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Title: Simultaneous quantification of the most common and proteolytic *Pseudomonas* species in raw milk by multiplex qPCR

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Supplementary Figure

Tree scale : 0.1

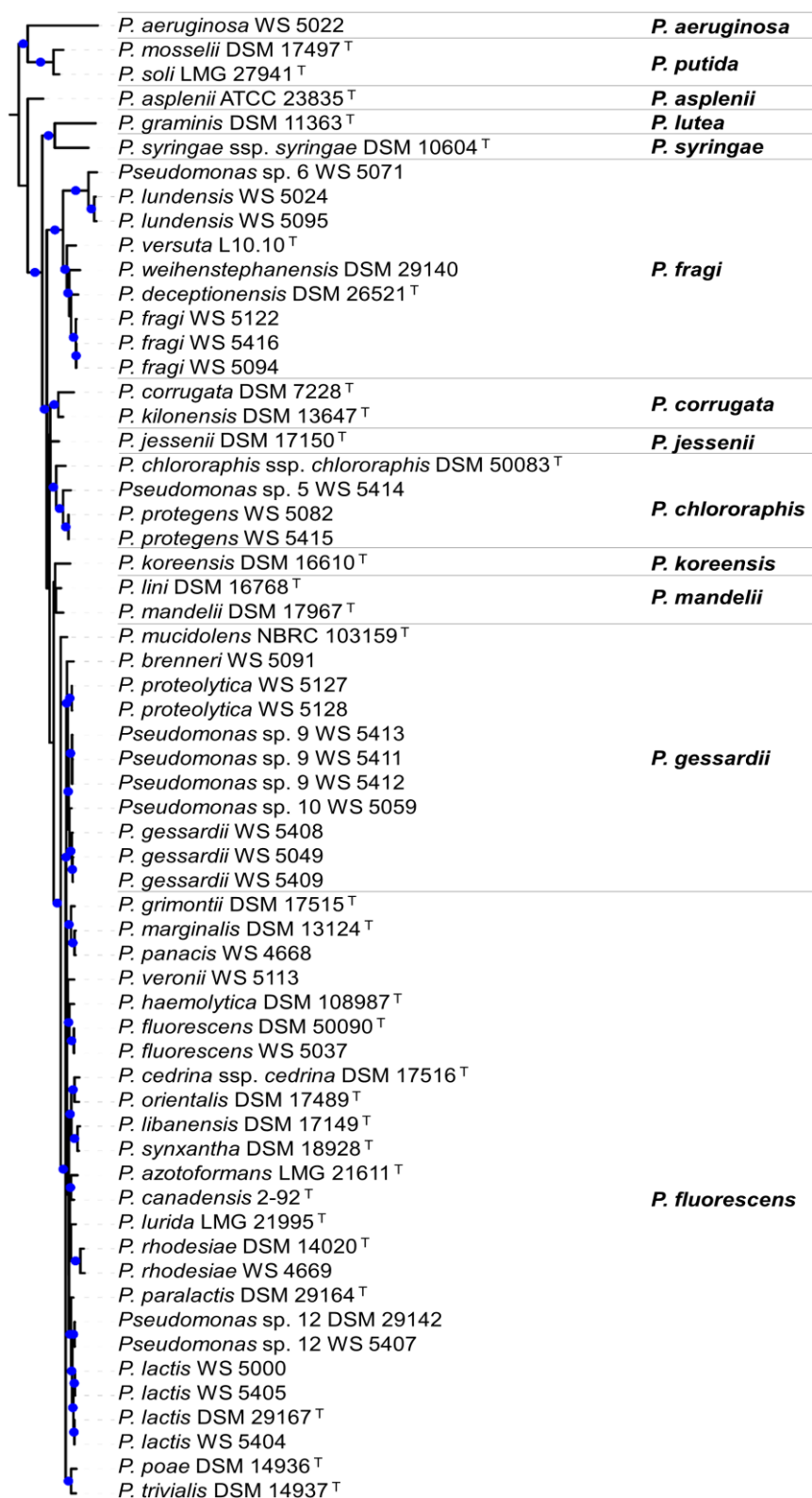


Fig S1 Rooted *rpoB* gene phylogeny comprising 61 different *Pseudomonas* strains. The tree was reconstructed on the basis of 4,074 alignment positions using the maximum likelihood method and the GTR+G+I nucleotide substitution model. *P. aeruginosa* WS 5022 was used as outgroup. Blue circles indicate branches with high bootstrap support ($\geq 70\%$ of 500 replicates). The phylogeny was separated in 13 monophyletic groups. Group names are shown in bold next to the tree

Supplementary Tables

Table S1 Bacterial strains used for evaluation of the multiplex qPCR assay. Target strains of the five species-specific hydrolysis probes (P1, P2, P3, P4 and P5) are indicated in bold print

Species	Strain	Strain collection	Origin
<i>Acinetobacter guillouiae</i>	WS 5457	WS (TUM)	raw milk, Germany
<i>Acinetobacter johnsonii</i>	WS 5458	WS (TUM)	raw milk, Germany
<i>Acinetobacter junii</i>	WS 5459	WS (TUM)	environmental monitoring for pharmaceutical industry
<i>Aerococcus viridans</i>	WS 5460	WS (TUM)	raw milk, Germany
<i>Arthrobacter casei</i>	WS 5462	WS (TUM)	Appenzeller cheese, Germany
<i>Arthrobacter ilicis</i>	WS 5461	WS (TUM)	environmental monitoring for pharmaceutical industry
<i>Bacillus licheniformis</i>	DSM 8785	DSMZ	miilk, unkown
<i>Bifidobacterium longum</i> [†]	DSM 20219	DSMZ	intestine of adult, unkown
<i>Brevibacterium aurantiacum</i>	WS 5463	WS (TUM)	raw milk, Germany
<i>Brevibacterium ptyocampae</i>	WS 5464	WS (TUM)	raw milk, Germany
<i>Chryseobacterium haifense</i>	WS 5465	WS (TUM)	raw milk, Germany
<i>Citrobacter freundii</i>	WS 5466	WS (TUM)	dairy product, Germany
<i>Corynebacterium comporealensis</i>	WS 5467	WS (TUM)	raw milk, Germany
<i>Corynebacterium stationis</i>	WS 5469	WS (TUM)	raw milk, Germany
<i>Delftia lacustris</i>	WS 5470	WS (TUM)	raw milk, Germany
<i>Enhydrobacter aerosaccus</i>	WS 5471	WS (TUM)	environmental monitoring for pharmaceutical industry
<i>Enterobacter cowanii</i>	WS 5472	WS (TUM)	raw milk, Germany
<i>Enterococcus durans</i>	WS 5473	WS (TUM)	raw milk, Germany
<i>Enterococcus italicus</i>	WS 5474	WS (TUM)	raw milk, Germany
<i>Hafnia alvei</i>	DSM 30098	DSMZ	raw milk, unkown
<i>Kocuria kristinae</i>	WS 5475	WS (TUM)	raw milk, Germany
<i>Lactobacillus paracasei</i>	WS 5476	WS (TUM)	Bauernkäse, Germany
<i>Lactococcus garvieae</i>	WS 5478	WS (TUM)	raw milk, Germany
<i>Lactococcus lactis</i>	WS 5479	WS (TUM)	raw milk, Germany
<i>Lactococcus raffinolactis</i> [†]	DSM 20443	DSMZ	raw milk, unkown
<i>Leuconostoc lactis</i>	WS 5480	WS (TUM)	Unknown
<i>Microbacterium hominis</i>	WS 5481	WS (TUM)	raw milk, Germany
<i>Pseudoalteromonas haloplanktis</i>	WS 5482	WS (TUM)	dairy product, Germany
<i>Pseudomonas aeruginosa</i>	WS 5022	WS (TUM)	raw milk, Germany
<i>Pseudomonas alcaligenes</i> [†]	WS 5013	DSMZ	dairy product, Germany
<i>Pseudomonas asplenii</i> [†]	DSM 17133	DSMZ	bird's nest fern <i>Asplenium nidus</i> , USA
<i>Pseudomonas brenneri</i>	WS 5091	DSMZ	raw milk, Germany
<i>Pseudomonas canadensis</i> [†]	LMG 28499	LMG	Soil, Woodslee, Ontario Canada
<i>Pseudomonas cedrina</i> [†]	DSM 17516	DSMZ	spring water, Lebanon
<i>Pseudomonas chengduensis</i> [†]	DSM 26382	DSMZ	waste disposal site, China
<i>Pseudomonas chlororaphis</i> [†]	DSM 50083	DSMZ	plate contaminant, unkown
<i>Pseudomonas corrugata</i> [†]	DSM 7228	DSMZ	<i>Lycopersicon esculentum</i> , UK
<i>Pseudomonas deceptionensis</i> [†]	DSM 26521	DSMZ	marine sediment, Antarctica

Species	Strain	Strain collection	Origin
<i>Pseudomonas endophytica</i>	WS 5129	WS (TUM)	stem tissue of <i>Solanum tuberosum</i> , Spain
<i>Pseudomonas extremaustralis</i> ^T	DSM 17835	DSMZ	water pond, Antarctica
<i>Pseudomonas fluorescens</i> ^{P2}	WS 5037	WS (TUM)	raw milk, Germany
<i>Pseudomonas fluorescens</i> ^{T, P2}	DSM 50090	WS (TUM)	Pre-filter tanks, UK
<i>Pseudomonas fragi</i> ^{P4}	WS 5094	WS (TUM)	raw milk, Germany
<i>Pseudomonas fragi</i> ^{P4}	WS 5112	WS (TUM)	raw milk, Germany
<i>Pseudomonas fragi</i> ^{P4}	WS 5416	WS (TUM)	raw milk, Germany
<i>Pseudomonas gessardii</i> ^{P1}	WS 5049	WS (TUM)	raw milk, Germany
<i>Pseudomonas gessardii</i> ^{P1}	WS 5408	WS (TUM)	raw milk, Germany
<i>Pseudomonas gessardii</i> ^{P1}	WS 5409	WS (TUM)	hok 070719-16-1
<i>Pseudomonas graminis</i>	DSM 100941	DSMZ	cleanroom facility, France
<i>Pseudomonas grimontii</i> ^T	DSM 17515	DSMZ	mineral water, France
<i>Pseudomonas haemolytica</i> ^T	DSM 108987	DSMZ	raw milk, Germany
<i>Pseudomonas helleri</i> ^T	DSM 29165	DSMZ	raw milk, Germany
<i>Pseudomonas jessenii</i>	DSM 10315	DSMZ	soil, Germany, Konstanz
<i>Pseudomonas jessenii</i>	WS 5418	WS (TUM)	raw milk, Germany
<i>Pseudomonas kilonensis</i> ^T	DSM 13647	DSMZ	agricultural soil, Germany
<i>Pseudomonas koreensis</i> ^T	DSM 16610	DSMZ	agricultural soil, Korea
<i>Pseudomonas lactis</i> ^{P2}	WS 5404	WS (TUM)	raw milk, Germany
<i>Pseudomonas lactis</i> ^{P2}	WS 5405	WS (TUM)	raw milk, Germany
<i>Pseudomonas lactis</i> ^{P2}	WS 5000	WS (TUM)	raw milk, Germany
<i>Pseudomonas lactis</i> ^{T, P2}	DSM 29167	DSMZ	raw milk, Germany
<i>Pseudomonas libanensis</i> ^T	DSM 17149	DSMZ	spring water, Lebanon
<i>Pseudomonas lini</i> ^T	DSM 16768	DSMZ	rhizospheric soil, France
<i>Pseudomonas lundensis</i> ^{P5}	WS 5024	WS (TUM)	raw milk, Germany
<i>Pseudomonas lundensis</i> ^{P5}	WS 5095	WS (TUM)	raw milk, Germany
<i>Pseudomonas mandelii</i> ^T	DSM 17967	DSMZ	mineral water, France
<i>Pseudomonas marginalis</i>	DSM 13124	DSMZ	<i>Cichorium intybus</i> , USA
<i>Pseudomonas mosselii</i> ^T	DSM 17497	DSMZ	medical specimen, France
<i>Pseudomonas mucidolens</i>	WS 5456	WS (TUM)	raw milk, Germany
<i>Pseudomonas nitroreducens</i> ^T	DSM 14399	WS (TUM)	oil-brine, Japan
<i>Pseudomonas orientalis</i> ^T	DSM 17489	DSMZ	spring water, Lebanon
<i>Pseudomonas oryzihabitans</i>	WS 5017	WS (TUM)	unknown, Germany
<i>Pseudomonas oryzihabitans</i> ^T	DSM 6835	DSMZ	rice paddy, Japan
<i>Pseudomonas panacis</i>	WS 4668	WS (TUM)	raw milk, Germany
<i>Pseudomonas paralactis</i> ^T	DSM 29164	DSMZ	raw milk, Germany
<i>Pseudomonas peli</i> ^T	DSM 17833	DSMZ	nitrifying enrichment culture, Belgium
<i>Pseudomonas poae</i> ^T	DSM 14936	DSMZ	phyllosphere of grasses, Germany
<i>Pseudomonas protegens</i> ^{P3}	WS 5082	WS (TUM)	raw milk, Germany
<i>Pseudomonas protegens</i> ^{P3}	WS 5415	WS (TUM)	raw milk, Germany
<i>Pseudomonas proteolytica</i> ^{P1}	WS 5127	WS (TUM)	raw milk, Germany
<i>Pseudomonas proteolytica</i> ^{P1}	WS 5128	WS (TUM)	raw milk, Germany
<i>Pseudomonas psychrophila</i> ^T	DSM 17535	DSMZ	coldroom for food storage, Japan

Species	Strain	Strain collection	Origin
<i>Pseudomonas psychrotolerans</i> [†]	DSM 15758	DSMZ	water under a dog's cage in a Medical Clinic for Small Animals, Austria
<i>Pseudomonas rhodesiae</i> [†]	DSM 14020	DSMZ	mineral water, France
<i>Pseudomonas saxonica</i>	DSM 108990	DSMZ	raw milk, Germany
<i>Pseudomonas saxonica</i> [†]	DSM 108989	DSMZ	raw milk, Germany
<i>Pseudomonas soli</i> [†]	DSM 28043	DSMZ	soil, Spain
<i>Pseudomonas</i> sp. 5 ^{P3}	WS 5414	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 6 ^{P5}	WS 5071	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 9 ^{P1}	WS 5411	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 9 ^{P1}	WS 5412	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 9 ^{P1}	WS 5413	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 10 ^{P1}	WS 5059	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 12 ^{P2}	WS 5407	WS (TUM)	raw milk, Germany
<i>Pseudomonas</i> sp. 12 ^{P2}	DSM 29142	DSMZ	raw milk, Germany
<i>Pseudomonas stutzeri</i>	WS 5018	WS (TUM)	environmental monitoring for pharmaceutical industry
<i>Pseudomonas synxantha</i> [†]	DSM 18928	DSMZ	cream, USA
<i>Pseudomonas syringae</i>	LMG 5141	DSMZ	<i>Cucumis sativus</i> , USA
<i>Pseudomonas syringae</i> subsp. <i>Syringae</i> [†]	DSM 10604	DSMZ	<i>Syringa vulgaris</i> , UK
<i>Pseudomonas taetrolens</i> [†]	DSM 21104	DSMZ	musty egg, unknown
<i>Pseudomonas trivialis</i> [†]	DSM 14937	DSMZ	phyllosphere of grasses, Germany
<i>Pseudomonas veronii</i>	WS 5113	WS (TUM)	raw milk, Germany
<i>Pseudomonas versuta</i> [†]	DSM 101070	DSMZ	Soil, Antarctica, Lagoon Island
<i>Pseudomonas weihenstephanensis</i>	DSM 29140	DSMZ	raw milk, Germany
<i>Psychrobacter alimentarius</i>	WS 5483	WS (TUM)	dairy product, Germany
<i>Psychrobacter psychrophilus</i>	WS 5484	WS (TUM)	air, Germany
<i>Serratia liquefaciens</i>	DSM 30065	DSMZ	raw milk, unknown
<i>Staphylococcus agnetis</i>	WS 5485	WS (TUM)	raw milk, Germany
<i>Staphylococcus chromogenes</i>	WS 5486	WS (TUM)	raw milk, Germany
<i>Staphylococcus haemolyticus</i>	WS 5488	WS (TUM)	raw milk, Germany
<i>Staphylococcus sciuri</i>	WS 5489	WS (TUM)	raw milk, Germany
<i>Stenotrophomonas maltophilia</i>	WS 5490	WS (TUM)	dairy product, Germany
<i>Stenotrophomonas rhizophila</i>	WS 5491	WS (TUM)	Fish delicacies, Germany
<i>Streptococcus equinus</i>	WS 5487	WS (TUM)	raw milk, Germany
<i>Streptococcus mitis</i> [†]	DSM 12643	DSMZ	oral cavity, human, unknown
<i>Streptococcus pyogenes</i>	DSM 2071	DSMZ	human isolate, unknown

[†]: type strains

^{P1-5}: target strain of probe P1-P5

Table S2 Genome data of 61 *Pseudomonas* strains from NCBI used for the construction of *rpoB*- and *aprX*-phylogenetic trees und for primer and probe design

Strain	NCBI WGS ID	RefSeq/GenBank IDs
<i>P. aeruginosa</i> WS 5022	JAAQZH01	
<i>P. asplenii</i> ATCC 23835 ^T		LT629777.1
<i>P. azotoformans</i> LMG 21611 ^T		NZ_LT629702.1
<i>P. brenneri</i> WS 5091	JAAQZG01	
<i>P. canadensis</i> 2-92 ^T	AYTD01	
<i>P. cedrina</i> ssp. <i>cedrina</i> DSM 17516 ^T	MNPW01	
<i>P. chlororaphis</i> ssp. <i>chlororaphis</i> DSM 50083 ^T	VFIN01	
<i>P. corrugata</i> DSM 7228 ^T	LHVK01	
<i>P. deceptionensis</i> DSM 26521 ^T	JYKX01	
<i>P. fluorescens</i> WS 5037	JAAQZD01	
<i>P. fluorescens</i> DSM 50090 ^T	VFEP01	
<i>P. fragi</i> WS 5094	JAAQYX01	
<i>P. fragi</i> WS 5112	JAAQYV01	
<i>P. fragi</i> WS 5416	JAAQYQ01	
<i>P. gessardii</i> WS 5409	JAAQYP01	
<i>P. gessardii</i> WS 5049	JAAQYO01	
<i>P. gessardii</i> WS 5408	JAAQYN01	
<i>P. graminis</i> DSM 11363 ^T	FOHW01	
<i>P. grimontii</i> DSM 17515 ^T	VFES01	
<i>P. haemolytica</i> DSM 108987 ^T	VOIW01	
<i>P. jessenii</i> DSM 17150 ^T	NIWT01	
<i>P. kilonensis</i> DSM 13647 ^T	LHVH01	
<i>P. koreensis</i> DSM 16610 ^T	JAAQYM01	
<i>P. lactis</i> WS 5000	JAAQYJ01	
<i>P. lactis</i> WS 5404	JAAQYI01	
<i>P. lactis</i> WS 5405	JAAQYH01	
<i>P. lactis</i> DSM 29167 ^T	JYLO01	
<i>P. libanensis</i> DSM 17149 ^T	JY LH01	
<i>P. lini</i> DSM 16768 ^T	JYLB01	
<i>P. lundensis</i> WS 5024	JAAQYG01	
<i>P. lundensis</i> WS 5095	JAAQYC01	
<i>P. lurida</i> LMG 21995 ^T	PDJB01	
<i>P. mandelii</i> DSM 17967 ^T	VFIM01	
<i>P. marginalis</i> DSM 13124 ^T	VFEQ01	
<i>P. mosselii</i> DSM 17497 ^T	JHYW01	
<i>P. mucidolens</i> NBRC 103159 ^T	BDAH01	
<i>P. orientalis</i> DSM 17489 ^T	JYLM01	
<i>P. panacis</i> WS 4668	JAARME01	
<i>P. paralactis</i> DSM 29164 ^T	JYLN01	
<i>P. poae</i> DSM 14936 ^T	JYLI01	
<i>P. protegens</i> WS 5082	JAARMD01	
<i>P. protegens</i> WS 5415	JAAQXO01	
<i>P. proteolytica</i> WS 5127	JAAQXK01	
<i>P. proteolytica</i> WS 5128	JAAQXJ01	
<i>P. rhodesiae</i> WS 4669	JAAQXF01	
<i>P. rhodesiae</i> DSM 14020 ^T	VFEU01	
<i>P. soli</i> LMG 27941 ^T	FOEQ01	
<i>Pseudomonas</i> sp. 5 WS 5414	JAAQWZ01	
<i>Pseudomonas</i> sp. 6 WS 5071	JAAQWY01	
<i>Pseudomonas</i> sp. 9 WS 5411	JAARMC01	
<i>Pseudomonas</i> sp. 9 WS 5412	JAARMB01	
<i>Pseudomonas</i> sp. 9 WS 5413	JAAQWR01	
<i>Pseudomonas</i> sp. 10 WS 5059	JAAQWO01	
<i>Pseudomonas</i> sp. 12 DSM 29142	JYLP01	
<i>Pseudomonas</i> sp. 12 WS 5407	JAAQWJ01	

Strain	NCBI WGS ID	RefSeq/GenBank IDs
<i>P. synxantha</i> DSM 18928 [†]	JY LJ01	
<i>P. syringae</i> ssp. <i>syringae</i> DSM 10604 [†]	JAL K01	
<i>P. trivialis</i> DSM 14937 [†]	JY LK01	
<i>P. veronii</i> WS 5113	JAA QWD01	
<i>P. versuta</i> L10.10 [†]		NZ_CP012676.1
<i>P. weihenstephanensis</i> DSM 29140	JY LG01	

[†]: type strain

Table S3 Composition of six different DNA-pools used as templates in single- and multiplex qPCR. Every DNA-pool (pool 1-6) contains equal DNA amounts of five different strains, each representing a target for one species-specific probe (P1-P5)

Probe	Species	Strain	Pool 1	Pool 2	Pool3	Pool 4	Pool 5	Pool 6
P1	<i>P. proteolytica</i>	WS 5127	X					
	<i>P. proteolytica</i>	WS 5128		X				
	<i>P. gessardii</i>	WS 5408			X			
	<i>P. gessardii</i>	WS 5049				X		
	<i>Pseudomonas</i> sp. 9	WS 5413					X	
	<i>Pseudomonas</i> sp. 9	WS 5411						X
P2	<i>P. lactis</i>	WS 5404	X					
	<i>P. lactis</i>	DSM 29167		X				
	<i>P. fluorescens</i>	WS 5037			X			
	<i>P. fluorescens</i>	DSM 50090				X		
	<i>Pseudomonas</i> sp. 12	WS 5407					X	
	<i>Pseudomonas</i> sp. 12	DSM 29142						X
P3	<i>Pseudomonas</i> sp. 5	WS 5414	X		X		X	
	<i>P. protegens</i>	WS 5082		X		X		X
P4	<i>P. fragi</i>	WS 5416	X		X		X	
	<i>P. fragi</i>	WS 5112		X		X		X
P5	<i>P. lundensis</i>	WS 5095	X		X		X	
	<i>P. lundensis</i>	WS 5024		X		X		X

Table S4 C_q-values from multiplex qPCR assays, applying the six *Pseudomonas* hydrolysis probes (P1-P6) and DNA (0.1-0.2 ng/μl final concentration) from 49 *Pseudomonas* strains from 45 non-target species and isolates of 40 other bacterial species. Mean values of two technical replicates per measurement are shown. Hyphens (-) represent no signal in qPCR. C_q-values above the defined threshold of 33 were considered as not quantifiable and are given in brackets

Species and strain	P1	P2	P3	P4	P5	P6
Non-target pseudomonads						
<i>Pseudomonas aeruginosa</i> WS 5022	-	-	-	-	-	22.69
<i>Pseudomonas alcaligenes</i> WS 5013	-	-	-	-	-	20.82
<i>Pseudomonas asplenii</i> DSM 17133 [†]	-	-	-	-	-	19.13
<i>Pseudomonas brenneri</i> WS 5091	-	-	-	-	-	18.51
<i>Pseudomonas canadensis</i> LMG 28499 [†]	-	-	-	-	-	20.08
<i>Pseudomonas cedrina</i> DSM 17516 [†]	-	-	-	-	-	20.35
<i>Pseudomonas chengduensis</i> DSM 26382 [†]	-	-	-	-	-	22.63

Species and strain	P1	P2	P3	P4	P5	P6
<i>Pseudomonas chlororaphis</i> DSM 50083 [†]	-	-	-	-	-	20.60
<i>Pseudomonas corrugata</i> DSM 7228 [†]	-	-	-	-	-	19.92
<i>Pseudomonas deceptionensis</i> DSM 26521 [†]	-	-	-	-	-	19.93
<i>Pseudomonas endophytica</i> WS 5129	-	-	-	-	-	19.97
<i>Pseudomonas extremaustralis</i> DSM 17835 [†]	-	-	-	-	-	18.64
<i>Pseudomonas graminis</i> DSM 100941	-	-	-	-	-	22.63
<i>Pseudomonas grimontii</i> DSM 17515 [†]	32.13	-	-	-	-	18.79
<i>Pseudomonas haemolytica</i> DSM 108987 [†]	-	26.00	-	-	-	20.43
<i>Pseudomonas helleri</i> DSM 29165 [†]	-	-	-	-	-	20.00
<i>Pseudomonas jessenii</i> DSM10315	-	-	-	-	-	18.24
<i>Pseudomonas jessenii</i> WS 5418	-	-	-	-	-	19.09
<i>Pseudomonas kilonensis</i> DSM 13647 [†]	-	-	-	-	-	20.05
<i>Pseudomonas koreensis</i> DSM 16610 [†]	-	-	-	-	-	19.01
<i>Pseudomonas libanensis</i> DSM 17149 [†]	-	-	-	-	-	20.07
<i>Pseudomonas lini</i> DSM 16768 [†]	-	-	-	-	-	18.64
<i>Pseudomonas mandelii</i> DSM 17967 [†]	-	-	-	-	-	17.45
<i>Pseudomonas marginalis</i> DSM 13124	32.12	-	-	-	-	18.73
<i>Pseudomonas mosselii</i> DSM 17497 [†]	-	-	-	-	-	21.81
<i>Pseudomonas mucidolens</i> WS 5456	-	-	-	-	-	20.32
<i>Pseudomonas nitroreducens</i> DSM 14399 [†]	-	-	-	-	-	21.38
<i>Pseudomonas orientalis</i> DSM 17489 [†]	-	24.45	-	-	-	18.81
<i>Pseudomonas oryzihabitans</i> DSM 6835 [†]	-	-	-	-	-	18.70
<i>Pseudomonas oryzihabitans</i> WS 5017	-	-	-	-	-	18.62
<i>Pseudomonas panacis</i> WS 4668	-	-	-	-	-	20.16
<i>Pseudomonas paralactis</i> DSM 29164 [†]	-	24.44	-	-	-	18.74
<i>Pseudomonas peli</i> DSM 17833 [†]	-	-	-	-	-	20.06
<i>Pseudomonas poae</i> DSM 14936 [†]	-	(33.31)	-	-	-	19.77
<i>Pseudomonas psychrophila</i> DSM 17535 [†]	-	-	-	-	-	18.14
<i>Pseudomonas psychrotolerans</i> DSM 15758 [†]	-	-	-	-	-	18.49
<i>Pseudomonas rhodesiae</i> DSM 14020 [†]	-	-	-	-	-	20.62
<i>Pseudomonas saxonica</i> DSM 108989 [†]	-	-	-	-	-	19.97
<i>Pseudomonas saxonica</i> DSM 108990	-	-	-	-	-	19.69
<i>Pseudomonas soli</i> DSM 28043 [†]	-	-	-	-	-	22.53
<i>Pseudomonas stutzeri</i> WS 5018	-	-	-	-	-	27.13
<i>Pseudomonas synxantha</i> DSM 18928 [†]	-	27.61	-	-	-	19.82
<i>Pseudomonas syringae</i> LMG 5141	-	-	-	-	-	20.19
<i>Pseudomonas syringae</i> subsp. <i>Syringae</i> DSM 10604 [†]	-	-	-	-	-	20.29
<i>Pseudomonas taetrolens</i> DSM 21104 [†]	-	-	-	-	-	18.02
<i>Pseudomonas trivialis</i> DSM 14937 [†]	(33.27)	(34.19)	-	-	-	18.21
<i>Pseudomonas veronii</i> WS 5113	-	-	-	-	-	19.72
<i>Pseudomonas versuta</i> DSM 101070 [†]	-	-	-	-	-	19.96
<i>Pseudomonas weihenstephanensis</i> DSM 29140	-	-	-	-	-	19.7

Species and strain	P1	P2	P3	P4	P5	P6
Other bacteria						
<i>Acinetobacter guillouiae</i> WS 5457	-	-	-	-	-	(33.70)
<i>Acinetobacter johnsonii</i> WS 5458	-	-	-	-	-	(33.84)
<i>Acinetobacter junii</i> WS 5459	(34.87)	-	-	-	-	-
<i>Aerococcus viridans</i> WS 5460	(33.23)	-	-	-	-	-
<i>Arthrobacter casei</i> WS 5462	-	-	-	-	-	-
<i>Arthrobacter ilicis</i> WS 5461	-	-	-	-	-	-
<i>Bacillus licheniformis</i> DSM 8785	-	-	-	-	-	-
<i>Bifidobacterium longum</i> DSM 20219 [†]	-	-	-	-	-	-
<i>Brevibacterium aurantiacum</i> WS 5463	-	-	-	-	-	-
<i>Brevibacterium ptyocampae</i> WS 5464	-	-	-	-	-	(33.99)
<i>Chryseobacterium haifense</i> WS 5465	-	-	-	-	-	-
<i>Citrobacter freundii</i> WS 5466	-	-	-	-	-	30.96
<i>Corynebacterium comporealensis</i> WS 5467	-	-	-	-	-	-
<i>Corynebacterium stationis</i> WS 5469	-	-	-	-	-	-
<i>Delftia lacustris</i> WS 5470	(33.31)	-	-	-	-	32.91
<i>Enhydrobacter aerosaccus</i> WS 5471	-	-	-	-	-	(33.46)
<i>Enterobacter cowanii</i> WS 5472	-	-	-	-	-	-
<i>Enterococcus durans</i> WS 5473	-	-	-	-	-	-
<i>Enterococcus italicus</i> WS 5474	-	-	-	-	-	-
<i>Hafnia alvei</i> DSM 30098	-	-	-	-	-	32.47
<i>Kocuria kristinae</i> WS 5475	-	-	-	-	-	-
<i>Lactobacillus paracasei</i> WS 5476	-	-	-	-	-	-
<i>Lactococcus garvieae</i> WS 5478	-	-	-	-	-	-
<i>Lactococcus lactis</i> WS 5479	-	-	-	-	-	-
<i>Lactococcus raffinolactis</i> DSM 20443 [†]	-	-	-	-	-	-
<i>Leuconostoc lactis</i> WS 5480	(33.90)	-	-	-	-	-
<i>Microbacterium hominis</i> WS 5481	-	-	-	-	-	-
<i>Pseudoalteromonas haloplanktis</i> WS 5482	-	-	-	-	-	29.61
<i>Psychrobacter alimentarius</i> WS 5483	-	-	-	-	-	-
<i>Psychrobacter psychrophilus</i> WS 5484	(34.37)	-	-	-	-	-
<i>Serratia liquefaciens</i> DSM 30065	-	-	-	-	-	32.76
<i>Staphylococcus agnetis</i> WS 5485	-	-	-	-	-	-
<i>Staphylococcus chromogenes</i> WS 5486	(34.29)	-	-	-	-	-
<i>Staphylococcus haemolyticus</i> WS 5488	-	-	-	-	-	-
<i>Staphylococcus sciuri</i> WS 5489	(34.87)	-	-	-	-	-
<i>Stenotrophomonas maltophilia</i> WS 5490	-	-	-	-	-	-
<i>Stenotrophomonas rhizophila</i> WS 5491	-	-	-	-	-	-
<i>Streptococcus equinus</i> WS 5487	(34.58)	-	-	-	-	-
<i>Streptococcus mitis</i> DSM 12643 [†]	-	-	-	-	-	-
<i>Streptococcus pyogenes</i> DSM 2071	32.91	-	-	-	-	-

[†]: type strains

Table S5 Total- and *Pseudomonas* cell counts of 60 industrial raw milk samples, determined by cultivation on TSA and CFC agar, respectively. ND: not determined

Raw milk sample	Total cell count	<i>Pseudomonas</i> cell count	<i>Pseudomonas</i> / total count [%]
1	1.10E+07	9.50E+06	86.7
2	>1.00E+08	2.00E+07	ND
3	1.20E+07	5.95E+06	49.6
4	2.00E+07	2.00E+07	100.0
5	>1.00E+08	1.07E+07	ND
6	>1.00E+08	1.16E+07	ND
7	7.00E+06	5.00E+06	71.4
8	2.00E+07	3.59E+06	18.0
9	6.51E+05	5.05E+05	77.5
10	3.17E+06	1.46E+06	46.1
11	1.29E+06	8.20E+05	63.6
12	6.23E+06	2.84E+06	45.6
13	>1.00E+08	3.24E+06	ND
14	4.30E+05	5.10E+05	118.6
15	1.75E+05	2.07E+05	118.1
16	>1.00E+05	3.86E+05	ND
17	6.88E+05	4.46E+05	64.9
18	1.87E+05	1.59E+05	85.0
19	3.80E+04	2.84E+04	74.6
20	1.36E+05	5.44E+04	40.0
21	1.92E+06	2.62E+05	13.6
22	9.50E+05	4.68E+05	49.3
23	1.60E+04	3.00E+02	1.9
24	9.91E+04	8.80E+04	88.8
25	6.00E+04	5.80E+04	96.7
26	1.23E+05	3.55E+04	29.0
27	5.55E+05	4.53E+04	8.2
28	1.92E+05	1.96E+05	102.4
29	4.66E+05	3.11E+05	66.7
30	1.10E+05	6.71E+04	61.0
31	1.16E+06	2.28E+05	19.7
32	2.72E+05	1.84E+05	67.6
33	2.73E+05	1.09E+05	40.0
34	1.25E+05	8.10E+04	64.8
35	1.07E+05	1.87E+04	17.5
36	8.30E+04	2.25E+04	27.1
37	9.82E+04	2.04E+04	20.8
38	3.00E+04	3.20E+03	10.7
39	1.40E+05	2.09E+04	14.9
40	3.20E+04	1.20E+03	3.8
41	6.70E+04	1.79E+04	26.7

Raw milk sample	Total cell count	<i>Pseudomonas</i> cell count	<i>Pseudomonas</i> / total count [%]
42	2.06E+05	1.35E+04	6.6
43	2.00E+06	3.21E+04	1.6
44	2.30E+04	8.00E+02	3.5
45	3.45E+05	8.10E+03	2.4
46	1.07E+05	1.18E+04	11.0
47	2.82E+04	4.20E+03	14.9
48	1.80E+04	3.00E+03	16.7
49	6.20E+04	2.75E+04	44.3
50	5.40E+04	5.60E+03	10.4
51	2.30E+04	5.55E+03	24.1
52	2.40E+04	2.60E+03	10.8
53	3.00E+04	4.50E+03	15.0
54	2.30E+04	1.50E+03	6.5
55	2.50E+04	9.00E+02	3.6
56	2.28E+05	9.18E+03	4.0
57	2.00E+04	6.00E+02	3.0
58	1.60E+04	2.20E+03	13.8
59	2.90E+04	2.10E+03	7.2
60	6.30E+04	6.00E+02	1.0