

COST Action TD0901  
**HypO<sub>2</sub>iaNet**

Training School DAVOS OXYGEN 2011 Conference, 10.01.2011  
Hypoxic cell culture

**Program**

13:30-14:00

PHYSICS WORKS... review of the gas laws and how they affect your hypoxia studies

**Roland Wenger**, Institute of Physiology, Zürich, CH: physical principles of gases relevant to hypoxic cell culture (what is "normoxia" in an incubator?!, gas law, Dalton's law, Henry's law, barometric formula, water saturation, Bunsen solubility constants, Fick's diffusion law, units, concentration vs. partial pressure etc)

14:00-14:30

MAKING CHOICES... how to select the equipment to produce the atmosphere you need

**Karen Studer-Rabeler and Brian Coy**, Coy Laboratory Products, Michigan, USA: research tool choices need to be made based on your application; insight into selecting the right chamber (incubator, cabinet or glove box) for your *in vitro* or *in vivo* application. Tools for ensuring that the desired O<sub>2</sub> environment is translating to the level of your cells and corresponds to the original tissue

14:30-15:00

WHAT YOUR CELLS SEE... monitoring oxygen in cell culture

**Gernot John**, PreSens, Regensburg, DE: Oxygen gradients in a multidish well can be detected with high spatial resolution applying a chemical optical microsensor in a micromanipulator. Additional measurements at the bottom of the well are taken with the SDR SensorDish Reader® - a non-invasive, multichannel measurement system for online oxygen monitoring

15:00-15:30

**Coffee break**

15:30-16:00

AVOIDING OXIDATIVE STRESS DURING CELL MANIPULATION... technical solutions on how to master the problems with permanent hypoxic cell culture and new technologies for preconditioning of tissue culture media

**Samir Patel and Andrew Skinn**, Ruskinn, Pencoed, UK: working with hypoxic workstations, deoxygenation of solutions, cell passaging, microscopy etc

16:00-16:30

HOW MUCH O<sub>2</sub> IS INSIDE YOUR CELLS... pericellular, intracellular and organellar phosphorescent oxygen probes

**Dmitry Papkovsky**, Luxcel, Cork, IE: Control of cell oxygenation is important in hypoxia research and metabolic studies, since experimental conditions influence O<sub>2</sub> gradients in respiring samples and can contribute to the observed biological effects. Luxcel's cell-permeable, self-loading O<sub>2</sub>-sensing probes provide simple loading of various mammalian cells, high phosphorescent signals, low cytotoxicity. They allow accurate, real-time monitoring of cellular O<sub>2</sub> levels and responses to metabolic stimulation, and can be used on standard time-resolved fluorescent readers and live cell imaging systems

16:30-17:00

HOW IS THE O<sub>2</sub> BEING RESPIRED... precisely monitoring oxygen consumption rate (OCR) and lactate production in adherent cells

**Per Bo Jensen**, Seahorse, Copenhagen, DK: until some years ago, cells would have to be trypsinized to bring them in solution before OCR could be monitored. Measuring OCR in traditional culture dishes is also not trivial, as many complex O<sub>2</sub> fluxes occur. We will show how this now can be accomplished, and discuss the many possible applications