User Guide:

CYTOCYPHER

Working with the CytoSolver

About

The SytoSolver is an online platform where you can upload, store, analyse, visualise and export your .zpt files faster than ever before. The following steps guide you through the entire process in a matter of minutes.

Step 1: Logging in

- Navigate to: cytosolver.cytocypher.com
- Log in with your username and password

Step 2: Upload your .zpt files

- Press on Upload files Button on the right-top of the page...
- Press Browse and select the .zpt file(s) that you want to upload
- press open and enter the sarcomere constant (and tag the file) ...
  *The sarcomere constant can be found in IonWizard .zpt file: Operations > constants... > Sarc. Calibrating constant > Current
- Press upload... (this may take a few minutes)
- Close the upload window when the uploading and processing is finished.

!!! Your data is now successfully uploaded and analysed.

- ✓ The database keeps track of all the files that have been uploaded.
- ✓ Feel free to use the webserver as extra backup of your .zpt files.

Step 3: Visualise and check your data

- Set the tickbox(es) of the file(s) that you want to visualise and press “Open” on the left-top of the page
- Under “Cell” set the “Myocyte Number” that you want to visually check.
  The program has automatically detected false transients.
  Visually check in the plotting window if the “accepted transients (“OK”)” are colored in green and the “false transients (“Bad transient”” in red. False transients are transients containing an artifact that are not due to a biological event.
  Tip: use the arrow buttons on your keyboard to go faster through all the cells.

- Under “Transient” set the “Transient Number” that you want to visually check.
  Visually check of the fitted lines correctly follow the raw data. A fit is used to give a better prediction of the data that contains noise and irregularities.

Step 4: Export to excel and/or CSV

- Press “Download results” on the right-top of the page
- Chose what you want to export,
- And press “Download”

Data Acquisition requirements

(next page)

Settings/limits

Data type: Contractility, Dual/single Calcium, Force, cell length, interpolated numerator

*minimal 50 data points per transient

Sampling frequency:	Stimulation frequency:
500 Hz	¼ Hz - 10 Hz
250 Hz	¼ Hz - 5 Hz
100 Hz	¼ Hz - 2 Hz

!!! You can vary the stimulation frequency during your experiment by using a new epoch.

Text marks

Text marks must be inserted while acquiring data or after finishing the experiment.

Delete: delete an epoch

Begin: defines and replaces the begin of the interval (Begin- and End must be used together)

End: defines and replaces the end of the interval

Background: Identifies an epoch as a background (calcium)

List with Parameters (or transient characteristics)

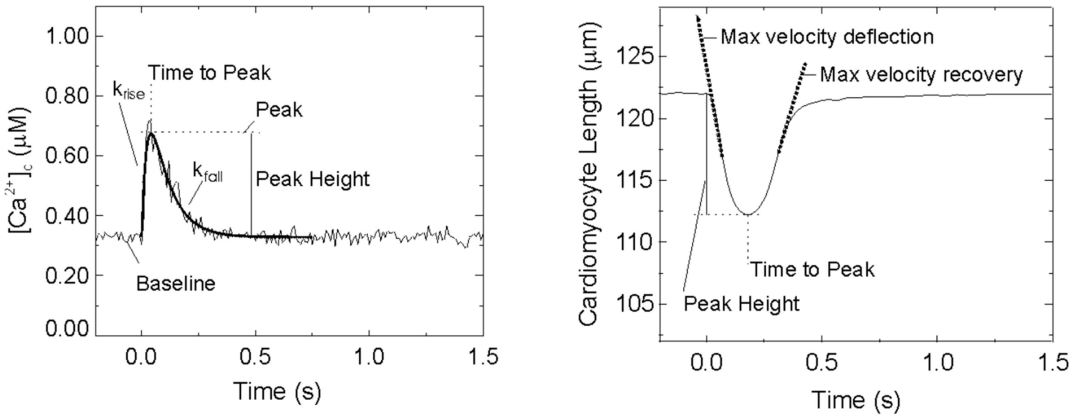

Figure 1. Some parameters determined from Calcium and Contractility transients (Monotonic Transient Analysis Defined, IonOptix).

Table 1. Transient parameters (characteristics) determined by CytoCypher Transient Analysis Tool.

Parameter	*Definition*
Remark	A remark saying indicating the transient status.
Arrhythmia	Indicates if there is an arrhythmia or not.
After Contraction	Indicating if there is an after contraction.
After Contraction size	100 x after contraction peak height / transient peak height
Contraction escape	An electrical stimulation but no transient.
Baseline	The pre-stimulation baseline value of the recorded signal.
Peak	The value of the transient at its maximal deflection from baseline.
Time to peak	The time at which peak occurs relative to the transient time.
Peak Height	peak - baseline.
Percentage of shortening	100 x peak height / baseline
Times to % Peak	Times for the transient to reach a percent of the peak during the deflection phase of the transient.
Times to % Baseline	Times for the transient to return a percent of the peak during the recovery phase of the transient.

Max Velocities	The maximum of first derivative of transient during the deflection and recovery phases of the transient.
Time Constants (tau)	The exponential time constants associated with recovery phases of the transients.
R^2	Goodness of fit