Figure 1

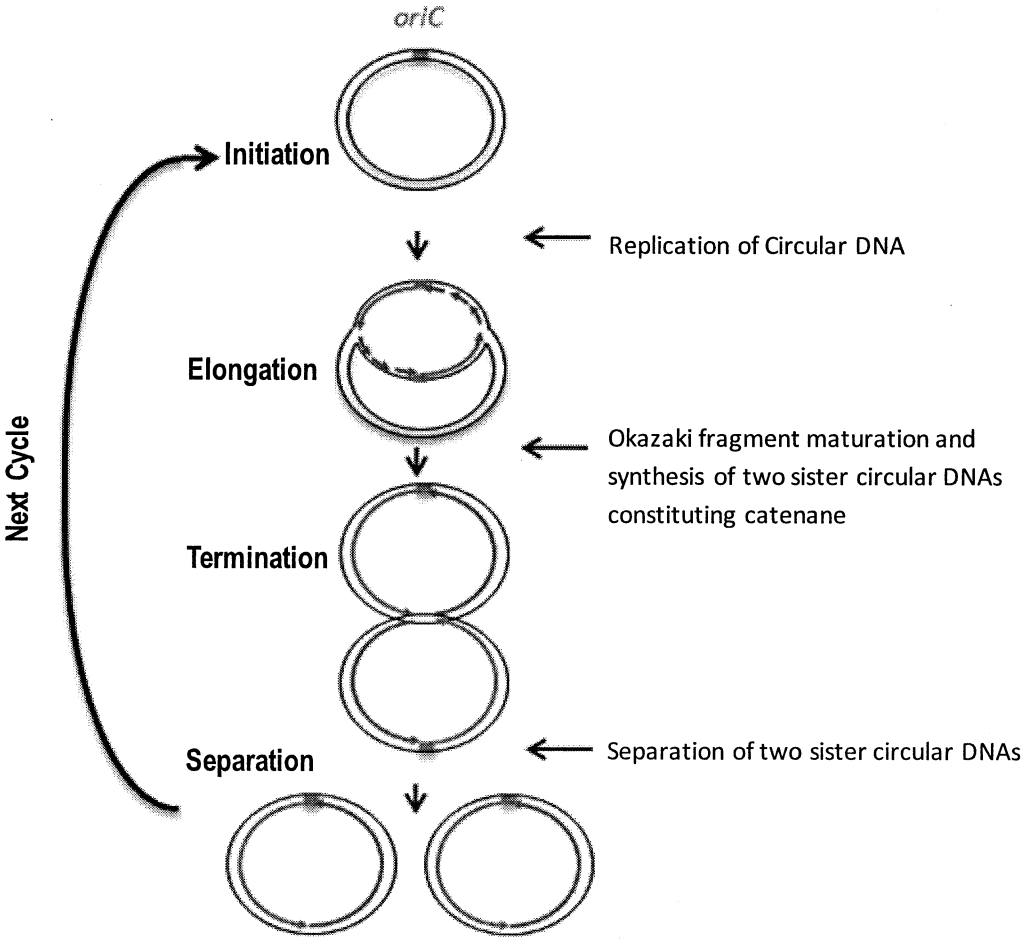

oriC
Initiation
Replication of Circular DNA
Elongation
Okazaki fragment maturation and synthesis of two sister circular DNAs constituting catenane
Termination
Separation
Separation of two sister circular DNAs
Next Cycle

Figure 2

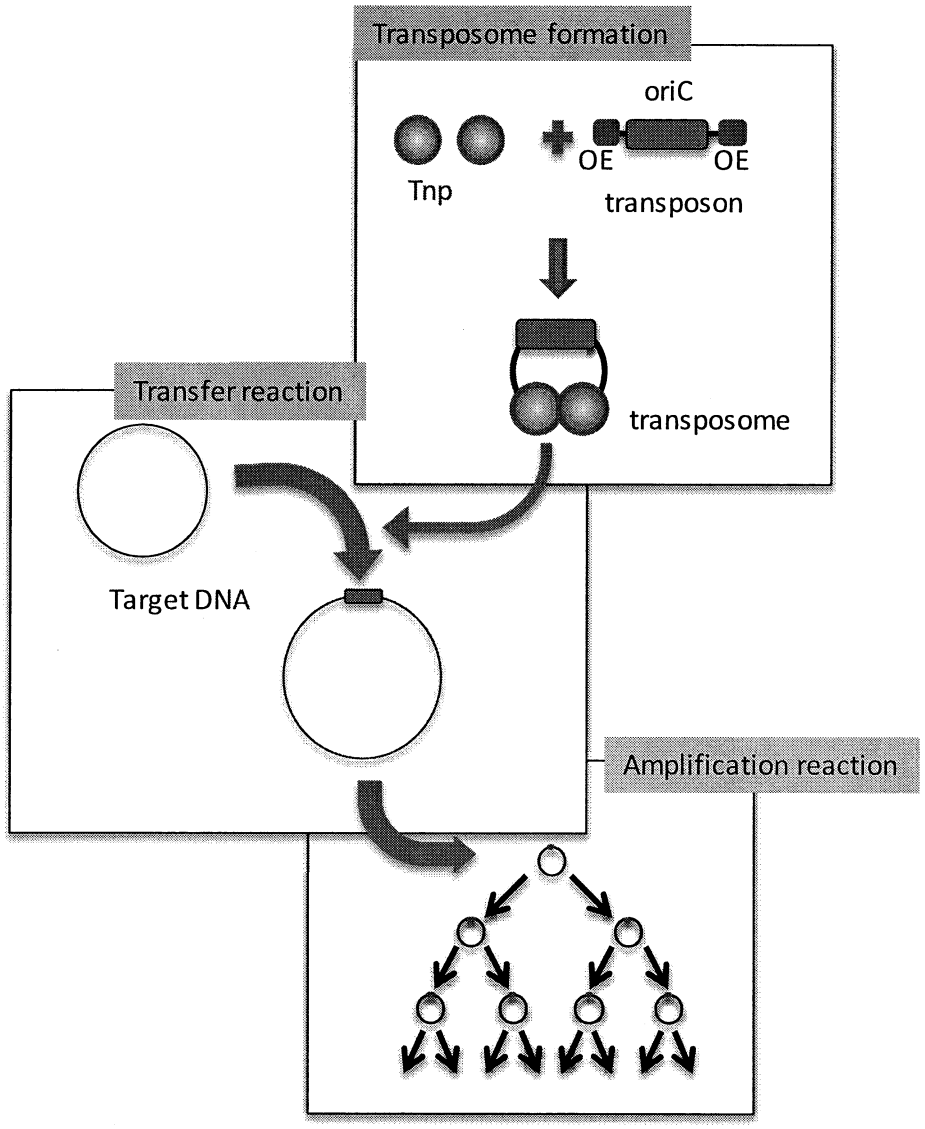

Transposome formation
oriC
OE
OE
Tnp
transposon
transposome
Transfer reaction
Target DNA
Amplification reaction

Figure 3

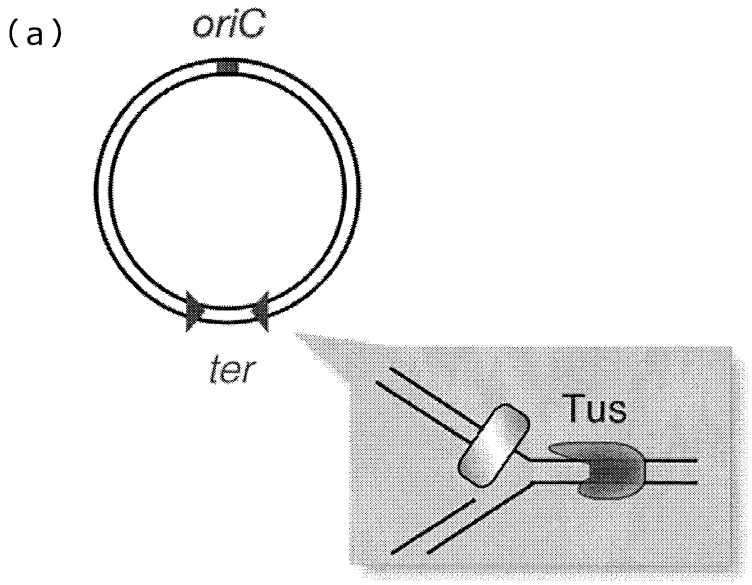
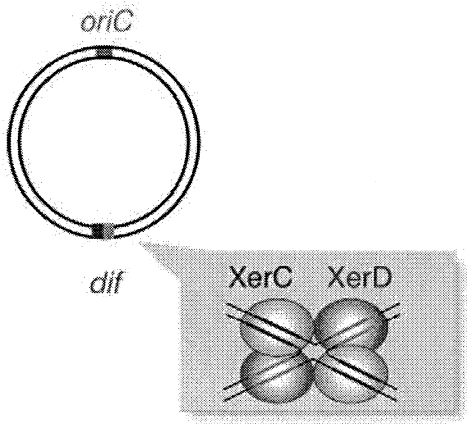

(a)
oriC
ter
Tus
(b)
ter site
–
+
Tus (nM)
0 2 5 0 2 5
Well
Multimer
Supercoil

Figure 4

(a)


oriC
dif
XerC
XerD

(b)

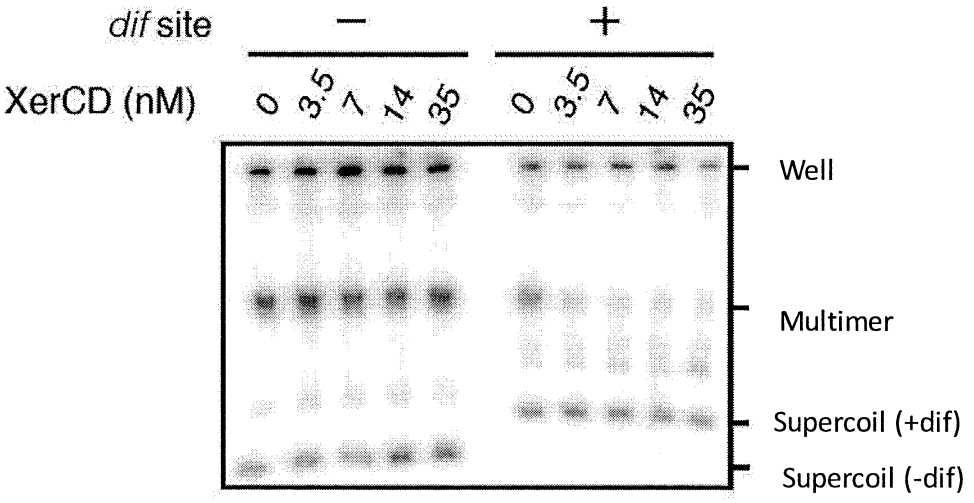

dif site
−
+
XerCD (nM)
0
3.5
7
14
35
0
3.5
7
14
35
Well
Multimer
Supercoil (+dif)
Supercoil (-dif)

Figure 5

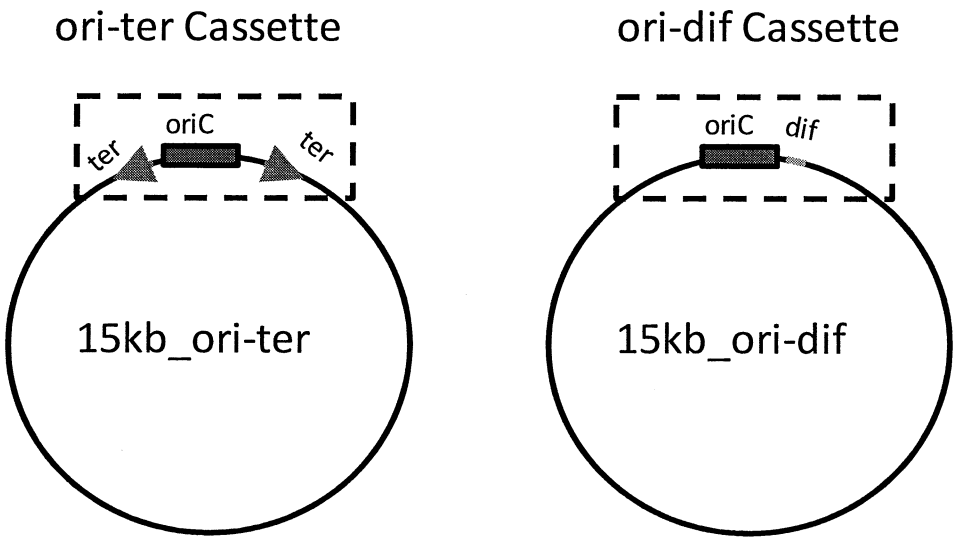


Figure 6

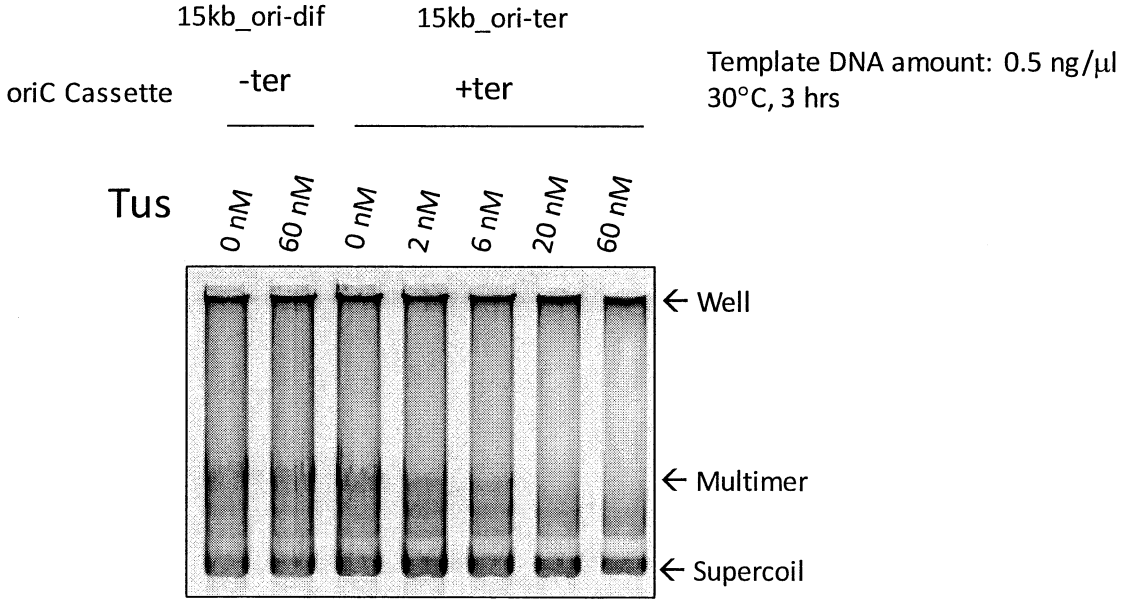


Figure 7

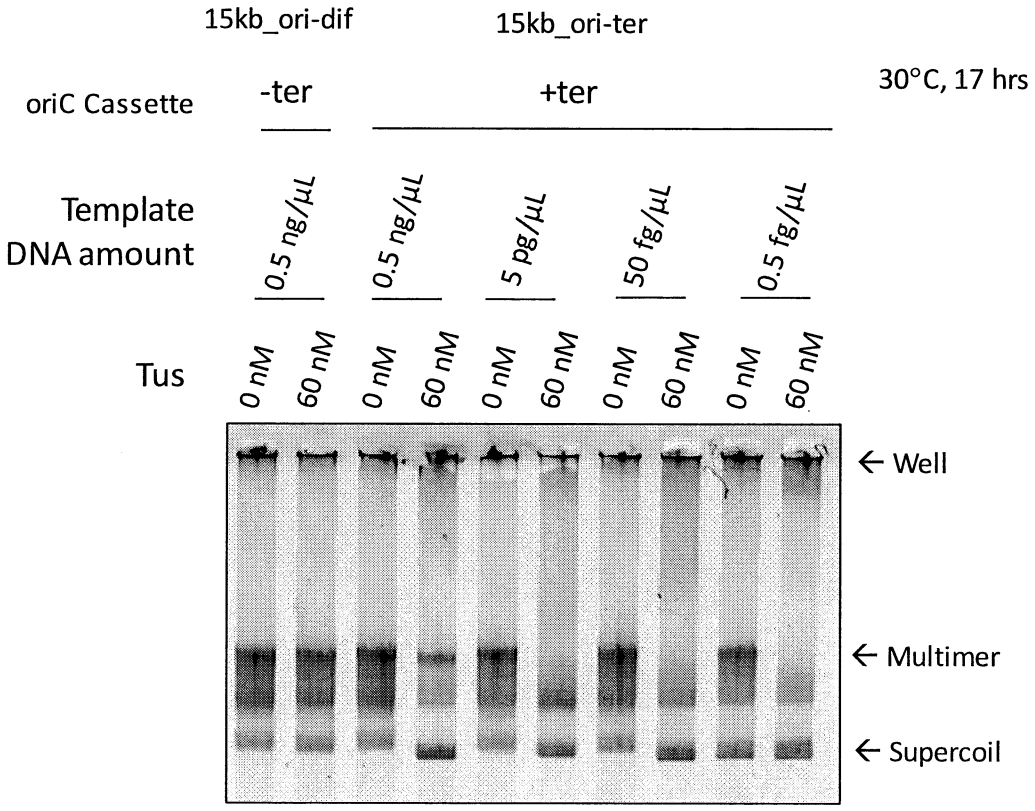

15kb_ori-dif
15kb_ori-ter
30°C, 17 hrs
oriC Cassette
-ter
+ter
Template DNA amount
0.5 ng/μL
0.5 ng/μL
5 pg/μL
50 fg/μL
0.5 fg/μL
Tus
0 nM
60 nM
0 nM
60 nM
0 nM
60 nM
0 nM
60 nM
0 nM
60 nM
← Well
← Multimer
← Supercoil

Figure 8

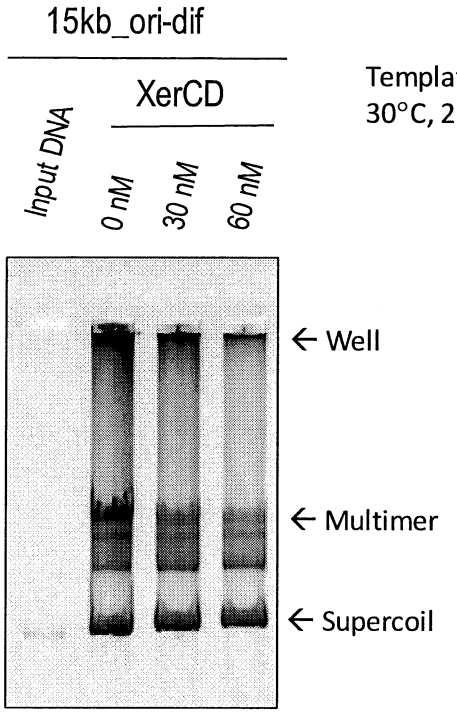

15kb_ori-dif
XerCD
Input DNA
0 nM
30 nM
60 nM
Template DNA amount: 0.5 ng/μl
30°C, 2 hrs
← Well
← Multimer
← Supercoil

Figure 9

Target DNA: 15 kb plasmid
(Final concentration upon transfer reaction: 10 fM)

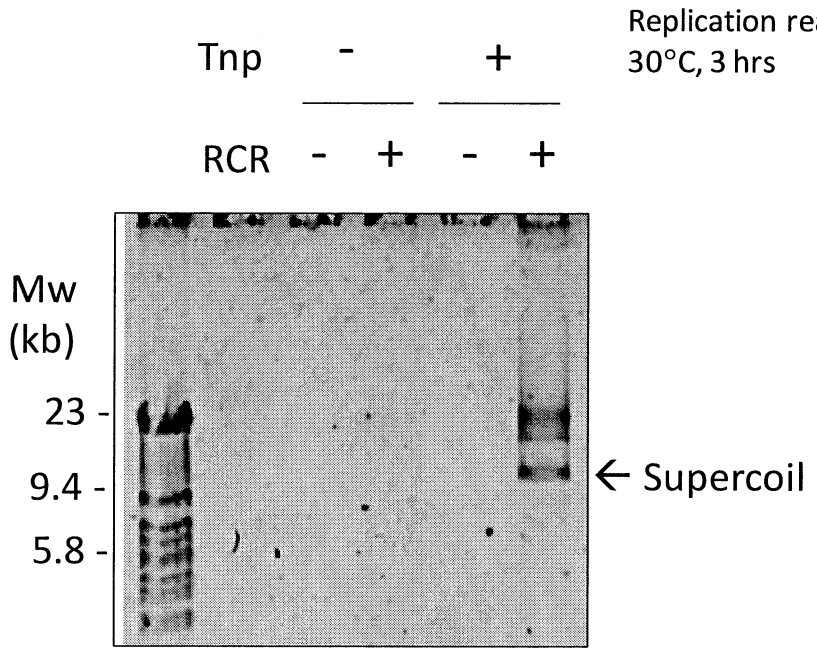


Figure 10

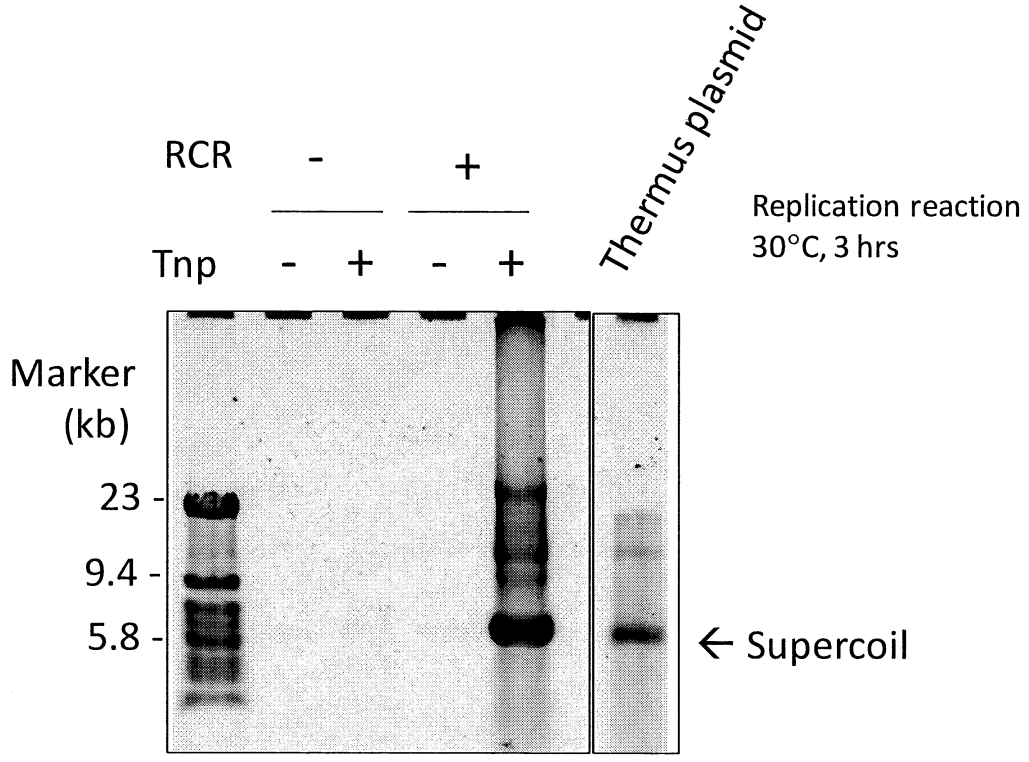


Figure 11

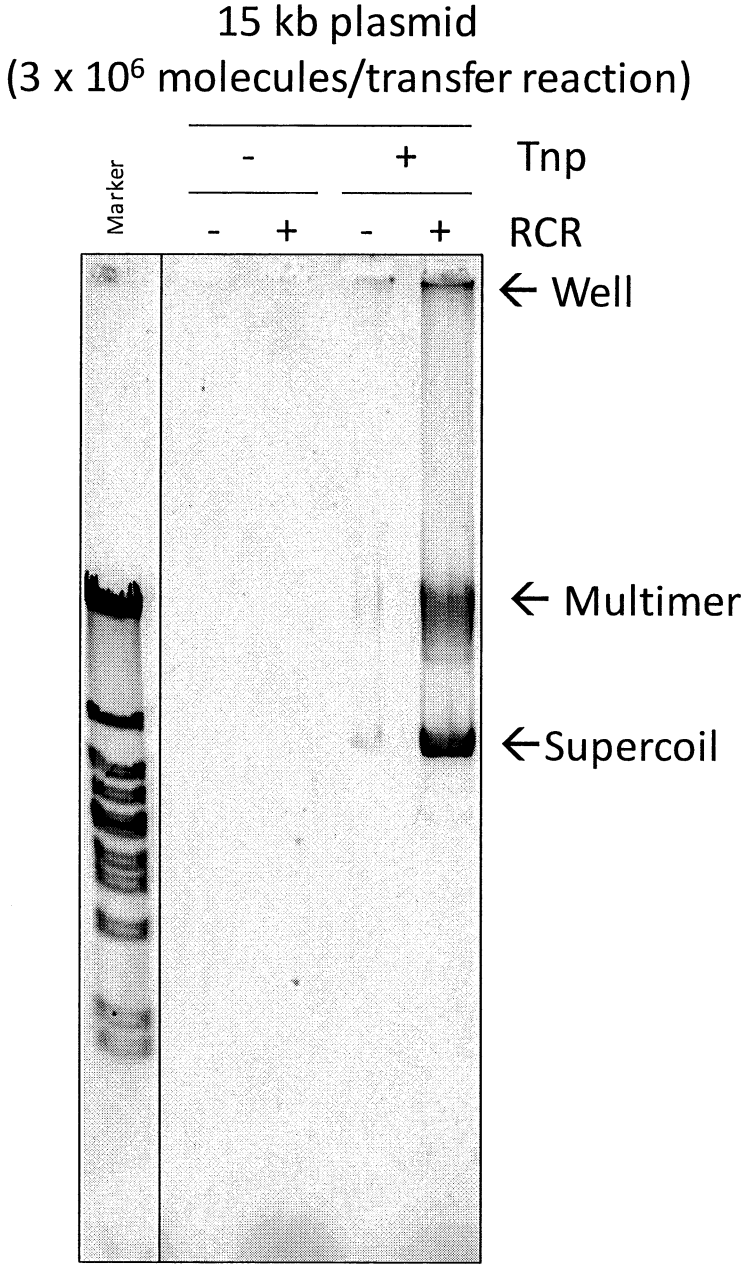

15 kb plasmid
(3 x 10^6 molecules/transfer reaction)
Marker
-
+
Tnp
-
+
-
+
RCR
← Well
← Multimer
←Supercoil

Figure 12

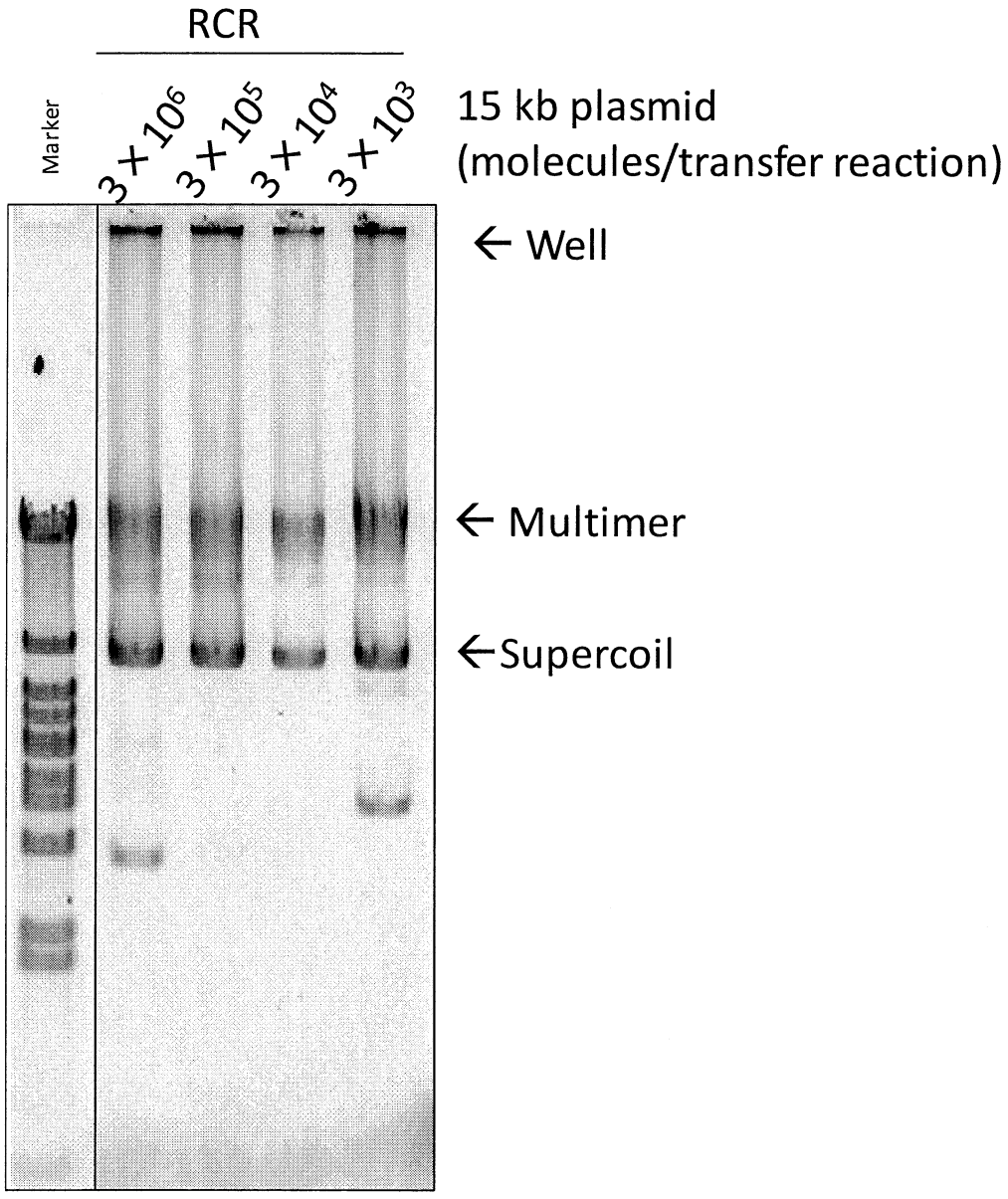

RCR
Marker
3 x 10^6
3 x 10^5
3 x 10^4
3 x 10^3
15 kb plasmid
(molecules/transfer reaction)
← Well
← Multimer
←Supercoil

Figure 13

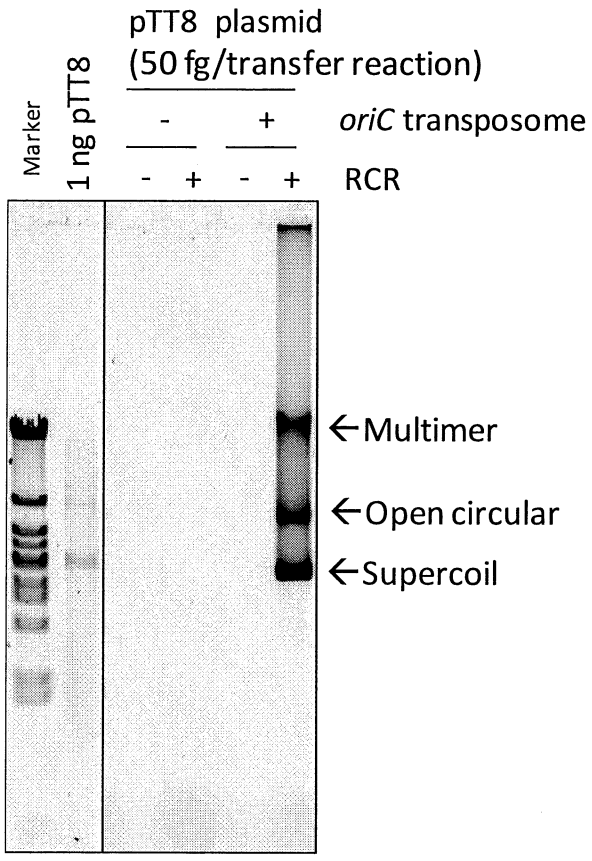

pTT8 plasmid
(50 fg/transfer reaction)
Marker
1 ng pTT8
-
+
oriC transposome
- + - +
RCR
←Multimer
←Open circular
←Supercoil

Figure 14

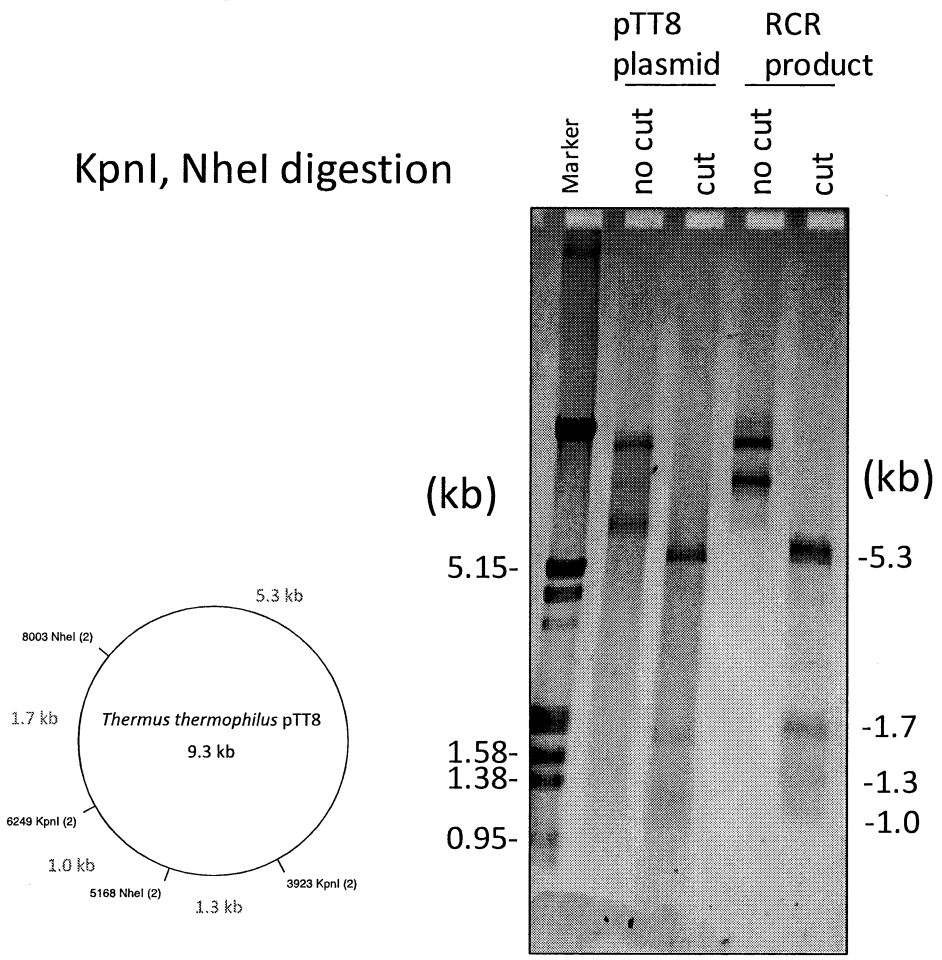

KpnI, NheI digestion
pTT8 plasmid
RCR product
Marker
no cut
cut
no cut
cut
(kb)
5.15-
1.58-
1.38-
0.95-
(kb)
-5.3
-1.7
-1.3
-1.0
5.3 kb
8003 NheI (2)
1.7 kb
Thermus thermophilus pTT8
9.3 kb
6249 KpnI (2)
1.0 kb
5168 NheI (2)
3923 KpnI (2)
1.3 kb

Figure 15

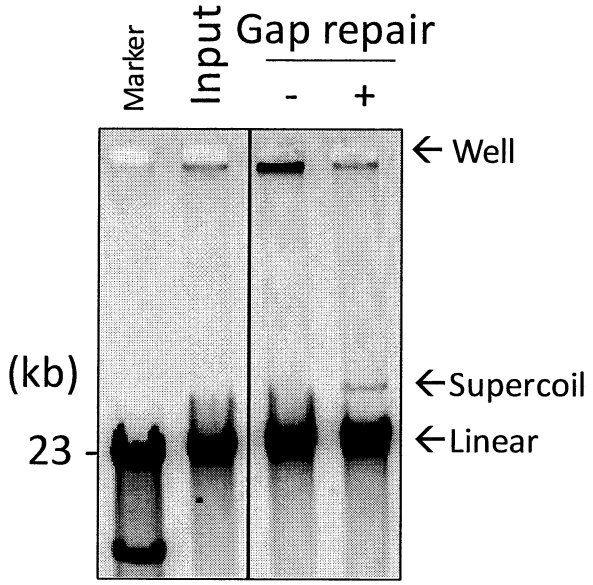


Figure 16

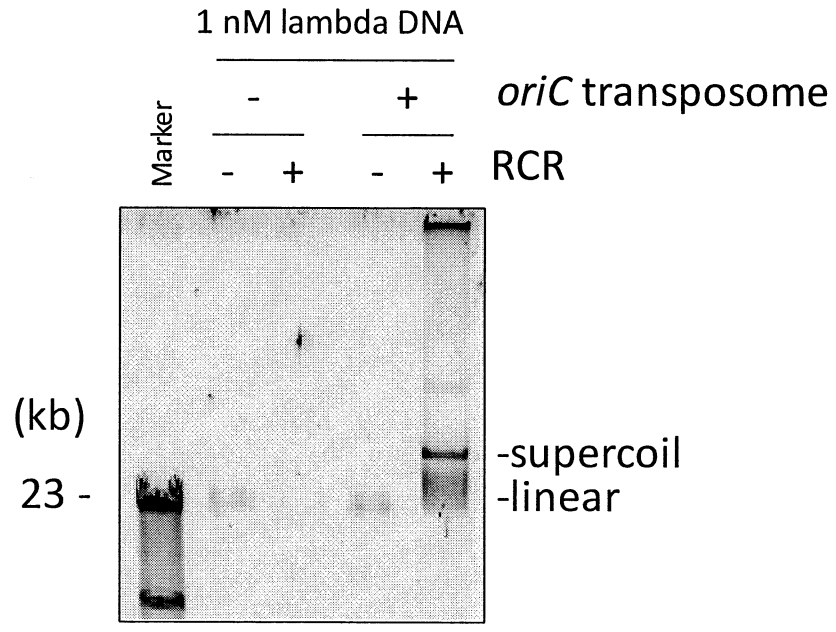


Figure 17

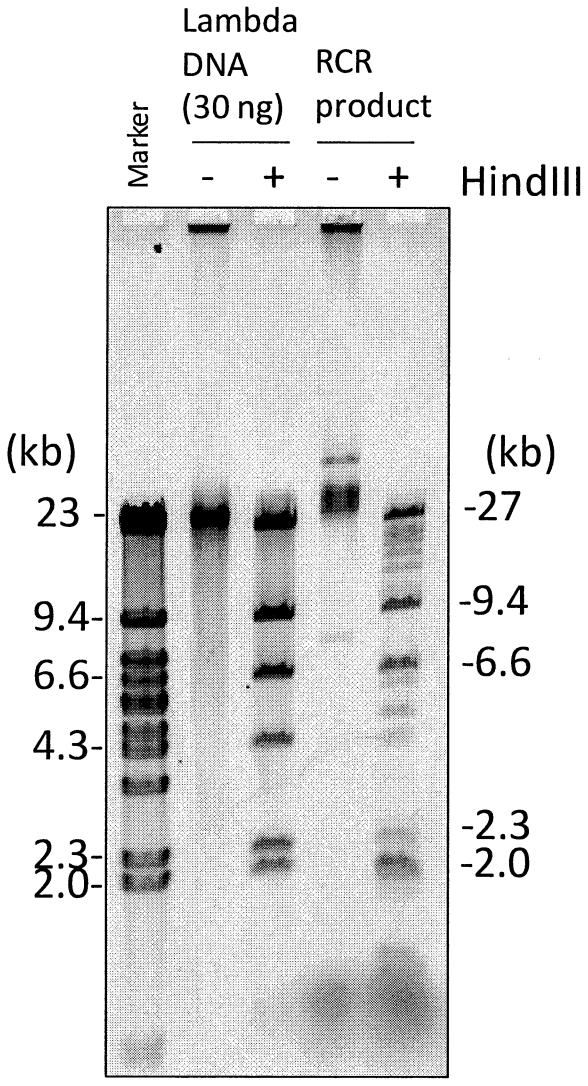

Lambda
DNA
(30 ng)
RCR
product
Marker
-
+
-
+
HindIII
(kb)
23
9.4
6.6
4.3
2.3
2.0
(kb)
-27
-9.4
-6.6
-2.3
-2.0

Figure 18

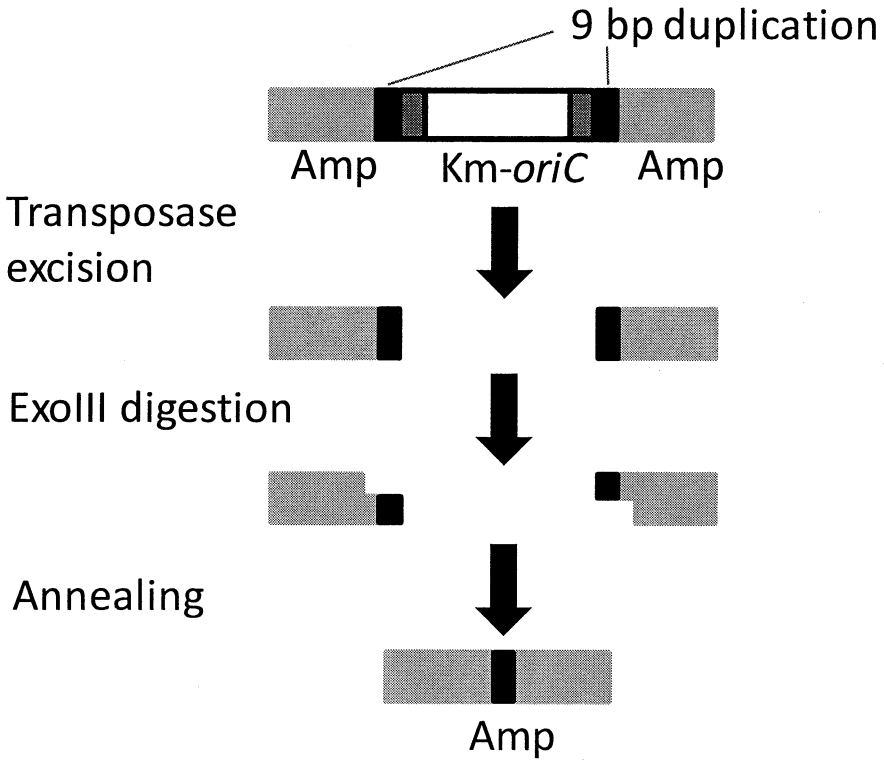


Figure 19

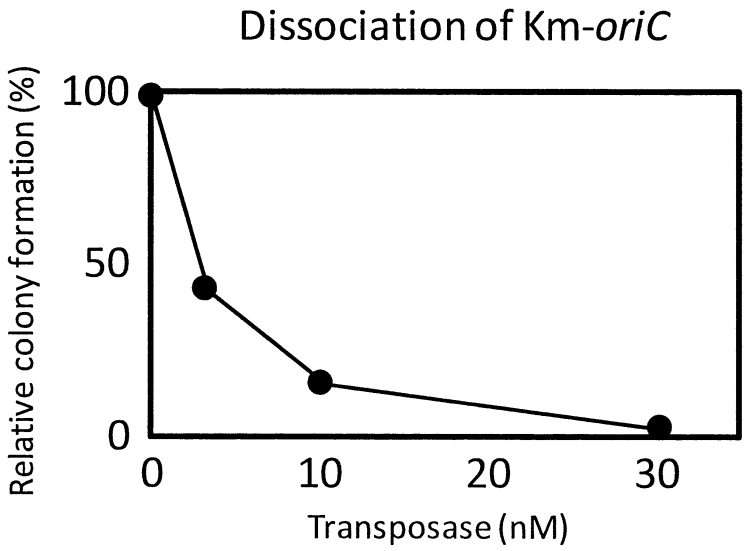


Figure 20

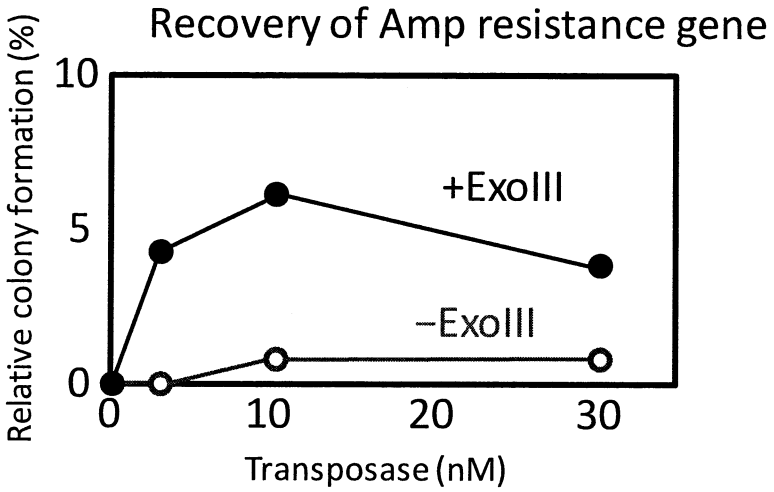


Figure 21

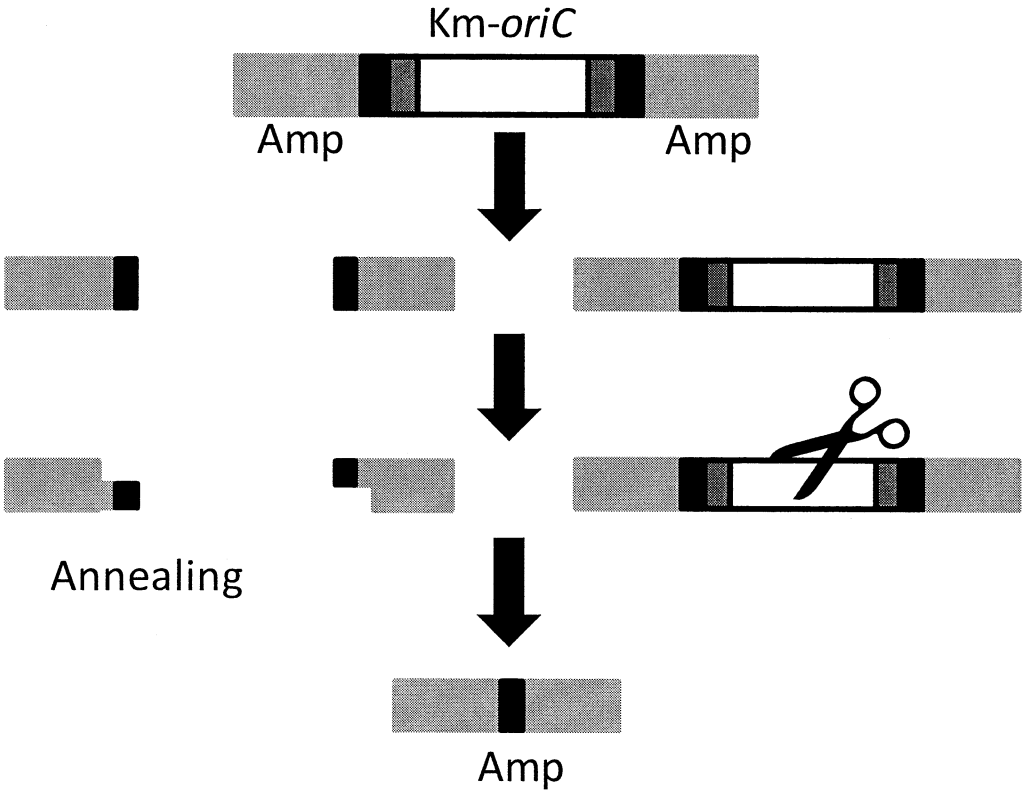
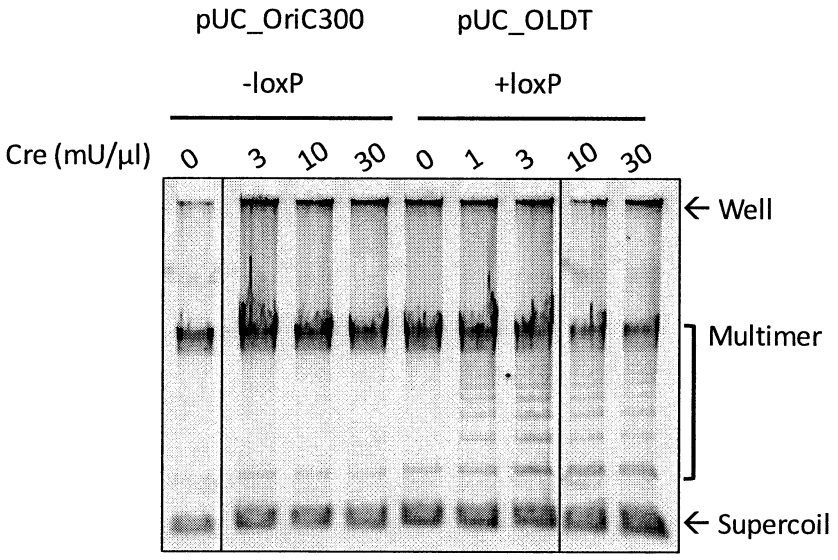


Figure 22


pUC_OriC300
-loxP
pUC_OLDT
+loxP
Cre (mU/µl)
0
3
10
30
0
1
3
10
30
Well
Multimer
Supercoil