**Summary and Outlook**

- **Z®RP System** is suitable for expansion of tumor-associated antigen-specific T-Cells from complex PBMCs.
- **Z®RP System** is able to maintain extremely constant cell culture conditions for prolonged periods.
- Bag culture leads to high, spiking levels in lactate due to discontinuous supply of cell culture medium.
- Reactor cultures show 68% higher recovery of CD3+ cells and 50% higher yield of CD8+ cells.

**Outlook:**
- Further optimization of feeding
- Normoxia vs. Hypoxia
- Expansion of pre-enriched T-Cells
- Culture for > 4 weeks

---

**Metabolism Analysis and Adaption of Feeding**

**Low Glucose / High Lactose Culture**

Gated on live, single, CD3+, CD8+ cells

**High Glucose / Low Lactose Culture**

Gated on live, single, CD3+, CD8+ cells

---

**Expansion of antigen-specific T-Cells**

PBMCs from healthy donors

- stimulation with MART-1 peptide @ d0, d7, d14, d21
- Medium: CellGro DC medium + 10% human serum + IL-2 50 IU/ml
- Analysis: metabolites (Lactate / Glucose)
- cell number
- flow cytometry

---

**Reactor Culture**

In-Line monitoring + automatic control of important culture parameters

**Traditional Approach**

- “Open” Culture: (cell culture dish or plate)
  - highly established and characterized system
  - ease of handling
  - No closed system
  - Not suitable for cGMP compliant production
- Bag Culture:
  - GMP compliant
  - discontinuously feeding
  - “Black Box”

**Relative Recovery of cells from Reactor or Bag Cultures**

**Relative yield of CD8+ cells from Reactor or Bag Cultures**

---

**Contact:** Michael Aigner, University Hospital Erlangen, Department of Internal Medicine 5 - Hematology/Oncology

**Email:** michael.aigner@uk-erlangen.de