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(54) Infectious etiologic agent detection probe and probe set, carrier, and genetic screening method

(57) An infectious etiologic agent detection probe set which detects an infectious etiologic agent gene, includes a plurality of kinds of probes including oligonucleotide having base sequences selected from each of a plurality of groups selected from a first group including base sequences of SEQ ID Nos. 1 to 14 and complementary sequences thereof, a second group including base sequences of SEQ ID Nos. 15 to 24 and complementary sequences thereof, a third group including base sequences of SEQ ID Nos. 25 to 36 and complementary sequences thereof, a fourth group including base sequences of SEQ ID Nos. 37 to 47 and complementary sequences thereof, a fifth group including base sequences of SEQ ID Nos. 48 to 57 and complementary sequences thereof, a sixth group including base sequences of SEQ ID Nos. 58 to 68 and complementary sequences thereof, a seventh group including base sequences of SEQ ID Nos. 69 to 77 and complementary sequences thereof, an eighth group including base sequences of SEQ ID Nos. 78 to 85 and complementary sequences thereof, a ninth group including base sequences of SEQ ID Nos. 86 to 97 and complementary sequences thereof, and a 10th group including base sequences of SEQ ID Nos. 98 to 106 and complementary sequences thereof.

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	WANG RONG-FU ET AL: "Design and evaluation of oligonucleotide-microarray method for the detection of human intestinal bacteria in fecal samples" FEMS MICROBIOLOGY LETTERS, vol. 213, no. 2, 6 August 2002 (2002-08-06), pages 175-182, XP002289519 ISSN: 0378-1097 * abstract *	1	C12Q1/68
Y	WILSON KENNETH H ET AL: "High-density microarray of small-subunit ribosomal DNA probes" APPLIED AND ENVIRONMENTAL MICROBIOLOGY, vol. 68, no. 5, May 2002 (2002-05), pages 2535-2541, XP002289520 ISSN: 0099-2240 * the whole document *	1-7	
A	KRIMMER VANESSA ET AL: "Detection of Staphylococcus aureus and Staphylococcus epidermidis in clinical samples by 16S rRNA-directed in situ hybridization" JOURNAL OF CLINICAL MICROBIOLOGY, vol. 37, no. 8, August 1999 (1999-08), pages 2667-2673, XP002289521 ISSN: 0095-1137 * the whole document *	1-7	TECHNICAL FIELDS SEARCHED (Int.Cl.7) C12Q
A	WO 02/070728 A (KELEN GABOR DAVID ; YANG SAMUEL (US); LIN SHIN (US); ROTHMAN RICHARD E) 12 September 2002 (2002-09-12)	1-7	
Y	*whole document, especially Fig 1, Table 1, Fig 5*	8-11	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 October 2004	Cornelis, K

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Y	WO 00/66788 A (GEN PROBE INC ; HOGAN JAMES J (US); GORDON PATRICIA (US)) 9 November 2000 (2000-11-09) *whole document*	1-3,49	
Y	DATABASE EMBL Staphylococcus sp Lgg15.2 partial 16S rRNA gene 13 June 2002 (2002-06-13), SPIRO: "Staphylococcus sp Lgg15.2 partial 16S rRNA gene" XP002289522 retrieved from EBI Database accession no. AJ489358 * abstract *	1-7	
Y	DATABASE EMBL 25 July 2002 (2002-07-25), BLAIOTTA, PENNACCHIA, VILLANI: "Stapylococcus aureus strain R1 16S ribosomal RNA gene, partial sequence" XP002289523 retrieved from EBI Database accession no. AY126146 * abstract *	1-7	
Y	WO 97/41253 A (MIRA DIAGNOSTICA GMBH ; LEISER ROBERT MATTHIAS (DE); SPERVESLAGE JENS) 6 November 1997 (1997-11-06) *Sequence 7, page 13*	1-7	
Y	DATABASE EMBL 26 April 2002 (2002-04-26), ERCOLINI, HILL, DODD: "Uncultured Staphylococcus sp. isolate DGGE gel band M4 16S ribosomal RNA gene, partial sequence" XP002289524 retrieved from EBI Database accession no. AF498067 * abstract *	1-7	

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TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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Y	DATABASE EMBL 29 January 2002 (2002-01-29), XU, MOORE, MILLAR, DOHERTY: "Bacillus pumilus strain ID48 16S rRNA geen, partial sequence" XP002289525 retrieved from EBI Database accession no. AY072700 * abstract *	1-7	
Y	DE 199 15 141 A (ARTUS GES FUER MOLEKULARBIOLOG) 28 September 2000 (2000-09-28) *Sequence on page 8, Column 1245-1275, Staphylococcus aureus*	1-7, 28-31	
Y	WO 97/31114 A (SMITHKLINE BEECHAM PLC ; BURNHAM MARTIN KARL RUSSELL (US); HODGSON JOH) 28 August 1997 (1997-08-28) *Seq Id No 91, page 24, lines 1-2*	1-7	
Y	US 5 620 847 A (GREISEN KAY S ET AL) 15 April 1997 (1997-04-15) *SEQ ID 18, Fig 2*	1-7	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	DATABASE EMBL 21 February 1995 (1995-02-21), GURTLER: "Staphylococcus aureus methicillin resistant isolate H11 clone RRNV13 16S-23S rRNA spacer region" XP002289526 retrieved from EBI Database accession no. U11775 * abstract *	1-7	

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Y	WO 01/07648 A (KRUPP GUIDO ; SCHEINERT PETER (DE); SOELLER RAINER (DE); SPENGLER ULRI) 1 February 2001 (2001-02-01) *Seq Id No 10,11, page 23 lines 15-20* *page 19*	1-7	
Y	EP 0 957 175 A (GRONINGEN ACAD ZIEKENHUIS ; UNIV GRONINGEN (NL)) 17 November 1999 (1999-11-17) *Seq Id No 10 (corresponds to Seq K on page 7), Seq ID No 6 (corresponds to Sequence I on page 7), Seq ID No 1 (correspods to seq C on page 7)*	1-7, 16-19	
Y	WO 01/42457 A (AVI BIOPHARMA INC) 14 June 2001 (2001-06-14) *Sequence 93, Table 8*	1-7	
Y	WO 99/22023 A (MIRA DIAGNOSTICA GMBH ; EPPING BERND (DE); LEISER MATTHIAS (DE)) 6 May 1999 (1999-05-06) *Sequence 55, page 9; Tabelle 1, page 7; Sequence 54, page 9*	1-7, 24-27,49	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	WO 97/21819 A (SMITHKLINE BEECHAM PLC ; BURNHAM MARTIN KARL RUSSELL (US); HODGSON JOH) 19 June 1997 (1997-06-19) *Sequence 6; page 20 lines 18-30*	1-7	
Y	WO 00/66789 A (GEN PROBE INC ; HOGAN JAMES J (US)) 9 November 2000 (2000-11-09) * esp. seq id no 15 and 27, sequencing primer*	1-3, 8-15,49	
Y	US 5 635 348 A (LEONG DIANE U) 3 June 1997 (1997-06-03) *seq id no 19*	1-3, 8-11,49	

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Y	WO 01/48237 A (HOEFT ANDREAS ; STUEBER FRANK (DE)) 5 July 2001 (2001-07-05) *seq id 12, 15, slk2, fig 12, slk11, slk 7 * -----	1-3, 8-11, 24-27, 40-43,49	
Y	US 6 380 370 B1 (DOUCETTE-STAMM LYNN A ET AL) 30 April 2002 (2002-04-30) *seq 2004* -----	1-3, 8-11,49	
Y	DATABASE EMBL 27 February 1996 (1996-02-27), TAKAHASHI: "Staphylococcus epidermidis gene for 16S rRNA, partial" XP002299712 retrieved from EBI Database accession no. D83363 * abstract * -----	1-3, 8-11,49	
Y	WO 01/34809 A (GLAXO GROUP LTD ; KIMMERLY WILLIAM JOHN (US)) 17 May 2001 (2001-05-17) *seq id 2031, 3821* -----	1-3, 8-11,49	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	WO 00/58505 A (KRUPP GUIDO ; ARTUS GES FUER MOLEKULARBIOLOG (DE)) 5 October 2000 (2000-10-05) *Table 1* -----	1-3, 8-11, 40-43,49	
Y	DATABASE EMBL 3 January 2003 (2003-01-03), ZHANG ET AL: "Staphylococcus epidermidis ATCC 12228 section 6 of 9 of the complete genome" XP002299713 retrieved from EBI Database accession no. AE016749 * abstract * -----	1-3, 8-11,49	
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Y	WO 99/07722 A (REGNAULT BEATRICE ; COLLIN MONIQUE (FR); GRIMONT PATRICK (FR); PASTEUR) 18 February 1999 (1999-02-18) *seq id 1*	1-3, 12-15	
Y	DATABASE EMBL 29 March 1996 (1996-03-29), CILIA ET AL: "E. coli rRNA gene" XP002299714 retrieved from EBI Database accession no. X80721 * abstract *	1-3, 12-15	
Y	PATENT ABSTRACTS OF JAPAN vol. 2000, no. 22, 9 March 2001 (2001-03-09) & JP 2001 136969 A (TECHNOPOLIS HAKODATE GIJUTSU SHINKO KYOKAI), 22 May 2001 (2001-05-22) * abstract *	1-3, 12-15	
Y	US 5 723 344 A (CROS PHILIPPE ET AL) 3 March 1998 (1998-03-03) *seq id 4*	1-3, 12-15	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	JP 07 039398 A (NIPPON FLOUR MILLS CO LTD; others: 01) 10 February 1995 (1995-02-10) *seq id 7,9*	1-3, 12-15, 20-23	
X	EP 0 497 464 A (AMOCO CORP) 5 August 1992 (1992-08-05) *seq id 2*	1-3, 12-15	

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Y	DATABASE EMBL 27 September 1996 (1996-09-27), PALUS: "Klebsiella pneumoniae 16S ribosomal RNA gene" XP002299716 Database accession no. U33121 * abstract *	1-3, 16-19	
Y	DATABASE EMBL 29 June 1998 (1998-06-29), BOYE ET AL: "Klebsiella pneumoniae 16S rRNA gene" XP002299717 retrieved from EBI Database accession no. Y17668 * abstract *	1-3, 16-19	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	DATABASE EMBL 27 February 1997 (1997-02-27), IBRAHIM: "K.pneumoniae ribosomal RNA strain ATCC13883" XP002299718 retrieved from EBI Database accession no. Y11487 * abstract *	1-3, 16-19	
Y	WO 98/14567 A (WISNIOWSKI PAUL ; ADVANCED RES & TECH INST (US); MARTIN WILLIAM J (US)) 9 April 1998 (1998-04-09) *seq id no 8*	1-3, 20-23	

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Y	WO 02/02811 A (ARMAND MARIE ASTRID ; LAFFAIRE PHILIPPE (FR); BIO MERIEUX (FR); LACROI) 10 January 2002 (2002-01-10) *Seq Id 6,8*	1-3, 20-23	
Y	DATABASE EMBL 9 September 1998 (1998-09-09), OKHRAVI: "Pseudomonas aeruginosa 16S ribosomal RNA gene, partial sequence" XP002299719 retrieved from EBI Database accession no. AF076039 * abstract *	1-3, 20-23,49	
Y	DE 199 41 359 A (GSF FORSCHUNGSZENTRUM UMWELT) 1 March 2001 (2001-03-01) *probe PAE2*	1-3, 20-23,49	
Y	DATABASE EMBL 16 May 2001 (2001-05-16), IRIYE ET AL: "Serratia marcescens gene for 16S rRNA partial sequence" XP002299977 retrieved from EBI Database accession no. AB061685 * abstract *	24-27	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	DATABASE EMBL 27 November 2000 (2000-11-27), FLETCHER ET AL: "Serratia marcescens 16S rRNA gene" XP002299978 retrieved from EBI Database accession no. AJ296306 * abstract *	1-3, 24-27,49	
Y	US 5 738 987 A (MILLIMAN CURT L) 14 April 1998 (1998-04-14) *seq id no 1*	1-3, 28-31,49	

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Y	DATABASE EMBL 13 April 1997 (1997-04-13), MORI ET AL: "Streptococcus pneumoniae DNA for 16S rRNA" XP002299979 retrieved from EBI Database accession no. AB002522 * abstract *	1-3, 28-31,49	
Y	DATABASE EMBL 9 September 1998 (1998-09-09), OKHRAVI ET AL: "Streptococcus pneumoniae 16S ribosomal RNA gene, partial" XP002299980 retrieved from EBI Database accession no. AF076029 * abstract *	1-3, 28-31,49	
Y	DATABASE EMBL 25 June 1996 (1996-06-25), QUENTIN ET AL: "H. influenza DNA for ribosomal RNA" XP002299981 retrieved from EBI Database accession no. X87977 * abstract *	1-3, 32-35,49	TECHNICAL FIELDS SEARCHED (Int.Cl.7)
Y	DATABASE EMBL 12 March 1991 (1991-03-12), DEWHIRST: "H. influenza 16S ribosomal RNA" XP002299982 retrieved from EBI Database accession no. M35019 * abstract *	1-3, 32-35,49	
Y	WO 95/20055 A (AMOCO CORP) 27 July 1995 (1995-07-27) *seq id no 1,2*	1-3, 32-35,49	

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Y	DATABASE EMBL 28 June 1999 (1999-06-28), HERDON ET AL: "Enterobacter cloacae 16S ribosomal RNA gene" XP002299983 retrieved from EBI Database accession no. AF157695 * abstract *	1-3, 36-39,49	
Y	DATABASE EMBL 21 December 2001 (2001-12-21), MANERO: "Enterococcus faecalis 16S rRNA gene" XP002299984 retrieved from EBI Database accession no. AJ420803 * abstract *	1-3, 40-43,49	
X	WO 96/16186 A (UNIV JEFFERSON ; MARIANI BRAIN D (US); TUAN ROCKY S (US)) 30 May 1996 (1996-05-30) *sequence 1*	44-48	
Y	DATABASE GENESEQ 20 November 2001 (2001-11-20), SEKIYU KODAN, CHINA PETROLEUM GAS: "Enterobacter 16S rRNA gene fragment" XP002299985 retrieved from EBI Database accession no. AAL44979 * abstract *	1-3, 36-39,49	

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

☐ Only part of the claims have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid, namely claim(s):

☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

see sheet B

☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.

☐ As all searchable claims could be searched without effort justifying an additional fee, the Search Division did not invite payment of any additional fee.

☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid, namely claims:

☐ None of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims, namely claims:

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

1. claims: 4-7 (completely) and 1-3,49 (partially)

An infection detection probe which can detect a gene originated in Staphylococcus aureus, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in S. aureus by using said carrier.

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2. claims: 8-11 (completely) and 1-3,49 (partially)

An infection detection probe which can detect a gene originated in Staphylococcus epidermidis, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in S. epidermidis by using said carrier.

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3. claims: 12-15 (completely) and 1-3, 49 (partially)

An infection detection probe which can detect a gene originated in Escherichia coli, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in E. coli by using said carrier.

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4. claims: 16-19 (completely) and 1-3,49 (partially)

An infection detection probe which can detect a gene originated in Klebsiella pneumoniae, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in K. pneumoniae by using said carrier.

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5. claims: 20-23 (completely) and 1-3, 49 (partially)

An infection detection probe which can detect a gene originated in Pseudomonas aeruginosa, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in P. aeruginosa by using said carrier.

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6. claims: 24-28 (completely) and 1-3, 49 (partially)

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LACK OF UNITY OF INVENTION
SHEET B

Application Number
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The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

An infection detection probe which can detect a gene originated in Serratia marescens, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in S. marcescens by using said carrier.

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7. claims: 28-31 (completely) and 1-3,49 (partially)

An infection detection probe which can detect a gene originated in Streptococcus pneumoniae, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in S. pneumoniae by using said carrier.

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8. claims: 32-35 (completely) and 1-3, 49 (partially)

An infection detection probe which can detect a gene originated in Haemophilus influenzae, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in H. influenzae by using said carrier.

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9. claims: 36-39 (completely) and 1-3, 49 (partially)

An infection detection probe which can detect a gene originated in Enterobacter cloacae, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in E. cloacae by using said carrier.

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10. claims: 40-43 (completely) and 1-3,49 (partially)

An infection detection probe which can detect a gene originated in Enterococcus faecalis, a probe set including such a probe, a carrier on which such an infection detection probe is immobilised and a genetic screening method of detecting a gene originated in E. faecalis by using said carrier.

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11. claims: 44-48 (completely)

European Patent Office

LACK OF UNITY OF INVENTION
SHEET B

Application Number
EP 04 25 1980

The Search Division considers that the present European patent application does not comply with the requirements of unity of invention and relates to several inventions or groups of inventions, namely:

An infectious etiologic agent amplification primer used to PCR-amplify a 16S rRNA gene arrangment of an infectious agent comprising oligonuccleotide having one of base sequences of SEQ ID No 107-112, and a method to detect an infectious agent by excecuting a PCR amplification process using a set of said amplification primers.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 04 25 1980

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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12-10-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

专利名称(译)	传染性病原体检测探针和探针组，载体和遗传筛选方法		
公开(公告)号	EP1464710A3	公开(公告)日	2004-12-22
申请号	EP2004251980	申请日	2004-03-29
[标]申请(专利权)人(译)	佳能株式会社		
申请(专利权)人(译)	佳能株式会社		
当前申请(专利权)人(译)	佳能株式会社		
[标]发明人	YAMAMOTO NOBUKO C O CANON KABUSHIKI KAISHA KAWAGUCHI MASAHIRO C O CANON KABUSHIKI KAISHA TSUKADA MAMORU C O CANON KABUSHIKI KAISHA YOSHII HIROTO C O CANON KABUSHIKI KAISHA SUZUKI TOMOHIRO C O CANON KABUSHIKI KAISHA ISHII MIE C O CANON KABUSHIKI KAISHA		
发明人	YAMAMOTO, NOBUKO, C/O CANON KABUSHIKI KAISHA OGURA, MASAYA, C/O CANON KABUSHIKI KAISHA KAWAGUCHI, MASAHIRO, C/O CANON KABUSHIKI KAISHA TSUKADA, MAMORU, C/O CANON KABUSHIKI KAISHA YOSHII, HIROTO, C/O CANON KABUSHIKI KAISHA SUZUKI, TOMOHIRO, C/O CANON KABUSHIKI KAISHA ISHII, MIE, C/O CANON KABUSHIKI KAISHA FUKUI, TOSHIFUMI, C/O CANON KABUSHIKI KAISHA		
IPC分类号	G01N33/53 C07H21/04 C12M1/00 C12M1/34 C12N15/09 C12Q1/02 C12Q1/70 G01N33/569 G01N37/00 C12Q1/68		
CPC分类号	C12Q1/6837 C12Q1/689 Y02A50/451 B01D24/26 B01D24/4815 B01D24/4861 B01D39/06 F16K31/18		
代理机构(译)	贝雷斯福德KEITH DENIS LEWIS		
优先权	2003099452 2003-04-02 JP 2003099453 2003-04-02 JP 2003099454 2003-04-02 JP 2003099455 2003-04-02 JP 2003099456 2003-04-02 JP 2003099457 2003-04-02 JP 2003099458 2003-04-02 JP 2003099459 2003-04-02 JP 2003099460 2003-04-02 JP 2003099461 2003-04-02 JP 2003099462 2003-04-02 JP 2003099463 2003-04-02 JP 2004077045 2004-03-17 JP		
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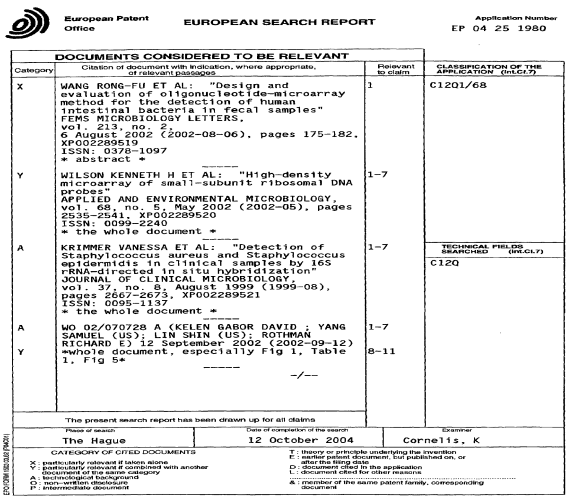
摘要(译)

检测感染性病原体基因的感染性病原体检测探针组包括多种探针，所述探针包括具有选自包括SEQ ID No.1至SEQ ID NO.1的碱基序列的第一组的多个基团中的每一个的碱基序列的寡核苷酸。 14及其互补序列，第二组包括SEQ ID Nos.15-24的碱基序列及其互补序列，第三组包括SEQ ID Nos.25-36的碱基序列及其互补序列，第四组包括碱基序列SEQ ID Nos.37-47及其互补序列，第五组包括SEQ ID Nos.48-57的碱基序列及其互补序列，第六组包括SEQ ID Nos.58-68的碱基序列及其互补序列第七组包括SEQ ID Nos.69-77的碱基序列及其互补序列，第八组包括SEQ ID NO：6的碱基序列第78-85号及其互补序列，第九组包括SEQ ID Nos.86-97的碱基序列及其互补序列，第10组包括SEQ ID Nos.98-106的碱基序列及其互补序列。



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EUROPEAN SEARCH REPORT

Application Number
EP 04 25 1980

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Y	*whole document, especially Fig 1, Table 1, Fig 5*	8-11	

-/--

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	12 October 2004	Cornelis, K

CATEGORY OF CITED DOCUMENTS
X : particularly relevant if taken alone
Y : particularly relevant if combined with another document of the same category
A : technological background
O : non-written disclosure
P : intermediate document

T : theory or principle underlying the invention
E : earlier patent document, but published on, or after the filing date
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& : member of the same patent family, corresponding document

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