

# HashMax™-5 Cell Hashing Antibodies

Each cell hashing barcode is made up of anti-CD29 (TS2/16) and anti-B2M (1H3F4)

Catalog No. G900081

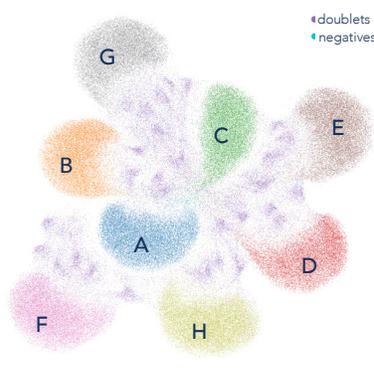
## Highlights

- **Broad Sample Compatibility** | Enables experiments with limited cell numbers and diverse sample types, opening new avenues for single-cell research.
- **Streamlined Workflow Integration** | Pre-titrated and validated for 10x Genomics Flex Fixed RNA Profiling and 5' Gene Expression assays (Next-GEM & GEM-X).
- **Superior Data Quality** | Significantly reduces undetectable multiplet rates and minimizes batch effects, ensuring robust and reliable single-cell data production.
- **Scalable Multiomics** | Perform cell hashing upstream of Feature Barcoding, allowing more samples and cells per reaction when paired with the MultiPro<sup>®</sup> Human Discovery Panel.
- **High-Capacity Multiplexing** | Analyze up to 128 samples in a single 10x Genomics Flex GEM using 8 unique HashMax™ codes and 16 Flex pool barcodes (**Fig 1**).
- **Balanced Sequencing** | Independent PCR handles for hashtags, antibodies, and RNA libraries enable high-quality, balanced, and cost-effective sequencing.

## 10x Genomics Flex Hashing

Undetectable Multiplet Rate (%)	Cells Loaded / Probe Barcode	Cells Recovered / Probe Barcode	Cells Equally Distributed on 16 Probe Barcodes	
			Cells Loaded / Well	Cells Recovered / Well
~0.4	825	500	13,200	8,000
~0.8	1,650	1,000	26,400	16,000
~1.6	3,300	2,000	52,800	32,000
~3.2	6,600	4,000	105,600	64,000
~4.8	9,900	6,000	158,400	96,000
~6.4	13,200	8,000	211,200	128,000
~8	14,500	10,000	232,000*	139,000*
~16	16,500	12,000	264,000*	192,000*

**Table 1** - Flex GEM recommended cell loading guidelines with extrapolated super-loading doublet percentages.



**Fig 1** - Hashing UMAP of 128 Human PBMC samples (160k cells) from one GEM (Next GEM Flex). Colors indicate hashing classification.

Probe BC (Flex)	1	2	9	10
Hashcode A	1560 (13.1%)	1498 (12.5%)	1,625 (13.3%)	1,526 (13.1%)
Hashcode B	1,165 (9.8%)	1,204 (10.0%)	1,215 (9.9%)	1,166 (10.0%)
Hashcode C	1,094 (9.2%)	1,184 (9.9%)	1,202 (9.8%)	1,191 (10.2%)
Hashcode D	1,194 (10.0%)	1,155 (9.6%)	1,309 (10.7%)	1,135 (9.7%)
Hashcode E	1,279 (10.8%)	1,305 (10.9%)	1,324 (10.8%)	1,290 (11.1%)
Hashcode F	1,230 (10.3%)	1,225 (10.2%)	1,171 (9.6%)	1,170 (10.0%)
Hashcode G	1,198 (10.1%)	1,206 (10.0%)	1,208 (9.9%)	1,201 (9.3%)
Hashcode H	1,138 (9.6%)	1,181 (9.8%)	1,138 (9.3%)	1,086 (9.3%)
Hash Doublet	2,002 (16.8%)	2,021 (16.8%)	1,974 (16.2%)	1,853 (15.9%)
Total	11,892	12,015	12,212	11,661

**Table 2** - Undetectable Flex pool doublets are resolved via HashMax™. GEM loaded at 1.3X maximum recommended by 10x Genomics\*. Negative cells ~0.3%.

\*Superloading not recommended by Proteintech Genomics. Example data generated for demonstration of enhanced multiplet identification.

## 10x Genomics 5' Hashing

HashMax™-based demux



SNP-based demux



HashMax™-based demux



CD34 RNA Expression



**Fig 2** - UMAP- 5' cell hashing results with PBMC. (Left) HashMax™ based demultiplexing. (Right) SNP based demultiplexing of same samples. 4 donors were used, each split into two & stained with HashMax™ antibodies.

**Fig 3** - 5' cell hashing results with 6 cell lines & CD34+ progenitors from bone marrow. UMAPs- (Left) HashMax™ based demultiplexing. (Right) Expression of the CD34 gene.

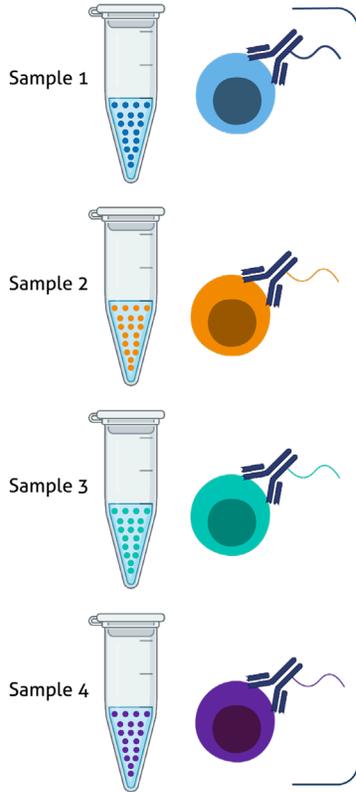
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## Workflow

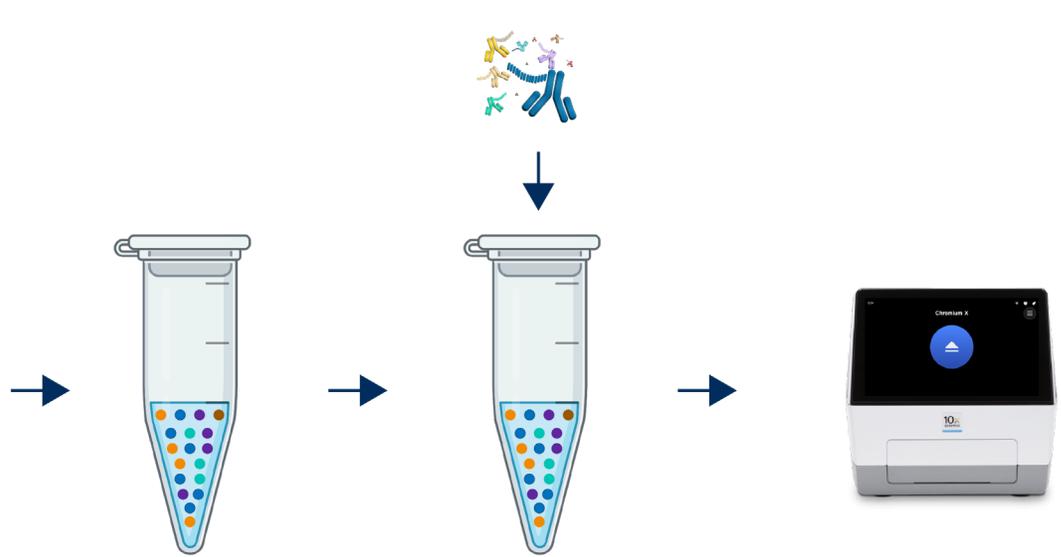
Stain with HashMax™ Antibodies



Pool Samples

Stain with MultiPro<sup>®</sup> Human Discovery Panel

10x Genomics Chromium



### Hash Kit 1 - G900081-KIT1-40RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode A G900123-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode B G900124-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode C G900125-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode D G900126-10RXNS

### Hash Kit 2 - G900081-KIT2-40RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode E G900127-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode F G900128-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode G G900129-10RXNS

MultiPro<sup>®</sup> HashMax™-5, Hashcode H G900130-10RXNS

### Hash Kit 3 - G900081-KIT3-80RXNS

All 8 Hashcodes from KIT1 and KIT2

More Information

Kit 1 or 2

**\$500 each**

KIT 3 - 7.5% Discount

**\$925 each**

