FIGURE 1

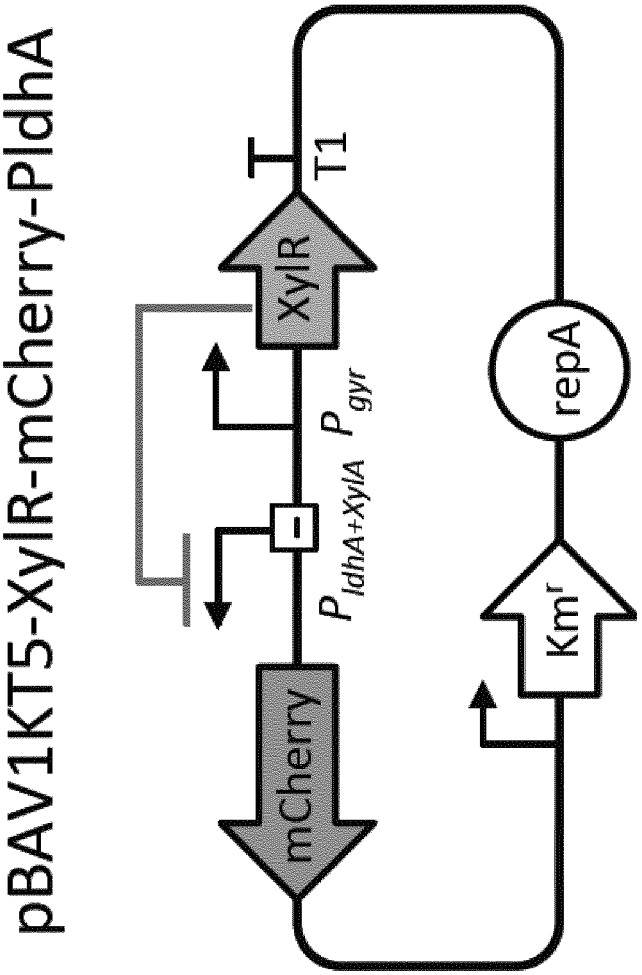
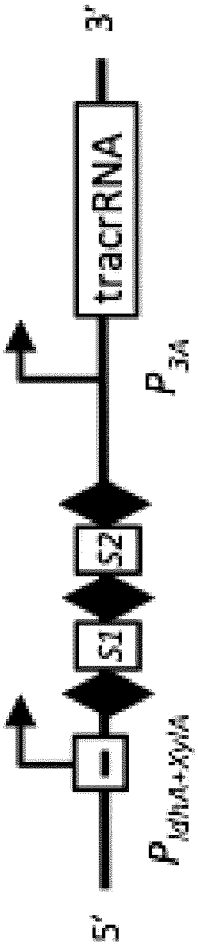

pBAV1KT5-XylR-mCherry-PldhA
T
T1
XylR
repA
P_{gyr}
$P_{ldhA+XylA}$
mCherry
Km^r

FIGURE 2



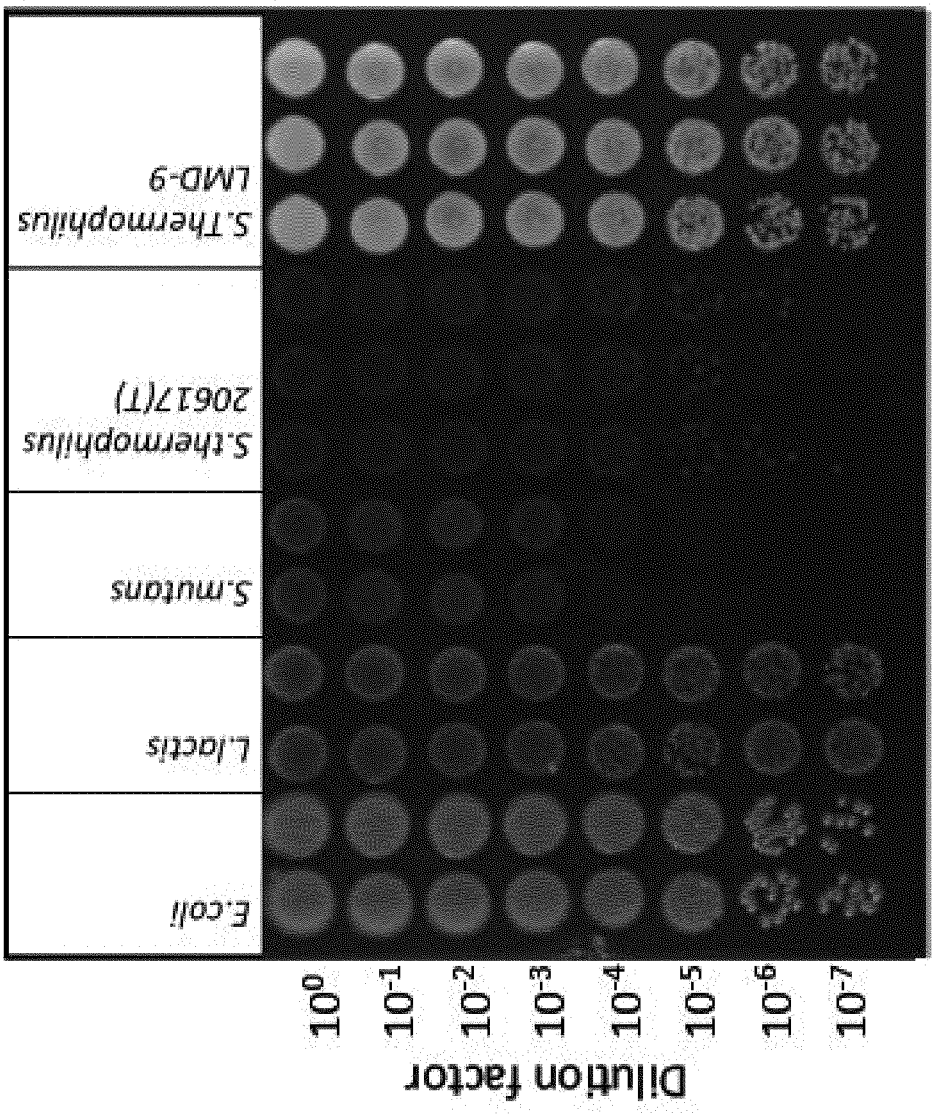

E.coli
L.lactis
S.mutans
S.thermophilus 20617(T)
S.Thermophilus LMD-9
Dilution factor
10^0
10^-1
10^-2
10^-3
10^-4
10^-5
10^-6
10^-7

FIGURE 3

FIGURE 4

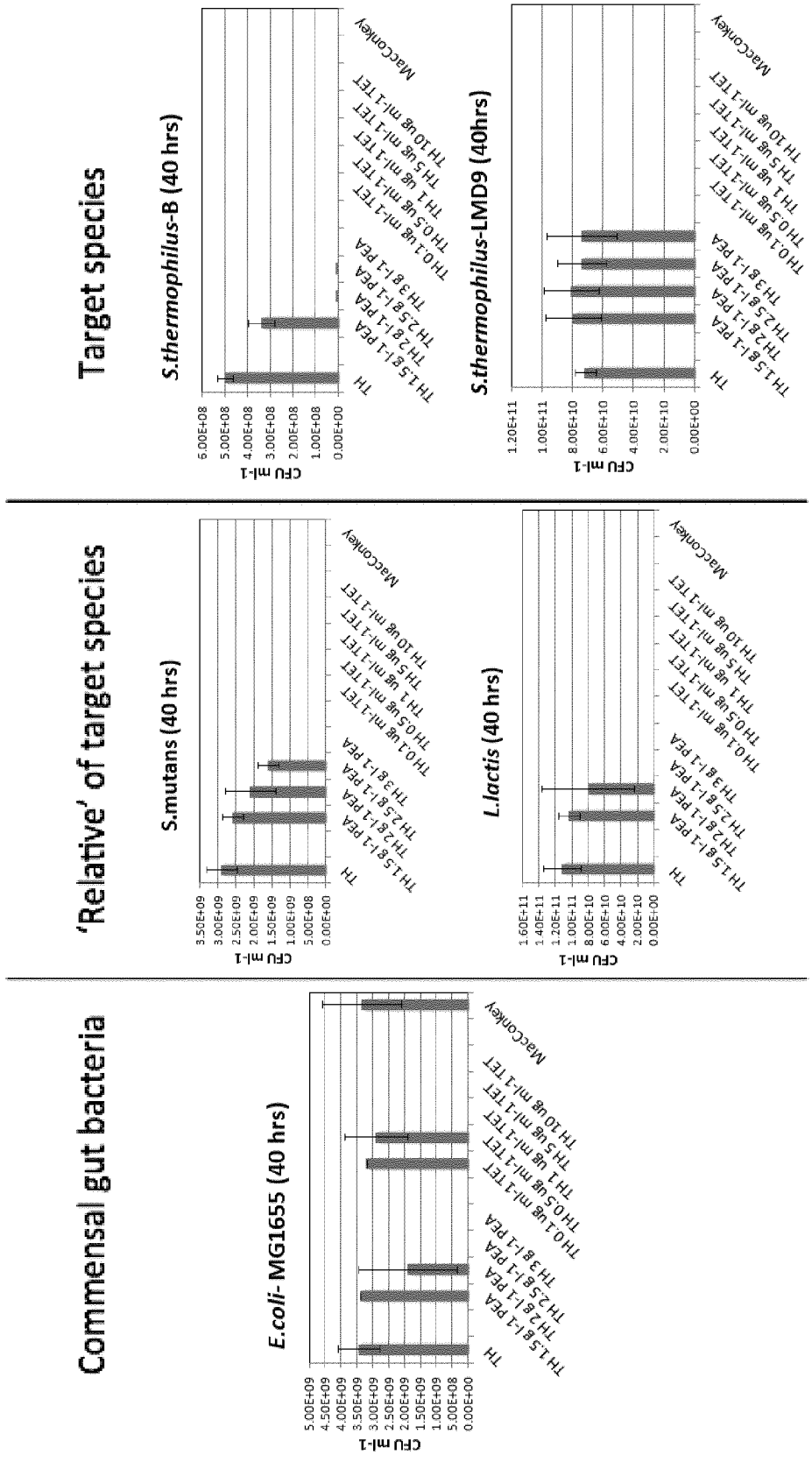

Commensal gut bacteria
E.coli- MG1655 (40 hrs)
CFU ml-1
'Relative' of target species
S.mutans (40 hrs)
L.lactis (40 hrs)
Target species
S.thermophilus-B (40 hrs)
S.thermophilus-LMD9 (40hrs)
TH
TH 1.5 ß-1 PEA
TH 2 ß-1 PEA
TH 2.5 ß-1 PEA
TH 3 ß-1 PEA
TH 0.1 ug ml-1 TET
TH 0.5 ug ml-1 TET
TH 1 ug ml-1 TET
TH 5 ug ml-1 TET
TH 10 ug ml-1 TET
MacConkey

FIGURE 5

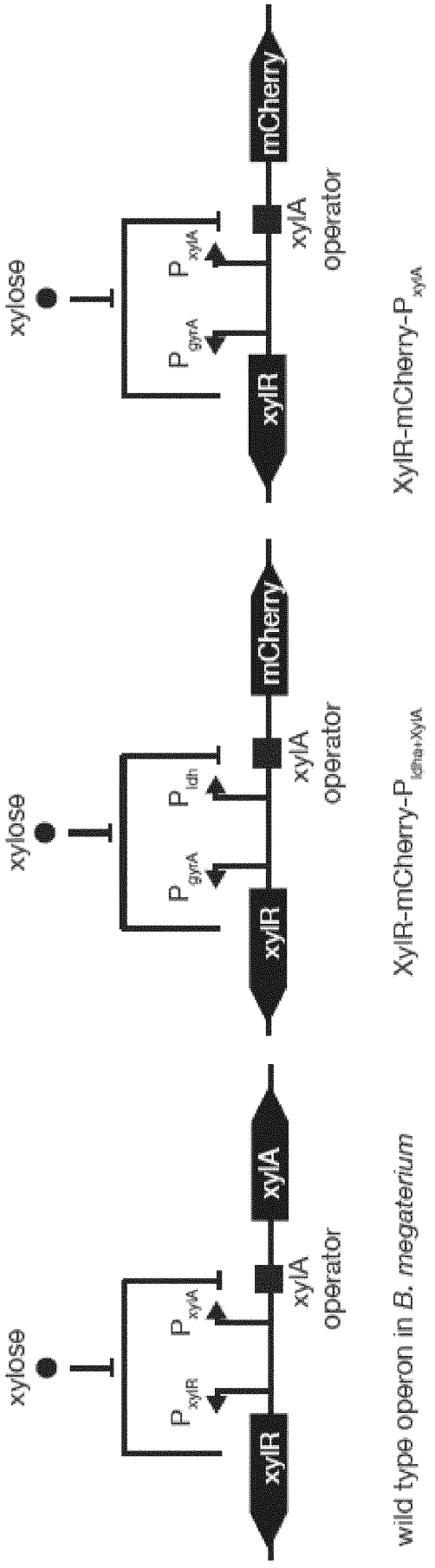

xylose
xylR
P xylR
P xylA
xylA
operator
xylA
wild type operon in B. megaterium
xylose
xylR
P gyrA
P ldh
xylA
operator
mCherry
XylR-mCherry-P ldhA+XylA
xylose
xylR
P gyrA
P xylA
xylA
operator
mCherry
XylR-mCherry-P xylA

FIGURE 6

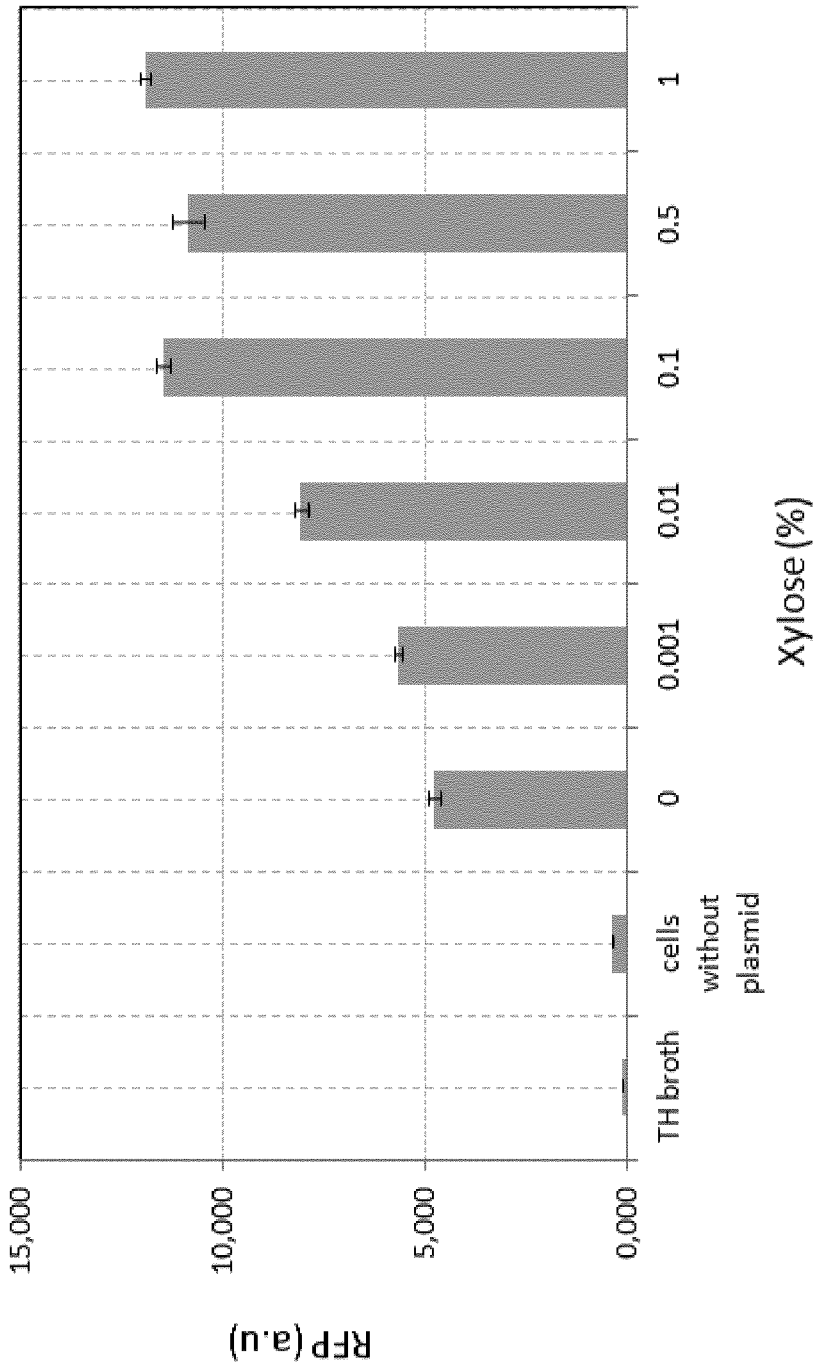

RFP (a.u)
15,000
10,000
5,000
0,000
TH broth
cells without plasmid
0
0.001
0.01
0.1
0.5
1
Xylose (%)

FIGURE 7

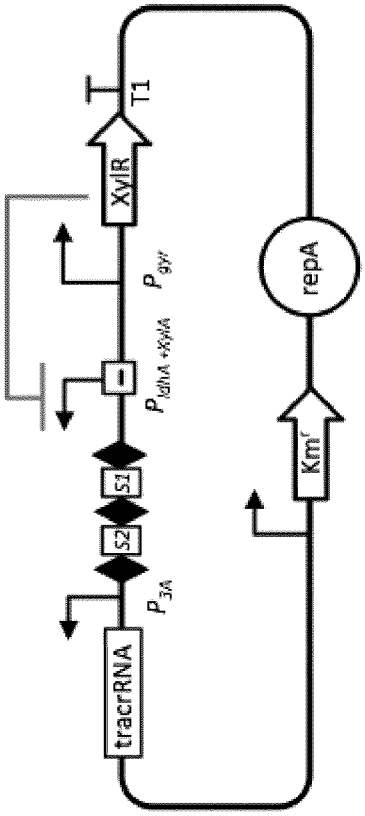


FIGURE 8

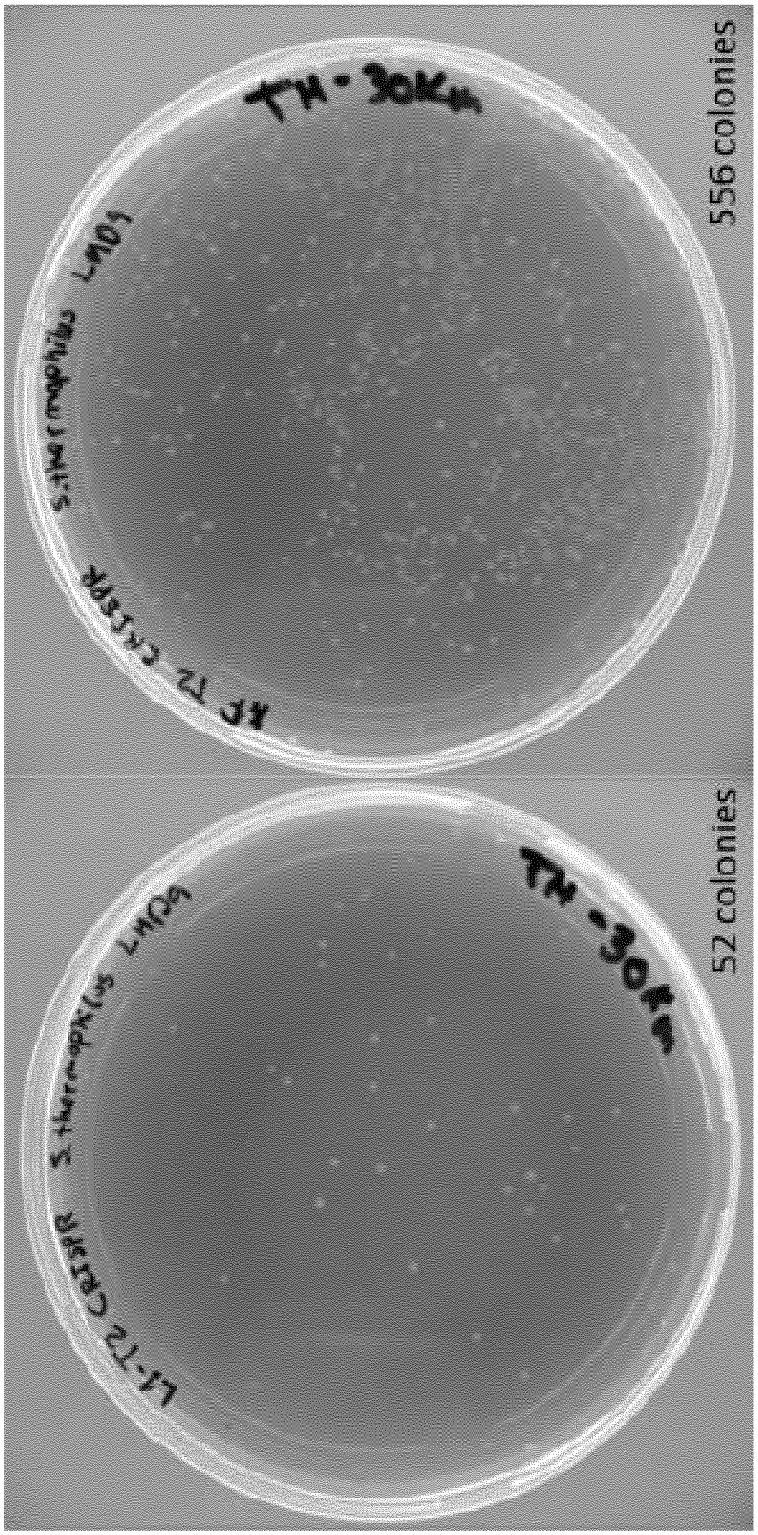


FIGURE 9

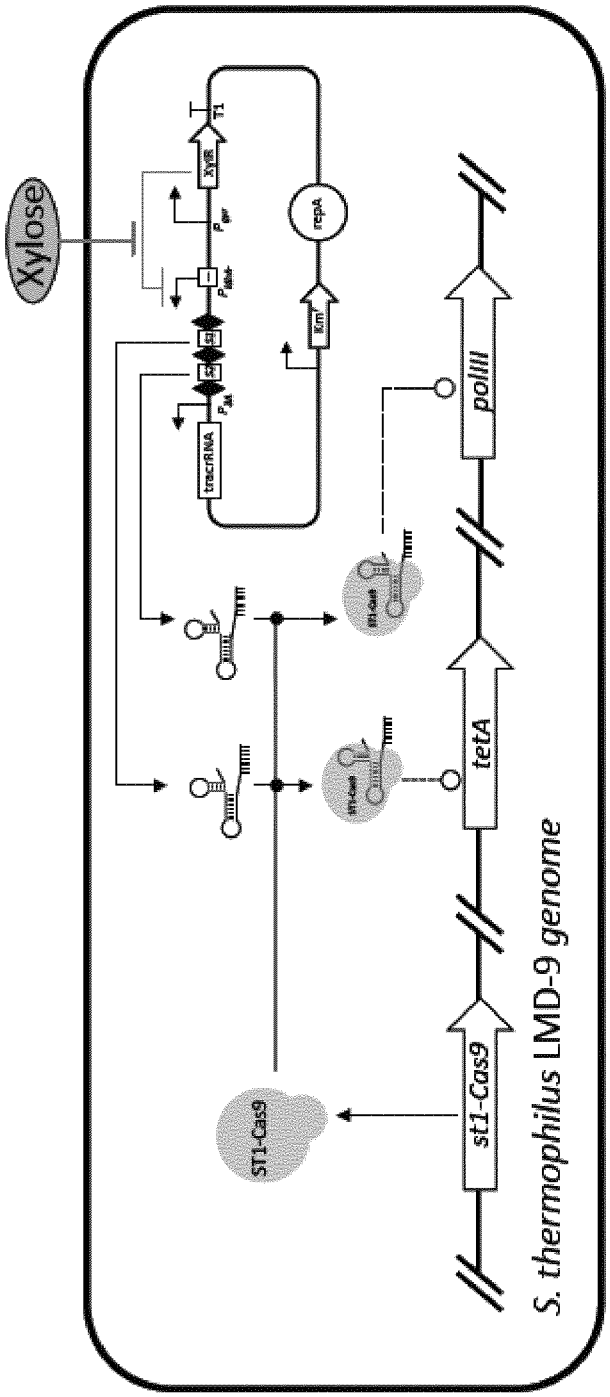

Xylose
XylR
T1
repA
Km
tracrRNA
polIII
tetA
st1-Cas9
ST1-Cas9
S. thermophilus LMD-9 genome

FIGURE 10

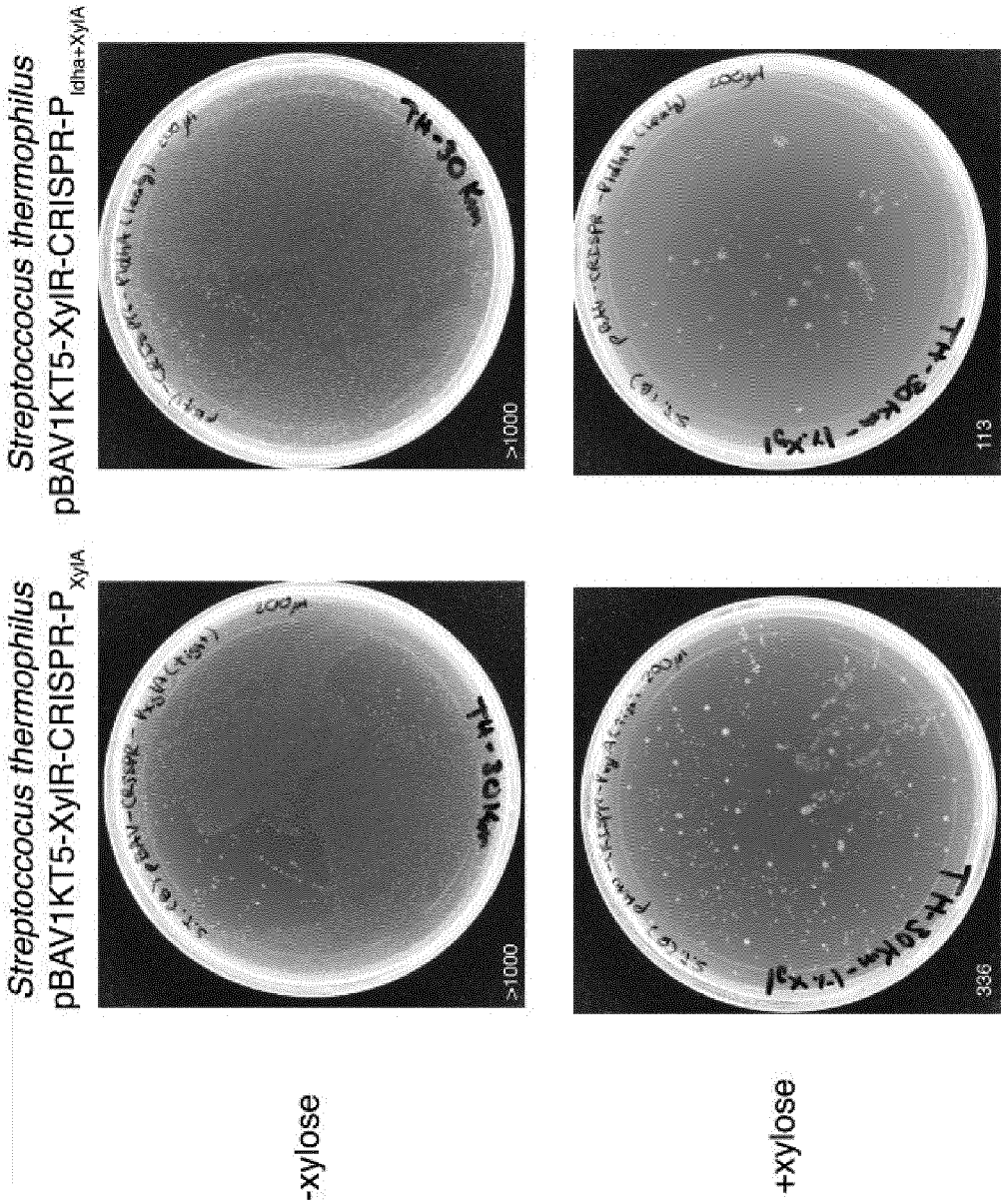

Streptococcus thermophilus
pBAV1KT5-XylR-CRISPR-P XylA
Streptococcus thermophilus
pBAV1KT5-XylR-CRISPR-P ldha+XylA
-xylose
+xylose
>1000
>1000
336
113

FIGURE 11

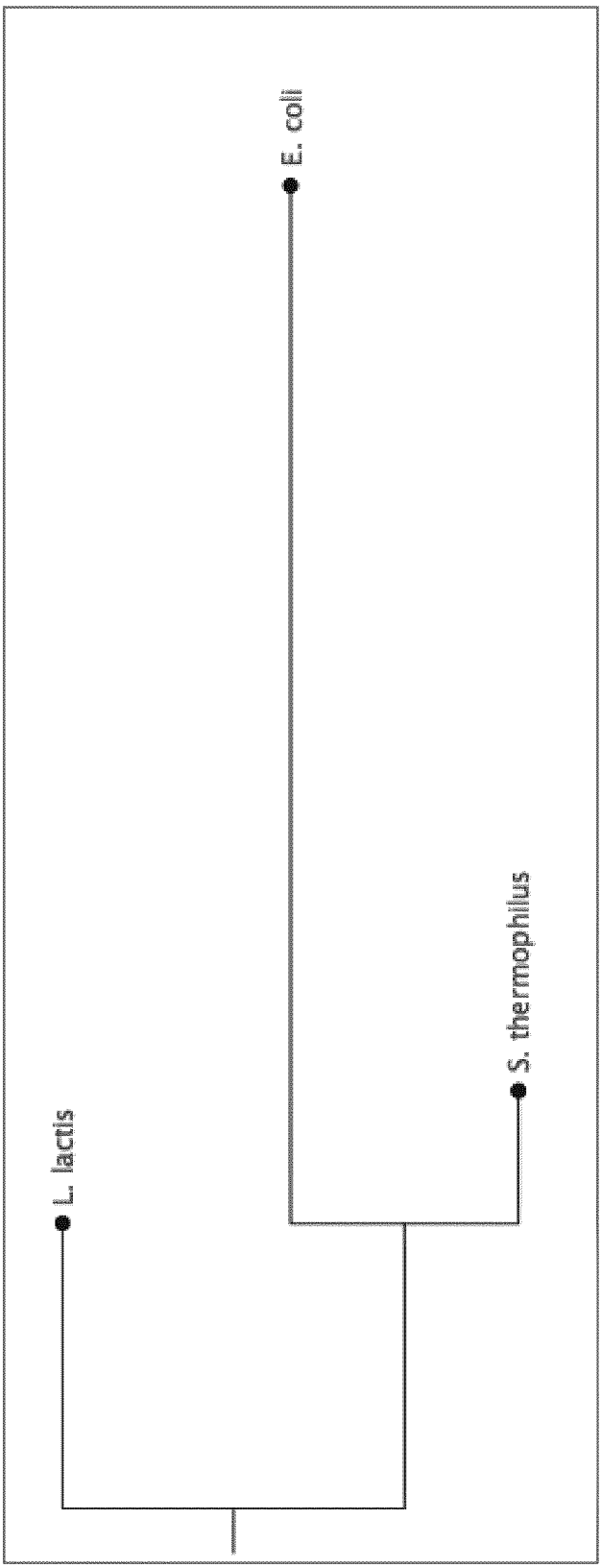
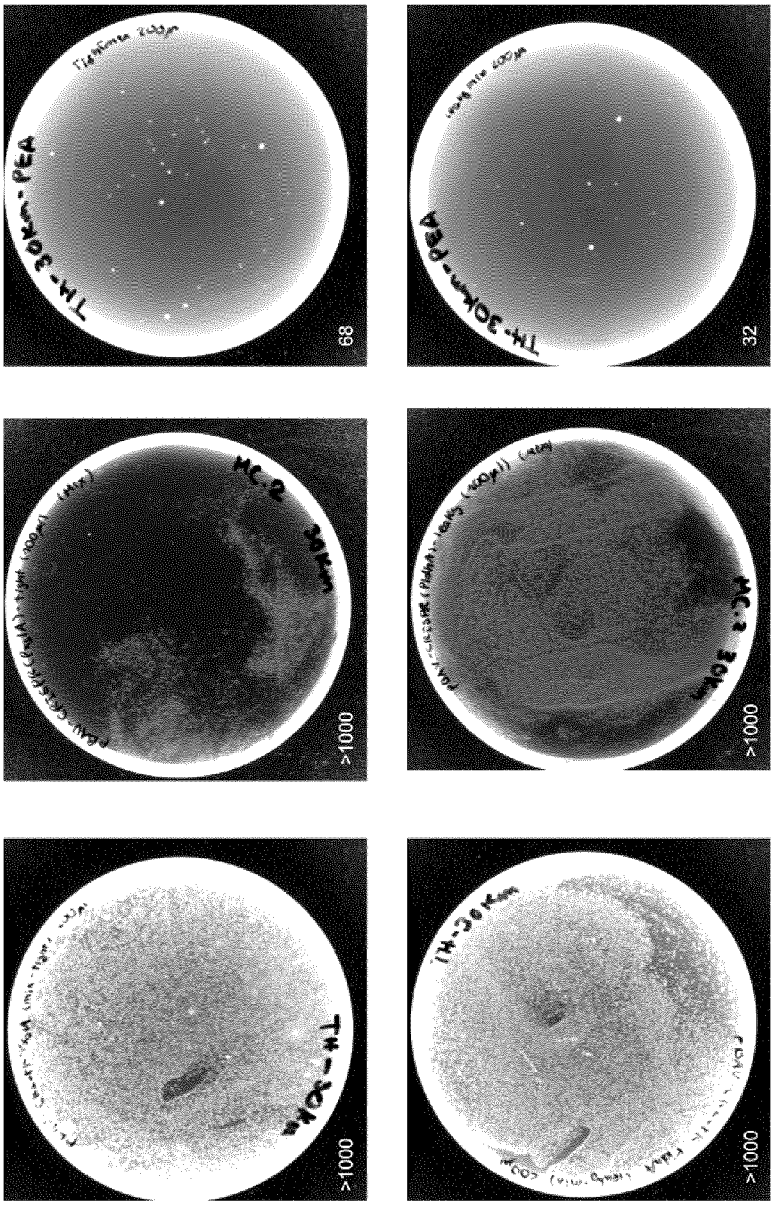


FIGURE 12


Todd Hewitt agar
MacConkey agar
Todd Hewitt agar supplemented with 2.5 g l-1 PEA
S.thermophilus, L.lactis and E.coli with plasmid pBAV1KT5-PXylA
S.thermophilus, L.lactis and E.coli with plasmid pBAV1KT5-PldhA
>1000
>1000
68
>1000
32