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Sequence of the *Dictyostelium discoideum* spore coat gene SP96

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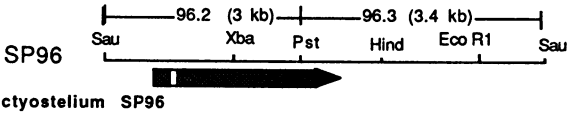
After 12 hours of development, prespore cells of *D. discoideum* synthesize three proteins, SP96, SP70 and SP60, that accumulate in prespore vesicles before being released to form the outer layer of encapsulated spores (1,4). We have recently cloned and sequenced the genes for SP60 and SP70 (3).We have used the same techniques with a cDNA probe for SP96 (2) to isolate and characterize the gene coding for SP96. In Fig. 1 the transcribed region is indicated relative to restriction sites; the cDNA sequence is filled. The gene has a single long open reading frame starting from ATG that is separated by an intron shown in italics in Fig. 1. cDNA that spans the intron was sequenced to confirm the splice junction.The predicted product of SP96 has a molecular weight of 59,464 and contains repeats of four independent short sequences of amino acids (see bold and underlined portions). One of the repeat motifs is also present in SP60 and SP70. Another of the SP96 repeats is shared by SP70. It appears that these genes have diverged from duplications of a common precursor. They may also share regulatory mechanisms since they are expressed coordinately under a variety of conditions.



Sequence of Dictyostelium SP96

ATGAGAGTATTACTTGTATTAGTTGCATGTTTAACATATTTTAGTGGTGGTGCATTAGCACAAT
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AAAAAAAAGTTAAAAAAAAAAAAAATGAATCAAATAATAAAAACAATAATAATAAACATAATTAGAATAAAAATATAGCAAAAAATCTAACT
TAAATATATTTTTTTTTTTTTTTTTTTTCTAATATAG
CATGTTCTTCATATTCTGGTGACAATTGTCCAAGTACTTGTTTCCAAGGATCATATGATATCCCATGTGGTGCACAAGTTAAATATTGTACA
GAAATGAAAGATAATTGTGGAGAAGGTGGTGATGTTAAATGTTGGAAAGATGGTAGTAATCTCCCAGTCCAAACATGGAGTTCATGTGTTCC
AAGTGAATTATTTGGTCCAAATGGTAAATTTAAACCAAGTGAAATACCAAATTCTTCAAATTGTCCAACAAATTGTGAAAATGGTGTAGAAT
GGGTTAATTTATGTGGTTTATCTTGCGATGCTAAAACAGCATGTTGCCCAGATGTTTGTCAATGTAAAGGTGGTCAAACAAGTGGTGGTTCA
ACAACTGGTTCACAAACAAGTGGTGGTTCAACAAGTGGTGGTTCAACAACTGGTTCACAAACAAGTGGTGGTTCAACAACTGGTTCACAAAC
TAGTGGTTCACAAACAAGTGCTGGATCATGTTCAAATACTCAATGTCCAAATGGATTCTATTGCCAAGTTCAAGGAAATAATGCAGTATGTG
TTCCACAACAATCATCAACCAGTGGTGGTCATCAAAATGATCCATGTGATACCGTTCAATGTCCATATGGTTACAGTTGTGAATCTAGAGAT
GGCTTTGAAGCTAAATGTACTAGAGATGAAGATGAACCAACTCATAGACCAACTCATAGACCAAAACCACCACACGACAGTGATAAATACCT
CTGTGATAATGTCCACTGCCCAAGAGGATACAAATGTAATGCTAAAAATGGTGTTGCCAAATGTATTGCCGGTTATGAAATTCCAAGAGTAT
GTCGTAACATCCAATGTCCAACCGGTTACAGATGTGAAGATCACAACCGTAATCCAATCTGTGTTTTAGAAGAAAGAGAGAATCCAGATAAT
TGTTTAACTTGTAATGATGTTAACTGTGAAGCCTCTGGTTTAGTTTGTGTTATGACTCGTGCTAGATGTAAGGTCGGTGCTGCTAAATGTTG
TGATGTTCAACCAACTTGTATCAAACCATCAACCATCGCAGGCTCAACCATCGCTTCAATTGCTTCTACTATTGCTTCAACTGGTTCAACTG
GTGCTACTTCACCATGTTCCGTTGCTCAATGTCCAACTGGTTATGTTTGTGTCGCTCAAAATAATGTAGCTGTTAGTTTGCCAAGACCTACC
ACTACCACCGGTAGCACATCTGACTCGTCTGCCCTTGGTTCAACCTCTGAAAGCTCTGCCTCTGGTTCCTCTGCTGTTTCAAGCTCTGCCTC
TGGTTCTTCTGCTGCTTCATCTTCACCATCATCATCTGCTGCAAGCTCTTCTCCATCTTCATCTGCTGCAAGCTCTTCTCCATCTTCATCTG
CTGCAAGCTCTTCCCCATCTTCATCTGCATCATCAAGCTCTTCCCCATCTTCATCTGCATCATCAAGCTCTGCCCCATCTTCATCTGCATCA
TCAAGCTCTGCTCCATCTTCATCTGCATCATCTTCATCTGCATCATCTTCATCTGCATCATCTGCAGCAACTACAGCTGCAACTACAATTGC
AACTACAGCTGCAACTACAACTGCAACTACAACCGCAACCACAGCTACAACCACAGCCACAACCACAGCTACAACCACAGCTGCAACCATAG
CTACAACCACAGCTGCAACTACAACTGCAACTACAACCGCAACCACAGCTACAACCACAGCTACAACCACAGCTACCTCT**TAA**ATTTAATCA
AAAAACTTTTTTTATCAAGTATCACTACAATAATAATTTTAATAATAATAGTATCAAAAAATGATATTAAAAATGCCCTTTTTTTCTCTATA
ATTTTTAAATTAAATATAA<u>AATAAA</u>TAAAAAAAAAAAAAAAAATCTCCAAGTTTCAAAAAAAAATTTTATTTTTATTTTTTATTGATAGGTAT

Translation Product: SP96

MRVLLVLVACLTYFSGGALAQSCSSYSGDNCPSTCFQGSYDIPCGAQVKYCTEMKDNCGEGGDVKCWKDGSNLPVQTWSS
CVPSELFGPNGKFKPSEIPNSSNCPTNCENGVEWVNLCGLSCDAKTACCPDVCQCK**GGQTSGGSTTGSQTSGGSTSG**
GSTTGSQTSGGSTTGSQTSGSQTSAGSCSNT<u>QCPNGFYCQ</u>VQGNNAVCVPQQSSTSGGHQNDPCDTV<u>QCPYGYSCE</u>
SRDGFEAKCTRDEDEPTHRPTHRPKPPHDSDKYLCDNVH<u>CPRGYKCN</u>AKNGVAKCIAGYEIPRVCRNI<u>QCPTGYRCE</u>DHNR
NPICVLEERENPDNCLTCNDVNCEASGLVCVMTRARCKVGAAKCCDVQPTCIKPSTIAGSTIASIASTIASTGSTGATSPC
SVA<u>QCPTGYVCV</u>AQNNVAVSLPRPTTTTGSTSDSSALGSTSE<u>SSASGSSAVSSSASGSSAASSSPSSSAASSSPSSSAASS</u>
<u>SPSSSAASSSPSSSASSSSSPSSSASSSSAPSSSASSSSAPSSSASSSSASSSSASS</u>**AATTAATTIATTAATTTATTT**
ATTATTTATTTATTTAATIATTTAATTTATTTATTATTTATTTATS

Fig. 1

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