

THE EXPRESSION OF THE REGULATORY FACTORS MYOD AND MYF-5 IN MYOGENIC STEM CELLS DURING DIFFERENTIATION *IN VITRO*

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The muscle regulatory factors (MRFs) are a family of 4 basic helix-loop-helix skeletal muscle transcription factors, of which MyoD, Myf-5, miogenin and MRF4 are required for the identification and differentiation of skeletal muscle cells.

Each of the MRFs forms dimers (*in vivo* and *in vitro*) with common E proteins such as E12 and E47, resulting in heterodimeric complexes that bind to DNA in a sequence-specific manner at E-boxes (CANNTG). This DNA motif is present in the promoters of many skeletal muscle-specific genes.

Satellite cells (SC) are the myogenic cells found between the basal lamina and the sarcolemma of fibers in adult skeletal muscle. They are responsible for the muscle's ability to regenerate. After activating, satellite cells proliferate and then fuse into myotubes, which may undergo maturation to muscular fibres. The regeneration of muscle fibers first requires the activation of SC. These myogenic precursors of adult skeletal muscle are normally quiescent and do not detectably express MRFs. Upon injury and activation, some fractions of satellite cells re-enter the cell cycle, and begin to express myogenic regulatory factors.

Our immunocytochemistry and Western blotting results showed that activated satellite cells first express Myf-5 and MyoD. MyoD protein expression starts in proliferating myoblasts and is present during the whole differentiation period (5th, 7th and 11th day of culture). The highest MyoD protein content is observed in the myotubes (11th day of culture). Myf-5 protein expression remains at the same level in dividing myoblasts, and is absent in multinucleated myotubes. Our experiments on a C₂C₁₂ mouse primary myoblast line confirm the results described above.