

Probe	Target	Probe sequence (5' - 3')	Formamide (%)	Reference
LOK1183	Lokiarchaeota	CTG ACC TGC CTT TGC CCG CT	20	This study
LOK1378	Lokiarchaeota	GTG TGC AAG GAG CAG AGA CG	20	This study
HEIM329	Heimdallarchaeota	GCA CTC GCA GAG CTG GTT TTA CC	20	This study
HEIM529	Heimdallarchaeota	CAC ACC GTA GTG CTA GGA CCA GT	20	This study
ARC915	Archaea	GTG CTC CCC CGC CAA TTC CT	35	Stahl and Amann, 1990
EUB338 I	Most Bacteria	GCT GCC TCC CGT AGG AGT	35	Daims et al., 1999
EUB338 II	Planctomycetales	GCA GCC ACC CGT AGG TGT	35	Daims et al., 1999
EUB338 III	Verrucomicrobiales	GCT GCC ACC CGT AGG TGT	35	Daims et al., 1999
NON338	Non-sense	ACT CCT ACG GGA GGC AGC	20	Amann et al., 1990

B	SILVA		Aarhus Bay sediments (this study)		Non-target hits SILVA		
	Target group	Hits	Target group	Hits	0 ^a	1 ^a	2 ^a
LOK1183	541	493	684	628	5	11	735
LOK1378	468	441	684	583	10	8270	10163
HEIM329	27	27	31	31	0	1	95
HEIM529	27	24	31	30	0	0	34

^anumber of mismatches between probe and non-target hit

Probe	Target	Probe sequence (5' - 3')	Formamide (%)
c11LOK1183	Competitor for LOK1183	CTG ACC TGC CGT TGC CCG CT	20
LOK1183-h1	Helper for LOK1183	CCT TCC TCM RTC TTA TCG A	20
LOK1183-h2	Helper for LOK1183	CAG GGG TTT CGG GGC ATA	20
c16LOK1378	Competitor for LOK1378	GTG TGC AAG GAG CAG GGA CG	20
c20LOK1378	Competitor for LOK1378	GTG TGC AAG GAG CAG GGA CA	20
c2LOK1378	Competitor for LOK1378	GAG TGC AAG GAG CAG GGA CG	20
LOK1378-h1	Helper for LOK1378	GTG GTG CTC CCC CGC CAA TT	20
LOK1378-h2	Helper for LOK1378	AGY ACA CTC GGA TGG AGC G	20
HEIM329-h1	Helper for HEIM329	GTC TKA GTG TCC TTC TCG GGG C	20
HEIM329-h2	Helper for HEIM329	CGC GCA TTG GGC ACA ATT CCT AA	20
HEIM529-h4	Helper for HEIM529	AGC CTT GCC CTC TGC TTG CTG TT	20
HEIM529-h5	Helper for HEIM529	CGG CTA CGG ATG CTT TAA GCC CA	20

Supplementary Table 1 Oligonucleotide probes used in this study. **A** Names, target groups, sequences, and formamide concentrations for newly designed Loki- and Heimdallarchaeota probes. **B** Number of the sequences in the target groups and the hits are shown together with non-target hits at 0,1 and 2 mismatches. For LOK1183 and LOK1378, only the sequences which contain the probe-target regions in SILVA database v132 (Quast et al. 2013) are considered. **C** Sequences and formamide concentrations for helper and competitor probes.