DatLab Protocols

Help DatLab 7

Mitochondrial Physiology Network 23.12(03):1-2 (2019)
Version 03: 2019-07-01
Updates: http://wiki.oroboros.at/index.php/MiPNet23.12_DL-Protocols_help

DL-Protocols

DLP: DL-Protocols are provided in DatLab as files with the extension *DLP. A DL-Protocol defines the sequence of Events and Marks. Templates are linked to DL-Protocols for storing exported data in a database and for data analysis. A DL-Protocol can be assigned to O2k-Chamber A or B, or both.

Instrumental: Instrumental DL-Protocols are used for calibrations and instrumental quality control, without experimental sample in the incubation medium.

SUIT: DL-Protocols for substrate-uncoupler-inhibitor titrations (SUIT) provide a guide through a sequence of coupling control states and electron transfer-pathway states.

Lower O2 limit [µM]: This can be set for each chamber, to trigger an automatic warning when the experimental O_2 concentration declines below this limit as a WARNING to remind the user that re-oxygenation of the medium may be required. In many cases the lower limit is set at 30 µM.

Titration volumes and concentrations: Users can edit titration volumes and concentrations. In [Protocols] select [Enable DL-Protocol editing] and edit the DL-Protocol in the Overview window, save the overview, and export the file as a user-specific DL-Protocol [File \ Export \ DL-Protocol User (*.DLPU)].

Events and marks: Users can modify steps (events, E and marks, M) in a DL-Protocol. In [Protocols] select [Enable DL-Protocol editing] and edit the DL-Protocol in the Overview window, save the overview, and export the file as a user-specific DL-Protocol [File \ Export \ DL-Protocol User (*.DLPU)].

DLPU: DL-Protocol User, with modified steps, titration volumes and final concentrations.

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E: Event in DatLab, an action at a time point in the SUIT protocol.

M: Mark in DatLab, a selected section over a period of time for numerical data analysis (Mark statistics).

SUIT

O2 O2 channel only.

AmR O2 channel and Amperometric channel (Amp) for Amplex UltraRed assay (AmR) for measurement of H_2O_2 production.

TPP O2 channel and Potentiometric channel (pX) for TPP^+ or $TPMP^+$ assay for measurement of mt-membrane potential difference.

Fluo O2 channel and Amperometric channel (Amp) for fluorescence dye (e.g. safranin, TMRM) for measurement of mt-membrane potential difference.

MgG O2 channel and Amperometric channel (Amp) for Magnesium green assay (MgG) for measurement of mitochondrial ATP production.

Abbreviations [1]

ce	living cells; $N_{ce} = N_{vce} + N_{dce}$
dce	dead cells
imt	isolated mitochondria
MiR	mitochondrial respiration medium
mt	mitochondria
mtprep	mitochondrial preparations
pce	permeabilized cells
pfi	permeabilized muscle fibers
pti	permeabilized tissue
SUIT	substrate-uncoupler-inhibitor protocol
thom	tissue homogenate
vce	viable cells

Units Report flow per cell in units [amol·s^{-1}·cell^{-1}] equivalent to [pmol·s^{-1}·10^{-6} cells].

[1] MitoEAGLE preprint 2019-05-20 Mitochondrial respiratory states and rates.
http://www.mitofit.org/index.php/Gnaiger_2019_MitoFit_Preprint_Arch

» NextGen-O2k: Supported by the NextGen-O2k project, which has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 859770.