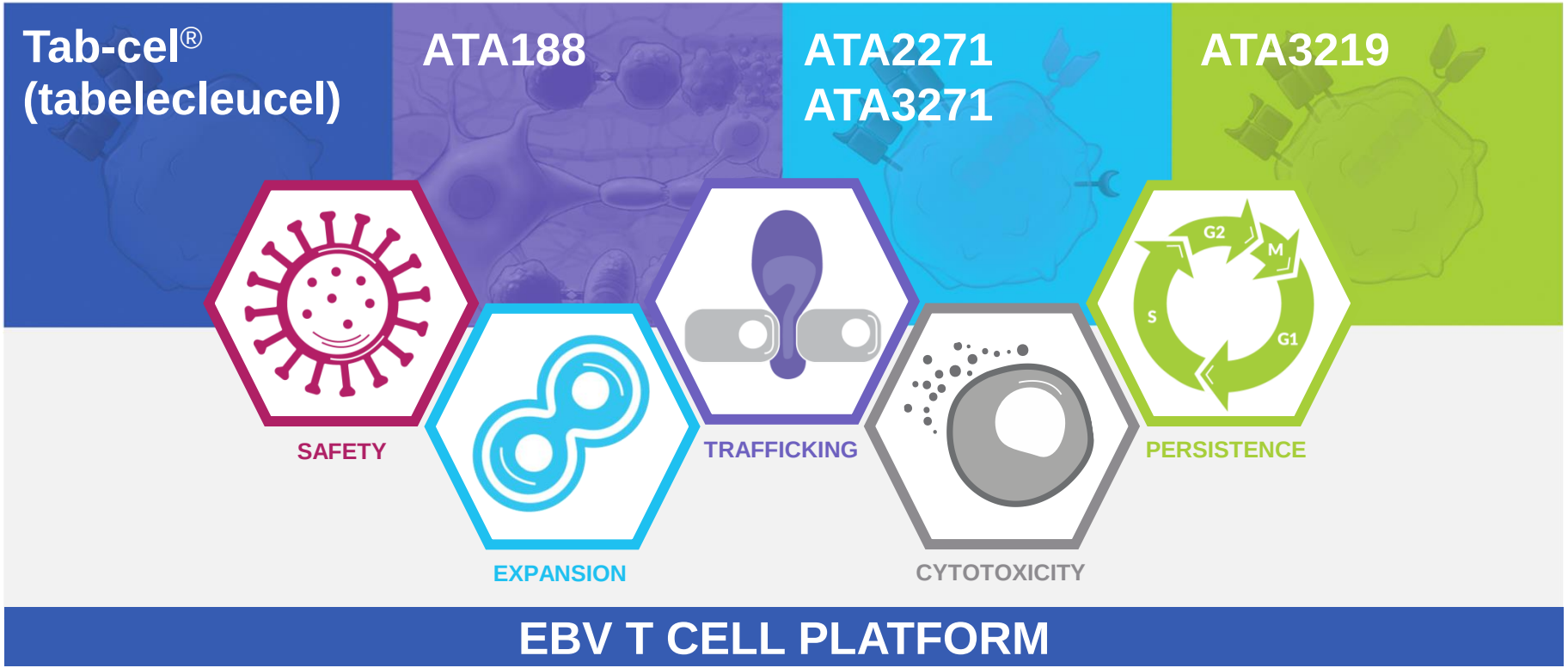
Potential to Transform the Lives of Patients with Serious Diseases



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Multiple Key Milestones Expected in 2020

Tab-cel® (tabelecleucel)	☑	Submitted clinical trial applications (CTA) to several European countries to enable opening EU clinical sites in 2020	**Nov 2019**
	☐	Begin enrollment in a Phase 2 multi-cohort study including patients with other EBV+ cancers	**H2 2020**
	☐	Initiate FDA Biologics License Application (BLA) submission for patients with EBV+ PTLD	**H2 2020**
ATA188	☐	Initiate enrollment of randomized, double-blind, placebo-controlled Phase 1b study in patients with progressive MS	**Q2-Q3 2020**
	☐	Present six-month Phase 1a clinical results for cohorts 1 through 4 and twelve-month results for cohorts 1 through 3	**Q2 2020**
	☐	Present twelve-month Phase 1a clinical results for cohort 4	**H2 2020**
ATA2271	☐	Submit next-generation mesothelin-targeted autologous CAR T IND for patients with advanced mesothelioma	**Q2-Q3 2020**
EBV CAR T Platform	☑	Academic presentation of an off-the-shelf, allogeneic EBV CD19 CAR T clinical proof-of-principle	**Feb 2020**

Nasdaq:
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Thank you

Ola
PTLD champion