

Abstract

Actin is one of the most abundant proteins in living organisms. Regulation of the actin cytoskeleton is provided by many mechanisms, one of the regulators of actin dynamics in plants and animals is highly conserved - Arp2/3 complex. In organisms it consists of two large subunits (Arp2 and Arp3) and five small subunits (ArpC1 - ArpC5). Arp2/3 complex controls actin filament branching at an angle of 70°. This thesis describes the functions of individual subunits with a special emphasis on those which are specific for individual subunits. This summarize exceeds the boundaries of the plant kingdom, and it also discusses animals and yeast, in which the complex is actively studied, and it is a lot of information available about the mechanisms of its regulation. The paper summarizes the interactions between the subunits and their interactions with regulators of Arp2/3 complex and other proteins. Some of the subunits are in some organisms encoded by, more than one gene in such cases, these isoforms may have different functions as well. Arp2/3 complex is for animals necessary for living, but in plants mutations in the subunits of the complex have moderate symptoms. In plants the Arp2/3 complex is used primarily in fast and oriented growth, mutations of subunits showing typical distorted trichomes.

Key words - Arp2/3 complex, actin, interaction domains, mutation, modulation of gene expression