

2009033 Fragile X (*FMRI*) with Reflex to Methylation Analysis

FRAG X PCR

Specimen Required: Collect: Lavender (K₂EDTA), Pink (K₂EDTA), or Yellow (ACD Solution A or B).
Specimen Preparation: Transport 5 mL whole blood. (Min: 1.5 mL)
Storage/Transport Temperature: Refrigerated.
Stability (collection to initiation of testing): Ambient: 1 week; Refrigerated: 1 month; Frozen: 6 months

Interpretive Data:

Background Information for Fragile X (*FMRI*)

Characteristics: Fragile X syndrome, the most common heritable form of mental retardation, is characterized by moderate mental retardation in males and mild mental retardation in females, hyperactivity, perseverative speech, social anxiety, poor eye contact, hand flapping or biting, autism spectrum disorders behavioral phenotype, and connective tissue anomalies. Adult males may have physical findings including: macroorchidism, a long narrow face, prominent ears and jaw, and a single palmar crease.

Incidence: 1 in 4,000 Caucasian males and 1 in 8,000 Caucasian females; unknown in other ethnicities.

Inheritance: X-linked dominant.

Penetrance: Reduced in females.

Cause: Expansion of the *FMRI* gene CGG triplet repeat.

Full mutation: >200-230 CGG repeats (methylated)

Premutation: 55-200 CGG repeats (unmethylated)

Intermediate: 45-54 CGG repeats (unmethylated)

Normal: 5-44 CGG repeats (unmethylated)

Clinical Sensitivity: 99 percent.

Methodology: Triplet repeat-primed polymerase chain reaction (PCR) followed by size analysis using capillary electrophoresis. Methylation-specific PCR analysis is performed for CGG repeat lengths of 100 or greater. Methylation analysis is used to distinguish between premutation and full mutation alleles.

Analytic Sensitivity and Specificity: 99 percent.

Limitations: Diagnostic errors can occur due to rare sequence variations.

Phenotype	Number of CGG Repeats
Unaffected	<45
Intermediate	45-54
Premutation	55-200
Affected	>200

See Compliance Statement C: www.aruplab.com/CS

Note: If a CGG repeat of 100 or greater is detected by PCR and Capillary Electrophoresis, methylation analysis will be added. Additional charges apply.