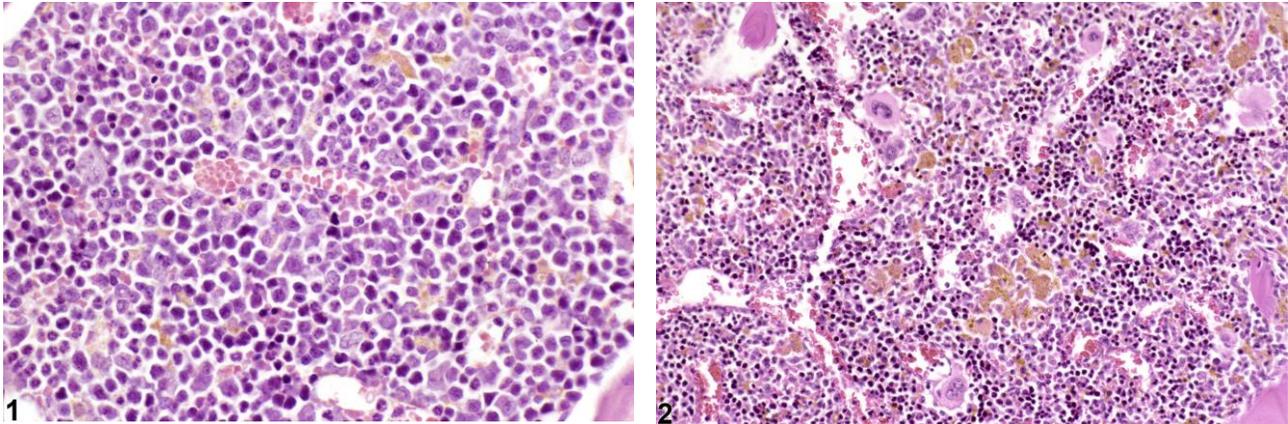


# NTP Nonneoplastic Lesion Atlas

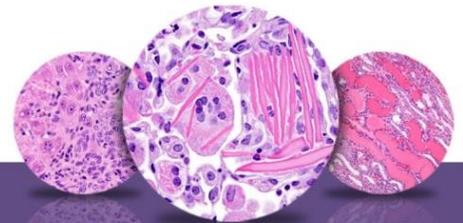
## Bone Marrow – Pigment



**Figure Legend:** **Figure 1** Low amounts of golden brown pigment in bone marrow in a male B6C3F1 mouse from a subchronic study. **Figure 2** Moderate amounts of golden brown pigment in bone marrow in a male B6C3F1 mouse from a chronic study.

**Comment:** Iron is stored as hemosiderin in resident macrophages of the bone marrow. An increase in the amount of hemosiderin within the bone marrow is recorded as (increased) pigment. Hemosiderin appears as a golden brown pigment with hematoxylin and eosin stain and as green, blue-green, or black with Wright's stain. Although golden brown pigment seen in macrophages most likely represents hemosiderin, a special stain, such as Prussian blue, would be needed for confirmation. Since iron is normally stored in the marrow, the level of pigmentation is assessed and graded in comparison with same-site concurrent controls.

Increased hemosiderin of the bone marrow is associated with old or chronic hemorrhage or hemolytic anemia or is due to the administration of excessive amounts of oral or parenteral iron (iron overload). Anemia of inflammatory (or chronic) disease may also result in increased bone marrow hemosiderin. This is due to increased production of hepcidin, a key mediator of anemia of inflammation, by the liver. Hepcidin plays a role in maintaining normal iron homeostasis by inhibiting absorption of dietary iron from the intestinal epithelium and preventing the export of iron from macrophages. Inflammatory and neoplastic disorders cause an increase in hepcidin production that with time results in increased iron stores within the bone marrow. These iron stores are unavailable for erythropoiesis, subsequently contributing to the development of anemia.



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## *Bone Marrow – Pigment*

**Recommendation:** While golden brown pigment within the bone marrow is presumed to be hemosiderin, it cannot be confirmed without special stains. Thus, “pigment” is deemed the most appropriate diagnosis. Increases in pigment in subchronic and chronic studies should always be documented, with grading based on the relative amounts of pigment present in comparison with same-site concurrent controls. When an increase in pigment is treatment related, it should be described in the narrative as being consistent with hemosiderin.

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## *Bone Marrow – Pigment*

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