

Supplementary Material

Keller et al. 2010. J. Clin. Microbiol. Vol. 48, No. 9.: Recognition of Potentially Novel Human Disease-associated Pathogens by Implementation of Systematic 16S rRNA Gene Sequencing in the Diagnostic Laboratory.

SUPPLEMENTARY TABLE 1. Isolates with 16S rRNA homology < 99% to accepted species (n = 60)

Analysis date	NCBI GenBank accession no.	IMM number	16S rRNA based identification	Match with highest % homology	Sequence length (bp)	Homology of 1 st match			Match with second highest % homology	Homology of 2 nd match		
						No of mismatches	%	Match length (bp)		No of mismatches	%	Match length (bp)
20071224	GU797892	316398/07	<i>Acinetobacter septicus</i>	<i>Acinetobacter septicus</i>	531	0	100.0	531	<i>Acinetobacter ursingii</i>	7	98.6	500
20050517	GU797842	270/05	<i>Acinetobacter</i> sp.	<i>Acinetobacter johnsonii</i>	537	13	97.5	526	<i>Acinetobacter junii</i>	22	95.8	519
20040827	GU797845	2293/04	<i>Acinetobacter</i> sp.	<i>Acinetobacter calcoaceticus</i>	574	10	98.3	574	<i>Acinetobacter johnsonii</i>	11	98.1	574
20051021	GU797861	127266/05	<i>Actinobaculum</i> sp.	<i>Actinobaculum schaalii</i>	574	21	95.8	496	<i>Arcanobacterium pluranimalium</i>	61	89.2	567
20080811	GU797883	316321/08	<i>Actinobaculum</i> sp.	<i>Actinobaculum schaalii</i>	771	26	96.6	768	<i>Actinobaculum urinale</i>	65	91.6	771
20080111	GU797867	316014/08	<i>Actinobaculum</i> sp.	<i>Actinobaculum schaalii</i>	576	13	97.7	577	<i>Actinobaculum massiliae</i>	16	95.8	385
20080402	GU797872	316128/08	<i>Actinobaculum</i> sp.	<i>Actinobaculum schaalii</i>	651	10	98.4	641	<i>Actinobaculum urinale</i>	63	90.4	655
20080929	GU797891	316395/08	<i>Actinomyces</i> sp.	<i>Actinomyces naeslundii</i>	568	15	97.4	573	<i>Actinomyces viscosus</i>	32	94.5	580
20040804	GU797844	2234/04	<i>Actinomyces</i> sp.	<i>Actinomyces turicensis</i>	546	7	98.7	541	<i>Actinomyces odontolyticus</i>	23	95.8	547
20071011	GU797884	316330/07	<i>Actinomyces</i> sp.	<i>Actinomyces odontolyticus</i>	504	17	96.6	496	<i>Actinomyces meyeri</i>	26	94.8	502
20041027	GU797850	3417/04	<i>Aerococcus</i> sp.	<i>Aerococcus viridans</i>	785	3	99.6	694	<i>Aerococcus urinaequi</i>	5	99.3	762
20071119	GU797887	316364/07	<i>Aggregatibacter</i> sp.	<i>Aggregatibacter segnis</i>	637	12	98.1	637	<i>Aggregatibacter aphrophilus</i>	28	95.6	635
20061228	GU797834	316503/06	<i>Aquabacterium</i> sp.	<i>Aquabacterium hongkongensis</i>	472	15	96.7	453	<i>Roseateles depolymerans</i>	27	94.3	472
20060130	GU797856	126279/06	<i>Aquabacterium</i> sp.	<i>Aquabacterium fontiphilum</i>	413	7	98.2	390	<i>Roseateles depolymerans</i>	20	95.2	413
20051128	GU797863	127700/05	<i>Aquabacterium</i> sp.	<i>Aquabacterium citratiphilum</i>	520	22	95.8	520	<i>Methylthium subsaxonicum</i>	26	95.0	520
20060509	GU797871	316114/06	<i>Brachybacterium</i> sp.	<i>Brachybacterium rhamnorum</i>	566	18	96.0	454	<i>Brachybacterium alimentarium</i>	21	95.4	454
20071029	GU797885	316347/07	<i>Brevibacteriaceae</i> family bacterium	<i>Leucobacter tardus</i>	735	57	92.2	734	<i>Rathayibacter iranicus</i>	58	85.5	399
20050208	GU797837	70/05	<i>Brevibacterium ravenburgense</i>	<i>Brevibacterium ravenburgense</i>	580	3	99.5	579	<i>Arthrobacter cummingsii</i>	28	94.9	550
20071122	GU797888	316373/07	<i>Burkholderiales</i> order bacterium	<i>Suterella stercoricanis</i>	531	54	89.8	530	<i>Schlegelella thermodepolymerans</i>	57	89.3	531
20070622	GU797876	316221/07	<i>Campylobacter ureolyticus</i>	<i>Campylobacter ureolyticus</i>	519	1	99.8	519	<i>Campylobacter jejuni</i>	33	93.7	522
20080107	GU797865	316002/08	<i>Clostridium</i> sp.	<i>Clostridium botleae</i>	531	15	97.2	530	<i>Clostridium clostridioforme</i>	17	96.8	529
20040929	GU797847	3008/04	<i>Collinsella</i> sp.	<i>Collinsella aerofaciens</i>	491	9	98.2	489	<i>Collinsella stercoris</i>	30	93.9	490
20050308	GU797839	126/05	<i>Corynebacterium freiburgense</i>	<i>Corynebacterium freiburgense</i>	595	0	100.0	595	<i>Corynebacterium acetacidophilum</i>	12	97.8	549
20081223	GU797833	316505/08	<i>Corynebacterium massiliense</i>	<i>Corynebacterium massiliense</i>	555	1	99.8	556	<i>Corynebacterium confusum</i>	16	97.1	556
20080812	GU797881	316309/08	<i>Corynebacterium pyruviciproducens</i>	<i>Corynebacterium pyruviciproducens</i>	745	0	100.0	745	<i>Corynebacterium glucuronolyticum</i>	20	97.3	745
20051207	GU797864	127894/05	<i>Corynebacterium massiliense</i>	<i>Corynebacterium massiliense</i>	409	1	99.8	409	<i>Corynebacterium confusum</i>	12	97.1	409
20051005	GU797860	127112/05	<i>Corynebacterium</i> sp.	<i>Corynebacterium ureicelerivorans</i>	537	10	98.1	532	<i>Corynebacterium afermentans</i>	12	97.8	538
20070110	GU797866	316003/07	<i>Corynebacterium mastitidis</i>	<i>Corynebacterium mastitidis</i>	463	0	100.0	463	<i>Corynebacterium segmentosum</i>	28	94.0	464
20060802	GU797878	316252/06	<i>Corynebacterium ureicelerivorans</i>	<i>Corynebacterium ureicelerivorans</i>	736	3	99.6	736	<i>Corynebacterium mucifaciens</i>	10	98.6	736
20050712	GU797853	126136/05	<i>Facklamia</i> sp.	<i>Facklamia hominis</i>	598	9	98.5	597	<i>Facklamia languida</i>	26	95.6	596
20041006	GU797848	3019/04	<i>Fusobacterium</i> sp.	<i>Fusobacterium nucleatum</i>	626	26	95.8	626	<i>Fusobacterium periodonticum</i>	25	96.0	626
20060201	GU797857	126303/04	<i>Gardnerella</i> sp.	<i>Gardnerella vaginalis</i>	527	6	98.9	527	<i>Bifidobacterium psychraerophilum</i>	50	90.5	527
20050110	GU797835	20/05	<i>Kineospaera</i> sp.	<i>Kineospaera limosa</i>	570	24	95.6	549	<i>Dermatophilus crocodyli</i>	32	94.2	551
20041221	GU797852	3961/05	<i>Kocuria</i> sp.	<i>Kocuria marina</i>	698	26	96.1	668	<i>Kocuria rhizophila</i>	39	94.4	698
20051026	GU797862	127283/05	<i>Kocuria</i> sp.	<i>Kocuria kristinae</i>	581	20	96.6	581	<i>Kocuria rosea</i>	21	96.4	583
20080922	GU797890	316386/08	<i>Leptotrichia</i> sp.	<i>Leptotrichia buccalis</i>	568	7	98.8	568	<i>Leptotrichia hofstadii</i>	13	97.7	568
20080708	GU797879	316252/08	<i>Mogibacterium</i> sp.	<i>Mogibacterium timidum</i>	538	7	98.7	538	<i>Mogibacterium vesicum</i>	18	96.6	537

SUPPLEMENTARY TABLE 1. Continued

Analysis date	NCBI GenBank accession	IMM number	16S rRNA based identification	Match with highest % homology	Sequence length (bp)	Homology of 1 st match			Match with second highest % homology	Homology of 2 nd match		
						No of mismatches	%	Match length (bp)		No of mismatches	%	Match length (bp)
20041008	GU797849	3033/04	<i>Neisseria zoodegmatidis</i>	<i>Neisseria zoodegmatidis</i>	523	3	99.4	525	<i>Neisseria waeverii</i>	20	96.1	517
20040827	GU797846	2297/04	<i>Nocardia</i> sp.	<i>Nocardia farcinica</i>	420	7	98.3	420	<i>Nocardia ottitidiscaviarum</i>	7	98.3	420
20070502	GU797874	316161/07	<i>Nocardia</i> sp.	<i>Nocardia flavorosea</i>	494	8	98.4	494	<i>Nocardia paucivorans</i>	14	97.2	494
20060227	GU797858	126561/06	<i>Nocardia</i> sp.	<i>Nocardia asteroides</i>	523	6	98.9	523	<i>Nocardia vinacea</i>	7	98.7	523
20080513	GU797875	316178/08	Paenibacillaceae family bacterium	<i>Paenicillus contaminans</i>	580	51	90.7	551	<i>Paenibacillus humicus</i>	57	90.2	581
20060927	GU797886	316349/06	Paenibacillaceae family bacterium	<i>Paenibacillus humicus</i>	523	46	91.3	526	<i>Paenibacillus contaminans</i>	52	89.9	516
20070117	GU797868	316015/07	Paenibacillaceae family bacterium	<i>Paenibacillus validus</i>	488	36	92.6	487	<i>Paenibacillus terrigena</i>	38	92.2	490
20070206	GU797869	316052/07	Paenibacillaceae family bacterium	<i>Paenibacillus chinjuensis</i>	481	34	92.9	480	<i>Paenibacillus soli</i>	34	92.9	482
20060907	GU797882	316316/06	Paenibacillaceae family bacterium	<i>Paenibacillus validus</i>	496	32	93.5	493	<i>Paenibacillus chinjuensis</i>	34	93.2	497
20080307	GU797870	316111/08	Paenibacillaceae family bacterium	<i>Paenibacillus pocheonensis</i>	585	35	93.8	563	<i>Paenibacillus validus</i>	35	93.7	558
20050221	GU797838	94/05	<i>Paenibacillus barengoltzii</i>	<i>Paenibacillus barengoltzii</i>	521	0	100.0	521	<i>Paenibacillus timonensis</i>	14	97.3	521
20071123	GU797889	316374/07	Peptostreptococcaceae family bacterium	<i>Anaerococcus octavius</i>	530	28	94.7	530	<i>Anaerococcus vaginalis</i>	38	92.6	512
20060809	GU797880	316269/06	<i>Propioniferax</i> sp.	<i>Propioniferax innocua</i>	750	27	96.3	720	<i>Microlunatus panaciterrae</i>	64	91.5	750
20050722	GU797855	126272/05	<i>Pseudomonas</i> sp.	<i>Pseudomonas fulva</i>	526	10	98.1	526	<i>Pseudomonas argentinensis</i>	10	98.1	526
20050114	GU797836	26/05	<i>Roseomonas</i> sp.	<i>Roseomonas mucosa</i>	327	5	98.5	327	<i>Roseomonas gilardii</i>	12	96.3	327
20081218	GU797893	316498/08	<i>Ruminococcus</i> sp.	<i>Ruminococcus obeum</i>	542	22	95.9	539	<i>Ruminococcus schinkii</i>	37	93.2	544
20050213	GU797841	187/08	<i>Streptococcus</i> sp.	<i>Streptococcus oralis</i>	471	18	96.1	463	<i>Streptococcus mitis</i>	19	95.9	465
20080616	GU797877	316221/08	<i>Streptococcus</i> sp.	<i>Streptococcus mitis</i>	392	10	97.4	392	<i>Streptococcus cristatus</i>	13	96.7	392
20050309	GU797840	130/05	<i>Streptococcus</i> sp.	<i>Streptococcus oralis</i>	435	9	97.8	403	<i>Streptococcus oralis</i>	9	97.8	403
20050912	GU797859	126831/05	<i>Streptococcus</i> sp.	<i>Streptococcus constellatus</i>	571	8	98.6	571	<i>Streptococcus anginosus</i>	8	98.6	571
20060605	GU797873	316152/06	<i>Streptococcus</i> sp.	<i>Streptococcus infantis</i>	636	7	98.9	631	<i>Streptococcus oralis</i>	8	98.7	632
20040611	GU797843	2056/04	<i>Streptomyces</i> sp.	<i>Streptomyces hygroscopicus</i>	636	10	98.4	628	<i>Streptomyces violaceusniger</i>	10	98.4	623
20041028	GU797851	3527/04	Thermoanaerobacteriales order bacterium	<i>Moorella thermoacetica</i>	505	88	80.3	446	<i>Moorella thermoautotrophica</i>	91	79.5	444

SUPPLEMENTARY TABLE 2. Database items used for the clinical score

Sample information	
Case number University Hospital Zurich	nnnnnnnn
Birth date	DD/MM/YYYY
Dept., ward	Dept., Ward
Case number Institute of Medical Microbiology	nnnnnnnn
Clinical diagnosis (when PCR sample was taken)	Text
Underlying disease	Text
Discharge diagnosis	Text
Consultation of Infectious Diseases Dept.	YES/NO
Infection	
Clinical findings	
Clinical infection (clinical signs & symptoms of infection)	YES/NO
Fever (according Crit. Care Med. 37 [7 Suppl]: S273–8)	YES/NO
Laboratory	
CRP (mg/L)	Value
Procalcitonin (ng/mL)	Value
Leucocytes (10 ³ cells/mL)	Value
Additional diagnostic procedures	
Imaging studies	YES/NO, text [condensed report]
Pathology	YES/NO, text [condensed report]
Serology	YES/NO, text [condensed report]
Various	Text [condensed reports]
Microbiology laboratory	
16S rRNA gene broad-spectrum PCR	
PCR: Request date	DD/MM/YYYY
PCR: Result date	DD/MM/YYYY
PCR: Pathogen identification (1 st match)	Species name
PCR: Sequence (bp)	Value
PCR: Mismatches (bp/match length)	Value
PCR: Homology of 1 st match (%)	Value
PCR: Homology of 2 nd match (%)	Value
PCR: Material type	Text
Patient: Sampling site (body site)	Text
Microscopy: Bacteria in Gram stain	Value [quantity per visual field]
Microscopy: Leucocytes in Gram stain	Value [quantity per visual field]
Culture: Pathogen, identification	Species name
Culture: Pathogen, quantity	Value [quantity]
Microbial examinations, other body sites	
Pathogen (most likely, combined result)	Species name(s)
Material	Text
Sampling date	DD/MM/YYYY
Therapy	
Antibiotic therapy	YES/NO
Antibiotic therapy: Regimen	Text [substance, dosage]
Antibiotic therapy: Start date	DD/MM/YYYY
Adaption of antibiotic regimen following PCR result	YES/NO
Adaption: Kind of adaption	Text
Adaption: Date	DD/MM/YYYY
Clinical Relevance	
Relevance of the pathogen identified in PCR	YES/NO
Relevance of PCR result	YES/NO