Fragile X Syndrome
CGG triplet repeats on FMR1 gene

Indications for Molecular Testing
- Individuals of either sex with mental retardation, developmental delay, or autism, especially if they have physical or behavioral characteristics of Fragile X Syndrome [long faces, large ears, prominent jaws, post-pubertal macroorchidism], a family history of Fragile X Syndrome, or male or female relatives with undiagnosed mental retardation.
- Individuals seeking reproductive counseling who have a family history of Fragile X Syndrome or a family history of undiagnosed mental retardation.
- Fetuses of known carrier mothers.

Testing Methodology
Screening procedure utilizes Polymerase Chain Reaction (PCR). If unable to determine fragment sizes by PCR, then direct mutation testing is performed by Southern analysis (Methylation). Southern analysis involves determination of restriction endonuclease DNA fragment sizes and methylation status with the StB12.3 FMR1 probe.

Interpretation of DNA analysis
Identification of CGG triplet repeat expansion mutations in the FMR1 gene is associated with X-linked, pseudo-dominant inheritance of mental retardation. Normal individuals have between 6 and 52 (median 30) repeats of CGG per FMR1 allele. Repeat numbers from 52 to about 150 characterize individuals with premutation alleles, i.e. they are carriers of an unstable repeat region. A new clinical phenotype, Fragile X-Associated Tremor Ataxia syndrome (FXTAS) has been observed in some males with a premutation allele and premature ovarian failure (POF) in some females. Further expansion occurs in the meiosis of germ cells of carrier females who may, in turn, pass on larger, expanded (>200) copies or full mutation alleles to their offspring. Individuals with full mutation-size alleles have the highest risk of mental retardation and associated phenotypic features. Individuals with full mutation alleles that are unmethylated may have milder clinical features and intermediate mental function.

Specimen Requirements
Peripheral blood--1 lavender-top (EDTA) tube. Invert several times to mix blood.
Prenatal Diagnosis--1 x 10^6 nucleated cells in cell medium (amniocytes nor chorionic villi sampling (CVS) is not available) Do not freeze. Forward promptly at ambient temperature to the following address:

Molecular Diagnostic Laboratory
Barnes-Jewish Hospital, Institute of Health
Mail Stop 90-28-344
425 South Euclid Avenue, Room 5970
St. Louis, MO 63110

Clinical information must be provided with specimen referral in order to correctly interpret test results.

Current Pricing
Contact Lab Customer Service for current pricing 314 362-1470.
CPT codes: PCR 81243, Southern analysis (additional) 81244

OSHU DNA Diagnostic Lab, Version 4 protocol