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Tumor Microenvironment in Asian-American and Native Hawaiian/Pacific Islander Women With Triple Negative Breast Cancer

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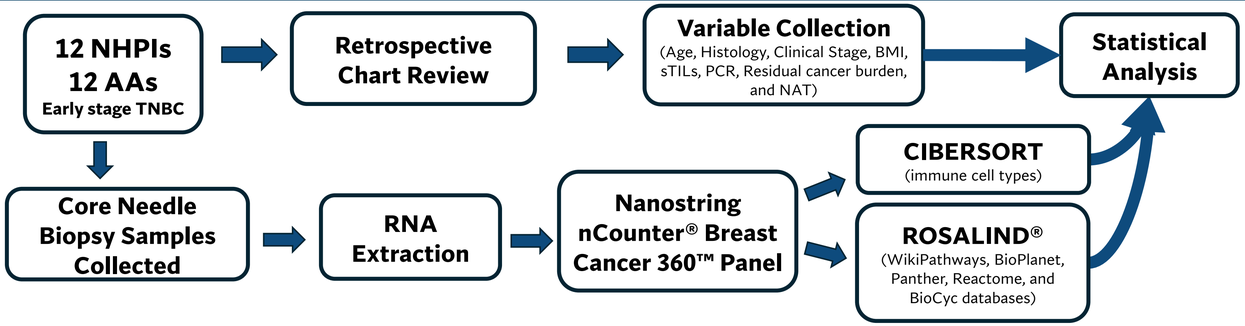
Introduction

- Triple negative breast cancer (TNBC)
  - ~10-20% of breast cancer cases
  - **Worst overall survival and prognosis** compared to other breast cancer subtypes[1]
- **Higher percent of stromal tumor infiltrating lymphocytes (sTILs)** in the tumor microenvironment (TME) of TNBC correlates with an **improved prognosis**
  - Ex. axillary lymph node negativity, lower histological grade, pathological complete response (pCR) to neoadjuvant therapy (NAT), and improved recurrence-free survival[2]
- Bansil et al. (2023) showed that all breast tumors from **Asian Americans (AA) and Native Hawaiians and Pacific Islanders (NHPI) patients have a higher percent of sTILs** compared to tumors from White patients[3]
- Although AAs have a lower cancer death ratio at 0.58, **NHPIs have a higher cancer death rate ratio** at 1.21 compared to White patients[4]

Purpose

Our study aims to molecularly characterize the tumor microenvironment in the AA and NHPI populations of patients with TNBC who received NAT

Methods



Results

Table 1. Patient Clinical & Pathologic Characteristics

Variable	Asian n (%)	NHPI n (%)
Age (year of diagnosis)		
30-39	2 (16.7)	0 (0)
40-49	3 (25)	3 (25)
50-59	3 (25)	2 (16.7)
60-69	3 (25)	5 (41.7)
70+	1 (8.3)	2 (16.7)
Clinical Stage*		
1	2 (16.7)	2 (28.6)
2	7 (58.3)	4 (57.1)
3	3 (25)	1 (14.3)
sTILs %		
0-9	0 (0)	2 (16.7)
10-50	6 (50)	5 (41.7)
51-100	6 (50)	5 (41.7)
Pathologic Complete Response (pCR)*		
No	8 (66.7)	2 (28.6)
Yes	4 (33.3)	5 (71.4)
Residual Cancer Burden (RCB)**		
0	4 (33.3)	5 (71.4)
1	6 (50)	1 (14.3)
2	1 (8.3)	1 (14.3)
3	1 (8.3)	0 (0)

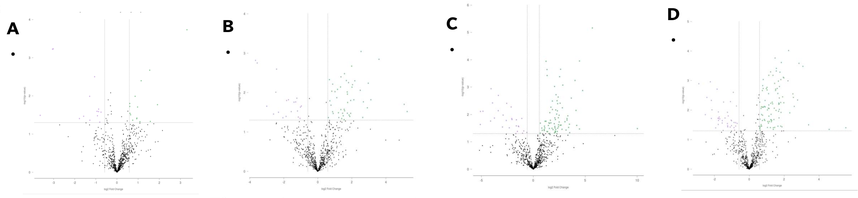


Figure 1. Volcano plot of DEGs, age adjusted comparisons
A. NHPIs versus AAs, **B.** AAs Responders (R) versus Nonresponders (NR), **C.** NHPI R versus NR, **D.** All R versus NR

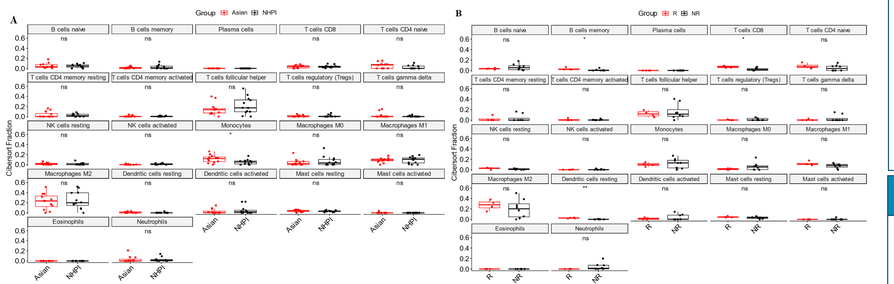


Figure 2. CIBERSORT analysis
A. AAs versus NHPIs, **B.** AAs R versus NR

Results

A.

Pathways	Database		
	WikiPathways	BioPlanet	Reactome
Allograft Rejection	■	■	
Interferon gamma signaling	■		■
PD-1 signaling		■	■

B.

Pathways	Database		
	WikiPathways	BioPlanet	Reactome
Allograft rejection	■	■	
PD-1 signaling		■	■

Figure 3. ROSALIND® Pathway Analysis
A. NHPI R versus NR, **B.** All R versus NR

Discussion

- Among NHPIs versus AAs, differences were seen in DEGs but no differences seen in pathways
  - NHPIs had less monocytes in CIBERSORT analysis
- AAs R had more CD8+ T-cell, memory B cells, and resting dendritic cells compared to NR
- NHPI R and all R had two databases that were significant for allograft rejection and PD-1 signaling pathways
- Limitation: Small sample size

Future Directions

- Include more samples for future analyses
- Analyze the spatial relationship of the TME using multiplex immunofluorescence

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Figure 1 DEGs

References

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