

MitoFit Science Camp

**MitoFit Science Camp and IOC112, Kuehtai, Tyrol, Austria
2016 July 07 – 13**



Programme

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Abstracts: http://www.mitofit.org/index.php/MitoFit_Science_Camp_2016_Kuehtai_AT



The MitoFit Science Camp may be considered as a sequence of workshops rather than a conference or school, addressing key topics of the COST Action MITOEAGLE project.



Thursday, July 7		2020m
07:00 - 18:30	Arrival	
19:00 - 20:30	<i>Dinner</i>	
20:30 - 21:15	Welcome by the organizers	



Friday, July 8 Morning

2020m



07:00 - 08:00	Yoga (Meagan McManus) / Competitive sports (Martin Fritz)
08:00 - 09:00	Break(fast)
Topic A1	Diagnostic SUIT protocols of mitochondrial fitness.
09:00 - 10:15	SUIT protocols: the next steps <i>Chairs:</i> Verena Laner, Charles L Hoppel
	Gnaiger Erich (ORO) SUIT protocols -MitoPathways 2007-2016. <u>A1-01</u>
	Gnaiger Erich (ORO) Release of DatLab 7 - new dimensions with MitoFit quality control and MitoPedia: DatLab. <u>A1-02</u>
	Doerrier Carolina (ORO) SUIT reference assay for OXPHOS analysis by high-resolution respirometry. <u>A1-03</u>
10:15 - 10:45	Coffee break
10:45 - 12:00	SUIT protocols: limitations and solutions
	Sumbalová Zuzana (ORO) Optimizing strategies on the malate concentration in SUIT protocols. <u>A1-04</u>
	Krumschabel Gerhard (ORO) O2k-Network discussion forum: Fatty acid oxidation. <u>A1-05</u>
	Osiki Prisca O (ZA) Suitability of octanoylcarnitine & malate for assessment of beta oxidation capacity by respirometry in aconitase-inhibited samples. <u>A1-06</u>
	Makrecka-Kuka Marina (LV) Long-chain acylCoAs vs acylcarnitines in mitochondrial bioenergetics: from <i>in vitro</i> to <i>in vivo</i> . <u>A1-07</u>
12:00 - 15:00	Lunch & Action / e-bikes



Friday, July 8 Afternoon

Topic A2	Quality management system for mt respirometry: the MitoFit proficiency test with a real-time Demo-Experiment (SUIT reference protocol).
15:30 - 16:45	O2k-demo experiment: reference SUIT protocol with cryopreserved mammalian cells. <i>Chairs:</i> Dominique-Marie Votion, Edward O Ojuka
	Lamberti Giorgia (ORO) Development of a reference sample for HRR. <u>A2-01</u>
	Doerrier Carolina, Lamberti Giorgia (ORO) O2k-Demo experiment: the SUIT reference protocol RP1/RP2. <u>A2-02</u>
16:45 - 17:15	Coffee break
17:15 - 18:30	Continued
19:00 - 20:30	Dinner

Topic A3	DatLab 7 proficiency test.	<u>A3-01</u>
20:30 - 21:15	Plattner Christina, Erich Gnaiger (ORO)	
	Pick up your OROBOROS USB-flash drive with DatLab 7	
	DatLab proficiency test – bring your laptop.	



Saturday, July 9 Morning

2020m



07:00 - 08:00	<i>Yoga (Meagan McManus) / Competitive sports (Martin Fritz)</i>	
08:00 - 09:00	<i>Break(fast)</i>	
Topic B1	Mitochondrial assays in blood cells: Blood cell preparation, cryopreservation, respiration.	
09:00 - 10:15	Blood cells for mitochondrial screening	
	<i>Chairs: Meagan McManus, P Darrell Neuffer</i>	
	Sumbalová Zuzana (ORO)	
	Human blood cells as study model of mitochondrial respiration.	<u>B1-01</u>
	Molina Anthony JA (US)	
	Blood-cell bioenergetics and physical function.	<u>B1-02</u>
	Karabatsiakis Alexander (DE)	
	Cryopreserved PBMCs as a study model of mitochondrial respiration.	<u>B1-03</u>
	Irving Brian A (US)	
	PBMC and t-cell mitochondrial function in humans.	<u>B1-04</u>
	Pelkena Dita (LV) Poster	
	OXPHOS enzyme activity measurements in mitochondria isolated from peripheral blood leukocytes in control group and patients with suspected mitochondrial disease.	<u>B1-05</u>
10:15 - 10:45	<i>Coffee Break</i>	
10:45 - 12:00	Workshop: Blood cell preparation, cryopreservation, respiration	
	<i>Chairs: Elisa Calabria, Sameh S Ali</i>	
12:00 - 15:00	<i>Lunch & Soccer / Volleyball / e-bikes</i>	



Saturday, July 9 Afternoon

Topic B2	Cell culture models versus tissue samples: - Brain and neuronal cells - Adipose tissue - Other.	
15:30 - 16:45	Cells and tissues	
	<i>Chairs: Chao-Pin Hsiao, Anthony J Hickey</i>	
	Hoppel Charles L (US)	
	Mitochondrial respiration in permeabilized skin fibroblasts.	<u>B2-01</u>
	Burtscher Johannes (AT)	
	Oxidative phosphorylation in the healthy and epileptic mouse brain.	<u>B2-02</u>
	Irving Brian A (US)	
	The rotenone paradox in liver mitochondria.	<u>B2-03</u>

	Volani Chiara (AT) Effects of iron imbalances on mitochondrial activity in mouse liver homogenate and permabilized rat PBMCs.	<u>B2-04</u>
16:45 - 17:15	<i>Coffee break</i>	
17:15 - 18:30	Cells and tissues <i>Chairs:</i> Verena Laner, Brian A Irving	
	Calzia Enrico (DE) Mitochondrial respiration shows tissue- and strain-specific aging in short- and long-lived <i>N. furzeri</i> strains.	<u>B2-05</u>
	Herminghaus Anna (DE) Poster Sterile laparotomy time-dependently modulates hepatic but not colonic mitochondrial function similar to moderate abdominal sepsis.	<u>B2-06</u>
	Madlala Hlengiwe (ZA) Fructose-induced defects in selected mitochondrial enzymes are detected by respirometry using glutamate&malate but not pyruvate&malate substrates.	<u>B2-07</u>
	Morales-Garcia Norma Lilia (MX) Respiratory deficiencies in isolated mitochondria from a Δ -shy1 <i>S. cerevisiae</i> strain.	<u>B2-08</u>
	Uribe Alvarez Christina (MX) In <i>Staphylococcus epidermidis</i> , oxygen variations promote differential expression of respiratory enzymes that constitute possible therapeutic targets.	<u>B2-09</u>
19:00 - 20:30	<i>Dinner</i>	

	Topic B3 Mitochondrial studies in neurodegeneration.	
20:30 - 21:15	<i>Chairs:</i> Nicole Bezuidenhout, David Marcinek	
	McManus Meagan (US) A multi-tiered mitochondrial approach to predictive biomarkers of neurodegenerative disease.	<u>B3-01</u>
	Schaefer Patrick M (DE) Prominent role of amyloid beta and its intracellular localization in Alzheimer's disease associated mitochondrial dysfunction.	<u>B3-02</u>
	Verebne Tar Krisztina (HU) Investigating the role of the proteasome activator PA200 in mitochondrial homeostasis in a cellular model for Huntington's disease.	<u>B3-03</u>
	Krako Nina (RS) Conformational targeting of amyloid β oligomers inside endoplasmic reticulum rescues mitochondrial deficits in 7PA2 cells. (<i>not present</i>)	<u>B3-04</u>
	Hsiao Chao-Pin (US) Poster Association between mitochondrial bioenergetics and radiation-related fatigue: a possible mechanism and novel target.	<u>B3-05</u>



Sunday, July 10 Morning

2020m



08:00 - 09:00	<i>Break(fast)</i>	
Topic C1	Skeletal and cardiac muscle fibres - towards a data repository.	
09:00 - 10:15	Quantitative studies	
	<i>Chairs: Marina Makrecka-Kuka, Anthony JA Molina</i>	
	Hoppel Charles L (US)	
	Skeletal muscle mitochondria: diagnostic studies.	<u>C1-01</u>
	Garcia-Roves Pablo M (ES)	
	Technical perspective of high-resolution respirometry in permeabilized skinned muscle fibers from different mouse models.	<u>C1-02</u>
	Coen Paul (US)	
	Improved mitochondrial function in human skeletal muscle – quantification.	<u>C1-03</u>
	Neufer P Darrell (US)	
	Direct real-time quantification of mitochondrial oxidative phosphorylation efficiency in permeabilized skeletal muscle myofibers.	<u>C1-04</u>
	Marcinek David J (US)	
	Targeting mitochondrial redox stress reveals two phases for reversal of mitochondrial dysfunction in aged mouse skeletal muscle.	<u>C1-05</u>
10:15 - 10:45	<i>Coffee break</i>	
10:45 - 12:00	Oxygen dependence of respiration in permeabilized fibres: respiration media, inhibitors, sample preparation	
	<i>Chairs: Zuzana Sumbalová, Paul Coen</i>	
	Merth Alexander, Droscher Stephanie, Bezuidenhout Nicole, Doerrier Carolina, Gradl Phillip, Gnaiger Erich (WGT, ORO)	
	The DatLab-controlled cooling plate for permeabilized muscle fibre preparation.	<u>C1-06</u>
	Bezuidenhout Nicole (ZA)	
	Comparison of oxygen dependence of respiration in permeabilized mouse skeletal muscle fibers in two respiration media, MiR06Cr and Buffer Z containing Ctl, Cr and Blebbistatin.	<u>C1-07</u>
	Kane Daniel N (CA)	
	Effects of inhibiting myosin-ATPase on mitochondrial respiratory capacity in permeabilized muscle.	<u>C1-08</u>
	Chicco Adam J (US)	
	Oxygen dependence of H ₂ O ₂ release from skeletal muscle and cardiac mitochondria: influence of sample preparation.	<u>C1-09</u>

Sunday, July 10 Afternoon

12:00 - 18:00	Excursion Dreiseenhütte power/moderate/slow
19:00	<i>Dinner</i>
20:30	<i>Soccer European-Championship public viewing</i>



Monday, July 11 Morning



07:00 - 08:00	<i>MitoFit Training (Stefan Moser)</i>	
08:00 - 09:00	<i>Break(fast)</i>	
Topic D1	Towards a database on mt-respiratory physiology: from laboratory standards to inter-laboratory harmonization. Data base and harmonization studies	
09:00 - 10:15	<i>Chairs: Plattner Christina, Adam J Chicco</i>	
	Garcia-Roves Pablo M (ES)	
	Design and implementation of systems biology approaches to integrate heterogenic data in biomedical research.	<u>D1-01</u>
	Drinnan Michael (UK)	
	The O2k in 2020: letting Datlab outside its box.	<u>D1-02</u>
	Molina Anthony JA (US)	
	UPBEAT, database and self-learning software.	<u>D1-03</u>
	Krumschnabel Gerhard (ORO)	
	O2k-MultiSensor: Mitochondrial respiration media for HRR and simultaneous O2k-Fluorometry.	<u>D1-04</u>
	Hoppel Charles L (US)	
	Comparison of permeabilized skeletal muscle fibers or isolated mitochondria for the detection of oxidative phosphorylation defects.	<u>D1-05</u>
	Markova Michaela (CZ) Poster	
	Porcine hearts samples preparation: PBI-Shredder or saponin?	<u>D1-06</u>
	Krumschnabel Gerhard (ORO)	
	O2k-Protocols: mt-preparations for HRR.	<u>D1-07</u>
	Irving Brian A (US)	
	Shredder: lessons learned.	<u>D1-08</u>
10:15 - 10:45	<i>Coffee break</i>	
10:45 - 12:00	MITOEAGLE nomenclature - roundtable	
	<i>Chairs: Giorgia Lamberti, Pablo Miguel Garcia-Roves</i>	
	Gnaiger Erich (AT)	
	Introduction: Do bioenergetics and mitochondrial physiology need a consistent nomenclature to become MitoFit? - Expand 'MitoPedia' as a basis for a joint publication on 'concepts and nomenclature'?	<u>D1-08</u>
12:00 - 15:00	<i>Lunch & Volleyball / Athletics</i>	



Monday, July 11 Afternoon

Topic D2	Mitochondrial health: molecules, cells and tissues. Exercise at high altitude and high performance	
15:30 - 16:45	<i>Chairs: Kathrin Renner-Sattler, Bret H Goodpaster</i>	
	Burtscher Martin (AT)	
	Living and exercising at moderate altitudes: health risk or benefit?	<u>D2-01</u>

	<p>Chicco Adam J (US) OXPHOS coupling efficiency of permeabilized muscle fibers predicts metabolic efficiency of subjects exercising at 5,260 m. <u>D2-02</u></p> <p>Votion Dominique-Marie (BE) OXPHOS capacities correlate with racing performance and indicate risk of developing exercise-induced myopathy. <u>D2-03</u></p> <p>Laner V, Gnaiger E (ORO) OXPHOS and ETS capacity in permeabilized fibres of canine superathletes. Analysis of HRR data presenting unexpected challenges. <u>D2-04</u></p>
16:45 - 17:15	<i>Coffee break</i>
17:15 - 18:30	<p>Mitochondrial function and dysfunction <i>Chairs:</i> Anna Herminghaus, Enrico Calzia</p> <p>Hickey Anthony J (NZ) How do bumblebees warm flight muscles? <u>D2-05</u></p> <p>Krajcova Adela (CZ) Mitochondrial pathogenesis of propofol infusion syndrome in an <i>in vitro</i> model of human skeletal muscle. <u>D2-06</u></p> <p>Chicco Adam J (US) Investigating the mechanism of cardiac mitochondrial respiratory impairment in Barth Syndrome. <u>D2-07</u></p> <p>Pileggi Chantal (NZ) Poster Voluntary exercise prevents high fat diet-induced cardiac mitochondrial dysfunction in male rats. <u>D2-08</u></p> <p>Maarman Gerald (ZA) Melatonin rescues uric acid-induced impairment of respiration in myotubes. <u>D2-09</u></p>
19:00 - 20:30	<i>Dinner</i>

Topic D3	MoTrPAC and MITOEGLE.
20:30 - 21:15	<p><i>Chairs:</i> Kathrin Renner-Sattler, Arnould Thierry</p> <p>Goodpaster Bret H (US) The molecular transducers of physical activity consortium (MoTrPAC) and MITOEGLE: exercise effects on mitochondria. The MoTrPAC is a new initiative funded by the U.S. National Institutes of Health to investigate the biological molecules in response to acute and chronic exercise, and to relate these changes to the benefits of physical activity. This molecular map will contain the many molecular signals that transmit the health effects of physical activity, and indicate how they are altered by age, sex, and fitness level. Clinical centers across the U.S. will obtain skeletal muscle, adipose tissue and blood specimens in ~2,500 healthy human subjects before and after bouts of acute exercise and following an exercise training program, and in a smaller number of non-exercise control subjects and in highly-trained athletes. Although not likely to be included in the primary analyses of blood and tissue specimens, <u>D3-01</u></p>



mitochondria was a featured topic of importance during the NIH-convened working group webinars and discussions that helped guide the MoTrPAC. We will propose an ancillary study to investigate the effects of exercise on mitochondrial genetics, energetics, dynamics, e.g., fusion, fission, mitophagy, epigenomics, oxidative stress and redox biology in skeletal muscle, adipose tissue and peripheral blood cells. This project within the MoTrPAC could synergize with MITOEAGLE to provide novel insights about the role of mitochondria and exercise in human health.

Discussion: MITOEAGLE - think MitoGlobally



Tuesday, July 12 Morning



07:00 - 08:00	<i>HIT-Training (Verena Menz)</i>	
08:00 - 09:00	<i>Break(fast)</i>	
Topic E1	MITOEAGLE and parallel IOC112 O2k-Workshop. V_{O2max} tests.	
09:00 - 10:15	<i>Chairs: Adelheid Weidinger, Dominik Pesta</i>	
	Göbel Georg (AT)	
	A supervised statistical approach: the meaning of the mean and beyond in small sample sizes.	<u>E1-01</u>
	The MITOEAGLE network.	<u>E1-02</u>
	IOC112 O2k-Workshop - experimental groups.	<u>E1-03</u>
10:15 - 10:45	<i>Coffee break</i>	
10:45 - 12:00	Continued	
12:00 - 15:00	<i>Lunch, 2 km walking-tests, V_{O2max} tests, e-bikes</i>	



Tuesday, July 12 Afternoon

Topic E2	MITOEAGLE and parallel IOC112 O2k-Workshop.	
15:30 - 16:45	MITOEAGLE: towards the 1 st MC Meeting.	<u>E2-01</u>
	IOC112 O2k-Workshop - experimental groups.	<u>E2-02</u>
16:45 - 17:15	<i>Coffee break</i>	
17:15 - 18:30	Continued	
19:00 - 20:30	<i>Dinner</i>	
20:30	<i>Conclusions and Poster Awards</i>	
21:30	MitoFit party at Dorfstadl	



Wednesday, July 13 Morning



08:00 - 09:00	<i>Break(fast)</i>
09:00	Departure by bus to Innsbruck

Posters

Herminghaus Anna: Sterile laparotomy time-dependently modulates hepatic but not colonic mitochondrial function similar to moderate abdominal sepsis.	B2-06
Hsiao Chao-Pin: Association between mitochondrial bioenergetics and radiation-related fatigue: a possible mechanism and novel target.	B3-05
Pelena Dita: OXPHOS enzyme activity measurements in mitochondria isolated from peripheral blood leukocytes in control group and patients with suspected mitochondrial disease.	B1-05
Pileggi Chantal: Voluntary exercise prevents high fat diet-induced cardiac mitochondrial dysfunction in male rats.	D2-08
Markova Michaela: Porcine hearts samples preparation: PBI-Shredder or saponin?	D1-06

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



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