Cancer Chromosomal Microarray Analysis (CMA) Guide
**Why chromosomal microarray analysis (CMA) for cancer?**

CMA has a greater resolution and can not only identify the abnormalities that are detectable by both routine chromosome analysis and FISH analysis but can also detect submicroscopic aberrations. Importantly, CMA does not require dividing cells allowing use of fresh frozen tissue and formalin-fixed paraffin-embedded (FFPE). Furthermore, the ability to perform a CMA on FFPE tissue, allows the health professional to obtain chromosomal imbalance information without the need for fresh tissue.

**Comparative genomic hybridization (CGH) vs single nucleotide polymorphism (SNP) arrays?**

CGH arrays are designed to detect losses and gains representing deletions, duplications or amplifications, and LOH (caused by deletions) of the cancer genome. Additionally, SNP arrays have the ability to detect copy-number neutral LOH.

**Limitations:** CMAs will not detect low level mosaicism, true balanced translocations, inversions, or point mutations that may be responsible for the clinical phenotype. For targeted point mutations of cancer-related genes please choose the Cancer Gene Mutation Panel (Test Code #9700)

<table>
<thead>
<tr>
<th>Array Name</th>
<th>Test Code</th>
<th>Average Resolution*</th>
<th>Sample Type</th>
<th>Cancer Specific</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>180K CGH</td>
<td>9500</td>
<td>1 Kb (large exons) to 10 Kb (cancer genomic regions) in targeted regions, and 20 Kb in backbone regions.</td>
<td>Blood, BM, FFPE, fresh frozen tissue</td>
<td>Y</td>
<td>This test can be used to detect CNVs in different cancer tissues including hematological malignancies as well as solid tumors. This array targets &gt;500 cancer genes and cancer-related genes.</td>
</tr>
<tr>
<td>180K CGH/SNP</td>
<td>9505</td>
<td>1 Kb (large exons) to 10 Kb (cancer genomic regions) in targeted regions, and 20 Kb in backbone regions.</td>
<td>Blood, BM, FFPE**, fresh frozen tissue</td>
<td>Y</td>
<td>This array contains both oligo probes that detect CNVs and SNP probes that detect LOH and segmental or whole chromosome UPD and can be used for different cancer tissues including hematological malignancies as well as solid tumors. This array targets &gt;500 cancer genes and cancer-related genes.</td>
</tr>
<tr>
<td>BCM 400K CGH/SNP</td>
<td>9510</td>
<td>1 Kb (large exons) to 10 Kb (cancer genomic regions) in targeted regions, and 12 Kb in backbone regions.</td>
<td>Blood, BM, FFPE**, fresh frozen tissue</td>
<td>Y</td>
<td>Designed by the CGL at BCM. 2,300 cancer genes or cancer-related genes, 235 cancer-associated miRNAs. Average of 6 probers/exon.</td>
</tr>
<tr>
<td>CytoScan™ HD</td>
<td>9515</td>
<td>Sensitivity for copy number changes &gt;400 kb.</td>
<td>Blood, BM, fresh frozen tissue</td>
<td>N</td>
<td>High resolution SNP array. Whole genome coverage. Over 2.6 million copy number markers.</td>
</tr>
<tr>
<td>GeneChip® Human Mapping 250K Nsp</td>
<td>9520</td>
<td>Can detect lesions &gt;300 Kb.</td>
<td>Blood, BM, FFPE, fresh frozen tissue</td>
<td>N</td>
<td>This array enables screening of the entire genome for gross abnormalities. Probes for 262,000 SNPs (up to five probes per marker). Assessing LOH and UPD.</td>
</tr>
</tbody>
</table>

* LOH less than 10 Mb in size will not be reported.

** This array cannot reliably detect LOH on FFPE samples older than 5 years. For FFPE samples older than 5 years, you may choose our 180K CGH Array (#9500) instead.

BM, bone marrow; CNV, copy number variation; FFPE, formalin-fixed paraffin-embedded; LOH, loss of heterozygosity; SNP, single nucleotide polymorphism; UPD, uniparental isodisomy.
Myelodysplastic Syndrome (BCM 400K CGH/SNP Array)

Choosing the Right CMA

Cancer Chromosomal Microarray Analysis

Is sample type FFPE?

No

BM, blood, freshly frozen tissue. For example, hematologic disorders.

180K CGH Array (TC #9500)

180K CGH/SNP Array (TC #9505)

or

BCM 400K CGH/SNP Array (TC #9510)

or

CytoScan™ HD Array (TC #9515)

Yes

Arrays compatible with FFPE samples.

FFPE Sample > 5 Years

Copy number variation (CNV) and LOH (including copy-number neutral LOH)

180K CGH Array (TC #9500)

FFPE Sample < 5 Years

Copy number variation (CNV) and LOH (including copy-number neutral LOH)

180K CGH/SNP Array (TC #9505)

or

BCM 400K CGH/SNP Array (TC #9510)

or

GeneChip® Human Mapping 250K Nsp Array (TC #9520)
Shipping & Handling

Please call 1-877-798-1063 prior to sending sample. Kits for submitting samples can also be obtained by calling 1-877-798-1063.

Additional Information:

Please visit http://www.bcm.edu/cancergeneticslab/ for additional information regarding sample requirements. Requisition forms can also be found on our site.