Fig. 1 (Sheet 1)

Scheme I

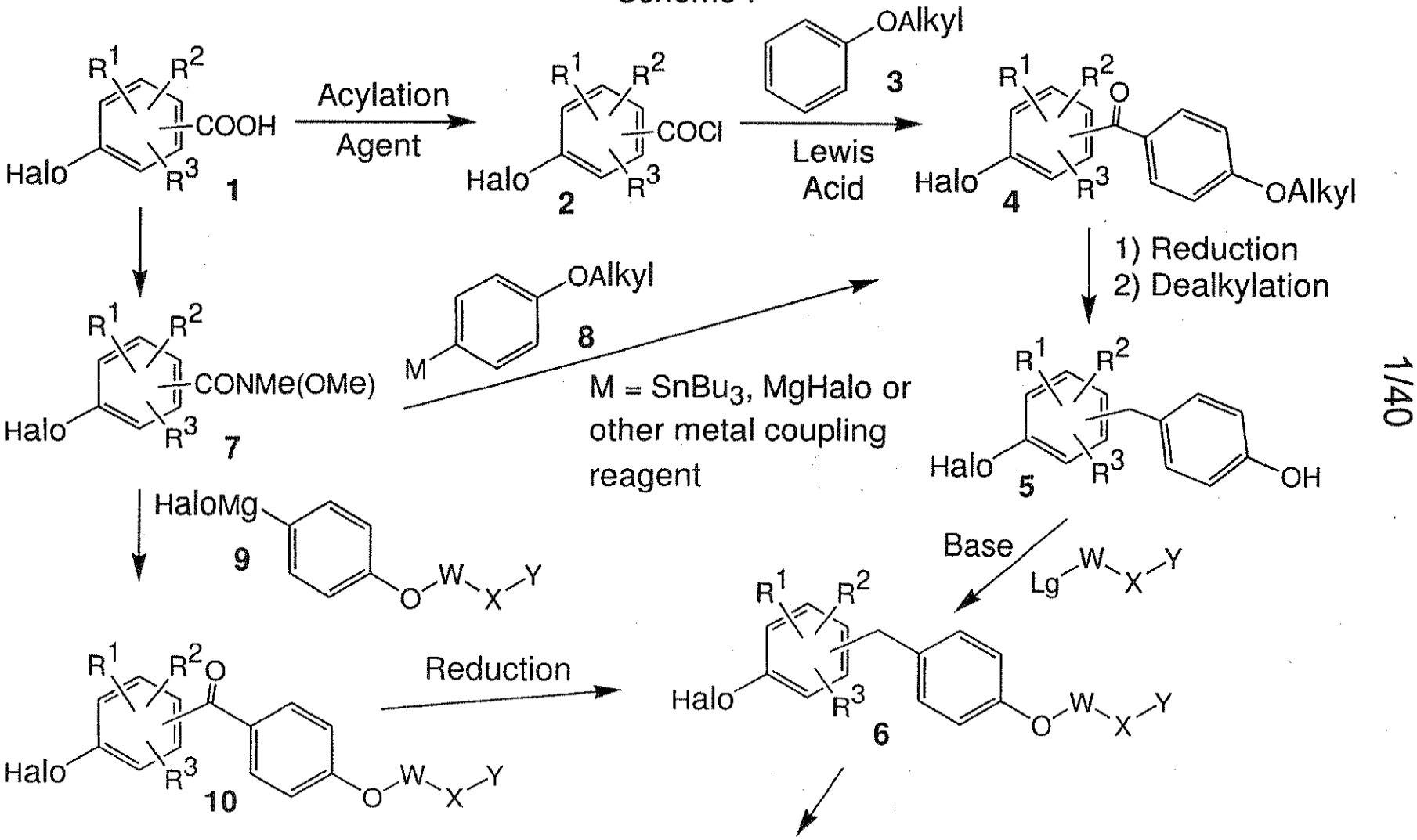


Fig. 1 (Sheet 2)

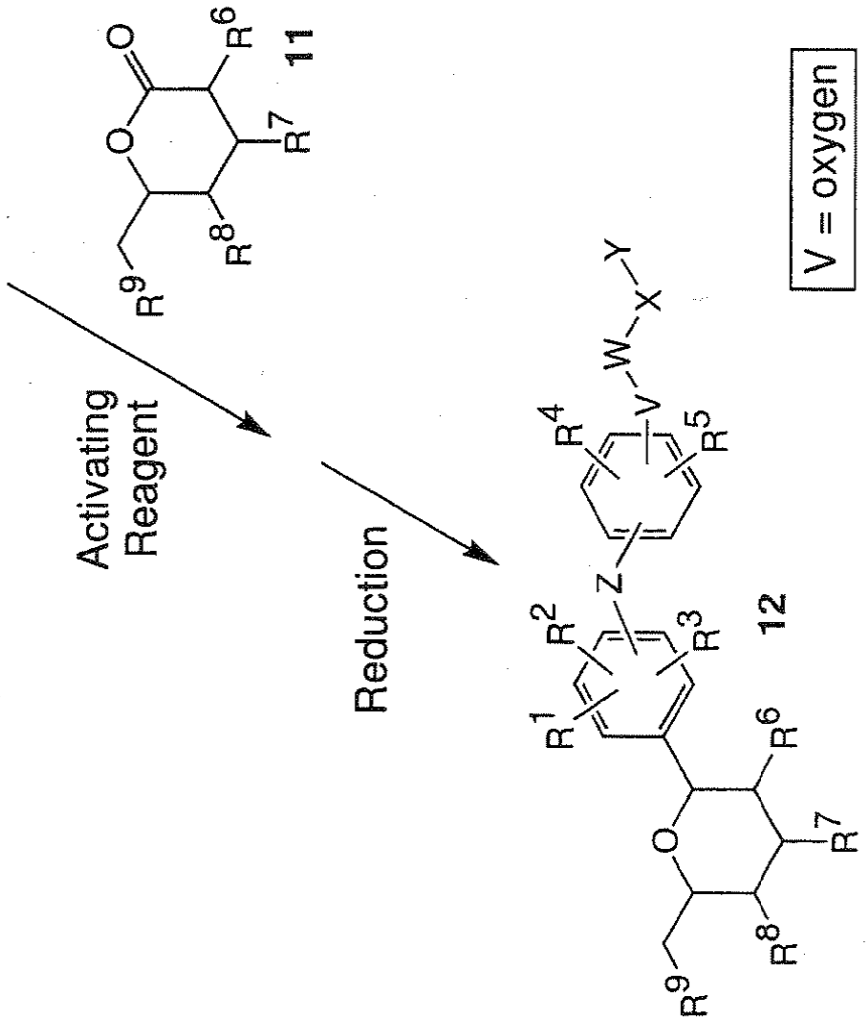


Fig. 2
Scheme II

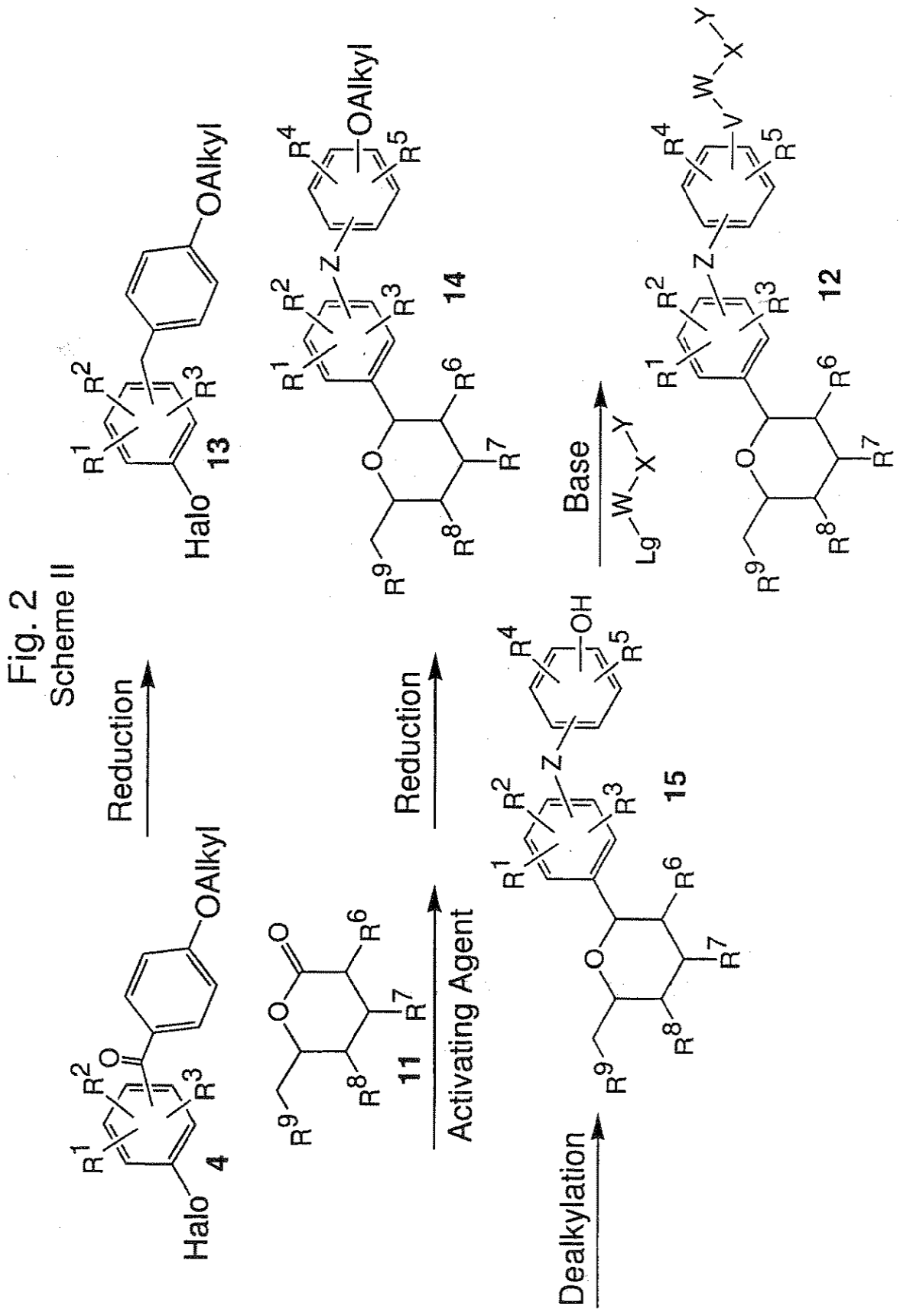


Fig. 3

Scheme III

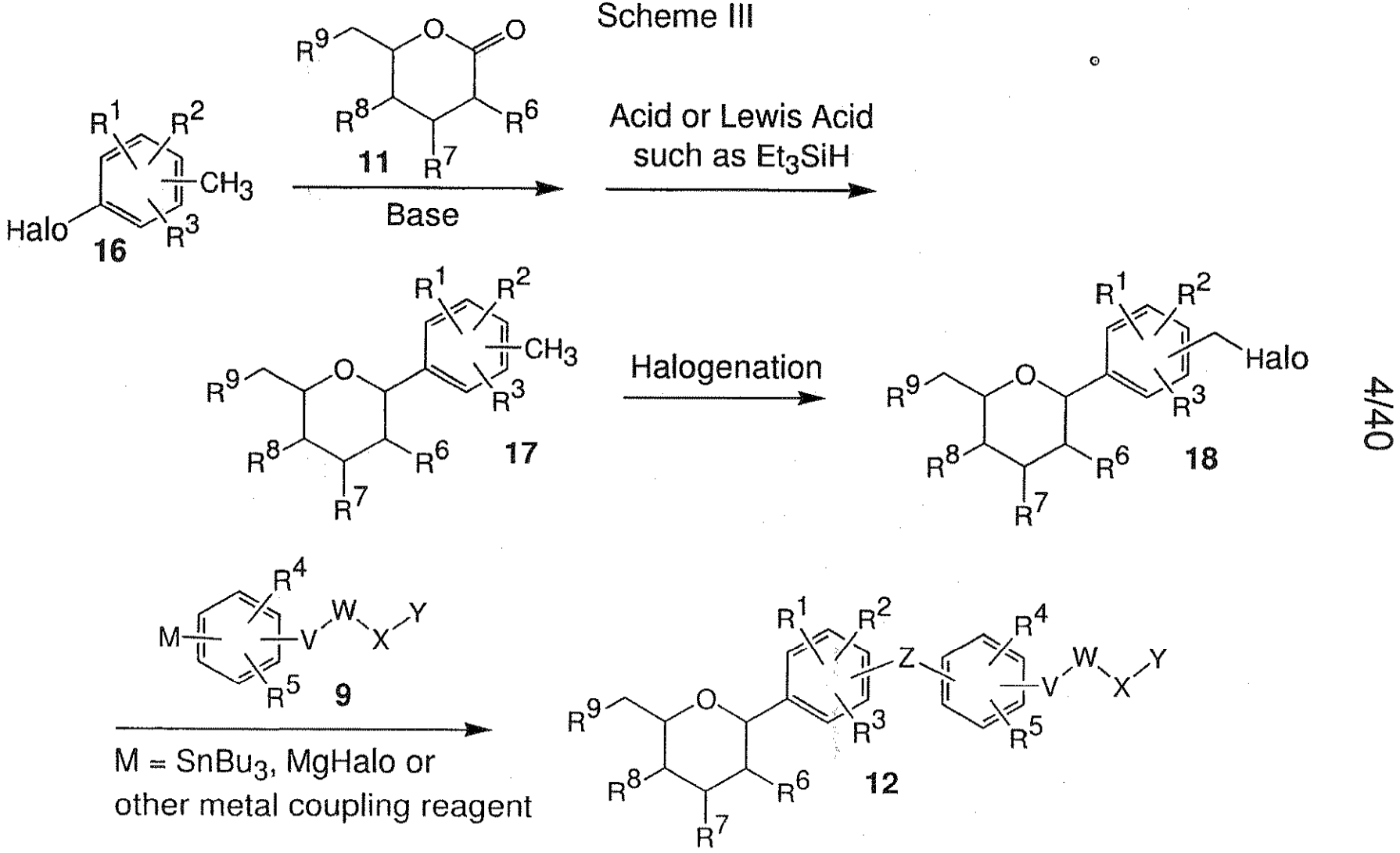


Fig. 4

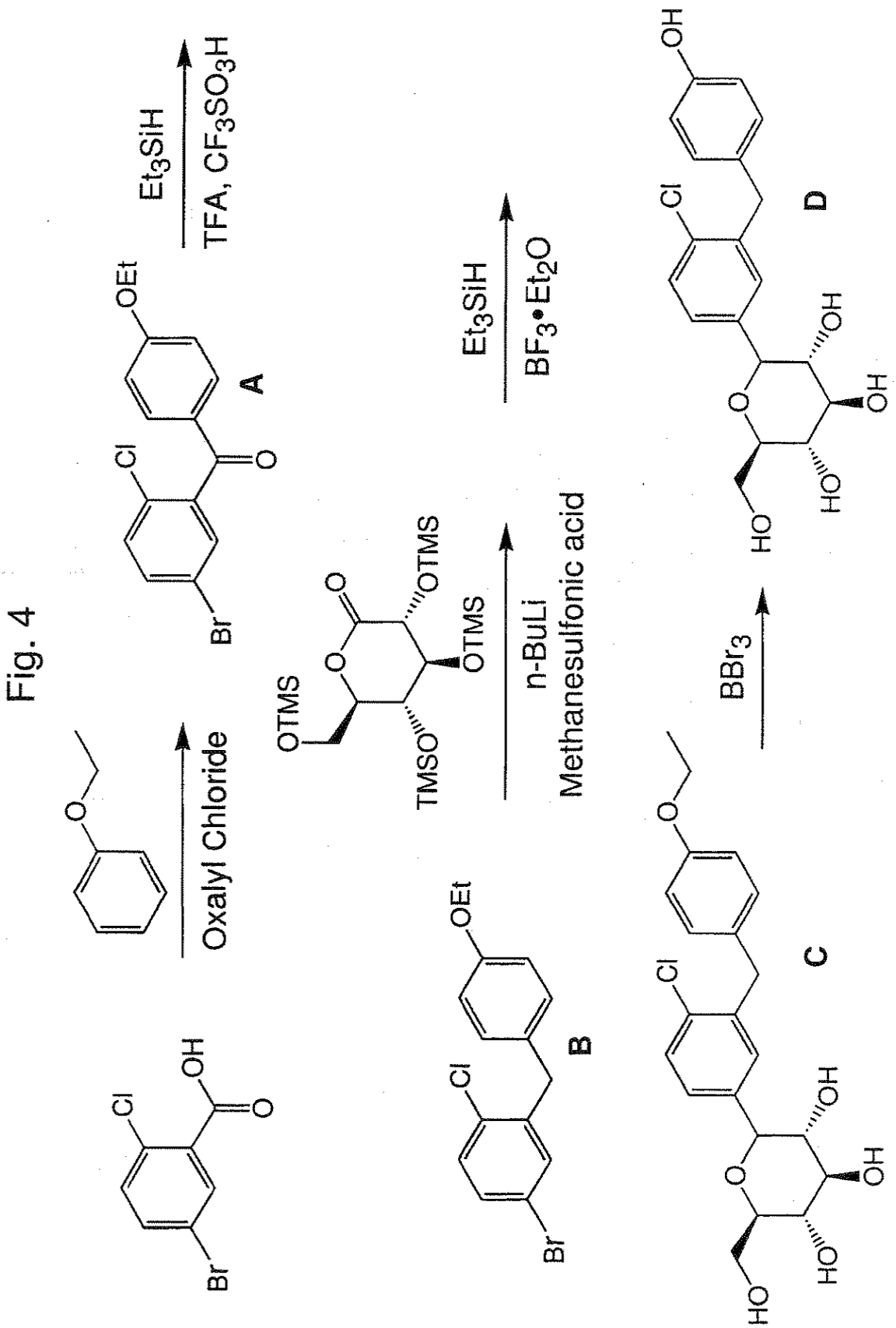

Oxalyl Chloride
Et3SiH
TFA, CF3SO3H
A
Et3SiH
BF3•Et2O
n-BuLi
Methanesulfonic acid
B
BBr3
C
D

Fig. 5

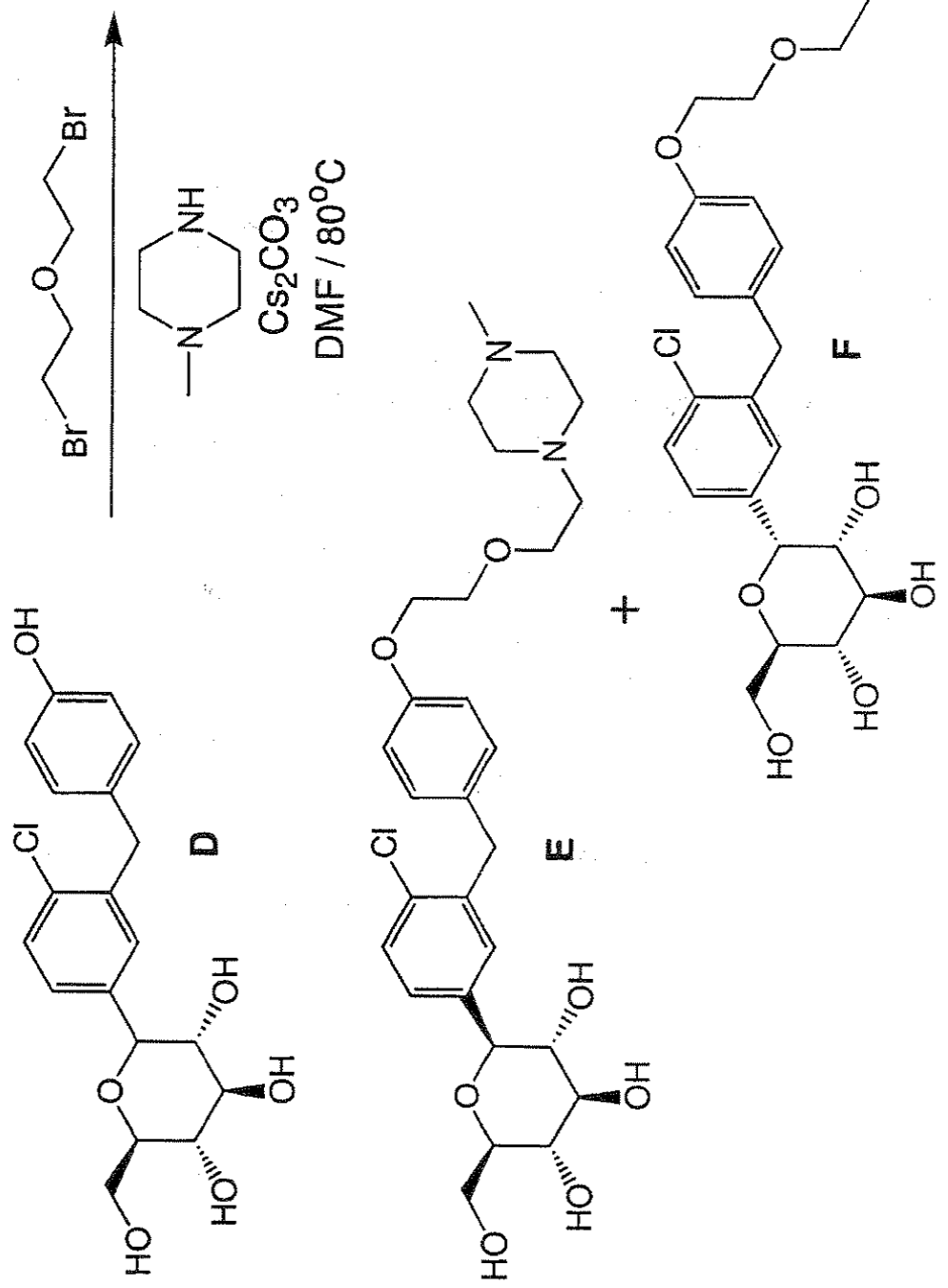

Br
Br
O
NH
N
Cs_2CO_3
DMF / 80°C
OH
Cl
O
OH
OH
HO
HO
D
N
N
O
O
Cl
O
OH
OH
HO
HO
E
+
N
N
O
O
Cl
O
OH
OH
HO
HO
F

Fig. 6

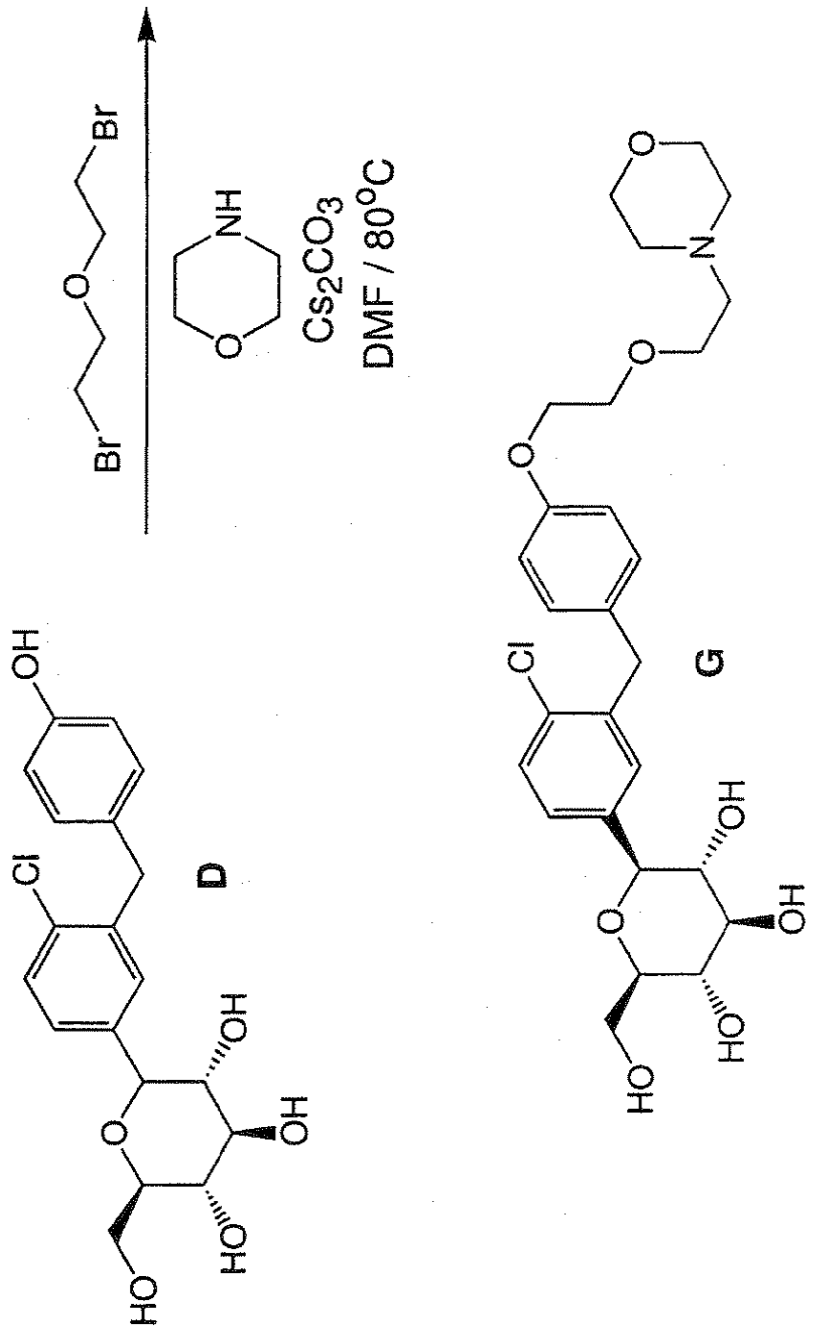


Fig. 7

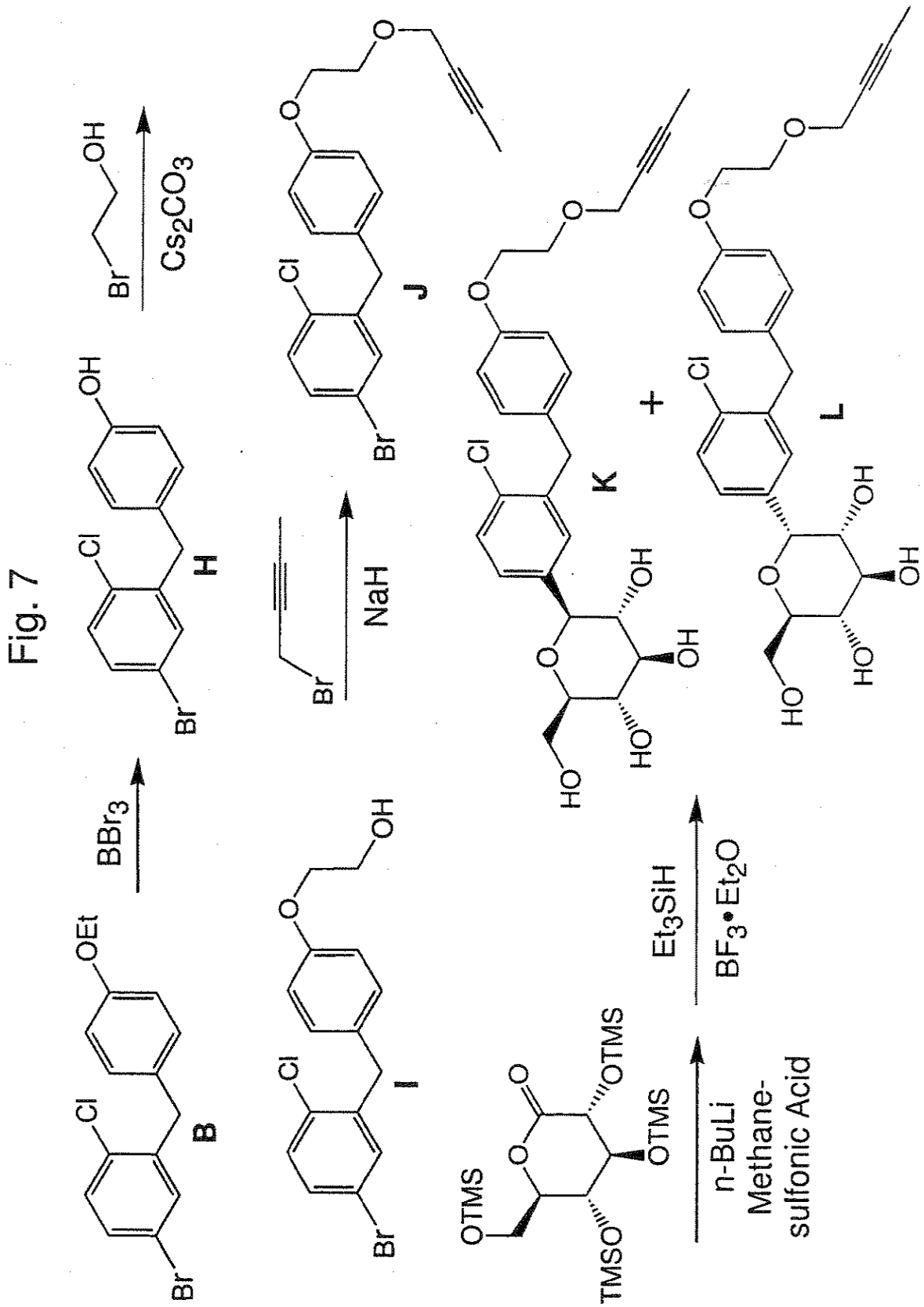

OEt
Cl
Br
B
BBr3
OH
Cl
Br
H
OH
Br
Cs2CO3
Br
NaH
Cl
Br
J
OH
Cl
Br
I
n-BuLi
Methane-
sulfonic Acid
OTMS
OTMS
OTMS
TMSO
Et3SiH
BF3•Et2O
Cl
HO
OH
OH
HO
K
+
Cl
HO
OH
OH
HO
L

Fig. 8

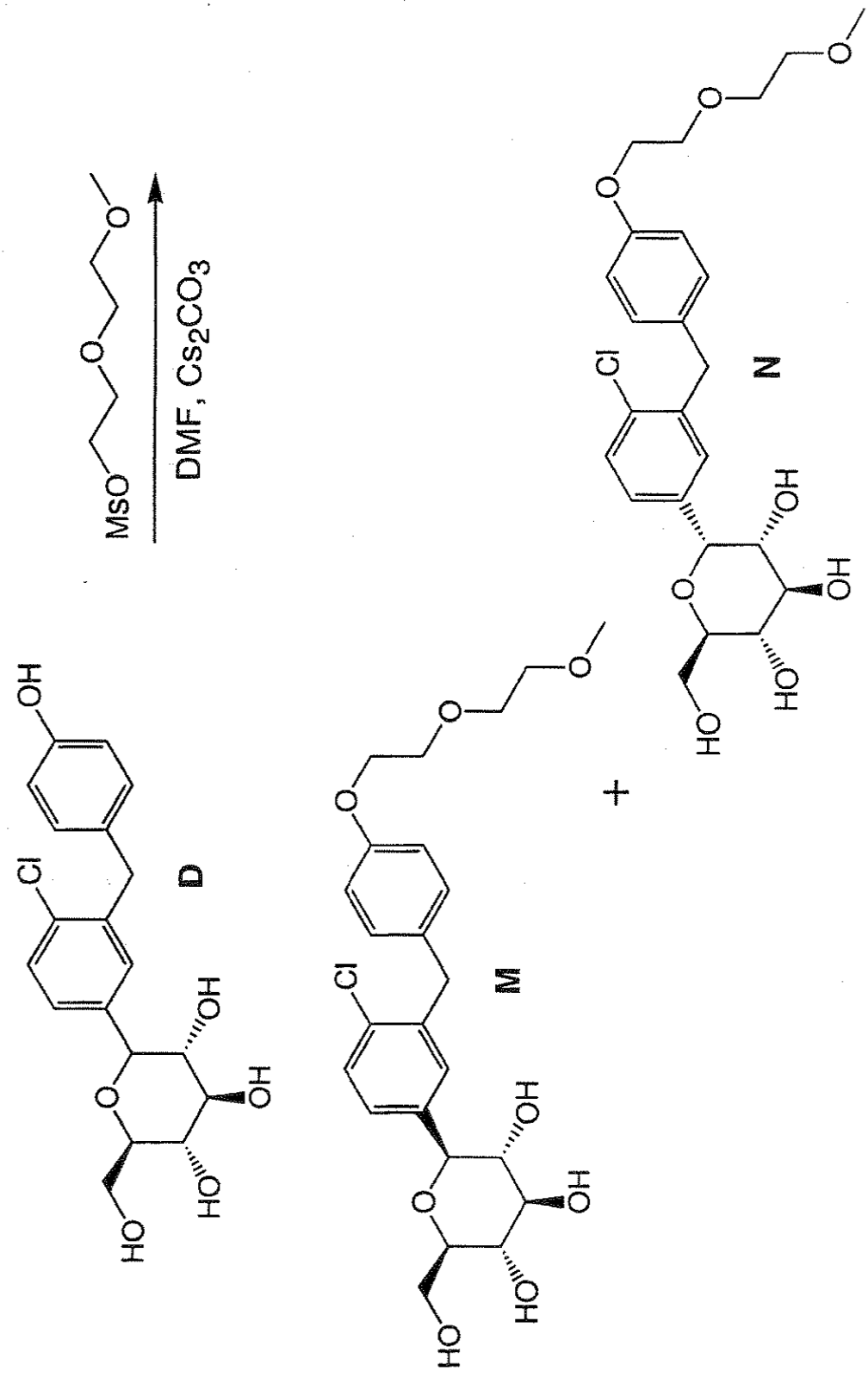


Fig. 9

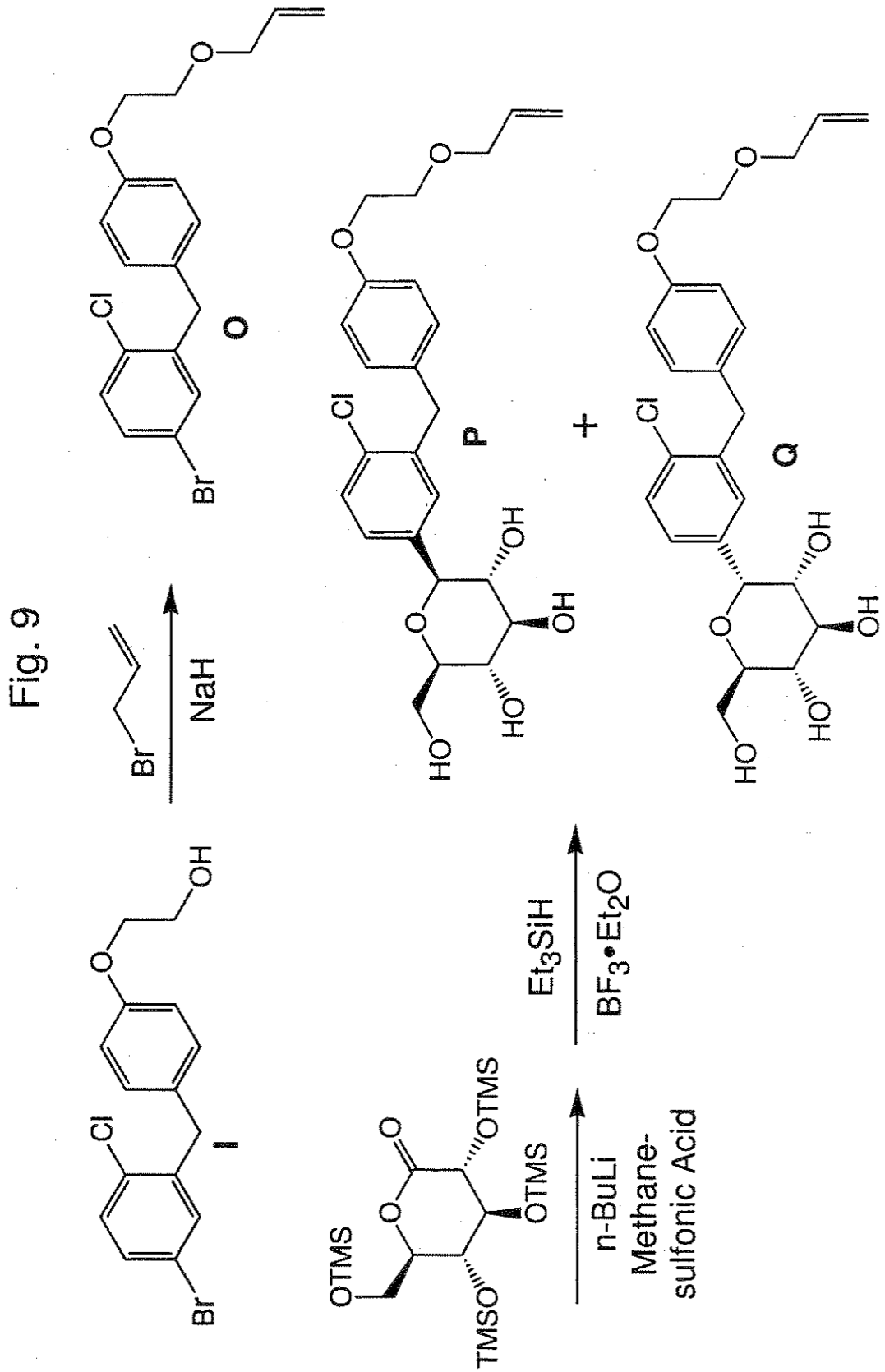

Br
NaH
O
Cl
Br
OH
I
OTMS
OTMS
OTMS
TMSO
n-BuLi
Methane-
sulfonic Acid
Et3SiH
BF3•Et2O
P
Q
+
HO
OH
HO
OH

Fig. 10

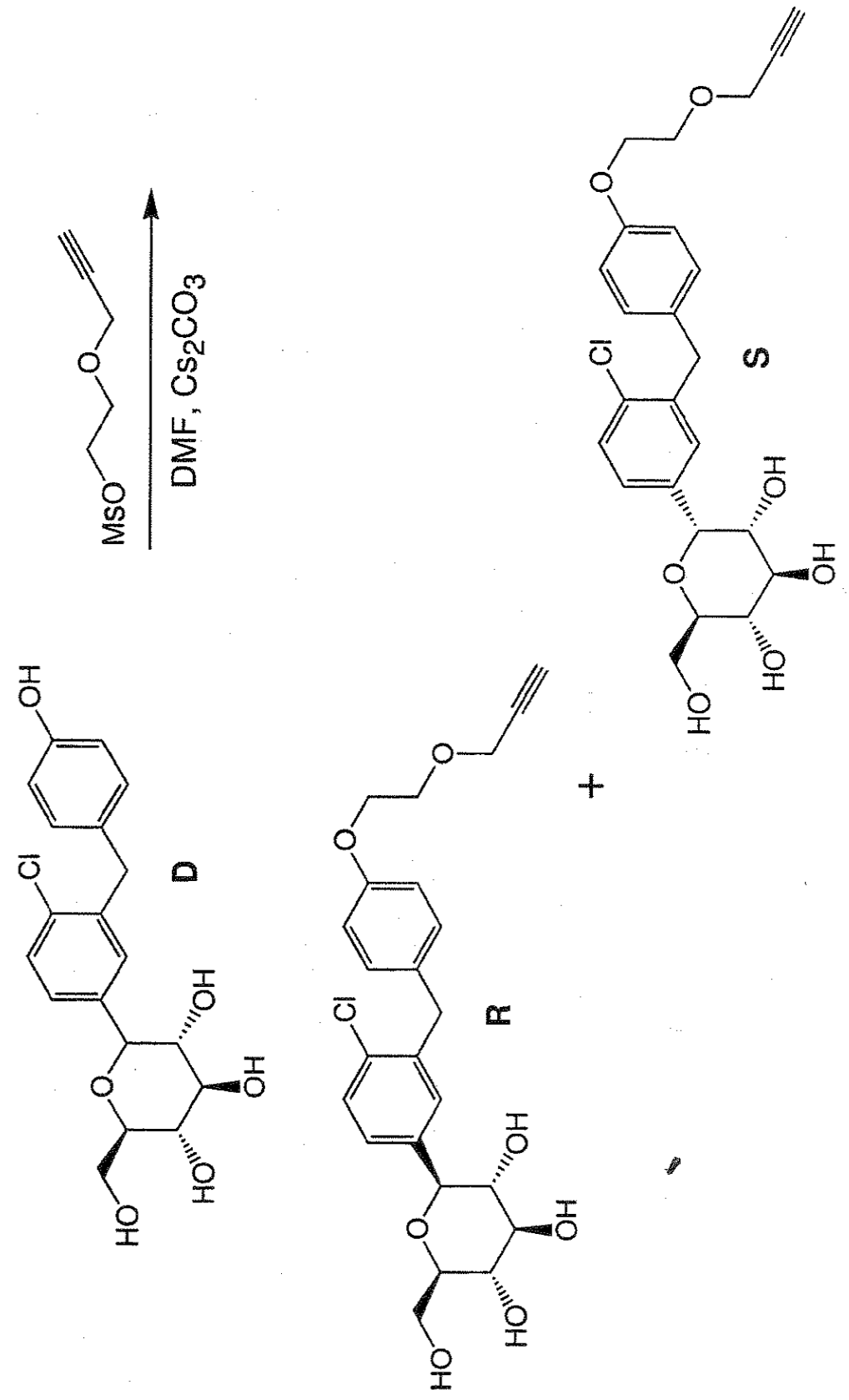


Fig. 11

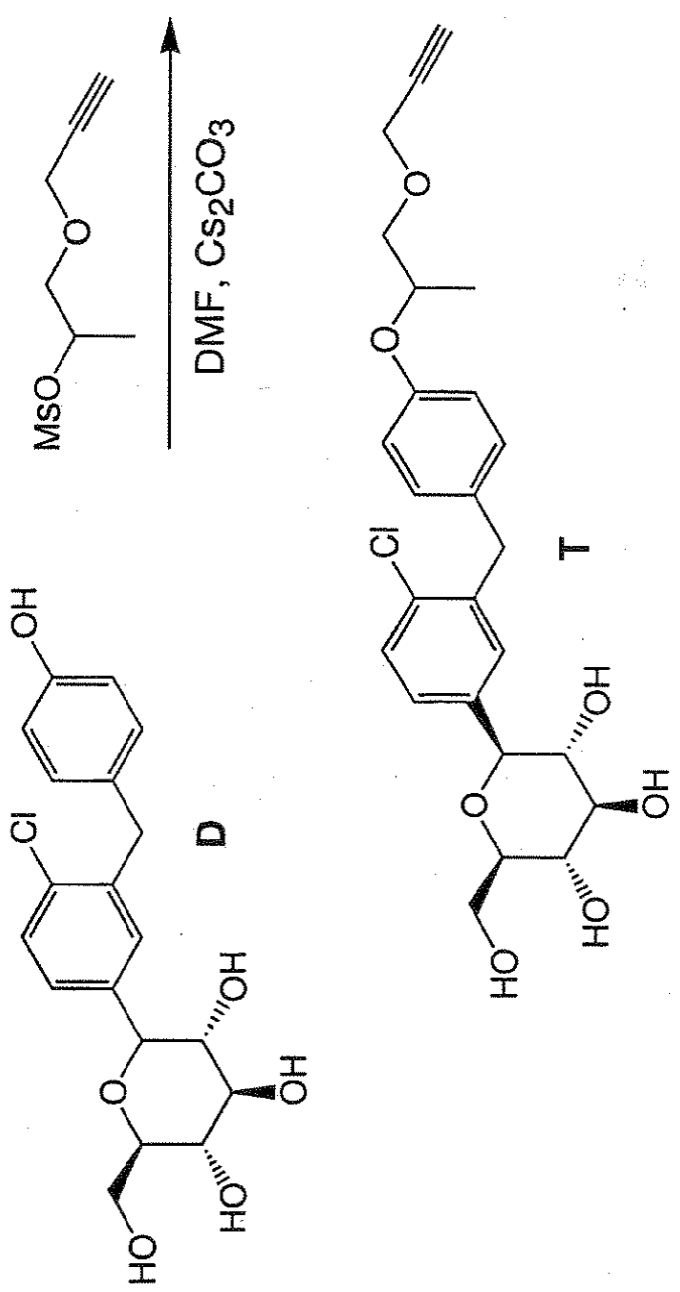


Fig. 12

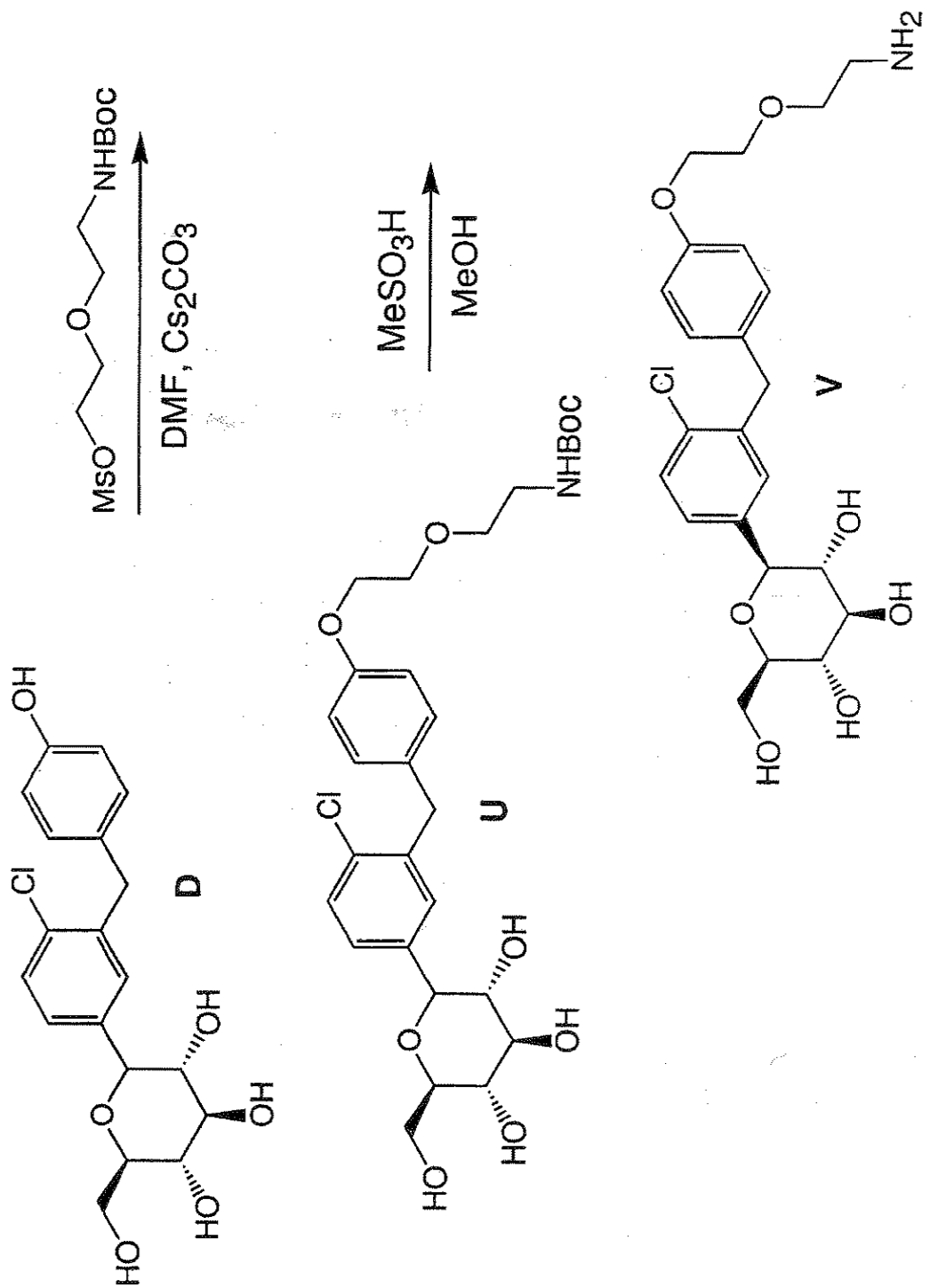


Fig. 13

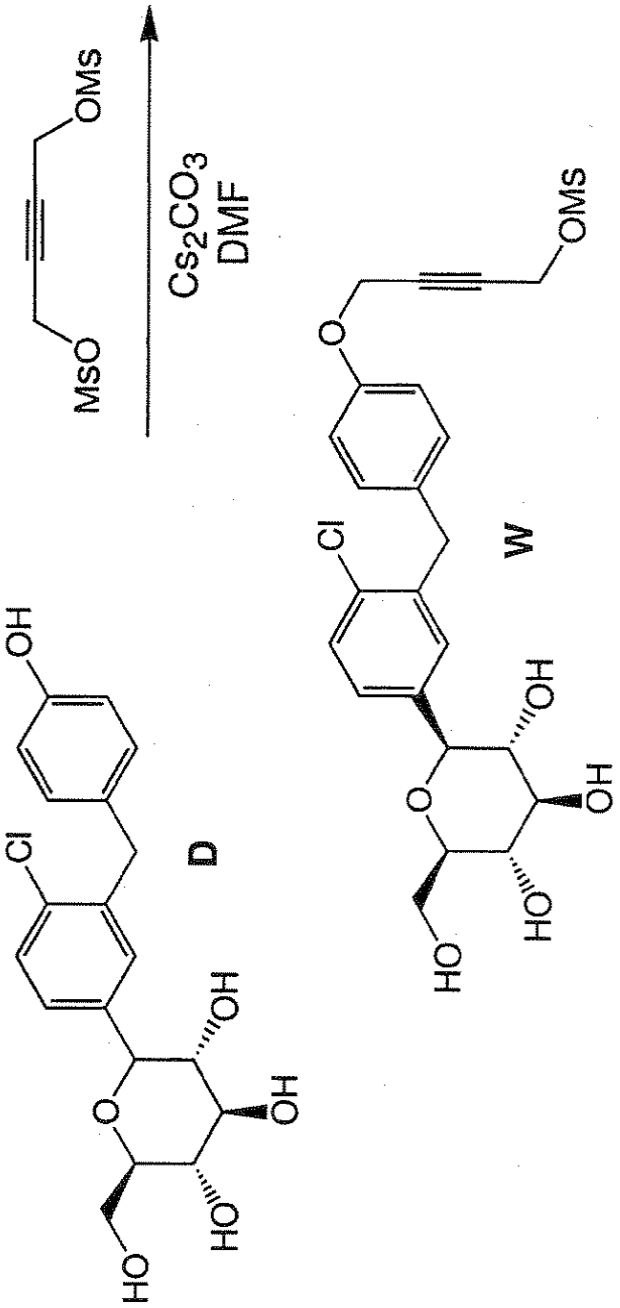


Fig. 14

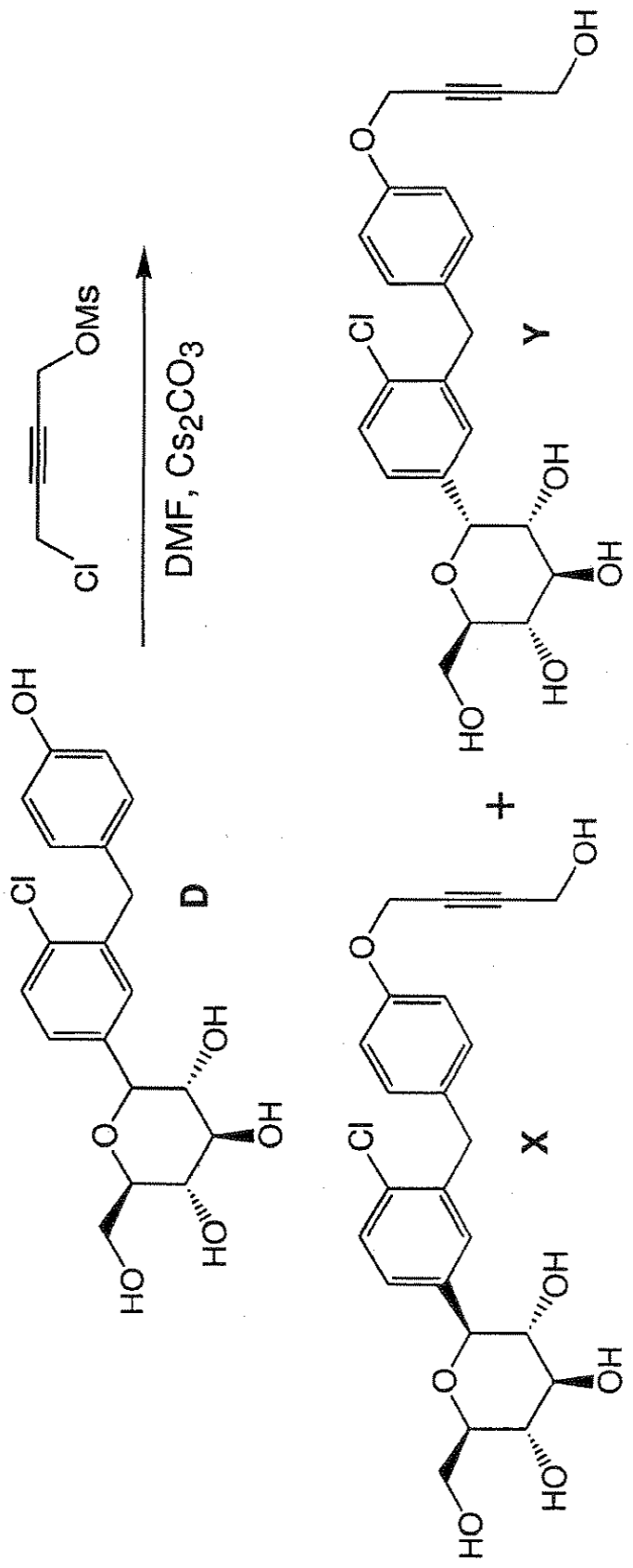

OMs
Cl
DMF, Cs2CO3
OH
Cl
D
O
OH
OH
HO
HO
OH
Cl
Y
O
OH
OH
HO
HO
+
OH
Cl
X
O
OH
OH
HO
HO

Fig. 15

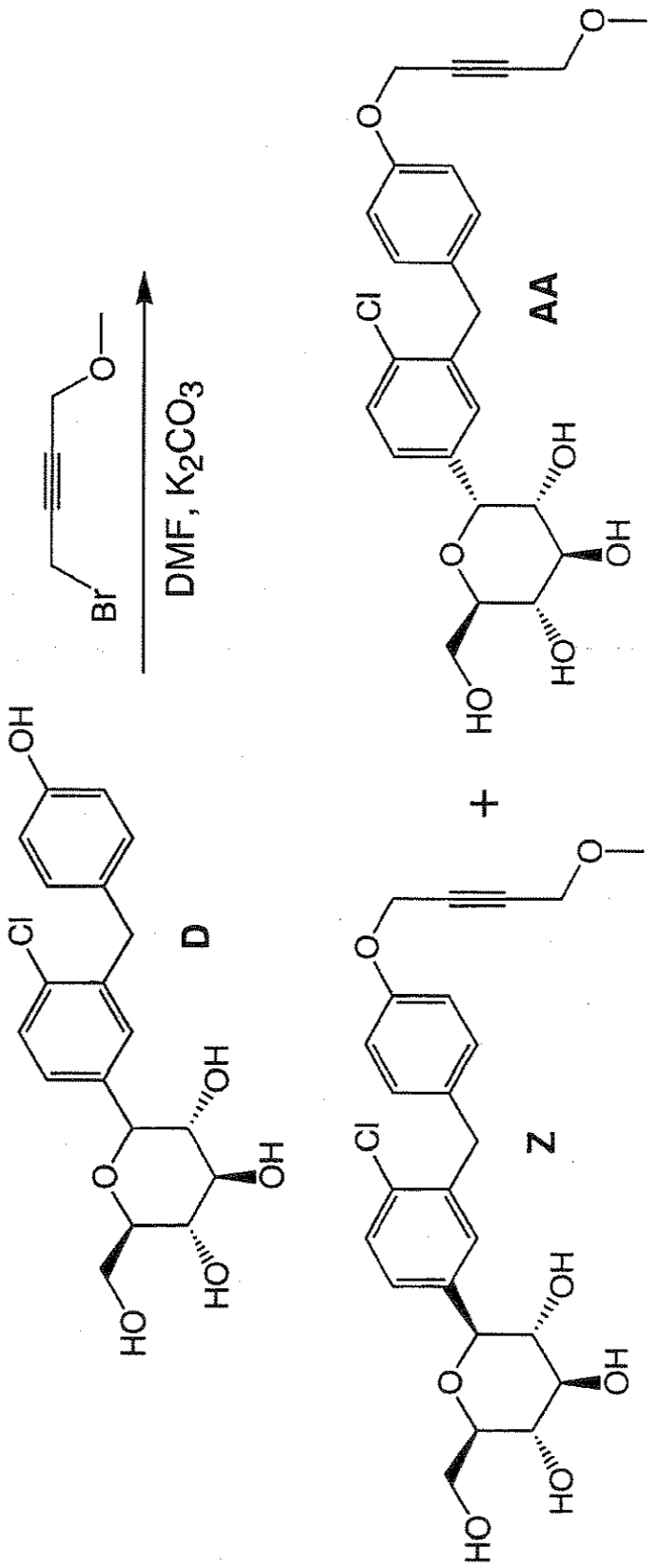


Fig. 16

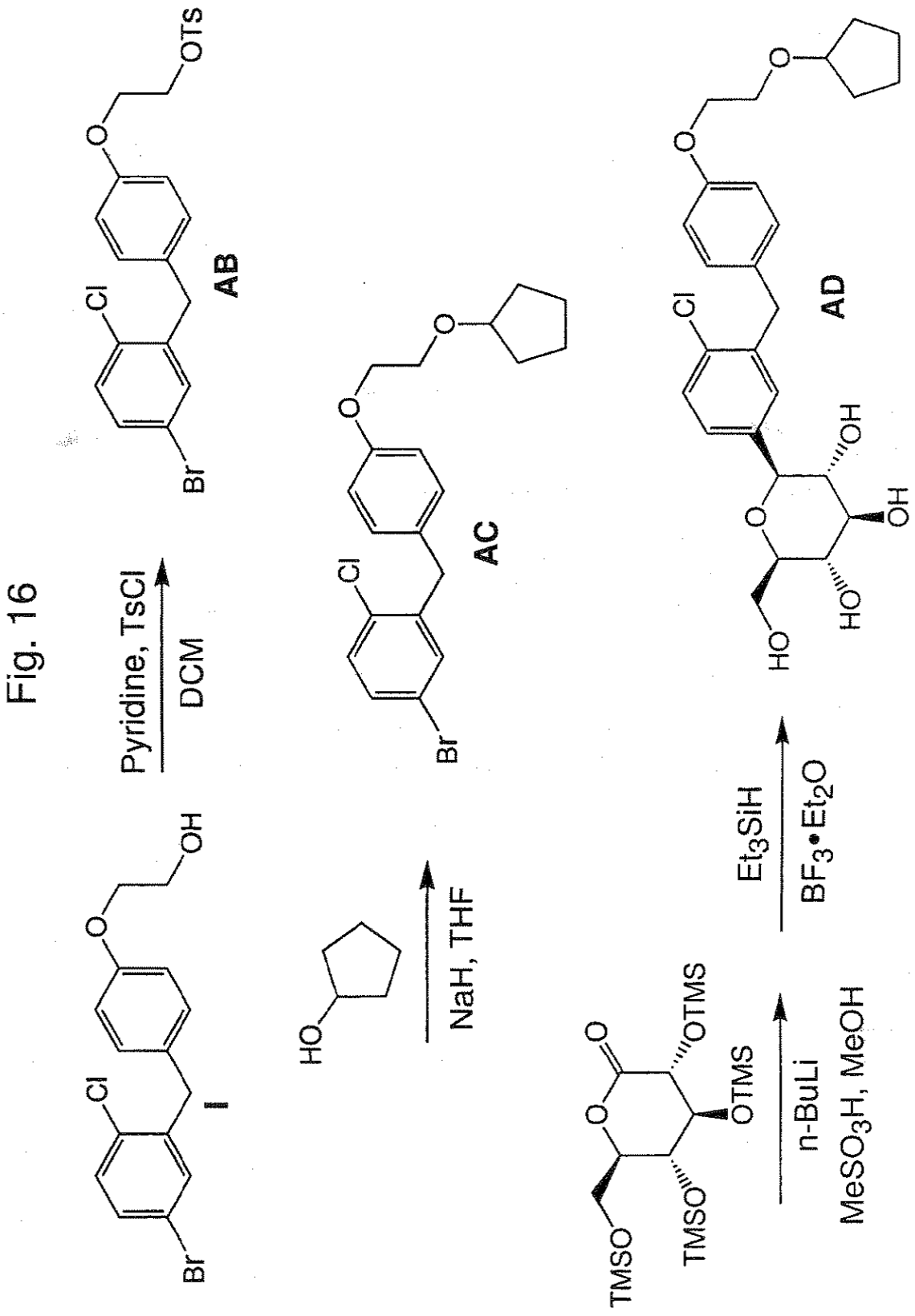

Pyridine, TsCl
DCM
NaH, THF
n-BuLi
MeSO3H, MeOH
Et3SiH
BF3•Et2O
I
AB
AC
AD
OTs
OH
Cl
Br
HO
TMSO
OTMS

Fig. 17

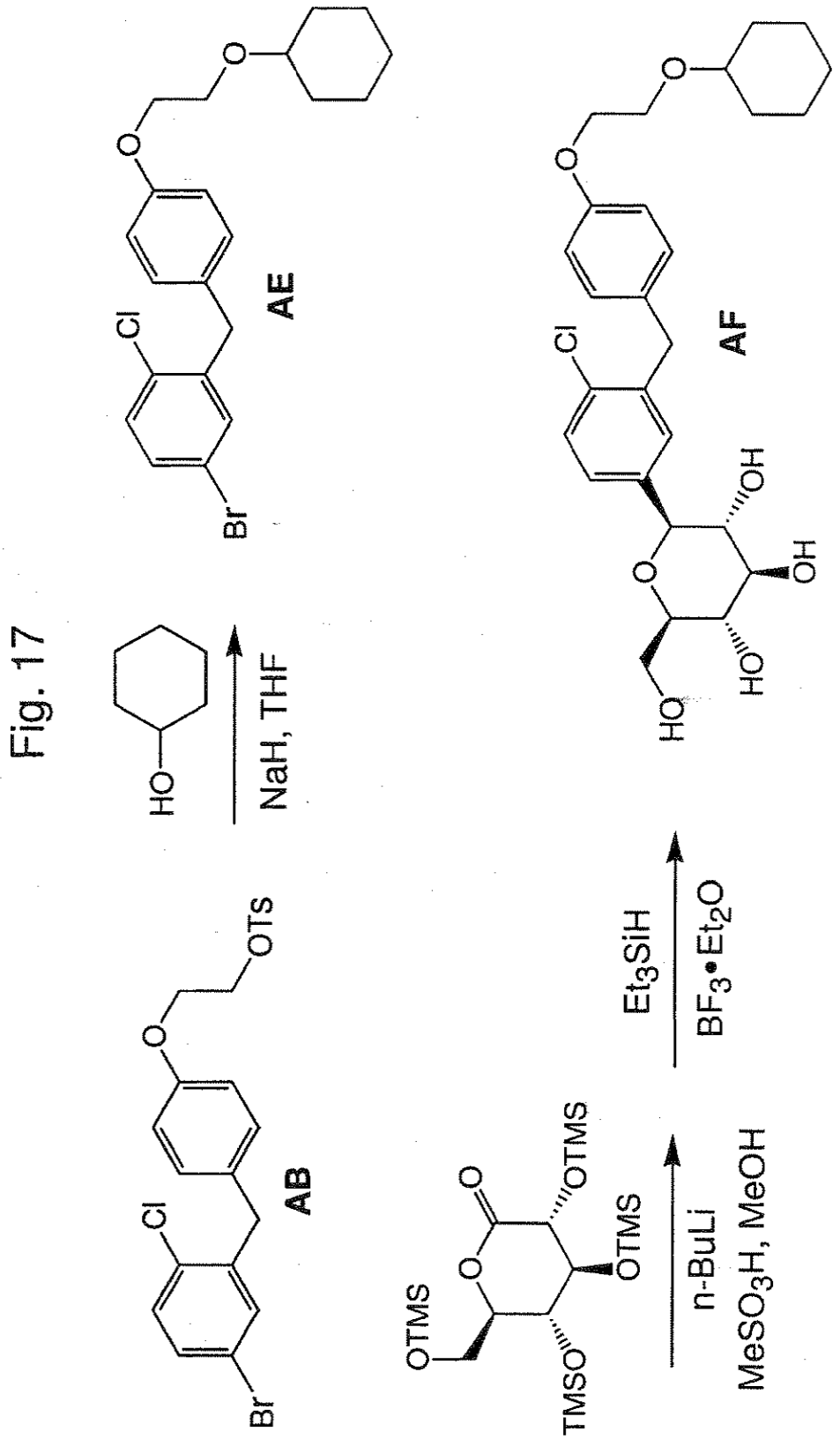

AB
AE
AF
NaH, THF
n-BuLi
MeSO3H, MeOH
Et3SiH
BF3•Et2O
OTs
OTMS
TMSO
HO
Cl
Br
O

Fig. 18 (Sheet 1)

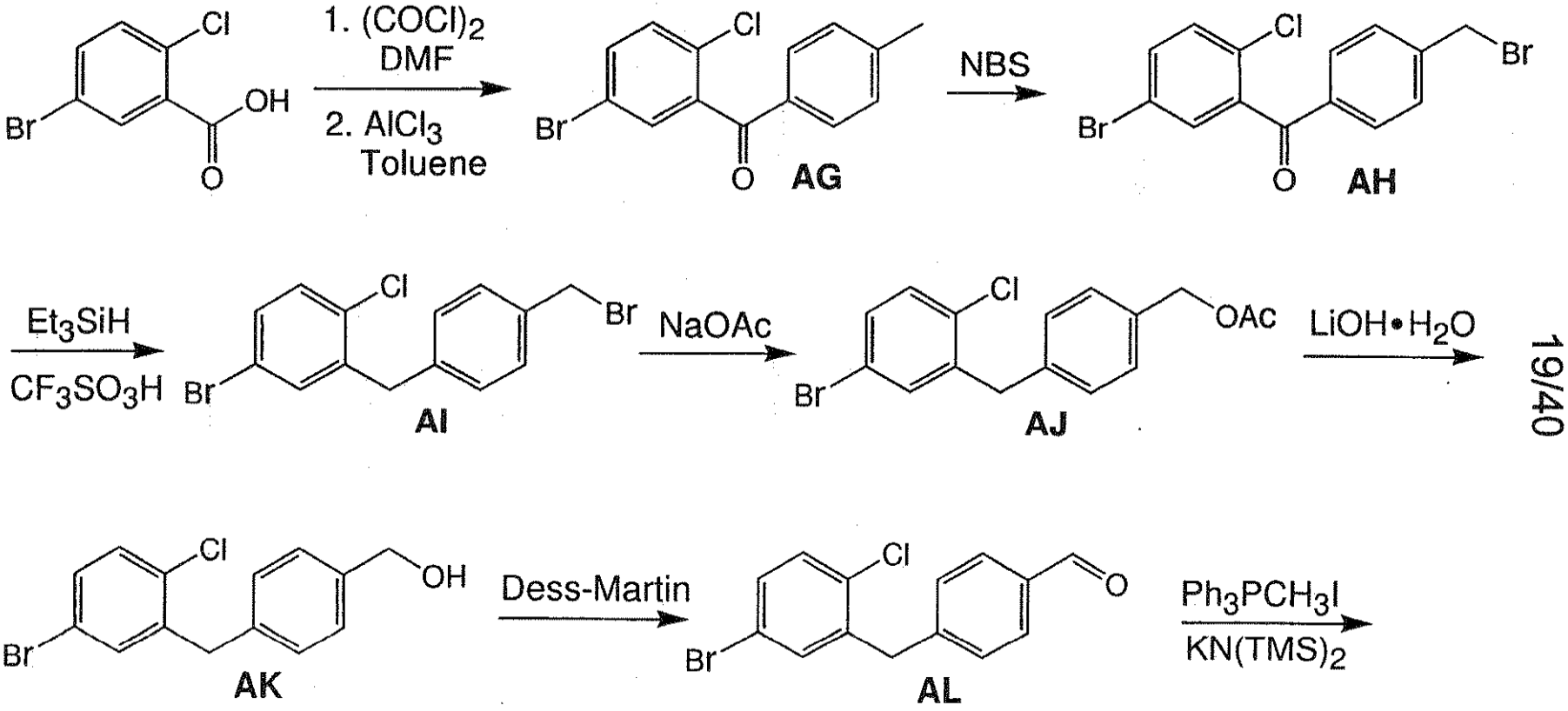


Fig. 18 (Sheet 2)

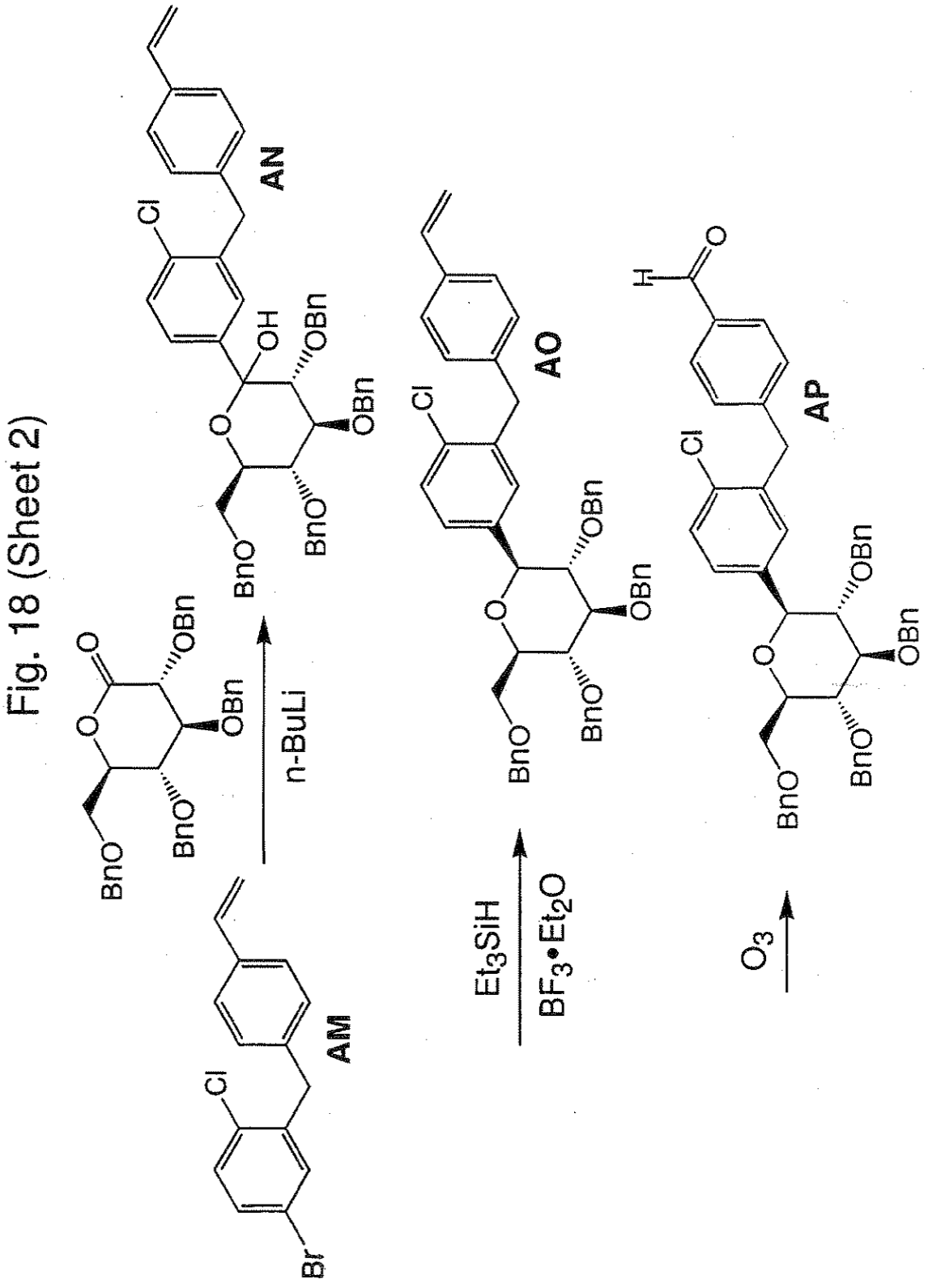


Fig. 18 (Sheet 3)

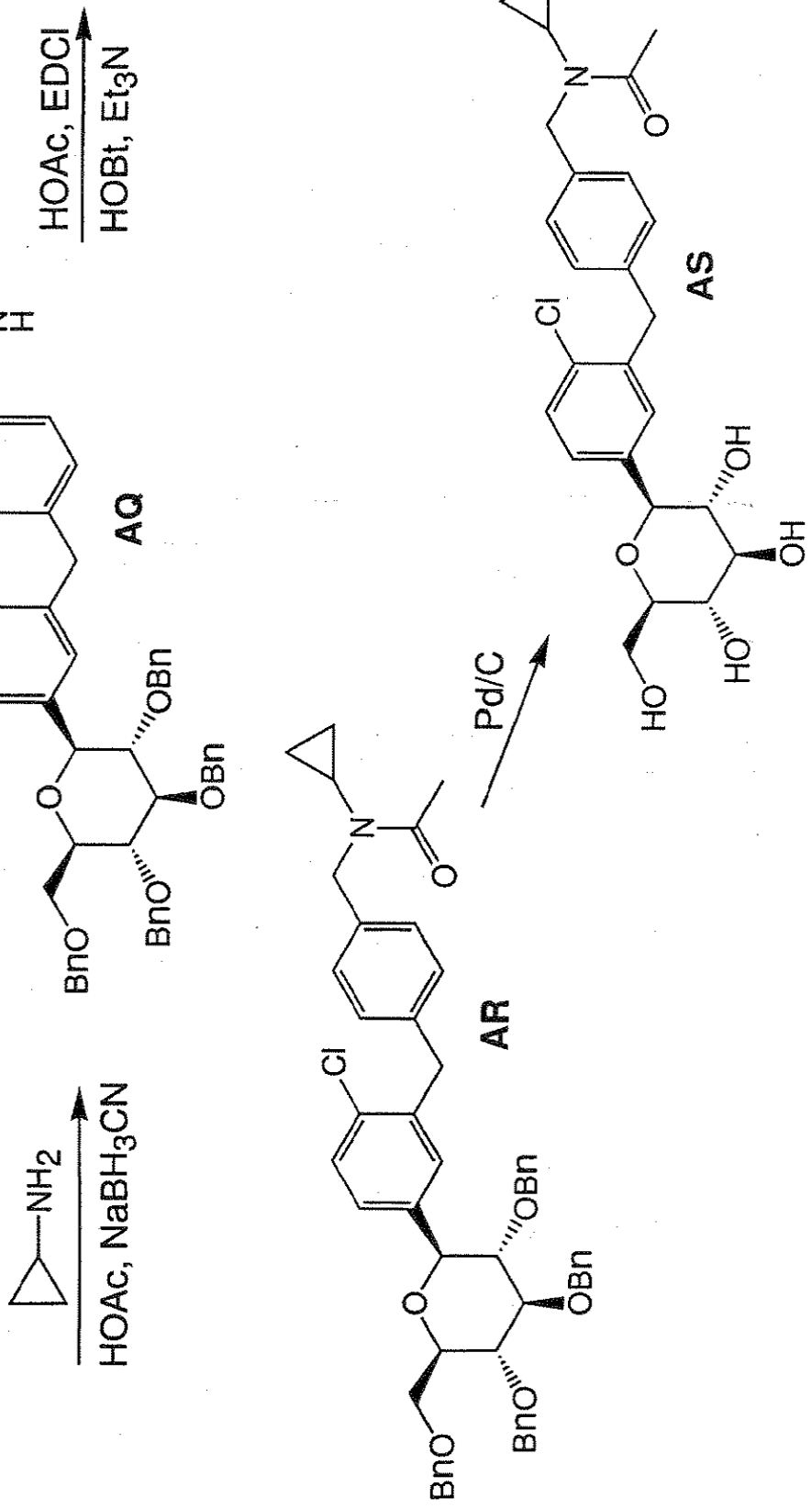


Fig. 19

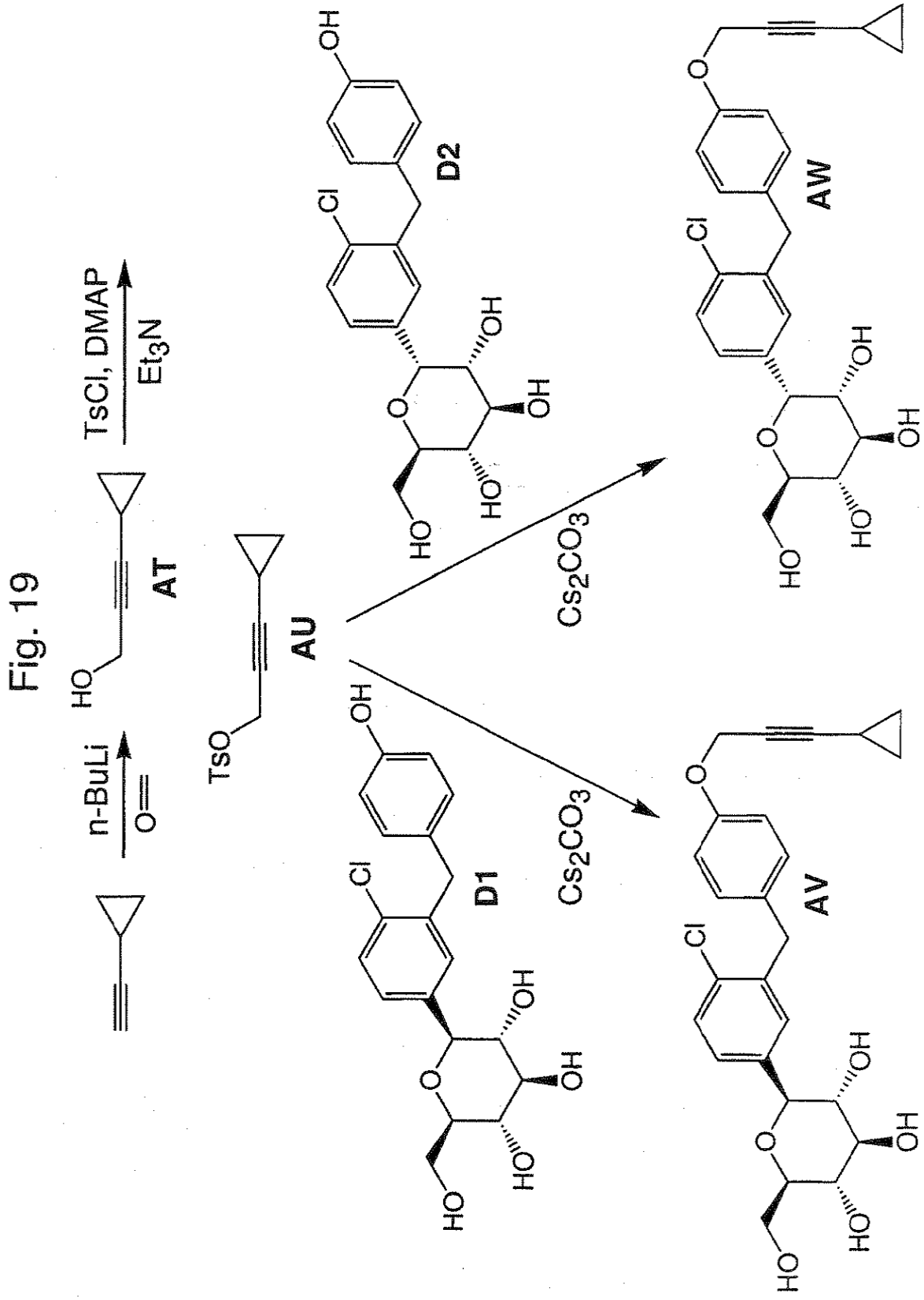

n-BuLi
O
HO
AT
TsCl, DMAP
Et3N
TsO
AU
D2
D1
AW
AV
Cs2CO3
Cs2CO3
OH
Cl
HO

Fig. 20 (Sheet 1)

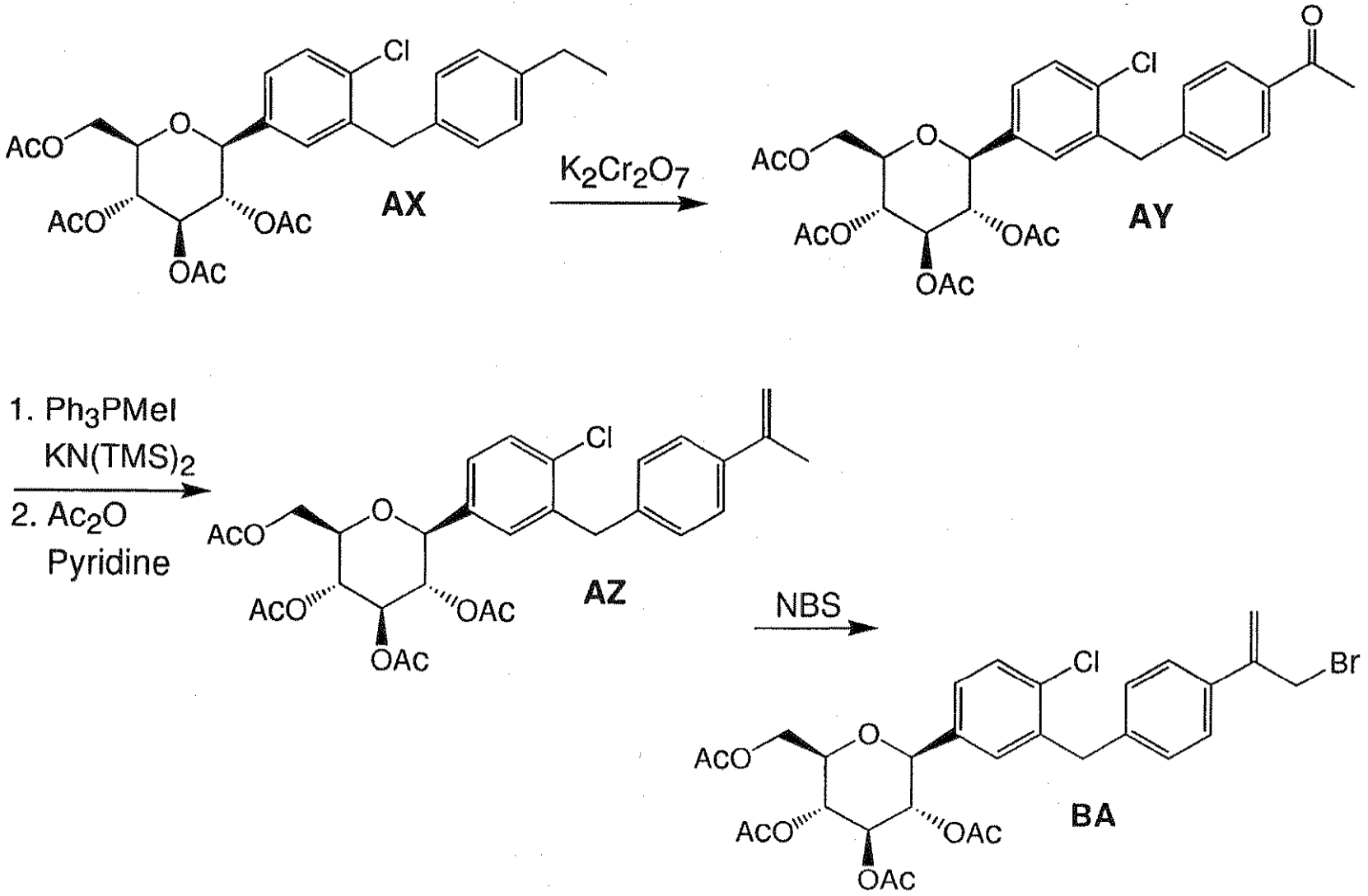


Fig. 20 (Sheet 2)

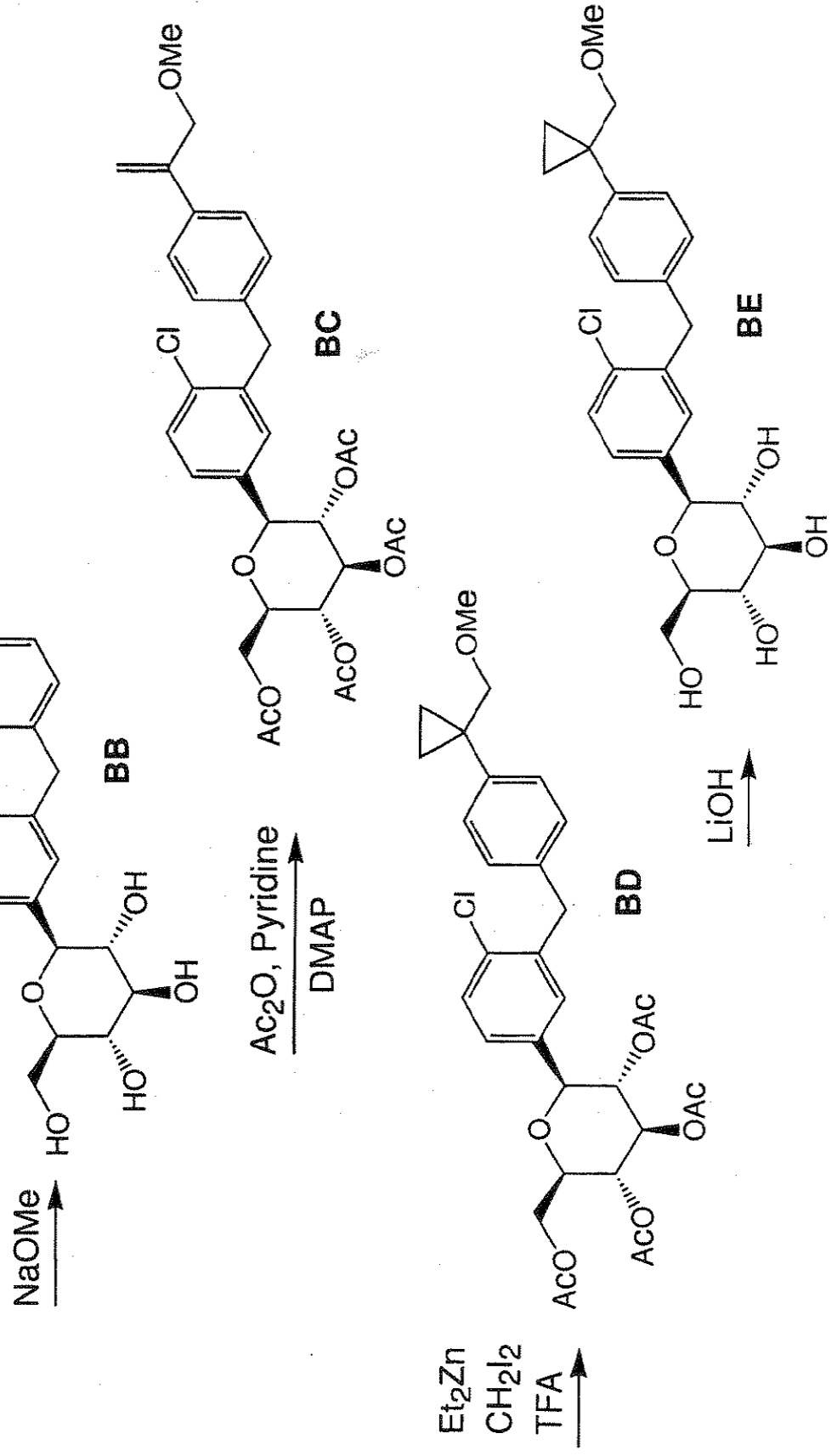


Fig. 21 (Sheet 1)

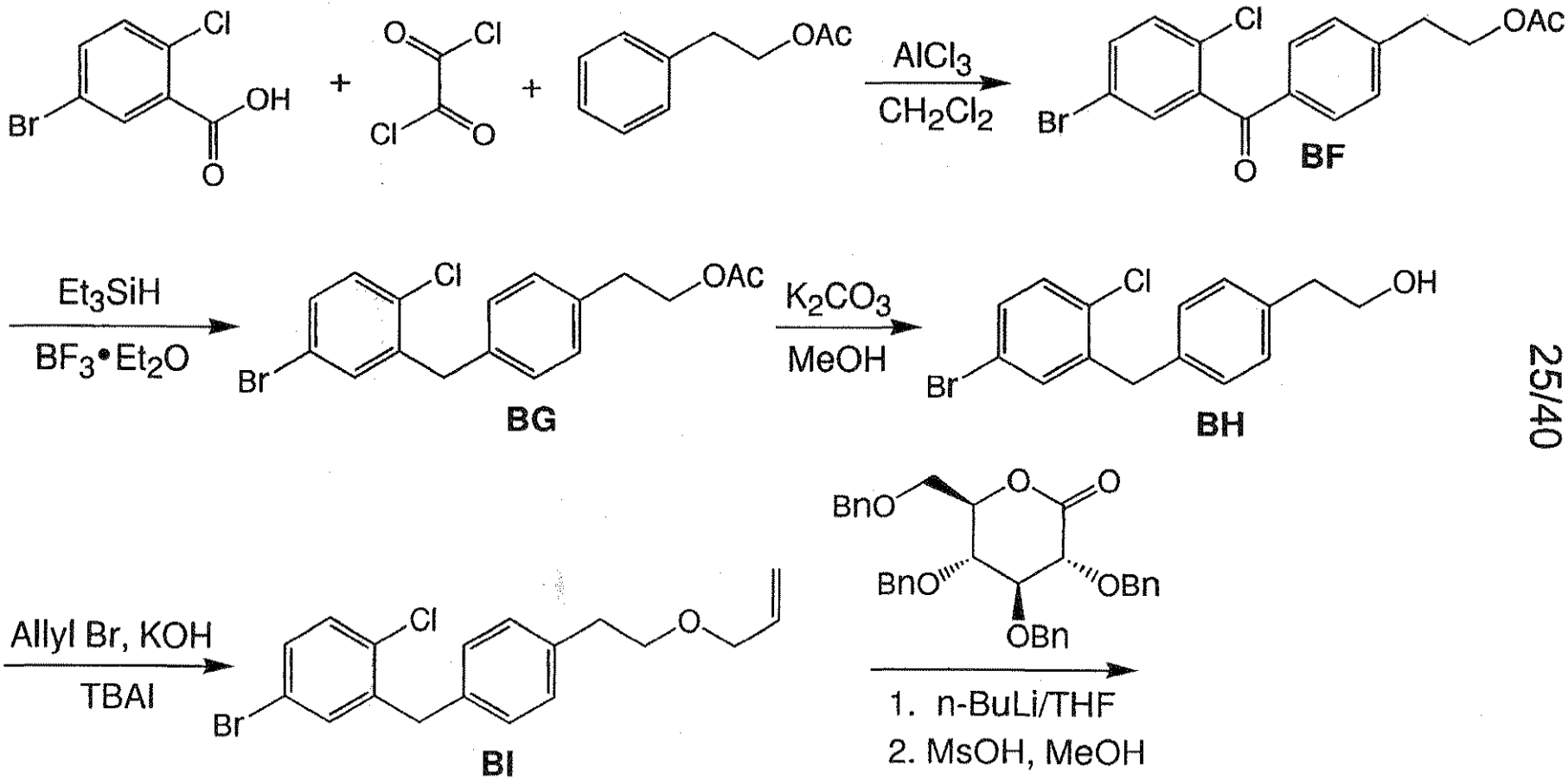


Fig. 21 (Sheet 2)

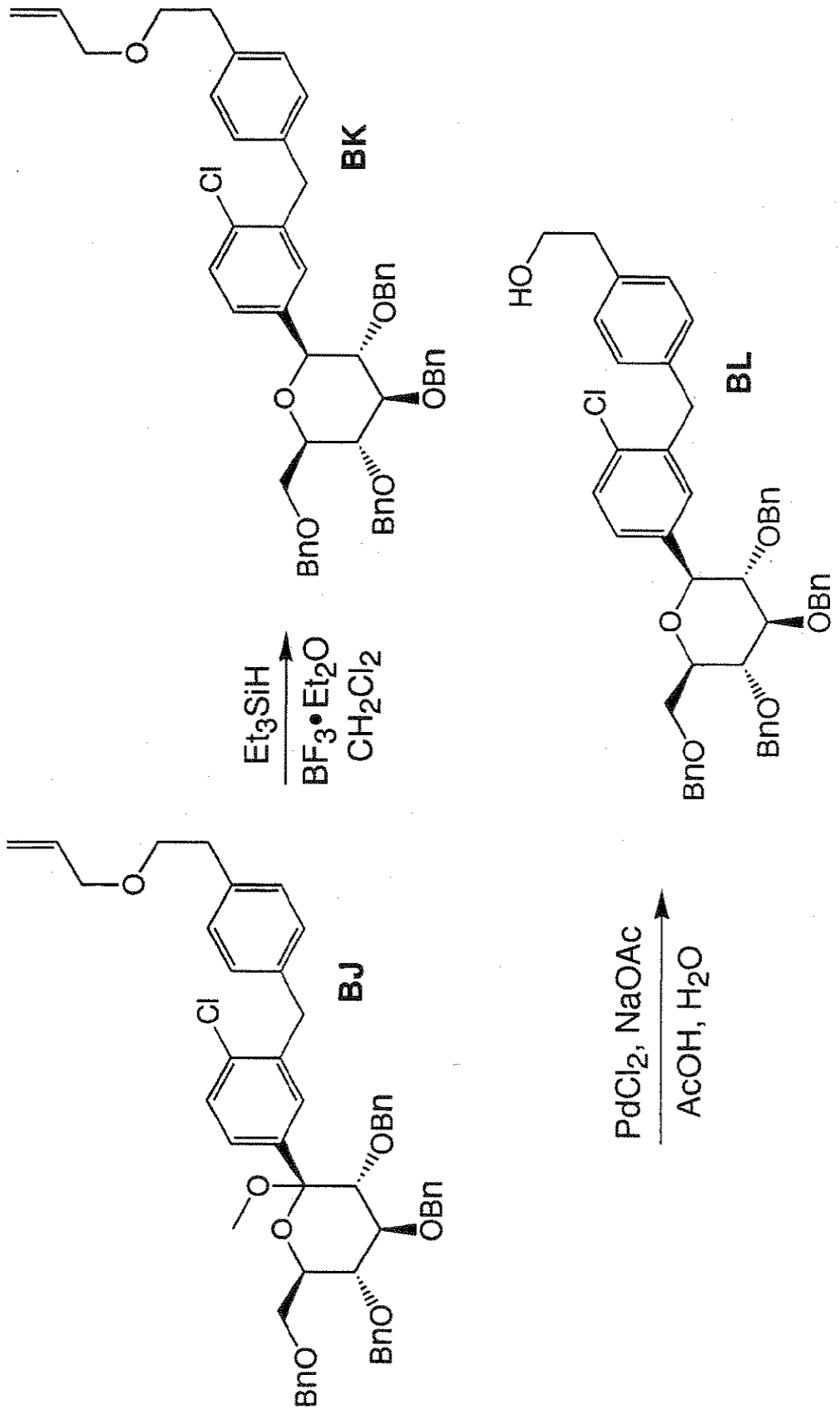


Fig. 21 (Sheet 3)

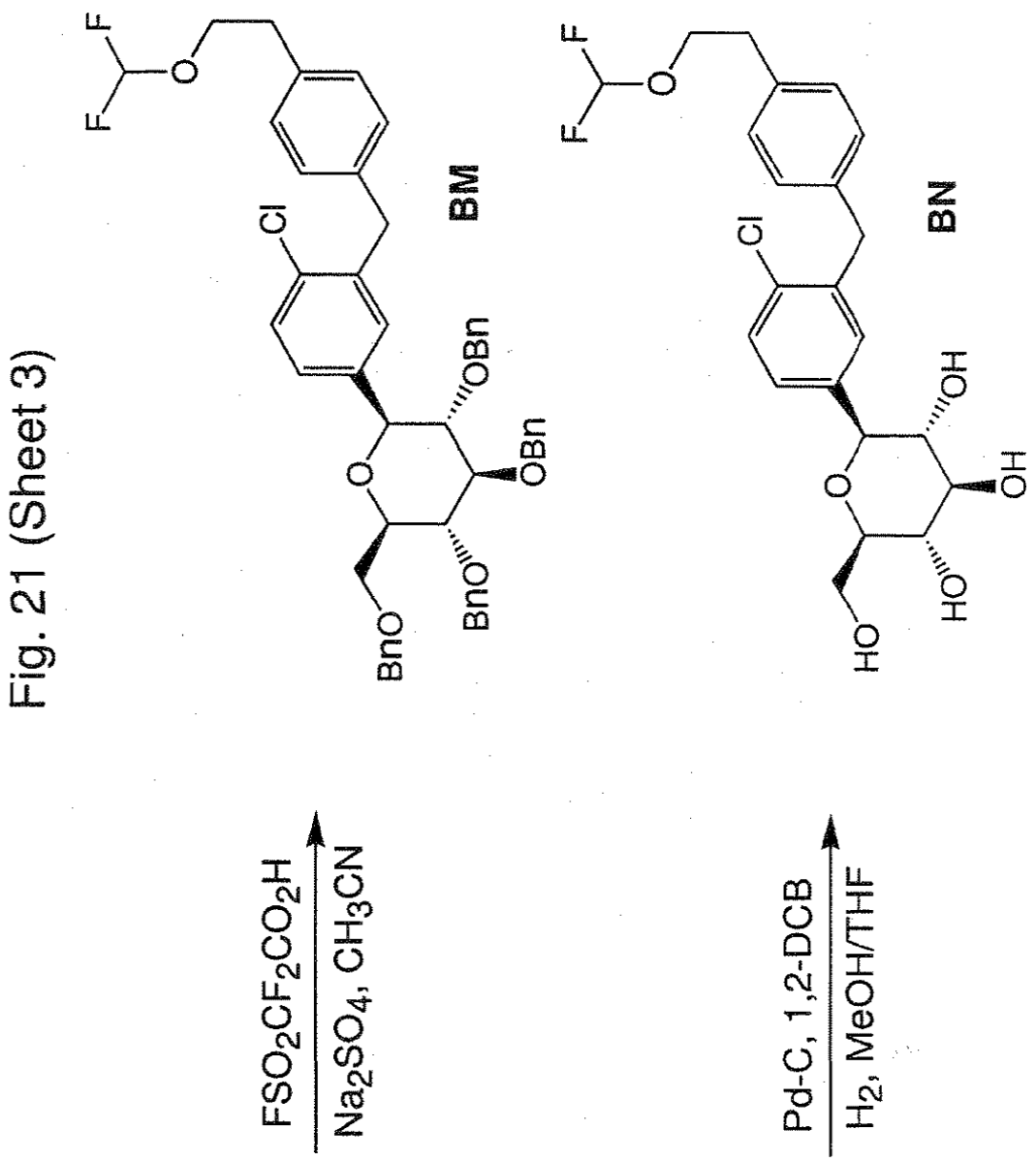


Fig. 22

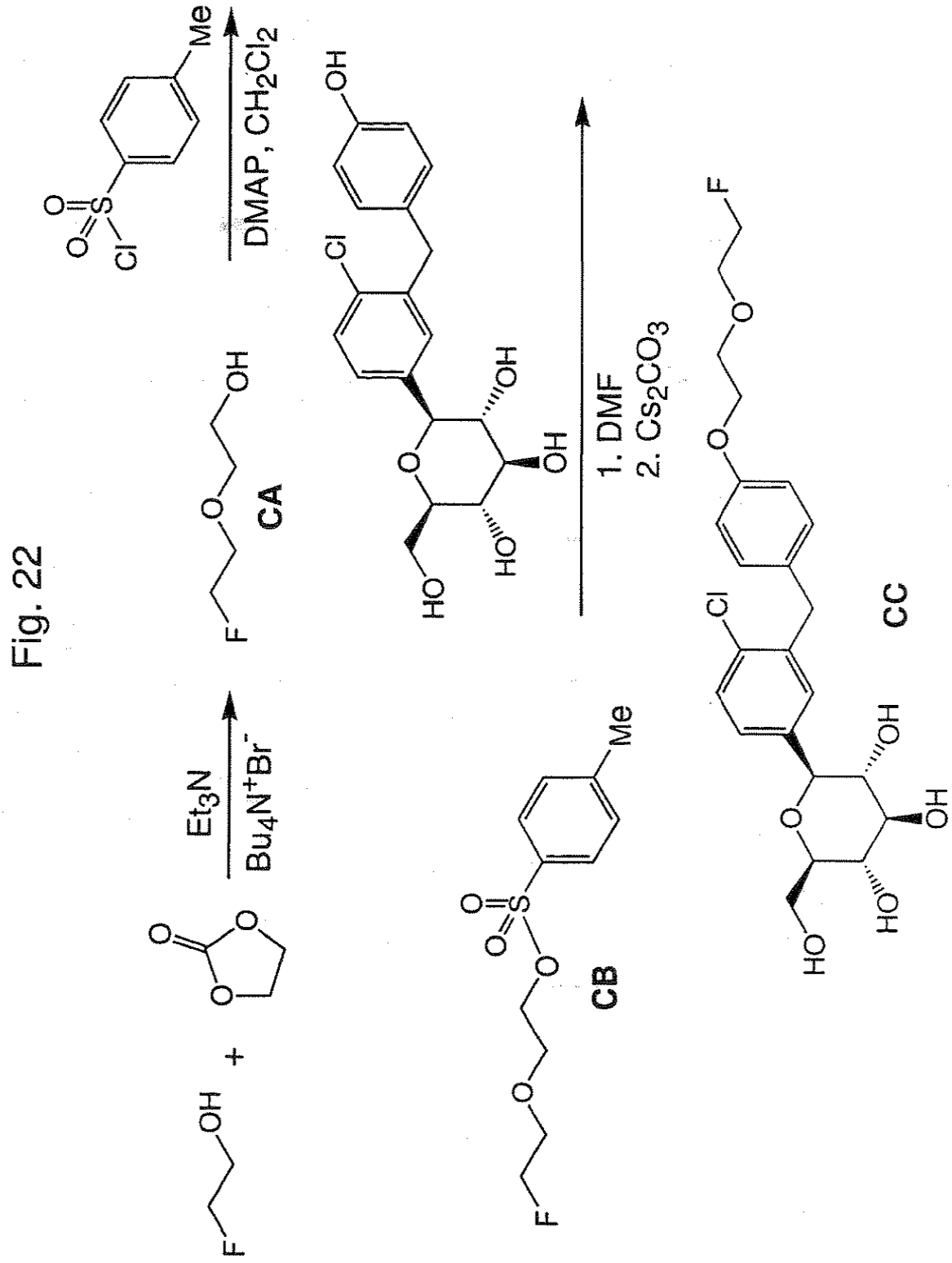


Fig. 23

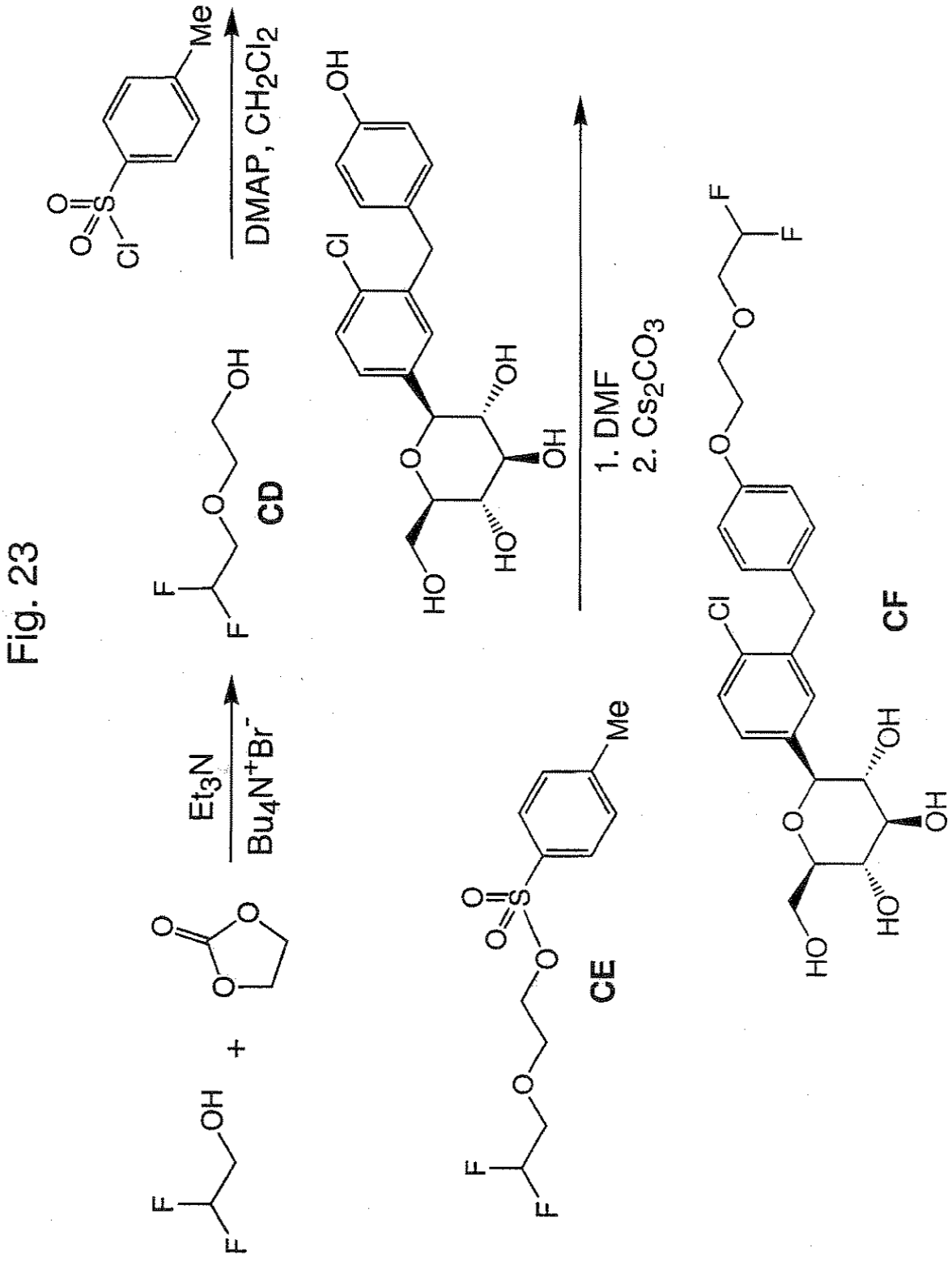


Fig. 24

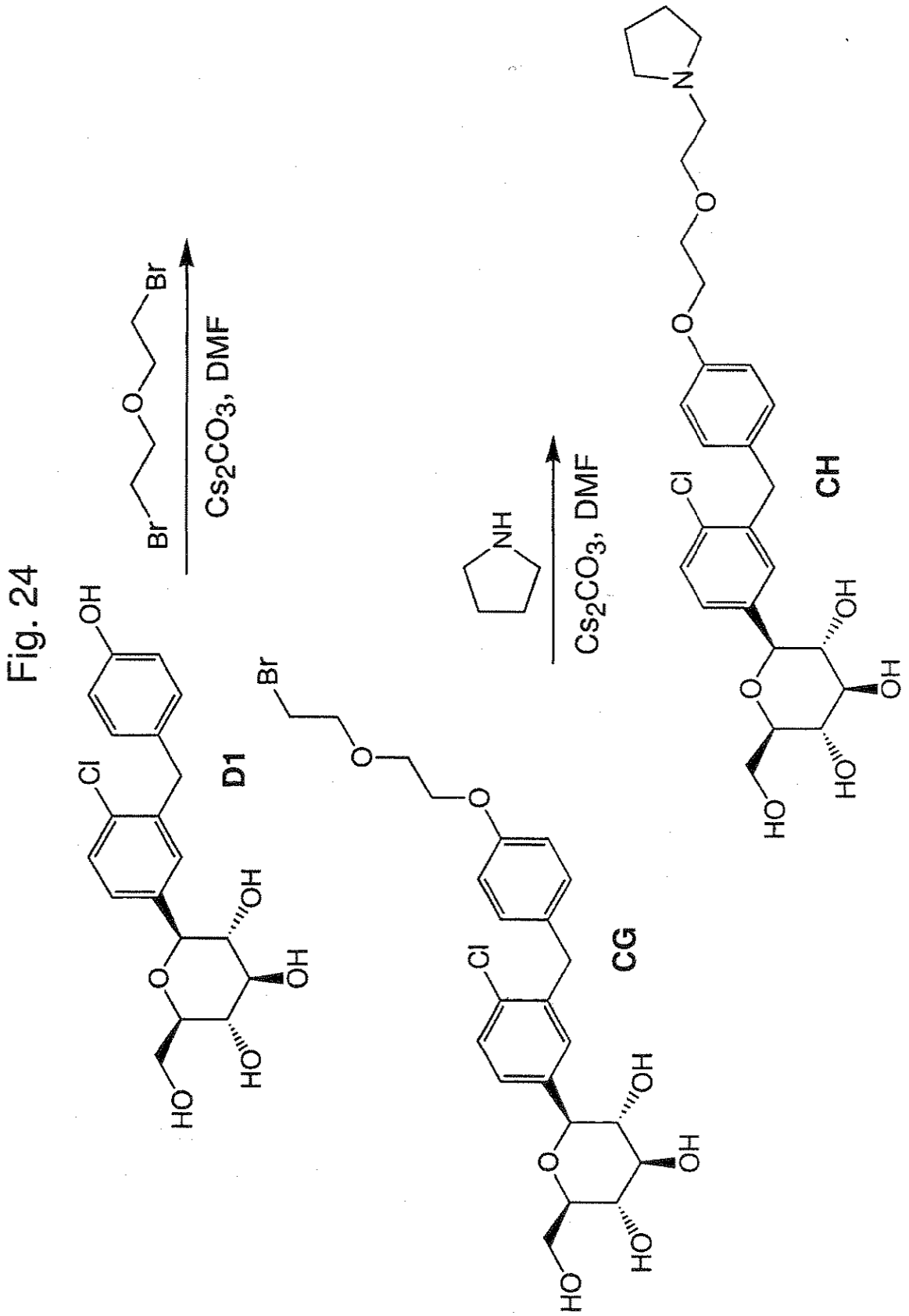


Fig. 25

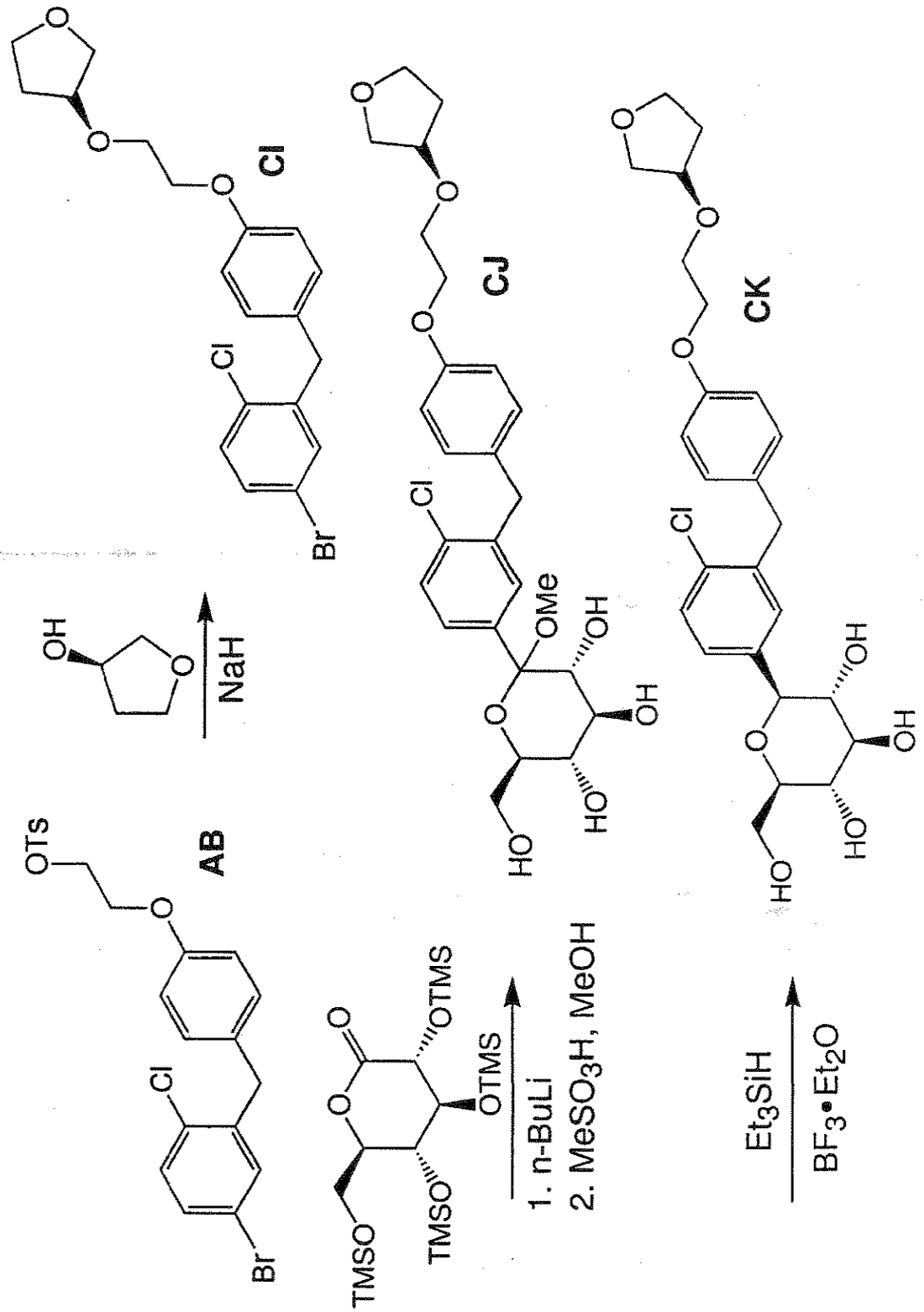

OTs
AB
Cl
Br
OH
NaH
Cl
Br
CJ
CK
TMSO
TMSO
OTMS
OTMS
1. n-BuLi
2. MeSO3H, MeOH
Et3SiH
BF3•Et2O
OMe
HO
HO
OH
OH
OH
HO
HO
OH
OH

Fig. 26

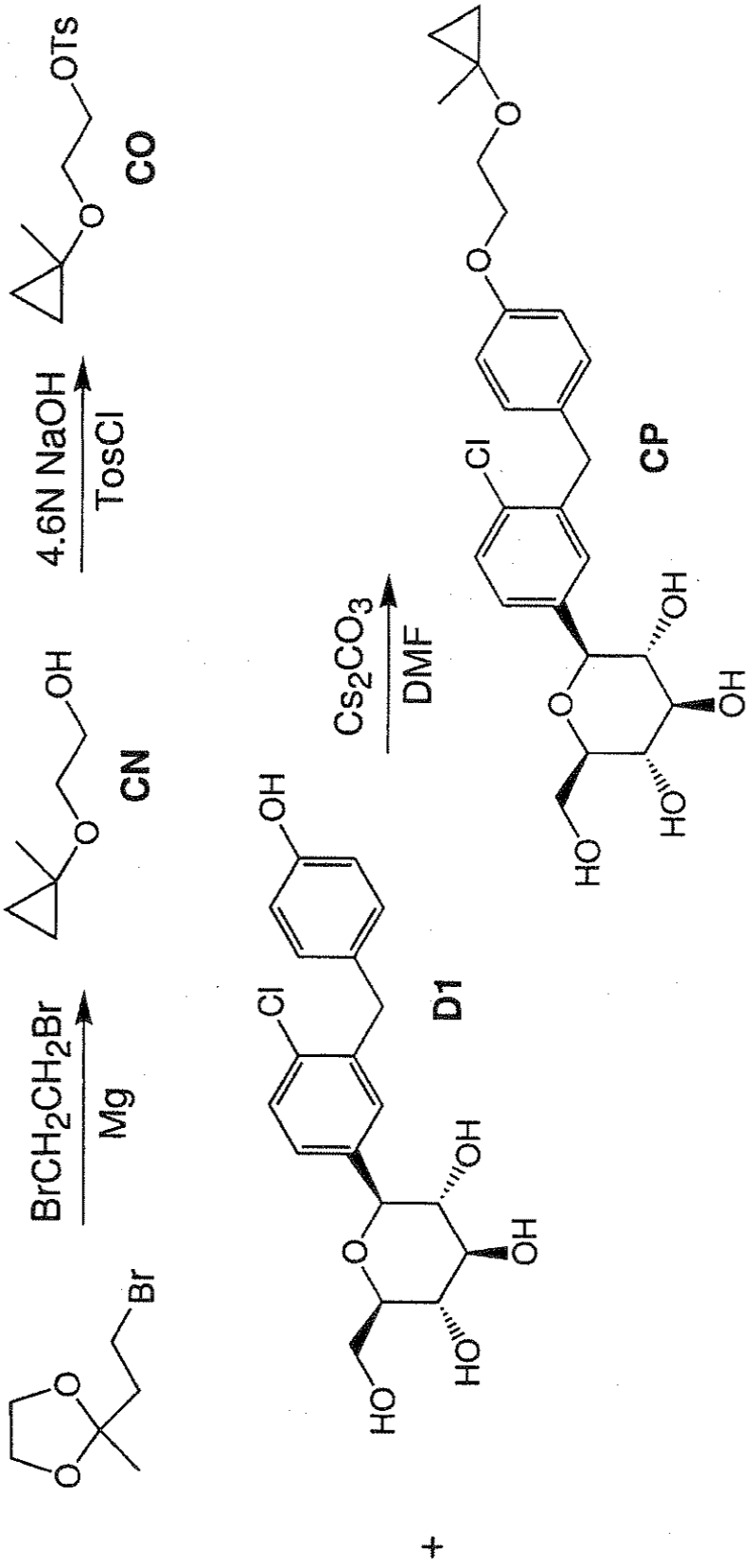

BrCH2CH2Br
Mg
4.6N NaOH
TosCl
Cs2CO3
DMF
CN
CO
D1
CP
OTs
OH
Cl
Br
HO
O

Fig. 27

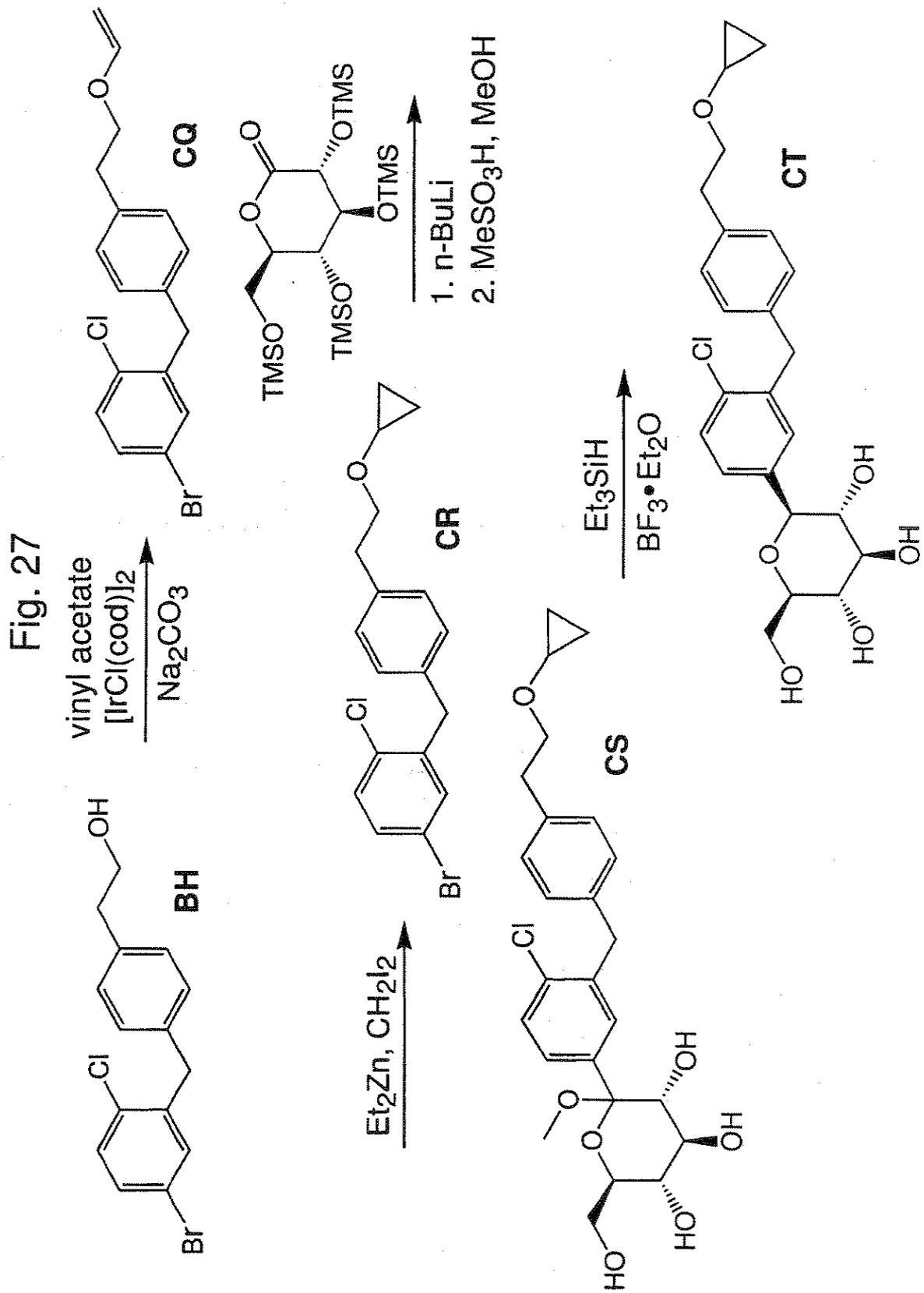

vinyl acetate
[IrCl(cod)]2
Na2CO3
BH
CQ
1. n-BuLi
2. MeSO3H, MeOH
Et2Zn, CH2I2
CR
Et3SiH
BF3•Et2O
CS
CT
Cl
Br
OH
O
TMSO
OTMS
HO

Fig. 28

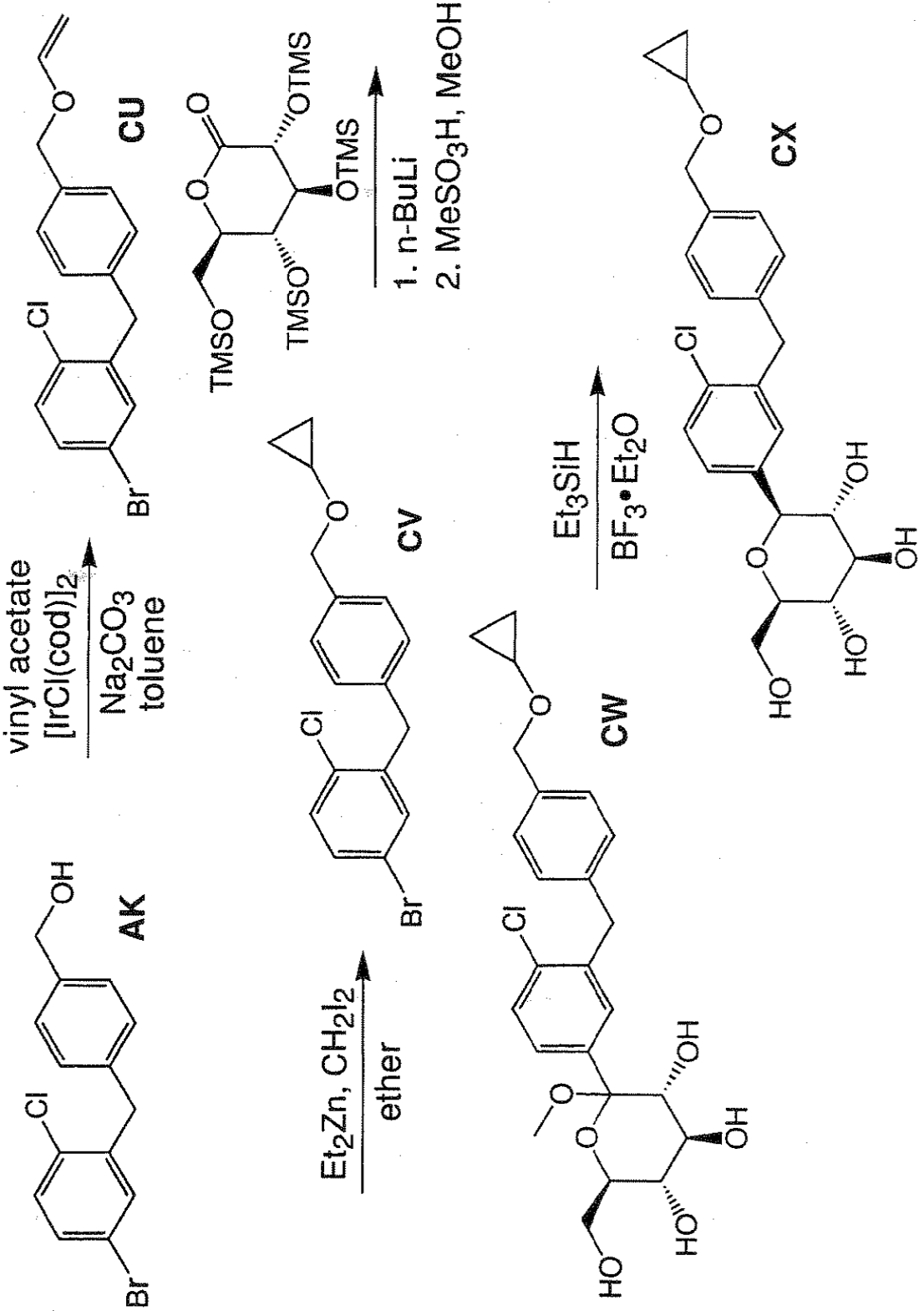

vinyl acetate
[IrCl(cod)]2
Na2CO3
toluene
AK
CU
Et2Zn, CH2I2
ether
CV
1. n-BuLi
2. MeSO3H, MeOH
Et3SiH
BF3•Et2O
CW
CX
Cl
Br
OH
O
TMSO
OTMS

Fig. 29 (Sheet 1)

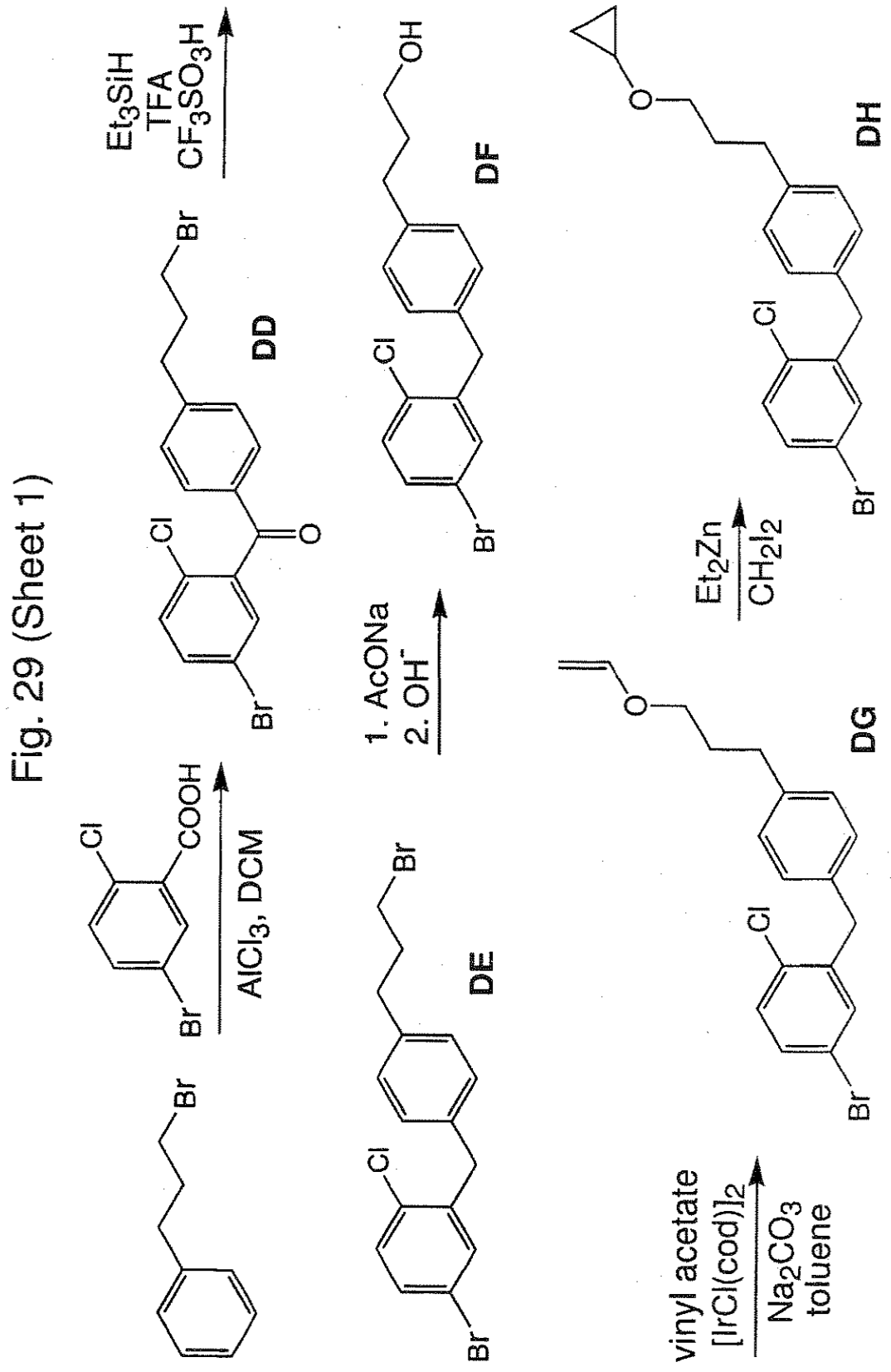


Fig. 29 (Sheet 2)

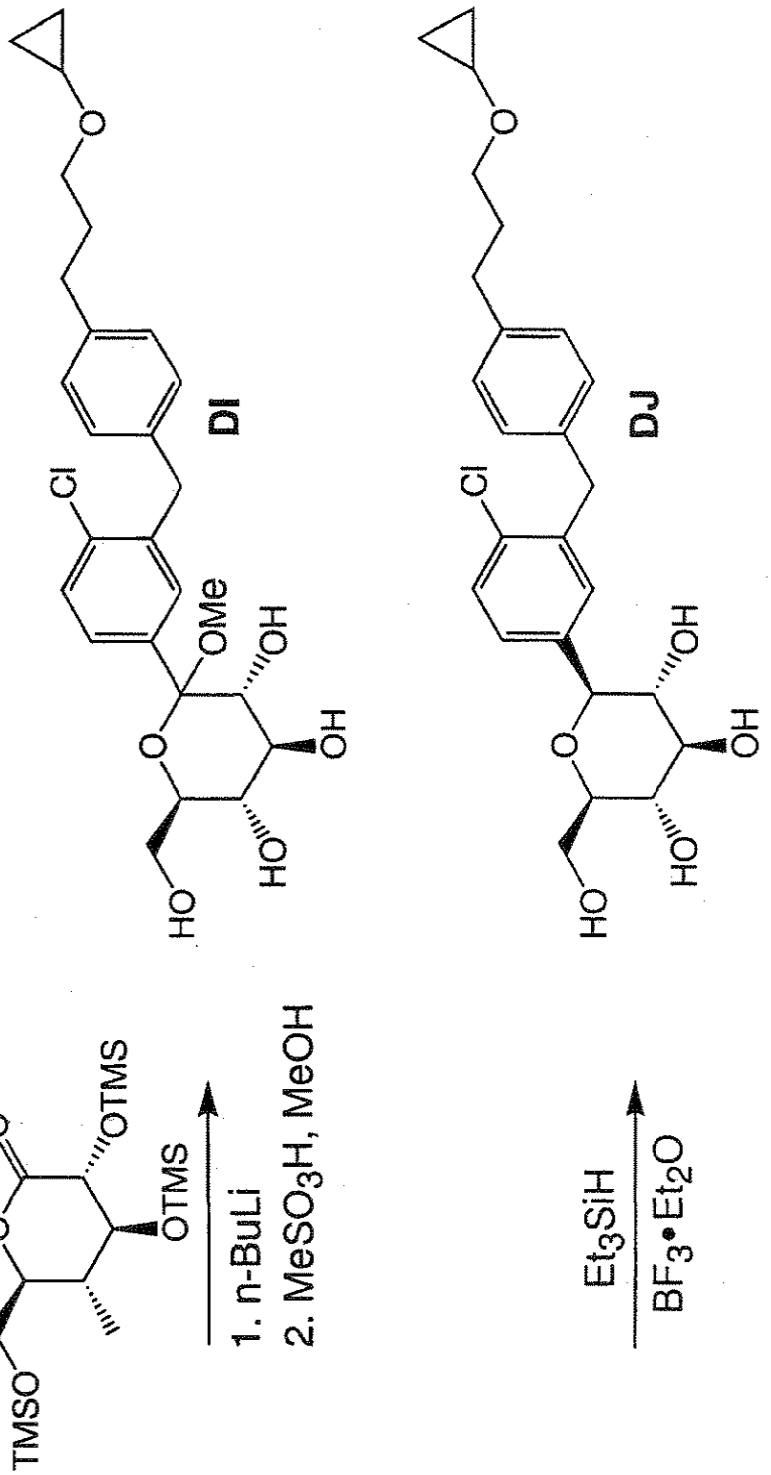


Fig. 30 (Sheet 1)

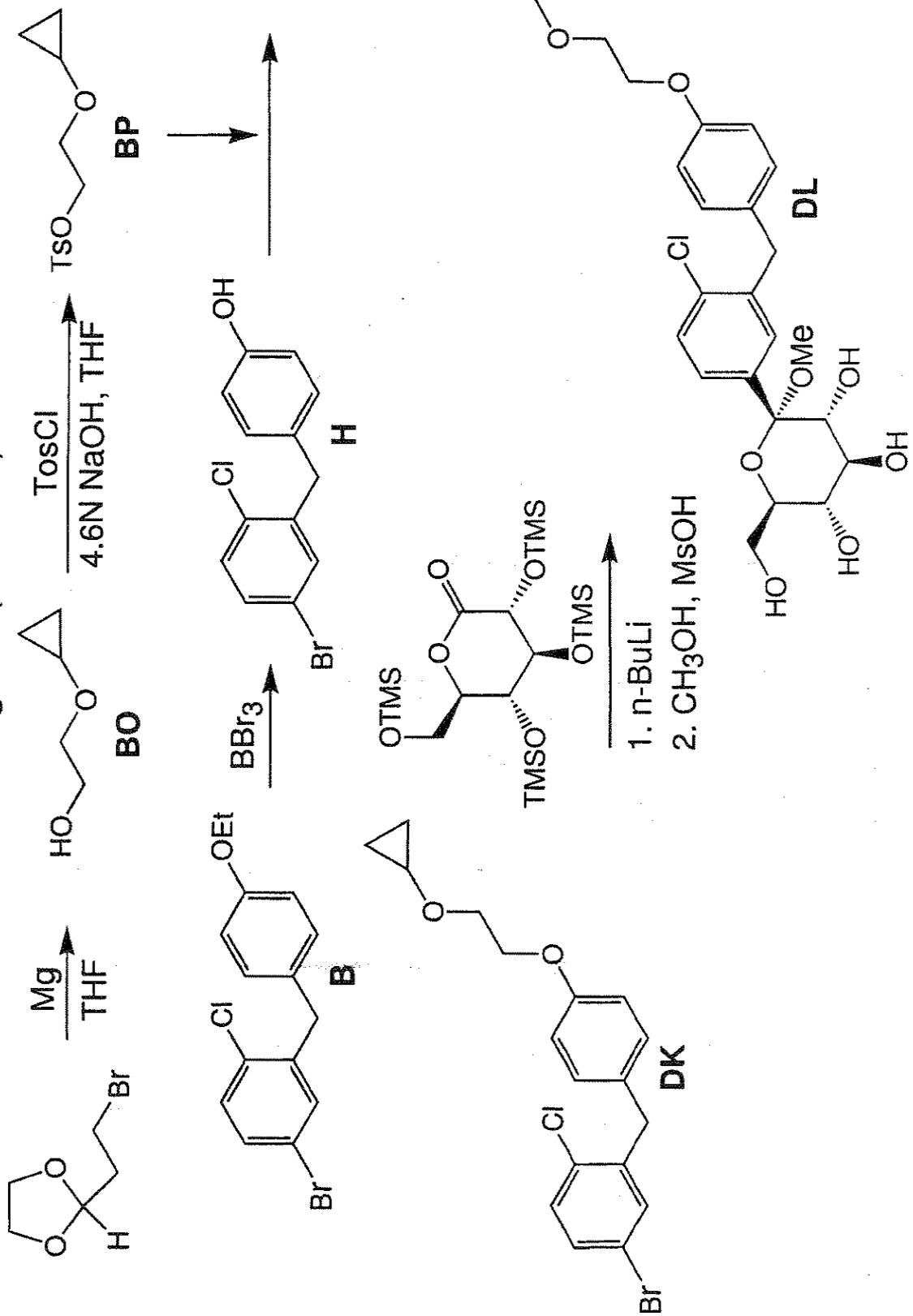
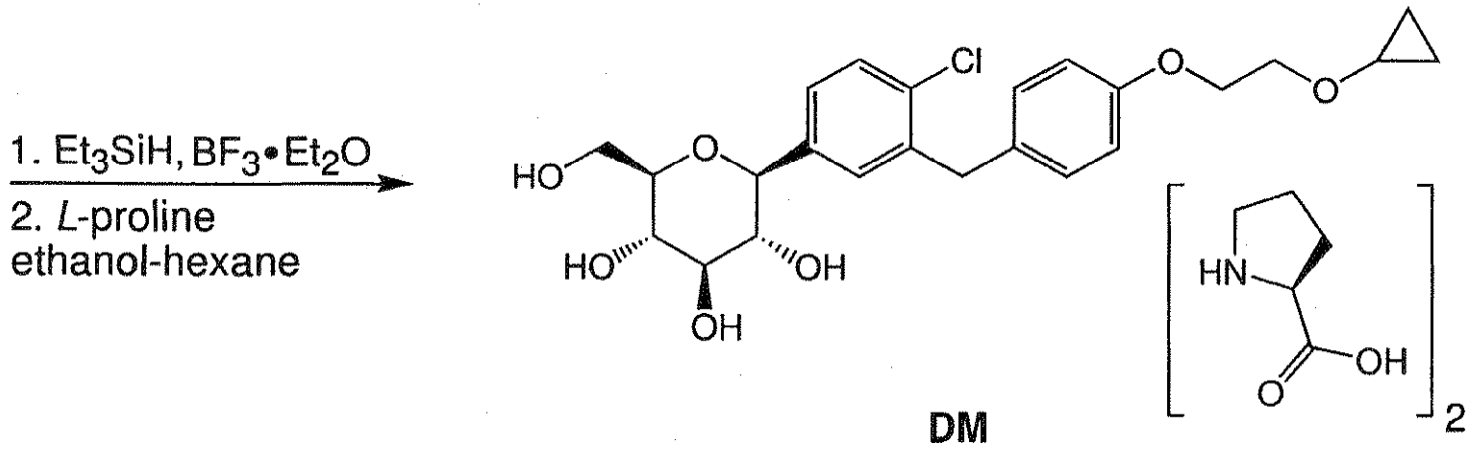


Fig. 30 (Sheet 2)



DM

Fig. 31

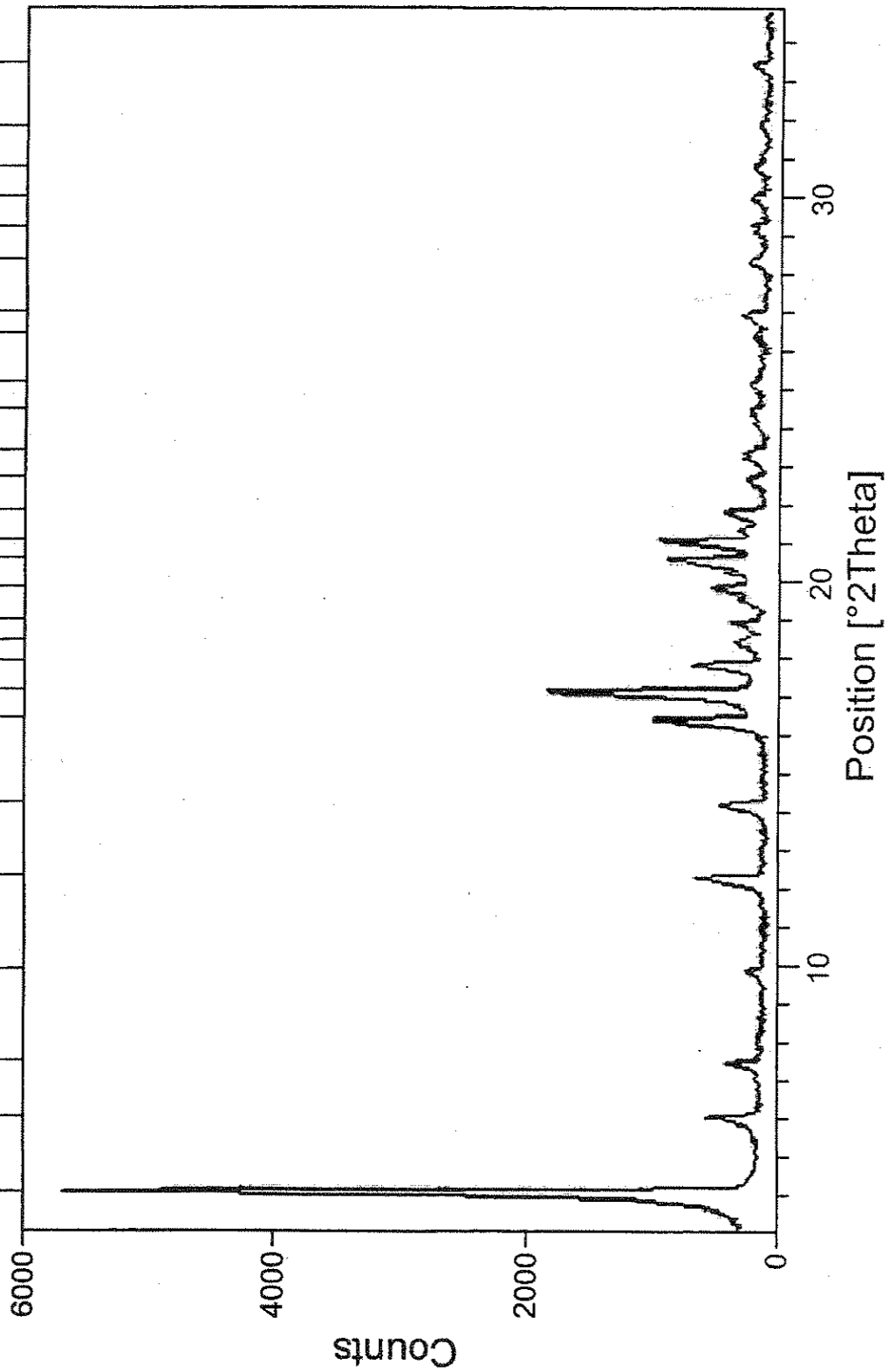
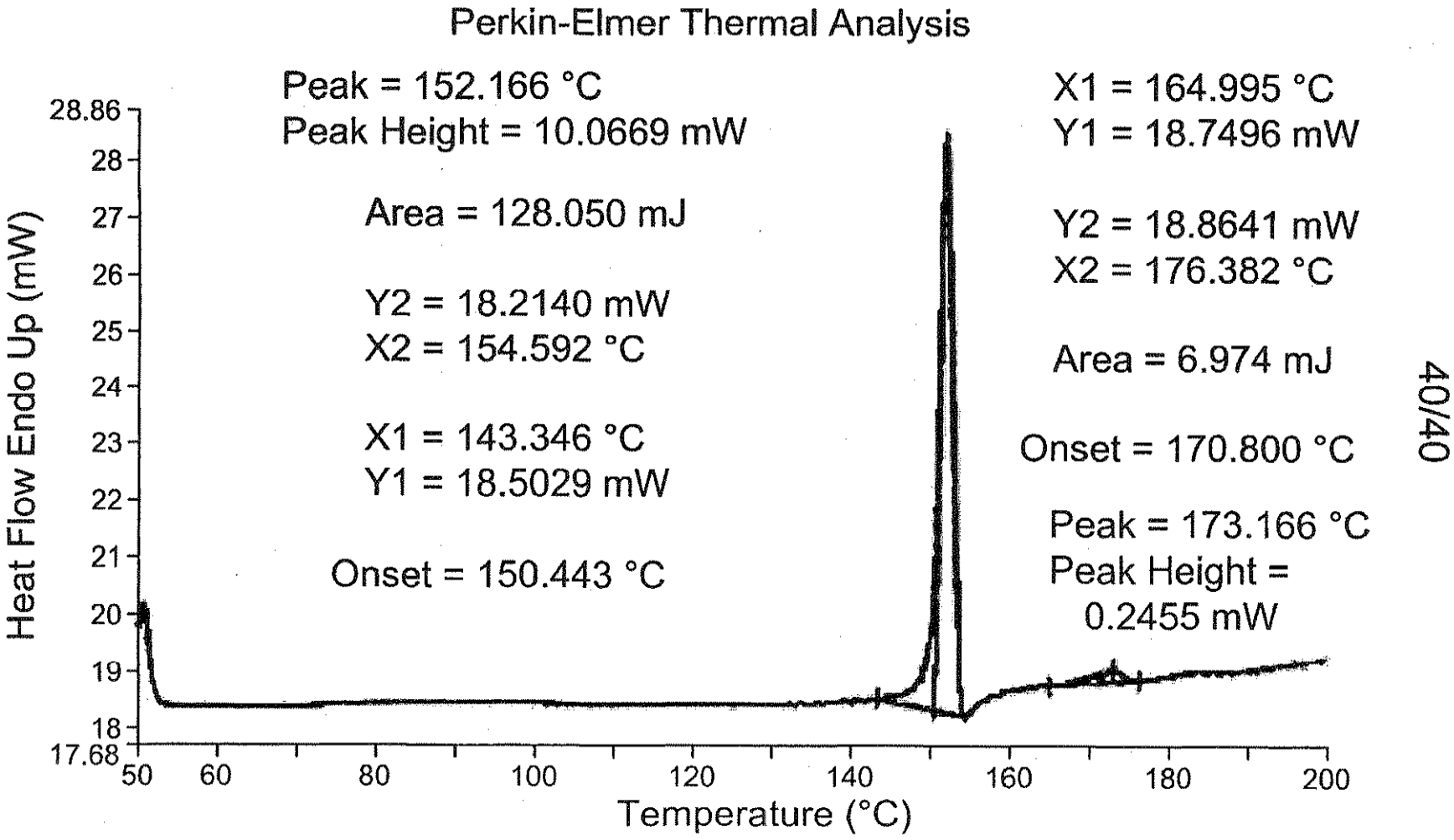


Fig. 32



1) Heat from 50.00°C to 200.00°C at 10.00°C/min