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(54) Title: VACCINE COMPOSITIONS AND METHODS

(57) Abstract: Methods of enhancing antigenic presentation or increasing immunogenicity of a polypeptide by modifying the three dimensional structure of a polypeptide.

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/41350

A. CLASSIFICATION OF SUBJECT MATTER				
IPC(7) : A61K 39/145, 39/00, 39/12; C12N 15/74; C07K 17/00				
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Minimum documentation searched (classification system followed by classification symbols)				
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Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
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Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
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	UMENTS CONSIDERED TO BE RELEVANT		D.I. and to alaim No.	
Category *	Citation of document, with indication, where a		Relevant to claim No.	
X	BERGMANN, C.C. et al. Flanking residues alter	intigenicity and immunogenicity of	1-16, 19-34, 36-47,	
	multi-unit CL epitopes.	•	49-55, 65	
	Journal of Immunology. 1996, Vol. 157,		;	
	pages 3242-3249, especially page 3248 and abstrac	t.		
X	YELLEN-SHAW. A.J. et al. Point mutation flanki	ng a CTL epitope ablates in vitro and	1-3, 11-16, 19-27, 35-	
	in vivo recognition of a full-length viral protein		47, 49, 51-55, 65	
	Journal of Immunology. 1997, Vol. 158,			
	pages 3227-3234, especially page 3228 and 3232.	Ì		
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	in vivo recognition of a full-length viral protein			
	Journal of Immunology. 1997, Vol. 158,			
	page 3227-3234.	ļ		
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Eurther	documents are listed in the continuation of Box C.	See patent family annex.	}	
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03 November 2004 (03.11.2004)				
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INTERNATIONAL SEARCH REPORT		
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Continuation of B. FIELDS SEARCHED Item 3:		
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