### Venue

Zentralinstitut für Medizintechnik (IMETUM)

Boltzmannstrasse 11
85748 Garching
Tel: 089-289 10800
Fax: 089-289 10801

### Project titles

<table>
<thead>
<tr>
<th></th>
<th>Project Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>(A)</td>
<td>Experimental and numerical investigation on the flow-induced stresses on the alveolar-epithelial-surfactant-air interface</td>
</tr>
<tr>
<td>(B)</td>
<td>Fluid mechanical and clinical analysis of regional compliance and the resulting lung mechanics for an individual modeling of ventilation</td>
</tr>
<tr>
<td>(C)</td>
<td>Development of a model-based lung protective artificial respiration strategy for dynamic mechanostabilization of the alveoli</td>
</tr>
<tr>
<td>(D)</td>
<td>Expansion of pulmonary alveoli during mechanical ventilation – Analysis of mechanical stresses and their biological effects</td>
</tr>
<tr>
<td>(E)</td>
<td>Quantitative analysis of dead-space-ventilation in animal models with acute lung injury</td>
</tr>
<tr>
<td>(F)</td>
<td>Optimization of the variable mechanical ventilation by numerical modelling of lung mechanics</td>
</tr>
<tr>
<td>(G)</td>
<td>High-frequency oscillatory ventilation: Analysis of transport mechanisms using computational fluid dynamics and magnetic resonance imaging of gases</td>
</tr>
<tr>
<td>(H)</td>
<td>Non-linear effects of mass transport in the upper human airways under high-frequency ventilation (HFV) and their use for efficient mechanical ventilation</td>
</tr>
<tr>
<td>(I)</td>
<td>Biofluidmechanics and physiological characteristics of ventilation in the alveolus and its capillaries</td>
</tr>
</tbody>
</table>

---

### Dinner

Directions to the restaurant:

- **Exits of subway station**
- **Isartor station**
- **Wirtshaus in der Au**

---

Final Meeting of the German Research Foundation (DFG)

**Priority Program “Protective Artificial Respiration”**

1st and 2nd of March, 2012
Day 1: Thursday, 1st of March

9:00 Welcome


9:50 From animal model to cells: A top-down approach for investigating alveolar epithelium during mechanical strain. (A) Gärtner, M., Rentzsch, I.

10:25 Regional differences of alveolar mechanics and morphology in a porcine model of acute lung injury. (B) Bickenbach, J.

10:50 Lung flow analysis and recruitment proposals. (B) Soodt, T.

11:15 Coffee break

11:40 Analysis of global respiratory system mechanics and alveolar stabilization by expiratory flow control. (C) Schumann, S.

12:05 Hierarchical modelling for mechanical ventilation therapy: efficiency and identification issues! (C) Möller, K.

12:30 Towards a “virtual lung” – Building blocks of a comprehensive computational lung model. (C) Yoshihara, L.

12:55 Lunch

14:00 Keynote: Mechanisms of fibrosis in lung disease: From tissue to relevant in vitro models. Eickelberg, O.

14:40 Local analysis of pulmonary tissue mechanics in the ventilated rat. (D) Schwenninger, D.

15:05 A realistic constituent based material model for lung parenchyma. (D) Rausch, S.

15:30 Coffee break

16:00 Quantitative analysis of dead space in ventilated rats and mice. (E) Nickles, H. and Dassow, C.


16:50 Multi-dimensional modeling of human lungs during spontaneous breathing and mechanical ventilation. (F) Ismail, M.

17:15 Organized patterns of random variable ventilation improve lung function and damage. (F) Gama de Abreu, M.

17:40 End of lecture program of day 1

19:30 Dinner at “Wirtshaus in der Au”

The dinner will take place at the Wirtshaus in der Au restaurant at 19:30 on Thursday evening.

Wirtshaus in der Au
Lilienstr. 51, 81669 München
Tel: 089-448 1400

Optional meeting points:
- 18:35 at the Garching Forschungszentrum subway station (U6, departure 18:43)
- 19:15 outside the Isartor station, exit “Deutsches Museum” in front of the flower shop
- 19:30 at the restaurant

Day 2: Friday, 2nd of March

9:00 Keynote: Biophysical determinants of alveolar epithelial repair. Hubmayr, R.D.

9:40 Direct numerical simulation of turbulent high-frequency oscillatory ventilation in a pipe. (G) Feldmann, D.

10:05 Magnetic resonance imaging during high frequency oscillatory ventilation. (G) Friedrich, J.

10:30 Experimental and numerical investigation of gas transport during high-frequency oscillatory ventilation. (G) Krenkel, L.

10:55 Coffee break

11:30 Unsteady mass transport in the upper human airways during CMV and HFOV. (H) Bauer, K.

11:55 Unsteady mass transport in the upper airways – A relevant problem in newborns. (H) Rüdiger, M.

12:20 Lunch

13:30 Keynote: Lung stretch induces a zinc-dependent protective program. Tschumperlin, D.

14:10 Flow in pulmonary capillary network models. (I) Schirmann, K.

14:35 Alveolar dynamics and mechanotransduction in intact, overventilated and acutely injured lungs. (I) Michalick, L.

15:00 Final discussion

15:20 Farewell coffee