Feasibility and Biomarker Validation of an International Randomized Phase 3 of Bria-IMT Cell Therapy in Late Stage MBC (Bria-ABC)

S. Hurvitz[1], J. O'Shaughnessy[2], C. Nangia[3], L. Negret[4], C. Calfa[4], A. Kahn[5], M. Barve[6], R. Shatsky[7], A. Brufsky[8], R. Zuniga[9], M. Cristofanilli[10], B. Bayer[11], W. Williams[11], G. Del Priore[11,12], S. Chumsri[13]

[1]University of Washington, Seattle, United States of America, [2]Texas Oncology - Baylor Sammons Cancer Center, Dallas, United States of America, [3]Hoag Cancer Center, Newport Beach, United States of America, [4]University of Miami Sylvester Comprehensive Cancer Center, Miami, United States of America, [5]Yale University, New Haven, United States of America, [6]Mary Crowley Cancer Research Center, Dallas, United States of America, [7]Moores Cancer Center - UC San Diego Health, La Jolla, United States of America, [8]UPMC Hillman Cancer Center, Pittsburgh, United States of America, [9]New York Cancer and Blood Specialists, New York, United States of America, [10]Weill Cornell Medicine / New York-Presbyterian Hospital, New York, United States of America, [11]BriaCell Therapeutics Corp., Philadelphia, United States of America, [12]Morehouse School of Medicine, Atlanta, United States of America, [13]Department of Haemato-Oncology, Mayo Clinic - Florida, Jacksonville, United States of America

ESMO 2025
Berlin, Germany
FPN 570P

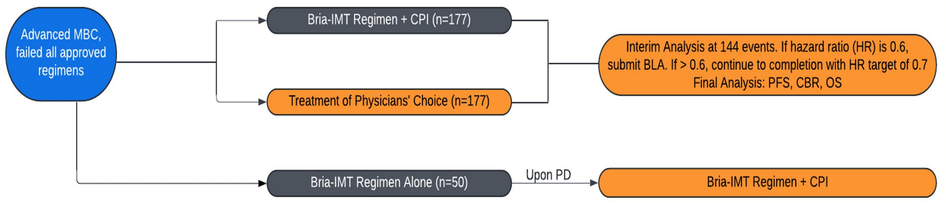
BACKGROUND

Bria-IMT is a combination immunotherapy comprising the allogeneic whole-cell vaccine SV-BR-1-GM, administered with low-dose cyclophosphamide (CTX), pegylated interferon alpha (IFNα), and an immune checkpoint inhibitor (CPI). SV-BR-1-GM breast cancer cells are engineered to express both class I and II HLA molecules, secrete GM-CSF to enhance dendritic cell activation, and present tumor associated antigens such as HER2 and PRAME. Functioning as antigen presenting cells, these cells serve as a reservoir of shared tumor antigens capable of activating anti-tumor immune responses. Subsequent enhancements to SV-BR-1-GM have improved in vitro immunologic characteristics (Lopez-Lago, SABC 2023)[1]. The addition of CPI is intended to potentiate SV-BR-1-GM–induced immune activation by overcoming tumor-induced immune suppression. We present updated findings from prospective randomized and post hoc exploratory analyses in patients with advanced metastatic breast cancer (aMBC) treated with the Bria-IMT regimen.

METHODS

Patients are randomized 1:1:1 to receive the Bria-IMT regimen + CPI, the Bria-IMT regimen alone, or Treatment of Physicians Choice (TPC). The Bria-IMT regimen includes Day -2 CTX (300 mg/m^2), Day 0 intradermal SV-BR-1-GM (20x10^{6}M irradiated cells), and Day 2-3 IFNα (0.1 mcg/site). CPI is administered q3w per protocol. Imaging assessments are performed every 6 weeks (×2) then every 8 weeks. ECOG2, CNS metastases, prior checkpoint inhibitor (CPI), antibody drug conjugate (ADC), or CDK4/6 inhibitor (CDK4/6i) exposure, are eligible, with no limit on prior lines. This interim report evaluates trial feasibility, biomarker validation, and arm blind PFS stratified by prior treatment failures, immunologic matching, and cellular biomarkers. PFS was reported using Kaplan Meier curves and further assessed by log rank tests.

Figure 1. Bria-IMT schema



RESULTS

Table 1: Patient Demographics

Characteristic	N (%)
Age, Median (Range)	52 (32-91)
BMI, Median (Range)	25.1 (8.7 – 45.7)
• White	88 (78)
• Other	25 (22)
• ECOG 0	55 (49)
• ECOG 1	50 (44)
• ECOG 2	7 (6)
Tumor Grade 1	3 (3)
Grade 2	16 (14)
Grade 3	26 (23)
Grade 4	3 (3)
• Unknown	65 (57)
Prior systemic therapy, Median (Range)	6 (2-15)
Previous therapies	
• ADC	97 (85)
• CPI	31 (27)
• CDK4/6 inhibitors	66 (58)
Number of HLA Match	
• 0	66 (62)
• ≥ 1	20 (19)
• Unreported	21 (19)

Table 2: Adverse Events Occurring in ≥ 10% of Patients

Adverse Event	Maximum Grade			
	Grade 1	Grade 2	Grade 3	Grade 4
	Number of subjects (percent)			
Fatigue	17(14.5)	14(12)	3(2.6)	0
Anemia	11(9.4)	7 (6)	7(6)	1 (0.85)
Nausea	15(12.8)	10(8.5)	1(0.85)	0
Constipation	13(11.1)	6(5.1)	1(0.85)	0
Vomiting	8(6.8)	7(6)	1(0.85)	0
Injection site reaction	14(12)	1(0.85)	0	0
Lymphocyte count decrease	4(3.4)	9(7.7)	2(1.7)	0
Anorexia	9(7.7)	5(4.2)	0	0
Back pain	7(6)	4(3.4)	2(1.7)	0
Cough	5(4.2)	8(6.8)	0	0
Headache	10(8.5)	2(1.7)	1(0.85)	0
Neutrophil count decrease	5(4.2)	3(2.6)	3(2.6)	1(0.85)

SV-BR-1-GM was well-tolerated with no discontinuations due to toxicity.

Figure 2: Best ORR and CBR by MBC Subtype

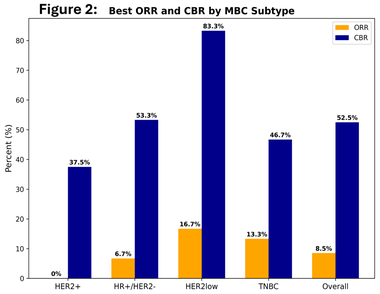


Table 3: Clinical Benefit in Evaluable Patients by MBC Subtype

Biomarkers	N (%)	Patients with Evaluable Outcome	Best ORR [CR, PR] in Evaluable Patients	Best CBR [CR, PR, SD] in Evaluable Patients
HER2+	14 (12)	8	0 %	37.5 %
HR + / HER2 -	48 (42)	30	6.7 %	53.3 %
HER2low	9 (8)	6	16.7 %	83.3 %
TNBC	40 (35)	15	13.3 %	46.7 %
Overall	113*	59	8.5 %	52.5 %

* The MBC subtype status of 2 patients are not yet reported; thus overall N = 113, not N = 111 as indicated by the sum of patients listed by MBC subtype above.

RESULTS

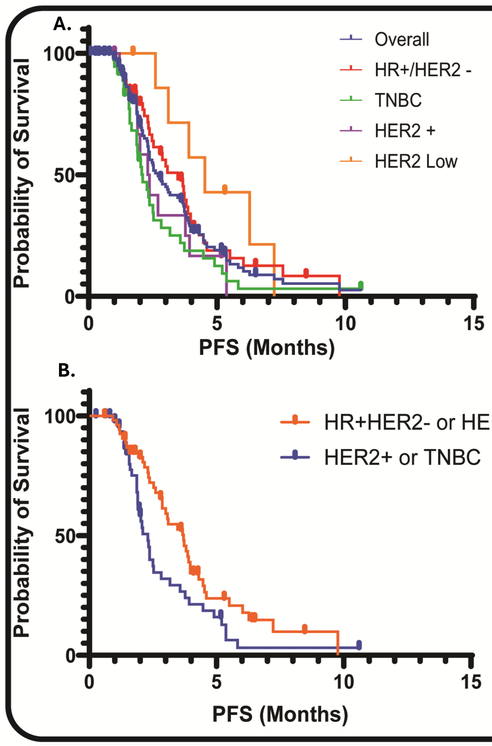


Table 4. Progression Free Survival in full cohort by MBC subtype

Subtype	Median (months)	Range
HER2-/HR+	3.5	0.6 – 9.8
HER2low	4.5	0.6 - 7.2
HER2+	2.3	0.4 – 5.4
TNBC	2.1	0.3 – 10.6
Overall	2.7	0.3 – 10.6

Figure 3A. Kaplan–Meier PFS by MBC subtype: Subtype-specific analysis showed median PFS of 3.5 months in HER2−/HR+, 4.5 months in HER2-low, 2.3 months in HER2+, and 2.1 months in TNBC; overall median PFS was 2.7 months.

Table 5. Progression Free Survival in full cohort by grouped MBC subtypes

Subtype	Median (months)	Range
HR+/HER2- or HER2low	3.7	0.6 – 9.8
HER2+ or TNBC	2.3	0.3 – 10.6
HR: 0.57 ; 95% CI 0.4 to 0.9, p = 0.02		

Figure 3B. Grouped analysis showed longer median PFS in HR+/HER2− or HER2-low (3.7 months) compared with HER2+ or TNBC (2.3 months), with HR 0.57 (95% CI 0.4–0.9, p=0.02).

Figure 4. Forest plot of hazard ratios (HR) for PFS by prior therapy exposure

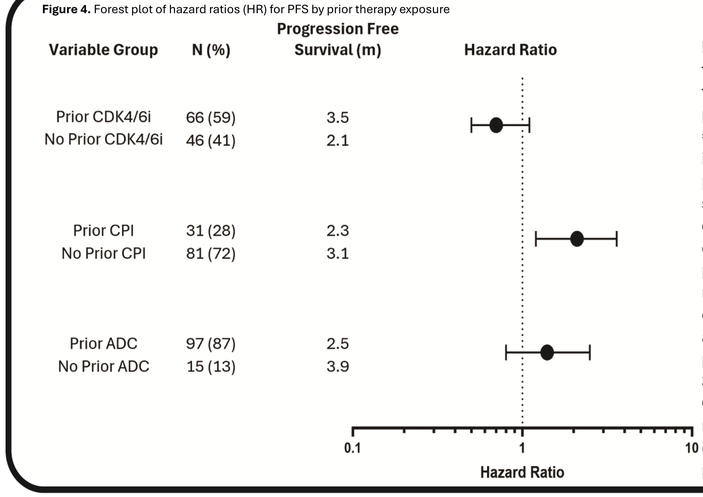


Figure 4. Forest plot depicting the hazard ratio for progression free survival among enrolled patients with available data (n = 113) (HR > 1 indicates increased risk). Patients with prior ADC exposure showed no statistically significant difference in risk of progression compared with ADC naïve patients (median PFS 2.5 vs 3.9 months; p = 0.25). Prior CPI exposure was associated with a significantly higher risk of progression (median PFS 2.3 vs 3.1 months; p = 0.01). Prior CDK4/6i exposure showed reduced risk of progression (median PFS 3.5 vs 2.1 months; p = 0.16).

Figure 5. PFS by CTC and CAML Biomarkers

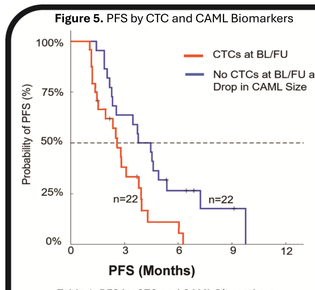


Table 6. PFS by CTC and CAML Biomarkers

Biomarker Status	Median (months)	Range
No CTCs at BL or Follow Up	3.5	1.2 - 6.0
CTCs at BL or Follow Up + Drop in Average CAML Size	2.5	1.0 – 10.6
HR: 1.1 ; 95% CI 0.7 to 1.8, p = 0.6		

Figure 5. Kaplan Meier curves showing progression free survival by the activity of CTCs and CAMLs in over time.

Figure 6. PFS by MHC HLA Class Expression

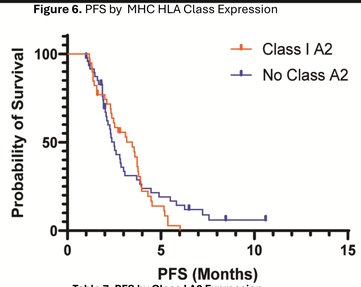


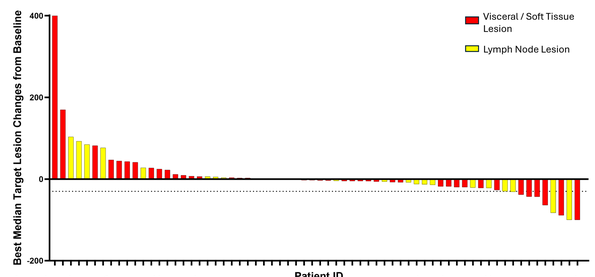
Table 7. PFS by Class I A2 Expression

HLA Expression Status	Median (months)	Range
Class I A2	3.5	1.2 - 6.0
No Class I A2	2.5	1.0 – 10.6
HR: 1.1 ; 95% CI 0.7 to 1.8, p = 0.6		

Figure 6. Kaplan-Meier curves comparing PFS in patients with and without HLA allele expression of MHC Class I A2.

RESULTS

Figure 7. Median best percent change in lesion diameter from baseline by metastatic site



Analysis of median best response of target lesion diameters in patients with evaluable data showed a median best percent change was −5.8% in lymph node metastases and −3.0% in visceral metastases.

Figure 8. PFS by Neutrophil to Lymphocyte Ratio

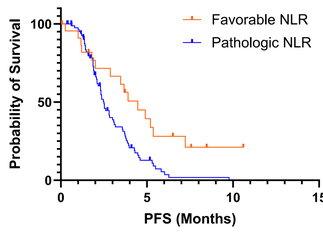


Table 8. PFS by NLR status after 1 treatment administration

NLR Status	Median (months)	Range
Favorable NLR	4.5	0.3 - 10.6
Pathologic NLR	2.5	0.4 – 9.8
HR: 0.5 ; 95% CI 0.3 to 0.8, p = 0.005		

Figure 8. Kaplan Meier curves showing PFS in patients with an NLR of 0.7 – 2.3 (4.5 mo) vs those with NLR < 0.7 or > 2.3 (2.5 mo).

Table 9. Median Scores per Question in the Physical Functioning Domain of the EORTC QLQ-C30

Visit Number	N	Q1	Q2	Q3	Q4	Q5	Q6
1	99	2	2	2	1	2	2
2	96	2	2	1	1	2	2
3	84	2	2	1	1	2	2
4	51	3	3	1	2	2	2
5	36	2	2	1	1	2	2
6	19	3	2	1	2	2	2
7	12	2	3	2	1	2	2

Raw scores (range 1 – 4; or N/A) from the physical activity domain evaluating of the EORTC QLQ-C30 Quality of Life survey were analyzed in patients with evaluable data across study visits. Questions evaluated the patient's ability to perform everyday physical tasks (self-reported). Median scores for each of the six domain questions remained stable over time, indicating no deterioration in patient-reported quality of life. Notably, one question demonstrated an improvement in median score through the first seven visits.

CONCLUSIONS

-These blinded data demonstrate our ability to recruit heavily pretreated patients with metastatic breast cancer, some with CNS metastases or a marginal performance status (ECOG 2) i.e. important cohorts with unmet needs.
-This study aims to discover and validate biomarkers that can potentially be used in the future to optimize patient selection.
-Enrollment is ongoing at >70 locations in the US
-QOL can improve while pursuing important PFS and OS goals.
-Important ancillary objectives including sequencing controversies, can be addressed in the context of new drug development.

1. Lopez-Lago M, Chang M, del Priore G, et al. Analysis of antibody response to SV-BR-1-GM therapeutic vaccine in breast cancer patients using human protein microarrays: potential correlations with therapy response [abstract]. Cancer Res. 2024;84(9 Suppl):PO2-13-06

The first author and presenting author declare no undisclosed conflicts of interest or financial relationships.
For further correspondence please reach out to gdelpriore@msm.edu .