

Abstract

Focal adhesions are cell structures that are formed between cell and the surrounding environment. The cell receives through focal adhesions important information about the chemical composition of the surrounding environment. In addition, focal adhesions are crucial for the transmission of forces that are generated inside the cell and the forces that affect the cell from the outside. CAS is the focal adhesion protein, which has been shown to regulate the actin cytoskeleton and the ability of the cells to generate forces needed for the surrounding environment deformation and cell migration. CAS is additionally molecular mechanosensor which senses mechanical forces and convert them into biochemical information, which is transmitted further into the cell. Localization of CAS in focal adhesions is necessary for its functioning. For this work, we have prepared a set of variants of CAS protein which was mutated in regions where are situated the N-terminal SH3 domain and a C-terminal CCH domain, which play the role of so-called anchoring domains. CAS protein variants were used to elucidate the role of anchoring domains for the localization and dynamics of CAS in focal adhesions and for the ability of the cells to generate traction forces.

Keywords: CAS, SH3 domain, CCH domain, FAT domain, focal adhesions, localization, dynamics