



Automating Spatial Biology with Pushbutton Precision

SPATIAL STATION



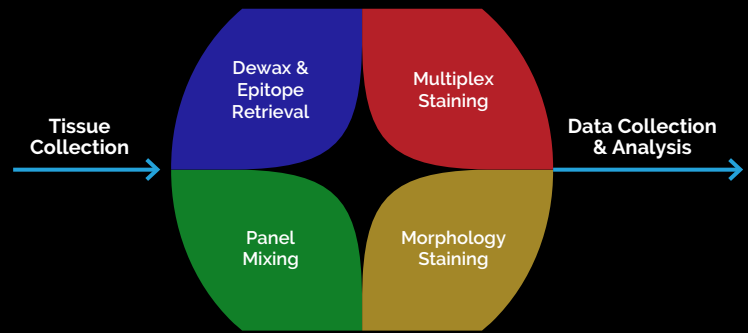
**Dock with the Spatial Station
Conquer Complex Sample Prep.**

PARHELIA.BIO Innovating Spatial Sample Prep so You can Advance Biology.

Increasing diversity and complexity of spatial biology techniques demand next-generation sample prep

Formalin-fixed paraffin embedded (FFPE) or fresh-frozen (FF) tissues destined for imaging undergo a sample preparation process whereby sample processing, antibody staining, and antibody cocktail preparation are primarily handled manually.

Automating these processes standardizes the sample prep workflow and enables researchers to focus on the science.



Experimental design complexity → Multi-step assays → Inconsistency & inefficiency with manual prep

- Target multiplexing (1-1000s)
- Multiomics (protein & RNA)
- Manual, labor-intensive protocols

Expensive & diverse stain chemistries



- Inter-operator variability
- Risk needing to repeat assays or losing precious samples

SPATIAL STATION

Purpose-built, end-to-end automation of spatial biology workflows

✓ Benchtop flexibility

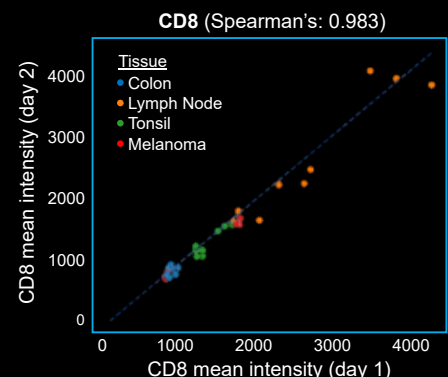
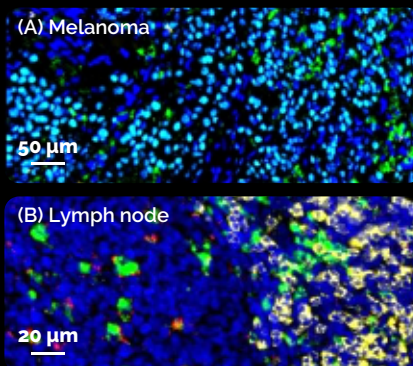
- Small footprint with state-of-the-art robotics, liquid handling, temperature control, and quality safeguards
- Bring your own chemistries and/or scale with single-use Skylab kits
- Flexible throughput: prepare one sample or up to 48 (12 with temperature control)

✓ High-quality staining

- Patented capillary laminar flow technology gently and uniformly applies reagents
- Flow cells assembled in seconds and protect precious samples
- 100 µl chambers and zero dead volume yield significant reagent cost savings

✓ Verified & customizable assays

- Growing list of plug-and-play assays developed with partners and collaborators
- Optimize protocols faster with automated robotic efficiency
- Intuitive protocol builder software, hands-on training, and a support team to guide you



Specimens were processed and stained with InSituPlex OmniVUE™ multiplex panel (DAPI, CD8, CD68, PD-L1, CK/Sox10). Representative imaging for (A) melanoma and (B) lymph node are shown. (C) CD8 intensity inter-day correlations among four tissues stained on different days. Data courtesy of UltiVue; Hwang et al. (2024) Cancer Res. 8(6_Suppl):1044.

Superior staining and precision

Capillary Laminar Flow Technology

Sample prep on the Spatial Station begins by simply placing a Cover Pad on your slide or coverslip. The ~70 μm capillary gap creates a reaction chamber filled with only 100 μl of reagent, facilitating buffer exchange by capillary action. Each module houses up to 12 samples, which can be scaled up to four independent modules.



Flexible throughput

- Treat each sample as a closed, discrete experiment to test parameters and different probe combinations
- Or accomplish a high-throughput workflow of up to 48 samples

Protect, save, and improve

- Flow cells protect samples from dehydration, shear, and delamination
- Gentle laminar flow provides uniform staining without edge artifacts
- Reagent use reduced by 50+% vs open-top methods
- Signal-to-noise improvements of up to 10% have been observed

The integral solution for spatial workflows



Intuitive touchscreen interface

- Optimize and repeat assays with robotic efficiency
- Customize assays with protocol-building software
- Step-by-step wizards for setup and maintenance



Precision heating and cooling

- Execute any baking, antigen retrieval, or incubation protocol with 0-100°C range
- Removable and automated lid prevents evaporation and maintains humidity during long incubations

Probe panel mixing and inventory management

- Create antibody cocktails and precisely aliquot to specific samples hands-free
- Generate reporter plates for PhenoCycler Fusion, etc
- Applicable to flow cytometry



Quality control protections

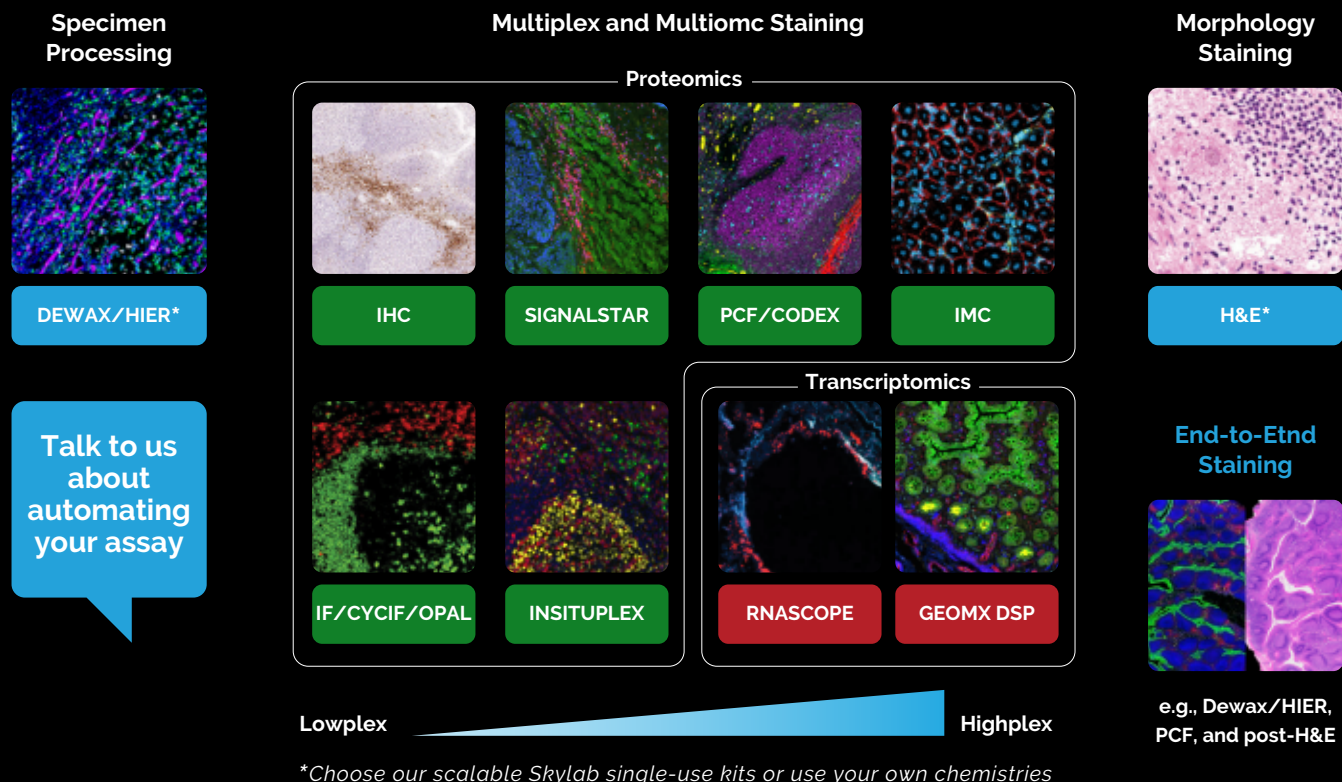
Rest assured that your overnight assay will be completed, you'll be informed if something goes wrong, and you'll receive a 21 CFR Part 11 compliant audit trail.

- **Capacitive Liquid Sensing** ensures all reagents are present in sufficient quantities
- **XYZ Auto-Calibration** eliminates the need for manual pipette calibration
- **Labware Auto-Detection** ensures proper labware placement and counts tips



Automate any pre-imaging assay

Working with spatial biology technology partners and academic and biopharma collaborators, we are actively verifying the assays you use every day to make discoveries and identify biomarkers. Talk to us about your specific assay needs.



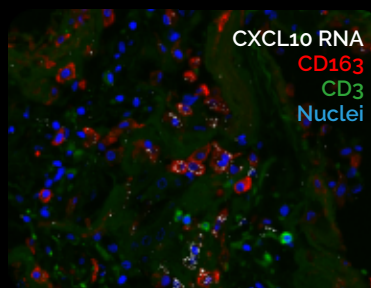
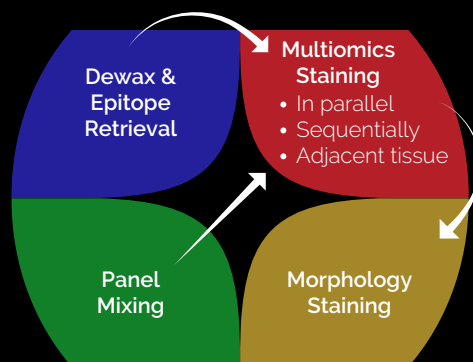
Simple sample prep solution for multiomics assay integration

Spatial multiomics (a.k.a., multi-modal 'omics) integration studies provide unprecedented information on intracellular and intercellular mechanisms underlying disease progression and therapy development.

However, they also introduce additional complexity to the sample prep workflow, which risks repeating expensive experiments with precious samples.

Preparing spatial multiomics studies with the Parhelia Spatial Station solves the added complexity riddle by transforming the additional steps into pushbutton protocol selection.

End-to-end automation of multiomics workflows removes labor-intensive and error-prone roadblocks from study design while ensuring hands-free consistency and data quality.



Integration of RNAScope (transcripts) and PhenoCycler Fusion (protein) assays in a COVID-19 study

CXCL10 expression in CD163+ macrophages and lung cells attracts CD3+ T-cells into the SARS-COV-2-infected alveoli.

Less pipetting, more consistency: Automated antibody cocktail panel generation

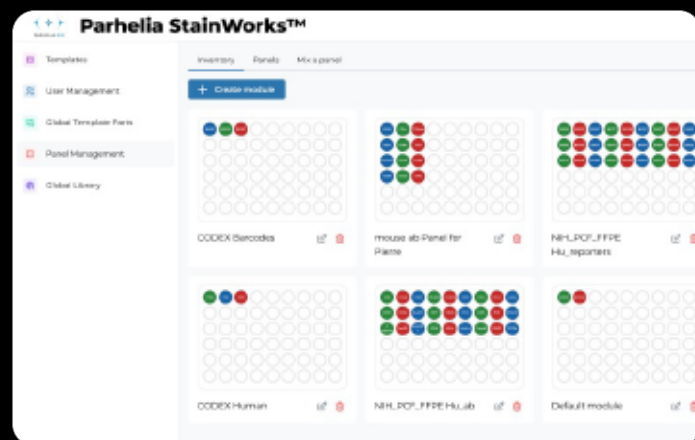
Suitable for Spatial Biology and Flow Cytometry

Multiplexing and multiomics techniques necessitate the painstaking preparation of staining cocktail mixtures containing the appropriate antibodies or probes.

The Spatial Station automates the panel mixing process with precision and efficiency. Design complex experiments and leave the antibody cocktail and FMO preparation to robotics.

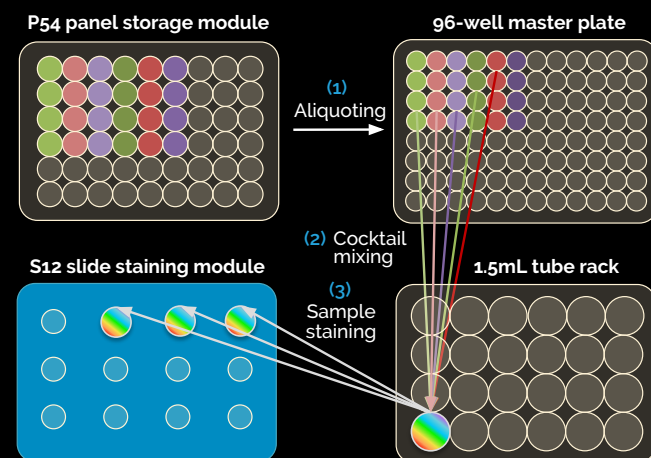
Build custom panels with Parhelia StainWorks™ software

- Track your inventory with precision capacitive liquid sensing
- Customize panel design and repeat on-demand



Onboard mixing enables automation of:

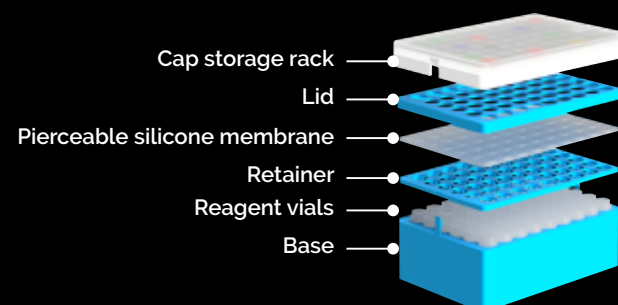
- Antibody cocktails
- Fluorescence minus one controls (FMOs)
- Reporter plates
- Single stains and more



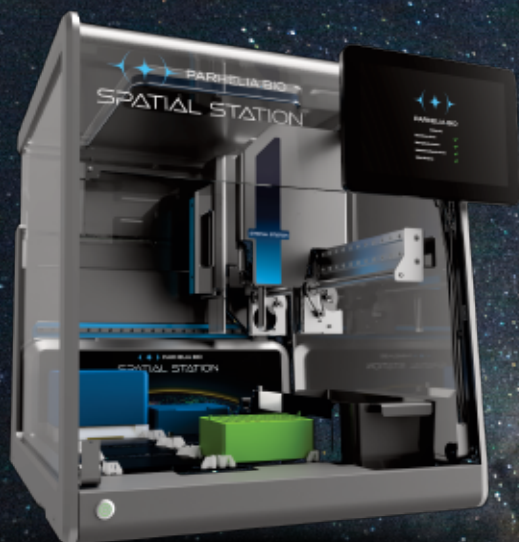
P54 module: a base for antibodies

Aliquot and store up to 54 antibody vials:

- Layered lid design avoids cross-contamination, tube capping, and recapping
- Store your annotated P54 module securely
- Scale to larger plex panels with multiple modules



SPATIAL STATION



**Purpose-built
to conquer spatial
sample prep
complexity.**

System Specifications	Spatial Station ST	Spatial Station ST+
Dimensions (L x W x H)	24 x 22 x 24 in (56 x 56 x 61 cm)	
Weight	85 lbs (38.5 kg)	
Incubation range	0-100 °C	
Sample throughput	1-48 (1-12 per module; 1 module temperature control)	
Software interface	Touchscreen; Panel mixing with StainWorks™	
Dead volume	0 µl	
Pipette volume	1-1000 µl	
Labware	Tubes (1.5, 15, 50 mL) screwcap vials, 6-96 well plates and blocks, buffer reservoirs	
Panel mixing	No	Yes
Part#	90001	90002

"With the Parhelia Spatial Station, we're delivering a solution that will accelerate research by automating the intricacies of sample prep – a task that, until now, has been a significant bottleneck for many scientists."

Nikolay Samusik, CEO and Co-founder Parhelia Biosciences



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