

Homology of MIP26 to Nod26

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We have isolated a partial cDNA sequence (Fig 1) coding for the major intrinsic protein (MIP26,  $M_r$  22-28 Kd) of rat lens fibre cell-membranes, which displays ~79% nucleotide homology with bovine MIP26 (1). Using the entire bovine MIP26 coding region to scan the EMBL DNA sequence data-bank we noticed ~48% nucleotide homology with a nodulin protein (Nod26,  $M_r$  26.5 kd) of soyabean root nodule peribacterial membranes (2). Protein alignment ('BestFit', Wisconsin Package) indicates maximum similarity (~58%) between amino acids 39-244 of MIP26 and 2-205 of Nod26. Hydrophobicity analyses (3) also suggests some topological similarity between these transmembrane proteins (Fig 2). MIP26 is expressed during terminal differentiation of vertebrate lens epithelial cells into fibre cells, when there is an enormous increase in cell-surface and membrane specialization into junctional domains (1). Although MIP26 is believed to be a component of membrane gap-junction channels (1) it shares no significant sequence homology with the liver, heart or lens 'family' of connexin proteins (4). Nod26 is similarly expressed during extensive biosynthesis of the peribacterial membrane of legume root nodules (2), but its physiological function is unknown. Whether these structural and temporal similarities signify a functional relationship between MIP26 and Nod26, however, remains to be established.

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R F F L T L Q F V L C I F A T Y D E R R N G R
1 CGGTTCTTCCTGACGCTCCAGTTCGTGCTCTGCATCTTTGCTACGTATGACGAGAGGGGAATGGCCGC
  M G S V A L A V G F S L T L G H L F G M Y Y T
70 ATGGGCTCTGTGGCCCTGGCTGTTGGCTTCTCCCTCACCTGGGGCACCTCTTTGGGATGTATTACACT
  G A G M N P A R S F A P A I L T R N F S N H W
139 GGCGCGGGATGAATCCC GCCCGCTCCTTTGCTCCTGCTATCCTCACGAAACTTCAGCAACCCTGG
  V Y W V G P I I G G G L G S L L Y D F L L F P
208 GTGTACTGGGTGGGCCCAATCATCGCGGGGCTGGGTAGCCTGCTCTACGACTTTCTCCTCTTCCCA
  R L K S V S E R L S I L K G A R P S D S N G Q
277 CGGCTCAAGAGTGTTTCTGAGAGACTGTCTATCCTCAAGGGAGCCAGCCAGTCTCAATGGACAG
  P E G T G E P V E L K T O A L *
346 CCAGAGGGTACAGGGGAACCTGTGGAAGTGAAGACTCAGGCCCTGTAAAAGTGCAGAACGCCGCTGGG
415 TTTCAGGGAGGCGCAAGCCAGCCCTTGGATGAAGAAAGAGACTGTGGGGAGGGGGATCAATCGGTA
    
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Fig 1. Rat lens fibre MIP26 cDNA sequence.

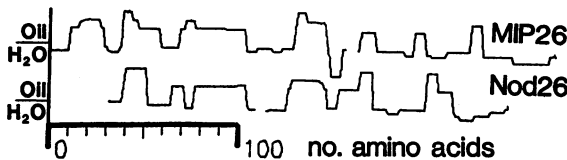


Fig 2. Median filtered (3) hydropathy profiles (mesh 5) of bovine MIP26 and soyabean Nod26, primarily aligned at the strong hydrophobic (MIP aa ~ 142; Nod aa ~ 106) hydrophilic (MIP aa ~ 150; Nod aa ~ 113) transition.

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**References:** (1) Gorin, MB, Yancey, SB, Cline, J, Revel, J-P, and Horwitz, J (1984) *Cell* 39 49-59. (2) Fortin, MG, Morrison, NA, and Verma, DPS (1987) *Nucleic Acids Res.* 15 813-824. (3) Bangham, JA (1988) *Anal. Biochem.* (in press). (4) Kistler, J, Christie, D and Bullivant, S (1988) *Nature* 331 721-723.