



High-Plex. High-Throughput.

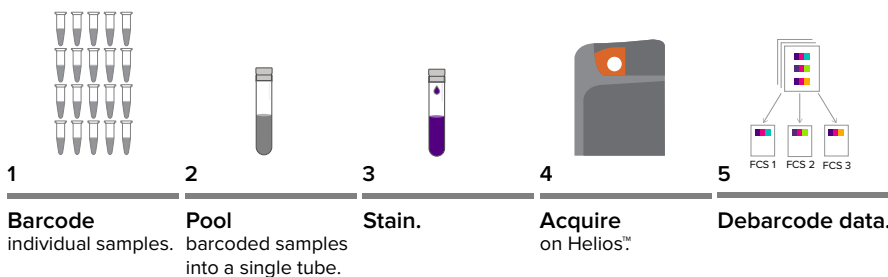
Sample multiplexing by cell barcoding for CyTOF

Streamline workflows and improve staining consistency with sample-specific cell barcoding.

Cell barcoding tags each sample with a unique identifier, enabling sample multiplexing for improved workflows and enhanced data quality.

Barcoded samples are stained together in a single tube, eliminating staining variability between samples and reducing antibody and reagent use. Acquisition time is faster, requiring only a single run of the multiplexed sample.

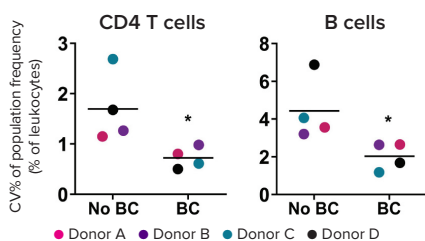
With cell barcoding, you can achieve higher sample throughput for scaled-up experiments and improved data consistency for large studies.



Standard workflow for barcoding. Individual samples are barcoded with a unique metal isotope code and combined with other samples for staining and acquisition as a single multiplexed sample. Data are debarcoded with CyTOF® Software for individual sample analysis.

Examples of barcoding in the literature

- Optimized mass-tag cell barcoding using palladium-based cell labeling and doublet-filtering scheme^{1,2}
- Streamlined workflow for up to 80 clinical samples with mass-tag cell barcoding³
- Staining and analysis of three tissue types simultaneously using anti-CD45 barcoding strategy⁴



Barcoding improves staining consistency.

Data from replicates of the same sample are compared between no barcoding (No BC) and barcoding (BC) protocols. Each point represents the CV% of five technical replicates per donor, and the horizontal line represents the grand mean of CV% per protocol.

Benefits of barcoding

Accessibility—Uses isotopes and workflows that are compatible with existing panel designs

Scaled-up experiments—Reduces processing time in experimental workflow, making it easier to increase sample throughput

Sample conservation—Enables efficient use of precious samples by allowing you to combine many samples in one tube

Increased data consistency—Minimizes batch effects and sample-to-sample technical variation when multiplexed samples are stained and acquired together

Cleaner data—Filters intersample cell doublets and multiplets by detecting more than one barcode per cell

Reagent savings—More economic use and lower usage of antibodies and reagents

Universal cell multiplexing with palladium-based barcodes

Easily combine up to 20 samples with ready-to-use kit.

The **Cell-ID™ 20-Plex Pd Barcoding Kit (PN 201060)** uses a combination of 3 of 6 stable palladium (Pd) isotopes to identify up to 20 fixed and permeabilized samples of any cell type, independent of species.

The kit combines the necessary reagents and barcoding tags to let you integrate barcoding into your next experiment. This method is compatible with downstream staining of surface, intracellular, nuclear and phosphorylated antigen targets that are not affected by fixation.

See the **Benefits of Palladium Barcoding Application Note (FLDM-00012)** for more information.



All-in-one universal cell barcoding kit. Contents include 3 sets of 20 Pd barcodes, buffers and solution.

Live-cell barcoding for more human leukocyte multiplexing options

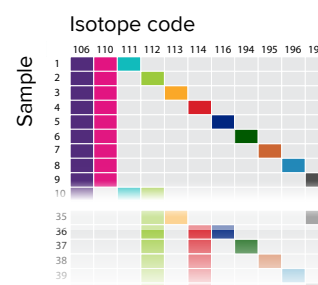
Scale up translational and clinical studies by barcoding 35 or more samples.

For customized multiplexing capability, live-cell barcoding is a flexible option that lets you vastly increase your multiplexing power to 35 samples or more.

Live-cell barcoding labels human white blood cell samples with anti-CD45 (a pan-leukocyte marker) antibodies selected from our catalog.

Choose from 12 metal-labeled anti-CD45 antibodies, including 4 new platinum tags, for greater flexibility to integrate barcoding with your panels and scale-up experiments.

See the **technical note** on best practices for using monoisotopic platinum-labeled antibodies for more information.



Example custom barcoding design. A 50-plus-plex design using an 11-choose-3 live-cell barcoding scheme combining CD45 antibodies conjugated with cadmium (106, 110–114, 116) and platinum (194–196, 198).

Choosing the right barcoding method for your research needs

Barcode Method	Advantages	Considerations
Palladium-based barcoding Cell-ID 20-Plex Pd Barcoding Kit (PN 201060)	<ul style="list-style-type: none"> • Universal, cell-agnostic • Ready-to-use kit and accompanying software • Unique tags allow maximum antibody panel size. 	<ul style="list-style-type: none"> • Adjustments to existing panels or workflows may be needed due to fix/perm step.
Live-cell barcoding Maxpar® anti-CD45 antibodies	<ul style="list-style-type: none"> • No fix/perm step required. Fix-sensitive epitopes are preserved. • Easily add to existing panels. • Flexible design allows scaling for sample number to 50-plus. 	<ul style="list-style-type: none"> • Barcoding scheme designed manually • Best for blood leukocytes, CD45-negative cells excluded

Speak with a technical support specialist about cell barcoding by visiting fluidigm.com/support

1. Behbehani, G.K. et al. *Cytometry Part A* 85 (2014): 1,011–1,019
2. Zunder, E.R. et al. *Nature Protocols* 10 (2015): 316–333
3. Thrash, E.M. et al. *STAR Protocols* 1 (2020): 100055
4. Lavin, Y. et al. *Cell* 169 (2017): P750–765.E17

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