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(71) Applicant: ZENECA LIMITED [GB/GB]; Imperial Chemical House, 9 Millbank, London SW1P 3JF (GB).		(88) Date of publication of the international search report: 21 July 1994 (21.07.94)	
(72) Inventors: SLATER, Anthony, Michael; 10 Hartington Drive, Chinley, Cheshire SK12 6DQ (GB). TIMMS, David; 45 Beech Lane, Macclesfield, Cheshire SK10 2DR (GB).			
(74) Agents: MACK, John, Richard et al.; ICI Group Patents Services Dept., P.O. Box 6, Shire Park, Welwyn Garden City, Hertfordshire AL7 1HD (GB).			
(54) Title: LIGAND BINDING VARIABLE DOMAIN (V-MIN) COMPRISING A FRAMEWORK REGION WITH A CYCLICALLY PERMUTED CENTRAL β -BARREL			
(57) Abstract			
The invention relates to ligand binding variable domains (V-mins) having structural rearrangement of the binding domain of immunoglobulins and other ligand binding members of the immunoglobulin superfamily. The minimal elements necessary to retain good antigen binding affinity, the complementarity determining region (CDRs) and the central beta barrel structure for the Fv fragment, may be retained positioned appropriately in space by cyclic permutation of the central beta barrel structure and leaving the strands of the β barrel intact. The invention is also independently based on recognising that after cyclic permutation of the central beta barrel the framework region which supports the CDRs can be pared down through creation of novel linkages in the structure.			

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INTERNATIONAL SEARCH REPORT

International Application No

PCT/GB 93/02375

A. CLASSIFICATION OF SUBJECT MATTER

IPC 5 C12N15/00 C07K15/00 C07K15/28 A61K47/48 A61K49/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 5 C12N C07K A61K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	PROTEINS. STRUCTURE, FUNCTION AND GENETICS vol. 1, no. 4, December 1986, NEW YORK, NY, USA pages 342 - 362 R. FINE ET AL. 'Predicting antibody hypervariable loop conformations. II: Minimization and molecular dynamics studies of MCPC603 from many randomly generated loop conformations.' see page 342 - page 343, left column ---	1-6
A	CURRENT OPINION IN STRUCTURAL BIOLOGY vol. 2, no. 4, 1992, PHILADELPHIA, PA, USA pages 593 - 596 L. PRESTA 'Antibody engineering' see page 594, right column, line 6 - line 21 -----	1-6

☐ Further documents are listed in the continuation of box C.☐ Patent family members are listed in annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

4 May 1994

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Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax (+31-70) 340-3016

Authorized officer

Nooij, F

INTERNATIONAL SEARCH REPORT

International application No.

PCT/GB93/02375

Box I Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☒ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
Remark : Although claim 18 is directed to a method of treatment for the human/animal body, the search has been carried out and based on the alleged effects of the compound/composition.
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.