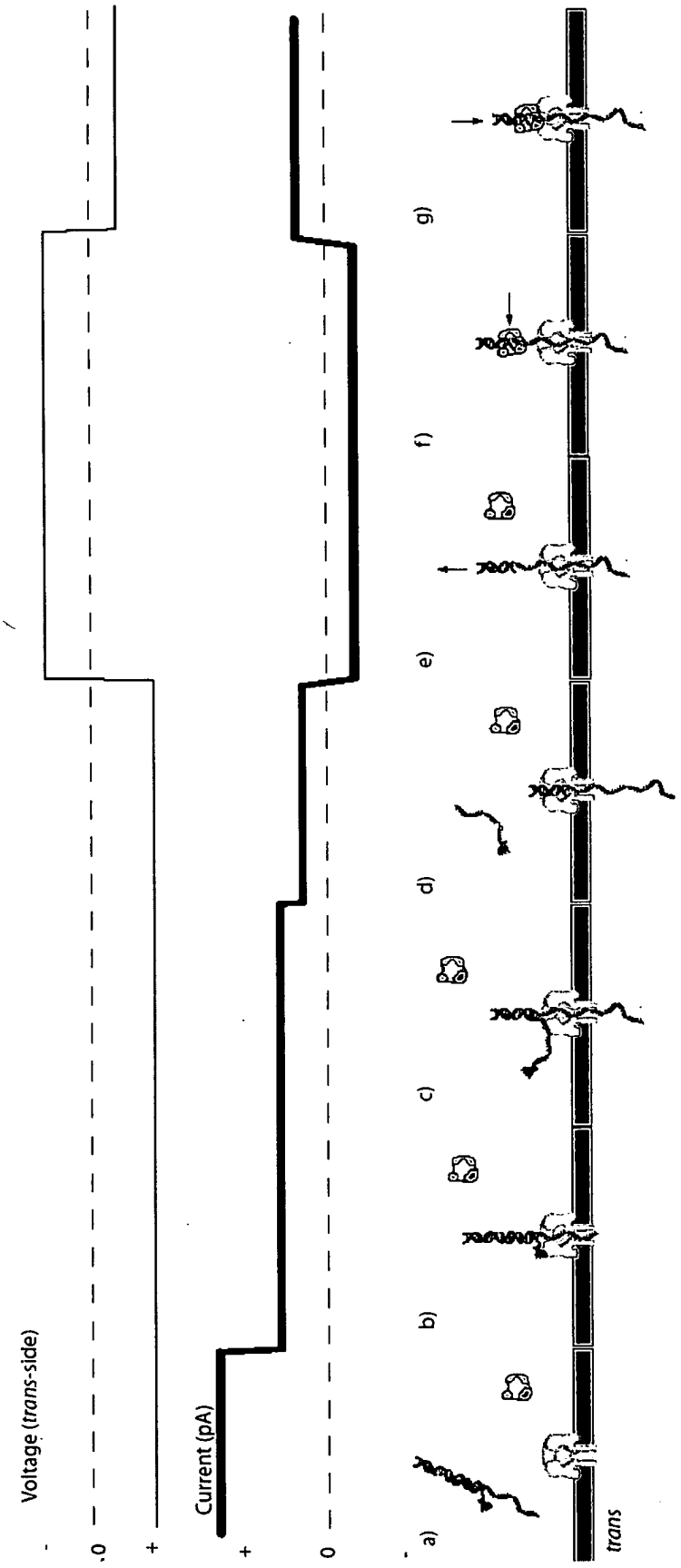


Figure 1

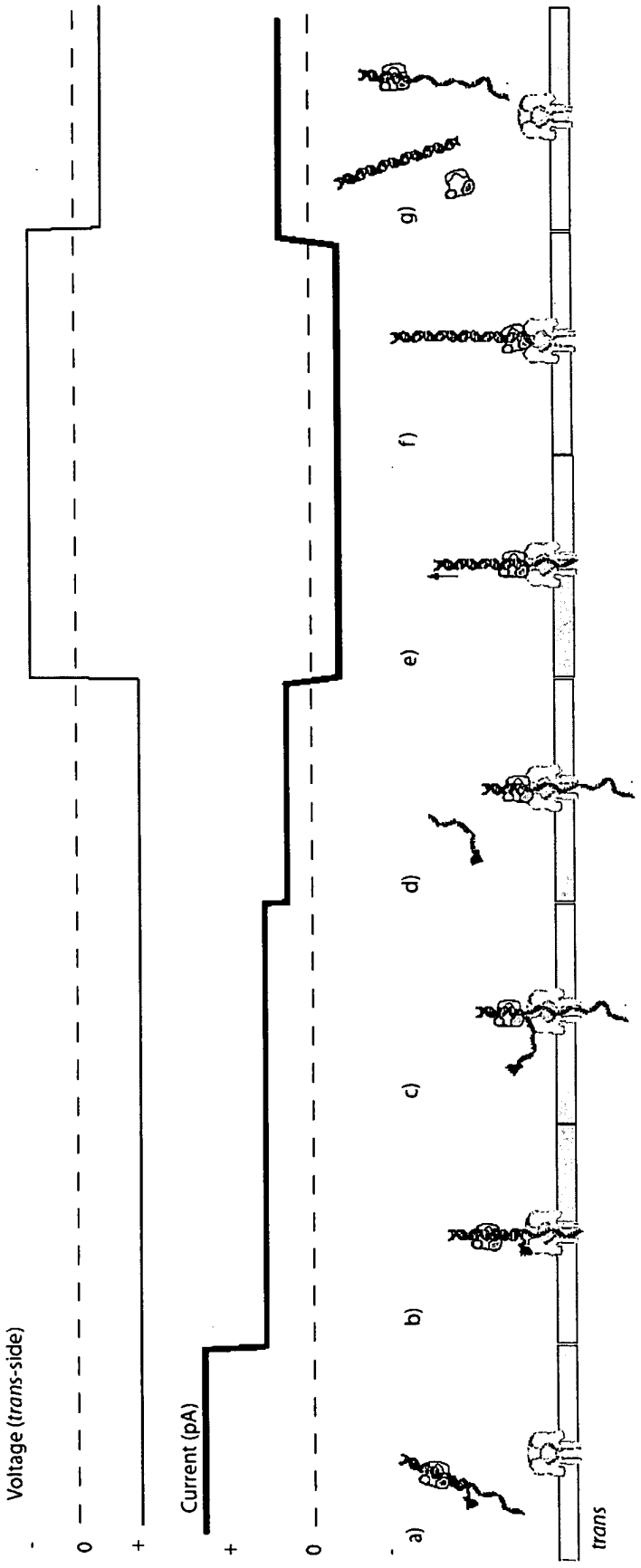


Figure 2

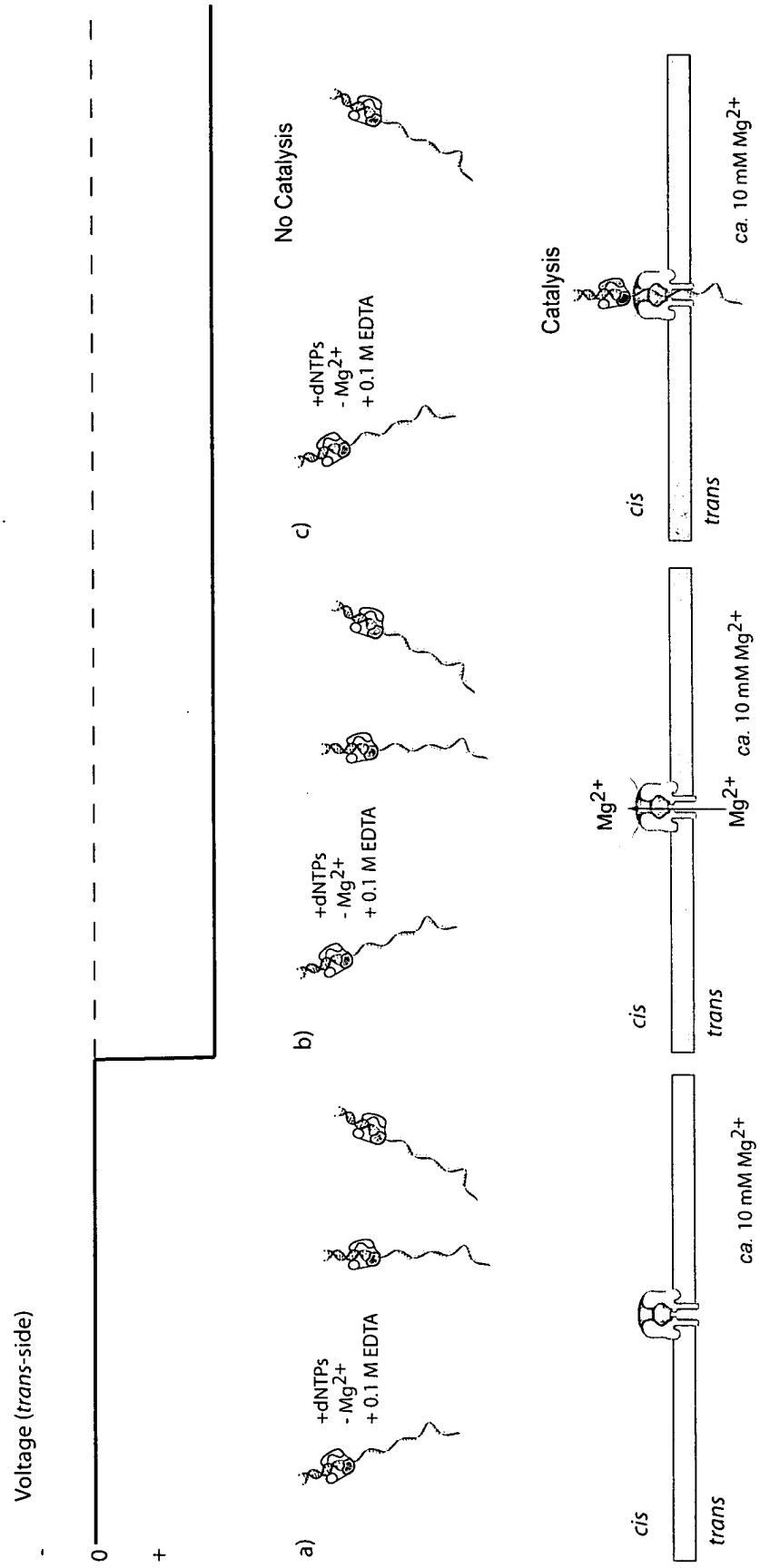

Voltage (trans-side)
-
0
+
a)
+dNTPs
- Mg2+
+ 0.1 M EDTA
ca. 10 mM Mg2+
cis
trans
b)
+dNTPs
- Mg2+
+ 0.1 M EDTA
No Catalysis
Mg2+
Mg2+
ca. 10 mM Mg2+
cis
trans
c)
+dNTPs
- Mg2+
+ 0.1 M EDTA
Catalysis
ca. 10 mM Mg2+
cis
trans

Figure 3

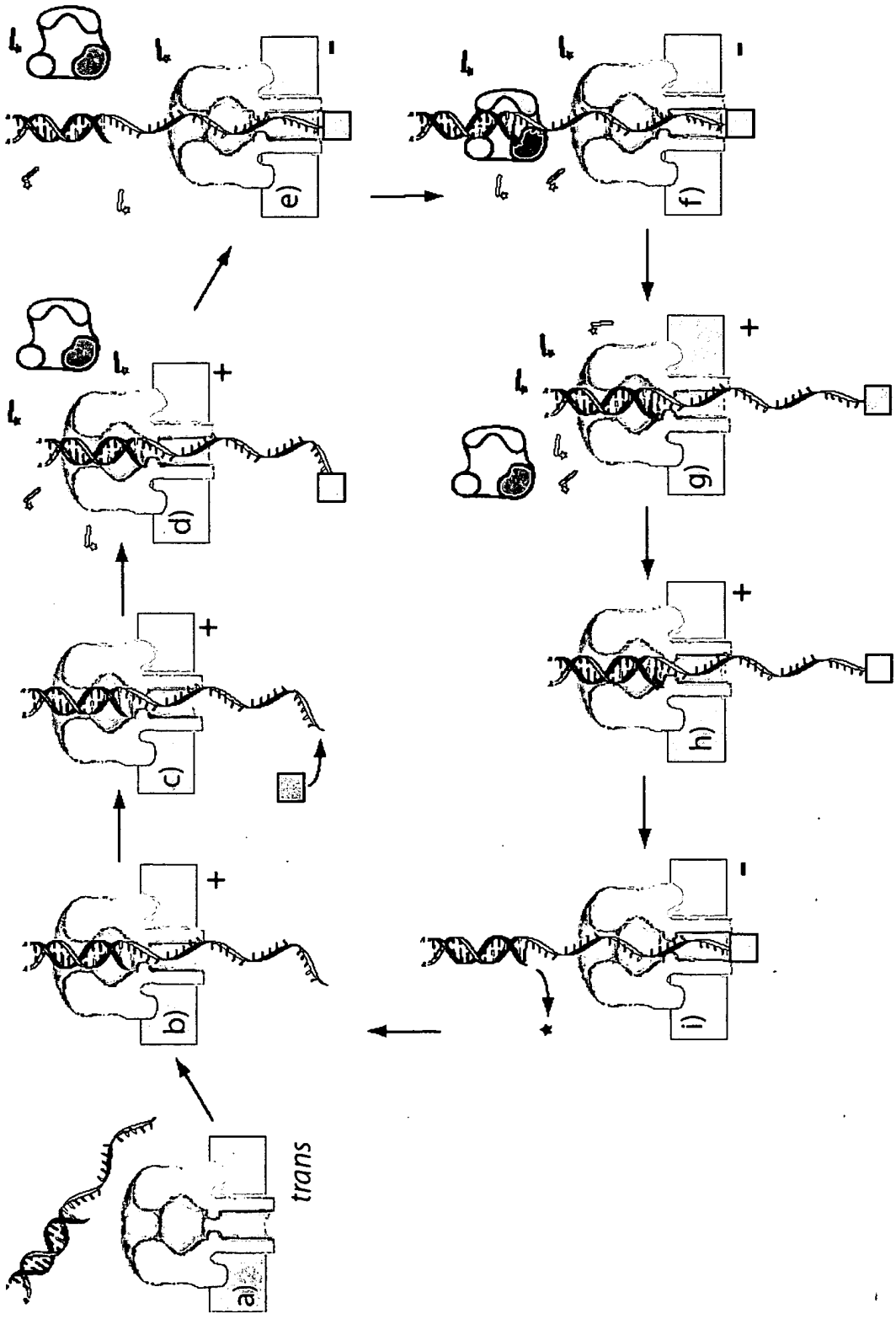


Figure 4

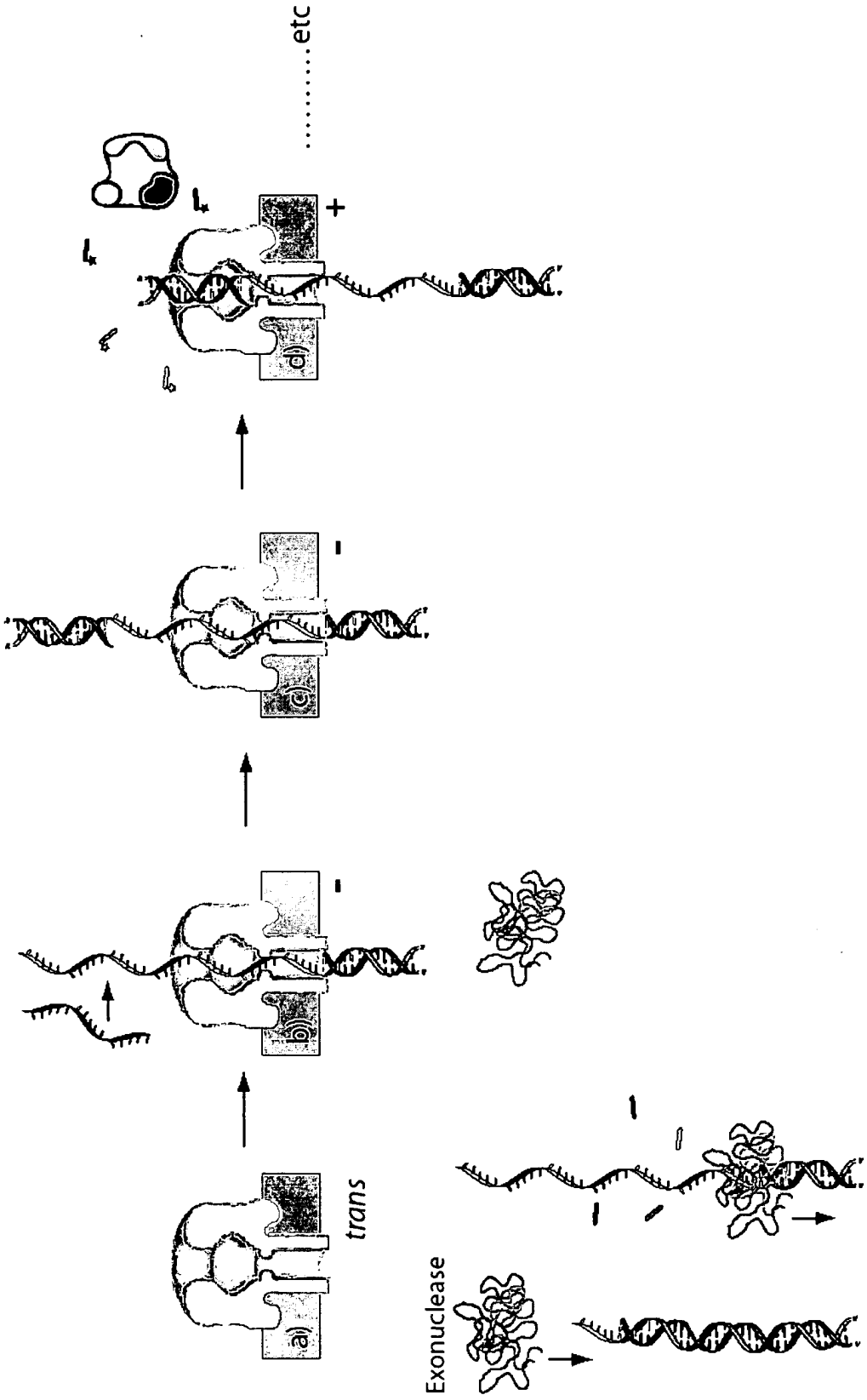


Figure 5

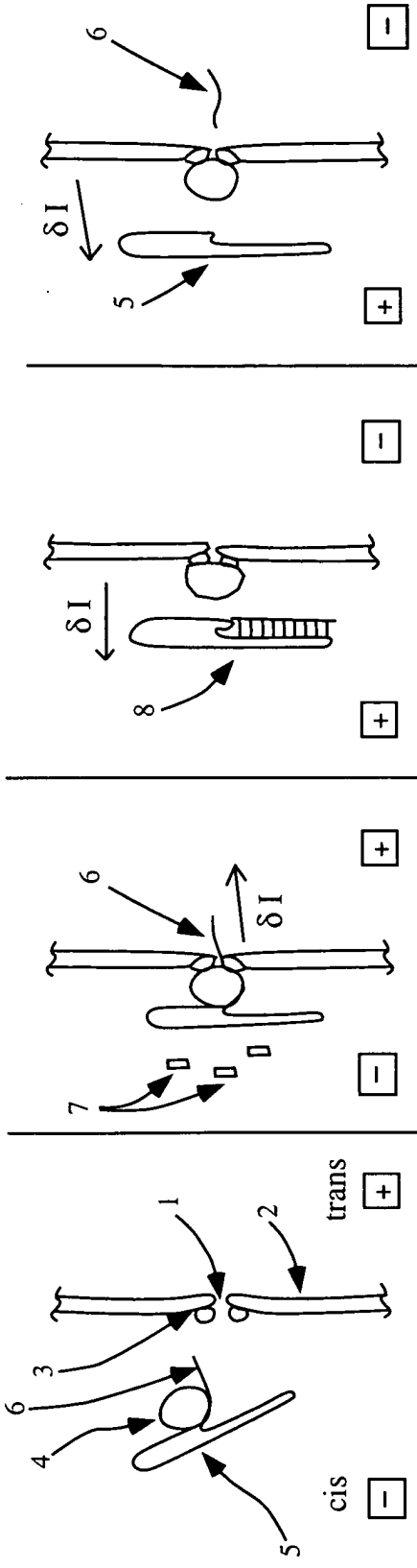


Fig. 6A

Fig. 6B

Fig. 6C

Fig. 6D

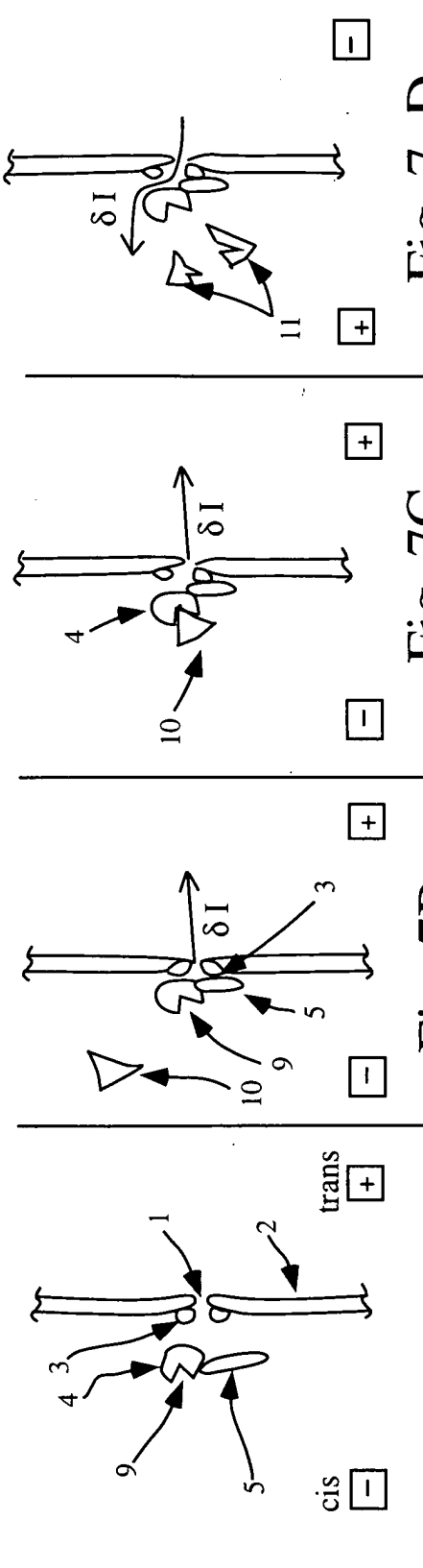


Fig. 7A

Fig. 7B

Fig. 7C

Fig. 7 D

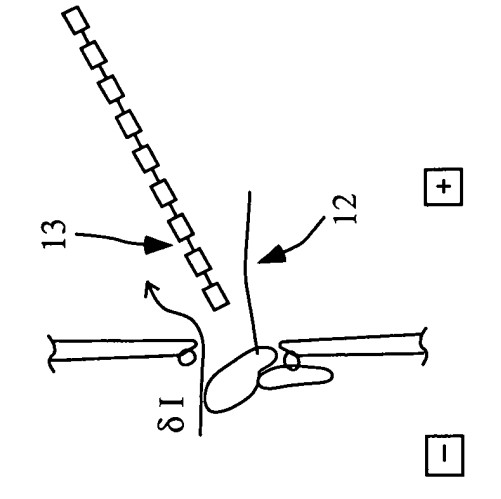


Fig. 8D

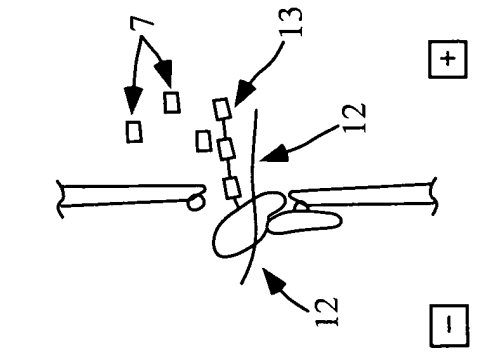


Fig. 8C

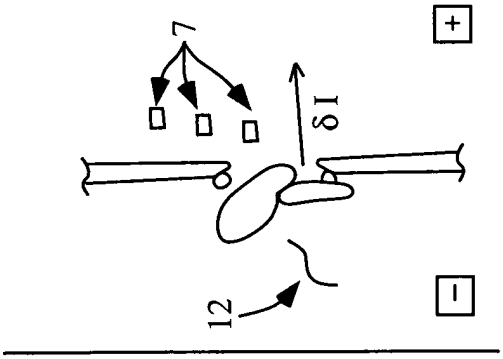


Fig. 8B

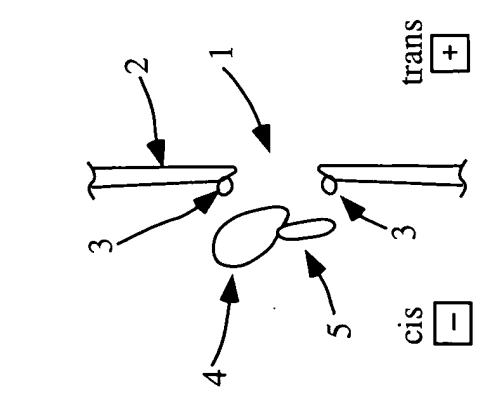
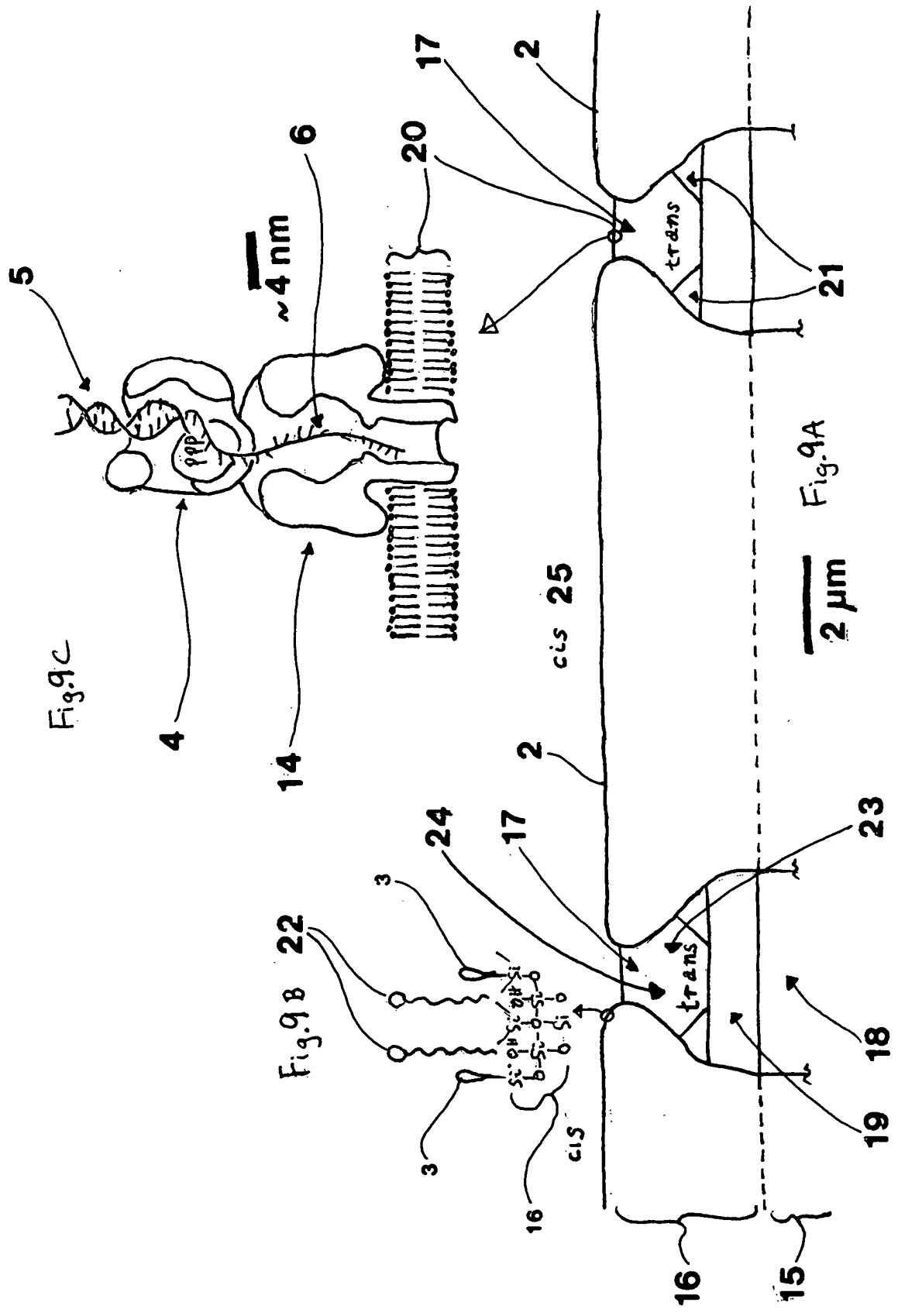


Fig. 8A


5
~4 nm
6
20
17
2
trans
21
4
14
cis 25
2
Fig.9A
2 µm
Fig.9C
24
17
23
22
3
trans
18
19
3
16
cis
16
15
Fig.9B

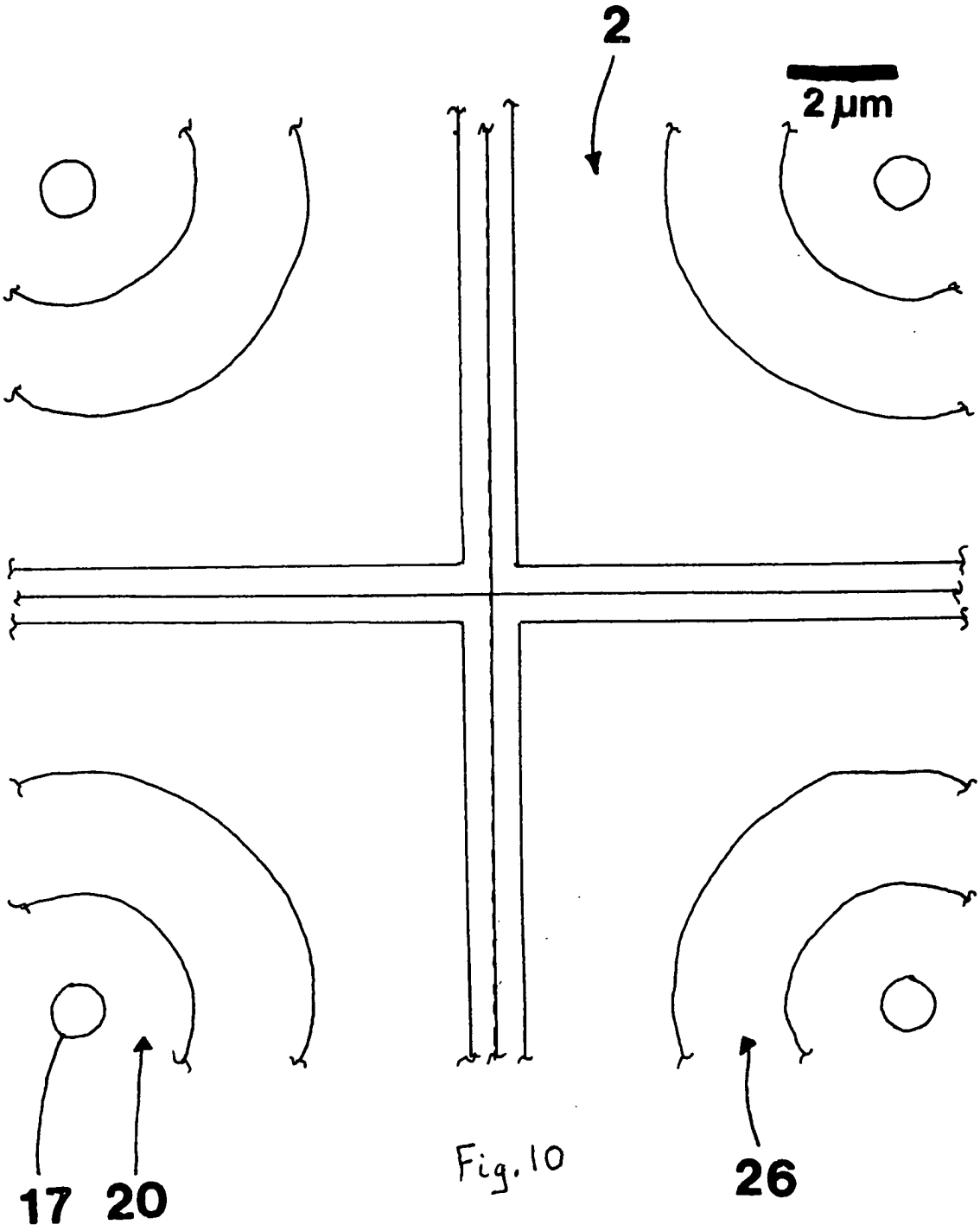


Fig. 10

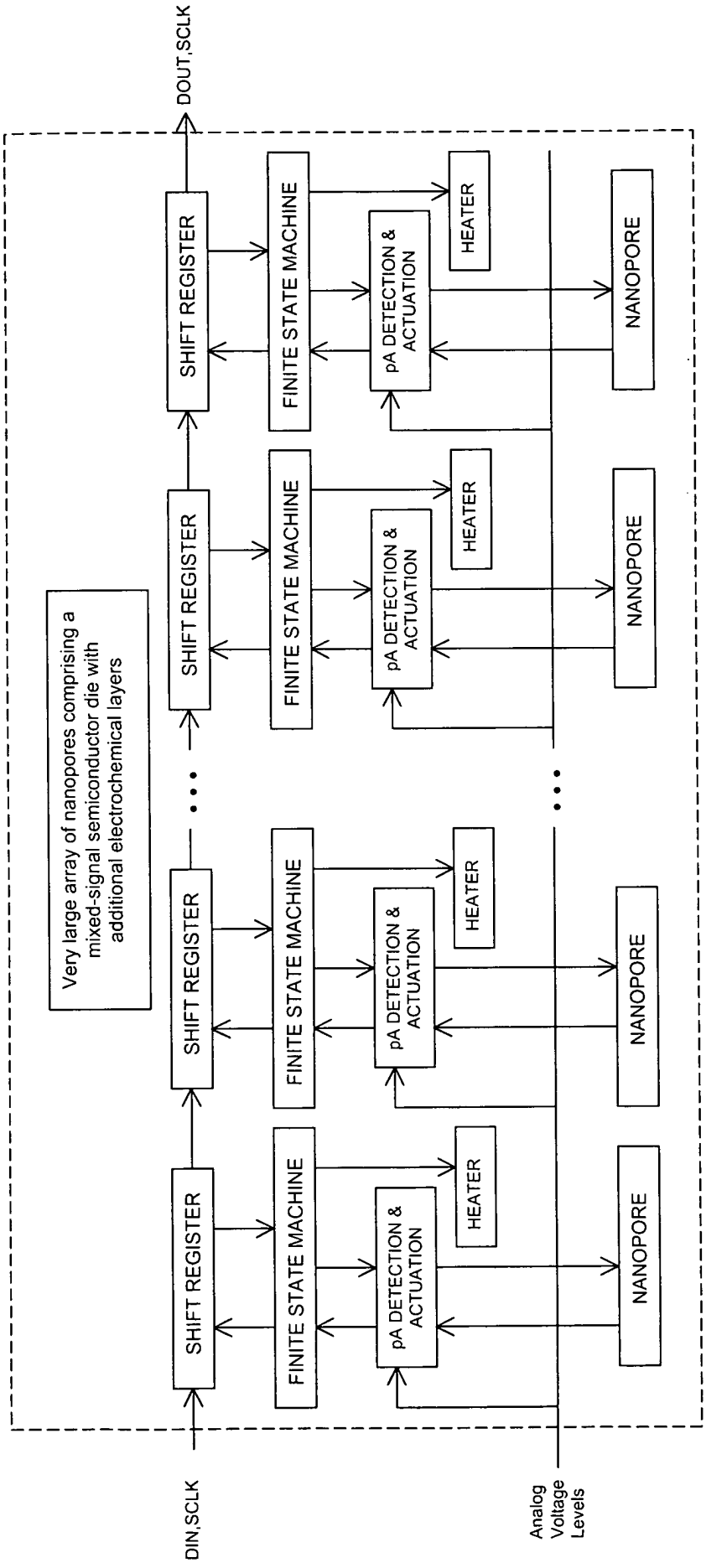

Very large array of nanopores comprising a mixed-signal semiconductor die with additional electrochemical layers
DIN,SCLK
DOUT,SCLK
Analog Voltage Levels
SHIFT REGISTER
FINITE STATE MACHINE
pA DETECTION & ACTUATION
HEATER
NANOPORE

Figure 11

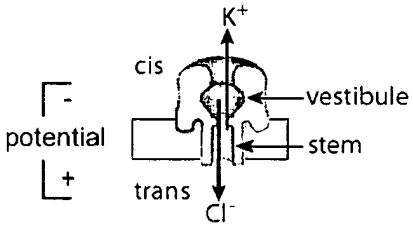


Figure 12

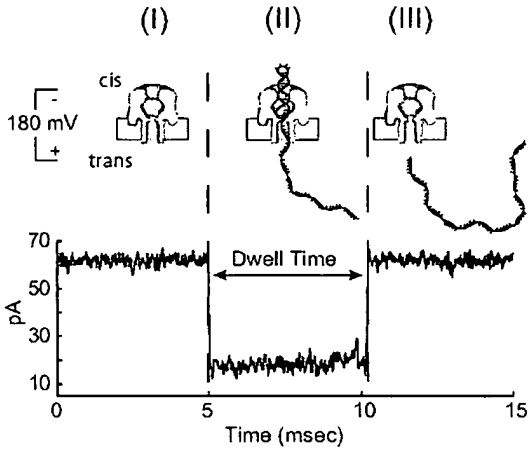


Figure 13

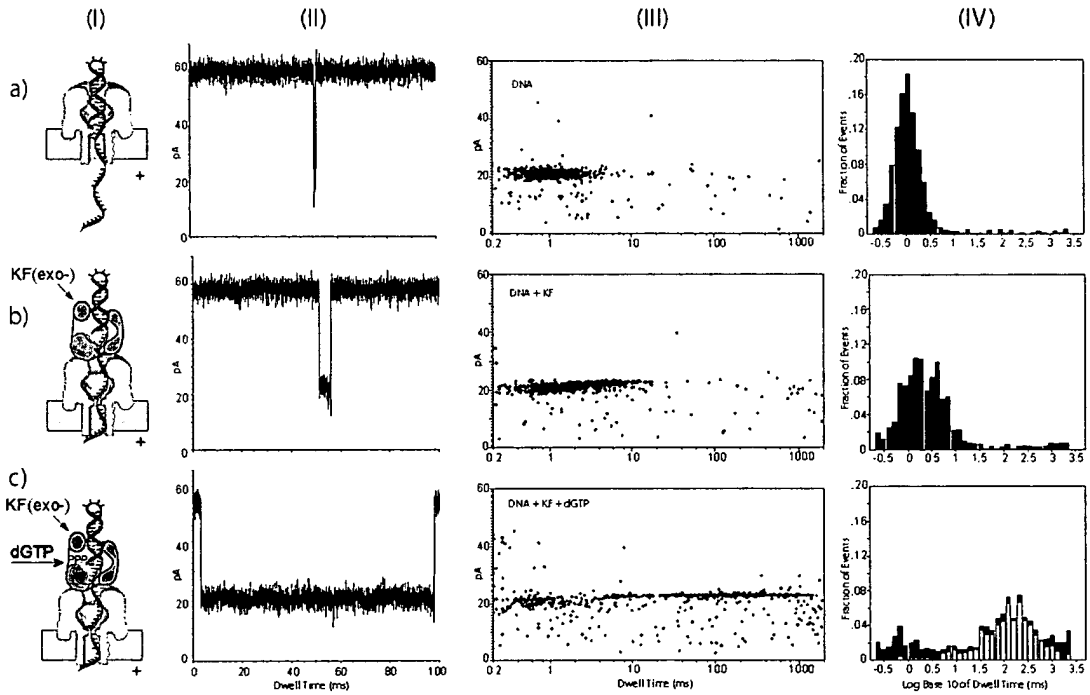


Figure 14

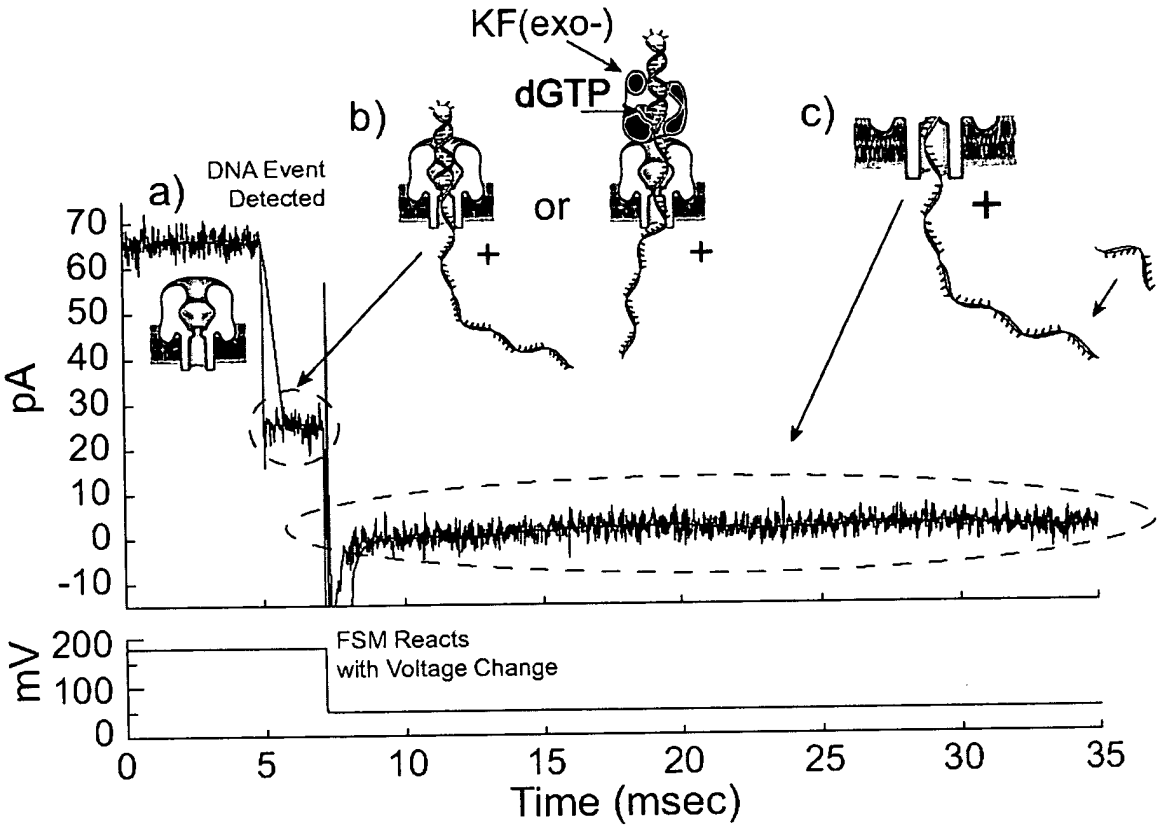


Figure 15

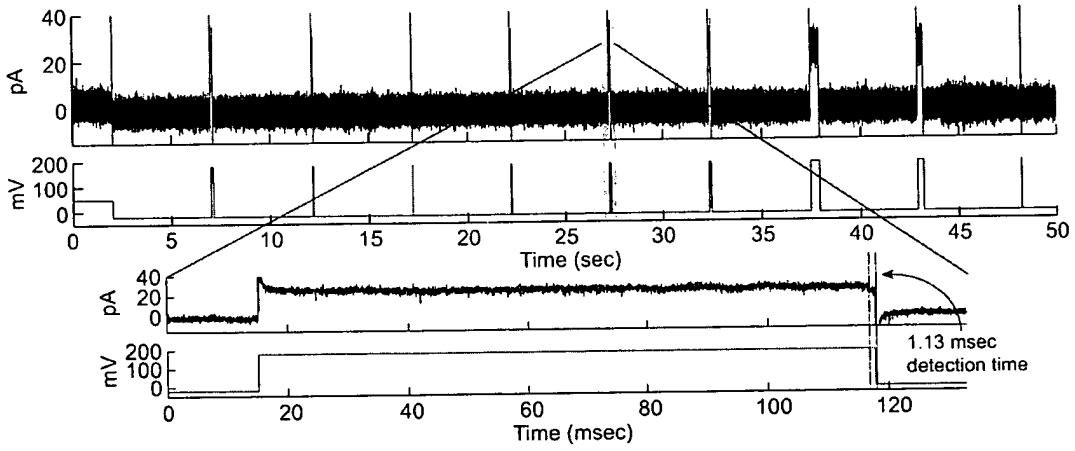


Figure 16

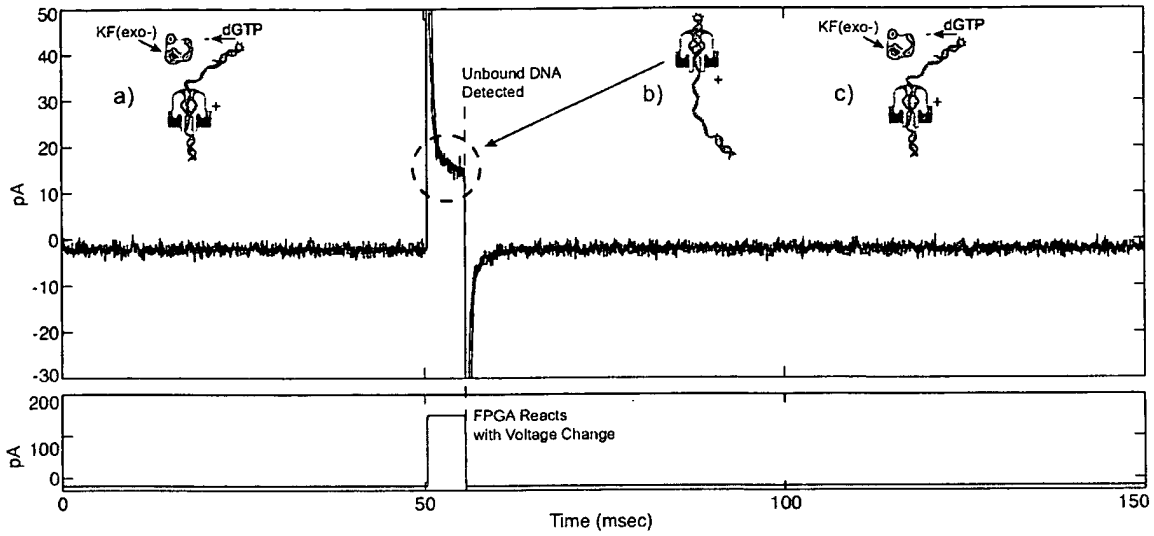


Figure 17

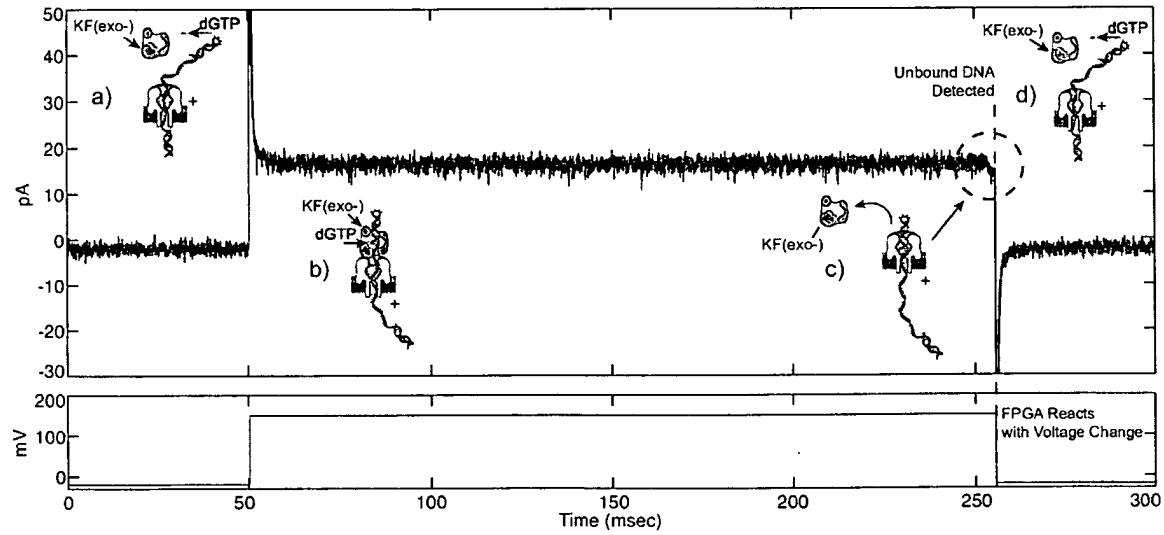


Figure 18

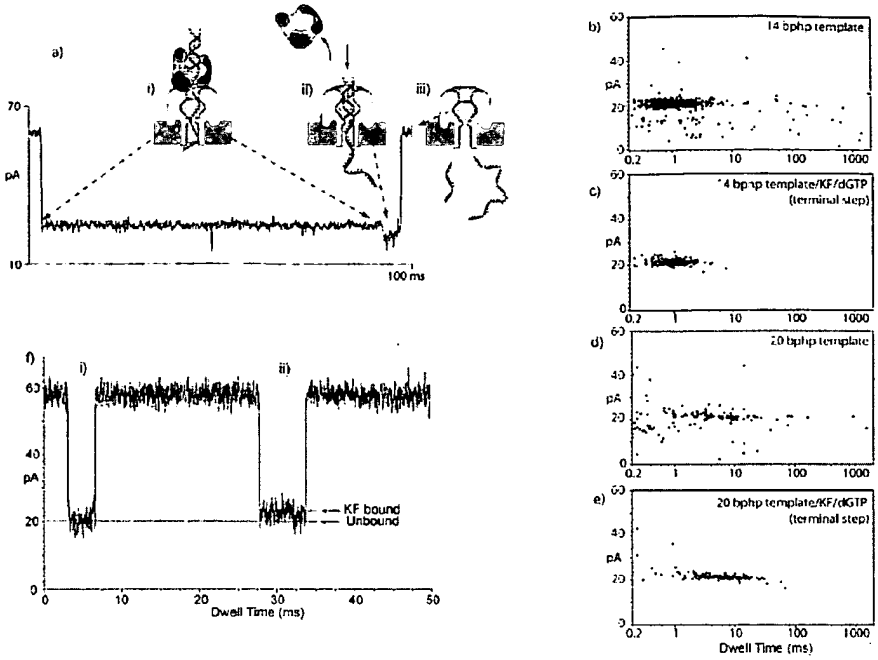


Figure 19

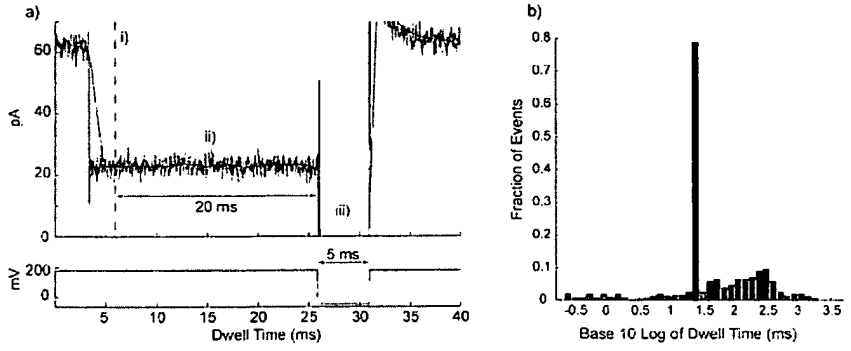


Figure 20

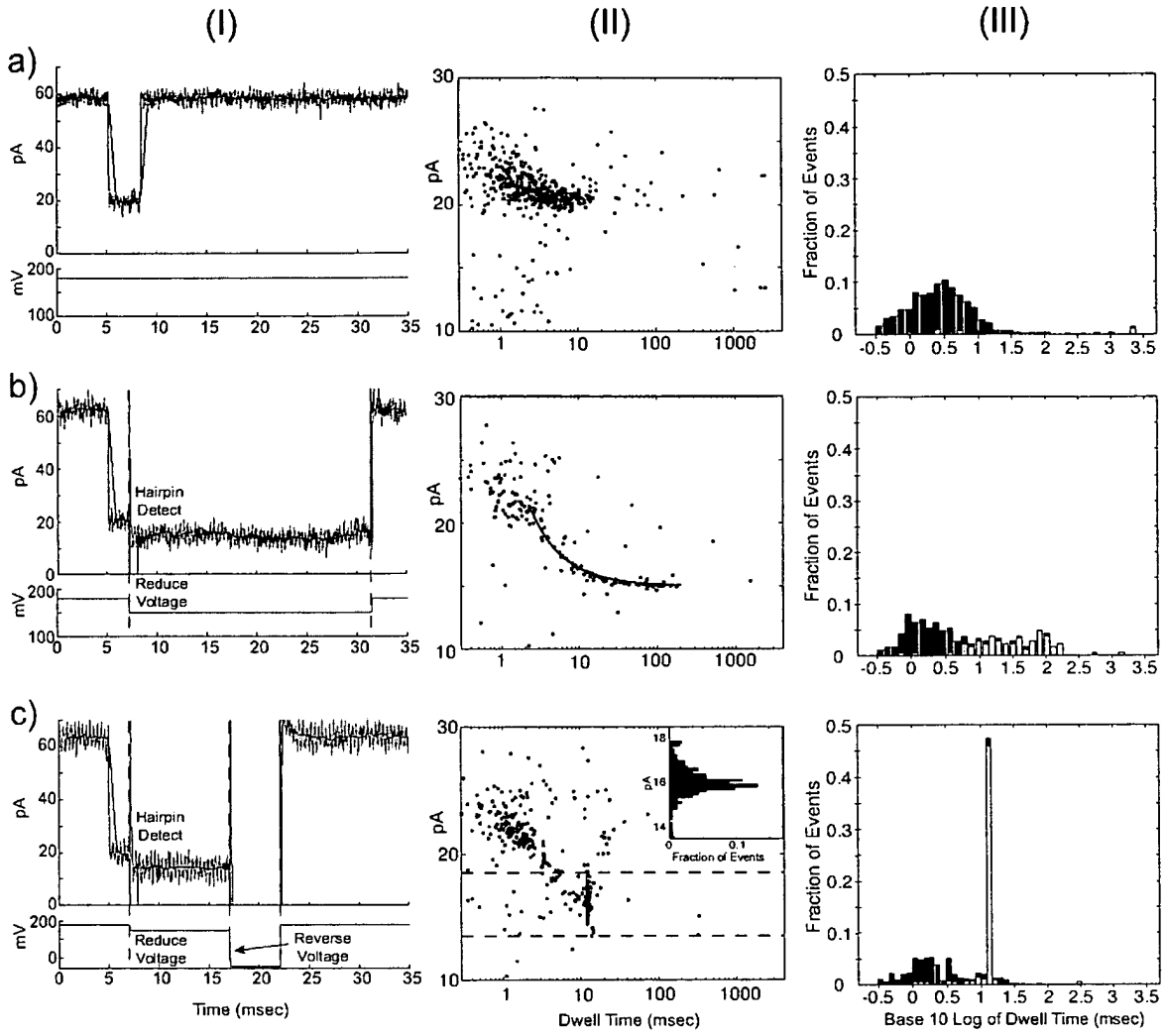

(I)
(II)
(III)
a)
b)
c)
pA
mV
Hairpin Detect
Reduce Voltage
Reverse Voltage
Time (msec)
Dwell Time (msec)
Fraction of Events
Base 10 Log of Dwell Time (msec)

Figure 21

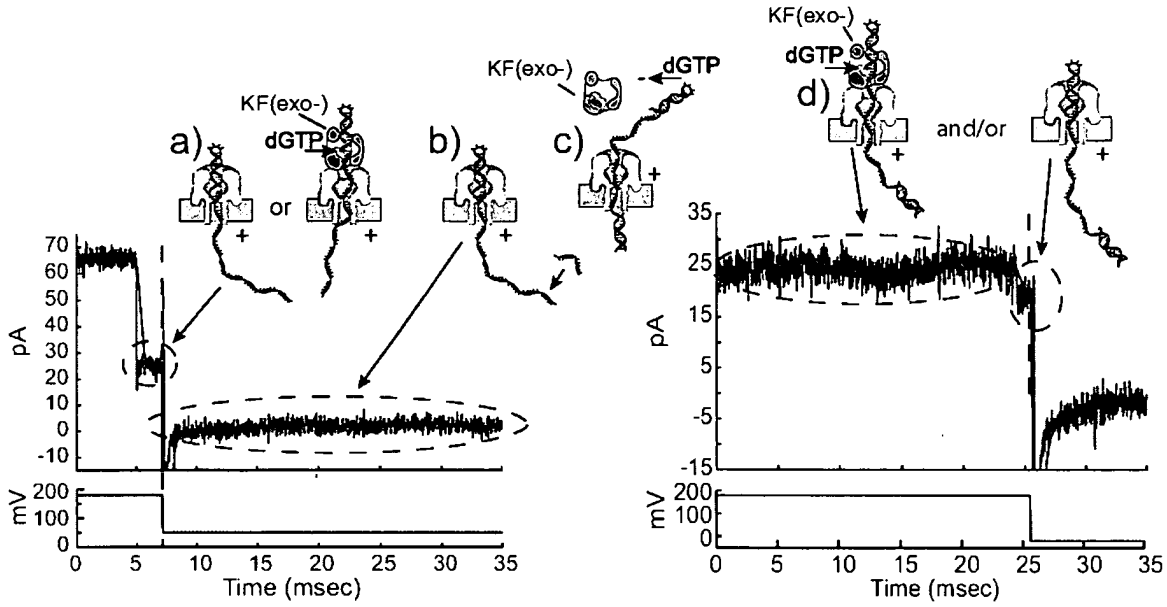


Figure 22