



Yale SCHOOL OF MEDICINE

# T-cell Lymphomas

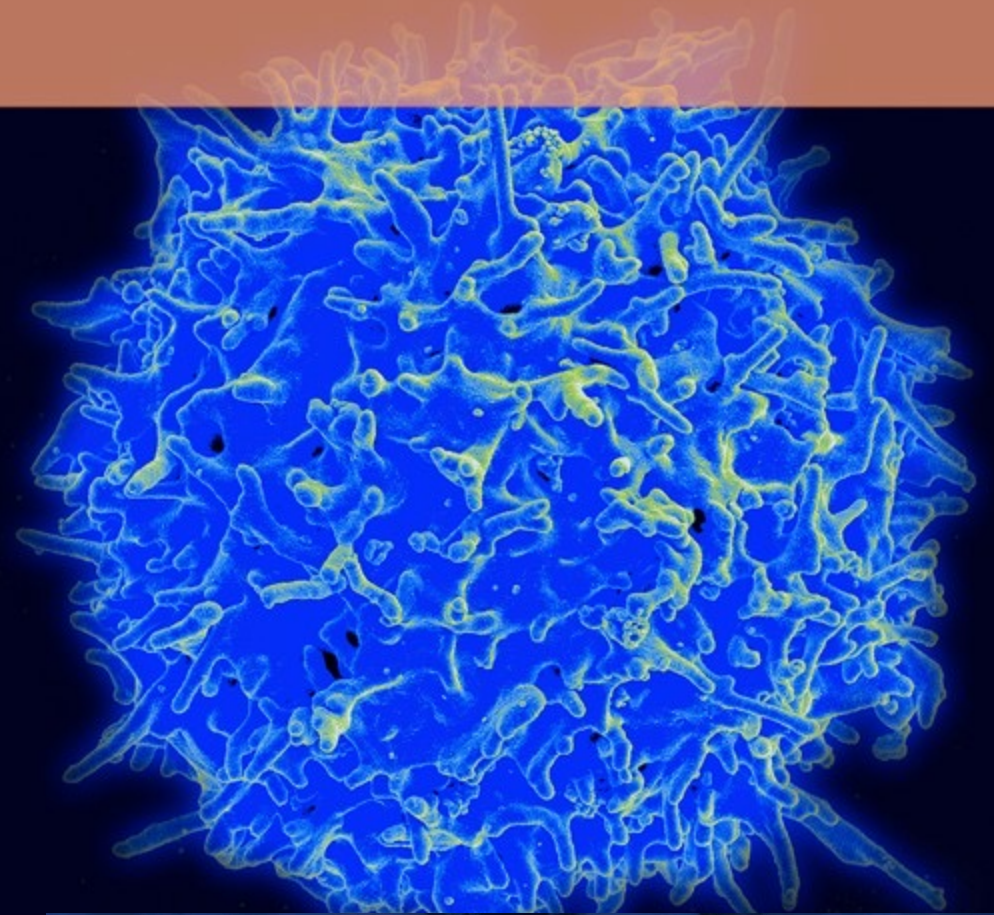
## *Updated Treatment Options*

**Francine Foss, M.D.**

Professor of Medicine and Dermatology

Yale University School of Medicine

New Haven, CT, USA



CONFERENCE DIRECTORS  
LUIS E. RAEZ, MD, FACP, FCCP  
EDUARDO S. SANTOS CASTILLERO, MD, FACP  
EDUARDO M. SOTOMAYOR, MD

20TH ANNUAL MIAMI CANCER MEETING

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Tampa Bay Edition

JANUARY 19-21, 2024

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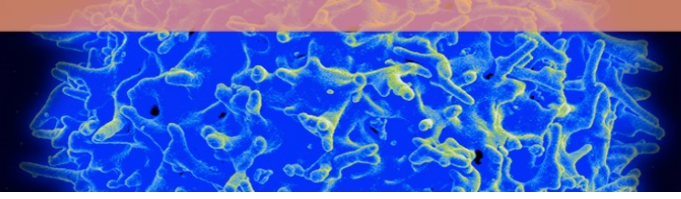
Fostering Multidisciplinary Care in the Era of Complex Cancer Treatments

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# WHO classification of T cell Lymphomas



Legend: Most common Less common Rare

## Leukemic

- T-cell PLL
- **T-cell LGL leukemia**
- Chronic LPDs of NK cells
- Aggressive NK-cell leukemia
- **ATLL**
- Systemic EBV+ T-cell lymphoma of childhood
- Hydroa vacciniforme-like lymphoproliferative disorder

## Nodal

- **PTCL-NOS**
- **AITL**  
(angioimmunoblastic)
- Follicular T-cell lymphoma
- **Nodal PTCL with TFH phenotype**
- **ALCL, ALK-positive**
- **ALCL, ALK-negative**

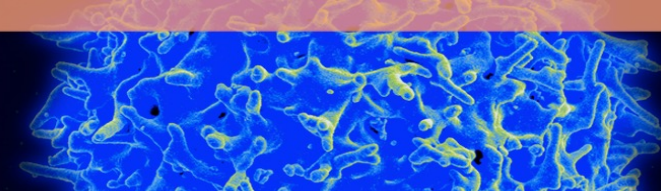
## Cutaneous

- **MF/Sezary Syndrome**
- Primary cutaneous CD30+ LPD
- LyP, pcALCL
- Primary cutaneous  $\gamma\delta$  TCL
- Primary cutaneous CD8+ aggressive epidermotropic cytotoxic TCL
- Primary cutaneous acral CD8+ TCL
- Primary cutaneous CD4+ small/medium T-cell LPD

## Extranodal

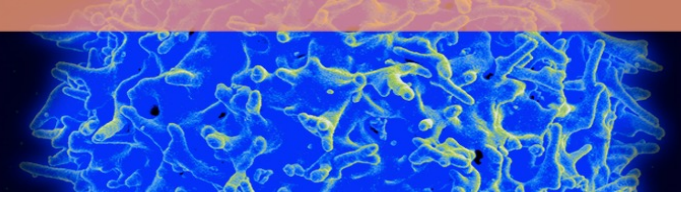
- Extranodal NK/TCL, nasal type
- Enteropathy-associated TCL
- **Monomorphic epitheliotropic intestinal T-cell lymphoma**
- Indolent T-cell proliferative disorder of the GI tract
- Subcut. panniculitis-like TCL
- Hepatosplenic TCL
- Breast implant-associated ALCL

# Molecular testing in T cell lymphoma- what you need to know

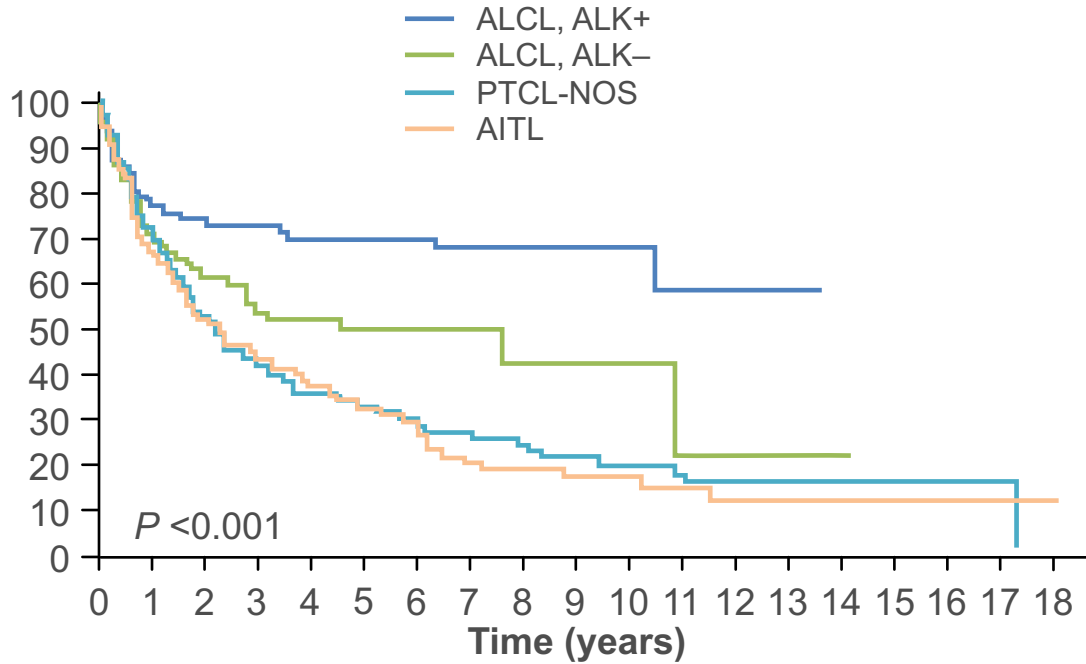


Gene	Characteristics	Disease subtype
ALK	FISH t(2;5)(p23;q35)	ALCL, candidate for ALK inhibitors
Dusp22-IRF4	FISH tumor suppressor gene Rearrangements associate with better outcomes	ALK negative ALCL CTCL subset
TP63	FISH TP63(3q28) and TBL1XR1: TP63 Rearrangements associated with poor outcomes	ALK negative ALCL
TCL-1, TRA	FISH translocations Inversion or translocation chromosome 14 T(14;14)(q11;q32) TCRa or TCRB translocated to activate TCL1A or MTCP1-B1	T PLL
Tet2; IDH1,2; DNMT3; RhoA	Mutational analysis Follicular helper subtype Response to epigenetic modifiers	Distinguishes PTCLnos from AITL or follicular helper subtype PTCL
STAT3, STAT5	Bidirectional sequencing STAT3,5 STAT5 associated with poor outcomes	LGL and NKTCL- 50% have STAT3 mutations Hepatosplenic T cell lymphoma NK leukemia
HAVCR2 (Tim3)	Tumor suppressor gene Mutations lead to loss of function, increase in inflammatory cytokines Associated with HLH	Subcutaneous panniculitis like T cell lymphoma

# Outcomes for PTCL-then and now



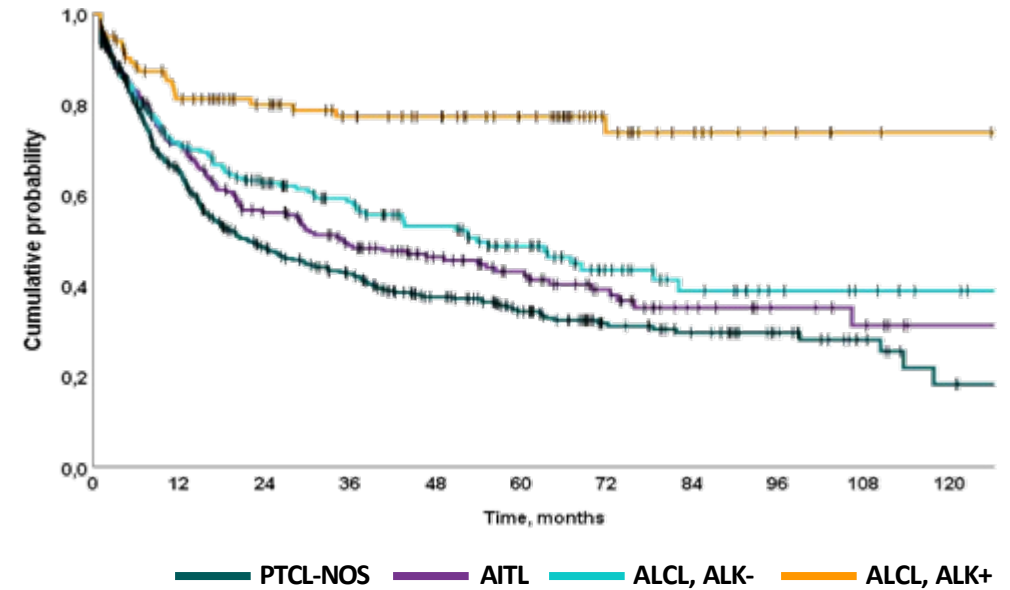
## International T cell Lymphoma Project



Diagnosis	5-year OS (%)
PTCL-NOS	32
AITL	32
ALCL, ALK+	70
ALCL, AKL-	49

Vose JM, et al. *J Clin Oncol*. 2008

## T Cell Project(T1)

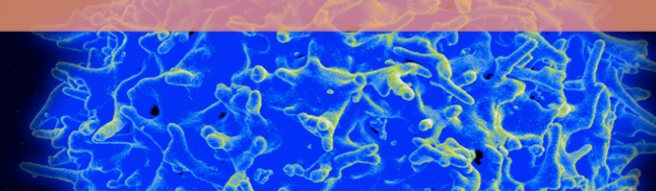


Diagnosis	5-yr PFS	5-yr OS
PTCL-NOS	24%	34%
ALCL ALK -	43%	49%
ALCL ALK +	63%	77%
AITL	30%	42%

Bellei et al, *Hematologica* 2019



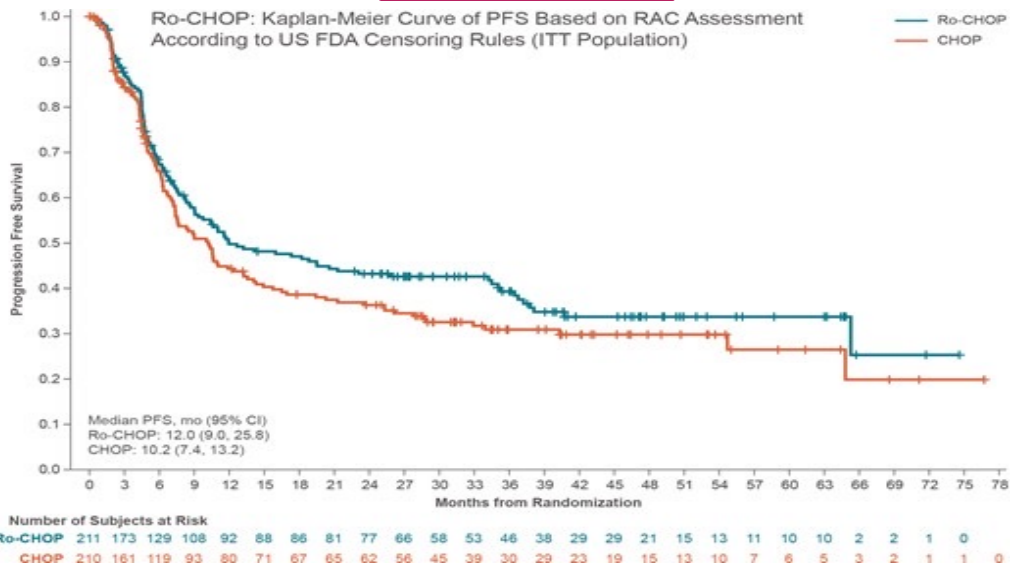
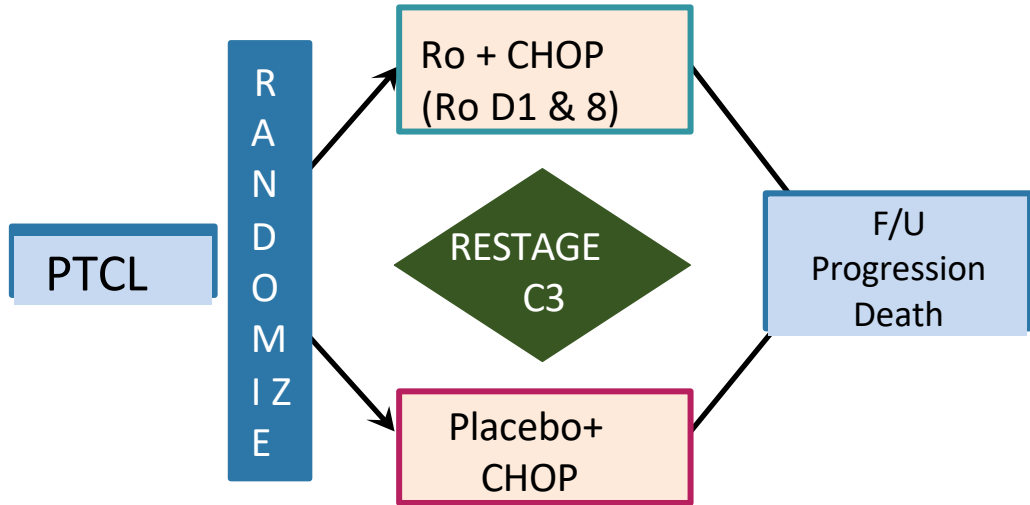
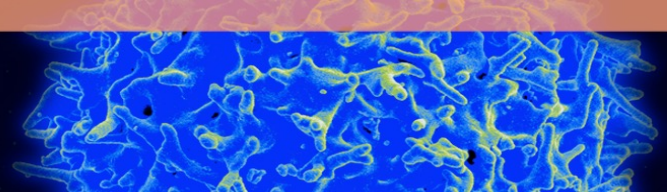
# Front line therapy for PTCL: NCCN guidelines



	First-line Therapy*	ALCL†
<b>Preferred regimens</b>	<p><b>PTCL-NOS, AITL; EATL; MEITL; Nodal PTCL, TFH; FTCL</b></p> <ul style="list-style-type: none"> <li>▪ Brentuximab-CHP can be considered for CD30+ histologies</li> <li>▪ Anthracycline-based combination chemotherapy</li> </ul>	<ul style="list-style-type: none"> <li>▪ CD30-directed ADC in combination with anthracycline-based combination chemotherapy (Category 1)</li> </ul>
<b>Other recommended regimens</b>	<ul style="list-style-type: none"> <li>▪ Newcastle regimen‡ (CHOP followed by IVE/MTX and ASCT for EATL)</li> <li>▪ Asparaginase regimen for NK/T cell- R-GemOX, SMILE,etc</li> </ul>	
<b>First-line consolidation</b>	<ul style="list-style-type: none"> <li>▪ In patients with ALK-positive ALCL, HDT/ASCR should be considered only for high-risk IPI patients</li> <li>▪ For other histologies (i.e., PTCL-NOS, ALCL, ALK–, and AITL, including nodal PTCL, TFH, and FTCL), consider HDT with ASCR</li> <li>▪ Role of alloBMT upfront not defined, consider in aggressive histologies (hepatosplenic , gamma delta)</li> </ul>	

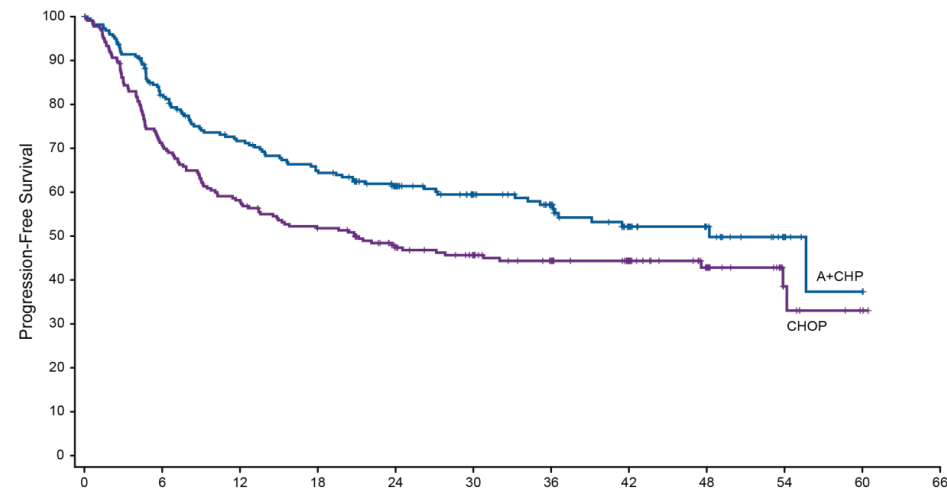
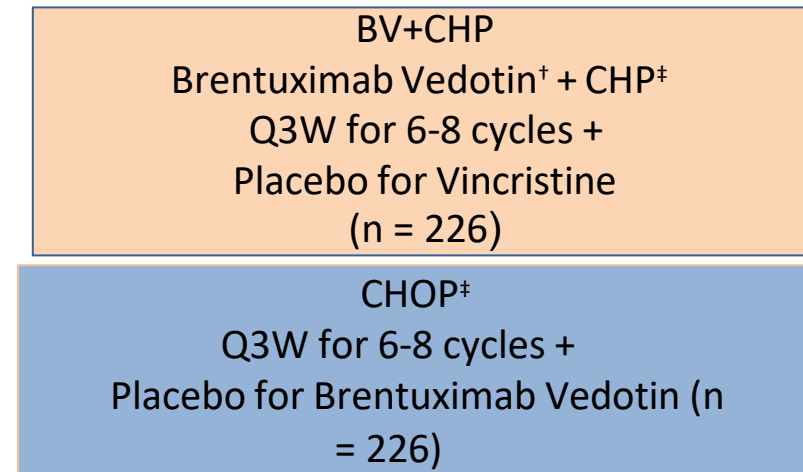
\*Although anthracycline-based regimens confer a favorable prognosis in ALK+ ALCL, these regimens have not provided the same favorable results for other PTCL histologies; clinical trial is therefore preferred for the management of these other histologies; †ALK– ALCL with a *DUSP22* rearrangement has been variably associated with a prognosis more similar to ALK+ ALCL disease, and treatment according to the ALK+ ALCL algorithm may be considered. ‡Studied only in patients with EATL. Referenced with permission from the NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines) for T-Cell Lymphomas V.2.2022. © National Comprehensive Cancer Network, Inc. 2022. All rights reserved. Accessed March 9, 2022. To view the most recent and complete version of the guideline, go online to [NCCN.org](https://www.nccn.org). NCCN makes no warranties of any kind whatsoever regarding their content, use or application and disclaims any responsibility for their application or use in any way.

# Front line randomized trials in PTCL



PFS 12.0 mo Ro-CHOP vs 10.2 mo CHOP, hazard ratio 0.81 (95% CI, 0.63-1.04;  $P = 0.096$ )

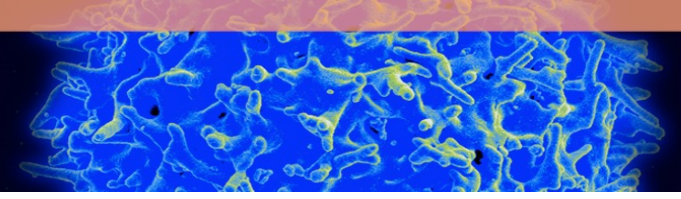
*Bachy et al, JCO 2022*



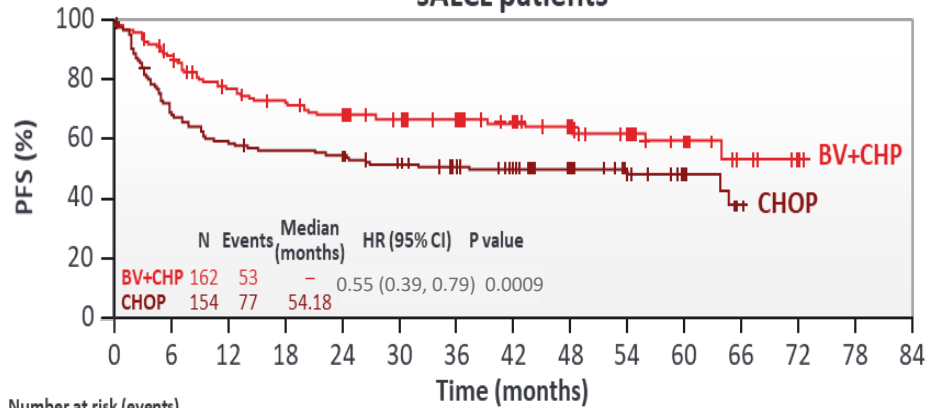
Treatment	Events, n (%)	HR (95% CI)	P Value
<b>BV+CHP</b>	95 (42)	0.71 (0.54-0.93)	.011
<b>CHOP</b>	124 (55)		

*Horwitz et al, Lancet 2019*

# Echelon-2: outcomes in ALCL- 5 year update



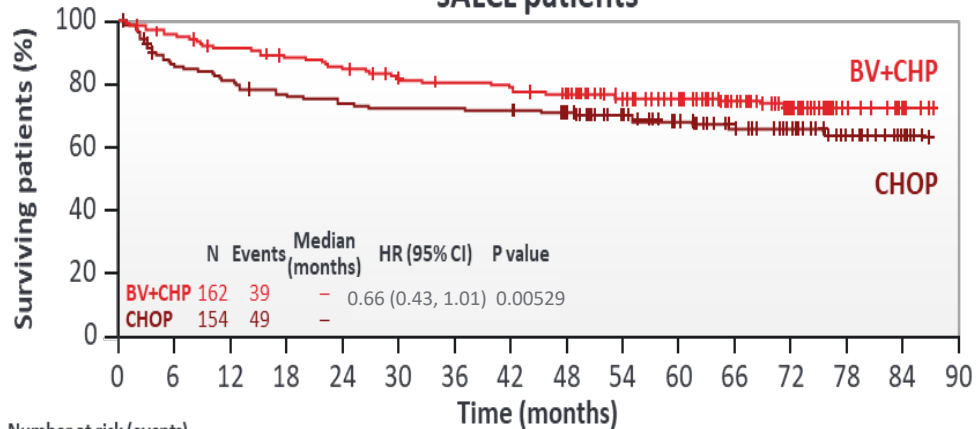
sALCL patients



Number at risk (events)

Time (months)	0	6	12	18	24	30	36	42	48	54	60	66	72	78	84
BV+CHP	162(0)	136(18)	117(34)	107(42)	95(46)	81(48)	67(48)	55(49)	33(50)	23(51)	15(52)	7(53)	2(53)	0(53)	0(53)
CHOP	154(0)	103(58)	89(62)	84(66)	75(69)	68(72)	57(73)	48(74)	38(74)	26(74)	16(75)	4(77)	0(77)	0(77)	0(77)

sALCL patients



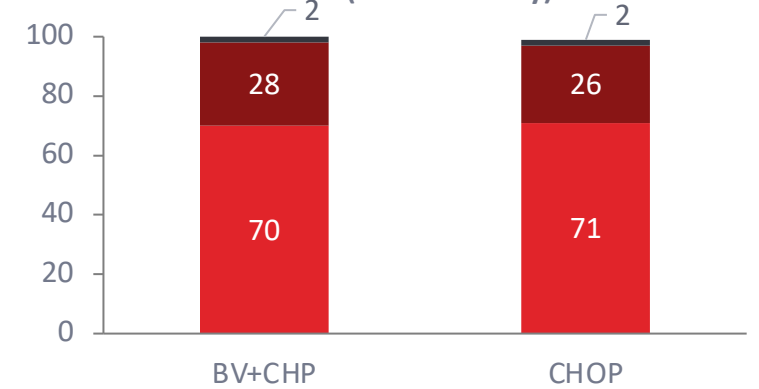
Number at risk (events)

Time (months)	0	6	12	18	24	30	36	42	48	54	60	66	72	78	84	90
BV+CHP	162(0)	151(8)	143(14)	137(18)	131(24)	122(29)	119(31)	116(34)	109(35)	88(37)	76(37)	56(38)	32(39)	12(39)	3(39)	0(39)
CHOP	154(0)	127(22)	119(30)	112(36)	109(39)	107(41)	107(41)	104(42)	97(43)	79(44)	68(46)	50(48)	31(48)	17(49)	4(49)	0(49)

**Median follow up**  
47.6 months



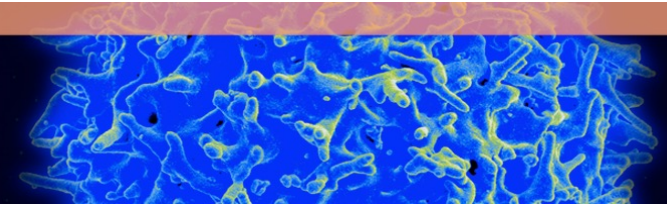
Frequency of PN events (worst severity)



	BV+CHP (n=223)	CHOP (n=226)
Any PN event, n (%)	117 (52)	124 (55)
Resolution of all PN events, n (%)*	71 (85)	82 (85)
Improvement of PN events, n (%)†	13 (15)	15 (15)

- At 5-year follow-up, similar resolution or improvement of PN events was seen for BV+CHP (n (%), 84 [72]) vs CHOP (97 [78]). For ongoing PN events, BV+CHP 98% vs CHOP 98% were Grade 1 or 2

# Aggressive T-cell Lymphomas: *Are we closer to a cure?*



## Front line treatment in PTCL in US

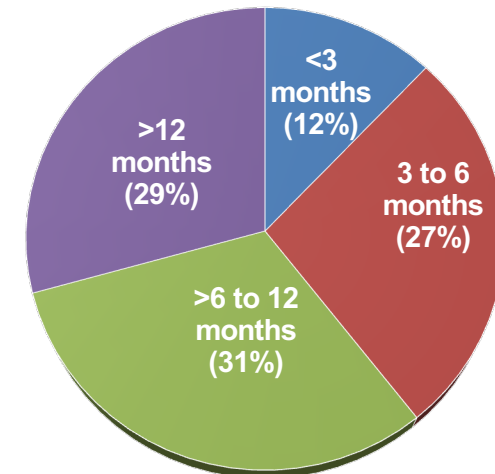
Study	CR rate
BV-CHP vs CHOP	64% vs 56%
Romi-CHOP	41% vs 37%
COMPLETE Registry	44%

## Complete Registry (N = 499)

Time to relapse from front-line treatment  
(N = 58)

### Observed median time from PTCL diagnosis to R/R PTCL

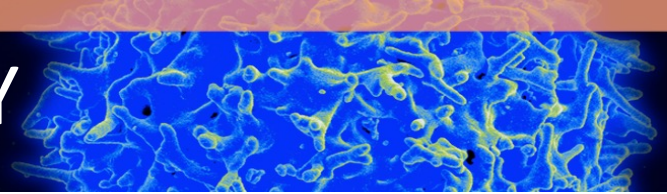
First relapse (n = 58)*	12.1 months (8.5-20.5)
Primary refractory <sup>†</sup> (n = 97)	3.8 months (2.4-6.0)



\*Response assessment was undertaken by the treating investigator according to the Revised Response Criteria for Malignant Lymphoma. \*PTCL-NOS (29%), AITL (14%), ALCL (14%). <sup>†</sup>PTCL-NOS (26%), AITL (22%), ALCL (10%).<sup>2</sup>  
CR, complete response; PR, partial response; R/R, relapsed/refractory.  
Lansigan F, et al. *Acta Haematol.* 2020;143:40-50.



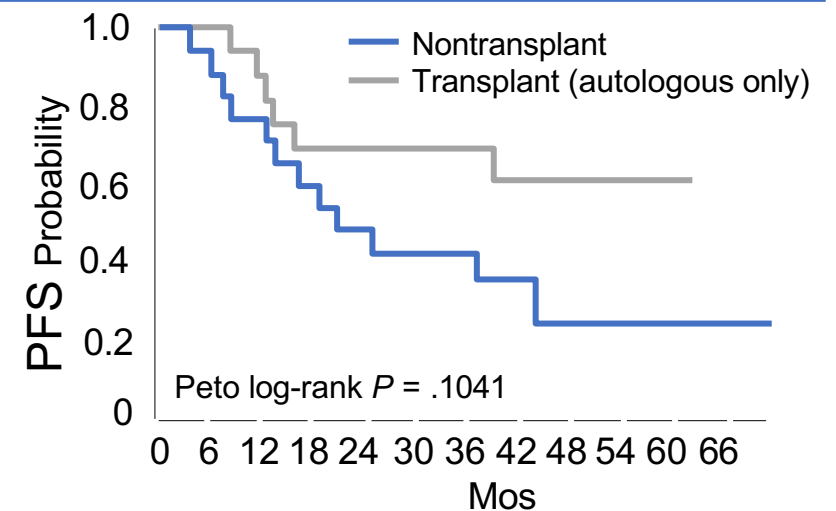
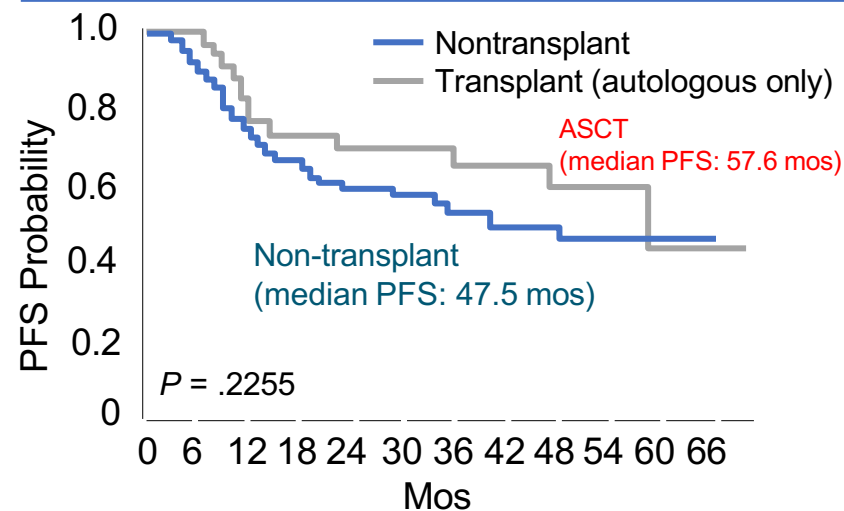
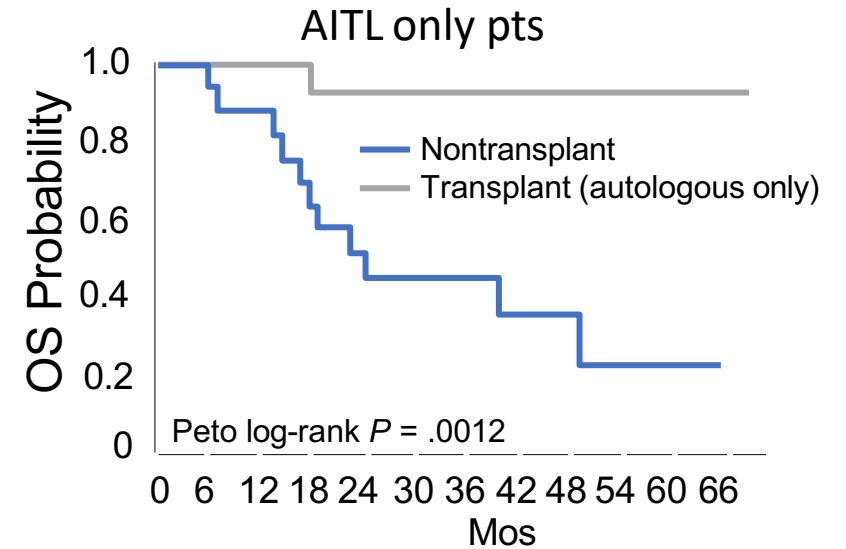
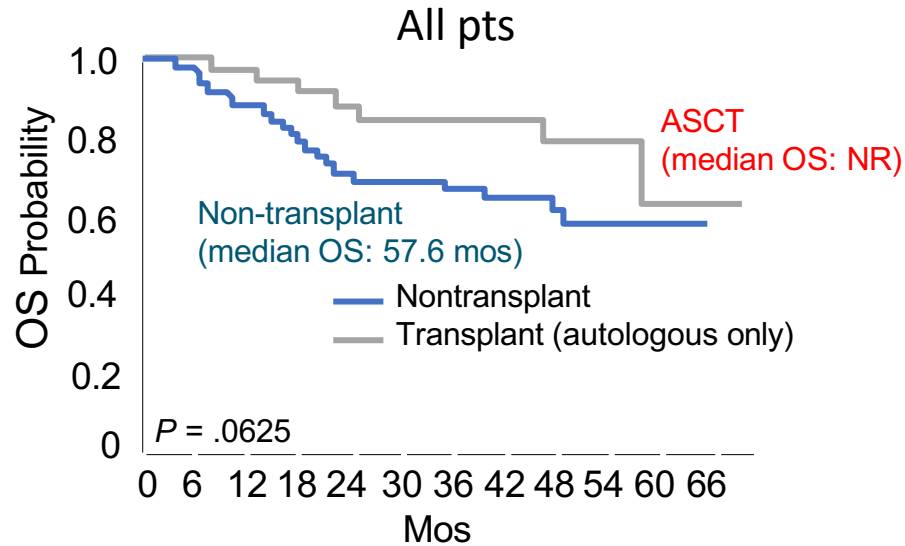
# Transplant in first remission: COMPLETE STUDY



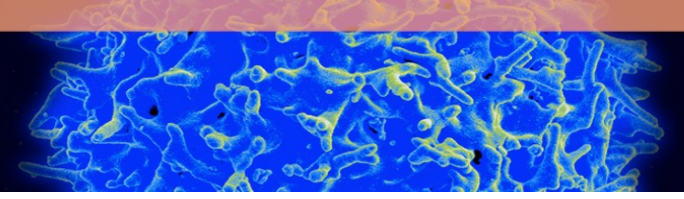
COMPLETE is a prospective registry of 500 patients in the US enrolled at diagnosis

NCCN recommends transplant in first remission for nodal subtypes of PTCL

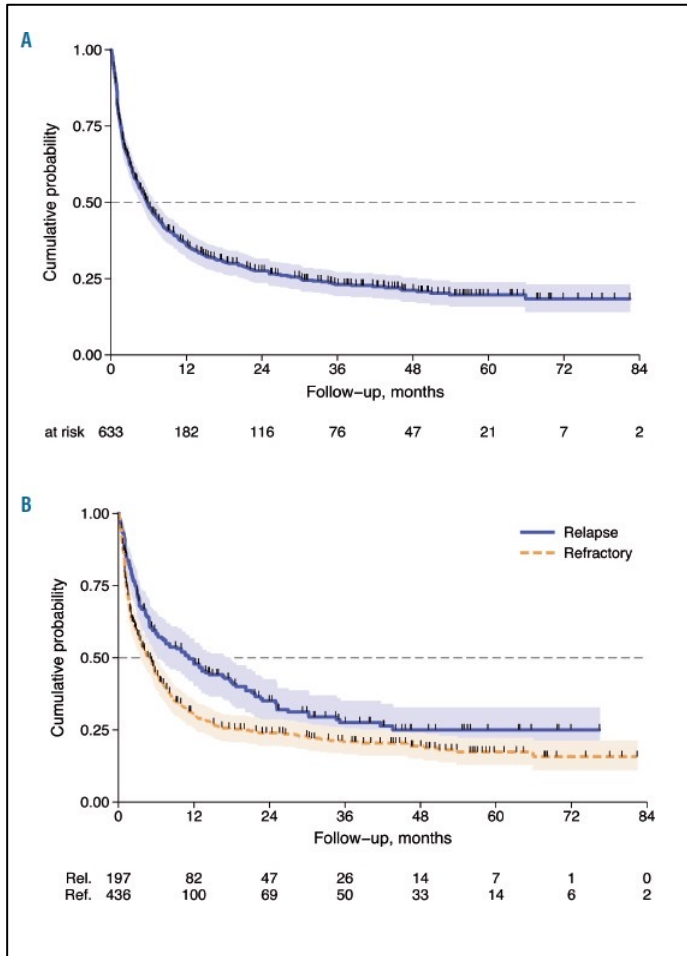
- COMPLETE is a prospective Registry study of patients with PTCL enrolled at diagnosis in the US
- 119 pts with nodal PTCL had CR
- 36 of those underwent ASCT
- ASCT was associated with superior survival for stage III–IV and intermediate-to-high IPI
- ASCT improved OS and PFS with AITL but not other PTCL subtypes
- Multivariate analysis, ASCT was independently associated with improved survival (HR: 0.37; 95% CI 0.15, 0.89)



# Relapsed/refractory PTCL- available therapies



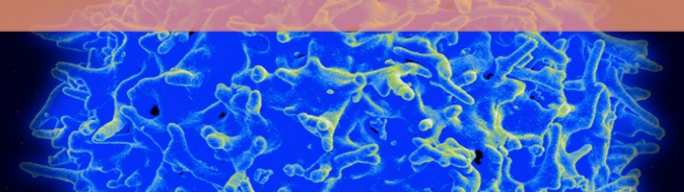
Outcomes for relapsed/refractory patients from the T Cell Project



## Approved drugs for relapsed/refractory PTCL

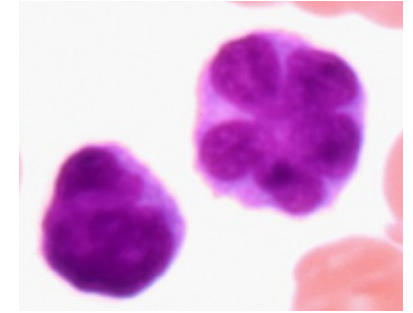
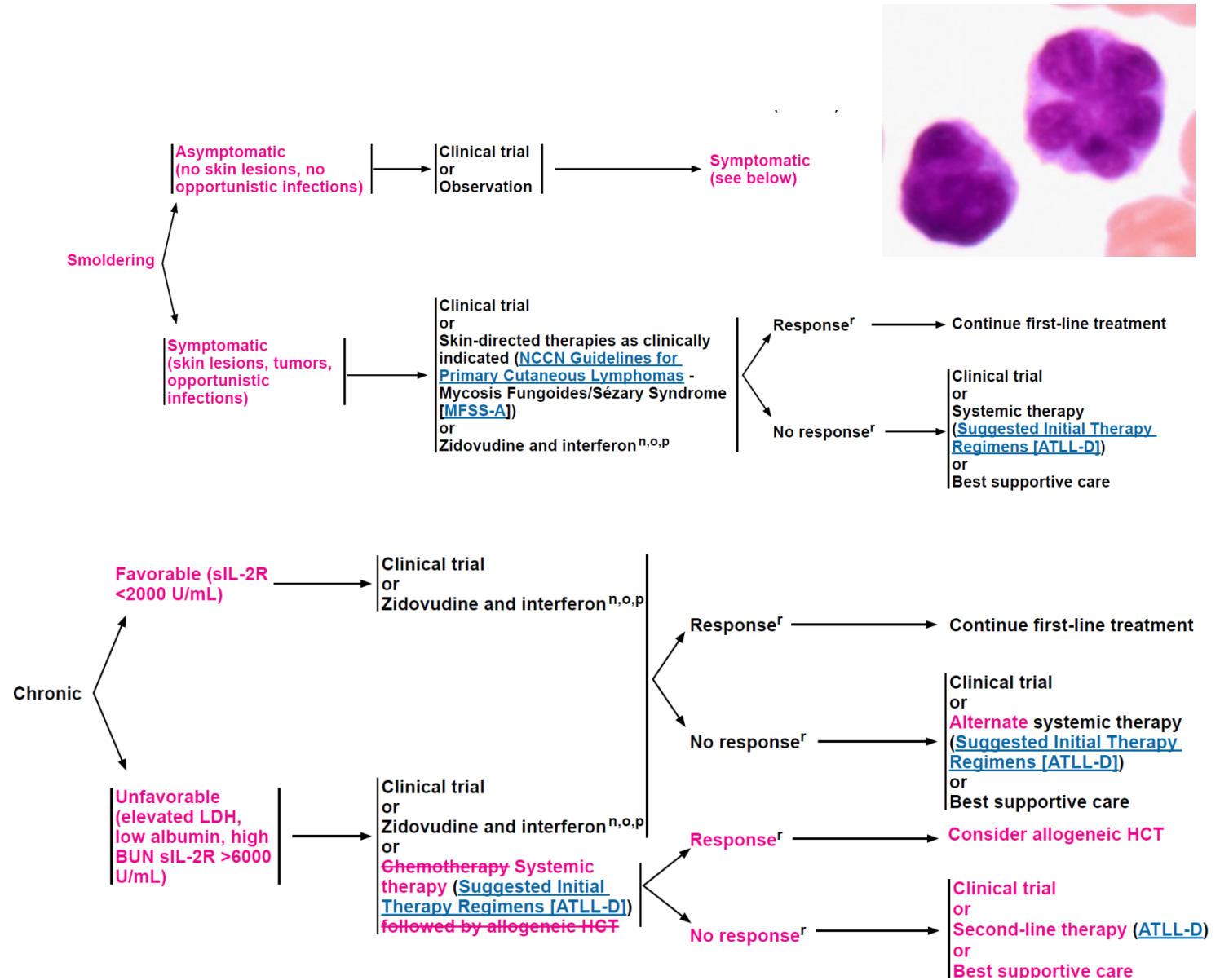
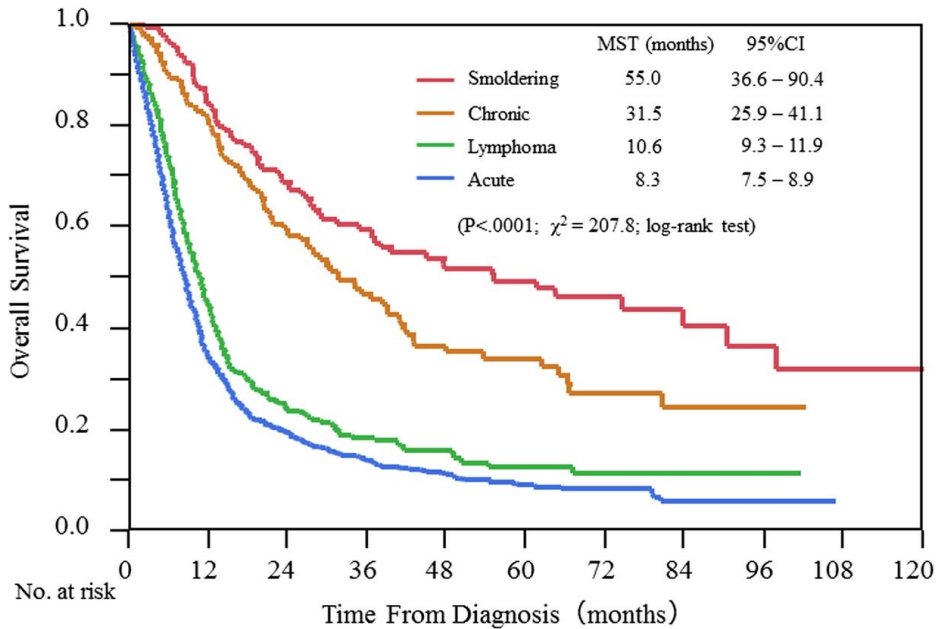
Drugs	Class	Indications
Pralatrexate	Antifolate	US FDA: PTCL (2009)
Romidepsin	HDAC inhibitor	US FDA: CTCL (2009) and PTCL (2011)
Brentuximab vedotin	Anti-CD30 ADC	US FDA: ALCL (2011)
Belinostat	HDAC inhibitor	US FDA: PTCL (2014)
Mogamulizumab	Anti-CCR4 mAb	Japan: ATLL (2012), PTCL and CTCL (both 2014)
Chidamide	HDAC inhibitor	China: PTCL (2014)
Forodesine	PNP inhibitor	Japan: PTCL (2017)
E7777 (Ontak)	IL2 Fusion Toxin	Japan: PTCL, CTCL (2021)

# NCCN Update: HTLV-1 associated Lymphoma/Leukemia



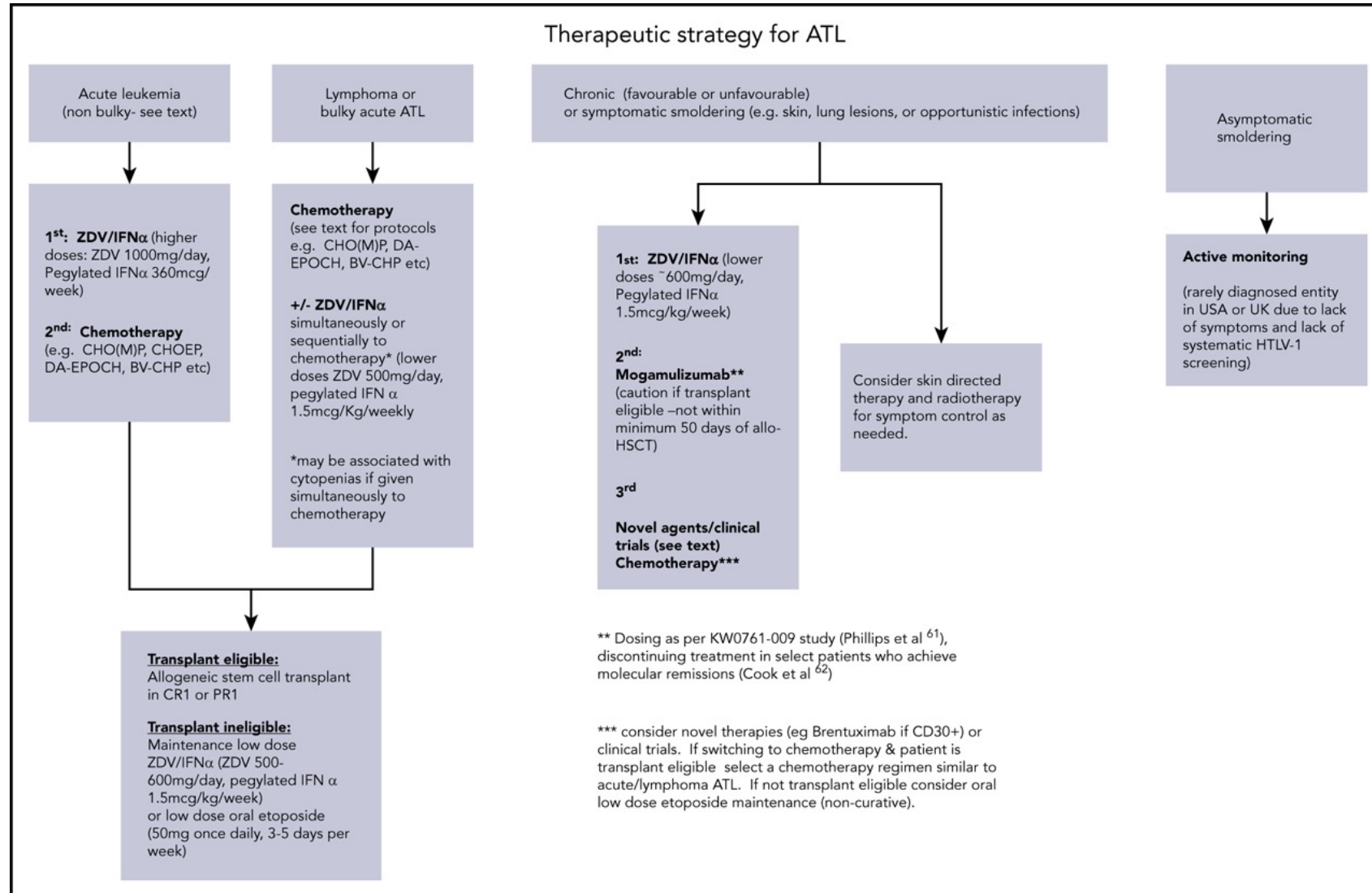
DIAGNOSTIC CRITERIA FOR ATLL

	Smoldering	Chronic	Lymphoma	Acute
Anti-HTLV-1 antibody	+	+	+	+
Lymphocyte (x 10 <sup>9</sup> /1/L)	<4	≥4 <sup>a</sup>	<4	*
Abnormal T lymphocytes	≥5%	+ <sup>b</sup>	≤1%	+ <sup>b</sup>
Flower cells of T-cell marker	Occasionally	Occasionally	No	+
LDH	≤1.5N	≤2N	*	*
Corrected Ca (mmol/1/L)	<2.74	<2.74	*	*
Histology-proven lymphadenopathy	No	*	+	*



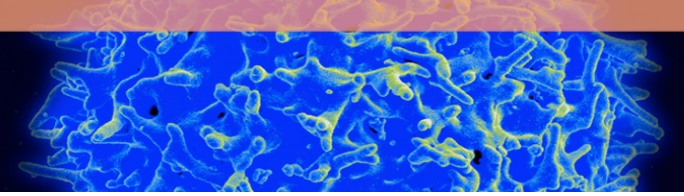
# HTLV-1 associated Lymphoma/Leukemia: treatment

- Brentuximab vedotin -CHP for CD30+ cases
- Dose-adjusted EPOCH, CHOPE, etc
- Zidovudine and interferon (acute, chronic, and symptomatic smoldering subtypes)
- Mogamulizumab (not for transplant eligible)
- Other agents with activity- lenalidomide
- Belinostat/AZT+/- IFN ( Ramos, Miami)
- Valemetostat (investigational)

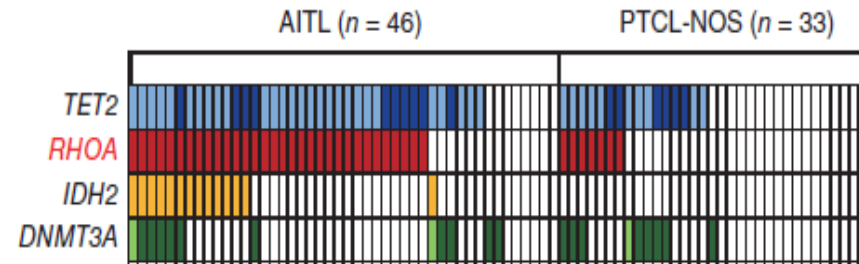




# Mutations of DNA methylation genes in PTCL

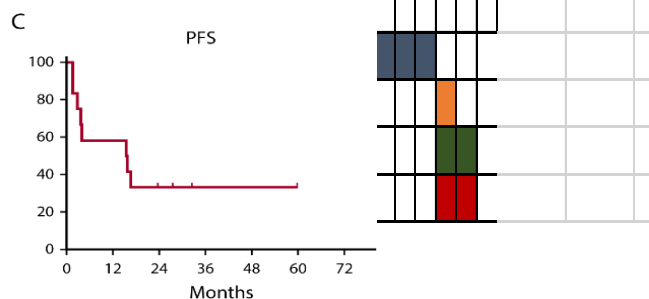
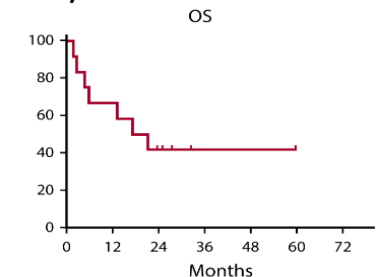
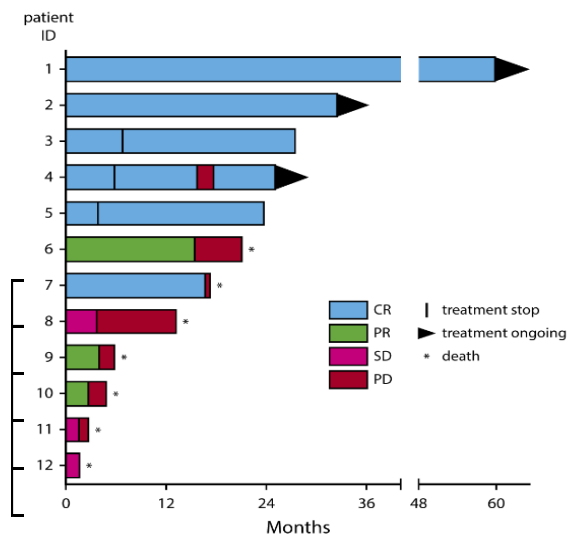


Recurrent mutations of genes involved in DNA methylation regulation have been described in PTCL and in angioimmunoblastic T cell lymphoma



## Phase II study of 5-azacitidine in AITL

- N = 12 patients with stage III/IV AITL
- **5-azacitidine** (median of 5.5 cycles), plus rituximab in 6/12 patients
- ORR 75%: CR 6/12 ; PR 3/12; SD 3/12



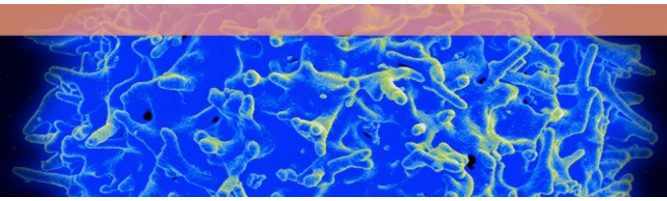
## Phase I study of oral 5-azacitidine and romidepsin

**5-azacitidine:** 100 mg/day d1-14, to 300 mg/day, d1-21

**Romidepsin** 10 mg/m<sup>2</sup>, d8,15, to 14 mg/m<sup>2</sup>, d8,15,22,21-35 day cycles

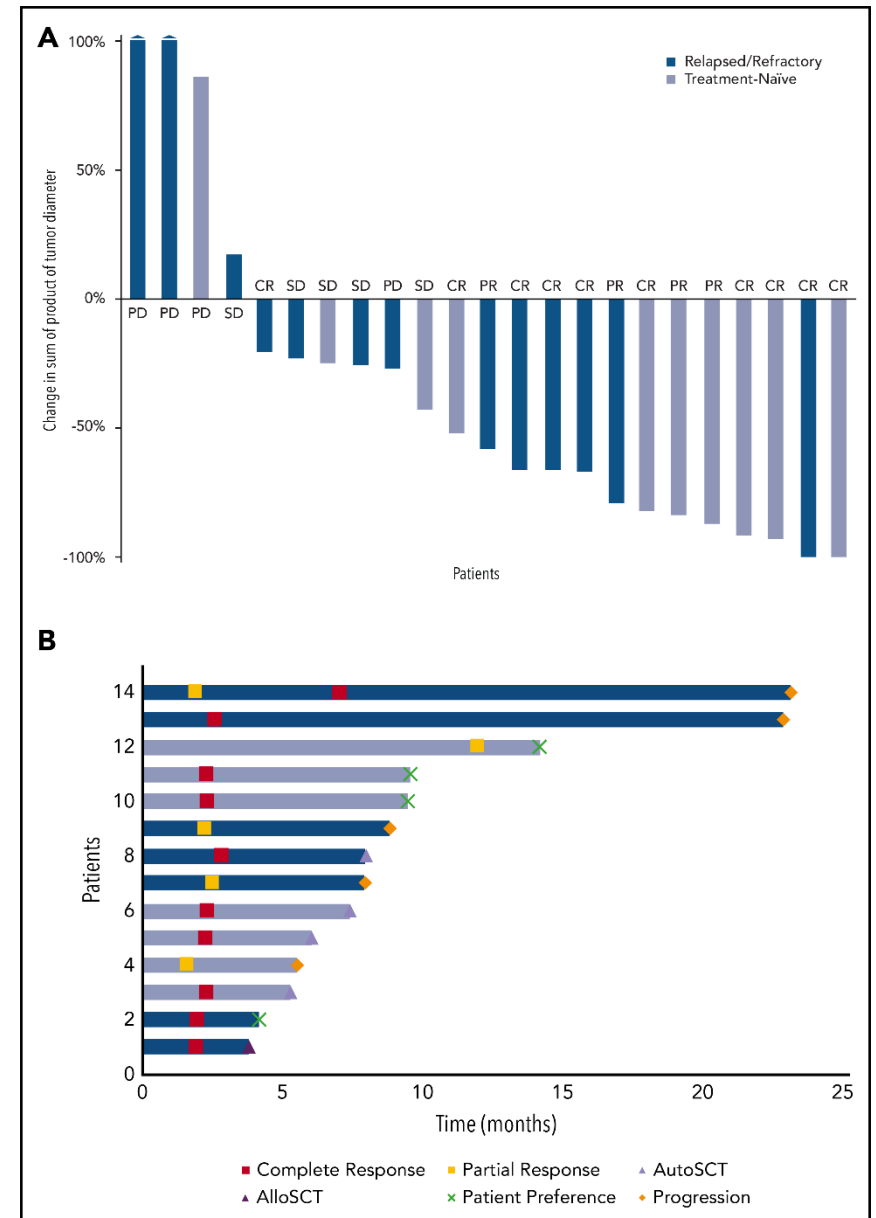
Response, n (%)	All Patients (N = 31)	T-cell Lymphoma (n = 11)
ORR	10 (32)	8 (73)
CR	7 (23)	6 (55)
PR	3 (10)	2 (18)
SD	7 (23)	0
PD	11 (35)	2 (18)
Not evaluable	3 (10)	1 (9)

# Epigenetic therapy: phase II study of romdepsin and 5-azacytidine



- Front line or R/R PTCL pts eligible
- Azacytidine 300 mg days 1 to 14, Romidepsin 14 mg/m<sup>2</sup> on days 8, 15, and 22 every 35 days.
- ORR 61% , CR 48%
- T-follicular helper cell (tTFH) higher ORR
- Gr 3 to 4 AEs were thrombocytopenia (48%), neutropenia (40%), lymphopenia (32%), and anemia (16%)
- Median PFS 8 mo, median OS not reached , median DOS 20.3 months
- Responders had higher average number of mutations in genes involved in DNA methylation and histone deacetylation

	Overall response	Complete response	Partial response
All pts (23)	61%	43%	17%
Front line (10)	70%	50%	20%
R/R disease (13)	54%	38%	15%
tFH (15)	80%	60%	20%

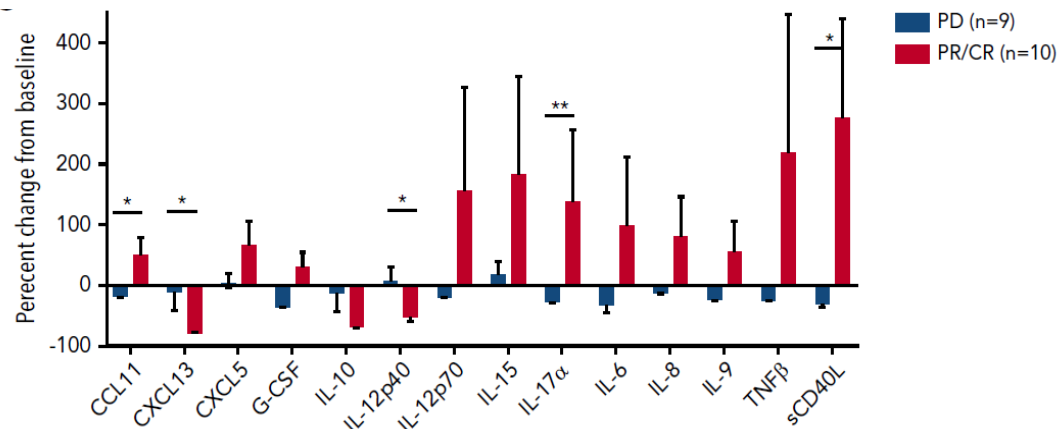


# PI3Kinase as a target: Duvelisib Phase II study

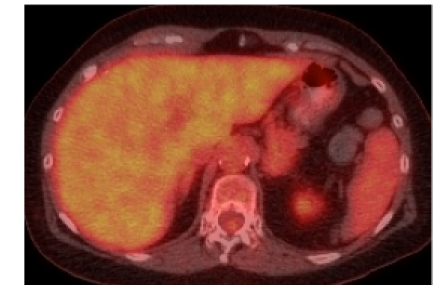
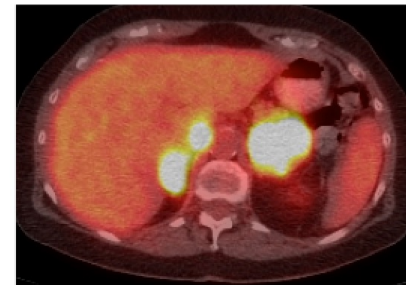
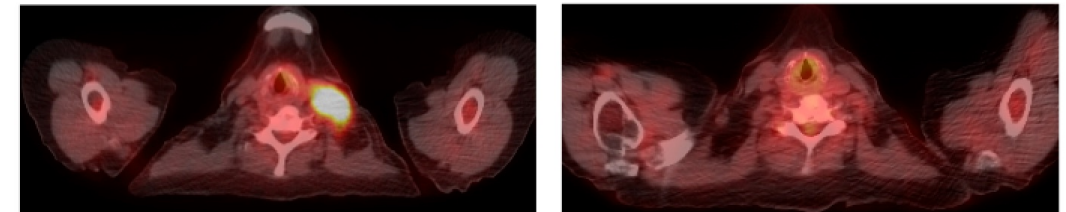
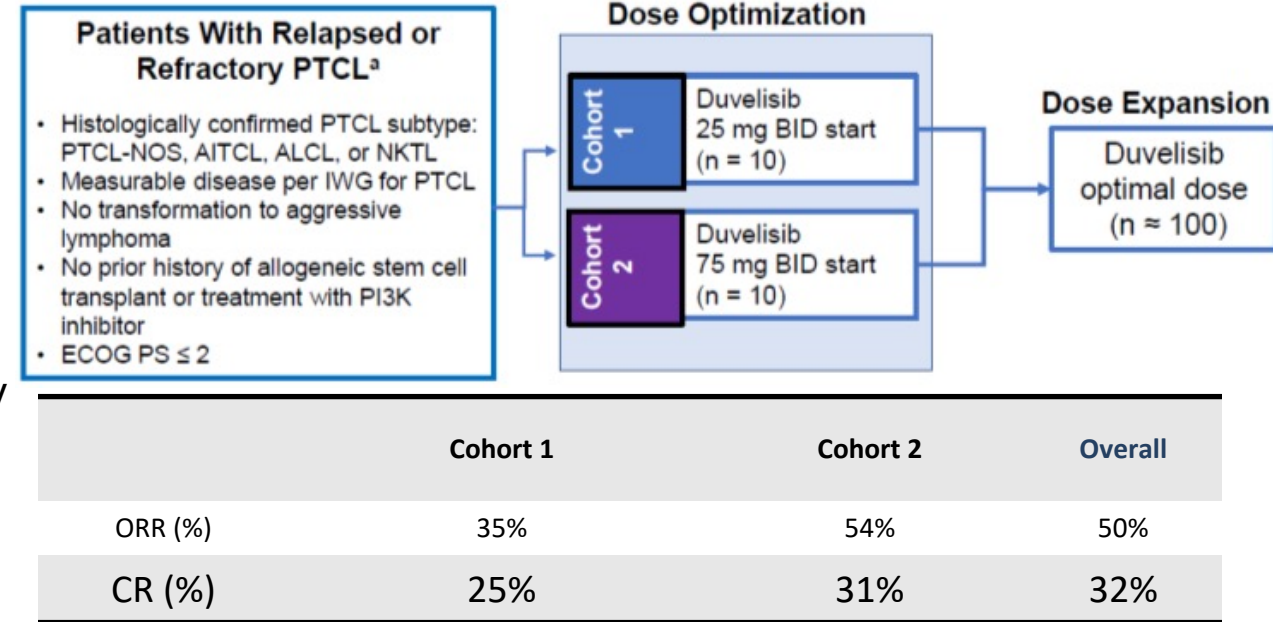
- Single agent phase II study in PTCL (PRIMO) n=78
  - 75mg BID x 2 cycles → 25mg BID unless progression/intolerance
  - ORR 50%, CR 32%
  - Grade ≥3 transaminitis 24%

## Safety:

Treatment interruptions and/or dose reductions most commonly required for AST/ALT elevation, rash, diarrhea, and pyrexia. Neutropenia in 20%. Grade ≥ 3 infections in 29%.



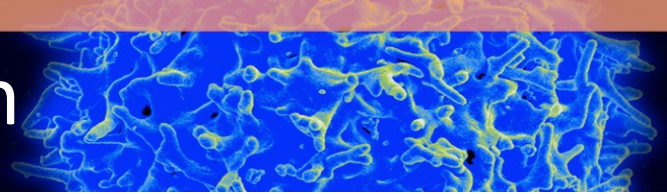
Horwitz et al Blood 2018, Brammer ASH 2021; Cheun et al Cancers 2020



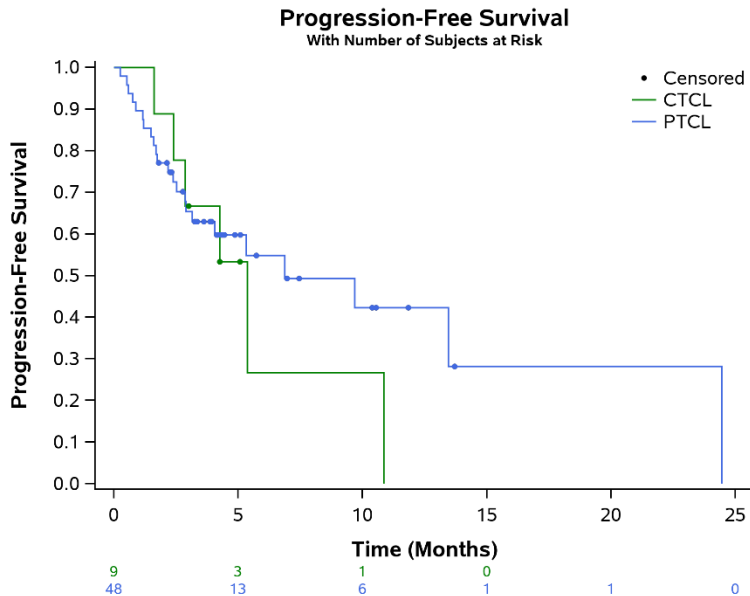
Predose

Post Cycle 1

# Duvelisib and romidepsin- a novel combination



	PTCL	CTCL
n	48	9
events	23	6
Censored	25	3
Median PFS (95% CI)	6.8 Mo (4.0 – NR)	5.3 Mo (2.8 – NR)
# of patients → Transplant	14 (29%)	0

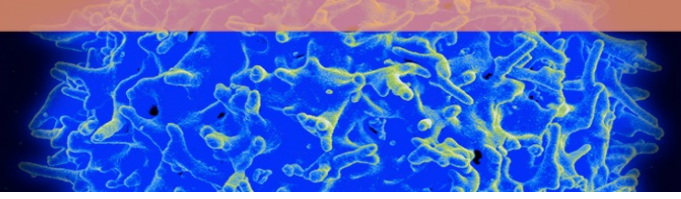


Fewer immune mediated side effects of duvelisib when given with romidepsin

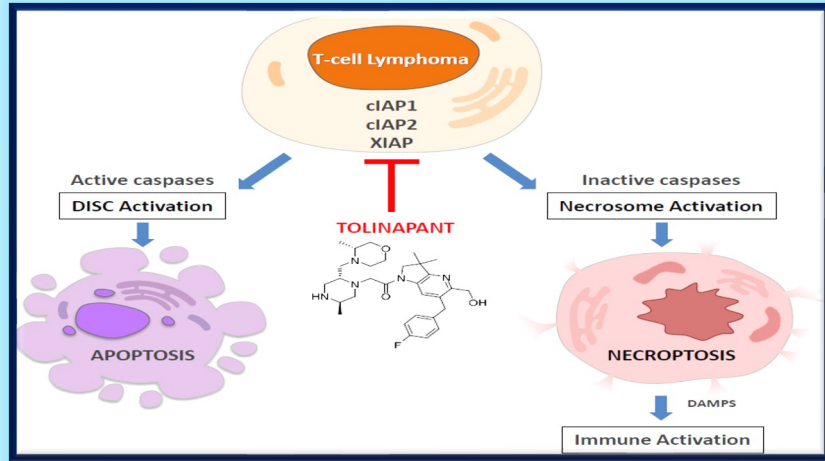
Event	initiated with single agent lead in cycle n=10	initiated with combination at MTD n=49
Transaminase	4 (40%)	4 (8%)
ALT	3 (30%)	4 (8%)
AST	1 (10%)	2 (4%)
Diarrhea	3 (30%)	6 (12%)
Neutrophil count decreased	2 (20%)	19 (39%)
Platelet count decreased	1 (10%)	5 (10%)
Infections	0	6 (12%)
Rash	2 (20%)	4 (8%)



# ASTX660 in Relapsed/Refractory PTCL and CTCL

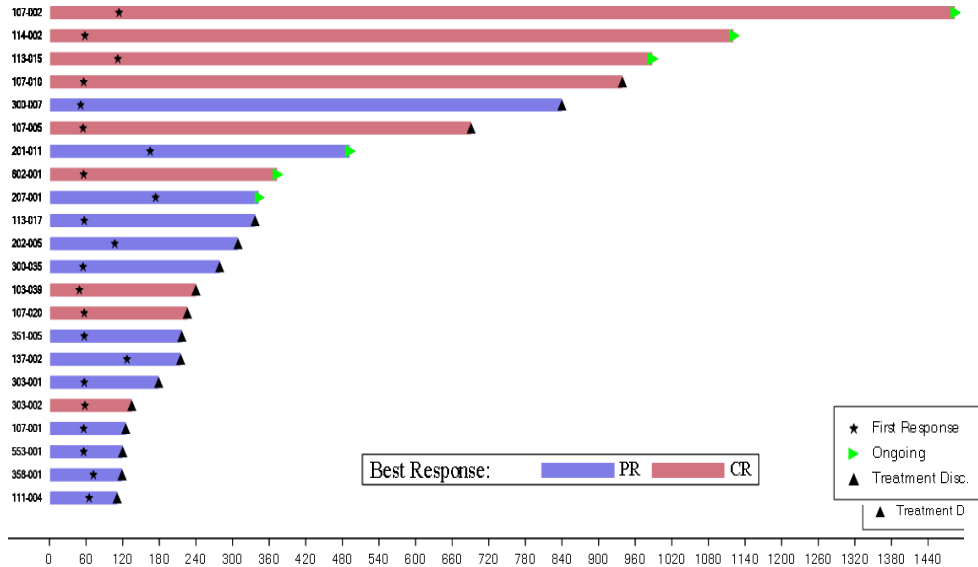


ASTX660 is an XIAP inhibitor



## Phase 2: Open Label Trial , PTCL and CTCL cohorts

	PTCL(n=99)	CTCL (n=51)
ORR	22% (22 pt)	28% (14 pt)
PFS median	1.8 mo	5.5 mo
DOR median	6.5 mo	8.8 mo

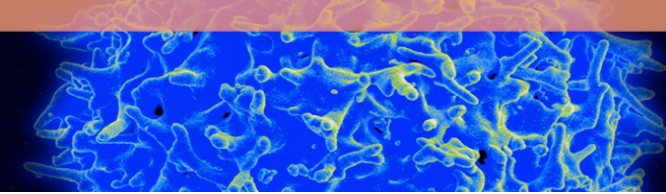


### Best overall response PTCL

N = 96

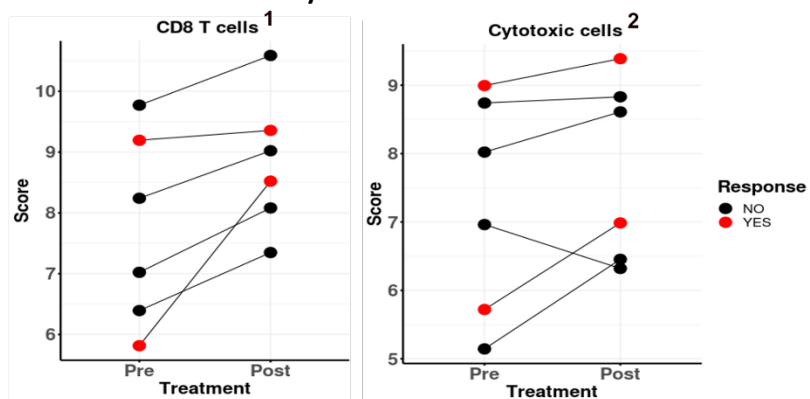
<b>CR</b>	<b>9 (9.4%)</b>
<b>PR</b>	<b>13 (13.5%)</b>
<b>SD</b>	<b>16 (16.7%)</b>
<b>PD</b>	<b>58 (60.4%)</b>

# ASTX660 in Relapsed/Refractory PTCL and CTCL



## Biopsies

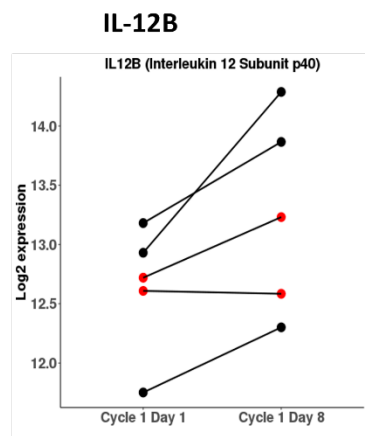
CD8 and cytotoxic cell recruitment



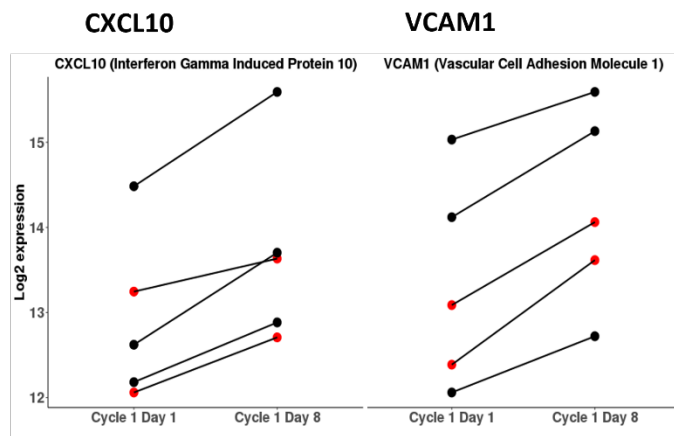
- Consistent with preclinical models, post-treatment PTCL samples show evidence of increased immune cell recruitment and soluble immune mediators

## Plasma

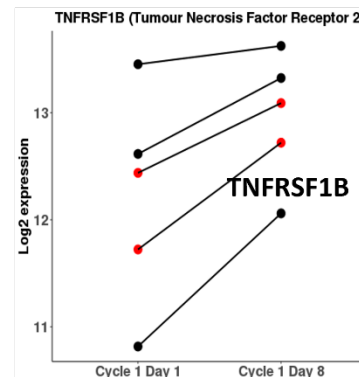
T cell differentiation



Mediators of leukocyte recruitment

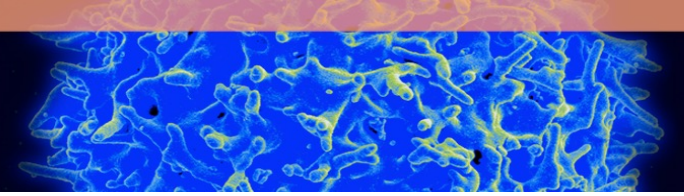


TNF pathway modulation

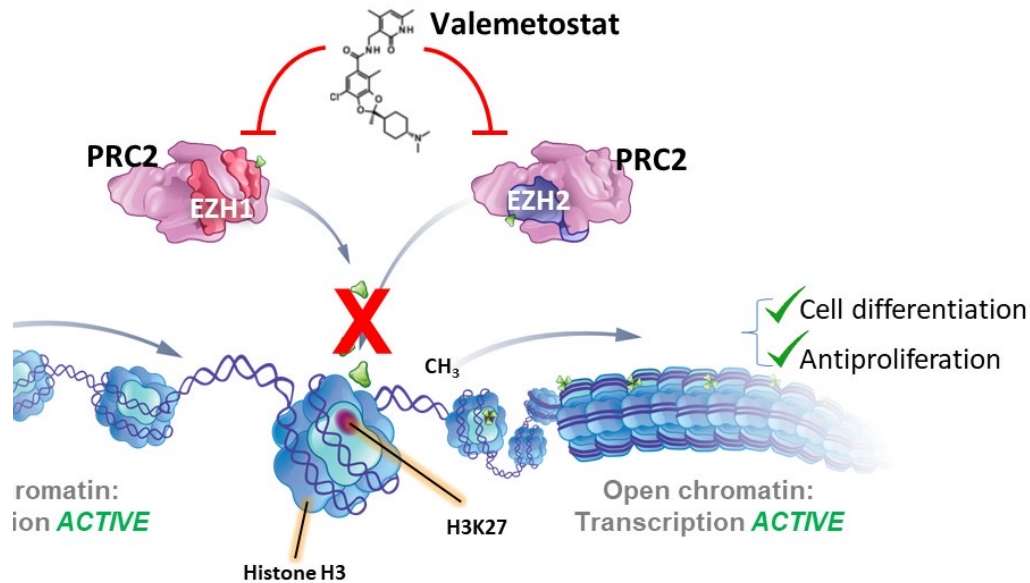


Adverse Event	Phase 2 Total (N=150) N (%)
Total Number of TEAEs	142
Subjects with >1 TEAE	68 (45.3)
Lipase increased	23 (15.3)
Rash (combined terms)	16 (10.7)
Amylase increased	10 (6.7)
Anaemia	7 (4.7)
Thrombocytopenia	7 (4.7)
Neutropenia	6 (4.0)
Febrile neutropenia	3 (2.0)
Pancreatitis	2 (1.3)
Tumor Flare	2 (1.3)
Acute kidney injury	2 (1.3)
Ejection fraction decrease	2 (1.3)
Hypercalcemia	2 (1.3)
Pruritis	2 (1.3)

# Valemetostat Tosylate: inhibitor of EZH1/EZH2



- Prevents trimethylation of H3K27
- Increases expression of genes silenced by H3K27me<sub>3</sub>, including those associated with the regulation of cell proliferation and differentiation<sup>1-4</sup>
- EZH2 is overexpressed in PTCLs and significantly overexpressed in ATL cells<sup>1,2</sup>



## Phase I/II study of valemetostat in PTCL

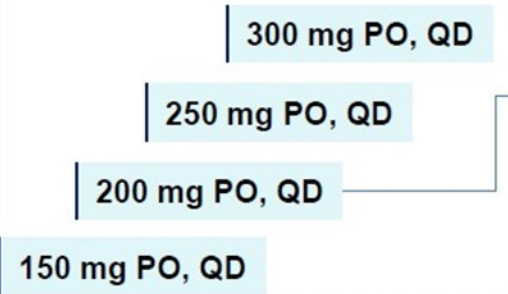
### Patients with R/R NHL

- Age ≥20 (Japan) or ≥18 (US) years
- ECOG PS 0 or 1
- Patients with ATL: positive test result for HTLV-1

### Part 1: Dose Escalation

Japan

#### R/R NHL (all-comers)<sup>b</sup>



### Part 2: Dose Expansion

Japan and US

#### R/R ATL

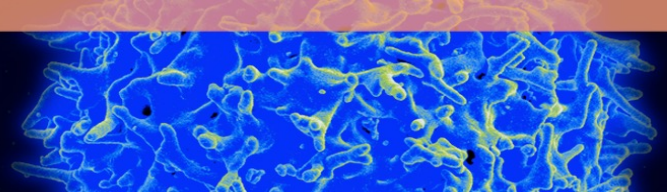
Valemetostat 200 mg PO, QD

#### R/R PTCL

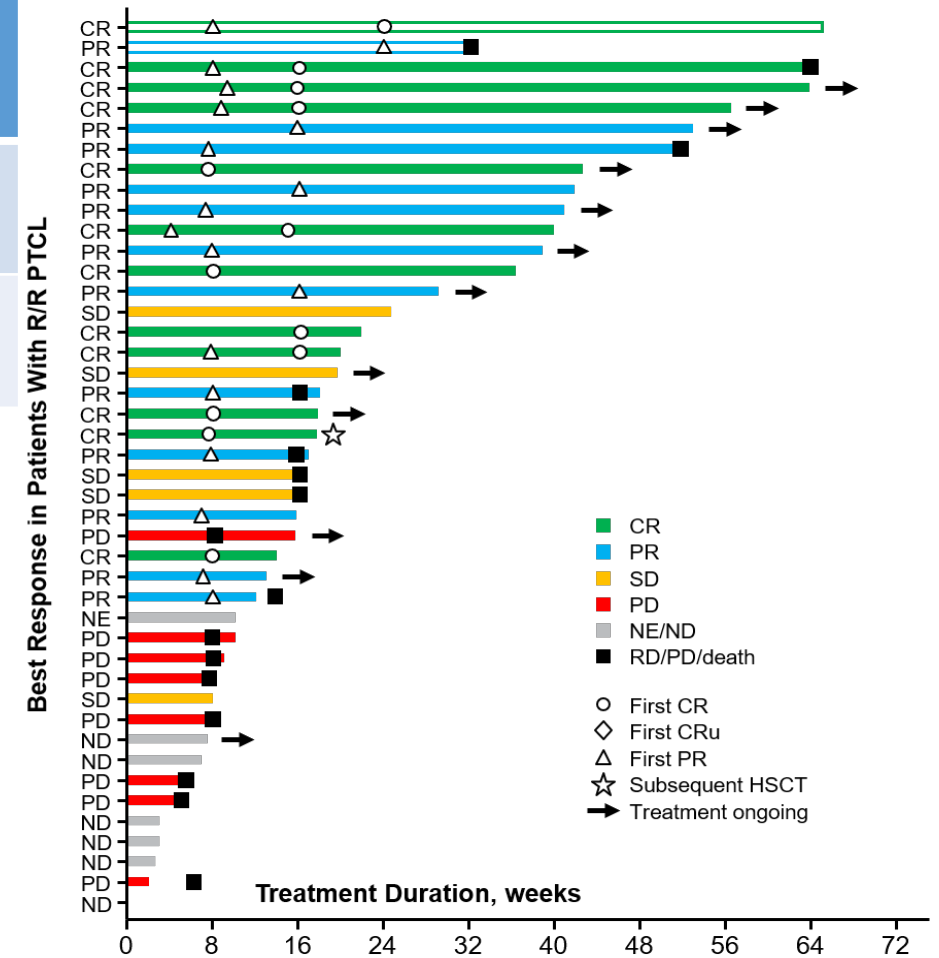
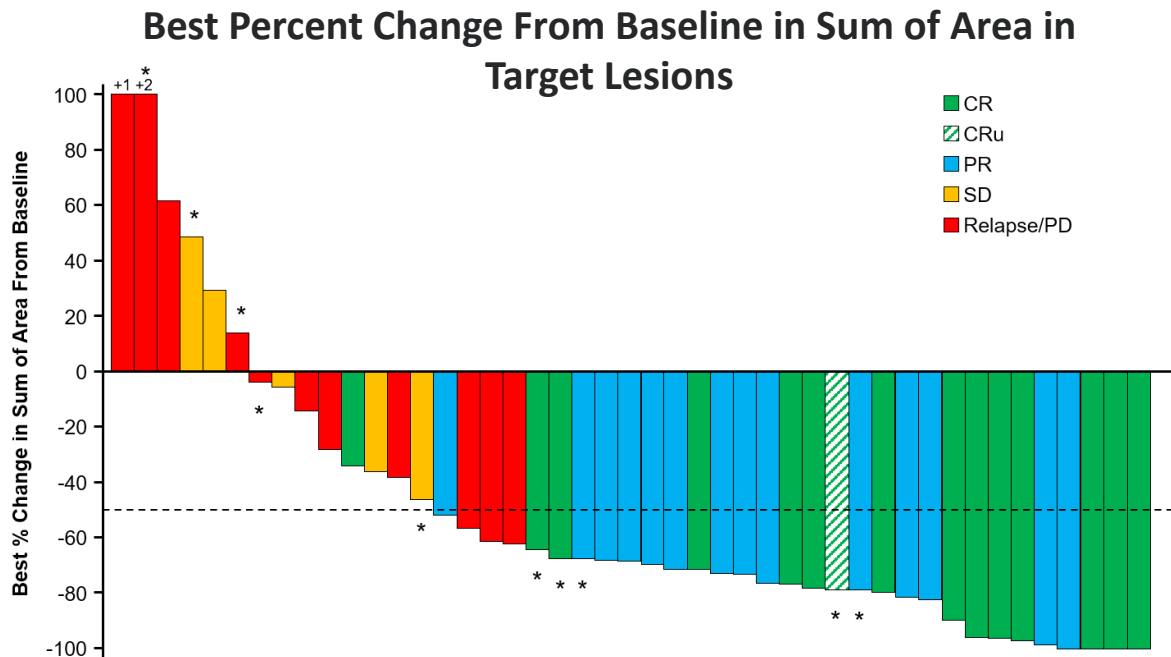
Valemetostat 200 mg PO, QD

1. Honma D, et al. *Cancer Sci.* 2017;108(10):2069-2078. 2. Yamagishi M, et al. *Cell Rep.* 2019;29:2017. Abstract 4670. 4. Nakagawa M, et al. ASH 2017. Abstract 590. 5. Juan AH, et al. *Cell Rep.* 2016;17(5):1369-1382. 6. Peirs S. *Immunol Rev.* 2015;263:50-67.

# Phase I/II study of Valemetostat: results



	All PTCL (n=44)	AITL (n=17)	PTCL-NOS (n=20)	ALCL (n=2)	ATLL (N=14)
ORR (%)	54.5%	65%	50%	50%	57%
CR (%)	27.3%	47%	20%	50%	28%



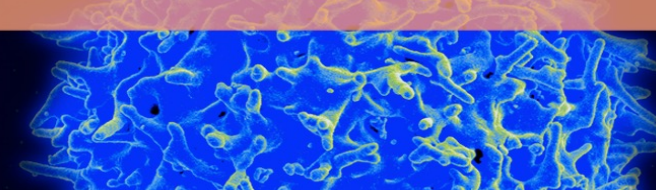


# Phase I/II study of valemestostat: adverse events

- Grade  $\geq 3$  platelet count decreased and thrombocytopenia<sup>a</sup> occurred in 13 (16.9%) and 2 (2.6%) patients with all histologies, respectively

Most Common TEAEs (occurring in $\geq 20\%$ of patients with TCL) <sup>b</sup>	All Histologies <sup>c</sup> (N=77)		PTCL (N=44)		ATL (N=14)	
	All grades	Grade $\geq 3$	All grades	Grade $\geq 3$	All grades	Grade $\geq 3$
Platelet count decreased <sup>d</sup>	47 (61.0)	13 (16.9)	21 (47.7)	5 (11.4)	9 (64.3)	3 (21.4)
Dysgeusia	40 (51.9)	0	20 (45.5)	0	8 (57.1)	0
Anemia	31 (40.3)	9 (11.7)	15 (34.1)	6 (13.6)	5 (35.7)	1 (7.1)
Neutrophil count decreased	27 (35.1)	18 (23.4)	13 (29.5)	8 (18.2)	6 (42.9)	5 (35.7)
Alopecia	26 (33.8)	0	12 (27.3)	0	6 (42.9)	0
WBC count decreased	23 (29.9)	12 (15.6)	10 (22.7)	6 (13.6)	4 (28.6)	3 (21.4)
Diarrhea	22 ( 28.6)	1 (1.3)	13 (29.5)	0	3 (21.4)	0
Lymphocyte count decreased	22 ( 28.6)	17 (22.1)	7 (15.9)	6 (13.6)	2 (14.3)	2 (14.3)
ALT increased	16 (20.8)	1 (1.3)	7 (15.9)	0	3 (21.4)	1 (7.1)
Nausea	16 (20.8)	0	11 (25.0)	0	3 (21.4)	0

# Phase II (Valentine) study of valemestostat



- 133 patients with relapsed/refractory PTCL enrolled
- Median 2 prior therapies
- 26% had prior stem cell transplant (32 auto, 5 allo)
- 119 efficacy evaluable
- ORR 43%
- Median PFS 5.5 mo
- Median OS 17 mo

- 57% of patients had grade  $\geq 3$  AE
- 13 pts had treatment discontinuation for AE

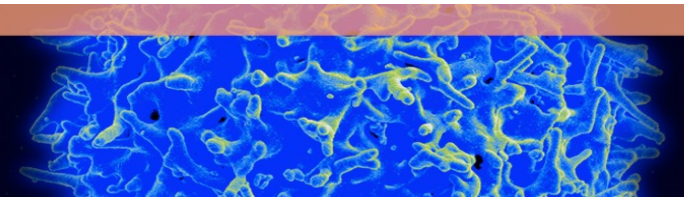
Table 1. Efficacy results per CT-based blinded independent central review assessment by PTCL subtype

Response	ALCL (ALK-positive or ALK-negative)					
	AITL (n = 42)	PTCL, NOS (n = 41)	PTCL TFH (n = 8)	ALK-negative) (n = 9)	Other <sup>a</sup> (n = 19)	All (N = 119)
ORR (CR or PR), n (%)	23 (54.8)	13 (31.7)	4 (50)	3 (33.3)	9 (47.4)	52 (43.7)
95% CI <sup>b</sup>	38.7–70.2	18.1–48.1	15.7–84.3	7.5–70.1	24.4–71.1	34.6–53.1
CR, n (%)	8 (19.0)	4 (9.8)	1 (12.5)	1 (11.1)	3 (15.8)	17 (14.3)
95% CI <sup>b</sup>	8.6–34.1	2.7–23.1	0.3–52.7	0.3–48.2	3.4–39.6	8.5–21.9
PR, n (%)	15 (35.7)	9 (22.0)	3 (37.5)	2 (22.2)	6 (31.6)	35 (29.4)
95% CI <sup>b</sup>	21.6–52.0	10.6–37.6	8.5–75.5	2.8–60.0	12.6–56.6	21.4–38.5
DOR <sup>c</sup> , median (range), months	11.9 (1.6–14.9+)	7.9 (0+–14.9+)	NE (5.1–11.1+)	3.8 (3.7–12.0+)	9.2 (3.7–9.5+)	11.9 (0+–14.9+)
95% CI <sup>d</sup>	10.8–NE	3.7–NE	5.1–NE	3.7–NE	3.7–NE	7.8–NE
DOCR <sup>e</sup> , median (range), months	NE (0+–12.0+)	11.2 (2.7+–11.2)	5.1 (5.1–5.1)	NE (8.3+–8.3+)	NE (6.5+–9.5+)	11.2 (0+–12.0+)
95% CI <sup>d</sup>	1.7–NE	4.2–NE	NE–NE	NE–NE	NE–NE	4.2–NE

Table 2. TEAEs in  $\geq 10\%$  of patients with R/R PTCL

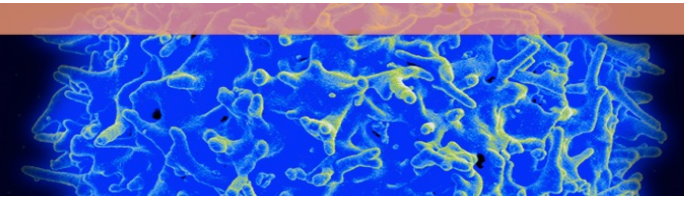
Preferred term	R/R PTCL (N = 133)	
	Any grade	Grade $\geq 3$
<b>Pts with <math>\geq 1</math> TEAE</b>	<b>128 (96.2)</b>	<b>77 (57.9)<sup>a</sup></b>
Thrombocytopenia <sup>b</sup>	66 (49.6)	31 (23.3)
Anemia <sup>c</sup>	47 (35.3)	25 (18.8)
Diarrhoea	39 (29.3)	5 (3.8)
Dysgeusia	38 (28.6)	0
Neutropenia <sup>d</sup>	35 (26.3)	23 (17.3)
COVID-19	28 (21.1)	4 (3.0)
Nausea	23 (17.3)	1 (0.8)
Cough	20 (15.0)	0
Pyrexia	20 (15.0)	0
Decreased appetite	19 (14.3)	2 (1.5)
Fatigue	19 (14.3)	2 (1.5)
Asthenia	17 (12.8)	4 (3.0)
Oedema peripheral	16 (12.0)	1 (0.8)
Pruritus	16 (12.0)	0
Alopecia	14 (10.5)	0
AST increased	14 (10.5)	1 (0.8)

# Immunotherapy in PTCL

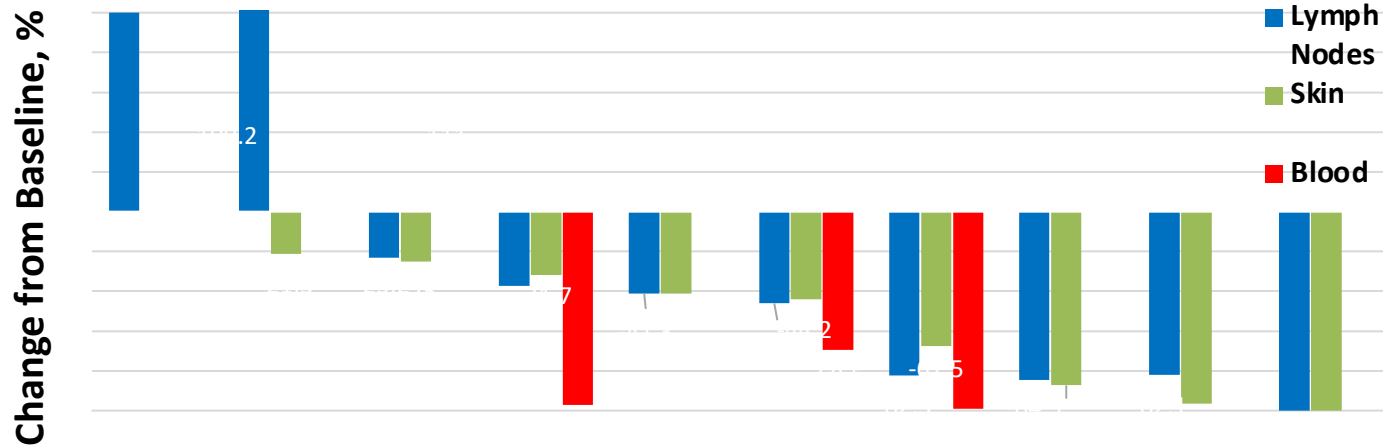


- Allogeneic SCT is potentially curative in relapsed setting
- T-cell Checkpoint inhibitors
  - Subtype specific responses
  - NK, MF/SS
  - Risk of hyper-progression and lack of predictors precludes wider use
- CD47 Strategies
  - Combination Studies ongoing (Magrolimab + Mogamulizumab in CTCL)
- CAR
  - CART-Early studies CD5, 7, 30, 37, 4, CCR4, TCRB1, others
  - ? Need for allo backup
  - Other cell types/sources
  - Allo-T, NK, Myeloid
- Bi-specifics
  - CD30, PD-1

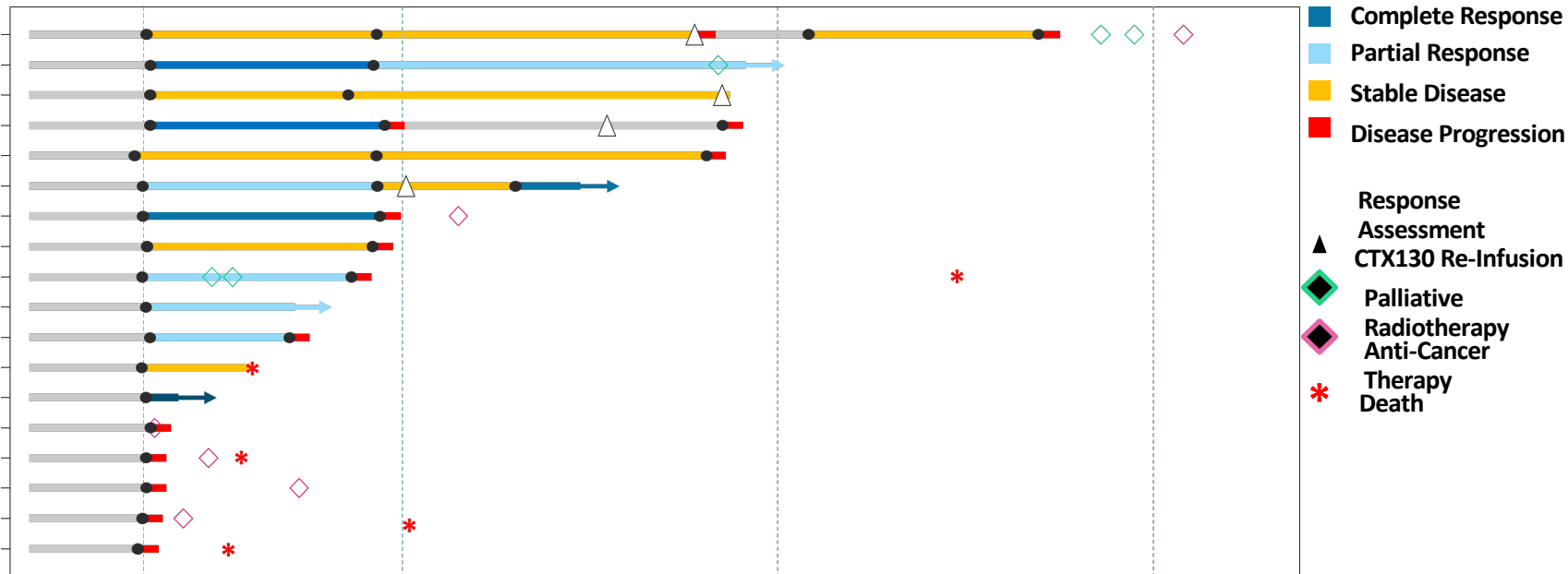
# COBALT-LYM Allogeneic CAR T trial



Responses were observed across compartments (lymph nodes, skin, blood) in patients with CTCL

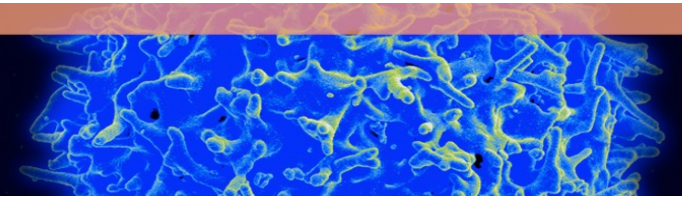


- CAR directed to CD70
- Median CD70+ expression amongst patients with relapsed / refractory T cell lymphoma was 90%
- CTX130 has demonstrated an acceptable safety profile in heavily pretreated patients with relapsed / refractory T cell lymphomas
- We have observed clinically meaningful responses with CTX130, including a 40% CR rate at DL  $\geq 3$





# COBALT-LYM Allogeneic CAR T trial



## Subject Overview

### Patient profile

- 47-year-old male with stage IVA2 transformed mycosis fungoides (tMF)
- 5 prior lines of therapy
- Refractory after last treatment with brentuximab vedotin
- CD70+ expression was 100% at baseline

### Efficacy

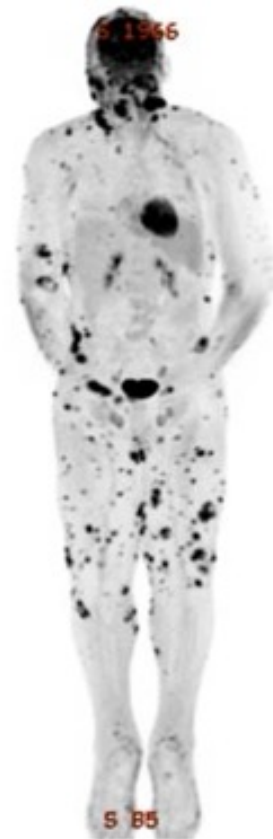
- CR at D28 after a single infusion of  $9 \times 10^8$  CAR+ T cells
- Remains in CR at M3

### Safety

- Gr 3 anemia (D3) & Gr 3 neutropenia (D4)
- All other AEs were Gr 1

## Responses

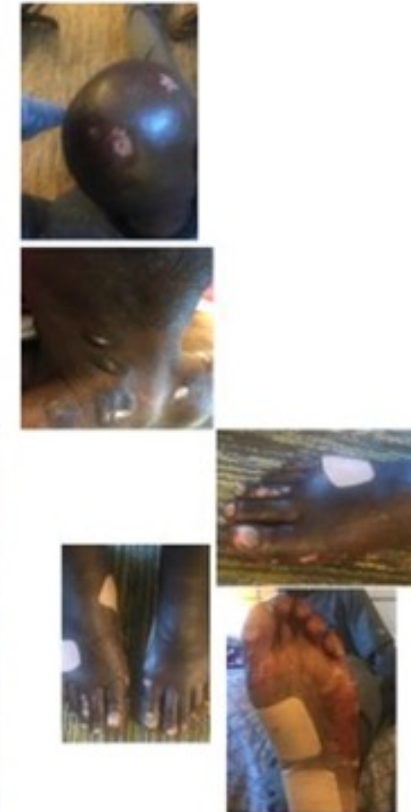
Before CTX-130 Jan 4



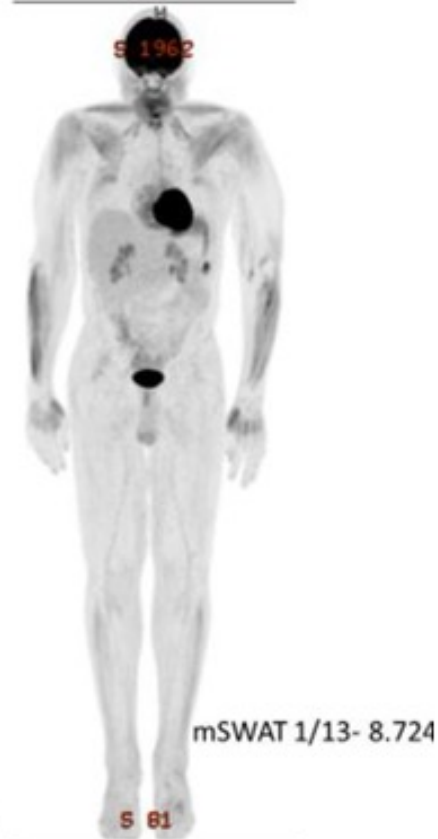
Before CTX-130 Jan 23, 2022



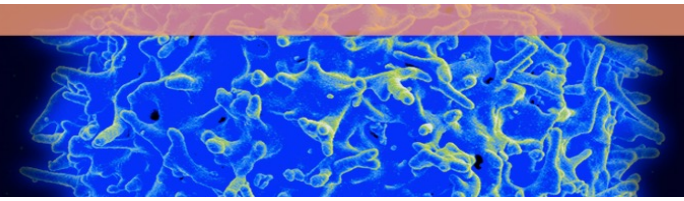
Day 18 CTX-130 Feb 11, 2022



Day 28 CTX-130 Feb 21, 2022



# Therapy of PTCL as we move forward..



- Relapsed PTCL remains heterogeneous group of diseases most with poor prognosis and little overall improvement in outcomes
- Front line therapy remains CHOP/chemo based but novel agents and combinations are being explored
- Allogenic transplant only potentially curative option at relapse or for high-risk subtypes
- New agents and combinations are promising
  - need subtype specific approaches
  - Targeted agents
- Clinical trial enrollment and international cooperation critical