



Preclinical Models of Chronic Rhinosinusitis (CRS)

Chronic Rhinosinusitis (CRS)

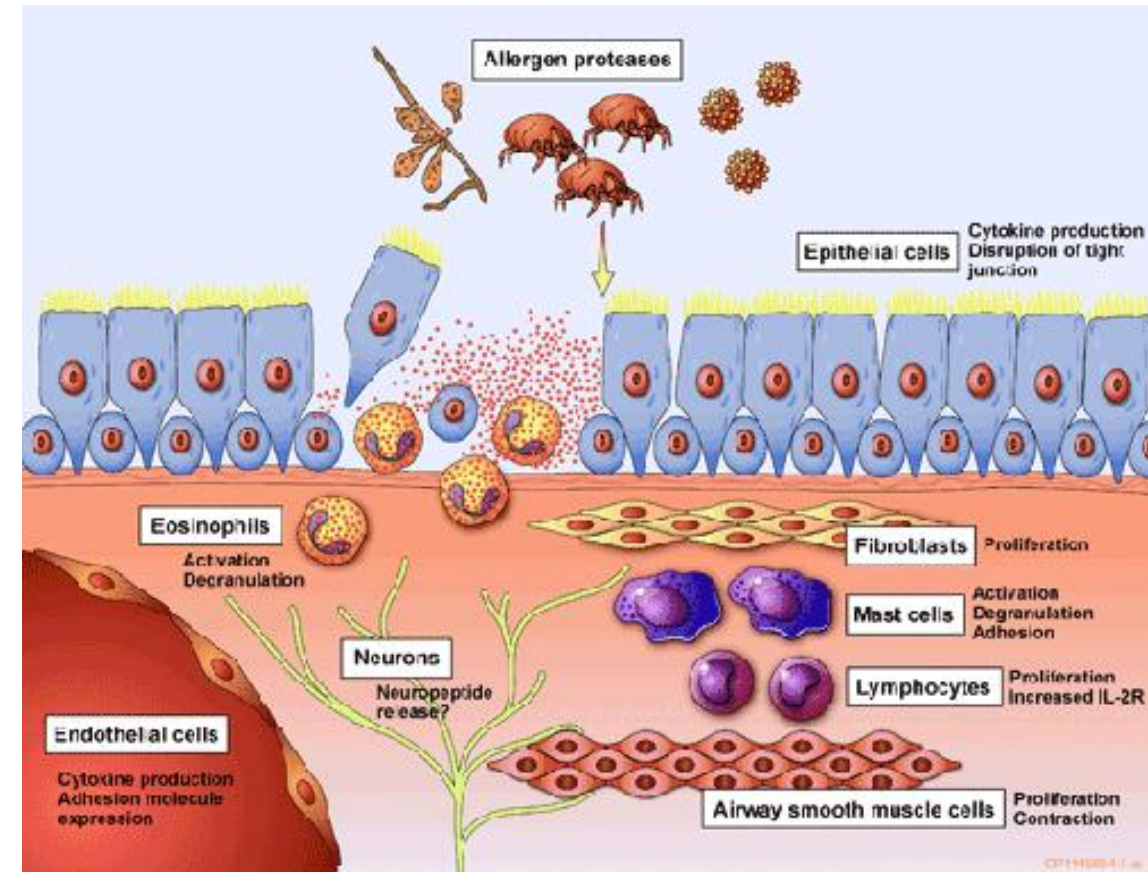
Symptoms and Causes

Symptoms of chronic rhinosinusitis may include: tenderness or pressure in the face, post nasal drip, nasal discharge or a stuffy nose, toothache, ear pain and/or headache, cough, tiredness, ear pain, loss of the senses of taste and smell, halitosis.

Chronic rhinosinusitis can be caused by several factors. These include: blocked airways from asthma or allergies or from conditions such as cystic fibrosis, infections, which can be bacterial, viral or fungal, abnormal nose structures, such as a deviated septum, polyps, a weak immune system.

Models in place:

- **Papain Induced C57BL/6 Eosinophilic Rhinosinusitis Model**
- **Aspergillus oryzae proteinase & OVA Induced C57BL/6 CRS Model**
- **Aspergillus oryzae proteinase & OVA Induced BALB/c CRS Model**
- **SEB&OVA Induced BALB/c CRS Model**



doi: 10.1016/j.jaci.2004.07.060.

Papain Induced C57BL/6 Eosinophilic Rhinosinusitis Model

■ Mechanism

Many aeroallergens with type 2 inflammation-inducing properties demonstrate detectable protease activity. This capacity to induce type 2 inflammation may be driven by proteolytic cleavage of intercellular junctions between epithelial cells, thereby disrupting the barrier and subsequently causing epithelial cytokine release.

the cysteine protease activity of papain is essential to its ability to activate type 2 immune pathways in the murine sinonasal mucosa via epithelial disruption and IL-33 release. This induction of IL-33 release results in type 2 inflammation, which is characteristic of eosinophilic rhinosinusitis pathology.

■ Papain Induced Murine CRS Model



Animal	C57BL/6
Evaluation	Clinical: Body weight,
	Cell: Eosinophil
	Cytokine: IL-33
	Pathology: HE

Papain Induced C57BL/6 Eosinophilic Rhinosinusitis Model

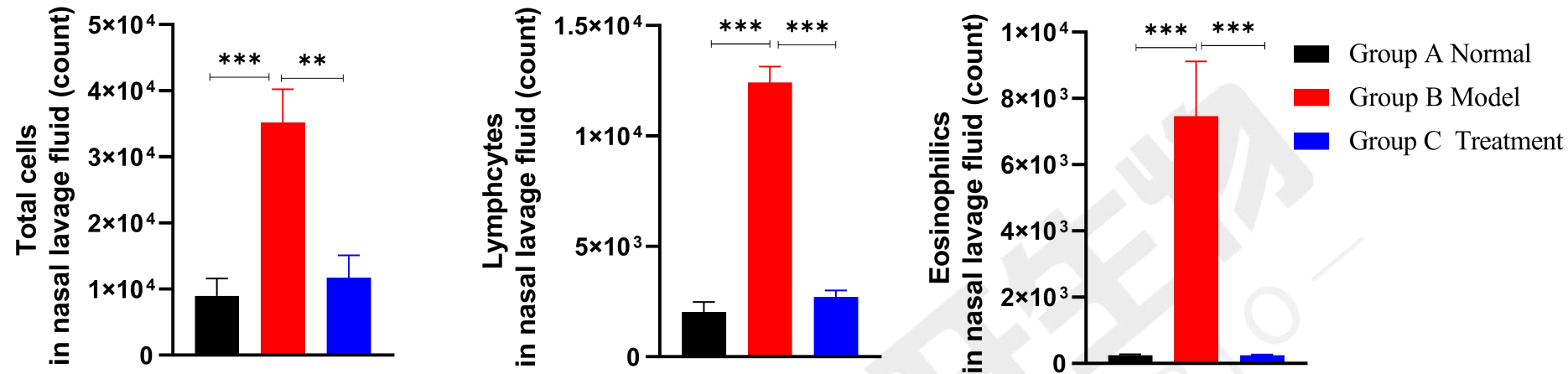


Fig 1 Cells in the nasal lavage fluid

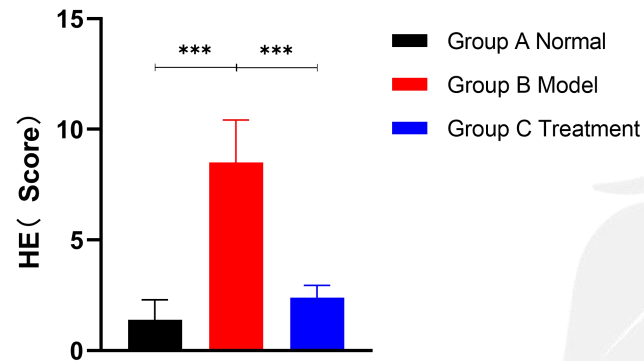


Fig 2 HE pathology

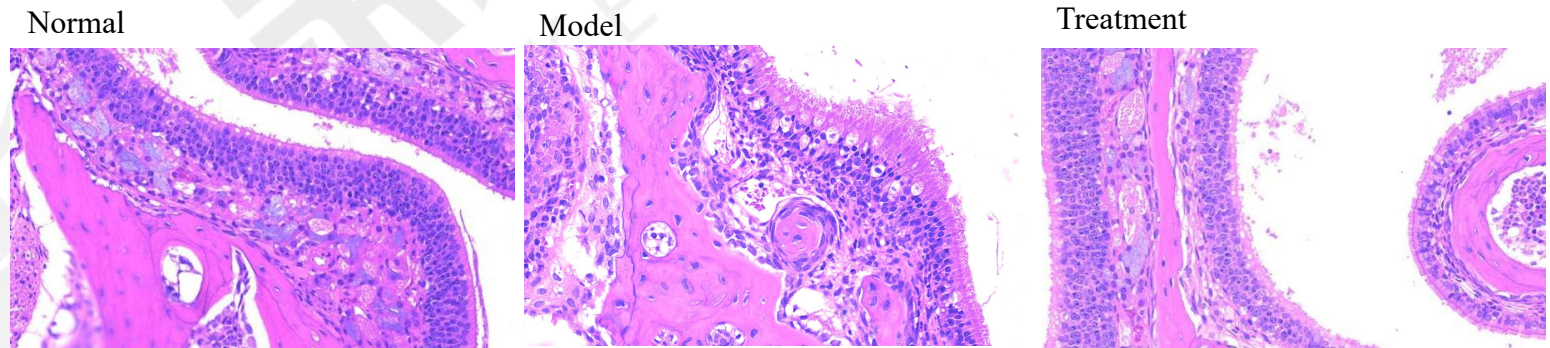


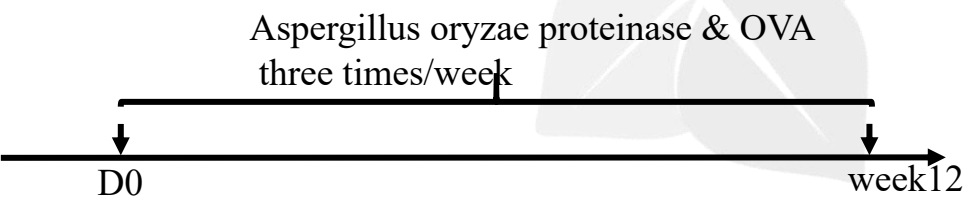
Fig 3 Typical pictures

Aspergillus oryzae protease & OVA Induced CRS Model

■ Mechanism

Inhalation of ovalbumin (OVA) or extracts of Aspergillus fumigatus were used to establish the allergic or eosinophilic CRS models, which is characterized by a marked increase in the expression of T-helper type 2 (Th2) cytokines and eosinophilic infiltration, is among the most common and clinically significant, and it is difficult to treat and is prone to recurrence.

■ Aspergillus oryzae proteinase & OVA Induced Murine CRS Model



Animal	C57BL/6, BALB/c
	Clinical: NA
Evaluation	Cytokine: NA
	Cell: Cells in Nasal Lavage

Aspergillus oryzae proteinase & OVA Induced C57BL/6 CRS Model

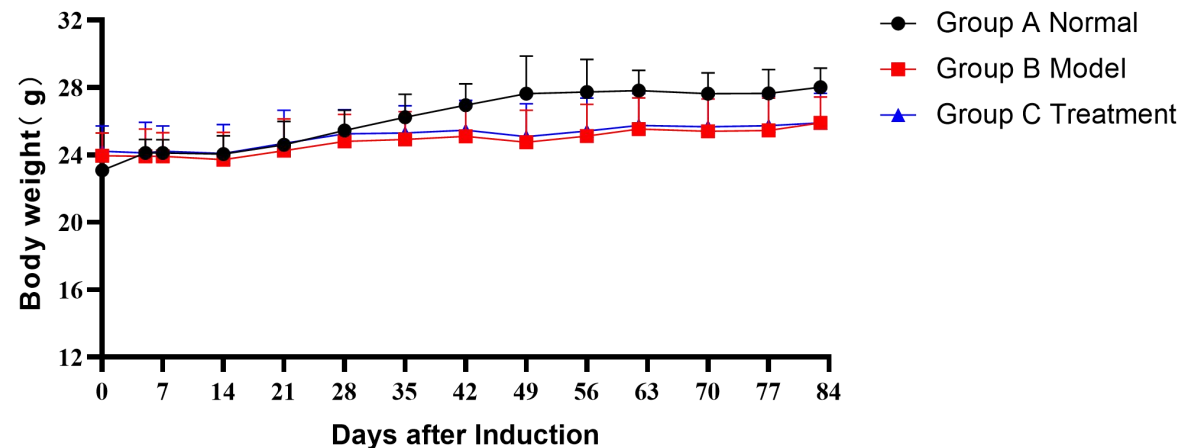


Fig 1 Body weight

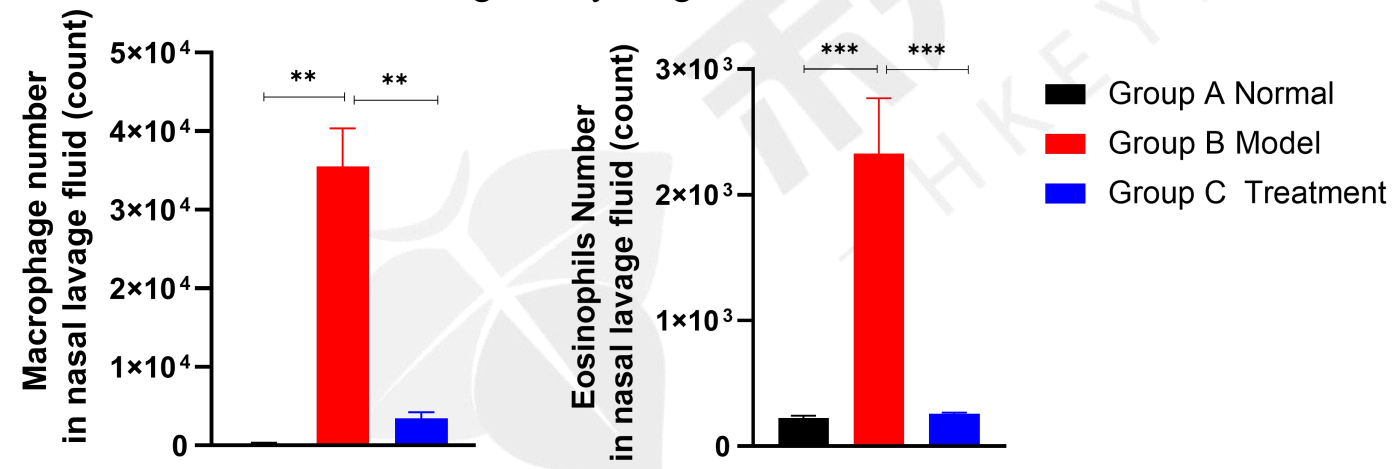


Fig 2 Cells level in the nasal lavage fluid

Aspergillus oryzae proteinase & OVA Induced BALB/c CRS Model

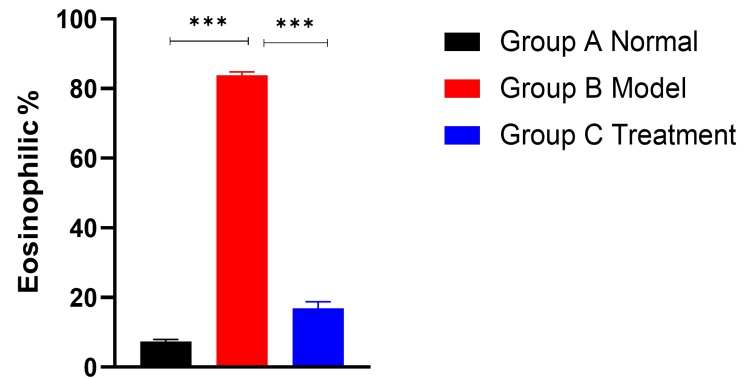


Fig 1 Macrophage levels in the nasal lavage fluid

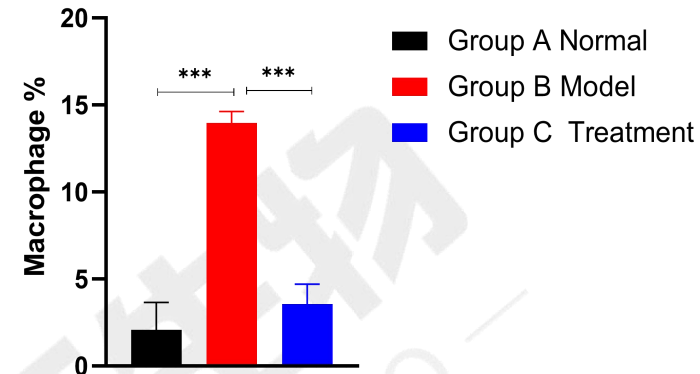


Fig 2 Eosinophil levels in the nasal lavage fluid

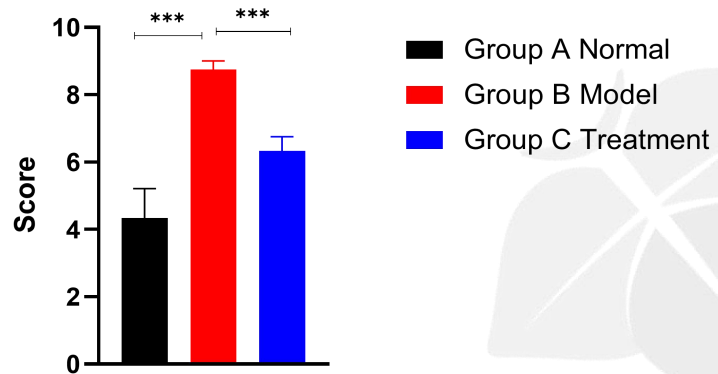


Fig 3 HE pathology

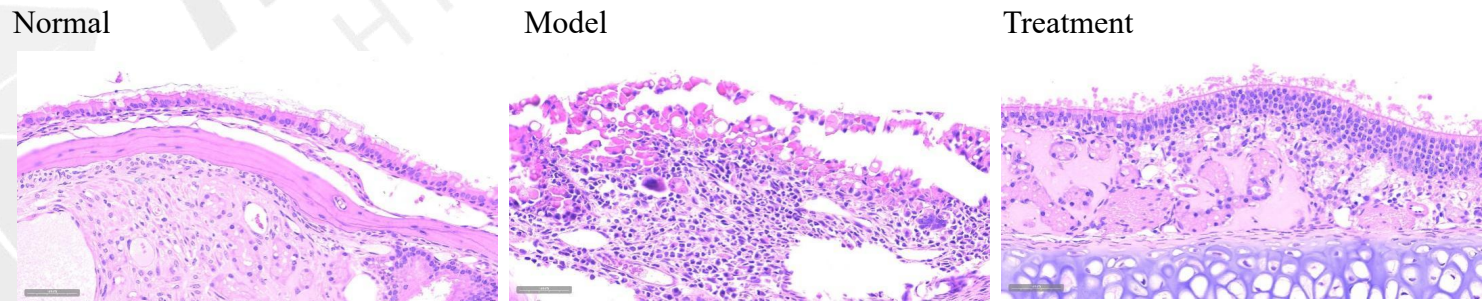


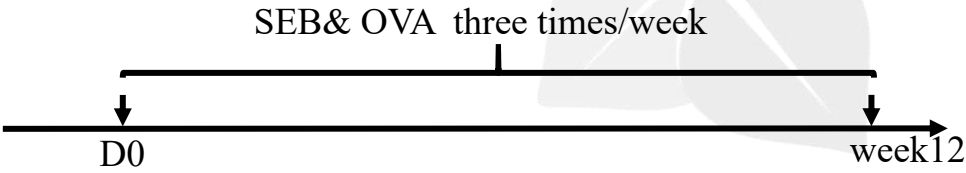
Fig 4 Typical pictures

SEB & OVA Induced CRS Model

■ Mechanism

Various immunopathological processes with persistent inflammation in the mucosal surface lead to CRS. As a result, CRS is a multifactorial inflammatory disorder whose precise pathogenesis remains unknown. However, different etiological factors such as Staphylococcus aureus enterotoxins (mainly Enterotoxin B (SEB)) have been reported for this disease. S. aureus is one of the common human bacteria often detected in the normal nasal microbiota of healthy individuals.

■ SEB & OVA Induced Murine CRS Model



Animal	C57BL/6, BALB/c
Evaluation	Clinical: NA
	Cytokine: NA
	Cell: Cells in Nasal Lavage

SEB & OVA Induced CRS Model

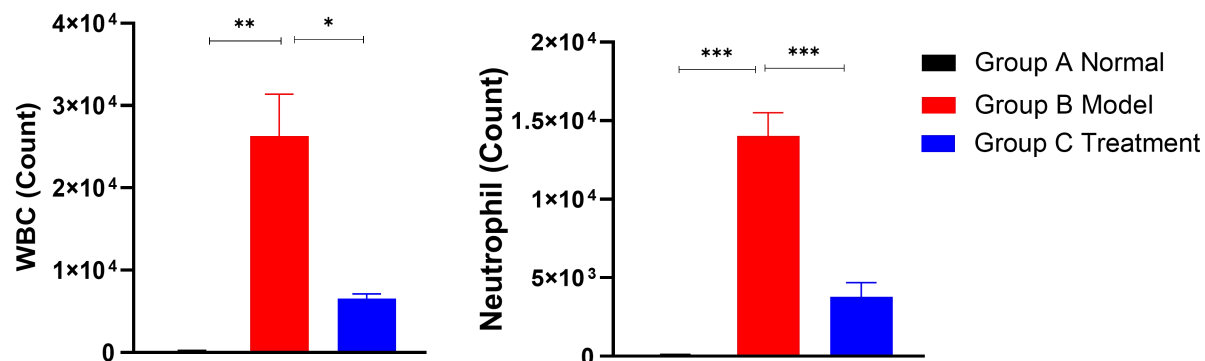


Fig 1 Cells count in the nasal lavage fluid

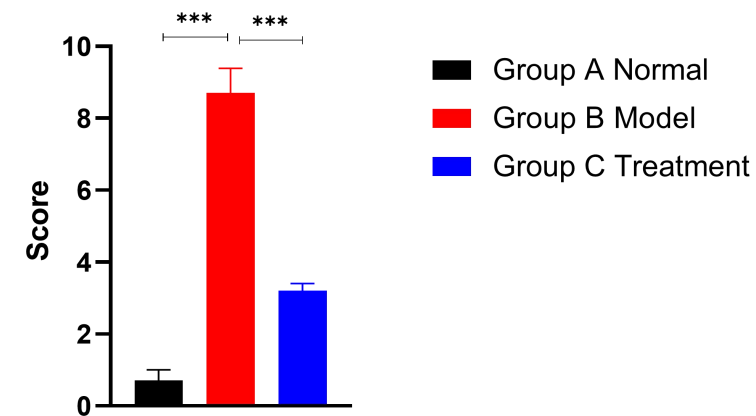


Fig 2 HE pathology

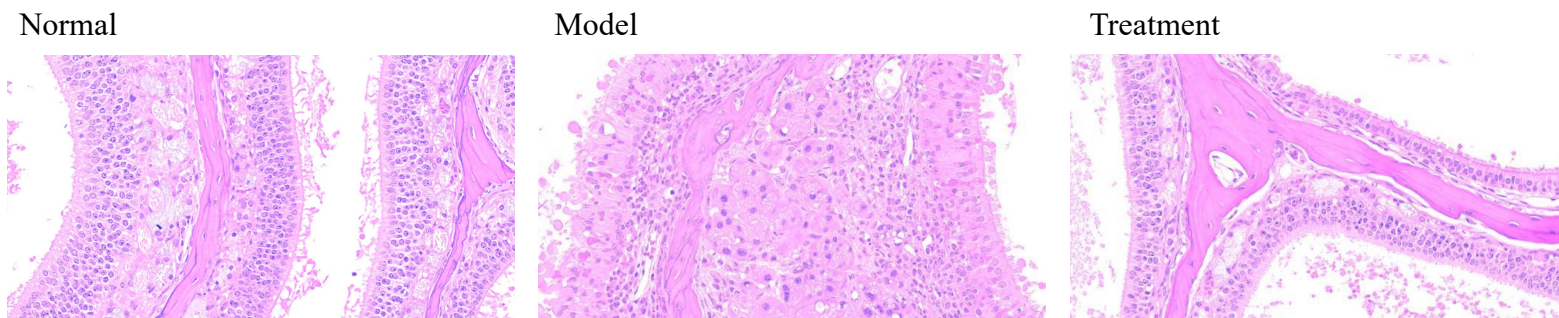


Fig 3 Typical pictures



Our Sites

Non-human Private Center: Guangxi
Analysis Center: Suzhou
Rodent Center: Suzhou



WeChat

Hkeybio Tech.

Website: www.hkeybio.com

Email: info@hkeybio.com