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Titin

(`'taɪtɪn/`), also known as **connectin**, is a protein that in humans is encoded by the *TTN* gene.^{[1][2]} Titin is a giant protein that functions as a molecular spring which is responsible for the passive elasticity of muscle. It is composed of 244 individually folded protein domains connected by unstructured peptide sequences.^[3]

These domains unfold when the protein is stretched and refold when the tension is removed.^[4]

Titin is the largest known protein.^[5] Furthermore the gene for titin contains the largest number of exons (363) discovered in any single gene.^[6]

Titin is important in the contraction of striated muscle tissues. It connects the Z line to the M line in the sarcomere. The protein contributes to force transmission at the Z line and resting tension in the I band region.^[7] It limits the range of motion of the sarcomere in tension, thus contributing to the passive stiffness of muscle. Variations in the sequence of titin between different types of muscle (e.g., cardiac or skeletal) has been correlated with differences in the mechanical properties of these muscles.

Linguistic significance

The name titin is derived from the Greek Titan (a giant deity, anything of great size).^[18]

As the largest known protein, titin also has the longest IUPAC name. The full chemical name, which

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starts *methionyl...* and ends *...isoleucine*, contains 189,819 letters and is sometimes stated to be the longest word in the English language, or any language.^{[19] [20]} However, lexicographers regard generic names of chemical compounds as *verbal formulae* rather than English words.^[21]