Human MyoD: cDNA and deduced amino acid sequence

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Submitted December 18, 1990

EMBL accession no. X56677

MyoD and members of the MyoD gene family are muscle regulatory proteins whose expression in fibroblasts can convert them to myoblasts capable of undergoing differentiation into myofibers (1). We report here the nucleotide and predicted complete amino acid sequence of human MyoD, including 120 nucleotides of 5' untranslated sequence. Previously published partial human MyoD sequence (myf3, (2)) did not include the first 52 amino acids of the full-length sequence, or any 5' untranslated sequence. A sequence data conflict with published data shows that amino acid residue # 124, a lysine, is conserved between mouse and human, not glutamate in human. Thus, human and mouse MyoD encode 100% identical amino acid sequences in the highly conserved basic—helix—loop—helix region (*myc* homology).

hMyoD (human MyoD) was isolated from a primary human myoblast cDNA library in λ gt10, probing with mouse MyoD cDNA (cM211, (3)) under conditions of reduced stringency. Primer extension experiments show several transcription initiation sites, all resulting in mRNAs even longer than this cDNA. Nucleotide sequence identity with mouse MyoD is 85% in a 962 bp overlap; overall amino acid sequence identity is 88% in a full

length or 319 aa overlap, containing the region of 100% identity as noted above. This full length hMyoD, like mouse MyoD, converts 10T1/2 fibroblasts to the myogenic phenotype when expressed under the control of a retroviral promoter (in collaboration with Hans Arnold (2)).

ACKNOWLEDGEMENTS

I thank Virginia Fristoe for excellent technical help, and Dr. Charles P. Emerson, Jr., in whose laboratory this work was begun. Aided by NIH DK40031 and Muscular Dystrophy Association grants to Dr. Emerson, and grants # IN-149F from the American Cancer Society and NIH HD27202 to S.P.-W.

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