

**Table S1.** A summary of previously reported electrical parameters of single nuclei.

Nuclear type	Specification	$\epsilon_{ne}$	$C_{ne}$ ( $\mu\text{F}/\text{cm}^2$ )	$R_{ne}$ ( $\Omega\cdot\text{cm}^2$ )	$\sigma_{ne} \times 10^{-3}$ (S/m)	$\epsilon_{np}$	$\sigma_{np}$ (S/m)	Reference
Drosophila flavorepleta larvae salivary gland cell			$412 \pm 62$	$1.5 \pm 0.4$				[1]
Drosophila flavorepleta salivary gland cell	In situ		$\sim 100$	$3.9 \pm 1.4$				[2]
Drosophila flavorepleta salivary gland cell	In semi-isolation		$\sim 100$	$1.5 \pm 0.3$				
Drosophila flavorepleta salivary gland cell				$1.5 \pm 0.4$				[3]
Xenopus laevis oocyte				$< 0.001$				
Triturus viridescens oocyte				$< 0.001$				
Marine oocyte				$< 0.001$				[4]
Midge chironomus thummi salivary gland cell	Normal			$0.72 \pm 0.09$				[5]
Chironomus salivary gland cell	Ecdysone			$1.38 \pm 0.1$				[6]
Murine lymphoma cell (L5178Y)		$19 \pm 2$	$0.43 \pm 0.03$	2	$0.7 \pm 0.2$	$308 \pm 20$	$0.8 \pm 0.04$	[7]
Mouse liver cell	In situ			$0.59 \pm 0.33$				[8]
Mouse spleen lymphocyte	In isolation	28	0.62	$0.28 \pm 0.23$	6	52	1.35	[9]
Madin-Darby canine kidney cell	Normal			1.4				[10]
Yeast cell	Aldosterone		$0.483 \pm 0.029$	1.0	$3.22 \pm 0.48$			[11]
	Maxwell-wanger theory		$1.12 \pm 0.20$				$3.35 \pm 1.50$	
Rat liver cell	Effective medium theory (EMT)		$1.16 \pm 0.29$				$2.58 \pm 0.54$	[12]
	EMT with dipole-dipole interaction		$0.92 \pm 0.01$				$1.70 \pm 0.10$	
Xenopus laevis oocyte				0.13				[13]
Human B-cell	Normal	$106 \pm 35$	$2.3 \pm 0.69$		$11.1 \pm 7.2$		$2.04 \pm 0.29$	[14,15]
	Magala	$72.5 \pm 11.6$	$1.6 \pm 0.48$		$3.7 \pm 0.9$		$1.08 \pm 0.03$	

	Farage	60.3 ± 22.6	1.3 ± 0.39		4.4 ± 2.5		1.07 ± 0.43	
	Raji	79.9 ± 34.4	1.8 ± 0.54		4.0 ± 1.6		1.02 ± 0.25	
	Bjab	108 ± 35	2.4 ± 0.72		2.1 ± 0.7		1.39 ± 0.54	
	Daudi	66.1 ± 7.5	1.5 ± 0.45		2.7 ± 0.3		1.44 ± 0.35	
	Normal	85.6 ± 16.7	1.9 ± 0.57		8.8 ± 0.6		1.26 ± 0.27	
Human T-cell	Peer	61.6 ± 17	1.4 ± 0.42		2.1 ± 0.6		1.42 ± 0.20	
	HDMAR	101.2 ± 55.3	2.2 ± 0.66		3.0 ± 0.2		1.58 ± 0.28	
Eukaryotic cell		6.8 – 100 (41)			0.083 – 7(3)	32 – 300(120)	0.25 – 2.2 (0.95)	[16]
Mammal skeletal myocyte	0.3 GHz microwave					73.5	3.2	
	1 GHz microwave					61.6	3.6	[17]
	3 GHz microwave					53.0	6.2	
Human jurkat cell		22.8			4.30	120	0.18	[18]
Human jurkat cell	Normal						0.48–0.42	
	1 min of pulse						0.49–0.31	[19]
	20 min of pulse						0.31–0.18	
Human jurkat cell	Microfluidic device		1.57 ± 0.01	0.26 ± 0.06			0.63 ± 0.005	
	Time domain reflectometry system		1.19 ± 0.14	0.21 ± 0.02			0.82 ± 0.06	[20]
Human hepatocyte		19.2					1.85	[21]
Human jurkat cell					1.75–2.25			[22]
Human jurkat cell			0.32 ± 0.002	6.37 ± 0.04			37.99 ± 8.09	
Mouse B16 cell			0.18 ± 0.11	7.81 ± 4.39			9.16 ± 0.63	[23]
Rat H9C2 cell			0.22 ± 0.05	7.25 ± 0.68			17.2 ± 8.53	

Human PC5 cell		0.16 ± 0.02	5.24 ± 1.98		27.3 ± 4.61	
Human PC6 cell		0.12 ± 0.02	9.26 ± 4.14		8.44 ± 3.48	
Human B16 cell	Normal	1.01 ± 0.56	2.65 ± 2.96		0.35 ± 0.31	
	Gadolinium	1.51 ± 0.51	1.21 ± 0.80		0.57 ± 0.33	
Human H9C2 cell	Normal	1.38 ± 0.13	0.58 ± 0.29		0.44 ± 0.10	
	Gadolinium	1.61 ± 0.08	1.54 ± 0.05		1.20 ± 0.43	
Human PC5 cell	Normal	1.91 ± 0.72	0.37 ± 0.06		0.33 ± .06	
	Gadolinium	1.59±0.08	0.57±0.50		0.26±0.13	
Mouse brain endothelial cell		52		6	52	1.35 [24]
Chinese hamster ovary cell		23.2		1	120	1.50 [25]
	Normal					
Mouse embryonic stem cell	Fixation				1.02 ± 0.01	
	In isolation	0.15 ± 0.07		9.9 ± 1.7	1.35 ± 0.05	
	Differentiate at 0 h				1.55 ± 0.45	
	Differentiate at 24 h				0.92 ± 0.20	[26]
	Differentiate at 48 h				1.18 ± 0.40	
					1.82 ± 0.16	

