



Cell software

An analog data
acquisition and analysis

 celica biomedical

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an analog data acquisition and analysis program designed to handle signals derived from single cell experiments

CELL is an analog data acquisition and analysis program designed to handle signals derived from single cell experiments. CELL acts as a multi-channel digital oscilloscope. It acquires a series of signals, performs calculations and stores the measured and calculated values in a data file on a hard disk.

CELL was developed primarily for whole-cell patch-clamp based capacitance measurements. It measures membrane current, voltage, real and imaginary admittances from the lock-in amplifier under whole-cell and cell-attached patch-clamp configurations. Membrane capacitance, membrane conductance and access conductance calculations are performed on-line. The software is supplemented with Ca^{2+} photometry and two additional multipurpose user-defined channels to simultaneously monitor other signals, e.g. amperometry etc. An analog-to-digital (A/D) converter is also required to perform the A/D conversion of the signals. At this time all National Instruments A/D converters are compatible with CELL.

To collect the cell parameters used in the calculations, any commercially available combination of the patch-clamp and lock-in amplifiers can be used. CELL was developed and extensively tested on SWAM amplifiers.

Highlights:

CELL software enables multi-channel data acquisition.

CELL software performs real-time calculations of passive electrical cell parameters: membrane capacitance C_m , membrane conductance G_m , access conductance G_a , and others, in patch-clamp experiments.

CELL software has a special module to monitor membrane sealing to establish a cell-attached and a whole-cell patch-clamp recording. This dispenses with the need for additional hardware equipment (oscilloscope and a pulse generator).



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