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# MYOSINS: LONG KNOWN BUT STILL UNKNOWN ACTIN-BASED MOLECULAR MOTORS

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Myosin, the ATP-fuelled actin-based motor was first discovered in skeletal muscle (in late 30. of the 20th century) and shown to be the key player, along with actin, in muscle contraction. Since then numerous myosins were identified in all *Eukaryota* (including plants and fungi) and now they form a large superfamily consisting of over 30 distinct classes. Myosins are ubiquitously but differentially expressed in every cell and generally, the more complicated organism, the higher number of myosin isoforms representing the higher number of families it contains. For example, in humans 40 genes are encoding myosins that belong to 12 classes. Besides well understood role in muscle contraction, these molecular motors are involved in a panoply of cellular functions such as cell migration, intracellular transport, cytokinesis, endo- and exocytosis, and trancription. Mutations within genes encoding numerous myosins were found to be associated with many human pathologies such as for example blindness, deafness, neurological disorders and familial hypertrophic cardiomyopathy. The structure-function relationships within myosin superfamily with the context of human pathology will be discussed.