## Operon-structure (Mannose)

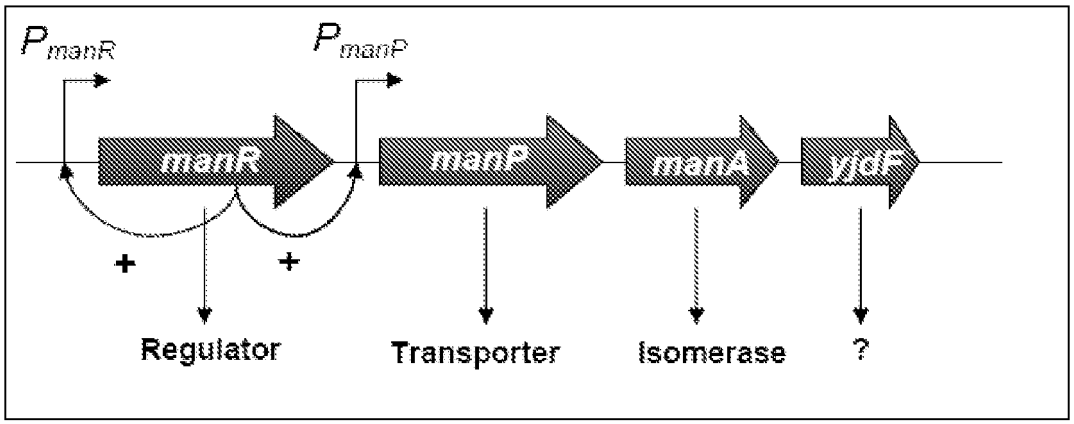



Fig. 1

## Mannose-Catabolism

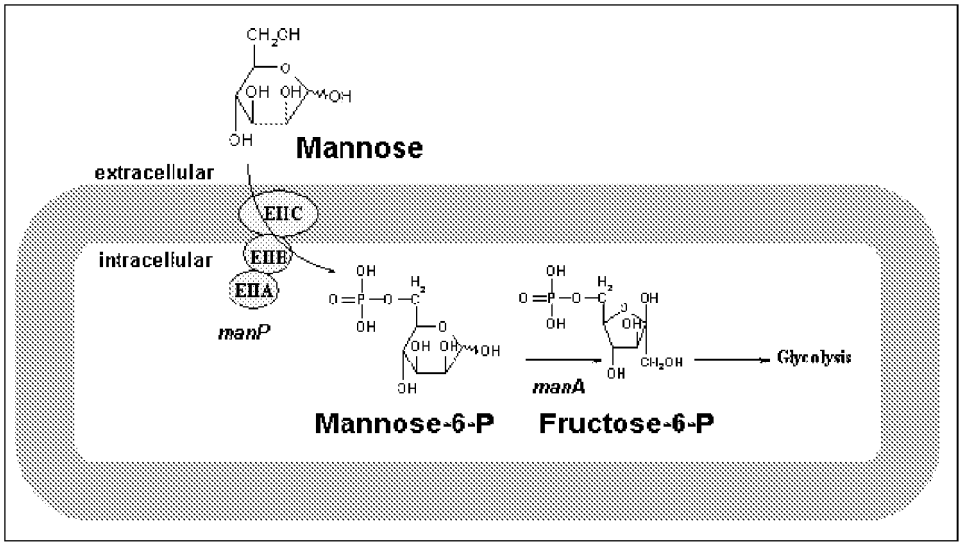



Fig. 2

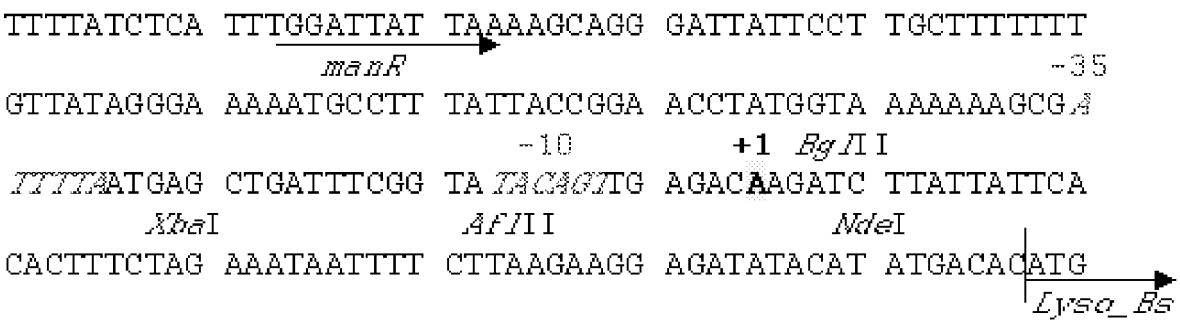



Fig. 3

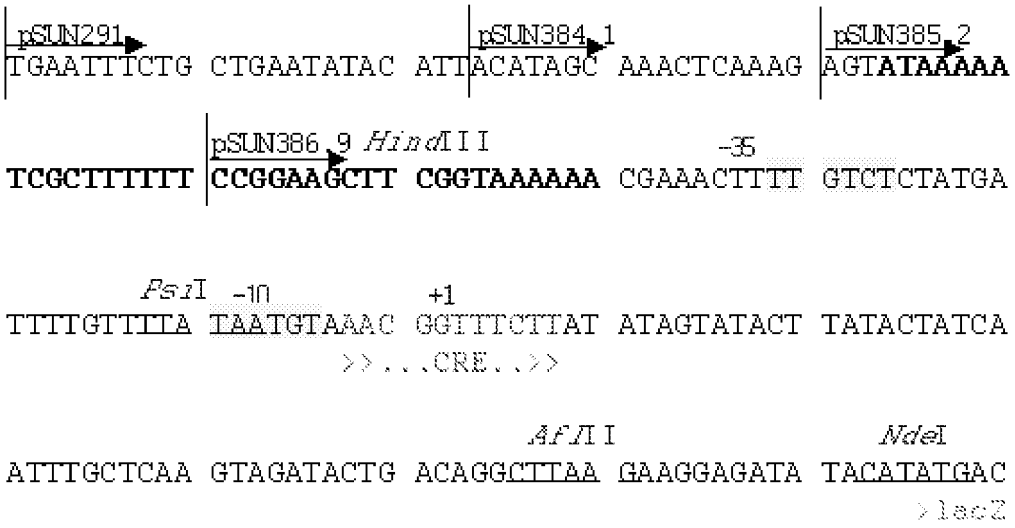



Fig. 4

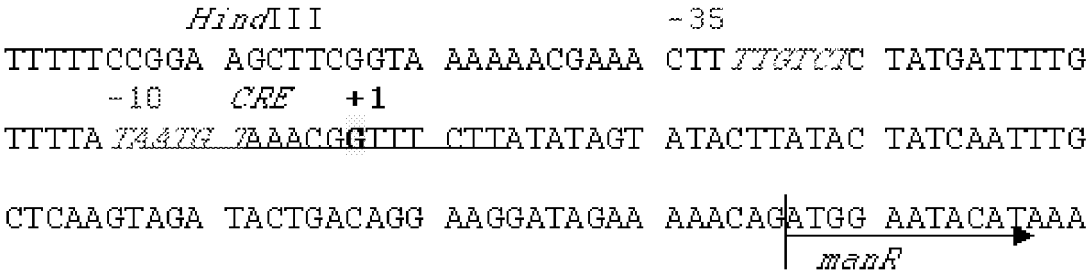



Fig. 5

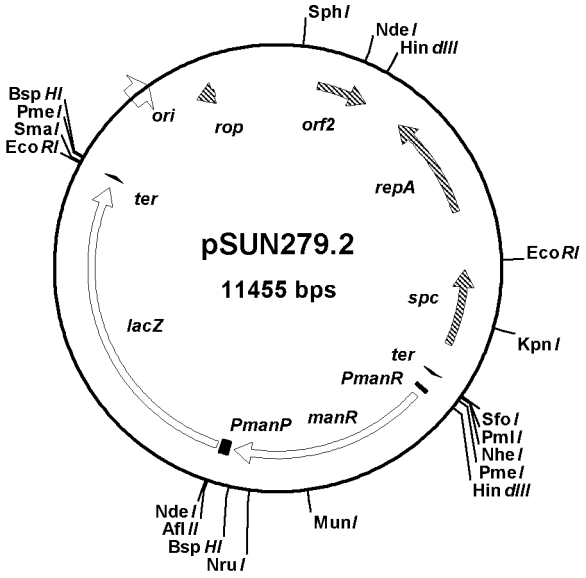

Sph I
Nde I
Hin dIII
Bsp HI
Pme I
Sma I
Eco RI
ori
rop
orf2
repA
ter
pSUN279.2
11455 bps
Eco RI
spc
lacZ
Kpn I
ter
PmanR
PmanP
manR
Sfo I
Pml I
Nhe I
Pme I
Hin dIII
Nde I
Afl II
Bsp HI
Nru I
Mun I

Fig. 6

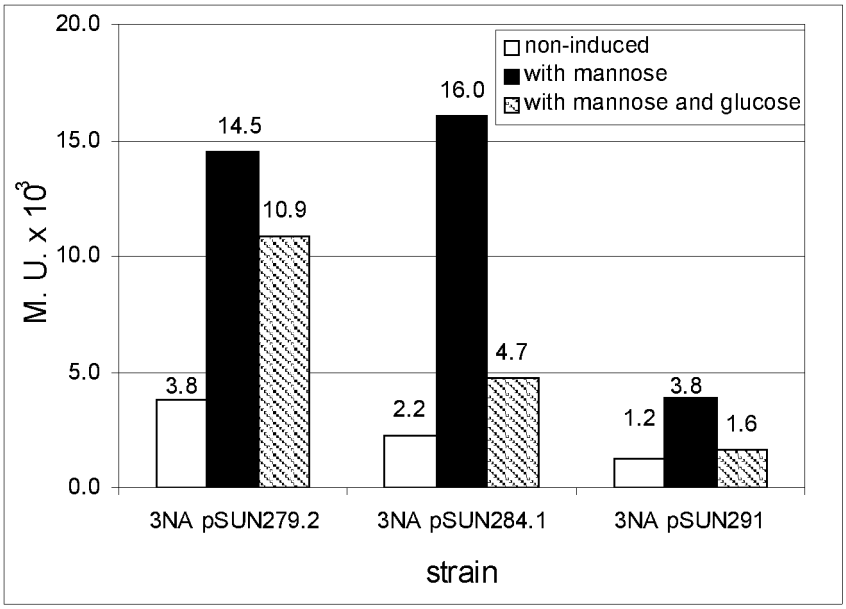

20.0
15.0
10.0
5.0
0.0
M. U. x 10³
non-induced
with mannose
with mannose and glucose
14.5
10.9
16.0
4.7
3.8
2.2
3.8
1.2
1.6
3NA pSUN279.2
3NA pSUN284.1
3NA pSUN291
strain

Fig. 7

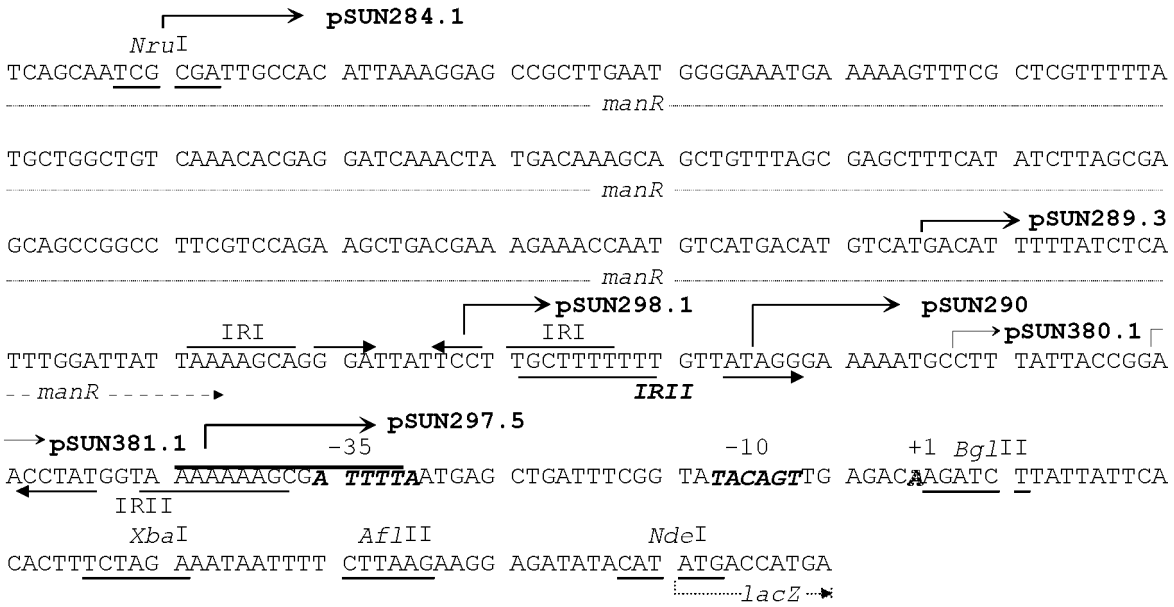

pSUN284.1
NruI
TCAGCAATCG CGATTGCCAC ATTAAAGGAG CCGCTTGAAT GGGGAAATGA AAAAGTTTCG CTCGTTTTTA
manR
TGCTGGCTGT CAAACACGAG GATCAAACTA TGACAAAGCA GCTGTTTAGC GAGCTTTCAT ATCTTAGCGA
manR
pSUN289.3
GCAGCCGGCC TTCGTCCAGA AGCTGACGAA AGAAACCAAT GTCATGACAT GTCATGACAT TTTTATCTCA
manR
pSUN298.1
pSUN290
IRI
IRI
pSUN380.1
TTTGGATTAT TAAAAGCAGG GATTATTCCT TGCTTTTTTT GTTATAGGGA AAAATGCCTT TATTACCGGA
manR
IRII
pSUN297.5
pSUN381.1
-35
-10
+1 BglII
ACCTATGGTA AAAAAAGCGA TTTTAATGAG CTGATTTCGG TATACAGTTG AGACAAAGATC TTATTATTCA
IRII
XbaI
AflII
NdeI
CACTTTCTAG AAATAATTTT CTTAAGAAGG AGATATACAT ATGACCATGA
lacZ

Fig. 8

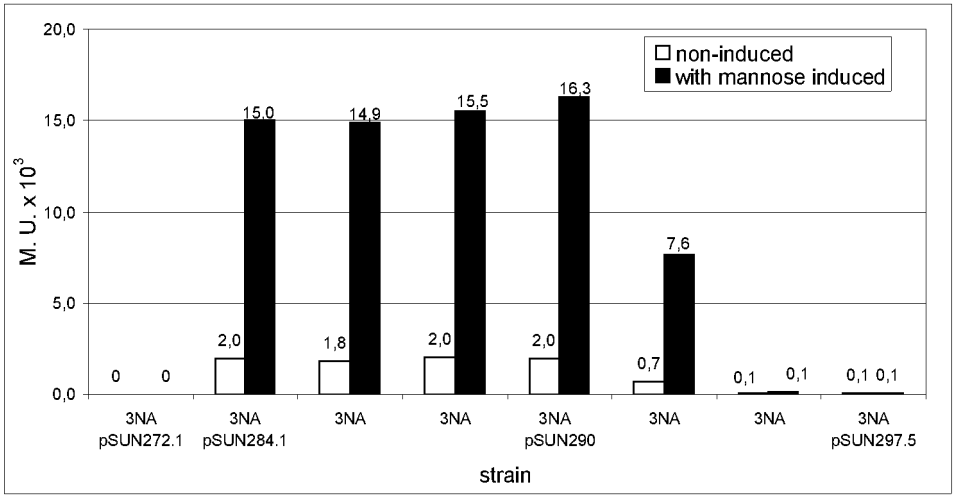

non-induced
with mannose induced
M. U. x 10^3
20,0
15,0
10,0
5,0
0,0
0
0
2,0
15,0
1,8
14,9
2,0
15,5
2,0
16,3
0,7
7,6
0,1
0,1
0,1
0,1
3NA
3NA pSUN272.1
3NA pSUN284.1
3NA
3NA
3NA pSUN290
3NA
3NA
3NA pSUN297.5
strain

Fig. 9

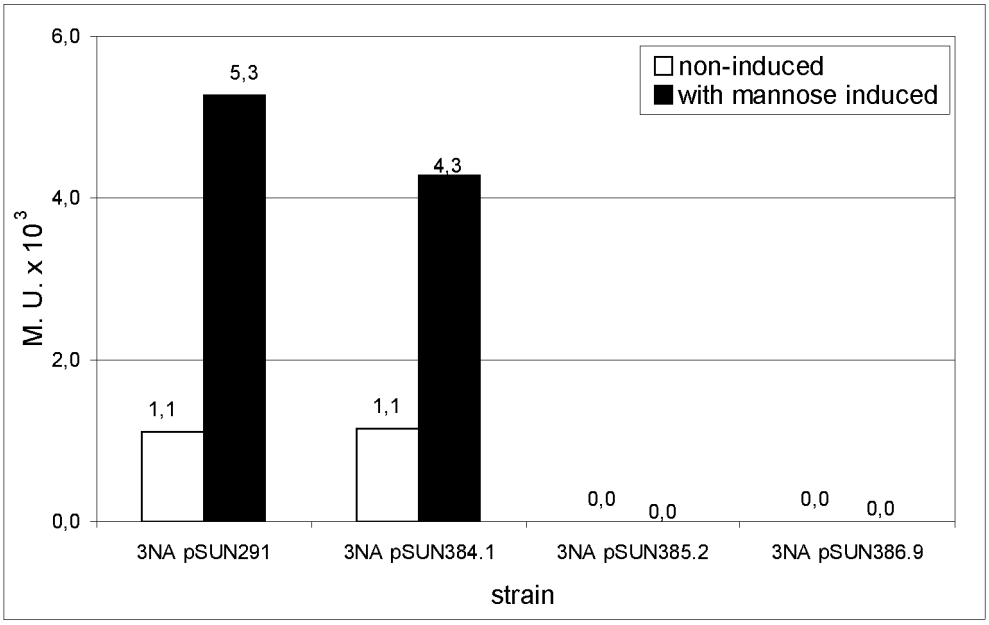

6,0
4,0
2,0
0,0
M. U. x 10^3
non-induced
with mannose induced
5,3
4,3
1,1
1,1
0,0
0,0
0,0
0,0
3NA pSUN291
3NA pSUN384.1
3NA pSUN385.2
3NA pSUN386.9
strain

Fig. 10

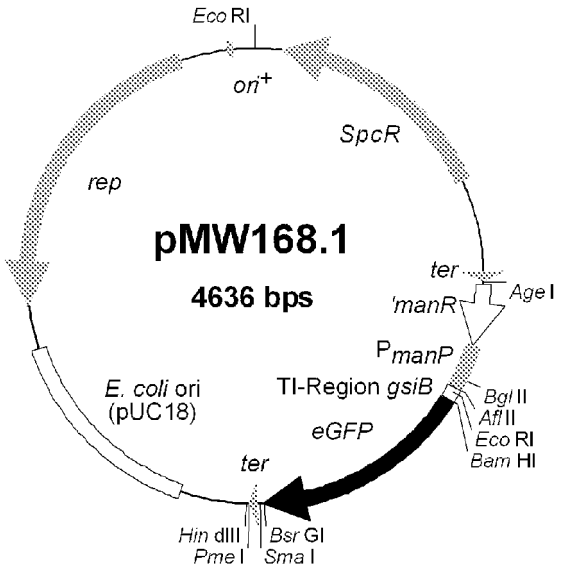

Eco RI
ori+
SpcR
rep
pMW168.1
4636 bps
ter
Age I
'manR
PmanP
TI-Region gsiB
Bgl II
Afl II
Eco RI
Bam HI
E. coli ori
(pUC18)
eGFP
ter
Hin dIII
Pme I
Bsr GI
Sma I

Fig. 11

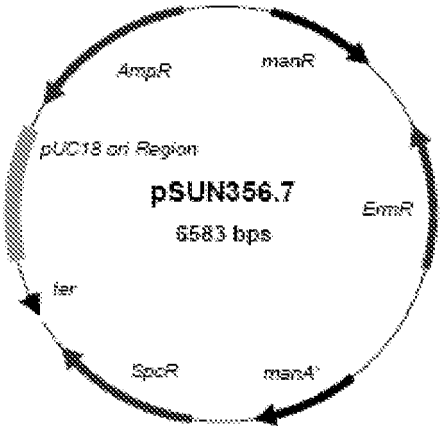



Fig. 12

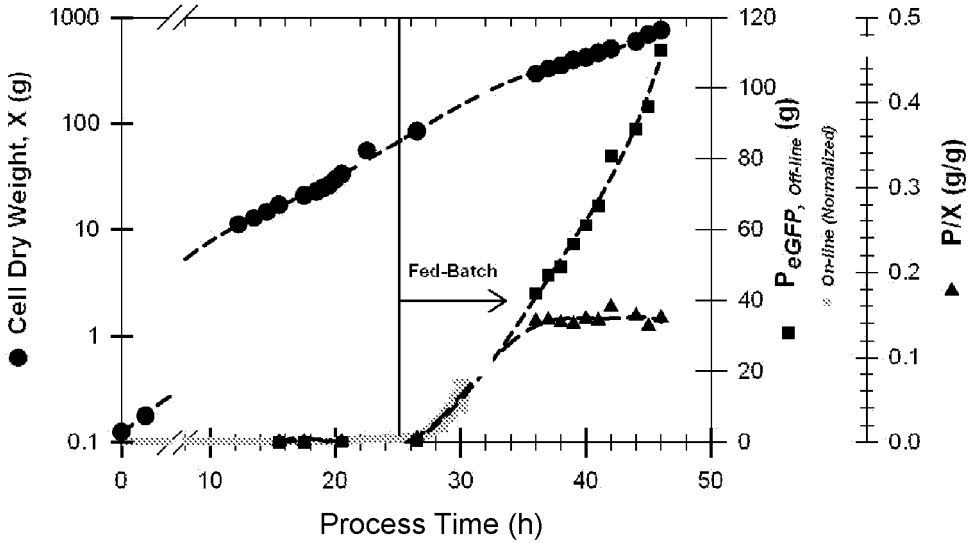



Fig. 13

Fed-batch fermentation of *B. subtilis* TQ356 / pMW168.1. Cell dry weight (X, black circles), total produced amount of eGFP ($P_{eGFP}$, black squares) and product yield (P/X, black triangle) are plotted over the fermentation time. The beginning of the fed-batch phase is indicated by a vertical line.

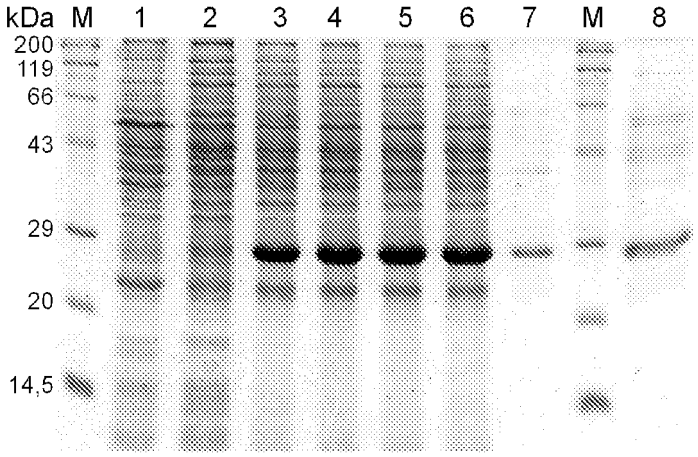



**Fig. 14**

Figure 14: SDS-PAGE of cell samples taken from the fermentation with *B. subtilis* TQ356 / pMW168.1. Lanes 1-8, M: Roti®-Mark STANDARD protein molecular weight marker; 1: after 12,5 h (batch); 2: after 20,5 h (batch); 3: after 36 h (13,5 h fed-batch); 4: after 41 h (18,5 h fed-batch); 5: after 44 h (21,5 h fed-batch); 6: after 46 h (23,5 h fed-batch, end of process); 7: after 46 h, unsoluble fraction; 8: after 46 h, culture supernatant.

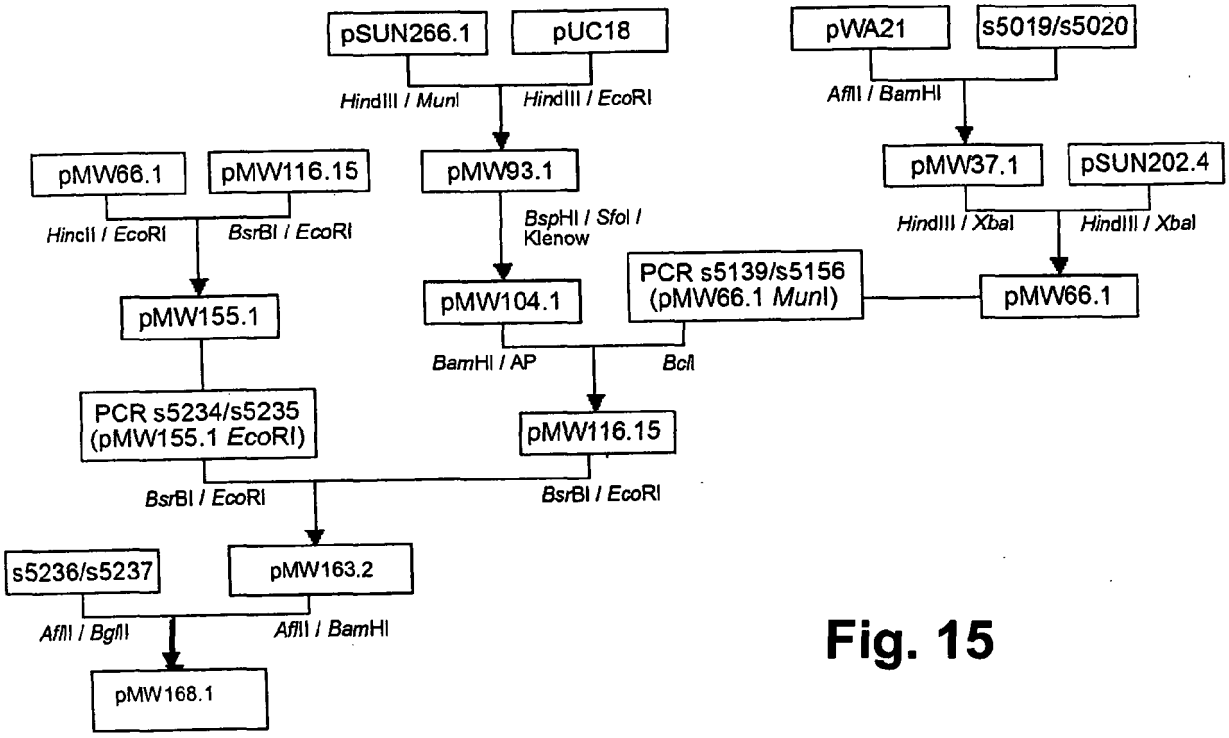

pSUN266.1
pUC18
HindIII / MunI
HindIII / EcoRI
pWA21
s5019/s5020
AflII / BamHI
pMW66.1
pMW116.15
pMW93.1
pMW37.1
pSUN202.4
HincII / EcoRI
BsrBI / EcoRI
BspHI / SfoI / Klenow
HindIII / XbaI
HindIII / XbaI
pMW155.1
pMW104.1
PCR s5139/s5156 (pMW66.1 MunI)
pMW66.1
BamHI / AP
BclI
PCR s5234/s5235 (pMW155.1 EcoRI)
pMW116.15
BsrBI / EcoRI
BsrBI / EcoRI
s5236/s5237
pMW163.2
AflII / BglII
AflII / BamHI
pMW168.1

Fig. 15