The Clinical Utility of Extracellular Vesicles in Liquid Biopsy

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Introduction

FYR Diagnostics is developing The Next Generation of Liquid Biopsy Solutions by harnessing the innovative properties of Extracellular Vesicles (EVs). FYR's proprietary SPARCs technology enriches for diseased EV subpopulations. Multi-omic EV subpopulation data outputs are combined with machine learning to enable enhanced detection of disease in patient plasma.

We are Head-quartered in: Missoula, Montana, USA

We are a Biotech Company Focused on: Oncology & Neurological Diseases

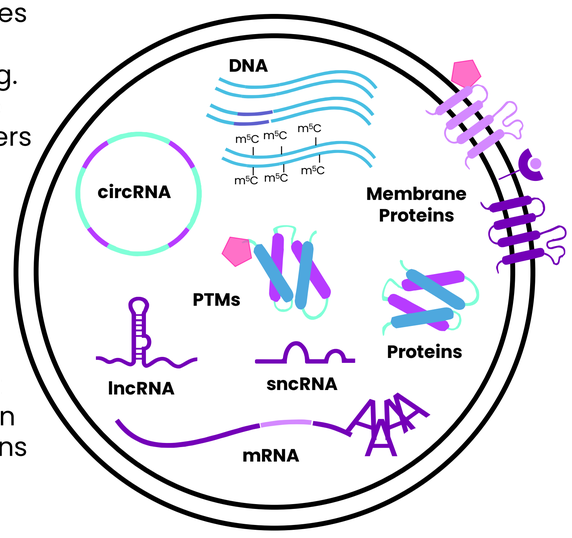
We are also a CLIA Laboratory: Purpose Built for Utilizing EVs

We are Conducting & Developing: Novel Multi-Omic Biomarker Discovery Platform & EV Enrichment Technology

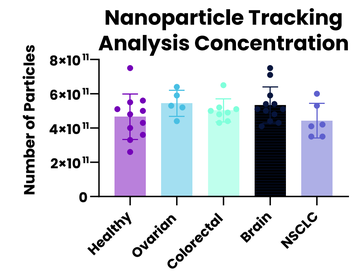
We are Leveraging: Proprietary Database and AI/ML-Enabled Analytics

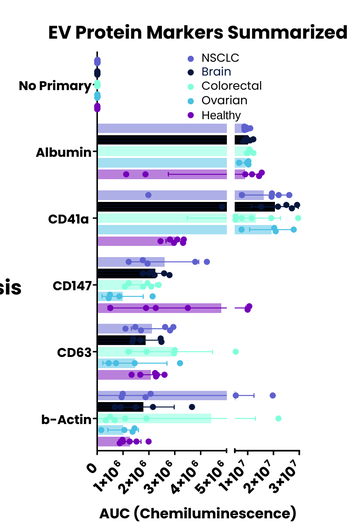
Extracellular Vesicles

Extracellular Vesicles play a vital role in cell to cell signaling. EVs contain a wide variety of biomarkers and protect these biomarkers in a lipid bilayer membrane. FYR leverages these facts in our EVO Platform to obtain EV-Omic data that can be utilized in an array of applications in BioPharma and Diagnostics.

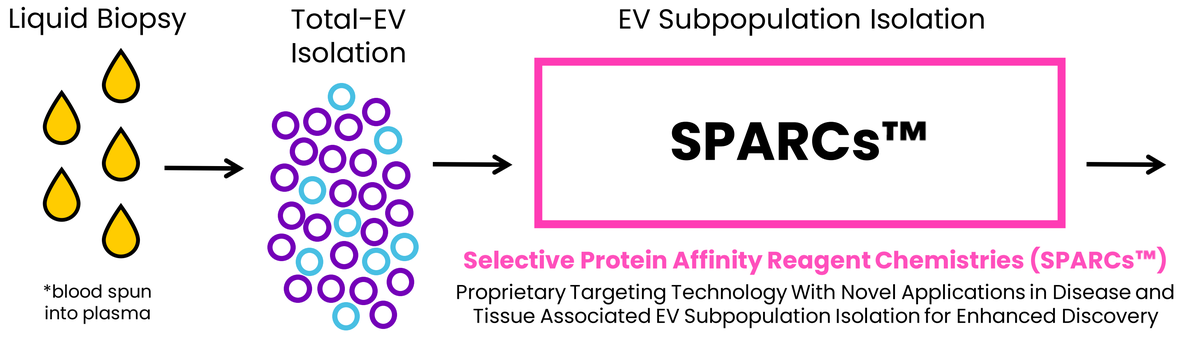


EV QC and Characterization





EVO: EV-Omics Discovery Platform

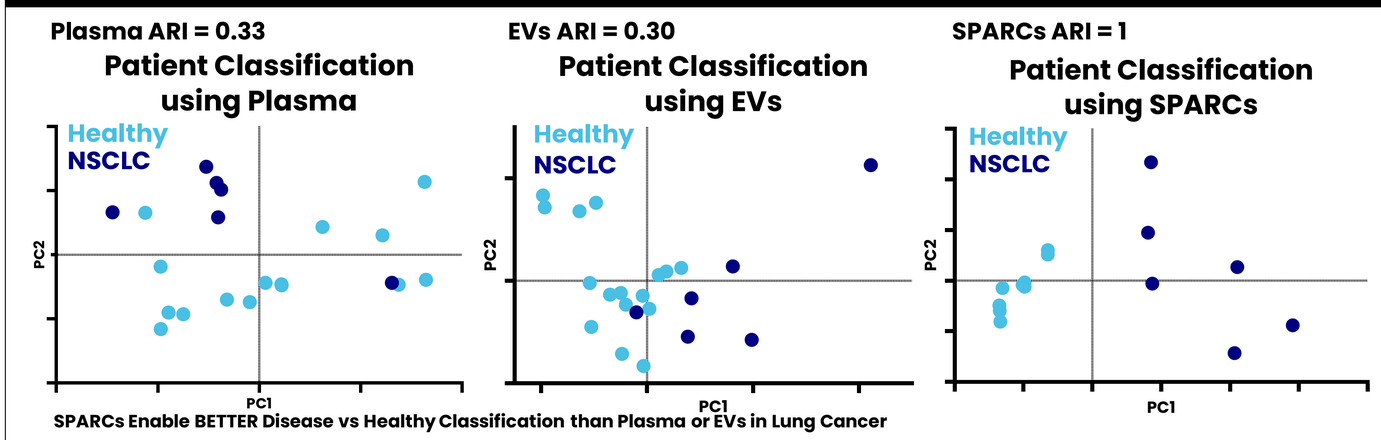


Pharma Applications
Support Clinical Trials
- Patient Enrollment and Stratification
- Treatment Response
- Treatment Selection and Monitoring

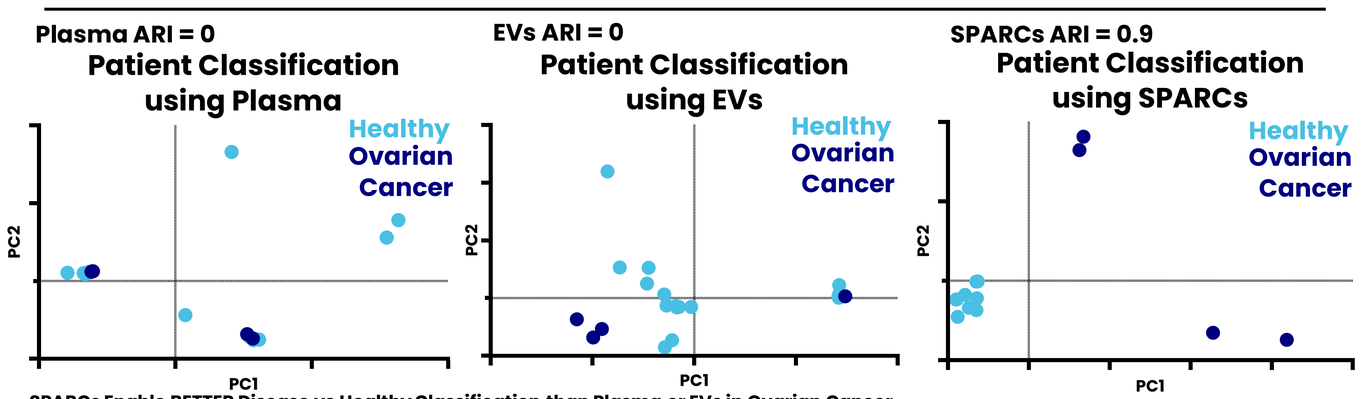
Companion Diagnostics (CDx)

Diagnostic Applications
- Early Detection/Screening
- Disease Profiling/Prognosis
- Recurrence/Minimal Residual Disease
- Treatment Selection/Monitoring

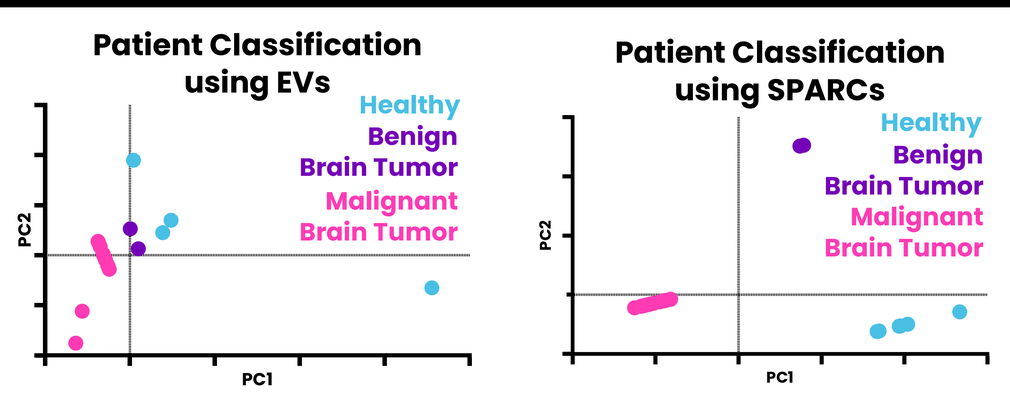
SPARCs in Combination with Machine Learning Predicts Patient Classification



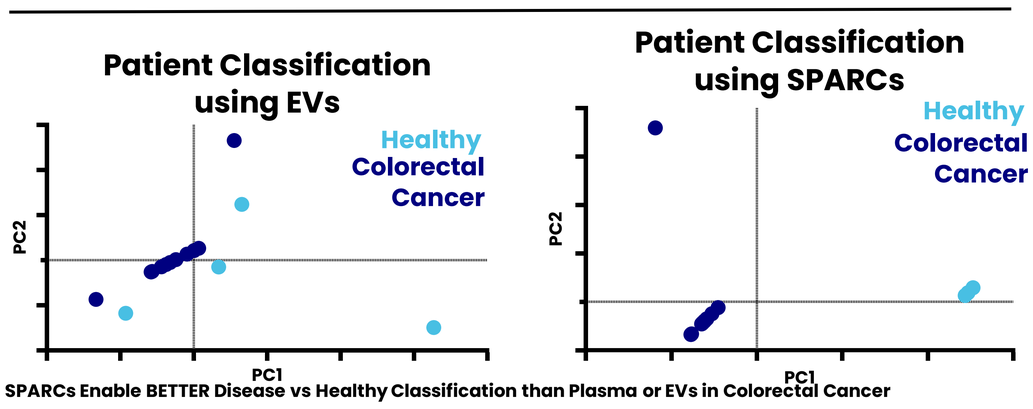
SPARCs Enable BETTER Disease vs Healthy Classification than Plasma or EVs in Lung Cancer



SPARCs Enable BETTER Disease vs Healthy Classification than Plasma or EVs in Ovarian Cancer

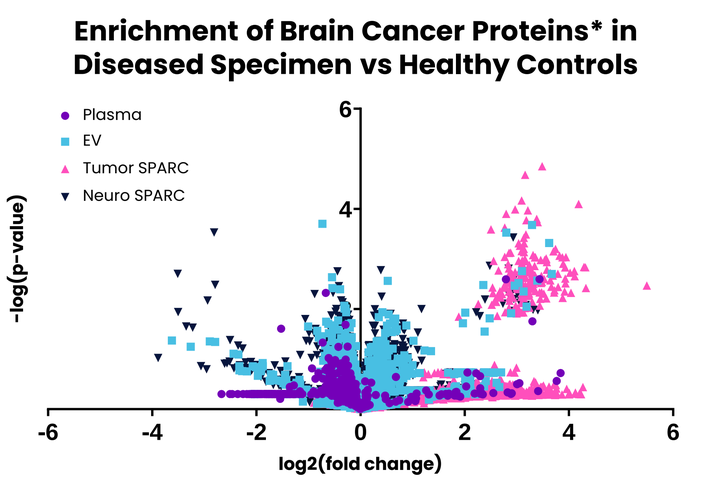


SPARCS with ML stratifies Benign vs Malignant in Brain Tumors



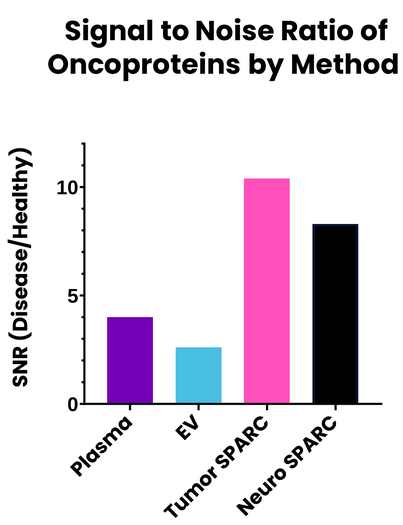
SPARCs Enable BETTER Disease vs Healthy Classification than Plasma or EVs in Colorectal Cancer

SPARCs Enrich for Markers of Disease

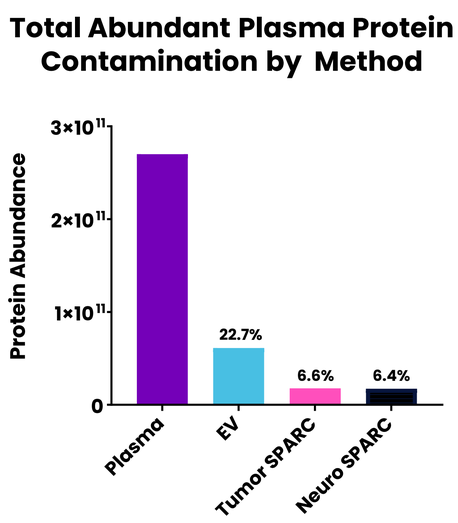


SPARCs Significantly Increase the Number of Brain Cancer Associated Proteins Identified with Significant ($p<0.05$) Fold Changes

Brain Cancer Proteins Determined with QIAGEN Ingenuity Pathway Analysis



SPARCs Improve Oncoprotein Detection



SPARCs Deplete ~94% of Total Abundant Plasma Proteins

Conclusions

Blood plasma of cancer patients contains EVs derived directly from tumor tissue that serve as rich sources of insight into tumor biology and disease pathology. We have developed a clinically applicable, multi-omic EV subpopulation interrogation pipeline that robustly profiles tumor derived EVs. Application of machine learning approaches to the omics data enables classification and distinction of cancer versus healthy patients.

Learn more at https://fyrdiagnostics.com/

Acknowledgements: Reference Medicine, Thermo Fisher Scientific