

# Myosin

**Myosin** is a protein, that is one of the main functional and structural components of a muscle fibre. It occurs in all animal cells as the basis of the locomotor apparatus, the cell cytoskeleton.

## Structure

The molecular weight of myosin is 480,000. There are seventeen different classes (types), in human muscles there is **type II myosin**. The molecule itself consists of 6 polypeptide chains: 2 heavy and 4 light. The heavy chains wrap around each other and form a "tail" of the molecule on one side, and a double globular structure on the other, the so-called "head". 2 light chains are attached to each "head". The "head" turns into a "tail" in a flexible "neck".

## Myosin myofilament

200 identical myosin molecules, gradually overlapping each other longitudinally, form a *myosin myofilament* by mutual connection. Their "tails" are formed by the body of the myofilament. Myosin "heads" on flexible "necks" protrude from the body of the myofilament at regular intervals. A myofilament is 1.6 µm long. In the cross-section, the "heads" are located every 60° (6 around the circumference).

## Function

Each „head“ has an actin- binding site and an ATP-hydrolase enzyme. The enzyme releases the chemical energy that is needed for **active movement** in the "neck", enabling mutual displacement of actin and myosin myofilaments and subsequent muscle contraction (muscle contraction).

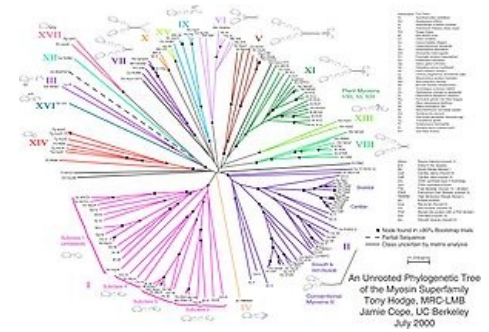
## Links

### related articles

- Actin
- Myofibril ultrastructure, contraction mechanism

### References

- KITTNAR, Otomar. *Lékařská fyziologie*. 1. edition. Praha : Grada, 2011. ISBN 978-80-247-3068-4.



Phylogenetic "tree" of myosin (2000)



Detail of the double "head" of myosin.