

**Table S1:** *Methylobacterium* sequences with mismatches to the specific primers. Analysis included 326 quality-controlled sequences of cultivated and uncultivated *Methylobacterium* strains present in the SILVA SSU Ref database, release 92.

Accession number	Name	No of mismatches
<b>Primer 1319fGC20<sup>1</sup></b>		
AY177363	Phenanthrene-degrading bacterium	1
AY177358	Phenanthrene-degrading bacterium	1 (= AY177363)
AB220083	<i>M. sp.</i> PB133	1 (= AY177363)
AB114610	Uncultured bacterium	1
AM691114	Uncultured bacterium	1
DQ490352	<i>M. sp.</i> KVD-1921-03	1
D32235	<i>M. sp.</i> F42	1
AY328673	Uncultured bacterium	3
AY568504	<i>M. sp.</i> C-14	4
AY828572	<i>M. sp.</i> P4E	1 insertion
EF138946	<i>M. sp.</i> LR-2006a	1 insertion
<b>Primer 444lof</b>		
DQ490353	<i>M. sp.</i> KVD-1894-12	1
DQ490345	<i>M. sp.</i> KVD-unk-23	1 (= DQ490353)
DQ490346	<i>M. sp.</i> KVD-unk-41	1 (= DQ490353)
DQ870729	<i>M. sp.</i> JSCtot8-4	1
EF098942	Uncultured bacterium	1
AY568504	<i>M. sp.</i> C-14	1
DQ223682	<i>M. sp.</i> zf-IVRHt11	1
M95655	<i>M. sp.</i>	1
AF395030	<i>M. sp.</i> TD4	1
AM697501	Uncultured bacterium	1
DQ223681	<i>M. sp.</i> zf-IVRHt8	2
AM234164	<i>Alphaproteobacterium</i> S15-IsoA	3 insertions, 1 deletion

<sup>1</sup> analysis was done without GC-clamp

**Table S2:** Organisms containing 16S rRNA gene sequences with zero mismatches to the specific primers. Analysis was performed in October 2007 using the probe match tool of the ribosomal database project II. Good quality sequences of  $\geq 1200$  bp were included in the analysis. Number of available sequences for each taxon is given in brackets.

Phylum	Class	Order	Family	Genus	No of targets
<b>Primer 1319fGC20<sup>1</sup></b>					<b>463</b>
<i>Actinobacteria</i>	<i>Actinobacteria</i> ( <i>Actinobacteridae</i> )	<i>Actinomycetales</i>	Unclassified (626)		1
OP10	OP10_genera_incertae_sedis (74)				1
<i>Proteobacteria</i>	<i>Alphaproteobacteria</i>	<i>Rhodospirillales</i>	<i>Rhodospirillaceae</i>	Unclassified (26)	2
			<i>Acetobacteriaceae</i>	<i>Acidisphaera</i> (21)	1
				<i>Acidicaldus</i> (19)	19
				Unclassified (110)	7
			Unclassified (198)		3
		<i>Sphingomonadales</i>	<i>Sphingomonadaceae</i>	<i>Sphingomonas</i> (475)	40
				<i>Novosphingobium</i> (235)	4
				<i>Sandaracinobacter</i> (6)	4
				<i>Sphingobium</i> (235)	1
				Unclassified (125)	5
		<i>Rhizobiales</i>	<i>Methylocystaceae</i>	Unclassified (20)	1
			<i>Beijerinckiaceae</i>	<i>Chelatococcus</i> (7)	4
				Unclassified (25)	1
			<i>Bradyrhizobiaceae</i>	<i>Balneimonas</i> (6)	6
			<b><i>Methylobacteriaceae</i></b>	<b><i>Methylobacterium</i> (340)</b>	<b>324</b>
				Unclassified (1)	1
			Unclassified (672)		24
		Unclassified (1269)			6
	<i>Deltaproteobacteria</i>	<i>Myxococcales</i> ( <i>Sorangineae</i> )	<i>Polyangiaceae</i>	<i>Byssovorax</i> (60)	1
	<i>Epsilonproteobacteria</i>	<i>Campylobacterales</i>	<i>Helicobacteraceae</i>	<i>Sulfurovum</i> (419)	1
		<i>Nautiliales</i>	<i>Nautiliaceae</i>	<i>Nautilia</i> (4)	3
				<i>Lebetimonas</i> (2)	1
				Unclassified (4)	2
<b>Primer 444lof</b>					<b>424</b>
<i>Acidobacteria</i>	<i>Acidobacteria</i>	<i>Acidobacteriales</i>	<i>Acidobacteriaceae</i>	Genus Gp1 (519)	69
<i>Proteobacteria</i>	<i>Alphaproteobacteria</i>	<i>Rhizobiales</i>	<i>Beijerinckiaceae</i>	<i>Chelatococcus</i> (7)	6
			<i>Bradyrhizobiaceae</i>	<i>Balneimonas</i> (6)	3
				Unclassified (90)	1
			<b><i>Methylobacteriaceae</i></b>	<b><i>Methylobacterium</i> (340)</b>	<b>326</b>
				<i>Microvirga</i> (6)	2
			Unclassified (672)		14
		Unclassified (1269)			2
Unclassified bacteria (3652)					1

<sup>1</sup> analysis was done without GC-clamp