OROBOROS INSTRUMENTS

# Oroboros O2k

## Mitochondria and Cell Research

www.oroboros.at

# Find solutions to

- Cancer · Diabetes · Obesity
- Neurodegeneration · Aging
- Cardiovascular
- Exercise physiology

Oroboros O2k-FluoRespirometer
High-Resolution Respirometry

## »explore

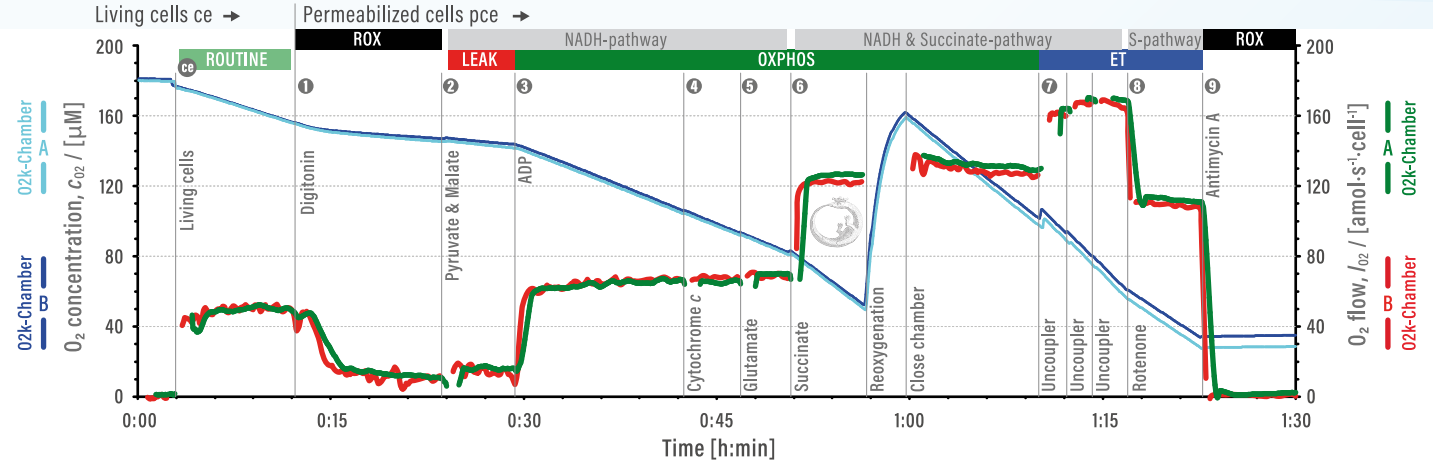
- $O_2$ consumption
- $H_2O_2$ production
- mt-Membrane potential
- ATP production
- pH, $Ca^{2+}$, $NO^{\cdot}$

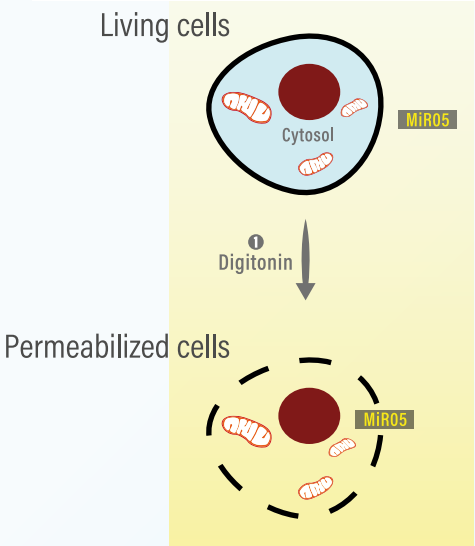
## »mitochondria and cells

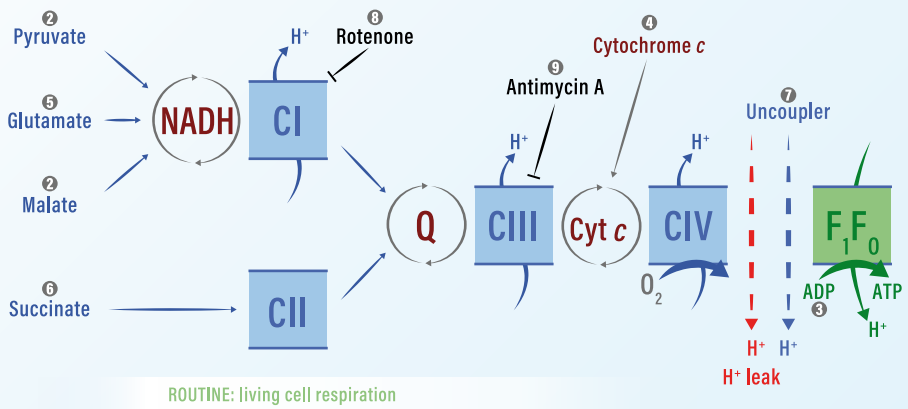
- Isolated mitochondria
- Tissue homogenate
- Permeabilized muscle fibers
- Permeabilized cells
- Living cells

## Oroboros O2k-SUIT protocol

2 chambers (A and B) - reproducibility



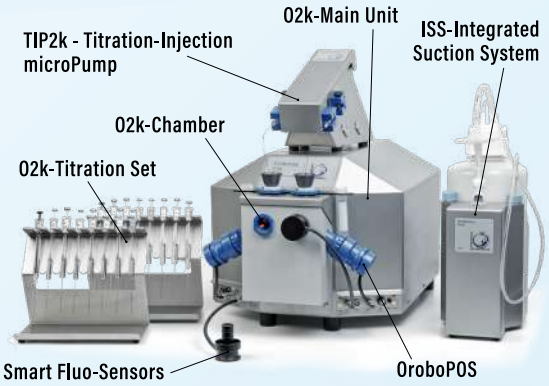




ROUTINE: living cell respiration
ROX: Residual oxygen consumption
LEAK: cation leak-dependent respiration
OXYPHOS: ADP-stimulated respiration, OXPHOS-capacity
ET: noncoupled respiration, ET-capacity

## 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 | ✓ | ✓ | | |
| MiR05-Kit | ✓ | ✓ | ✓ | ✓ |
| 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 chamber volume
High-resolution respirometry with reduced amounts of biological sample

O2k-$TPP^+$ Potentiometric ion-selective electrodes
Measurement of mitochondrial membrane potential

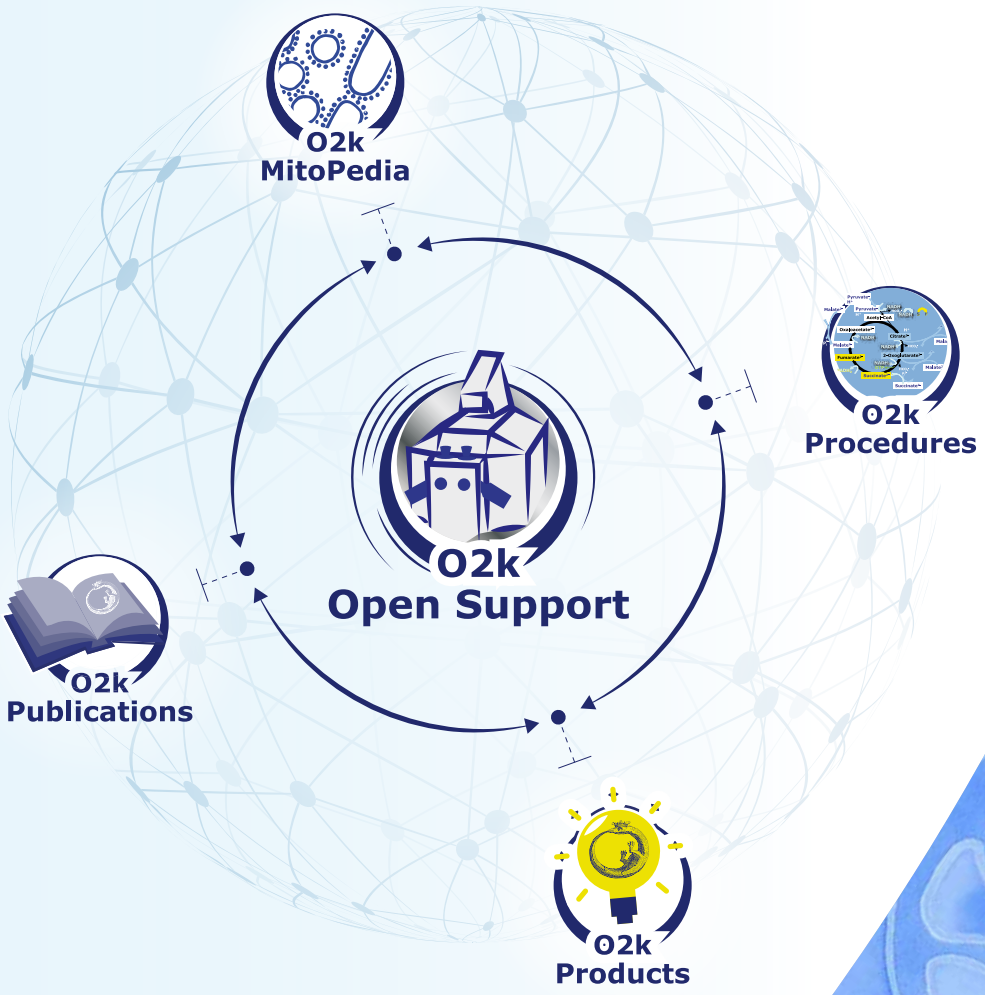
O2k-pH Electrodes
pH measurement

O2k-NO NO-sensor compatibility pack
Amperometric O2k-MultiSensor applications: NO, $H_2S$, $H_2O_2$

# Sole-source instrument

| | |
|---|---|
| **Oxygen** | Respiration chambers with minimun oxygen diffusion<br>▪ High-resolution of oxygen flux: ±1 pmol $O_2 \cdot s^{-1} \cdot mL^{-1}$ from normoxia to anoxia<br>▪ High-resolution of oxygen concentration: 5 nM<br>▪ Long-term stability and linearity of the polarographic oxygen sensor (OroboPOS)<br>▪ Barometric pressure transducer for accurate air calibration at any altitude |
| **SUIT protocols** | Standardized substrate-uncoupler-inhibitor-titration DL-Protocols<br>▪ Real-time monitoring of respiratory rates and states<br>▪ Multiple titrations within a single assay for in-depth analysis of mitochondrial fitness |
| **MultiSensor** | Additional parameters recorded real-time in combination with oxygen in the same chamber<br>▪ Automatic and documented calibration routines, instrumental background tests, and mitochondrial assays supported by DL-Protocols |
| **Temperature** | 4 to 47 °C \| stability ±0.002 °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




This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 859770.
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