Coding sequences of human *ralA* and *ralB* cDNAs

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Moderate stringency hybridization with the simian *ralA* cDNA probe (ref.) enabled to isolate, from a human pheochromocytoma library, the corresponding human *ralA* cDNA. The deduced a.a. sequence of the human *ralA* protein shows only one difference from simian *ralA* (a conservative change).

From the same screening we also isolated cDNAs coding for a second closely related protein: *ralB* that shares ~85% a.a. identity with *ralA*.

ralA and *ralB* proteins differ by only one a.a. between residues 12 to 97. The main four GTP-binding regions are strictly conserved. Both proteins share ~50% a.a. identity with *ras* proteins.

SEQUENCE : H RAL A

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1  M A A N K P K G Q N S L A L H K V I M V G S G G V
   ATGGCTGCAAAATAGGCCAAGGGTCAGAAATCTTTGGCTTACACAAAGTCATCATGGTGGGCAGTGGTGGCGTG
26 G K S A L T L Q F M Y D E F V E D Y E P T K A D S
   GGCAAGTCAGCTCTGACTCTACAGTTCATGTACGATGAGTTTGTGGAGGACTATGAGCCTACCAAAGCAGACAGC
51 Y R K K V V L D G E E V Q I D I L D T A G Q E D Y
   TATCGGAAGAAGGTAGTGCTAGATGGGGAGGAAGTCCAGATCGATATCTTAGATACAGCTGGGCAGGAGGACTAC
76 A A I R D N Y F R S G E G F L C V F S I T E M E S
   GCTGCAATTAGAGACAACACTTCCGAAGTGGGGAGGGGTTCCCTCTGTGTTTTCTCTATTACAGAAATGGAATCC
101 F A A T A D F R E Q I L R V K E D E N V P F L L V
   TTTGCACTACAGCTGACTTCAGGAGCAGATTTTAAGAGTAAAGAAGATGAGAATGTTCCATTCTACTGGTT
126 G N K S D L E D K R Q V S V E E A K N R A E Q W N
   GGTAACAATCAGATTTAGAAAGATAAAAGACAGGTTTCTGTAGAAGAGGCCAAAAACAGAGCTGAGCAGTGGAAT
151 V N Y V E T S A K T R A N V D K V F F D L M R E I
   GTTAAGTACGTGGAACATCTGCTAAACACGAGCTAATGTTGACAAGGTATTTTTGATTTAATGAGAGAAAT
176 R A R K M E D S K E K N G K K K R K S L A K R I R
   CGAGCGAGAAAGATGGAAGACAGCAAGAAAAAGATGGAAAAAGAAGAGGAAAAAGTTTAGCCAAGAGAATCAGA
201 E R C C I L *
   GAAAGATGCTGCATTTTATAA

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SEQUENCE : H RAL B

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1  M A A N K S K G Q S S L A L H K V I M V G S G G V
   ATGGCTGCCAACAAAGAGTAAGGGCCAGAGCTCCTTGGCCCTCCACAAGGTGATCATGGTTGGCAGCGGAGGCGTT
26 G K S A L T L Q F M Y D E F V E D Y E P T K A D S
   GGCAAGTCAGCCCTGACGCTTCAGTTCATGTATGACGAGTTTGTAGAAGACTATGAACCTACCAAAGCTGACAGT
51 Y R K K V V L D G E E V Q I D I L D T A G Q E D Y
   TATAGAAAGAAAGTGGTTCTTGATGGGGAAGAAGTTCAGATAGATATTCTGGACACCGCTGGGCAAGAGGACTAC
76 A A I R D N Y F R S G E G F L L V F S I T E H E S
   GCAGCCATTCGAGATAACTACTTTTCGGAGTGGGGAAGGGTTTCTTGTGTTCTCAATCAGACAACATGAATCC
101 F T A T A E F R E Q I L R V K A E E D K I P L L V
   TTTACAGCAACAGCCGAATTCAGGGAACAGATTCTCCGTGTGAAGGCTGAAGAAGATAAAATCCACTGCTCGTC
126 V G N K S D L E E R R Q V P V E E A R S K A E E W
   GTGGGAAACAAGTCTGACCTAGAGGAGCGGAGGCAGGTGCCTGTGGAGGAGGCCAGGAGTAAAGCCGAAGAGTGG
151 G V Q Y V E T S A K T R A N V D K V F F F D L M R E
   GGCGTGCAGTACGTGGAGACGTACGCGAAGACCCGGGCCAACGTGGCAAGAGTGTCTTTGACCTAATGAGAGAA
176 I R T K K M S E N K D K N G K K S S K N K K S F K
   ATCAGAACAAAGAAGATGTGAGAAAACAAAGACAAGAATGGCAAGAAAAGCAGCAAGAACAAAGAAAAGTTTAA
201 E R C C L L *
   GAAAGATGTTGCTTACTATGA

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Reference: Chardin, P. and Tavitian, A. (1986) E.M.B.O. J., 5, 2203-2208.