

LEROCICLIB (G1T38), A CONTINUOUSLY DOSED ORAL CDK4/6 INHIBITOR, WITH FULVESTRANT IN HR+ /HER2- ADVANCED BREAST CANCER PATIENTS: UPDATED PHASE 2 RESULTS AND DOSE SELECTION



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BACKGROUND

- Endocrine therapy is an established treatment for patients with hormone receptor-positive (HR+) human epidermal growth factor receptor 2-negative (HER2-) advanced breast cancer (ABC); however, endocrine resistance remains a serious challenge in the clinic1,2
Cyclin-dependent kinase 4/6 (CDK4/6) inhibitors in combination with endocrine therapy (fulvestrant) represent an established treatment for HR+/HER2- ABC, with significant improvements in progression-free survival (PFS) and overall survival (OS) compared with fulvestrant monotherapy3-5
Two marketed CDK4/6 inhibitors have dose-limiting neutropenia requiring a drug holiday, potentially limiting efficacy, with the third administered continuously but limited by gastrointestinal toxicity6
Preliminary results of this study demonstrated continuous dosing of leroiclib with fulvestrant was generally well tolerated and showed early evidence of antitumor activity7
Here, we present updated results and dose selection

STUDY OBJECTIVES

- PRIMARY OBJECTIVES:
Evaluate the safety, tolerability, and dose-limiting toxicities of leroiclib administered with fulvestrant
Determine the dose and schedule (once daily [QD] or twice daily [BID]) of leroiclib administered continuously with fulvestrant
SECONDARY OBJECTIVES:
Determine the pharmacokinetic (PK) parameters of leroiclib when administered with fulvestrant (refer to Bulat et al for PK results)7
Assess fulvestrant and goserelin day 15 plasma concentrations when administered with leroiclib
Assess response rate, clinical benefit rate (CBR), PFS, and OS
KEY EXPLORATORY OBJECTIVES:
Assess correlation between changes in cell-free DNA (cfDNA) with efficacy measures
Assess the relationships between PK parameters and efficacy parameters

METHODS

- STUDY DESIGN (NCT02983071; EUADR NUMBER 2016-001485-29)
Part 1: open-label, 3 + 3, parallel-dose escalation of leroiclib 200 mg-850 mg QD and 100 mg-425 mg BID administered continuously
Part 2: open-label expansion of leroiclib doses 400 mg QD, 500 mg QD, 150 mg BID, and 200 mg BID administered continuously
Fulvestrant 500 mg on days 1, 15, and 29, then once monthly as per standard of care
Pre or perimenopausal patients also received goserelin as per local standard of care for the duration of study treatment. A luteinizing hormone-releasing hormone agonist must have started ≥ 28 days before the first dose of leroiclib

KEY INCLUSION CRITERIA

- HR+/HER2- ABC
Women of any menopausal status ≥ 18 years of age
Progressed during or within 12 months after adjuvant therapy or progressed during or within 2 months after endocrine therapy for advanced disease
Part 1: ≤ 2 chemotherapy regimens in the advanced setting
Part 2: ≤ 1 chemotherapy regimen in the advanced setting
Eastern Cooperative Oncology Group performance status 0-1

KEY EXCLUSION CRITERIA

- Parts 1 and 2: prior treatment with fulvestrant
Part 2: prior treatment with a CDK4/6 inhibitor
Known active uncontrolled or symptomatic central nervous system metastases

PHARMACODYNAMIC ANALYSIS

- To evaluate mutational changes in cfDNA, peripheral blood samples were collected at baseline, cycle 1 day 15 (C1D15); week 3 day 1, each tumor assessment, and at a post-treatment visit 30 days (+ 5 days) after the last dose of study treatment. Samples were processed and analyzed at Guardant Health, Inc. and Fios Genomics Ltd.

PATIENT DEMOGRAPHICS, BASELINE CHARACTERISTICS, DISPOSITION, AND LEROCICLIB EXPOSURE

- As of April 17, 2020, 110 patients have been treated (46 in part 1 and 64 in part 2); 39 patients (35.5%) remain on leroiclib treatment overall; 10 of 20 patients (50.0%) treated with 150 mg BID remain on treatment
Nine patients (45.0%) treated with 150 mg BID discontinued leroiclib treatment due to progressive disease and 1 patient (5.0%) due to an adverse event (AE). Across all dose cohorts, 65 patients (59.1%) discontinued leroiclib treatment due to progressive disease, 4 (3.6%) due to an AE, and 2 (1.8%) withdrew by choice
Median (range) duration of leroiclib exposure was 9.3 (1.7-27.8) months for the 150 mg BID dose cohort and 9.4 (1.0-37.3) months across all dose cohorts
Patient demographics and baseline characteristics are summarized in Table 1. Refer to Bulat et al for doses not shown7

TABLE 1. BASELINE CHARACTERISTICS AT SELECTED DOSE LEVELS

Table with 8 columns: Patient characteristics, 300 mg (n=3), 400 mg (n=15), 500 mg (n=30), All QD Doses (n=60), 150 mg (n=20), 200 mg (n=21), All BID Doses (n=50), Total (n=110)

* Includes lamotrigine and toremifene; * No patients had prior exposure to CDK4/6 inhibitors; * One patient had missing bone assessment data and was not included in the denominator. AI, aromatase inhibitor; BID, twice daily; ECOG PS, Eastern Cooperative Oncology Group performance status; mTOR, mammalian target of rapamycin; QD, once daily; SERM, selective estrogen receptor modulator

SAFETY AND TOLERABILITY

- The selected dose of leroiclib 150 mg BID demonstrated an improved tolerability profile relative to QD dosing and other BID doses, including decreased rates of gastrointestinal AEs as well as lower rates of neutropenia considered related to leroiclib treatment (Table 2)
Grade 4 neutropenia was reported in 1 patient (5.0%) treated with 150 mg BID, and no other leroiclib-related Grade 4 AEs were reported at this dose level, Grade 3 febrile neutropenia was reported in 1 patient (5.0%) treated with 150 mg BID
No leroiclib dose interruptions or reductions were required for Grade 3 neutropenia without associated infection or fever
No leroiclib-related Grade ≥ 3 nausea, vomiting, diarrhea, or fatigue was reported in patients treated with 150 mg BID
Grade 2 stomatitis was reported in 1 patient (5.0%) treated with 150 mg BID
Alopecia was reported in 1 patient (5.0%) treated with 150 mg BID. Across all dose levels, all leroiclib-related alopecia was Grade 1
Leroiclib-related serious AEs were reported in 1 patient (5.0%) treated with 150 mg BID (Grade 2 pneumonitis)
Leroiclib treatment discontinuation due to an AE occurred in 1 patient (5.0%) treated with 150 mg BID (Grade 2 pneumonitis, resolved)
Leroiclib dose reduction occurred in 2 patients (10.0%) treated with 150 mg BID and in 36 patients (32.7%) overall
No cases of QTcF prolongation (≥ 480-ms) or venous thromboembolism were reported at any dose level

RESULTS

TABLE 2. MOST COMMON LEROCICLIB-RELATED AEs (≥ 10% OF ALL PATIENTS) AT SELECTED DOSE LEVELS

Table with columns: AEs, 300 mg (n=3), 400 mg (n=15), 500 mg (n=30), All QD Doses (n=60), 150 mg (n=20), 200 mg (n=21), All BID Doses (n=50), Total TRAEs (N=110), Total TEAEs (N=110)

* Includes neutropenia and neutrophil count decreased
* Includes leukopenia and white blood cell count decreased
* Includes anemia, anemia macrocytic, red blood cell count decreased, and hemoglobin decreased
* Includes thrombocytopenia and platelet count decreased
* Includes lymphocytopenia, lymphopenia, and lymphocyte count decreased
No Grade 5 AEs were reported
AE, adverse event; BID, twice daily; QD, once daily; TEAE, treatment-emergent adverse event; TRAE, treatment-related adverse event

EFFICACY

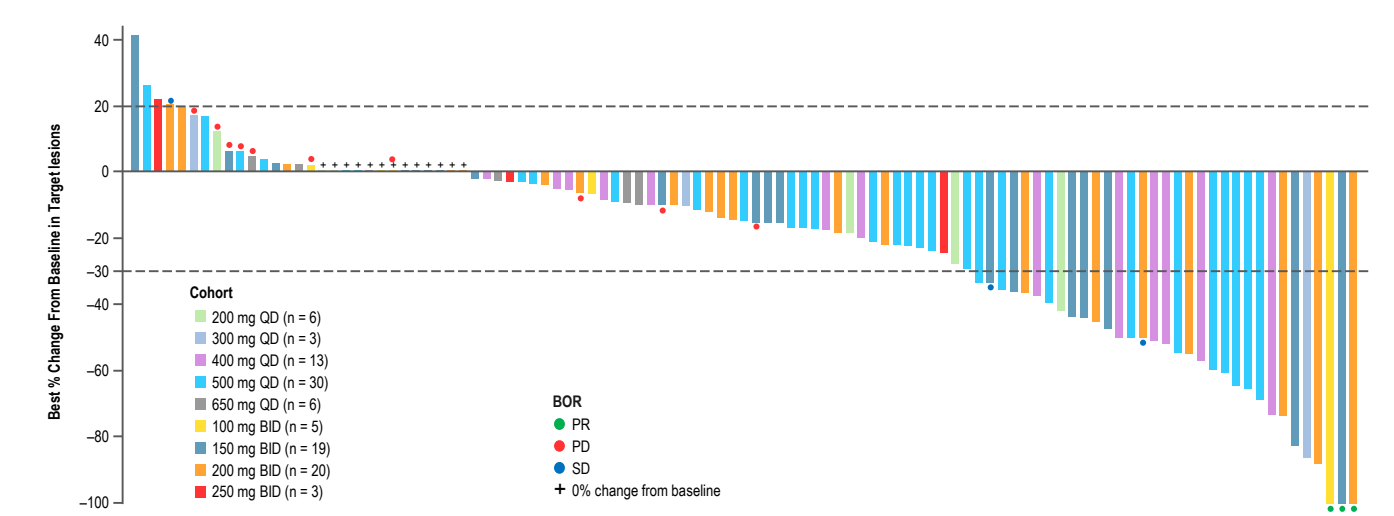
- Confirmed objective partial response (PR) rate was 31.6% in patients treated with leroiclib 150 mg BID and 29.5% across all dose levels (Table 3; Figures 1 and 2)
CBR (complete response + PR + stable disease lasting ≥ 24 weeks) was 73.7% in patients treated with leroiclib 150 mg BID and 70.5% across all dose levels (Table 3)
Subgroup analyses revealed the following:
Patients who received no prior chemotherapy in the advanced setting (n = 58) had a CBR of 74.1%, compared with a CBR of 66.0% in patients who received ≥ 1 prior line of chemotherapy in the advanced setting (n = 47)
Patients without visceral disease at baseline (n = 23) had a CBR of 78.3%, compared with a CBR of 68.3% in patients with visceral disease at baseline (n = 82)
Postmenopausal patients (n = 83) had a CBR of 72.3%, compared with a CBR of 63.6% in pre/perimenopausal patients (n = 22)
Median PFS (95% CI) in patients treated with leroiclib 150 mg BID was 28.6 (3.7, 28.6) months (60.0% censored at last follow-up) and 12.9 (9.3, 16.6) months in all patients (45.5% censored at last follow-up)

TABLE 3. BEST OVERALL RESPONSE (CONFIRMED) IN PATIENTS WITH MEASURABLE DISEASE AT SELECTED DOSE LEVELS

Table with columns: Response, 300 mg (n=3), 400 mg (n=15), 500 mg (n=30), All QD Doses (n=58), 150 mg (n=19), 200 mg (n=20), All BID Doses (n=47), Total (N=105)

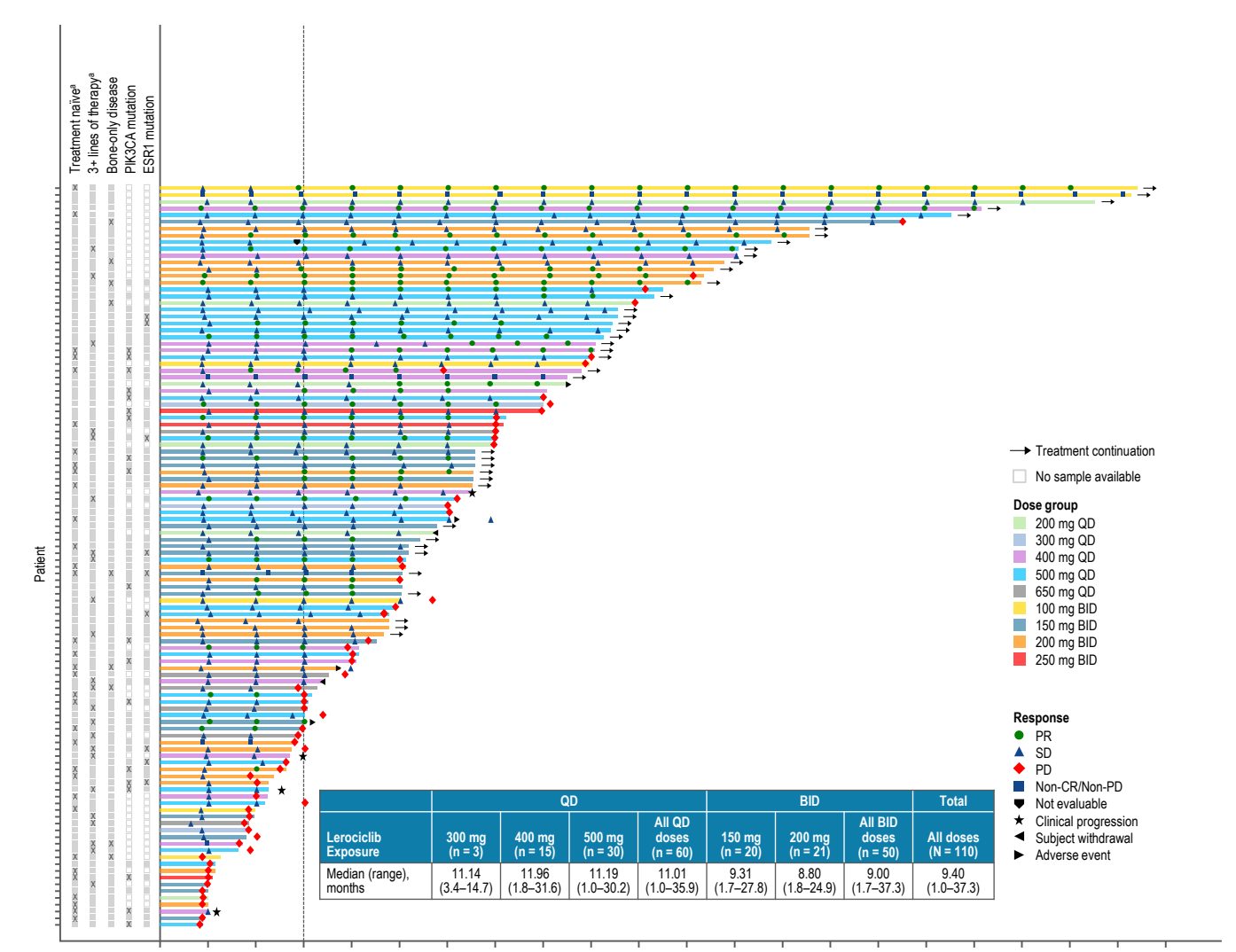
Based on Response Evaluation Criteria in Solid Tumors (RECIST), Version 1.1
* Clopper-Pearson exact method used to calculate 95% CI
* Five patients (4.5%) did not have measurable disease
* Objective response = CR + PR
* Clinical benefit = CR + PR + SD lasting ≥ 24 weeks
BID, twice daily; CR, complete response; PD, progressive disease; PR, partial response; QD, once daily; SD, stable disease

FIGURE 1. BEST RELATIVE CHANGE FROM BASELINE IN TUMOR SIZE FOR TARGET LESIONS BY DOSE LEVEL IN ALL PATIENTS



BID, twice daily; BOR, best overall response; PD, progressive disease; PR, partial response; QD, once daily; SD, stable disease

FIGURE 2. TREATMENT DURATION AND RESPONSE BY GROUP IN ALL PATIENTS



* In advanced setting
BID, twice daily; CR, complete response; ESR1, estrogen receptor 1; PD, progressive disease; PIK3CA, phosphatidylinositol 4,5-bisphosphate 3-kinase catalytic subunit alpha; PR, partial response; QD, once daily; SD, stable disease

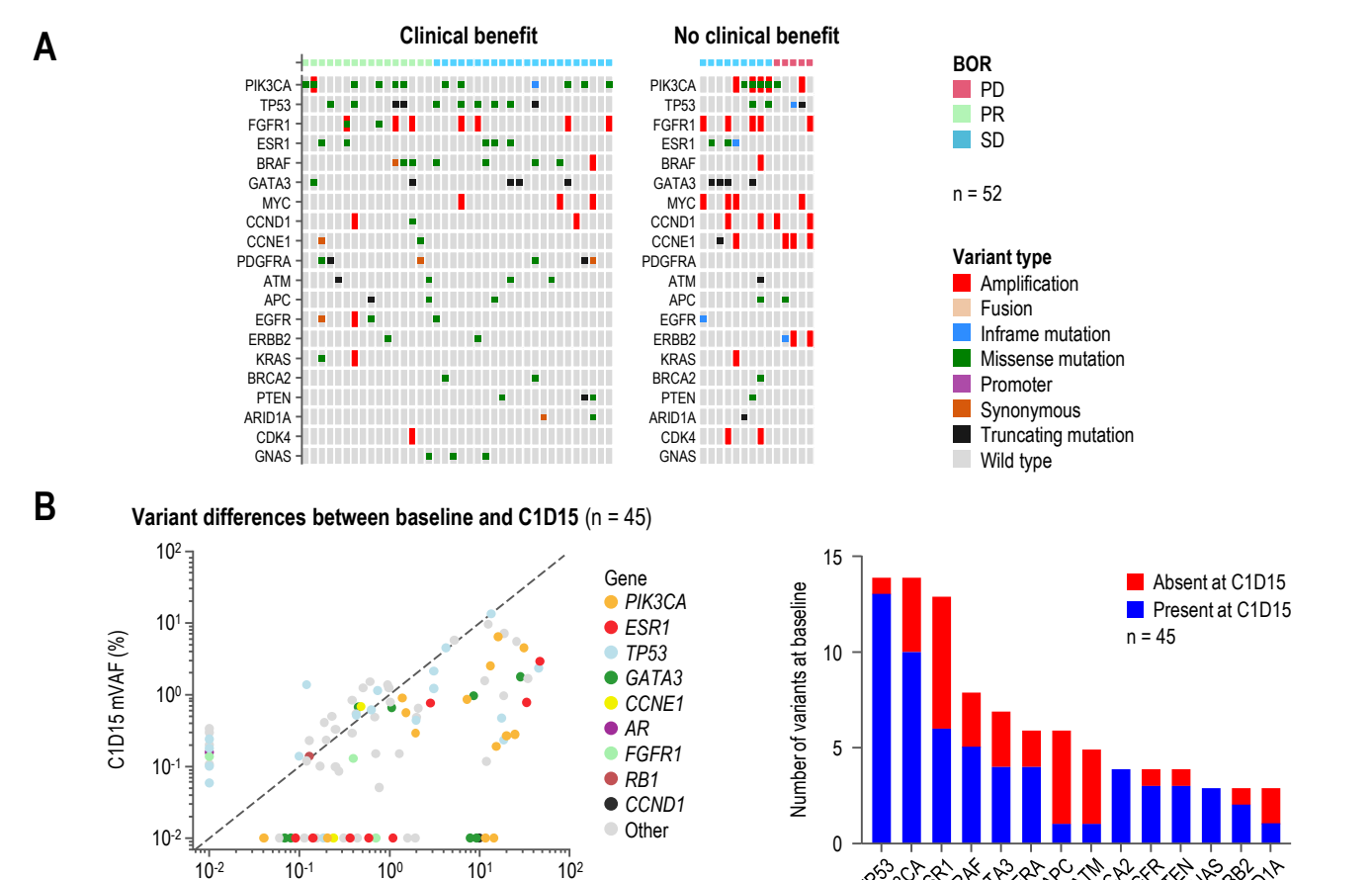
PHARMACODYNAMICS

- 67/110 patients (61%) had samples analyzed for cfDNA: 63 at baseline, 61 at C1D15, and 22 at time of progression (Table 4; Figure 3)
A higher number of genes with variants, as well as variants in MYC, ERBB2, CCND1, or CCNE1, were significantly associated with lack of clinical benefit (Figure 4A)
ESR1 and PIK3CA status did not impact response
36/45 patients (80%) had a decrease in mean variant allele frequency (mVAF) at C1D15 (Figure 4B)
PFS did not correlate with change in mVAF due to the low number of events in patients with a mVAF increase
At C1D15, > 90% of variants in BRCA2, GNAS, and TP53 were still present; 80% of variants in ATM and APC were absent
For additional cfDNA results, refer to the mini oral by Krastev et al (ESMO Abstract #1417)8

TABLE 4 AND FIGURE 3. BASELINE CHARACTERISTICS

Table with columns: Baseline, Visceral disease, Prior endocrine therapy, Prior chemotherapy, ESR1 baseline variants (n=9), PIK3CA baseline variants (n=19)

FIGURE 4. CFDNA RESULTS: (A) VARIANTS AT BASELINE ASSOCIATED WITH CLINICAL RESPONSE AND (B) CFDNA DYNAMICS AFTER 2 WEEKS OF TREATMENT



CONCLUSIONS

- Leroiclib 150 mg BID shows a differentiated safety profile and is the selected dose for future studies
Low rates of Grade 4 neutropenia support continuous leroiclib dosing without a drug holiday
Low rates of diarrhea, nausea, vomiting, fatigue, stomatitis, and alopecia were observed
The efficacy data are consistent with marketed CDK4/6 inhibitors used in combination with fulvestrant3-5
Leroiclib 150 mg BID treatment resulted in a CBR of 73.7% and 70.5% across all doses
Subgroup analyses of all treated patients revealed a CBR of 74.1% in patients who received no prior chemotherapy in the advanced setting, a CBR of 78.3% in patients without visceral disease at baseline, and a CBR of 72.3% in postmenopausal patients
Preliminary median PFS was 28.6 months for the 150 mg BID dose and 12.9 months across all doses
Preliminary exploratory cfDNA results indicate genetic variants present at baseline are associated with clinical response, which warrant prospective validation in future studies. Two weeks of leroiclib with fulvestrant treatment decreased the number of cfDNA variants detectable, indicative of clinical activity

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CONFLICTS OF INTEREST: Dr Bulat has nothing to disclose

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