Efficacy and Safety of Ublituximab in Combination with Umbralisib (U2) in Patients with Chronic Lymphocytic Leukemia (CLL) by Treatment Status: A Sub-analysis of the Phase 3 **UNITY-CLL Study**

BACKGROUND AND METHODS

- Umbralisib, a selective phosphoinositide 3-kinase delta (PI3Kδ) and casein kinase-1 epsilon (CK1E) inhibitor, is pharmacologically distinct from other PI3K inhibitors¹, with low rates of immune-mediated toxicities and discontinuations due to AEs²
- Ublituximab is a novel anti-CD20 monoclonal antibody glycoengineered for enhanced antibody-dependent cellular cytotoxicity (ADCC) that targets a unique epitope on CD20³
- Umbralisib+ublituximab (U2) prolonged progression-free survival compared to chemoimmunotherapy in the primary analysis of the randomized, multicenter, Phase 3 UNITY-CLL trial⁴
- Herein, we present a post-hoc analysis for patients treated with U2 stratified by prior treatment status

AEs: adverse events ¹Burris H, et al. Lancet Oncol 2018;19:486-96. ²Davids M, et al. Blood Adv 2021. ³Sawas A, et al. Br J Hematol 2017;177(2):243-253. 4Gribben J, et al. Blood 2020;136:37-39.

Umbralisib is a Selective Inhibitor of PI3K δ and CK1 ϵ											
	Umbralisib ¹	Idelalisib ¹	Idelalisib ¹ Duvelisib ¹								
		$F \qquad O \qquad (N) \qquad (N$									
m		K _d (nM)								
	>10000	600	40	0.04							
	>10000	19	0.89	1.5							

				ŇŢO	Patient Dispositi	on & Exposure		
		HN//	HN-			Treatment-naïve N=119	Previously Treated N=91	
Isoform		K _d	(nM)	1	Treated with study drug at least 1 day, n (%)	116 (97)	90 (99)	
ΡΙ3κα	>10000	600	40	0.04	Randomized but not treated, n (%)	3 (3)	1(1)	
ΡΙ ₃ Κβ	>10000	19	0.89	1.5	Treatment exposure, median (range), months Ublituximab	30(0.03 - 46)	15(0.07 - 42)	
ΡΙ3Κγ	1400	9.1	0.21	0.31	Umbralisib	27 (0.03 – 47)	16 (0.26 – 44)	
ΡΙ3Κδ	6.2	1.2	0.047	0.068	Treatment status, n (%)			
CK1ε	180	>30,000	>30,000	>6,000	 Ongoing Discontinued regimen 	60 (50) 59 (50)	21 (23) 70 (77)	
Umbralisib is a	an oral, once dail	y, selective inhibi	tor of PI3Kδ and (CK1ε	Progressive disease during treatment	13 (11)	39 (43)	
Umbralisib ha	s >1000-fold grea	ater selectivity fo	r Pl3K8 compared	d to α and	Adverse event	25 (21)	10 (11)	
ßisoforms		/	5 1		Withdrawal of consent	10 (8)	13 (14)	
 Umbralicibic 	alco basa fald m	ore coloctive for [DIall & ralative to 1		Investigator decision	7 (6)	4 (4)	
• Umbrailsib is also >200-τοία more selective for Pl3Ko relative to Pl3Kγ					Death	3 (3)	2 (2)	
CK1E: casein kinase 1E; PI3k: phosphoinositide 3-kinase. 1. Burris HA, et al. Lancet Oncol. 2018;19(4):486-496.					Other	1(1)	1(1)	
2. Data on File [TGR 001]	. TG Therapeutics, Inc, Nev	w York City, NY.			Lost to follow-up	-	1(1)	

Ublituximab is a Novel Glycoengineered anti-CD20 mAb

- Ublituximab (TG-1101, UTX) is a novel, glycoengineered, Type I, anti-CD20 monoclonal antibody with several defining features:
- Targets a unique epitope on the CD20 antigen Type I maintains complement-dependent
- cytotoxicity (CDC) - Glycoengineered to enhance affinity for all variants of FcyRIIIa receptors, thereby demonstrating greater antibody-dependent cellular cytotoxicity (ADCC) activity than rituximab and ofatumumab, including in 17p

deleted CLL cells¹

Ublituximab 1009 1000000

Red: Key of atumumab epitope amino acids Purple: Core amino acids of ublituximab epitope Figure adapted from Ruuls et al, 2008²

As a single agent, ublituximab is active in rituximab-refractory CLL and Non-Hodgkin's lymphoma (NHL) patients²

BLA currently under review for CLL BLA: biologics license application; CLL: chronic lymphocytic leukemia. 1. Le Garff-Tavernier M, et al. Leukemia. 2014;28:230-233; 2. Ruuls S, et al. Biotechnology J. 2008; 3:1157-1171.



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Demographics & Baseline Characteristics										
Characteristic	Treatment- naïve N=119	Previously Treated N=91								
Age, median (range), years	68 (39 – 88)	65 (43 – 87)								
<65 years, n (%)	43 (36)	42 (46)								
≥65 years, n (%)	76 (64)	49 (54)	Over 50% of TN & PT							
ECOG-PS 0 – 1 / 2, %	96/3	98/2	natients exhibited at							
High-risk features, n (%)										
Del(17p)	6 (5)	13 (14)	least 1 high-risk featur							
Del(11q)	25 (21)	22 (24)								
Unmutated IGHV	61 (51)	52 (57)	In PT population,							
Prior therapies, median (range)	-	2 (1 – 9)	patients were heavily							
Prior therapy type, n (%)			protropted with p							
Anti-CD20 antibody	-	83 (91)	precieated with a							
Chemoimmunotherapy	-	81 (89)	median of 2 prior lines							
BTK inhibitor	-	14 (15)	extending up to 9 prior							
Venetoclax	-	1 (1)	lines of thorapy							
PI3K Inhibitor ^a	-	1(1)	ines of therapy							

heavy-chain variable gene; PI3k: phosphoinositide 3-kinase. ^aTrial excluded prior PI3K exposure; however, 1 patient with prior PI₃K did enroll and was treated with U₂

IRC-assessed & Investigator-assessed Progression-free Survival With U₂ in Treatment-naïve Population

ırvival (%)	100 · 90 · 80 · 70 ·	_		╘╫╾┶╌┶╁╾╪	- 1.	═┺╍╫╍╧╼╌╌┥	┝╴╌┾╸	++		└ <u>╷</u>	┶╋╼╺╫╫╫╢ <mark>┙</mark>	╗╫╫╌╫┼╴ ╊ _{╋╋╫╫╴╺╁} ╶╫╫╴	┿╫╫╴ ╧╫╫╸	₩₽ _₽	+ (Censore	ed	
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rogre	20	_	IR	С		38 . (33.2 -	- 5 - NE)		76.6		-							
₽	10		Investi	gator		NF (38.5 -	R - NE)		81.4									
	0	0	<u>,</u>	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48
			J		2		Tim	e Since	e Ranc	lomiza	ntion (I	month	s)			•		·
IRC	C-U2	119	106	100	94	90	84	79	76	72	68	39	25	12	6	3	0	
In۱	/-U2	119	106	98	92	88	87	82	79	75	70	49	37	18	11	7	1	0
CI: cc U2: u	onfide Imbra	nce i lisib -	nterval <mark>;</mark> + ublitu>	Inv: inv kimab	estiga	ator; IRC	C: indep	pendent	t reviev	v comm	nittee; N	NR: not	reache	d; PFS:	progre	ession-f	ree sur\	/ival;

STUDY DESIGN

UNITY-CLL Study Design (UTX-TGR-304)

Trial also initially randomized patients to umbralisib and ublituximab monotherapy cohorts, contribution analysis on first 50 subjects per arm supported closure of enrollment to those arms

In primary analysis, U2 improved PFS compared to chemoimmunotherapy in both treatment-naïve and previously treated populations

The current analysis focuses on outcomes in U2-treated patients by prior treatment status. Data cutoff is the same as primary analysis – May 1, 2020

CLL: chronic lymphocytic leukemia; CR: complete response; DOR: duration of response; ECOG PS: Eastern Cooperative Oncology Group performance status; IRC: independent review committee; IV: intravenously; ORR: overall response rate; PFS: progressionfree survival; PO: orally; Q3: every 3; QD: daily; uMRD: undetectable minimal residual disease; D1/2 signifies split doses ublituximab (150 mg / 750 mg) obinutuzumab (100 mg /900 mg); cycles were 28 days. U2 combination continued until progressive disease, unacceptable toxicity, or withdrawal of consent.

American Society of Hematology 63rd Congress December 11, 2021.

RESULTS



Safety Overview											
AE Type, n (%)Treatment-naïvePreviously TreatedN=116N=90											
29.5	14.6										
26.5	15.6										
116 (100)	90 (100)										
53 (45.7)	42 (46.7)										
96 (82.8)	73 (81.1)										
25 (21.6)	10 (11.1)										
4 (3.4) ^a	4 (4.4) ^b										
	Safety Overview Treatment-naïve N=116 29.5 26.5 116 (100) 53 (45.7) 96 (82.8) 25 (21.6) 4 (3.4) ^a										

AE: adverse event. Safety was assessed in all patients who received ≥1 dose of treatment. *Percentages for discontinuations due to AEs differ from Disposition table, which is out of ITT population (TN N=119, PT N=91). ^aFatal AEs in TN cohort: neutropenic sepsis (related), cardiac arrest (unrelated), acute myocardial infarction (unrelated), progressive multifocal leukoencephalopathy (related) ^bFatal AEs in PT cohort: glioblastoma (unrelated), sepsis (related), sudden cardiac death (related), pneumonia (unrelated).

All Causality AEs (≥25%) in Any Treatment Arm											
		Treatme N=	n t-naïve 116		Previously Treated N=90						
Es, n (%)	Grade 1	Grade 2	Grade 3	Grade 4	Grade 1	Grade 2	Grade 3	Grade 4			
ausea	46 (40)	22 (19)	1(1)	-	22 (24)	12 (13)	2 (2)	-			
arrhea	23 (20)	23 (20)	16 (14)	-	30 (33)	14 (16)	9 (10)	-			
R	11 (10)	49 (42)	1(1)	-	2 (2)	29 (32)	2 (2)	1 (1)			
tigue	27 (23)	19 (16)	4 (3)	-	8 (9)	14 (16)	-	-			
eadache	31 (27)	9 (8)	-	-	10 (11)	2 (2)	1(1)	-			
bugh	24 (21)	9 (8)	-	-	12 (13)	14 (16)	-	-			
eutropenia	-	2 (2)	10 (9)	18 (16)	1(1)	2 (2)	17 (19)	19 (21)			
ecreased appetite	23 (20)	4 (3)	2 (2)	-	9 (10)	2 (2)	-	-			
nills	16 (14)	11 (10)	1(1)	-	10 (11)	12 (13)	-	-			
vrexia	16 (14)	8 (7)	1(1)	-	18 (20)	8 (9)	-	-			

AEs: adverse events; IRR: infusion related reaction; URTI: upper respiratory tract infection

Events of Clinical Interest – PI3K Specific										
		Treatment- N=116	naïve	Previously Treated N=90						
Es, n (%)	Any	Grade ≥3	Discontinued U2 ^b	Any	Grade ≥3	Discontinued U2 ^b				
LT elevation	27 (23)	14 (12)	3 (3)	8 (9)	3 (3)	-				
ST elevation	21 (18)	9 (8)	3 (3)	7 (8)	2 (2)	-				
ash ^a	17 (15)	4 (3)	1(1)	9 (10)	1(1)	1(1)				
neumonia	14 (12)	8 (7)	1(1)	18 (20)	10 (11)	1(1)				
olitis (non-infectious) ^ª	8 (7)	3 (3)	-	2 (2)	1(1)	1(1)				
neumonitis	4 (3)	1(1)	2 (2)	2 (2)	-	1(1)				
pportunistic infections ^a	3 (3)	1(1)	1(1)	3 (3)	1(1)	-				

AE: adverse event; PT: previously treated; TN: treatment-naïve; U2: umbralisib + ublituximab. ^aGroup includes multiple MedDRA terms. ^bReported as n (%) of patients whose primary reason for discontinuing all therapy was due to respective AEs.

CONCLUSIONS

- UNITY-CLL is the first randomized trial of a PI3Kδ inhibitor (umbralisib) versus chemoimmunotherapy in treatment-naïve CLL
- U2 is a novel, non-chemotherapeutic regimen that is highly active in the treatment of CLL, with demonstrated efficacy including prolonged progressionfree survival compared to chemoimmunotherapy (O+Chl) and a well-tolerated safety profile
- U2 demonstrated a tolerable safety profile in both the treatment-naïve and previously treated populations
- U2 regimen is being explored as a backbone for triplet combinations, including combinations with venetoclax and BTK inhibitors

ACKNOWLEDGMENTS

Morphosys, Novartis, Takeda, and TG Therapeutics, Inc.

- Thank you to the patients, their families and caregivers for their participation
- Thank you to the investigators, research staff, and the entire UNITY-CLL study
- team Disclosure RJ - AbbVie Inc., Adaptive Biotechnologies, ADC Therapeutics, AstraZeneca, Genentech, Jannsen, MEI Pharma, Pharmacyclics LLC, an AbbVie Company, Sanofi, SecuraBio, TeneoBio, TG Therapeutics, Inc., and Verastem. WJ - AbbVie Inc., AstraZeneca, Bayer, BeiGene, Celgene, Celltrion Healthcare, Debbiopharm, Epizyme, Incyte, Janssen, Loxo Oncology, Mei Pharma, Merck, MorphoSys, Novo Nordisk, Roche, Sandoz, Takeda, and TG Therapeutics, Inc. IWF - AbbVie Inc., Acerta Pharma, Agios, ArQule, AstraZeneca, BeiGene, Calithera Biosciences, Celgene, Century Therapeutics, Constellation Pharmaceuticals, Curis, FormaTherapeutics, Forty Seven, Genentech, Gilead Sciences, Inc., Great PointPartners, Hutchison MediPharma, IGM Biosciences, Iksuda Therapeutics, Incyte, Infinity Pharmaceuticals, Janssen, Johnson & Johnson, Juno Therapeutics, Karyopharm Therapeutics, Kite, a Gilead Company, Loxo Oncology, Merck, MorphoSys, Novartis, Nurix Therapeutics, Pfizer, Pharmacyclics LLC, an AbbVie Company, Portola Pharmaceuticals, Rhizen Pharmaceuticals, Roche, Sarah Cannon Research Institute, Seagen Inc., Seattle Genetics, Servier Pharmaceuticals, Takeda, Teva, TG Therapeutics, Inc., Trillium Therapeutics, Triphase Research & Development Corp., Unum Therapeutics, Verastem, Vincerx Pharma, and Yingli Pharmaceuticals. SG, SFZ and SK have nothing to disclose. KG - AbbVie Inc., Amgen, AstraZeneca, BeiGene, Gilead Sciences, Inc., GSK, Janssen, Karyopharm Therapeutics, Novartis, Pfizer, Polish Myeloma Consortium, Next Generation Hematology Association, Roche, Sandoz, Sanofi -Genzyme, Takeda, Teva, and TG Therapeutics, Inc. TW - BeiGene, Bristol Meyers Squibb, Janssen, Novartis, Roche, and Takeda. JLC - BeiGene. AVD - AbbVie Inc., AstraZeneca, Bayer Oncology, BeiGene, Bristol Meyers Squibb, Genentech, Gilead Sciences, Inc., Pharmacyclics LLC, an AbbVie Company, Rigel Pharm, SecuraBio, Takeda Oncology, and TG Therapeutics, Inc. JMB - AbbVie Inc., Adaptive Biotechnologies, AstraZeneca, BeiGene, Bristol Myers Squibb, Epizyme, Kura Oncology, Kymera, MorphoSys, Roche/Genentech, Seagen Inc., Verastem, and X4 Pharmaceuticals. JG - Amgen, Blue Ridge Cancer Care, Bristol Meyers Squibb, G1 Therapeutics, Ontada, and TG Therapeutics, Inc. DFB, PS, HPM, and MSW - TG Therapeutics, Inc. SFH - AbbVie Inc., AstraZeneca, Bayer, Celgene, DTRM Biopharm, Flatiron Health Inc., Genentech, Novartis, Pharmacyclics LLC, an AbbVie Company, Seagen Inc., Servier, TG Therapeutics, Inc., and Thyme Inc. JPI - AbbVie Inc., AstraZeneca, Janssen, MEI Pharma, Novartis, Sellas, Sunesis, Takeda, and TG Therapeutics, Inc. JPS - AbbVie Inc., AstraZeneca, BeiGene, Bristol Meyers Squibb, Centessa, Lilly, Pharmacyclics LLC, an AbbVie Company, and TG Therapeutics, Inc. TS - AbbVie Inc., AstraZeneca, BeiGene, Bristol Meyers Squibb, Celgene, Dava Oncology, Jannsen, Juno therapeutics, Kite Pharma, and PCYC. DMB - AbbVie Inc., ArQule, ArQule/Merck, Ascentage Pharma,

AstraZeneca, BeiGene, DTRM Biopharma, Genentech, Juno Therapeutics/Celgene/Bristol Myers Squibb, Loxo Oncology, MEI Pharma, NCCN, Novartis, Pfizer, Pharmacyclics LLC, an AbbVie Company, TG Therapeutics, Inc., and Verastem. MS - AbbVie Inc., Adaptimmune, Adaptive Biotechnologies, AstraZeneca, Atara Biotherapeutics, Inc., BeiGene, Bristol Myers Squibb, Celgene, Eli Lilly, Epizyme, Genentech, Genmab, Gilead Sciences, Inc., Innate Pharma, Kite Pharma, MorphoSys, Mustang Bio, Pharmacyclics LLC, an AbbVie Company, Sound Biologics, Sunesis, and TG Therapeutics, Inc. JMP - Actinium Pharmaceuticals, AstraZeneca, BeiGene, Epizyme, Gilead Sciences, Inc., Incyte/MorphoSys, Kite, a Gilead Company, MEI Pharma, and Pharmacyclics LLC, an AbbVie Company. MDD - AbbVie Inc., Acerta Pharma, BeiGene, Incyte, Janssen, MacroGenics, MEI Pharma, Roche, Servier, and Takeda. NG - AbbVie Inc., Adaptive Biotechnologies, ADC Therapeutics, AstraZeneca, Bristol Myers Squibb, Epizyme, Genentech, Genmab, Gilead Sciences, Inc., Incyte, Janssen, Karyoma, Karyopharm Therapeutics, Pharmacyclics LLC, an AbbVie Company, Seattle Genetics, and TG Therapeutics, Inc. KSK - Atara Biotherapeutics, Inc., McKesson Specialty Health, Sumitomo Dainippon Pharma, TG Therapeutics, Inc., and Tolero Pharma. OAO - Dren, Kymera, Mundipharma, Myeloid Therapeutics, Nomocan, and TG Therapeutics, Inc. JGG - AbbVie Inc., AstraZeneca, Bristol Meyers Squibb, Gilead Sciences, Inc./Kite, Janssen,