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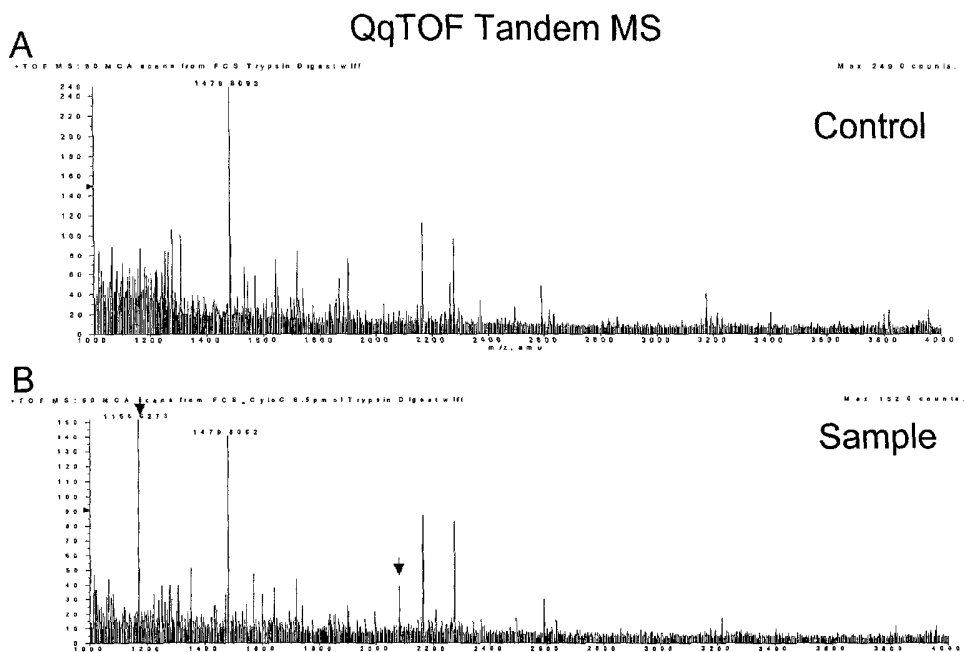
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- Declaration under Rule 4.17:**
— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

[Continued on next page]

(54) **Title:** IMPROVED METHODS FOR PROTEIN IDENTIFICATION, CHARACTERIZATION AND SEQUENCING BY TANDEM MASS SPECTROMETRY



(57) **Abstract:** Presented are novel apparatus and methods for protein characterization, identification, and sequencing using affinity capture laser desorption/ionization tandem mass spectrometry.



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A. CLASSIFICATION OF SUBJECT MATTER		
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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. : 435/4, 6, 7.1, 23, 24, 69.1; 436/57, 86, 89, 172, 501, 536; 250/281, 288, 423		
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)		
MEDLINE, EMBASE, SCISEARCH, BIOSIS		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y/P	US 6,291,189 A (WOODS et al.) 18 September 2001 (18.09.2001), see entire document, especially columns 7-21 and 27-31.	1-5, 15-26
Y/P	US 6,322,970 B1 (LITTLE et al.) 27 November 2001 (27.11.2001), see entire document, especially columns 3-8, 15-25, and 33-39.	1-26
Y/P	US 6,265,716 B1 (HUNTER et al.) 24 July 2001 (24.07.2001), see entire document.	1-26
Y	HAYNES et al, Identification of gel-separated proteins by liquid chromatography-electrospray tandem mass spectrometry: Comparison of methods and their limitations. Electrophoresis. 1998, Vol 19, pages 939-945, see entire document.	1-26
X	DONGRE et al, Emerging tandem-mass spectrometry techniques for rapid identification of proteins. Tibtech. October 1997. Vol 15, pages 418-425, see entire document.	6-14
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Y		1-5, 15-26
Y	QIN et al, De novo peptide sequencing in an Ion Trap Mass Spectrometer with O Labeling. Rapid Communications. 1998, Vol 12, pages 209-216, see entire document.	1-26
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier application or patent published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703)305-3230		Authorized officer <i>Valerie Bell-Harris for</i> Gailene R. Gabel Telephone No. (703) 308-0196

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International application No.

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C. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	DUNCAN et al, Amino acid sequencing analysis of peptides and proteins on the femtomole scale by gas chromatography/mass spectrometry. Anal. Chem. March 1998, Vol 70. No 5, pages 890-896, see entire document.	1-26
Y	KRUTCHINSKY et al, Orthogonal Injection of Matrix-assisted Laser Desorption/Ionization Ions into a Time-of-Flight Spetrometer through a Collisional Damping Interface. Rappid Communications in Mass Spectrometry. 1998, Vol 12, pages 508-518, see entire document.	1-26
A	US 6,111,251 A (HILLENKAMP et al.) 29 August 2000 (29.08.2000), see entire document.	1-26
A	US 6,140,053 A (KOSTER et al.) 31 October 2000 (31.10.2000), see entire document.	1-26