Clinical Use
- Confirm diagnosis of 21-hydroxylase deficiency (21-OHD)
- Screen for 21-OHD carrier status in at-risk individuals
- Prenatal diagnosis of 21-OHD

Reference Range
Negative (no mutations detected)

Interpretive Information
Positive (mutations detected)
- 21-hydroxylase deficiency (carrier or affected)

Clinical Background
21-Hydroxylase deficiency, the most common cause of congenital adrenal hyperplasia (CAH), is an autosomal recessive disorder caused by mutations or rearrangements in the CYP21A2 gene on chromosome 6. The deficiency is characterized by decreased cortisol and increased androgen blood levels. Severe reduction in 21-hydroxylase activity causes classic CAH, the simple virilizing form (25% of cases), and/or the salt-wasting form, which is further characterized by decreased aldosterone levels. Onset occurs prenatally and, if detected prenatally, it can be treated to reduce virilization in affected females. Non-classic CAH, on the other hand, presents postnatally with signs of hyperandrogenism.

Testing for the more common mutations can detect both relevant mutations in 81% and 1 mutation in about 18% of affected individuals. Preparation for prenatal testing requires mutation analysis of parents and/or an affected offspring.

Method
- Polymerase chain reaction (PCR) and DNA mini-sequencing
- Common mutations sought: P30L; Intron 2 5′g; G110del8nt; I172N; exon 6 cluster of I236N, V237E & M239K; V281L; F306+1nt; Q318X; R356W; and P453S
- Deduction of deletions and recombinations between CYP21A2 and its pseudogene

Specimen Requirements
5 mL room temperature whole blood
3 mL minimum
Collect blood in a lavender-top (EDTA) or yellow-top (ACD solution B) tube.
For prenatal testing, submit amniotic fluid, CVS sample, or cultured cells from either source.