Prenatal and Pregnancy Loss Testing

Pregnancy Loss Microarray
also known as: Pregnancy Loss Array, CGH

TEST DESCRIPTION:
This test evaluates fetal cells after a pregnancy loss and is performed using an ISCA 180K platform including 120,000 oligonucleotides and 60,000 single nucleotide polymorphisms (SNP).

TEST DETAILS and COMPLEMENTARY TESTING:
- In addition to fetal tissue, a maternal blood sample (paternal if a patient’s pregnancy was the result of egg donation) is requested to rule out maternal cell contamination, which ensures that the microarray results are representative of the fetus rather than the mother.
- Prenatal Microarray should be ordered instead of this test to analyze fetal cells during a pregnancy.
- Postnatal testing on maternal, paternal, or newborn blood after delivery, including Postnatal Chromosome Analysis, Postnatal FISH, or Postnatal High Density SNP Microarray, must be ordered separately.

ADVANTAGES:
- Allows for appropriate patient management and calculation of accurate recurrent risks
- Evaluates hundreds of genetic conditions across the genome with one test
- Detects aneuploidy (including monosomy, trisomy, and sex chromosome abnormalities) and triploidy
- Identifies deletions and duplications in regions known to be associated with well-characterized microdeletion and microduplication syndromes
- Provides enriched coverage of subtelomeric regions, often undetectable by traditional chromosome analysis
- More comprehensive than individual FISH tests
- This test can rule out maternal cell contamination when maternal blood is submitted along with a tissue sample
- Does not require cell culture, thus reducing test failure rates often seen with traditional cytogenetic methods
- Often allows for results on suboptimal specimens for which chromosome analysis is not feasible

LIMITATIONS:
- Cannot identify all genetic conditions or the cause of all birth defects or pregnancy losses
- Does not detect changes in the DNA sequence of genes
- Cannot detect balanced chromosome rearrangements (less likely the cause of a pregnancy loss)

INDICATIONS FOR TESTING: Approximately 60% of early pregnancy losses are caused by a chromosome abnormality, and a genetic cause for a loss may be identified at any gestational age. For some patients, knowing the cause for a loss may provide comfort. For many, this test is a cost-efficient tool that provides answers, accurate recurrence risks for future pregnancies, and optimal obstetric management approaches following a miscarriage or stillbirth.

SPECIMEN COLLECTION & TRANSPORT:
Complimentary test kits are available upon request, but are not required.

SAMPLE TYPE and REQUIREMENTS:
- products of conception (POC) or chorionic villi sampling (CVS):
  - 1 cm³ (sterile) fetal tissue and/or villi in tissue culture media or PBS
  - Preferred fetal tissue sample sites include buttocks or thigh. If fetal tissue is not available placental villi can be utilized. Separate villi from maternal blood and deciduas to reduce the chance for maternal cell contamination.
- tissue, paraffin embedded: 3 curls of confirmed fetal tissue, 25-30 microns thick
• **TEST RECOMMENDATION:** When Microarray is ordered, maternal blood is requested in addition to the tissue specimen. The blood sample is used to help interpret test results and to rule out maternal cell contamination. This is NOT chromosome analysis (karyotyping) on the blood sample.
  o **maternal blood:** 2 ml whole blood in sodium heparin tube (green top)
    ▪ Send paternal blood (in place of maternal blood) ONLY when the pregnancy resulted from egg donation.

**SHIPPING:**
- Maintain and ship samples at room temperature.
- Coordinate transport for sample to be received in our laboratory within 24-48 hours of collection.
  o **LOCAL:** Call 402-559-5070 (option 1)
  o **OUT OF AREA:** Prior to shipment, please fax the completed test request form to 402-559-7248, including the FedEx® airbill tracking number.
    ▪ Saturday delivery MUST be checked when sending FedEx® on Friday.
    ▪ Please include Internal Billing Reference # 3155070600 on the FedEx® airbill.
    ▪ **Ship To:** Human Genetics Laboratory – Zip 5440
      UNMC Shipping & Receiving Dock
      601 S. Saddle Creek Road
      Omaha, NE 68106

**REQUIRED FORM:** The following forms can be downloaded via our website.
- Prenatal and Pregnancy Loss Test Request Form

**OPTIONAL FORM:**
- Informed Consent for Genetic Testing

**POTENTIAL TEST RESULTS:**

**NORMAL:**
- A **normal** result indicates no clinically-significant chromosome abnormalities were identified.
  o arr[hg19](1-22,X)x2 (female)
  o arr[hg19](1-22)x2,(XY)x1 (male)

**ABNORMAL:**
- Results are reported by location in the genome, including chromosome and size.
- An **abnormal** result indicates that a clinically-significant chromosome abnormality was identified in the fetus that likely provides an explanation for the indications.
  o **Uncertain Clinical Significance (UCS)** – Our Prenatal Microarray is designed to identify clinically-relevant anomalies. However, in rare cases, a reportable anomaly may be identified for which a definitive classification (i.e., normal or abnormal) is not possible. In those cases, these anomalies will be reported as variants of uncertain clinical significance. Uncertain variants may also be classified as “Likely Pathogenic” or “Likely Benign” based on the ACMG recommendations for variant classification.
  o **Deletion:** Part of a chromosome (genetic material) is missing. Some may be very small and only include one gene and others are bigger and may involve numerous genes.
  o **Duplication:** Extra chromosome material is present in the patient’s DNA.
  o Parental testing (Postnatal Chromosome Analysis on maternal and/or paternal blood) may be recommended in order to clarify whether the result is de novo or familial for the purpose of recurrence risk calculation.

**TURN-AROUND-TIMES:** Results are typically available in 1 week when performed on POC or CVS; 2 weeks when performed on paraffin embedded tissue.
BILLING: Our laboratory offers patient/self-pay, insurance (including Medicare/Medicaid), and client/institution billing options. Verifying coverage requirements or obtaining preauthorization PRIOR TO OR AT THE TIME OF SPECIMEN COLLECTION is often necessary. We provide preauthorization services upon request by calling 402-559-5070 (option 3); the following form is helpful for obtaining the information required by insurance providers and can be downloaded via our website.

- Request for Insurance Pre-Authorization

In some circumstances, a test may be warranted even though insurance coverage is denied or not guaranteed. For these situations, we request the following form be signed by the patient and submitted with the sample. This helps inform patients of their potential financial responsibility, should the costs of genetic testing not be paid by their insurance provider.

- Advanced Beneficiary Notice of Noncoverage (ABN) – required when billing Medicare

CPT CODES:
- CVS: 81229, 88235
- tissue, fresh (POC): 81229, 88233
- tissue, paraffin embedded: 81229

PRICING: For current costs contact the laboratory billing staff at 402-559-5070 (option 3).

RESOURCES: The following resources can be downloaded via our website, or you may request brochures for your clinic by contacting our marketing specialist at 402-559-6935 | humangenetics@unmc.edu.

- PATIENT BROCHURE: Amniocentesis (English)
- PATIENT BROCHURE: Amniocentesis (Spanish)
- PATIENT BROCHURE: CVS (English)
- PATIENT BROCHURE: CVS (Spanish)

REFERENCES:

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