



Mitochondrial Physiology Network 21.16(01):1-8 (2016) Version 01: 2016-07-29 ©2016 OROBOROS Updates: <u>http://wiki.oroboros.at/index.php/MiPNet21.16_DatLab_7</u>

DatLab 7: innovations

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1. General

1.1. User: For better documentation and traceability, a username has to be entered after starting DatLab. The current user is displayed in the O2k signal line and usernames are connected with personal graph layouts (see Layout-section).



Change user: When DatLab is already running, the user can be changed under [File/Change user].

Manage users: Existing users can be renamed and deleted (with all connected graph layouts) under [File/Manage users].

1.2. Menus: New, user-friendly structure of menus: [Flux/Slope] as a separate menu with new features (see Flux/Slope section).

🏈 Dati	Lab								
File (Oxygraph-2k	TIP2k	Experiment	Calibration	Flux / Slope	Graph	Layout	Marks	?

- **1.3. Hyperlinks in DatLab windows:** In many DatLab windows, a helplink to the Bioblast website has been added, for explanations and instructions about the according terms and functions.
- **1.4. Event names:** Event names are shown on top of the graph to avoid text overlaps with mark names.
- **1.5. Illumination:** "Light" has been renamed to "Illumination" to distinguish it from the LED light introduced into the chambers for the purpose of spectrophotometric and fluorometric measurements.

2. Oxygraph-2k

In the Oxygraph-2k menu, the "Show channel"functions have been moved and an additional submenu [O2k configuration] added for a better overview.

Оху	graph-2k TIP2k	Experiment
	O2k control	F7
	O2k configuration	
	Stirrer A on/off	F11
	Stirrer B on/off	F12
	Stirrer test	F9
	Illumination on/of	f F10
	Manage setups	

2.1. Data recording interval: The data recording interval can no longer be changed when the O2k is running. It has to be set when the O2k control window pops up at the beginning of an experiment.

2.2. O2k configuration window:

O2k configuration		
02k serial number		
Power-02k	Р	
Chamber	A	В
Oxygen, 02		
Uxygen sensor #		
Channel label	02	02
Amperometric, Amp 🔽		
Amp sensor #		
Channel label	Amp	Amp
Potentiometric, pX 🔽		
pX Electrode #		
pX Reference electrode #		
Channel label	рХ	рХ
Skip configuration at reconnect <u>MitoPedia: 02k configuration</u>	Cancel	ок

In [O2k configuration], channels (amperometric and potentiometric) can be switched on/off by selecting the according tick box.

Power-O2k and numbers for Oxygen sensor, Amp sensor, pX Electrode and pX Reference electrode have to be entered and edited in the mask shown on the left. They can still be found in [O2k control], but can no longer be edited there.

The O2k configuration window will pop up automatically after connecting with the O2k. If the tick box "Skip configuration at reconnect" is selected, this window will not pop up when reconnecting with the O2k.

3. TIP2k

3.1. Insert/Append Button: A new button "Append" has been added for more user-friendly programming of the TIP2k. "Append" adds the new line at the bottom of the program, whereas "Insert" adds it at the selected position.

TIP2k	
Control Chemicals Configuration Info	
Delay [s] 1 00:00:01	
Mode Direct control Feedback control	
Vol+Flow Volume [μl] 18.999 C TIP backward	
Vol+Time Flow (μl/s) 50.000	
Flow+Time Time [s] 0.20 Test start	
Interval [s] 1 00:00:01	
Cycles 1	
Duration [s] 1 00:00:01	
Program line: Append Insert Replace Delete	Move up Move down
Line Mode Del [s] Vol [µl] Flow [µl/s] Time [s] Duration [s] Cyc	les Feedback quantity >< Value DataN Action Pause [s]

3.2. TIP2k configuration: Adjustments to "Configuration" were done to accommodate the TIP2k series and Microsyringe type. By providing this information, DatLab is able tocheck the total volume programmed in the "Control" window and warn the user if the approximate maximum operation volume is exceeded.

TIP	2k			
С	ontrol Chemical	s Configuration Info		
Т	IP2k series	C and higher 💌 🕻	and B: Single light on the rear push button on the and higher: Green light on the front push button, b	side of the TIP2k. lue light on the rear push button.
M	ficrosyringe type	200 μl 🗨	Save TIP2k configuration	
Г	Operational volum	ne		
	TIP2k series	Microsyringe type	Approximate max. operational volume	
	All	200 µl	200 µl	
	A and B	500 µl	600 µl	
	C and higher	500 µl	360 µl	

4. Experiment

4.1. Edit experiment window:

The "Edit experiment" window has been complemented with the following boxes:

- File recorded by (automatically filled)
- Protocol: SUIT protocol's name
- Sample type: renamed from "Sample"
- Cohort
- Sample code
- Sample number
- Subsample number

Experimental code						Change upp
File recorded by			C 0001			Unange use
Power-02k			P4			
Chamber	A		14		в	
Protocol						
Sample type						
Cohort						
Sample code						
Sample number	Ø				0	
Subsample number	0				0	
Unit	Unit	-]	Unit		-
Concentration	0.000	per ml		0.	.000	per ml
Amount	0.000	per cha	amber	0.	.000	per chamber
Medium						
Chamber volume	2.00			2.00		Reset to system defaul
Data recording interv	al [s]		2.0			
Comments						

Protocol and sample number are shown next to the graph (right side) above the displayed channel names.

A double-click on the Protocol name or sample number will open the "Edit experiment" window.



4.2. Experimental log: The "View protocol" window has been renamed to "Experimental log".

5. Calibration

5.1. Calibration of pX channel:

- The pX calibration window has been changed to allow multipoint calibration, similar to the Amp calibration window.
- Units for the calibrated pX signal and pX slope were updated.

pX calibration					
Channel: D3B: pX Active sensor # 96230					
Channel label: 🖂					
Signal					
Current calibration	Calibrate				Copy from file
Calibration source	Select marks Ent	er pX calibration values		Unit	1 –
Calib. Sensor # 96230	▼ 01 ▼ 02	Name Time 01 01:56:23	Signal [V] 9	ilope p 0.01291	× ^
Name Signal [V] Slope p× 01 3.91730 0.01291 □ 4.00000	V 03	02 02:01:07	2.82568	-4.00071	5.00000
02 2.82568 -4.00071 □ 5.00000 03 0.50905 -0.04184 □ 7.00000					E
	Gain	V/uA1 20 Offset v	oltage (mV)	0	
Sensitivity [V/unit] -1.1393 R²=0.99979 Intercept [V] 8.4934	Copy from file Sensitivit Reset to system default	v [V/1] -1.1393 [V] 8.4934	R²=0.99979	Show graph	
MitoPedia: 02k-Calibration				Cancel	Calibrate

6. Flux/Slope

The following features of the previous [Calibration] window (Tab: Slope) have been moved to Flux/Slope:

- Flux Control Ratio (FCR)
- Baseline Correction
- Background Correction

These features are applied by selecting the according tick box or radio button.

For each channel, a separate window is provided. The following functions have been added to each mask:

- Selection and switch between "Flux per volume", "Flux per mass" or "Flux control ratio, FCR" is possible. The default label and unit change automatically as a result of this selection.
- Stoichiometry: default: -1 for O2 and +1 for Amp and pX

Slope configuration			
Flux / Slope: Channel: 5A: 02	Default label: 5A: 02 flux per mass [pmol	/(s*mg)]	
C Flux per volume		Chamber volume	2.00 ml
Flux per mass	Sample concentration 0.5	10 mg/ml	Edit experiment
C Flux control ratio, FCR State	Select 02 flux per mark [pmol/[s*m] J1 1.	V 1 <u>1</u> 00	
Baseline State correction Baseline	Select 02 flux per mark [pmol/(s*m	V 11 00	
I Background correction a* -2.6 b* 0.6	Calibrate a* = Intercept: flux at zero o BG b* = Slope: flux per oxygen	xygen Reset to conc. system default	Copy from file
Slope smoothing 20	▼ Stoichiometry C +1 • 1		
MitoPedia: Flux / Slope		Cancel	ок

7. Graph

7.1. [Select plots] – Graph layout: The [Select plots] window has been restructured and renamed to "Graph layout" in DatLab 7 to ensure a more user-friendly window:

Graph layout					
Plots Scaling I	nfo				
Select graph Grap	<mark>h1</mark> ▼				
Oxygen, O2 Amp	erometric, Amp Potentiome	tric, pX System channels			
02 signal ✓ Y1 ☐ Y2	 Use default label 54: 02 concentration [μM] 	C Use custom label	Channel labet: 02 Unit µM ▼	Color Wi	idth Linestyle ✦ Solid ・ Raw signal
02 Flux / Slop □ Y1 ☑ Y2	© ● Use default label 54: 02 flux per mass [pmol/(s*mg)]	C Use custom label	 C Flux per volume I Flux per mass, 0.510 mg/ml C Flux control ratio □ Baseline corr. ☑ Background corr. 	Color Wi Red v 6 Unit pmol/(s*ml)	idth Linestyle ✦ Solid ↓ Raw signal
- 02 signal □ Y1 □ Y2	 Use default label 5B: 02 concentration [μM] 	C Use custom label	Channel labet: 02 Unit: µM ▼	Color Wi	idth Linestyle ↓ Solid ↓ Raw signal
02 Flux / Slog	De				
□ Y1 □ Y2	Use default label SB: 02 flux per mass [pmol/(s*mg)]	C Use custom label	C Flux per volume	Color Wi Red 6 Unit pmol/(s*ml)	idth Linestyle
C Reference layoul C All users O User: #	^{ts} Layout type Other	.	Load Sa layout lay	ave	
MitoPedia: Layout fo	r DatLab graphs				Cancel OK

Channels are separated in different tabs. For each graph, plots are selected with tick boxes. The axis labels are changed automatically,

according to the channel and unit. Signal units in [Select plots] window are independent of the units used for calibration.

To display the raw signal, the tick box on the right side of the according channel has to be selected.

7.2. Custom label: In DatLab 7, users have the possibility to change the axis labels in [Graph/Select plots]. Two lines are available for entering a name and the according unit.

8. Layout

8.1. Layout structure: A new hierarchy for DatLab graph layouts has been implemented:

Layout categories

- Reference layouts
- All users
- User: #

Reference layouts are provided with the installation package of DatLab 7. They cannot be changed or deleted, but it is possible to edit a reference layout and save it under a new name. Layouts saved in "All users" can be used and edited by all users. Personal layouts (saved in "User: #") can only be accessed by the according user.

For every layout category mentioned above, the following layout types are provided:

- O2k-Core
- 02 & Amp
- O2 & pX
- Other

Layout Marks ?			
Info / Load / Save			
Reference layouts	•	O2k-Core	×
All users	•	O2 & Amp	•
User: #	+	02 & pX	•
Most recently used layouts:		Other	•

8.2. Most recently used layouts: The last five layouts used are displayed in the menu [Layout].

9. Marks

9.1. Mark statistics – "Copy to clipboard" options: In addition to the mark information, experimental details are copied to clipboard as default. In order to use older versions of our DatLab Excel templates, this function can be switched off by deselecting the tick box "Experimental details". Furthermore, the slope values are exported

as the slope negative for traceability. To copy the current values (e.g. flux per mass), the tick box "Traceability in DatLab-Excel templates" has to be deselected.

- **9.2. Mark statistics exporting median:** Instead of exporting the averages of marks, the median is exported in DatLab 7 as default. Furthermore, **Range** was added as an additional export-option.
 - window: This window has been
- **9.3. Edit mark information window:** This window has been complemented with three new functions (opened by a click on the mark bar):
 - Delete points: Deletes all data points in the plot within the selected mark frame.
 - Interpolate points: Interpolates all data points in the plot within the selected mark frame.
 - Restore points: Reverses all data points in the plot if they have been previously deleted or interpolated.

These functions are applied by selecting the according tick box and pressing the button "OK".

Edit mark	information			
Start Stop N Points Average Name Value	00:26:12 00:29:03 85 365.3895 01	0.00000		Delete points Interpolate points Restore points
Comment <u>MitoPedia</u>	a: Marks		Ca	ncel OK



Select

Median

C Average C Range