Lipopolysaccharide-Responsive, Beige-Like Anchor Protein

Alternative Names
LRBA
LBA
Cell Division Cycle 4-Like Protein
CDC4L
Cdc4-Like Protein

Record Category
Gene locus

WHO-ICD
N/A to gene loci

Incidence per 100,000 Live Births
N/A to gene loci

OMIM Number
606453

Mode of Inheritance
N/A to gene loci

Gene Map Locus
4q31.3

Description
The LRBA gene encodes a multi-domain protein belonging to the WDL-BEACH-WD protein family. The protein is made up of the Plekstrin Homology (PH) like domain, the BEACH domain and the highly conserved WD40 domain. While the exact role of LRBA has not yet been fully elucidated, it is postulated to play a role in regulating the expression of the CTLA4 gene as well as in signal transduction and vesicle trafficking to enable the secretion and membrane deposition of immune effector molecules.

The gene has been implicated in Common Variable Immunodeficiency 8 with Autoimmunity (CVID8), a phenotypically heterogeneous disorder characterized by recurrent respiratory tract infections, autoimmune disorders, hypogammaglobulinemia, and organomegaly.

Molecular Genetics
The LRBA gene is located on the long arm of chromosome 4. It spans a length of 751 kb and its coding sequence consists of 61 exons. The gene encodes a 319 kDa protein made up of 2863 amino acids. Alternative splicing results in an additional isoform made up of 2851 amino acids. The gene is expressed in multiple human cells including hematopoietic, neural, gastrointestinal and endocrine cells. More than a dozen homozygous mutations in the LRBA gene have been found to result in CVID8. Most of these mutations result in little to no expression of the LRBA protein.

Epidemiology in the Arab World

Lebanon

Alkhairy et al. (2016) analyzed a 6-year-old Lebanese girl suffering from hypogammaglobulinemia, organomegaly, thrombocytopenia, arthralgia, growth retardation, seizures and respiratory tract infection. The patient was born to consanguineous parents. Whole exome sequencing uncovered a novel LRBA mutation (c.2963delT) resulting in a frameshift deletion and premature truncation (p.N988fs*7). The mutation was predicted to result in the loss of LRBA protein expression.

References
Alkhairy OK, Abolhassani H, Rezaei N, Fang M, Andersen KK, Chavoshzadeh Z, Mohammadzadeh I, El-Rajab MA, Massaad M, Chou J, Aghamohammadi A, Geha RS, Hammarström L. Spectrum of Phenotypes Associated with Mutations in LRBA. J Clin Immunol. 2016; 36(1):33-45. PMID: 26707784.

Related CTGA Records
Immunodeficiency, Common Variable, 8, With Autoimmunity

External Links
https://ghr.nlm.nih.gov/gene/LRBA
https://www.genecards.org/cgi-bin/carddisp.pl?gene=LRBA

Contributors

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