

B1-01 Informagicians conquering cancer

BIOLOGY AND THERAPEUTIC
VULNERABILITY IN PIK3CA
MUTATED BREAST CANCER

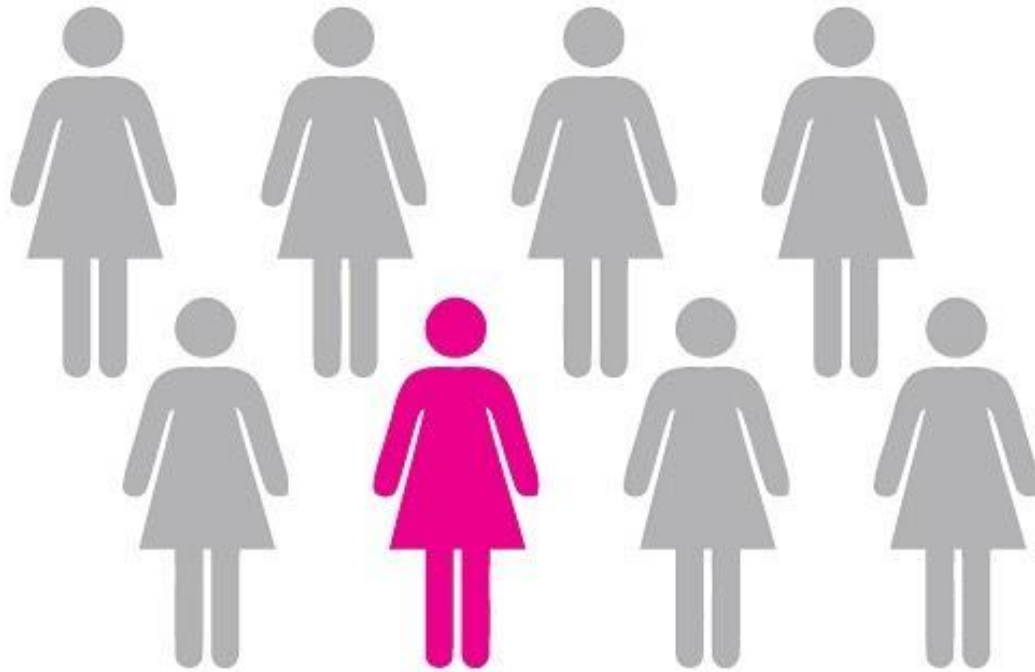


UTSouthwestern
Medical Center®

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DID YOU KNOW???

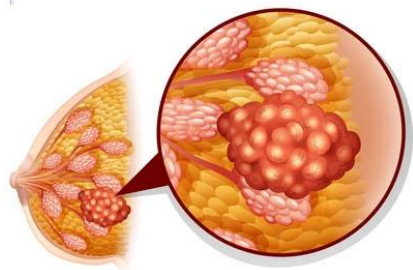
1 in 8 women will develop breast cancer in her lifetime



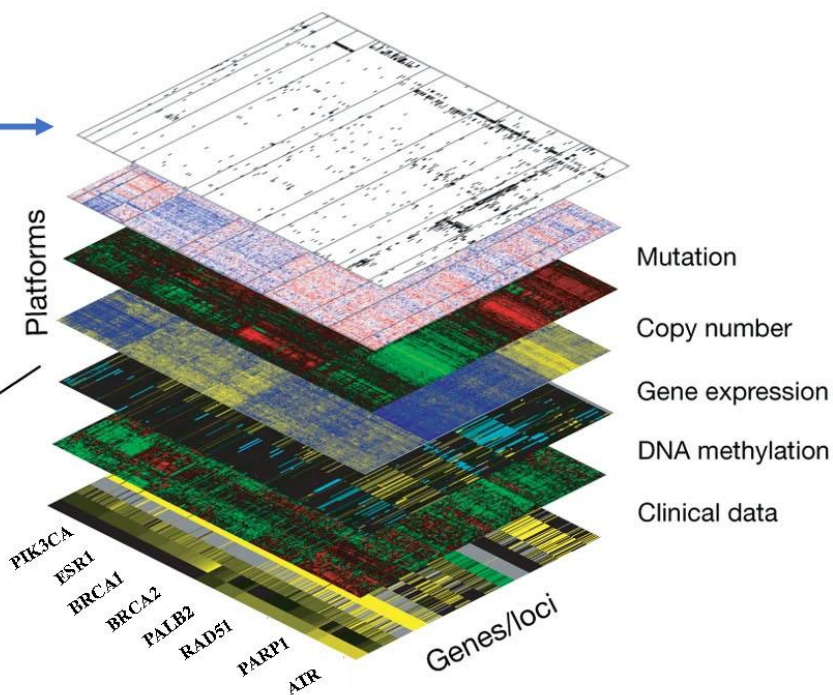
- *About 264,000 new cases in the US*
- *Treated with aggressive therapies*
- *Not all tumors are the same*
 - *About 100,000 harbor PIK3CA gene mutation*

Team Goal: Effective treatment with limited toxicity

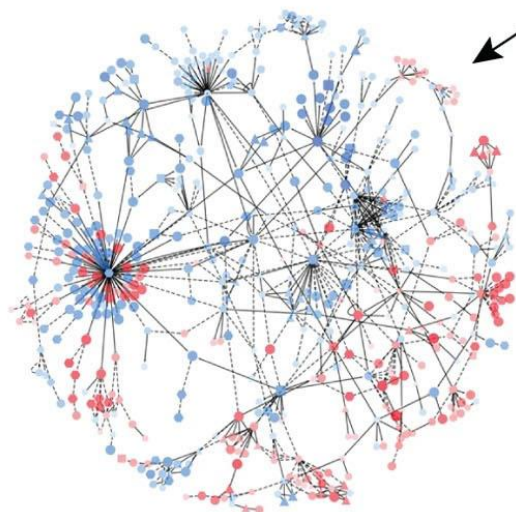
TCGA Breast Cancer Dataset



Omics Characterization



Data Interpretation

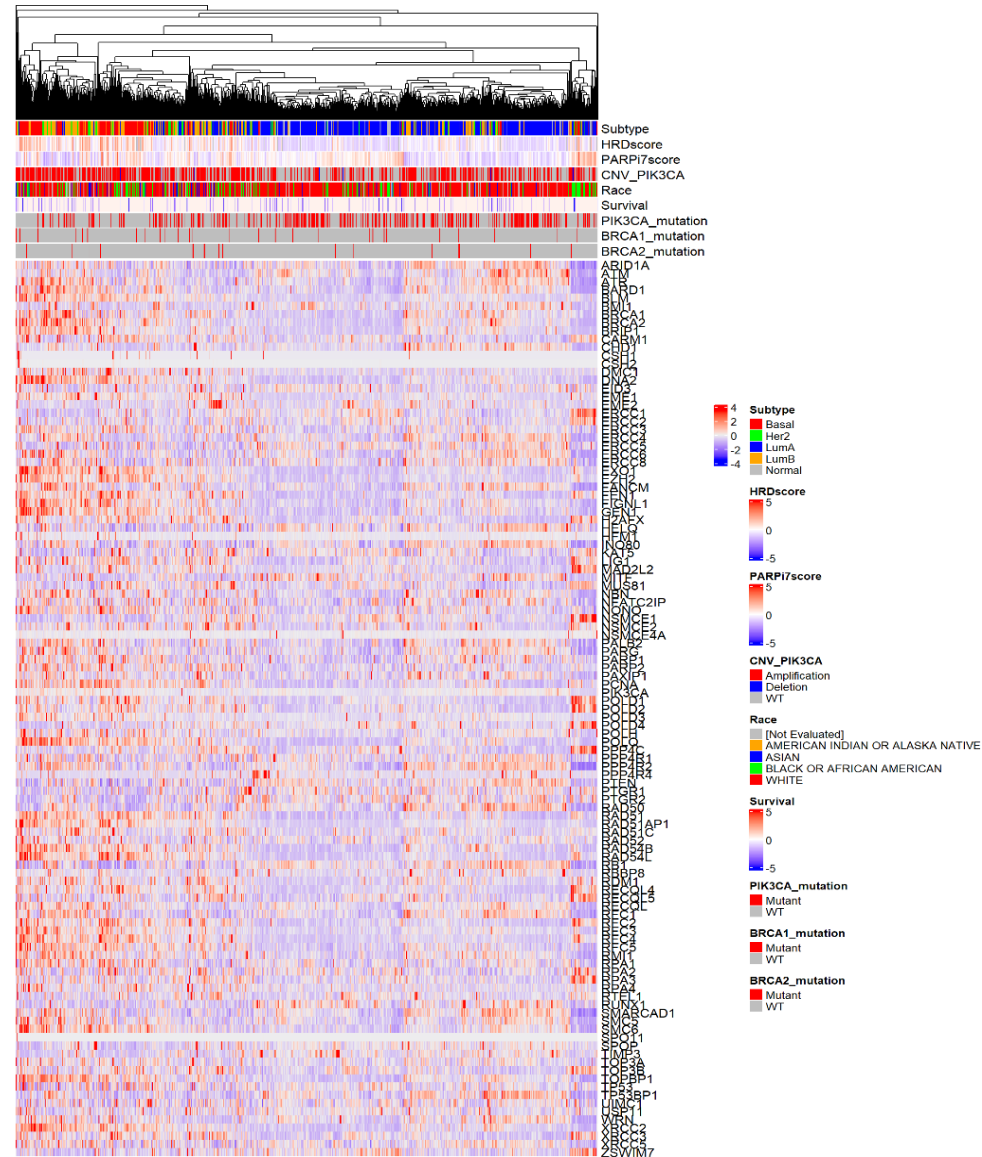


Outcome:
New therapeutic vulnerabilities

*How did we
approach
this?*

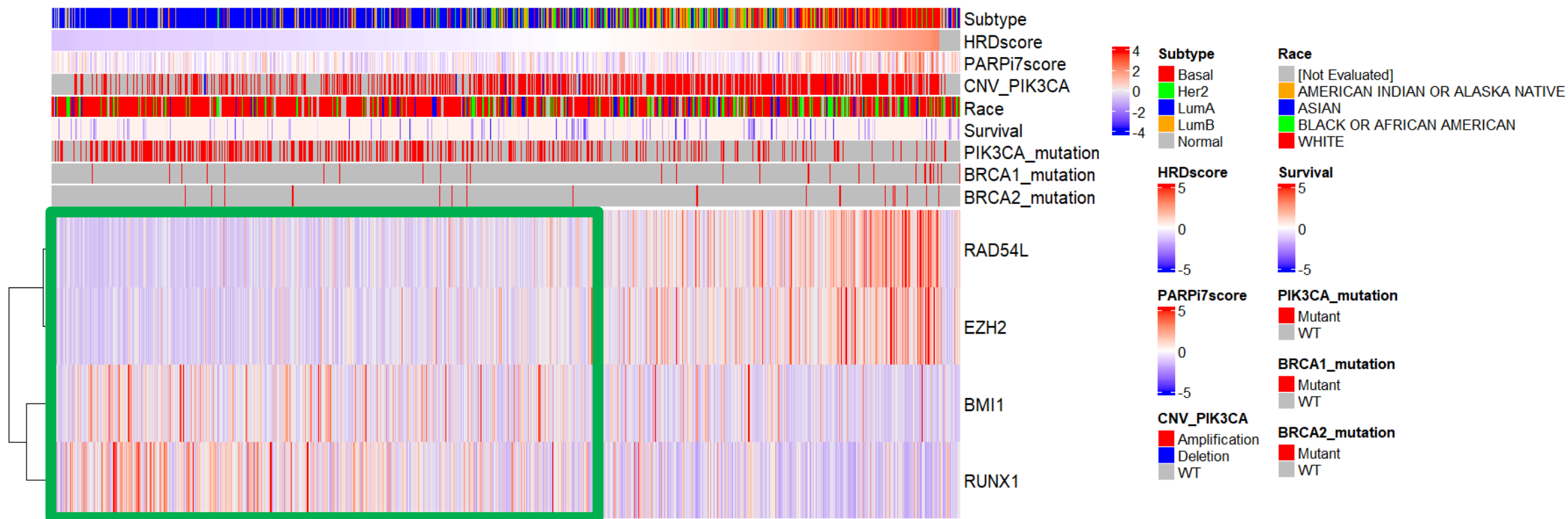
Modified from Nature Genetics 45:1113-1120

Our first output genomic
data hack 😊



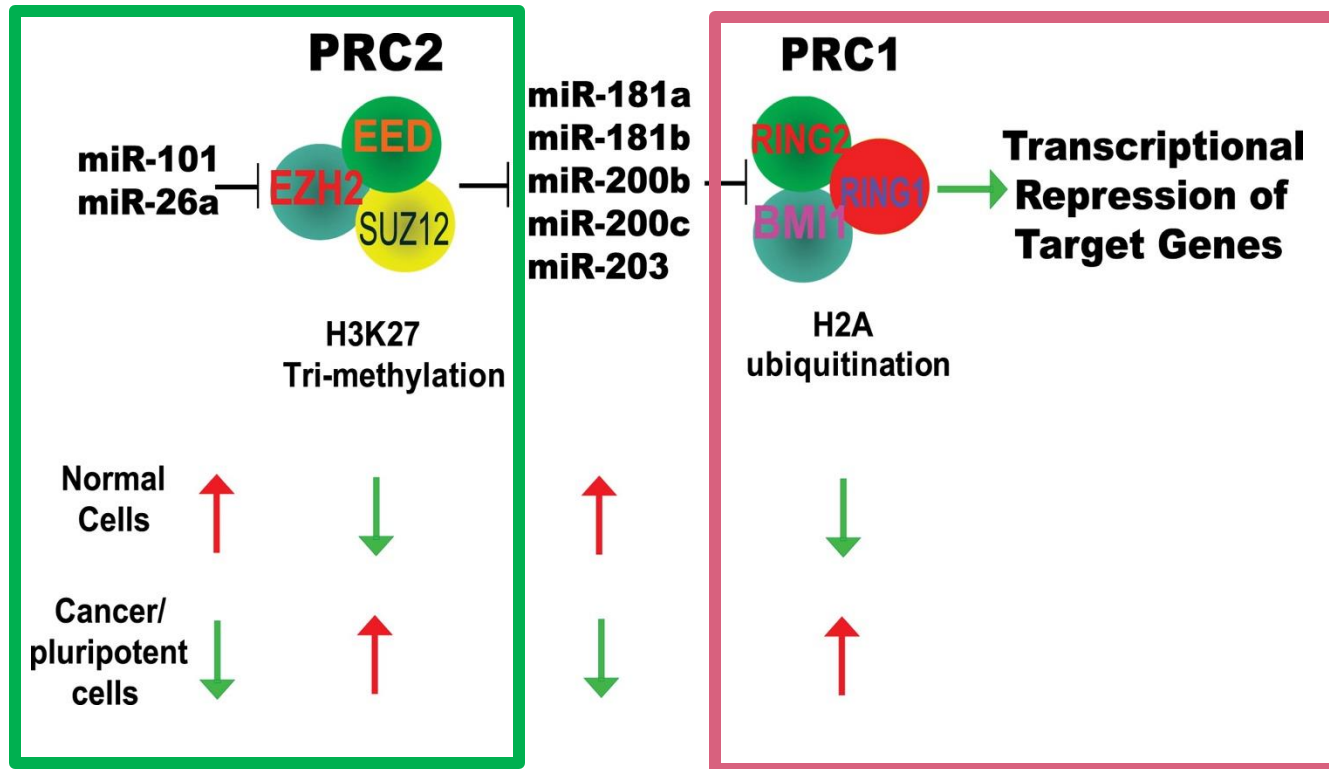
*Breast
cancer
biology is
very complex*





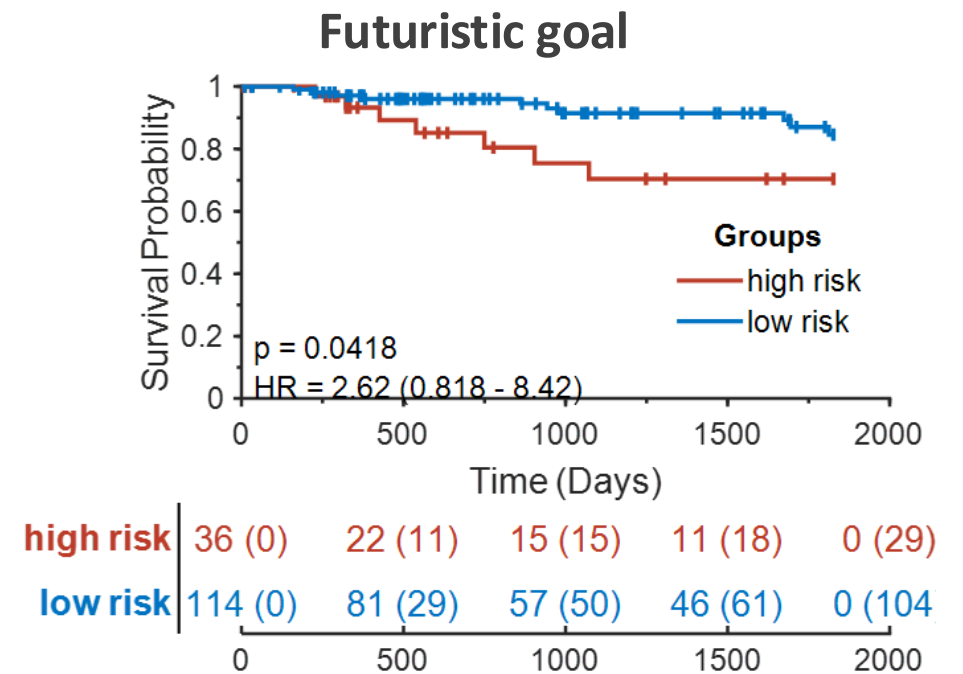
PIK3CA mutant specific signature!!!!

Implications of our findings



PIK3CA wild type
EZH2 inhibitors

PIK3CA mutant
BMI1 inhibitors

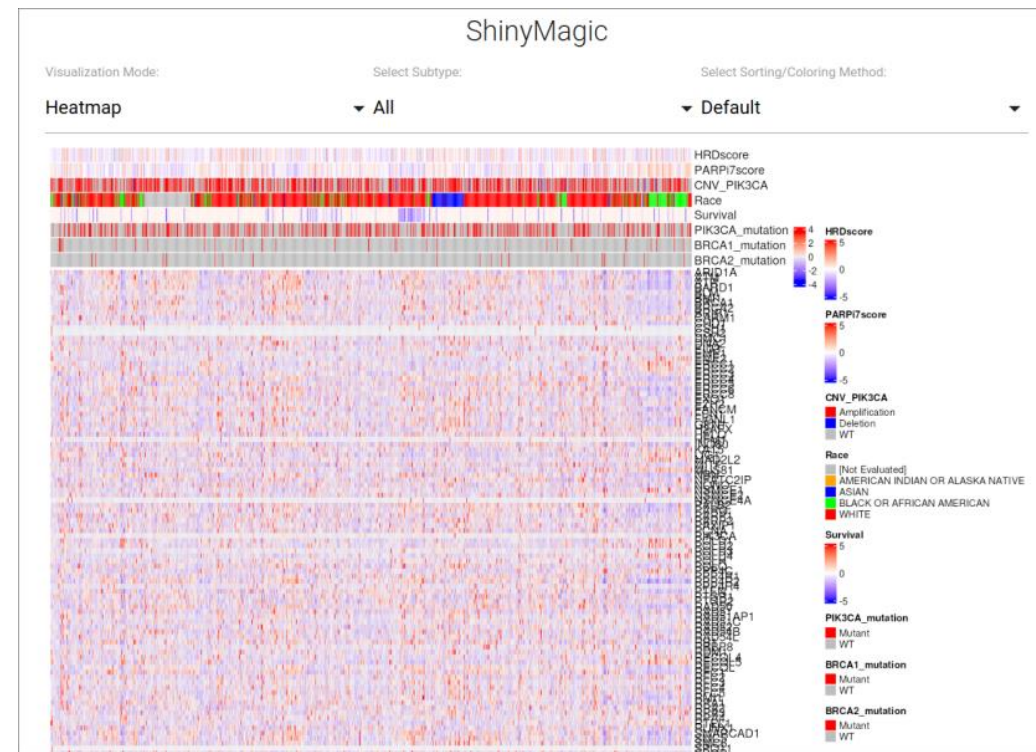
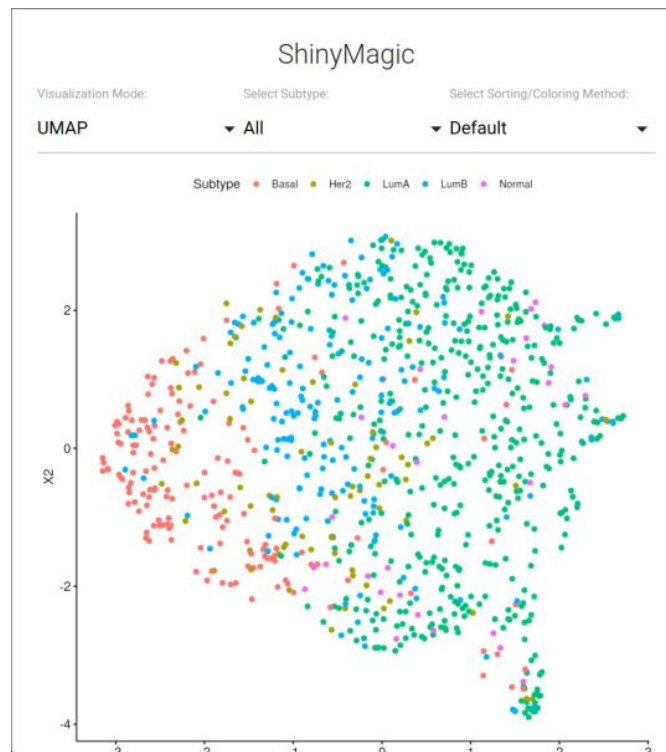


Machine learning for bridging the biology to the clinic

ShinyMagic App



We developed a web server for interactive analysis and visualization of genetic signatures

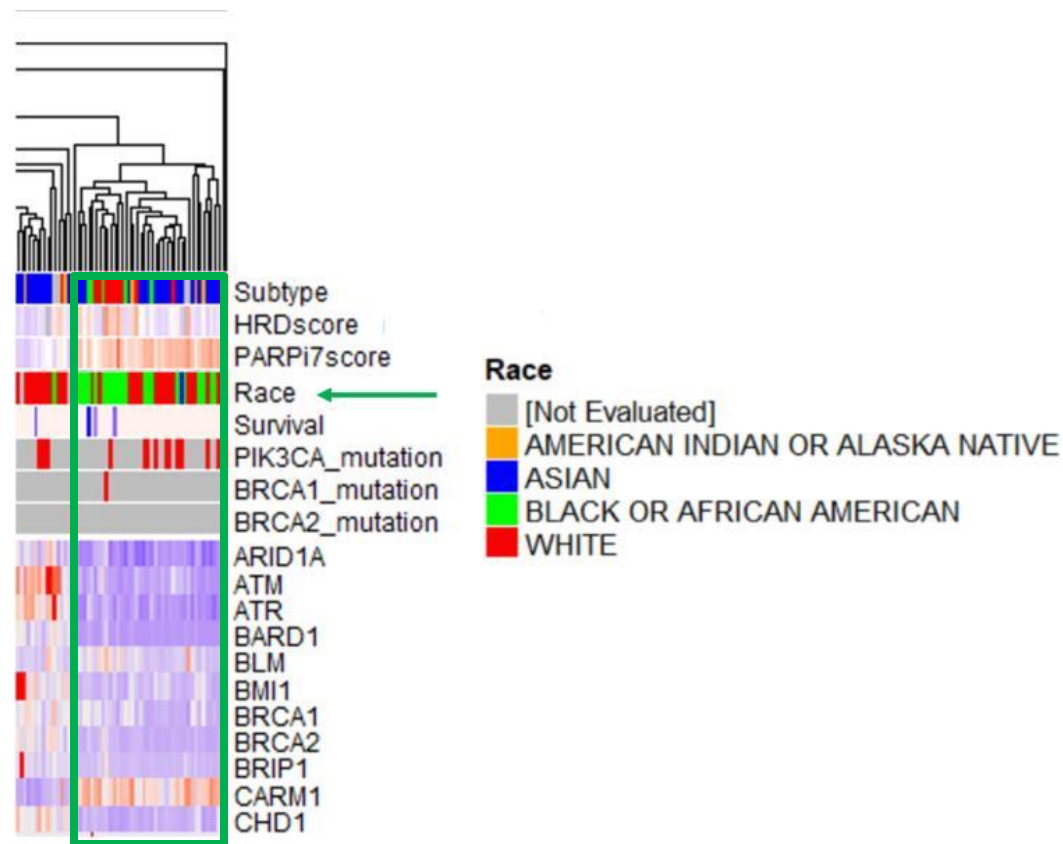


ShinyMagic App



Hypothesis generator data
(Limited sample size)

Distinct DNA repair pathways in tumors
of self-reported Black women
compared to other races



Thank you



Acknowledgments

- Department of Bioinformatics UTSW
- BioHPC
- Patient advocates
- Susan G Komen for the cure
- All participants

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