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CONQUERING THORACIC CANCERS WORLDWIDE

EGFR-mutated Non-Small Cell Lung Cancer: Update from WCLC Singapore

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DISCLOSURES

Commercial Interest	Relationship(s)
Genentech	Research Grant (Institutional)
Amgen	Research Grant (Institutional)
Astra Zeneca	Consultant (Institutional)
IO Biotech	Consultant (Institutional)
Guardant Health	Consultant (Institutional)
Oncocyte	Consultant (Institutional)
Roche Genentech	Advisory Board
Merck	Advisory Board
Novartis	Advisory Board
Boehringer Ingelheim	Advisory Board
Amgen	Advisory Board



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EGFR-mutated NSCLC: Overview for Advanced Stage Disease in March 2021

EGFR exon20 mutated NSCLC: New Therapeutic Approaches

Comparative clinical outcomes for patients with *EGFR* exon20ins vs the common sensitizing *EGFR* mutations (*Girard*)

Amivantamab in post-platinum *EGFR* exon20ins NSCLC: CHRYSALIS trial (Sabari)

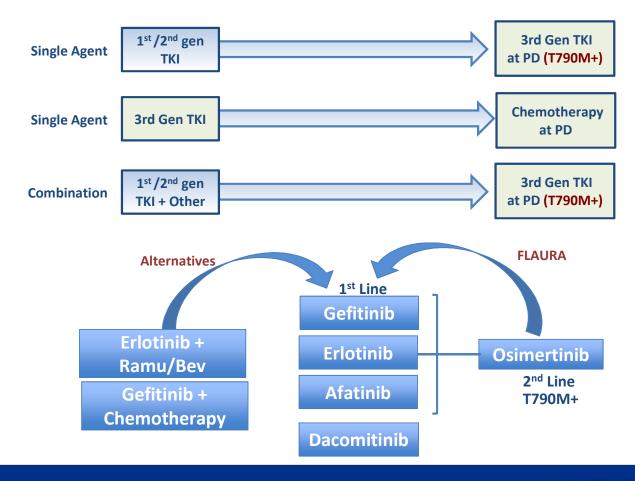
Mobocertinib in NSCLC with EGFR exon20ins: EXCLAIM trial (Zhou)

EGFR mutated NSCLC: Mechanisms of Resistance to EGFR TKIs & New Approaches

Osimertinib + savolitinib in *EGFR*m *MET*-amplified/ overexpressed NSCLC: TATTON final analysis (*Han*)

Efficacy and Safety of a HER3-Directed Antibody Drug Conjugate Patritumab Deruxtecan (HER3-DXd; U3-1402) in EGFR-Mutated NSCLC (Yu)

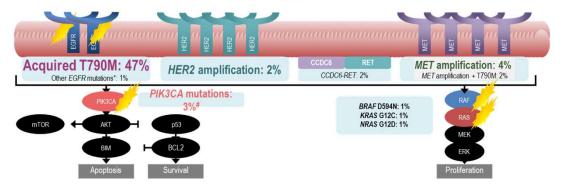
Strategies for Optimizing 1st-line Therapy for EGFR-mutated NSCLC: Options for 1st line Therapy



JANUARY 28-31, 2021 | WORLDWIDE VIRTUAL EVENT

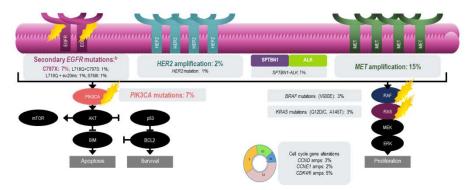
FLAURA: Acquired Resistance Mechanisms in Comparator EGFR TKIs (Gefitinib or Erlotinib)

Most common acquired resistance mechanisms were T790M (47%), MET amplification, PIK3CA mutations & HER2 amplification



FLAURA: Acquired Resistance Mechanisms after Osimertinib 1st-line therapy

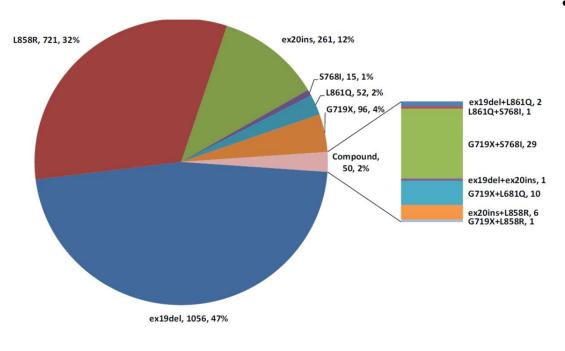
- No cases of acquired EGFR T790M
- Most common mechanisms were MET amplification (15%) and EGFR C797X mutation (10%)
 - Other mechanisms included HER2 amplification/mutation (3%), PIK3CA(7%), RAS/RAF mutations and ALK transformation



Ramalingam et al: ESMO 2019

EGFR Ex20ins-mutated NSCLC

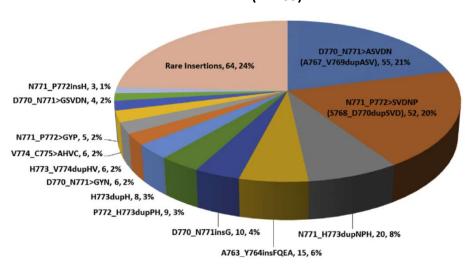
EGFR Mutation Subtypes (N=2,251)



Riess, Gandara et al. JTO 2018

- EGFR Ex20ins mutations (~2% of NSCLC)
- ~12% of all EGFR mutations (3rd most common)
- Typically resistant to 1st Gen EGFR TKIs

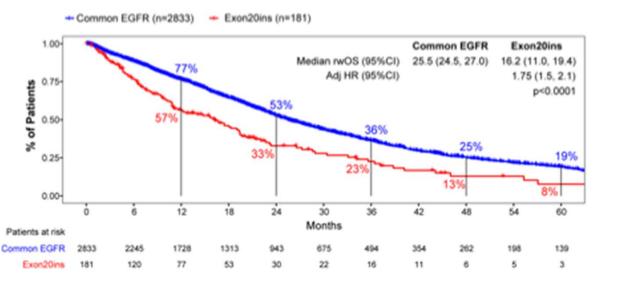
Distribution of EGFR Ex20ins mutations (N=263)

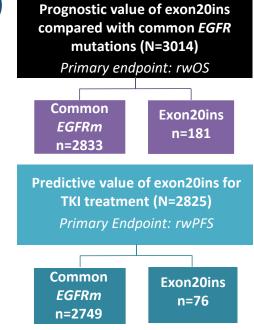


Comparative clinical outcomes for patients with NSCLC with EGFR exon20ins versus common EGFR mutations (Ex19del, L858R)

Prognostic value of

- Advanced NSCLC diagnosis between January 2011 to May 2020 in the Flatiron database (real-world evidence)
- EGFR L858R, exon19del, or exon20ins
- Predictive value analysis: any TKI treatment

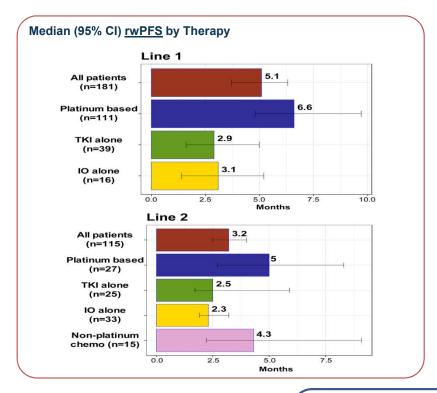


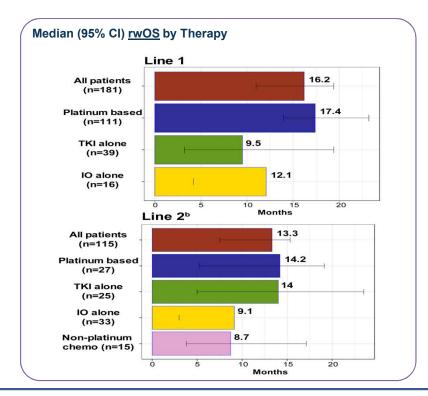


		Real-world data on PFS
	Common EGFRm	Exon20ins
Median rwPFS (95% CI)	10.5 months (10.1, 10.9)	2.9 months (2.1, 3.9)
Adjusted HR (95% CI)		2.69 (2.1, 3.6) <i>P</i> <0.0001

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Clinical outcomes for patients with NSCLC with EGFR exon20ins mutations





EGFRm, EGFR mutations; rwOS, real-world overall survival; rwPFS, real-world progression-free survival. Girard N et al. WCLC 2020. Abstract MA04.07.

- Poorer prognosis compared with patients with common EGFRm
- Less benefit from EGFR TKIs compared with patients with common EGFRm
- Platinum-based therapies were the most common first-line treatment, no clear standard in second line
- 6.6 months can be considered median duration of response to first-line platinum-based chemotherapy for comparison studies of novel agents in patients with *EGFR* exon20ins

Current treatment landscape for EGFR Ex20 NSCLC

Drug	Class	N	ORR (%)
Chemotherapy ¹	Platinum-based	105 first line	19.2%
Gefitinib/ Erlotinib ²	1G EGFR TKI	9 first line 16 pre-treated	8
Erlotinib ³	1G EGFR TKI	11 pre-treated	25
Dacomitinib ⁴	2G EGFR TKI	6 pre-treated	16
Afatinib ⁵	2G EGFR TKI	21 TKI pre-treated 70 TKI naive	14.3 24.3
Osimertinib ^{6,7}	3G EGFR TKI	20 pre-treated, 80 mg OD 21 pre-treated, 160 mg OD	5 25
Poziotinib ⁸	Pan-HER TKI	115 pre-treated	14.8
CLN-081 ⁹	EGFR TKI	22 pre-treated	35
Mobocertinib	EGFR TKI	114 pre-treated	23
Amivantamab	EGFR-MET bispecific Ab	81 pre-treated	40

¹Yang G et al, Lung Cancer 2020; ²Beau-Faller M et al, Ann Oncol 2014; ³Naidoo J et al, Cancer 2015; ⁴Janne PA et al, CCR 2011; ⁵Yang JC et al, JTO 2020; ⁶Veggel B et al, Ann Oncol 2018; ⁷Piotrowska Z et al, ESMO 2020; ⁸Le X et al, AACR 2020; ⁹Piotrowska Z et al, ESMO 2020

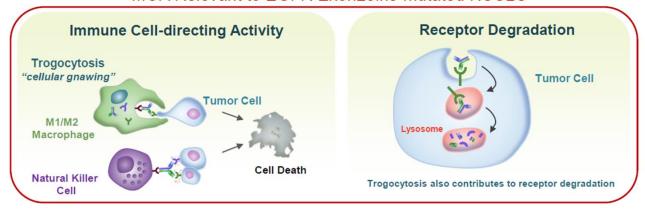
Gillianne G.Y. Lai, National Cancer Centre Singapore, Singapore

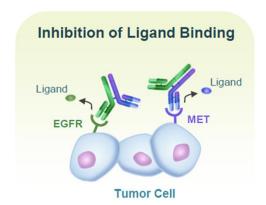


Amivantamab in post-platinum *EGFR* exon20ins-mutant NSCLC¹

- Amivantamab: Fully human EGFR-MET bispecific antibody^{2,3}
- Targets activating and resistance EGFR mutations and MET mutations and amplifications^{4,5}
- Demonstrated monotherapy activity in patients with diverse *EGFRm* disease including *EGFR* exon19del, L858R, T790M, C797S, exon20ins, and *MET* amplifications^{4,5}

MOA Relevant to EGFR Exon20ins-mutated NSCLC

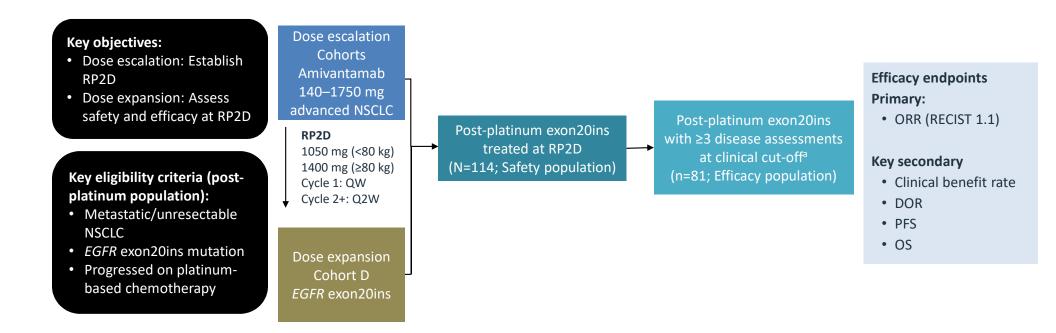




MOA, mechanism of action.

- 1. Sabari JK et al. WCLC 2020. Abstract OA04.04. 2. Vijayaraghavan S et al. Mol Cancer Ther 2020;19:2044–56. 3. Yun J et al. Cancer Discov 2020;10:1194–209.
- 4. Haura EB et al. J Clin Oncol 2019;37(15_suppl):9009. 5. Park K et al. J Clin Oncol 2020;38(15_suppl):9512.

CHRYSALIS study design: Post-platinum exon20ins population



NCT02609776.

^aPostplatinum patients treated at the RP2D and had ≥3 scheduled disease assessments or discontinued, progressed, or died prior to the 3rd postbaseline assessment at the time of clinical cut-off (June 8, 2020). By October 8, 2020, all responders in the efficacy population had ≥6 months of follow-up from their first disease assessment.

DOR, duration of response; ORR, overall response rate; OS, overall survival; PFS, progression-free survival; QW, weekly; Q2W, twice weekly; RECIST, Response Evaluation Criteria in Solid Tumors; RP2D, recommended phase 2 dose.

Sabari JK et al. WCLC 2020. Abstract OA04.04.

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Amivantamab: Demographics and Baseline Characteristics

Characteristic, n (%)	Efficacy Population (n=81)
Median age, years (range)	62 (42–84)
Male / Female	33 (41) / 48 (59)
Race	
Asian	40 (49)
White	30 (37)
Black	2 (3)
Not reported/multiple	9 (11)
Smoking history	
Non-smoker	43 (53)
Smoker	38 (47)
Median time from initial diagnosis, months (range)	17 (1–130)

Characteristic, n (%)	Efficacy Population (n=81)
History of brain metastases	18 (22)
Median number of prior lines (range)	2 (1–7)
Prior systemic therapy	81 (100)
Platinum-based doublet chemotherapy	81 (100)
Immuno-oncology therapy	37 (46)
EGFR TKI	20 (25)
1 st -gen TKI	7 (9)
2 nd -gen TKI	6 (7)
3 rd -gen TKI	6 (7)
Poziotinib	1 (1)

CHRYSALIS: Amivantamab adverse events

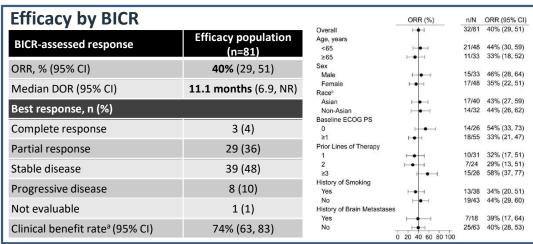
	Safety population (N=114)			
AE (≥15% of treatment-emergent	Treatment-em	ergent AE	Treatment-related AE	
AEs), n (%)	Total	Grade ≥3	Total	Grade ≥3
EGFR-related				
Rash ^a	98 (86)	4 (4)	98 (86)	4 (4)
Paronychia	51 (45)	1 (1)	48 (42)	1 (1)
Stomatitis	24 (21)	0	21 (18)	0
Pruritus	19 (17)	0	19 (17	0
MET-related				
Hypoalbuminemia	31 (27)	3 (3)	17 (15)	2 (2)
Peripheral edema	21 (18)	0	11 (10)	0
Other				
Infusion-related reaction	78 (66)	3 (3)	75 (66)	3 (3)
Constipation	27 (24)	0	7 (6)	0
Nausea	22 (19)	0	13 (11)	0
Dyspnea	22 (19)	2 (2)	6 (5)	0
Fatigue	21 (18)	2 (2)	14 (12)	1 (1)
Increased ATL	17 (15)	1 (1)	14 (12)	1 (1)

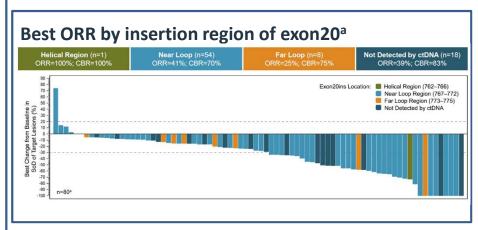
- Safety profile consistent with inhibition of EGFR and MET pathways
- 2% discontinued due to rash
- 12% had diarrhea (10% treatment-related)
 - 8.5% grade 1-2
 - 3.5% grade 3
- 94% of IRRs occurred with the first infusion and rarely impacted ability to continue with subsequent treatments

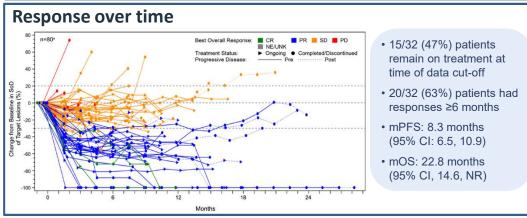
AE, adverse event; ALT, alanine transaminase; IRR, infusion-related reaction. Sabari JK et al. WCLC 2020. Abstract OA04.04.

^aIncludes all rash-related AE.

CHRYSALIS: Amivantamab efficacy







- This update confirms safety and efficacy of amivantamab in EGFR ex20ins+ NSCLC
- These data compare favorably to other options in this EGFR-mutated subset
- FDA breakthrough designation (March 10, 2020)
- Randomized trials of combinations are being pursued in EGFR ex20ins+ and first-line EGFR-mutated NSCLC

^aDetected by ctDNA; 25 distinct exon20ins identified by NGS of ctDNA (Guardant360[®]) from 63 evaluable patient samples.

BICR, blinded independent central review; CBR, clinical benefit rate; CR complete response; ctDNA, circulating tumor DNA; ECOG PS, Eastern Cooperative Oncology Group performance status;

mOS, median overall survival; mPFS, median progression-free survival; NE, not reached; ORR, overall response rate; PD, progressive disease; PR, partial response; SD, stable disease; SoD, sum of diameter; UNK, unknown.

Sabari JK et al. WCLC 2020. Abstract OA04.04.

Mobocertinib in NSCLC with *EGFR* exon20ins: Results from EXCLAIM and pooled platinum-pretreated patient populations

Patient demographics and baseline characteristics were similar between cohorts

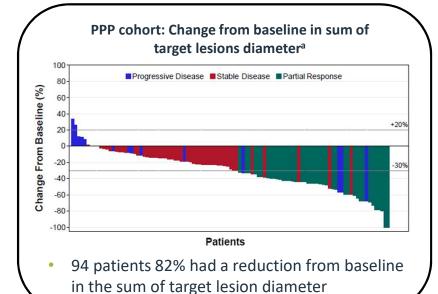
Characteristic	PPP cohort (N=114)	EXCLAIM cohort (N=96)	
Median age, years (range)	Median age, years (range)		
Female, %		66	65
	Asian	60	69
Race, %	White	37	29
	Black	3	2
ECOG PS, %	0	25	29
LCOG F3, 76	1	75	71
	Never	71	73
History of smoking, %	Current	2	2
	Former	27	25
Median no. of prior systemic anticancer regimes (range)		2 (1–7)	1 (1–4)
	1	41	51
Prior systemic anticancer regimens, %	2	32	31
	≥3	27	18
Prior platinum therapy, %	100	90	
Prior TKI therapy, %		25	31
Prior immunotherapy, %	43	34	

Data cut-off May 29, 2020

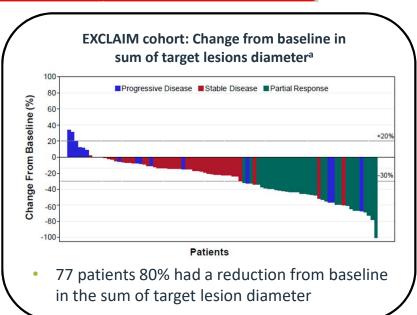
ECOG PS, Eastern Cooperative Oncology Group performance status; PPP, platinum pretreated patients. Zhou C et al. WCLC 2020. Abstract OA04.03.

Mobocertinib in NSCLC with *EGFR* exon20ins: Efficacy results

Parameter	PPP cohort (N=114)	EXCLAIM cohort (N=96)
Median time on treatment, months (range)	7.0 (0–31)	6.5 (0–14)
Confirmed ORR per IRC, n (%) [95% CI]	30 (26) [19, 35]	22 (23) [15, 33]
Confirmed ORR per investigator, n (%) [95% CI]	40 (35) [26, 45]	31 (32) [23, 43]



Median DOR >12 months Median PFS 7.3 months



DOR, duration of response; IRC, independent review committee; ORR, objective response rate; PFS, progression-free survival; PPP, platinum pretreated patients.

Zhou C et al. WCLC 2020. Abstract OA04.03.

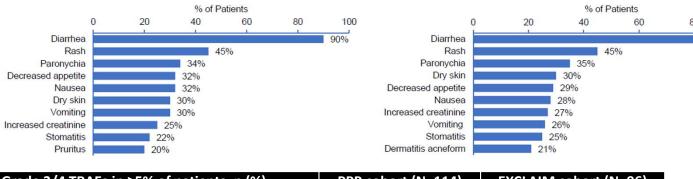
^aPer investigator assessment.

Mobocertinib safety profile was consistent between the PPP and EXCLAIM cohorts

n (%)	PPP cohort (N=114)	EXCLAIM cohort (N=96)
Any treatment-related AE	113 (99)	95 (99)
Grade ≥3 treatment-related AE	53 (46)	39 (41)
Serious treatment-emergent AEs	52 (46)	39 (41)
AEs leading to dosage reduction	28 (25)	20 (21)
AEs leading to treatment discontinuation	19 (17)	10 (10)
Treatment-related AEs leading to death	1 (1)	1 (1)



EXCLAIM cohort (N=96)



Grade 3/4 TRAEs in ≥5% of patients, n (%)	PPP cohort (N=114)	EXCLAIM cohort (N=96)
Diarrhea	24 (21)	15 (16)

Mobocertinib in Ex20ins

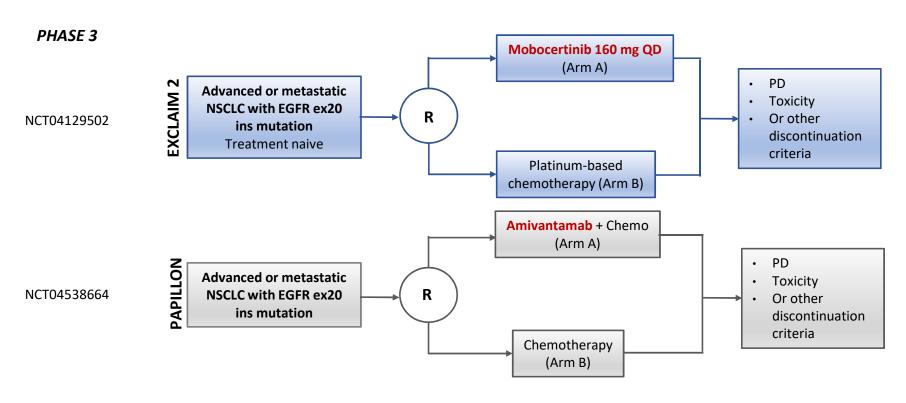
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- ORR ~30% in both cohorts (~25%–35%)
- Promising efficacy but GI toxicity (diarrhea) is challenging

AE, adverse event; DOR, duration of response; GI, gastrointestinal; ORR, objective response rate; PFS, progression-free survival; PPP, platinum pretreated patients; TRAE, treatment-related adverse event.

Zhou C et al. WCLC 2020. Abstract OA04.03.

Ongoing studies in EGFR Ex20ins NSCLC

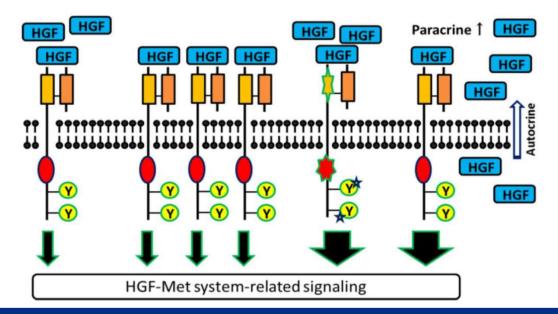


Gillianne G.Y. Lai: Discussant -WCLC Singapore, Jan 2021

MET as a Mechanism of Resistance in EGFR-mutated NSCLC

Measuring MET pathway Activation in Cancer

Normal MET over-expression MET Mutation Up-regulation Protein- IHC Ex14 skipping of HGF Amplification



MET TKIs: Efficacy in *MET* **ex14 NSCLC**

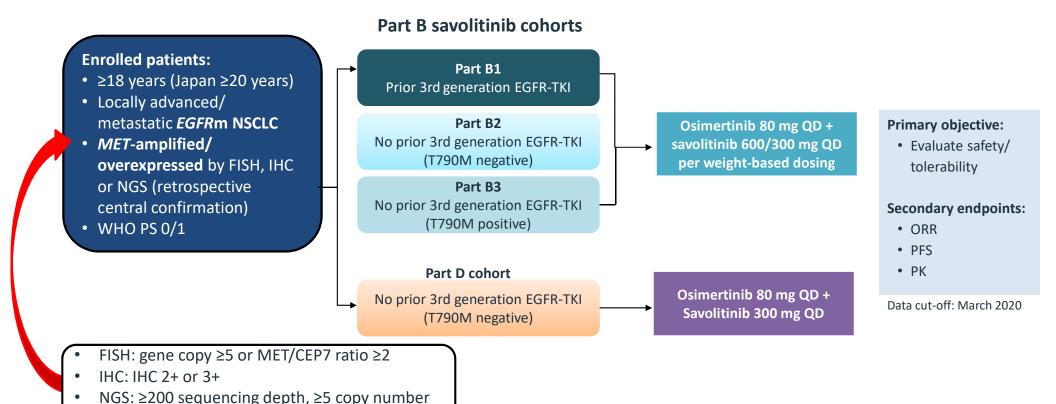
Agent	MET testing	n	ORR, % (95% CI)	DOR (months)	PFS (months)
Capmatinib ¹	Tissue RT-PCR	97 1L: 28 2/3L: 69	1L: 68 (47.6–84.1) 2L/3L: 41 (28.9–53.1)	1L: 11.1 (5.55–NE 2L: 9.7 (5.55–12.98)	1L: 9.7 (5.5–13.86) 2L/3L: 5.4 (4.2–6.97)
Tepotinib ²	Liquid (DNA- based NGS) Tissue (RNA- based NGS)	73 Liquid: 48 Tissue: 51	Liquid: 50 (35.2–64.8) 1L: 59 (32.0–81.6) 2L: 53 (26.6–78.7) ≥3L: 37.5 (15.2–64.6) Tissue: 45 (31.1–59.7) 1L: 44 (21.5–69.2) 2L: 50 (26–74) ≥3L: 40 (16.3–67.7)	Liquid: 12.4 (5.8–NE) Tissue: 15.7 (9.0–NE)	Liquid: 9.5 (6.7–NE) Tissue: 10.8 (6.9–NE)
Crizotinib ³	Tissue-local Prospective central tissue & liquid ctDNA	65	32 (21–45)	9.1 (6.4–12.7)	7.3 (5.4–9.1)
Savolitinib ⁴	Tissue	29	55	na	na

^{1.} Wolf J, et al. ASCO 2019. Abstract 9004. 2. Paik, PK et al. ASCO 2019; Abstract 9005. 3. Drilon A, et al. WCLC 2018. 4. Lu S, et al. AACR 2019.

Courtesy of K Reckamp



TATTON: Phase Ib multi-cohort study of osimertinib-based combinations

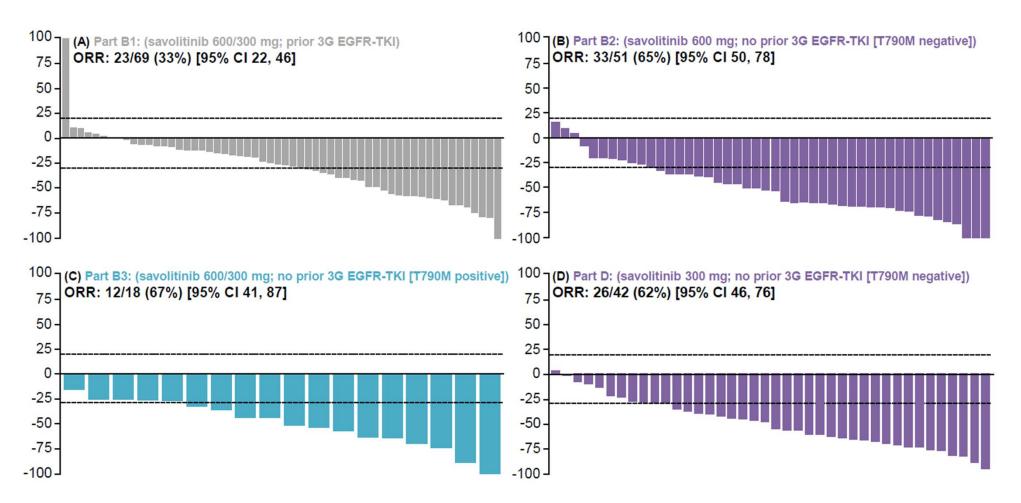


IHC, immunohistochemistry; FISH, fluorescence in situ hybridization; NGS, next-generation sequencing; ORR, objective response rate; PFS, progression-free survival; PK, pharmacokinetics; PS, performance status; QD once daily; WHO, World Health Organization.

Han J et al. WCLC 2020. Abstract FP14.03.

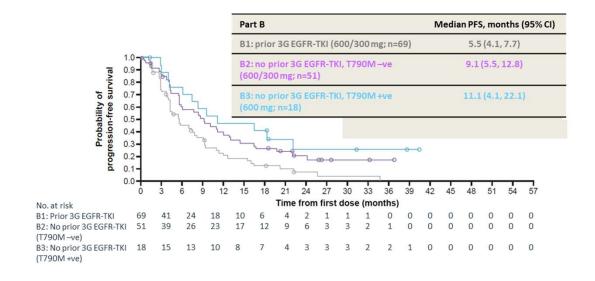
of tumor ploidy

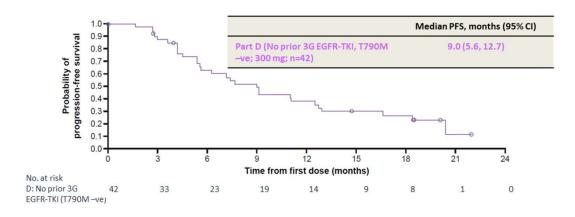
Response rate to Savolitinib + Osimertinib in various cohorts



3G, 3rd generation; IHC, immunohistochemistry; FISH, fluorescence in situ hybridization; NGS, next-generation sequencing; ORR, objective response rate. Han J et al. WCLC 2020. Abstract FP14.03.

PFS with Savolitinib + Osimertinib in various cohorts





Toxicity of the Savolitinib-Osimertinib Combination

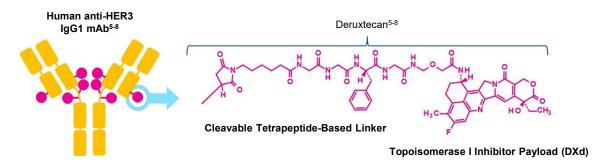
	Part B (n=138)		Part D (n=42)	
AE, n (%)	AE causally related to savolitinib	AE causally related to osimertinib	AE causally related to savolitinib	AE causally related to osimertinib
ALT increased	7 (5)	6 (4)	0	0
Anaphylactic reaction	5 (4)	1 (1)	1 (2)	0
AST increased	8 (6)	6 (4)	0	0
Diarrhea	3 (2)	2 (1)	2 (5)	2 (5)
Drug hypersensitivity	5 (4)	2 (1)	3 (7)	2 (5)
Fatigue	4 (3)	0	0	0
Generalised edema	0	0	2 (5)	0
Myalgia	3 (2)	0	2 (5)	2 (5)
Nausea	4 (3)	4 (3)	0	0
Neutropenia	4 (3)	3 (2)	0	0
Neutrophil count decreased	9 (7)	8 (6)	1 (2)	1 (2)
Edema peripheral	4 (3)	2 (1)	1 (2)	0
Rash	4 (3)	2 (1)	1 (2)	0
Vomiting	6 (4)	4 (3)	0	0
WBC count decreased	4 (3)	4 (3)	0	0

AE, adverse event;
ALT alanine aminotransferase;
AST, aspartate aminotransferase;
WBC, white blood count.
Han J et al. WCLC 2020. Abstract FP14.03.

- Combination is reasonably well tolerated
- The osimertinib/savolitinib combination is promising in MET +ve EGFR TKI-resistant NSCLC
- Need to define the MET biomarker more clearly (IHC vs FISH vs NGS)
- Uncertain if savolitinib 300 mg or 600 mg is optimal for the combination

Efficacy and Safety of a HER3-Directed Antibody Drug Conjugate Patritumab Deruxtecan (HER3-DXd; U3-1402) in *EGFR*-Mutated NSCLC

- Patients with advanced EGFR-mutated NSCLC have few treatment options after failure of EGFR TKIs and platinum-based chemotherapy^{1,2}
- **HER3 is expressed in most lung cancers**, including in >80% of *EGFR*-mutated NSCLC, and overexpression has been associated with worse clinical outcomes^{1,3-4}
 - HER3 therefore represents a promising therapeutic target; however, no HER3 directed therapies are currently approved^{3,4}
- Patritumab deruxtecan (HER3-DXd; U3-1402) is a novel, investigational HER3-directed ADC comprising a fully human anti-HER3 IgG1 mAb (patritumab) covalently linked to a topoisomerase I inhibitor payload, an exatecan derivative, via a tetrapeptide-based cleavable linker⁵⁻⁸



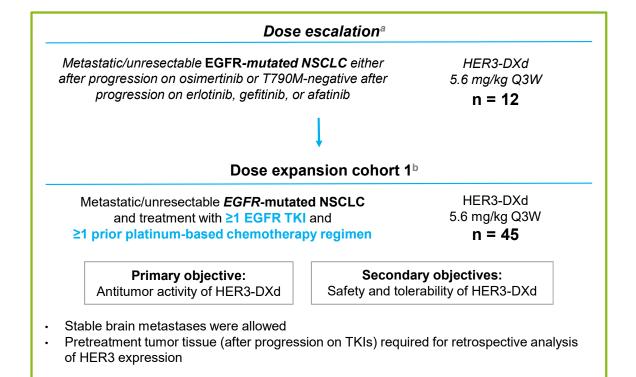
1. Tan CS, et al. *Mol Cancer*. 2018;17:29. 2. Lee CK, et al. *J Thorac Oncol*. 2017;12:403-407. 3. Scharpenseel H, et al. *Sci Rep*. 2019;9:7406. 4. Yi ES, et al. *Mod Pathol*. 1997:142-148. 5. Hashimoto Y, et al. *Clin Cancer Res*. 2019;25:7151-7161. 6. Nakada T, et al. *Chem Pharm Bull (Tokyo)*. 2019;67(3):173-185. 7. Ogitani Y, et al. *Clin Cancer Res*. 2016;22(20):5097-5108. 8. Koganemaru S, et al. *Mol Cancer Ther*. 2019;18:2043-2050.

Yu et al: IASLC WCLC 2020



Phase 1 Study of HER3-DXd in EGFR-Mutated NSCLC

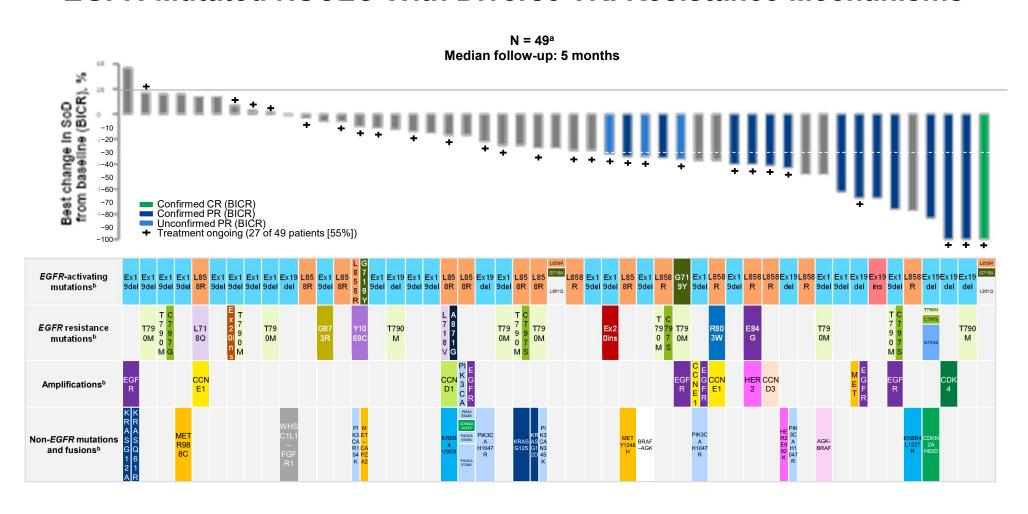
- HER3-DXd is being evaluated in a global, multicenter, open-label phase 1 study in patients with metastatic/unresectable NSCLC, including patients harboring an EGFR-activating mutation (NCT03260491)
- In the dose escalation portion of the study^{1,a}:
 - RDE was determined to be 5.6 mg/kg
 IV Q3W
 - Safety was manageable
 - Antitumor activity was observed in patients across multiple resistance mechanisms



Yu et al: IASLC WCLC 2020



HER3-DXd 5.6 mg/kg Demonstrated Antitumor Activity in EGFR-Mutated NSCLC With Diverse TKI Resistance Mechanisms



HER3-DXd 5.6 mg/kg Continues to Demonstrate a Manageable Safety Profile

- The most common grade ≥3 TEAEs were thrombocytopenia (16 patients [28%]) and neutropenia (11 patients [19%])
- TEAEs associated with discontinuation (9%) included fatigue (n = 2), decreased appetite (n = 1), interstitial lung disease (n = 1), pneumonitis (n = 1), and URI (n = 1)
 - No discontinuations were due to thrombocytopenia or neutropenia
- Three (5.3%) interstitial lung disease events were adjudicated by an independent central review committee as being related to treatment
- There were no treatment-related TEAEs associated with death

TEAEs (regardless of causality), n (%)	N = 57
TEAEs Grade ≥3 Associated with discontinuation Associated with dose reduction Associated with dose interruption Associated with death	57 (100) 38 (67) 5 (9) 10 (18) 17 (30) 3 (5)
Treatment-emergent SAEs Grade ≥3 Treatment related	21 (37) 18 (32) 11 (19)

TEAEs in 200% of notion to in (%)	N = 57	
TEAEs in ≥20% of patients, n (%)	All grades	Grade ≥3
Fatigue	33 (58)	5 (9)
Nausea	31 (54)	2 (4)
Thrombocytopenia ^a	30 (53)	16 (28)
Decreased appetite	20 (35)	1 (2)
Neutropenia ^b	19 (33)	11 (19)
Vomiting	17 (30)	1 (2)
Alopecia	17 (30)	NA
Anemia ^c	15 (26)	5 (9)
Constipation	14 (25)	0

Yu et al: IASLC WCLC 2020

