Nucleotide sequence of a cDNA encoding the rat T3 delta chain

J.D.Davies, D.Mueller, D.B.Wilson and D.P.Gold*

Division of Immunology, Medical Biology Institute, 11077 North Torrey Pines Road, La Jolla, CA 92037, USA

Submitted June 21, 1990

EMBL accession no. X53430

The CD3 complex on the surface of human and mouse T lymphocytes consists of at least 5 non-polymorphic chains, δ , γ , ϵ , ζ (for review see 1) and η (2) in association with the polymorphic, disulfide-linked heterodimeric antigen receptor. Here we present the sequence of a cDNA clone, pJDD, which encodes the rat homologue of the human and murine CD3- δ chain (Fig.1).

pJDD was isolated from a cDNA library of the rat thymoma C58NT (3) constructed in the vector pTZ18R-B (Invitrogen) and identified with the mouse T3- δ probe, pPEM (4). A comparison of the predicted amino acid sequence for the mature rat, mouse and human CD3- δ chains is shown in Fig. 2. The overall amino acid similarity for the rat and mouse chains is 80% as compared to 69% or the rat and human chains. The intra-cytoplasmic domain showed the highest degree of similarity between the three species, 85%, for both rat and mouse as well as rat and human, again suggesting a conserved functional role for this domain (1).

ACKNOWLEDGEMENTS

This work was supported by grants A1-24526 and A1-22519 from the National Institutes of Health (DBW) and IM-515 from the American Cancer Society (DPG).

REFERENCES

1. Clevers, H. *et al.* (1988) *Ann. Rev. Immunol.* **6**, 629-662.
2. Baniyash, M. *et al.* (1988) *J. Biol. Chem.* **263**, 9874-9878.
3. Geering, G. *et al.* (1966) *J. Exp. Med.* **124**, 753-772.
4. van den Elsen, P. *et al.* (1985) *Nature* **314**, 542-544.

```

1   gctcaccagctggtcggtcggtgacttgccctcactccgtggatgagtcacctgtggaagATGGAGCAC
71  TATGGAATTCTGGTTAGTCTGCTACTGGCTACTGTTCTCCCCAAGGGAGCCCCCTCAAGATAGAAGTGG
141 TTGAATATGAGGACAAAGTGTGTTGTAATTGCAACACCAGCATCAGGCATCTAGATGGATCAGTGGAAAG
211 ATGGTTGACCAAAAATAAATCACTCATCTTGGGCAAAGGCATCCTGGACCCACGAGGGATGTATATGTGT
281 AATGGGACAGAGGAGCTGGCGAAGGAGGTGTCGACTGTTCAAGTATATTACCGAATGTGCCAGAACTGTG
351 TGGAGCTGGACTCAGCCACCCTGGCTGGTGTGTCATCACTGATCTCATCGCCACTCTGCTCCTGGCTTT
421 GGGGGTCTACTGCTTTGTCAGGCCATGAGACCGGAAGACTTTCTGGGGCTGTGACACTCAAGTCTTGTG
491 AAGAACGAGCAGCTGTATCAGCCTCTTCGAGATCGCGATGATGCCAGTACAGCCGCTCTGGAGGGAAC
561 GGCCCCGGAACAAAAGGTCTtgagatggaggtttctcagagtgtatatcaacggtgccttccccttgtg
631 ctcaaccaataaagatgtgttccttcagtcagcaaa

```

Figure 1. Nucleotide sequence of the rat CD3- δ cDNA. Coding region is shown in upper case letters.

```

1
R: FKIEVVEYEDKVFVNCNTSIRHLDGSVERWLTKNKSILILGKGILDPRGMYMCNGTEELAKEVSTVQVYRMCQNC
M: ...Q.T.....T....VM....T..G.FA...T.N....V.....I.L....Q...V..S...H.....
H: ...PIE.L..R.....TWVE.T.GTL.SDITR.D...R.....I.R....DIYKDKKE.....H.....S.

76   ↓                               ↓
R: VELDSATLAGVIITDLIATLLALLGVYCFAGHETGRLSGAVDTQVLLKNEQLYQPLRDRDDAQYSRLGGNWPRNKRS*
M: .....G.M....FI.....P...AEV.A.....E.T.....K.*
H: ....P..V..I.V..V.....F....R.....A...A..R.D.V.....H....A...*

```

Figure 2. Amino acid comparison of the rat, mouse and human T3- δ chain sequence. Arrows denote the boundaries of the predicted transmembrane segment separating the N-terminal extra-cytoplasmic and C-terminal intra-cytoplasmic domains.

* To whom correspondence should be addressed