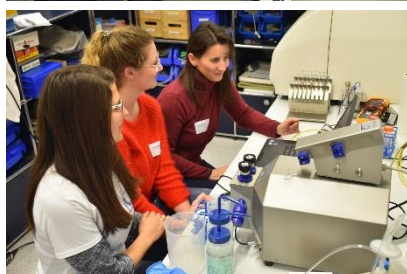


O2k-Coaching Days - Basic 144th O2k-Workshop on high-resolution respirometry

2020 Jan 20th-22nd
Innsbruck, Tyrol, Austria



O2k-Coaching Days - Basic is a training course which provides a fundamental introduction to high-resolution respirometry (HRR) with the Oroboros O2k. We will give you an overview of the O2k-FluoRespirometer, including real-time analysis with DatLab 7.4 and applications of the Titration-Injection microPump TIP2k. Hands-on sessions range from OroboPOS technical service (instrumental quality control system which is an essential component of HRR) to respirometry experiments with substrate-uncoupler-inhibitor (SUIT) protocols. Also, the new Oroboros SUITbrowser will be presented. The SUITbrowser helps you to find the best SUIT protocol for your specific research questions: [Oroboros SUITbrowser](#). Many optimized SUIT protocols are available as DL-Protocols and will be shown at the Coaching Days.

A wide range of mitochondrial topics will be covered, including abstracts and experimental experiences presented by the participants.

On previous workshops, IOC participants invariably asked for a detailed discussion about protocol design. The [Blue Book](#) (5th edition in prep.) and [Mitochondrial respiratory states and rates](#) provide a basic introduction to mitochondrial physiology, complemented by overview presentations with examples, including

DatLab Analysis of demo files. During the course, the students will be introduced to our **instrumental quality control system**, which is a fundamental component of HRR and will be put to the practical test in teams using seven O2k (14 chambers). Finally, the **O2k-FluoRespirometer** and its **O2k-MultiSensor** applications, particularly fluorescence measurements, will be introduced with hands-on sessions about ROS production measurement with Amplex[®] UltraRed.

The 144th workshop is a unique opportunity to learn about the new developments in HRR.

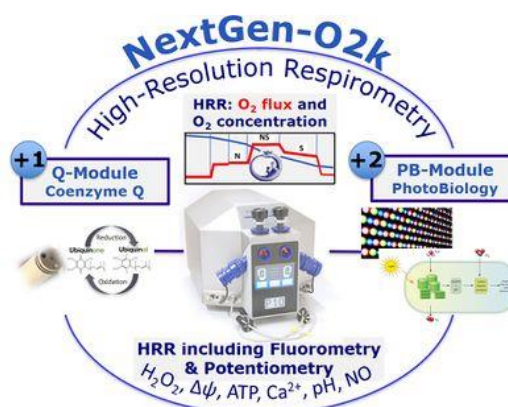


Lecturers and tutors

Luiza Cardoso	Postdoc, Mitochondrial Wizard, Oroboros Instruments
Marco Di Marcello	Research Assistant, Research Magician, Oroboros Instruments
Carolina Doerrier	CSO, Scientific Motive Force, Oroboros Instruments
Luiz Felipe Garcia-Souza	PhD student, Mitochondrial Adventurer, Oroboros Instruments
Erich Gnaiger	CEO, Innovation Alchemist, Oroboros Instruments
Timea Komlodi	Postdoc, Mitochondrial Explorer, Oroboros Instruments
Manuela Passrigger	Laboratory Manager, Lab Guardian, Oroboros Instruments

NextGen O2k

Oroboros - as a driving force in mitochondrial physiology - extends the analytical and diagnostic power of high-resolution respirometry by integration of NADH- and Q-redox monitoring in the **NextGen-O2k**. We aim at establishing the Oroboros quality control management for dissemination to our worldwide O2k-Network laboratories. This will become an effective contribution to address the acute *reproducibility crisis* of scientific investigation. In the spirit of Open Science and global networking, we will enable data sharing across projects and institutions in an Open Access database on mitochondrial physiology and pathology, to resolve the *inflation crisis* and ultimately the *value-impact crisis* of present academic publication. This will support key developments in mitochondrial medicine. In addition, we expand our business to algal biotechnology and ecology with the photobiology module of the NextGen-O2k, widening our focus from medicine to environment and climate.



Programme

1 Monday, Jan 20

Workshop		Room
08:15	Welcome - Get-together: Introduction of participants and their research interests	Oroboros O2k-Laboratory
08:30-09:15	OroboPOS service and O2k instrumental setup - overview with videoclips	"_"
09:15-09:55	Hands-on (2 groups) OroboPOS service and O2k instrumental setup	"_"
09:55-10:30	DatLab 7.4 overview	"_"
10:30	Coffee / Tea	Kitchen
11:00-11:30	Instrumental quality control 1: oxygen calibration	Oroboros O2k-Laboratory
11:30-12:00	Hands-on: Instrumental quality control 1: oxygen calibration DL-Protocol: O2k-cleaning BeforeUse DL-Protocol: O2 calibration air	"_"
12:00	Lunch break	
13:00-13:30	Hands-on: Instrumental quality control 1: oxygen calibration (continuation) DL-Protocol: O2 calibration air	Oroboros O2k-Laboratory
13:30-14:00	Instrumental quality control 2: Instrumental O2 background – overview with videoclips	"_"
14:00-15:00	Hands-on:Instrumental quality control 2: Instrumental O2 background DL-Protocol: Instrumental O2 background TIP2k	"_"
15:00	Coffee / Tea	Kitchen
15:30-17:30	Hands-on: Instrumental quality control 1 and 2. DatLab analysis.	Oroboros O2k-Laboratory

2 Tuesday, Jan 21

Workshop		Room
08:30-09:15	Hands-on: Instrumental quality control 1: oxygen calibration DL-Protocol: O2k-cleaning BeforeUse DL-Protocol: O2 calibration air	Oroboros O2k-Laboratory
09:15-09:45	Introduction to substrate-uncoupler-inhibitor titration (SUIT) protocols – fundamental principles. SUIT reference protocol: RP1&RP2	"_"
09:45-10:00	SUITbrowser: how to find the best SUIT protocol for your research questions.	"_"
10:00	Coffee / Tea	Kitchen
10:30-11:45	Hands-on: O2k-Demo experiment: Respiration of permeabilized cells: measurement of oxygen consumption with the reference protocol RP1 (SUIT-001) and RP2 (SUIT-002). DL-Protocol: SUIT-001 O2 ce-pce D003.DLP DL-Protocol: SUIT-002 O2 ce-pce D007.DLP	Oroboros O2k-Laboratory
11:45-12:00	Hands-on: O2k-cleaning after use DL-Protocol: O2k-cleaning AfterUse	"_"
12:00	Lunch break	
13:00-13:30	Hands-on: O2k-cleaning after use (continuation) DL-Protocol: O2k-cleaning AfterUse	Oroboros O2k-Laboratory
13:30-15:00	DatLab 7.4 analysis: Introduction and new features	"_"
15:00	Coffee / Tea	Kitchen
15:30-17:30	Individual DatLab analysis + summary	Oroboros O2k-Laboratory

3 Wednesday, Jan 22

Workshop		Room
08:30-10:00	MitoFit proficiency test Hands-on: Instrumental quality control 1: oxygen calibration DL-Protocol: O2k-cleaning BeforeUse DL-Protocol: O2 calibration air	Oroboros O2k-Laboratory
10:00	Coffee / Tea	Kitchen
10:30-11:45	MitoFit proficiency test Hands-on: O2k-Demo experiment: Respiration of permeabilized cells: measurement of oxygen consumption with the reference protocol RP1 (SUIT-001) and RP2 (SUIT-002). DL-Protocol: SUIT-001 O2 ce-pce D003.DLP DL-Protocol: SUIT-002 O2 ce-pce D007.DLP	Oroboros O2k-Laboratory
11:45-12:00	Hands-on: O2k-cleaning after use DL-Protocol: O2k-cleaning AfterUse	"_"
12:00	Lunch break	
13:00-13:15	Hands-on: O2k-cleaning after use (continuation) DL-Protocol: O2k-cleaning AfterUse	Oroboros O2k-Laboratory
13:15-14:00	DatLab analysis	"_"
14:00-14:30	O2k-Applications - overview	"_"
14:30-15:00	Proficiency test: DatLab analysis summary	"_"
15:00	Coffee / Tea	Kitchen
15:30-16:30	The Bioblast wiki, MitoFit Preprint Archives, O2k-Network and MitoEAGLE	MiPArT
16:30-17:00	Feedback & conclusions	"_"
17:00	Farewell activity	"_"

O2k-Workshop: OUR COMMON AIMS

- **Mitochondrial physiology:**
Study mitochondrial function in the **context** of cell physiology and pathology
- **Instrumental performance – the O2k:**
 - 🕒 Learn **high**-resolution respirometry
 - 🕒 Gain **hands-on** experience
 - 🕒 Extend to O2k-**Multi**Sensor applications
- **Excellence in research:**
 - 🕒 Instrumental **quality** control
 - 🕒 Experimental design for **innovation**
 - 🕒 Data analysis meeting superior **standards**



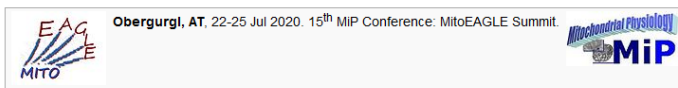
List of participants

Participant	Institution
Buoso Chiara	AT Innsbruck Weiss G - Medical University Innsbruck, Innsbruck (AT)
Beleza Jorge	PT Porto Beleza J - University of Porto, Porto (PT)
Carter Kristen	US MS Jackson Cornelius DC - University of Mississippi, Jackson (US)*
Chamkha Imen	SE Lund Elmer E - Lund University, Lund (SE)*****
Coldewey Sina	DE Jena Coldewey S - Jena University Hospital, Jena (DE)*
Esper Trembl Ricardo	DE Jena Coldewey S - Jena University Hospital, Jena (DE)*
Gayathri Narayanappa	IN Bangalore Gayathri N - NIMHANS, Bangalore (IN)*
Griffiths Kate	UK Glasgow Selman C - Glasgow University, Glasgow (UK)*
Hussein Rawya	SE Lund Elmer E - Lund University, Lund (SE) *****
Linzi Jin	CN Beijing Huawei - Huawei, Beijing (CN)*
Neu Charles	DE Jena Coldewey S - Jena University Hospital, Jena (DE)*
Pereira Rita	PT Porto Beleza J - University of Porto, Porto (PT)
Place Nicolas	CH Lausanne Place N - Université de Lausanne, Lausanne (CH)*
Li Nora	SE Lund Elmer E - Lund University, Lund (SE) *****

*Asterisks indicate the number of O2k instruments in the participant's lab.



MitoEAGLE Obergurgl 2020



Venue and Accommodation

Oroboros O2k-Laboratory

Schoepfstrasse 18, 6020 Innsbruck

> [How to get there](#)

Hotel suggestion:

Basic Hotel Innsbruck

> <https://www.basic-hotel.at/en/>



More details?

Gnaiger E (2019) Mitochondrial pathways and respiratory control. An introduction to OXPHOS analysis. 5th ed. Mitochondr Physiol Network 24.05. Oroboros MiPNet Publications, Innsbruck:96 pp. » [Full text in Bioblast](#)

O2k-Manual – <http://wiki.oroboros.at/index.php/O2k-Manual>

O2k-Procedures – <http://wiki.oroboros.at/index.php/O2k-Procedures>

>3,400 O2k-Publications – <http://wiki.oroboros.at/index.php/O2k-Publications: Topics>

COST Action CA15203 MitoEAGLE



MitoEAGLE Mitochondrial respiratory states and rates. MitoFit Preprint Arch doi:10.26124/mitofit:190001.v6
[Mitochondrial respiratory states and rates](#)

MitoFit Preprint Archive



The Open Access preprint server for mitochondrial physiology and bioenergetics

Articles can be submitted by Email as a pdf file with embedded figures accompanied by the abstract as a word (text) document.

Send to: javier.iglesias-gonzalez@oroboros.at

» https://www.mitofit.org/index.php/MitoFit_Preprint_Archives

Acknowledgements

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Mitochondria and cell research

O2k-Workshops are listed as [MitoGlobal Events](#)

