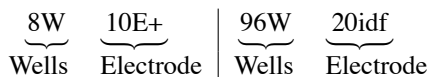


## Choosing The Proper ECIS® Array

The nomenclature for standard ECIS® Cultureware has two parts: The well number and the electrode type.



There are two broad categories of electrode geometries, small circular electrodes (1E, 1E+ 10E+, 10E) and interdigitated finger electrodes (10 idf, 20 idf and CP). Arrays come in 2, 8 or 96 well formats (2W, 8W, 96W) along with single or 6 channel flow arrays (1F, 6F).

⊖ **Note:** When selecting the array type in the ECIS Software you may choose any array that matches your electrode type.

### Small Circular Electrodes

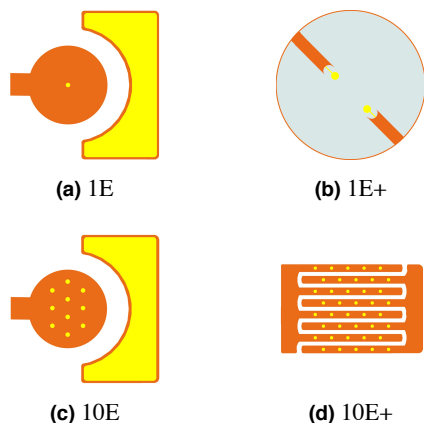


Figure 1. ECIS® Circular Electrode Types

**1E** Cells are measured on a single 250 micrometer diameter active electrode. With this small population of cells, one is able to observe the random non-synchronous motions of cells in culture as fluctuations of the impedance signal. This movement has been termed “micromotion” and its measurement is unique to the ECIS® technology. These arrays are only available in the 8 well format.

**1E+** Cells are measured on two 334 micrometer diameter electrodes connected in series. These arrays are excellent for micromotion measurements and are standard in a 96 well format.

**10E and 10E+** These arrays are an excellent choice when one wants to average over a larger number of cells but still have high sensitivity to more subtle changes. These

arrays are commonly used for barrier function analysis, signal transduction assays and other assays where synchronous changes in cell morphology are expected. They also are an excellent choice for the ECIS extravasation assay. These arrays are standard in 8 well format.

### Inter digitated electrode arrays

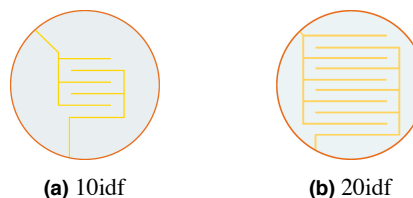


Figure 2. ECIS® Interdigitated Finger Electrodes

**10idf** These arrays offer similar performance as the 10E+ arrays and are standard in 96 well format.

**20 idf (CP)** The active electrode area in these arrays is 80 times that of the 1E arrays. Because of this, measurements are less sensitive to cell distribution on the bottom of the well and averaged over a large substrate area. These arrays are also referred to as CP as they are the choice for cell proliferation measurements.

### Cell Migration and in situ electroporation experiments

With the small circular electrode arrays, large electric fields can be applied across the plasma membranes allowing one to both electroporate the cells and carry out cell migration measurements via the “wound healing” or “electric fence” protocols. We recommend using the 1E or 1E+ arrays for these migration measurements.

As the gold film is only  $\approx$  500 nanometers thick, the electrodes and cells can be observed with an inverted tissue culture microscope. For more information about these and other arrays check, out ECIS Cultureware in the manual that can be found in the ECIS software under Help/Manual.