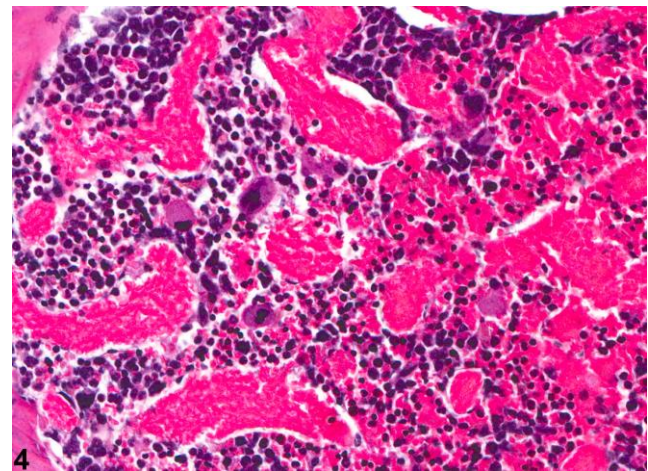
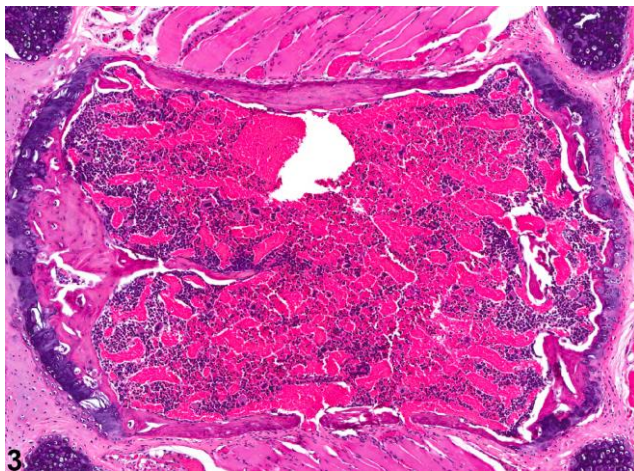
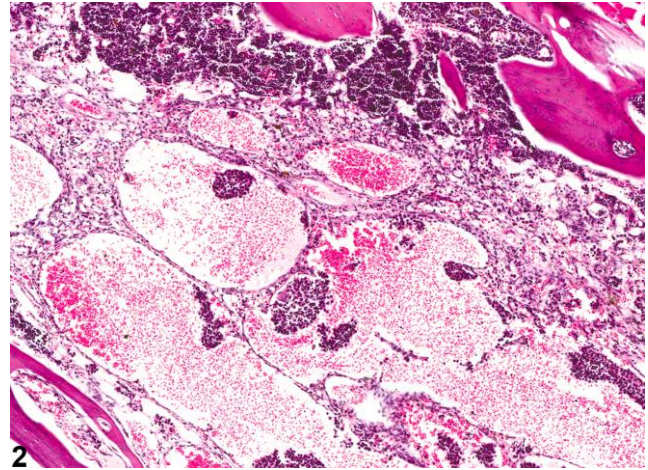
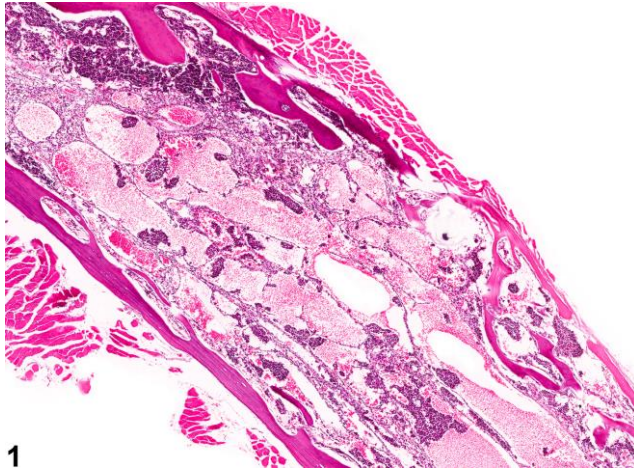




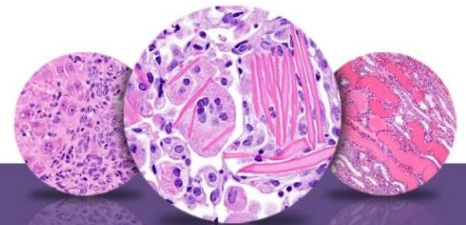
# NTP Nonneoplastic Lesion Atlas

## Bone Marrow – Angiectasis



**Figure Legend:** **Figure 1** Angiectasis in the bone marrow sinuses in a female B6C3F1 mouse from a chronic study. **Figure 2** Angiectasis in the bone marrow sinuses in a female B6C3F1 mouse from a chronic study (higher magnification of Figure 1). **Figure 3** Angiectasis in the bone marrow sinuses in a female B6C3F1 mouse from a chronic study. **Figure 4** Angiectasis in the bone marrow sinuses in a female B6C3F1 mouse from a chronic study (higher magnification of Figure 3).

**Comment:** The vascular supply of the bone marrow culminates with capillaries opening into a plexus of sinusoids lined with endothelial cells and an incomplete outer layer of adventitial cells. Angiectasis of the bone marrow is defined as dilatation of these vessels or sinusoids with blood. In some cases, the dilatation can be so severe as to cause the appearance of large lakes of erythrocytes and/or proteinaceous fluid (serum) that should not be confused with hemorrhage



# NTP Nonneoplastic Lesion Atlas

## *Bone Marrow – Angiectasis*

(Figures 1 and 2). The presence of a continuous intact endothelial lining helps distinguish angiectasis from hemorrhage. With more severe or chronic congestion of the vasculature, macrophages sometimes containing pigment and/or cholesterol clefts may be seen around the dilated vasculature.

A distinction between angiectasis and hemangioma should be attempted, although the distinction is not always obvious. Hemangiomas tend to be well-circumscribed, unencapsulated masses composed of tightly packed, dilated vascular spaces. Each vascular space is enclosed and lined by a single layer of normal-appearing endothelial cells aligned on collagenous septa, which are usually thin, although some have broad collagenous stroma. Angiectasis does not usually present as a well-circumscribed mass: the dilated vascular channels often course irregularly through the hematopoietic tissue.

Angiectasis has been observed in rodents with severe loss of hematopoietic tissue. It is also observed as a nonspecific finding or in association with inflammation, neoplasia, or vascular/cardiovascular disorders (e.g., thrombi, congestive heart failure).

**Recommendation:** Angiectasis should be diagnosed and graded in subchronic and chronic studies whenever it is present. Treatment-related angiectasis should also be described in the pathology narrative. Grading is based on a combination of the number of dilated spaces and the degree of dilatation. The term “ectasia” should not be used in place of angiectasis.



# NTP Nonneoplastic Lesion Atlas

## *Bone Marrow – Angiectasis*

### References:

Bain BJ, Clark DM, Lampert IA, Wilkins BS. 2001. Bone Marrow Pathology, 3rd ed. Blackwell, Ames, IA, 90–140.

Abstract: <http://onlinelibrary.wiley.com/book/10.1002/9780470757130>

Lévy M, Raphaël M. 1987. Effects of antimitotic treatment on haematopoietic tissues in mice. Ann Inst Pasteur Immunol 138:347–357.

Abstract: <http://www.ncbi.nlm.nih.gov/pubmed/3651238>

Travlos GS. 2006. Histopathology of the bone marrow. Toxicol Pathol 34:566–598.

Abstract: <http://tpx.sagepub.com/content/34/5/566.abstract>

### Authors:

Michelle C. Cora, DVM, DACVP  
Veterinary Medical Officer  
NTP Clinical Pathologist  
NTP Clinical Pathology Group  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC

Gregory Travlos, DVM, DACVP  
Group Leader, Clinical Pathology Group  
Cellular and Molecular Pathology Branch  
National Institute of Environmental Health Sciences  
Research Triangle Park, NC