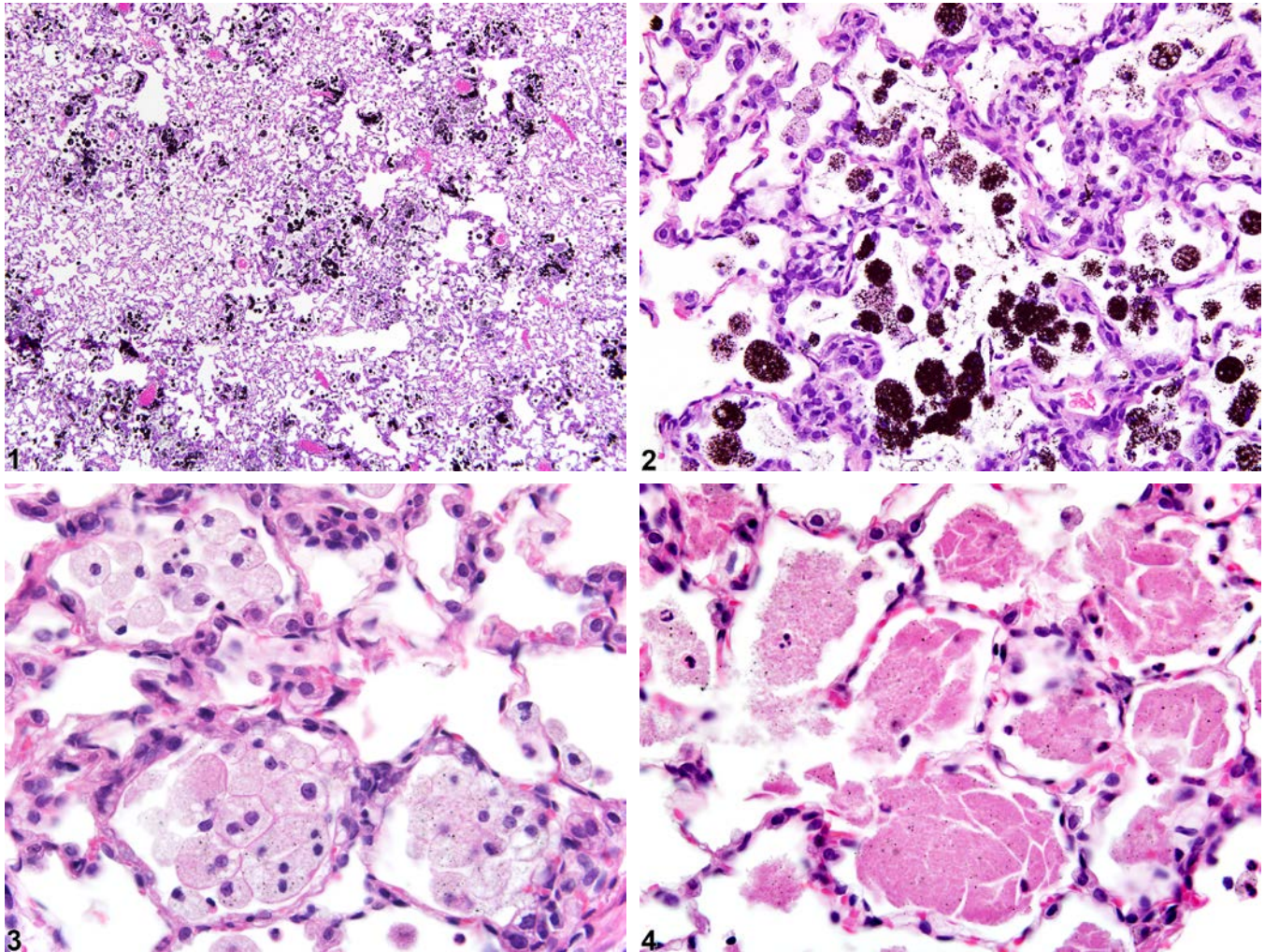
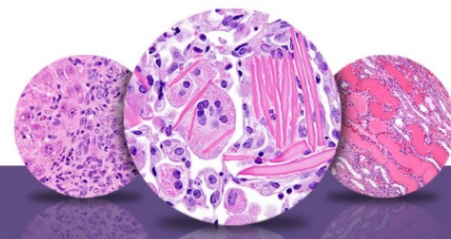


# NTP Nonneoplastic Lesion Atlas

## Lung – Foreign Material



**Figure Legend:** **Figure 1** Lung, Alveolus - Foreign material in a male Harlan Sprague-Dawley rat from a subchronic study. The black material is considered to be the test agent. **Figure 2** Lung, Alveolus - Foreign material in a male Harlan Sprague-Dawley rat from a subchronic study (higher magnification of Figure 1). The black material is considered to be the test agent, and the majority is contained within alveolar macrophages. **Figure 3** Lung, Alveolus - Foreign material in a male Harlan Sprague-Dawley rat from a subchronic study. The brown to black material within the macrophages is considered to be the test agent. **Figure 4** Lung, Alveolus - Foreign material in a male Harlan Sprague-Dawley rat from a subchronic study. The brown to black material associated with the alveolar proteinosis is considered to be the test agent.



# NTP Nonneoplastic Lesion Atlas

## *Lung – Foreign Material*

**Comment:** Foreign material (Figure 1, Figure 2, Figure 3, and Figure 4) refers to inhaled test material or presumed test material. The term “pigmentation” is reserved for endogenous pigments (hemosiderin, lipofuscin) found in the lung and should not be used for exogenous material. If the material has the expected morphologic appearance, is found only in treated animals, and increases in amount with increasing exposure level, it may be assumed to be the test agent. The term “foreign body” is reserved for inhaled bits of plant material (feed or bedding), hair fragments, corn oil from gavage accidents, or other substances that are not found only in the treated animals or do not increase in severity with increasing exposure level.

The response to inhaled test material varies from histiocyte infiltration with relatively inert material to a more severe inflammatory reaction that may be acute (in short-term studies), chronic active, chronic, or granulomatous, depending on the physicochemical properties of the foreign material. Other lesions may be associated with an inflammatory response, such as alveolar proteinosis, necrosis, fibrosis, or epithelial hyperplasia of the airways and/or alveoli.

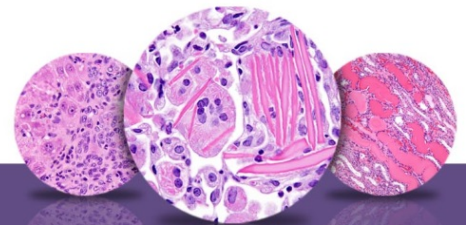
**Recommendation:** Lung - Foreign material (inhaled test material or presumed test material) should be diagnosed and graded whenever present. The specific location (e.g., alveolus, bronchus, or bronchiole) should be indicated in the diagnosis as a site modifier. If the foreign material is present in more than one location, the site modifier may be omitted and the locations described in the pathology narrative. Associated lesions (e.g., histiocytic infiltration, inflammation, necrosis, fibrosis, epithelial hyperplasia) should be diagnosed and graded separately.

### **References:**

Boorman GA, Eustis SL. 1990. Lung. In: Pathology of the Fischer Rat: Reference and Atlas (Boorman GA, Eustis SL, Elwell MR, MacKenzie WF, eds). Academic Press, San Diego, CA, 339-367.

Dixon D, Herbert RA, Sills RC, Boorman GA. 1999. Lungs, pleura, and mediastinum. In: Pathology of the Mouse: Reference and Atlas (Maronpot RR, Boorman GA, Gaul BW, eds). Cache River Press, Vienna, IL, 293-332.

Renne RA, Dungworth DL, Keenan CM, Morgan KT, Hahn FF, Schwartz LW. 2003. Non-proliferative lesions of the respiratory tract in rats. In: Guides for Toxicologic Pathology. STP/ARP/AFIP, Washington, DC.



# NTP Nonneoplastic Lesion Atlas

## *Lung – Foreign Material*

### **Authors:**

Mark F. Cesta, DVM, PhD, DACVP  
Staff Scientist/NTP Pathologist  
NTP Pathology Group  
National Toxicology Program  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC

Darlene Dixon, DVM, PhD, DACVP  
Group Leader  
Molecular Pathogenesis Group  
National Toxicology Program  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC

Ronald A. Herbert, DVM, PhD  
Group Leader/NTP Pathologist  
Pathology Support Group  
National Toxicology Program  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC

Lauren M. Staska, DVM, PhD, DACVP  
Senior Pathologist  
WIL Research  
Hillsborough, NC