

# Oroboros 02k

Mitochondria and Cell Research

[www.orooboros.at](http://www.orooboros.at)





# To find solutions

- Cancer • Diabetes • Aging
- Neurodegeneration
- Cardiovascular
- Exercise physiology



**Oroboros O2k-FluoRespirometer**  
High-Resolution Respirometry

## » explore

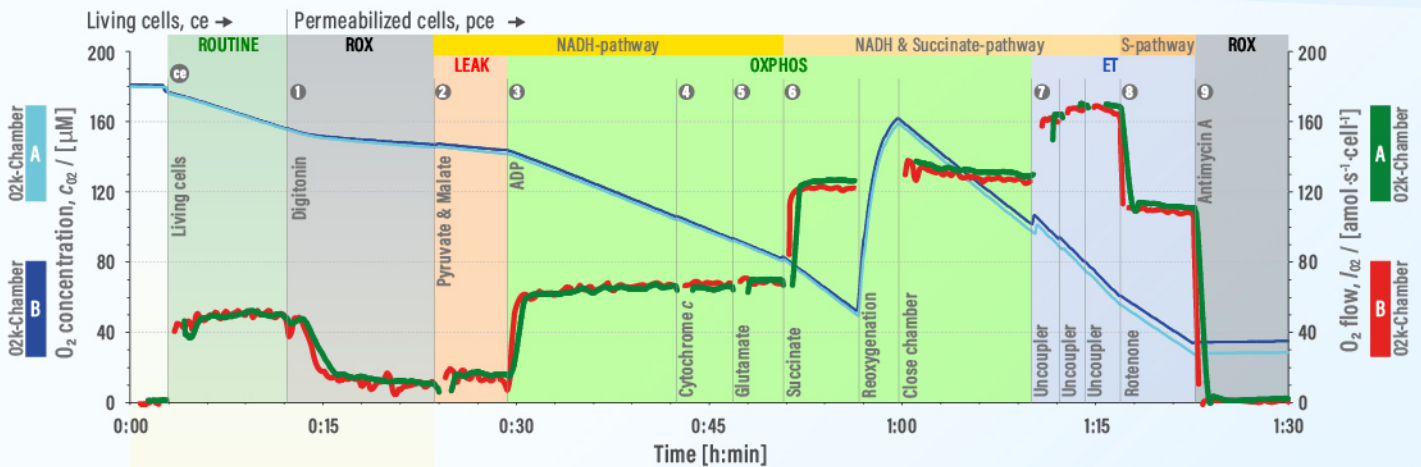
- O<sub>2</sub> consumption
- H<sub>2</sub>O<sub>2</sub> production
- mt-Membrane potential
- ATP production
- pH, Ca<sup>2+</sup>, NO<sup>-</sup>

## » mitochondria and cells

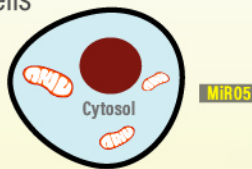
- Isolated mitochondria
- Tissue homogenate
- Permeabilized muscle fibers
- Permeabilized cells
- Living cells

## Oroboros O2k-SUIT protocol

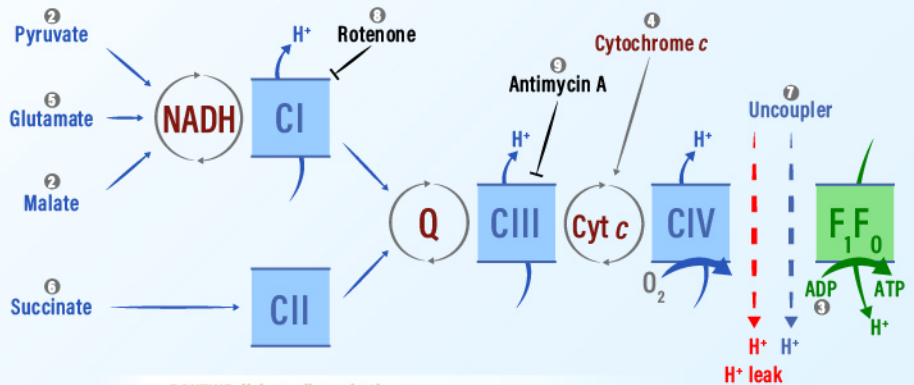
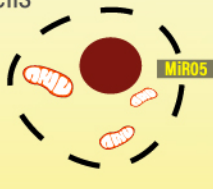
2 chambers (A and B) - reproducibility



Living cells



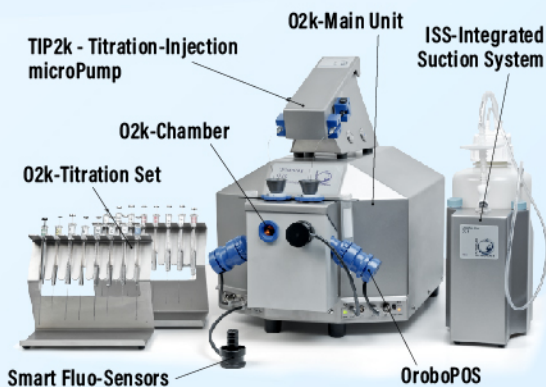
Permeabilized cells



- ROUTINE: living cell respiration
- ROX: Residual oxygen consumption
- LEAK: cation leak-dependent respiration
- OXYPHOS: ADP-stimulated respiration, OXPHOS-capacity
- ET: noncoupled respiration, ET-capacity

## Oroboros O2k-Packages

	O2k-FluoRespirometer	Startup O2k-Respirometer	Power O2k-FluoRespirometer	Power O2k-Respirometer
O2k-Main Unit	✓	✓	✓	✓
TIP2k - Titration-Injection microPump	✓		✓	
O2k-Fluo Smart-Module	✓		✓	
Small Chamber O2k-sV-Module	✓	✓	✓	✓
DL-Protocols	✓	✓	✓	✓
O2k-Assembly Kit	✓	✓	✓	✓
OroboPOS polarographic oxygen sensors	3	2	2	2
OroboPOS-Service Box	✓	✓	✓	✓
O2k-Chamber	2	2	2	2
DatLab software with SUITbrowser and SUIT protocols	✓	✓	✓	✓
ISS-Integrated Suction System	✓	✓		
O2k-Titration Set with Syringe Racks and Tube Racks	✓	✓		
MiRO5-Kit & MitoKit-CII	✓	✓	✓	✓
Expert support	✓	✓	✓	✓
Free registration for O2k-Workshop	✓	✓	✓	✓



## Oroboros O2k-Modules

O2k-Fluo Optical sensors and filters

Fluorescence module for measurement of  $H_2O_2$ , ATP production, mt-membrane potential,  $Ca^{2+}$

TIP2k Titration-Injection microPump

Programable and automated titrations for complex protocols

O2k-sV Small operation volume

High-resolution respirometry with reduced amounts of biological sample

O2k-TPP+ Potentiometric ion-selective electrodes

Measurement of mitochondrial membrane potential

O2k-pH pH electrodes

pH measurement

O2k-NO NO-sensor compatibility pack

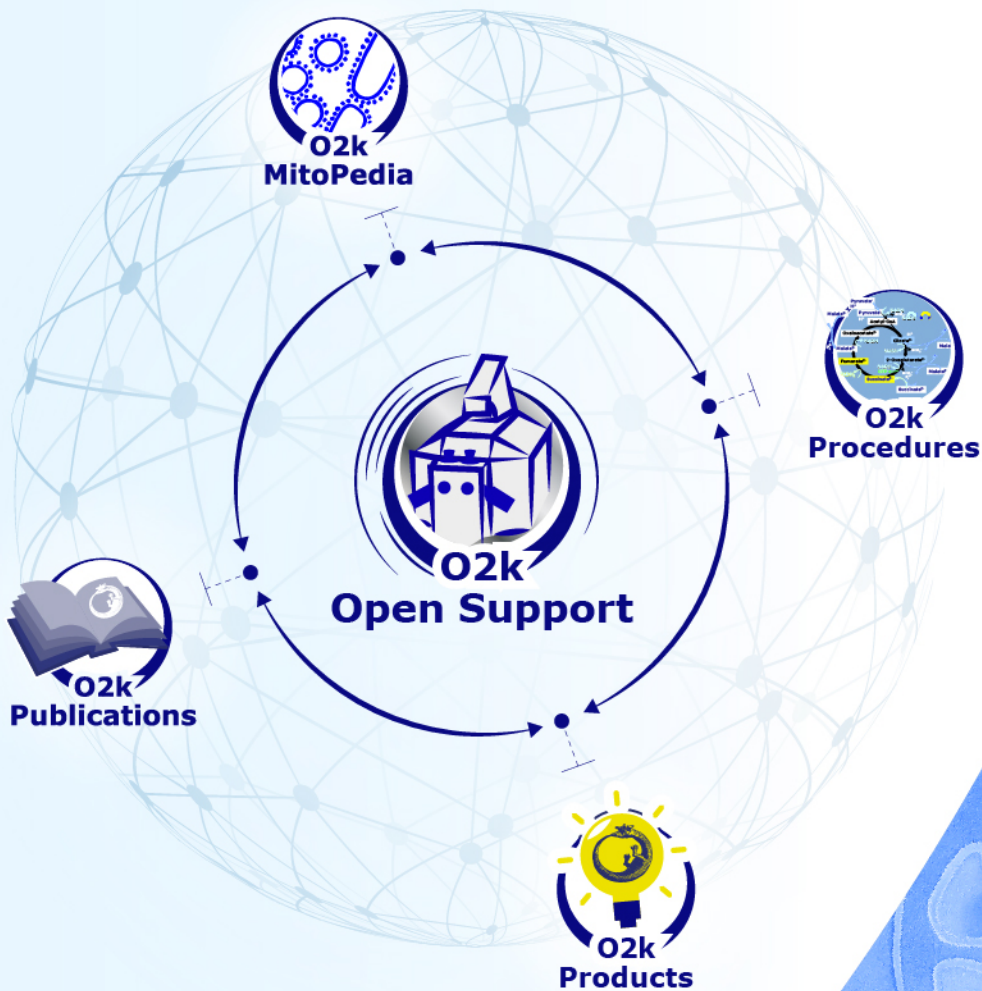
Amperometric O2k-MultiSensor applications: NO,  $H_2S$ ,  $H_2O_2$



# Sole-source instrument

<b>Oxygen</b>	<p>Respiration chambers with minimum oxygen O<sub>2</sub> diffusion</p> <ul style="list-style-type: none"> <li>• High-resolution of oxygen flux: <math>\pm 1 \text{ pmol O}_2 \cdot \text{s}^{-1} \cdot \text{mL}^{-1}</math> from normoxia to anoxia</li> <li>• High-resolution of oxygen concentration: 5 nM</li> <li>• Long-term stability and linearity of the polarographic oxygen sensor (OroboPOS)</li> <li>• Barometric pressure transducer for accurate air calibration at any altitude</li> </ul>
<b>SUIT protocols</b>	<p>Standardized substrate-uncoupler-inhibitor-titration DL-Protocols</p> <ul style="list-style-type: none"> <li>• Real-time monitoring of respiratory rates and states</li> <li>• Multiple titrations within a single assay for in-depth analysis of mitochondrial fitness</li> </ul>
<b>MultiSensor</b>	<p>Additional parameters recorded real-time in combination with oxygen in the same chamber</p> <ul style="list-style-type: none"> <li>• Automatic and documented calibration routines, instrumental background tests, and mitochondrial assays supported by DL-Protocols</li> </ul>
<b>Temperature</b>	4 to 47 °C   stability $\pm 0.002 \text{ }^\circ\text{C}$

**Dimensions:** L 45 cm, W 31 cm, H 23 cm | **Weight:** 14 kg | **Power:** 100 – 240 V, 47 – 63 Hz, 120 W  
**Chamber:** Duran glass | **Volume:** 2 mL or 0.5 mL | **Thermostat:** Peltier temperature control  
**Specialized DatLab Software** for use on a Windows PC connected to the O2k via a USB port



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