

INFORME DE BÚSQUEDA DE PATENTES PARA EL No de Radicación: 15-268313						
CRITERIOS PARA LA BÚSQUEDA (anexar pantallazo o reporte en PDF, junto con los boleanos utilizados)						
Palabras clave utilizadas		"anti CD3 biespecific antibodies" "anti-BCMA biespecific antibodies" "CD3 AND BCMA bispecific anditbod?"				
CLASIFICACIONES INTERNACIONALES UTILIZADAS PARA LA BÚSQUEDA		C07K168, A61 K39/G95, A61P35/02, A61 P37/00				
BASES DE DATOS CONSULTADAS.						
Google patents		Espacenet		WIPO		Sience Direct
PubMed		NCBI		The lens		Patbase
INFORMES DE EXÁMENES REALIZADOS EN OTRAS OFICINAS (documentos patentes, literatura no patente etc...)						
Oficina	Fecha del examen o de reporte de búsqueda de documentos	Anterioridades encontradas para el examen o reportados en el examen de búsqueda(relacionarlos todos)	Reiv. afectadas	RELEVANCIA (requisito que afecta)	FUERON TENIDOS EN CUENTA PARA EL EXAMEN EN LA OFICINA COLOMBIANA	
					SI	NO
EUROPEA	20/Mayo/2014	RYAN MAUREEN C ET AL: "Antibody targeting of B-cell maturation antigen on malignant plasma cells MOLECULAR CANCER THERAPEUTICS, AMERICAN ASSOCIATION OF CANCER RESEARCH, US, vol. 6, no. 11, 1 November 2007 (2007-11-01), pages 3009-3018, XP002581270JSSN: 1535-7163 WO 2009/132058 A2	25 y 26	Novedad	X	
		WO 02/066516 A2 WO 2004/106383 A1	25 y 26	Novedad		X
USPTO	06/Octubre/2015	US9150664	A	NA	NA	NA
DOCUMENTOS ADICIONALES ENCONTRADOS POR EL EXAMINADOR DE ACUERDO A LOS CRITERIOS DE BÚSQUEDA.						
Ursula Reusch et al, "Anti-CD3 X Anti-Epidermal Growth Factor Receptor (EGFR) Bispecific Antibody Redirects T-Cell Cytolytic Activity to EGFR-Positive Cancers In vitro and in an Animal Model" Clin Cancer Res 12(1) January 1, 2006						
US 20110123532						
US 20090252683						
BÚSQUEDA DE SECUENCIAS						
Número de depósito / patente y N° de secuencia % de identidad						
SEQ ID NO (de la solicitud)	NCBI	The Lens	EMBL-EBI	DDJB	Genome Quest	
167, 177, 187, 197, 207, 217, 227, 627, 637, 647, 657, 667, 677, 687, 697,	NA: AGP01464.1	US 7612178 / SEQ ID NO: 20				
	81%, 83%	82%, 84%				

707, 717, 727, 737, 747, 757, 767, 777, 787, 797, 807, 817, 827, 837, 967, 977, 987, 997					
168, 178, 188, 198, 208, 218, 228, 628, 638, 648, 658, 668, 678, 688, 698, 708, 718, 728, 738, 748, 758, 768, 778, 788, 798, 808, 818, 828, 838, 968, 978, 988, 998	NA: AAF35179.1 87%, 88%	US 8716195 / SEQ ID NO: 286 90%, 92%			

Pantallazos Búsqueda de Palabras Clave

Sequences producing significant alignments:

Select: [All](#) [None](#) Selected: 0

Alignments Download GenPept Graphics Distance tree of results Multiple alignment						
	Description	Max score	Total score	Query cover	E value	Ident
☐	Sequence 286 from patent US 8716195	197	197	100%	2e-64	90% AJL40644.1
☐	Sequence 5 from patent US 8409567	193	193	100%	7e-63	90% AGM90594.1
☐	Sequence 11 from patent US 8911732	193	193	100%	8e-63	90% AJN78887.1
☐	Sequence 44 from patent US 8877194	193	193	100%	1e-62	92% AJN47760.1
☐	Sequence 107 from patent US 8999331	192	192	100%	1e-62	92% AKX75630.1
☐	Sequence 29 from patent US 8236315	192	192	100%	1e-62	89% AFQ74154.1
☐	Sequence 95 from patent US 8314213	192	192	100%	1e-62	89% AGA36778.1
☐	Sequence 91 from patent US 8314213	192	192	100%	2e-62	90% AGA36774.1
☐	Sequence 60 from patent US 7867495	192	192	100%	2e-62	89% AEC23586.1
☐	Sequence 1329 from patent US 8916160	192	192	100%	2e-62	89% AJN82650.1
☐	Sequence 2 from patent US 8785605	192	192	100%	2e-62	90% AJM42179.1
☐	Sequence 144 from patent US 8101724	192	192	100%	2e-62	89% AFA83440.1
☐	Sequence 15 from patent US 6884879	192	192	100%	2e-62	89% AAY69884.1
☐	Sequence 94 from patent US 6632926	192	192	100%	2e-62	88% AAR67112.1
☐	Sequence 202 from patent US 8241628	192	192	100%	3e-62	90% AFQ77305.1
☐	Sequence 8 from patent US 6884879	192	192	100%	3e-62	88% AAY69877.1
☐	Sequence 35 from patent US 8877194	192	192	100%	3e-62	91% AJN47751.1
☐	Sequence 1 from patent US 7667004	192	192	100%	3e-62	88% ADF17595.1
☐	Sequence 58 from patent US 7867495	191	191	100%	4e-62	89% AEC23584.1
☐	Sequence 105 from patent US 6884879	191	191	100%	4e-62	88% AAY69936.1
☐	Sequence 25 from patent US 8658169	192	192	100%	5e-62	90% AHL64574.1
☐	Sequence 549 from patent US 7605237	191	191	100%	5e-62	87% ADA14234.1
☐	Sequence 92 from patent US 8314213	191	191	100%	5e-62	88% AGA36775.1
☐	Sequence 17 from patent US 5821337	191	191	100%	5e-62	89% AAE23186.1
☐	Sequence 13 from patent US 6884879	191	191	100%	5e-62	88% AAY69882.1
☐	Sequence 96 from patent US 9085622	191	191	100%	5e-62	91% AMF68775.1
☐	Sequence 22 from patent US 8673306	191	191	100%	6e-62	89% AJK94978.1
☐	Sequence 103 from patent US 6884879	191	191	100%	7e-62	88% AAY69934.1
☐	Sequence 8 from patent US 6902734	191	191	100%	7e-62	89% AAY76516.1

Sequences producing significant alignments:

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Alignments	Download	GenPept	Graphics	Distance tree of results	Multiple alignment	
Description	Max score	Total score	Query cover	E value	Ident	Accession
☐ immunoglobulin light chain variable region [Homo sapiens]	191	191	100%	3e-60	87%	AAF35179.1
☐ immunoglobulin VL region=humanized bispecific antibody [human, Peptide Recombinant, 107 aa]	191	191	100%	4e-60	89%	AAB24132.1
☐ Chain L, Vascular Endothelial Growth Factor In Complex With A Neutralizing Antibody	194	194	100%	1e-59	88%	1BJ1.L
☐ immunoglobulin kappa light chain variable domain Ki O18/O8 [synthetic construct]	189	189	100%	2e-59	88%	ABR37293.1
☐ Chain A, Structure Of The Germline Vk1 O18/O8 LIGHT CHAIN VARIABLE Domain Homodimer	189	189	100%	2e-59	88%	2Q20.A
☐ Chain L, Crystal Structure Of Ustekinumab Fab	193	193	100%	2e-59	89%	3HMV.L
☐ immunoglobulin light chain [Macaca mulatta]	190	190	100%	2e-59	86%	AAB09454.1
☐ anti-HAV capsid immunoglobulin G light chain variable region [Homo sapiens]	189	189	100%	2e-59	89%	AAO86900.1
☐ Chain A, Solution Structure Of The Ki O18/O8 Y87H IMMUNOGLOBULIN LIGHT Variable Domain	189	189	100%	3e-59	87%	2KQM.A
☐ Chain L, Vascular Endothelial Growth Factor In Complex With An Affinity Matured Antibody	192	192	100%	3e-59	87%	1CZ8.L
☐ anti-PLAP single-chain variable fragment antibody [synthetic construct]	191	191	100%	4e-59	89%	ACM90512.1
☐ immunoglobulin light chain variable region [Homo sapiens]	189	189	100%	4e-59	89%	AIT52393.1
☐ immunoglobulin kappa light chain VLJ region [Homo sapiens]	189	189	100%	4e-59	89%	BAC01557.1
☐ immunoglobulin kappa light chain VLJ region [Homo sapiens]	189	189	100%	4e-59	88%	BAC01580.1
☐ immunoglobulin kappa light chain [Homo sapiens]	189	189	100%	4e-59	89%	BAH04867.1
☐ immunoglobulin kappa light chain [Homo sapiens]	189	189	100%	4e-59	87%	BAH04704.1
☐ Chain A, Ki O18/O8 Y87H IMMUNOGLOBULIN LIGHT CHAIN VARIABLE DOMAIN	189	189	100%	4e-59	87%	3CDF.A
☐ immunoglobulin mu light chain variable region [Homo sapiens]	189	189	100%	5e-59	89%	AAT86034.1
☐ immunoglobulin light chain variable region EM1-PPS-4-K1-5 [Homo sapiens]	189	189	100%	6e-59	88%	ABC6862.1
☐ immunoglobulin G heavy chain variable region [Homo sapiens]	188	188	100%	6e-59	86%	AIT38746.1
☐ immunoglobulin IgM light chain variable region [Homo sapiens]	188	188	100%	7e-59	89%	AAD03721.1
☐ immunoglobulin kappa light chain [Homo sapiens]	188	188	100%	8e-59	88%	BAH04750.1
☐ Chain L, X-ray Structures Of Fragments From Binding And Nonbinding Versions Of A Humanized Anti-cd18 Antibody: Structural Indications Of Th	191	191	100%	8e-59	89%	2FGW.L
☐ immunoglobulin kappa chain variable region [Homo sapiens]	187	187	100%	9e-59	86%	CAJ13477.1
☐ anti-HAV capsid immunoglobulin G light chain variable region [Homo sapiens]	187	187	100%	1e-58	87%	AAO86901.1
☐ immunoglobulin light chain variable region [Macaca mulatta]	187	187	100%	1e-58	85%	AKP06489.1
☐ Chain L, X-ray Structures Of Fragments From Binding And Nonbinding Versions Of A Humanized Anti-cd18 Antibody: Structural Indications Of Th	187	187	100%	1e-58	88%	1FGV.L
☐ monoclonal IgM antibody light chain [Homo sapiens]	192	192	100%	1e-58	88%	AAS01771.1
☐ immunoglobulin light chain variable region [Homo sapiens]	188	188	100%	1e-58	88%	CAJ57384.1

Sequences producing significant alignments:

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Alignments	Download	GenPept	Graphics	Distance tree of results	Multiple alignment	
Description	Max score	Total score	Query cover	E value	Ident	Accession
☐ immunoglobulin A heavy chain variable region [Homo sapiens]	201	201	100%	1e-63	81%	AGP01464.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	199	199	100%	9e-63	79%	AAC18203.1
☐ immunoglobulin A heavy chain variable region [Homo sapiens]	199	199	100%	1e-62	82%	AGP01449.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	198	198	100%	2e-62	79%	ADW08224.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	198	198	100%	3e-62	79%	AAR83306.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	198	198	100%	3e-62	80%	ACS96248.1
☐ immunoglobulin kappa chain variable region [Homo sapiens]	197	197	100%	4e-62	82%	ACS95970.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	197	197	100%	4e-62	79%	ACS96121.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	197	197	100%	6e-62	80%	AKU38587.1
☐ humanised mouse immunoglobulin [synthetic construct]	197	197	99%	6e-62	82%	CDNT1444.1
☐ IgM heavy chain variable region (VH-D-JH region) [rats, LEW, HAR-1 hybridoma cells, Peptide Partial, 121 aa]	196	196	100%	1e-61	79%	AAB35892.1
☐ immunoglobulin G heavy chain variable region [Homo sapiens]	196	196	100%	1e-61	80%	AEX29524.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	196	196	100%	1e-61	79%	CAE45435.1
☐ immunoglobulin A heavy chain variable region [Homo sapiens]	196	196	100%	1e-61	80%	AGP01255.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	196	196	100%	2e-61	79%	CAI64018.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	196	196	100%	2e-61	79%	ABB69939.1
☐ humanized anti-DREG-55 immunoglobulin heavy chain variable region [synthetic construct]	196	196	100%	2e-61	83%	AAF21960.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	196	196	100%	2e-61	79%	AAL13258.1
☐ immunoglobulin G heavy chain variable region [Homo sapiens]	196	196	100%	2e-61	76%	AEX28511.1
☐ immunoglobulin rearranged heavy chain [Homo sapiens]	195	195	100%	3e-61	79%	AAB61655.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	195	195	100%	3e-61	82%	CAE45478.1
☐ immunoglobulin variable region [Homo sapiens]	196	196	100%	3e-61	81%	ADX65554.1
☐ immunoglobulin A heavy chain variable region [Homo sapiens]	195	195	100%	3e-61	79%	AGP01811.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	195	195	100%	4e-61	79%	ACS95962.1
☐ immunoglobulin G heavy chain variable region [Homo sapiens]	194	194	100%	5e-61	83%	AEX29523.1
☐ immunoglobulin heavy chain VHdJ region [Homo sapiens]	194	194	100%	5e-61	79%	BAC02071.1
☐ immunoglobulin G heavy chain variable region [Homo sapiens]	194	194	100%	5e-61	78%	AEX29656.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	194	194	100%	6e-61	82%	ACS95737.1
☐ immunoglobulin heavy chain variable region [Homo sapiens]	194	194	96%	6e-61	80%	AAX19317.1

Sequences producing significant alignments:

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Alignments							 Download	 GenPept	 Graphics	 Distance tree of results	 Multiple alignment	
Description							Max score	Total score	Query cover	E value	Ident	Accession
☐	Sequence 20 from patent US 7612178						202	202	100%	6e-66	82%	ADA33556.1
☐	Sequence 622 from patent US 8101724						202	202	100%	8e-66	82%	AFA83659.1
☐	Sequence 2026 from patent US 8114968						201	201	100%	3e-65	81%	AFC14468.1
☐	Sequence 1214 from patent US 7329737						201	201	100%	3e-65	81%	ACC02715.1
☐	Sequence 810 from patent US 8816055						200	200	100%	7e-65	81%	AJM68043.1
☐	unnamed protein product (synthetic construct)						200	200	100%	8e-65	81%	CAK49696.1
☐	Sequence 38 from patent US 7504104						199	199	100%	8e-65	80%	ACP82324.1
☐	Sequence 1 from patent US 7943742						199	199	100%	1e-64	80%	AEF79265.1
☐	Sequence 262 from patent US 7285269						199	199	100%	2e-64	80%	ABX90443.1
☐	Sequence 9 from patent US 8394928						198	198	100%	2e-64	81%	AGM90136.1
☐	Sequence 821 from patent US 8013125						198	198	100%	2e-64	80%	AEP74987.1
☐	Sequence 322 from patent US 7485297						198	198	100%	2e-64	80%	ACN04885.1
☐	Sequence 40 from patent US 7504104						198	198	100%	3e-64	80%	ACP82326.1
☐	Sequence 143 from patent US 8679496						198	198	100%	3e-64	80%	AJL00160.1
☐	Sequence 47 from patent US 8865870						197	197	100%	4e-64	78%	AJN41286.1
☐	Sequence 40 from patent US 8865870						197	197	100%	4e-64	79%	AJN41279.1
☐	Sequence 795 from patent US 8013125						197	197	100%	4e-64	80%	AEP74961.1
☐	Sequence 490 from patent US 7485297						197	197	100%	4e-64	81%	ACN04969.1
☐	Sequence 823 from patent US 8013125						197	197	100%	5e-64	79%	AEP74989.1
☐	Sequence 26 from patent US 7563443						197	197	100%	5e-64	81%	ACW22367.1
☐	Sequence 82 from patent US 8129503						197	197	100%	5e-64	79%	AFD49542.1
☐	Sequence 39 from patent US 7504104						197	197	100%	5e-64	79%	ACP82325.1
☐	Sequence 68 from patent US 8129503						197	197	100%	6e-64	79%	AFD49528.1
☐	Sequence 145 from patent US 7943742						197	197	100%	7e-64	79%	AEF79339.1
☐	Sequence 12 from patent US 8865870						197	197	100%	7e-64	78%	AJN41251.1
☐	Sequence 48 from patent US 8865870						197	197	100%	7e-64	78%	AJN41287.1
☐	Sequence 10 from patent US 8394928						197	197	100%	8e-64	79%	AGM90137.1
☐	Sequence 1101 from patent US 8013125						197	197	100%	8e-64	79%	AEP75267.1

anti CD3 bispecific antibodies

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Cerca de 67,700 resultados (0.47 segundos)

Se muestran resultados de **anti CD3 *bispecific* antibodies**
Buscar, en cambio, anti CD3 bispecific antibodies

Artículos académicos para anti CD3 bispecific antibodies

... coated with anti-glioma× anti-CD3 bispecific antibody ... - Nitta - Mencionado por 43
... by a trifunctional anti-EpCAM× anti-CD3 antibody: a ... - Burges - Mencionado por 166
... of an anti-PSA x anti-CD3 bispecific antibody for the ... - Katzenwadel - Mencionado por 28

Anti-CD3-based bispecific antibody designed for therapy of ...

www.ncbi.nlm.nih.gov/pubmed/9650561 ▶ Traducir esta página
por BK Link - 1996 - Mencionado por 24 - Artículos relacionados
Anti-CD3-based bispecific antibody designed for therapy of human B-cell malignancy can induce T-cell activation by antigen-dependent and ...

T cells armed with anti-CD3 x anti-CD20 bispecific antibody ...

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por JM Gall - 2005 - Mencionado por 37 - Artículos relacionados
T cells armed with anti-CD3 x anti-CD20 bispecific antibody enhance killing of CD20+ malignant B cells and bypass complement-mediated rituximab resistance ...

Bispecific T-Cell Engaging Antibodies for Cancer Therapy

cancerres.aacrjournals.org/content/69/.../4941.full.ht... ▶ Traducir esta página
por PA Baeuerle - 2009 - Mencionado por 199 - Artículos relacionados
15 jun. 2009 - Here, we review the principle of a new class of bispecific antibodies ...
The anti-CD3 specific single-chain antibody (green) is shared by all BiTE ...

anti BCMA bispecific antibodies

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Cerca de 35,200 resultados (0.75 segundos)

Se muestran resultados de **anti BCMA *bispecific* antibodies**
Buscar, en cambio, anti BCMA bispecific antibodies

Artículos académicos para anti BCMA bispecific antibodies

... engineering and design of therapeutic antibodies - Presta - Mencionado por 168
... cell, and, via the Fc portion of the bispecific antibody - Lindhofer - Mencionado por 57
Antibody-based therapies in multiple myeloma - Tai - Mencionado por 27

An anti-B cell maturation antigen bispecific antibody for ...

www.ncbi.nlm.nih.gov/pubmed/25826669 - Traducir esta página
por NS Ramadoss - 2015 - Artículos relacionados
15 abr. 2015 - We report a bispecific antibody against B cell maturation antigen (BiFab-BCMA), which potently and specifically redirects T cells to lyse ...

Patent EP2762497A1 - Bispecific antibodies ... - Google

www.google.com/patents/EP2762497A1?cl=en ▶ Traducir esta página
6 ago. 2014 - A bispecific antibody specifically binding to the two targets human ...
The use of anti-BCMA antibodies for the treatment of lymphomas and ...

BCMA-BASED STRATIFICATION AND THERAPY FOR ...

www.faqs.org/patents/app/20130101599 ▶ Traducir esta página
25 abr. 2013 - The method of claim 10, wherein said anti-BCMA antibody is a monoclonal antibody, a chimeric antibody a humanized antibody, or a bispecific ...

Patent EP2762497A1 - Bispecific antibodies ... - Google

www.google.com.ar/patents/EP2762497A1?cl=pt... ▶ Traducir esta página

#	Search query	Results	Options
1	TAC=(CD3~ AND BCMA~ BISPECIFIC~ ANTIBOD?~)	3	View Browse Hits Optimise more...

Cadenas Ligeras

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Percent Identity Matrix - created by Clustal2.1

1:	H02013072406_718	100.00	98.13	97.20	97.20	91.59	93.46	93.46	93.46	96.26	80.37	79.44	78.50	80.37	78.50	80.37	79.44	77.57	77.57	77.57	77.57	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64	
2:	H02013072406_708	98.13	100.00	98.13	97.20	93.46	91.59	94.39	93.46	94.39	80.37	79.44	78.50	80.37	78.50	80.37	79.44	77.57	77.57	77.57	77.57	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64	
3:	H02013072406_668	97.20	98.13	100.00	98.13	91.59	90.65	96.26	94.39	93.46	79.44	80.37	77.57	79.44	77.57	79.44	80.37	78.50	78.50	78.50	78.50	78.50	78.50	79.44	79.44	79.44	79.44	78.50	78.50	78.50	78.50	77.57	
4:	H02013072406_658	97.20	97.20	98.13	100.00	90.65	90.65	94.39	96.26	93.46	79.44	80.37	77.57	79.44	77.57	79.44	80.37	78.50	78.50	78.50	78.50	78.50	78.50	79.44	79.44	79.44	79.44	78.50	78.50	78.50	78.50	77.57	
5:	H02013072406_698	93.46	93.46	91.59	90.65	100.00	98.13	94.39	93.46	94.39	82.24	81.31	80.37	81.31	79.44	81.31	80.37	78.50	78.50	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64	76.64	79.44	79.44	78.50	
6:	H02013072406_728	93.46	91.59	90.65	90.65	98.13	100.00	93.46	93.46	96.26	82.24	81.31	80.37	81.31	79.44	81.31	80.37	78.50	78.50	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64	76.64	79.44	79.44	78.50	
7:	H02013072406_648	93.46	94.39	96.26	94.39	94.39	93.46	100.00	98.13	97.20	81.31	82.24	79.44	81.31	79.44	81.31	82.24	80.37	80.37	80.37	80.37	77.57	77.57	78.50	78.50	78.50	78.50	77.57	77.57	80.37	80.37	79.44	
8:	H02013072406_638	93.46	93.46	94.39	96.26	93.46	93.46	98.13	100.00	97.20	81.31	82.24	79.44	81.31	79.44	81.31	82.24	80.37	80.37	80.37	80.37	77.57	77.57	78.50	78.50	78.50	78.50	77.57	77.57	80.37	80.37	79.44	
9:	H02013072406_638	96.26	94.39	93.46	93.46	94.39	96.26	97.20	97.20	100.00	82.24	81.31	80.37	82.24	80.37	82.24	81.31	79.44	79.44	79.44	79.44	78.50	78.50	77.57	77.57	77.57	77.57	76.64	76.64	79.44	79.44	78.50	
10:	H02013072406_838	80.37	80.37	79.44	79.44	82.24	82.24	81.31	81.31	81.31	81.31	82.24	100.00	96.26	95.33	97.20	92.52	94.39	93.46	90.65	91.59	91.59	91.59	88.79	88.79	87.85	87.85	87.85	87.85	86.92	86.92	89.72	
11:	H02013072406_838	79.44	79.44	80.37	80.37	81.31	81.31	82.24	82.24	81.31	81.31	82.24	96.26	100.00	97.20	93.46	94.39	94.39	97.20	92.52	91.59	91.59	91.59	88.79	88.79	89.72	89.72	89.72	89.72	90.65	90.65	92.52	
12:	H02013072406_818	78.50	78.50	77.57	77.57	80.37	80.37	79.44	79.44	80.37	95.33	97.20	100.00	92.52	97.20	95.33	94.39	89.72	88.79	88.79	88.79	87.85	87.85	86.92	86.92	86.92	86.92	87.85	87.85	89.72	89.72	90.65	
13:	H02013072406_808	80.37	80.37	79.44	79.44	81.31	81.31	81.31	81.31	81.31	82.24	97.20	93.46	92.52	100.00	95.33	97.20	96.26	89.72	90.65	90.65	90.65	88.79	88.79	87.85	87.85	87.85	87.85	86.92	86.92	89.72		
14:	H02013072406_778	78.50	78.50	77.57	77.57	79.44	79.44	79.44	79.44	80.37	92.52	94.39	97.20	95.33	100.00	98.13	97.20	88.79	87.85	87.85	87.85	87.85	87.85	86.92	86.92	86.92	86.92	87.85	87.85	89.72	89.72	90.65	
15:	H02013072406_798	80.37	80.37	79.44	79.44	81.31	81.31	81.31	81.31	81.31	82.24	94.39	94.39	95.33	97.20	98.13	100.00	97.20	90.65	89.72	89.72	89.72	89.72	88.79	88.79	88.79	88.79	87.85	87.85	91.59	91.59	90.65	
16:	H02013072406_788	79.44	79.44	80.37	80.37	80.37	80.37	82.24	82.24	81.31	93.46	97.20	94.39	96.26	97.20	97.20	100.00	91.59	90.65	90.65	90.65	88.79	88.79	89.72	89.72	89.72	89.72	90.65	90.65	92.52	92.52	93.46	
17:	H02013072406_978	77.57	77.57	78.50	78.50	78.50	78.50	80.37	80.37	79.44	90.65	92.52	89.72	89.72	88.79	90.65	91.59	100.00	95.33	97.20	97.20	93.46	91.59	91.59	92.52	92.52	92.52	92.52	91.59	91.59	93.46	93.46	92.52
18:	H02013072406_998	77.57	77.57	78.50	78.50	78.50	78.50	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	95.33	100.00	98.13	98.13	89.72	89.72	90.65	90.65	90.65	90.65	89.72	89.72	92.52	92.52	91.59	
19:	H02013072406_968	77.57	77.57	78.50	78.50	78.50	78.50	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	97.20	98.13	100.00	100.00	90.65	90.65	91.59	91.59	91.59	91.59	90.65	90.65	92.52	92.52	91.59	
20:	H02013072406_988	77.57	77.57	78.50	78.50	78.50	78.50	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	97.20	98.13	100.00	100.00	90.65	90.65	91.59	91.59	91.59	91.59	90.65	90.65	92.52	92.52	91.59	
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22:	H02013072406_768	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	78.50	88.79	88.79	87.85	88.79	87.85	89.72	88.79	91.59	89.72	90.65	90.65	100.00	100.00	99.07	99.07	99.07	99.07	98.13	98.13	95.33	95.33	94.39	
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24:	H02013072406_198	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	96.26	95.33	
25:	H02013072406_738	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	96.26	95.33	
26:	H02013072406_748	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	96.26	95.33	
27:	H02013072406_218	77.57	77.57	78.50	78.50	76.64	76.64	77.57	77.57	76.64	86.92	90.65	87.85	86.92	87.85	87.85	90.65	91.59	89.72	90.65	90.65	98.13	98.13	99.07	99.07	99.07	99.07	100.00	100.00	95.33	95.33	96.26	
28:	H02013072406_758	77.57	77.57	78.50	78.50	76.64	76.64	77.57	77.57	76.64	86.92	90.65	87.85	86.92	87.85	87.85	90.65	91.59	89.72	90.65	90.65	98.13	98.13	99.07	99.07	99.07	99.07	100.00	100.00	95.33	95.33	96.26	
29:	H02013072406_168	77.57	77.57	78.50	78.50	79.44	79.44	80.37	80.37	79.44	90.65	92.52	89.72	90.65	89.72	91.59	92.52	93.46	92.52	92.52	92.52	95.33	95.33	96.26	96.26	96.26	96.26	95.33	95.33	100.00	100.00	99.07	
30:	H02013072406_188	77.57	77.57	78.50	78.50	79.44	79.44	80.37	80.37	79.44	90.65	92.52	89.72	90.65	89.72	91.59	92.52	93.46	92.52	92.52	92.52	95.33	95.33	96.26	96.26	96.26	96.26	95.33	95.33	100.00	100.00	99.07	
31:	H02013072406_208	76.64	76.64	77.57	77.57	78.50	78.50	79.44	79.44	78.50	89.72	93.46	90.65	89.72	90.65	90.65	93.46	92.52	91.59	91.59	91.59	91.59	94.39	94.39	95.33	95.33	95.33	95.33	96.26	96.26	99.07	99.07	100.00

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Percent Identity /Matrix- created by Clustal2.1
#

1:	HQ0013072406_718	100.00	98.13	97.20	97.20	93.46	91.59	90.65	90.65	93.46	93.46	96.26	80.37	79.44	78.50	80.37	78.50	80.37	79.44	77.57	77.57	77.57	77.57	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64
2:	HQ0013072406_708	98.13	100.00	98.13	97.20	91.59	93.46	91.59	90.65	94.39	93.46	94.39	80.37	79.44	78.50	80.37	78.50	80.37	79.44	77.57	77.57	77.57	77.57	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	76.64
3:	HQ0013072406_668	97.20	98.13	100.00	98.13	90.65	91.59	93.46	91.59	96.26	94.39	93.46	79.44	80.37	77.57	79.44	77.57	79.44	80.37	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	77.57	
4:	HQ0013072406_658	97.20	97.20	98.13	100.00	90.65	90.65	91.59	93.46	94.39	96.26	93.46	79.44	80.37	77.57	79.44	77.57	79.44	80.37	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	77.57	
5:	HQ0013072406_728	93.46	91.59	90.65	90.65	100.00	98.13	97.20	97.20	93.46	93.46	96.26	82.24	81.31	80.37	81.31	79.44	81.31	80.37	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	77.57	
6:	HQ0013072406_688	91.59	93.46	91.59	90.65	98.13	100.00	98.13	97.20	94.39	93.46	94.39	82.24	81.31	80.37	81.31	79.44	81.31	80.37	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	78.50	77.57	
7:	HQ0013072406_688	90.65	91.59	93.46	91.59	97.20	98.13	100.00	98.13	96.26	94.39	93.46	81.31	82.24	79.44	80.37	78.50	80.37	81.31	79.44	79.44	79.44	79.44	77.57	77.57	78.50	78.50	78.50	78.50	78.50	77.57	77.57	80.37	79.44
8:	HQ0013072406_678	90.65	90.65	91.59	93.46	97.20	97.20	98.13	100.00	94.39	96.26	93.46	81.31	82.24	79.44	80.37	78.50	80.37	81.31	79.44	79.44	79.44	79.44	77.57	77.57	78.50	78.50	78.50	78.50	77.57	77.57	80.37	79.44	
9:	HQ0013072406_648	93.46	94.39	96.26	94.39	93.46	94.39	96.26	94.39	100.00	98.13	97.20	81.31	82.24	79.44	81.31	79.44	81.31	82.24	80.37	80.37	80.37	77.57	77.57	78.50	78.50	78.50	78.50	78.50	77.57	77.57	80.37	79.44	
10:	HQ0013072406_628	93.46	93.46	94.39	96.26	93.46	93.46	94.39	96.26	98.13	100.00	97.20	81.31	82.24	79.44	81.31	79.44	81.31	82.24	80.37	80.37	80.37	77.57	77.57	78.50	78.50	78.50	78.50	78.50	77.57	77.57	80.37	79.44	
11:	HQ0013072406_638	96.26	94.39	93.46	93.46	96.26	94.39	93.46	93.46	97.20	97.20	100.00	82.24	81.31	80.37	82.24	81.31	79.44	79.44	80.37	80.37	80.37	77.57	77.57	78.50	78.50	78.50	78.50	78.50	77.57	77.57	80.37	79.44	
12:	HQ0013072406_638	80.37	80.37	79.44	79.44	82.24	82.24	81.31	81.31	81.31	81.31	82.24	100.00	96.26	95.33	97.20	92.52	94.39	93.46	90.65	91.59	91.59	88.79	88.79	87.85	87.85	87.85	87.85	87.85	87.85	86.92	86.92	90.65	89.72
13:	HQ0013072406_628	79.44	79.44	80.37	80.37	81.31	81.31	82.24	82.24	82.24	82.24	81.31	96.26	100.00	97.20	93.46	94.39	94.39	97.20	92.52	91.59	91.59	88.79	88.79	89.72	89.72	89.72	89.72	89.72	90.65	90.65	92.52	93.46	
14:	HQ0013072406_618	78.50	78.50	77.57	77.57	80.37	80.37	79.44	79.44	79.44	79.44	80.37	95.33	97.20	100.00	92.52	97.20	95.33	94.39	89.72	88.79	88.79	87.85	87.85	86.92	86.92	86.92	86.92	86.92	87.85	87.85	89.72	90.65	
15:	HQ0013072406_608	80.37	80.37	79.44	79.44	81.31	81.31	80.37	80.37	81.31	81.31	82.24	97.20	93.46	92.52	100.00	95.33	97.20	96.26	89.72	90.65	90.65	88.79	88.79	87.85	87.85	87.85	87.85	86.92	86.92	90.65	89.72		
16:	HQ0013072406_778	78.50	78.50	77.57	77.57	79.44	79.44	78.50	78.50	79.44	79.44	80.37	92.52	94.39	97.20	95.33	100.00	98.13	97.20	88.79	87.85	87.85	87.85	87.85	86.92	86.92	86.92	86.92	87.85	87.85	89.72	90.65		
17:	HQ0013072406_768	80.37	80.37	79.44	79.44	81.31	81.31	80.37	80.37	81.31	81.31	82.24	94.39	94.39	95.33	97.20	98.13	100.00	97.20	90.65	89.72	89.72	89.72	89.72	88.79	88.79	88.79	88.79	87.85	87.85	91.59	90.65		
18:	HQ0013072406_788	79.44	79.44	80.37	80.37	80.37	80.37	81.31	81.31	81.31	82.24	82.24	81.31	93.46	97.20	94.39	96.26	97.20	97.20	100.00	91.59	90.65	90.65	90.65	88.79	88.79	89.72	89.72	89.72	90.65	90.65	92.52	93.46	
19:	HQ0013072406_978	77.57	77.57	78.50	78.50	78.50	78.50	79.44	79.44	80.37	80.37	79.44	90.65	92.52	89.72	89.72	88.79	90.65	91.59	100.00	95.33	97.20	97.20	91.59	91.59	92.52	92.52	92.52	92.52	91.59	93.46	93.46	92.52	
20:	HQ0013072406_998	77.57	77.57	78.50	78.50	78.50	78.50	79.44	79.44	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	95.33	100.00	98.13	98.13	89.72	89.72	90.65	90.65	90.65	90.65	89.72	89.72	92.52	91.59	
21:	HQ0013072406_968	77.57	77.57	78.50	78.50	78.50	78.50	79.44	79.44	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	97.20	98.13	100.00	100.00	90.65	90.65	91.59	91.59	91.59	91.59	90.65	90.65	92.52	91.59	
22:	HQ0013072406_988	77.57	77.57	78.50	78.50	78.50	78.50	79.44	79.44	80.37	80.37	79.44	91.59	91.59	88.79	90.65	87.85	89.72	90.65	97.20	98.13	100.00	100.00	90.65	90.65	91.59	91.59	91.59	91.59	90.65	90.65	92.52	91.59	
23:	HQ0013072406_228	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	78.50	88.79	88.79	87.85	88.79	87.85	89.72	88.79	91.59	89.72	90.65	90.65	100.00	100.00	99.07	99.07	99.07	99.07	98.13	98.13	95.33	94.39	
24:	HQ0013072406_768	79.44	79.44	78.50	78.50	78.50	78.50	77.57	77.57	77.57	77.57	78.50	88.79	88.79	87.85	88.79	87.85	89.72	88.79	91.59	89.72	90.65	90.65	100.00	100.00	99.07	99.07	99.07	99.07	98.13	98.13	95.33	94.39	
25:	HQ0013072406_178	78.50	78.50	78.50	78.50	78.50	78.50	79.44	79.44	77.57	77.57	78.50	88.79	88.79	87.85	88.79	87.85	89.72	92.52	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	95.33	
26:	HQ0013072406_198	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	95.33
27:	HQ0013072406_238	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	95.33
28:	HQ0013072406_748	78.50	78.50	79.44	79.44	77.57	77.57	78.50	78.50	78.50	78.50	77.57	87.85	89.72	86.92	87.85	86.92	88.79	89.72	92.52	92.52	90.65	91.59	91.59	99.07	99.07	100.00	100.00	100.00	100.00	99.07	99.07	96.26	95.33
29:	HQ0013072406_218	77.57	77.57	78.50	78.50	76.64	76.64	77.57	77.57	77.57	77.57	76.64	86.92	90.65	87.85	86.92	87.85	87.85	90.65	91.59	89.72	90.65	90.65	98.13	98.13	99.07	99.07	99.07	99.07	100.00	100.00	95.33	95.33	
30:	HQ0013072406_758	77.57	77.57	78.50	78.50	76.64	76.64	77.57	77.57	77.57	77.57	76.64	86.92	90.65	87.85	86.92	87.85	87.85	90.65	91.59	89.72	90.65	90.65	98.13	98.13	99.07	99.07	99.07	99.07	100.00	100.00	95.33	95.33	
31:	HQ0013072406_168	77.57	77.57	78.50	78.50	79.44	79.44	80.37	80.37	80.37	80.37	79.44	90.65	92.52	89.72	90.65	89.72	91.59	92.52	93.46	92.52	92.52	92.52	95.33	95.33	96.26	96.26	96.26	96.26	95.33	95.33	100.00	100.00	
32:	HQ0013072406_188	77.57	77.57	78.50	78.50	79.44	79.44	80.37	80.37	80.37	80.37	79.44	90.65	92.52	89.72	90.65	89.72	91.59	92.52	93.46	92.52	92.52	92.52	95.33	95.33	96.26	96.26	96.26	96.26	95.33	95.33	100.00	100.00	
33:	HQ0013072406_208	76.64	76.64	77.57	77.57	78.50	78.50	79.44	79.44	79.44	79.44	78.50	89.72	93.46	90.65	90.65	90.65	93.46	92.52	91.59	94.39	94.39	94.39	94.39	95.33	95.33	95.33	95.33	96.26	96.26	99.07	100.00		

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