

Bacterial Assays

28F-YM GAGTTTGATYMTGGCTCAG
 28F-Borrellia GAGTTTGATCCTGGCTTAG
 28FChloroflex GAATTTGATCTTGGTTCAG
 28F-Bifdo GGGTTCGATTCTGGCTCAG

These primers are mixed at a
 4:1:1:1 ratio (28F-YM is the 4)

28F *GAGTTTGATCNTGGCTCAG*

519R GTNTTACNGCGGCKGCTG

388R *TGCTGCCTCCCGTAGGAGT*

104F GGCGVACGGGTGAGTAA

530R CCGCNGCNGCTGGCAC

338F TCCTACGGGAGGCAGCAGT

797R GGACTACCAGGGTATCTAATCCTGTT

338aF ACTCCTACGGGAGGCAGCAG

518R ATTACCGCGGCTGCTGG

939F TTGACGGGGGCCGCACAAG

1492R TACCTTGTTACGACTT

357F CCTACGGGAGGCAGCAG

907R CCGTCAATTCMTTGGAGTTT

926R CCGTCAATTCMTTTRAGTTT

926wR CCGTCAATTYMTTTRAGTTT*

357wF *CCTACGGGNGGCWGCAG*

785R *GACTACHVGGGTATCTAATCC*

515F **GTGCCAGCMGCCGCGGTAA**

806R **GGACTACHVGGGTWTCTAAT****

909R CCCCGYCAATTCMTTTRAGT

515yF GTGYCAGCMGCCGCGGTAA

926pF **CCGYCAATTYMTTTRAGTTT**

926F AAACYAAAKGAATTGACGG

1392R ACGGGCGGTGTGTRC***

** Bacterial & Archaeal “universal”

*** Bacterial & Archaeal & Eukaryotic “universal”

Bolded Primers are from Earth Microbiome Project

Italicized Primers are default primers for RTLGenomics

Archaea

16S

21F	TCCGGTTGATCCYGCCGG	534R	ATTACCGCGGCTGCTGG
		531R	ACCGCGGCKGCTGRC
340wF	CCCTAYGGGGYGCASCAG	958R	YCCGGCGTTGAMTCCAATT
		909R	TTTCAGYCTTGCGRCCGTAC
		806R	GGACTACVSGGGTATCTAAT
<i>517F</i>	<i>GCYTAAAGSRNCCGTAGC</i>	<i>909R</i>	<i>TTTCAGYCTTGCGRCCGTAC</i>
519wF	CAGCMGCCGCGGTAA	1017R	GGCCATGCACCWCCTCTC
519F	CAGCCGCCGCGGTAA	915R	GTGCTCCCCCGCCAATTCCT

Italicized Primers are default primers for RTLGenomics

Euk/Fungal Assays

18S

EukA7F	AACCTGGTTGATCCTGCCAGT	EUK570R	GCTATTGGAGCTGGAATTAC
EUK300F	AGGGTTCGATTCCGGAG	EUK555R	GCTGCTGGCACCAGACT
EUK515F	GTGYCAGCMGCCGCGGTA	EUKNSR951R	TTGGYRAATGCTTTTCGC
EUK516F	GGAGGGCAAGTCTGGT	EUK1055R	CGGCCATGCACCACC
EUK560F	CCAGCASCYGCGGTAATWCC	EUK1055R	CGGCCATGCACCACC
EUK555F	AGTCTGGTGCCAGCAGCCGC	EUK1055R	CGGCCATGCACCACC
		EUK1269R	AAGAACGGCCATGCACCAC
EUK1560F	TGGTGCATGGCCGTTCTTAGT	EUK2035R	CATCTAAGGGCATCACAGACC
EUK1391F	GTACACACCGCCCGTC	EUKBR	TGATCCTTCTGCAGGTTACCTAC
FUN545F	TGGAGGGCAAGTCTGGTG	FUN1021R	TCGGCATAGTTTATGGTTAAG
<i>TAReukF</i>	<i>CCAGCASCYGCGGTAATTCC</i>	<i>TAReukR</i>	<i>ACTTTCGTTCTTGATYRA</i>
		Hapto1R	CGAAACCAACAAAATAGCAC
WANDAF	CAGCCGCGGTAATTCCAGCT	AM1R	GTTTCCCGTAAGGCGCCGAA

ITS

ITS1F	CTTGGTCATTAGAGGAAGTAA	ITS4R	TCCTCCGCTTATTGATATGC
		ITS2aR	GCTGCGTTCTTCATCGATGC
ITSDino	GTGAATTGCAGAACTCC	ITS2R	CCTCCGCTTACTTATATGCTT
<i>ITS3F</i>	<i>GCATCGATGAAGAACGCAGC</i>	<i>ITS4R</i>	<i>TCCTCCGCTTATTGATATGC</i>
endoITSF	AAGGTCTCCGTAGGTGAAC	endoITSR	GATCCCTACCTGATCCGAG

23S

AlgaeF	GGACAGAAAGACCCTATGAA	AlgaeR	TCAGCCTGTTATCCCTAGAG
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Functional Assays
amoA

amoAF	GGGGTTTCTACTGGTGGT	amoAR	CCCCTCKGSAAAGCCTTCTTC
ArchamoAF	STAATGGTCTGGCTTAGACG	ArchamoAR	GCGGCCATCCATCTGTATGT

dsr

dsrLF*	CAACATCGTYCATACMCAGGG	dsrLR*	GTGTAGCAGTTACCGCA
dsrBF	GTGTAGCAGTTACCGCA	dsrBR	CAACATCGTYCAYACCCAGGG

mcrA

mcrAF	GTCGGWTTACACMCAGTACGC	mcrAR	TGCCCTCGTCKGACTGGTA
mcrA2F	GCMATGCARATHGGWATGTC	mcrA2R	TGTGTGAAWCKACDCCACC
mcrA3F	GGTGGTGTMGGATTCACACARTAYGCWACAGC	mcrA3R	TTCATTGCRTAGTTWGGRTAGTT

nifA

bacillusnifAF	RCTCYCGAACATTTCCAGGCCA	bacillusnifAR	TGGGGCAATTGARCGAGCGG
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nifH

mnifHF	TGYGAYCCNAARGCNGA	mnifHR	ADNGCCATCATYTCNCC
nifHF	GGCAAGTCCACCACCCAGC	nifHaR	GACGATGTAGATYTCCTG
unifHF		nifHR	CTCGATGACCGTCATCCGGC
nifHPolF	TGCGAYCCSAARGCBGACTC	mnifhR	ADNGCCATCATYTCNCC
		nifHPolR	ATSGCCATCATYTCRCCGGA

nirK

nirK1F	GGMATGGTKCCSTGGCA	nirK5R	GCCTCGATCAGRTRRTGG
F1aCuF	ATCATGGTSCTGCCGCG	R3CuR	GCCTCGATCAGRRTGTGGTT

nirS

Cd3AF	G TSAACG TSAAGGARACSGG	R3CdR	GASTTCGGRTGSGTCTTGA
nirsSF	GTGAACGTCAAGGAAACGGG	nirsR	GAATTCGGATGCGTCTTGA

nosZ

nosZF CGYTGTTTCMTCGACAGCCAG

nosZIIF CTNNGNCCNYTKCAYAC

nrfA

nrfAF TTAGTCCAGTCAGAGAAAGC

nrfA6F GAYTGCCAYATGCCTAAAGT

pmoA

A189F GGNGACTGGGACTTCTGG

nosZR CGSACCTTSTTGCCRITYGCG

nosZIIR GCNGARCARAANTCBGTRC

nrfA4R GCATCCGCSGCTTTATCCAT

nrfA7R TWNGGCATRTGTCARTC

nrfA6R GCBKCTTTYGCTTCRAAGTG

MB661R CCGGMGCAACGTCYTTACC

A682R GAASGCNGAGAAGAASGC

454 Assays

28F	GAGTTTGATCNTGGCTCAG	519R	GTNTTACNGCGGCKGCTG
		388R	TGCTGCCTCCCGTAGGAGT
104F	GGCGVACGGGTGAGTAA	530R	CCGCNGCNGCTGGCAC
530F	GTGCCAGCMGCNGCGG	1100R	GGTTNCGNTCGTTR
939F	TTGACGGGGGCCCGACAAG	1492r	TACCTTGTTACGACTT
341F	CCTACGGGAGGCAGCAG*	907R	CCGTCAATTCMTTGTGATTT
		926R	CCGTCAATTCMTTTRAGTTT
		926wR	CCGTCAATTYMTTTRAGT
799F	ACCMGGATTAGATACCKG	1115R	AGGGTTGCGCTCGTTG
		1193r	CRTCCMCACCTTCCTC
211F	GAGCGGCGGACGGCTGAG	956R	WTRCTTAACGCGTTAGCTTCGC
410F	GGATGACACTTTTCGGAG	661R	AATTCCATCTGCCTCTCC
515F	GTGCCAGCMGCCGCGGTAA	806R	GGACTACHVGGGTWTCTAAT**
926F	AAACTYAAAKGAATTGACGG	1392R	ACGGGCGGTGTGTRC***

*341F = 357F

** Bacterial & Archaeal "universal"

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