

innovations

from The University of Vermont

TITLE: NONINVASIVE PULMONARY AIRWAY RESISTANCE MEASUREMENT SYSTEM

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SUMMARY: The assessment of lung mechanical function in small animals, particularly mice, is essential for many investigations into the pathophysiology of pulmonary disease. The forced oscillation technique applied in anesthetized tracheostomized animals provides the most accurate and specific assessment of lung function but is highly invasive. Unrestrained plethysmography in conscious animals provides a parameter called PenH, but this quantity is actually a reflection of the control of breathing and not lung mechanics. Thus, there is currently no completely noninvasive method available for determining lung function in small animals, despite the continued erroneous use of PenH in this regard. However, our research has shown that unrestrained plethysmography would provide a valid means for following changes in lung mechanical function if it could be coupled to independent measurements of changes in lung volume. The invention combines unrestrained plethysmography with the measurement of changes in lung volume using orthogonal video images of the thorax, titled unrestrained video-assisted plethysmography (UVAP).

ADVANTAGES: This device will provide researchers with the ability to follow changes in airway resistance in mice, in response to both acute and chronic interventions, without harming or even interfering with the animal in any way. This will greatly increase the throughput possible when screening large numbers of animals, and will allow non-destructive testing of valuable animal models of lung disease.

PATENT STATUS: Patent pending

LICENSING STATUS: World wide rights available

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