



NTP Nonneoplastic Lesion Atlas

Lymph Node – Pigment

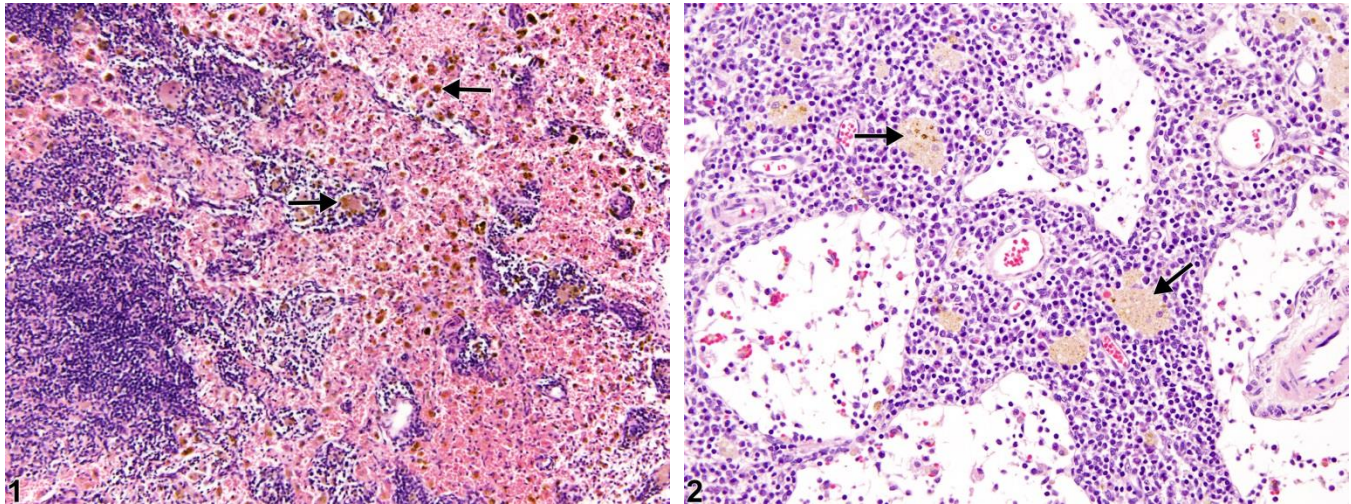
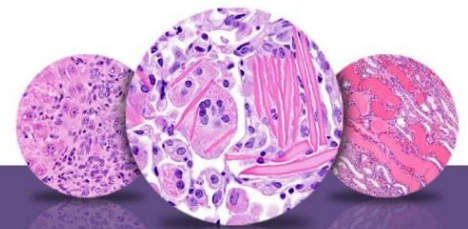


Figure Legend: **Figure 1** Lymph node, Medullary sinuses - Pigment in a male Harlan Sprague-Dawley rat from a chronic study. Macrophages within the medullary sinuses contain intracytoplasmic golden-brown pigment suggestive of hemosiderin (arrows). **Figure 2** Lymph node, Medullary cords - Pigment in a male F344/N rat from a chronic study. Macrophages within the medullary cords contain yellow-brown pigment suggestive of ceroid/lipofuscin (arrows).

Comment: Pigment is a common finding in lymph nodes of control and treated rodents, particularly in the mesenteric and mandibular lymph nodes. Typically, pigment is seen within macrophages of the medullary sinuses and cords and may become increased as an effect of treatment. When specifically related to treatment, exogenous pigment is generally most prominent in lymph nodes regional to the route of test article administration. Hemosiderin (Figure 1, arrows) and ceroid/lipofuscin (Figure 2, arrows) are the most frequently encountered pigments. Hemosiderin is an iron-containing golden-brown granular material, and macrophages containing this pigment are typically observed with sinus erythrocytosis, congestion, or hemorrhage. Lipofuscin is also a yellow-brown, finely granular pigment; however, it is derived mainly from the breakdown products of lipids, such as cell membranes. Ceroid is a variant of lipofuscin that is acid-fast and autofluorescent. Differentiation of these pigments with 100% certainty using only conventional hematoxylin and eosin (H&E) staining is not possible. Hemosiderin can be identified with iron stains such as Perl's iron and Prussian blue, both of which stain the pigment blue. Ceroid/lipofuscin may be identified with Sudan black B, Schmorl's reaction, Oil Red O, carbol



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lipofuscin stain, periodic acid-Schiff, Ziehl-Neelsen acid-fast stain, autofluorescence, or lysosomal acid phosphatase and esterase stains. Melanin is another endogenous pigment that can be found within lymph nodes. This is a normal finding in black mice. Schmorl's method and dopa-oxidase histochemical stains can be used to identify melanin pigment.

Recommendation: Pigment in lymph nodes should be diagnosed and given a severity grade.

However, not all pigments have to be diagnosed, as some are ubiquitous in aging animals or related to some other disease process and not toxicologically meaningful. The pathologist should use his or her judgment in deciding whether deposits of pigment are toxicologically significant or prominent enough to warrant a separate diagnosis. Definitive pigment identification is often difficult in histologic sections, even with a battery of special stains. Therefore, it is recommended that a diagnosis of "pigment" (as opposed to diagnosing the type of pigment, e.g., hemosiderin or lipofuscin) is most appropriate. The pathology narrative should describe the morphologic features of the pigmentation.

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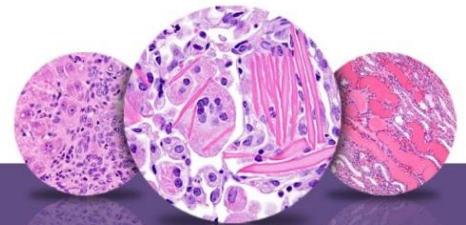
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Authors:

Kristen Hobbie, DVM, PhD
Principal Pathologist
Huntingdon Life Sciences
Peterborough, UK

Susan A. Elmore, MS, DVM, DACVP, DABT, FIATP
Staff Scientist, NTP Pathologist
NTP Pathology Group
National Toxicology Program
National Institute of Environmental Health Sciences
Research Triangle Park, NC

Holly M. Kolenda-Roberts, DVM, PhD, DACVP
Veterinary Pathologist
SNBL USA
Everett, WA