

# Challenging Cases from Junior Investigators — The Application of Available and Emerging Clinical Research in the Care of Patients with Chronic Lymphocytic Leukemia

*A CE/NCPD-Accredited Virtual Event in Partnership  
with the 2022 Pan Pacific Lymphoma Conference*

**Wednesday, October 12, 2022**

**5:00 PM – 6:30 PM ET**

## **Faculty**

**Danielle Brander, MD**  
**Matthew S Davids, MD, MMSc**

**Anthony R Mato, MD, MSCE**  
**William G Wierda, MD, PhD**

## **Moderator**

**Neil Love, MD**

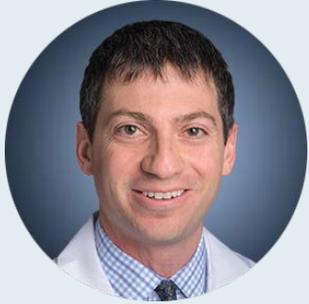
# Faculty



**Danielle Brander, MD**  
Assistant Professor of Medicine  
Director, CLL and Lymphoma Clinical  
Research Program  
Duke University Medical Center  
Durham, North Carolina



**William G Wierda, MD, PhD**  
Jane and John Justin Distinguished Chair in Leukemia  
Research in Honor of Dr Elihu Estey  
Section Chief, Chronic Lymphocytic Leukemia  
Center Medical Director  
Department of Leukemia, Division of Cancer Medicine  
Executive Medical Director, Inpatient Medical Services  
The University of Texas MD Anderson Cancer Center  
Houston, Texas



**Matthew S Davids, MD, MMSc**  
Associate Professor of Medicine  
Harvard Medical School  
Director of Clinical Research  
Division of Lymphoma  
Dana-Farber Cancer Institute  
Boston, Massachusetts



**MODERATOR**  
**Neil Love, MD**  
Research To Practice



**Anthony R Mato, MD, MSCE**  
Associate Attending  
Director, Chronic Lymphocytic Leukemia Program  
Memorial Sloan Kettering Cancer Center  
New York, New York

## Commercial Support

This activity is supported by an educational grant from Genentech, a member of the Roche Group.

## Dr Love — Disclosures

**Dr Love** is president and CEO of Research To Practice. Research To Practice receives funds in the form of educational grants to develop CME activities from the following companies: AbbVie Inc, Adaptive Biotechnologies Corporation, ADC Therapeutics, Agios Pharmaceuticals Inc, Alexion Pharmaceuticals, Amgen Inc, Array BioPharma Inc, a subsidiary of Pfizer Inc, Astellas, AstraZeneca Pharmaceuticals LP, Aveo Pharmaceuticals, Bayer HealthCare Pharmaceuticals, BeiGene Ltd, BeyondSpring Pharmaceuticals Inc, Blueprint Medicines, Boehringer Ingelheim Pharmaceuticals Inc, Bristol-Myers Squibb Company, Celgene Corporation, Clovis Oncology, Coherus BioSciences, CTI BioPharma Corp, Daiichi Sankyo Inc, Eisai Inc, Elevation Oncology Inc, EMD Serono Inc, Epizyme Inc, Exact Sciences Corporation, Exelixis Inc, Five Prime Therapeutics Inc, Foundation Medicine, G1 Therapeutics Inc, Genentech, a member of the Roche Group, Genmab, Gilead Sciences Inc, GlaxoSmithKline, Grail Inc, Halozyme Inc, Helsinn Healthcare SA, ImmunoGen Inc, Incyte Corporation, Ipsen Biopharmaceuticals Inc, Janssen Biotech Inc, administered by Janssen Scientific Affairs LLC, Jazz Pharmaceuticals Inc, Karyopharm Therapeutics, Kite, A Gilead Company, Kronos Bio Inc, Lilly, Loxo Oncology Inc, a wholly owned subsidiary of Eli Lilly & Company, MEI Pharma Inc, Merck, Mersana Therapeutics Inc, Mirati Therapeutics Inc, Natera Inc, Novartis, Novartis Pharmaceuticals Corporation on behalf of Advanced Accelerator Applications, Novocure Inc, Oncopeptides, Pfizer Inc, Pharmacyclics LLC, an AbbVie Company, Puma Biotechnology Inc, Regeneron Pharmaceuticals Inc, Sanofi, Seagen Inc, Servier Pharmaceuticals LLC, Sumitomo Dainippon Pharma Oncology Inc, Taiho Oncology Inc, Takeda Pharmaceuticals USA Inc, TerSera Therapeutics LLC, Tesaro, A GSK Company, TG Therapeutics Inc, Turning Point Therapeutics Inc, Verastem Inc and Zymeworks Inc.

# The University of Nebraska Medical Center (UNMC) and Research To Practice (RTP) Planners, Staff and Reviewers

The below planning committee members have nothing to disclose: Neil Love, MD — RTP President and Planner, Atif Hussein, MD — RTP Reviewer, Renee Paulin, MSN, RN, CWOCN — UNMC Planner and Reviewer, Brenda Ram, CMP, CHCP — UNMC Planner, Michele Williams, DNP, AGPCNP-BC — RTP Reviewer, and Kathryn Ault Ziel, PhD — RTP Staff and Planner.

# Accreditation Information



In support of improving patient care, this activity has been planned and implemented by University of Nebraska Medical Center and Research To Practice. University of Nebraska Medical Center is jointly accredited by the Accreditation Council for Continuing Medical Education (ACCME), the Accreditation Council for Pharmacy Education (ACPE), and the American Nurses Credentialing Center (ANCC), to provide continuing education for the healthcare team.

## **Physicians**

The University of Nebraska Medical Center designates this live activity for a maximum of 2.0 *AMA PRA Category 1 Credit™*. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

## **Nurses**

The University of Nebraska Medical Center designates this activity for 2.0 ANCC contact hours. Nurses should only claim credit for the actual time spent participating in the activity.

## **Support Statement**

This activity is supported by an educational grant from Genentech, a member of the Roche Group.

## Dr Brander — Disclosures

<b>Advisory Committee</b>	AbbVie Inc, Genentech, a member of the Roche Group, Pfizer Inc, TG Therapeutics Inc
<b>Consulting Agreements</b>	AbbVie Inc, Genentech, a member of the Roche Group, Pfizer Inc, Pharmacyclics LLC, an AbbVie Company
<b>Contracted Research</b>	AbbVie Inc, Acerta Pharma — A member of the AstraZeneca Group, ArQule Inc, Ascentage Pharma, AstraZeneca Pharmaceuticals LP, BeiGene Ltd, Bristol-Myers Squibb Company, Catapult Therapeutics, CATO SMS, Celgene Corporation, DTRM Biopharma Co Ltd, Genentech, a member of the Roche Group, Juno Therapeutics, a Celgene Company, MEI Pharma Inc, Newave Pharmaceutical Inc, Novartis, Pharmacyclics LLC, an AbbVie Company, TG Therapeutics Inc
<b>Nonrelevant Financial Relationship</b>	CLL Society (expert medical council), NCCN (panel member)

# Dr Davids — Disclosures

<b>Consulting Agreements</b>	AbbVie Inc, Adaptive Biotechnologies Corporation, Ascentage Pharma, AstraZeneca Pharmaceuticals LP, BeiGene Ltd, Bristol-Myers Squibb Company, Celgene Corporation, Genentech, a member of the Roche Group, Janssen Biotech Inc, Lilly, MEI Pharma Inc, Merck, Ono Pharmaceutical Co Ltd, Pharmacyclics LLC, an AbbVie Company, Takeda Pharmaceuticals USA Inc, TG Therapeutics Inc
<b>Contracted Research</b>	Ascentage Pharma, AstraZeneca Pharmaceuticals LP, Genentech, a member of the Roche Group, MEI Pharma Inc, Novartis, Surface Oncology, TG Therapeutics Inc
<b>Honoraria</b>	Aptitude Health, Curio Science
<b>Nonrelevant Financial Relationship</b>	Bio Ascend

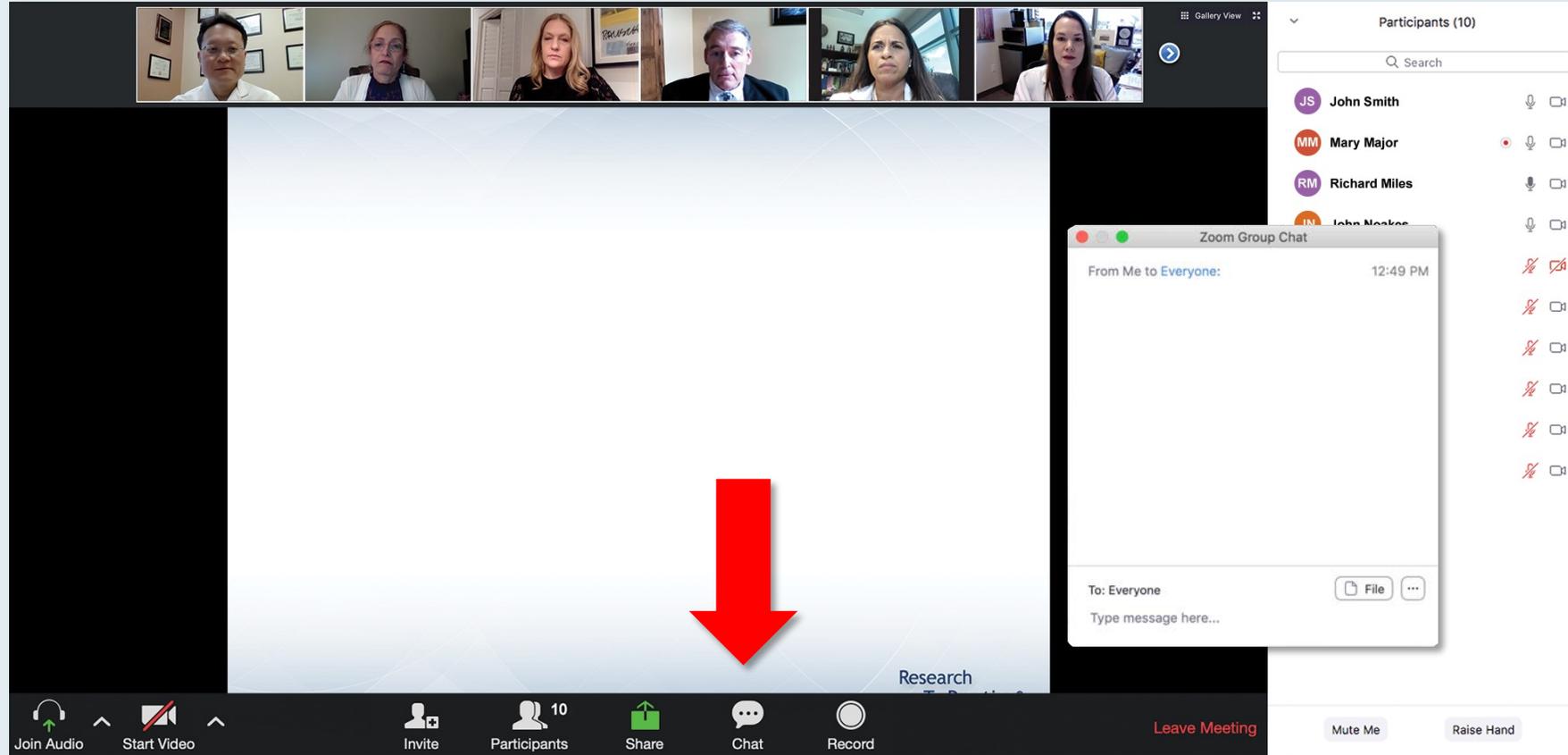
## Dr Mato — Disclosures

<b>Consulting Agreements and Data and Safety Monitoring Board/Committee</b>	AbbVie Inc, Acerta Pharma — A member of the AstraZeneca Group, Adaptive Biotechnologies Corporation, Celgene Corporation, DTRM Biopharma Co Ltd, Genentech, a member of the Roche Group, Genmab, Johnson & Johnson Services Inc, Nurix Therapeutics Inc, Octapharma Plasma, Pharmacyclics LLC, an AbbVie Company, Sunesis Pharmaceuticals Inc, TG Therapeutics Inc, Verastem Inc
<b>Contracted Research</b>	AbbVie Inc, Acerta Pharma — A member of the AstraZeneca Group, Adaptive Biotechnologies Corporation, DTRM Biopharma Co Ltd, Genentech, a member of the Roche Group, Genmab, Johnson & Johnson Services Inc, Loxo Oncology Inc, a wholly owned subsidiary of Eli Lilly & Company, Nurix Therapeutics Inc, Octapharma Plasma, Pharmacyclics LLC, an AbbVie Company, Regeneron Pharmaceuticals Inc, Sunesis Pharmaceuticals Inc, TG Therapeutics Inc

# Dr Wierda — Disclosures

<b>Contracted Research</b>	AbbVie Inc, Acerta Pharma — A member of the AstraZeneca Group, Bristol-Myers Squibb Company, Cyclacel Pharmaceuticals Inc, Genentech, a member of the Roche Group, Gilead Sciences Inc, GlaxoSmithKline, Janssen Biotech Inc, Juno Therapeutics, a Celgene Company, Kite, A Gilead Company, Loxo Oncology Inc, a wholly owned subsidiary of Eli Lilly & Company, Miragen Therapeutics Inc, Novartis, Oncternal Therapeutics, Pharmacyclics LLC, an AbbVie Company, Sunesis Pharmaceuticals Inc, Xencor
<b>Nonrelevant Financial Relationship</b>	National Comprehensive Cancer Network (Chair, CLL)

# We Encourage Clinicians in Practice to Submit Questions



Feel free to submit questions now before the program begins and throughout the program.

# Familiarizing Yourself with the Zoom Interface

## Expand chat submission box

The screenshot shows a Zoom meeting interface. At the top, there are video thumbnails for participants: RTP Coordinat..., Kirsten Miller, RTP Mike Rivera, and Lisa Suarez. Below the thumbnails is a slide titled "Meet The Professor Program Participating Faculty" with six faculty members listed:

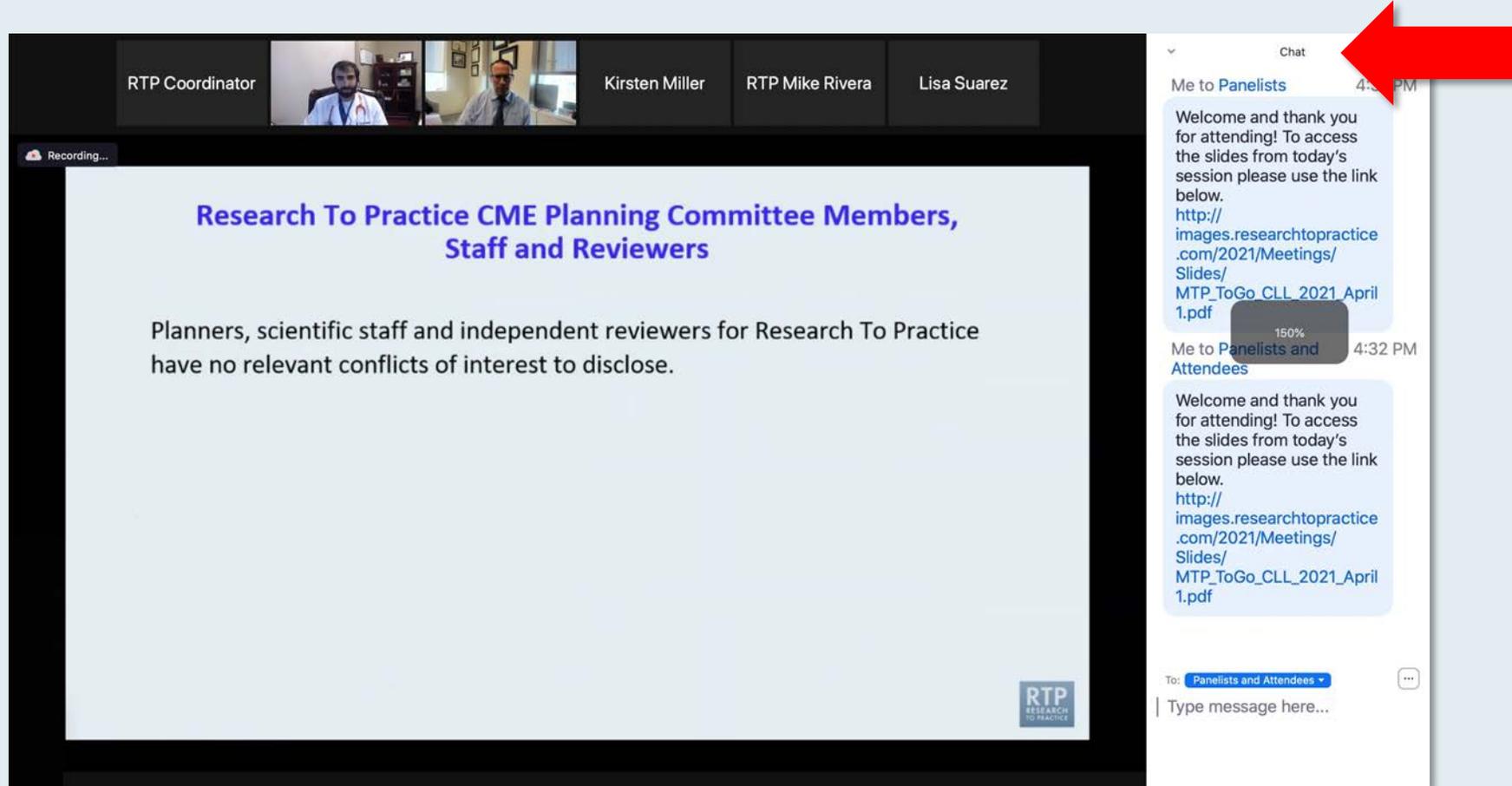
- Nancy L Bartlett, MD**  
Professor of Medicine  
Koman Chair in Medical Oncology  
Washington University School of Medicine  
St Louis, Missouri
- Jonathan W Friedberg, MD, MMSc**  
Samuel E Durand Professor of Medicine  
Director, James P Wilmot Cancer Institute  
University of Rochester  
Rochester, New York
- Carla Casulo, MD**  
Associate Professor of Medicine  
Division of Hematology/Oncology  
Director, Hematology/Oncology Fellowship Program  
University of Rochester  
Wilmot Cancer Institute  
Rochester, New York
- Brian T Hill, MD, PhD**  
Director, Lymphoid Malignancy Program  
Cleveland Clinic Taussig Cancer Institute  
Cleveland, Ohio
- Christopher R Flowers, MD, MS**  
Chair, Professor  
Department of Lymphoma/Myeloma  
The University of Texas MD Anderson Cancer Center  
Houston, Texas
- Brad S Kahl, MD**  
Professor of Medicine  
Washington University School of Medicine  
Director, Lymphoma Program  
Siteman Cancer Center  
St Louis, Missouri

The chat window on the right shows a message from "Me to Panelists" at 4:31 PM with a link to a PDF slide. Below it is a message from "Me to Panelists and Attendees" at 4:32 PM with the same link. At the bottom of the chat window, there is a dropdown menu set to "Panelists and Attendees" and a text input field "Type message here...". A red arrow points to the white line above the input field, indicating how to expand the chat box.

Drag the white line above the submission box up to create more space for your message.

# Familiarizing Yourself with the Zoom Interface

## Increase chat font size



The screenshot displays a Zoom meeting interface. At the top, there are video thumbnails for participants: RTP Coordinator, Kirsten Miller, RTP Mike Rivera, and Lisa Suarez. The main content area shows a slide titled "Research To Practice CME Planning Committee Members, Staff and Reviewers" with the text: "Planners, scientific staff and independent reviewers for Research To Practice have no relevant conflicts of interest to disclose." On the right, the chat window is open, showing a message from "Me to Panelists" with a link to a PDF document. A red arrow points to the font size adjustment icon (a plus sign) in the chat window's header area.

**Press Command (for Mac) or Control (for PC) and the + symbol.  
You may do this as many times as you need for readability.**

# Clinicians in the Audience, Please Complete the Pre- and Postmeeting Surveys

The screenshot shows a Zoom meeting with a slide titled "Meet The Professor: Optimizing the Selection and Sequencing of Therapy for Patients with Metastatic Gastrointestinal Cancer". The slide includes the date "Wednesday, August 25, 5:00 PM – 6:00 PM EST" and identifies the faculty as "Wells A Messersmith, MD" and the moderator as "Neil Love, MD". A "Quick Survey" overlay is displayed in the center, listing various treatment combinations with radio button options. The survey options are: 

- Certizomb +/- dexamethasone
- Pomalidomide +/- dexamethasone
- Certizomb + pomalidomide +/- dexamethasone
- Ektuzumab + lenalidomide +/- dexamethasone
- Ektuzumab + pomalidomide +/- dexamethasone
- Daratumumab + lenalidomide +/- dexamethasone
- Daratumumab + pomalidomide +/- dexamethasone
- Daratumumab + bortezomib +/- dexamethasone
- Isazomb + Rd

Other options are listed as "Other". A "Submit" button is at the bottom of the survey. The Zoom interface shows 10 participants in the top right corner and a bottom toolbar with "Join Audio", "Start Video", "Invite", "Participants", "Share", "Chat", "Record", and "Leave Meeting".

The screenshot shows a Zoom meeting with a slide titled "Regulatory and reimbursement issues aside, which treatment would you recommend for a 65-year-old patient with clear cell renal cell carcinoma (ccRCC) who has a follow-up 3 years later is found to have asymptomatic disease (PS 0)?". A "Quick Poll" overlay is displayed in the center, listing eight treatment options with radio button options. The poll options are: 

- Nivolumab/ipilimumab
- Avelumab/axitinib
- Pembrolizumab/axitinib
- Pembrolizumab/lenvatinib
- Nivolumab/cabozantinib
- Tyrosine kinase inhibitor (TKI) monotherapy
- Anti-PD-1/PD-L1 monotherapy
- Other

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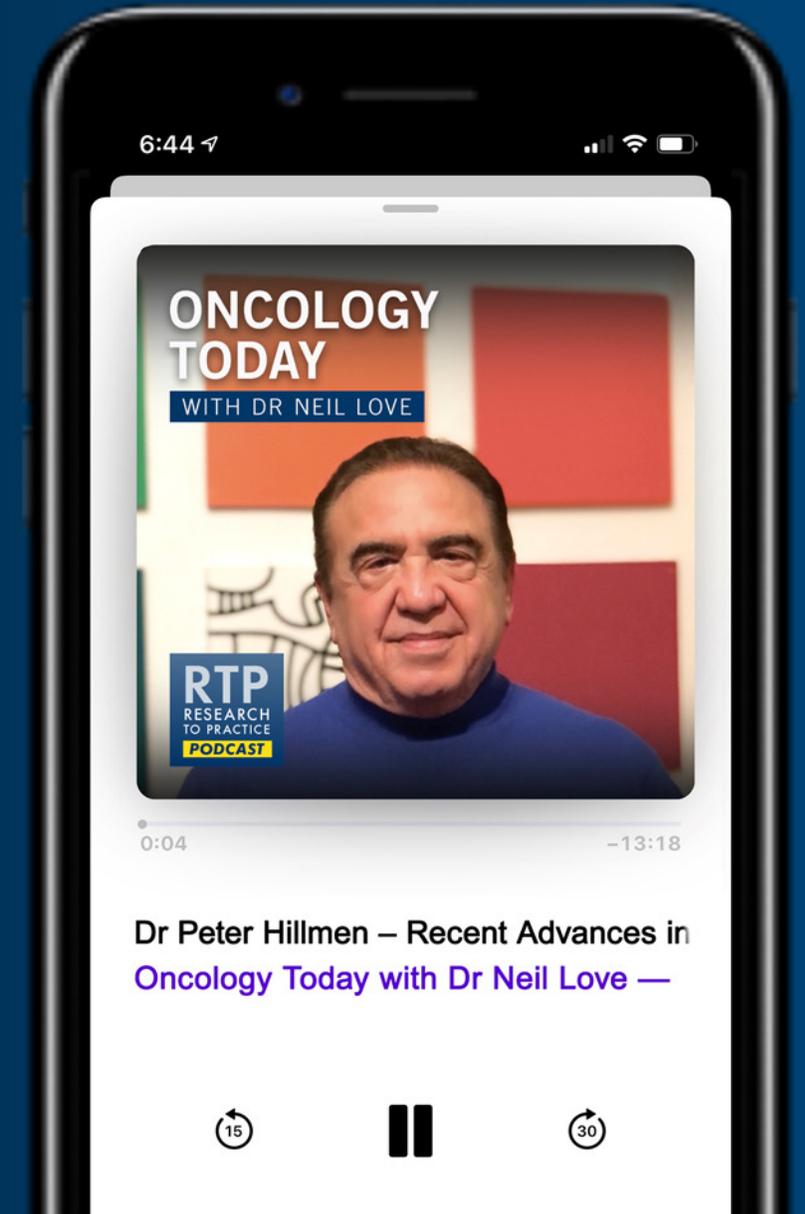
# ONCOLOGY TODAY

WITH DR NEIL LOVE

## Recent Advances in the Treatment of Chronic Lymphocytic Leukemia



DR PETER HILLMEN  
UNIVERSITY OF LEEDS



# **The Clinical Implications of Key Recent Data Sets in Oncology: A Daylong Multitumor Educational Symposium in Partnership with Florida Cancer Specialists**

**Saturday, October 22, 2022**

**7:30 AM – 5:30 PM ET**

**JW Marriott Orlando | Orlando, Florida**

## **Faculty**

**Ghassan Abou-Alfa, MD, MBA**

**Matthew P Goetz, MD**

**Ian E Krop, MD, PhD**

**Ann S LaCasce, MD, MMSc**

**Corey J Langer, MD**

**Prof Georgina Long, AO, BSc, PhD, MBBS**

**Christine M Lovly, MD, PhD**

**Wells A Messersmith, MD**

**Alicia K Morgans, MD, MPH**

**David M O'Malley, MD**

**Thomas Powles, MBBS, MRCP, MD**

**Mitchell R Smith, MD, PhD**

**John Strickler, MD**

**Saad Zafar Usmani, MD, MBA**

**Shannon N Westin, MD, MPH**

**Evan Y Yu, MD**

## **Moderator**

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## Lung Cancer

**7:30 AM – 8:30 AM ET**

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## CLL and Lymphomas

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PARP Inhibitors**

**3:50 PM – 4:10 PM ET**

**Faculty**

**David M O'Malley, MD**

**Gastrointestinal Cancers**

**4:10 PM – 5:10 PM ET**

**Faculty**

**Wells A Messersmith, MD**

**John Strickler, MD**

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***Meet The Professor***  
**Optimizing the Use of Hormonal Therapy  
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**Tuesday, October 25, 2022  
5:00 PM – 6:00 PM ET**

**Faculty**

**Matthew R Smith, MD, PhD**

**Moderator**

**Neil Love, MD**

***Thank you for joining us!***

***CME and NCPD credit information will be emailed  
to each participant within 3 business days.***

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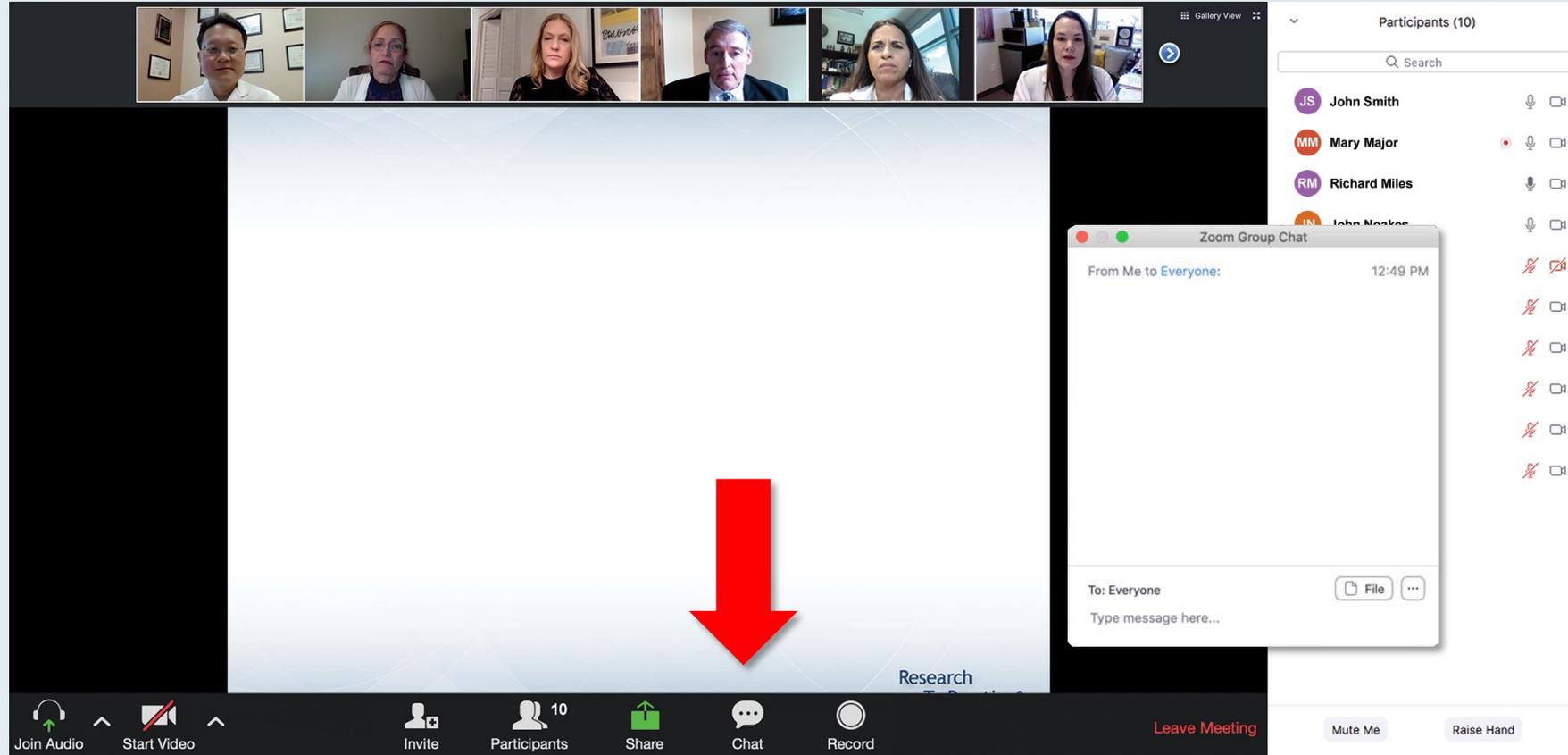


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**Quick Survey**

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Participants (10): John Smith, Mary Major, Richard Miles, John Noakes, Alice Suarez, Jane Perez, Robert Stiles, Juan Fernandez, Ashok Kumar, Jeremy Smith.

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**Quick Poll**

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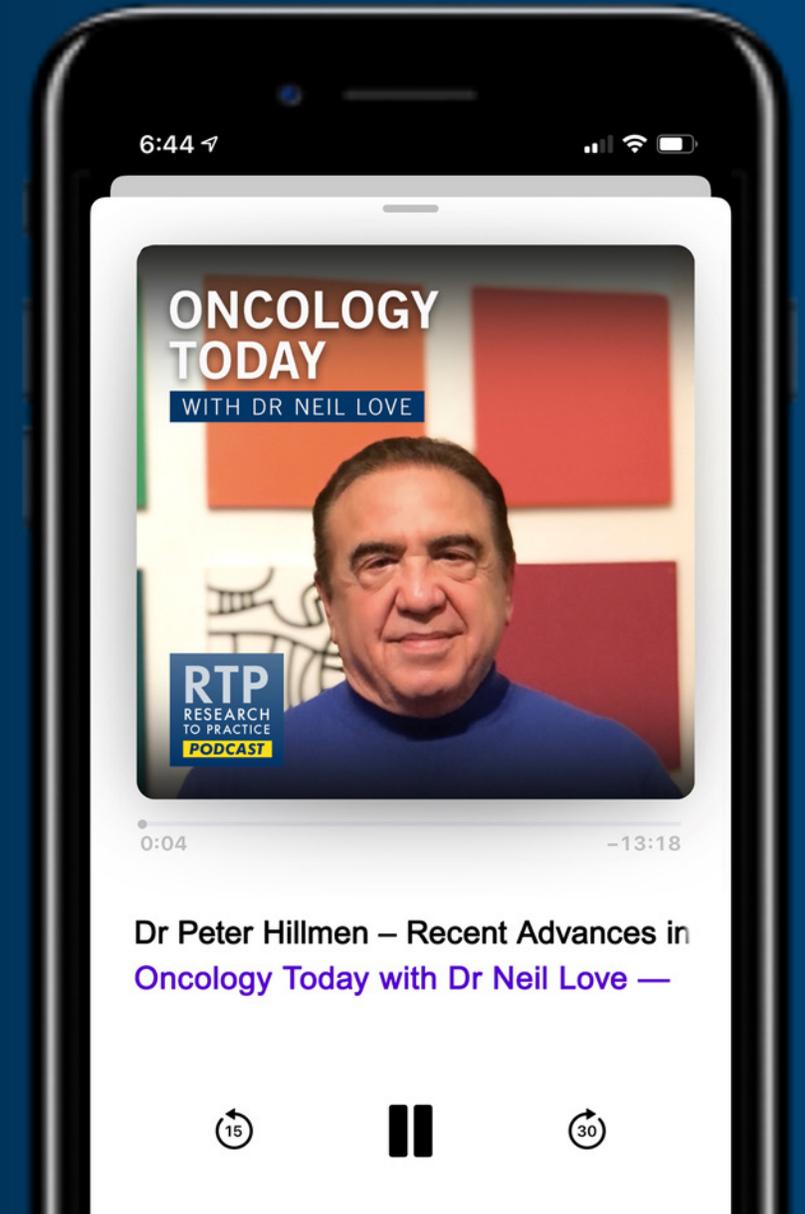
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This activity is supported by an educational grant from Genentech, a member of the Roche Group.

### **The University of Nebraska Medical Center (UNMC) and Research To Practice (RTP) Planners, Staff and Reviewers**

The below planning committee members have nothing to disclose: Neil Love, MD — RTP President and Planner, Atif Hussein, MD — RTP Reviewer, Renee Paulin, MSN, RN, CWOCN — UNMC Planner and Reviewer, Brenda Ram, CMP, CHCP — UNMC Planner, Michele Williams, DNP, AGPCNP-BC — RTP Reviewer, and Kathryn Ault Ziel, PhD — RTP Staff and Planner.

## Dr Brander — Disclosures

<b>Advisory Committee</b>	AbbVie Inc, Genentech, a member of the Roche Group, Pfizer Inc, TG Therapeutics Inc
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<b>Nonrelevant Financial Relationship</b>	CLL Society (expert medical council), NCCN (panel member)

# Dr Davids — Disclosures

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<b>Honoraria</b>	Aptitude Health, Curio Science
<b>Nonrelevant Financial Relationship</b>	Bio Ascend

## Dr Mato — Disclosures

<b>Consulting Agreements and Data and Safety Monitoring Board/Committee</b>	AbbVie Inc, Acerta Pharma — A member of the AstraZeneca Group, Adaptive Biotechnologies Corporation, Celgene Corporation, DTRM Biopharma Co Ltd, Genentech, a member of the Roche Group, Genmab, Johnson & Johnson Services Inc, Nurix Therapeutics Inc, Octapharma Plasma, Pharmacyclics LLC, an AbbVie Company, Sunesis Pharmaceuticals Inc, TG Therapeutics Inc, Verastem Inc
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# Dr Wierda — Disclosures

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<b>Nonrelevant Financial Relationship</b>	National Comprehensive Cancer Network (Chair, CLL)



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# Agenda: CLL Update

## A Meeting within a Meeting

**MODULE 1: Front-Line CLL – Standard-Risk Patients — Dr Mato**

**MODULE 2: Chronic Lymphocytic Leukemia in 2022: Front-Line Therapy in Patients with High-Risk Disease — Dr Brander**

**MODULE 3: Fixed-Duration Targeted Therapy for CLL — Dr Wierda**

**MODULE 4: Novel Investigational Agents and Strategies in CLL — Dr Davids**

**MODULE 5: CLL 2030?**

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**MODULE 5: CLL 2030?**

# Cases and Questions: Autoimmune Cytopenias



**Adam Kittai, MD**



**Christine Ryan, MD**

# Cases and Questions: Discussing “Watch and Wait”



**Adam Kittai, MD**



**Christine Ryan, MD**

# Cases and Questions: First-Line Treatment for Younger Patients; MAJIC Study



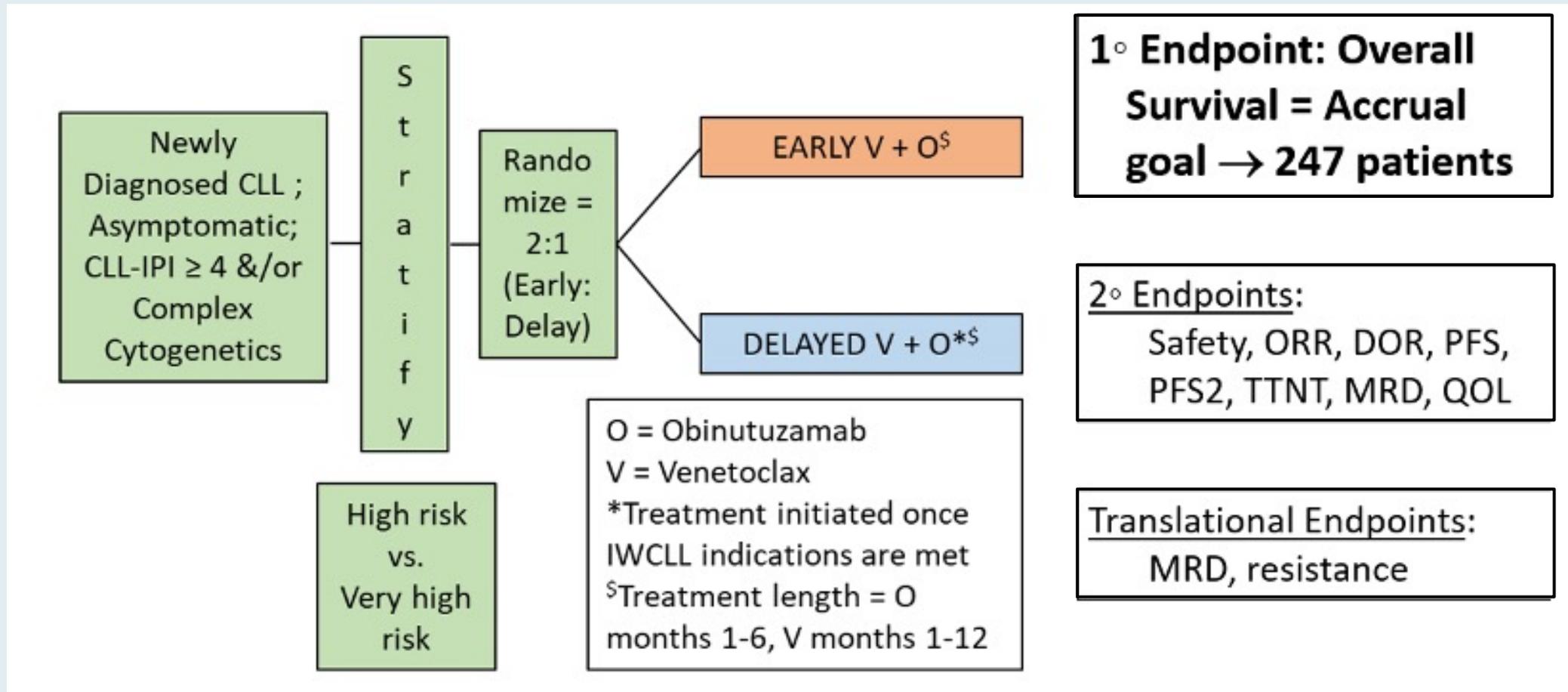
**Christine Ryan, MD**

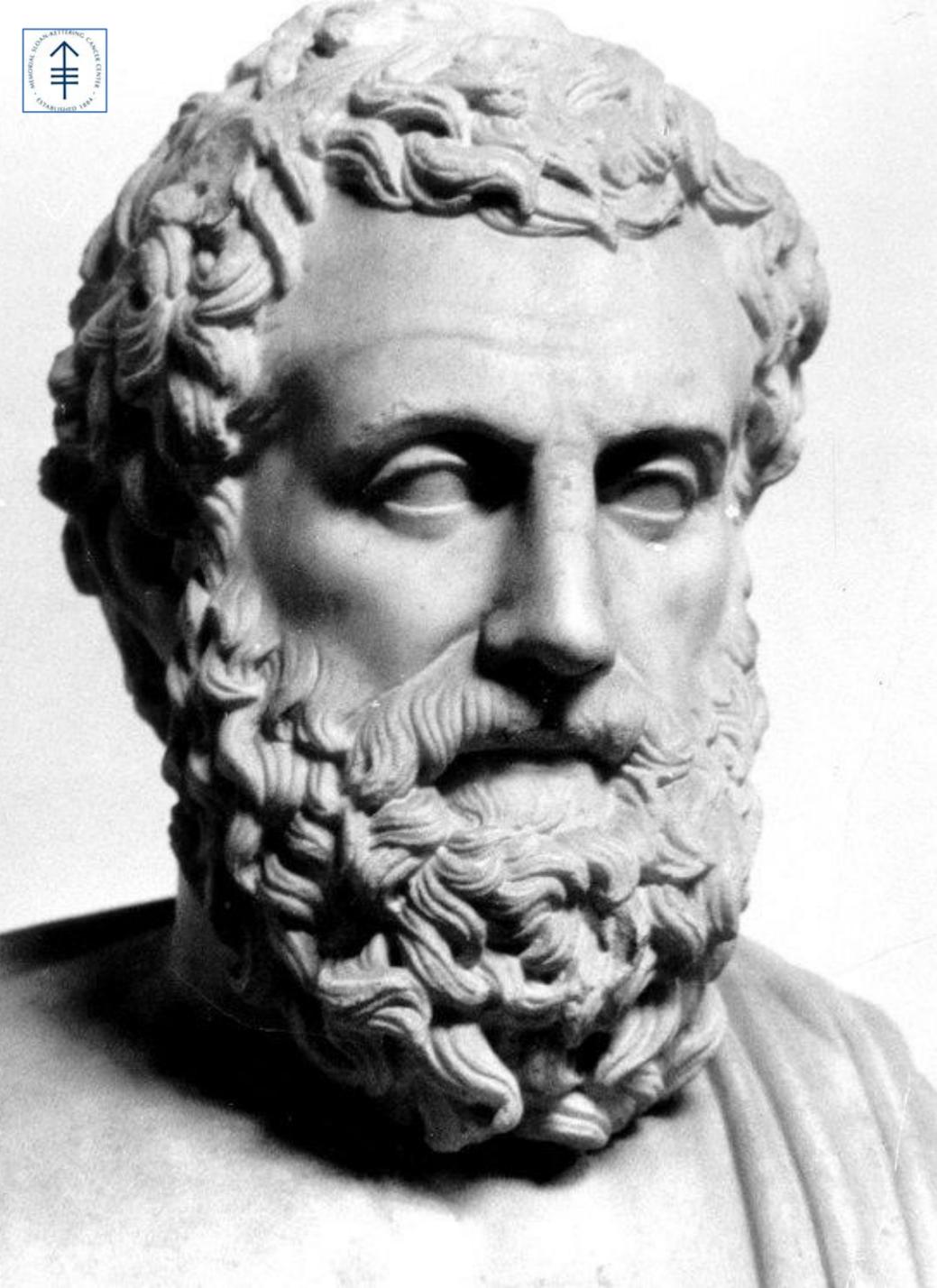
# Cases and Questions: First-Line Treatment for High-Risk Disease; EVOLVE CLL/SLL Study



**Adam Kittai, MD**

# SWOG-S1925 (EVOLVE CLL/SLL): Ongoing Phase III Study Design





Front Line CLL – Standard Risk Patients

**“Is the whole greater than the sum of its parts?”  
(Aristotle, 360 BC)**

*Anthony Mato, MD MSCE*

*Director, CLL Program*

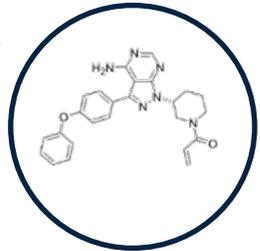
*Memorial Sloan Kettering Cancer Center*

*RTP 2022 Pan Pacific Summary*



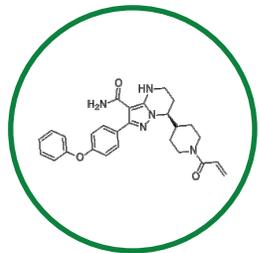
**The gold standards for future comparison of new agents and current standard of care should be either be BTK-based or Ven-G based therapy.**

# Major Phase 3 Trials Support the Use of Continuous BTKi Therapy in TN CLL: *BTKi are standard of care*



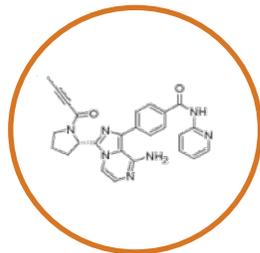
**Ibrutinib<sup>1-5</sup>**

- ✓ **RESONATE-2:** superior PFS and OS vs Clb
- ✓ **iLLUMINATE:** superior PFS vs GClb
- ✓ **ALLIANCE:** superior PFS vs BR in older patients
- ✓ **FLAIR:** superior PFS for IR vs FCR
- ✓ **ECOG 1912:** superior PFS and OS with IR vs FCR in younger patients



**Acalabrutinib<sup>6</sup>**

- ✓ **ELEVATE-TN:** superior PFS and showed a trend for better OS with acalabrutinib regimens vs GClb

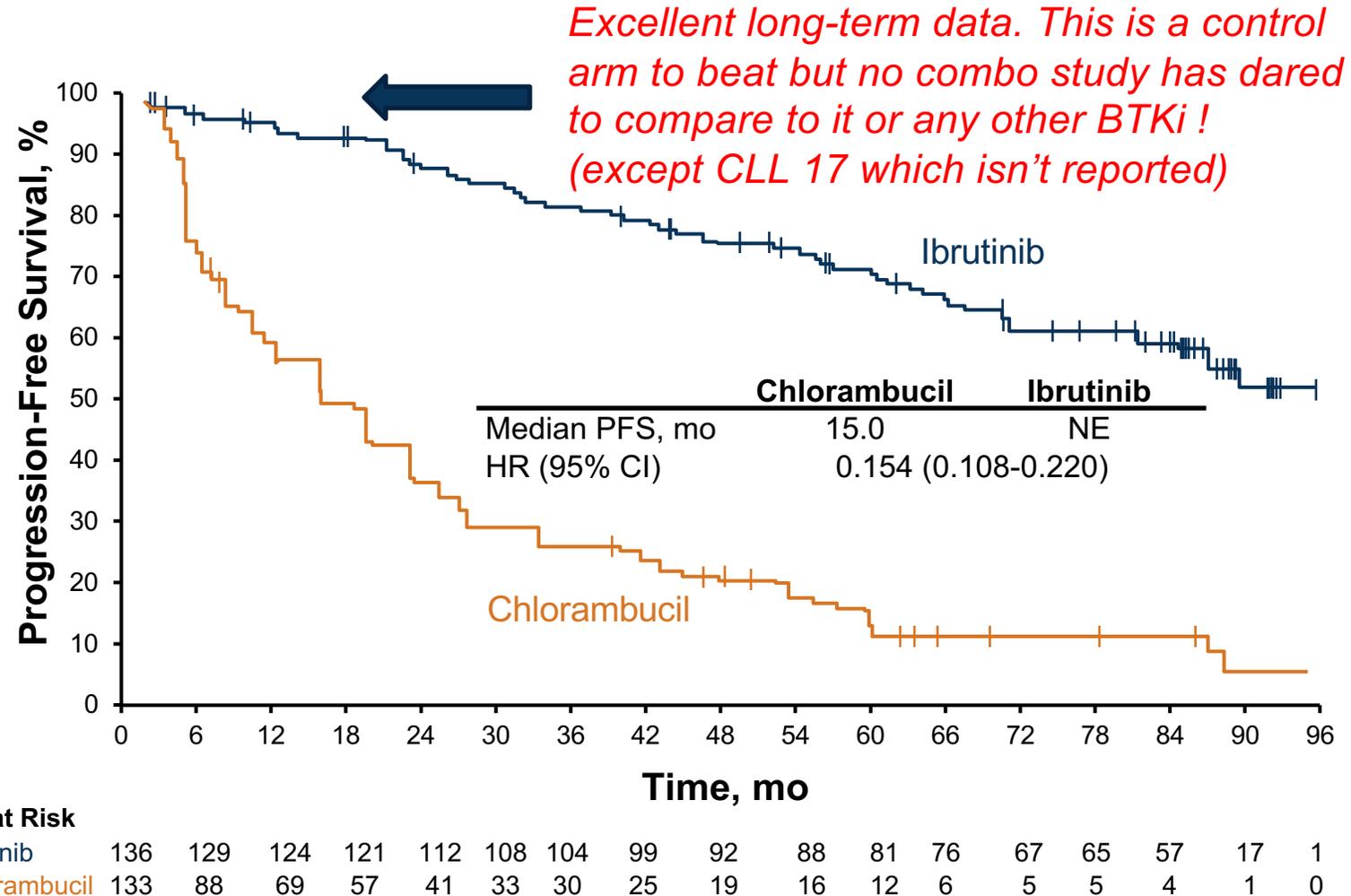


**Zanubrutinib<sup>7</sup>**

- ✓ **SEQUOIA:** superior PFS vs BR

# 8-Year Follow-Up From RESONATE-2 Continues to Show Clinical Benefit of Ibrutinib Monotherapy in CLL

- Longest follow-up to date with a single-agent BTK inhibitor from a phase 3 study<sup>1</sup>
- Sustained PFS benefit with ibrutinib versus chlorambucil
- Benefit was similar for mutated and unmutated IGHV



1. Barr PM et al. *Blood Adv.* 2022 Apr 4 [Epub ahead of print].

# Summary of Significant Studies With AEs Occurring in Patients Treated With BTKi

BTK Clinical Trial, AE %	Arthralgia	A-fib	Hematologic <sup>a</sup>	Bleeding/Hemorrhage	Hypertension	Infection
<b>RESONATE-2<sup>1</sup></b> Ibrutinib (n = 136)	–	6	–	4	14	–
<b>iLLUMINATE<sup>2</sup></b> Ibrutinib + G vs GClb (n = 113)	22	12	17-44	NR	17	14 <sup>c</sup>
<b>ALLIANCE A041202<sup>3</sup></b> Ibrutinib (n = 180)	1 <sup>d</sup>	17 <sup>b</sup>	41 <sup>d</sup>	2 <sup>d</sup>	29 <sup>d</sup>	20 <sup>d</sup>
Ibrutinib + rituximab (n = 181); vs BR	2 <sup>d</sup>	14 <sup>b</sup>	39 <sup>d</sup>	4 <sup>d</sup>	34 <sup>d</sup>	20 <sup>d</sup>
<b>ECOG-1912<sup>4</sup></b> Ibrutinib + rituximab (n = 352); vs FCR	4.8 <sup>d</sup>	6.5 <sup>d</sup>	34.7 <sup>d</sup>	1.1 <sup>d</sup>	18.8 <sup>d</sup>	10.5 <sup>d</sup>
<b>FLAIR<sup>5</sup></b>	<b>SAEs by organ class for FCR vs IR:</b> infections in 33.6% of patients vs 27.1%; blood and lymphatic in 19.8% vs 10.7%; and cardiac in 1.1% vs 8.3%					

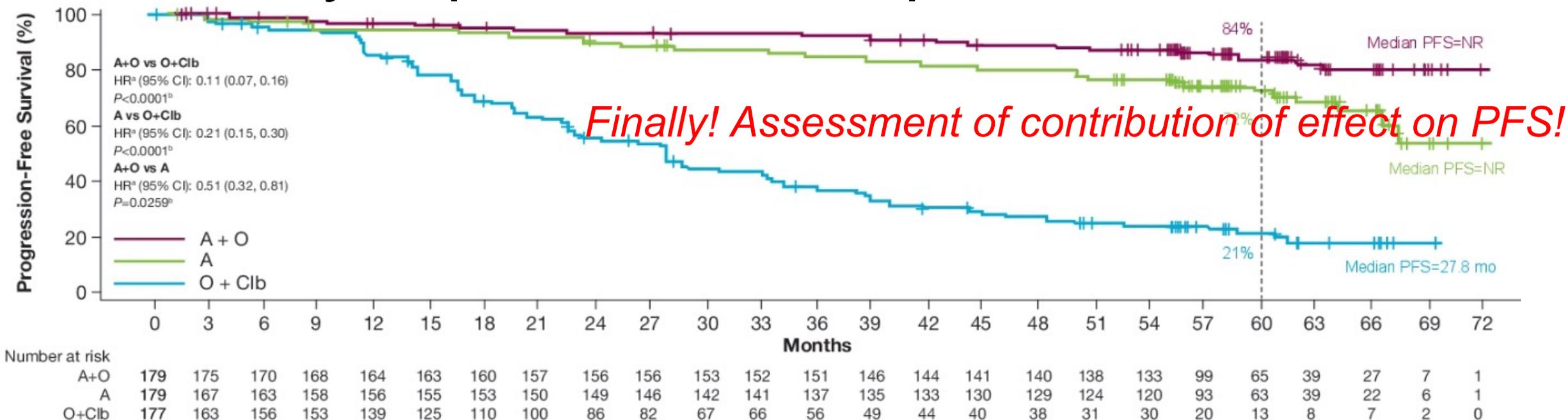
<sup>a</sup> Includes anemia, neutropenia, and thrombocytopenia. <sup>b</sup> Any grade, most commonly petechiae, including ecchymosis. <sup>c</sup> Upper respiratory tract. <sup>d</sup> Grade 3 or higher.

1. Burger JA et al. *Leukemia*. 2020;34:787-798. 2. Moreno C et al. iwCLL 2019. Abstract 2069. 3. Woyach J et al. *N Engl J Med*. 2018;379:2517-2528.

4. Shanafelt TD et al. *N Engl J Med*. 2019;381:432-443. 5. Hillmen P et al. ASH 2021. Abstract 642.

# Longer Follow-Up From ELEVATE-TN Shows Sustained PFS Benefit With Acalabrutinib ± Obinutuzumab<sup>1</sup>

5-year update, median follow-up of 58.2 months



	HR (95% CI)	P
A + G vs GClb	0.11 (0.07-0.16)	< .0001
A vs GClb	0.21 (0.15-0.30)	< .000
A + G vs A	0.51 (0.32-0.81)	.0295

**Data from 4-year follow-up showed PFS in unmutated IGHV CLL was 86%/77% for A + G/A vs 4% for GClb<sup>2</sup>**

1. Sharman JP et al. ASCO 2022. Abstract 7539. 2. Sharman JP et al. ASCO 2021. Abstract 7509.

# Summary of Significant Studies With AEs Occurring in Patients Treated With Next Gen BTKi

BTK Clinical Trial, AE %	Arthralgia	A-fib	Hematologic <sup>a</sup>	Bleeding/Hemorrhage	Hypertension	Infection
<b>ELEVATE-TN<sup>1</sup></b> Acalabrutinib (n = 179) Acalabrutinib + G (n = 179); vs GClb	15.6 <sup>b</sup> (0.6) 21.9 <sup>b</sup> (1.1)	4.0 <sup>b</sup> 3.4 <sup>b</sup>	9.5 <sup>d</sup> 29.8 <sup>d</sup>	15.1 <sup>b</sup> (2) 23.6 <sup>b</sup> (2)	2 <sup>d</sup> 3 <sup>d</sup>	14 <sup>d</sup> 21 <sup>d</sup>
<b>BGB-3111-206/ BGB-311-AU-003<sup>2</sup></b> Zanubrutinib (n = 118)	14	2	25 <sup>d</sup>	11	14	11 <sup>d</sup>

<sup>a</sup> Includes anemia, neutropenia, and thrombocytopenia. <sup>b</sup> Any grade, most commonly petechiae, including ecchymoses.

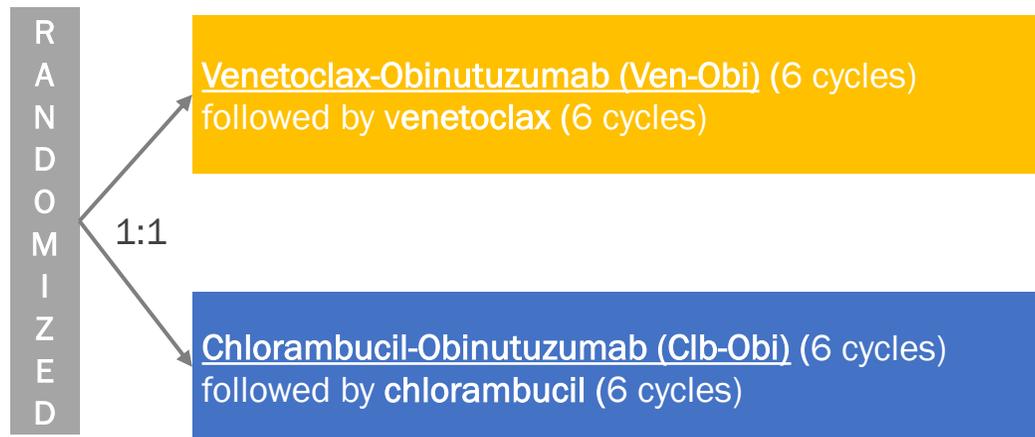
<sup>c</sup> Anemia and neutropenia, grade 3 or higher. <sup>d</sup> Grade 3 or higher.

1. Sharman JP et al. *Lancet*. 2020;395:1278-1291. 2. Tam CS et al. ASH 2019. Abstract 500.

# 5-Year Results From the CLL14 Phase 3 Study of Obinutuzumab + Venetoclax in Patients With TN CLL: Study Design and Patients

## Key Eligibility Criteria

- Patients with TN CLL and coexisting medical conditions
- CIRS >6 and/or CrCl <70 mL/min



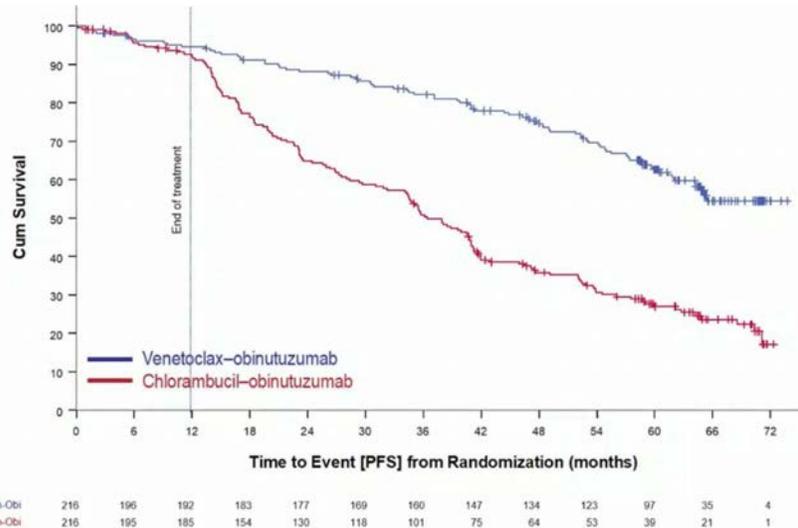
Primary endpoint: PFS

Secondary endpoints: response, MRD, OS

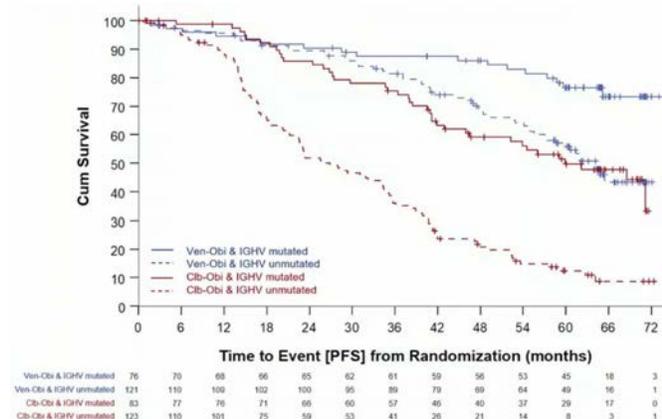
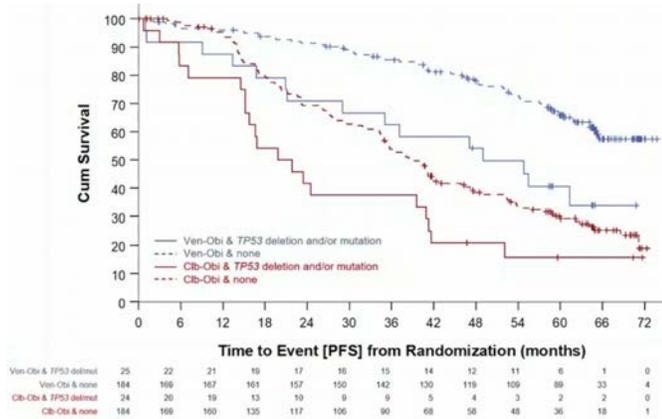
Patient Characteristics		Ven-Obi (n=216)	Clb-Obi (n=216)
Median age, years		72	71
Binet stage, %	A	21	20
	B	35	37
	C	44	43
Median total CIRS score (range)		9 (0-23)	8 (1-28)
Median estimated CrCl, mL/min		65.2	67.4
TLS risk category, %	Low	14	12
	Intermediate	64	68
	High	22	20
IGHV mutated, %		38	40
TP53 deleted and/or mutated, %		12	12
Cytogenetic subgroups, %	del(17p)	8	7
	del(11q)	17	18
	Trisomy 12	17	19
	No abnormalities	24	20
	del(13q) alone	34	36

# 5-Year Results From the CLL14 Phase 3 Study of Obinutuzumab + Venetoclax in Patients With TN CLL: Efficacy

PFS: All Patients



PFS by TP53 & IGHV Status



Median observation time: 65.4 months.  
Al-Sawaf O, et al. EHA 2022. Abstract S148.

PFS by Subgroup		Ven-Obi (n=216)	Clb-Obi (n=216)
All patients	Median, months	NR	36.4
	5-year rate, %	62.6	27.0
	HR (95% CI); P value	0.35 (0.26-0.46); <0.0001	
<b>Median, months</b>			
TP53 del/mut	No	NR (n=184)	38.9 (n=184)
	Yes	49.0 (n=25)	19.8 (n=24)
IGHV status	Mut	NR (n=76)	59.9 (n=83)
	Unmut	64.2 (n=121)	26.9 (n=123)

- For Ven-Obi, pretreatment disease burden (max. LN size >5 cm and ANC >25 G/l) and del(17p) were independent prognostic factors for PFS

The conundrum remains: to use all our best agents at once or save ammunition for the future.

FIRST LINE: IBRUTINIB MONO = MEDIAN PFS ESTIMATED TO CONSERVATIVELY TO BE ... 100 months (likely longer)

SECOND LINE:

- VENETOCLAX MONOTHERAY ESTIMATED TO BE ... 24+ months (Jones et al, Lancet Oncology 2017).
- VR even longer ~ hard to estimate ~ 40 months (after BTKi)

Third line: Pirtobrutinib ~ 18-20 months

I+V MEDIAN PFS MUST BE BETTER THAN .... 130-140 months

- Almost no data on retreatment or mechanisms of resistance

And without LONG TERM data we should not dangle the word **CURE** with any novel agent combination based on **high rate of undetectable MRD** data alone

# Agenda: CLL Update

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**MODULE 5: CLL 2030?**

# Cases and Questions: Management of High-Risk CLL



**Adam S Kittai, MD**



**Christine E Ryan, MD**

# Cases and Questions: Richter's Syndrome



**Adam Kittai, MD**

---

# **Chronic Lymphocytic Leukemia (CLL) in 2022:** *frontline therapy in patients with high risk disease*

**Danielle M. Brander, MD**

**Duke Cancer Institute**

**danielle.brander@duke.edu**

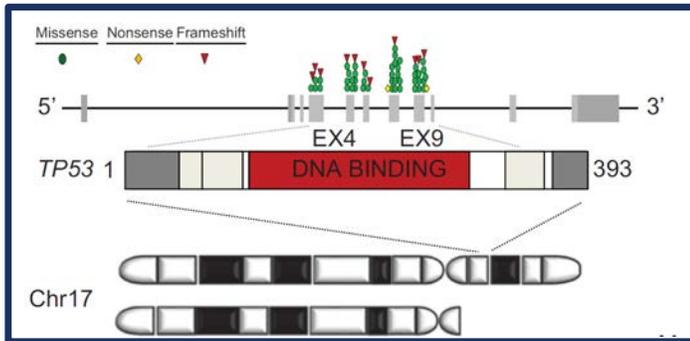
*Research To Practice – Application in the Care of Complex Patients with CLL*

*2022 Pan Pacific Lymphoma Conference*

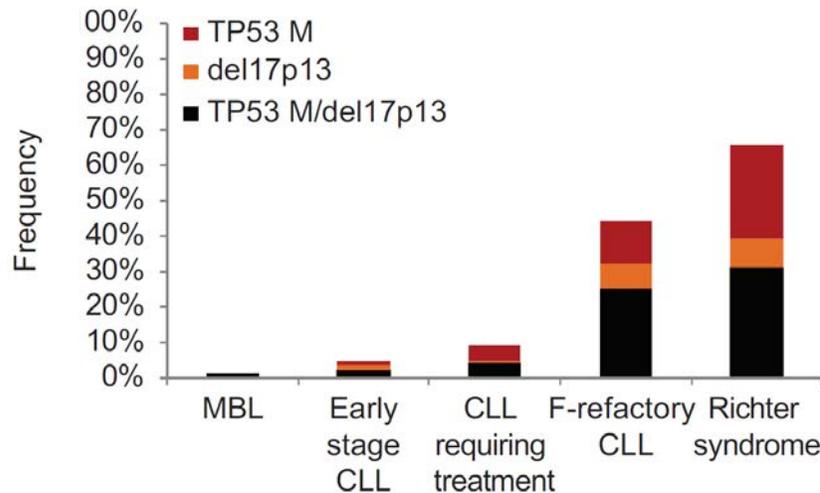
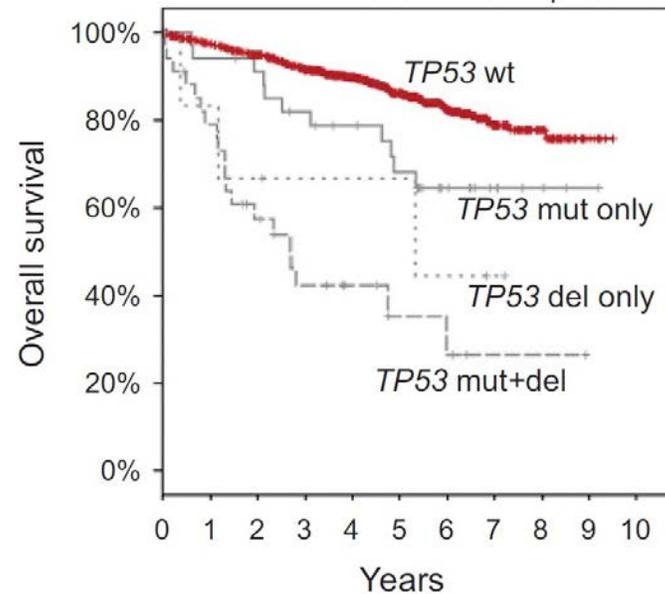
*12 October 2022*



# HISTORICAL IN ERA OF CHEMOIMMUNOTHERAPY (CIT): del(17p) / TP53 mutation



TP53 wt  
vs. TP53 mut only:  $p = 0.013$   
vs. TP53 del only:  $p = 0.008$   
vs. TP53 mut+del  $p < 0.001$



## TP53 aberrations & CIT:

*responses for treatment naïve*

BR: mPFS of 7.9mo

FCR: 3 yr PFS of 18%

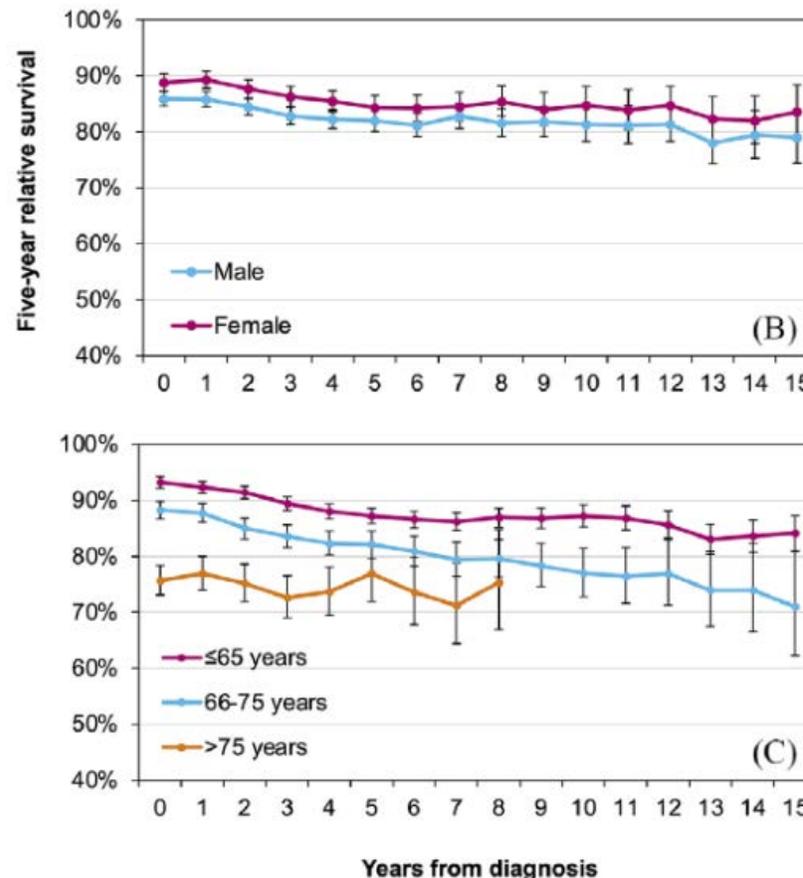
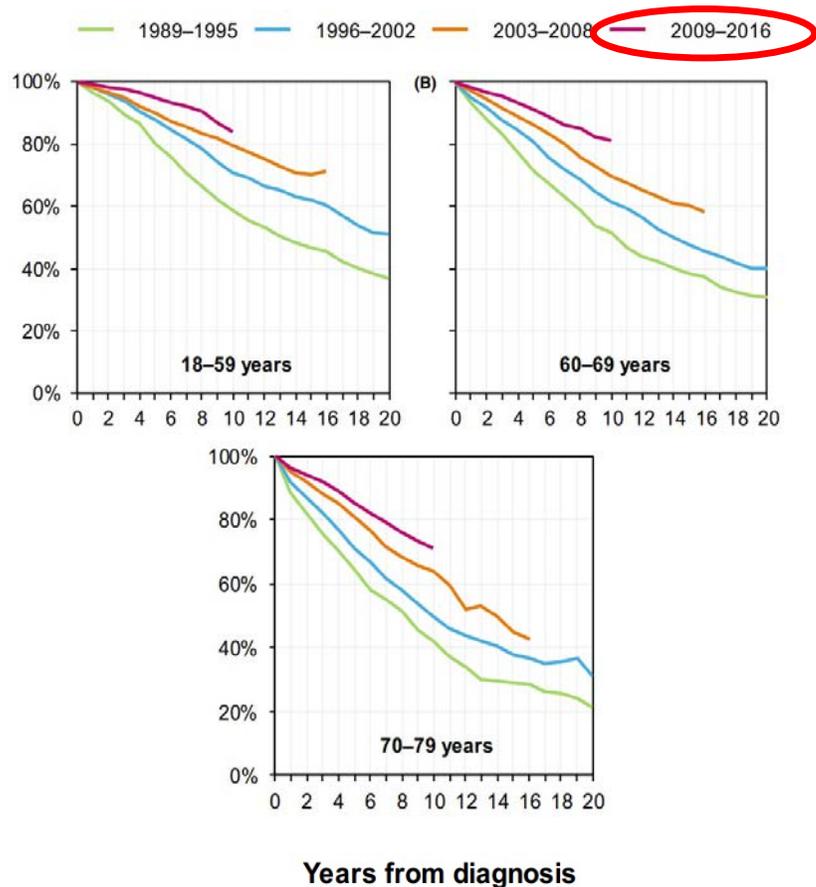
*survival*  
~ 32 months mOS

### Survival continues to increase in chronic lymphocytic leukaemia: a population-based analysis among 20 468 patients diagnosed in the Netherlands between 1989 and 2016

### Conditional relative survival among patients with chronic lymphocytic leukaemia: A population-based study in the Netherlands

Lina van der Straten<sup>1,2,3</sup> | Mark-David Levin<sup>2</sup> | Otto Visser<sup>4</sup> | Eduardus F.M. Posthuma<sup>5,6</sup> | Jeanette K. Doorduijn<sup>7</sup> | Arnon P. Kater<sup>8</sup> | Avinash G. Dinmohamed<sup>1,8,9,10</sup>

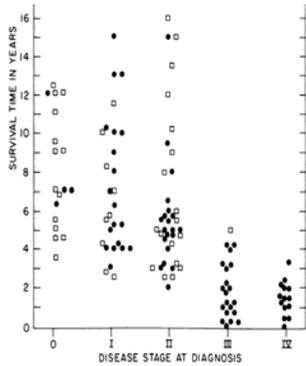
Relative survival



# STAGING, MARKERS, PROGNOSTICS – HOW BEST TO ASSESS AND INCORPORATE ?

## Clinical Staging of Chronic Lymphocytic Leukemia

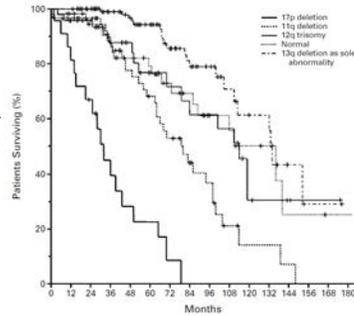
By Kanti R. Rai, Arthur Sawitsky, Eugene P. Cronkite, Arjun D. Chanana, Robert N. Levy, and Bernard S. Posternack



The New England Journal of Medicine

## GENOMIC ABERRATIONS AND SURVIVAL IN CHRONIC LYMPHOCTIC LEUKEMIA

HAYMET DOHNER, M.D., STEPHAN STILGENBAUER, M.D., AXEL BINNER, M.Sc., EIKE LEUPOLD, M.D., ALEXANDER KROEMER, M.D., LARS BRILLIGER, M.D., KONSTANZ DOHNER, M.D., MARTIN BENTZ, M.D., AND PETER LOHNER, Ph.D.



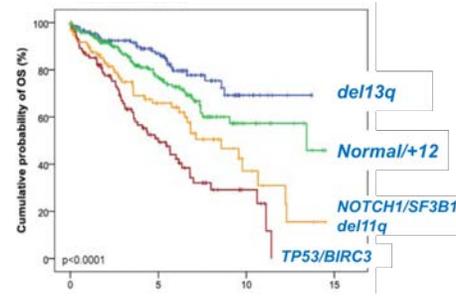
## Regular Article

### LYMPHOID NEOPLASIA

#### CME Article

### Integrated mutational and cytogenetic analysis identifies new prognostic subgroups in chronic lymphocytic leukemia

David R. Foster, Silvia Ricca, Susana Torres, Alessio Braccagnini, Sara Morici, Cornelia Diehl, Clara Damborg, Hagar Elshorbagy, Barbara Sani, Francesca Barabasi, Francesca Forconi, Luca Calzavara, Robert Malmqvist, Michele Di Carlo, Francesca Maria Rossini, Fabio Bultrini, Jorge Noronha, Giovanni Di Paolo, Valter Galati, Laura Pavesi, et al.

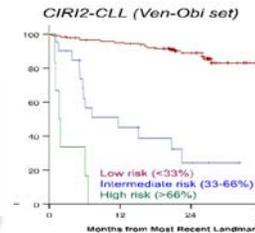
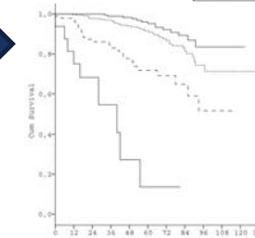


## CLINICAL TRIALS AND OBSERVATIONS

### Development of a comprehensive prognostic index for patients with chronic lymphocytic leukemia

Harun Pflug, Gaurav Saini, Farid S. Secrest, Barbara F. Eichmann, Marwan A. Barghout, Thomas Bleh, Karim Basun, Gabriel Mochales, Karl G. Rabus, Stephan Stilgenbauer, Hagar Elshorbagy, Ulrich Jager, Michael J. East, Gaurav Singh, Piyush Bhanu, Piyush Bhanu, Anika Maria Fink, Christiana Maria Weidner, Klaus Fischer, Neil E. Kay, and Michael Hallek

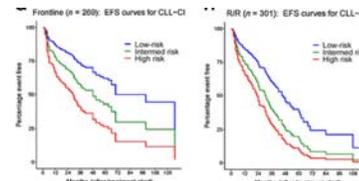
Variable	Adverse factor	Grading
TP53 (17p)	Deleted and/or mutated	4
IGHV status	Unmutated	2
β2M, mg/L	>3.5	2
Clinical stage	Binet B/C or Rai I-IV	1
Age	>65 years	1
CLL-IPI Prognostic Score		0-10



PRECISION MEDICINE AND IMAGING | SEPTEMBER 01 2021

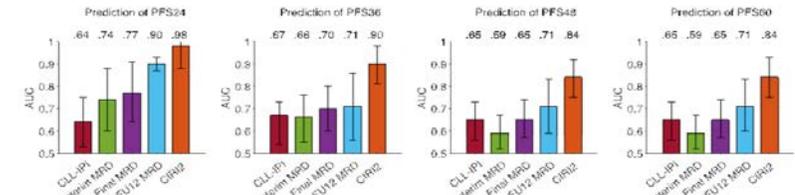
## The Chronic Lymphocytic Leukemia Comorbidity Index (CLL-CI): A Three-Factor Comorbidity Model

Max J. Gordon, Andy Klampt, Andrea Göttinger, Geoffrey Shouse, Matthew Mei, Danielle M. Brander, Tareq Salous, Brian T. Hill, Hamed Alagattani, Michael Gao, Michael C. Chumatisi, Jonathan B. Cohen, Deborah M. Stephens, Tariya Siddiqui, Xavier Rivera, Daniel Parsky, Paul Witniewski, Kish Patel, Mazyar Shadmeh, Byung Park, Alexey V. Danilov



## 139 | A CONTINUOUS INDIVIDUALIZED RISK INDEX FOR REFINED OUTCOME PREDICTION AFTER TARGETED THERAPY FOR PATIENTS WITH CHRONIC LYMPHOCTIC LEUKEMIA (CIRI-CLL)

O. Al-Sawaf<sup>1</sup>, M. S. Eshfahani<sup>2</sup>, C. Zhang<sup>1</sup>, E. Tausch<sup>2</sup>, A. Schillhabel<sup>1</sup>, B. Eichhorst<sup>1</sup>, S. Stilgenbauer<sup>2</sup>, M. Hallek<sup>1</sup>, A. A. Alizadeh<sup>2</sup>, D. M. Kurtz<sup>2</sup>, K. Fischer<sup>1</sup>



What is the role of co-morbidities?  
Of MRD?  
Of time to response?

Rai et al. Blood. 1975; 46:219. Rossi et al. Blood. 2013;121:1403. Dohner et al. N Engl J Med 2000;343:1910. Pflug et al. Blood. 2014; 124:49-64. Gordon et al. Clin Cancer Res 2021;27:4814. Al-Sawak et al. iwCLL oral presentation and Hematological Oncology Supplement Abstracts 139. 2021.

# CLL/SLL TARGETED/NOVEL THERAPY

APPROVED & *IN DEVELOPMENT (PARTIAL)* IN VARIOUS TREATMENT SETTINGS

	<b>BTKi</b>	<b>BCL2i <i>BH3 mimetics</i></b>	<b>PI3Ki</b>	<b>anti-CD20 Ab</b>	<b>Others</b>
<b>Drugs</b>	ibrutinib +/- anti-CD20 acalabrutinib +/- anti-CD20 zanubrutinib (BGB-3111) <sup>a</sup> tirabrutinib (ONO-4059/GS-4059) DTRMWXHS-12  vecabrutinib (SNS-062) <sup>b</sup> pirtobrutinib (LOXO-305) <sup>b</sup> nemtabrutinib (MK-1026/ARQ-531) <sup>b</sup> LP-168 <sup>c</sup>	venetoclax S55746 lisaftoclax (APG-2575) BGB-11417 LOXO-338 LP-118  <i>Dual</i> navitoclax (ABT-263) AZD0466  MCLI**	idelalisib* duvelisib umbralisib (TGR-1202) <sup>d</sup> zandelisib (MEI-401) <sup>e</sup>	rituximab obinutuzumab ofatumumab ublituximab	CAR-T (liso-cel +/- novel) CVAY736 (anti-BAFF Ab) CAP-100 (anti-CC7 Ab) cirmtuzumab (RORI Ab)
<b>Notes</b>	a. cat I NCCN for CLL b. Noncovalent BTK inhibitor c. Dual WT covalent/C481S noncovalent	** phase I studies across heme malignancies	d. Approved in FL, MZL e. Trial in FL		

# CLL/SLL TARGETED/NOVEL THERAPY



National  
Comprehensive  
Cancer  
Network®

## NCCN Guidelines Version 1.2023

### Chronic Lymphocytic Leukemia/Small Lymphocytic Lymphoma

#### SUGGESTED TREATMENT REGIMENS<sup>a,b,c,d</sup>

CLL/SLL with del(17p)/TP53 mutation

(alphabetical by category)

CIT is not recommended since del(17p)/TP53 mutation is associated with low response rates.

#### FIRST-LINE THERAPY<sup>e</sup>

##### Preferred regimens

- Acalabrutinib<sup>f</sup> ± obinutuzumab
- Venetoclax<sup>f,g</sup> + obinutuzumab
- Zanubrutinib<sup>f</sup>

##### Other recommended regimens

- Alemtuzumab<sup>f</sup> ± rituximab
- HDMP + rituximab
- Ibrutinib<sup>f,h</sup>
- Obinutuzumab
- Ibrutinib + venetoclax<sup>f,g</sup> (category 2B)

#### SECOND-LINE AND SUBSEQUENT THERAPY<sup>e</sup>

##### Preferred regimens

- Acalabrutinib<sup>f,q</sup> (category 1)
- Venetoclax<sup>f,g</sup> + rituximab (category 1)
- Venetoclax<sup>f,g</sup>
- Zanubrutinib<sup>f,q</sup>

##### Other recommended regimens

- Ibrutinib<sup>f,h</sup> (category 1)
- Alemtuzumab<sup>f</sup> ± rituximab
- Duvelisib<sup>f</sup>
- HDMP + rituximab
- Idelalisib<sup>f</sup> ± rituximab<sup>s</sup>
- Lenalidomide<sup>t</sup> ± rituximab

# LOW FREQUENCY OF FISH/IGHV TESTING

**bjh** research paper

Real-world clinical experience in the Connect<sup>®</sup> chronic lymphocytic leukaemia registry: a prospective cohort study of 1494 patients across 199 US centres

## Original Study

Prognostic Testing and Treatment Patterns in Chronic Lymphocytic Leukemia in the Era of Novel Targeted Therapies: Results From the informCLL Registry

Anthony R. Mato,<sup>1</sup> Jacqueline C. Barrientos,<sup>2</sup> Nilanjan Ghosh,<sup>3</sup> John M. Pagel,<sup>4</sup> Danielle M. Brander,<sup>5</sup> Meghan Gutierrez,<sup>6</sup> Karen Kadish,<sup>7</sup> Brian Tomlinson,<sup>8</sup> Reethi Iyengar,<sup>9</sup> David Ipe,<sup>9</sup> Sandhya Upasani,<sup>9</sup> Carlos I. Amaya-Chanaga,<sup>9</sup> Murali Sundaram,<sup>10</sup> Jennifer Han,<sup>10</sup> Nick Gafis,<sup>9</sup> Jeff P. Sharman<sup>11</sup>

## Connect CLL US Database (2010 – 2014)

First line (n=889)

Second line (n=260)

## informCLL Registry (2015-)

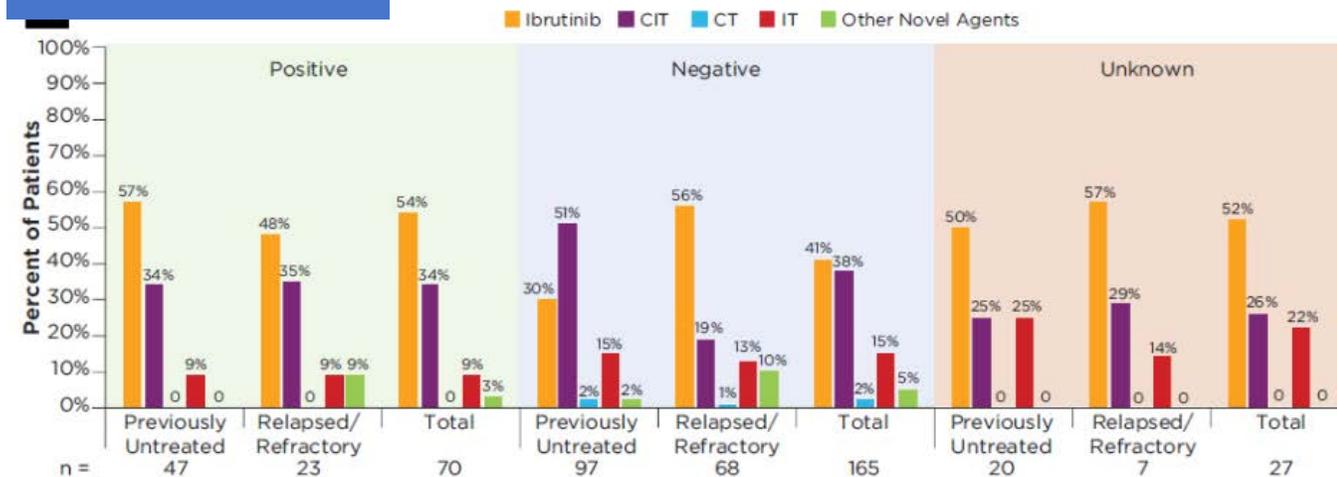
*interim analysis (n=840)*

Untreated (n=459, 55%)

Previously tx (n=381, 45%)

Test	% tested (first line)	% tested (2 <sup>nd</sup> line)
Metaphase cytogenetics	39%	31.2%
FISH	58%	40.4%
IGHV	7.9%	5% (not required if prior)

## del17p



Mato et al. *BJH*. 2016;175z;892

Mato et al. *Clinical Leukemia Lymphoma Myeloma*. 2020; 20:174

# IBRUTINIB FRONTLINE

## TP53 aberrations

Ahn et al 2018

TP53 aberration cohort (n=51; 34 TN)

In TN TP53:

5 year PFS was 74%

5 year OS was 85%

In R/R TP53: 19% 5 year PFS

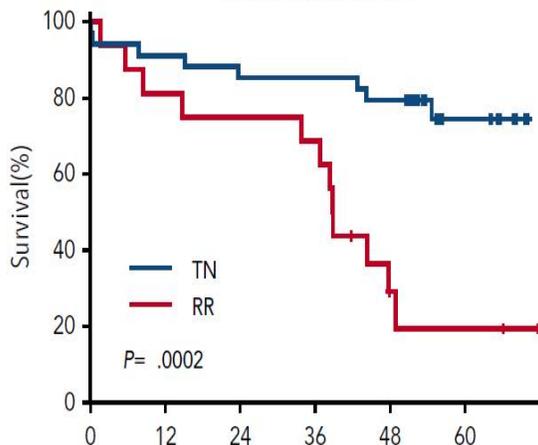
RESONATE-2 (no del17p):  
12 pts with TP53 mutations in ibrutinib arm

Ibrutinib mPFS in TP53 mutation vs TP53 WT:  
mPFS not reached

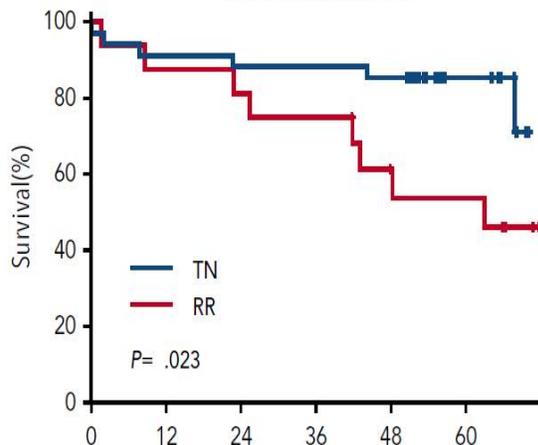
5 yrs PFS est:  
56% TP53mut vs 73% in WT

Only 3 pts with TP53 in chlorambucil arm

TP53 cohort: PFS



TP53 cohort: OS



		TP53 cohort: PFS						TP53 cohort: OS					
		0	12	24	36	48	60	0	12	24	36	48	60
TN	34	31	29	29	27	10	TN	34	31	30	30	29	11
RR	16	13	12	11	3	2	RR	16	14	13	12	8	7

	Favor Ibrutinib	Favor Chlorambucil	N	Hazard Ratio	95% CI
All patients			269	0.155	(0.105, 0.228)
Age					
<70			80	0.076	(0.026, 0.219)
≥70			189	0.175	(0.114, 0.268)
Gender					
Male			169	0.171	(0.108, 0.269)
Female			100	0.114	(0.054, 0.242)
Rai stage at baseline					
Stage 0-II			137	0.198	(0.118, 0.334)
Stage III-IV			132	0.122	(0.069, 0.217)
ECOG at baseline					
0			112	0.162	(0.091, 0.289)
1-2			157	0.151	(0.089, 0.254)
Bulky disease					
<5 cm			170	0.146	(0.086, 0.247)
≥5 cm			94	0.112	(0.059, 0.212)
Cytopenias at baseline					
Yes			145	0.137	(0.081, 0.232)
No			124	0.175	(0.098, 0.311)
High prognostic risk (TP53 mut/del(11q)/unmut IGHV)					
Yes			143	0.083	(0.047, 0.145)
No			126	0.253	(0.144, 0.443)
Del(11q)					
Yes			54	0.034	(0.010, 0.108)
No			197	0.205	(0.132, 0.318)
IGHV					
Mutated			82	0.153	(0.067, 0.349)
Unmutated			118	0.105	(0.058, 0.190)

Ahn et al. Blood. 2018;131:2357. O'Brien et al. Blood. 2018;131:1910. Barr et al. Haematologica. 2018;103:1502.

Burger et al. Leukemia. 2020; 34:787.

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# FRONTLINE: IBRUTINIB VS. CHEMOIMMUNOTHERAPY

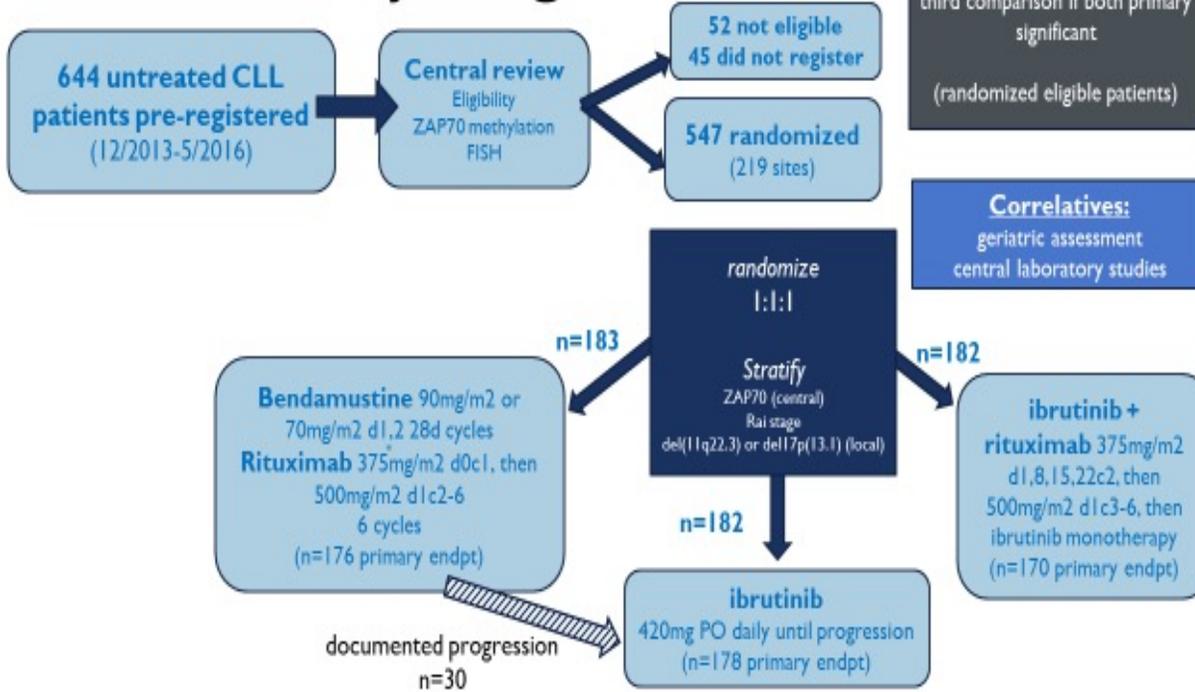
The NEW ENGLAND JOURNAL of MEDICINE

ORIGINAL ARTICLE

## Ibrutinib Regimens versus Chemoimmunotherapy in Older Patients with Untreated CLL

J.A. Woyach, A.S. Ruppert, N.A. Heerema, W. Zhao, A.M. Booth, W. Ding, N.L. Bartlett, D.M. Brander, P.M. Barr, K.A. Rogers, S.A. Parikh, S. Coutre, A. Hurria,\* J.R. Brown, G. Lozanski, J.S. Blachly, H.G. Ozer, B. Major-Elechi, B. Fruth, S. Nattam, R.A. Larson, H. Erba, M. Litzow, C. Owen, C. Kuzma, J.S. Abramson, R.F. Little, S.E. Smith, R.M. Stone, S.J. Mandrekar, and J.C. Byrd

### A041202 Study Design



NOTE: Other randomized studies did not include del17p/TP53 mutations especially after SOC changed → keep in mind when reviewing study long term follow up

#### Primary Endpoint: PFS

BR: mPFS 43 mos  
Ibr: mPFS NR  
Ibr+R: mPFS: NR

**No difference in PFS  
ibrutinib vs ibrutinib + R**

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Woyach et al. N Engl J Med. A041202 2018;379:2517. Shanafelt et al. N Engl J Med 2019;381:432

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# FRONTLINE: IBRUTINIB VS. CHEMOIMMUNOTHERAPY

The NEW ENGLAND JOURNAL of MEDICINE

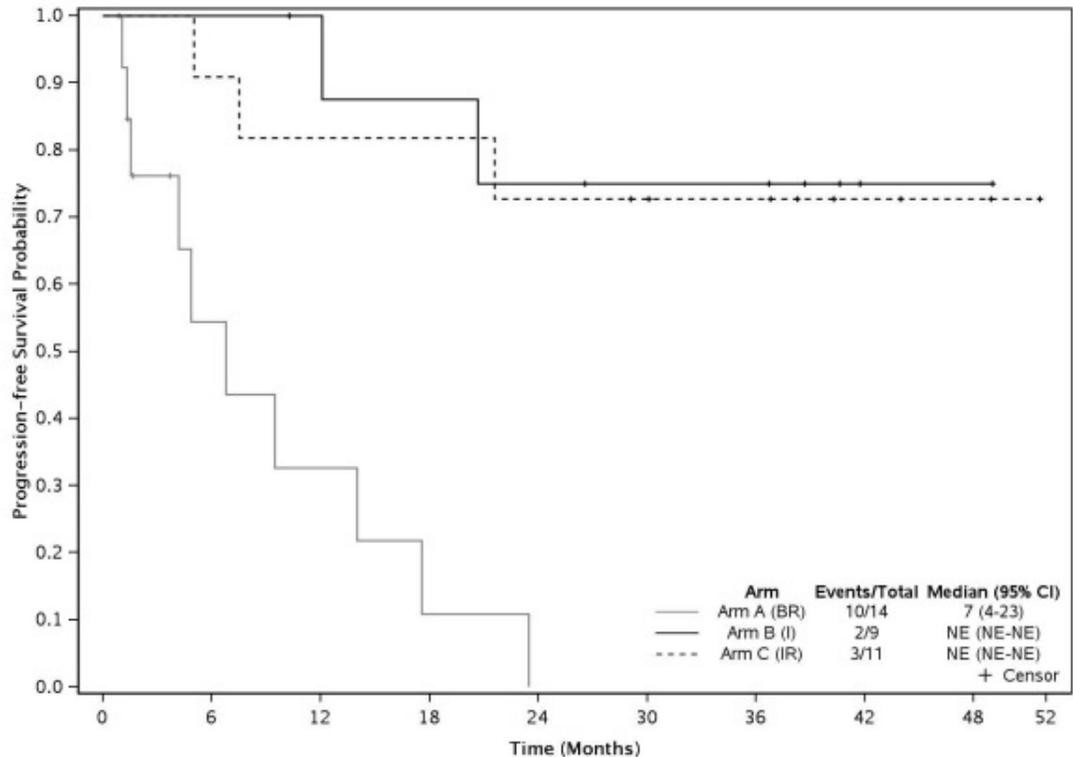
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**Figure S2: Progression-Free Survival by arm and Dohner's Hierarchy.** Progression-Free Survival for A) del(17p); B) del(11q); C) Patients with neither del(17p) nor del(11q)

A



	0	6	12	18	24	30	36	42	48	52
Arm A (BR)	14	5	3	1	0					
Arm B (I)	9	9	8	7	6	5	5	1	1	0
Arm C (IR)	11	10	9	9	8	7	6	3	2	0

NOTE: Other randomized studies did not include del17p/TP53 mutations especially after SOC changed → keep in mind when reviewing study long term follow up

# ACALABRUTINIB FOR FRONTLINE CLL: *ELEVATE-TN*

## PFS – Investigator assessed PFS by del17p and TP53

**mPFS in del17p and/or TP53 mut:**

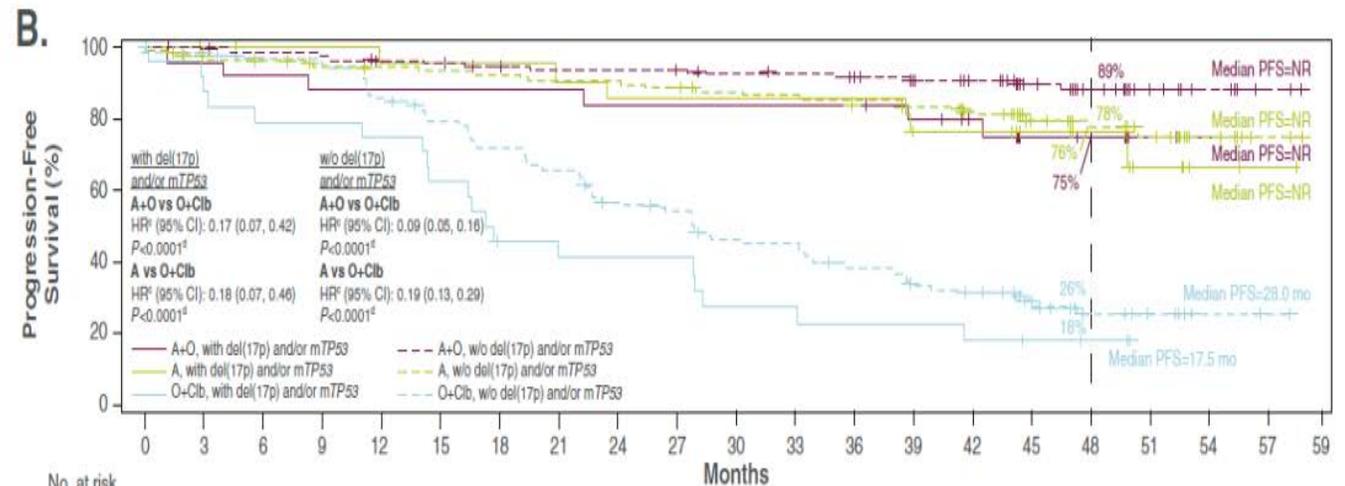
G-acala and acala: NR

G-chlor: 17.5 mos

**48 month PFS estimates in del17p and/or TP53 mut:**

G-acala: 74.8%

Acala: 76.2%



	No. at risk	0	3	6	9	12	15	18	21	24	27	30	33	36	39	42	45	48	51	54	57	59
A+O, with del(17p) and/or mTP53	25	24	23	22	22	22	22	22	21	21	21	21	21	21	19	16	9	8	3	1	0	0
A, with del(17p) and/or mTP53	23	22	21	21	20	20	20	19	18	18	18	18	18	18	15	15	11	9	5	2	1	0
O+Clb, with del(17p) and/or mTP53	25	21	19	19	18	15	10	9	9	9	6	6	5	5	4	3	2	0	0	0	0	0
A+O, w/o del(17p) and/or mTP53	154	152	148	146	142	141	138	135	135	134	132	131	129	122	116	76	51	30	11	2	0	0
A, w/o del(17p) and/or mTP53	156	145	142	137	136	135	133	131	131	128	124	123	118	115	108	68	52	30	14	3	0	0
O+Clb, w/o del(17p) and/or mTP53	152	142	137	134	121	110	100	91	77	73	61	60	50	43	38	19	11	6	2	1	0	0

# CLL14

## EXTENDED FOLLOW UP

### Minimal Residual Disease Dynamics after Venetoclax-Obinutuzumab Treatment: Extended Off-Treatment Follow-up From the Randomized CLL14 Study

Othman Al-Sawaf, MD<sup>1,2,3</sup>; Can Zhang, PhD<sup>4</sup>; Tong Lu, PhD<sup>4</sup>; Michael Z. Liao, PhD<sup>4</sup>; Anesh Panchal, MSc<sup>5</sup>; Sandra Robrecht, PhD<sup>1</sup>; Travers Ching, PhD<sup>6</sup>; Maneesh Tandon, MBChB<sup>5</sup>; Anna-Maria Fink, MD<sup>1</sup>; Eugen Tausch, MD<sup>7</sup>; Christof Schneider, MD<sup>7</sup>; Matthias Ritgen, MD<sup>8</sup>; Sebastian Böttcher, MD<sup>9</sup>; Karl-Anton Kreuzer, MD<sup>1</sup>; Brenda Chyla, PhD<sup>10</sup>; Dale Miles, PhD<sup>4</sup>; Clemens-Martin Wendtner, MD<sup>11</sup>; Barbara Eichhorst, MD<sup>1</sup>; Stephan Stilgenbauer, MD<sup>7,12</sup>; Yanwen Jiang, PhD<sup>4</sup>; Michael Hallek, MD<sup>1</sup>; and Kirsten Fischer, MD<sup>1</sup>

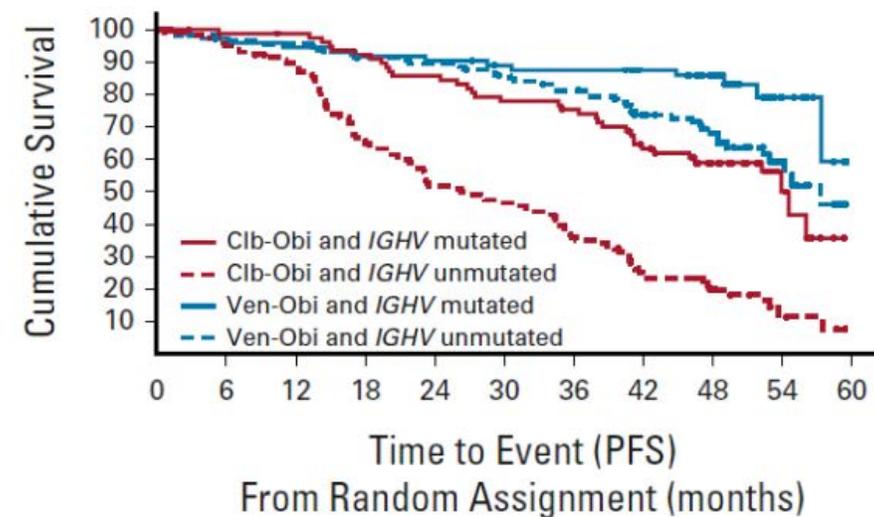
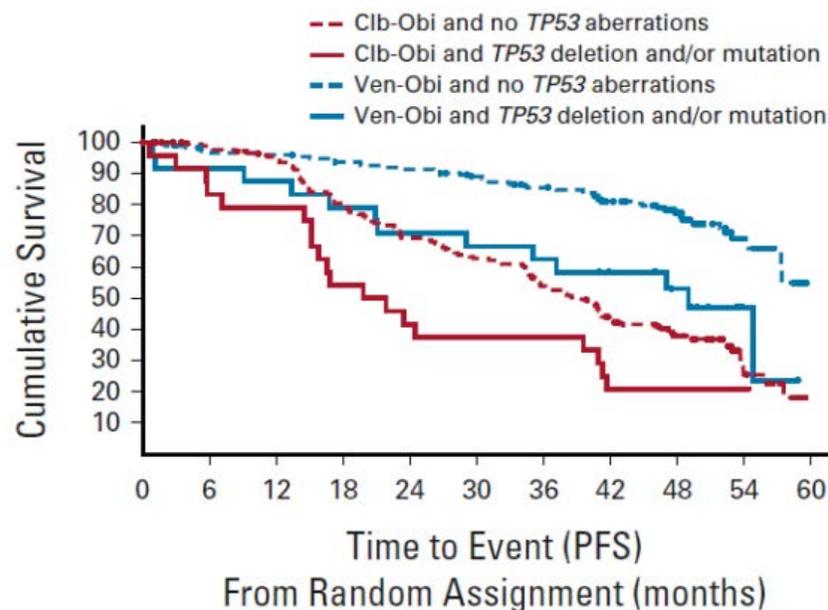
### 4 year follow up (3 yrs off drug):

**4 yr PFS**  
*all*  
Ven-G: 74%  
G-chlor: 35%

**TP53**  
Ven-G: 53%  
G-chlor: 21%

**Unmutated IGHV**  
Ven-G: 68%  
G-chlor: 20%

**4 yr OS**  
Ven-G: 85%  
G-chlor: 83%



Al-Sawaf O, et al. ASH 2020. Abs 127.  
Al-Sawaf O, Et al. EHA 2021. Absr SI46  
Al-Sawaf O et al. JCO. 2021; 39:4049

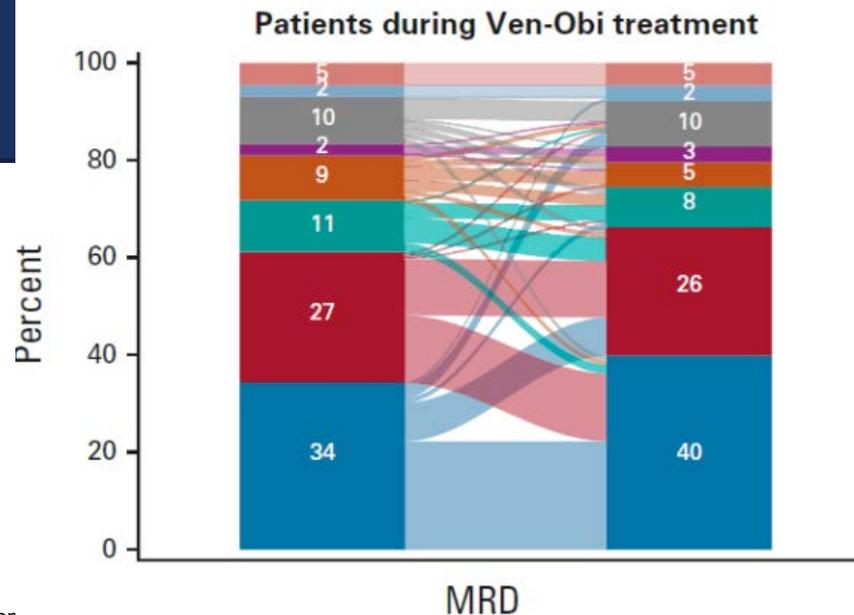
# CLL I4

## EXTENDED FOLLOW UP

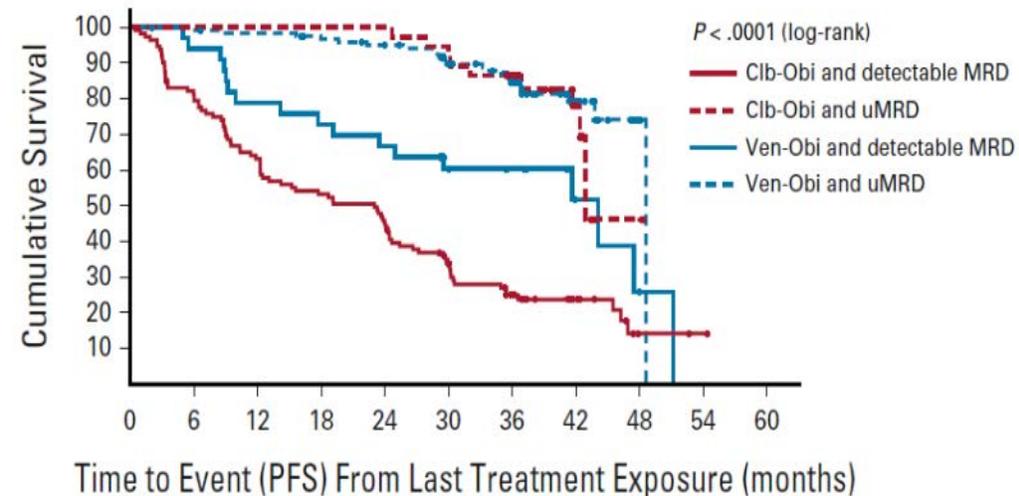
### MRD by adaptive clonoSEQ®

MRD at EOT  
74% venG,  
32% Gchl

Many patients in venG arm  
had uMRD at C7, 25%  
deepened response



### PFS by MRD



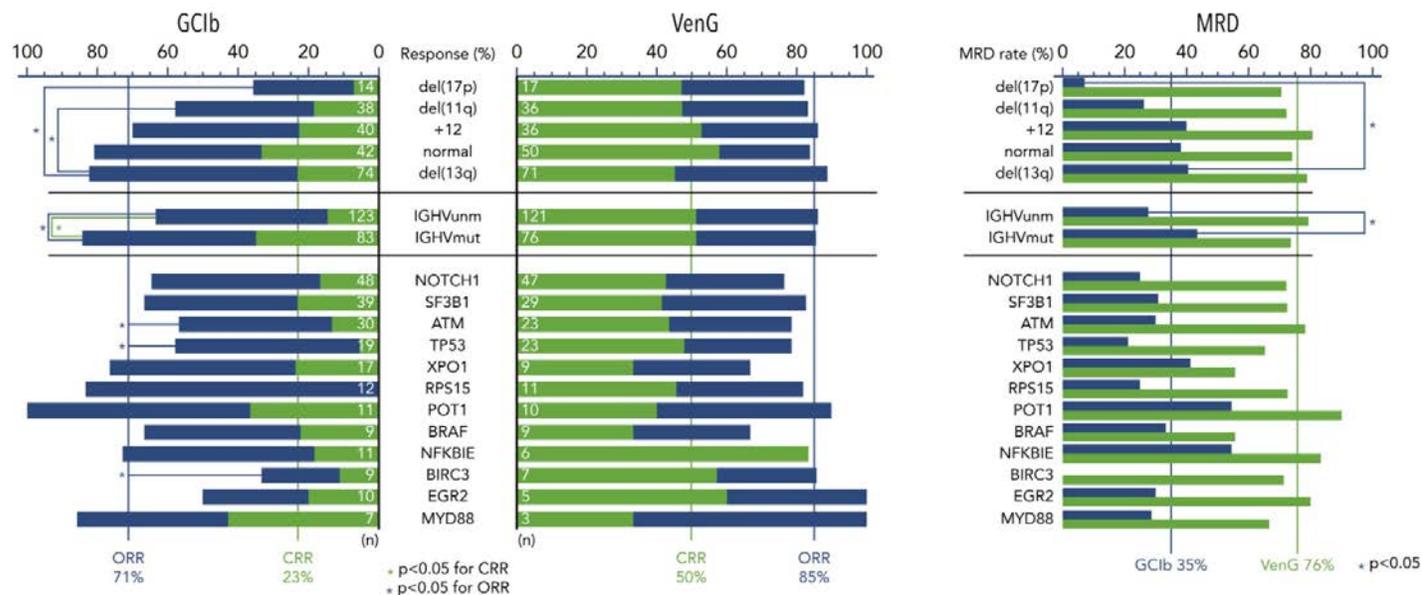
Al-Sawaf O, et al. ASH 2020. Abs 127.  
Al-Sawaf O, Et al. EHA 2021. Absr S146  
Al-Sawaf O et al. JCO. 2021; 39:4049

# CLL14

## ROLE OF MARKERS IN ORR AND MRD

Assessment of NGS including minor mutations (VAF 2-10%)

\*No BCL2 G101V mutations found\*



**52 months follow up (markers):**

**PFS (p<0.05):**

Ven-G: del17p/TP53+, UM-IGHV

G-chlor: del17p/TP53+, ATM+, BIRC3+, NOTCH1+, SF3B1+, UM-IGHV

**OS (p<0.05):**

Ven-G: del17p/TP53+

G-chlor: del17p/TP53+, SF3B1+, UM-IGHV

# IBRUTINIB + VENETOCLAX FRONTLINE - MDACC PH2

## Treatment Naïve CLL + High Risk

### (1 of following):

TP53 aberration (del17p and/or TP53 mut)  
 Del11q  
 Unmutated IGHV  
 Age >65 yo

### Treatment plan:

Ibr x 3cycles → 24 cycles combination V+Ibr  
 If BM MRD+ @ 24mo → continue Ibr  
 AMD: 24mo BM MRD+: can cont.V+ibr

## The NEW ENGLAND JOURNAL of MEDICINE

ESTABLISHED IN 1812 MAY 30, 2019 VOL. 380 NO. 22

### Ibrutinib and Venetoclax for First-Line Treatment of CLL

Nitin Jain, M.D., Michael Keating, M.D., Philip Thompson, M.D., Alessandra Ferrajoli, M.D., Jan Burger, M.D., Ph.D., Gautam Borthakur, M.D., Koichi Takahashi, M.D., Zeev Estrov, M.D., Nathan Fowler, M.D., Tapan Kadia, M.D., Marina Konopleva, M.D., Ph.D., Yesid Alvarado, M.D., Musa Yilmaz, M.D., Courtney DiNardo, M.D., Prithviraj Bose, M.D., Maro Ohanian, D.O., Naveen Pemmaraju, M.D., Elias Jabbour, M.D., Koji Sasaki, M.D., Rashmi Kanagal-Shamanna, M.D., Keyur Patel, M.D., Ph.D., Jeffrey Jorgensen, M.D., Ph.D., Naveen Giri, M.D., Xuemei Wang, M.S., Katrina Sondermann, B.A., Nichole Cruz, R.N., Chongjuan Wei, Ph.D., Ana Ayala, R.N., William Plunkett, Ph.D., Hagop Kantarjian, M.D., Varsha Gandhi, Ph.D., and William Wierda, M.D., Ph.D.

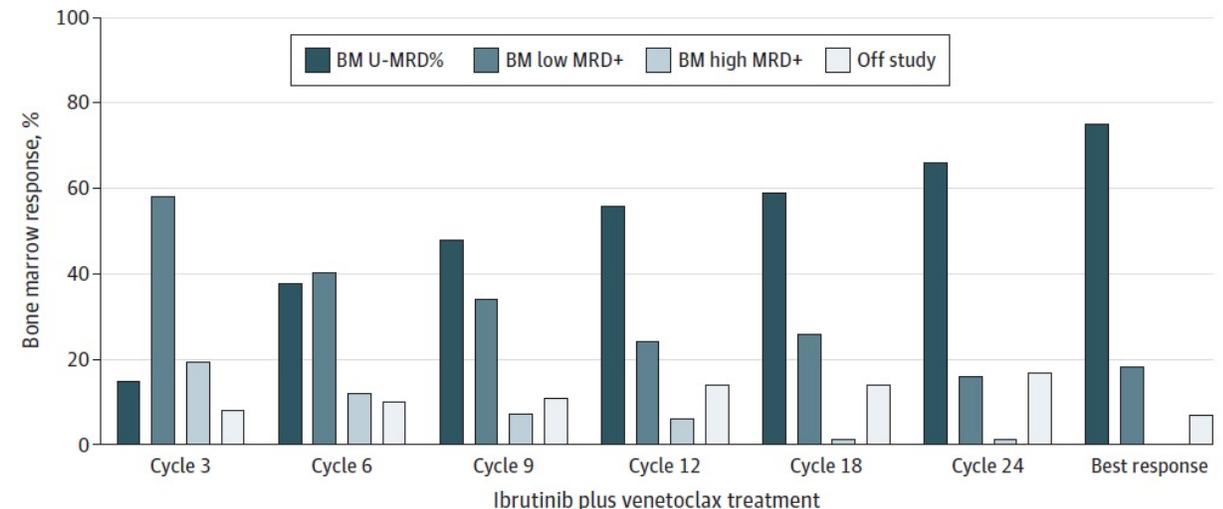
## BM uMRD:

12C: 56%  
 24C: 66%  
 Best: 75%

**3 year PFS (m38 mos follow up): 93%**

(authors report ~80% 3yrs PFS in pooled ibrutinib monotherapy and 82% in CLL14)

Figure 1. Bone Marrow (BM) Measurable Residual Disease (MRD) Response at Serial Points on an Intent-to-Treat Basis in 80 Patients

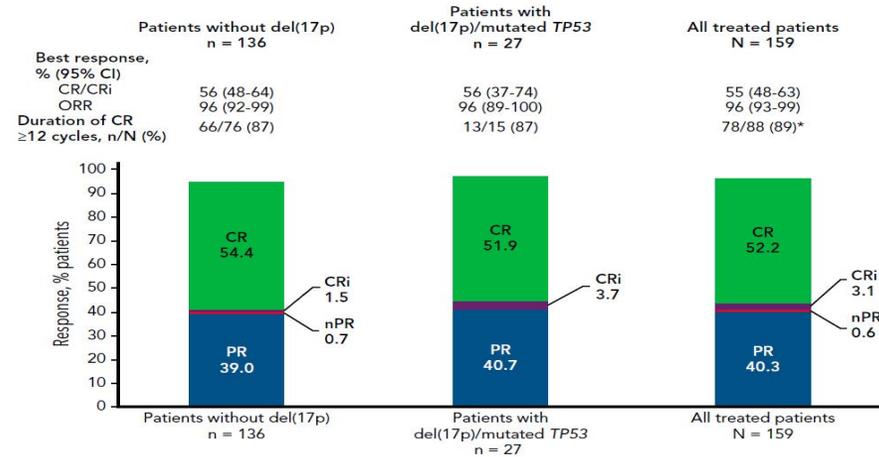


# IBRUTINIB + VENETOCLAX FRONTLINE, CAPTIVATE (PCYC-1142)

## Fixed Duration Cohort

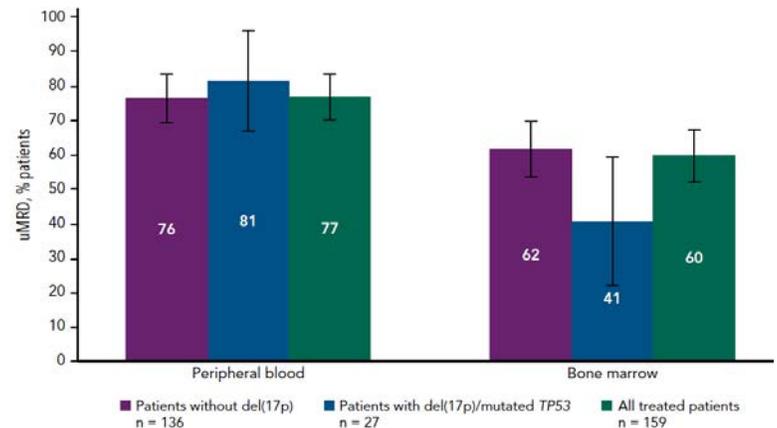
Median time on study: ~28 months  
Median time off treatment: ~14 months

Characteristic	All treated patients (n = 159), n (%)
<b>Hierarchical cytogenetics (FISH) classification*</b>	
Del(17p)	20 (13)
Del(11q)	28 (18)
Trisomy 12	23 (14)
Normal	33 (21)
Del(13q)	54 (34)
Unknown	1 (1)
<b>Mutated TP53</b>	
Yes	16 (10)
No	142 (89)
Unknown	1 (1)
<b>Del(17p) or mutated TP53</b>	
Yes	27 (17)
No	129 (81)
Unknown	3 (2)

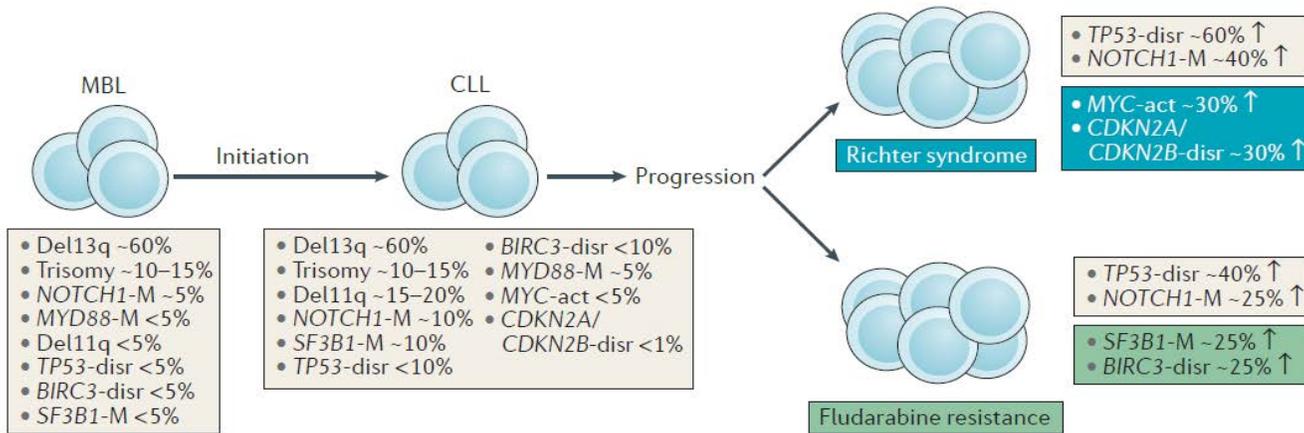


**Primary endpoint:**  
Investigator CR/CRi rate  
In patients without del17p: 56%  
(min rate of 37%)

**MRD**



# RICHTER'S TRANSFORMATION



## SWOG CLL Study S1925

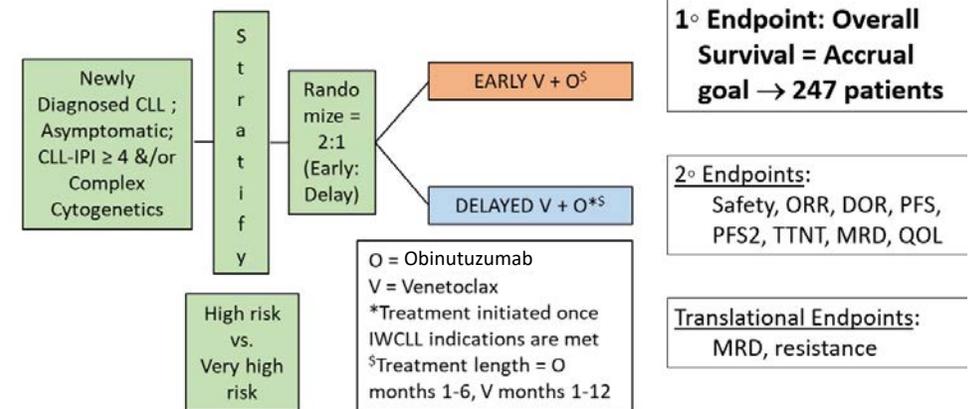
Randomized, Phase III Study of Early Intervention with Venetoclax and Obinutuzumab versus DeLayed Therapy with Venetoclax and Obinutuzumab in Newly Diagnosed Asymptomatic High-Risk Patients with CLL:  
**EVOLVE CLL Study**

### SWOG CLL Study Group

Debbie Stephens, Brian Hill, John Pagel, Alexey Danilov, Mazyar Shadman, Susan O'Brien, Steve Coutre  
ECOG Champion: Anthony Mato  
Alliance Champion: Danielle M Brander



## S1925: EVOLVE Study



# Agenda: CLL Update

## A Meeting within a Meeting

**MODULE 1: Front-Line CLL – Standard-Risk Patients — Dr Mato**

**MODULE 2: Chronic Lymphocytic Leukemia in 2022: Front-Line Therapy in Patients with High-Risk Disease — Dr Brander**

**MODULE 3: Fixed-Duration Targeted Therapy for CLL — Dr Wierda**

**MODULE 4: Novel Investigational Agents and Strategies in CLL — Dr Davids**

**MODULE 5: CLL 2030?**

# Cases and Questions: TLS and Venetoclax/Obinutuzumab



**Adam Kittai, MD**

**A 60-year-old patient with CLL, an absolute lymphocyte count of 80,000 and several involved lymph nodes that are larger than 5 centimeters is about to receive venetoclax. If a local tertiary center offered to start this patient on treatment and then transfer the patient back to you, would you likely use this service?**

Yes

No

No, but I would if they helped me manage the case virtually

I'm not sure

# Cases and Questions: Management of BTK- and Venetoclax-Refractory CLL



**Christine Ryan, MD**

## Have you administered or would you administer a BTK inhibitor in combination with venetoclax as first-line treatment for CLL?

I have

I have not but would for the right patient

I have not and would not

I'm not sure

**What would be your most likely approach for a patient with newly diagnosed CLL to whom you decided to administer up-front venetoclax/obinutuzumab and who has detectable MRD after completing 1 year of treatment?**

Continue treatment

Discontinue treatment

I'm not sure

# Fixed-duration Targeted Therapy for CLL

**12 October 2022**

**WILLIAM G. WIERDA MD,PHD**

*PROFESSOR OF MEDICINE*

*SECTION HEAD, CLL*

*DEPARTMENT OF LEUKEMIA*

*U.T. M.D. ANDERSON CANCER CENTER*

*HOUSTON, TX USA*

# BTKi- vs. BCL-2i-based Treatment

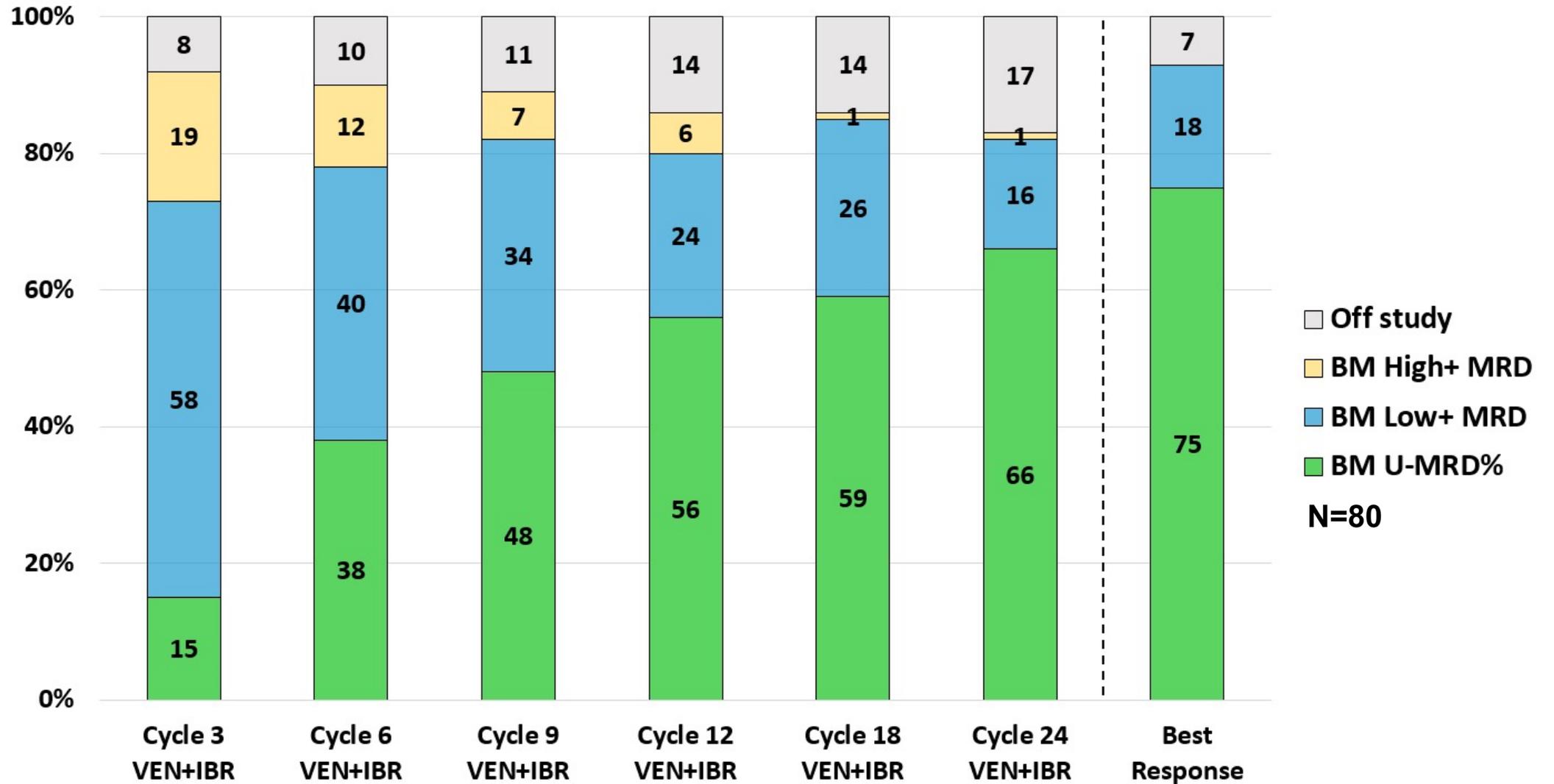
## BTK Inhibitor<sup>1-4</sup>

- Easy initiation
- Continuous and indefinite therapy
- Very low TLS risk
- More cardiac risk
- Some favor in del(17p)/mutated-*TP53*
- Activity in nodal disease

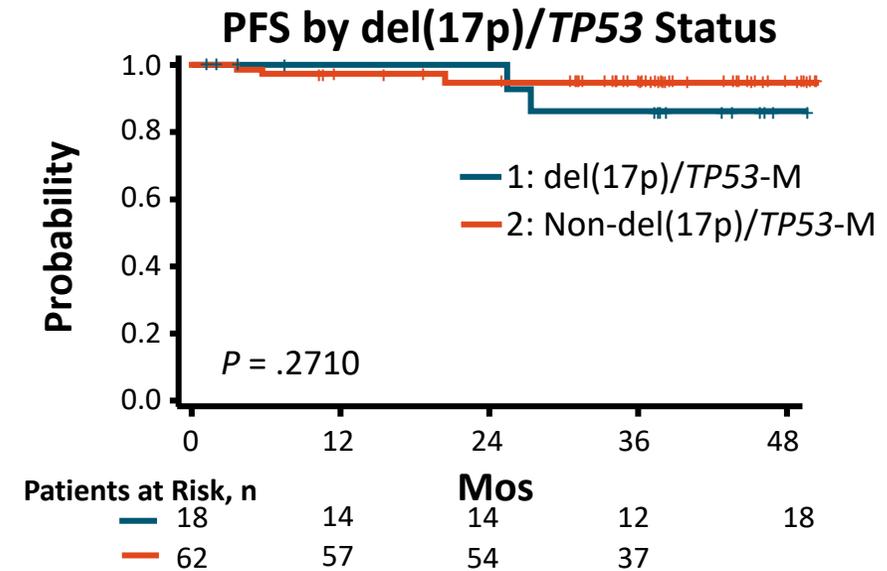
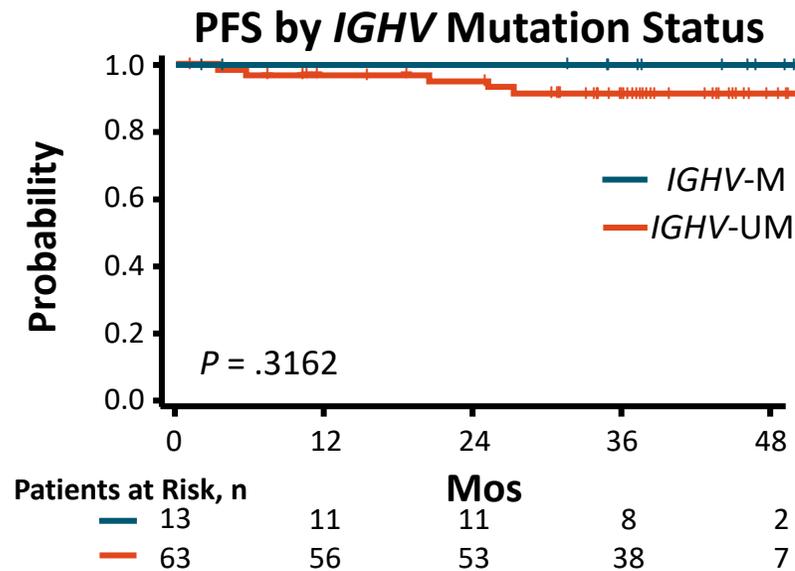
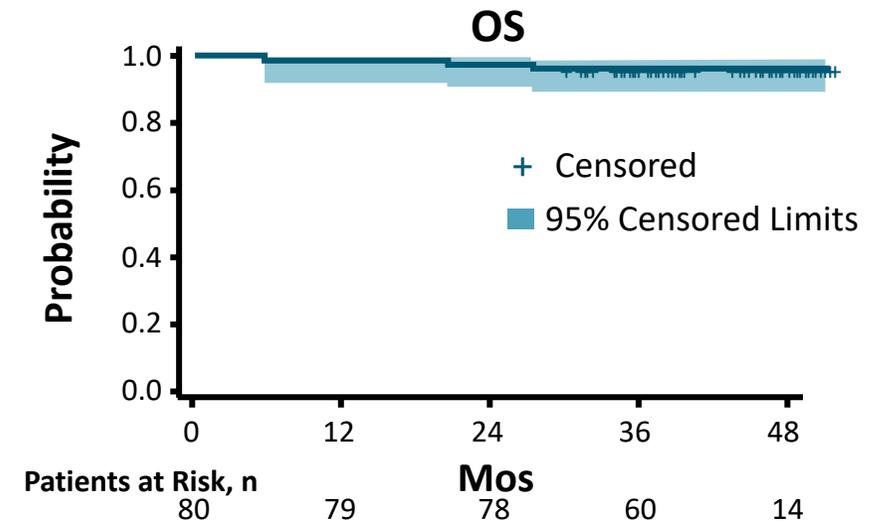
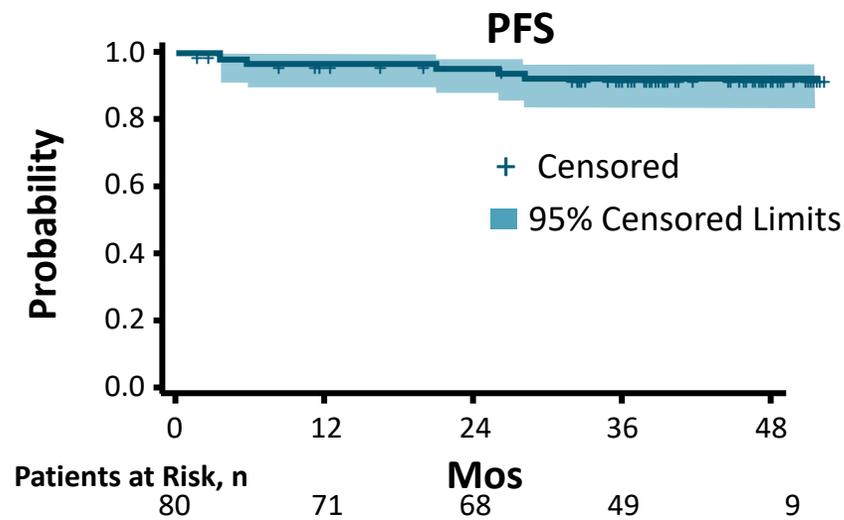
## BCL-2 Inhibitor<sup>4,5</sup>

- Risk for TLS requires monitoring for initiation
- Includes CD20 mAb – immunosuppression
- Fixed duration
- GFR sensitivity
- Concern for del(17p)/mutated-*TP53*
- Activity in BM and blood

# Firstline IBR+VEN BM MRD Responses Over Time

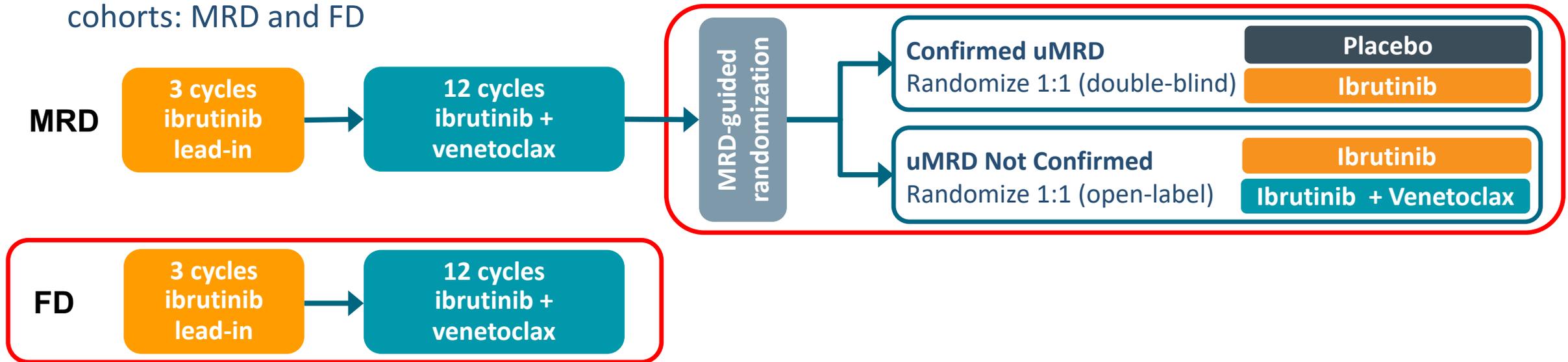


# Frontline Ibrutinib + Venetoclax: Survival Outcomes



# Phase 2 CAPTIVATE Study

- CAPTIVATE (PCYC-1142) is an international, multicenter phase 2 study evaluating first-line treatment with 3 cycles of ibrutinib followed by 12 cycles of combined ibrutinib + venetoclax that comprises 2 cohorts: MRD and FD



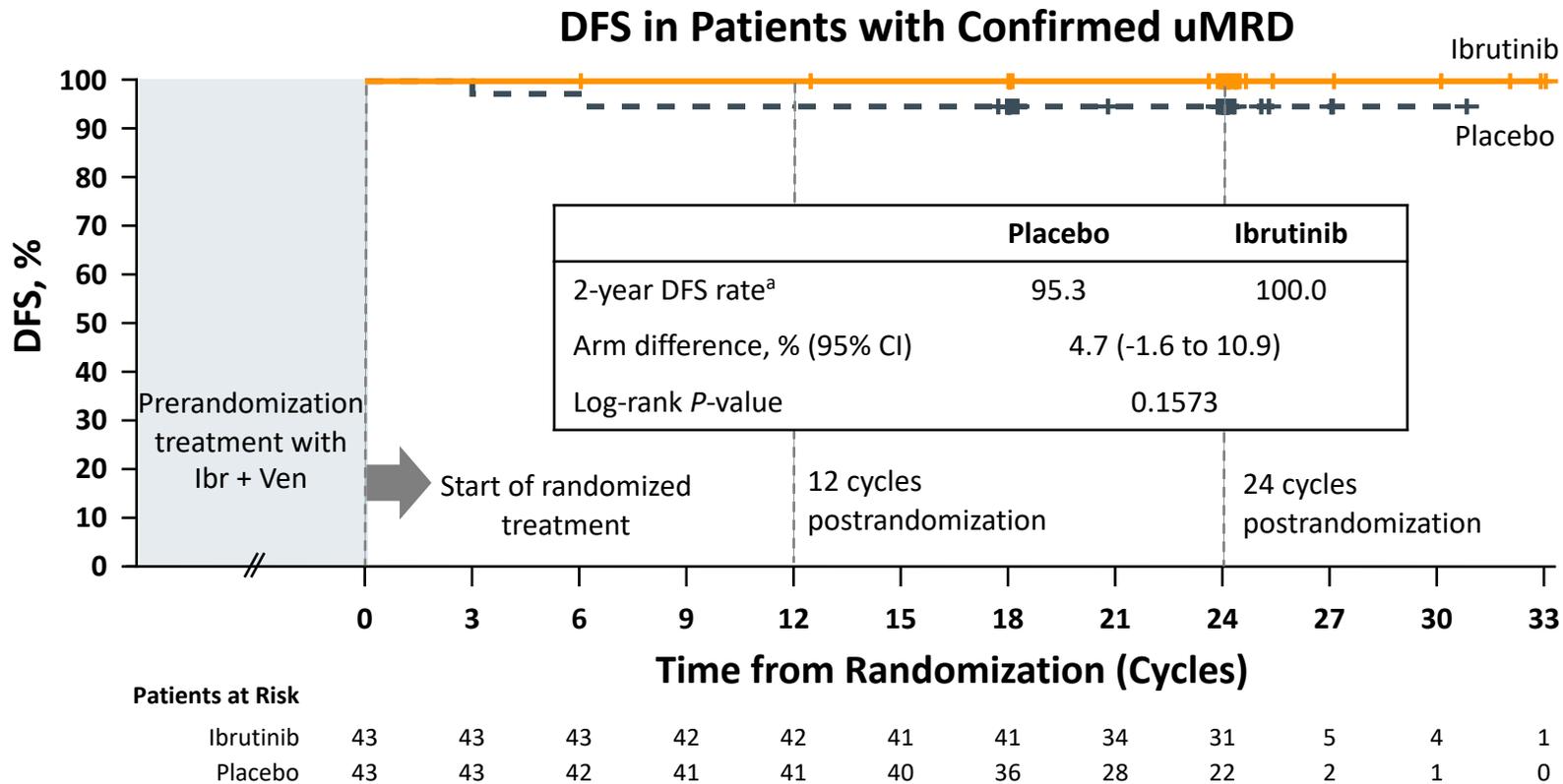
- Results from the MRD cohort demonstrated uMRD in more than two-thirds of patients treated with 12 cycles of ibrutinib + venetoclax (PB, 75%; BM, 68%), and 30-month PFS rates of  $\geq 95\%$  irrespective of subsequent MRD-guided randomized treatment<sup>1</sup>
- Primary analysis results from the FD cohort of CAPTIVATE are presented

BM, bone marrow; MRD, minimal residual disease; FD, fixed-duration; PB, peripheral blood; PFS, progression-free survival.

1. Wierda WG et al. ASH 2020, Abstract #123.

iwCLL 2021, CAPTIVATE-FD; Wierda et al.

# MRD Cohort: No New DFS Events Occurred Since Primary Analysis



**Median follow-up = 24 months postrandomization**

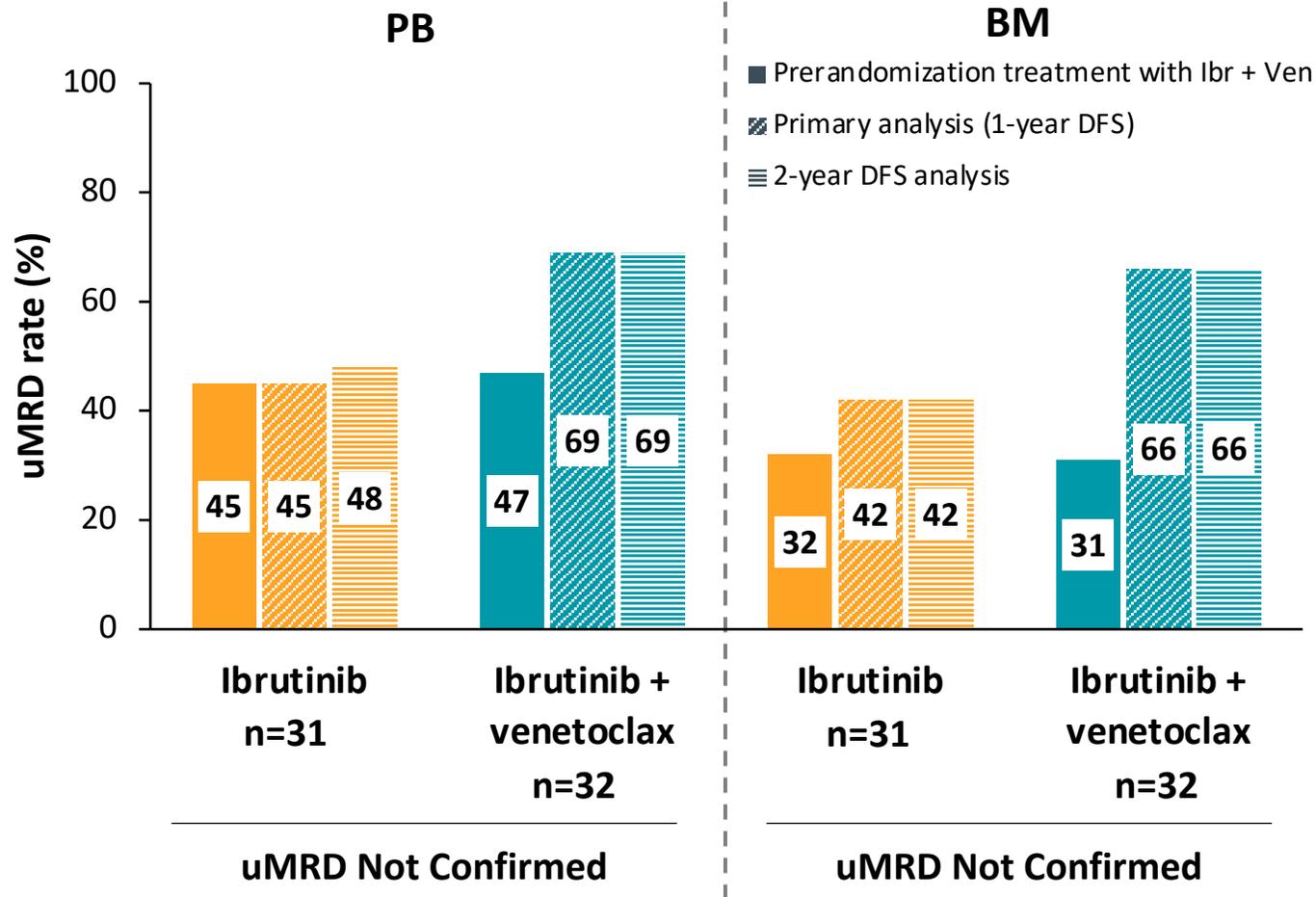
- DFS was defined as freedom from MRD relapse ( $\geq 10^{-2}$  confirmed on 2 separate occasions) and without PD or death starting from randomization after 15 cycles of treatment
- In the additional year of follow-up since the 1-year DFS primary analysis, no new MRD relapses, PD, or deaths occurred in patients with Confirmed uMRD randomized to ibrutinib or placebo

DFS, disease-free survival; PD, progressive disease.

<sup>a</sup>24 cycles postrandomization.

Tick marks indicate patients with censored data.

# MRD Cohort: Best uMRD Rates Improved With Further Treatment in uMRD Not Confirmed Population



- As with CR rates, greatest uMRD rate improvements occurred during the first year of randomized treatment
  - Greater improvements with ibrutinib + venetoclax than with ibrutinib
- Improvements in uMRD rates were similar between patients achieving CR or PR

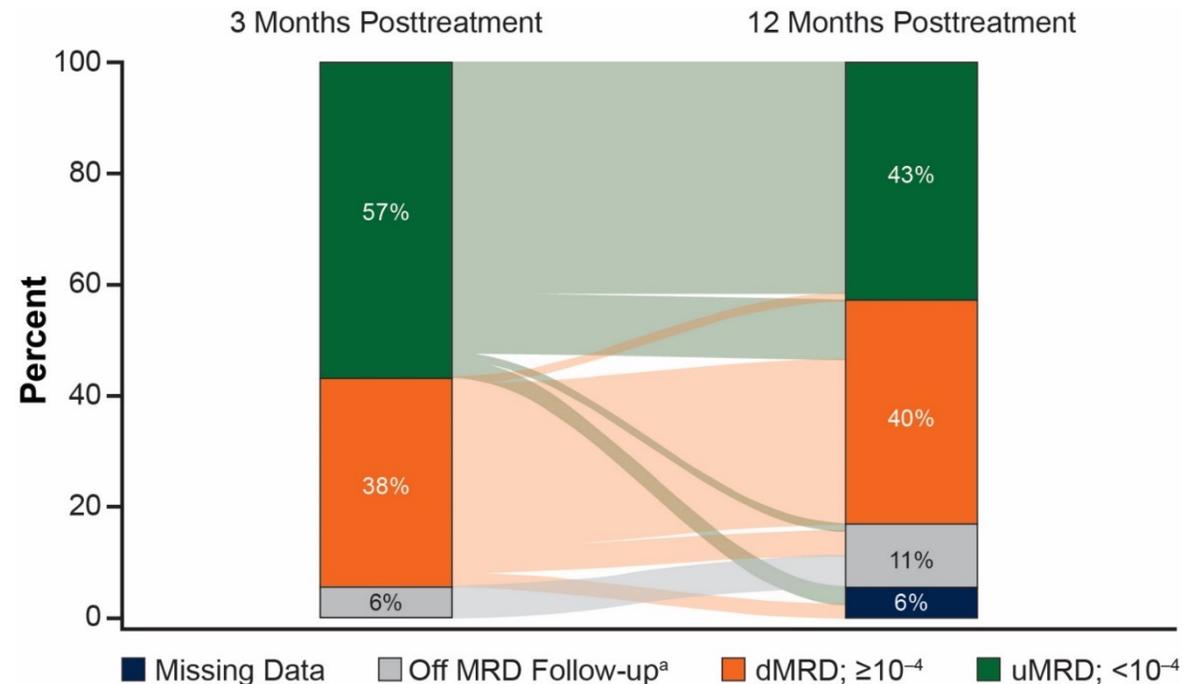
PR, partial response.

<sup>a</sup>Confirmed uMRD defined as having uMRD ( $<10^{-4}$  by 8-color flow cytometry) serially over  $\geq 2$  assessments  $\geq 3$  months apart and in both PB and BM; the best uMRD rates in the Confirmed uMRD population were 100% in both PB and BM.

# CAPTIVATE FD: With An Additional Year of Off-treatment Follow-up Since the Primary Analysis, Rates of CR and Undetectable MRD Remained High

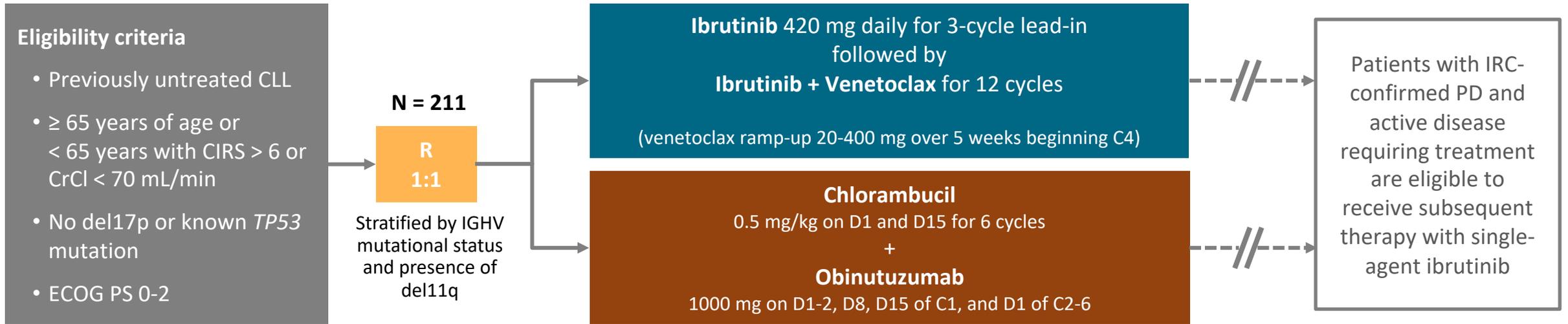
- The CR rate in all treated patients increased from 55% (95% CI, 48–63) at primary analysis to 57% (95% CI, 50–65) with an additional year of follow-up off treatment
- 79% of patients (125/159) had a best response of uMRD in PB and/or BM

- Of patients with uMRD in PB at 3 months posttreatment, 78% (66/85) of evaluable patients maintained uMRD through 12 months posttreatment



<sup>a</sup>Off MRD Follow-up included patients who met any one of the criteria: progressive disease, initiation of subsequent therapy, death, or withdrawal from study. BM, bone marrow; dMRD, detectable minimal residual disease; MRD, minimal residual disease; PB, peripheral blood; uMRD, undetectable minimal residual disease.

# Phase 3 GLOW Study Design (NCT03462719)

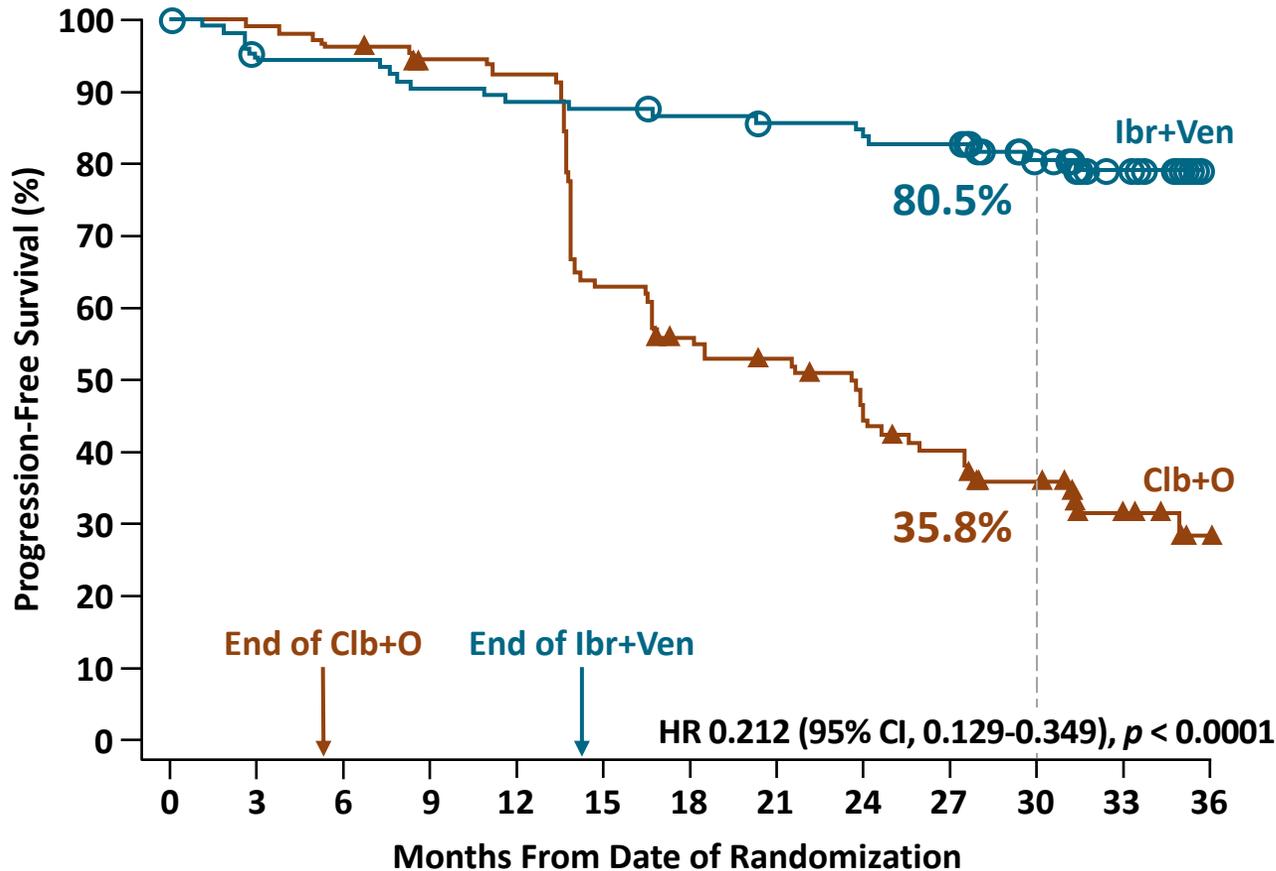


- **Study primary endpoint:** PFS as assessed by IRC
- **Current MRD analysis:**
  - MRD evaluated via NGS and reported with cutoffs of  $< 10^{-4}$  and  $< 10^{-5}$  (not all samples had sufficient cell yield to be analyzed at  $< 10^{-6}$ ). NGS analysis not yet available beyond EOT+12 time point
  - PB/BM concordance calculated for patients with uMRD in PB at EOT+3 who had a paired BM sample
  - PFS results updated with 34.1 months of follow-up

BM, bone marrow; C, cycle (28 days); CIRS, Cumulative Illness Rating Scale score; CrCl, creatinine clearance; D, day; ECOG PS, Eastern Cooperative Oncology Group performance status; EOT, end of treatment; EOT+3, 3 months after EOT; EOT+12, 12 months after EOT; IRC, independent review committee; NGS, next-generation sequencing; PB, peripheral blood; PD, progressive disease; R, randomization; uMRD, undetectable minimal residual disease.



# GLOW: Superior Progression-Free Survival With Ibr+Ven vs Clb+O Was Maintained With Median 34.1 Months of Follow-up



## Patients at risk

Ibr+Ven	106	98	98	94	92	91	89	87	86	84	71	42	1
Clb+O	105	104	101	96	94	64	55	51	43	37	30	13	3

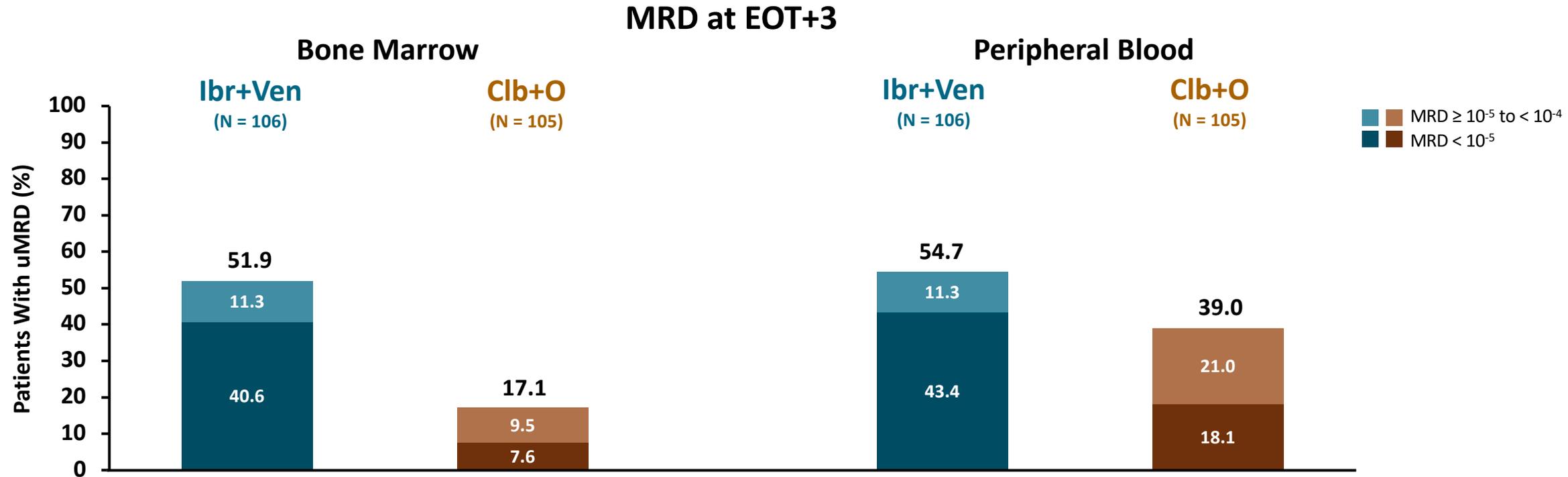
CI, confidence interval; HR, hazard ratio; OS, overall survival.

Munir T, et al. ASH 2021, Abstract #70

- IRC-assessed PFS for Ibr+Ven was superior to Clb+O at primary analysis (median 27.7 months of follow-up)
  - HR 0.216 (95% CI, 0.131-0.357;  $p < 0.0001$ )
- With median follow-up of 34.1 months:
  - IRC-assessed PFS remained superior for Ibr+Ven (HR 0.212, 95% CI, 0.129-0.349;  $p < 0.0001$ )
  - 30-month PFS: 80.5% for Ibr+Ven vs 35.8% for Clb+O
  - Overall survival HR 0.76 (95% CI, 0.35-1.64), with 11 deaths for Ibr+Ven vs 16 for Clb+O



# GLOW: uMRD Rate $< 10^{-5}$ Was Higher With Ibr+Ven vs Clb+O in Both Compartments



- In the Ibr+Ven arm, but not the Clb+O arm, most patients with uMRD  $< 10^{-4}$  had deep responses of uMRD  $< 10^{-5}$
- uMRD concordance at  $< 10^{-5}$  in PB/BM: **90.9%** for Ibr+Ven vs **36.8%** for Clb+O

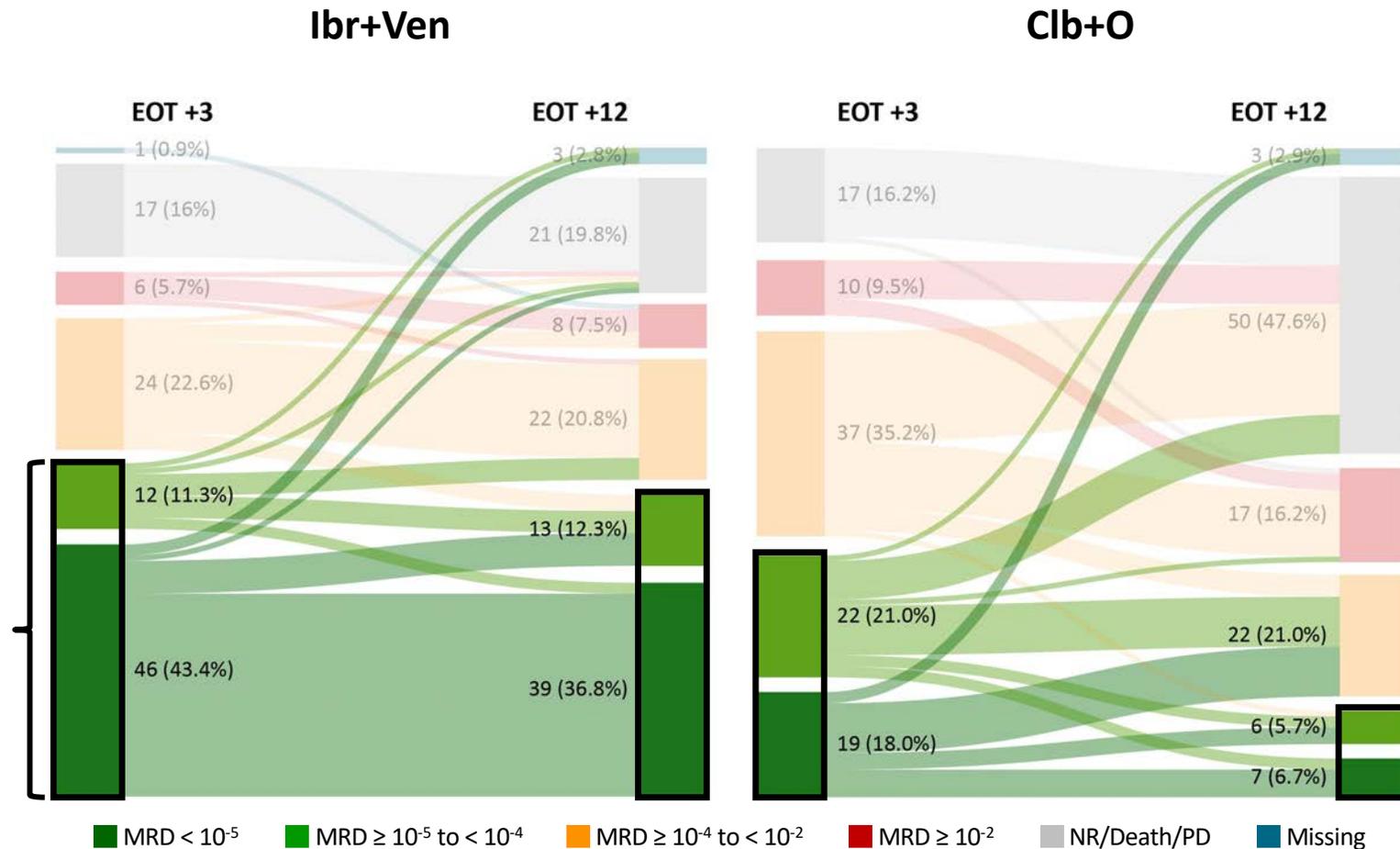
MRD results by next-generation sequencing at EOT+3. Note: Numbers may not add up due to rounding.  
BM, bone marrow; EOT, end of treatment; PB, peripheral blood.

Munir T, et al. ASH 2021, Abstract #70



# GLOW: uMRD in PB Was Better Sustained With Ibr+Ven From EOT+3 to EOT+12

- **84.5%** (49/58) of patients had sustained uMRD  $< 10^{-4}$  and **80.4%** (37/46) had sustained uMRD  $< 10^{-5}$  with Ibr+Ven<sup>a</sup>
  - 29.3% (12/41) and 26.3% (5/19) with Clb+O
- uMRD  $< 10^{-4}$  rate decreased 6% with Ibr+Ven vs 27% with Clb+O



<sup>a</sup>Sustained uMRD rate is calculated on a per-patient basis, not using intent-to-treat MRD rates at EOT+3 and EOT+12. EOT, end of treatment; NR, nonresponder; PB, peripheral blood; PD, progressive disease.



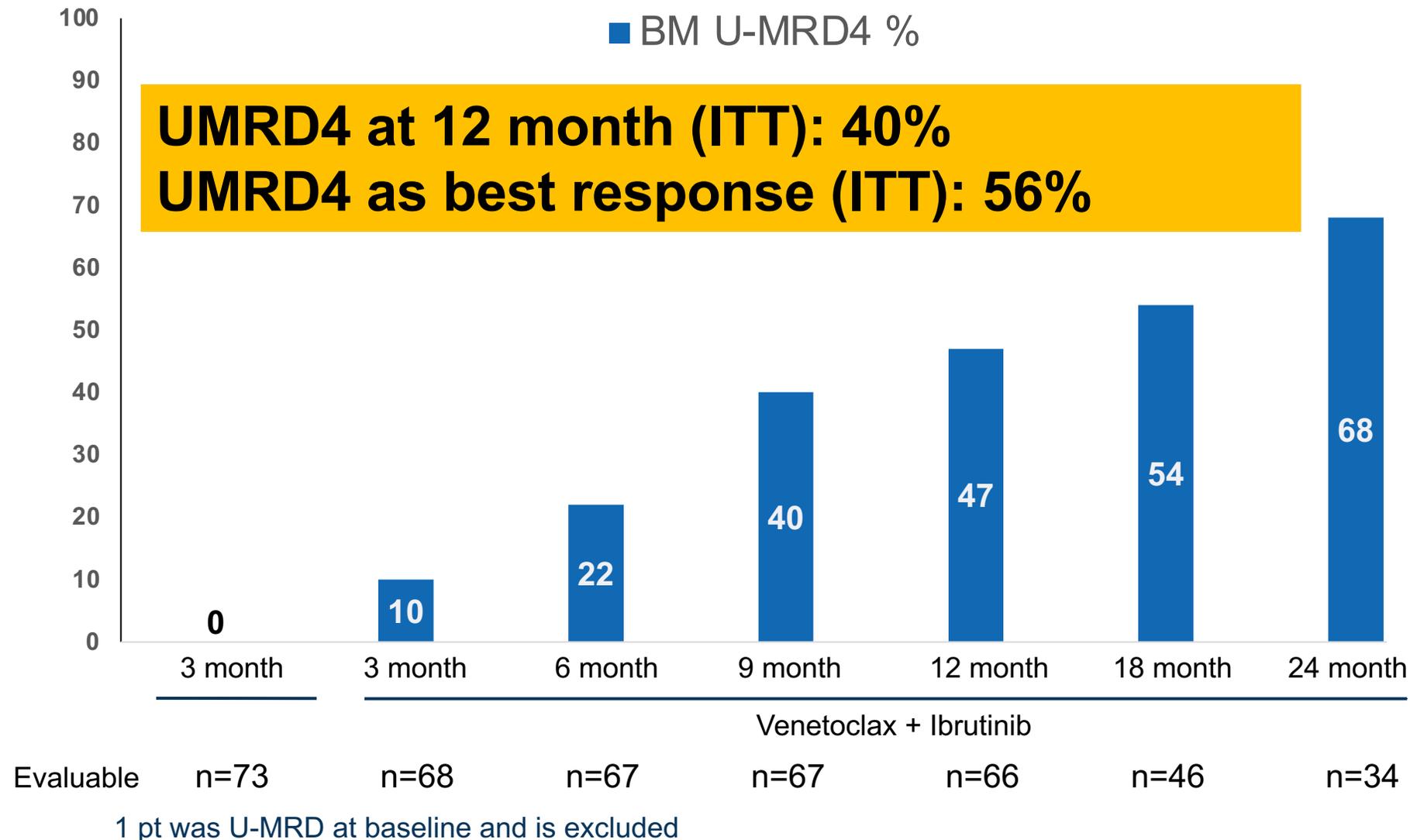
# Select Ongoing First-line Phase III Clinical Trials

Trial	Subgroup	N	Status*	MRD	Treatment Arms			
GAIA/CLL13 (NCT02950051)	Fit pts	926	Enrolled	Co-Primary	IbrVenOb	VenOb	VenR	FCR/BR
EA9161 (NCT03701282)	Fit, 18-69 yo	720	Enrolled	Secondary	IbrVenOb	IbrOb		
A041702 (NCT03737981)	≥70 yo	454	Enrolled	Secondary	IbrVenOb	IbrOb		
ACE-CL-311 (NCT03836261)	All pts	780	Enrolling	Secondary	AcaVenOb	AcaVen		FCR/BR
CRISTALLO (NCT04285567)	Fit pts [no del(17p)]	165	Enrolling	Primary	VenOb			FCR/BR
CLL17 (NCT04608318)	All pts	897	Enrolling	Secondary	IbrVen	VenOb	Ibr	
GCLLSG (NCT05197192)	High-risk	650	Enrolling	Secondary	AcaVenOb	VenOb		
MAJIC (NCT05057494)	All	600	Enrolling	Secondary	AcaVen	VenOb		

\*Status as of September 2022

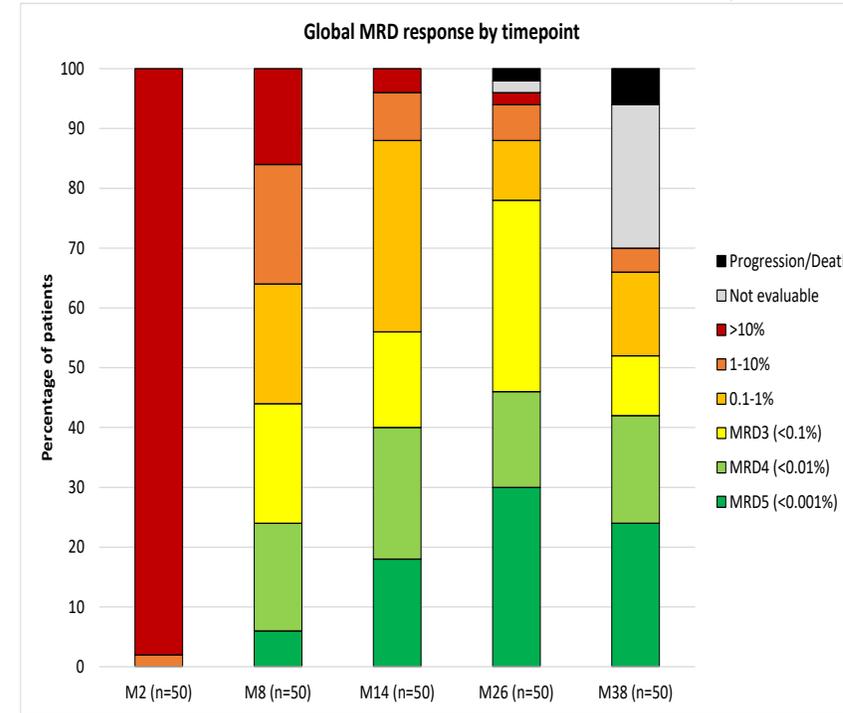
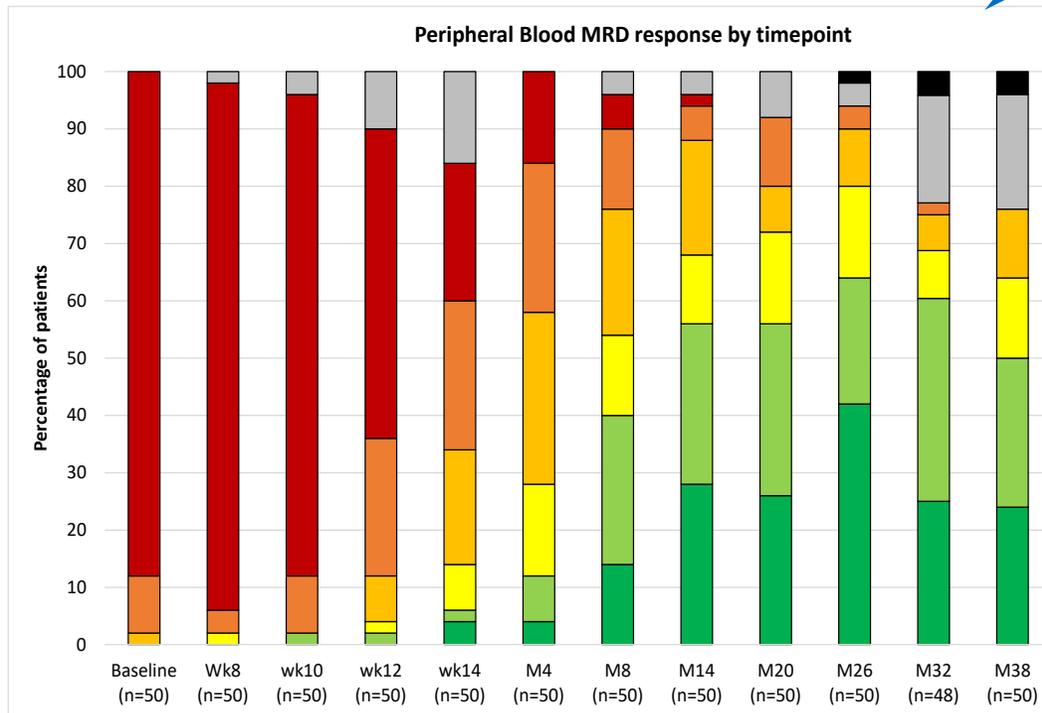
# MDACC: IBR + VEN in R/R CLL

## BM MRD4 Responses at Serial Time-Points



# CLARITY: MRD level by time-point (up to Month 38)

At month 38, MRD4 (<0.01%) negative rates were 50% and 40% in peripheral blood and bone marrow respectively in all evaluable patients\*

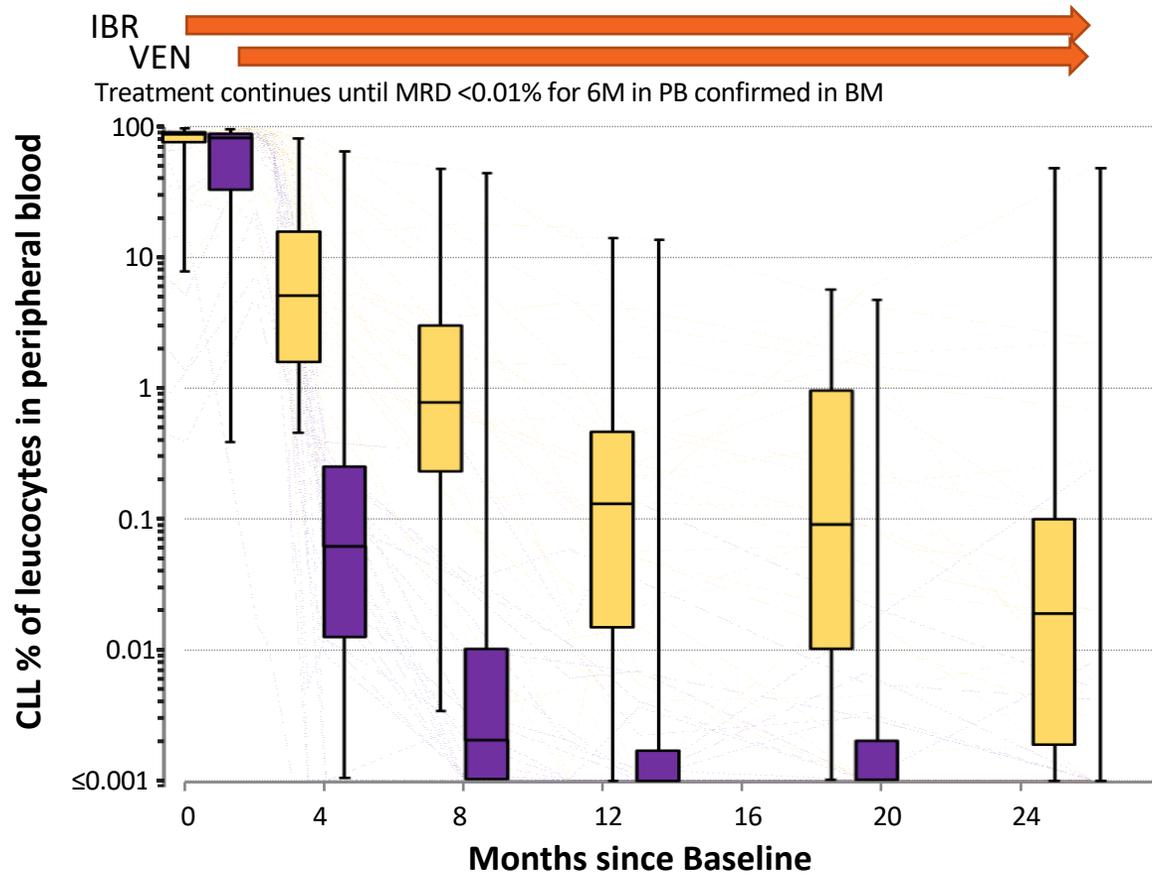


\*Data missing at month 38 due to Covid Pandemic  
Date of data lock: 6<sup>th</sup> Nov, 2020

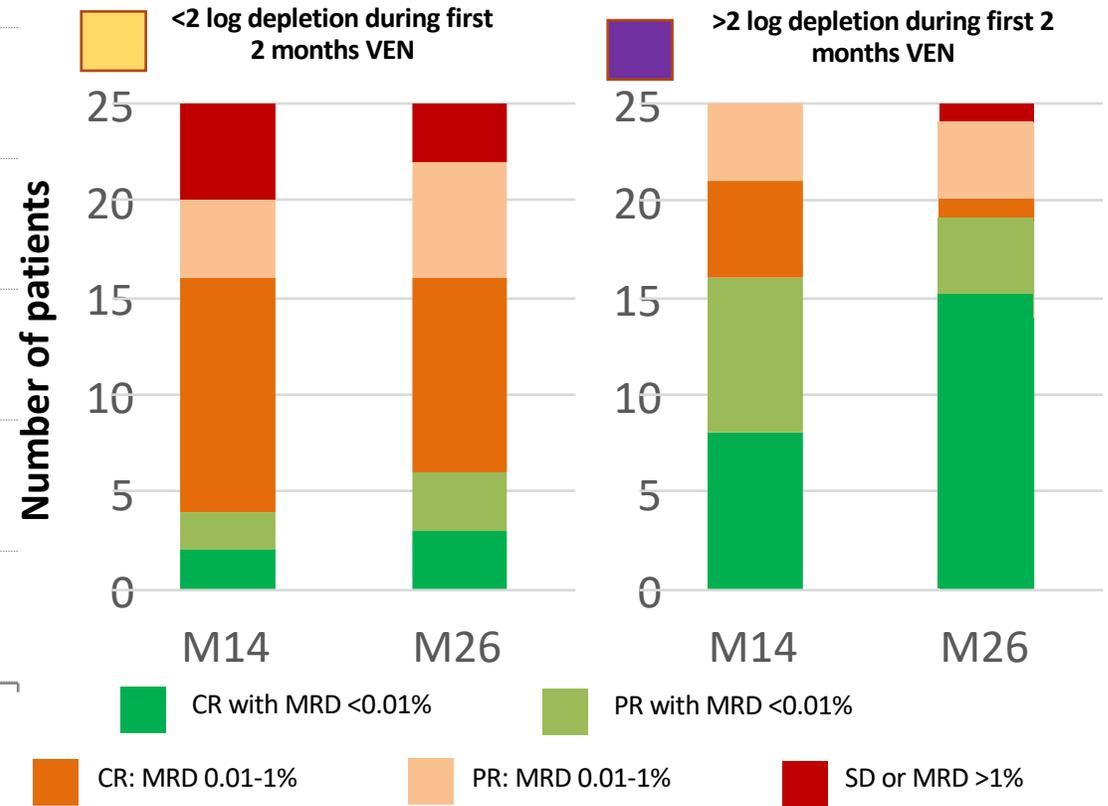
M14 M26 M38

M14 M26 M38

# CLARITY: Response Correlated with Initial Depletion Rate



IWCLL response & MRD status



Date of data lock: 06-Nov-2020

# Conclusions

- Combined targeted therapy (ibrutinib + venetoclax) results in deep remissions (uMRD) with finite-duration treatment and is well-tolerated and safe
- Ongoing phase III clinical trials will help to clarify optimal first-line combined targeted therapy and potentially ideal patient for regimen
- MRD is critical to optimizing finite-duration targeted therapy
  - Important early endpoint given deep and durable remissions
- For clarification:
  - Ideal patient for combined targeted treatment
  - Optimal combination
  - Remission duration, long-term outcomes (exposure  $\neq$  resistance = progression on treatment)

# Agenda: CLL Update

## A Meeting within a Meeting

**MODULE 1: Front-Line CLL – Standard-Risk Patients — Dr Mato**

**MODULE 2: Chronic Lymphocytic Leukemia in 2022: Front-Line Therapy in Patients with High-Risk Disease — Dr Brander**

**MODULE 3: Fixed-Duration Targeted Therapy for CLL — Dr Wierda**

**MODULE 4: Novel Investigational Agents and Strategies in CLL — Dr Davids**

**MODULE 5: CLL 2030?**

# Cases and Questions: Management of CLL with BTK Resistance Mutations; Role of Transplant

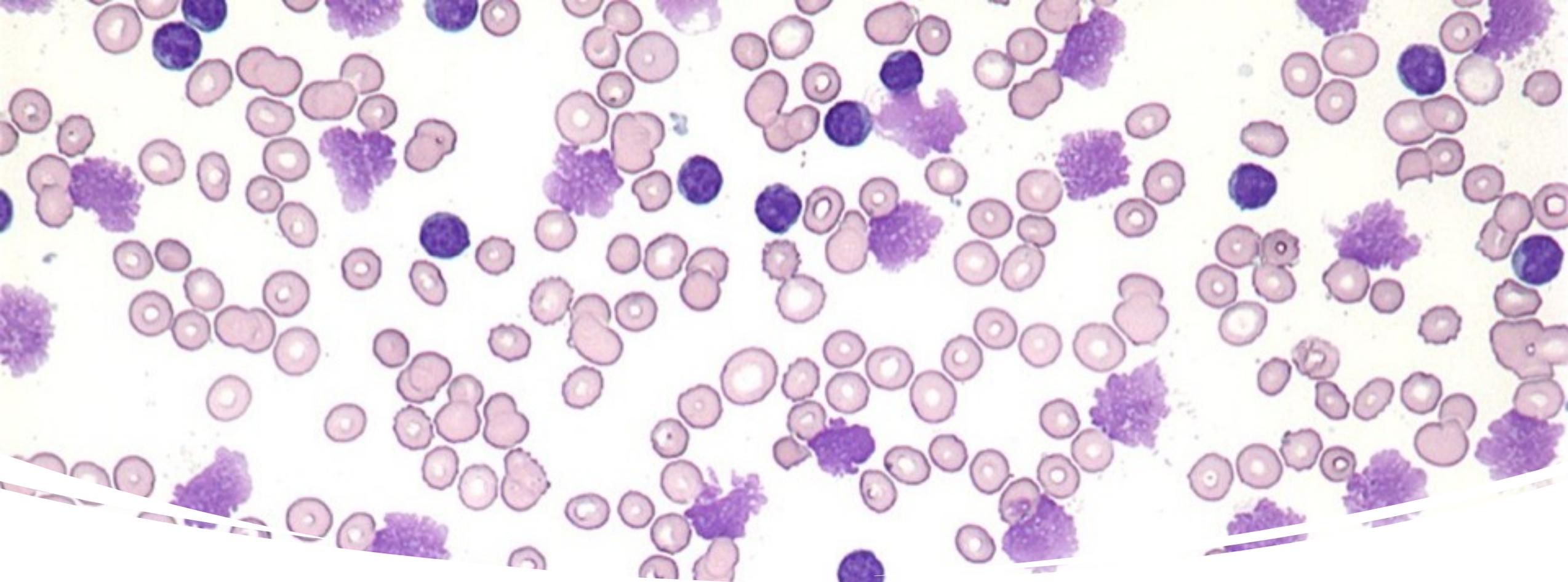


**Adam Kittai, MD**

# Cases and Questions: New Agents and Strategies



**Adam Kittai, MD**



# Novel investigational agents and strategies in CLL

Matthew S. Davids, MD, MMSc

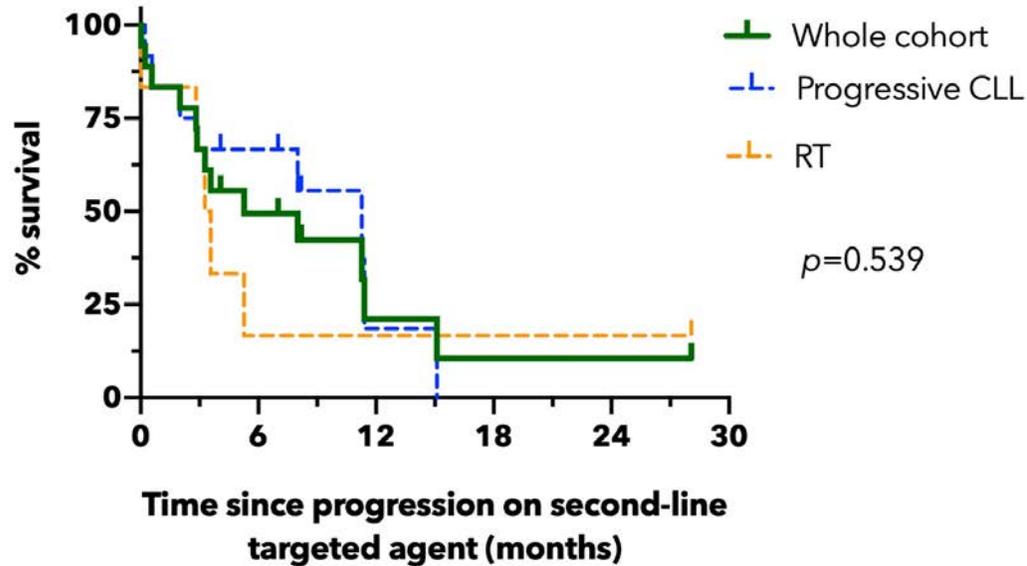
Dana-Farber Cancer Institute | Harvard Medical School

2022 UNMC Pan Pacific CLL | Research To Practice

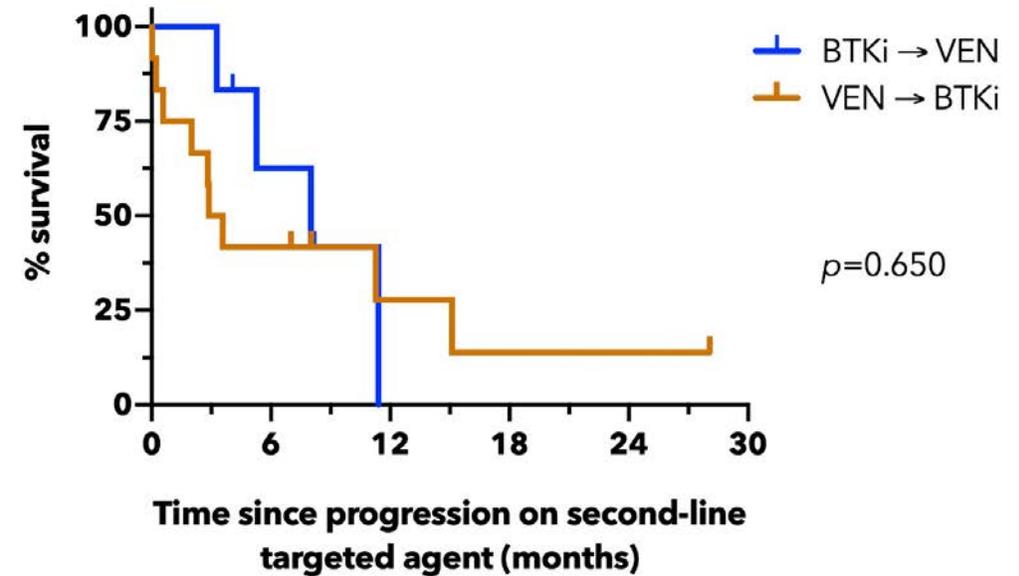
October 12, 2022

# Outcomes for “double class resistant” CLL are poor

2011 to 2020: 165 pts treated with Ven or BTKi → 42 double exposed → 18 double refractory



No. at risk	Whole	18	8	2	1	1
CLL	12	7	1			
RT	6	1	1	1	1	1



No. at risk	B > V	6	3			
V > B	12	5	2	1	1	

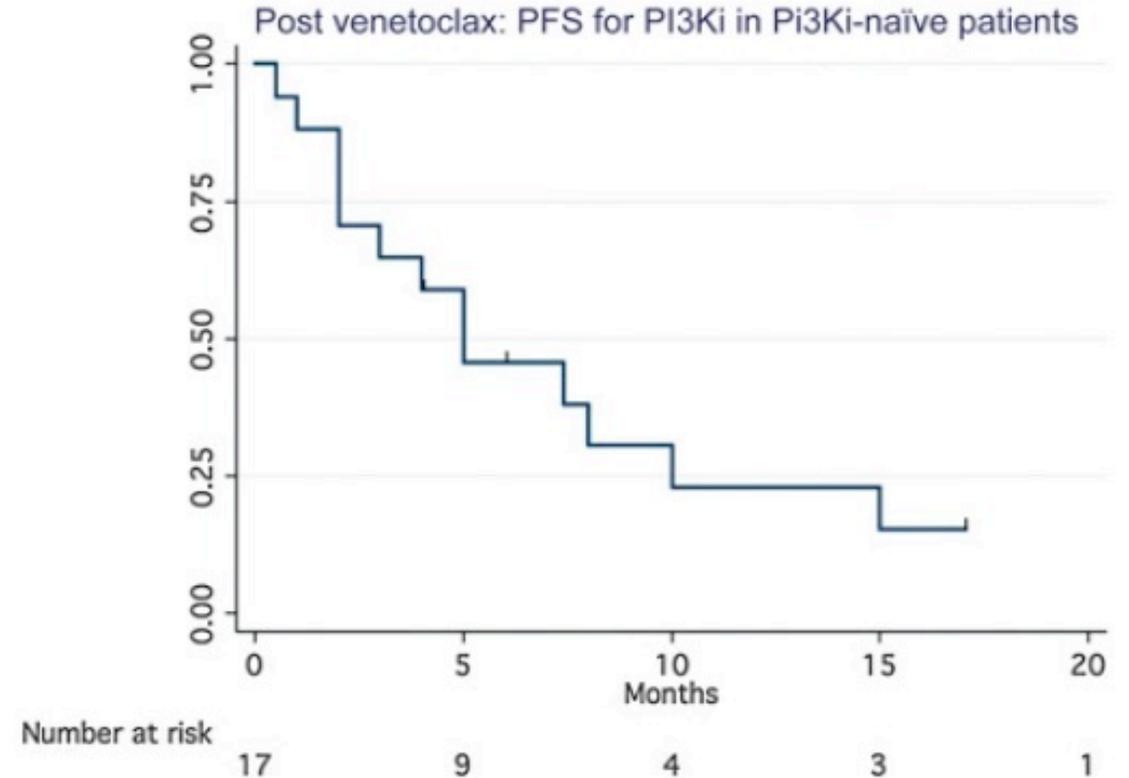
- Whole cohort median OS: 5.3 months
- No difference in OS between progressive CLL (11.3 months) and RT (3.4 months)

- No difference in OS between BTKi → VEN (8 months) and VEN → BTKi (3.2 months)

# Real-world data suggest PI3Ki following Ven & BTKi have activity but limited durability

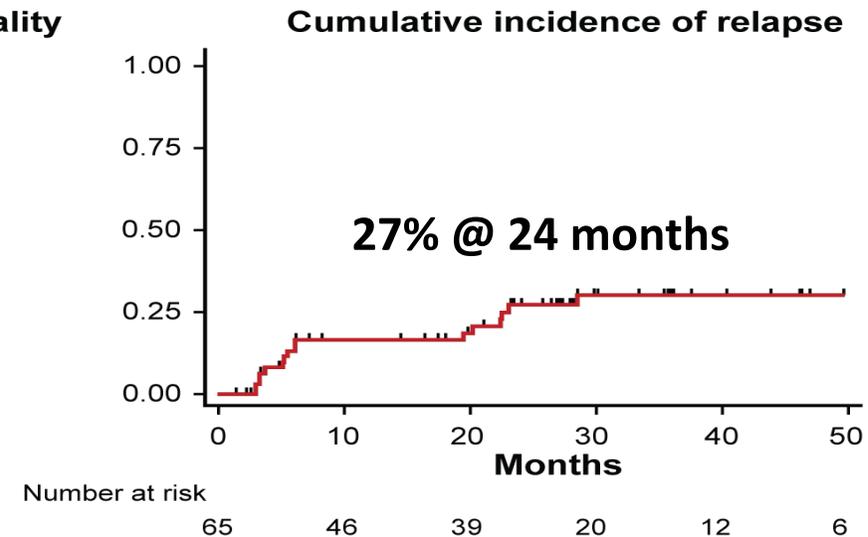
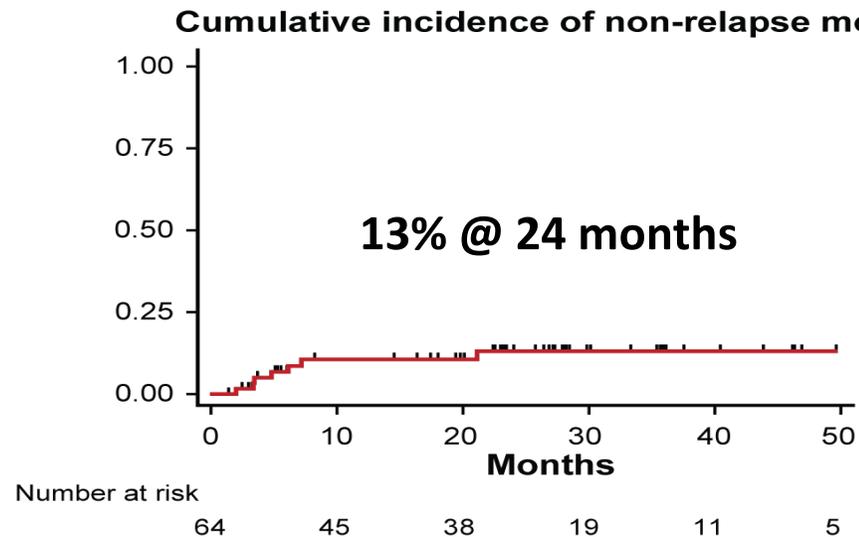
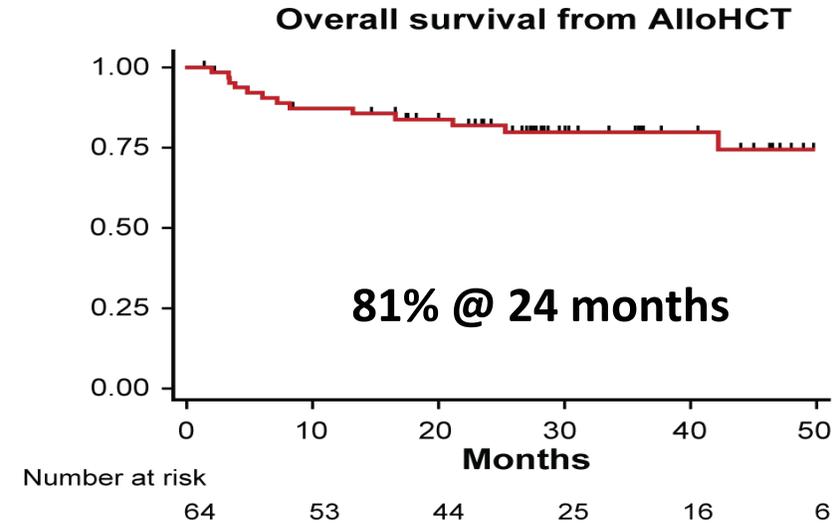
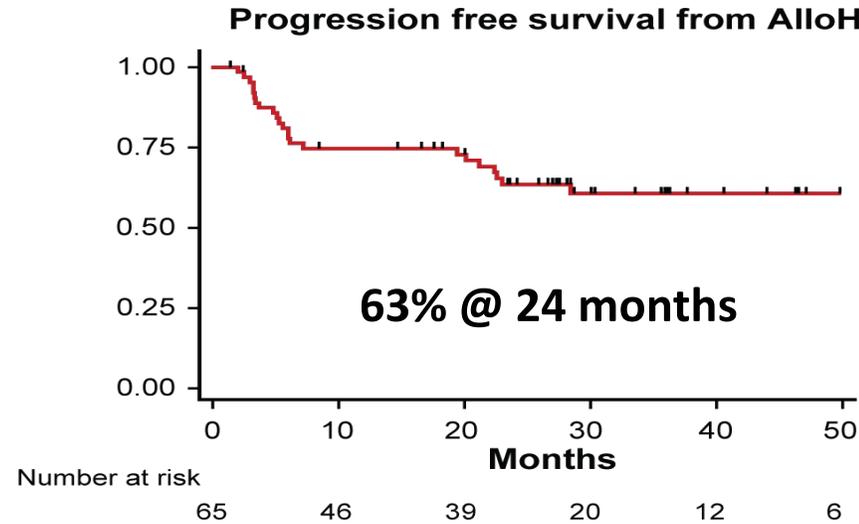
**17 pts, median 4 prior tx, included BTKi intolerant & resistant**

- **ORR 47%**
- **Median PFS 5 months**



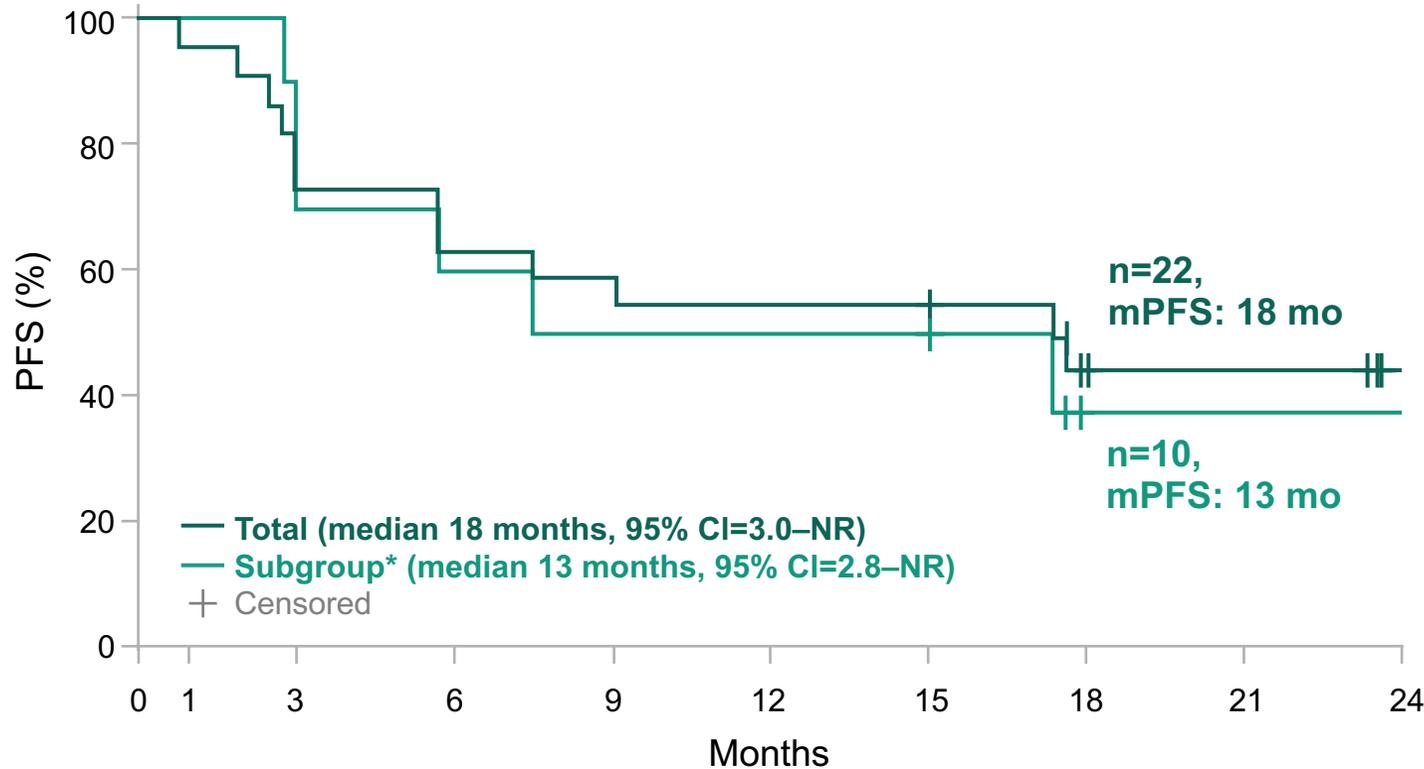
# Allogeneic transplant remains effective in double class exposed CLL

Multicenter study (n=65); 82% BTKi, 40% Ven, both 17%. Likely few pts truly double-refractory



# Is anti-CD19 CAR T-cell therapy effective for patients with double-refractory CLL?

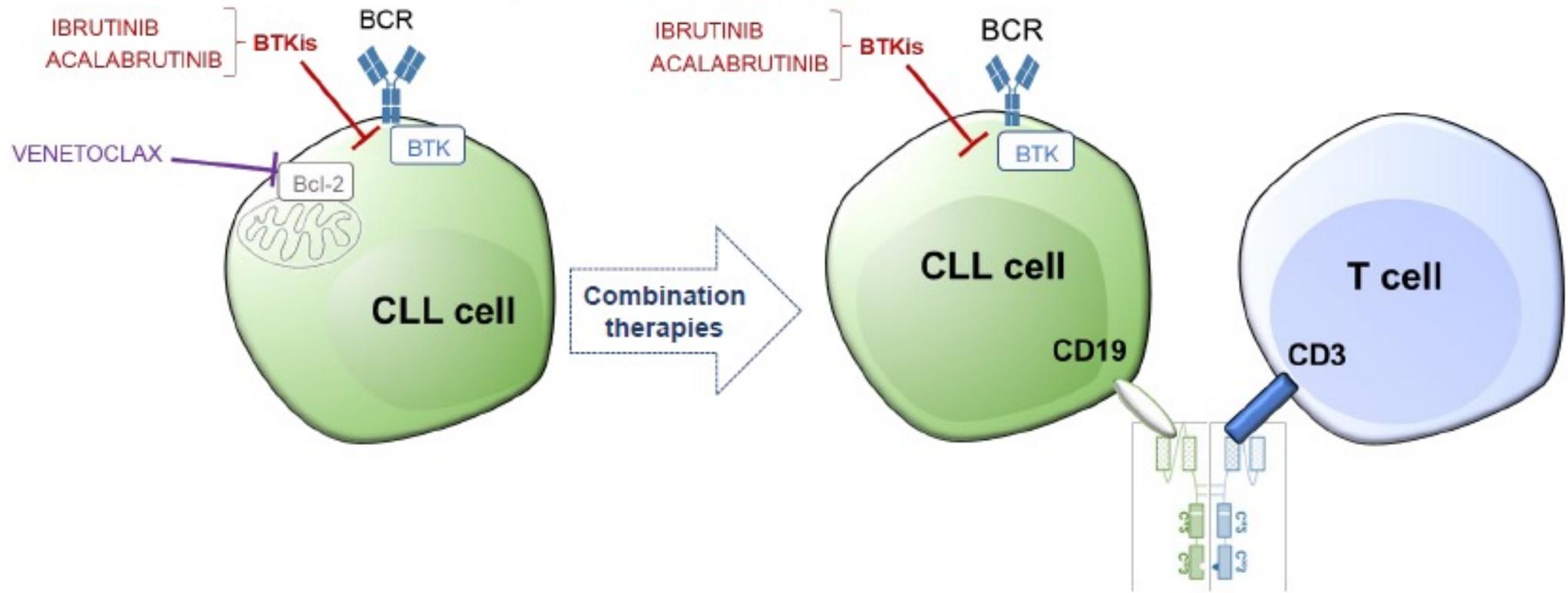
TRANSCEND-CLL-004: PFS with liso-cel ± ibrutinib (N=23)  
(median follow-up: 24 months)



- Subgroup included patients with:
- BTKi progression and
  - venetoclax failure because of
    - progression
    - intolerance
    - failure to respond after ≥3 months of therapy

# Bi-specific antibodies may eventually play a role in CLL treatment

Successful treatment modalities for CLL but variable patient responses and drug resistance  
-> Call for adjunct therapies



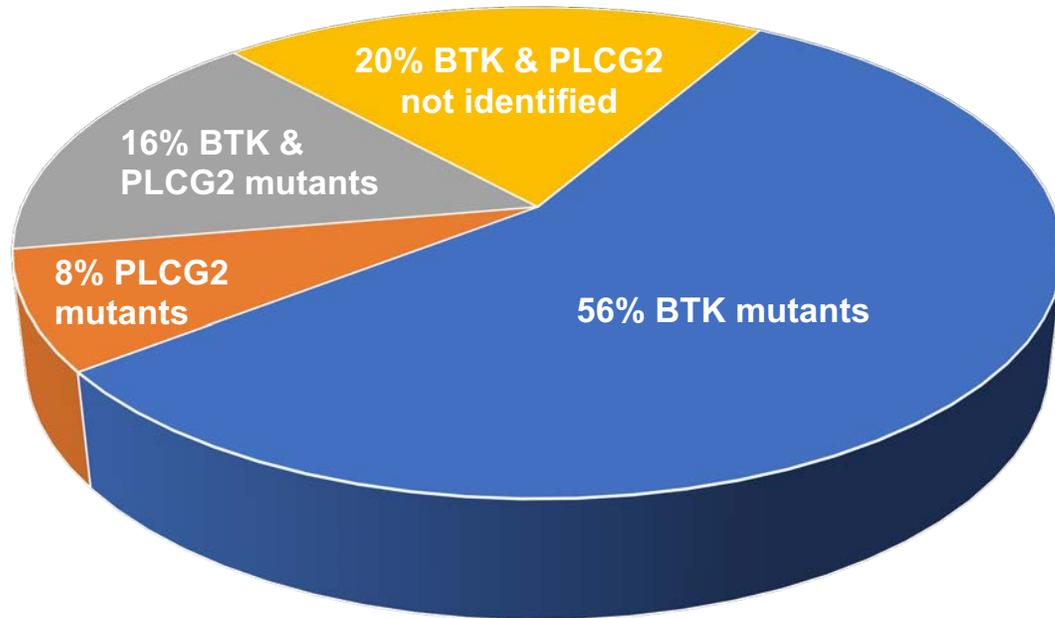
### Anti-CD19/CD3

Combining BTKis with a CD19/CD3 bispecific antibody  
➤ Enhanced T-cytotoxicity activity against CLL cells

Mhibik et al., Blood 2021

# BTK mutations are a common cause of resistance

## Acquired Resistance to Ibrutinib in Patients With Progressive CLL<sup>1</sup>



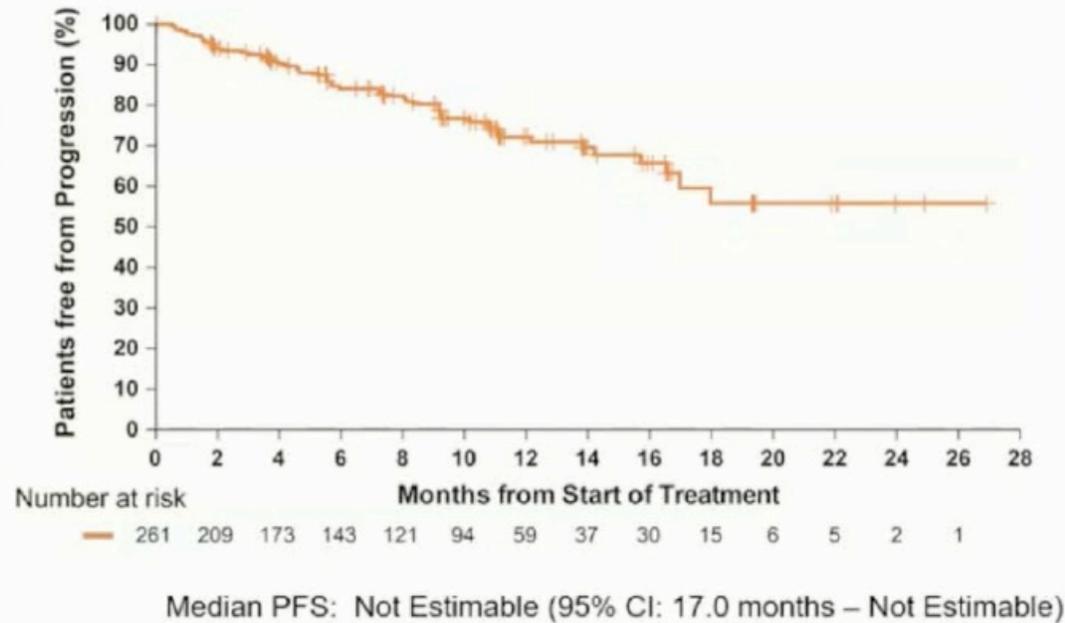
- BTK C481 mutations are the principal reason for progressive CLL after treatment with covalent BTK inhibitors<sup>2</sup>
- BTK C481 mutations impair target inhibition by covalent BTK inhibitors<sup>2</sup>

BTK, Bruton tyrosine kinase; CLL, chronic lymphocytic leukemia; PLCG2, phospholipase C gamma 2.

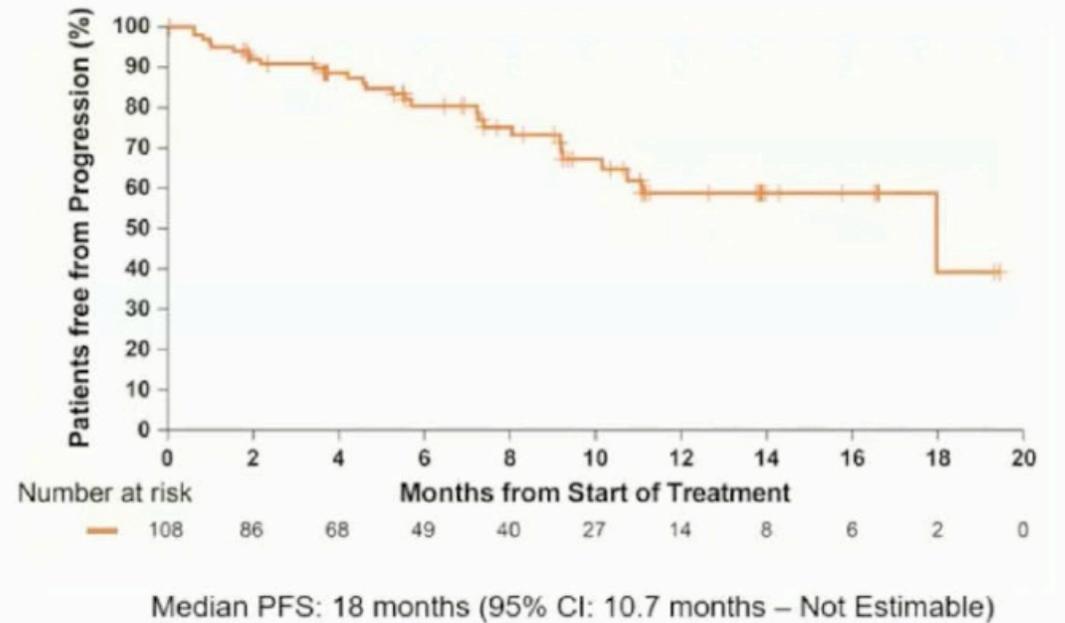
# Pirtobrutinib is highly active in double class exposed CLL

## Progression-Free Survival in BTK Pre-Treated CLL/SLL Patients

PFS in at least BTK pre-treated patients  
Median prior lines = 3



PFS in at least BTK and BCL2 pre-treated patients  
Median prior lines = 5

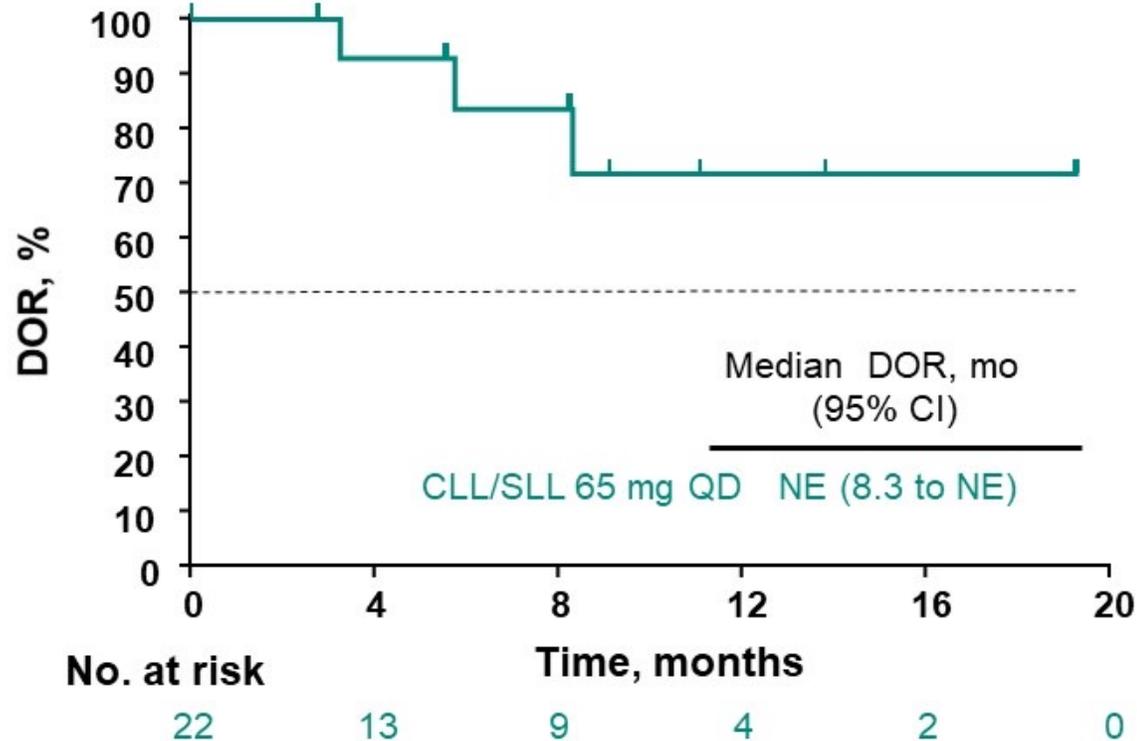


# Nemtabrutinib is also active in R/R CLL, though f/u is short

Woyach MK-1026 ASH 2021

## Summary of Response (CLL/SLL), Efficacy Evaluable Population

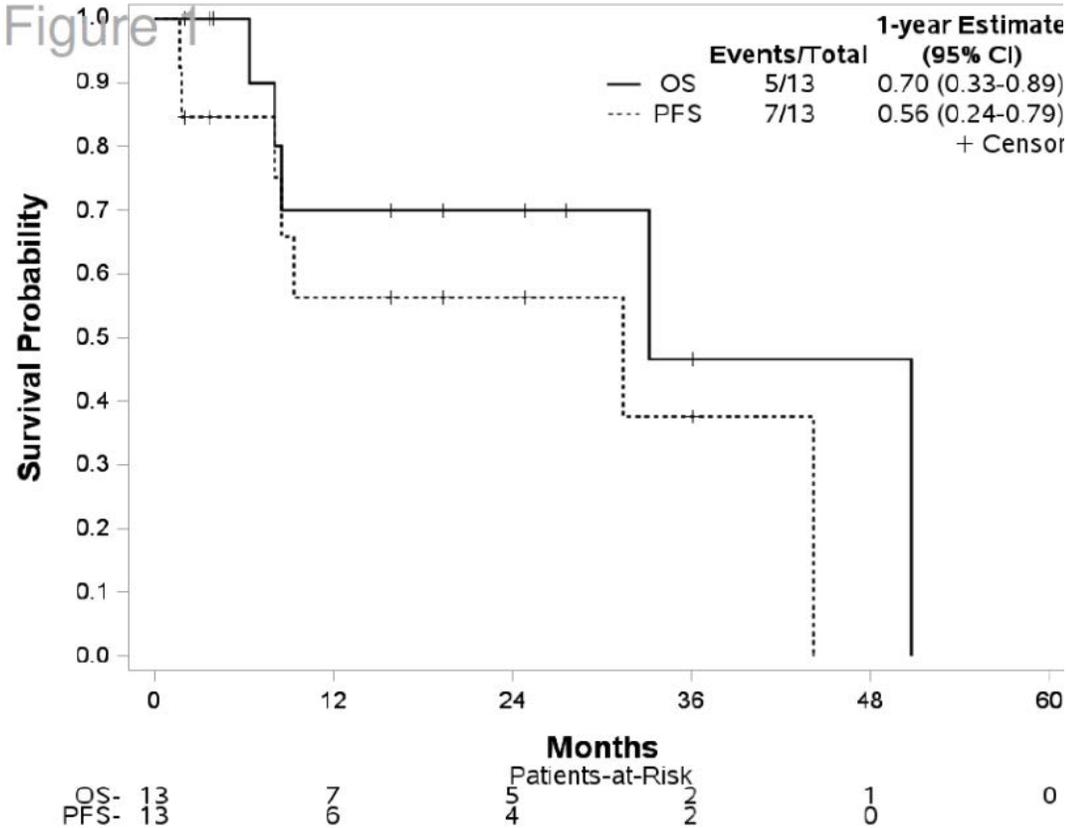
n (%) [95% CI]	CLL/SLL 65 mg QD N = 38 <sup>a</sup>
<b>ORR</b>	<b>22 (57.9%)</b> <b>[40.8-73.6]</b>
CR	1 (2.6%) [0.0-13.8]
PR	12 (31.6%) [17.5-48.6]
PR-L	9 (23.7%) [11.4-40.2]
SD	15 (39.5%) [24.0-55.6]



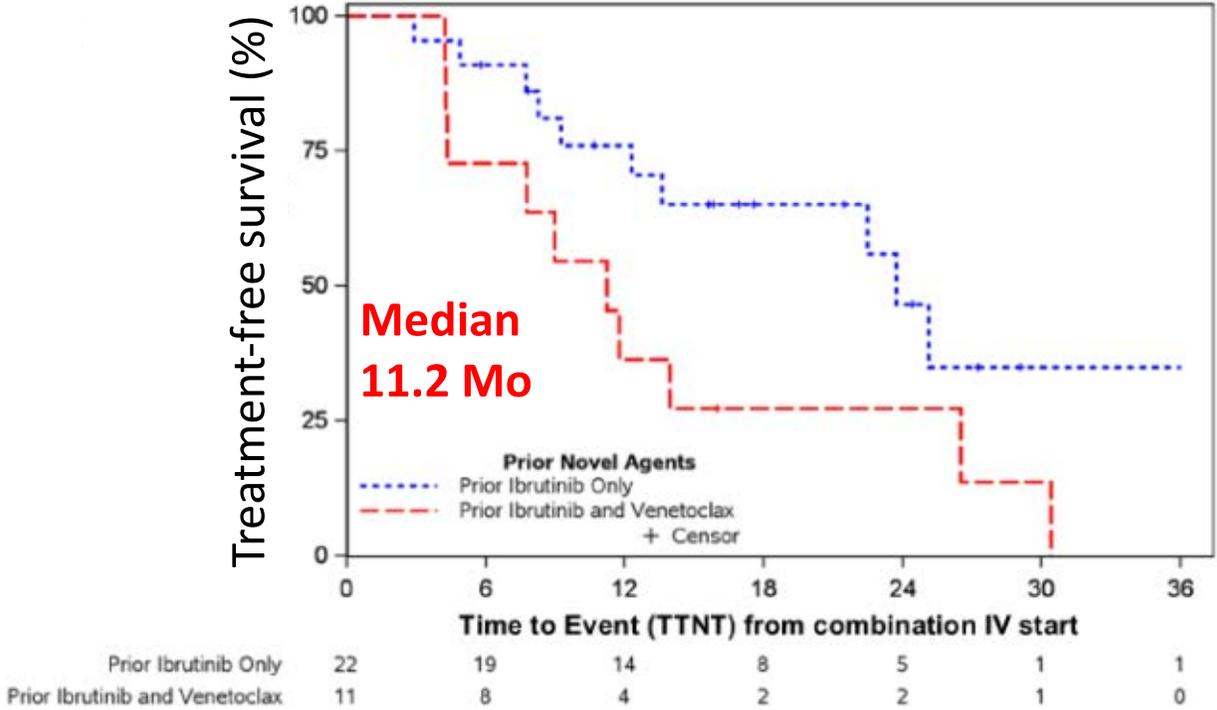
<sup>a</sup>Efficacy evaluable patients with CLL/SLL who received at least one cycle of MK-1026 at preliminary RP2D of 65 mg QD and had ≥1 post-baseline assessment; Response assessed per iwCLL criteria  
Data cut-off: April 7, 2021.

# Combination Ven/BTKi has activity after sequential single agent exposure / resistance

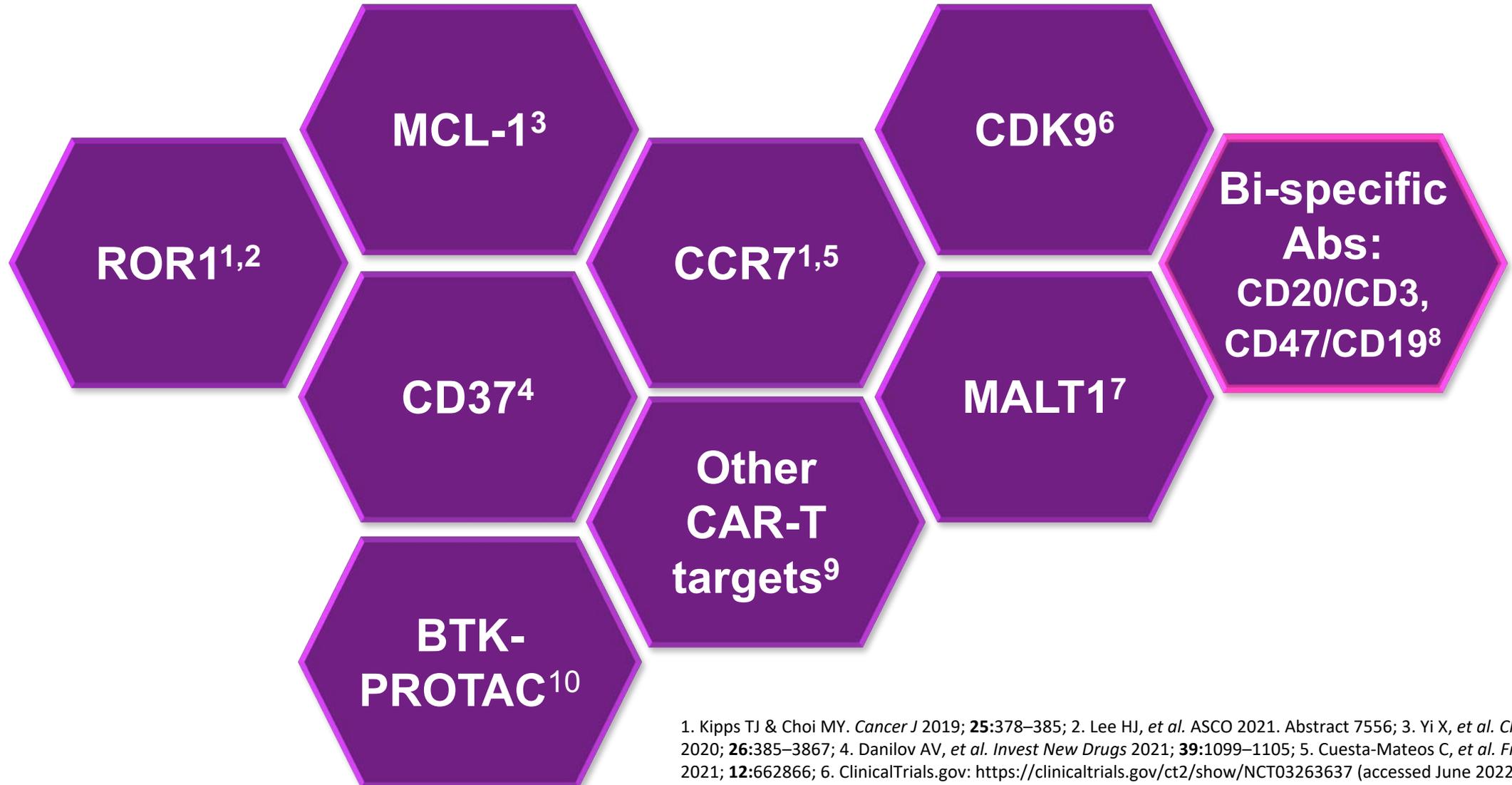
**Ohio State; n = 13, 69% ORR. 4/6 double refr**



**Mayo Clinic; n = 11, 100% ORR**



# Future directions: Novel pathways/targets under investigation



1. Kipps TJ & Choi MY. *Cancer J* 2019; **25**:378–385; 2. Lee HJ, et al. ASCO 2021. Abstract 7556; 3. Yi X, et al. *Clin Cancer Res* 2020; **26**:385–386; 4. Danilov AV, et al. *Invest New Drugs* 2021; **39**:1099–1105; 5. Cuesta-Mateos C, et al. *Front Immunol* 2021; **12**:662866; 6. ClinicalTrials.gov: <https://clinicaltrials.gov/ct2/show/NCT03263637> (accessed June 2022); 7. ClinicalTrials.gov: <https://clinicaltrials.gov/ct2/show/NCT04876092> (accessed June 2022); 8. Lejeune M, et al. *Front Immunol* 2020; **11**:762; 9. Kharfan-Dabaja MA, et al. *Transplant Cell Ther* 2022; **22**:5–17. 10. Beigene BGB-16673 & Nurix NX-2127

# Cases and Questions: Venetoclax Retreatment; ReVenG Study



**Christine Ryan, MD**

# ReVenG: An Ongoing Phase II Study of Venetoclax in Combination with Obinutuzumab Retreatment for Relapsed CLL

## Eligibility Criteria

- Relapsed CLL
- Completed 12 cycles of first line Ven-Obi and achieved a clinical response<sup>1</sup>
- Minimum of 1 year progression-free period after completing 1L Ven treatment
- PD by iwCLL criteria

## Treatment Cohorts

### COHORT 1 (n = 60)

> 2 years between last dose of fixed duration Ven in 1L setting and PD

### Study Treatment

6 cycles Ven-Obi, then 6 cycles Ven monotherapy

### COHORT 2 (n = up to 15)

1-2 years between last dose of fixed duration Ven in 1L setting and PD

### Study Treatment<sup>2</sup>

6 cycles Ven-Obi, then 18 cycles Ven monotherapy

## Endpoints

### Primary Endpoint

ORR at EoCT (C6+3 months)

### Key Secondary Endpoints

CR/CRi

ORR at EoT

DOR

uMRD 10<sup>-4</sup>

PFS

OS

TTNT

Safety

# Cases and Questions: CLL and COVID-19



**Adam Kittai, MD**



**Christine Ryan, MD**

# Agenda: CLL Update

## A Meeting within a Meeting

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**MODULE 5: CLL 2030?**

# **The Clinical Implications of Key Recent Data Sets in Oncology: A Daylong Multitumor Educational Symposium in Partnership with Florida Cancer Specialists**

**Saturday, October 22, 2022**

**7:30 AM – 5:30 PM ET**

**JW Marriott Orlando | Orlando, Florida**

## **Faculty**

**Ghassan Abou-Alfa, MD, MBA**

**Matthew P Goetz, MD**

**Ian E Krop, MD, PhD**

**Ann S LaCasce, MD, MMSc**

**Corey J Langer, MD**

**Prof Georgina Long, AO, BSc, PhD, MBBS**

**Christine M Lovly, MD, PhD**

**Wells A Messersmith, MD**

**Alicia K Morgans, MD, MPH**

**David M O'Malley, MD**

**Thomas Powles, MBBS, MRCP, MD**

**Mitchell R Smith, MD, PhD**

**John Strickler, MD**

**Saad Zafar Usmani, MD, MBA**

**Shannon N Westin, MD, MPH**

**Evan Y Yu, MD**

## **Moderator**

**Neil Love, MD**

***Thank you for joining us!***

***CME and NCPD credit information will be emailed  
to each participant within 3 business days.***