

RESPIRATORY PLATFORM

PRESENTATION

Respiratory diseases involving inflammatory mechanisms and airway hyperreactivity (AHR), such as asthma, have an increased prevalence worldwide.

Different tests enable to explore mechanisms involved in lung inflammatory diseases such as AHR and bronchial inflammation in order to phenotype genetically engineered mice and / or to screen *in vivo* potential therapeutic drugs.



1. AIRWAY REACTIVITY

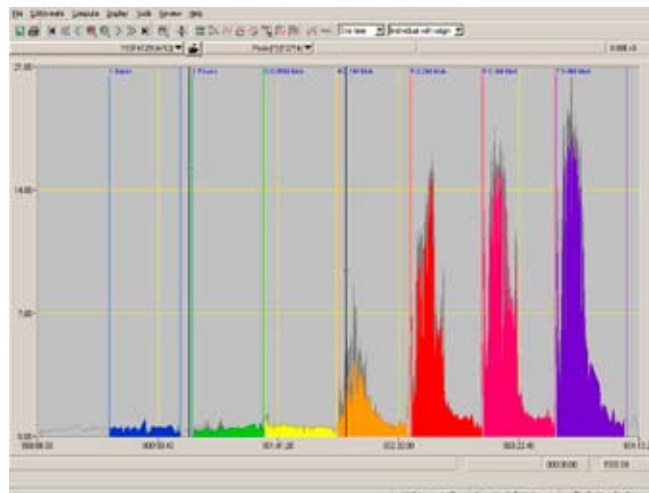
In response to metacholine by whole-body barometric plethysmography in conscious mice

Plethysmography allows indirect and non-invasive measurements of airway reactivity (AR) to aerosolised stimulants, like metacholine, in unrestrained and conscious mice. Furthermore, it provides repeated and long-term measurements of AR, and evaluation of kinetics and treatment protocols of airway hyperresponsiveness (AHR).

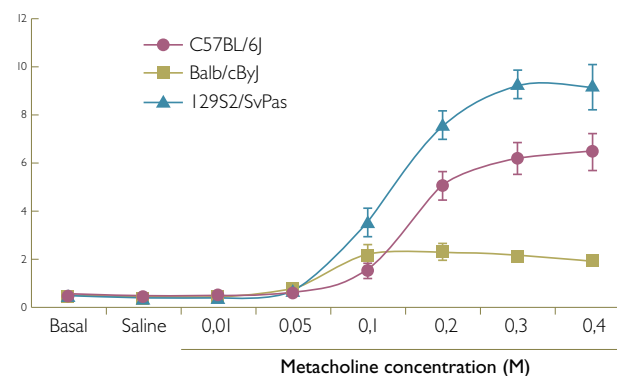


At least 10 airway parameters are measured or calculated during airway reactivity measurement. The enhanced pause (Penh) is the principal parameter studied, as an index of airway obstruction.

Example of observations obtained for airway reactivity (Penh) in response to increasing concentrations of metacholine



Metacholine-dose-responses in different WT mouse strain

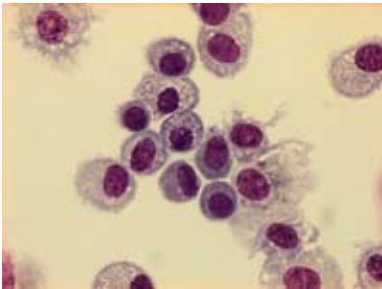


2. COLLECTION OF BRONCHOALVEOLAR LAVAGE FLUIDS (BAL)

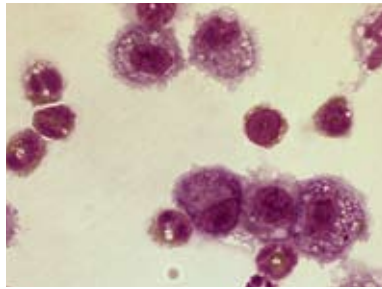
Bronchoalveolar lavage fluids (BAL)

Inflammatory cells and their mediators content in mice airways are investigated.

Examples of results obtained from BAL:



Haematoxylin-eosin coloration of BAL cells from naive C57BL/6j mice (enlargement : x 55)



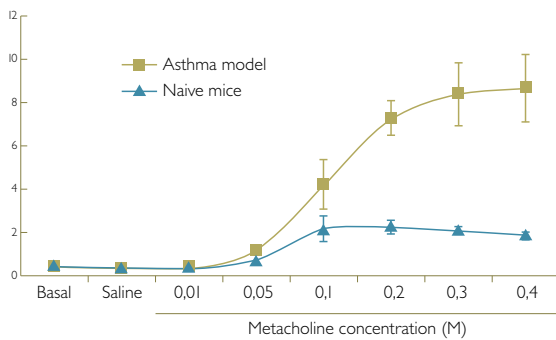
Haematoxylin-eosin coloration of BAL cells from C57BL/6j ova-sensitized and challenged mice (enlargement : x 55)

3. ASTHMA MODEL

The hallmarks of bronchial asthma are airway inflammation associated with elevated allergen-specific IgE in serum, infiltration of **eosinophils and CD⁴T-helper type 2 (Th2) cells** in airways and airway hyperresponsiveness.

Cell infiltration in airways, ovalbumin-specific IgE in serum and airway hyperresponsiveness in response to metacholine are measured.

Metacholine-dose-responses in an asthma model (Balb/cByJ mouse)



Cytokines in serum concentrations in BAL and OVA-specific IgE production (Balb/cByJ mouse)

