

**Statistical analysis for electrophysiology:**

Statistical analysis was performed using Graphpad Prism. A probability value of  $p < 0.05$  was considered statistically significant (\* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ ; \*\*\*\* $P < 0.0001$ ).

**Statistical Analysis (P values) for Fig. 1:**

**\* NA : Not Applicable**

	Time, min									
	30		75		120		180		240	
	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test
<b>Fig. 1B</b>										
SC-CA2	0.043	NA	NA	NA	0.043	NA	0.043	NA	NA	NA
SC-CA1	0.043	NA	NA	NA	0.345	0.012	0.138	0.012	NA	NA
MF-CA3	0.501	NA	NA	NA	0.500	0.012	0.500	0.012	NA	NA
<b>Fig. 1D</b>										
SC	0.109	NA	NA	NA	0.007	NA	NA	NA	0.007	NA
EC	0.007	NA	NA	NA	0.010	NA	NA	NA	0.010	NA

	Time, min			
	20		50	
	Wilcoxon	U test	Wilcoxon	U test

**Fig. 1E.**

SC	0.005	NA	0.005	NA
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**Fig. 1F.**

CA2-ctrl	0.753	NA	0.753	NA
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## Statistical Analysis (P values) for Fig. 2:

	Time, min									
	30		75		120		180		240	
	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test
<b>Fig. 2A.</b>										
SC	0.011	NA	NA	NA	0.011	0.001	NA	NA	0.011	0.001
EC	NA	NA	0.326	NA	0.779	0.001	NA	NA	0.401	0.001
<b>Fig. 2B.</b>										
SC	NA	NA	0.612	NA	0.398	0.002	NA	NA	0.865	0.002
EC	0.017	NA	NA	NA	0.018	0.002	NA	NA	0.017	0.002
<b>Fig. 2C.</b>										
SC	NA	NA	0.345	NA	0.753	NA	NA	NA	0.172	NA
EC	NA	NA	0.345	NA	0.074	NA	NA	NA	0.172	NA
<b>Fig. 2D.</b>										
SC	0.753	NA	NA	NA	0.753	NA	NA	NA	0.753	NA
EC	0.753	NA	NA	NA	0.753	NA	NA	NA	0.345	NA

### Statistical Analysis (P values) for Fig. 3:

		Time, min									
		30		75		120		180		240	
		Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test
<b>Fig. 3A.</b>											
SC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EC	NA	NA	0.398	NA	0.017	NA	NA	NA	NA	0.128	NA
<b>Fig. 3B.</b>											
SC	0.111	NA	NA	NA	0.017	NA	NA	NA	NA	0.017	NA
EC	NA	NA	0.090	NA	0.017	NA	NA	NA	NA	0.013	NA
<b>Fig. 3C.</b>											
SC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EC	NA	NA	0.735	NA	0.017	NA	NA	NA	NA	0.236	NA
<b>Fig. 3D.</b>											
SC	0.017	NA	NA	NA	0.011	NA	NA	NA	NA	0.011	NA
EC	NA	NA	0.400	NA	0.011	NA	NA	NA	NA	0.011	NA
<b>Fig. 3E.</b>											
SC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
EC	NA	NA	0.865	NA	0.017	NA	NA	NA	NA	0.398	NA
<b>Fig. 3F.</b>											
SC	0.016	NA	NA	NA	0.003	NA	NA	NA	NA	0.003	NA
EC	NA	NA	0.858	NA	0.003	NA	NA	NA	NA	0.003	NA

### Statistical Analysis (P values) for Fig. 4:

#### Fig. 4A.

SC	0.310	NA	NA	NA	0.612	NA	NA	NA	0.398	NA
EC	0.062	NA	NA	NA	0.735	NA	NA	NA	0.865	NA

#### Fig. 4B.

SC	0.027	NA	NA	NA	0.027	NA	NA	NA	0.027	NA
EC	0.115	NA	NA	NA	0.027	NA	NA	NA	0.027	NA

#### Fig. 4D.

SC	0.612	NA	NA	NA	0.498	NA	NA	NA	0.311	NA
EC	0.311	NA	NA	NA	0.091	NA	NA	NA	0.236	NA

#### Fig. 4E.

SC	0.865	NA	NA	NA	0.017	NA	NA	NA	0.017	NA
EC	0.735	NA	NA	NA	0.017	NA	NA	NA	0.017	NA

### Statistical Analysis (P values) for Fig. 5:

#### Fig. 5A.

SC	0.046	NA	NA	NA	0.027	NA	NA	NA	0.017	NA
EC	0.046	NA	NA	NA	0.345	NA	NA	NA	0.027	NA

#### Fig. 5B.

SC	0.017	NA	NA	NA	0.017	NA	NA	NA	0.017	NA
EC	NA	NA	0.176	NA	0.017	NA	NA	NA	0.017	NA

#### Fig. 5C.

SC	0.027	NA	NA	NA	0.027	NA	NA	NA	0.027	NA
EC	NA	NA	0.916	NA	0.027	NA	NA	NA	0.027	NA

### Statistical Analysis for SF 2:

	Time, min									
	30		75		120		180		240	
	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test

Fig. SF2B.

SC	0.500	NA	NA	NA	0.224	NA	0.079	NA	NA	NA
EC	0.500	NA	NA	NA	0.224	NA	0.224	NA	NA	NA
CA1-SC	0.892	NA	NA	NA	0.685	NA	0.345	NA	NA	NA

Fig. SF2C.

SC	0.248	NA	NA	NA	0.027	0.005	0.046	0.020	NA	NA
EC	0.345	NA	NA	NA	0.027	0.008	0.027	0.008	NA	NA
CA1-SC	0.345	NA	NA	NA	0.079	NA	0.115	NA	NA	NA

### Statistical Analysis for SF 3:

	Time, min									
	30		75		120		180		240	
	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test

Fig. SF3A.

SC	0.310	NA	NA	NA	1.00	NA	0.398	NA	NA	NA
EC	0.865	NA	NA	NA	0.735	NA	0.865	NA	NA	NA

Fig. SF3B.

SC	0.172	0.005	NA	NA	0.115	0.013	0.463	0.045	NA	NA
EC	0.027	0.005	NA	NA	0.046	0.013	0.046	0.045	NA	NA

Fig. SF3C.

SC	0.128	0.001	NA	NA	0.678	0.013	0.441	0.658	NA	NA
EC	0.005	0.001	NA	NA	0.202	0.013	0.959	0.658	NA	NA

## Statistical Analysis for SF 4:

	Time, min									
	30		75		120		180		240	
	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test	Wilcoxon	U test
<b>Fig. SF4A.</b>										
SC	0.345	NA	NA	NA	0.074	NA	0.916	NA	NA	NA
EC	0.685	NA	NA	NA	0.345	NA	0.600	NA	NA	NA
<b>Fig. SF4B.</b>										
SC	0.753	NA	NA	NA	0.115	NA	0.115	NA	NA	NA
EC	0.248	NA	NA	NA	0.600	NA	0.463	NA	NA	NA
<b>Fig. SF4C.</b>										
SC	0.753	NA	NA	NA	0.685	NA	0.463	NA	NA	NA
EC	0.172	NA	NA	NA	0.463	NA	0.248	NA	NA	NA
<b>Fig. SF4D.</b>										
SC	1.000	NA	NA	NA	1.000	NA	0.090	NA	NA	NA
EC	0.248	NA	NA	NA	0.345	NA	0.753	NA	NA	NA

## Statistical Analysis for SF 5:

<b>Fig. SF5A.</b>										
SC	0.011	NA	NA	NA	NA	NA	NA	NA	NA	NA
EC	NA	NA	0.483	NA	0.011	NA	NA	NA	0.011	NA
<b>Fig. SF5B.</b>										
SC	NA	NA	0.310	NA	0.612	0.004	NA	NA	0.865	0.701
EC	NA	NA	0.612	NA	0.017	0.004	NA	NA	0.236	0.701
<b>Fig. SF5C.</b>										
SC	NA	NA	0.115	NA	0.463	0.020	NA	NA	0.600	0.005
EC	0.172	NA	NA	NA	0.027	0.020	NA	NA	0.027	0.005

### **Statistical analysis for Real Time PCR**

Statistical analysis was performed using Excel and GraphPad Prism 6 (La Jolla, CA, USA). A probability value of  $p < 0.05$  was considered statistically significant (Fig. 1Ab & SF5; \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ ; \*\*\*\* $P < 0.0001$ ).

### **Statistical analysis for SF1:**

<b>Samples</b>	<b>NK1 (p-values)</b>
CA1 vs CA2	0.0002
CA1 vs CA3	0.0001

### **Statistical analysis for SF6:**

	<b>Sample</b>	<b>CAMK4</b>	<b>PRKCZ</b>
CA2	Control	0.003	0.048
	Vs		
	Treated	0.020	0.044
	Naïve rat Control		
Vs			
	Treated		

### **Statistical analysis for Western blotting:**

Statistical analysis was performed using Excel and GraphPad Prism 6 (La Jolla, CA, USA). A probability value of  $p < 0.05$  was considered statistically significant (Fig. 4C<sub>b</sub>, F<sub>b</sub> & SF6<sub>b</sub>; \* $P < 0.05$ ; \*\* $P < 0.01$ ; \*\*\* $P < 0.001$ ; \*\*\*\* $P < 0.0001$ ).

### **Statistical analysis for Fig.4C<sub>b</sub>:**

Samples	p-values
Ctrl vs treated	0.012

### **Statistical analysis for Fig.4F<sub>b</sub>:**

Samples	p-values
Ctrl vs treated	0.014

### **Statistical analysis for SF7:**

Samples	p-values
Ctrl vs antisense	0.002
Antisense vs scrambled	0.005