AACR-NCI-EORTC International Conference on **MOLECULAR TARGETS AND CANCER THERAPEUTICS**

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Clinical activity of lirafugratinib (RLY-4008), a highly selective FGFR2 inhibitor, in patients with advanced *FGFR2*-altered solid tumors: the ReFocus study

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Oncogenic Activation of FGFR2 Drives Multiple Cancers, But Selective Targeting of FGFR2 Has Not Been Achieved





 Babina IS and Turner NC. Nat Rev Cancer. 2017;17:318–332; 2. Krook MA, et al. Br J Cancer 2021;124:880–892; 3. Helsten T, et al. Clin Cancer Res. 2016;22:259–267; 4. Li J et al, Front Oncol 2021; 11: DOI=10.3389/fonc.2021.644854 5. PEMAZYRE® (penigatinib). Highlights of prescribing information; Pemazyre (pemigatinib) [package insert]. Wilmington, DE Incyte; 2020; ESMO 2019; 6. LYTGOBI® (futibatinib). Highlights of prescribing information; Lytgobi (futibatinib) [package insert]. Princeton, NJ Taiho Oncology; 2022 7. BALVERSA (erdafittib) Highlights of prescribing information; Balversa (erdafittibi) [package insert]. Horsham, PA Janssen. 8. Trusetliq(infigratinib) [package insert]. Brisbane, CA QED Therapeutics; 2021 9. As defined by increased serum phosphate except for infigratinib which is not specified

CCA: Cholangiocarcinoma, FGFRi: fibroblast growth factor receptor, FGFRi: fibroblast growth factor receptor inhibitor

CCA: cholangiocarcinoma; DoR: duration of response

Lirafugratinib: The First Highly Selective FGFR2 Inhibitor





1. Schönherr H. et al. Presented at MedChem GRC meeting; August 7-12,2022. 2. Goyal L. et al. Presented at AACR Annual Meeting; April-9-14;2021. 3. Truseltiq(infigratinib) [package insert]. Brisbane, CA QED Therapeutics; 2021. 4. Pemazyre(pemigatinib) [NDA]. Wilmington, DE;2019. www.accessdata.tda.gov/drugsattda_docs/nda/2020/213736Orig1s000ChemR.pdf Accessed August 25,2022. 5. Sootome H. et al. Cancer Res. 2020;80(22):4986-4997. BID: twice daily dosing; CCA fusion: intrahepatic cholangiocarcinoma PDX (FGFR2-TTC28 fusion); TNBC amp: MFM-223 triple negative breast cell line (FGFR2-amplified); NSCLC fusion: lung adenocarcinoma PDX (FGFR2-CCDC6 fusion); Gastric cancer amp: SNU-16 cell line (FGFR2-amplified)

ReFocus Design and Milestones



ongoing

(N=50)

Part 2: Dose Expansion – ORR/DoR per RECIST 1.1, safety per CTCAE v5

FGFR2-fusion+ CCA without prior FGFRi (N=100) LPI 9/2023 FGFR2-fusion+ CCA with prior FGFRi (N=50) LPI 12/2023 FGFR2-fusion+ CCA with no prior Tx (N=20) ongoing Any FGFR2-mutant/amplified CCA (N=20) ongoing Advanced solid tumors with FGFR2 alterations (N=50) ongoing FGFR2-fusion+ solid tumors (N=50) ongoing	Cholangioca	<u>Enrollment</u>				
FGFR2-fusion+ CCA with prior FGFRi (N=50) LPI 12/2021 FGFR2-fusion+ CCA with no prior Tx (N=20) ongoing Any FGFR2-mutant/amplified CCA (N=20) ongoing Advanced solid tumors with FGFR2 alterations (N=50) ongoing FGFR2-fusion+ solid tumors (N=50) ongoing FGFR2-amplified solid tumors (N=50) ongoing	FGFR2-fusior	FGFR2-fusion+ CCA <u>without prior FGFRi</u> (N=100)				
FGFR2-fusion+ CCA with no prior Tx (N=20) Any FGFR2-mutant/amplified_CCA (N=20)ongoing ongoingAdvanced solid tumors with FGFR2 alterations (excluding CCA)FGFR2-fusion+ solid tumors(N=50)ongoingFGFR2-fusion+ solid tumors(N=50)ongoingFGFR2-amplified solid tumors(N=50)ongoing	FGFR:	2-fusion+ CCA <u>with prior FGF</u>	<u>Ri</u> (N=50)	LPI 12/2022		
Any FGFR2-mutant/amplified_CCA (N=20) ongoing Advanced solid tumors with FGFR2 alterations (excluding CCA) FGFR2-fusion+ solid tumors (N=50) ongoing FGFR2-amplified solid tumors (N=50) ongoing	reference	FGFR2-fusion+ CCA <u>with no prior Tx</u> (N=20)				
Advanced solid tumors with FGFR2 alterations (excluding CCA)ongoingFGFR2-fusion+ solid tumors(N=50)ongoingFGFR2-amplified solid tumors(N=50)ongoing	Any E	GFR2-mutant/amplified_CCA	(N=20)	ongoing		
FGFR2-fusion+ solid tumors(N=50)ongoingFGFR2-amplified solid tumors(N=50)ongoing	Advanced solid tumors with <i>FGFR2</i> alterations (excluding CCA)					
FGFR2-amplified solid tumors (N=50) ongoing	FGFR2-fusi	on+ solid tumors	(N=50)	ongoing		
	FGFR2-amp	FGFR2-amplified solid tumors (N=50)				

FGFR2-mutant solid tumors

BID: twice daily dosing; CCA: cholangiocarcinoma; CTCAE: common terminology criteria for adverse events; DoR: duration of response; LPI: last patient in; MTD: maximum tolerated dose; PK/PD: pharmacokinetics/pharmacodynamics; ORR: objective response rate; QD: once daily dosing; QDi: once daily dosing, 3 weeks on, 1 week off; RP2D: recommended Phase 2 dose

Lirafugratinib

RP2D:

70 mg QD

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Part 1: Dose Escalation – MTD/RP2D, safety, PK-PD, anti-tumor activity

Advanced FGFR2-altered solid tumors

- Bayesian Optimal Interval Design
- Enrollment per local diagnostic assessment
- Lirafugratinib administered orally QD, BID, or QDi

ReFocus: Early Clinical Validation of Lirafugratinib in Patients with Cholangiocarcinoma

American Association for Cancer Research'

Irreversible FGFR2 Inhibition Provides Robust Target Coverage Without FGFR1-Related Hyperphosphatemia



≥96% predicted median receptor occupancy at 70 mg QD RP2D; Effective half-life ~18-26h supports QD dosing

Annals of Oncology (2022) 33 (suppl_7): S808-S869. 10.1016/annonc/annonc1089 ORR: QD: once daily dosing; RP2D: recommended Phase 2 dose

Data as of 01 Aug 2022

ReFocus: Early Clinical Validation of Lirafugratinib in Patients with Cholangiocarcinoma

Robust Initial Efficacy in Cholangiocarcinoma with *FGFR2*-Fusion/Rearrangement

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ORR: objective response rate; QD: once daily dosing; RP2D: recommended Phase 2 dose

Data as of 01 Aug 2022

ReFocus: Solid Tumor Patient Baseline



NIH



Characteristics (excluding cholangiocarcinoma)

Parameter	Efficacy	Safety Pop.		
Equal $p(\theta')$	FOP. (N=64)	(N - 124)		
	51 (01)			
Age (years), median (range)	62 (33, 84)	62 (20, 84)		
Race, n (%)				
White	46 (55)	65 (52)		
Asian	12 (14)	19 (15)		
Other/Unknown	26 (31)	40 (32)		
ECOG PS, n (%)				
0	31 (37)	49 (40)		
1	52 (62)	70 (56)		
2	1 (1)	2 (2)		
Number of prior lines	2 5 (0 11)	3 (0 14)		
of systemic therapy, median (range)	2.5 (0, 11)	3 (0, 14)		
Number of prior lines of systemic therapy, n (%)				
0	2 (2)	2 (2)		
1	14 (17)	23 (19)		
2	26 (31)	35 (28)		
≥3	42 (50)	64 (52)		
Prior systemic therapy, n (%)	· ·			
Chemotherapy	79 (94)	118 (95)		
FGFR inhibitor	0	21 (17)		

Parameter	Efficacy Population (N=84)			
Tumor types, n (%)				
Gastric cancer	26 (31)			
Breast Cancer	14 (17)			
Pancreatic	7 (8)			
Ovarian	5 (6)			
Colorectal	4 (5)			
NSCLC	4 (5)			
Endometrial	4 (5)			
CUP	3 (4)			
Salivary gland	2 (2)			
Others*	15 (18)			
FGFR2 oncogenic alteration, n (%) by local testing				
FGFR2 fusion or rearrangement	26 (31)			
FGFR2 amplification**	34 (40)			
FGFR2 mutation	24 (29)			

*Includes ameloblastic, ampullary, cervical, duodenal, esophageal, fallopian, melanoma, orbita, thyroid

**Amplification defined as FGFR2 locus with copy number ≥8 in tumor tissue or validated by next generation sequencing (NGS). No amplification cutoff is defined for circulating tumor DNA (ctDNA)

Safety population includes 124 FGFR inhibitor (FGFRi)-naive and pretreated patients with tumors other than CCA, with FGFR2 fusions, amplifications, or mutations by local testing, and who received ≥ 1 dose of lirafugratinib administered at the recommended phase 2 dose. Efficacy population includes 84 patients in the safety population who were FGFRi-naive, had measurable disease, and either had ≥ 1 post-baseline tumor assessment or discontinued treatment before 1st postbaseline tumor assessment. CUP: carcinoma of unknown primary; ECOG: Eastern Cooperative Oncology Group; NSCLC: non-small cell lung cancer

Solid Tumors with *FGFR2*-Fusion/Rearrangement: Radiographic Tumor Regression and Response per RECIST 1.1







Waterfall includes patients with post-baseline scans. Objective response rate (ORR) calculation includes 26 efficacy evaluable patients BOR: best overall response; CUP: carcinoma of unknown primary; DCR: disease control rate; DoE: duration of exposure; NSCLC: non-small cell lung cancer

Preliminary data as of 23 Aug 2023

Solid Tumors with *FGFR2* Amplification: Radiographic Tumor Regression and Response per RECIST 1.1







Waterfall includes patients with post-baseline scans. Objective response rate (ORR) calculation includes 34 efficacy evaluable patients BOR: best overall response; DCR: disease control rate; DoE: duration of exposure; NSCLC: non-small cell lung cancer; *TBP: Treated Beyond Progression

Preliminary data as of 23 Aug 2023

Solid Tumors with Select *FGFR2* Mutations: Radiographic Tumor Regression and Response per RECIST 1.1







Waterfall includes patients with post-baseline scans. Objective response rate (ORR) calculation includes 24 efficacy evaluable patients BOR: best overall response; DCR: disease control rate; DoE: duration of exposure

Preliminary data as of 23 Aug 2023

Responses Are Durable Across Solid Tumors AACR with *FGFR2* Alterations



* Cycle length = 28 days

Preliminary data as of 23 Aug 2023

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Efficacy Parameter	Fusion N=26	Amplification N=34	Mutation N=24
Best Overall Response, n (%)			
Partial response*	9 (35)	8 (24)	3 (13)
Stable disease	9 (35)	13 (38)	7 (29)
Progressive disease	6 (23)	9 (26)	12 (50)
Not evaluable**	2 (8)	4 (12)	2 (8)
ORR n (%) 95% Cl	9 (35) 17, 56	8 (24) 11, 41	3 (13) 3, 32
DoR, months, min, max	1.9+, 11.5	2.7+, 12.8+	9.2, 14.9+
Disease control rate, n (%) 95% Cl	18 (69) 48, 86	21 (62) 44, 78	10 (42) 22, 63

*Including ongoing 1 uPR in ovarian cancer patient with FGFR2 fusion, confirmed after data extraction, 1 ongoing uPR in esophageal cancer patient with FGFR2 amplification, and 1 ongoing uPR in gastric cancer patient with FGFR2 mutation

** Including N=2 fusion: 1 patient who discontinued due to death before first post-baseline scan and 1 patient with 1 post-baseline scan that did not meet the minimum duration of > 8 weeks from baseline for SD; N=4 amplification: 3 patients who discontinued due to progressive disease before first post-baseline scan and 1 patient with 1 post-baseline scan that did not meet the minimum duration of > 8 weeks from baseline for SD; N=2 mutation: 2 patients who discontinued due to progressive disease before first post-baseline scan and 1 patient with 1 post-baseline scan that did not meet the minimum duration of > 8 weeks from baseline for SD; N=2 mutation: 2 patients who discontinued due to progressive disease before first post-baseline scan

+: response ongoing at time of data cutoff

DoR: duration of response among confirmed responders; ORR: objective response rate; uPR: unconfirmed partial response

Preliminary data as of 23 Aug 2023

Responses Observed Across Diverse Tumor Types with *FGFR2* Fusion/Rearrangement and Amplification





ORR includes PR + 1 ongoing uPR in ovarian cancer patient with *FGFR2* fusion confirmed after data extraction, 1 ongoing uPR in esophageal cancer patient with FGFR2 amplification Other includes: ampullary, cervical, endometrial, esophageal, fallopian, melanoma, salivary, thyroid; DCR: disease control rate; CRC: colorectal; CUP: carcinoma of unknown primary; NSCLC: non-small cell lung cancer; ORR: objective response rate; uPR: unconfirmed partial response

Preliminary data as of 23 Aug 2023

Marked Response in a Patient with Heavily Pretreated HR+ HER2- Breast Cancer with *FGFR2* Amplification





Patient Profile

- 66 yo female with HR+/HER2- mBC
- FGFR2 amplification (copy number: 10)
- 6 prior lines of therapy, including endocrine therapy, CDK4/6 inhibitor and chemotherapy

Impact of Lirafugratinib

- FGFR2 ctDNA cleared at Week 4
- Initial PR at Week 16, confirmed at Week 23
- Patient ongoing treatment at Week 72

Baseline





Cycle 9





Courtesy Dr Tai, NCC Singapore

ctDNA: circulating tumor DNA; HR+HER2-: hormone receptor positive, human epidermal growth factor receptor 2 negative; mBC: metastatic breast cancer

Preliminary data as of 23 Aug 2023

Promising Activity In Patients with Heavily Pretreated HR+ HER2- Breast Cancer with *FGFR2* Alterations





* Patient was treated with a single dose of concomitant fulvestrant

BOR: best overall response; DCR: disease control rate; DoE: duration of exposure; LoT: lines of treatment; mPFS: median progression free survival; ORR: objective response rate;

PD: progressive disease; PR: partial response; SD: stable disease

Preliminary data as of 23 Aug 2023

Response and duration across HR+ HER2-Breast Cancer



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* Patient was treated with a single dose of concomitant fulvestrant BOR: best overall response; DoR: duration of response; LoT: lines of treatment; NE: non-evaluable; PD: progressive disease; PR: partial response; SD: stable disease

Preliminary data as of 23 Aug 2023



Consistent, manageable safety profile that minimizes off-isoform toxicity



PPE: Palmar-plantar erythrodysesthesia, RPED: retinal pigment epithelium detachment

Preliminary data as of 23 Aug 2023



ReFocus data validate lirafugratinib as the first highly selective FGFR2 inhibitor active across oncogenic driver alterations

Encouraging response rates and initial durability across refractory solid tumors augment promising efficacy previously demonstrated in cholangiocarcinoma (ORR 58%-82%) Solid tumors other than CCA:

- *FGFR2* Fusion/Rearrangement: 35% ORR; duration of response range 1.9+ to 11.5
- FGFR2 Amplification: 24% ORR; duration of response range 2.7+ to 12.8+ mo
- *FGFR2* Mutation: 13% ORR; duration of response range 9.2 to 14.9+ in a subset of tumors across a heterogeneous mutation spectrum
- Durable responses observed across 9 tumor types other than CCA, with promising initial signal across FGFR2 alterations in refractory HR+HER2- breast cancer (40% ORR; 70% DCR; N=10)

Efficacy in patients with FGFR2-altered solid tumors together with lirafugratinib's differentiated safety profile (minimal offisoform toxicity) suggest broad therapeutic potential

Clinical development in cholangiocarcinoma and across solid tumors continues in ReFocus

⁺ Indicates treatment ongoing

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