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European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,  
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI,  
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GQ, GW, ML, MR, NE, SN, TD, TG).

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ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.*

(54) Title: ANTIBODY VARIANTS WITH FASTER ANTIGEN ASSOCIATION RATES

(57) Abstract: Antibody variants with faster antigen association rates are disclosed. The antibody variants have one or more amino acid alteration(s) in or adjacent to at least one hypervariable region thereof which increase charge complementarity between the antibody variant and an antigen to which it binds.



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# INTERNATIONAL SEARCH REPORT

International application No. \_\_\_\_\_

PCT/US03/04184

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : C12N 15/00, 15/63; C07K 16/00; C07H 21/04

US CL : 435/69.1, 69.6, 320.1; 530/387.1, 387.3, 388.24; 536/23.53

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)

U.S. : 435/69.1, 69.6, 320.1; 530/387.1, 387.3, 388.24; 536/23.53

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 practicable, search terms used)

Please See Continuation Sheet

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
E, X --- E, Y	US 6,632,926 B1 (CHEN et al) 14 October 2003 (14.10.2003), see entire document, especially columns 3, 5-6, 11-15, 19-20 and Figures 3-5.	1-9, 13-17, 22-24, 29-30, 36-42, 46, 48, 50-56 ----- 10-12, 18-21, 25-28, 31-35, 43-45, 47, 49, 57-61
Y	SELZER et al. Nature Structural Biology. July 2000, Vol. 7, No. 7, pages 537-541, see entire document, especially Figure 1 and page 358.	1-61
Y	FOGOLARI et al. European Journal of Biochemistry. 2000, Vol. 267, pages 4861-4869, see entire document, especially Figures 5-6 and pages 4865-4867.	1-61
Y	MULLER et al. Structure. 15 September 1998, Vol. 6, No. 9, pages 1153-1 167, see entire document, especially Figure 6 and page 1165, right column.	1-61



Further documents are listed in the continuation of Box C.



See patent family annex.

\* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

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# INTERNATIONAL SEARCH REPORT

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## Continuation of B. FIELDS SEARCHED Item 3:

WEST, Medline, Emabse, Cancerlit, Biosis, Biotechno, Dissabs, Biotechabs, geneseq, PIR 79, Uniprot 03.

Search terms: SEQ ID numbers, electrostatic steering, charge complementarity, association rate, antibody affinity, VEGF, tissue factor (TF), anti-HER2, antibody 4D5, inventor search.