



BroadBranch Advisors

AACR Annual Meeting 2024: Driving Toward Improved Detection and Diagnostic Capabilities

The 2024 American Association for Cancer Research (AACR) Annual Meeting took place April 5-10 in San Diego, CA. The meeting had a record attendance of 23,200 attendees from 78 countries and territories. The conference presented a record number of clinical trial results highlighting the growing importance of clinical and translational research to the field, as well as a plethora of basic research. In addition to the research presented, a variety of new diagnostic and research developments were presented by tool companies including advances in the liquid biopsy and spatial biology spaces.

Cancer is a highly complex disease, in part because of the microenvironments in which tumors reside. With a multitude of cell types and microorganisms, the tumor microenvironment can influence how cancer forms, whether it spreads, and how it responds to treatment. Making progress against



cancer, therefore, requires a thorough understanding of the intricate relationships that exist between cancers and their environment. Advances in Spatial Biology presented at AACR will help researchers understand these micro-environments at a deeper level, and advances in Liquid Biopsy technologies promise to provide researchers with the tools needed to detect and measure these tumors earlier in the diagnostic process.





Spatial biology is a field of science that aims to be able to measure protein or nucleic biomarkers in situ to correlate these levels with tumor morphology.

Liquid Biopsy

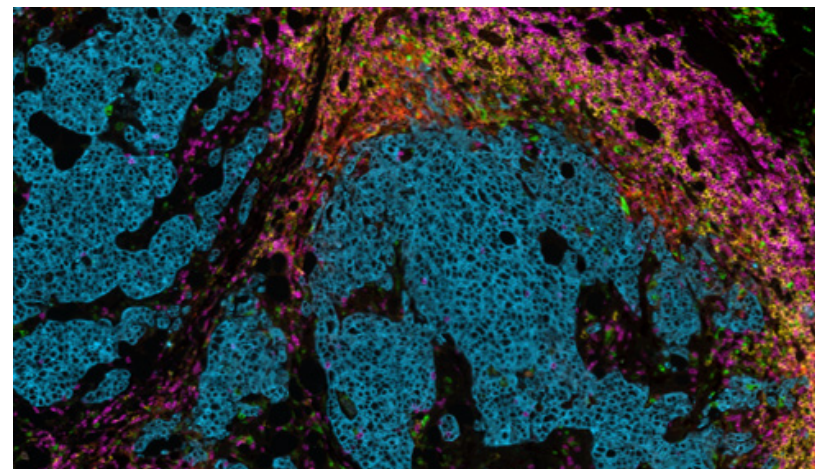
A major focus of AACR 2024 was on detecting cancer earlier and monitoring residual disease through the use of liquid biopsy approaches using minimally invasive sampling procedures to identify markers of the disease long before imaging or other technologies might be able to detect tumor formation.

One promising new liquid biopsy approach that has enormous promise is the measurement of extra-cellular exosomes. While exosomes themselves can be counted / interrogated, they also have the added benefit of lending themselves to multi-omic approaches as they contain nucleic acid and protein biomarkers. Exosomes have the added benefit of lending themselves to multi-omic approaches as they contain nucleic acid and protein. One such example presented was an exosome-based liquid biopsy developed by Dr. Ajay Goel and colleagues at City of Hope which accurately detected 97% of stage 1-2 pancreatic cancers when combined with the biomarker CA 19-9. Their approach analyzed exosomes shed by cancer cells for microRNA and cell-free DNA signatures.

Spatial Biology

Spatial Biology technologies were also prominently featured at AACR 2024. Spatial Biology is a field of science that aims to be able to measure protein or nucleic biomarkers in situ to correlate these levels with tumor morphology.

Multiple companies at AACR showcased advances in this field. Early applications of spatial transcriptomics revealed the vast heterogeneity within cancer tissue, and combining conventional spatial transcriptomics with single-cell RNA sequencing provides even greater insight into the heterogeneous gene expression and cell types found in the tumor microenvironment. These analyses will become increasingly important as targeted therapies work on more and more specific cell types within the tumor, and to help clinicians understand how and why particular tumors responded to therapy.



Spatial Biology image from Lunophore



Company Highlights

AACR 2024 was an opportunity for tools and service providers to showcase new technologies for detecting, monitoring, researching, or characterizing cancer. Advances in the field were shown not only across the Liquid Biopsy and Spatial Biology fields, but also in multi-omic approaches, bispecific antibody approaches, and residual disease monitoring. Promising advances in cancer detection and monitoring were showcased by longstanding players and emerging players alike:

biotechne®

Bio-Techne introduced a new automated spatial multiomics workflow on their COMET platform that combines RNAscope and immunofluorescence imaging on the same tissue section. Bio-Techne also demonstrated the benefits of a multi-omic approach in colorectal cancer screening or using qPCR from derived exosomes.



Akoya Biosciences showcased advances in their Spatial Biology 2.0 platforms that allow researchers to characterize the tumor environment at unprecedented depth to understand differential tumor treatment response rates.

nanoString®

NanoString invited customers to experience their GeoMx Digital Spatial Profiler which allows researchers to select and characterize specific portions of the tumor for independent analyses. NanoString also featured their AtoMx Spatial Imaging Platform, a cloud based platform for analyzing results across different workflows.



Standard BioTools unveiled rapid whole slide imaging modes for their Hyperion XTi system that allow for cellular or tissue level analyses, along with an automated slide loader to load up to forty slides, improving workflows and speed of analysis for the user.



AbCellera presented data demonstrating the success of their new T-Cell Engager bispecific antibody (BSA) development platform against four tumor targets. This platform promises to allow customers to quickly develop BSA's targeting CD3+ cells that can target specific cell types with tumor lethal payloads, minimizing off target effects and harmful cytokine response.



Predicine presented 15 separate posters demonstrating the utility of their liquid biopsy technologies for use in patient disease selection, residual disease monitoring and detection, and for the enrichment of cell-free DNA from patient urine samples.



Biodesix highlighted the utility of their GeneStrat ddPCR test for the rapid detection of actionable mutations (EGFRm) in NSCLC patients which may indicate a particular subgroup of patients who may benefit from additional treatment.



nRichDx exhibited an automated platform (Revolution Sample Prep System), for the processing of urine as a liquid biopsy option for cfDNA and cfRNA detection.

Conclusion

AACR 2024 again demonstrated both the enormous opportunity and challenge that research in the Oncology space presents. While researchers continue to uncover new insights, and industry partners continue to provide new tools and options for understanding cancer, these advances are somewhat muted by the enormous complexity of the disease researchers are continuing to discover. While challenges remain, the energy for solving these challenges continues to impress and represents a hope for new treatments, diagnostics and therapeutic approaches for patients.



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A D V I S O R S



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