**Distribution and characteristic of nitrite-dependent anaerobic methane oxidation bacteria in wastewater treatment plants and agriculture fields of northern China**

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**Fig. S1** Composition of bacteria community at phylum level in four samples.

**Table S1.** The primers and thermal proﬁles used in this study

**Table S2.** Phylotype coverage, diversity and richness estimators of 16S rRNA genes and *pmoA* genes at a phylogenetic distance of 3%

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Primer | Sequence (5’-3’) | Speciﬁcity | Position | Thermal proﬁles | References |
| 1545R202F | CAKAAAGGAGGTGATCCGACCAAAGGGGGCGAGCG | Bacteria 16S rRNA*M. oxyfera* 16S rRNA | 1529–1545193 | 10min at 95℃, followed by 35 cycles of 30s at 95℃, 30s at 51℃and 60s at 72℃ | ( Juretschko et al. 1998; Ettwig et al. 2009) |
| qp1Fqp1Rqp2R | GGGCTTGACATCCCACGAACCTGCGCCTTCCTCCAGCTTGACGCCTCAGCGACTTCGAGTACAG | *M. oxyfera* 16S rRNA*M. oxyfera* 16S rRNA*M. oxyfera* 16S rRNA | 100112011481–1500 | 10 min at 95, followed by32 cycles of 60s at 95℃, 60s at 50 ℃and 45s at 72℃(pcr,qp1F- qp2R)3 min at 95℃, followed by 40 cycles of 60 s at 95 ℃, 60 s at59℃ and 60s at 72℃(qpcr,qp1F-qp1R) | (Ettwig et al. 2009) |
| A189bcmo682cmo182cmo568 | GGNGACTGGGACTTYTGGTCGTTCTTYGCCGGRTTTTCACGTTGACGCCGATCCGATGGGGATGGAGTATGTGC | *M. oxyfera pmoA**M. oxyfera pmoA**M. oxyfera pmoA**M. oxyfera pmoA* | 136-153649-666182-199549-568 | 4 min at 94℃,followed by35 cycles of 60 s at 94 ℃,60 s at 56 ℃and 60s at 72℃ | (Luesken et al. 2011) |

**Table S2.** Phylotype coverage, diversity and richness estimators of 16S rRNA genes and *pmoA* genes at a phylogenetic distance of 3%

|  |  |  |  |
| --- | --- | --- | --- |
| Sample | 16S rRNA |  | *pmoA* |
| OTUs | ACE | Chao | Shannon | Simpson | Good’s coverage (%) |  | OTUs | ACE | Chao | Shannon | Simpson | Good’s coverage (%) |
| PF | 536 | 972.2 | 1015.3 | 4.11 | 0.81 | 88.13 |  | 95 | 110.46 | 105.56 | 0.72 | 0.16 | 98.13 |
| CF | 434 | 765.0 | 773.6 | 4.00 | 0.81 | 86.68 |  | 113 | 136.18 | 138.59 | 0.76 | 0.18 | 93.91 |
| EC | 348 | 601.2 | 580.9 | 3.42 | 0.78 | 90.22 |  | 85 | 105.61 | 119.5 | 0.57 | 0.13 | 97.97 |
| WS | 203 | 351.7 | 325.2 | 1.30 | 0.26 | 94.70 |  | 117 | 123.82 | 130.13 | 0.80 | 0.19 | 92.76 |