

IMMUNE CELL TYPE ABUNDANCE PREDICTS SURVIVAL OF PEDIATRIC ACUTE MYELOID LEUKEMIA PATIENTS AT DIAGNOSIS



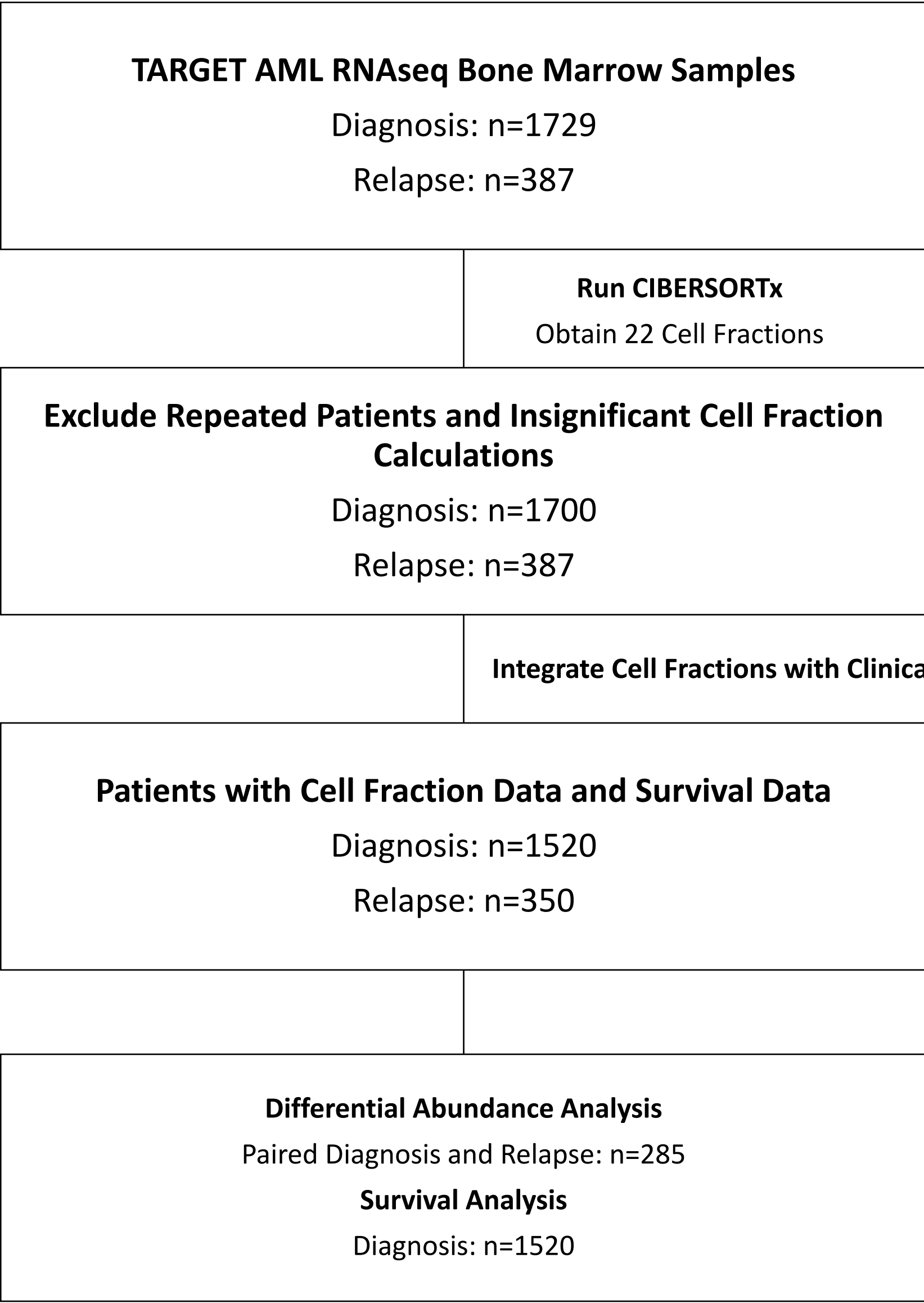
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INTRODUCTION

- Acute myeloid leukemia (AML) is largely heterogeneous and has a high relapse rate, making personalized prognostic markers and new therapeutic targets vital in improving survival rates of AML patients^{1,2}
- CIBERSORTx is a machine learning model that uses gene expression profiles to provide an estimation of cell abundances in a mixed cell type population³
- Knowing this, we wanted to explore if cell type abundances, predicted by CIBERSORTx, could be used as a survival marker for pediatric AML patients

METHODS



REFERENCES

¹Rady M, etal. Adoptive NK cell therapy in AML: progress and challenges. Clin Exp Med. 2025 Jan 17;25(1):41. doi: 10.1007/s10238-025-01559-5. PMID: 39820676; PMCID: PMC11748472.

²Döhner H, et al. Acute Myeloid Leukemia. N Engl J Med. 2015 Sep 17;373(12):1136-52. doi: 10.1056/NEJMra1406184. PMID: 26376137.

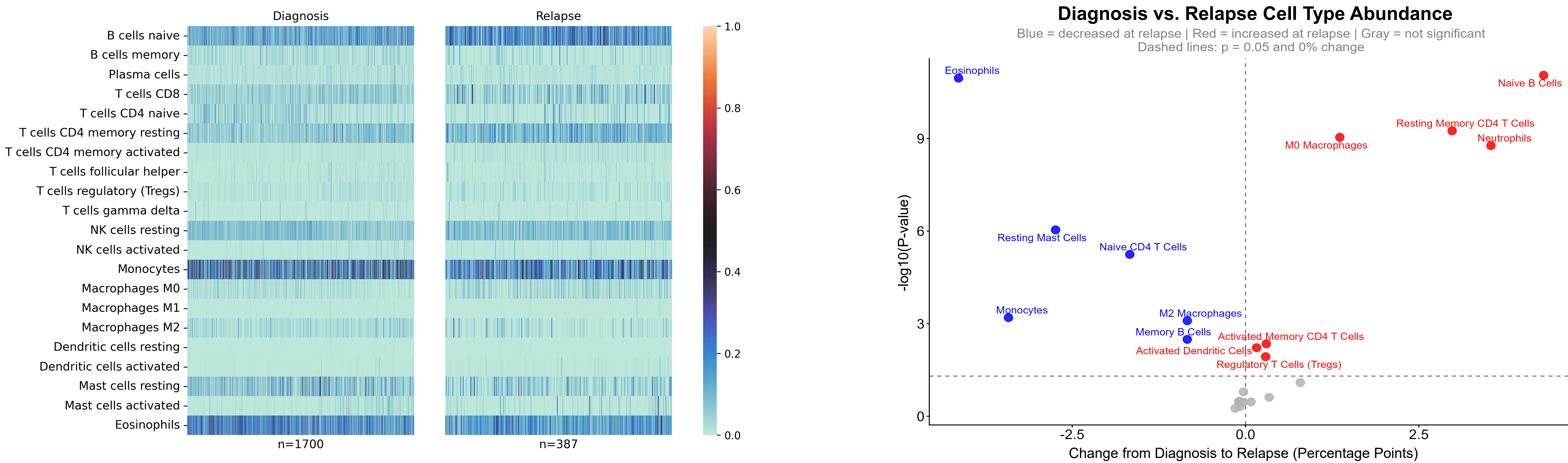
³Newman AM, et al. Determining cell type abundance and expression from bulk tissues with digital cytometry. Nat Biotechnol. 2019 Jul;37(7):773-782. doi: 10.1038/s41587-019-0114-2. Epub 2019 May 6. PMID: 31061481; PMCID: PMC6610714.

RESULTS

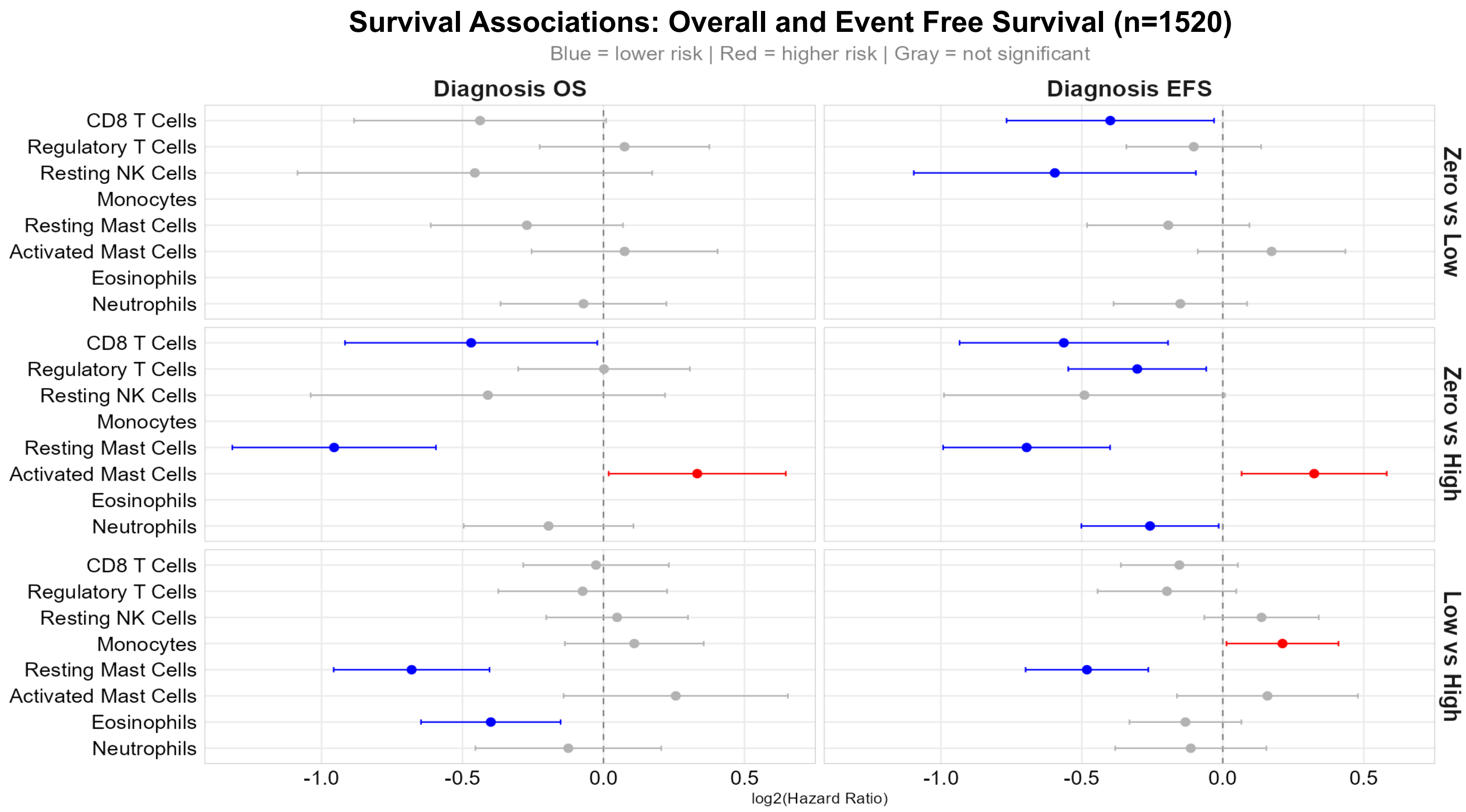
Clinical Characteristics of TARGET AML Patients

	Diagnosis	Paired Diagnosis and Relapse
Number of patients	1520	285
Age		
Median Age (years)	10.3	10
FLT3-ITD		
Yes	256 (17%)	43 (15.1%)
No	1251 (83%)	242 (84.9%)
Gender		
Female	731 (48.1%)	139 (48.8%)
Male	789 (51.9%)	146 (51.2%)
Race		
White	1100 (72.4%)	216 (75.8%)
Black	170 (11.2%)	27 (9.5%)
Other	413 (27.4%)	75 (26.8%)
Cytogenetics		
t(8;21)	210 (13.9%)	39 (13.9%)
inv(16)	168 (11.1%)	28 (10%)
Normal	379 (25.1%)	59 (21.1%)
11q	305 (20.2%)	71 (25.4%)
Unknown	15 (1%)	4 (1.4%)
Risk Group		
High Risk	191 (12.8%)	25 (9%)
Low Risk	574 (38.4%)	99 (35.6%)
Standard Risk	716 (47.9%)	150 (54%)

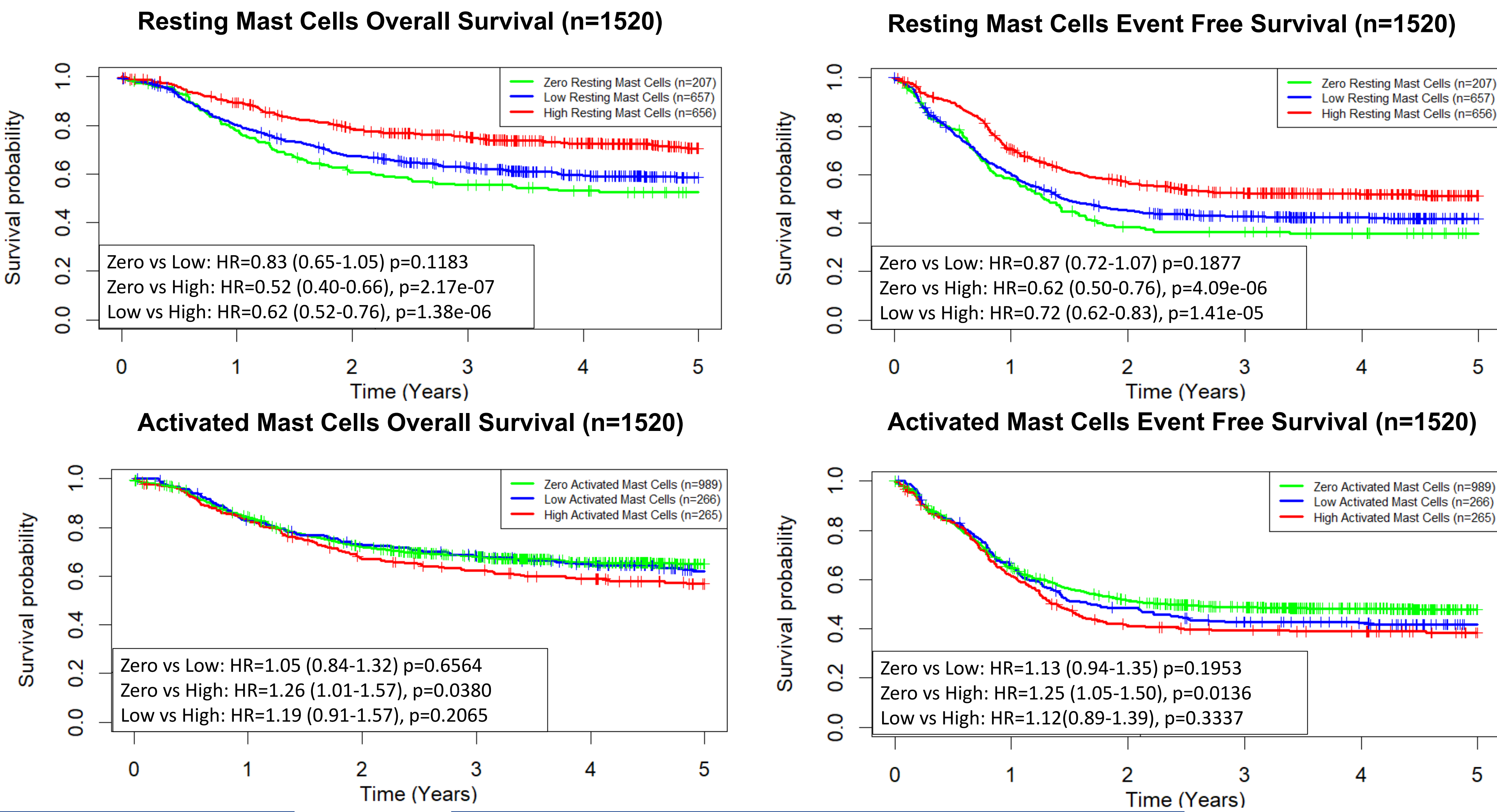
Cell Type Abundance Varies From Diagnosis to Relapse



Cell Fractions Predict Survival



Mast Cell Activation State Predicts Survival



CONCLUSIONS AND FUTURE DIRECTIONS

- Cell type abundances vary greatly from diagnosis to relapse in pediatric AML patients
- A number of cell types have an impact on event free survival and overall survival of pediatric AML patients
- Mast cell states may serve as a novel prognostic marker for event free survival and overall survival of pediatric AML patients

ACKNOWLEDGEMENTS

Research reported was supported by the NIH/NCI (R01CA132946 and R01CA270120), UF Health Cancer Institute, supported in part by state appropriations provided in Fla. Stat. § 381.915 and the NIH/NCI P30CA247796.

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