## Viracta Therapeutics, Inc.

R&D Day – October 4, 2023





Introduction:

Mark Rothera

President and Chief Executive Officer



### **Forward-Looking Statements**

This communication contains "forward-looking" statements within the meaning of the Private Securities Litigation Reform Act of 1995, which are based on current expectations, estimates and projections based on information currently available to management of Viracta Therapeutics, Inc. ("Viracta" or the "Company"), including, without limitation, statements regarding: Viracta's development pipeline; the details, timeline and expected progress for Viracta's ongoing trials; the expected ability of Viracta to undertake certain activities and accomplish certain goals with respect to its clinical program in EBV+ lymphoma, EBV+ solid tumors, other virus-associated malignancies or its programs; expectations regarding future therapeutic and commercial potential with respect to Viracta's clinical program in EBV+ lymphoma, EBV+ solid tumors or other virus-associated malignancies; the ability of Viracta to support multiple new drug application filings and approvals from the NAVAL-1 trial; Viracta's plans to meet with the FDA to discuss preliminary results from the NAVAL-1 trial, amending the NAVAL-1 protocol to add patients as necessary to enable registration and provide other program updates; Viracta's cash projections and the sufficiency of its cash and cash equivalents to fund operations into late 2024; the future availability of capital under Viracta's credit facility; the expected future milestones and key upcoming events and their significance; and other statements that are not historical facts. Risks and uncertainties related to Viracta that may cause actual results to differ materially from those expressed or implied in any forward-looking statement include, but are not limited to: Viracta's ability to successfully enroll patients in and complete its ongoing and planned clinical trials; Viracta's plans to develop and commercialize its product candidates, including all oral combinations of nanatinostat and valganciclovir; the timing of initiation of Viracta's planned clinical trials; the timing of the availability of data from Viracta's clinical trials; the possibility that previous preclinical and clinical results may not be predictive of future clinical results; the timing of any planned investigational new drug application or new drug application; Viracta's plans to research, develop and commercialize its current and future product candidates; the clinical utility, potential benefits and market acceptance of Viracta's product candidates; Viracta's ability to identify additional products or product candidates with significant commercial potential; developments and projections relating to Viracta's competitors and its industry; the impact of government laws and regulations; Viracta's ability to protect its intellectual property position; and Viracta's estimates regarding future expenses, capital requirements and need for additional financing.

These risks and uncertainties may be amplified by the COVID-19 pandemic, which has caused significant economic uncertainty. If any of these risks materialize or underlying assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. Additional risks and uncertainties that could cause actual outcomes and results to differ materially from those contemplated by the forward-looking statements are included under the caption "Risk Factors" and elsewhere in Viracta's most recent filings with the SEC and any subsequent reports on Form 10-K, Form 10-Q or Form 8-K filed with the SEC from time to time and available at <a href="https://www.sec.gov">www.sec.gov</a>. The forward-looking statements included in this communication are made only as of the date hereof. Viracta assumes no obligation and does not intend to update these forward-looking statements, except as required by law or applicable regulation.



### **Epstein-Barr Virus (EBV): A High Global Cancer Priority**

EBV+ malignancies account for ~2% of all new cancer cases globally

EBV positivity, by lymphoma subtype <sup>1, 2,3</sup>				
Peripheral T-cell lymphoma* (PTCL)	40-65%			
Diffuse large B-cell lymphoma (DLBCL)	5-15%			
Post-transplant lymphoproliferative disorders (PTLD)	60-80%			

EBV positivity, by solid tumor subtype <sup>4</sup>			
Nasopharyngeal carcinoma (NPC)	75-95%		
Gastric cancer (GC)	8-10%		

~90% of the adult population are infected with EBV

Latency confers resistance to antiviral therapies and facilitates evasion of immune detection >300,000 new cases/year of EBV+ lymphomas and solid tumors<sup>5</sup>

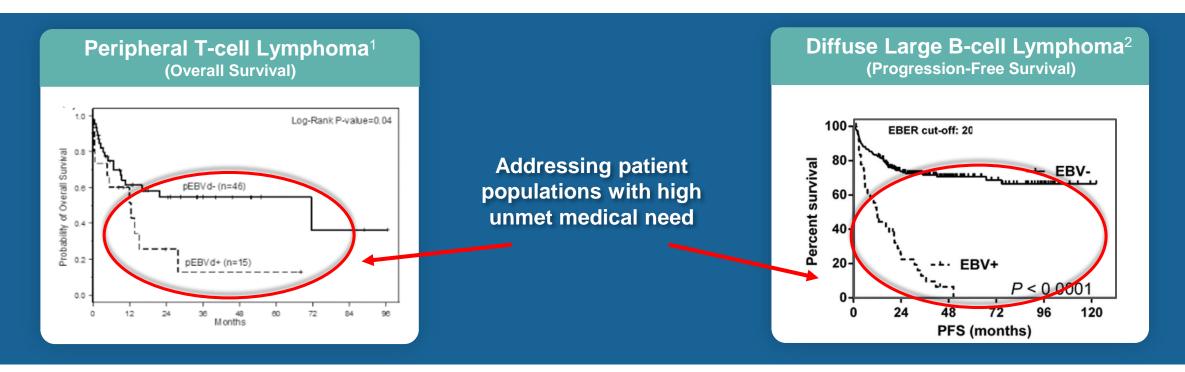
Responsible for ~180,000 cancer deaths/year<sup>5</sup>

The incidence of EBV-associated cancers is likely greater, impacting more cancer types



# Viracta is Developing a Precision Medicine to Treat Unique Subsets of EBV+ Lymphoma with Adverse Survival Outcomes

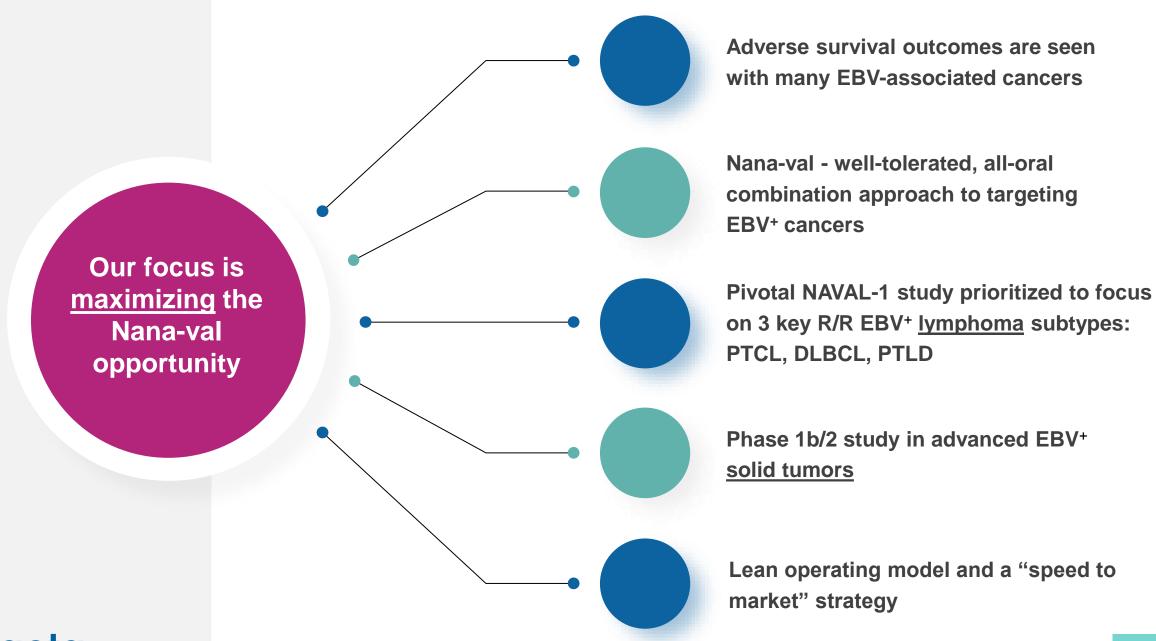
**Currently limited or no targeted therapy options for EBV-associated cancers** 



PTCL EBV+ Rate: 40-65%

viracta

DLBCL EBV+ Rate: 5-15%



### **Expert Key Opinion Leaders Presenting Today**





Pierluigi Porcu, M.D.

Professor of Medical Oncology, Director of the Division of Hematologic Malignancies and Hematopoietic Stem Cell Transplantation, Department of Medical Oncology at Thomas Jefferson University

Robert A. Baiocchi, M.D., Ph.D.

Professor of Internal Medicine, Associate Director for Translational and Clinical Science in the Division of Hematology at The Ohio State University



### **Today's Presenters from Viracta**



Ayman Elguindy, PhD

Chief Scientific Officer



Darrel P. Cohen, MD, PhD

Chief Medical Officer



### Today's Agenda

Introduction	Mark Rothera, President and Chief Executive Officer		
Nana-val Mechanism of Action	Ayman Elguindy, PhD, Chief Scientific Officer  Pierluigi Porcu, MD, Thomas Jefferson University Darrel P. Cohen, MD, PhD, Chief Medical Officer		
<ul> <li>EBV+ Peripheral T-Cell Lymphoma (PTCL)</li> <li>"PTCL: Unmet Medical Need"</li> <li>Preliminary data from pivotal NAVAL-1 trial</li> <li>Additional data cut from Phase 1b/2 study</li> </ul>			
<ul> <li>EBV+ Diffuse Large B-Cell Lymphoma (DLBCL)</li> <li>"EBV+ DLBCL: A Unique Entity"</li> <li>Additional response and follow-up from Phase 1b/2 study</li> </ul>	Robert A. Baiocchi, MD, PhD, The Ohio State University Darrel P. Cohen, MD, PhD, Chief Medical Officer		
<ul> <li>Advanced EBV+ Solid Tumors</li> <li>New clinical data from Phase 1b study</li> <li>Rationale for Split Daily Dosing (SDD) schedule</li> </ul>	Darrel P. Cohen, MD, PhD, Chief Medical Officer Ayman Elguindy, PhD, Chief Scientific Officer		
<ul><li>Closing Comments</li><li>Lymphoma market opportunity</li><li>Milestones</li></ul>	Mark Rothera, President and Chief Executive Officer		





Nana-val:
Mechanism-of-Action

### Nana-val: All-Oral Combination Drug Product of Nanatinostat and Valganciclovir

**Precisely eradicates EBV+ tumor cells** 

### Nanatinostat (proprietary molecule):

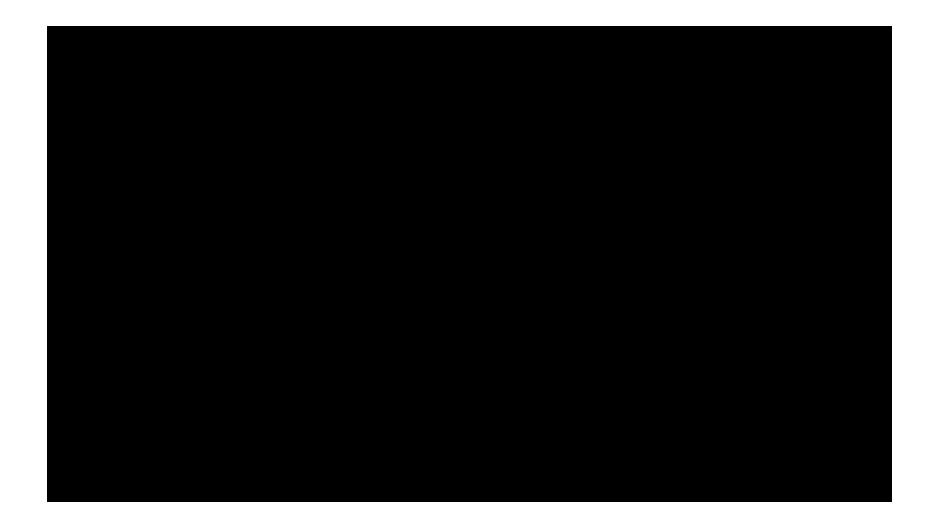
- Epigenetic agent, used to selectively activate EBV gene expression and immune enhancement
- Class I HDAC inhibitor, selective for HDACs 1, 2, and 3
- Potent inducer of EBV protein kinase (BGLF4) expression at low doses

### Valganciclovir:

- Synthetic nucleoside analog
- Antiviral prodrug, converted into a cytotoxic agent by viral enzymes (kinases)



### Nana-val MOA Video





### Nana-val: a Unique Approach to Targeting and Killing EBV+ Cancer Cells

Nanatinostat sensitizes EBV+ tumors to the cytotoxic effects of ganciclovir

#### **LATENCY**

EBV is latent in cancer cells.

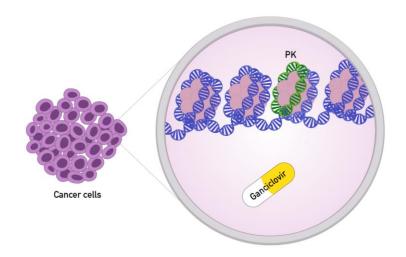
Valganciclovir, antiviral & cytotoxic prodrug of ganciclovir (GCV), is inactive in the absence of EBV protein kinase (PK)

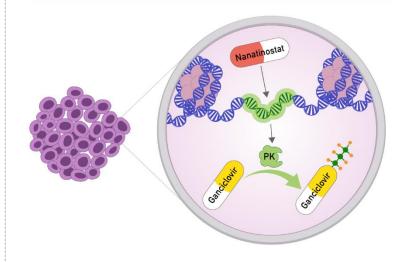
#### THE KICK

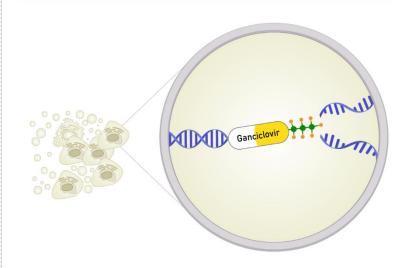
Nanatinostat potently induces expression of EBV protein kinase (PK), which activates GCV into its cytotoxic form

#### THE KILL

Activated GCV inhibits DNA replication leading to apoptosis of EBV+ cancer cells

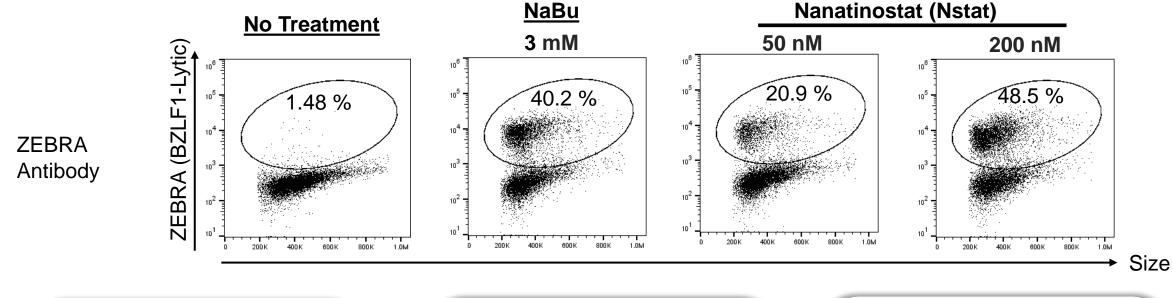


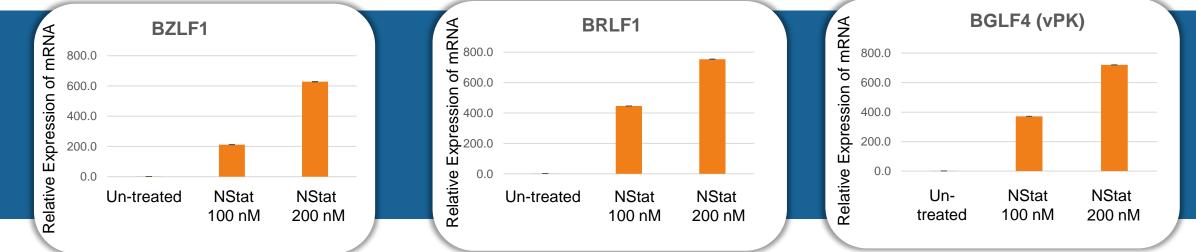






### Nanatinostat is a Potent Inducer of the EBV Lytic Cycle in Lymphoma Cells





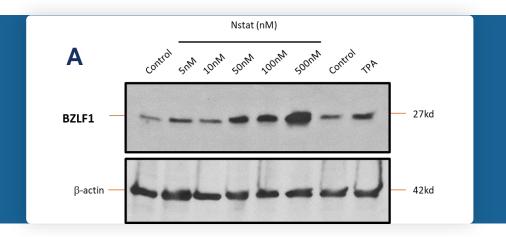


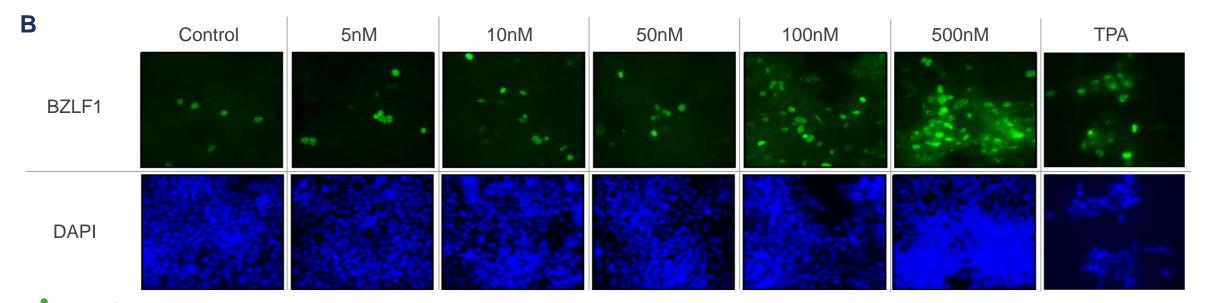
### Nanatinostat Induces the EBV Lytic Cycle in EBV+ NPC Cells

Different concentrations of nanatinostat activate the expression of BZLF1, the master EBV lytic cycle switch protein

A) Western blot, B) Immunofluorescence, of BZLF1

BZLF1 drives expression of lytic viral proteins including BGLF4, the viral protein kinase

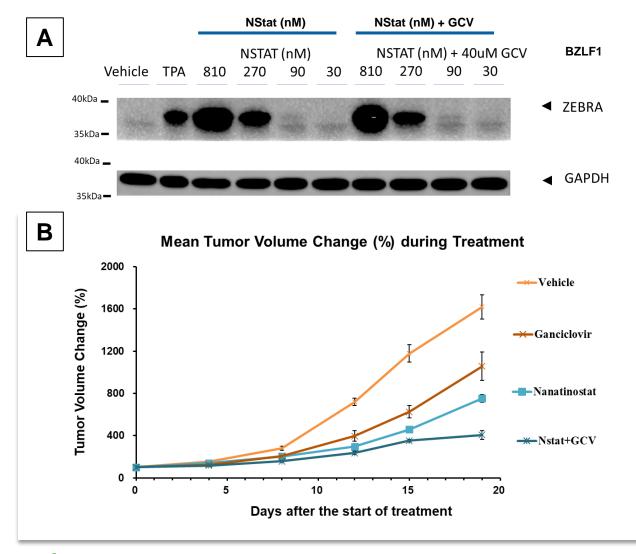


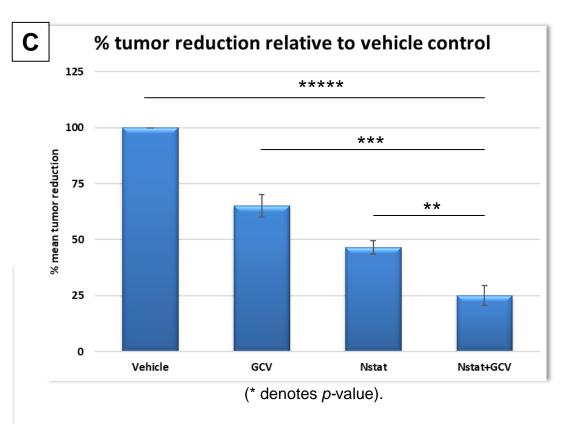




Potent Responses to Nanatinostat and Ganciclovir Treatment in EBV+ Solid

**Tumor Murine Model** 





- Panel A: Treatment of EBV<sup>+</sup> gastric cancer SNU-719 cells with NSTAT alone or together with GCV potently induces the lytic cycle; expression of BZLF1
- Panels B and C: In vivo, the combination of NSTAT+GCV results in significant reduction in gastric cancer tumor growth versus no treatment





EBV+ Peripheral T-Cell Lymphoma: T-cell lymphoma with high unmet medical need



# EBV-Positive Peripheral T-cell Lymphoma



Pierluigi Porcu, M.D.

Professor Medical Oncology, Dermatology, and Cutaneous Biology
Director, Division of Hematologic Malignancies and Cellular Therapy
Sidney Kimmel Cancer Center at Jefferson Health,
Director, Blood Cancer Center of Excellence (BCCE)
Thomas Jefferson University, Philadelphia

JeffersonHealth.org/Cancer

### Some Terms and Definitions

### Peripheral T-cell Lymphoma (PTCL)

- Historical all-embracing definition of lymphomas of T-cell or NK-cell lineage
- Now defines a subtype of MTCN (PTCL-NOS)

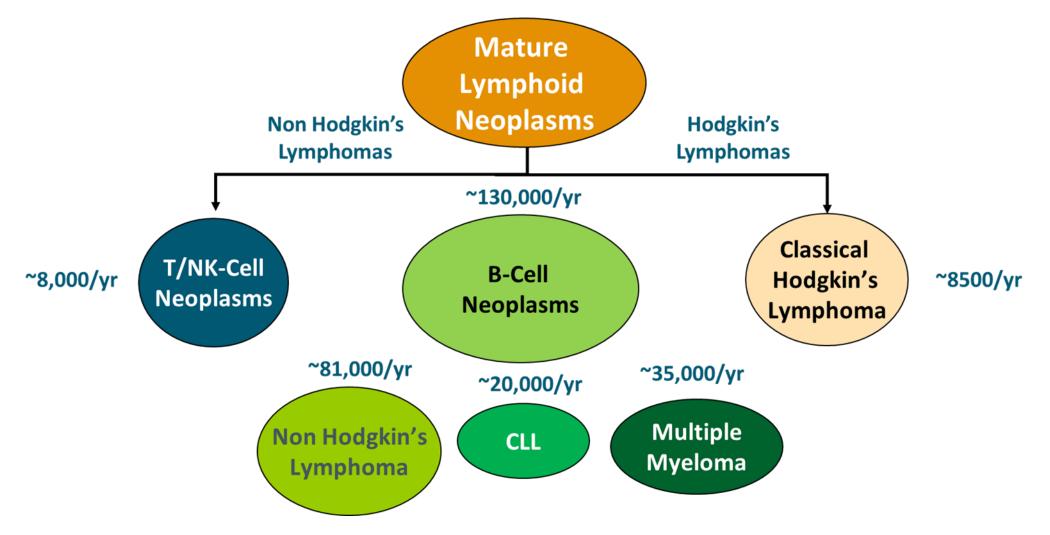
### **Cutaneous T-cell Lymphoma (CTCL)**

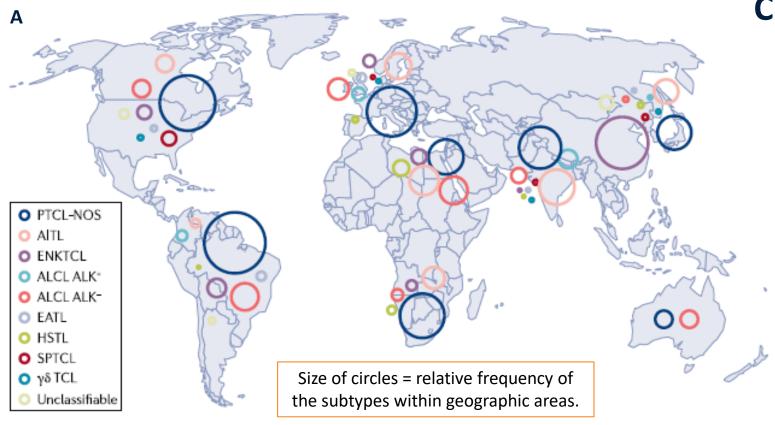
- Used to describe extranodal T-cell lymphomas of the skin
- Often used in contrast with PTCL

### Mature T-cell Neoplasms (MTCN)

- Standard nomenclature used by WHO and ICC (>30 entities)
- Nodal, Extranodal, Leukemic, and Cutaneous

# Peripheral T-Cell Lymphomas (or Mature T/NK-Cell Neoplasms) are Non-Hodgkin Lymphomas

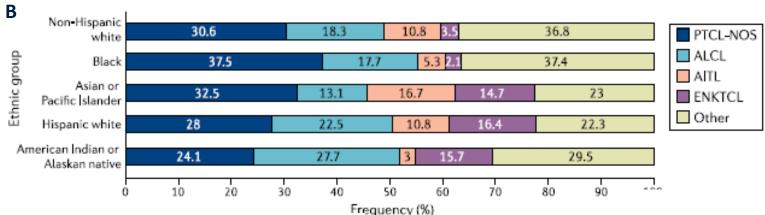




# Classification and ethnic and geographic distribution of T-cell neoplasms

### (A) Worldwide distribution

PTCL-NOS: most frequent subtype, equally distributed in the world (though more common in black people). ENKTL and other subtypes: more selective geographic distribution (Asia, Central, and South America), variable frequency across ethnicities. 1,2,3,4



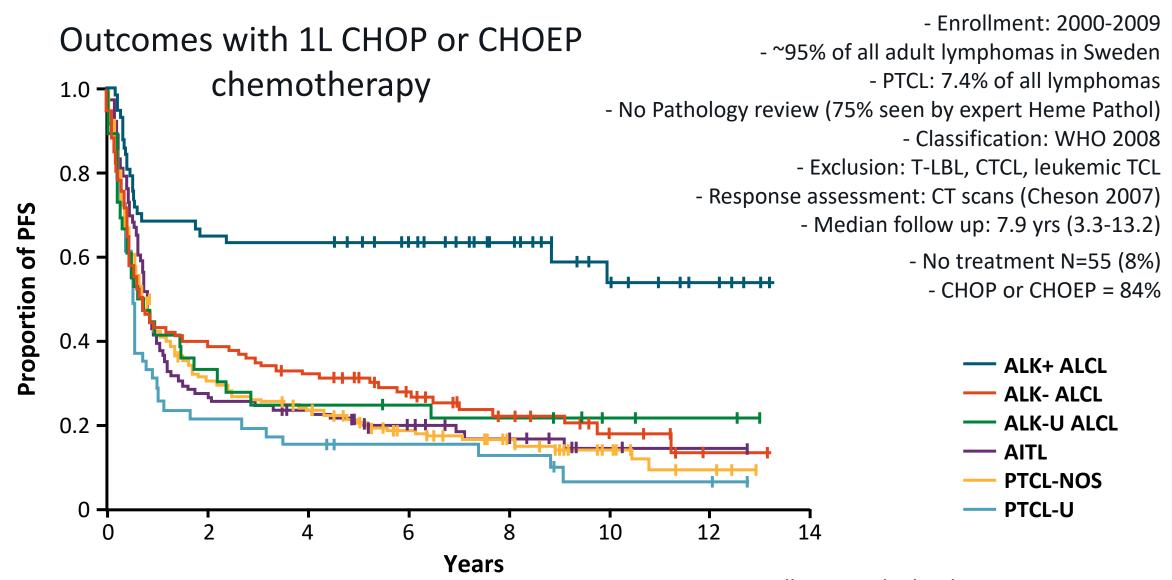
### (B) Ethnic distribution in the U.S.

**ENKTL** less frequent in whites, Hispanics, and blacks; **ALCL** more frequent in Hispanic whites, American Indians)

<sup>1</sup>Adams et al. JCO 2016; <sup>2</sup>Bellei et al. Hematol Oncol 2017 <sup>3</sup>Perry et al. Ann Hematol. 2016; <sup>4</sup>Van Leeuwen et al. Int J Cancer 2014

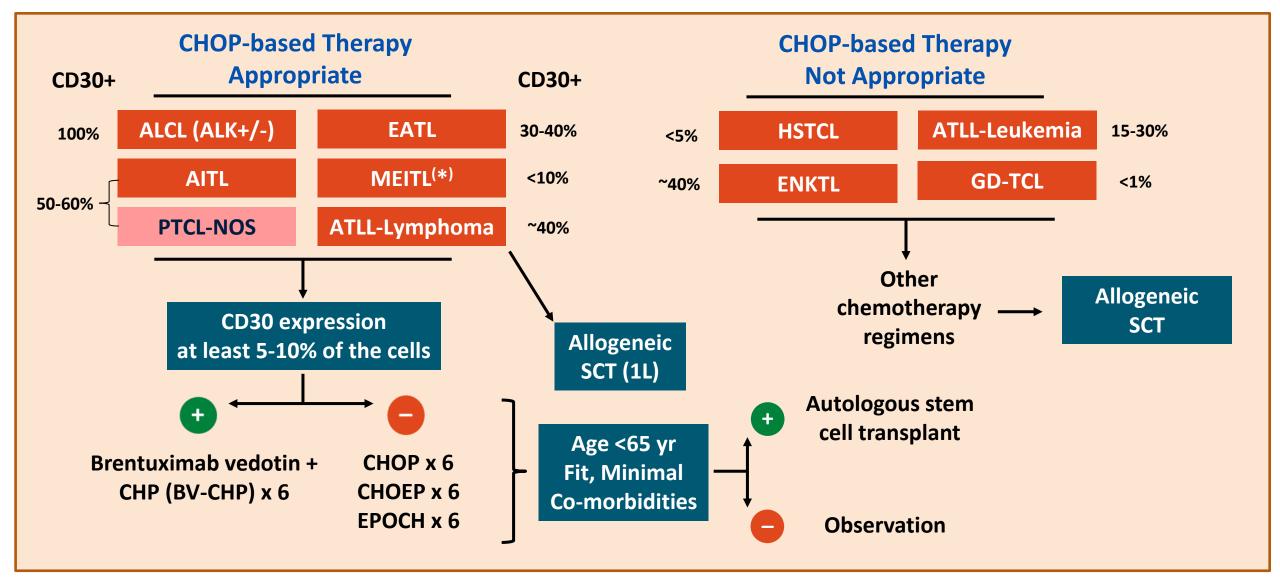
From: Fiore et al. Nat Rev Cancer 2020

### Swedish Lymphoma Registry: PFS in 755 Patients with PTCL



# PTCL: Front-Line Therapy

## 1L PTCL Therapy Pathways at Jefferson/SKCC



<sup>(\*)</sup> Alternative regimen if CD30-negative

### Benchmarks for Frontline CHO(E)P-based Therapy

CR rates ~ 35-60% - 3 yr PFS ~35-40%

		Regime	n	N	ORR	CR	EFS/PFS	os	CHOP Gr ≥3 AEs
ive	CHOP <sup>1</sup>			117 PTCL-US 33 ALCL 10 AITL	84% 76% 90%	64% 55% 70%	<b>5-y PFS</b> 29% 28% 13%	<b>5-y OS</b> 35% 43% 36%	Not Reported
Retrospective		CHOP <sup>2,*</sup>		83 (32 PTCL-NOS, 27 AITL, 13 ALCL, ALK-, 11 other)		39%	<b>3-y PFS</b> CR pts: 36%	<b>3-y OS</b> CR pts: 48%	Not Reported
		CHOP or CHOEP <sup>3</sup>		113 ALCL, ALK- 78 ALCL, ALK+ 70 PTCLU 28 AITL	-	_	<b>3-y EFS</b> 45.7% 75.8% 41.1% 50.0%	<b>3-y OS</b> 62.1% 89.8% 53.9% 67.5%	Not Reported
ſ	CHOP <sup>5</sup>			43 (69% PTCL-NOS, 18% AITL, 13% ALCL, ALK-/3% ALK+)	70%	35%	2-y EFS 41%	<b>Median</b> 42 mo	8% neutropenia, 2% thrombocytopenia
Prospective				43 (19 PTCL-NOS, 17 AITL, 6 ALCL, ALK 1 EATL)	, 76%	CR/CRu 62%	<b>2-y PFS</b> 36.6%	<b>2-y OS</b> 51.0%	40% neutropenia, 29% febrile neutropenia; 10% thrombocytopenia
	CD30+ <sup>6</sup>	0+ <sup>6</sup> Ph 3	СНОР	226 (105 sALCL, ALK-, 49 sALCL, ALK+, 4 PTCL-NOS, 24 AITL)	3 72%	56%	<b>3-y PFS</b> 44.4%	Medians not reached	34% neutropenia, 10% anemia
_			BV-CHP	226	83%	68%	<b>3-y PFS</b> 57.1%		

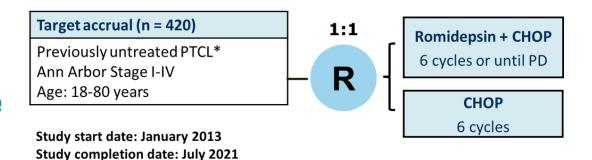
- 1. Savage et al. Ann Oncol. 2004;15:1467-1475. (BCCA 1981-2000)
- 2. Reimer et al. J Clin Oncol. 2009;27:106-113.
- 3. Schmitz et al. Blood. 2010;116:3418-3425. (DSHNHL)

- 4. Simon et al. Br J Haematol. 2010;151:159-166. (GOELAMS-LTP95)
- 5. Gleeson et al. Lancet Haematol. 2018;5:e190-e200.
- 6. Horwitz et al. Lancet. 2019;393:229-240. (ECHELON-2)

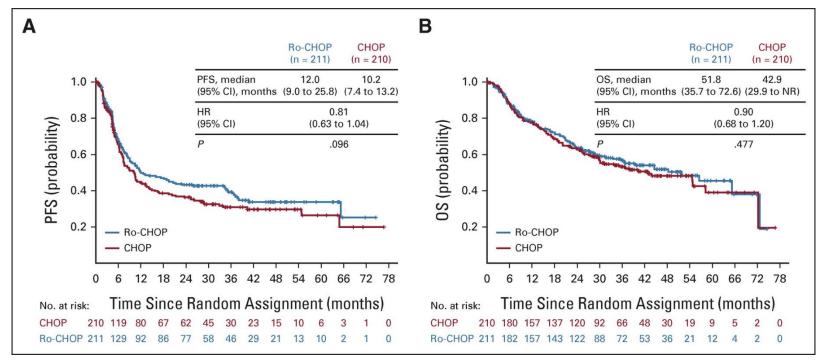
# original report

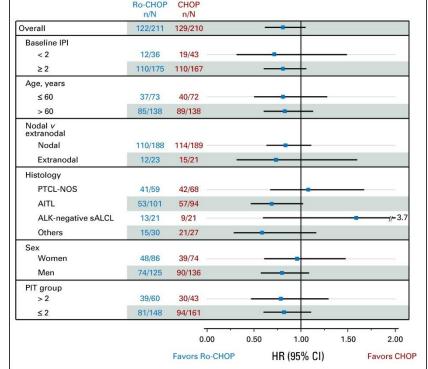
# Romidepsin Plus CHOP Versus CHOP in Patients With Previously Untreated Peripheral T-Cell Lymphoma: Results of the Ro-CHOP Phase III Study (Conducted by LYSA)

Emmanuel Bachy, MD, PhD<sup>1,2</sup>; Vincent Camus, MD<sup>3</sup>; Catherine Thieblemont, MD, PhD<sup>4</sup>; David Sibon, MD, PhD<sup>5</sup>; René-Olivier Casasnovas, MD<sup>6</sup>; Loïc Ysebaert, MD, PhD<sup>7</sup>; Gandhi Damaj, MD, PhD<sup>8</sup>; Stéphanie Guidez, MD<sup>9</sup>; Gian Matteo Pica, MD<sup>10</sup>; Won Seog Kim, MD, PhD<sup>11</sup>; Soon Thye Lim, MBBS<sup>12</sup>; Marc André, MD<sup>13</sup>; Alejandro Martín García-Sancho, MD, PhD<sup>14</sup>; Maria Jesus Penarrubia, MD, PhD<sup>15</sup>; Philipp B. Staber, MD, PhD<sup>16</sup>; Judith Trotman, MBChB<sup>17</sup>; Andreas Hüttmann, MD<sup>18</sup>; Vittorio Stefoni, MD, PhD<sup>19</sup>; Alessandro Re, MD<sup>20</sup>; Philippe Gaulard, MD<sup>21</sup>; Marie-Helene Delfau-Larue, MD, PhD<sup>22</sup>; Laurence de Leval, MD, PhD<sup>23</sup>; Michel Meignan, MD, PhD<sup>24</sup>; Ju Li, PhD<sup>25</sup>; Franck Morschhauser, MD, PhD<sup>26</sup>; and Richard Delarue, MD<sup>5,27</sup>



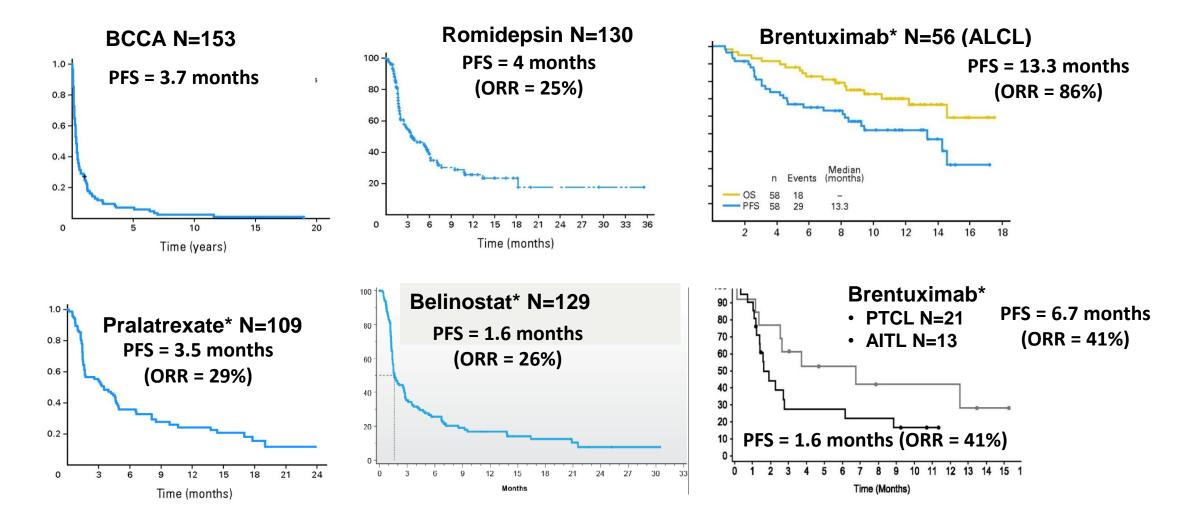
**Primary endpoint:** Progression-free survival (PFS) by independent review **Secondary endpoints include:** OS, response rate, DoR, safety and quality of life \* Includes PTCL-NOS, AITL, ALK-ALCL, EATL, HSTCL SPTCL



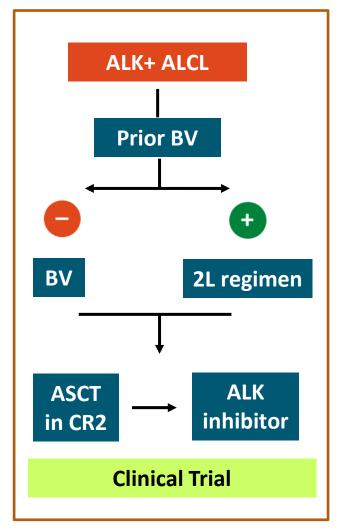


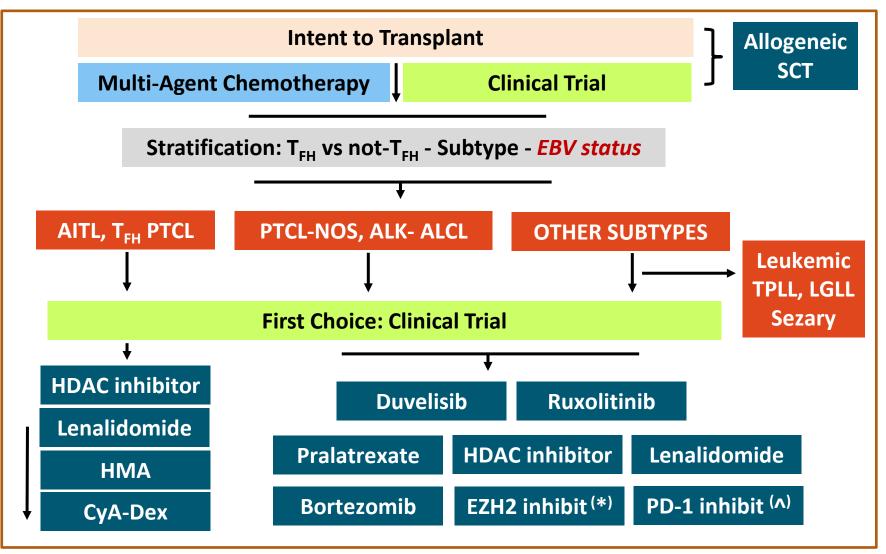
# Relapsed or Refractory PTCL

### Benchmarks for Relapsed/Refractory PTCL



# **≥2L PTCL Therapy Pathways at Jefferson/SKCC No current SOC in 2L R/R PTCL**





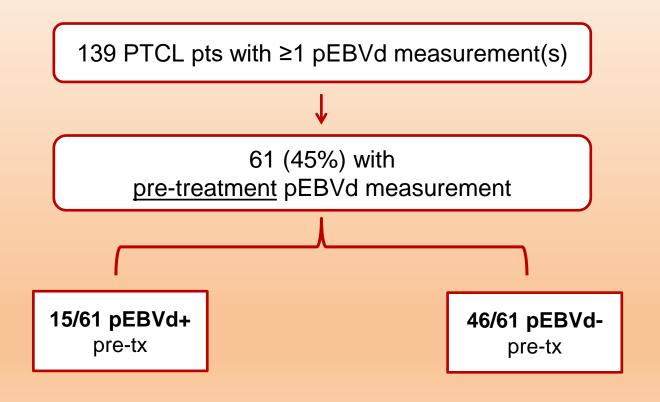
<sup>(\*)</sup> Based on Valemetostat data, (^) Watch for hyper-progression

## **Emerging New Agents in T-Cell Lymphomas**

Study Title	Phase	Target	NCT #
A Study of anti-CD94 mAb DR-01 in Subjects With LGLL or Cytotoxic Lymphomas	First in Human	CD94	NCT05475925
Safety, PK, PD, Clinical Activity of KT-333 in Adult Patients N Refractory Lymphoma, LGLL, Solid Tumors	With Phase I	STAT3 degrader	NCT05225584
A Study of MT-101 in Subjects With CD5+ Relapsed/Refrac TCL (IMAGINE)	tory Phase I	CD5 CAR Myeloid Cells	NCT05138458
A Study of Tolinapant With Oral Decitabine/Cedazuridine a Oral Decitabine/Cedazuridine Alone in Patients with R/R P	Phase i	Dual IAP antagonist	NCT05403450
Modified Immune Cells (AFM13-NK) and AFM13 in Patient With R/R CD30 Positive Hodgkin or Non-Hodgkin Lymphon	First in Hilman	CD30/CD16A bispecific, CB-derived NK cells	NCT04074746
A Study to Investigate the Safety, Tolerability, PK, PD, and Efficacy of ONO-7018 in Patients With R/R NHL or CLL	First in Human	MALT1	NCT05515406
Trial of Nanatinostat in Combination With Valganciclovir in Patients With EBV+ R/R Lymphomas (NAVAL-1)	Phase II	EBV	NCT05011058

# EBV-Positive PTCL

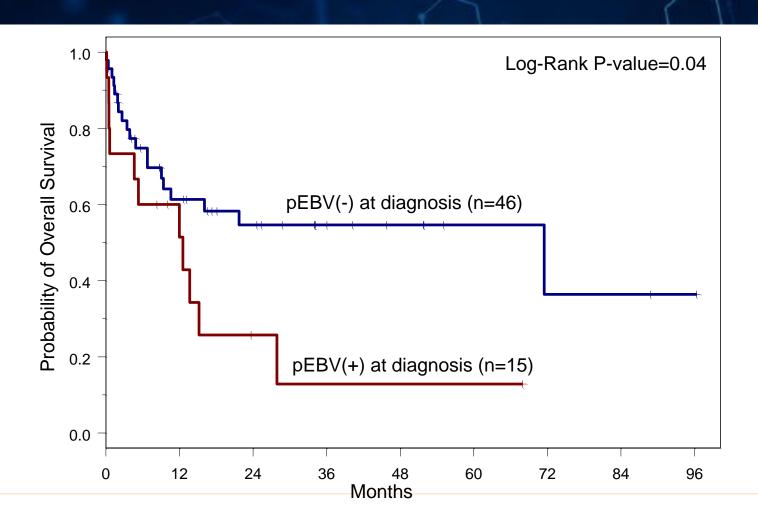
## Ohio State Retrospective Study of pEBVd in PTCL



Subtype	N=61
PTCL-NOS	46%
AITL	25%
ALCL ALK-	16%
ALCL ALK+	7%
Other	6%

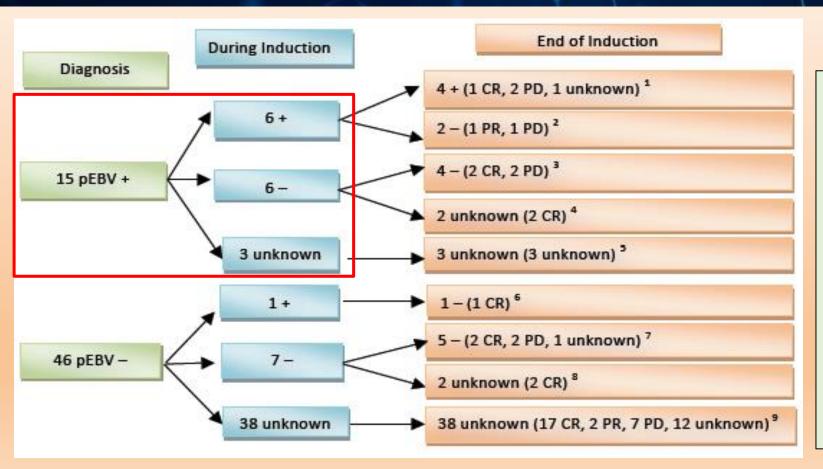
No significant differences between age, sex, subtype, stage, PS, LDH, BM involvement, or extranodal disease

## Overall Survival by pEBVd Status



Haverkos B, et al. Int J Cancer. 2017 Apr 15;140(8):1899-1906.

### Serial pEBVd Measurements and Outcomes in EBV+ PTCL



Status at last follow up

4/4 Dead of disease

2/2 Dead of disease

2/4 Alive disease free

2/2 Alive disease free

3/3 Dead of disease

1 Alive disease free

3/5 Alive disease free

2/2 Alive disease free

21/38 Alive disease free

pEBVd measurement reported as a dichotomous variable where "+" indicated pEBVd >2000 copies/mL. Response in accordance with Cheson criteria. pEBVd measured at the end of induction in parallel to imaging assessment. PR=partial response, CR=complete response, PD progressive disease

### **Estimated Frequency of EBV+ T-cell Lymphomas**

eClinicalMedicine 2022;54: 101674 Published online 1 October 2022 https://doi.org/10.1016/j. eclinm.2022.101674

		EBER-ISH Score Results			
Subtype	N	Score 0	Score 1	Score 2	Score 3
T-ALL	3	3	0	0	0
ALK- ALCL	12	10	2	0	0
AITL/TFH	33	8	9	2	14
PTCL-NOS	11	9	2	0	0
PTCL-Rare Subtypes	4	3	1	0	0
Intestinal TCL	4	2	2	0	0
Total	67	35	16	2	14

<u>Score 0</u> = EBV-negative; <u>Score 1-3</u> = Variously EBV-positive; **Total 32/65 = 49%** 

### PTCL Conclusions

- PTCL is associated with a poor prognosis
- First-line combination chemotherapy provides moderate life extension
- EBV+ PTCL is associated with worse survival outcomes than EBV- PTCL
- There is no current standard of care in the treatment of patients with R/R PTCL
- A targeted treatment for patients with R/R EBV+ PTCL could provide an important addition, with potential eventual incorporation into the frontline treatment setting



#### NAVAL-1: Pivotal Phase 2 Trial in Patients with R/R EBV+ Lymphomas

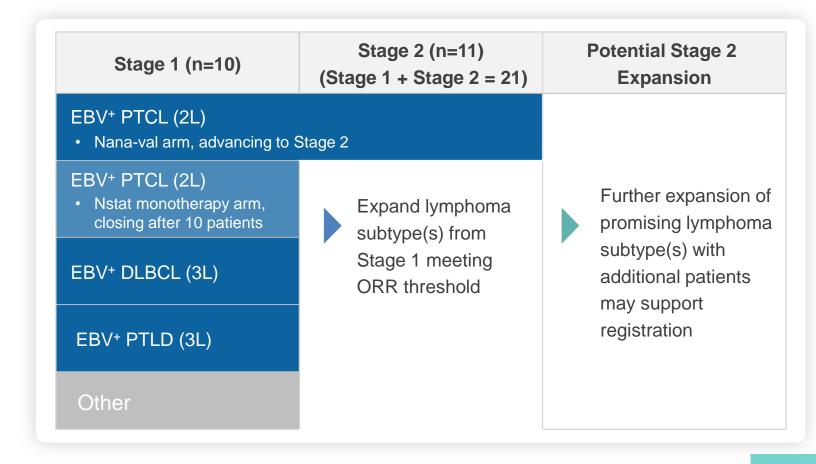
Global study, with an adaptive Simon 2-stage design, focused on the largest EBV-positive lymphoma patient populations, with high unmet medical need and positive Study 201 clinical data

#### Patient population:

 R/R EBV<sup>+</sup> lymphoma with ≥2 prior therapies and no curative options (≥1 prior therapy for PTCL)

#### **Primary endpoint:**

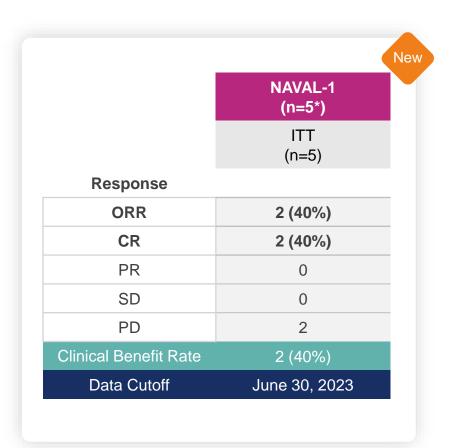
- Objective response rate (ORR) by independent central review
- Potential to further expand indications with promising antitumor activity after Stage 2





#### R/R EBV+ PTCL: Initial Data from Pivotal NAVAL-1 Trial

#### Achieved Stage 1 ORR threshold in the second quarter of 2023 to advance into Stage 2

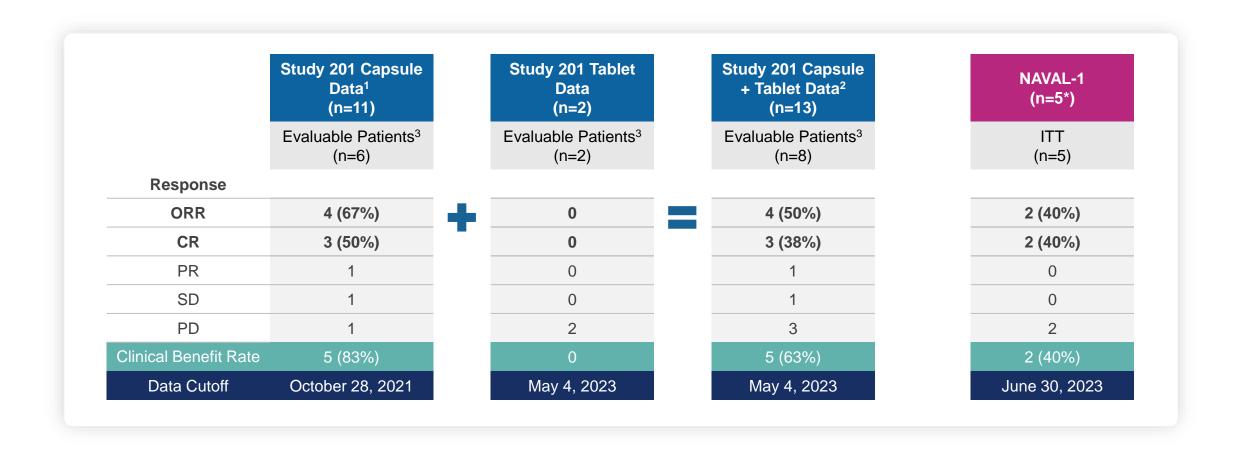


- Threshold for advancing into Stage 2 is 2 responses in Stage 1, same for all indications
- Complete responses achieved ORR threshold within first
   of 10 Stage 1 patients enrolled
- Median duration of response (DoR) not yet reached
- Anticipate completing Stage 2 (n=21) enrollment in 2024
  - 10 R/R EBV<sup>+</sup> PTCL patients have been enrolled into combination and monotherapy arms of Stage 1 (as of June 30, 2023 data cutoff)



#### R/R EBV+ PTCL: Initial Efficacy Data from NAVAL-1 Consistent with Study 201

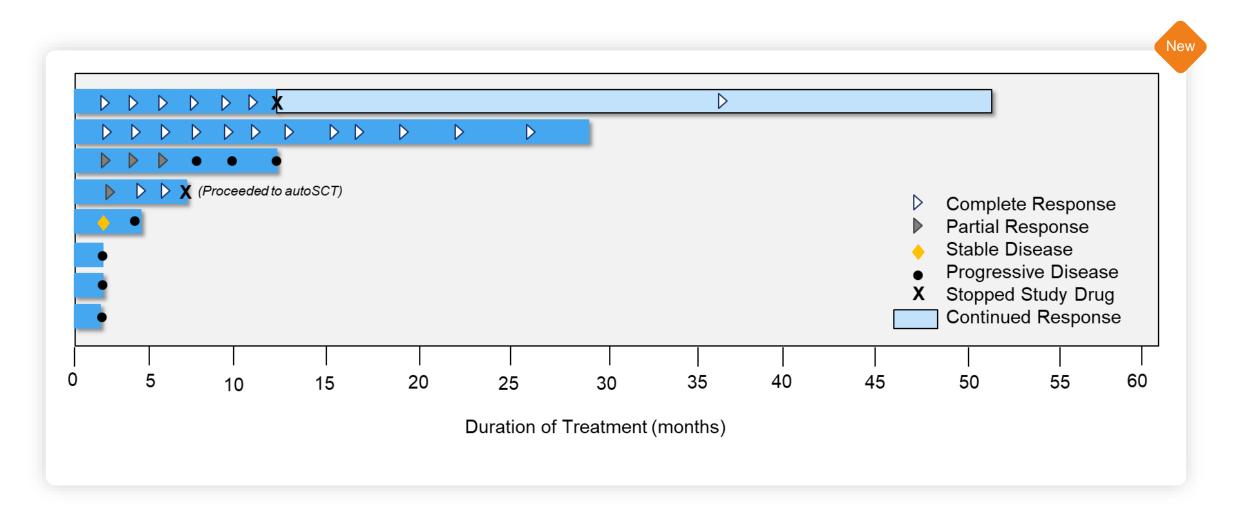
Improved blend uniformity and stability with tablet that had comparable safety/PK with capsule





#### R/R EBV+ PTCL: Median DoR in Study 201 Extended to 17.3 Months\*

Exceeds ~8.5 - 9.5-month median DoR in other R/R PTCL therapies that have received AA





## **Expanded and Extended Safety Data Demonstrated Nana-val Regimen was Generally Well-Tolerated**

Treatment-Emergent Adverse Events Reported in >16 (>25%) Patients								
	Study 201 Capsule + Tablet (N=64)							
Any G3 G4								
Thrombocytopenia	27 (42%)	8 (13%)	6 (10%)					
Neutropenia	25 (39%)	10 (16%)	11 (17%)					
Nausea	25 (39%)	2 (3%)	0					
Anemia	24 (38%)	12 (19%)	1 (2%)					
Fatigue	22 (34%)	4 (6%)	0					
Constipation	19 (30%)	1 (2%)	0					
Diarrhea	19 (30%)	1 (2%)	0					
Creatinine Increased	17 (27%)	1 (2%)	0					

### **Treatment-Emergent Serious Adverse Events Occurred in 23 of 64 (36%) Patients**

- Treatment-emergent serious adverse events occurring in more than 1 patient (n=2 each):
  - febrile neutropenia
  - atrial fibrillation
  - sepsis
  - pneumonia (pneumonia and viral pneumonia)
  - dyspnea
  - acute kidney injury
  - pyrexia
- There were no study treatment-related deaths

Safety profile suggests potential for combining with other chemo- and/or immunotherapies



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#### Nana-val is Well Positioned for Potential Accelerated Approval in R/R EBV+ PTCL

Anticipate engagement with FDA in 2024 to align on accelerated registration pathway

Accelerated Approval Criteria	Nana-val: R/R EBV+ PTCL Program	
Unmet medical need population	No approved therapies for R/R EBV+ PTCL	<b>/</b>
Rarity of the serious life-threatening disease without alternate available treatment options	EBV+ PTCL 5-year survival rate of ~11%*	<b>/</b>
Magnitude of the response rate observed	ORR of 30% - 45%+ CRR of ~25% - 40%	<b>/</b>
Duration of response (DoR)	17.3 months median DoR observed in Phase 1b/2 study	<b>/</b>
Favorability of the safety profile	Generally well-tolerated	<b>/</b>

Base Case Assumption: ~60-90 total R/R EBV+ PTCL patients may be required in the NAVAL-1 trial for potential accelerated approval



#### Nana-val is Well Positioned for Potential Accelerated Approval in R/R EBV+ PTCL

Criteria	Nana-val*	Beleodaq** (Belinostat)	Istodax** (Romidepsin)	Folotyn** (Pralatrexate)
Indication(s)	EBV+ PTCL	R/R PTCL (EBV+ & EBV-)	R/R PTCL (EBV+ & EBV-)	R/R PTCL (EBV+ & EBV-)
Overall Response Rate (ORR)	30-50%	25.8%	26.2%	26.6%
Complete Response Rate (CRR)	~25-40%	10.8%	15.4%	8.3%
Duration of Response (DoR)	17.3 months	8.4 months	<8.5 months	9.4 months
Sample Size	~60-90 (pending FDA confirmation)	120	130	109
Route of Administration	Oral	IV	IV	IV



#### **Anticipated Program Milestones**\*



	Indication	2023		202	2025		
NAVAL-1 (EBV+ Lymphoma)	PTCL	Initial Stage 1 ORR DATA	Complete enrollment of Stage 2	Meet with <u>FDA</u> & align on potential AA pathway	Initiate Registration Phase	Present Stage 2 DATA	Registration Phase LPI





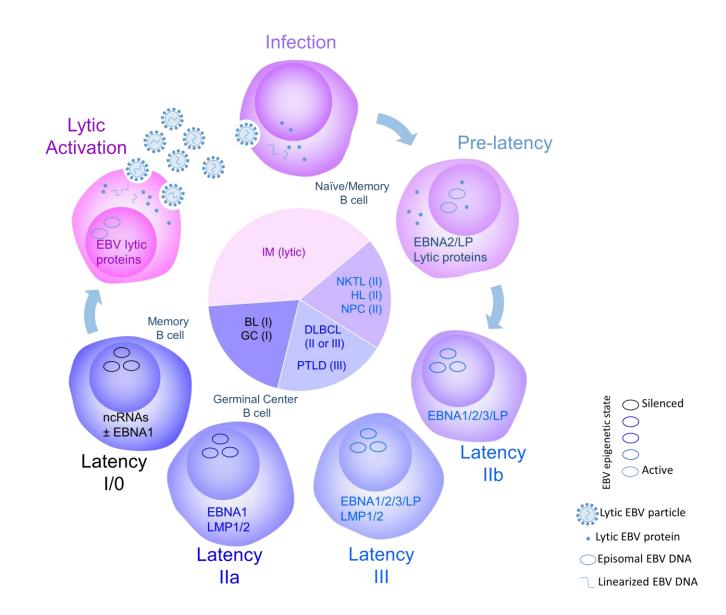
### **EBV-Positive DLBCL as a Unique Entity**

Robert Baiocchi, MD, PhD

Division of Hematology

The Ohio State University

#### **EBV Latent/Lytic States and Lymphoma**



#### **EBV-Positive DLBCL is a Unique Entity**

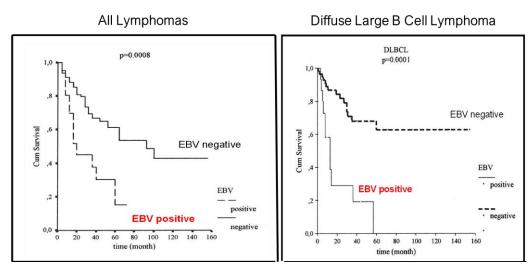
- 2003 Oyama et al first described first cases of EBV+ DLBCL in elderly patients (Am J Surg Pathol, 2003). Most patients responded poorly to standard chemotherapy
- 2008 the WHO classification of lymphoid malignancies included EBV+ DLBCL of elderly as a provisional entity.
- New information on unique pathology, clinical features, common signaling pathways, immune evasion, and distinct mutational profiles have led to EBV+ DLBCL to be included in the 5<sup>th</sup> Edition of the WHO Classification of Haematolymphoid Tumors.

of Haematolymphoid Tumours: Lymphoid Neoplasms

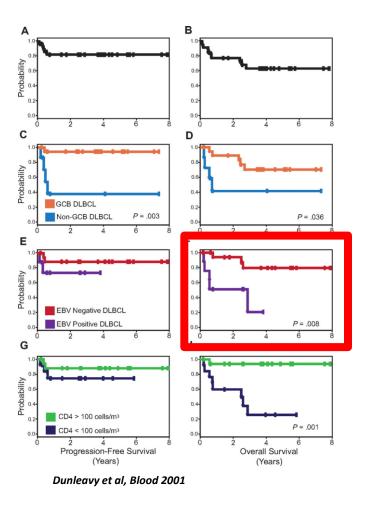


## EBV-Positive DLBCL as a Unique Entity Clinical Features:

- Older age at diagnosis
- High IPI scores, extranodal presentation (GI, skin, marrow)
- Poor ECOG performance status
- Poor response/survival with standard immuno-chemotherapy



Parks et al, Blood 2006



# **EBV-Positive DLBCL as a Unique Entity Clinical Features: Poor Outcomes with SOC Therapy**

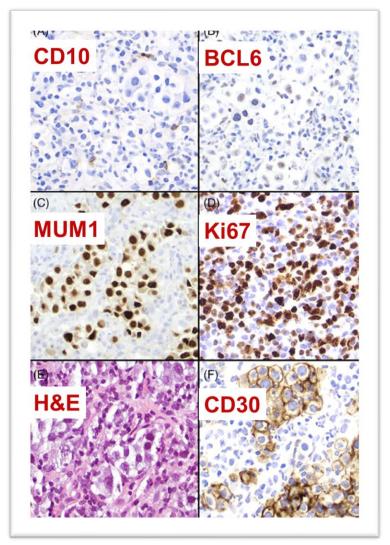
Study	EBER	Regimen	N	ORR/CR rates	os
Oyama, 2007	>50%	CHOP	56	80%/66%	5-year: 25%
Park, 2007	>20%	R-CHOP	25	72%/NR	5-year: 45%
Beltran, 2011	>20%	R-CHOP	8	NR/66%	3-year: 40%
		CHOP	12	NR/33%	3-year: 40%
Ahn, 2014	>50%	R-CHOP	18	72%/61%	3-year: 57%
Ok, 2014	>10%	R-CHOP	28	89%/NR	5-year: 54%
Sato, 2014	>30%	R-CHOP	8	50%/25%	3-year: 38%
		CHOP	3	33%/33%	3-year: 0
Lu, 2015	>20%	R-CHOP	35	66%/NR	3-year: 30%
Song, 2015	NR	R-CHOP	8	63%/50%	3-year: 70%
		CHOP	8	50%/38%	3-year: 25%
Okamoto, 2016	>20%	R-CHOP	13	NR	4-year: 41%
Hong, 2017	>20%	R-CHOP	14	NR	Median 15 months
Beltran, 2018	>20%	R-CHOP	17	71%/59%	5-year: 54%
Liu, 2018	>50%	CHOP	16	31%/31%	5-year: 38%
		R-CHOP	6	NR/50%	2-year: 20%
		CHOP	3	NR/50%	2-year: 0
Witte, 2019	>50%	R-CHOP	62	94%/67%	2-year: 70%
Zhou, 2019	>50%	R-CHOP	22	NR	Median 29 months
Yoon, 2020	>20%	IR-CHOP	24	67%/67%	1-year: 33.3%
		R-CHOP	24	67%/63%	1-year: 50%

**EBV-Positive DLBCL as a Unique Entity** 

**Pathologic Features:** 

 Generally, Non-GC phenotype (CD10/BCL6 neg, MUM1+

- Diverse morphology, monomorphic, polymorphic, polymorphic w RS like cells
- Pan B cell markers CD19+/CD20+, PAX5, CD79a
- High proliferative index
- Monoclonal IGH signature
- EBER+ (variable)
- Latency pattern II and III (EBER, LMP1, EBNA2+) most common
- Lat II less common (varies by study)
- New data showing CD30 expression
- Immune evasion signature (PDL1/LAG2)
- Unique mutational signature



Malpica et al AJH 2022

## EBV Positive DLBCL as a Unique Entity Unique Mutational Landscape

- Frontzek et al, (Leukemia 2023)
- Targeted sequencing, recurrent somatic CNVs in 60 EBV+ DLBCL samples
- LymphGen classifier used and showed less than 20% of EBV+ DLBCL corresponded to one of the established molecular DLBCL subtypes highlighting the unique nature of this subtype of DLBCL
- Recurrent mutations involved NOTCH (*NOTCH1*, *NOTCH2*), JAK/STAT (*SOCS1*, *STAT3*, epigenetic (*KMT2D*, *KMT2C*), DNA repair (*SP53*), and B cell program (*FOXO1*) pathways
- Amplifications of 9p24.1 driving excessive PDL1 expression contributing toward immune escape
- Cho et al, (Cancers 2023): *TET2* (LOF) and *LILRB1* mutations in 50% elderly EBV+ DLBCL patients.

# EBV Positive DLBCL as a Unique Entity Unique Mutational Landscape: Mutations Associated with Clonal Hematopoiesis (CHIP)

- Li et al (Blood Adv 2022)
- Compared targeted RNAseq EBV+ DLBCL (n=104) to EBV- DLBCL (n=768). 77% represented NGC histologic subtype.
- TET2, ASXL1, DNMT3A, TP53 = top 4 CHIP related genes mutated in EBV+ DLBCL compared to EBV- DLBCL or NGC DLBCL
- MYD88 mutations found in 4% EBV+ DLBCL vs 20% EBV- DLBCL/NGC
- Genomic landscape of EBV+ DLBCL distinct from other EBV+ lymphomas including BL, ENKTL, PTLD, and carcinomas (NPC, GCA)
- Of the top 10 most frequently mutated genes in EBV+ DLBCL, 7 were of myeloid CHIP characterization. A unique feature compared to EBV- DLBCL (8/10 top mutations are lymphoid CHIP).
- The top myeloid CHIP mutations corresponded to DLBCL from patients with African ancestry (TET2, DNMT3A) primarily NGC and associated with poor prognosis, Lee et al, Cancers 2022).

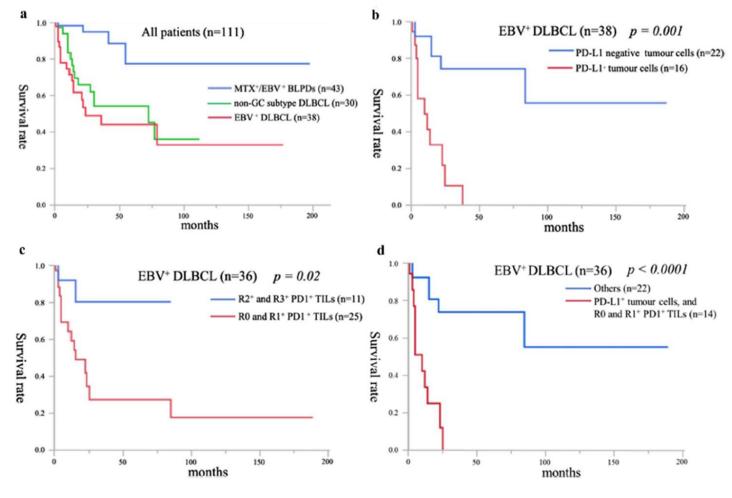
# EBV Positive DLBCL as a Unique Entity Unique Mutational Landscape: Mutations Associated with Clonal Hematopoiesis (CHIP)

Table 1: Top 10 recurrent genetic mutations by targeted RNA-seq in our EBV-positive or -negative DLBCL cases and by DNA sequencing in other DLBCL cohorts.

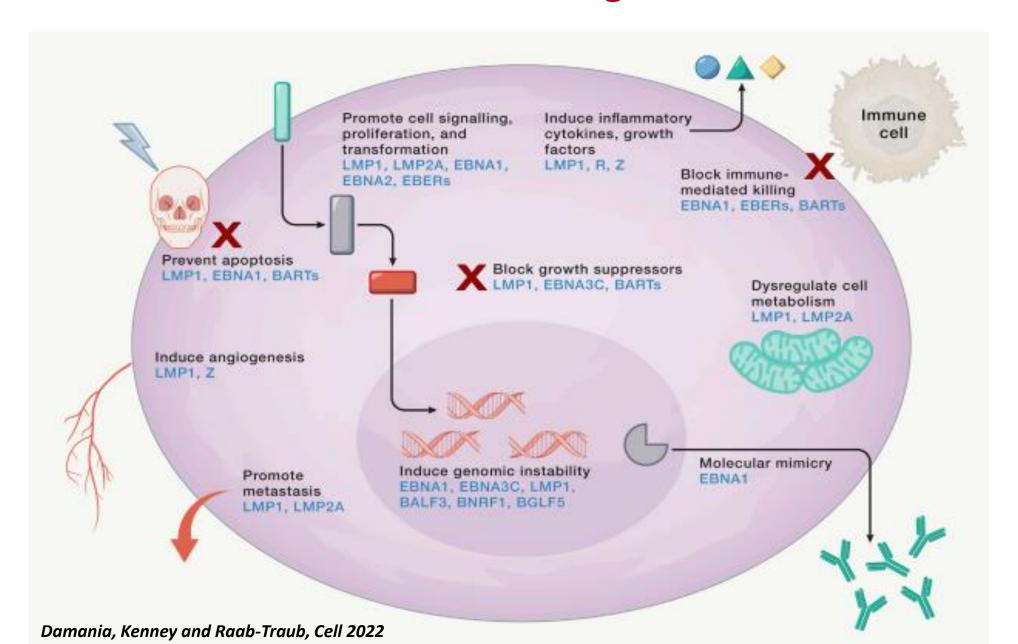
Group	EBV-positive DLBCLs, n=99		EBV-negative DLBCLs, n=381		Reddy et al, 2017 n=1,001		Schmitz et al, 2018, n=574		Chapuy et al 2018, n=304	l,
Rank	Gene	%	Gene	%	Gene	%	Gene	%	Gene	%
1	TP53	42.4	KMT2D	24.4	KMT2D	24.8	KMT2D	31.4	KMT2D	24.7
2	TET2	39.4	MYD88	16.8	BCL2	17.4	PIM1	27.5	PIM1	22.0
3	APC	31.3	TP53	16.5	MYD88	17.2	MYD88	26.8	TP53	21.4
4	PTPN11	20.2	CARD11	11.8	HIST1H1E	16.9	TP53	23.0	MYD88	18.1
5	ASXL1	19.2	EZH2	10.0	PIM1	16.6	HLA-B	21.6	BCL2	17.4
6	DNMT3A	18.2	ACACA	8.9	CREBBP	11.4	BTG2	18.3	CREBBP	16.8
7	SMAD4	18.2	CD79B	8.4	CARD11	11.3	TMSB4X	16.7	CD79B	14.5
8	SOCS1	16.2	BCL10	7.9	SPEN	10.1	TNFAIP3	16.7	BTG1	14.1
9	ETV6	16.2	CD58	6.6	TP53	9.9	HLA-A	16.0	SGK1	14.1
10	STAG2	15.1	CREBBP	6.0	ARID1A	9.7	B2M	15.9	TNFRSF14	13.8

## EBV-Positive DLBCL as a Unique Entity Immune Evasion:

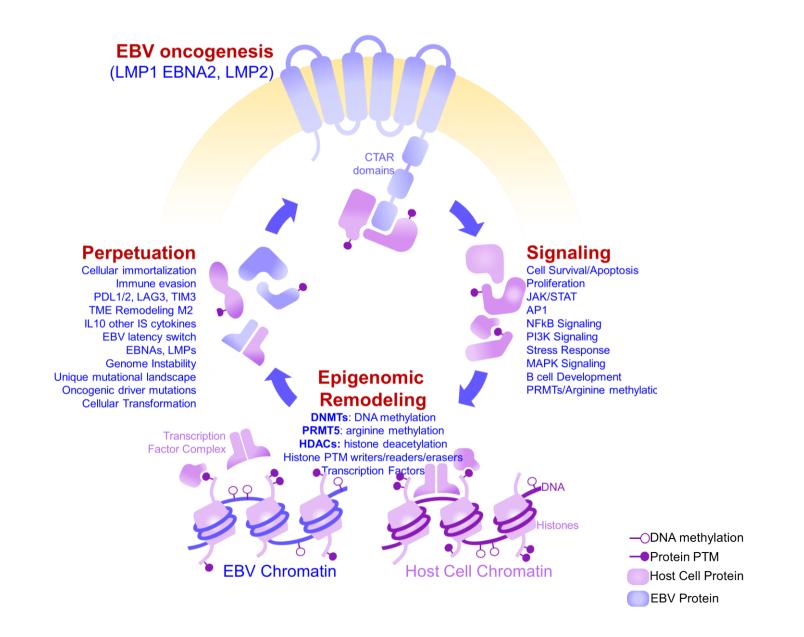
- Kimura et al, Clin Exp Med, 2022
- PDL1, PD1 expression (IHCS) identified unique prognostic feature of EBV+ DLBCL
- Other studies point toward PDL1. PDL2 modulation by EBV proteins (LMP1. EBNA2)



#### **How Does EBV Contribute to Pathogenesis of DLBCL?**

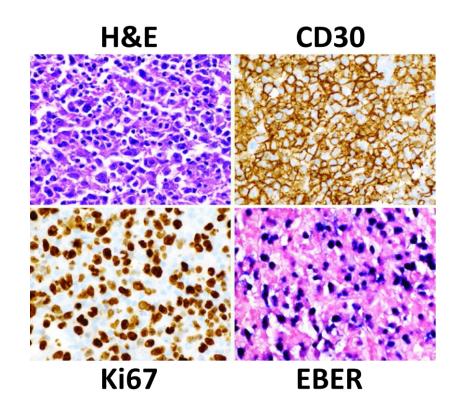


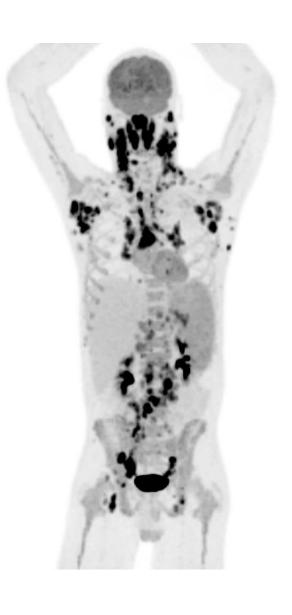
#### How Does EBV Contribute to Pathogenesis of DLBCL?



#### **Case Report: EBV+ DLBCL**

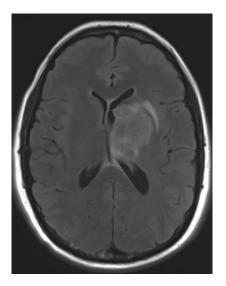
- 31 yo man with HIV (on cART) presented with:
  - 60# weight loss
  - Fevers
  - Diffuse bulky lymphadenopathy
  - PET scan
  - Biopsy non GC CD30+ EBER+ DLBCL.

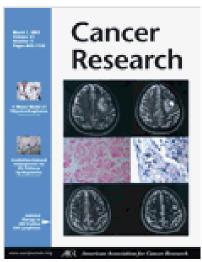




#### Case Report: EBV+ DLBCL

- R-EPOCH. Progressed after 2 cycles (primary refractory disease).
- Respiratory failure: Salvage therapy RICE x 1 cycle
- Continued with 4 cycles R-GDP
- CNS lymphoma w large frontal lobe mass, Bx = EBV+ DLBCL
- R-HD MTX x 2 cycles with disease progression
- Bridged to CD19 CAR-T (yescarta)
- Developed CRS and MRI with disease progression
- GARD regimen (Dugan et al Clin Ca Res 2018)
  - GCV, AZT, Rituximab, Dexamethasone
  - 5 fractions palliative XRT w rationale XRT induces EBV kinase expression (Roychowdhury et al. Ca Res, 2003, Westphal et al, Cancer Res 2000)
- 30 day post GARD MRI improved
- Continued on AZT/GCV
- 90day post GARD MRI continues to improve c/w PR.
- Recently started on ibrutinib maintenance with ASCT
- •Two additional patients with R/R EBV+ plasmablastic lymphoma treated with low dose XRT + GARD achieved CRs





Clinical Trials: Targeted Therapy

Complete and Durable Responses in Primary Central Nervous System Posttransplant Lymphoproliferative Disorder with Zidovudine, Ganciclovir, Rituximab, and Dexamethasone





James P. Dugan<sup>1</sup>, Bradley M. Haverkos<sup>1</sup>, Lynda Villagomez<sup>2</sup>, Ludmila K. Martin<sup>3</sup>, Mark Lustberg<sup>4</sup>, John Patton<sup>3</sup>, Marisa Martin<sup>3</sup>, Ying Huang<sup>3</sup>, Gerard Nuovo<sup>5</sup>, Fengting Yan<sup>3</sup>, Robert Cavaliere<sup>6</sup>, Joyce Fingeroth<sup>7</sup>, Shannon C. Kenney<sup>8</sup>, Richard F. Ambinder<sup>9</sup>, Gerard Lozanski<sup>6</sup>, Pierluigi Porcu<sup>5</sup>, Michael A. Caligiuri<sup>5</sup>, and Robert A. Baiocchi<sup>5</sup>

## **EBV Positive DLBCL as a Unique Entity Summary**

- EBV-positive DLBCL is now a recognized histologic subtype of large B cell lymphoma (5<sup>th</sup> Edition WHO Classification of lymphoid neoplasms 2022).
- EBV-positive DLBCL is clinically more aggressive.
- EBV-positive DLBCL is associated with distinct biologic features (epigenetic, MYC activation, somatic mutational profile/M-CHIP, PDL1 amplification, CD30.
- Most studies showed inferior outcome of EBV-positive DLBCL vs EBV-negative DLBCL treated with R-CHOP (Parks et al, Blood) or R-EPOCH (Dunleavy et al, Blood)
- The majority of EBV positive DLBCL belong to the non-GC subtype, which is a subtype with poor prognosis. EBV+ PBL is also associated with a poor prognosis.

## EBV Positive DLBCL as a Unique Entity Future Considerations

- From a regulatory standpoint, should the efficacy of a new therapy targeting EBV+ DLBCL (like Nana-val) be compared to the SoC in all forms of DLBCL, the ABC subtype or EBV+ DLBCL?
  - Consider discussion with the Agency on EBV+ DLBCL as a unique entity
- Can we make the case that EBV+ DLBCL is not adequately treated by current SoC?
  - Initiative to collect real world evidence underway



#### EBV+ DLBCL Has a Significantly Worse Prognosis Compared to EBV- DLBCL

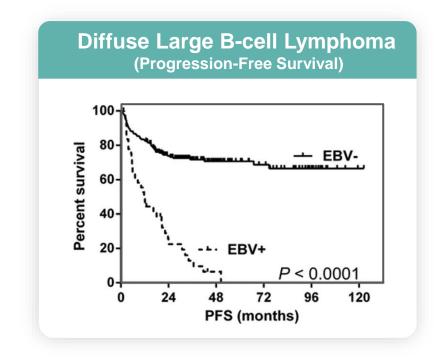
Recognized as a unique subtype of DLBCL with its own classification by the World Health Organization

#### DLBCL is the most common lymphoma (~25% of all NHLs)

- ~5-15% of DLBCL cases are associated with EBV
- 5-year relative survival rate of ~64% overall
- Poor survival in R/R disease, current treatments offer modest response in 3L

#### EBV+ DLBCL is a clinically more aggressive subtype of DLBCL

- Survival rate is significantly less compared to EBV disease
- Poor response/survival with standard immuno-chemotherapy
- Associated with distinct biologic features and mutational landscape
- Currently, no approved treatment options specifically targeting EBV+ DLBCL





#### NAVAL-1: Pivotal Phase 2 Trial in Patients with R/R EBV+ Lymphomas

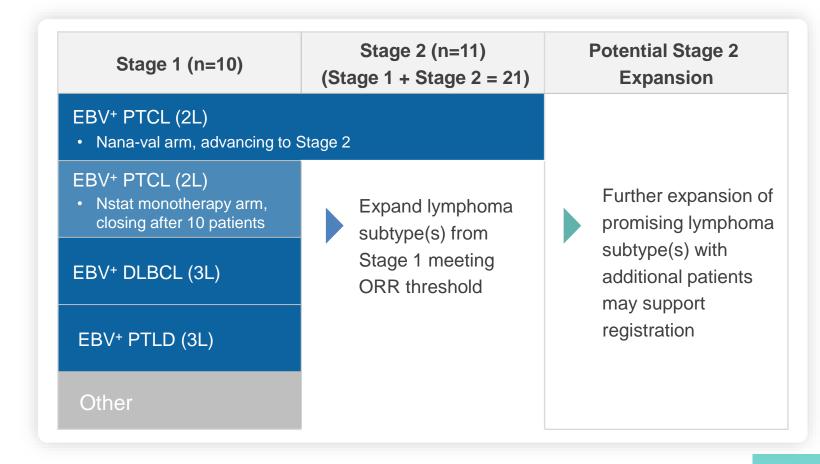
Global study, with an adaptive Simon 2-stage design, focused on the largest EBV-positive lymphoma patient populations, with high unmet medical need and positive Study 201 clinical data

#### Patient population:

 R/R EBV<sup>+</sup> lymphoma with ≥2 prior therapies and no curative options (≥1 prior therapy for PTCL)

#### **Primary endpoint:**

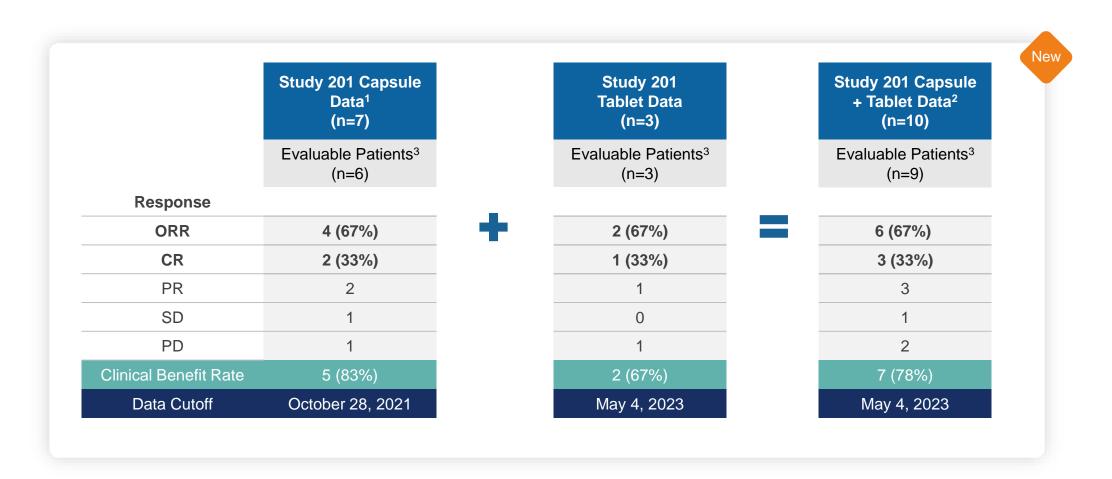
- Objective response rate (ORR) by independent central review
- Potential to further expand indications with promising antitumor activity after Stage 2





#### R/R EBV+ DLBCL Lymphoma: Expanded Clinical Response Data (1)

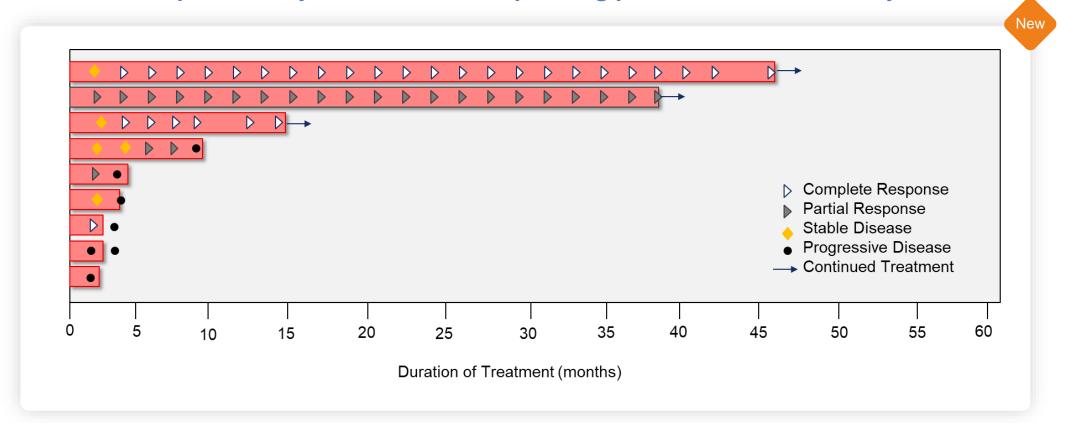
ORR maintained at 67% with half of responders achieving complete response





#### R/R EBV+ DLBCL Lymphoma: Expanded Clinical Response Data (2)

Median duration of response not yet reached, as responding patients remain on study treatment\*



Median Duration of Response (DoR) not yet reached — 3 responding patients remain on study treatment with DoRs of ~11 months (CR), ~37 months (PR), and ~42 months (CR) (as of May 2023)



#### **Anticipated Program Milestones**\*



	Indication	2023		2024		2025	
NAVAL-1 (EBV+ Lymphoma)	DLBCL	201: Expanded ORR & DoR DATA	Potential Advancement into Stage 2	Present Stage 1 DATA	Complete enrollment of Stage 2	Meet with <u>FDA</u> & align on potential AA pathway	Present Stage 2 DATA





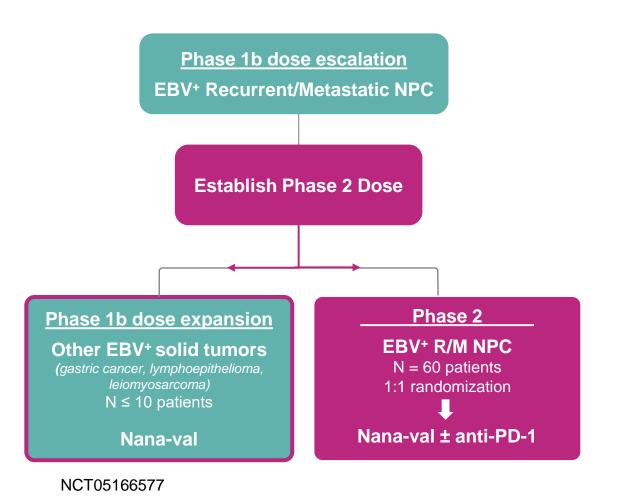
Nana-val:

Advanced EBV+ Solid Tumor

Program

#### Nana-val Study "301": Phase 1b/2 Trial in Advanced EBV+ Solid Tumors

Open-label, multicenter study to evaluate the safety, tolerability, PK, and preliminary antitumor activity of Nana-val in patients with advanced EBV+ solid tumors



#### **Endpoints:**

- Primary:
  - Phase 1b: Incidence of dose-limiting toxicities
  - Phase 2: Overall response rate by RECIST v1.1
- Key Secondary:
  - Incidence and severity of AEs
  - Duration of response
  - Progression-free survival
  - Pharmacokinetic parameters



#### R/M EBV+ NPC Initial Responses from Phase 1b Dose Escalation

#### First response confirmed at Dose Level 3

Dose Level	Nstat Oral Dose (Days 1-4/wk)	VGCV Oral Dose	N	Best Response	Started at RP2D for R/R EBV+
1	20 mg QD	900 mg QD	3	• • • •	lymphoma
2	30 mg QD	900 mg QD	4	$\circ \circ \circ \circ$	
3	40 mg QD	900 mg QD	3	● ○ NE	First response at 40 mg Nstat

- Partial response observed at Dose Level 3
- Dose Level 3 response is ongoing and durable, >6.9 months on treatment\*

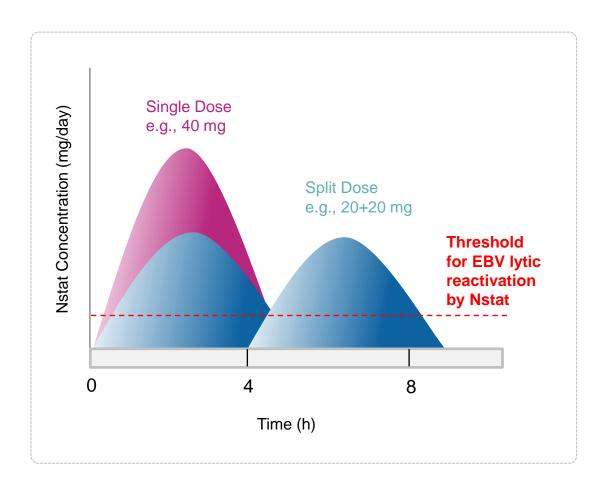


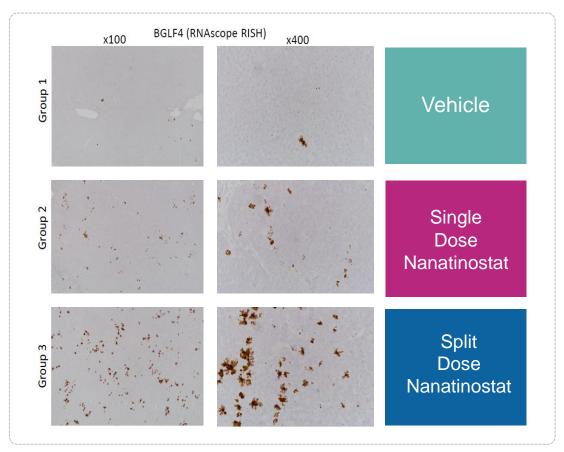


## New

## Eight Hours Exposure to Nanatinostat Required for EBV Lytic Reactivation in Solid Tumors

Expression of EBV protein kinase (BGLF4) was markedly higher in animals treated with split dose Nstat

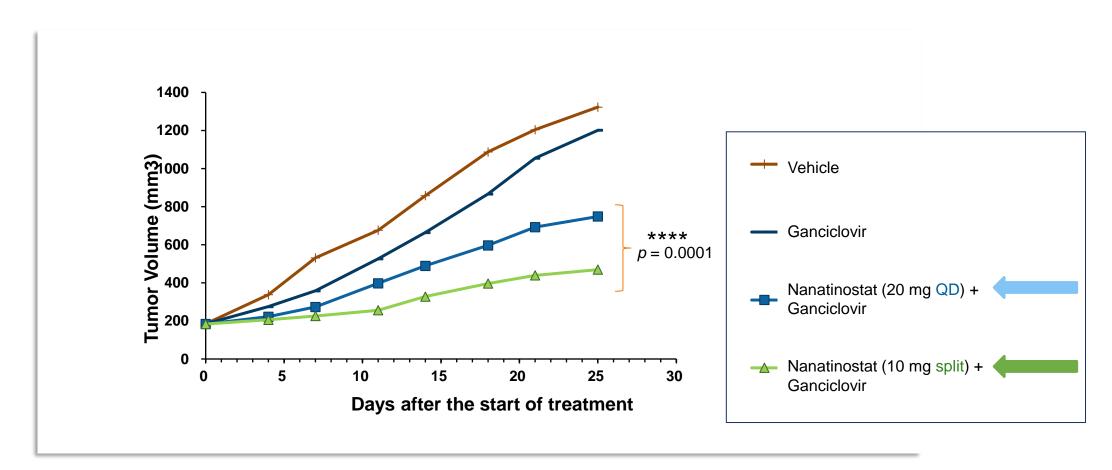






# Split Dosing Augments the Anti-Tumor Activity of Nana-val in Xenograft Model

Anti-tumor activity of SNU-719 subcutaneous xenograft model in B-NDG mice





# R/M EBV+ NPC Responses to Date and Phase 1b Dose Escalation Schedule

Emerging evidence of dose response at higher doses and promise of split dosing approach

Dose Level	Nstat Oral Dose (Days 1-4/wk)	VGCV Oral Dose	N	Best Response
1	20 mg QD	900 mg QD	3	
2	30 mg QD	900 mg QD	4	
3	40 mg QD	900 mg QD	3	● ○ NE
4	10 mg split dose	900 mg BID x 21 d, then QD	3	- 0 0
5	20 mg / 10 mg split dose	900 mg BID x 21 d, then QD	4	

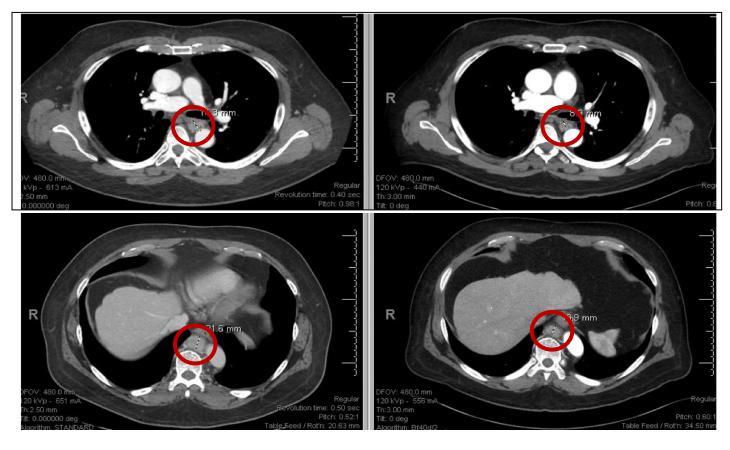
- Partial responses observed at Dose Level 3 and Dose Level 5\* suggesting a dose response relationship
- Responses observed at Dose Level 5 but not at Dose Level 2, supporting clinical benefit of split dosing approach





# Study 301: CT Scan of Partial Response at Dose Level 5

~40% reduction in tumor size at 8 weeks



- 56-year-old male with R/M EBV+ NPC (posterior mediastinal and midline retroperitoneal lymphadenopathy)
- Disease previously progressed through chemoradiation therapy then chemoimmunotherapy

Baseline Week 8



## Nana-val has been Generally Well-Tolerated at all Dose Levels

Preliminary safety data support continued dose escalation to determine RP2D

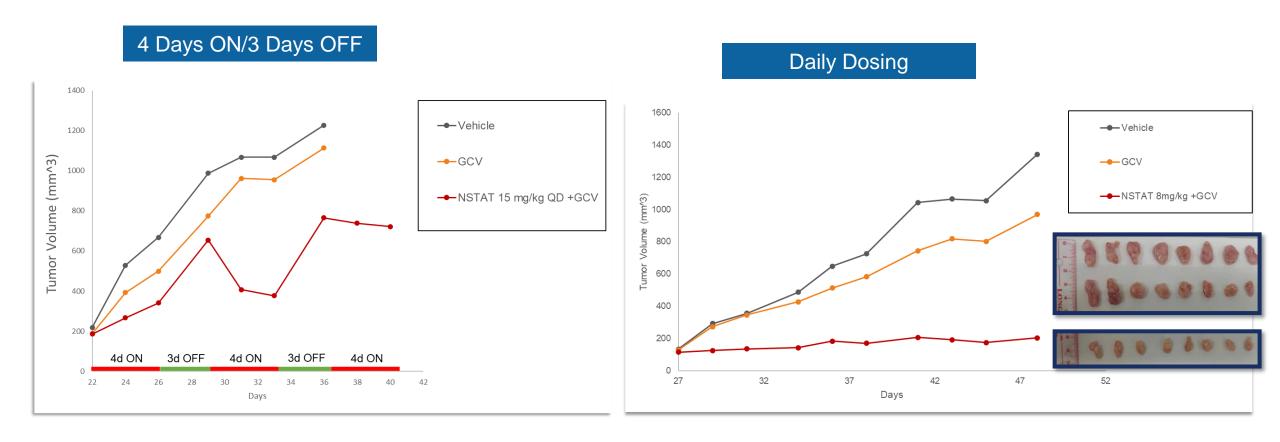
	Treatment-Related Adverse Events in ≥3 Patients  Dose Level 1 = RP2D for R/R Lymphoma									
	Dose Level		Dose Level Dose Level 2 3		Dose Level 4		Dose Level 5			
	(n:	=3)	(n:	=4)	(n	=3)	(n=	=3)	(n=	=4)
	G1-2	G3-4	G1-2	G3-4	G1-2	G3-4	G1-2	G3-4	G1-2	G3-4
Nausea	1		2		2		1		1	
Decreased appetite	1		1		1		2		2	
Creatinine increased	1		2						2	
Fatigue	1		2			1	1			
Anemia	1		1							1
Lymphopenia			1				1	1		
Vomiting					2		1			

## Safety:

- No dose-limiting toxicities reported to date
- Majority of treatmentrelated adverse events were mild to moderate in severity



# Dosing Schedule of 4 Days ON/3 Days OFF Allows Solid Tumor Regrowth but Daily Dosing Renders Potent Anti-Tumor Activity in Xenograft Model





# Rationale for Split Daily Dosing (SDD) of Nanatinostat in Combination with Valganciclovir

Compelling preclinical data provides supporting evidence to evaluate a new dosing regimen

### Split dose

(2-4 hours apart) increases expression of EBV protein kinase, BGLF4

## **Daily dosing**

Enables increased anti-tumor activity relative to 4 days on 3 days off

## Split dose

Significantly increased the anti-tumor activity of Nana-val in murine EBV+ gastric cancer xenograft model

## **Higher doses**

Safety data suggest patients with NPC can withstand higher doses of nanatinostat compared to lymphoma patients



SDD of Nanatinostat offers a potential to extend Nana-val patent portfolio with differentiated strategy from lymphoma; US provisional application(s) have been filed





# Planned Incorporation of Split Daily Dosing (SDD) Strategy into Phase 1b Study

Up to 3 additional dose levels planned to determine RP2D

Dose Level	Nstat Oral Dose	VGCV Oral Dose	N	Best Response
1	20 mg QD (4 days/wk)	900 mg QD	3	
2	30 mg QD (4 days/wk)	900 mg QD	4	$\circ \circ \circ \circ$
3	40 mg QD (4 days/wk)	900 mg QD	3	● ○ NE
4	10 mg split dose (4 days/wk)	900 mg BID x 21 d, then QD	3	
5	20 mg / 10 mg split dose (4 days/wk)	900 mg BID x 21 d, then QD	4	
6	20 mg / 20 mg SDD	450 mg / 450 mg SDD		
7	30 mg / 30 mg SDD	450 mg / 450 mg SDD		Dartiel Dage
8	40 mg / 40 mg SDD	450 mg / 450 mg SDD		Partial Response
				Progressive



# **Anticipated Program Milestones**\*



	Indication	2023	2024	2025
11 Ph1b/2 id Tumors)	NPC	Present Disclose SDD preliminary dosing Phase 1b strategy DATA	Complete Phase Determine 1b dose RP2D Phase 1b (+/- anti-PD-1) escalation DATA	Meet with <u>FDA</u> & align Present on potential AA preliminary Phase pathway 2 DATA
Study 301 F (EBV+ Solid	GC		Initiate Exploratory Phase 1b Study	Present Initiate Phase preliminary Phase 2 Study 1b GC DATA





# **US Incidence Estimates for EBV+ Hematological Malignancies**



Incidence and % EBV Positivity by Lymphoma Subtype								
Subtype	Annual (newly diagnosed)	R/R	Total	EBV Positivity				
Peripheral T-cell lymphoma (PTCL)*	~2,600	~1,100	~3,600	40%-65%				
Diffuse large B-cell lymphoma (DLBCL)	~27,700	~13,800	~41,500	5%-15%				
PTLD	~1,300	~700	~2,000	60%-80%				

We believe the diagnosed incidence of EBV-associated hematological malignancies is likely understated, given inconsistent testing due to the absence of a targeted and actionable therapy



# Global Incidence Estimates for Priority EBV+ Hematological Malignancies

Nana-val has the potential to address other EBV<sup>+</sup> hematological malignancies

Incidence and % EBV Positivity by Lymphoma Subtype							
Subtype	Annual (newly diagnosed)	R/R	Total	EBV Positivity			
Peripheral T-cell lymphoma (PTCL)*	~15,200	~6,300	~21,500	40%-65%			
Diffuse large B-cell lymphoma (DLBCL)	~113,000	~56,000	~169,000	5%-15%			
PTLD	~9,100	~4,600	~13,700	60%-80%			

We believe the diagnosed incidence of EBV-associated hematological malignancies is likely underestimated, given inconsistent testing due to the absence of a targeted and actionable therapy



# **Summary of Key Growth Drivers for Nana-val in Lymphoma**

High unmet need, targeted treatment, compelling efficacy and duration data will drive strong value

	PTCL	DLBCL	PTLD	
Pricing Considerations (Unmet Need)	No standard of care for second line Low 5-year survival (11%) Strong preliminary Nana-val data	Separate EBV+ WHO classification Low 5-year survival Strong preliminary Nana-val data	Ebvallo may set a high price	
Line of Therapy	Potential 2L → 1L	Potential 3L → 2L	Potential 3L → 2L	
Duration of Response (DOR)	Current therapies: 4-8 months**  Nana-val: 17.3 months*	DoR >12 months considered clinically meaningful** DoR for Nana-val not yet calculated, multiple patients still on long-term therapy (ranging from 11- 42 months)*	DoR TBD, early data encouraging	
Market Penetration	Effective, well tolerated, t	argeted, easy to use product (outpatient oral therapy).	Can drive high penetration	
EBV Testing Rate Today**	++++	++ Opportunity to drive awareness	++++	

Viracta's clinical development footprint is designed to support global registration and market access





**Closing Remarks** 

# **Conclusion on Key Data and Insights**

## Lead Program EBV+ PTCL

- High unmet medical need, no approved therapies for R/R PTCL\* or EBV+ PTCL
- Pivotal NAVAL-1 trial preliminary ORR/CRR data of 40%/40% consistent with previous Study 201 data
- Long median duration of response of >17 months

### EBV+ DLBCL

- EBV+ DLBCL is a unique entity and an area of high unmet medical need
- Additional Study 201 response data showed ORR/CRR remained 67%/33%
- Long duration of response, patients on therapy for ~4 years (mDoR not yet reached)

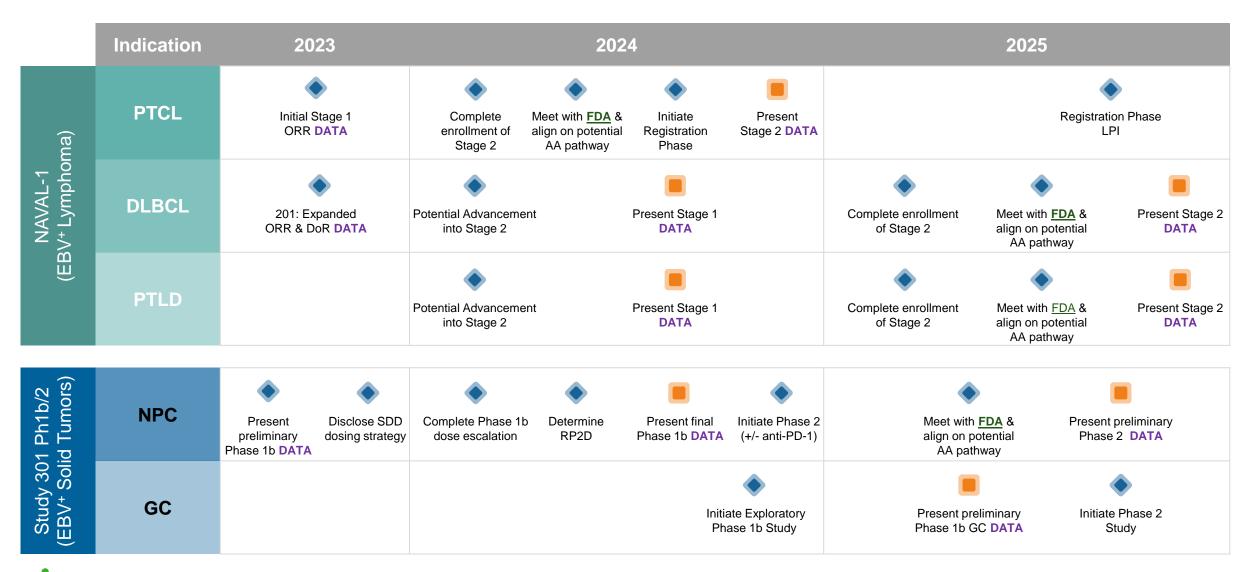
### EBV+ Advanced Solid Tumors

- New interim clinical data suggestive of emerging dose response, 2 PRs & 5 SDs in 17 patients with R/M EBV+ NPC
- Opportunity to optimize RP2D by dose escalating further with an innovative split daily dosing regimen supported by new preclinical data



# **Anticipated Program Milestones**\*









Q&A

# Thank You

