LAMA2 Gene

Subjects: Genetics & Heredity
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Laminin subunit alpha 2

genes

1. Introduction

The *LAMA2* gene provides instructions for making a part (subunit) of certain members of a protein family called laminins. Laminin proteins are made of three different subunits called alpha, beta, and gamma. There are several forms of each subunit, and each form is produced from instructions carried by a different gene. The *LAMA2* gene provides instructions for the alpha-2 subunit. This subunit, together with the beta-1 and gamma-1 subunits, forms the laminin 2 protein, also known as merosin or laminin-211. The alpha-2 subunit, along with the beta-2 and gamma-1 subunits, also forms another laminin called laminin 4, sometimes known as laminin-221.

Laminins are found in an intricate lattice of proteins and other molecules that forms in the spaces between cells (the extracellular matrix). There, the laminins help regulate cell growth, cell movement (motility), and the attachment of cells to one another (adhesion). They are also involved in the formation and organization of basement membranes, which are thin, sheet-like structures within the extracellular matrix that separate and support cells in many tissues. Laminin 2 and laminin 4 play a particularly important role in the muscles used for movement (skeletal muscles). The laminins attach (bind) to other proteins in the extracellular matrix and in the membrane of muscle cells, which helps maintain the stability of muscle fibers.

2. Health Conditions Related to Genetic Changes

2.1. LAMA2-Related Muscular Dystrophy

More than 100 *LAMA2* gene mutations have been identified in individuals with *LAMA2*-related muscular dystrophy, a disorder that causes weakness and wasting (atrophy) of skeletal muscles. This condition generally appears in one of two ways: as a severe, early-onset type or a milder, late-onset form. Most *LAMA2* gene mutations that cause early-onset *LAMA2*-related muscular dystrophy result in the absence of functional laminin alpha-2 subunit. Mutations that cause late-onset *LAMA2*-related muscular dystrophy usually result in a reduction (deficiency) of functional laminin alpha-2 subunit. Deficiency or absence of the laminin alpha-2 subunit results in a corresponding lack of laminin 2 and laminin 4, reducing the strength and stability of muscle tissue and leading to the signs and symptoms of *LAMA2*-related muscular dystrophy.

3. Other Names for This Gene

- LAMA2_HUMAN
- laminin M chain
- laminin subunit alpha-2
- laminin subunit alpha-2 isoform a precursor
- laminin subunit alpha-2 isoform b precursor
- laminin, alpha 2
- laminin-12 subunit alpha
- laminin-2 subunit alpha
- laminin-4 subunit alpha
- LAMM
- merosin heavy chain

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