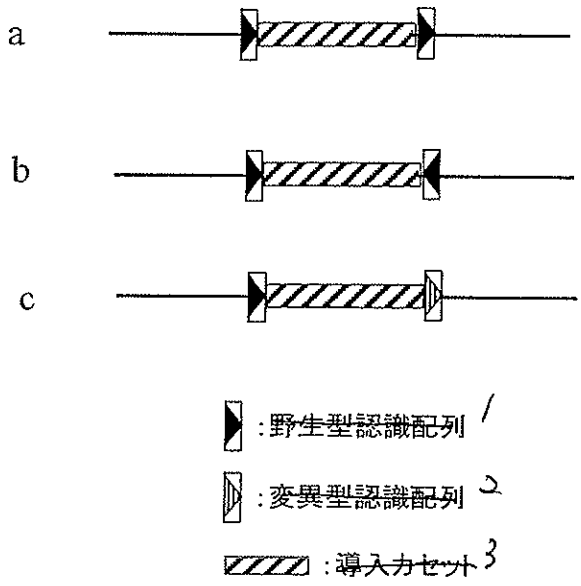
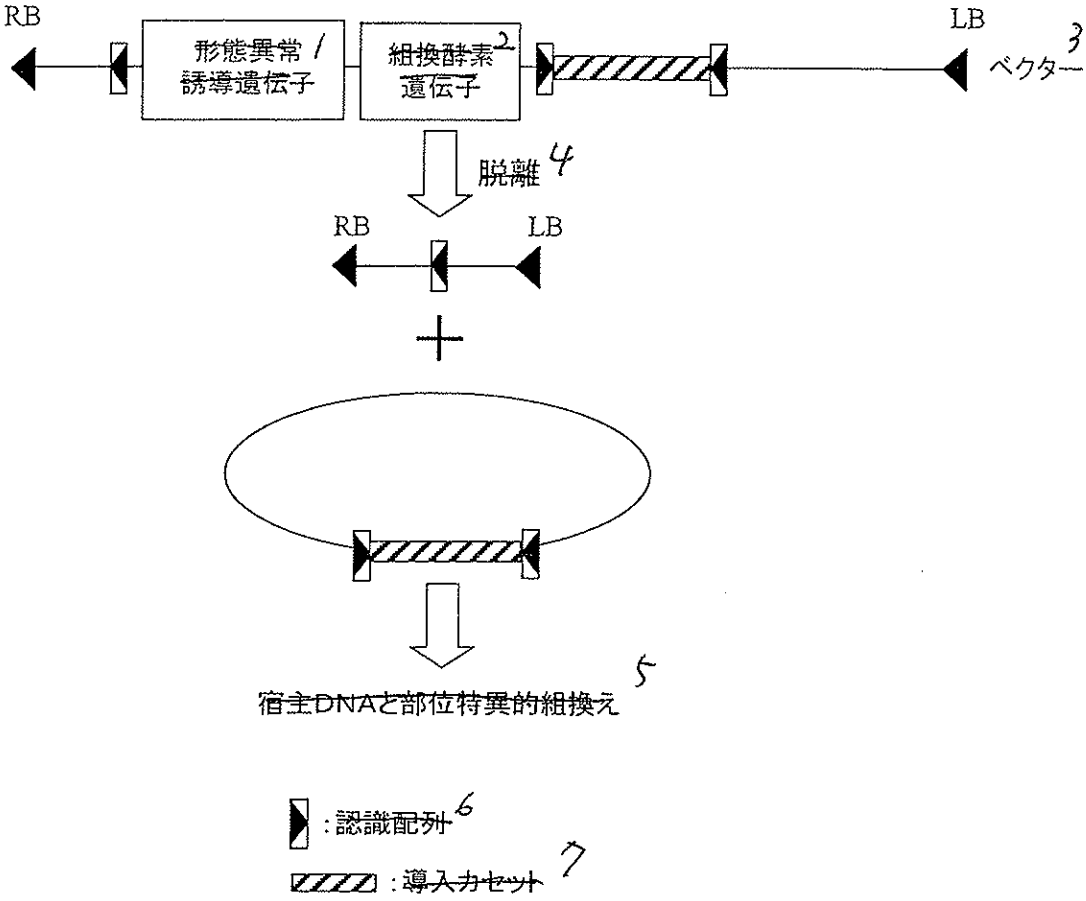
FIG.
図 1



1: Wild type recognition sequence
2: Mutation type recognition sequence
3. Introduction cassette

FIG.
図2



1: Morphological abnormality induction gene
2: Recombinase gene
3: Vector
4: Removal
5: Site-specific recombination with host DNA
6: Recognition sequence
7: Introduction cassette

FIG.
図3

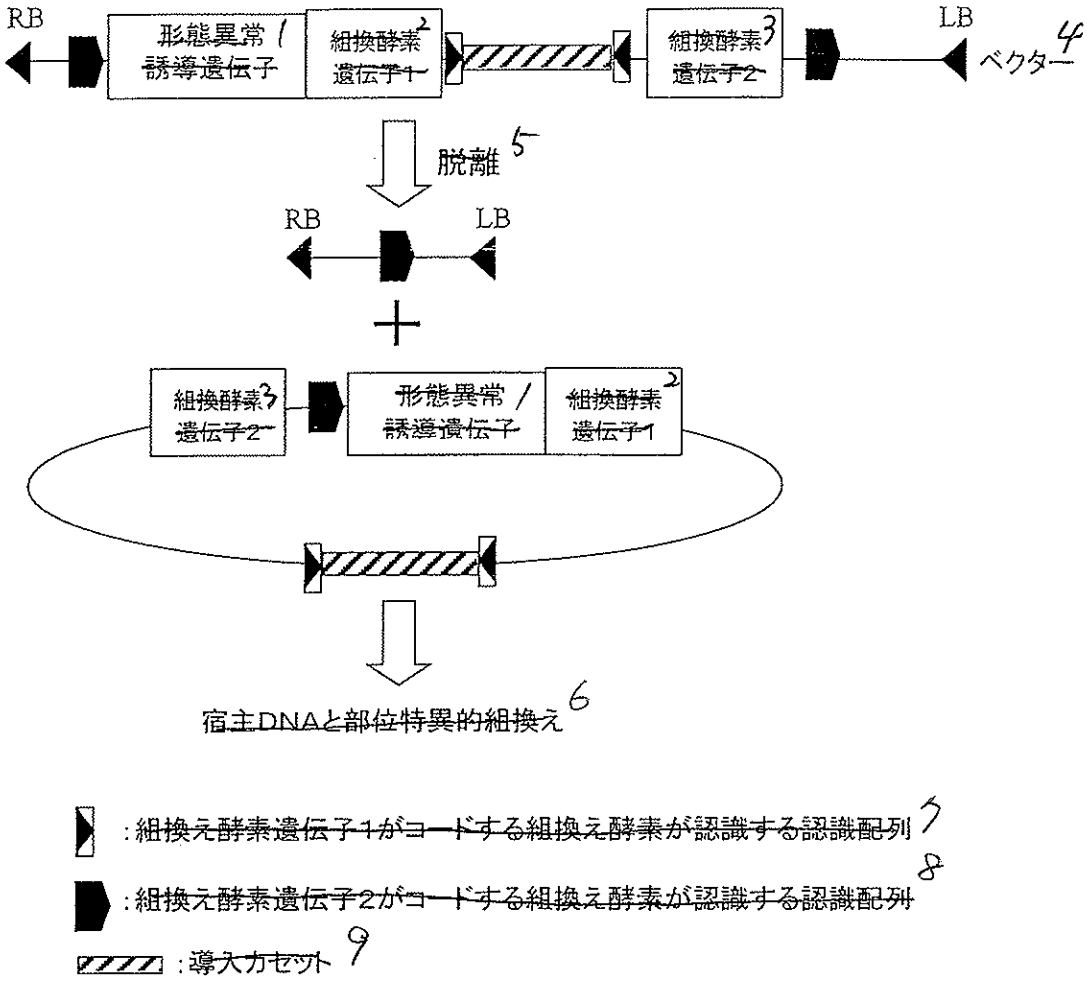
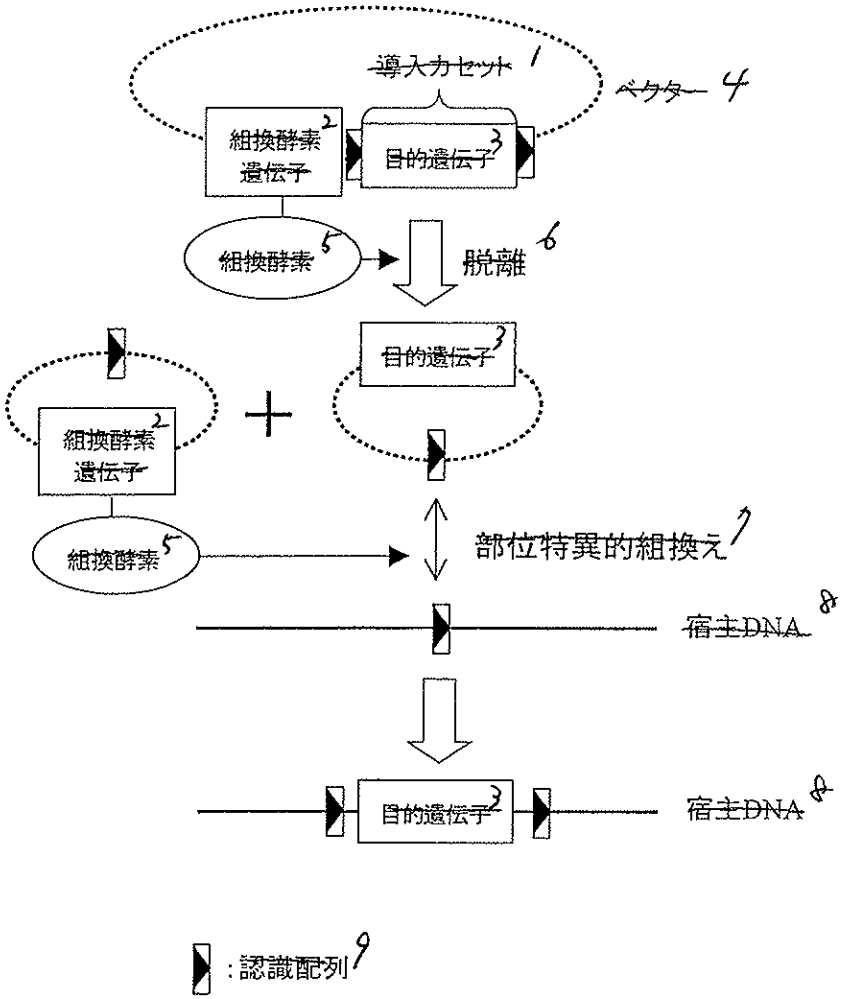


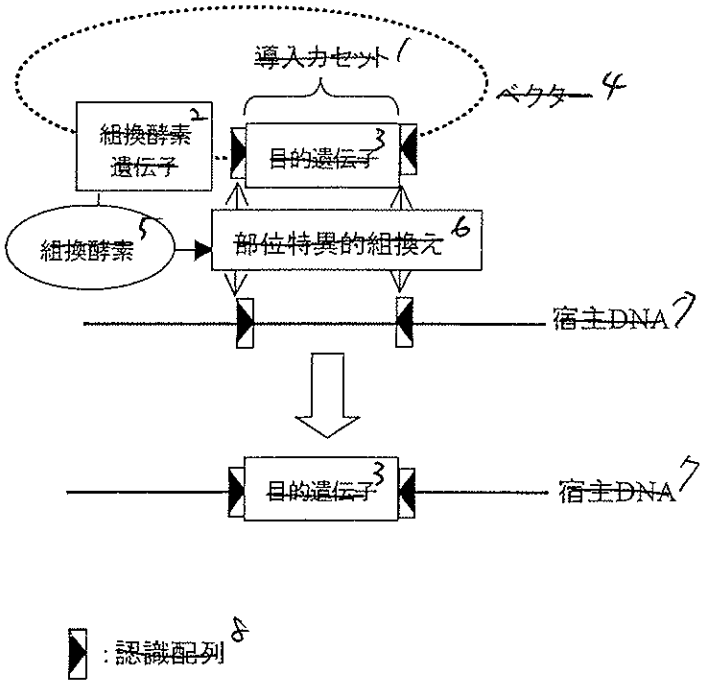
Fig. 3
1: Morphological abnormality induction gene
2: Recombinase gene 1
3: Recombinase gene 2
4: Vector
5: Removal
6: Site-specific recombination with host DNA
7: Recognition sequence recognizable by recombinase encoded by recombinase gene 1
8: Recognition sequence recognizable by recombinase encoded by recombinase gene 2
9: Introduction cassette

FIG.
図4



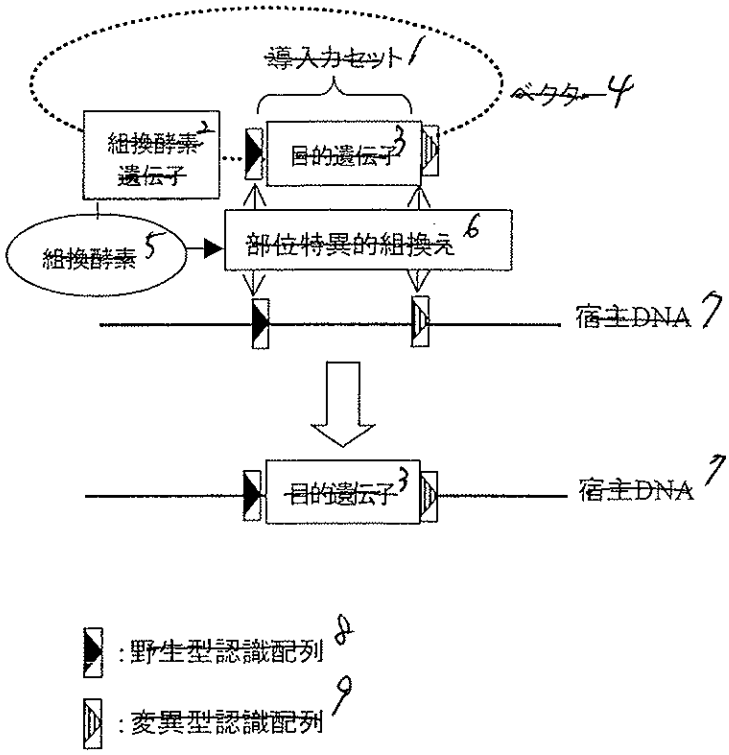
1: Introduction cassette
2: Recombinase gene
3: Desired gene
4: Vector
5: Recombinase
6: Removal
7: Site-specific recombination
8: Host DNA
9: Recognition sequence

FIG.
図5



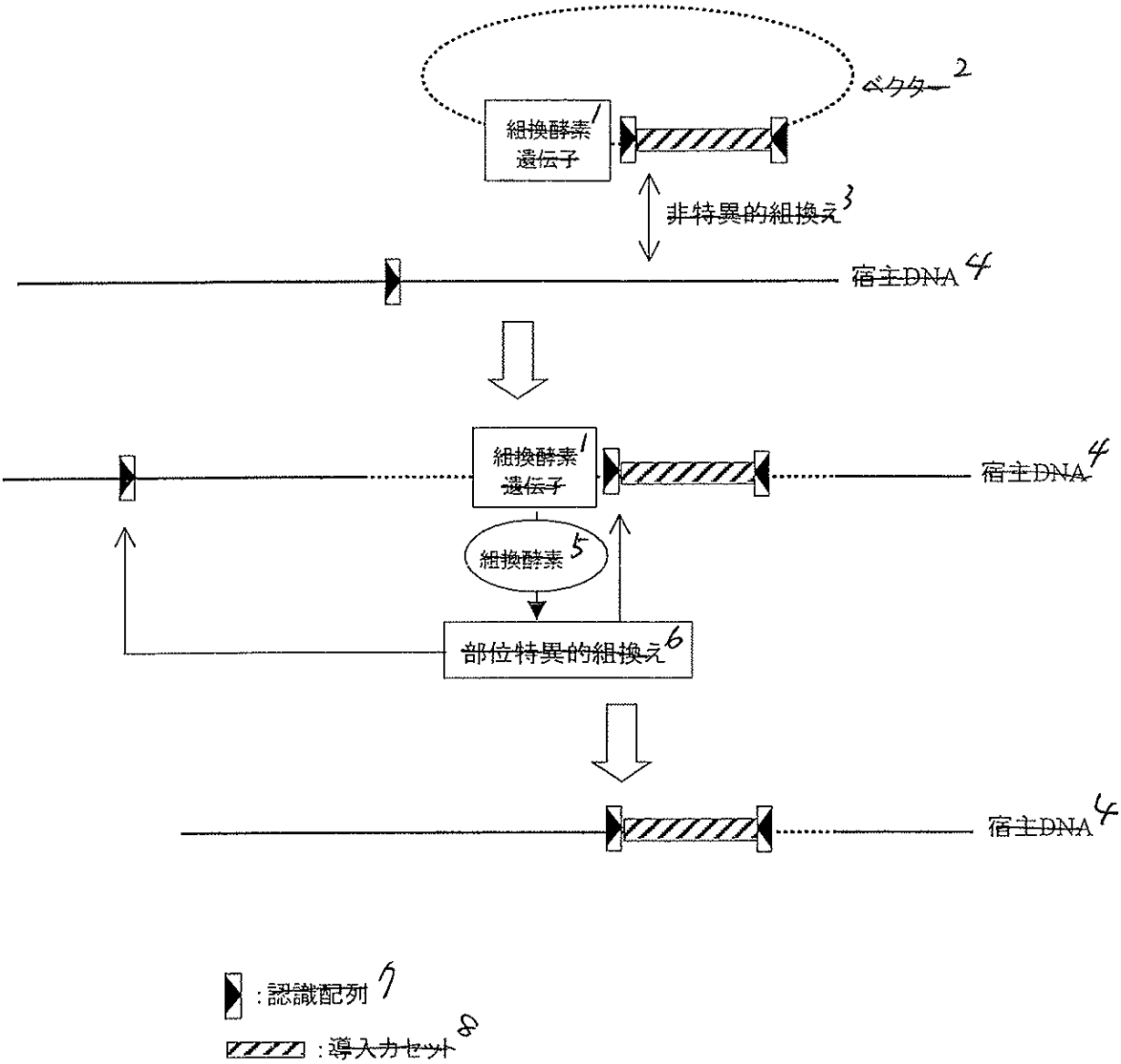
1: Introduction cassette
2: Recombinase gene
3: Desired gene
4: Vector
5: Recombinase
6: Site-specific recombination
7: Host DNA
8: Recognition sequence

FIG.
図6



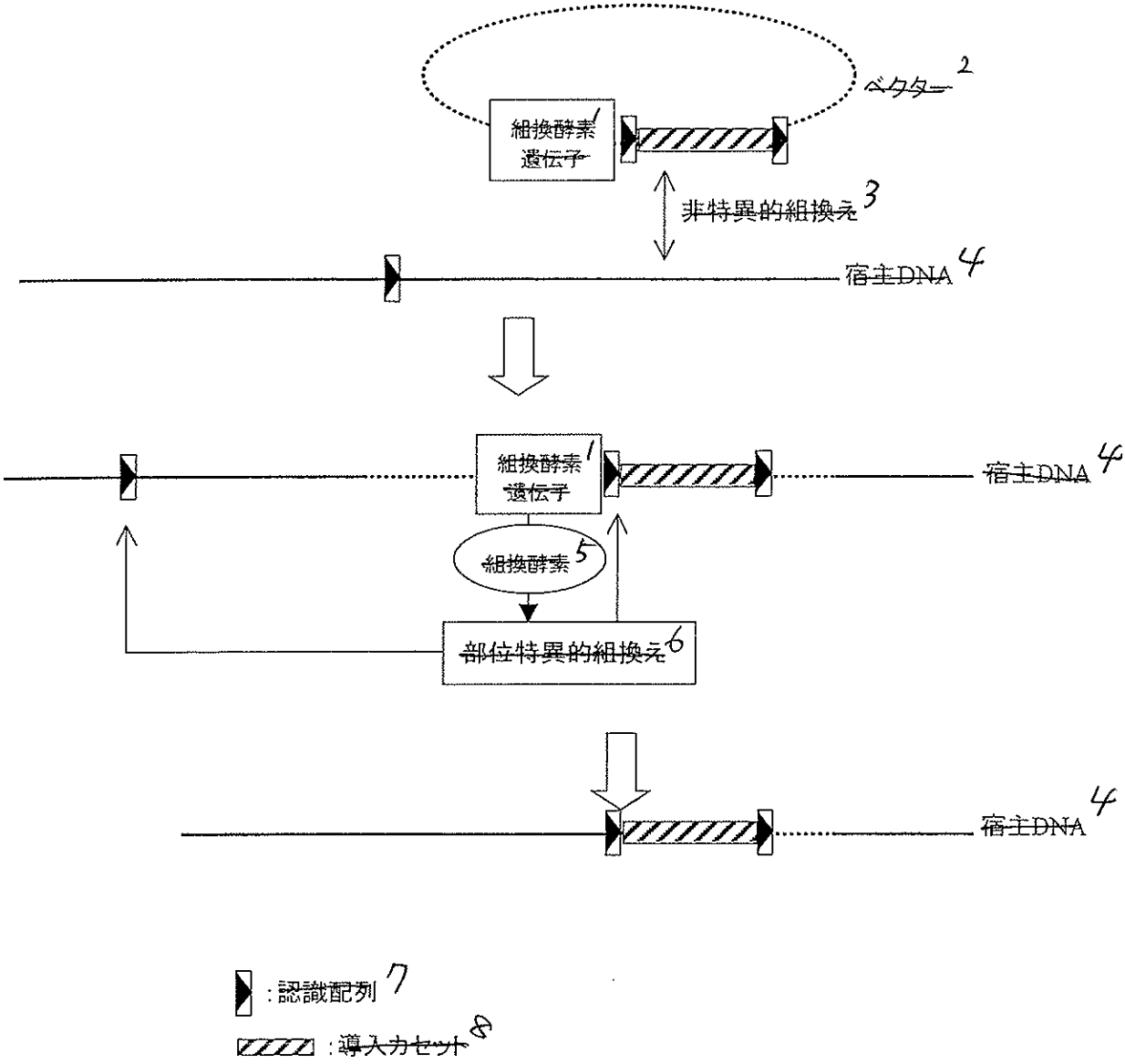
1: Introduction cassette
2: Recombinase gene
3: Desired gene
4: Vector
5: Recombinase
6: Site-specific recombination
7: Host DNA
8: Wild type recognition sequence
9: Mutation type recognition sequence

FIG.
図7



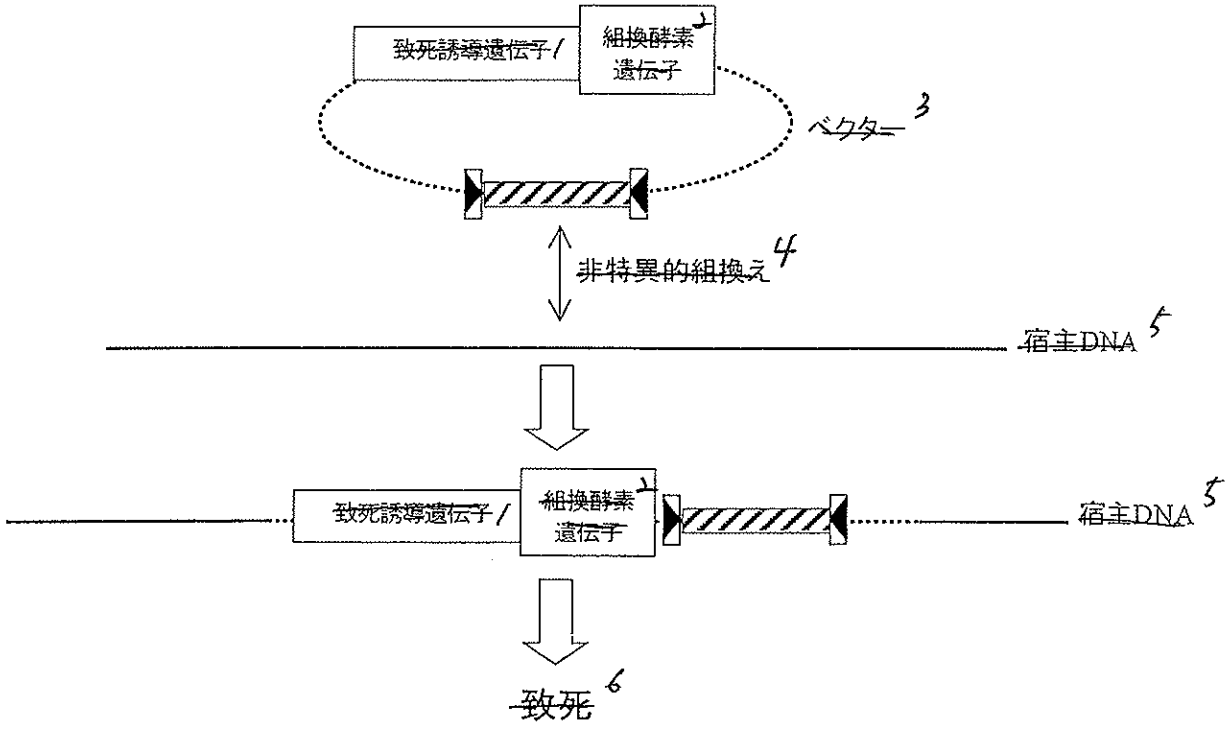
1: Recombinase gene
2: Vector
3: Non-specific recombination
4: Host DNA
5: Recombinase
6: Site-specific recombination
7: Recognition sequence
8: Introduction cassette

Fig.
図8



1: Recombinase gene
2: Vector
3: Non-specific recombination
4: Host DNA
5: Recombinase
6: Site-specific recombination
7: Recognition sequence
8: Introduction cassette

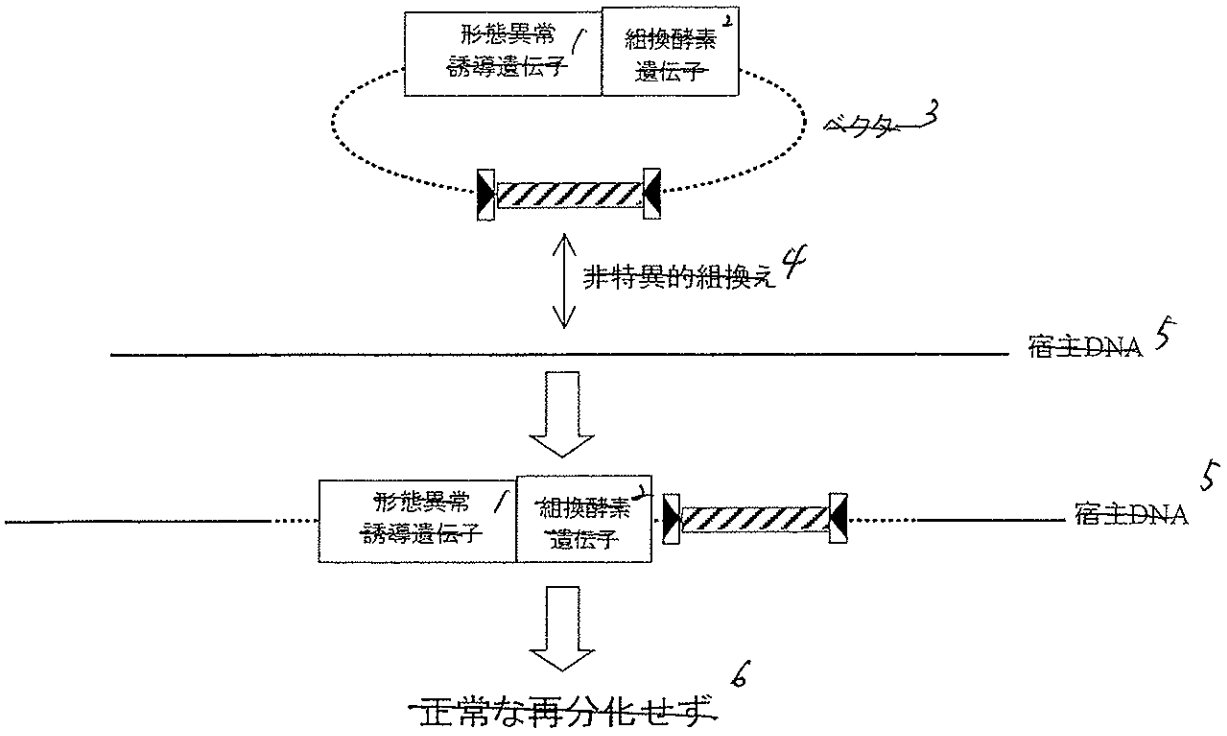
FIG.
図9



1: Lethal induction gene
2: Recombinase gene
3: Vector
4: Non-specific recombination
5: Host DNA
6: Lethal
7: Recognition sequence
8: Introduction cassette

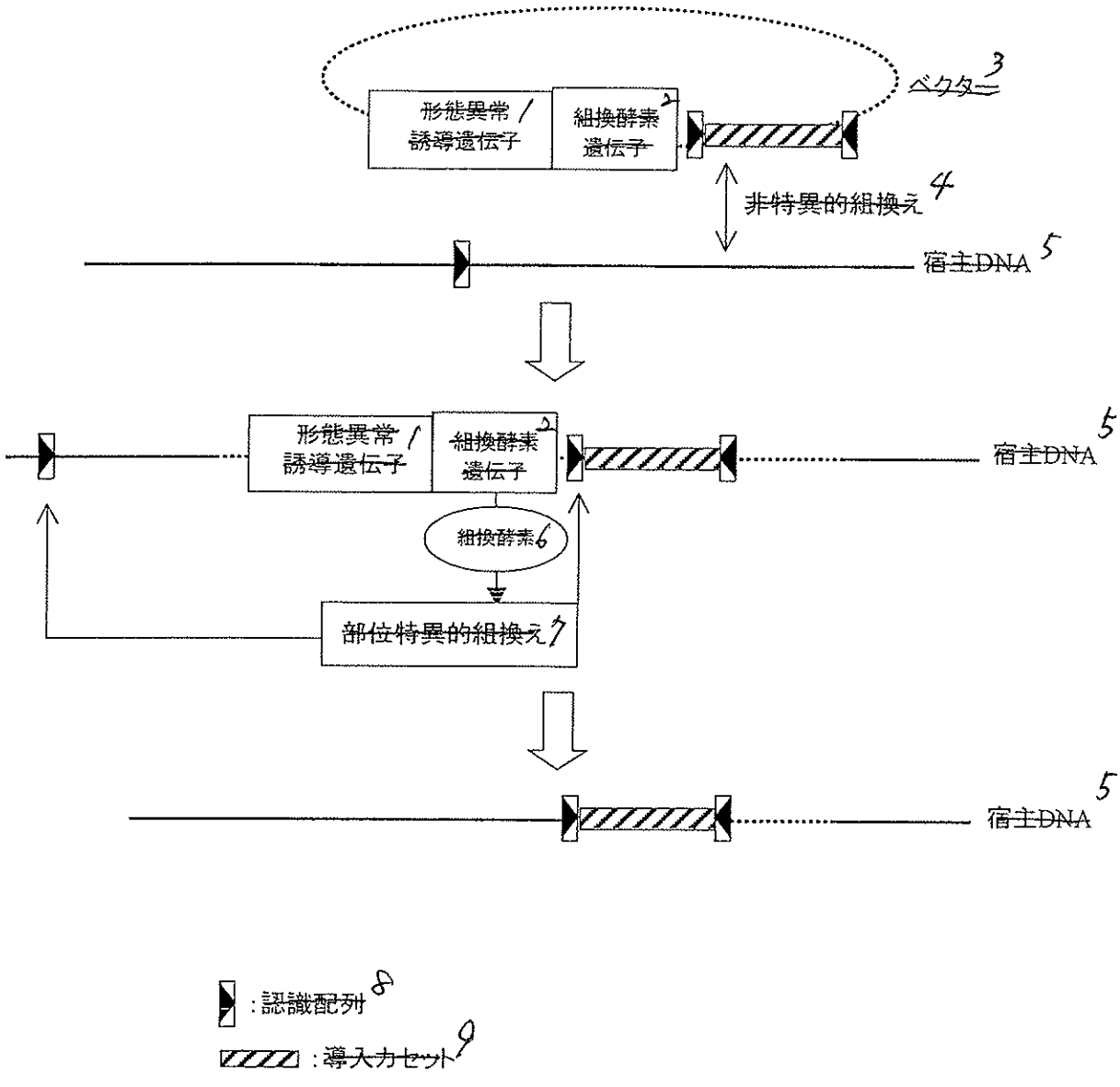
FIG.

図１０



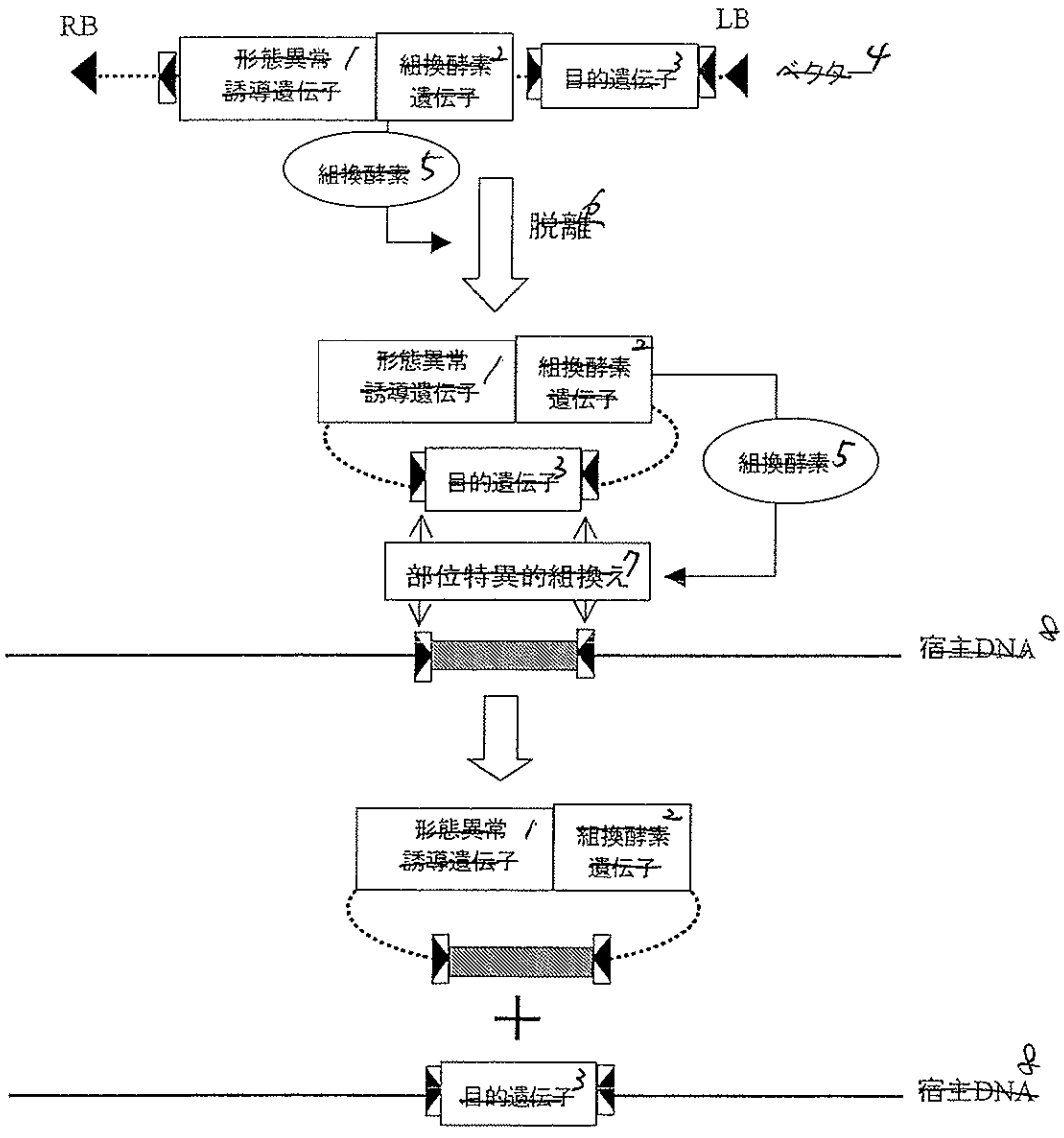
1: Morphological abnormality induction gene
2: Recombinase gene
3: Vector
4: Non-specific recombination
5: Host DNA
6: No normal redifferentiation
7: Recognition sequence
8: Introduction cassette

Fig.
図１１



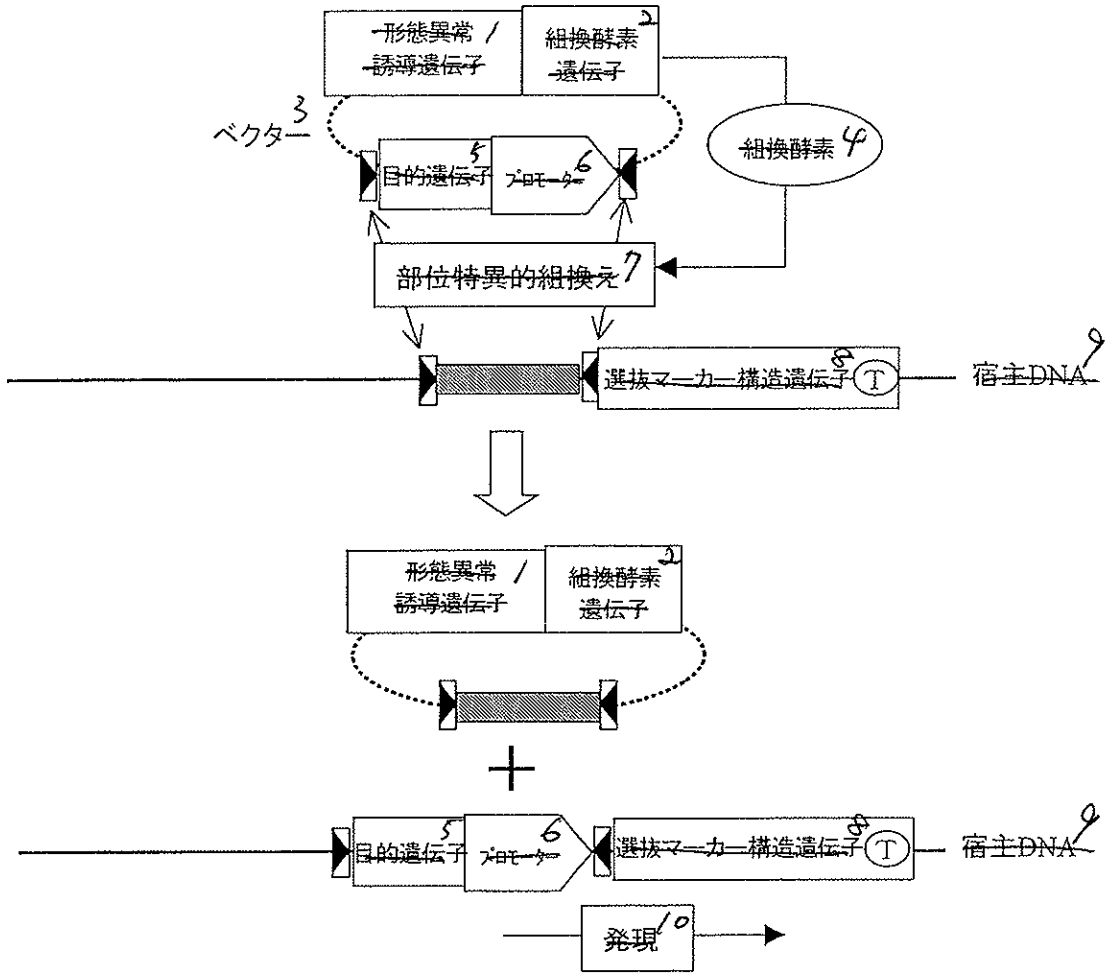
1: Morphological abnormality induction gene
2: Recombinase gene
3: Vector
4: Non-specific recombination
5: Host DNA
6: Recombinase
7: Site-specific recombination
8: Recognition sequence
9: Introduction cassette

Fig.
図１２



1: Morphological abnormality induction gene
2: Recombinase gene
3: Desired gene
4: Vector
5: Recombinase
6: Removal
7: Site-specific recombination
8: Host DNA
9: Recognition sequence

FIG.
図１３

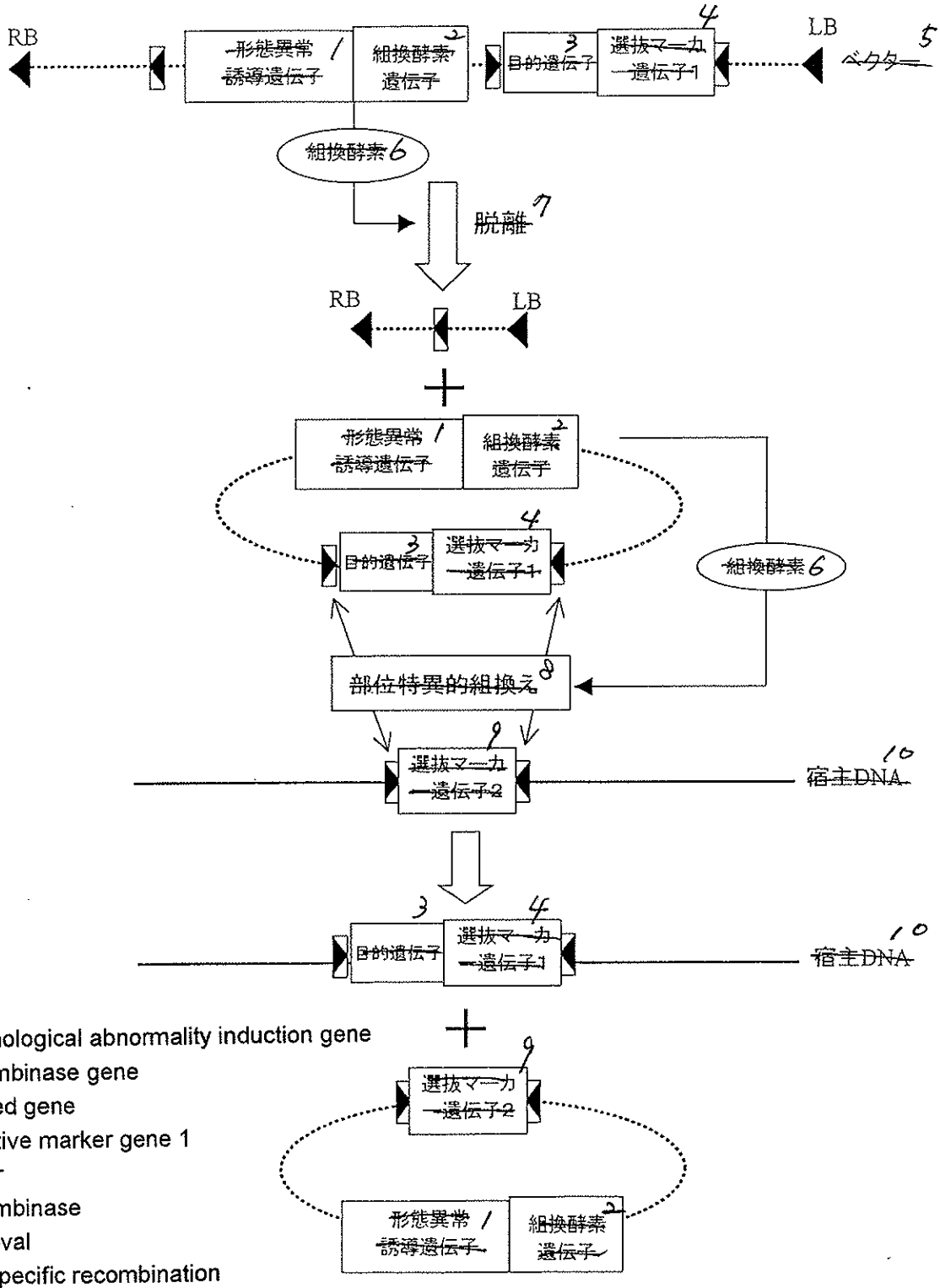


：認識配列 11

T：ターミネーター 12

1: Morphological abnormality induction gene
2: Recombinase gene
3: Vector
4: Recombinase
5: Desired gene
6: Promoter
7: Site-specific recombination
8: Selective marker structural gene
9: Host DNA
10: Expression
11: Recognition sequence
12: Terminator

FIG.
図１４



1: Morphological abnormality induction gene
2: Recombinase gene
3: Desired gene
4: Selective marker gene 1
5: Vector
6: Recombinase
7: Removal
8: Site-specific recombination
9: Selective marker gene 2
10: Host DNA

FIG.
図15

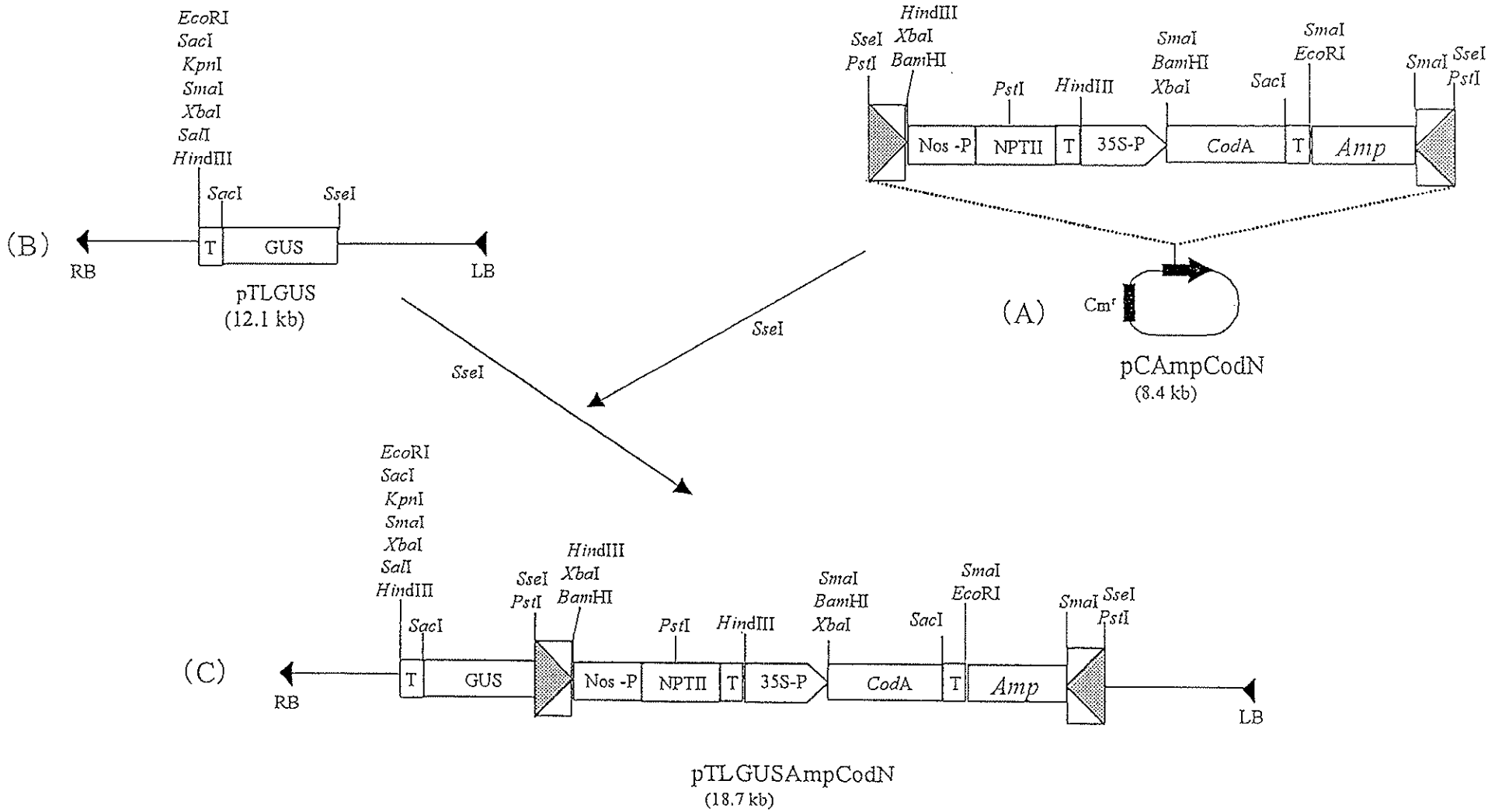

EcoRI
SacI
KpnI
SmaI
XbaI
SalI
HindIII
SacI
SseI
(B)
T
GUS
RB
LB
pTLGUS
(12.1 kb)
HindIII
XbaI
SseI
PstI
BamHI
PstI
HindIII
SmaI
BamHI
XbaI
SacI
SmaI
EcoRI
SmaI
SseI
PstI
Nos -P
NPTII
T
35S-P
CodA
T
Amp
(A)
Cmr
pCAmpCodN
(8.4 kb)
SseI
SseI
EcoRI
SacI
KpnI
SmaI
XbaI
SalI
HindIII
SacI
SseI
PstI
HindIII
XbaI
BamHI
PstI
HindIII
SmaI
BamHI
XbaI
SacI
SmaI
EcoRI
SmaI
SseI
PstI
(C)
RB
T
GUS
Nos -P
NPTII
T
35S-P
CodA
T
Amp
LB
pTLGUSAmpCodN
(18.7 kb)

FIG.
図16

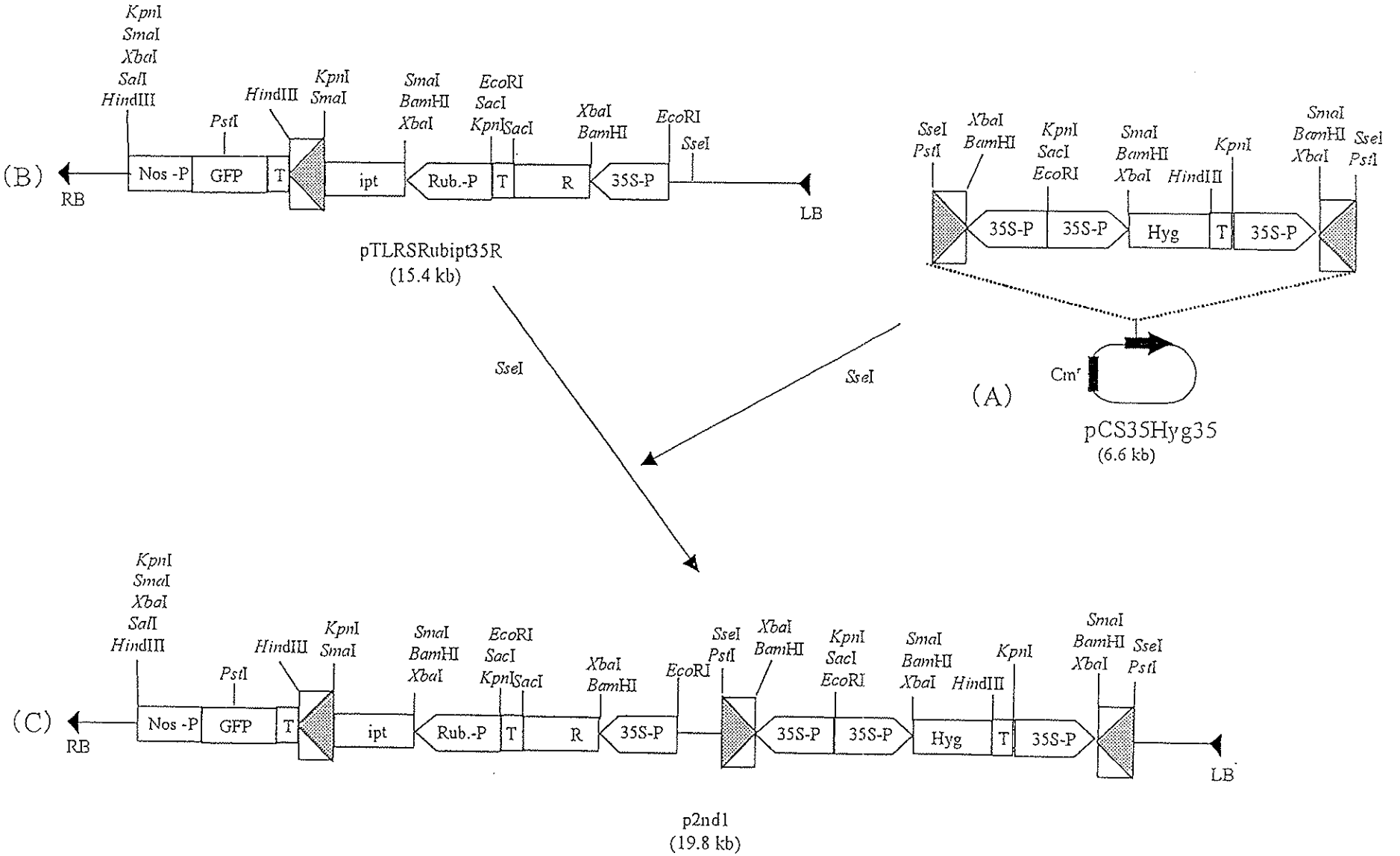

(B)
RB
Nos -P
GFP
T
ipt
Rub.-P
T
R
35S-P
LB
KpnI
SmaI
XbaI
SalI
HindIII
PstI
SacI
EcoRI
BamHI
SseI
pTLRSRubipt35R
(15.4 kb)
SseI
SseI
(A)
Cmr
35S-P
Hyg
pCS35Hyg35
(6.6 kb)
(C)
p2nd1
(19.8 kb)

FIG.
図17

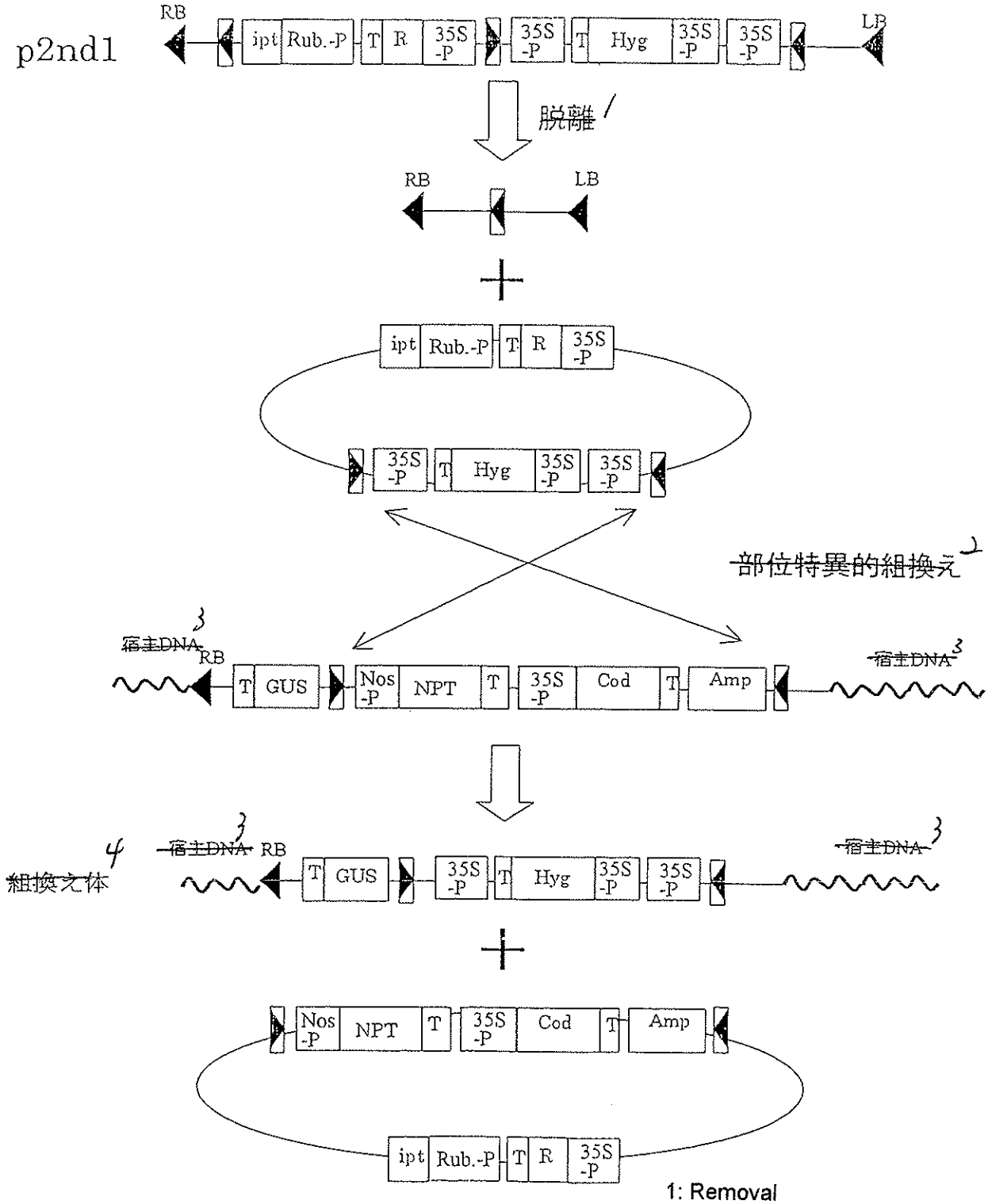

p2nd1
RB
ipt
Rub.-P
T
R
35S -P
T
Hyg
LB
脱離 1
部位特異的組換え 2
宿主DNA 3
GUS
Nos -P
NPT
Cod
Amp
組換え体 4
1: Removal
2: Site-specific recombination
3: Host DNA
4: Recombinant

Fig.
図18

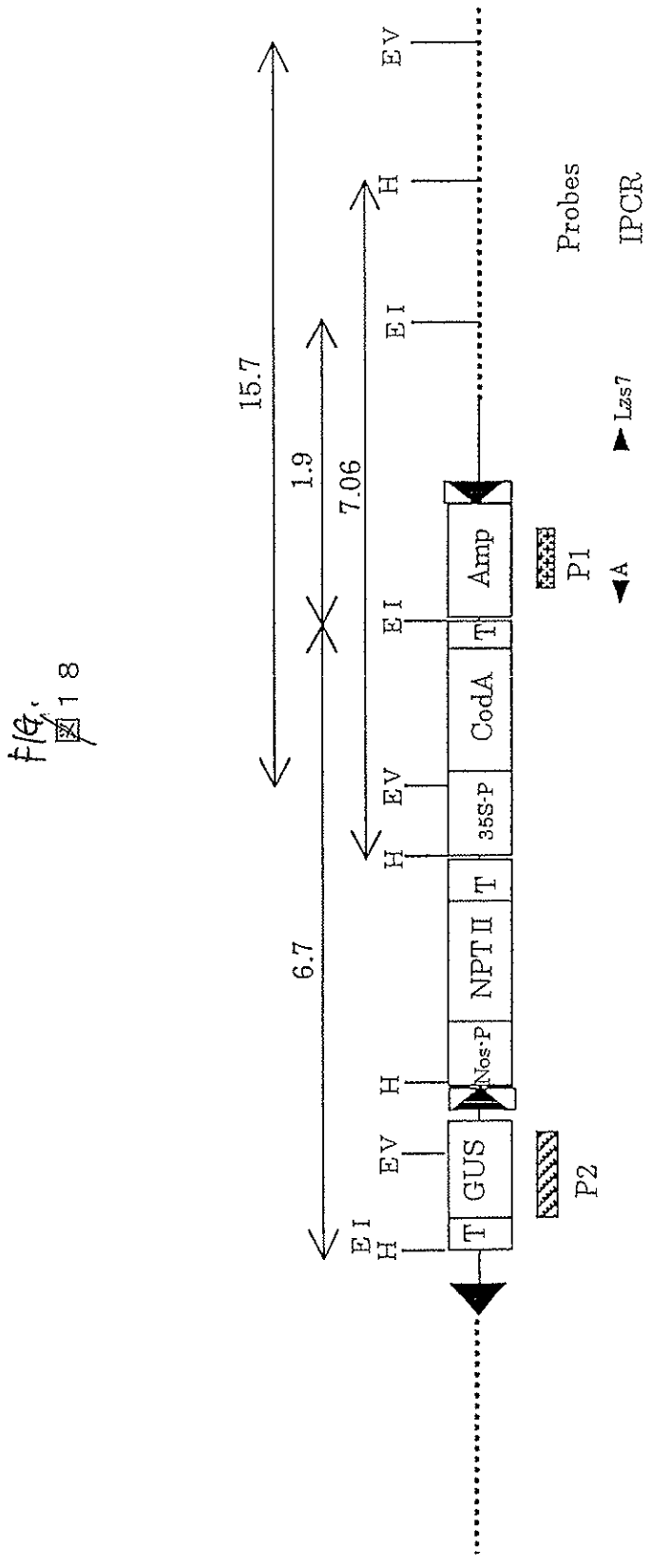

15.7
1.9
7.06
6.7
EV
H
EI
H
EV
H
EI
H
EV
T
GUS
Nos-P
NPT II
T
35S-P
CodA
T
Amp
P1
P2
Probes
IPCR
Las7
A

FIG.
図19

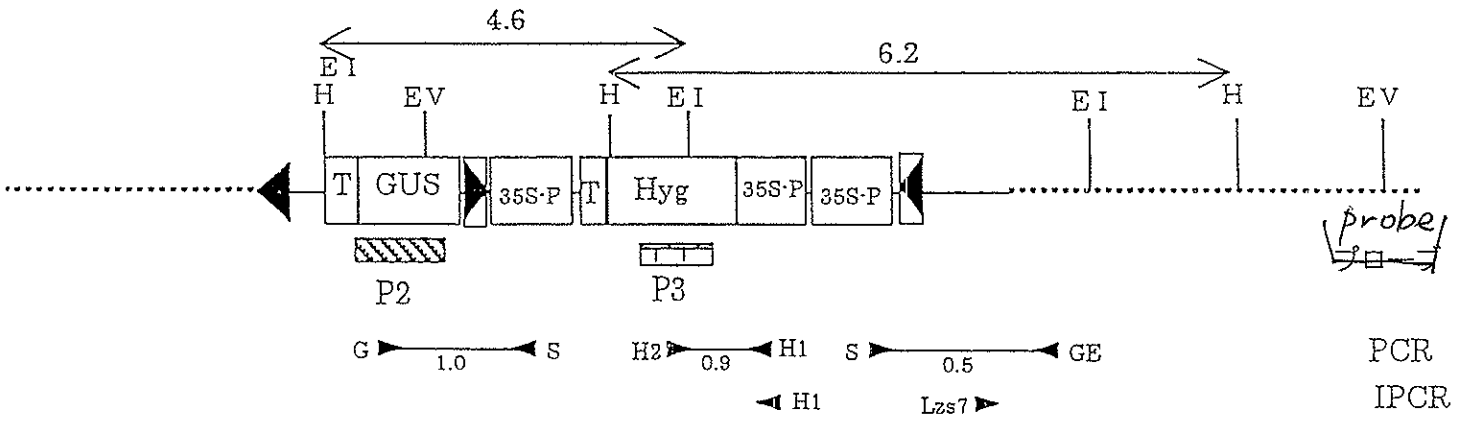

4.6
6.2
EI
H
EV
H
EI
EI
H
EV
T
GUS
35S-P
T
Hyg
35S-P
35S-P
probe
P2
P3
G
1.0
S
H2
0.9
H1
S
0.5
GE
H1
Lzs7
PCR
IPCR

FIG.

図２０

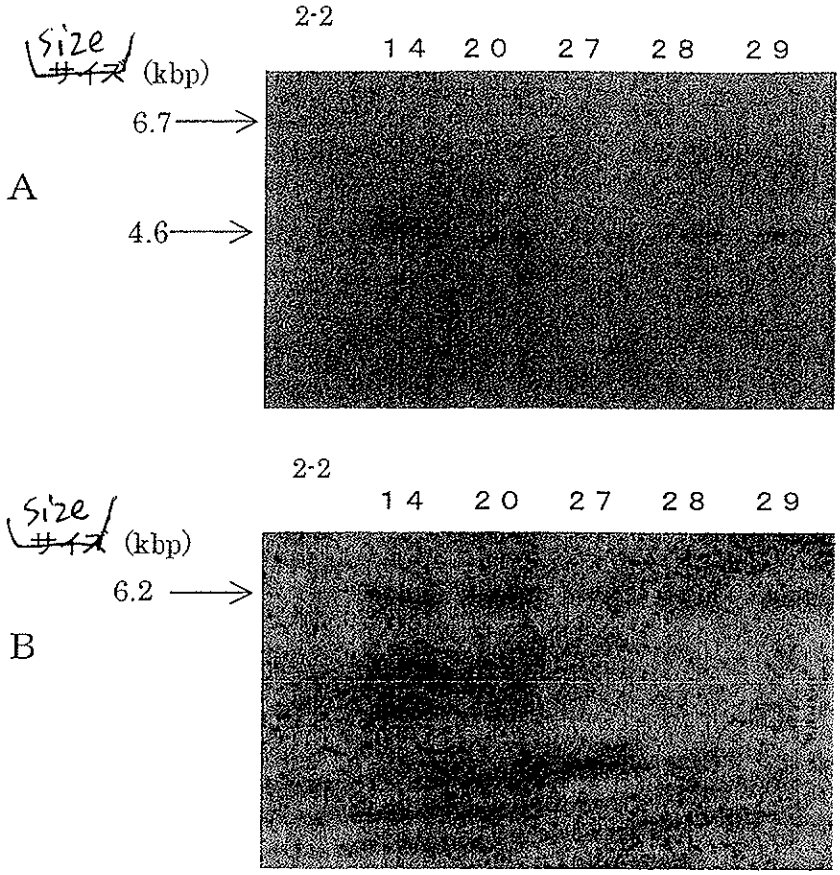

2-2
１４ ２０ ２７ ２８ ２９
Size
サイズ (kbp)
6.7
4.6
A
2-2
１４ ２０ ２７ ２８ ２９
Size
サイズ (kbp)
6.2
B

FIG. 21

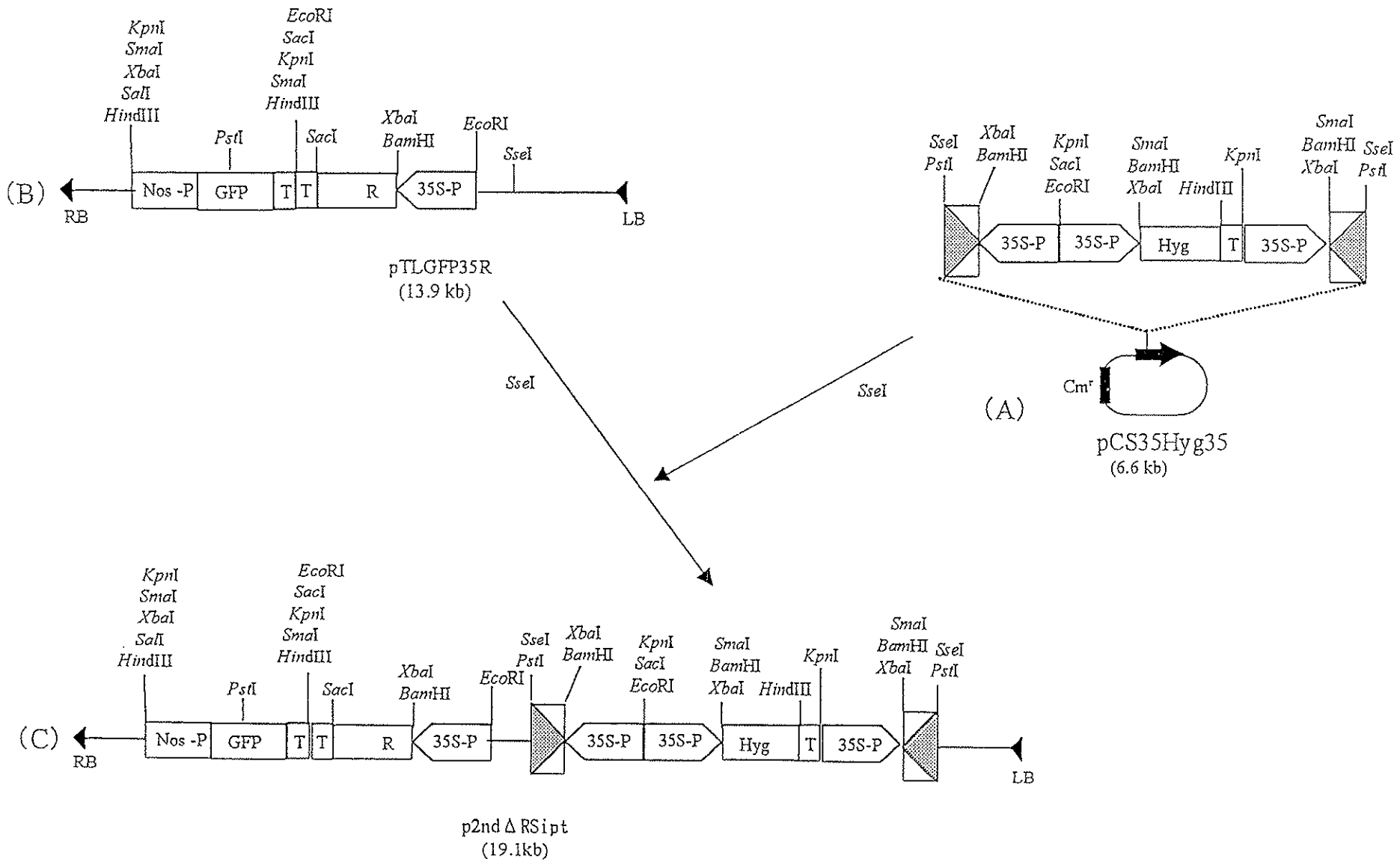

(B)
RB
Nos -P
GFP
T
T
R
35S-P
LB
KpnI
SmaI
XbaI
SalI
HindIII
PstI
EcoRI
SacI
KpnI
SmaI
HindIII
SacI
XbaI
BamHI
EcoRI
SseI
pTLGFP35R
(13.9 kb)
SseI
SseI
(A)
Cmr
35S-P
35S-P
Hyg
T
35S-P
SseI
PstI
XbaI
BamHI
KpnI
SacI
EcoRI
SmaI
BamHI
XbaI
HindIII
KpnI
SmaI
BamHI
XbaI
SseI
PstI
pCS35Hyg35
(6.6 kb)
(C)
RB
Nos -P
GFP
T
T
R
35S-P
35S-P
35S-P
Hyg
T
35S-P
LB
p2nd Δ RSipt
(19.1kb)

FIG.
図22

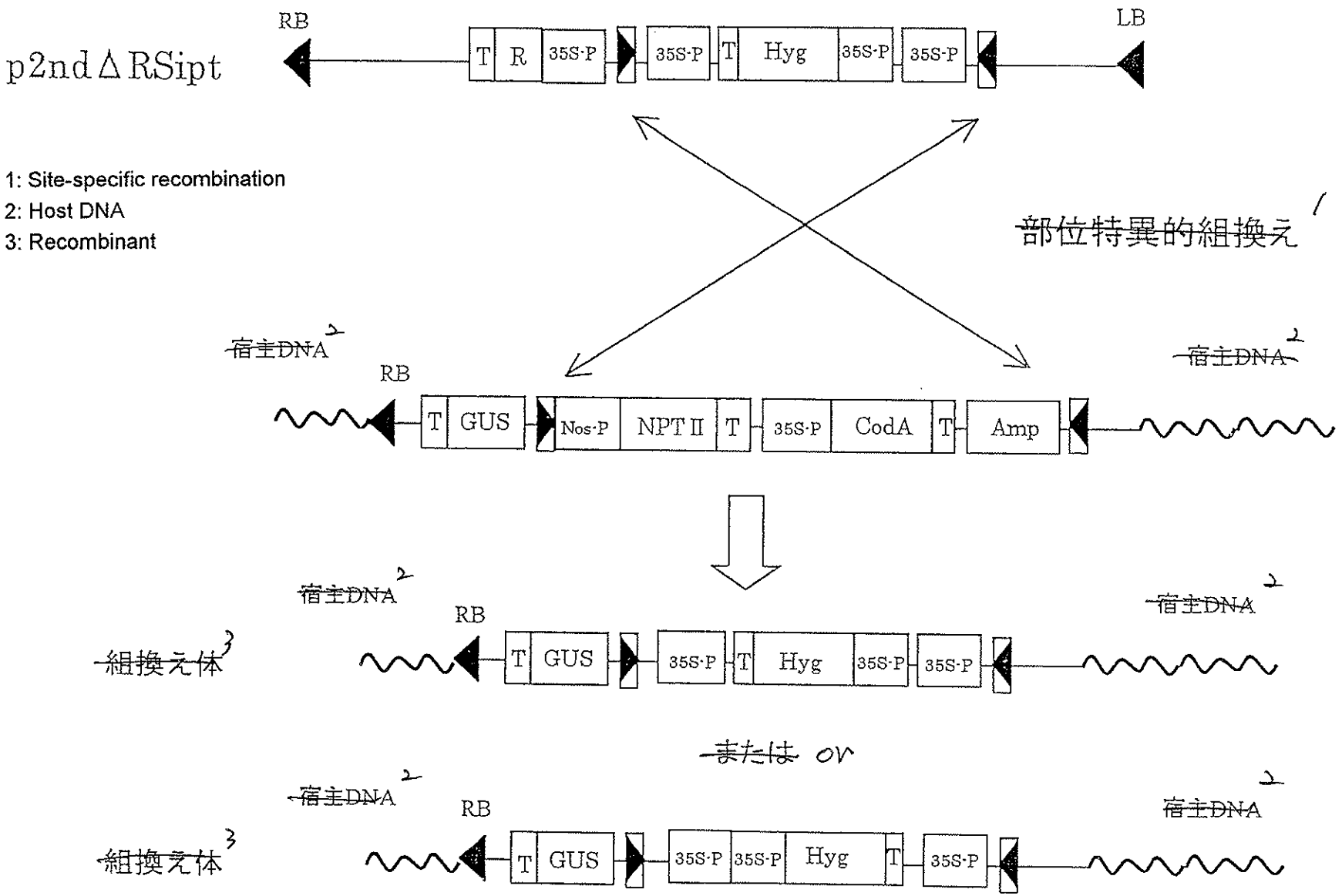

p2nd△RSipt
RB
T
R
35S-P
35S-P
T
Hyg
35S-P
35S-P
LB
1: Site-specific recombination
2: Host DNA
3: Recombinant
部位特異的組換え
宿主DNA
RB
T
GUS
Nos-P
NPT II
T
35S-P
CodA
T
Amp
宿主DNA
組換え体
または or

Fig.
図23

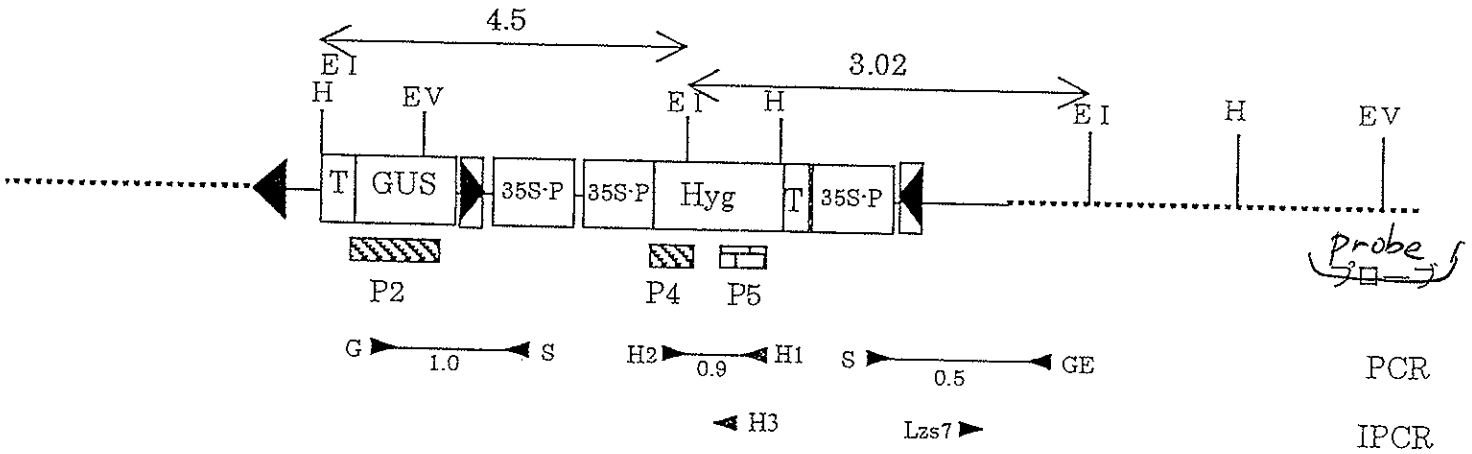

4.5
3.02
E I
H
EV
E I
H
E I
H
EV
T
GUS
35S·P
35S·P
Hyg
T
35S·P
Probe
P2
P4
P5
G
1.0
S
H2
0.9
H1
S
0.5
GE
H3
Lzs7
PCR
IPCR

FIG.
図24

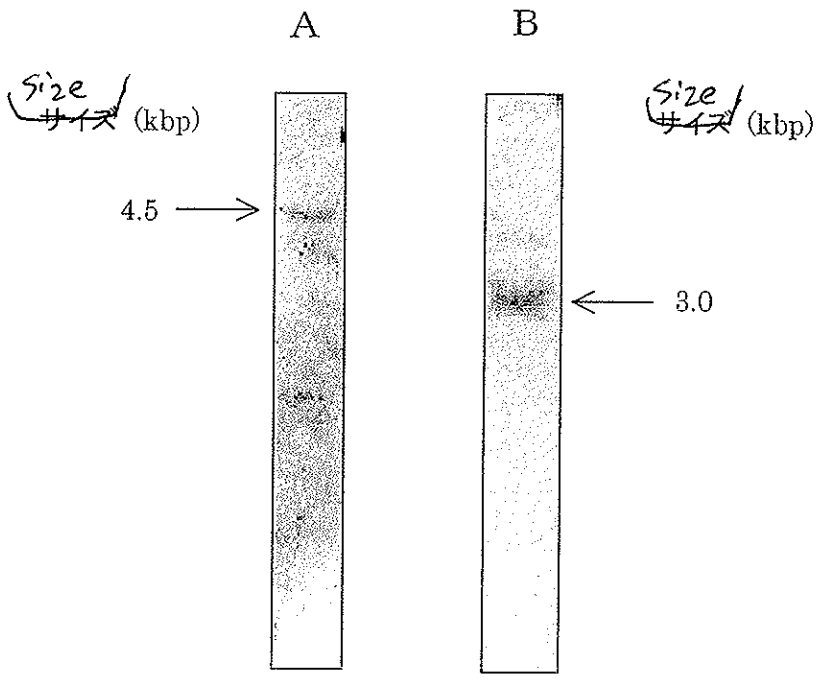


FIG.
図25

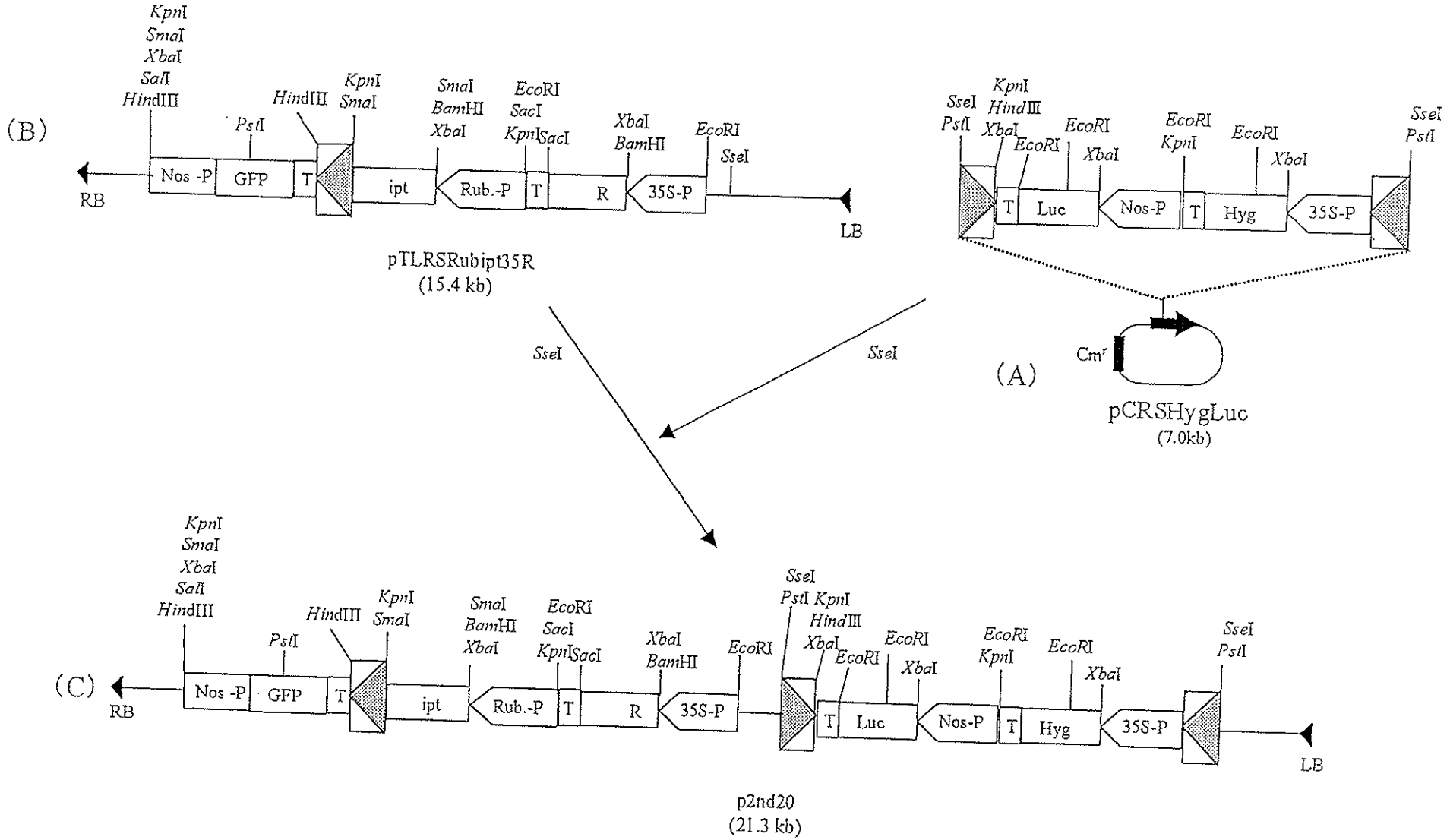

(B)
KpnI
SmaI
XbaI
SalI
HindIII
PstI
HindIII
KpnI
SmaI
SmaI
BamHI
XbaI
EcoRI
SacI
KpnI
SacI
XbaI
BamHI
EcoRI
SseI
RB
Nos -P
GFP
T
ipt
Rub.-P
T
R
35S-P
LB
pTLRSRubipt35R
(15.4 kb)
SseI
SseI
(A)
SseI
PstI
KpnI
HindIII
XbaI
EcoRI
EcoRI
XbaI
EcoRI
KpnI
EcoRI
XbaI
SseI
PstI
T
Luc
Nos-P
T
Hyg
35S-P
Cmr
pCRSHygLuc
(7.0kb)
(C)
KpnI
SmaI
XbaI
SalI
HindIII
PstI
HindIII
KpnI
SmaI
SmaI
BamHI
XbaI
EcoRI
SacI
KpnI
SacI
XbaI
BamHI
EcoRI
SseI
PstI
KpnI
HindIII
XbaI
EcoRI
EcoRI
XbaI
EcoRI
KpnI
EcoRI
XbaI
SseI
PstI
RB
Nos -P
GFP
T
ipt
Rub.-P
T
R
35S-P
T
Luc
Nos-P
T
Hyg
35S-P
LB
p2nd20
(21.3 kb)

FIG.
図２６

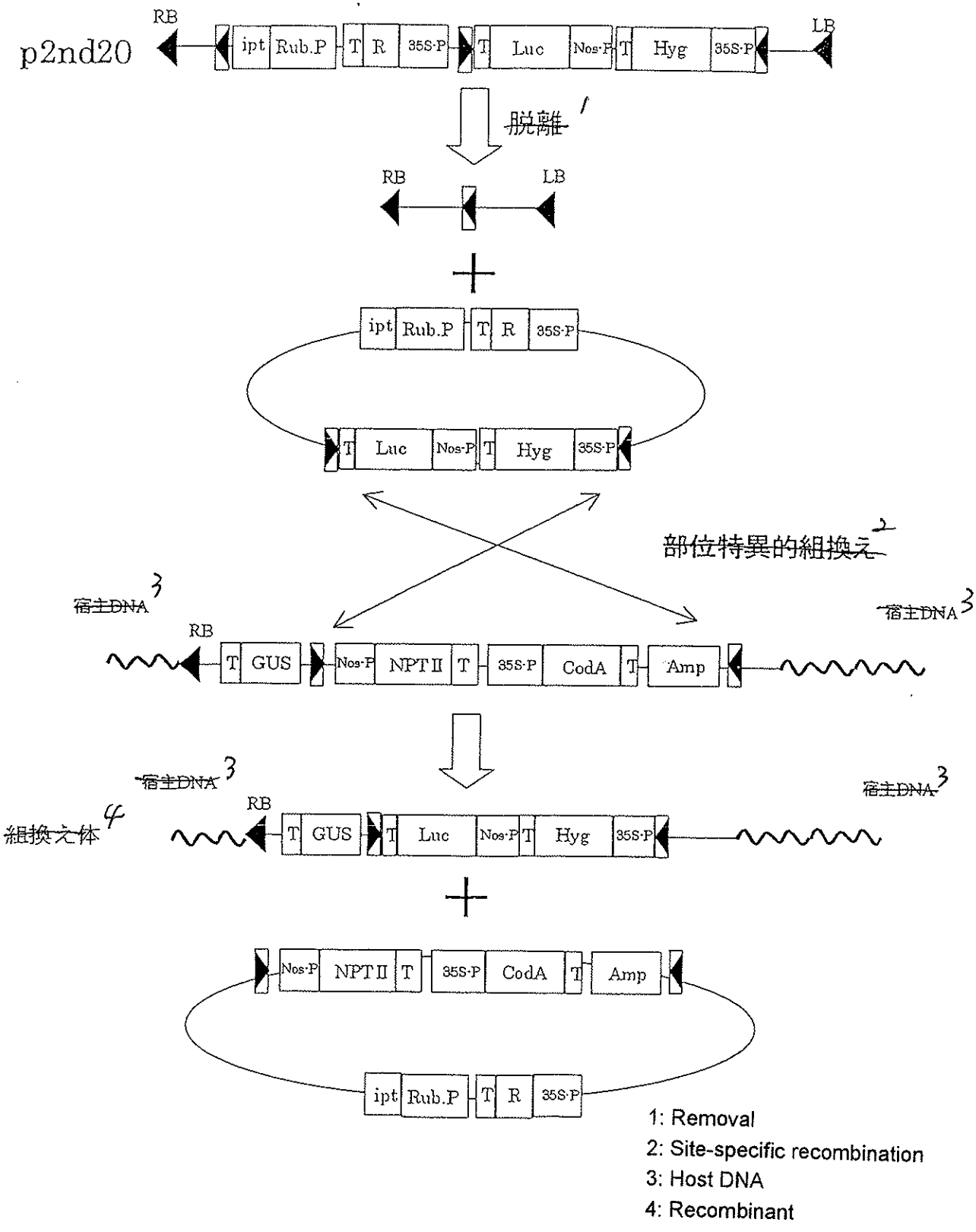

p2nd20
RB
ipt
Rub.P
T
R
35S-P
Luc
Nos-P
Hyg
LB
脱離 1
部位特異的組換え 2
宿主DNA 3
GUS
NPTII
CodA
Amp
組換え体 4
1: Removal
2: Site-specific recombination
3: Host DNA
4: Recombinant

FIG.
図27

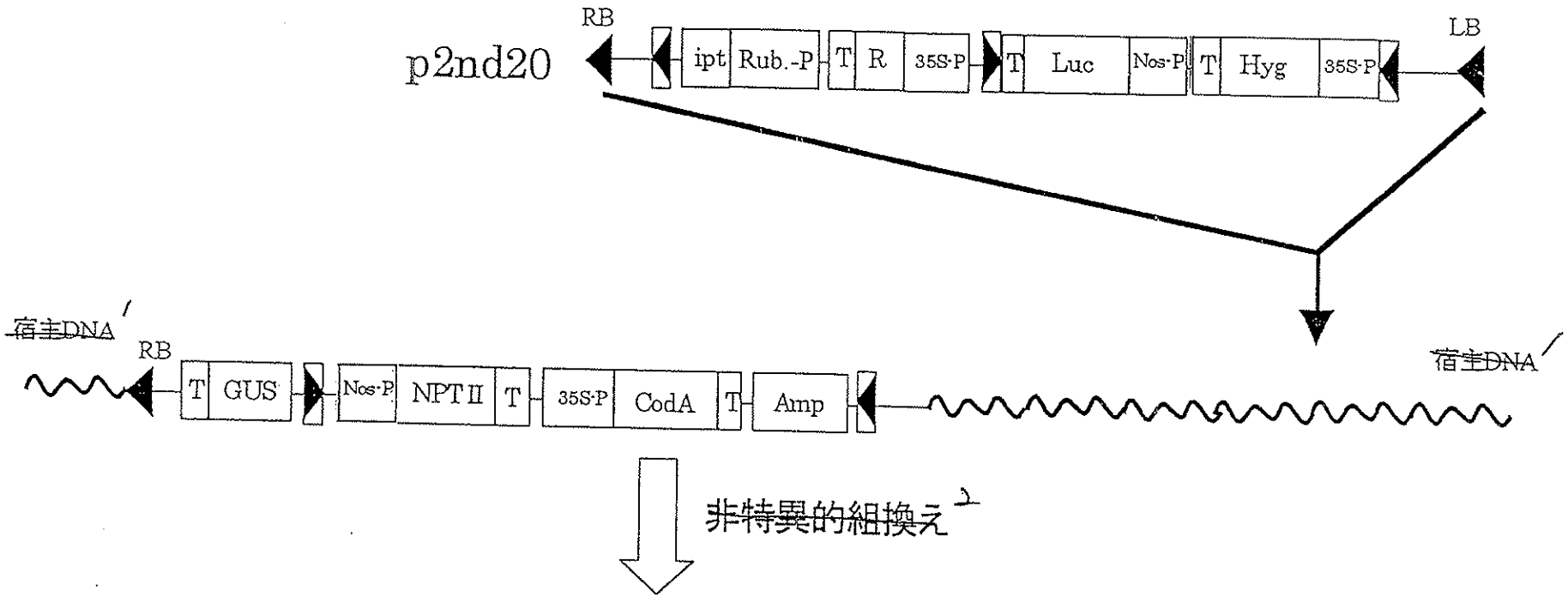

p2nd20
RB
ipt
Rub.-P
T
R
35S-P
T
Luc
Nos-P
T
Hyg
35S-P
LB
宿主DNA
RB
T
GUS
Nos-P
NPT II
T
35S-P
CodA
T
Amp
宿主DNA
非特異的組換え
1: Host DNA
2: Site-specific recombination

FIG. Cont'd.

図２７（続き）

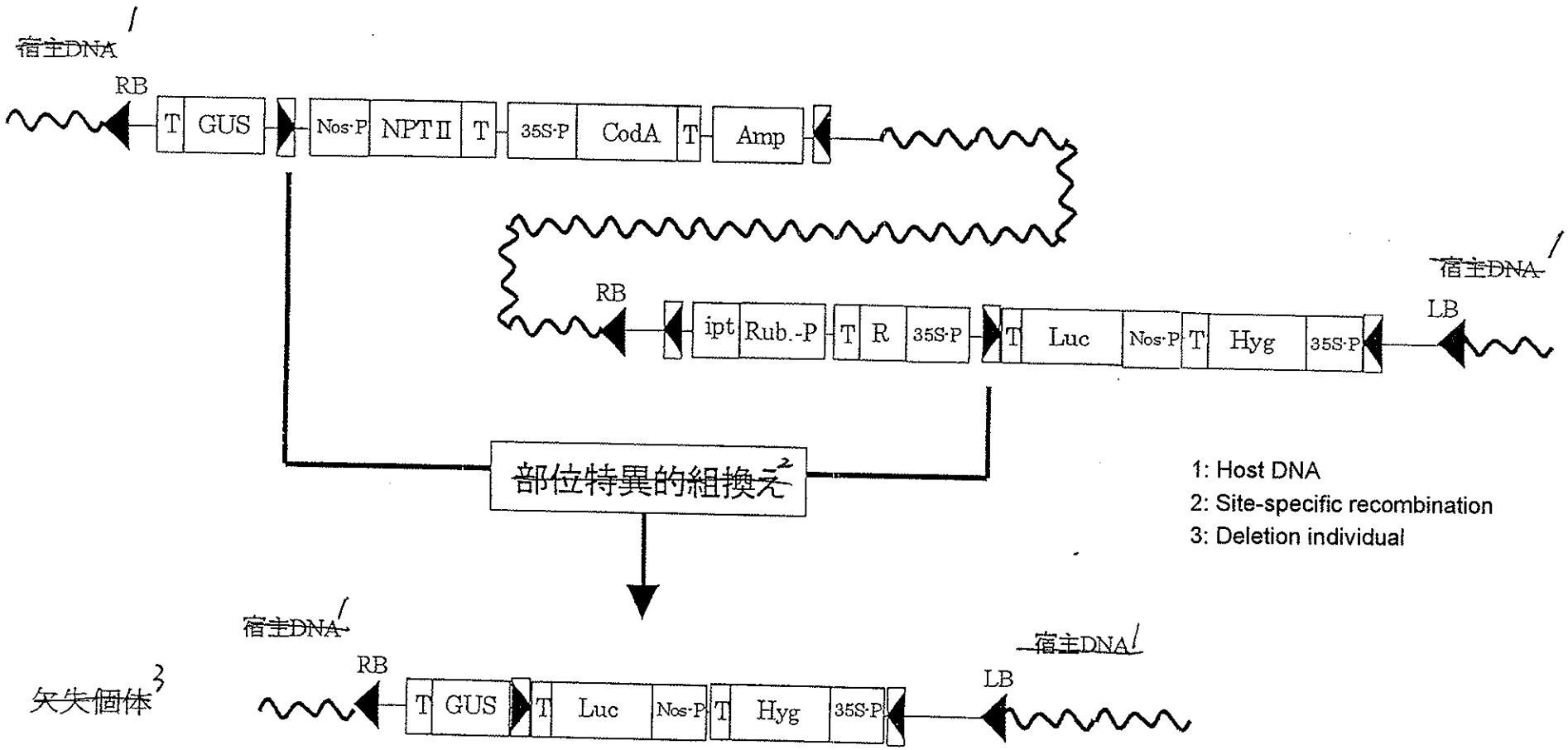


FIG. 28

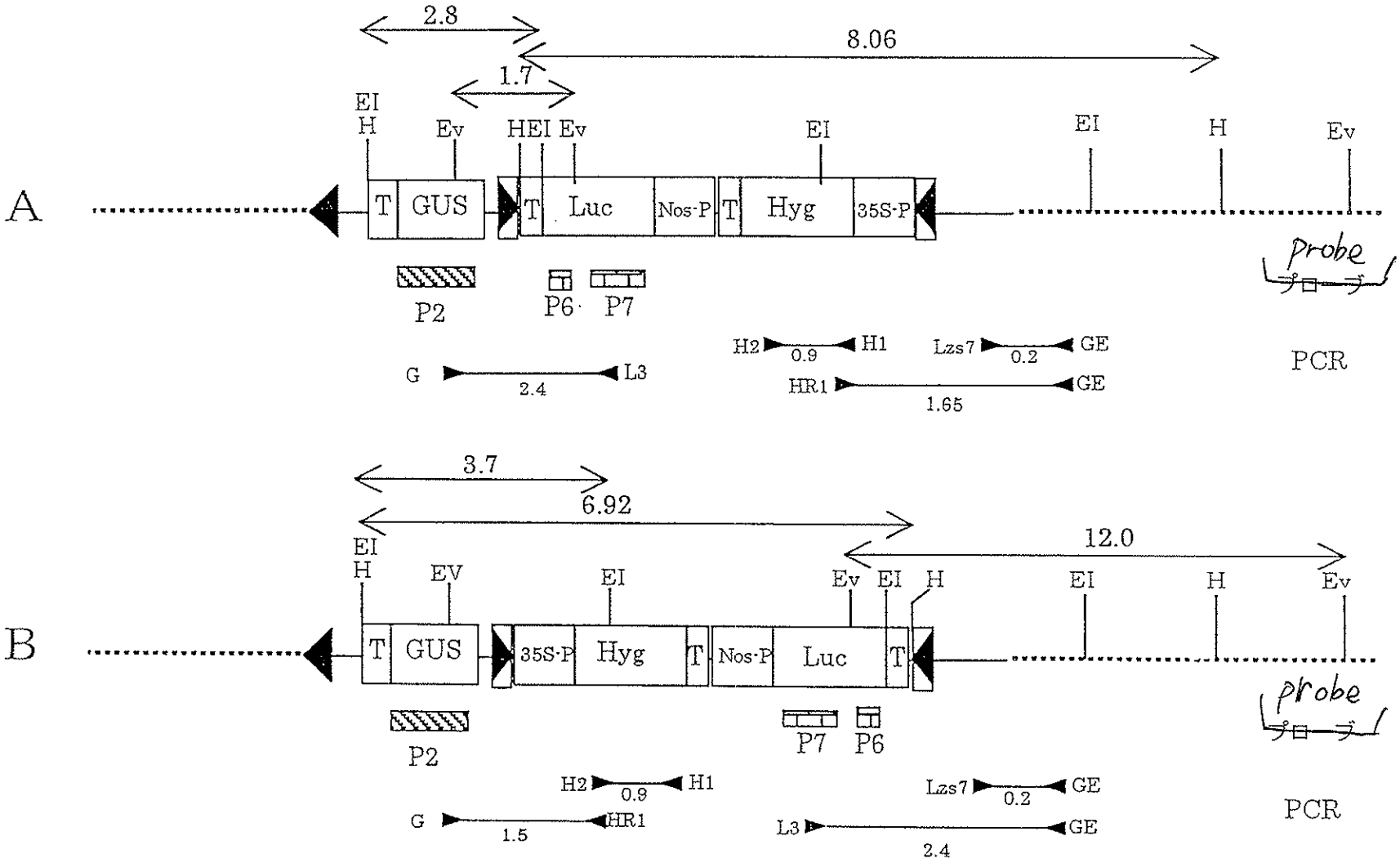

A
2.8
8.06
1.7
EI
H
Ev
HEI Ev
EI
EI
H
Ev
T
GUS
T
Luc
Nos-P
T
Hyg
35S-P
probe
P2
P6
P7
H2
0.9
H1
Lzs7
0.2
GE
G
2.4
L3
HR1
1.65
GE
PCR
B
3.7
6.92
12.0
EI
H
EV
EI
Ev
EI
H
EI
H
Ev
T
GUS
35S-P
Hyg
T
Nos-P
Luc
T
probe
P2
P7
P6
H2
0.9
H1
Lzs7
0.2
GE
G
1.5
HR1
L3
2.4
GE
PCR

FIG.
図２９

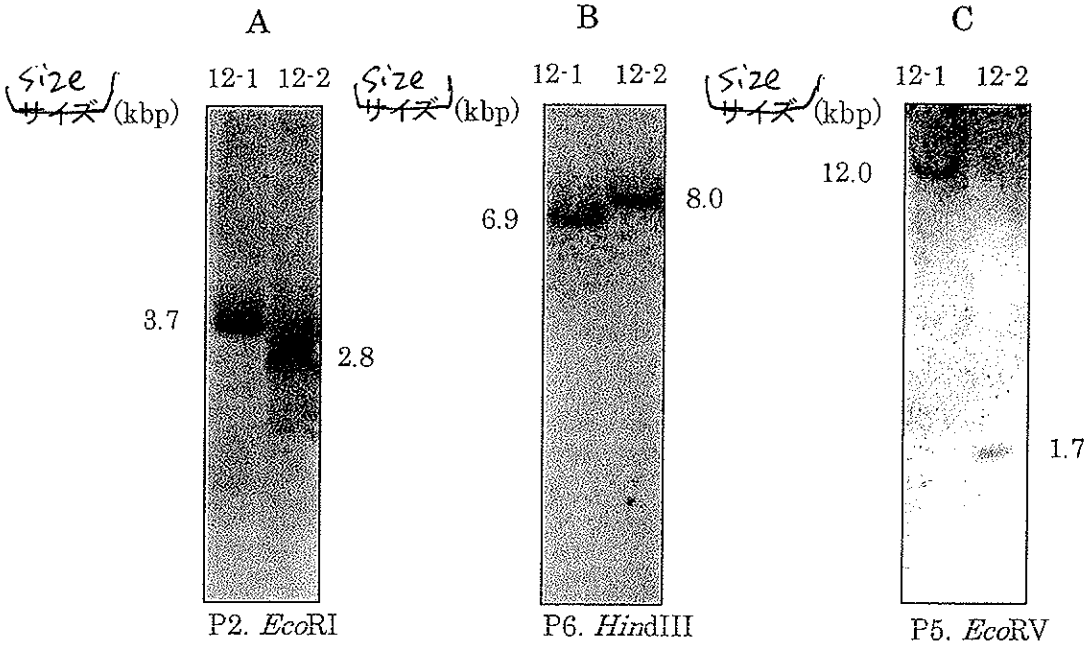

A
B
C
size
サイズ
(kbp)
12-1
12-2
3.7
2.8
6.9
8.0
12.0
1.7
P2. EcoRI
P6. HindIII
P5. EcoRV

FIG.
図３０

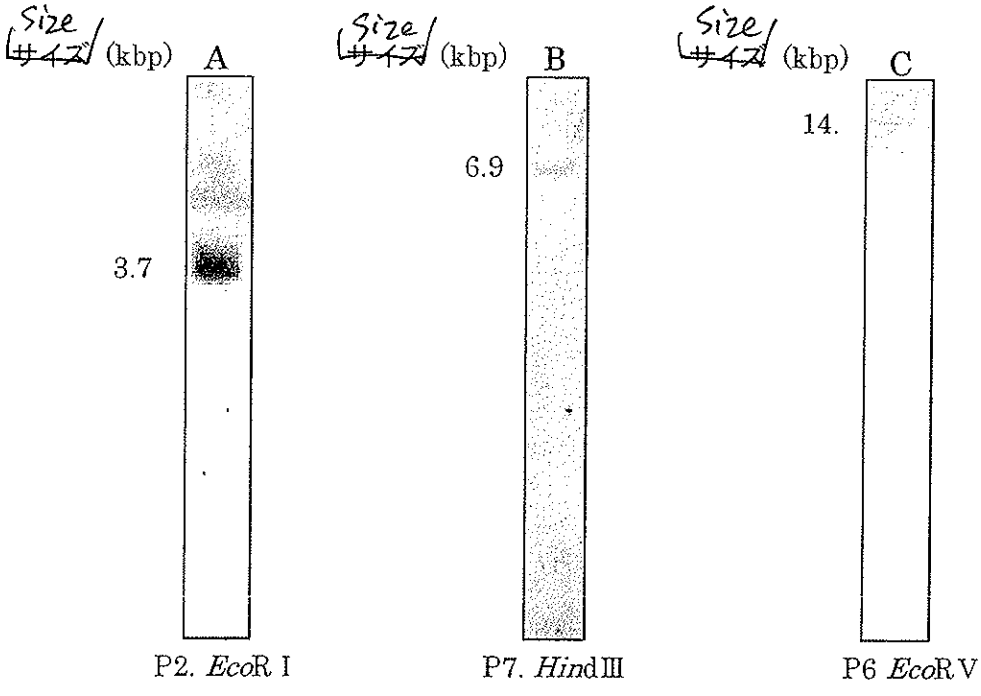

Size サイズ (kbp)
A
3.7
P2. *Eco*R I
Size サイズ (kbp)
B
6.9
P7. *Hind*III
Size サイズ (kbp)
C
14.
P6 *Eco*R V

FIG.
図31

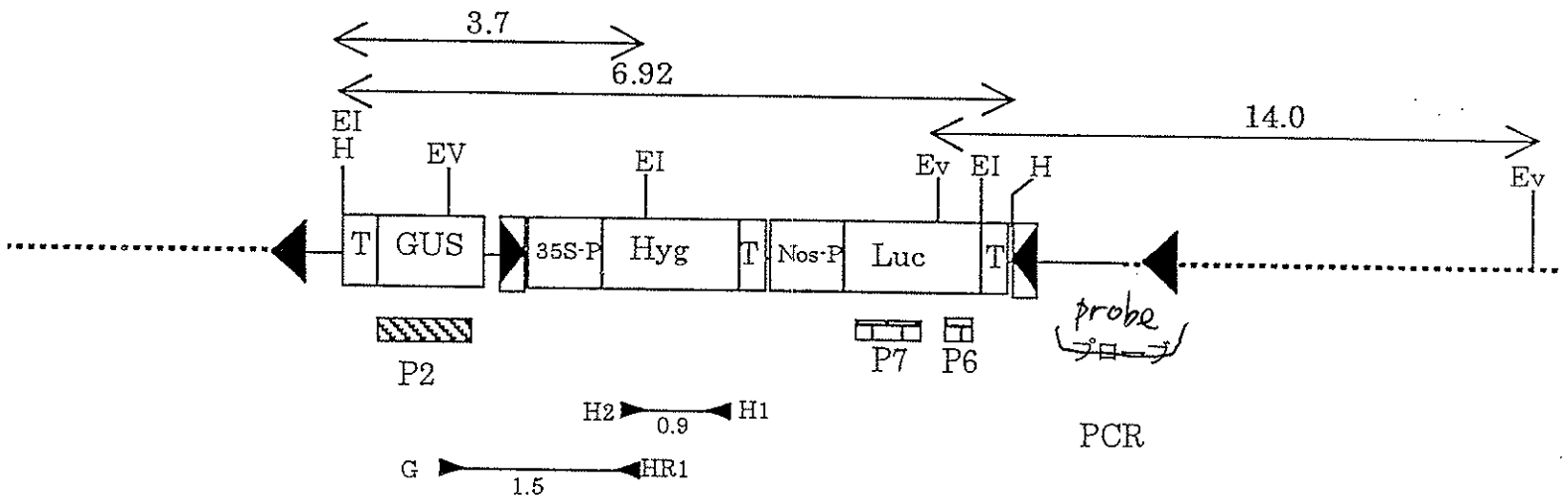
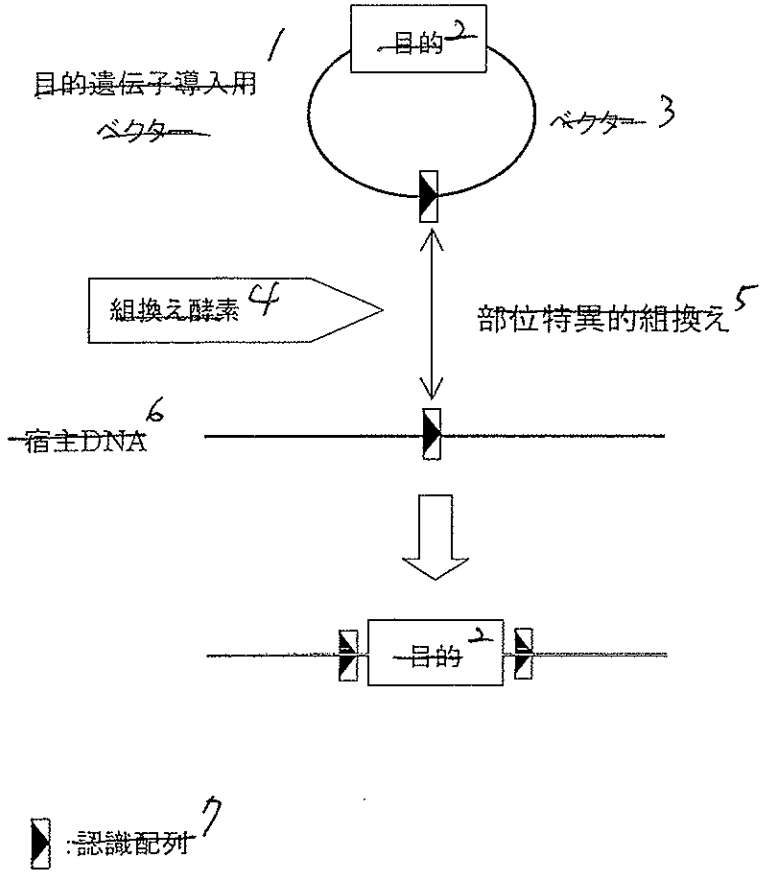

3.7
6.92
14.0
EI
H
EV
EI
Ev
EI
H
Ev
T
GUS
35S-P
Hyg
T
Nos-P
Luc
T
probe
P2
P7
P6
H2
0.9
H1
PCR
G
1.5
HR1

FIG.
図３２



1: Vector for introducing desired gene
2: Desired
3: Vector
4: Recombinase
5: Site-specific recombination
6: Host DNA
7: Recognition sequence

SEQUENCE LISTING

<110> Nippon Paper Industries Co.,Ltd.

<120> Novel Vector

<130> P04889400

<150> JP 2003-193227
<151> 2003-06-03

<150> JP 2003-436431
<151> 2003-12-09

<160> 12

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<213> Artificial Sequence

<220>
<223> primer for PCR

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<210> 2
<211> 28
<212> DNA
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<220>
<223> primer for PCR

<400> 2
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<210> 3
<211> 20
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<220>

<223> primer for PCR

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tgaacgaaat agacagatcg 20

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<220>
<223> primer for PCR

<400> 4
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<210> 5
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<220>
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<210> 6
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<210> 7
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<220>
<223> primer for PCR

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acaatcccac tatccttcgc 20

<210> 8
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<212> DNA
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<220>
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<223> primer for PCR

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<212> DNA
<213> Artificial Sequence

<220>
<223> primer for PCR

<400> 12
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