

Our skeletal muscles are very plastic, being able adapt to conditions they are subjected to. For example when subjected to disuse, muscle proteins are broken down and loss of muscle mass ensues. On the other hand, when subjected to stress, for example during resistance activities, muscle builds proteins and other components, leading to increase in muscle mass. This also happens when nutrition deprivation is followed by provision of nutrients, and in muscles recovery after trauma or injuries. To co-ordinate the response of skeletal muscles to the environment to which they are exposed, several factors are employed. Some of these factors regulate the division of muscle cells while others regulate the formation of myofibres (non-dividing muscle cells) from dividing muscle cells. We previously reported the expression in skeletal muscle of a factor involved in regulating protein synthesis and cell division. We showed that the removal of this factor led to increased protein synthesis. In the present study, we further studied the regulation of this factor. We showed that amino acids (nutrients that can affect muscle growth) do not directly control the expression of this factor. Rather, hormones, which may be released in our bodies when nutrients are consumed, may. We also demonstrated that the roles that this factor play may depend on the developmental state of muscle cells. In particular, its expression may be crucial for the restoration of muscle mass during recovery periods following injuries. As a result, efficacies of interventions used to regulate muscle mass under such conditions might depend on the effect of such strategies on the expression of this protein.

Reference: Kakade D, Islam N, Maeda N, Adegoke OA. [Differential effects of PDCD4 depletion on protein synthesis in myoblast and myotubes.](#) BMC Cell Biol. 2014 Jan 9;15:2. doi: 10.1186/1471-2121-15-2.

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