RDH5 Gene Testing in Fundus Albipunctatus

Disorder also known as: 11-cis Retinol Dehydrogenase; Retinol Dehydrogenase 1 (RDH1)

Clinical Features:
Fundus albipunctatus is a retinal disorder characterized by night blindness and delayed dark adaptation after exposure to bright light, which typically presents during early childhood The fundi of affected individuals contain multiple small, white or pale yellow dots in the retinal pigment epithelium, which may or may not involve the macula. These dots can remain unchanged, become more prominent, or can fade during aging; new dots may also appear. The dark-adaptation curve of affected individuals features prolonged recovery of cone and rod sensitivity and electroretinogram cone and rod amplitudes are markedly reduced after 30-40 minutes of dark adaptation; however, they may come to normal or near-normal levels after many hours of adaptation.[1] Niwa et al. showed that approximately 38% of individuals with FA have extensive cone dysfunction.[2] Variants in the RLBP1 gene have also been reported in FA patient. Genetic testing for RLBP1 is available at GeneDx; please refer to its gene-specific information sheet for further information.

Inheritance Pattern/Genetics:
Pathogenic variants in the RDH5 are inherited in an autosomal recessive manner. The vast majority of pathogenic variants observed in the RDH5 gene are missense substitutions; however, frameshift variants have also been observed.[3,5,6]

Test Methods:
Using genomic DNA obtained from the submitted biological material, bi-directional sequence of the coding exons (exons 2-5) and splice junctions of the RDH5 gene is analyzed to evaluate for a variant in this gene. Variants found in the first person of a family to be tested are confirmed by repeat analysis using sequencing, restriction fragment analysis, or another appropriate method.

Test Sensitivity:
The majority of studies performed examining fundus albipunctatus have been case studies or small familial studies. The identification of RDH5 variants in affected individuals with FA in these studies has ranged from 75% to 100%. [7,3,4] RLBP1 is another gene associated with FA.

References:

1. Dryja TP (2000) Am J Ophthalmol 130(5):547-63.
2. Niwa et al., (2005) Invest Ophthalmol Vis Sci 46(4):1480-5.
3. Nakamura et al., (2000) Invest Ophthalmol Vis Sci 41(12):3925-32.
4. Nakamura et al. (2003) Doc Ophthalmol 107(1):3-11.
5. Liden et al., (2001) J Biol Chem 276(52):49251-7.
6. Driessen et al., (2001) Ophthalmology 108(8):1479-84.
7. Yamamoto H et al., (1999) Nat Genet 22:188-91.