

Computational Feasibility Analysis of Electrochemotherapy with Novel Needle-Electrode Arrays for the Treatment of Invasive Breast Ductal Carcinoma

Supplementary material

Table A. Global electroporation protocols

P ^a	Array	Voltage ^b [V]			Tissue Coverage [%]						$\bar{I}^e$ [A]
		C-P	P-P	D	Tumor		Breast		Fat		
					RE ^c	IRE ^d	RE	IRE	RE	IRE	
1	4De1	800	2500	--	100	19.2	100	72.2	100	73.2	5.9
	4De2	2000	1500	--	100	30.2	85.3	11.0	90.6	10.1	3.1
	4Di1	--	1000	2000	100	0	95.0	22.9	99.8	48.4	3.5
	4Di2	--	3000	3000	5.91	0	32.6	0	73.4	0.3	4.4
	5Di1	--	3000	--	100	7.73	100	83.5	100	89.6	11.4
	5Di2	1500	3000	--	99.6	22.1	70.8	4.9	87.1	6.7	3.8
	6St1	800	3000	--	100	19.5	100	86.0	100	91.5	4.7
	6St2	1500	3000	--	100	33.5	85.0	6.2	91.8	6.6	4.3
2	4De1	3000	3000	--	98.1	88.2	94.9	64.1	94.1	67.5	13.9
	4De2	3000	3000	--	99.8	60.3	99.6	48.8	99.8	62.3	7.6
	4De3	2000	3000	--	99.8	33.0	99.9	46.2	100	49.6	7.4
	4Di1	--	1500	2500	99.8	83.9	94.3	45.6	92.3	48.1	5.9
	4Di2	--	3000	3000	16.1	0	73.0	1.8	85.2	17.7	5.4
	4Di3	--	3000	3000	78.1	4.81	100	36.8	100	65.2	6.2
	5Di1	3000	--	--	100	98.8	100	66.8	98.3	69.7	19.7
	5Di2	2000	--	--	98.9	9.7	96.7	16.9	99.4	28.1	7.9

3	5Di3	2500	--	--	100	46.1	99.8	55.2	100	66.5	10.2
	6St1	--	3000	--	99.3	35.6	98.1	73.9	94.7	66.3	6.6
	6St2	2500	2000	--	100	29.9	100	51.0	100	64.0	5.8
	6St3	2000	--	--	99.7	30.7	99.6	46.3	99.8	56.7	6.8
	4De1	3000	3000	--	99.9	70.2	65.7	12.5	94.7	53.5	9.2
	4De2	3000	3000	--	95.7	14.1	88.2	22.7	100	59.4	6.1
	4De3	3000	3000	--	98.5	30.7	83.3	27.9	100	67.1	7.4
	4Di1	--	3000	2000	100	26.1	40.1	2.60	93.9	47.4	5.2
	4Di2	--	3000	3000	5.7	0	13.4	0	77.9	11.7	4.5
	4Di3	--	3000	3000	22.0	1.70	52.6	2.95	98.0	54.5	5.3
	5Di1	--	3000	--	79.1	17.1	42.6	6.4	95.4	58.3	6.6
	5Di2	3000	--	--	97.8	15.4	92.1	27.5	100	74.9	8.2
	5Di3	2500	--	--	97.6	17.9	85.6	17.8	99.7	59.1	7.9
	6St1	1000	3000	--	71.3	11.7	30.9	10.6	93.9	63.0	4.5
	6St2	3000	--	--	98.6	14.8	93.9	28.9	100	80.5	8.2
	6St3	3000	--	--	99.6	53.6	91.6	31.7	100	80.9	9.5

^aPatient

^bVoltage applied between central electrodes and peripheral electrodes (C-P), peripheral electrodes (P-P) and opposite electrodes (D) in 4-needle diamond configuration.

^cPercentage of tissue covered at the reversible electroporation threshold (RE = 400 V/cm)

^dPercentage of tissue covered at the irreversible electroporation threshold (RE = 800 V/cm)

^eAverage electric current between activated pairs of needles