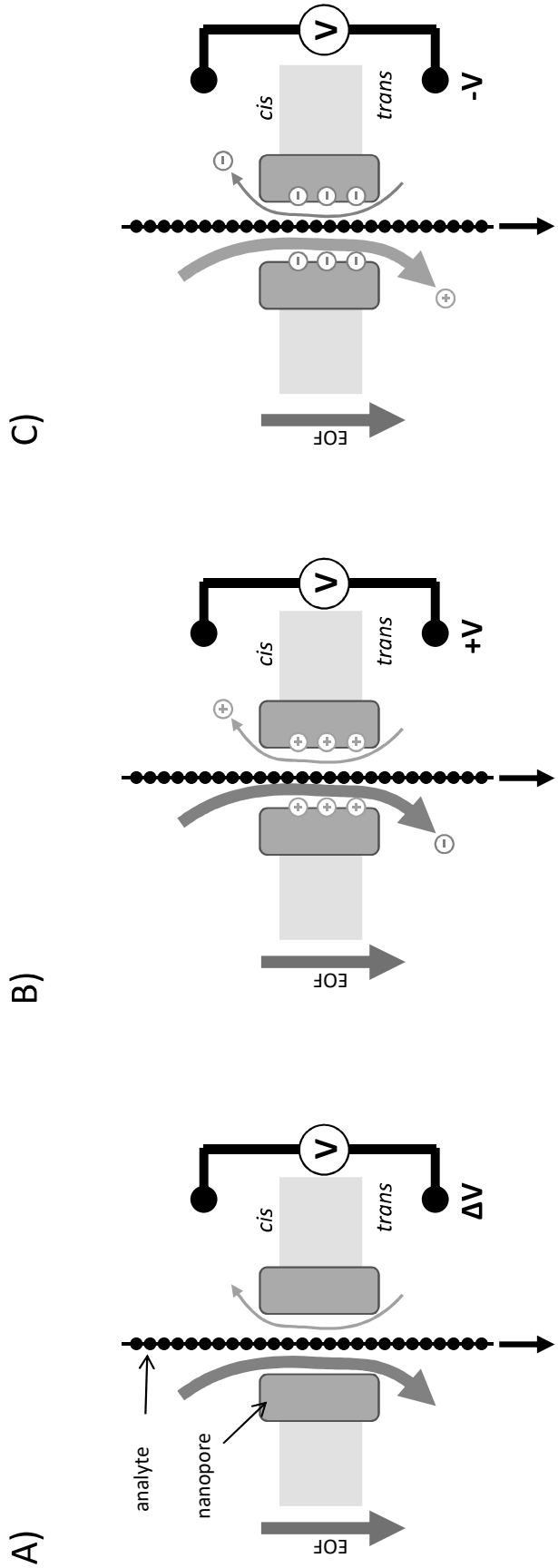


Fig 1

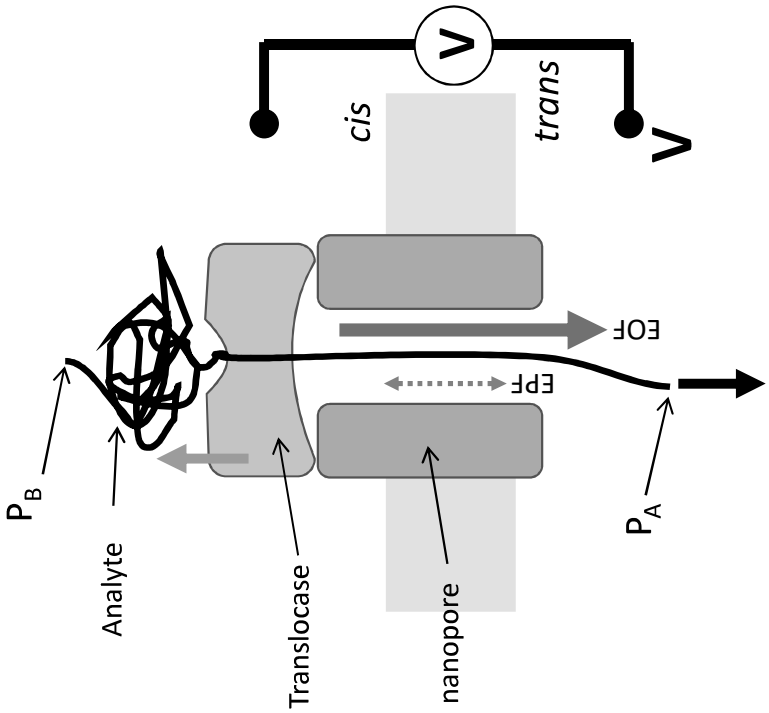


Fig 2

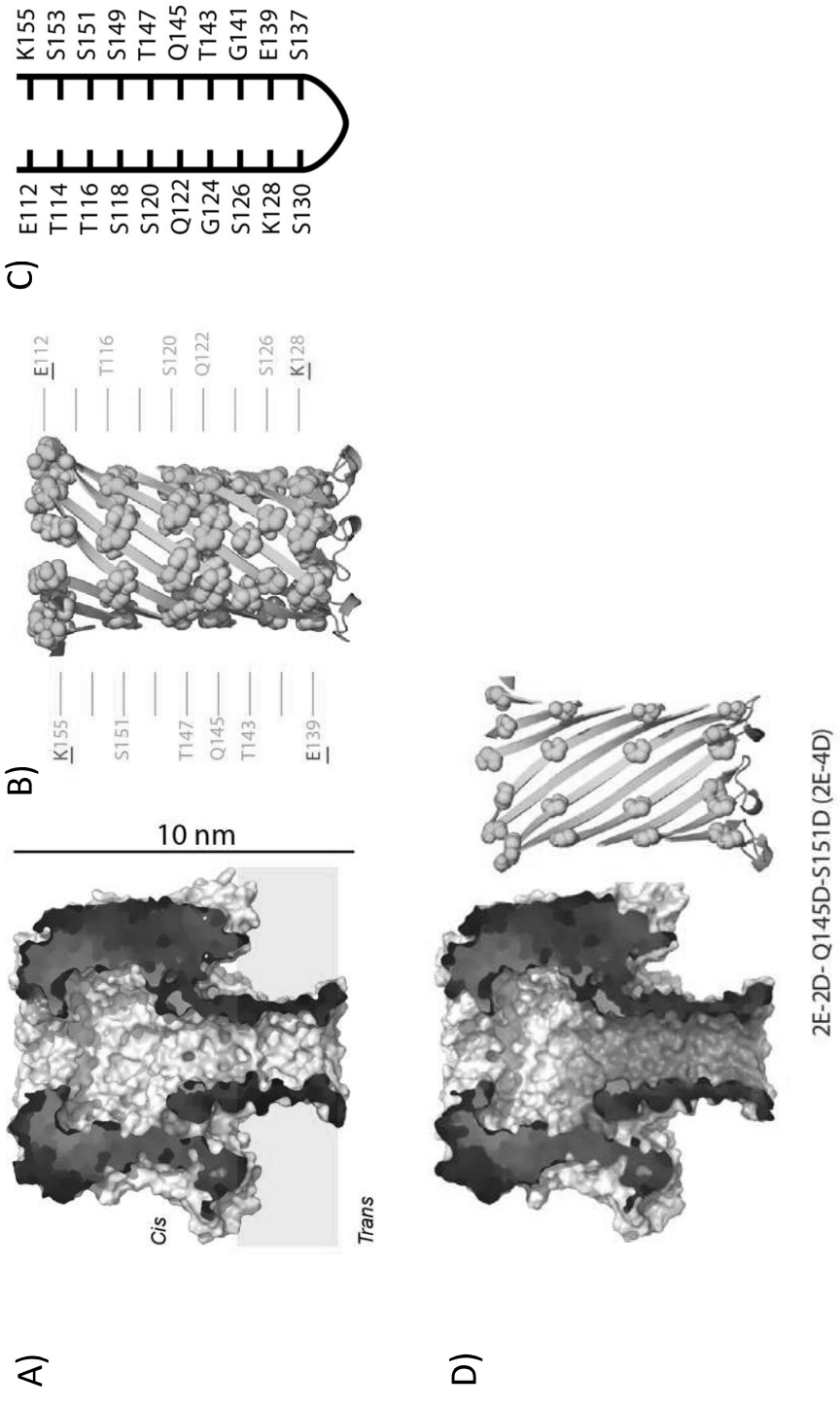
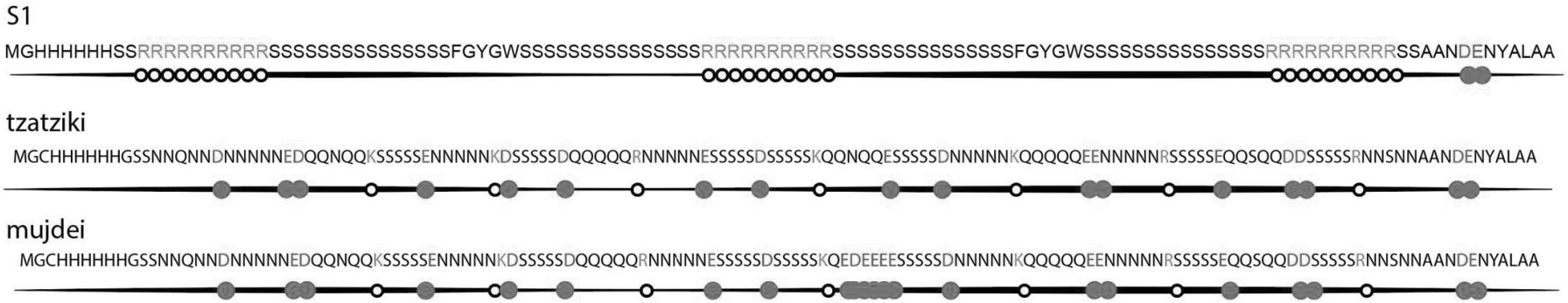

A)
10 nm
Cis
Trans
B)
K155
S151
T147
Q145
T143
E139
E112
T116
S120
Q122
S126
K128
C)
E112
T114
T116
S118
S120
Q122
G124
S126
K128
S130
K155
S153
S151
S149
T147
Q145
T143
G141
E139
S137
D)
2E-2D- Q145D-S151D (2E-4D)

Figure 3

Figure 4


S1
MGHHHHHHSSRRRRRRRRRRSSSSSSSSSSSSSSSFGYGWSSSSSSSSSSSSSSSRRRRRRRRRRSSSSSSSSSSSSSSSFGYGWSSSSSSSSSSSSSSSRRRRRRRRRRSSAANDENYALAA
tzatziki
MGCHHHHHHGSSNNQNNDNNNNNEDQQNQQKSSSSSENNNNNKDSSSSSDQQQQQRNNNNNESSSSSDSSSSSKQQNQQESSSSSDNNNNNKQQQQQEENNNNNRSSSSSEQQSQQDDSSSSSRNNSNNAANDENYALAA
mujdei
MGCHHHHHHGSSNNQNNDNNNNNEDQQNQQKSSSSSENNNNNKDSSSSSDQQQQQRNNNNNESSSSSDSSSSSKQEDEEEESSSSSDNNNNNKQQQQQEENNNNNRSSSSSEQQSQQDDSSSSSRNNSNNAANDENYALAA

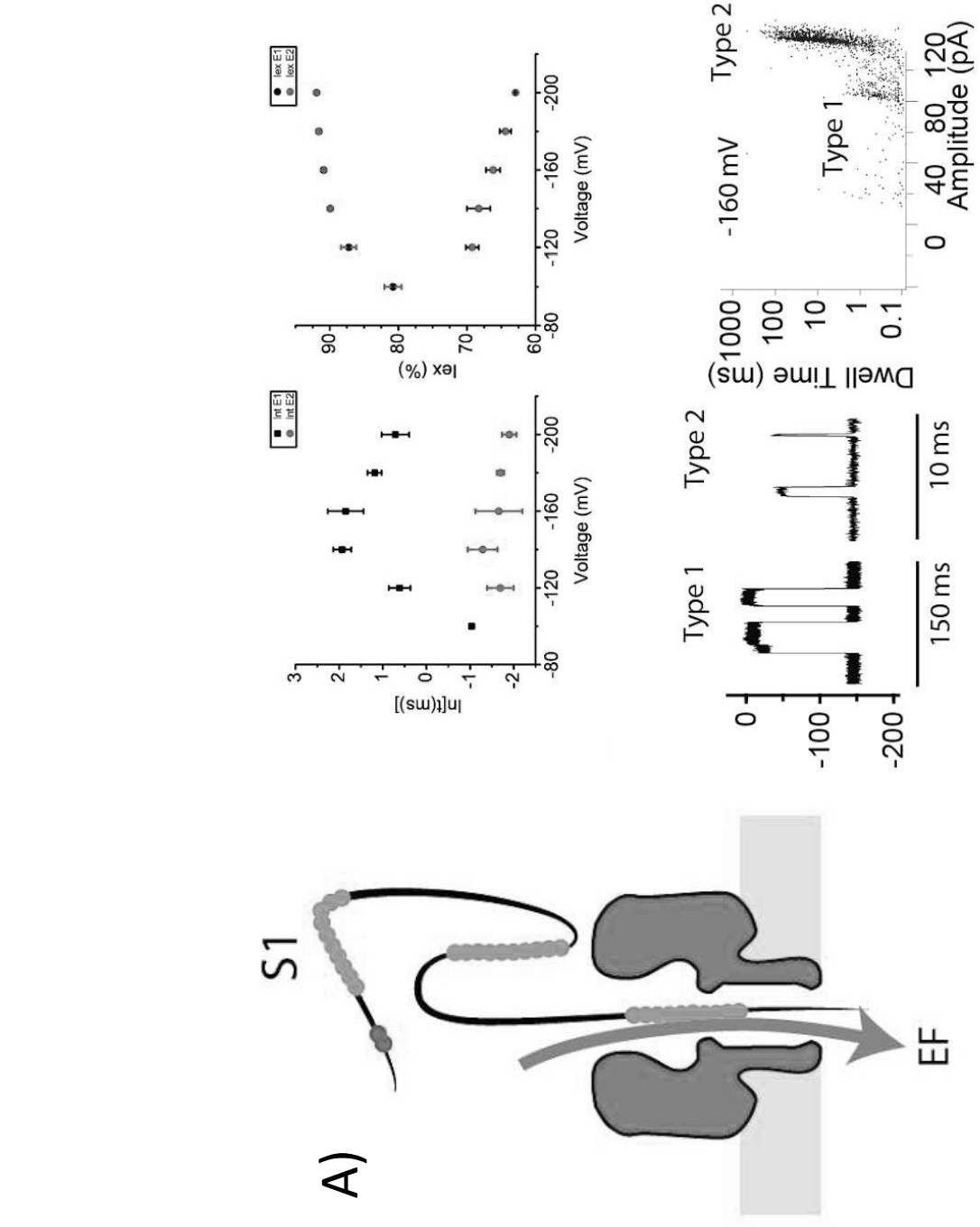

A)
S1
EF
Type 1
Type 2
150 ms
10 ms
0
-100
-200
Dwell Time (ms)
1000
100
10
1
0.1
-160 mV
Type 1
Type 2
0
40
80
120
Amplitude (pA)
Iex (%)
Voltage (mV)
Iex E1
Iex E2
ln[t(ms)]
Int E1
Int E2

Figure 5

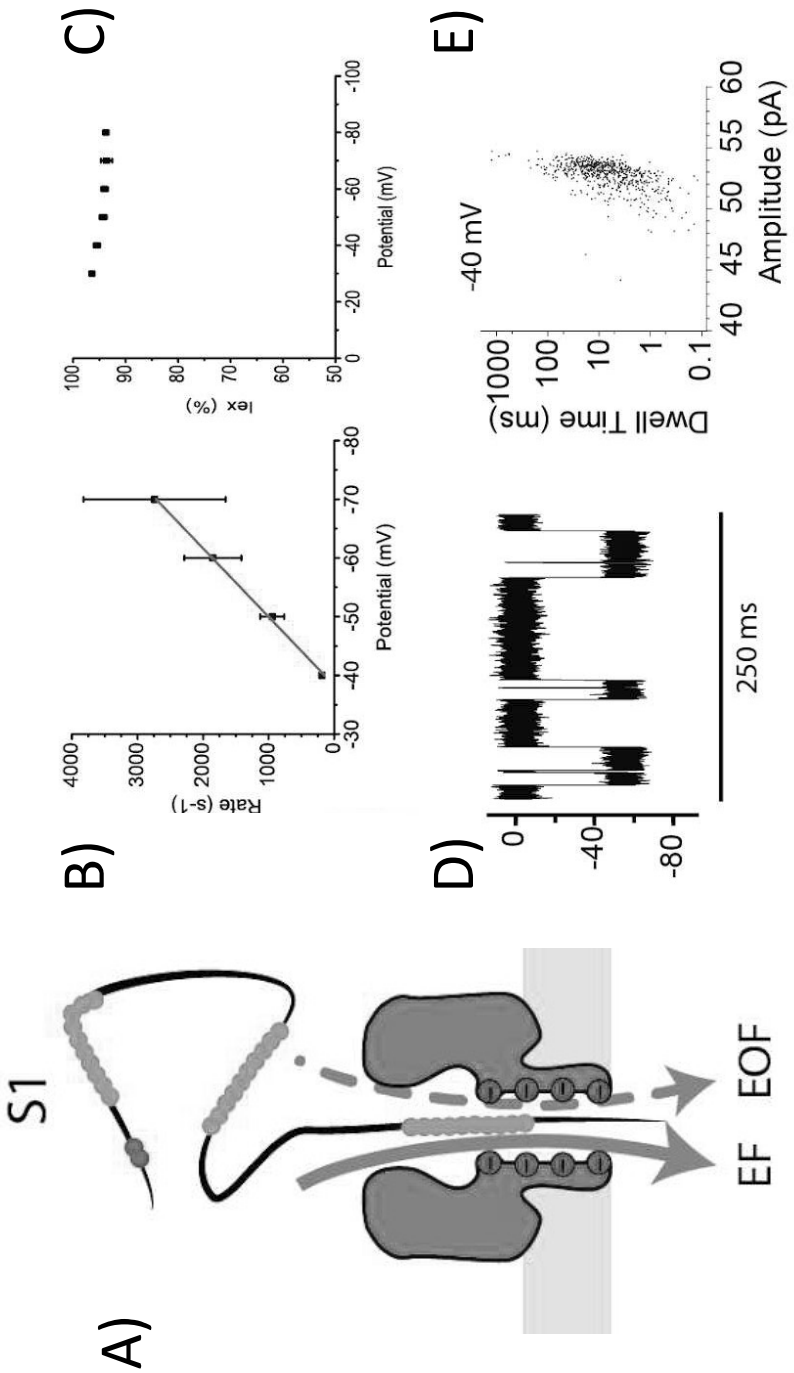

A)
S1
EF
EOF
B)
Rate (s-1)
Potential (mV)
C)
Iex (%)
Potential (mV)
D)
250 ms
E)
-40 mV
Dwell Time (ms)
Amplitude (pA)

Figure 6

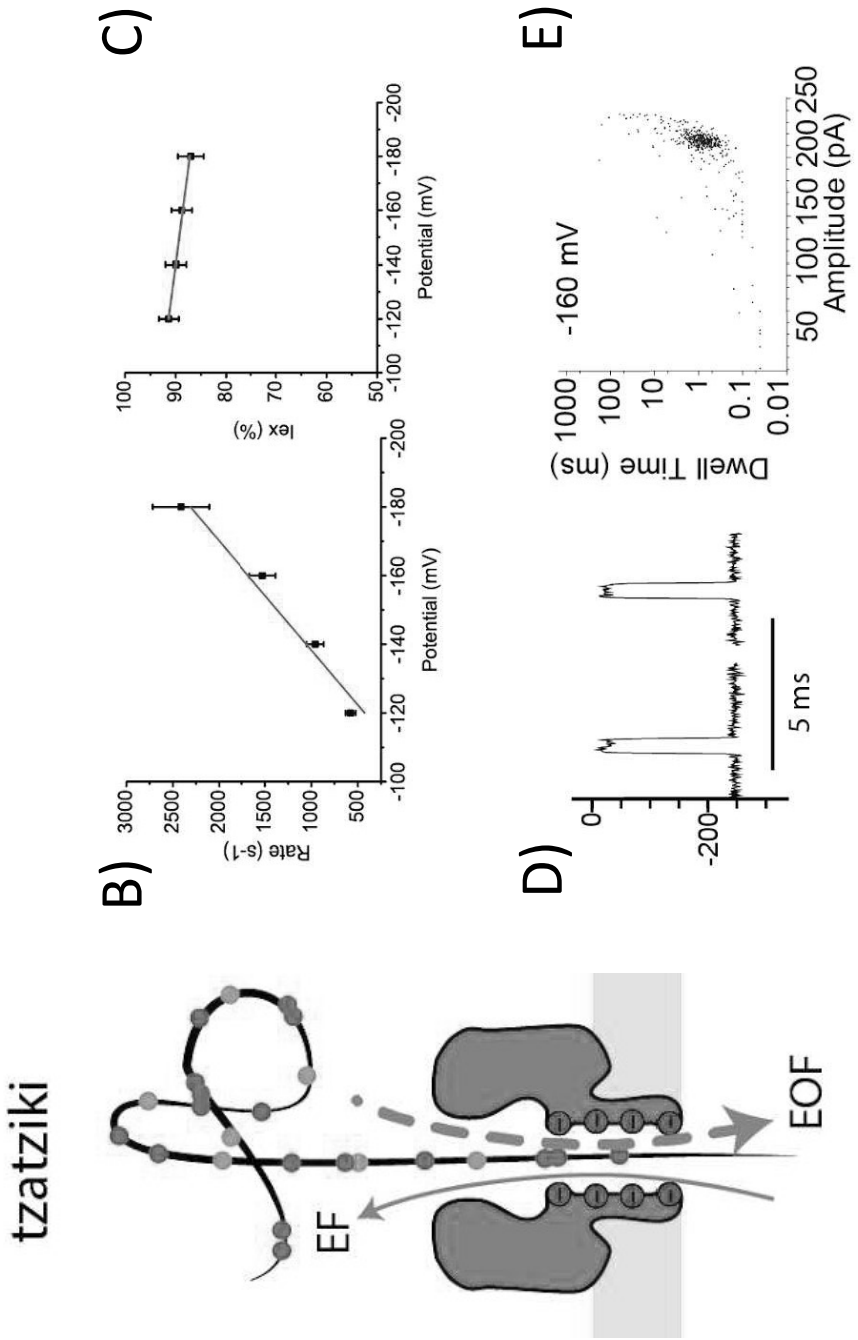

tzatziki
A)
EF
EOF
B)
Rate (s-1)
Potential (mV)
C)
Iex (%)
Potential (mV)
D)
5 ms
E)
-160 mV
Dwell Time (ms)
Amplitude (pA)

Figure 7

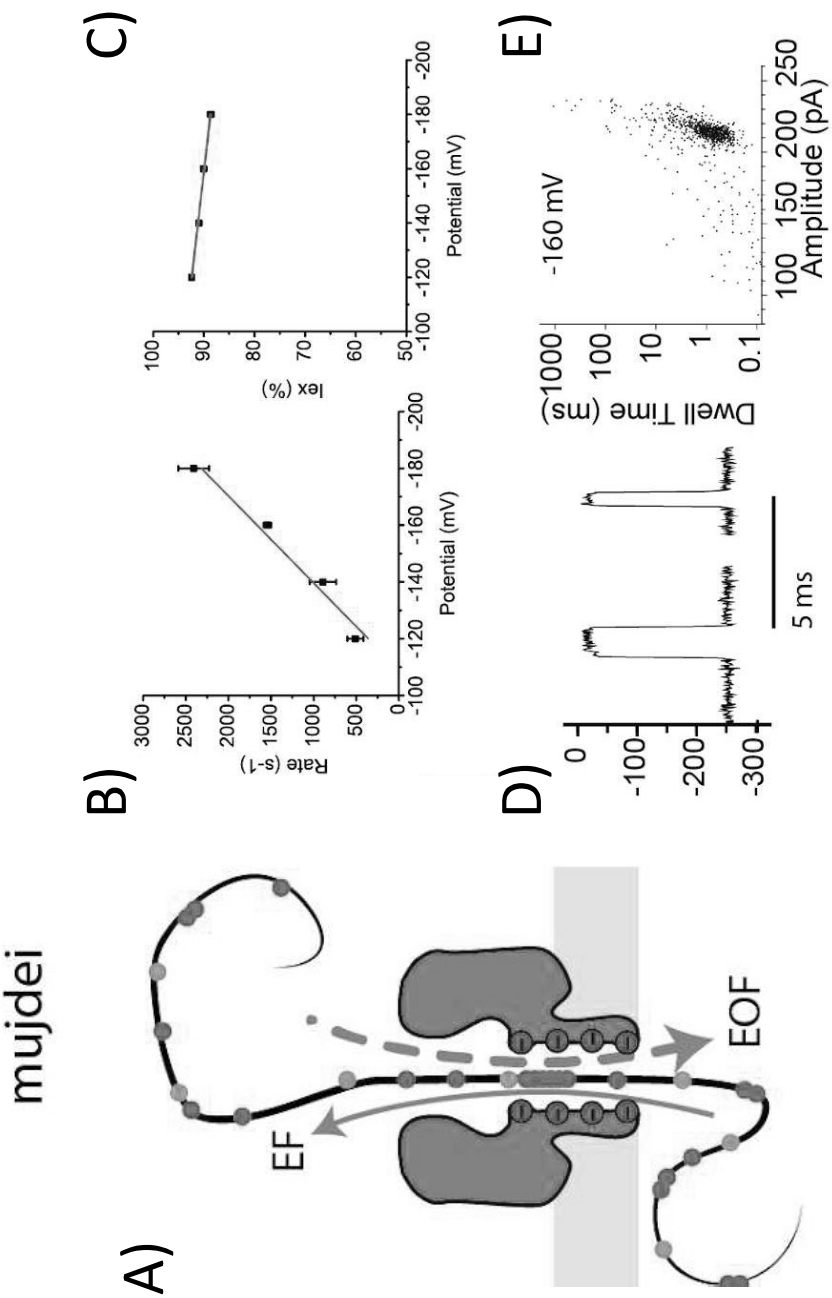

A)
mujdei
EF
EOF
B)
Rate (s-1)
Potential (mV)
C)
Iex (%)
Potential (mV)
D)
5 ms
E)
-160 mV
Dwell Time (ms)
Amplitude (pA)

Figure 8

Figure 9

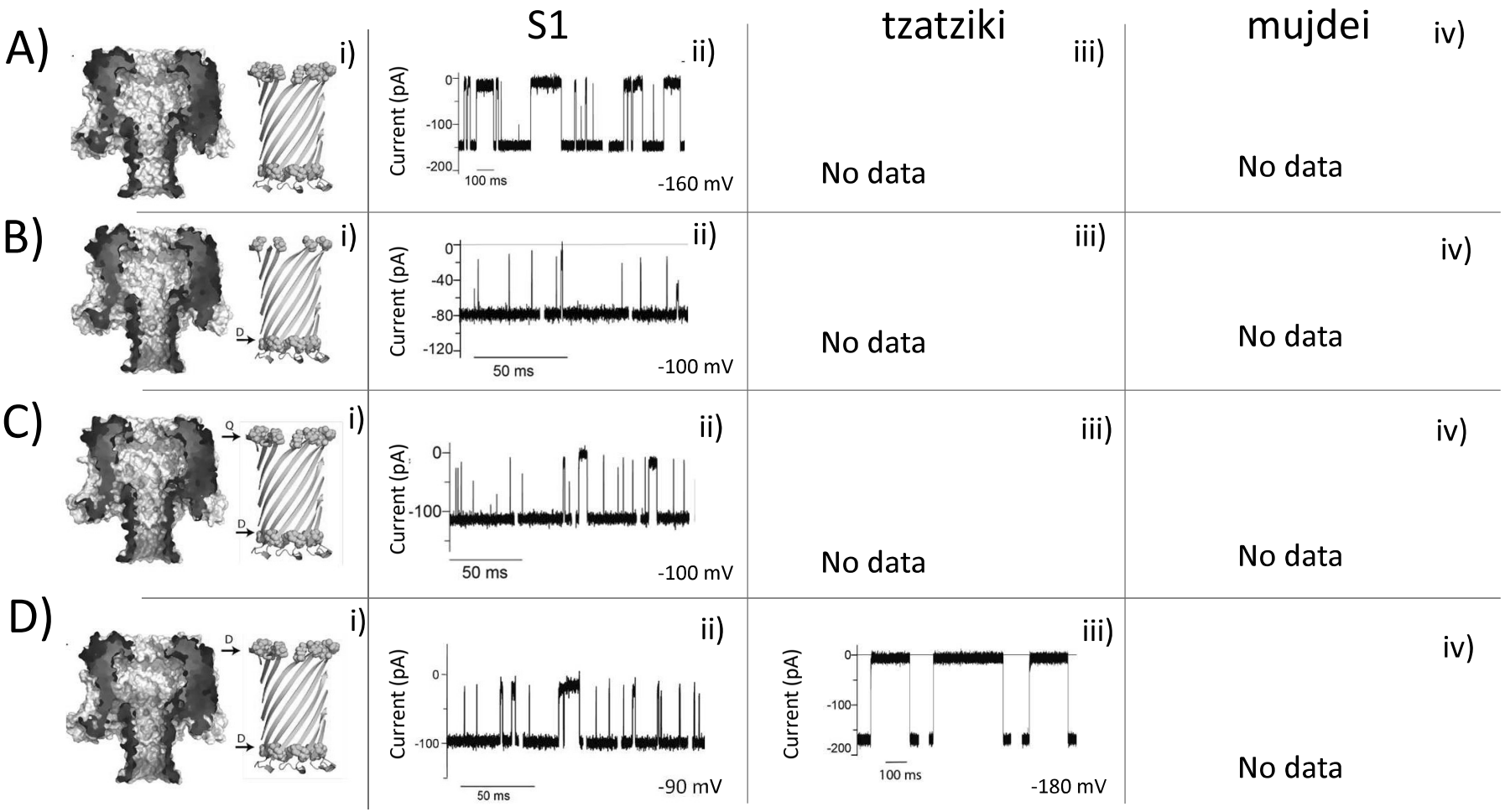
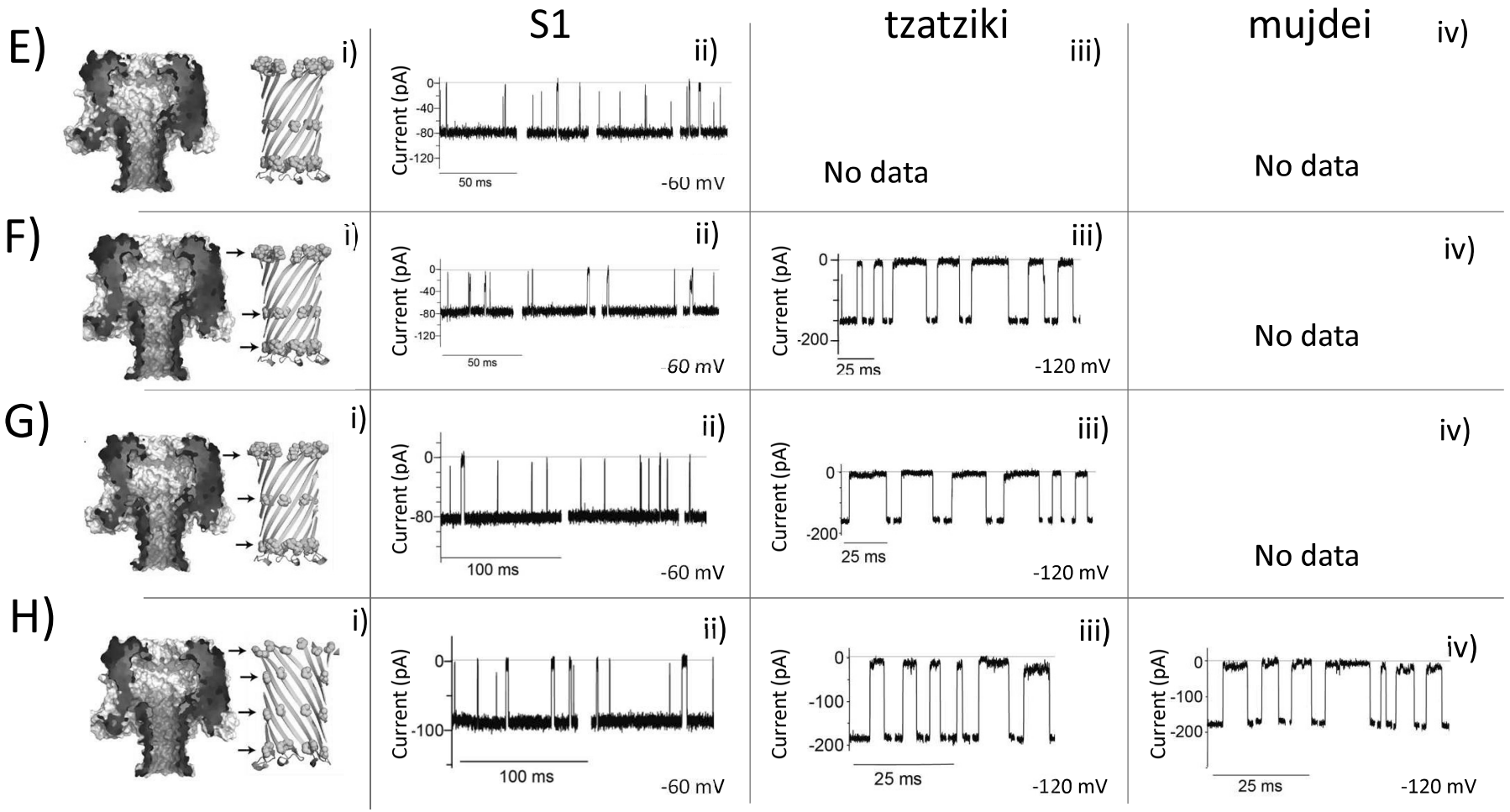

S1
tzatziki
mujdei
A)
B)
C)
D)
i)
ii)
iii)
iv)
Current (pA)
0
-100
-200
100 ms
-160 mV
No data
No data
-40
-80
-120
50 ms
-100 mV
No data
No data
Q
D
-100 mV
No data
No data
-90 mV
-180 mV
No data

Figure 9


S1
tzatziki
mujdei
E)
F)
G)
H)
i)
ii)
iii)
iv)
No data
No data
Current (pA)
0
-40
-80
-120
50 ms
-60 mV
-200
25 ms
-120 mV
100 ms
-100

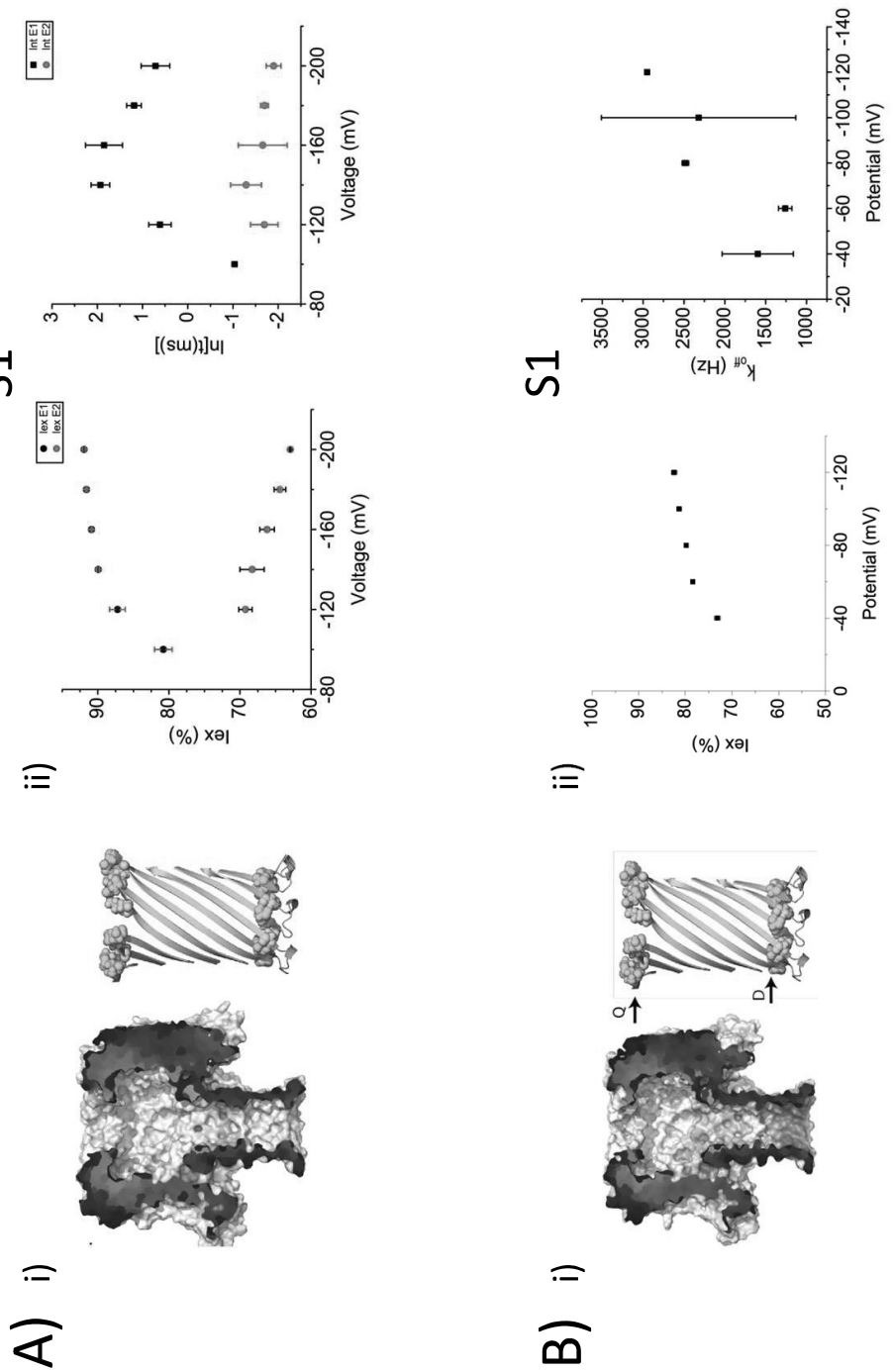

A)
i)
ii)
S1
Iex E1
Iex E2
Iex (%)
Voltage (mV)
Int E1
Int E2
ln[t(ms)]
Voltage (mV)
B)
i)
ii)
S1
Q
D
Iex (%)
Potential (mV)
k_{off} (Hz)
Potential (mV)

Figure 10

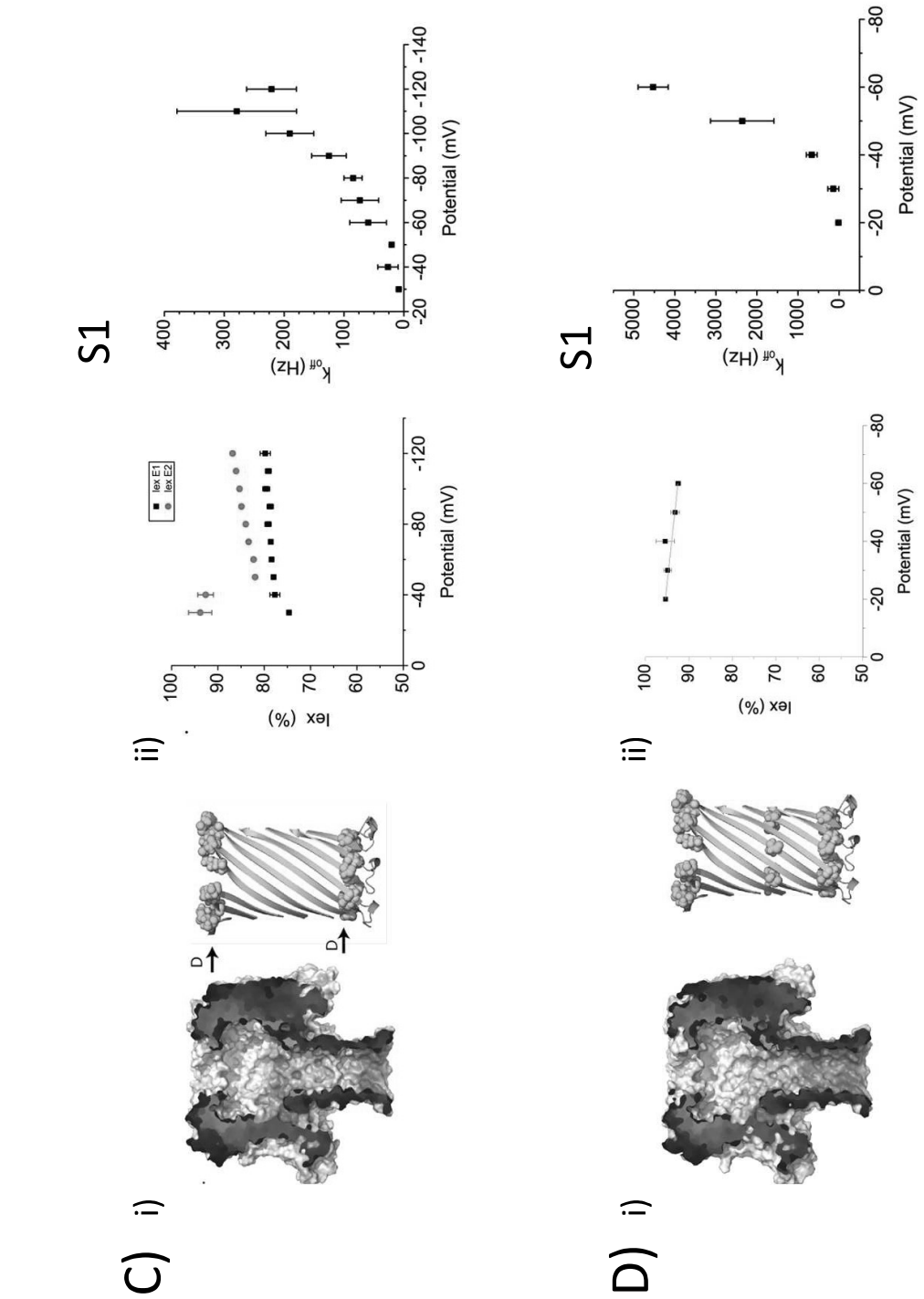
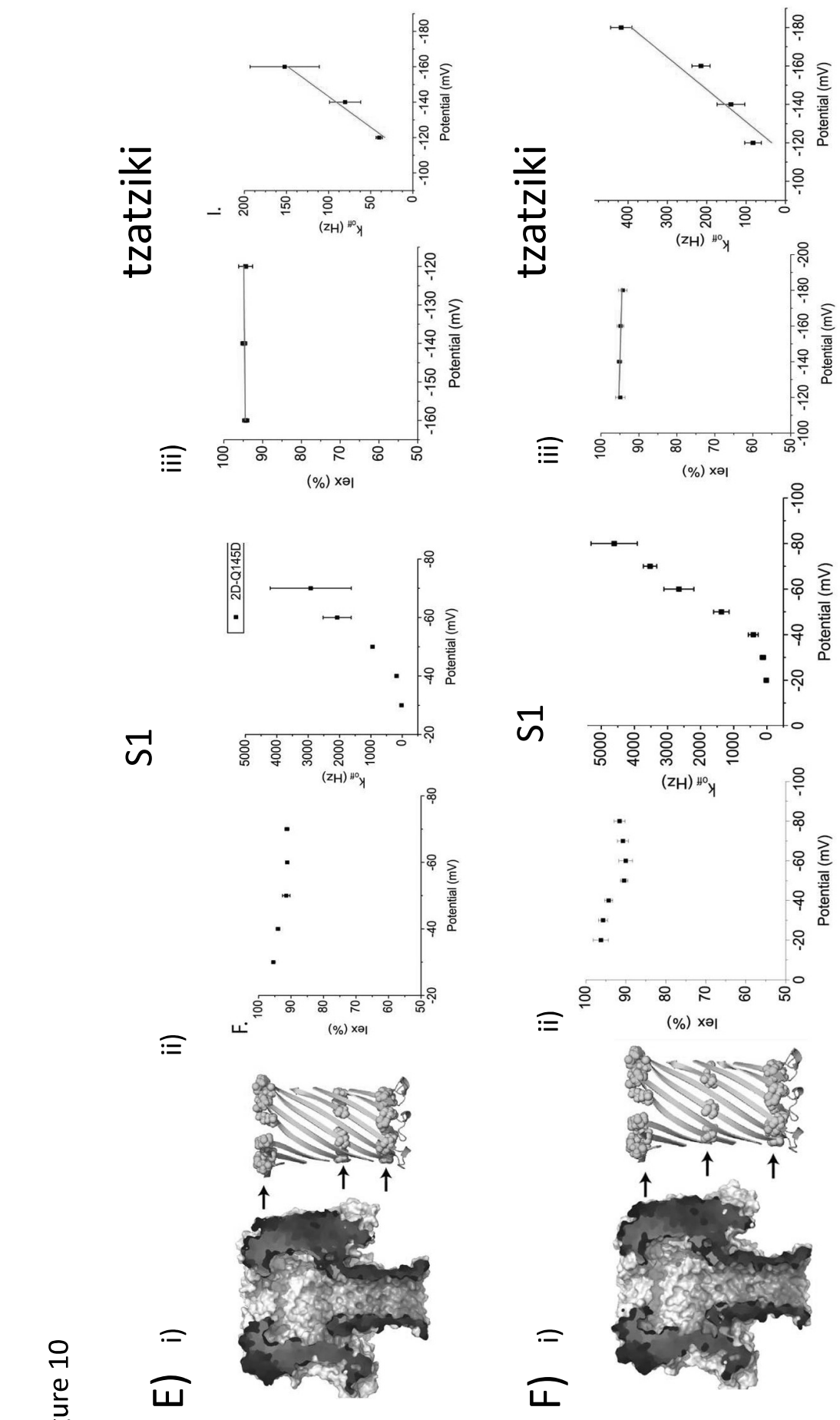

C) i)
D
D
ii)
S1
k_{off} (Hz)
Potential (mV)
lex (%)
lex E1
lex E2
D) i)
ii)
S1
k_{off} (Hz)
Potential (mV)
lex (%)
Potential (mV)

Figure 10

Figure 10



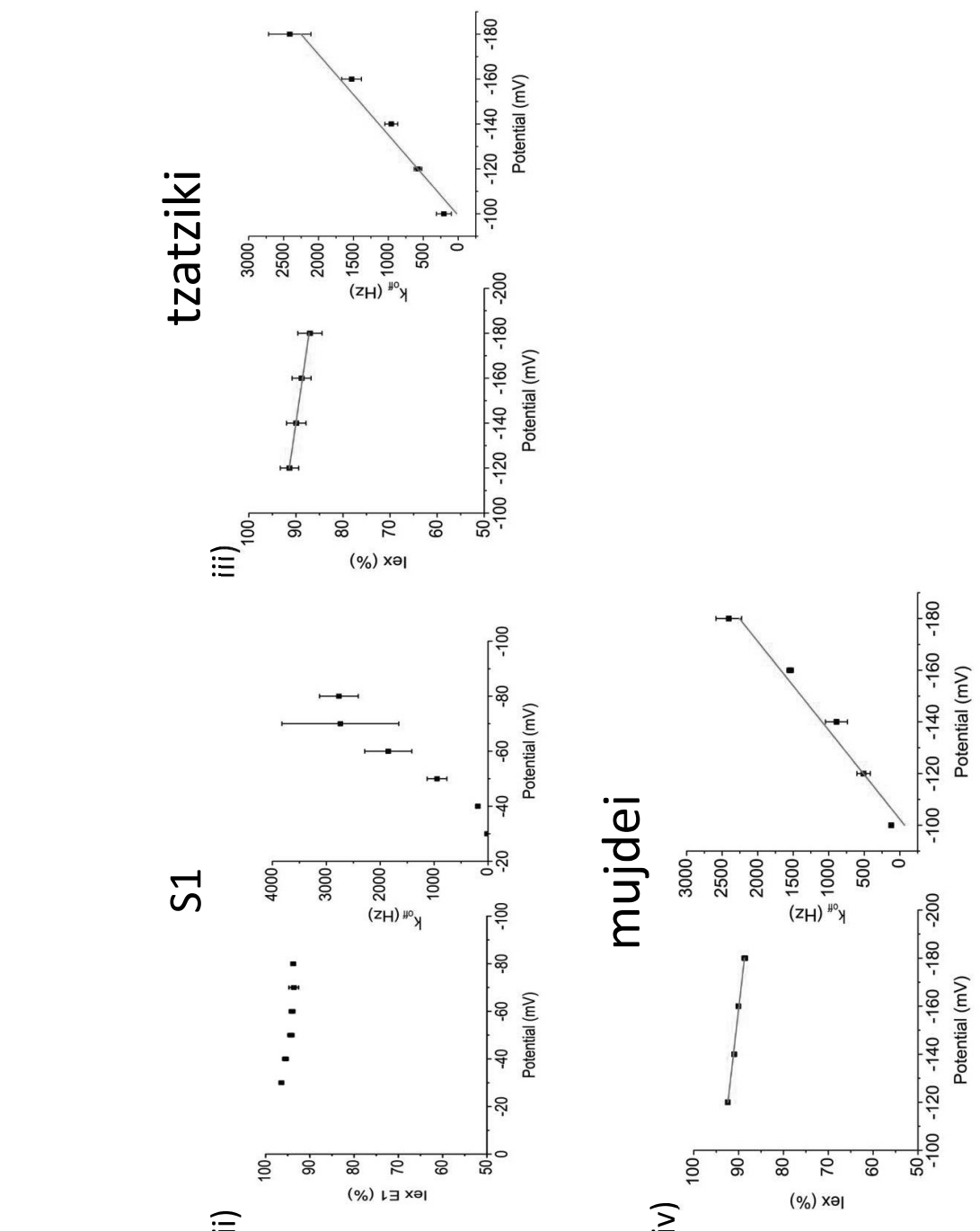

G)
i)
ii)
S1
iii)
tzatziki
iv)
mujdei
Iex E1 (%)
Iex (%)
K_{off} (Hz)
Potential (mV)

Figure 10

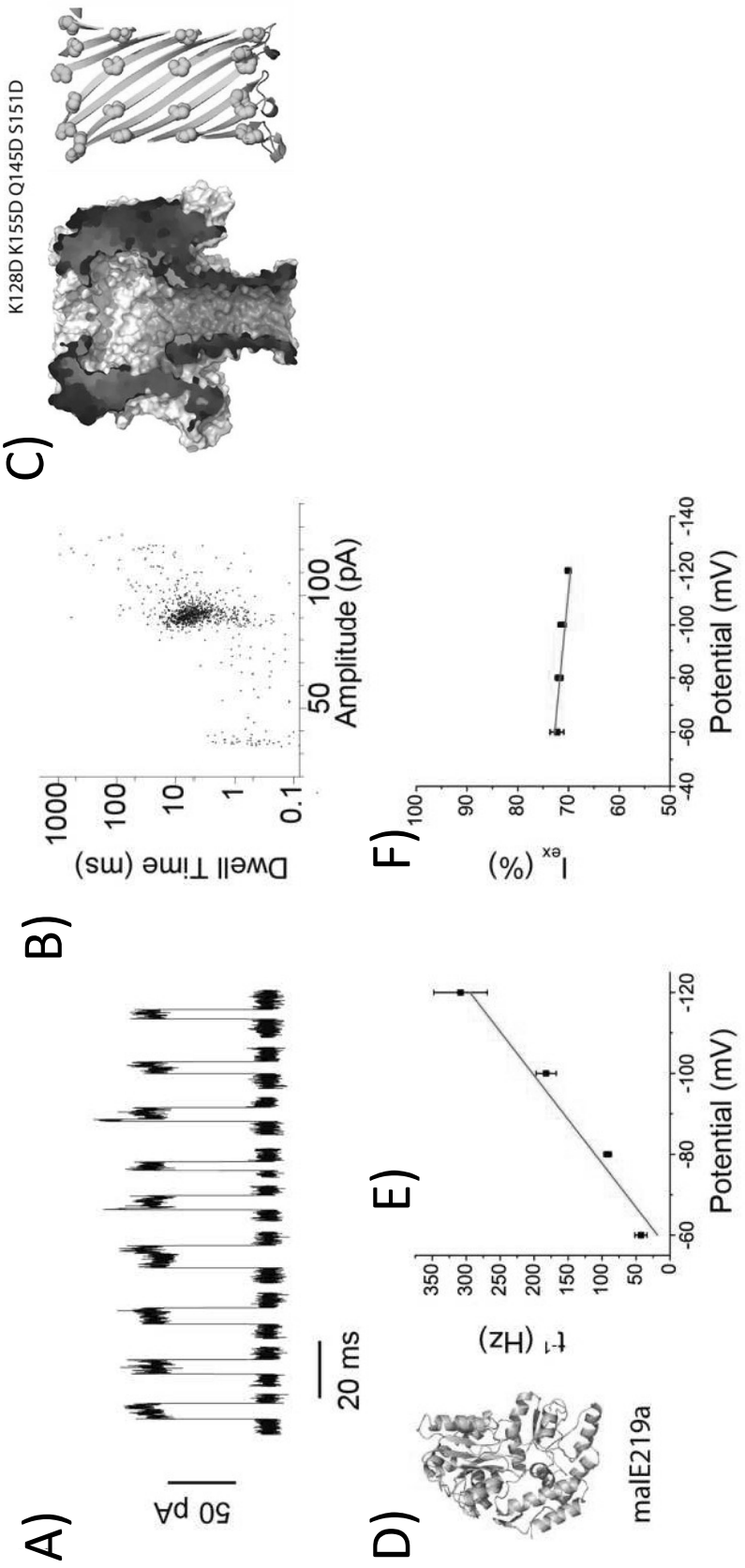

A)
50 pA
20 ms
B)
Dwell Time (ms)
1000
100
10
1
0.1
50
100
Amplitude (pA)
C)
K128D K155D Q145D S151D
D)
malE219a
E)
τ-1 (Hz)
350
300
250
200
150
100
50
0
-60
-80
-100
-120
Potential (mV)
F)
I ex (%)
100
90
80
70
60
50
-40
-60
-80
-100
-120
-140
Potential (mV)

Figure 11

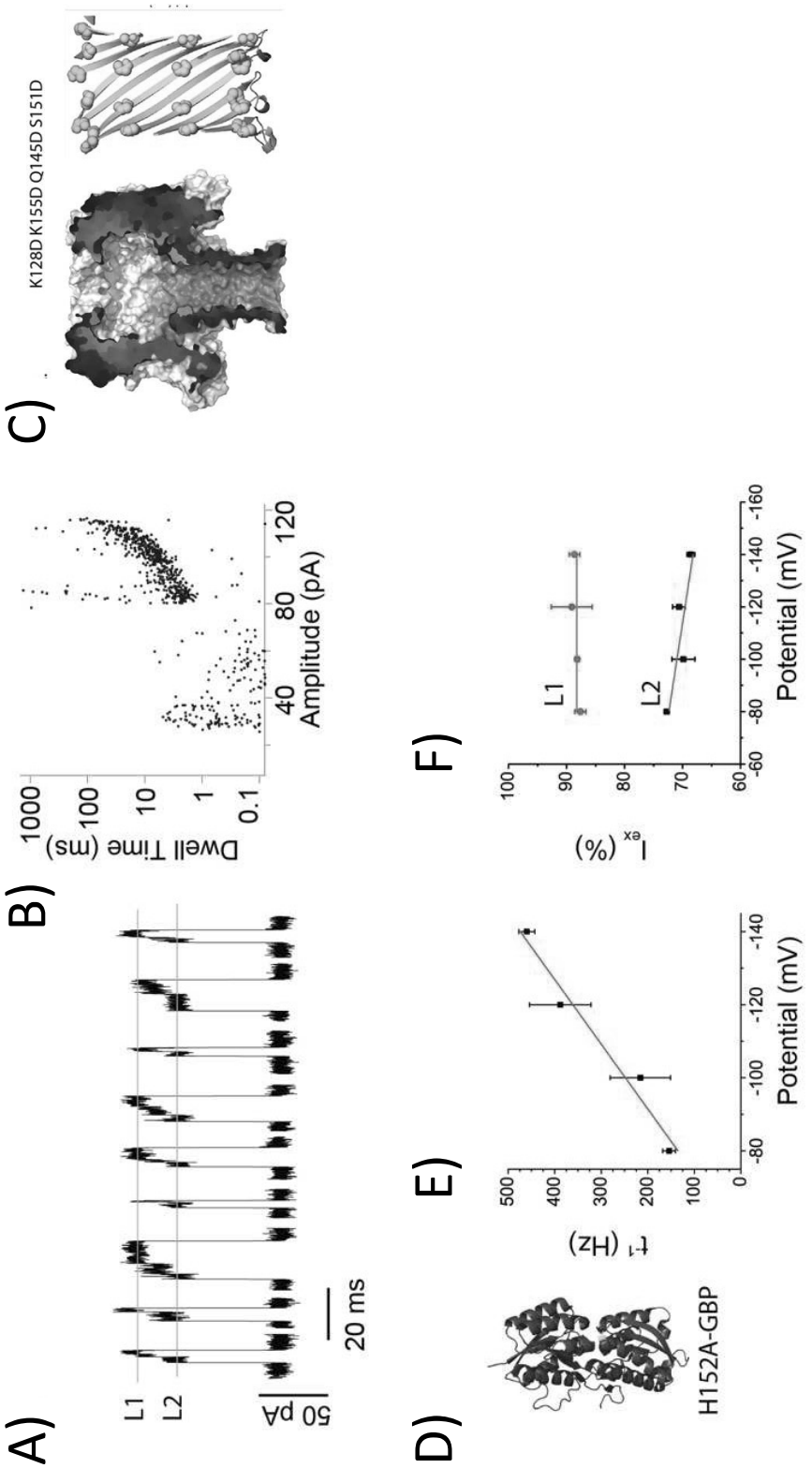

A)
L1
L2
50 pA
20 ms
B)
Dwell Time (ms)
1000
100
10
1
0.1
40
80
120
Amplitude (pA)
C)
K128D K155D Q145D S151D
D)
H152A-GBP
E)
τ-1 (Hz)
500
400
300
200
100
0
-80
-100
-120
-140
Potential (mV)
F)
I_ex (%)
100
90
80
70
60
-60
-80
-100
-120
-140
-160
Potential (mV)
L1
L2

Figure 12

Figure 13

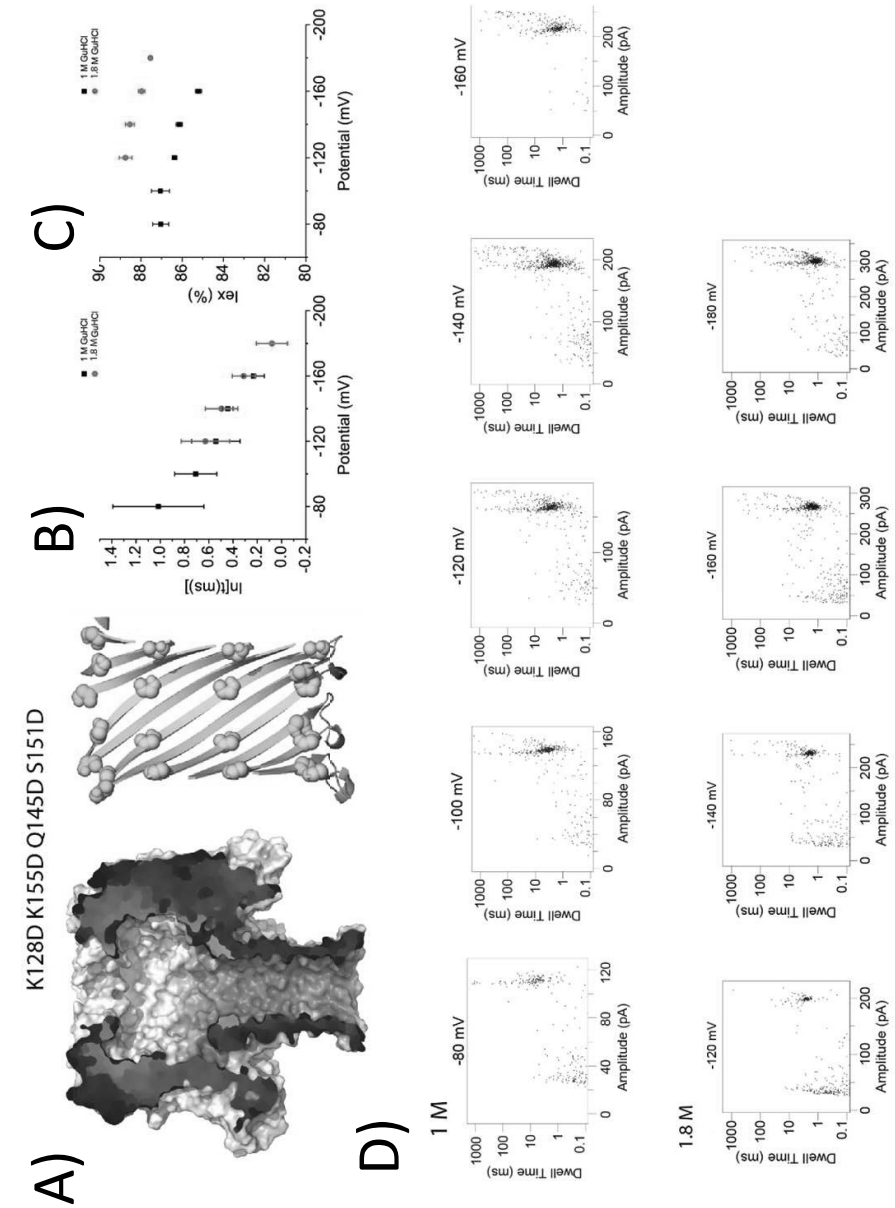
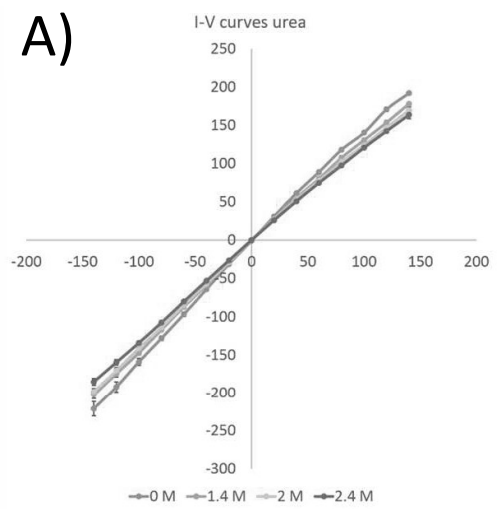
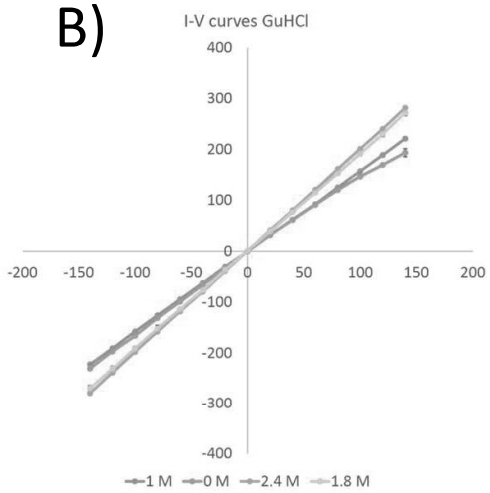

A)
K128D K155D Q145D S151D
B)
1 M GuHCl
1.8 M GuHCl
ln[t(ms)]
Potential (mV)
C)
1 M GuHCl
1.8 M GuHCl
Iex (%)
Potential (mV)
D)
1 M
1.8 M
-80 mV
-100 mV
-120 mV
-140 mV
-160 mV
-180 mV
Dwell Time (ms)
Amplitude (pA)

Figure 14

A)



B)



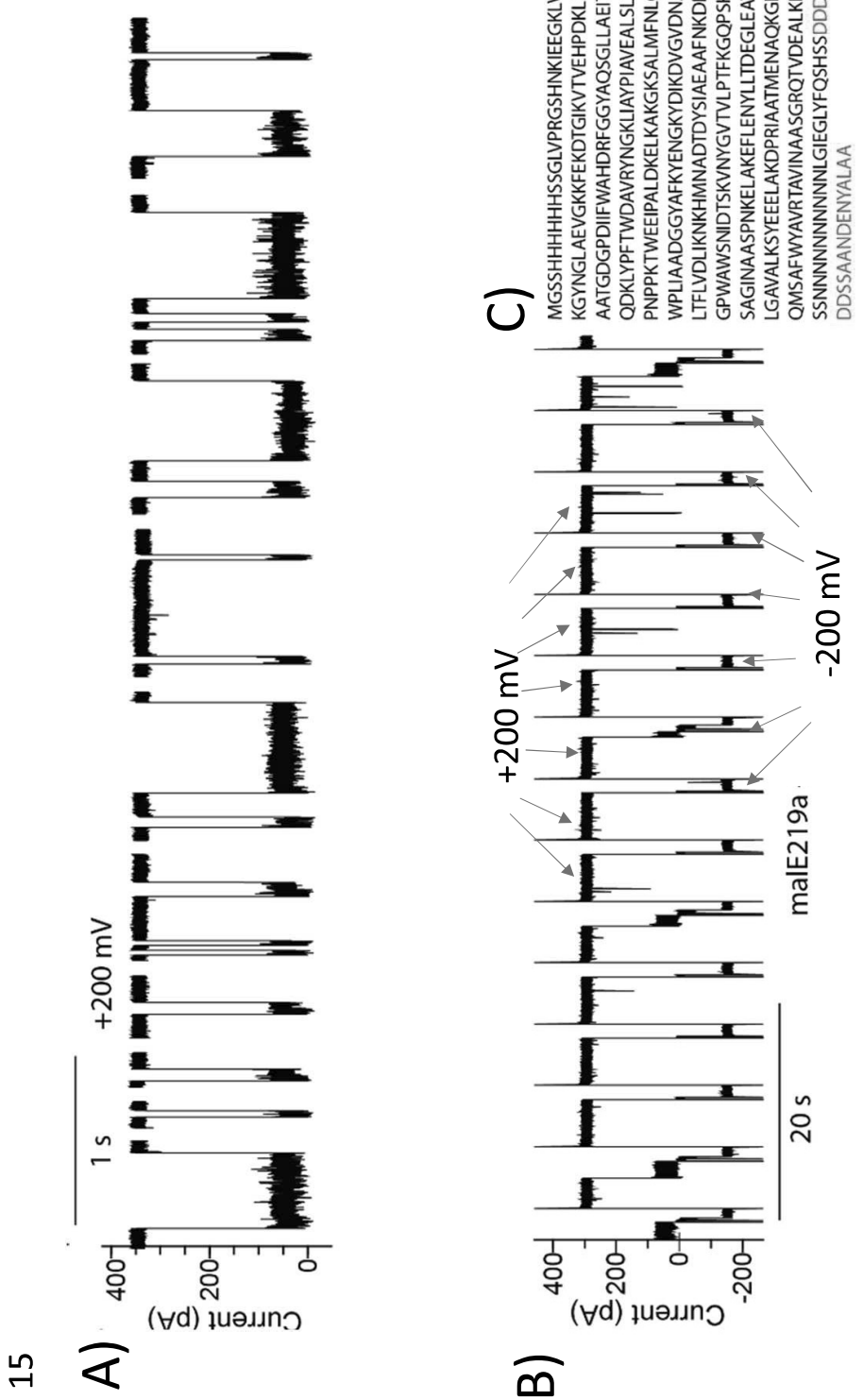
C)

[urea] (M)	|I-100|/ |I+100|
0	1.13
1.4	1.12
2	1.14
2.4	1.11

D)

[GuHCl] (M)	|I-100|/ |I+100|
0	1.133
1	1.003
1.8	0.998
2.4	0.984

Figure 15


A)
1 s
+200 mV
Current (pA)
400
200
0
B)
+200 mV
-200 mV
malE219a
20 s
Current (pA)
400
200
0
-200
C)
MGSSHHHHHHSSGLVPRGSHNKIEEGKLVIWINGD
KGYNGLAEVGKKFEKDTGIKVTVEHPDKLEEKFPQV
AATGDGPDIIFWAHDRFGGYAQSGLLAEITPDKAF
QDKLYPFTWDAVRYNGKLIAYPIAVEALSLIYNKDLL
PNPPKTWEEIPALDKELKAKGKSALMFNLQEPYFT
WPLIAADGGYAFKYENGKYDIKDVGVDNAGAKAG
LTFLVDLIKNKHMNADTDYSIAEAAFNKDPTAMTIN
GPWAWSNIDTSKVNYGVTVLPTFKGQPSKPFVGVL
SAGINAASPNKELAKEFLENYLLTDEGLEAVNKDKP
LGAVALKSYEEELAKDPRIAATMENAQKGEIMPNIP
QMSAFWYAVRTAVINAASGRQTVDEALKDAQTNS
SSNNNNNNNNNNLGIEGLYFQSHSSDDDDDDD
DDSSAANDENYALAA

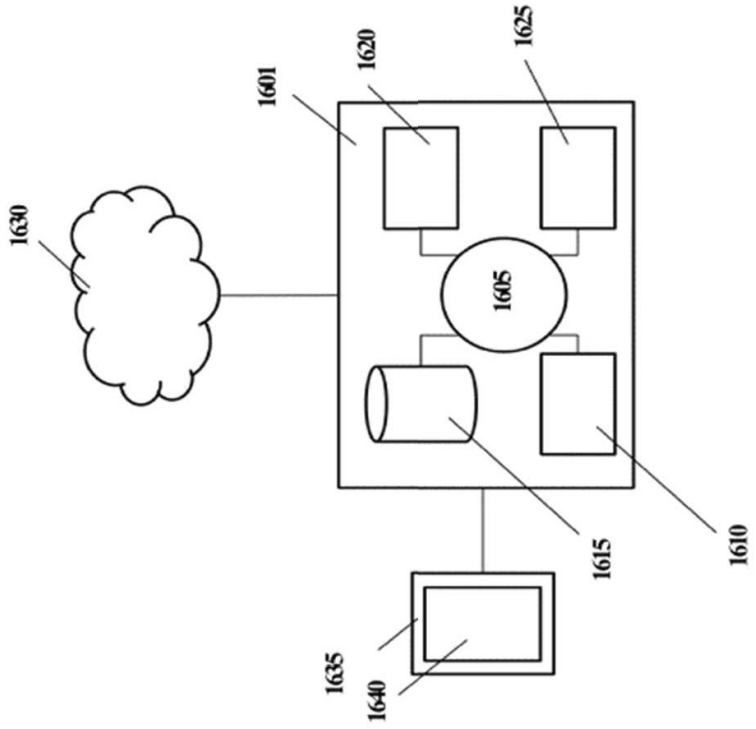


Figure 16