

Technology Offer

Non-invasive Optical Lung Function Measurement for (Pre-)Clinical Research

Translational lung function testing without contact, radiation, or subject compliance

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Background

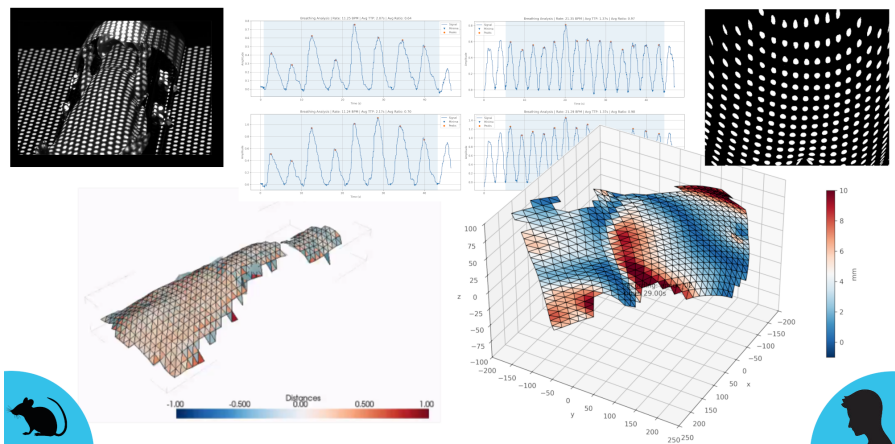
Lung disease is a leading cause of morbidity and mortality worldwide, and reliable lung function assessment is essential for both research and clinical care. However, established methods like spirometry, plethysmography, and forced ventilation require subject compliance, physical contact, or invasive procedures, making them unsuitable for infants, unconscious patients, or preclinical models. The lack of a non-invasive, physiologically relevant lung function test compatible with both small animals and human subjects represents a major bottleneck in the translation of preclinical findings into the clinic.

Technology

Researchers at the Max Planck Institute for Multidisciplinary Sciences in Göttingen have developed Optical Lung Function (OLF): a novel, non-invasive, contact-free lung function measurement system based on structured light projection and stereo-camera imaging. Validated in mouse models of pulmonary disease, **OLF demonstrated higher sensitivity than established X-ray-based lung function (XLF) testing** and achieved effect sizes comparable to μ CT.

Key Advantages

- Fully non-invasive and contact-free
- Robust, fast and easy to use
- High spatial and temporal resolution
- 4D chest surface mapping
- Translational by design
- No ionizing radiation
- Compatible with longitudinal studies



Applications

- Preclinical drug efficacy assessment
- Translational respiratory research
- Clinical lung function testing in non-compliant patients
- Early diagnosis
- Assessment of pulmonary disease severity, therapy success, chemotherapy side effects
- Health monitoring (occup. and environm.)
- Applicable for patients with infectious diseases

Patent

The international Patent Application WO2025017240A1 has been filed in 2025.

Opportunity

We are seeking licensing or cooperation partners to develop this technology further.