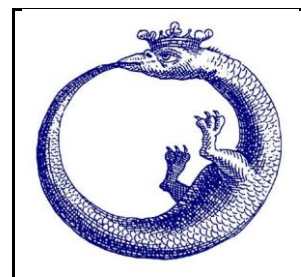


**CLINICAL AND INTERDISCIPLINARY**

Department of Transplant Surgery  
Research Division  
University Hospital of Innsbruck  
Anichstrasse 35  
A-6020 Innsbruck, Austria  
Tel: +43 512 504 2343 (2603)  
Fax: +43 512 504 2605

**BIOENERGETICS****METABOLIC  
ENERGETICS  
RESEARCH  
GROUP IN  
EUROPE****International Oxygraph Seminar**

COMETT - Community Action Programme in Education and Training for Technology

**HIGH-RESOLUTION RESPIROMETRY AND MICROCALORIMETRY  
IN BIOENERGETIC STUDIES OF HYPOXIC CELLS**

**Department of Transplant Surgery, University of Innsbruck, Austria**

**Seminar: June 1-2, 1994**

**Special Application Course: June 3, 1994**

**Lecturers**

**F.N. Gellerich**, Dept. Transplant Surgery, Innsbruck, A  
**E. Gnaiger**, Dept. Transplant Surgery, Innsbruck, A  
**L. Gustafsson**, Dept. of Microbiology, Göteborg, S  
**R.B. Kemp**, Inst. Biological Sciences, Aberystwyth, UK  
**M. Rigoulet**, Inst. Biochemistry and Cellular Genetics, Bordeaux, F  
**R. Steinlechner**, Dept. Transplant Surgery, Innsbruck, A  
**M. Wyss**, Dept. Transplant Surgery, Innsbruck, A

**Aim**

Presentation of high-resolution *Oxygraph* respirometry and discussion of biological microcalorimetry. Discussion of specific applications in respiratory research.

**Areas of interest**

Cellular physiology; bioenergetics; alternatives to animal experiments; cell preservation; fermentation; biotechnology; microbiology; ecophysiology; toxicology.

**Instrumentation**

OROBOROS *Oxygraph* (PAAR, Graz, Austria).  
Analysis Software DATGRAF 2.1 (M. Reck, Austria).  
TIP - TITRATION-INJECTION MICROPUMP (ALGE Elektronik).  
Microcalorimeter TAM, Thermal Activity Monitor (ThermoMetric AB, Stockholm, Sweden).

**Support**

COMETT - Alpine Training Association Center, Innsbruck; Austrian Ministry of Science; ANTON PAAR KG, Graz, Austria; ALGE Elektronik, Lustenau, Austria; Austrian Science Foundation FFF and FWF.

**Organization**

Erich Gnaiger; Cooperation: Frank N. Gellerich, Toni Knoblechner, Rosmarie Steinlechner, Markus Wyss.

**PROGRAM****MERGE - International *Oxygraph* Seminar**

University of Innsbruck, June 1-3, 1994

**Venue:** Universitätsklinik Innsbruck, Anichstraße 35, A-6020 Innsbruck, Austria.  
Chirurgie I., Abteilung für Transplantationschirurgie.

**Secretariat:** Tel.: +43 512 504 2343 and 2603; Fax: +43 512 504 2605

**Tuesday, May 31** 19:00 **Welcome reception, registration**

**Wednesday, June 1** 09:00 **Registration**

09:15 ***Oxygraph* design and function - basis for high-resolution respirometry.**  
*Erich Gnaiger*

10:00 **Respiration in cultured endothelial cells. Stability of oxygen flux and dependence on oxygen pressure.**  
*Rosmarie Steinlechner*

10:30 Coffee/tea

11:00 **Oxygraph calibration and the importance of basal corrections in high-resolution respirometry at low  $p_{O_2}$ .**  
*Erich Gnaiger and Rosmarie Steinlechner*

11:30 **High time resolution in *Oxygraph* respirometry. Determination of the time constant and the importance of time corrections in kinetic studies.**  
*Markus Wyss and Erich Gnaiger*

12:30 Lunch

14:30 **Titration-Injection Respirometer *Oxygraph*: demonstration and introduction into practical applications.**

○ *Oxygraph* assembly, POS function and maintenance.

○ Calibration, time constant, and basal correction as a function of  $p_{O_2}$ .

SEMINARS IN CLINICAL AND INTERDISCIPLINARY BIOENERGETICS:

17:00 **Microcalorimetry and respirometry in yeast cells in various oxidative and fermentative states.**

*Lena Gustafsson, University of Göteborg*

18:00 **Control of oxidative phosphorylation in yeast.**

*Michel Rigoulet, Centre National de la Recherche Scientifique, Bordeaux*

19:15 *Discussion on an International European Union Project:*

**Transitions of cellular and mitochondrial energy metabolism between active and resting**

states. **Hypoxia, hypothermia and starvation** (working title).

Chairperson: *Lena Gustafsson*

20:30 Dinner

## Thursday, June 2

09:30 ***Oxygraph* data analysis for high-resolution titration-injection respirometry: towards DATLAB. Guided PC exercises.**

*Erich Gnaiger*

- Constant oxygen flux and linear slopes? Evaluation by time derivatives.
- Data smoothing: options and pitfalls.
- MICROPUMP (TIP) function: pulse titration and steady state injection.
- Evaluation of P/O ratios by stopped-flow ADP injection and ADP pulse titration.
- Separation of maintenance and activated respiration.

12:30 Lunch

14:30 *Oxygraph* and MICROPUMP (TIP): exercises.

16:30 Coffee/tea

SEMINARS IN CLINICAL AND INTERDISCIPLINARY BIOENERGETICS:

17:00 **The value of the calorimetric/respirometric ratio in metabolic and toxicological studies of cultured mammalian cells.**

*Richard Kemp*, University of Wales

18:00 **Respirometry of human tissues for studies of mitochondrial function and defects.**

*Frank Gellerich*, University Hospital of Innsbruck

20:30 Dinner

## Friday, June 3

09:30 Experiment: Respiration of yeast cells under starving and fed conditions as a function of  $p_{O_2}$ .

14:30 Exercises, experiments and advanced data analysis: Measurements under aerobic conditions and at extremely low  $p_{O_2}$ .

**Accommodation:** For all registered participants, room reservations have been made at **Hotel Mozart, Müllerstraße 15**. Hotel Mozart is in walking distance from the Rail Station (Hauptbahnhof), the University Clinic and the medieval center of Innsbruck.

**Venue:** From Hotel Mozart one block North, you reach Maximilianstraße. Continue straight West into the area of the **University Clinic** until you reach the Department of Surgery on the left (**Chirurgie**, 12 story building, marked **X**).