AKOYA BIOSCIENCES

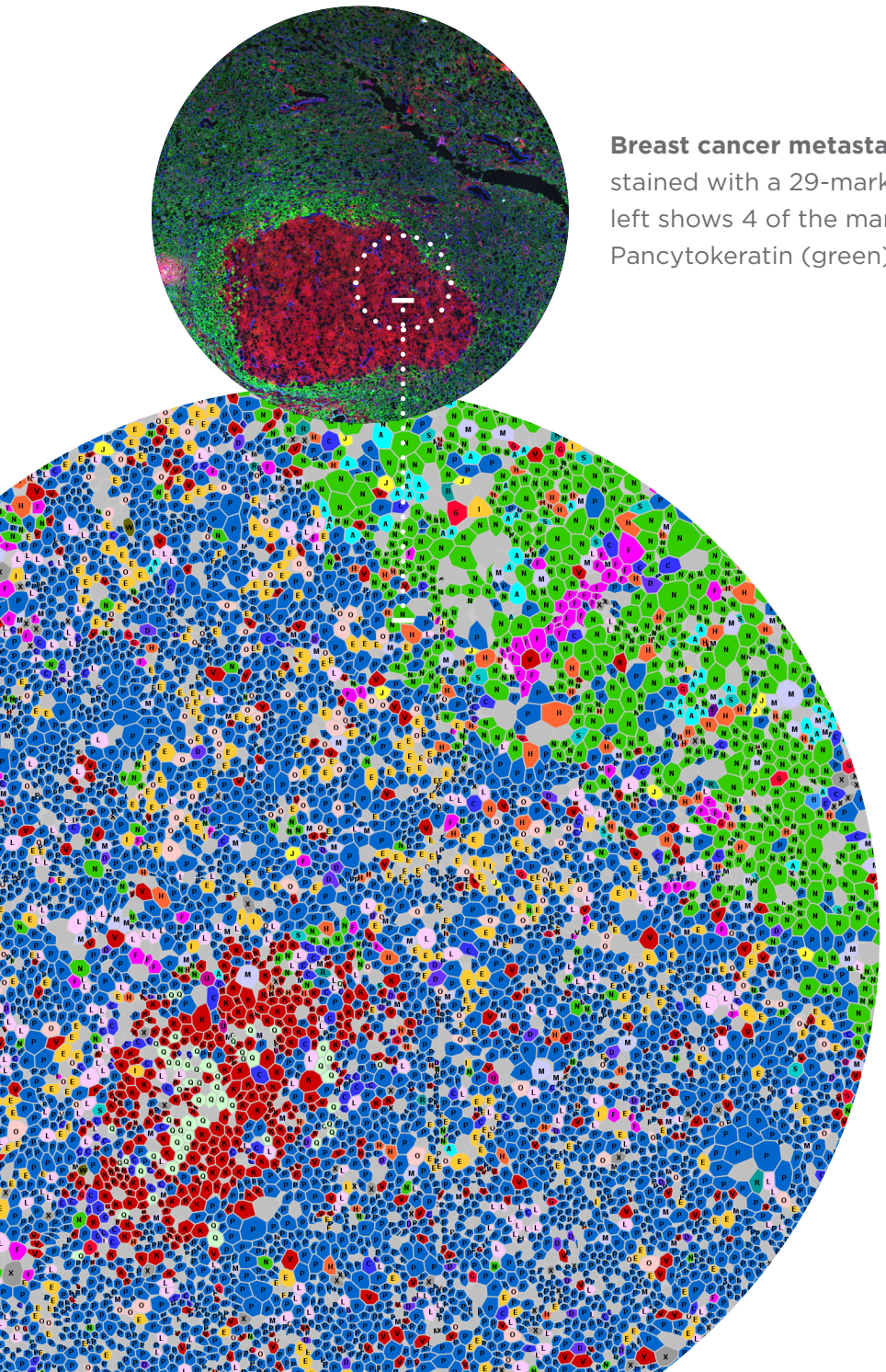
The CODEX® System

Highly multiplexed immunofluorescence
has arrived on your benchtop

Advanced cell phenotyping is now within reach

Understanding the biology and progression of cancer or complex immune disorders requires a comprehensive understanding of spatial architecture within the tissue microenvironment.

Getting an accurate picture of cell neighborhoods and interactions in the tissue microenvironment requires a high level of multiplexed marker detection at the single cell level with spatial context.



Breast cancer metastatic lymph node tissue section (FF) stained with a 29-marker CODEX panel. The image on the left shows 4 of the markers on the panel – CD45 (red), Pancytokeratin (green), vWF (blue), Podoplanin (white).

A Voronoi diagram of one of the lymphoid follicular structures in the tissue reveals the complex cellular phenotypes and subtypes that can be uncovered using a highly multiplexed CODEX panel. Germinal centers are visible with a concentration of B-cells (red)

- A Plasma cells
- B Plasma cells near epithelial cells
- C DCs near B cells
- D NKs
- E T cells interacting with DCs
- F Vascular endothelial cells (vWF/CD146)
- G Combined T cell population
- H Epithelial cells (CD63/Pan-cytokeratin)
- I Vascular endothelial cells (CD146/CD36)
- J Vascular endothelial cells (CD146/vWF/CD36)
- K B cells
- L DCs interacting with T cells
- M Epithelial cells (CD9/vimentin/Pan-cytokeratin)
- N Epithelial cells (CD63/CD9/Pan-cytokeratin)
- O DCs (CD205+, vimentin+)
- P Helper T cells
- Q FDCs
- R DCs near epithelium
- S Epithelial cells (63/9(lo))
- T Lymphatic vasculature
- U TFH (CD279+)
- V TFH
- W DCs (CD205+)
- X Filtered

Meet the CODEX System

BENCHTOP FOOTPRINT

INTEGRATES WITH EXISTING MICROSCOPE

"CODEX has really democratized access to spatially resolved, multiplexed immunofluorescence. The integration with existing microscopes enables users to generate high quality images while keeping the capital investment low."

Julia Kennedy-Darling, PhD, Co-Inventor of CODEX Technology and Director of R&D, Akoya Biosciences, Inc.

FLEXIBLE
Validated on fresh frozen and FFPE samples

SAMPLE-FRIENDLY
Samples can be used for downstream H&E staining or ROI analysis

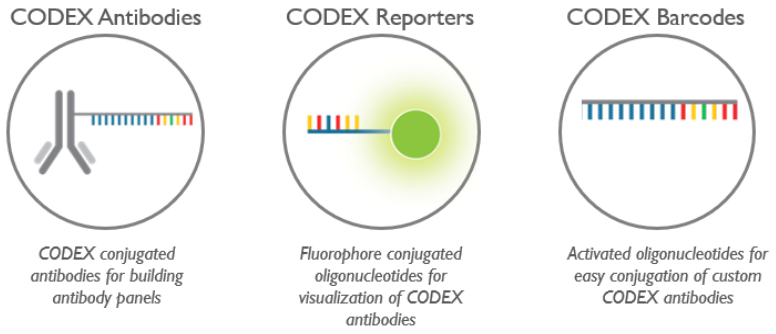
SCALABLE
Image 40+ biomarkers per sample

COMPREHENSIVE
Includes reagents and software suite

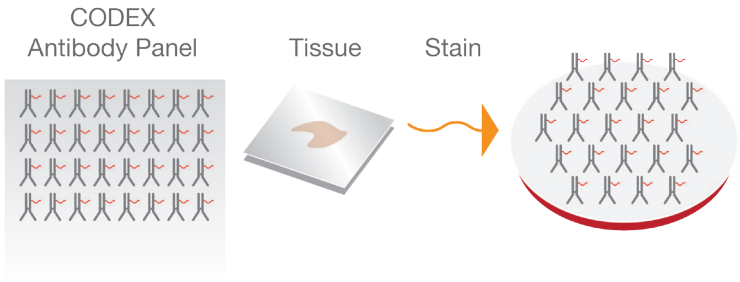
Behind-the-scenes technology

The CODEX (CO-Detection by indEXing) technology, originally developed in the lab of Dr. Garry Nolan at Stanford University, uses antibodies conjugated to a proprietary library of oligonucleotides called Barcodes. This enables customizable panels of up to 40+ CODEX Antibodies to be combined for a single tissue staining reaction.

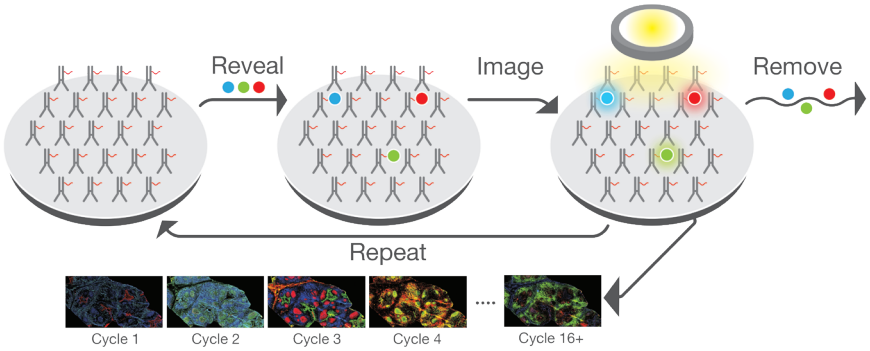
The CODEX fluidics instrument automates iterative imaging cycles. For each cycle, three CODEX Reporters, each with a spectrally-distinct dye, are applied to the stained tissue to assay the corresponding Antibody Barcode. This process is repeated until all antibodies have been imaged.



3 MAIN COMPONENTS OF CODEX TECHNOLOGY



SINGLE-STEP STAINING TO PRESERVE SAMPLE INTEGRITY



AUTOMATED PROCESS OF IMAGING BIOMARKERS USING THE CODEX INSTRUMENT AND A COMPANION MICROSCOPE

Validated antibodies and reagents

We offer a complete solution that includes antibodies and reagents that have been optimized and validated for the CODEX system. Users have the flexibility to create panels comprised of commercially available, Akoya-validated antibodies or clones labeled with CODEX Barcodes using Akoya's custom conjugation kit.

Multiple tissue types

Validated and inventoried targets are available for different tissue types: Mouse Fresh Frozen, Human Fresh Frozen and Human FFPE

Custom Panels

Don't see your favorite target on our inventoried marker list? Use the CODEX Conjugation Kit to create panels with custom antibodies of your choice

CODEX Antibody Validation

Commercial CODEX antibodies undergo a robust validation process to minimize the optimization required by users.

Download the tech note at **akoyabio.com/codexvalidation**

AKOYA PROVIDES FULLY VALIDATED CODEX® ANTIBODIES AND A LIST OF SUPPLEMENTAL ANTIBODIES THAT HAVE UNDERGONE VARYING LEVELS OF TESTING. FOR THE COMPLETE LIST, PLEASE CONTACT US AT INFO@AKOYABIO.COM

Intuitive software suite

The CODEX Analysis Suite is offered free of charge to users and enables them to unlock the power of highly multiplexed tissue images generated using the CODEX System. The software also generates .fcs files which can be imported into third-party software packages.

CODEX Instrument Management Software (CIM)

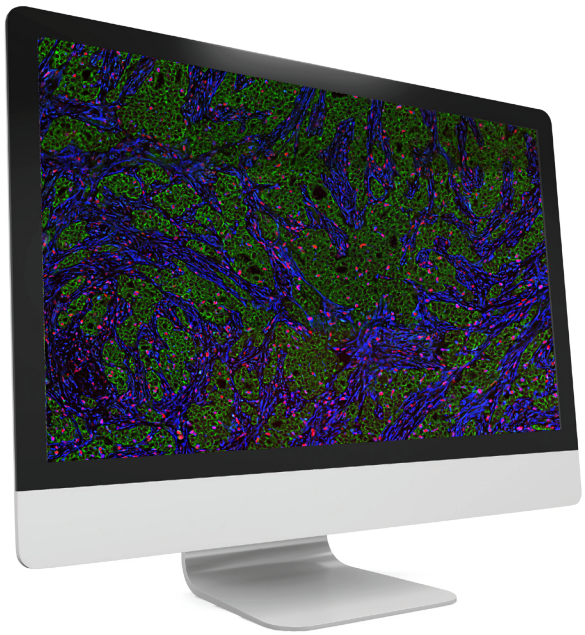
- Controls the CODEX fluidics platform
- Integrates with the microscope control software for image capture

CODEX Analysis Manager (CAM)

- Formats raw images for downstream analysis.
- Key functionalities include drift compensation, background subtraction, cell segmentation and clustering
- Integrates with deconvolution software

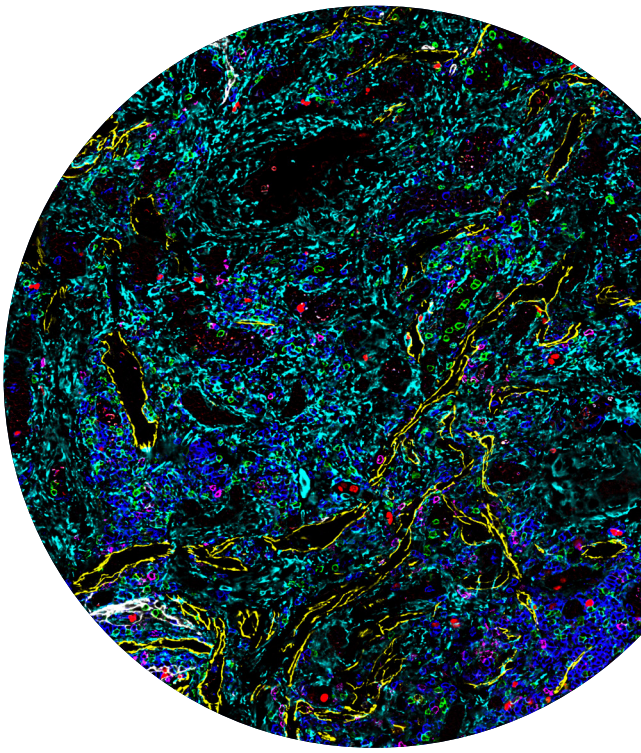
Multiplex Analysis Viewer (MAV)

- Visualizes fluorescence/cluster data
- Gates cells
- Generates spatial network map

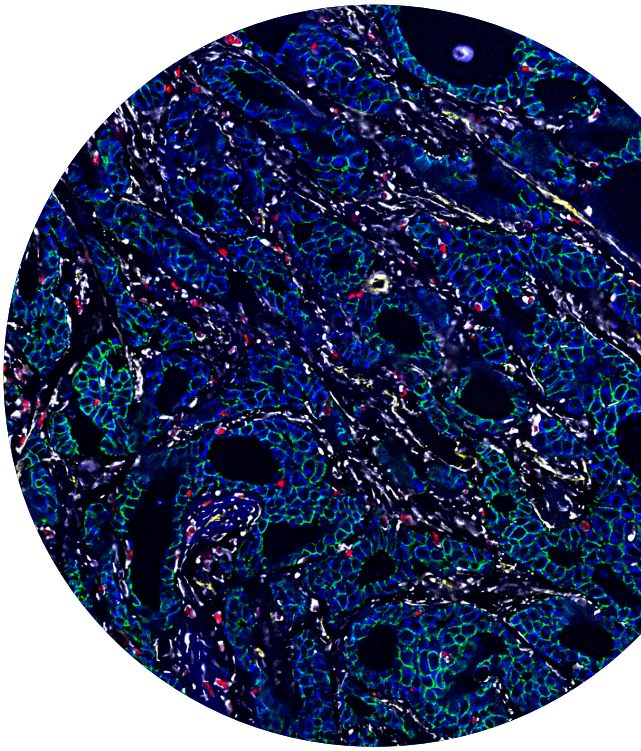


Dive deeper into the tumor microenvironment

The high level of multiplexing with the CODEX® Solution allows a deeper interrogation of the tumor microenvironment with the potential to accelerate the discovery of better predictive biomarkers.



An example of a multiplexed image of a renal cell carcinoma sample (human FFPE) stained with a panel of 15 markers specific to immune and tumor cells. Shown here are Ki67 (red), CD8 (green), CD4 (blue), Podoplanin (white), SMA (cyan), CD20 (magenta) and CD31 (yellow).



An example of a multiplexed image of a Stage IIb breast cancer patient sample (human FFPE) stained with a panel of 15 markers specific to tumor cells. Shown here are Runx3 (red), CD31 (magenta), Keratin14 (blue), Vimentin (white), Ki67 (cyan), and E-cadherin (green).

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SUPPORTING YOU ALL THE WAY

The CODEX Support team serves as an expert resource to actively guide users through installation, training and beyond. CODEX users will also get exclusive access to training webinars, user meetings and workshops to encourage the sharing of best practices and success stories across the community.

Visit us at akoyabio.com/codex or get in touch with us at info@akoyabio.com