

# **What is Next After Osimertinib Progression?**

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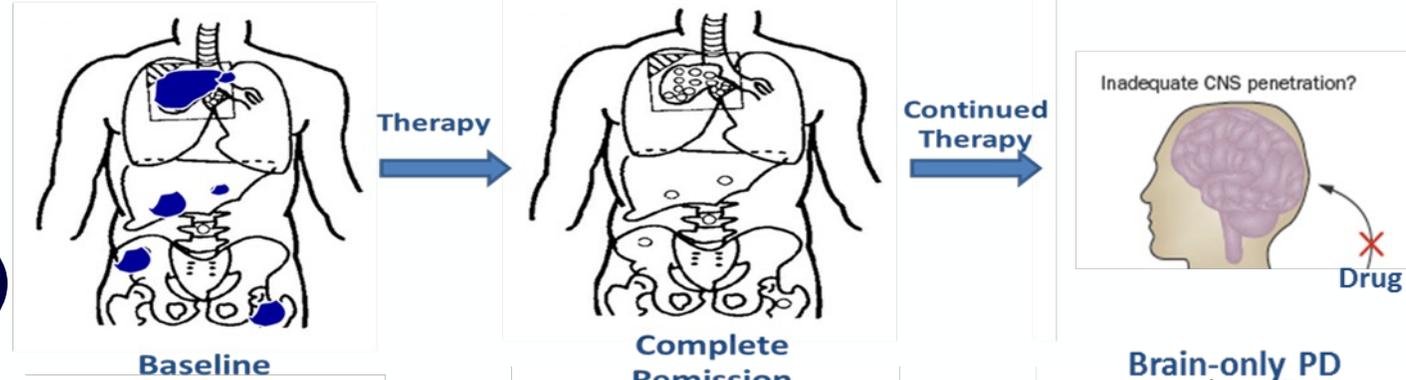
# Considerations

- Pace and sites of progression
- Is there a role for loco-regional therapies (oligo-progression)
- Should tissue biopsy be done (histologic transformation)
- Presence of co-mutations
- Plasma testing results (should be routine first move)
- Acquired resistance mechanism identified?
- Is continuation of a TKI necessary?

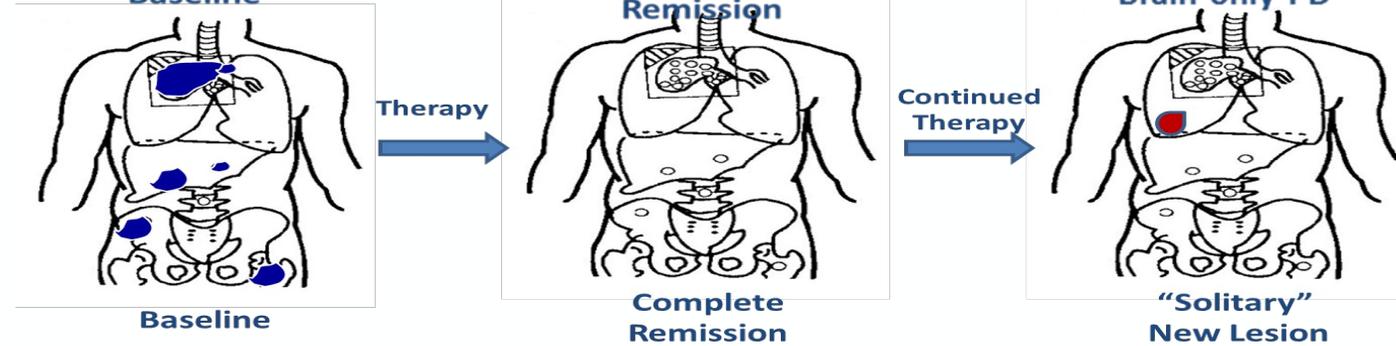
# At Least 3 Clinical Subtypes of Acquired Resistance to Targeted TKIs

## PD-Subtype

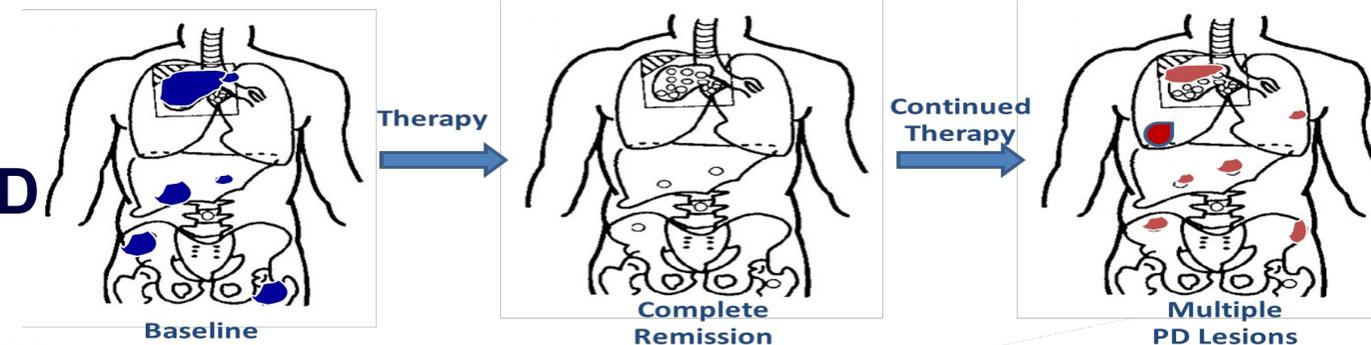
**CNS-PD  
(Sanctuary)**



**Oligo-PD**

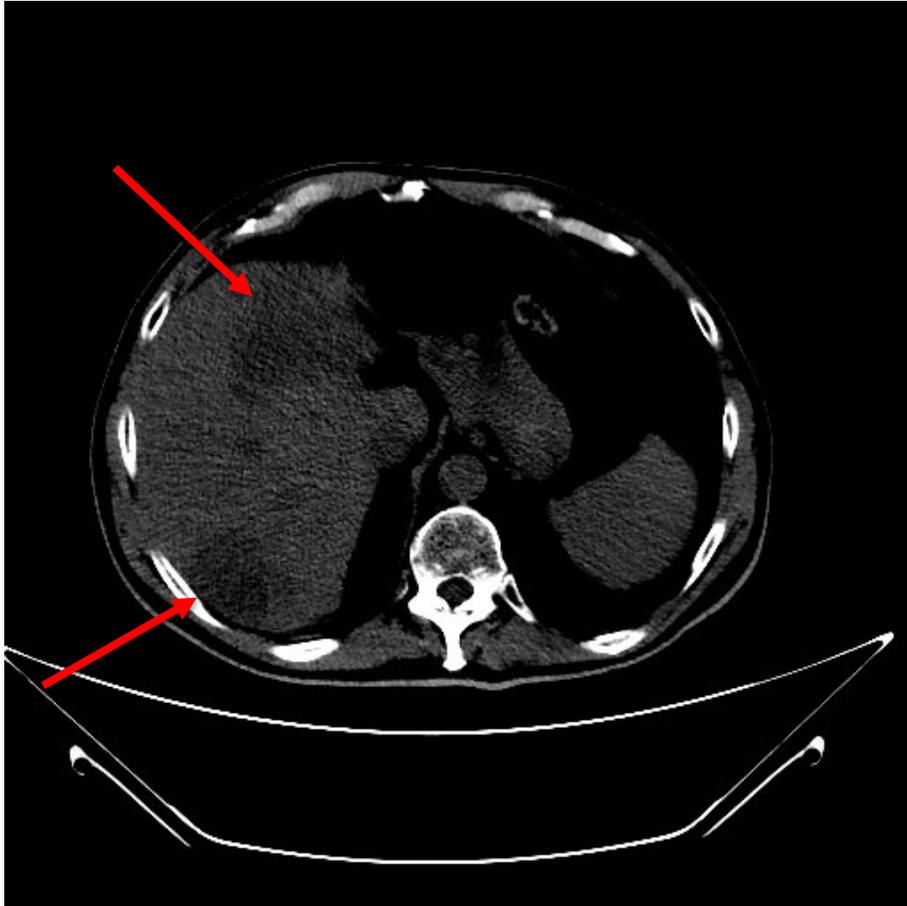


**Systemic-PD**



**66 yo male diagnosed with stage IV adenocarcinoma, EGFR L858R mutation positive in October 2019 initially treated with osimertinib. Developed progressive weakness, abdominal pain. CT demonstrated new liver mets and RP adenopathy in December 2023**

March 27, 2024



# Re-biopsy of liver metastasis was performed. Path showed adenocarcinoma, 95% PD-L1 +. Molecular testing showed native EGFR mutation as well as met amplication

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## Result:

Solid Tumor Profiling assay (50 genes) by Next Generation Sequencing and ALK1 rearrangement by immunohistochemical stain.

Results:

Specimen Adequacy:

Adequate: Estimated tumor cellularity (area used for testing) is 40%.

The following mutation(s) is/are identified:

Gene Name pVariant Variant Allele Fraction

*EGFR exon 21* L858R 0.133

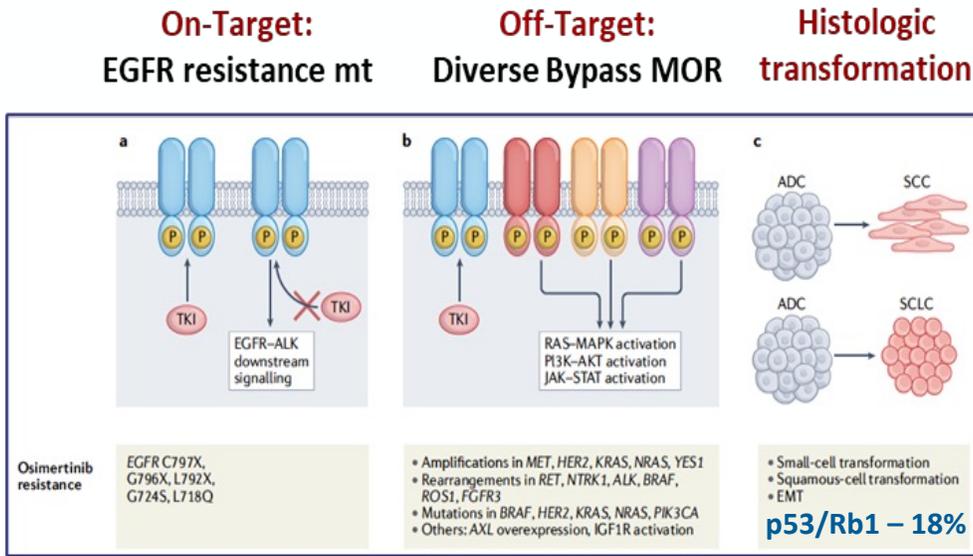
*TP53* P151S 0.223

MET amplification with copy number of 8.2

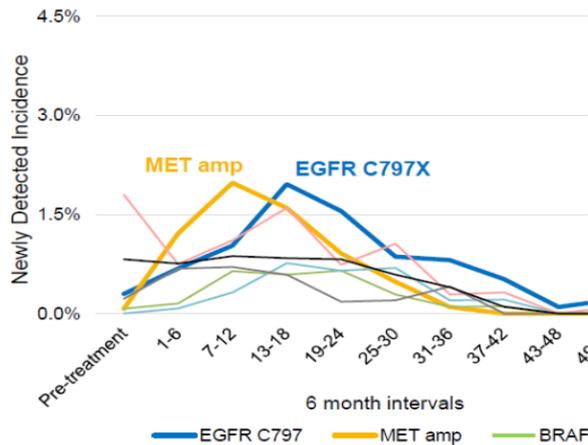
Clinical significance:

Per clinical note, the patient was on osimertinib treatment and now is have disease progression. The MET amplification identified suggests that the resistance to osimertinib treatment may be associated MET amplification. The copy number of MET by NGS is slightly less than 10 copies, a cut-off usually defining MET amplification in tissue specimen. However, given this particular specimen shows low tumor cell content (40%), the MET copy number in cancer cells is likely more than 10 copies. If further evaluation of MET copy number is needed, please contact lab at 407-303-9427 to request the test to be performed at a reference lab. Please correlate clinically.

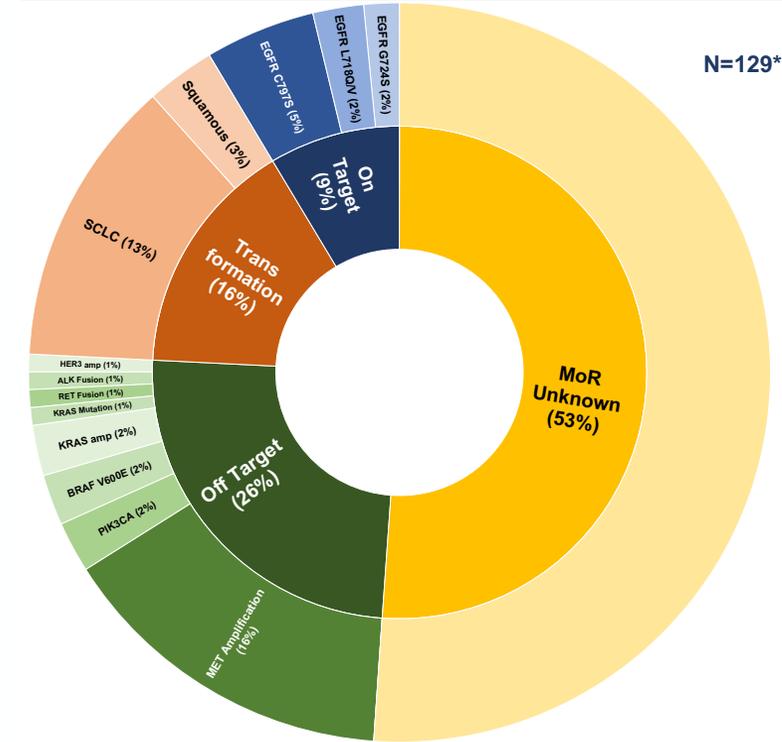
# Broad Mechanisms of Resistance to EGFR-TKI and Temporal Occurrence



Cooper AS, et al, Nat Rev Clin Oncol 2022



## Osimertinib Resistance Mechanisms (Real World Tissue)

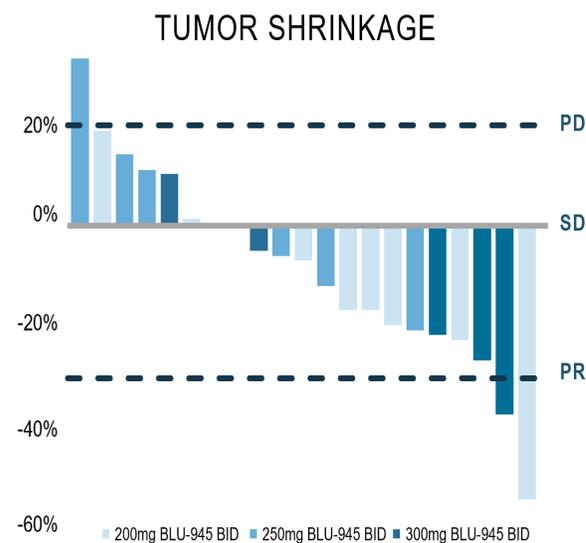
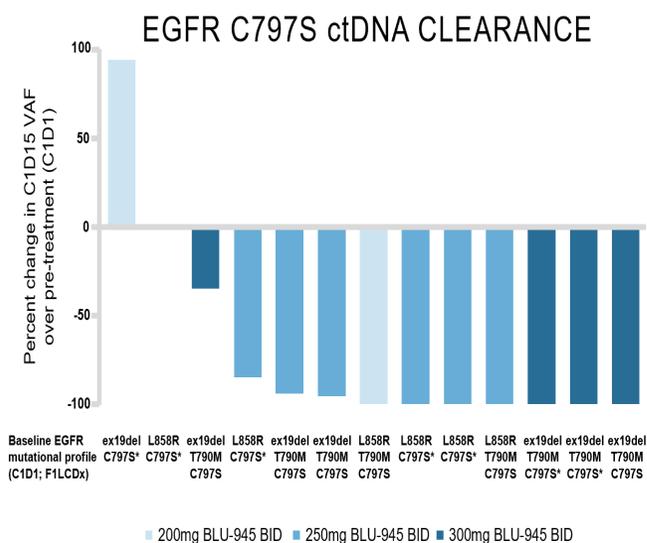


- Pre-Existing Comutations Mediating Resistance (Impact for locally advanced/early stage treatment)
- Resistance to Immunotherapy

Z. Piotrowska et al. ASCO 2023

# On-Target - 4<sup>th</sup> Generation C797S EGFR TKIs in the Clinic

## BLU-945: Preliminary Efficacy Data Monotherapy Cohorts, Top Dose Levels



## BDTX-1535 in Efficacy Evaluable Population



	300		400		200		200		200		400		400		300		200		200		300		100	
Assigned dose level, mg QD	300		400		200		200		200		400		400		300		200		200		300		100	
EGFR mutation	Classical		L858R		Ex19del		L858R#		Ex19del		Ex19del		Ex19del		Ex19del		L858R		L858R		L858R		L858R	
(retrospective central testing)	Non-classical		L833V		G719A		E709V*		G724S		S768I		E709V		L747P		L718Q							
	Acquired		C797S		C797S		C797S		C797S		C797S		C797S		C797S		C797S							
Prior lines of therapy	1 <sup>st</sup> line		Osi		Osi		Gefi		Osi		Erlo		CPI		Osi		Osi		C		Osi			
	2 <sup>nd</sup> line		Daco, Osi		C		C		CPI, C		C		Osi		Osi+Gefi		C		CPI/C		Osi			
	>2 line		CPI, C		Afa								C		BLU-701		C		C		C			

Osi = Osimertinib; Afa = Afatinib; Gefi = Gefitinib; Daco = Dacomitinib; Erl = Erlotinib; CPI = Checkpoint inhibitor; C = Chemotherapy; # - mutations were absent on confirmatory test; \* uPR-unconfirmed partial response-patient had a PR on a post-baseline scan, but a radiologist was unable to confirm a response on a subsequent scan; this patient remains on study treatment without evidence of PD. \*\*%SoD was updated to -50% from prior data release  
 24July2023 BDTX-1535-101 clinical data extract  
 Data from Poster at EORTC/AACR/NCI International Conference on Molecular Targets and Cancer Therapeutics October 2023

**Efficacy-Evaluable Patients**  
5 cPR, 1 uPR of 13 by RECIST

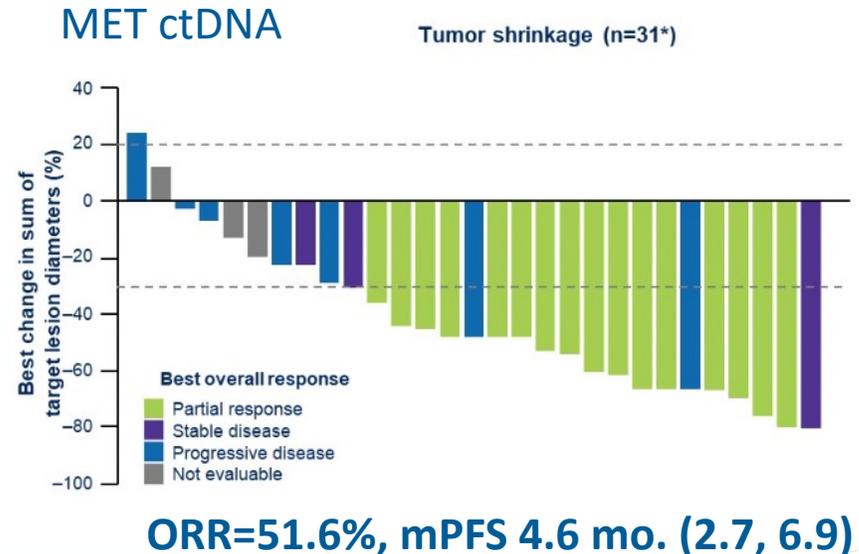
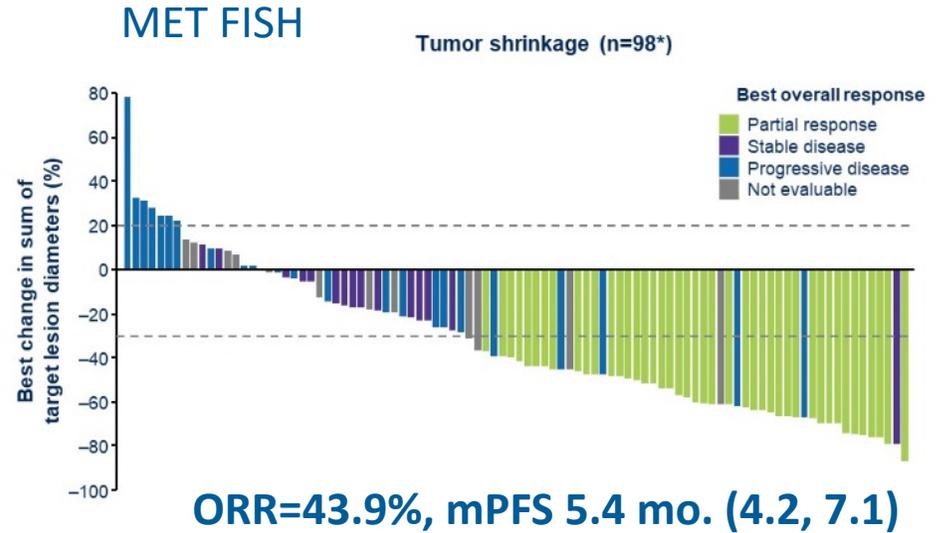
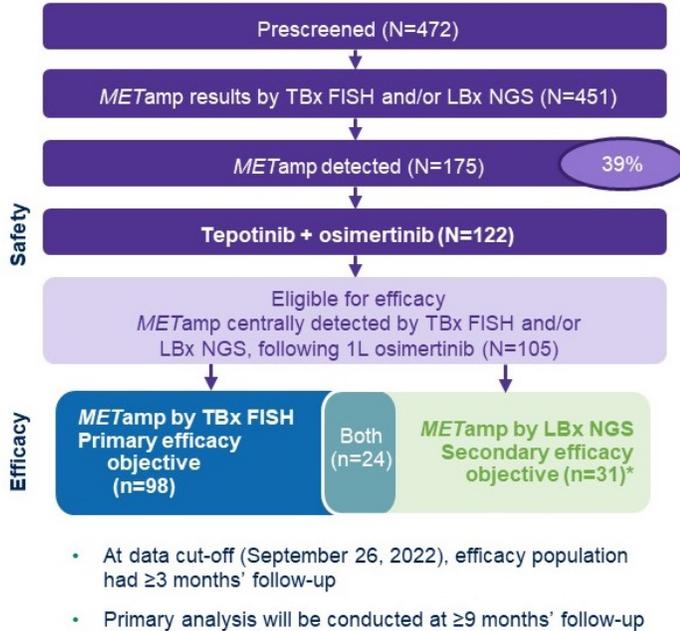
**Post-Osimertinib Patients**  
5 cPR, 1 uPR of 11 by RECIST

Adapted from: Mar, B. Presented to EGFR Exon 20 Research Consortium

Adapted from Poster at EORTC/AACR/NCI Triple Meeting October 2023

# MET Inhibition - INSIGHT 2: Osimertinib + Tepotinib for MET-amplified EGFRm NSCLC

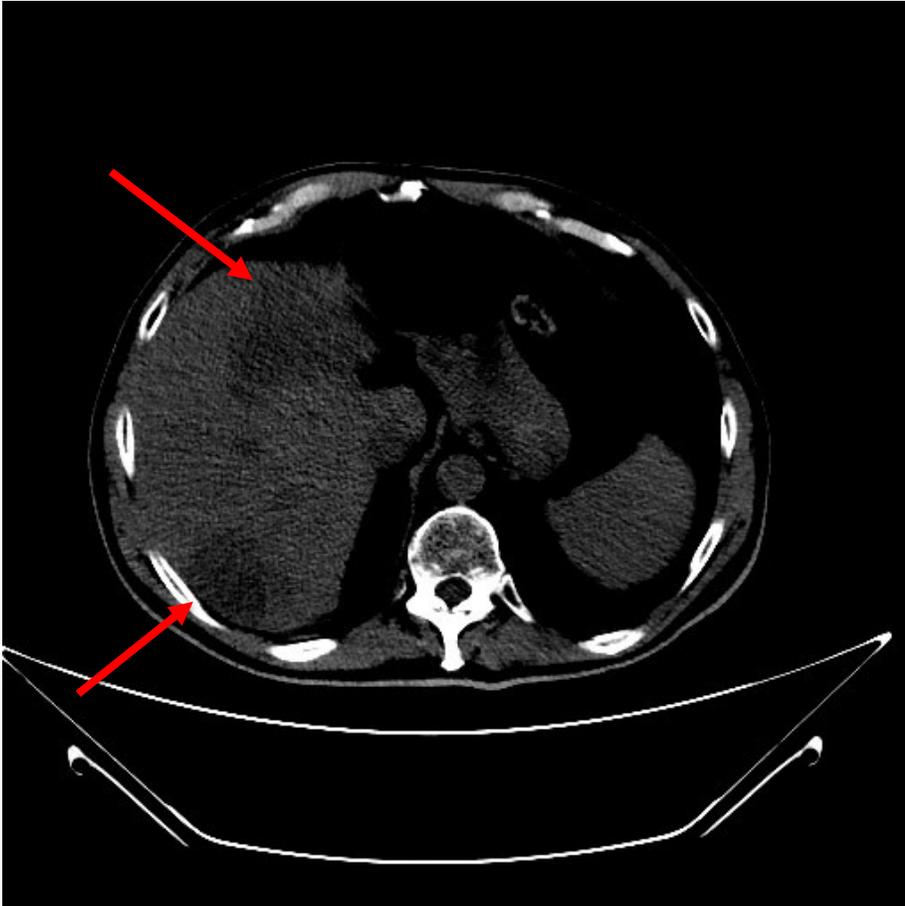
- **METamp detected by:** **TBx FISH** ( $MET\ GCN \geq 5$  and/or  $MET/CEP7 \geq 2$ ) and/or by **LBx NGS** ( $MET\ GCN \geq 2.3$ ; Archer®)
- Comprehensive analysis of prescreening METamp by **TBx FISH** & **LBx NGS** is reported by Yu et al. (Poster 9074, ASCO 2023)
- **Primary endpoint:** objective response by IRC for patients with centrally detected METamp by **TBx FISH**



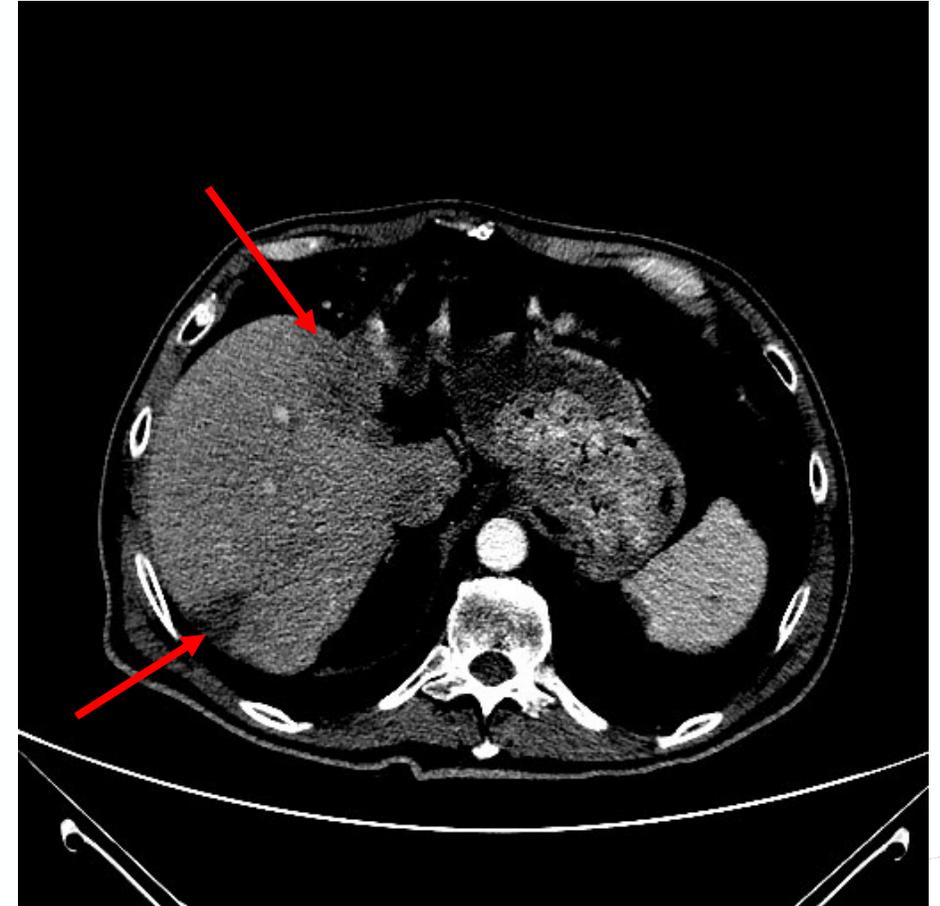
D. Tan et al. ASCO 2023.

# Tepotinib added to osimertinib. Abdominal pain resolved in 2-3 days, PS improved

March 27, 2024

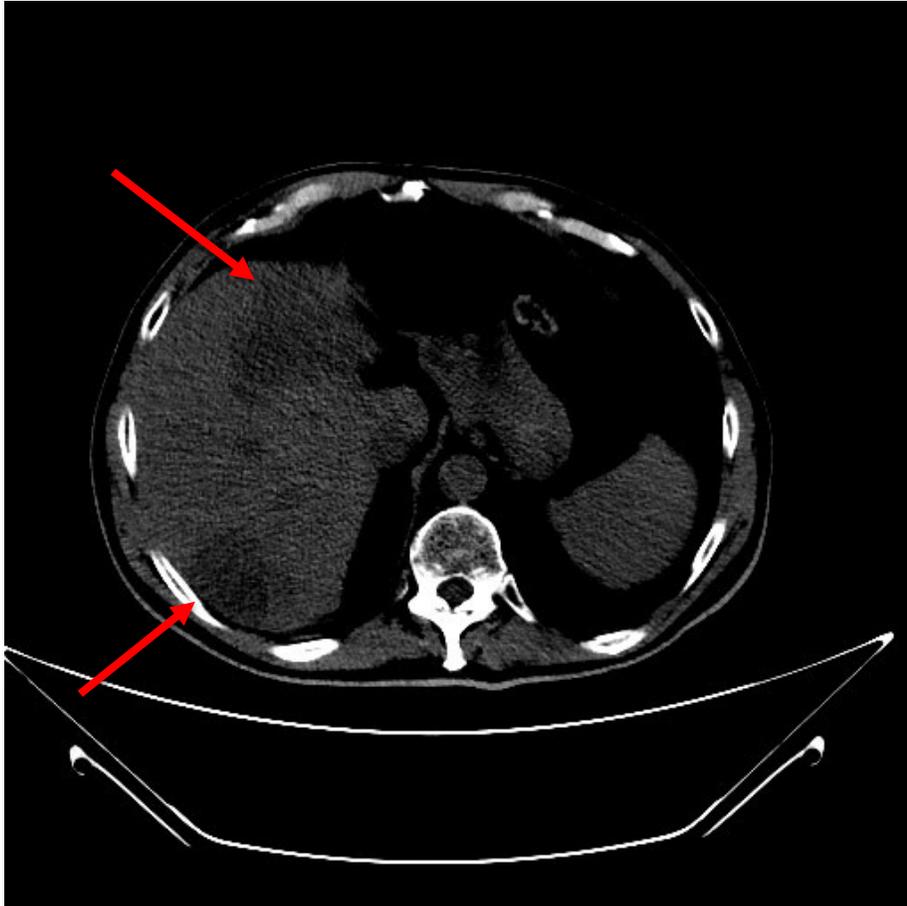


May 10, 2024



# Tepotinib added to osimertinib. Abdominal pain resolved in 2-3 days, PS improved

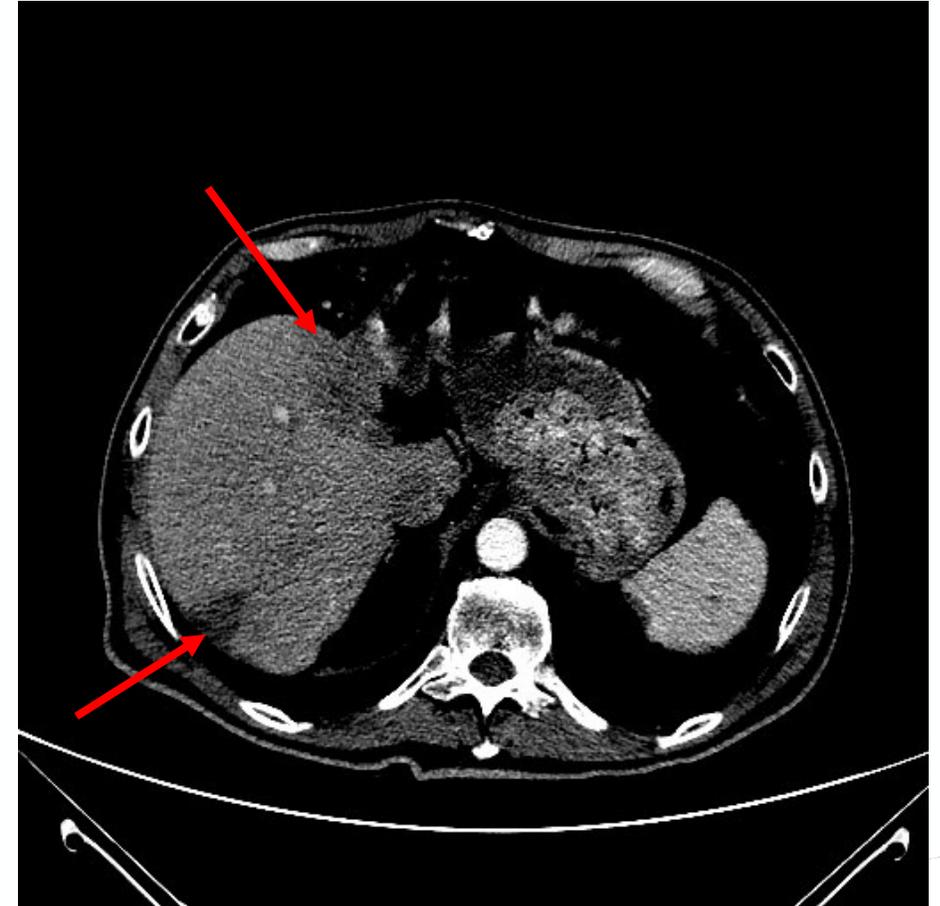
March 27, 2024



Target lesions

48 mm → 37 mm  
21 mm → 9 mm  
28 mm → 16 mm  
30 mm → 14 mm  
69 mm → 27 mm

May 10, 2024



# Other Bypass Tracts That Are Potentially Actionable

ALK Fusions

Osimertinib + Alectinib  
6 months DoR  
Case Reports

BRAF Fusions

Osimertinib + Trametinib  
Response, D/c at 5 mo (Tox)  
Case Report

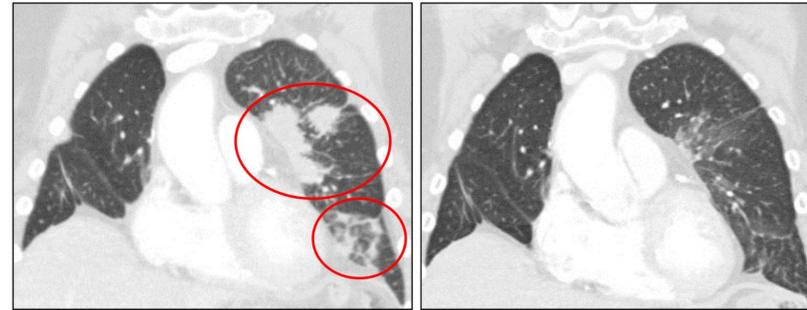
BRAF V600E

Osimertinib +  
Dabrafenib/Trametinib  
7-8 months DoR  
Osimertinib+Vemurafenib  
7+ months DoR  
Case Reports

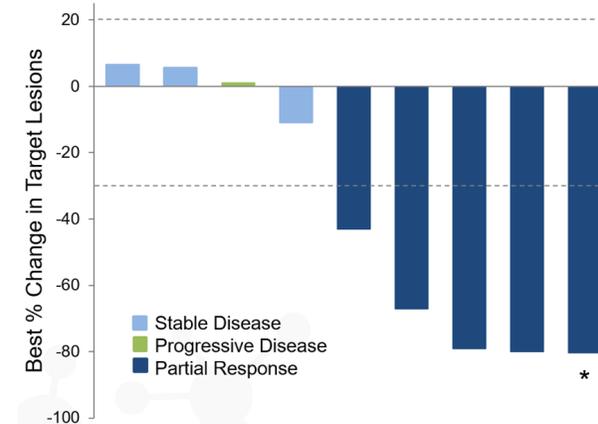
## Osimertinib + RET TKI in Acquired Resistance Mediated by RET Fusion

### Pralsetinib

B



### Selpercatinib



Best Response (n=10)	
Objective Response n (%)	5 (50%)
Partial Response*	5 (50%)
Stable Disease	3 (30%)
Progressive Disease	2 (20%)
<b>Disease Control Rate n (%)</b>	<b>8 (80%)</b>
<b>Median Depth of Response (%)</b>	<b>-43%</b>

\*One partial response unconfirmed

One patient with clinical progression without radiographic evaluation not shown

Jebbink et al. MA02.07. WCLC 2021; Schrock JTO 2018; Offin et al JCP Precis Oncol. 2018;

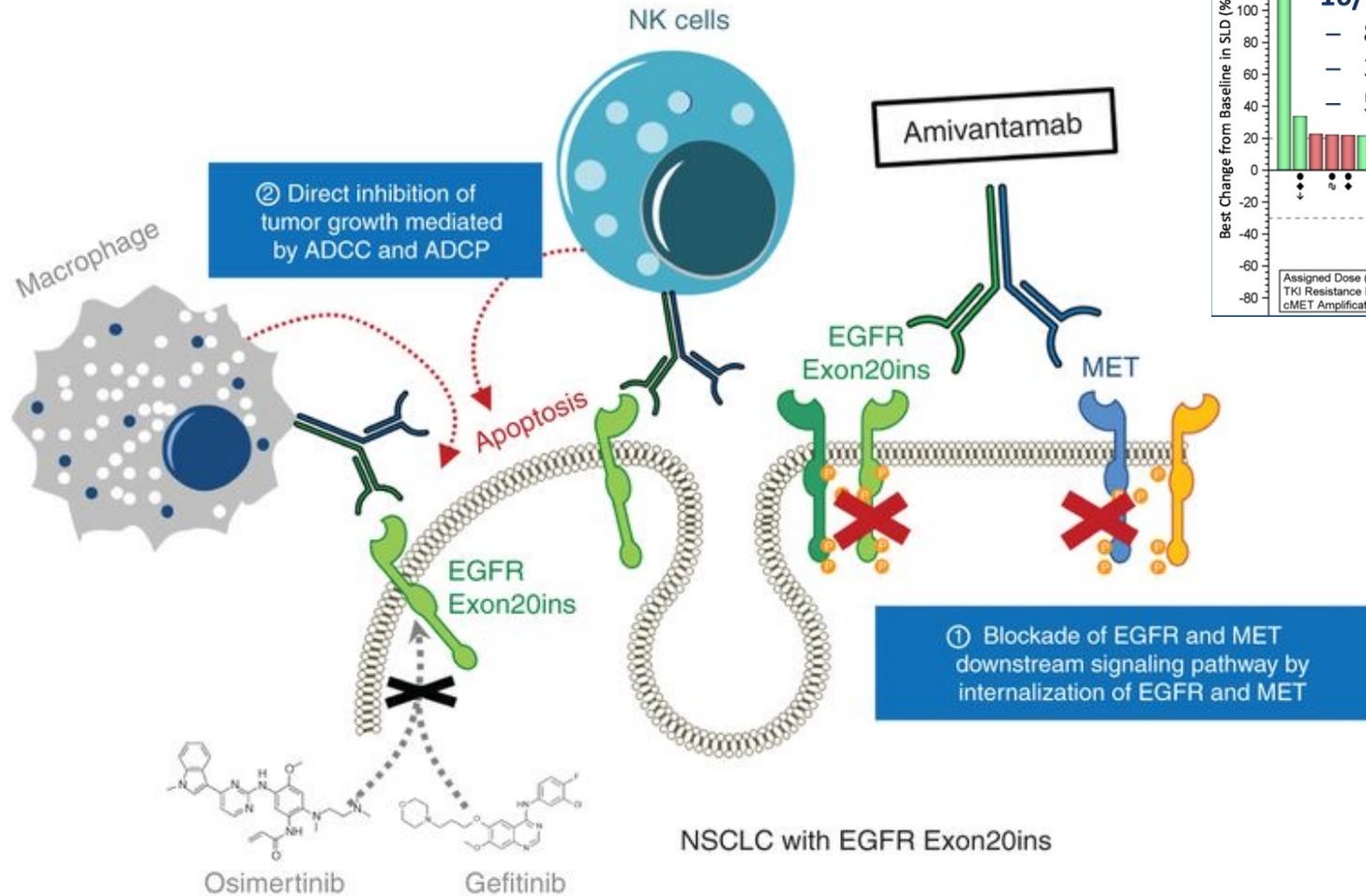
Ribero et al, npj precision oncology 2021; Huang et al JTO 2019; Sun et al Thorac Cancer 2022; Dagogo-Jack et al. JTO. 2019

J. Rotow et al. WCLC 2021

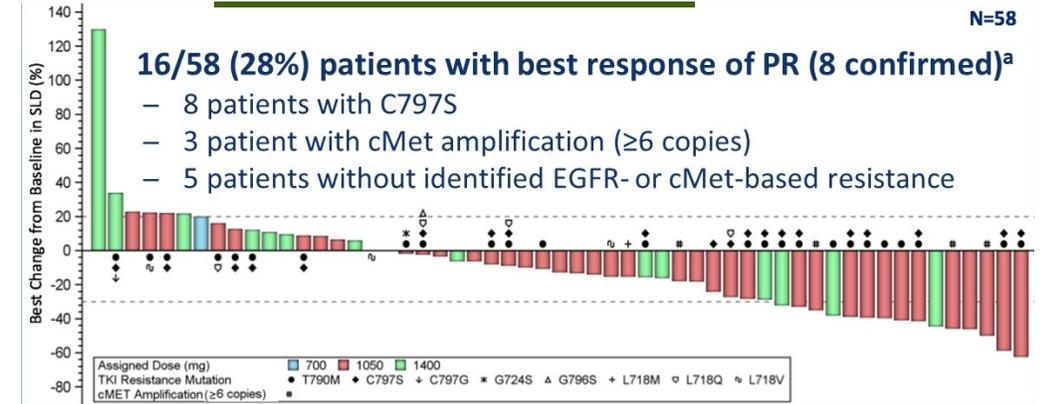
Z. Piotrowska et al. Cancer Discovery 2018.

# Amivantamab

C



## CHRYSALIS trial

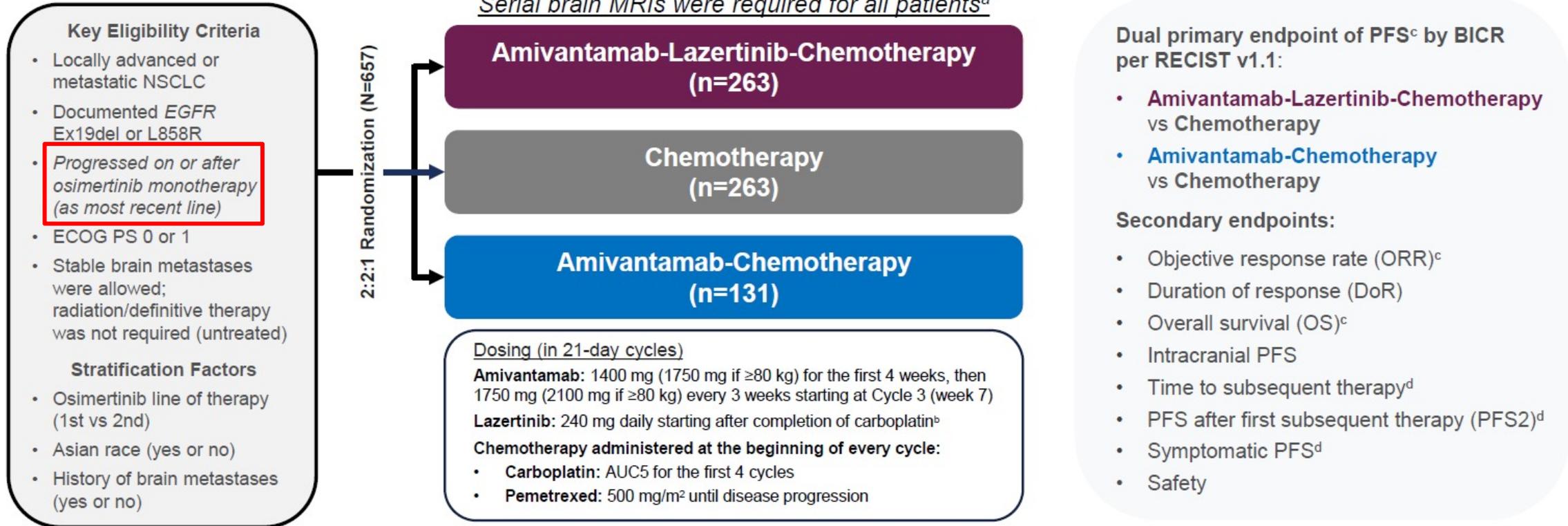


16/58 (28%) patients with best response of PR (8 confirmed)<sup>a</sup>

- 8 patients with C797S
- 3 patient with cMet amplification (≥6 copies)
- 5 patients without identified EGFR- or cMet-based resistance

- Amivantamab has single agent activity after osimertinib
- Activity is independent MET amplification or 2<sup>nd</sup> site *EGFR* mutation/amplification.

# MARIPOSA-2: Phase 3 Study Design



MARIPOSA-2 (ClinicalTrials.gov Identifier: NCT04988295) enrollment period: December 2021 to April 2023; data cut-off: 10-Jul-2023

<sup>a</sup>Patients who could not have MRI were allowed to have CT scans.

<sup>b</sup>All patients randomized before 7Nov2022 initiated lazertinib on the first day of Cycle 1 (see next slide).

<sup>c</sup>Key statistical assumptions: 600 patients with 350 events across all 3 arms would provide approximately 83% and 93% power for amivantamab-chemotherapy and amivantamab-lazertinib-chemotherapy, respectively, vs chemotherapy to detect a HR of 0.65 using a log-rank test, with an overall two-sided alpha of 0.05 (median PFS of 8.5 months for amivantamab-containing arms vs 5.5 for chemotherapy). Statistical hypothesis testing included PFS, ORR, and then OS.

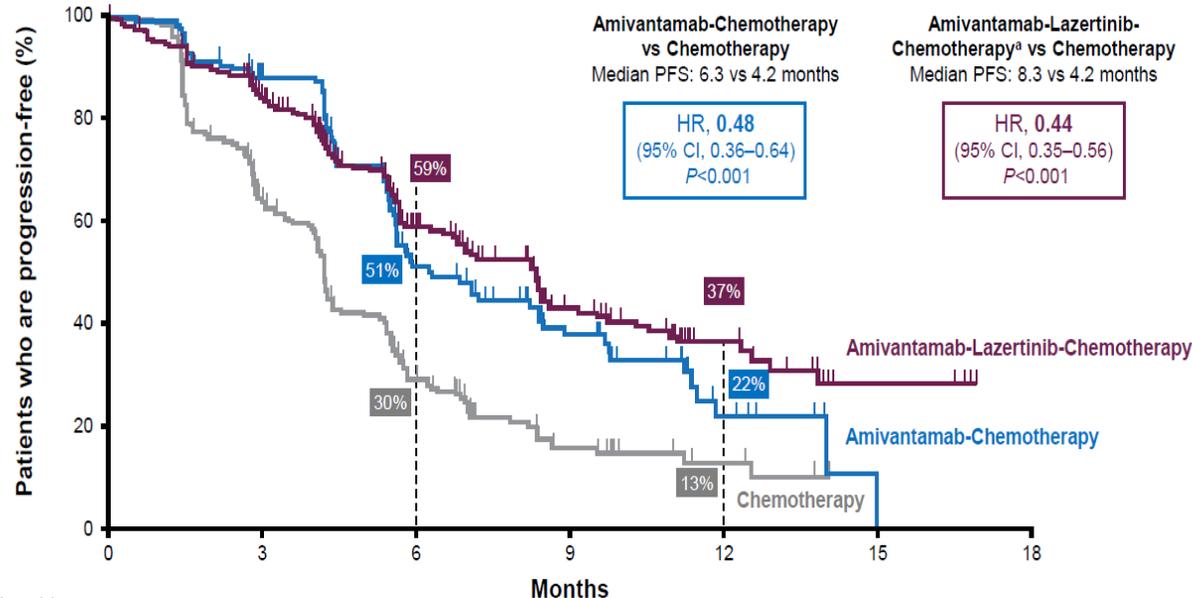
<sup>d</sup>These secondary endpoints (time to subsequent therapy, PFS2, and symptomatic PFS) will be presented at a future congress.

AUC, area under the curve; BICR, blinded independent central review; CT, computed tomography; ECOG PS, Eastern Cooperative Oncology Group performance status; EGFR, epidermal growth factor receptor; Ex19del, Exon 19 deletions; HR, hazard ratio; IDMC, independent data monitoring committee; MRI, magnetic resonance imaging; NSCLC, non-small cell lung cancer; PFS, progression-free survival; RECIST, Response Evaluation Criteria in Solid Tumors.



# Primary Endpoint: Progression-free Survival by BICR

At a median follow-up of 8.7 months, amivantamab-chemotherapy and amivantamab-lazertinib-chemotherapy reduced the risk of progression or death by 52% and 56%, respectively



- Benefits across all subgroups (Race, Sex, EGFR mutation type)

## • ORR:

36 % chemo  
64% chemo + Ami  
63% chemo + Ami +Laz

- mDOR 5.6 vs. 6.9 vs. 9.4 months
- Overall Survival data immature

- Higher Toxicity with Lazartinib: DVT/PE (prophylaxis required), Grade TEAEs ≥ G3 48%, 72% and 92% Discontinuations of all agents due to treatment- related AEs was 2%, 8%, and 10%

No. at risk	0	3	6	9	12	15	18
Amivantamab-Chemotherapy	131	99	49	27	7	0	0
Amivantamab-Lazertinib-Chemotherapy	263	194	104	52	21	4	0
Chemotherapy	263	135	49	17	6	0	0

Consistent PFS benefit by investigator: HR, 0.41 (8.2 vs 4.2 mo;  $P<0.001^b$ ) & HR, 0.38 (8.3 vs 4.2 mo;  $P<0.001^b$ )

<sup>a</sup>Amivantamab-lazertinib-chemotherapy arm includes all patients regardless of the dosing regimen received. <sup>b</sup>Nominal P-value; endpoint not part of hierarchical hypothesis testing.

BICR, blinded independent central review; CI, confidence interval; HR, hazard ratio; PFS, progression-free survival.

Copies of this presentation obtained through OR mode are for

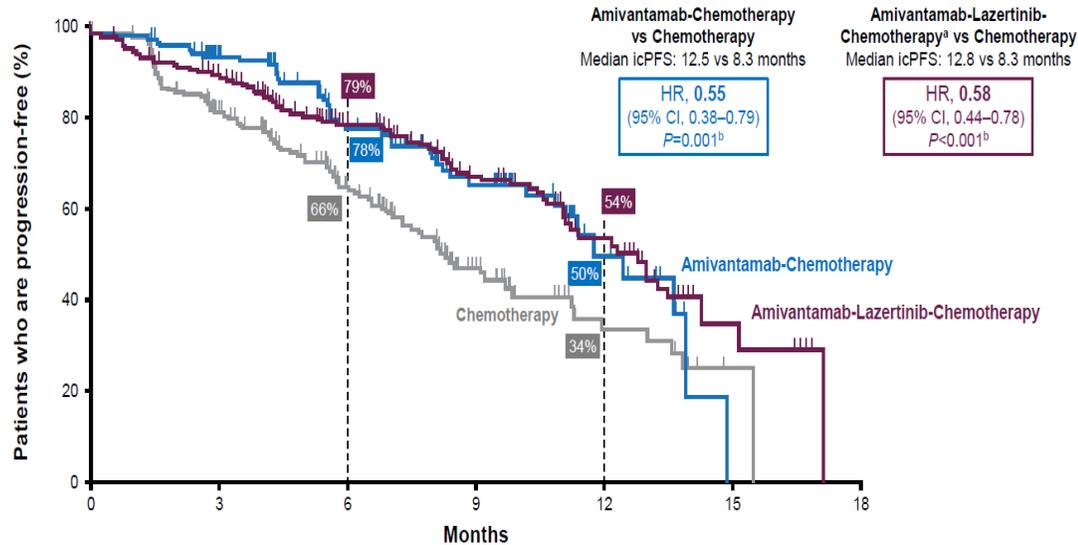
## No Crossover to Ami or Ami + Laz

Passaro et al. ESMO 2023 and Ann Oncol. 2023 Oct 23;S0923-7534(23)04281-3

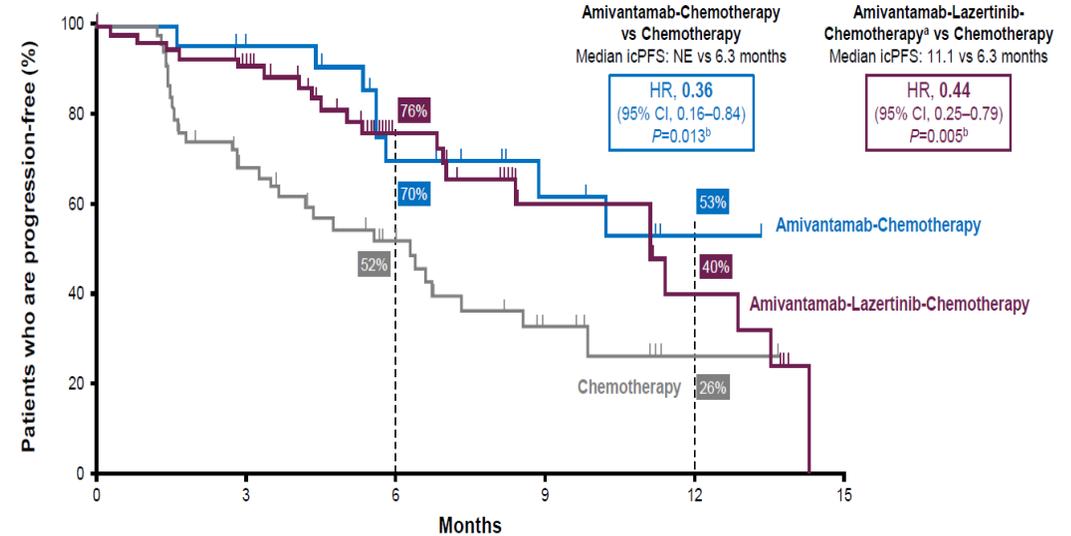
# What about CNS disease control in the absence of a TKI?

## Intracranial Progression-free Survival by BICR

Amivantamab-chemotherapy and amivantamab-lazertinib-chemotherapy reduced the risk of intracranial progression or death by 45% and 42%, respectively



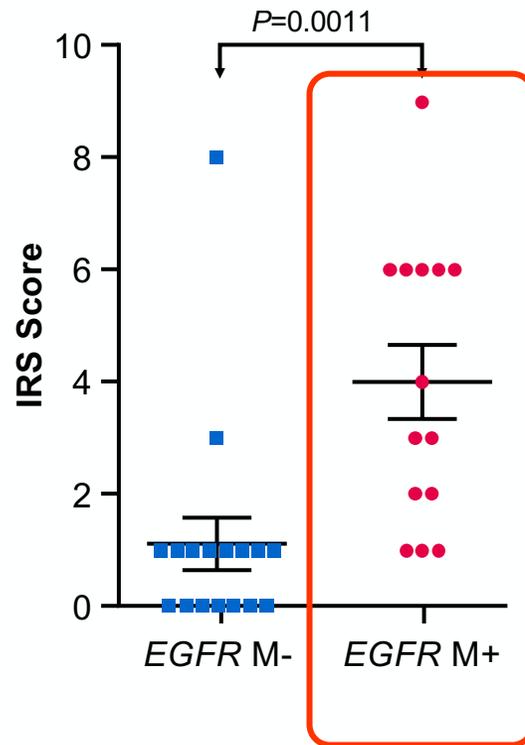
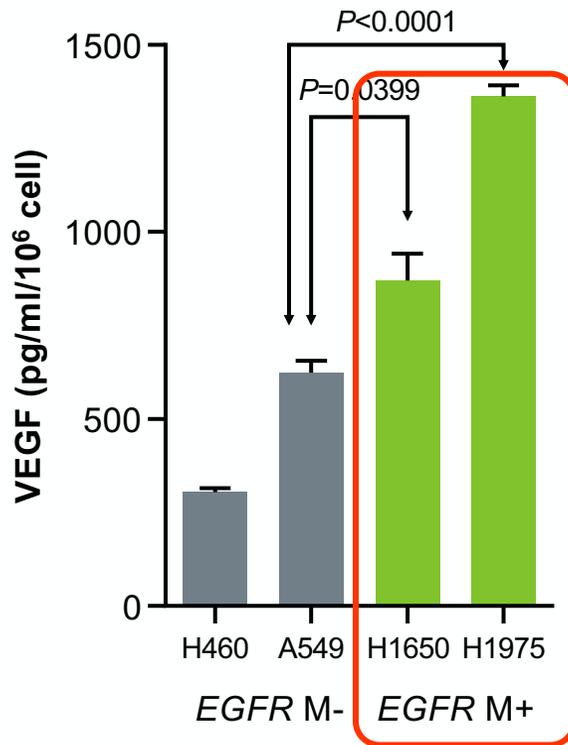
## Intracranial Progression-free Survival by BICR Among Patients With a History of Brain Metastases and No Prior Brain Radiotherapy



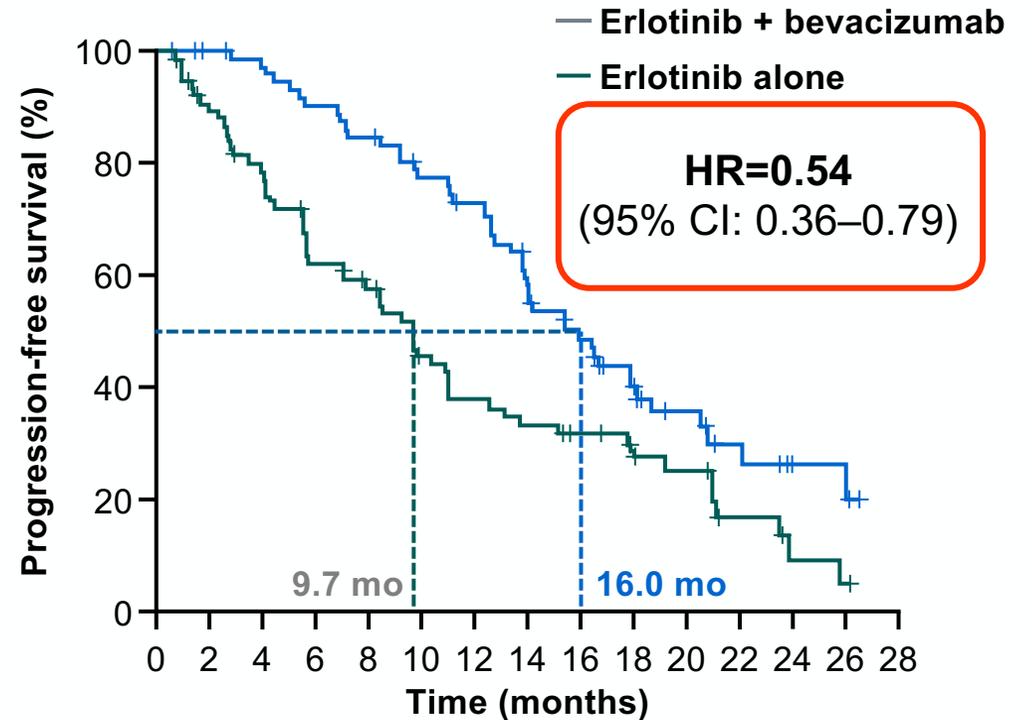
No. at risk	0	3	6	9	12	15
Amivantamab-Chemotherapy	24	20	13	8	1	0
Amivantamab-Lazertinib-Chemotherapy	56	42	22	10	5	0
Chemotherapy	61	32	17	7	1	0

# What is the role of VEGF in patients with *EGFR*+ NSCLC?

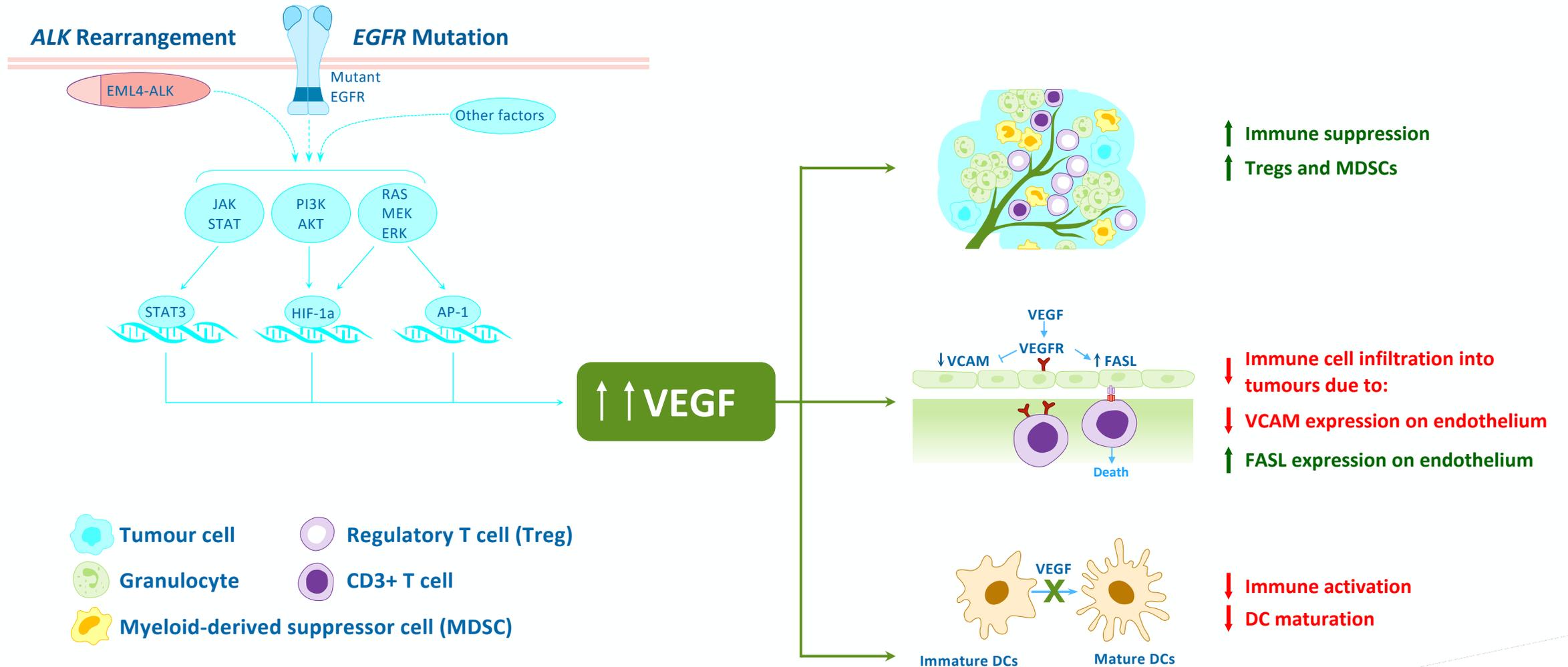
EGFR signal activation increases VEGF production



JO25567: *EGFR*+ NSCLC patients have increased sensitivity to bevacizumab

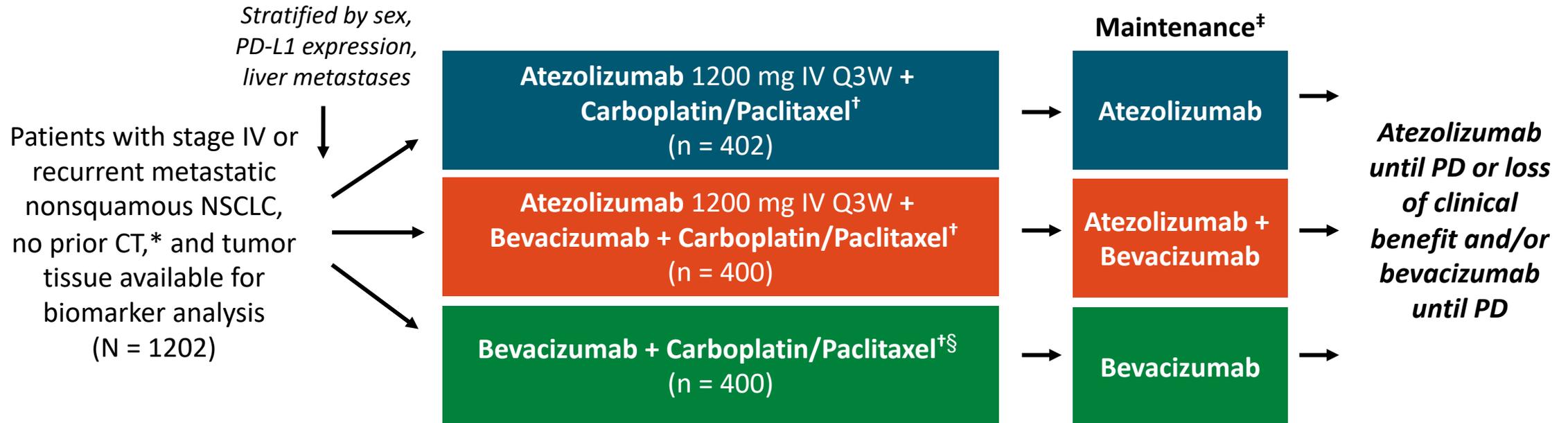


# VEGF-mediated immunoregulation may be stimulated by EGFR/ALK signalling



# IMpower150: Addition of Atezolizumab and/or Bevacizumab to CT in Metastatic NSCLC

- Multicenter, open-label, randomized phase III trial (data cutoff: January 22, 2018)

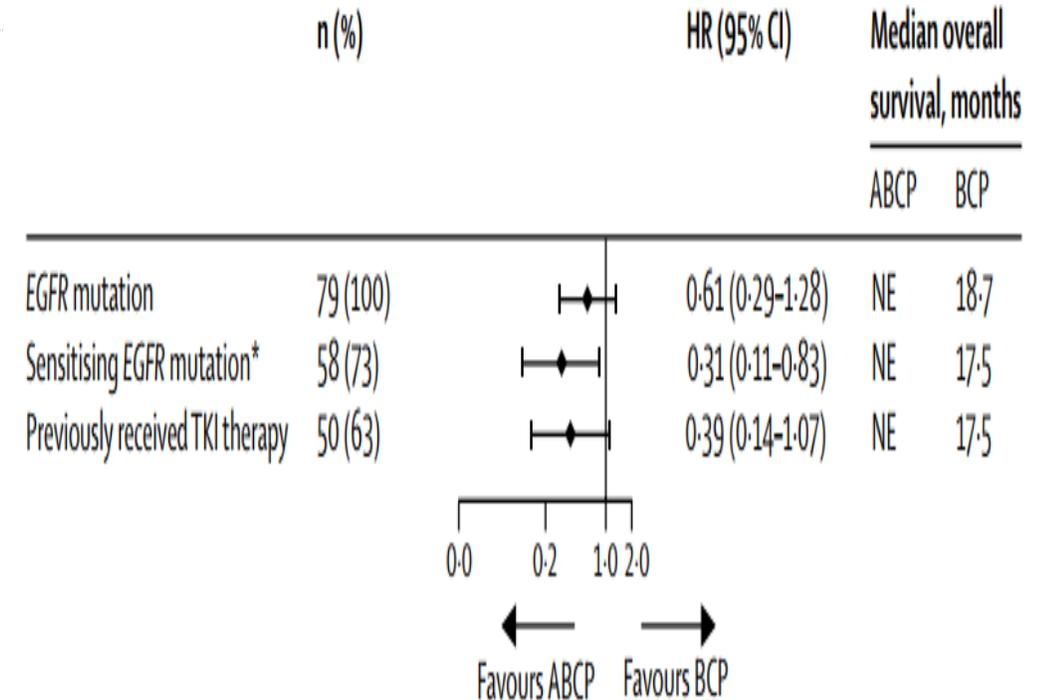
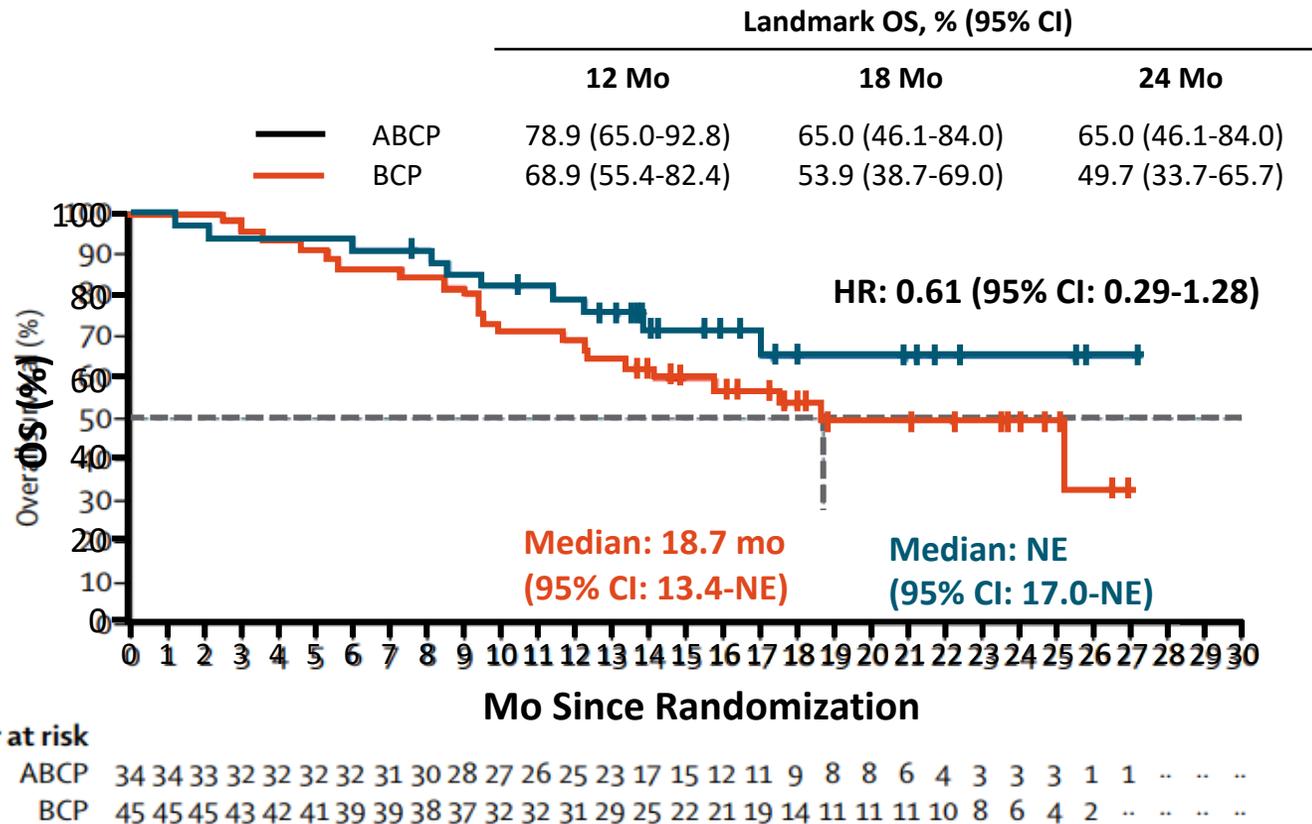


\*If sensitizing *EGFR* mutation or *ALK* translocation present, must have PD on or intolerance to  $\geq 1$  approved targeted therapy. <sup>†</sup>Bevacizumab 15 mg/kg; carboplatin AUC 6; paclitaxel 200 mg/m<sup>2</sup>; all given IV Q3W for 4 or 6 cycles. <sup>‡</sup>No crossover permitted. <sup>§</sup>Control arm.

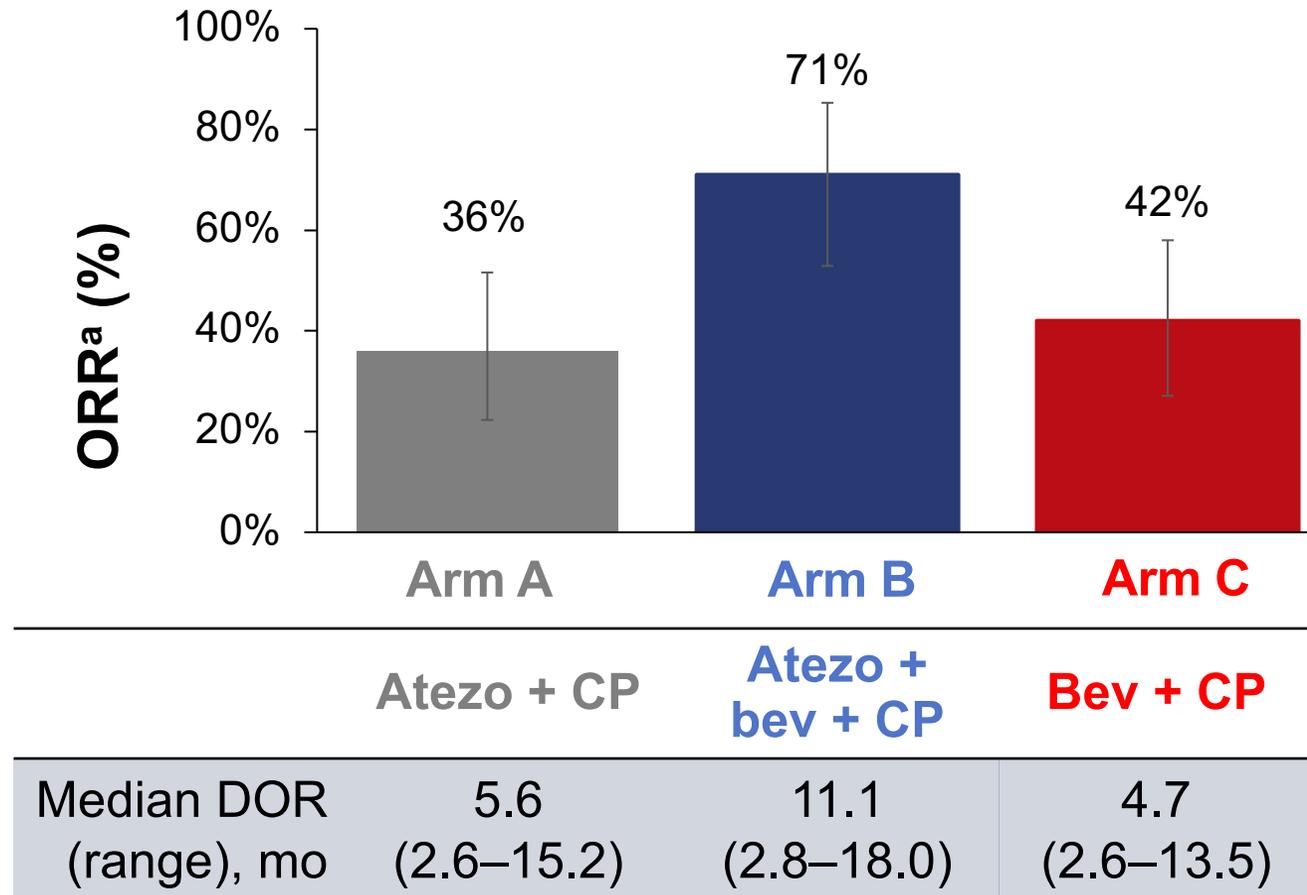
- Coprimary endpoints: investigator-assessed PFS in ITT WT, Teff-high WT; OS in ITT WT
- Secondary endpoints: investigator-assessed PFS, OS in ITT; investigator-assessed PFS in PD-L1 subgroups; IRF-assessed PFS; ORR, DoR per RECIST v1.1; safety in ITT

# IMpower150: Survival in Patients with *EGFR* Mutations

OS With Atezo + Carbo/Pac + BEV vs Carbo/Pac + BEV  
in Advanced *EGFR*+ NSCLC Post *EGFR* TKI (n = 124)<sup>1</sup>



# ORR and DOR in *EGFR*-mt patients

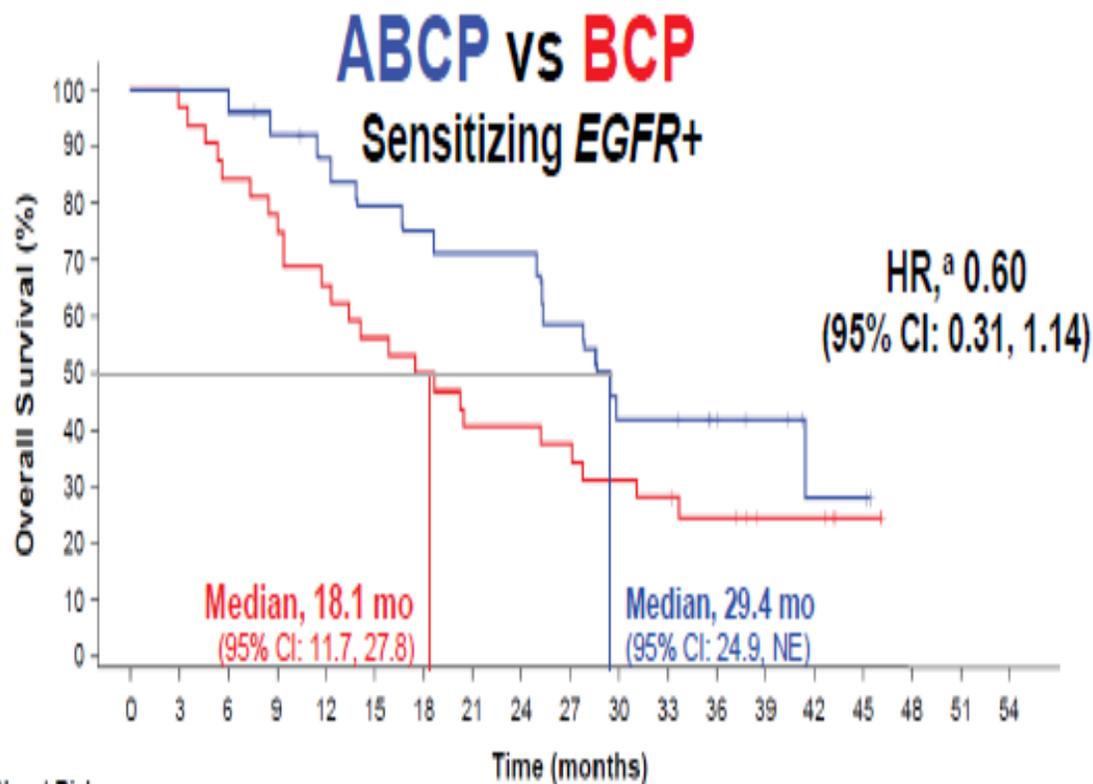


- The addition of bevacizumab to atezolizumab and chemotherapy almost doubled the overall response rate and duration of response in *EGFR*-mt patients

<sup>a</sup> Responses are confirmed.

Data cutoff Jan 22, 2018.

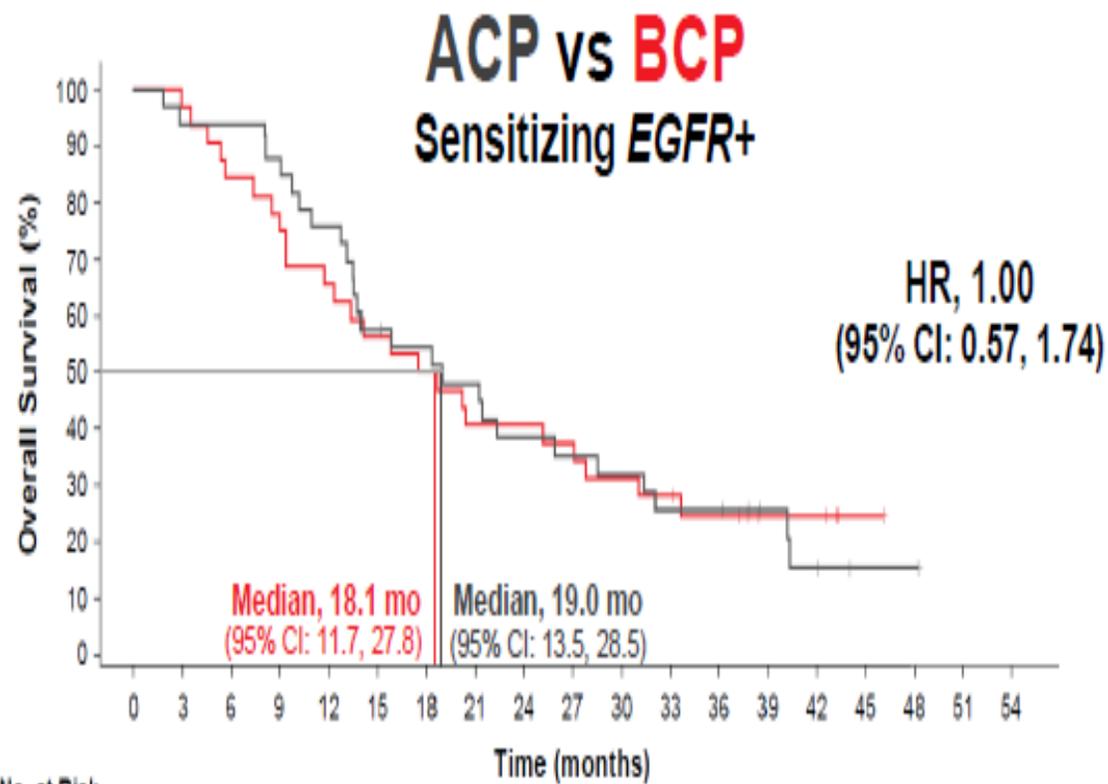
# Final OS analysis



No. at Risk

ABCP	26	26	26	23	21	19	18	17	17	14	10	10	7	5	2	2
BCP	32	31	27	25	21	18	16	13	13	12	10	9	7	4	4	1

**Arm B vs Arm C**

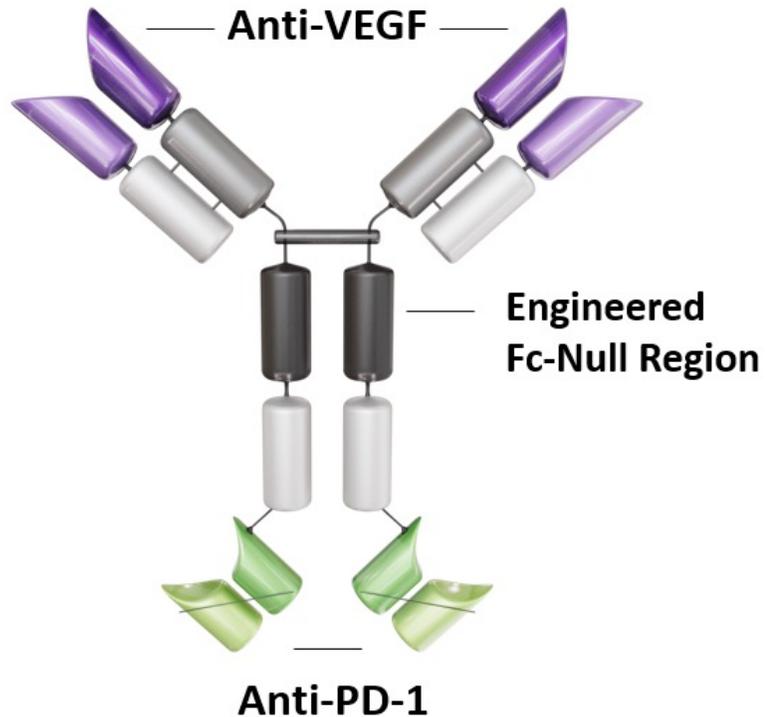


No. at Risk

ACP	33	31	31	29	25	19	17	15	12	11	10	8	8	5	3	1	1
BCP	32	31	27	25	21	18	16	13	13	12	10	9	7	4	4	1	

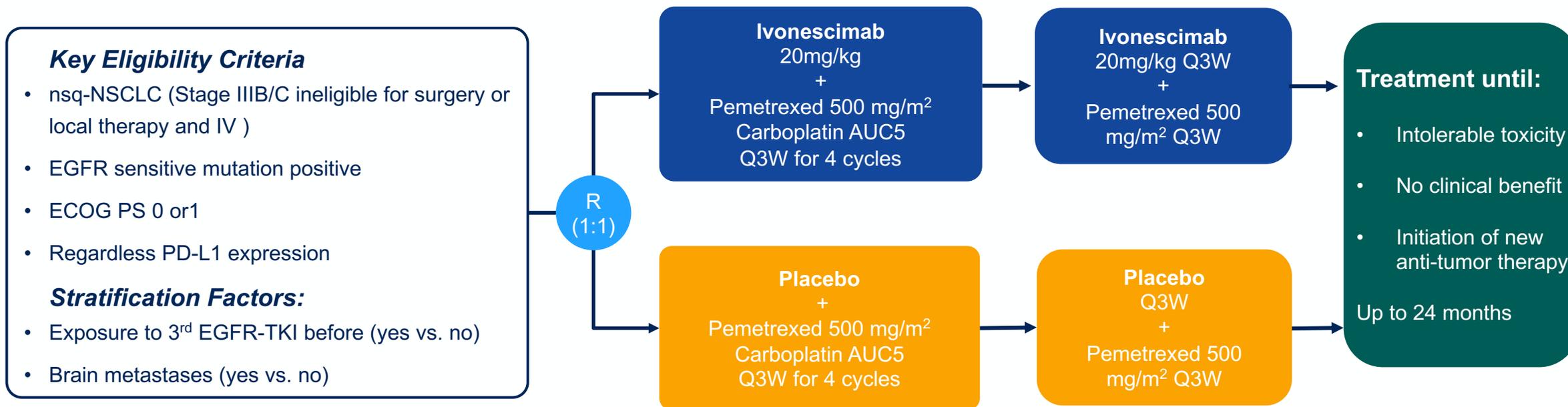
**Arm A vs Arm C**

# Ivonescimab - Background



- For patients with EGFR-mutant NSCLC, upfront treatment with tyrosine kinase inhibitors is standard. However, drug resistance remains a challenge, and an effective therapy after progression is needed.
- Ivonescimab (AK112/SMT112) is an anti-PD-1/VEGF bispecific antibody displaying cooperative binding characteristics.
- Phase II clinical studies have shown potential efficacy of Ivonescimab plus chemotherapy in NSCLC patients with EGFR mutations who progressed on prior EGFR-TKIs therapies<sup>1-2</sup>.

# HARMONi-A Study Design

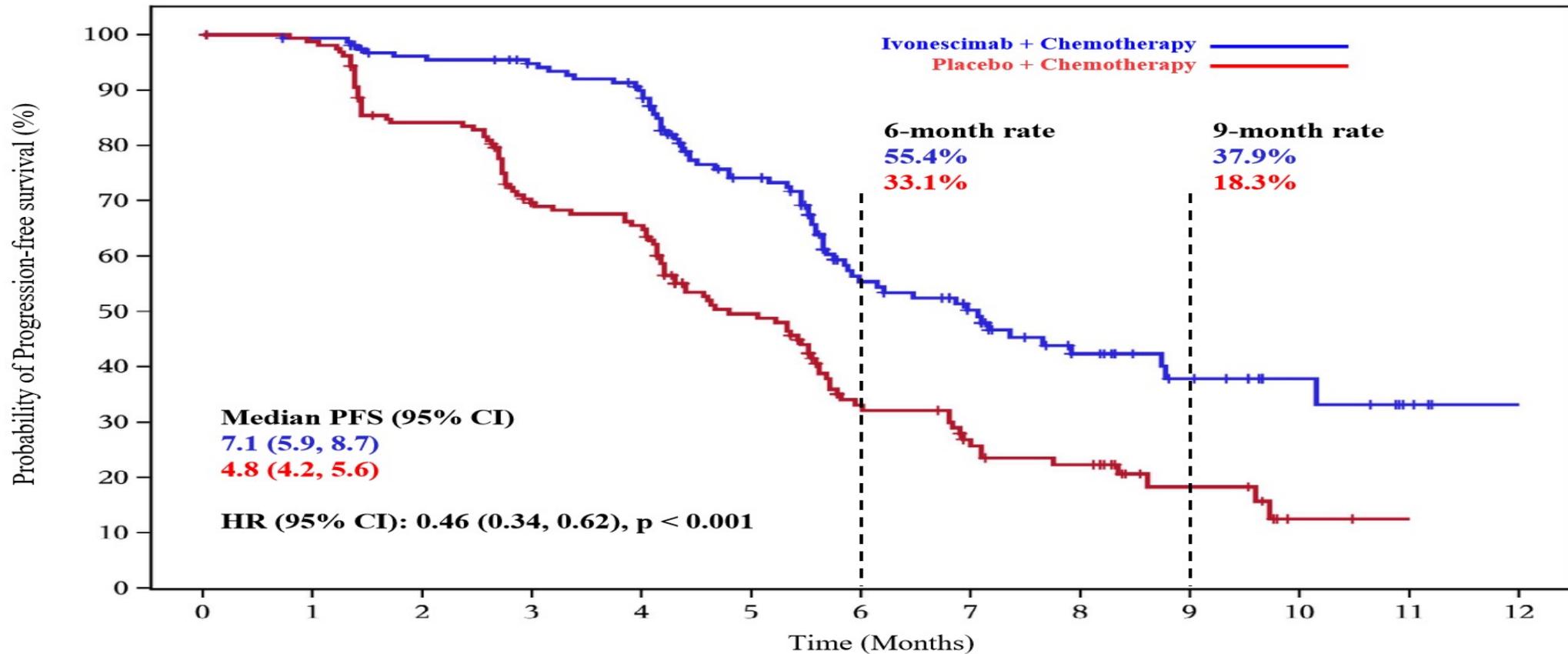


## Endpoints

- Primary: Progression-free survival by independent radiologic review committee (IRRC)
- Secondary: Overall survival, Response rate, Duration of response, Time to response and Safety

ClinicalTrials.gov, NCT05184712; NSCLC, non-small cell lung carcinoma; EGFR, epidermal growth factor receptor; ECOG, eastern cooperative oncology group; TKI, tyrosine-kinase inhibitor; Q3W, every 3 weeks.

# Study Met Primary Endpoint of PFS per IRRC



## At risk (events)

	0	1	2	3	4	5	6	7	8	9	10	11	12
<b>Ivonescimab + Chemo</b>	161 (0)	155 (1)	144 (6)	138 (8)	129 (15)	92 (36)	56 (57)	44 (62)	27 (68)	16 (70)	8 (70)	3 (71)	0 (71)
<b>Placebo + Chemo</b>	161 (0)	157 (2)	130 (25)	102 (47)	96 (53)	63 (75)	33 (94)	23 (101)	19 (104)	8 (106)	1 (108)	0 (108)	

HR and P-value were stratified by previous 3<sup>rd</sup> Gen EGFR-TKI use (yes vs. no) and presence of brain metastases (yes vs. no), and were calculated with stratified Cox model and log rank test. The two-sided P-value boundary is 0.024 as calculated using Lan-Demets spending function with O'Brien-Fleming approximation. HR, hazard ratio; CI, confidence interval; IRRC, independent radiology review committee.

# Conclusions

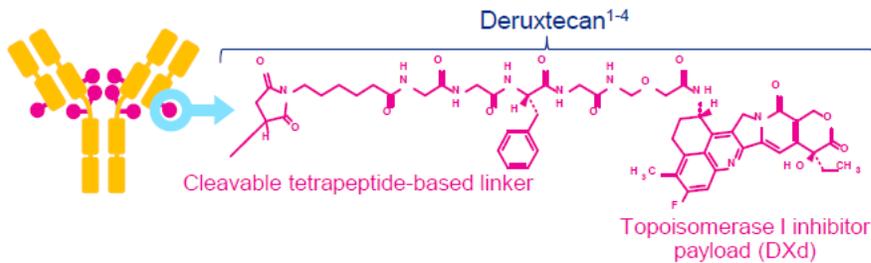
- Ivonescimab plus chemotherapy significantly improved PFS in patients who progressed on prior EGFR-TKIs treatments: **PFS HR 0.46 (95% CI: 0.34, 0.62), P<0.001**
- The prespecified subgroup analysis showed PFS benefit favoring patients receiving ivonescimab over those receiving the placebo across all subgroups.
- OS analyses show a favorable trend for prolonged OS for ivonescimab-chemotherapy
- The safety profile was generally manageable, without any unexpected adverse events and a low rate of treatment discontinuation.
- This study is being expanded globally, HARMONi (NCT06396065), to include patients from North America and Europe.

**With the recent approval in China, ivonescimab plus chemotherapy is a new standard treatment option for NSCLC patients who progress after EGFR-TKI treatment**

# Anti-HER3 ADC: Patritumab Deruxtecan(HER3-DXd)

**HER3-DXd is an ADC composed of 3 parts<sup>1-4</sup>:**

- A fully human anti-HER3 IgG1 mAb (patritumab)
- A topoisomerase I inhibitor payload (DXd)
- A tetrapeptide-based cleavable linker that covalently bonds the other 2 components



Payload mechanism of action: topoisomerase I inhibitor<sup>1-4,a</sup>

High potency of payload<sup>1-4,a</sup>

High drug to antibody ratio  $\approx 8^{1,2,a}$

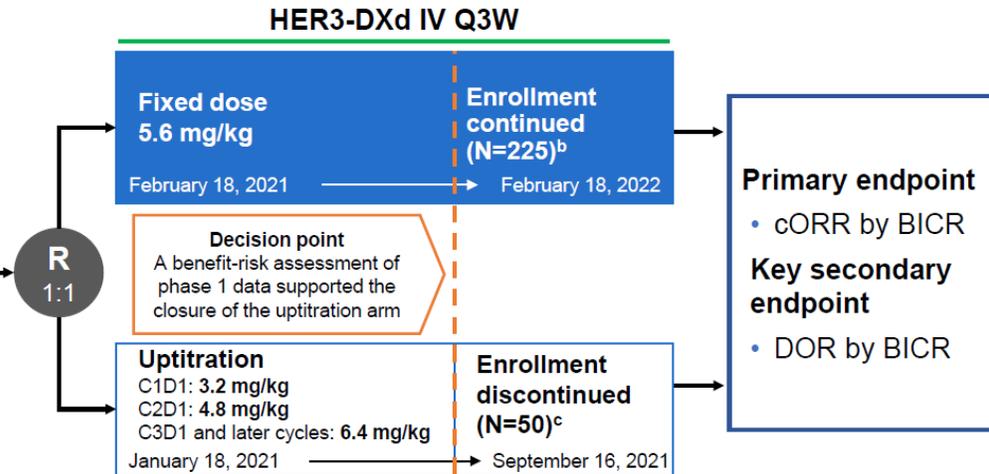
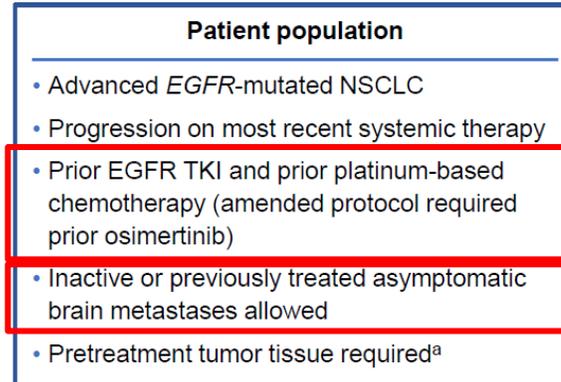
Payload with short systemic half-life<sup>2,3,a,b</sup>

Stable linker-payload<sup>2-4,a</sup>

Tumor-selective cleavable linker<sup>1-5,a</sup>

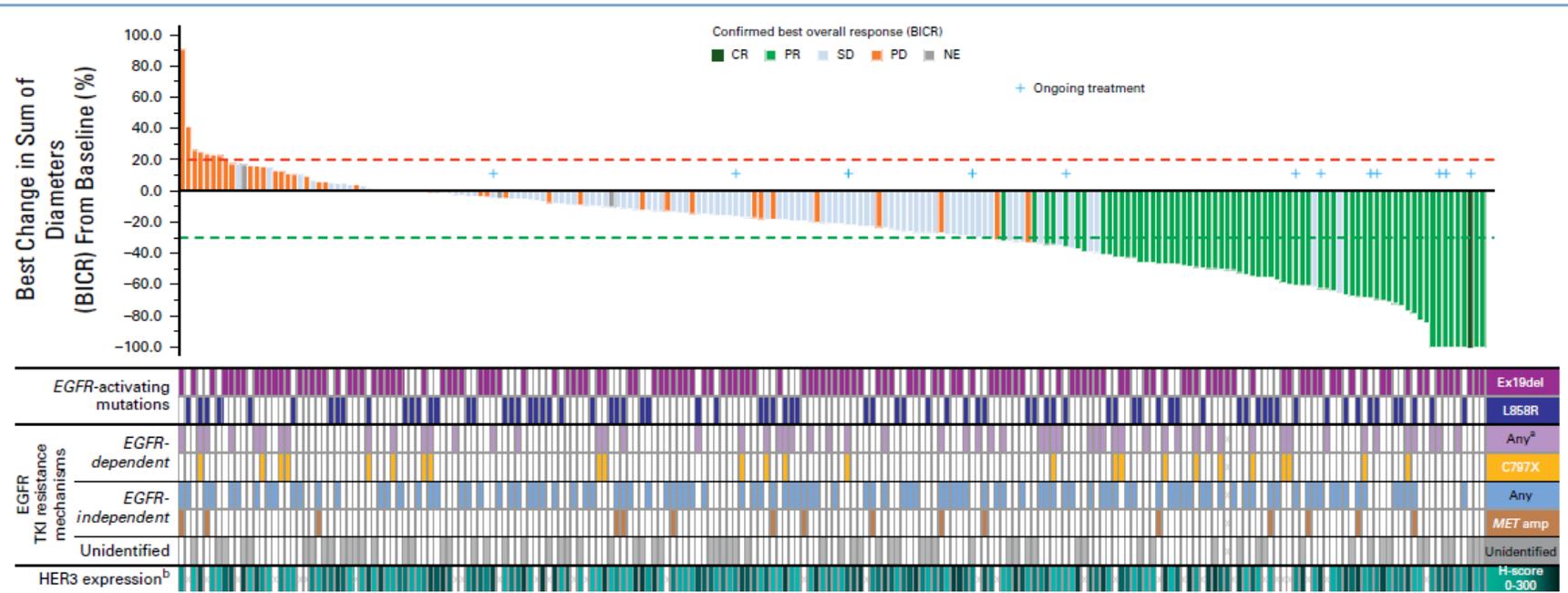
Bystander antitumor effect<sup>2,6,a</sup>

## HERTHENA-Lung01 Study Design<sup>1</sup>



- 51% prior brain metastases (32 % at baseline)
- Median lines of therapy: 3 (93% 3<sup>rd</sup> generation TKI, 40% prior IO)

# Anti-HER3 ADC: Patritumab Deruxtecan(HER3-DXd)



- Benefits across all subgroups.
- Benefit across EGFR TKI resistance mechanisms.
- Benefit seen regardless of HER3 IHC expression.

	Type of EGFR TKI resistance mechanism			
	EGFR-dependent, only (n=34)	EGFR-independent, only (n=81)	Both EGFR-dependent and -independent (n=32)	None identified (n=77)
Confirmed ORR (95% CI), %	32.4 (17.4-50.5)	27.2 (17.9-38.2)	37.5 (21.1-56.3)	27.3 (17.7-38.6)

mPFS 5.5 months (5.1-5.9)  
 mDOR 6.4 months (4.9-7.8)  
 mOS 11.9 months (11.2-13.1)

Snapshot data cutoff, 18 May 2023.  
 Median study follow-up, 18.9 (range, 14.9-27.5) months.

# What about CNS disease control in the absence of a TKI?

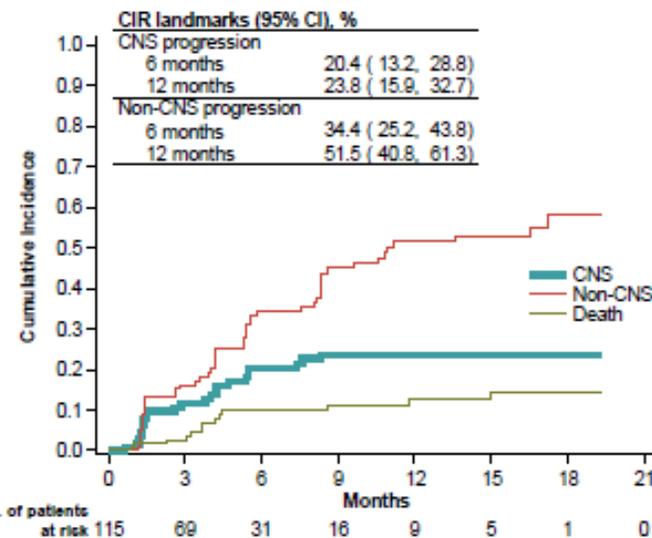
Responses by CNS BICR <sup>a</sup>	All patients with baseline BM by CNS BICR (n=95)	Patients whose baseline BM had not been irradiated (n=30) <sup>b</sup>
CNS cORR, n (%) [95% CI]	19 (20.0) [12.5, 29.5]	10 (33.3) [17.3-52.8]
CR, n (%)	15 (15.8)	9 (30.0) <sup>c</sup>
PR, n (%)	4 (4.2)	1 (3.3)
SD/non-CR/non-PD, n (%)	57 (60.0)	13 (43.3)
PD, n (%)	13 (13.7)	4 (13.3)
NE, n (%)	6 (6.3)	3 (10.0)
CNS DCR (95% CI), %	80.0 (70.5, 87.5)	76.7 (57.7-90.1)
CNS DOR, median (95% CI), mo	9.2 (8.1-11.1)	8.4 (5.8-9.2)

<sup>a</sup>Snapshot data cutoff, 18 May 2023.  
<sup>b</sup>Median study follow-up, 18.9 (range, 14.9-27.5) months.

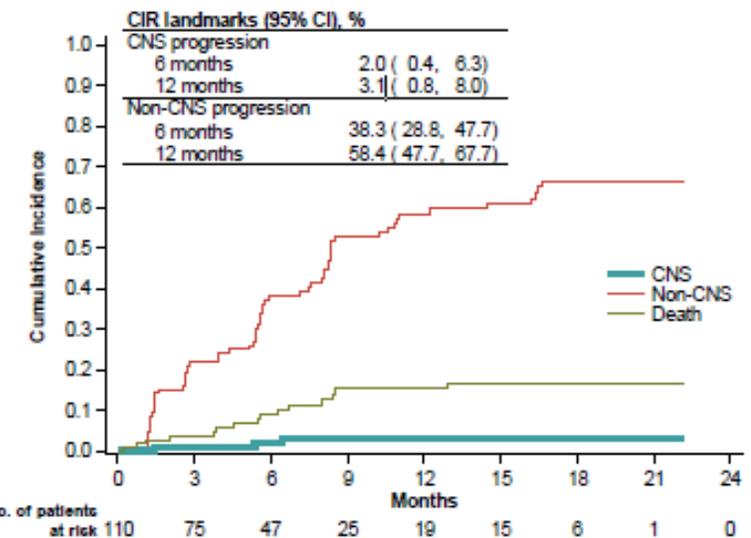
## Site of first PD:

- 21% of patient with h/o BM
- 3% of patients without h/o BM

With History of Brain Metastasis (n=115)



With No History of Brain Metastasis (n=110)



CIR, cumulative incidence rate; CNS, central nervous system.

Johnson et al. ESMO 2023; Yu et al. WCLC 2023; Yu et al. JCO 2023



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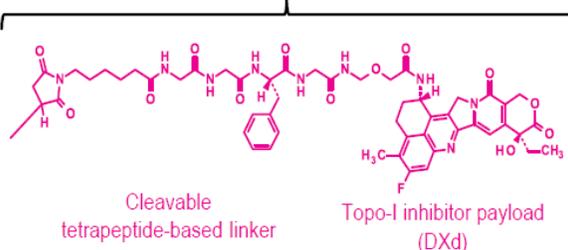
# Trop2-ADCs: Datopotamab deruxtecan (Dato-DXd)

## TROPION-Lung05(NCT04484142)

Dato-DXd: Humanized anti-TROP2 IgG1 mAb<sup>2-5</sup>



Deruxtecan



### Screening

#### Key inclusion criteria

- Stage IIIB, IIIC, or IV NSCLC
- Presence of  $\geq 1$  actionable genomic alteration (*EGFR*, *ALK*, *ROS1*, *NTRK*, *BRAF*, *MET* exon 14 skipping, or *RET*)
- ECOG PS of 0 or 1
- $\geq 1$  line of targeted therapy
- 1 or 2 prior cytotoxic agent-containing therapies including platinum-based therapy in the metastatic setting
- Radiographic disease progression after targeted therapy

### Treatment

Dato-DXd  
6 mg/kg  
Q3W

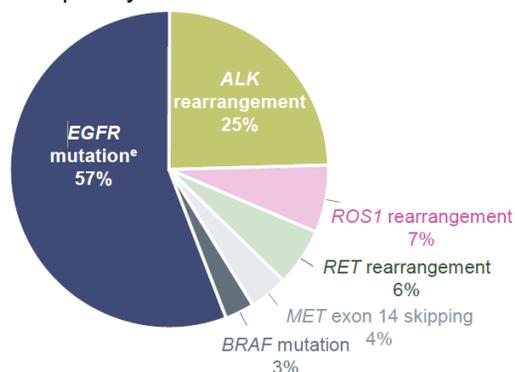
### Endpoints<sup>a</sup>

**Primary:** ORR by BICR

**Secondary:**

- By BICR and investigator: DOR, DCR, CBR, PFS, TTR
- By investigator: ORR
- OS, safety, PK, immunogenicity

Relative Frequency of Genomic Alterations<sup>b-d</sup>



Heavily pretreated patient cohort:

- 72 %  $\geq 3$  lines of therapy (60%  $\geq 2$  prior TKIs)
- 51% patients with BM
- 3% of patients without h/o BM

### Disposition

At the time of data cutoff (December 14, 2022):

- Median (range) treatment duration was 4 (1-21) months
- 60 participants (44%) were ongoing in study
- 20 participants (15%) were ongoing on study treatment

# Datopotamab deruxtecan (Dato-DXd)

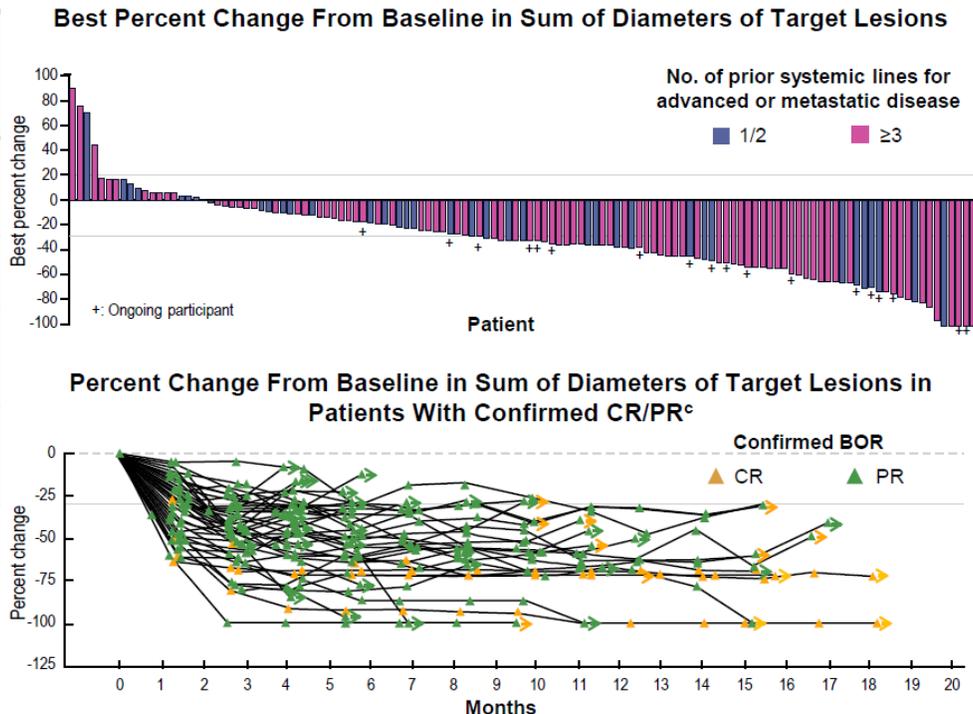
TROPION-Lung05(NCT04484142)

## Efficacy Summary

Response per BICR	All treated patients (N=137)	Patients with EGFR mutations (N=78)	Patients with ALK rearrangement (N=34)
ORR confirmed, n (%) [95% CI] <sup>a</sup>	49 (35.8) [27.8-44.4]	34 (43.6) [32.4-55.3]	8 (23.5) [10.7-41.2]
Median DOR (95% CI), months	7.0 (4.2-9.8)	7.0 (4.2-10.2)	7.0 (2.8-8.4)
DCR confirmed, n (%) [95% CI] <sup>a</sup>	108 (78.8) [71.0-85.3]	64 (82.1) [71.7-89.8]	25 (73.5) [55.6-87.1]
Median PFS, (95% CI), months <sup>b</sup>	5.4 (4.7-7.0)	5.8 (5.4-8.3)	4.3 (2.6-6.9)

**BOR:** In the overall population (N=137), 4 patients (3%) achieved a CR and 45 (33%) achieved a PR

**EGFR subset:** Among patients with sensitizing or T790M mutations (N=68), the ORR was 49.1% in those previously treated with osimertinib



BICR, blinded independent central review; BOR, best overall response; CR, complete response; DCR, disease control rate; DOR, duration of response; ORR, objective response rate; PFS, progression-free survival; PR, partial response.

<sup>a</sup>The 2-sided 95% CIs are based on the Clopper-Pearson exact binomial method. <sup>b</sup>Median PFS and PFS probabilities are based on the Kaplan-Meier method. <sup>c</sup>Per BICR.

- Most toxicities were Grade 1-2 (nausea, stomatitis, fatigue, vomiting).
- grade  $\geq 3$  (stomatitis, ocular, rare ILD)  
TRAE 29% grade  $\geq 3$
- Phase 3 Tropion-Lung 01 PFS HR 0.38 Dato-DXd vs. docetaxel in the alteration positive population.
- Other Trop2-ADCs are being explored (sacituzumab govitecan, SKB264)

# What is Next After Osimertinib Progression?

