

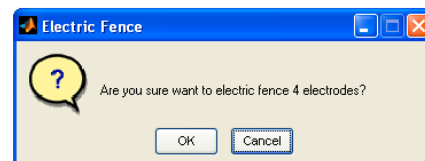
ECIS Electric Fence

Quantifying Cell Behavior

The electric fence is an alternative to the conventional ECIS wound healing protocol. Instead of growing cells to confluence and then wounding the cells with high current, we instead use high current to prevent the cells from attaching and spreading upon the electrode surface. Cells grow on all areas of the well bottom except the fenced electrodes. Once a confluent layer has been established, the fence electrode surface until the electric fence is turned off. Now cells migrate inward to fill the open areas. This migration of cells onto the electrode is monitored with normal ECIS measurements. As in the wounding assay, the cells must move the radius of the electrode to bring the final impedance values up to those of the control cell-covered electrodes.

To carry out this assay, first follow the steps below to set up the electrodes to be fenced:

1. Open the ECIS software, run Setup, identify the type arrays being used
2. Click on the Wound/Electroporate box
3. Click on the main graph area and then activate the electric fence feature by pressing the keys Shift-Ctrl F keys together. You will see the Electric Fence option appear in the Wound/Electroporate area
4. Select the wells to be electric fenced in the well selector on the left hand side.
5. Click on the Electric Fence box – leaving 5 in the box. This indicates that there will be ~5 minutes between the applications of the high current for the fenced electrodes.
6. You will next be prompted to accept the number of wells selected as a safeguard to not fence wells unintentionally. In the example at right, we have selected four wells that will be fenced.
7. Once you click ok, a window will appear that lists the various parameters that control the electric fence. Depending on the software version you may see setting for all or some of the parameters in the table at the left. Change the default parameters to those in this table.



Electric Fence Parameters	
Frequency	Z Θ : 40,000 hz Z: 48,000 hz
Current	1E: 1mA 10E/10E+ 6mA
Pulse on	200 msec
Pulse off	200 msec
Number of Pulses	Z Θ : 3 Z: 1
Number of Cycles	1
Target Capacitance	1E: 4.5 nF 10E/10E+: 45nF

8. Click Okay, select all wells and begin your experiment as normal.
9. To turn off the electric fence uncheck the electric fence box.

