

QuantumCyte *CytoMask*

Advancing Molecular Pathology at the Cellular Level

The Quantumcyte CytoMask technology is a scalable, cost effective and automated system that enriches and extracts the molecular material directly from targeted cells delivering high accuracy results. Our system utilizes typical biopsies such as FFPE sections and cryopreserved tissues mounted on standard microscope slides. Further, CytoMask technology can process manually annotated slides and digital images, as well as your automatically annotated digital pathology images. The CytoMask output is compatible with most off-the-shelf NGS gene panels thus improving the specificity of your existing validated workflow (see Figure 1).

The Quantumcyte workflow combines identifying clinically important areas (CIAs), masking nonessential areas, and the extraction of nucleic acid or protein from the CIAs. The resulting extracts can then be processed via standard techniques including but not limited to qPCR, Sanger sequencing, NGS sequencing, or proteomic analysis.



Figure 1: Demonstrated cellular enrichment of distributed CIAs in FFPE sample for downstream NGS analysis. Region size ranges from 0.8 mm to 2.5 mm in this example.

“This pilot phase shows the tremendous potential of the CytoMask technology for use in clinical molecular diagnostics.”

– Department of Anatomical Pathology
Singapore General Hospital



CytoMask Proof of Principle

A technical pilot utilizing CytoMask for tumor cellular enrichment was performed on FFPE samples. One FFPE unstained slide per sample was digitally annotated by a pathologist. Nucleic acid was extracted for Ion Torrent 27 gene Hot Spot Panel with tertiary Ion Reporter analysis (Table 1). The goal was to increase both allele frequency (AF%) and quality scores (Q) for CytoMask enriched cells from CIAs versus classical manual scraping.

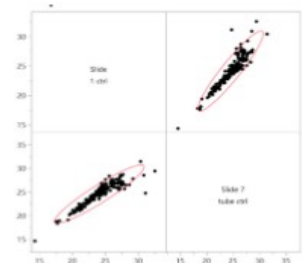
	Sequencing Quality (Panel Coverage)	Manual Scraping AF% Q	CytoMask AF% Q	Increase (%) AF% signal
Sample 1	100.00% (250X)	3.9 45.4	9.0 470	130
Sample 2	100.00% (250X)	9.2 374	12.3 911	33
Sample 3	100.00% (250X)	4.6 32	7.2 281	56

Table 1: Demonstrated increased signal-to-noise via CytoMask cellular enrichment for NGS applications. An increase in both Allele Frequency (AF%) and Quality Score (Q) was shown in Ion Reporter.

Nucleic Acid Metrics

CytoMask Yield (ng/1mm ²)	RNA	DNA
Breast Cancer	15-50	1-5
Head/Neck	2-35	20-50

Nucleic Acid yield is on par with standard extraction techniques but results varies greatly with tissue/tumor type.



Ordering information:

CytoMask Cellular Enrichment Assay (16 samples)	CM-00016
CytoMask Cellular Enrichment Assay (96)	CM-00096
CytoMask Cellular Enrichment Assay (1000)	CM-01000
CytoMask Cellular Enrichment Assay (10000)	CM-10000



For additional information or to place an order, please contact sales@quantumcyte.com