Singapore General Hospital
SingHealth

CYTOGENOMIC MICROARRAY ANALYSIS (CMA) TEST: KARYOTYPE&CMA FOR CLL, FISH&CMA FOR MM, CMA-HAEMATOLOGICAL AND CMA-SOLID TUMOURS

Synonym(s): KARY&CMA-CLL, FISH&CMA-MM, CMA-HAEMATOLOGICAL, CMA-SOLID-TUMOURS

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Lab Section Category	**Cytogenetics - CMA** Click here to find out more about the **write-up (/clinical-departments-centers/pathology/pathology-handbook/lab discipline-special-instructions/pages/cytogenetics.aspx)**.
Indications	CMA test detects both large (whole chromosome) and very small (in exon level) chromosomal gains/losses, at an average revolution of 25 kb for karyotype&CMA for CLL, FISH&CMA for MM and CMA-Haematological. In addition, copy number neutral loss of heterozygosity (CN-LOH) which may confer an adverse prognosis to the disease may also be detected. It is recommended for patients with haematological disorders at diagnosis or relapse. It is not suitable for patients following treatment or for monitoring minimal residual disease. For CMA-Solid Tumours the overall average resolution is 9 Mb and the information of CN-LOH is not able to be obtained. Karyotype&CMA for CLL is a test package that includes CMA and karyotyping for patients with chronic lymphocytic leukaemia (CLL). FISH&CMA for MM is a test package that includes CMA and FISH tests with 3 translocation probes (FGFR3/IGH, CCND1/IGH and IGH/MAF) for patients with multiple myeloma. CMA-Haematological is a standalone CMA test for myelodysplastic syndrome (MDS), acute lymphoblastic leukaemia (ALL), acute myeloid leukaemia (AML) and other haematological disorders. CMA-Solid Tumours is a standalone CMA test for renal cell carcinoma (RCC).

Specimen Required	Karyotype&CMA for CLL: collect 2-3ml peripheral blood/bone marrow specimen each in 2 lithium heparinized vacutainers. FISH&CMA for MM: collect 2ml bone marrow (2nd aspirate) specimen in 1 lithium heparinized vacutainer or 2ml bone marrow (3rd aspirate onwards) specimen each in 2 lithium heparinized vacutainers. CMA-Haematological: collect 2ml bone marrow (2nd aspirate preferred) specimen in a lithium heparinized vacutainer. CMA-Solid Tumours: 8-10 sections of 5µm FFPE tumour sections, accompanied by a copy of H&E section with the tumour region marked out.
Storage and Transport	Keep at room temperature and send to the lab on the sampling date, or keep at 4°C and send to the lab on the next day.
Method	CMA is carried out using the Agilent SurePrint G3 Cancer CGH+SNP (AMADID 072115 or 030587) 4x180K slide. For karyotype&CMA for CLL, FISH&CMA for MM and CMA-Haematological the referred sample and reference Agilent Euro Male/Female sample are processed with the Agilent Complete SureTag Enzymatic Labeling kit. For CMA-Solid Tumours the referred sample and reference control sample are processed using Agilent ULS labelling kit. Data are analyzed with the Agilent Cytogenomics software version 3.0.1.1 using the default Mosaic Analysis Method.
Test Result	CMA test results will be reported as normal, abnormal or unavailable (insufficient DNA obtained from samples). Abnormal CMA results are reported in accordance to the International System for Human Cytogenomic Nomenclature (ISCN, 2016). In addition, reports will include interpretation, comments and references.

Turnaround Time	Within 21 days.
Day(s) Test Set up	Monday – Friday (office hours)

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Change History Notes

- **01 Oct 2015 11:07 AM**
  CHROMOSOME MICROARRAY ANALYSIS (CMA) TEST: KARYOTYPE&CMA FOR CLL, FISH&CMA FOR MM AND CMA-HAEMATOLOGICAL available w.e.f 1 Oct 2015