

Pulmonary Disease Platform

- State-of-the-art technologies and fully equipped invasive and non-invasive systems
- Dedicated team with 10+ years experience
- Comprehensive disease models: pulmonary fibrosis, pulmonary arterial hypertension, asthma, chronic obstructive pulmonary disease, and more

Platform and Facilities

Small Animal Whole Body Plethysmography System



- Detect basic respiratory function parameters such as PenH, TVb, frequency, and more
- Non-invasive system with automatic data calibration
- Typically used for asthma, AHR, COPD, apnea, and cough

Pulmonary Function Test System



- Collect invasive resistance, dynamic compliance, and elastance data
- Evaluate spontaneously breathing, ventilated, aerosol challenged animals
- Prolonged data collection with a heated bed
- Typically used for asthma, AHR and COPD

Resistance and Compliance System



- The most comprehensive assessment of pulmonary function
- Complete a series of tests in minutes
- Typically used for COPD and pulmonary fibrosis

Well-Validated Disease Models in House



Pulmonary Fibrosis

- BLM induced pulmonary fibrosis
- Silica induced pulmonary fibrosis



Pulmonary Arterial Hypertension (PAH)

- MCT induced PAH
- SU5416/hypoxia induced PAH



Chronic Obstructive Pulmonary Disease

- Long term cigarette smoke induced COPD
- Short term cigarette smoke/LPS induced COPD-like
- PPE/LPS induced COPD



Acute Lung Injury (ALI)/Acute Respiratory Distress Syndrome (ARDS)

- LPS induced ALI/ARDS
- Cigarette smoke/LPS induced ALI



Asthma

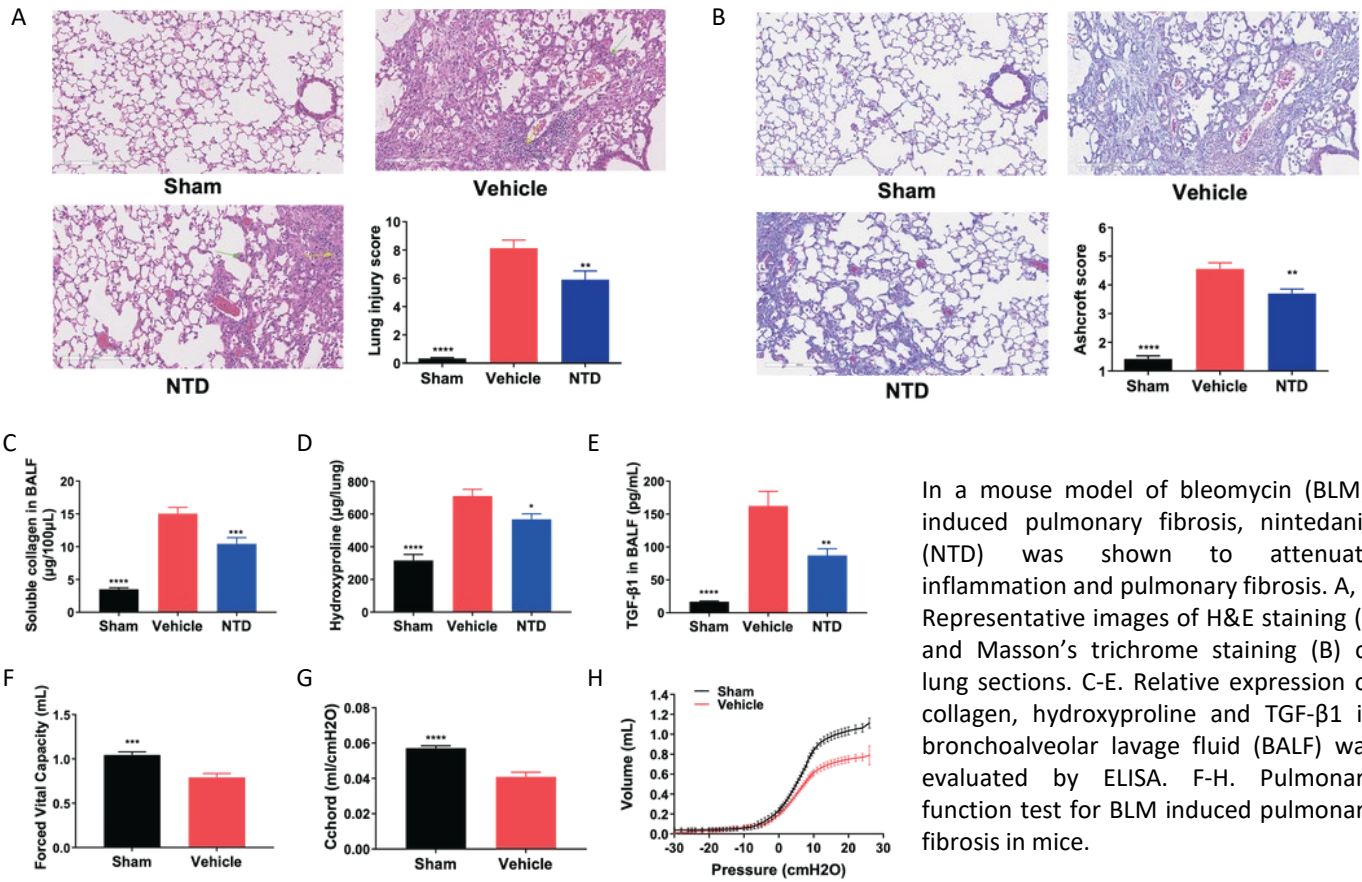
- OVA induced allergic asthma
- HDM induced allergic asthma
- *Ex vivo* tracheal ring constriction test
- OVA/LPS induced neutrophilic asthma



Other Models/Capabilities

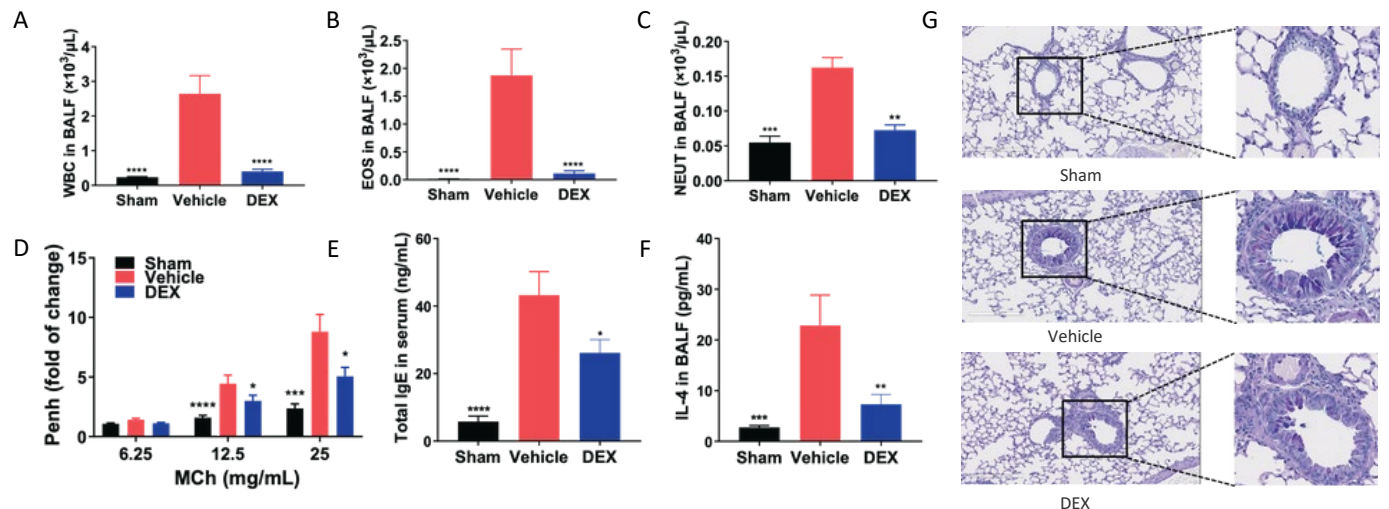
- OVA induced allergic rhinitis
- ATP/citric acid induced acute cough
- Histamine/citric acid induced acute cough
- Pulmonary drug delivery platform

Case Study: Bleomycin (BLM) Induced Pulmonary Fibrosis in Mice



In a mouse model of bleomycin (BLM)-induced pulmonary fibrosis, nintedanib (NTD) was shown to attenuate inflammation and pulmonary fibrosis. A, B. Representative images of H&E staining (A) and Masson's trichrome staining (B) of lung sections. C-E. Relative expression of collagen, hydroxyproline and TGF-β1 in bronchoalveolar lavage fluid (BALF) was evaluated by ELISA. F-H. Pulmonary function test for BLM induced pulmonary fibrosis in mice.

Case Study: Ovalbumin (OVA) Induced Asthma in Mice



Dexamethasone (DEX) significantly alleviates asthma airway inflammation in the OVA-induced model. A-F: Inflammatory cell counts in BALF, airway hyperresponsiveness (AHR), total IgE, and cytokines of OVA-induced asthmatic mice. G: Representative images of AB-PAS staining (400x) of lung tissues.

