## *Tooth, Incisor – Degeneration*

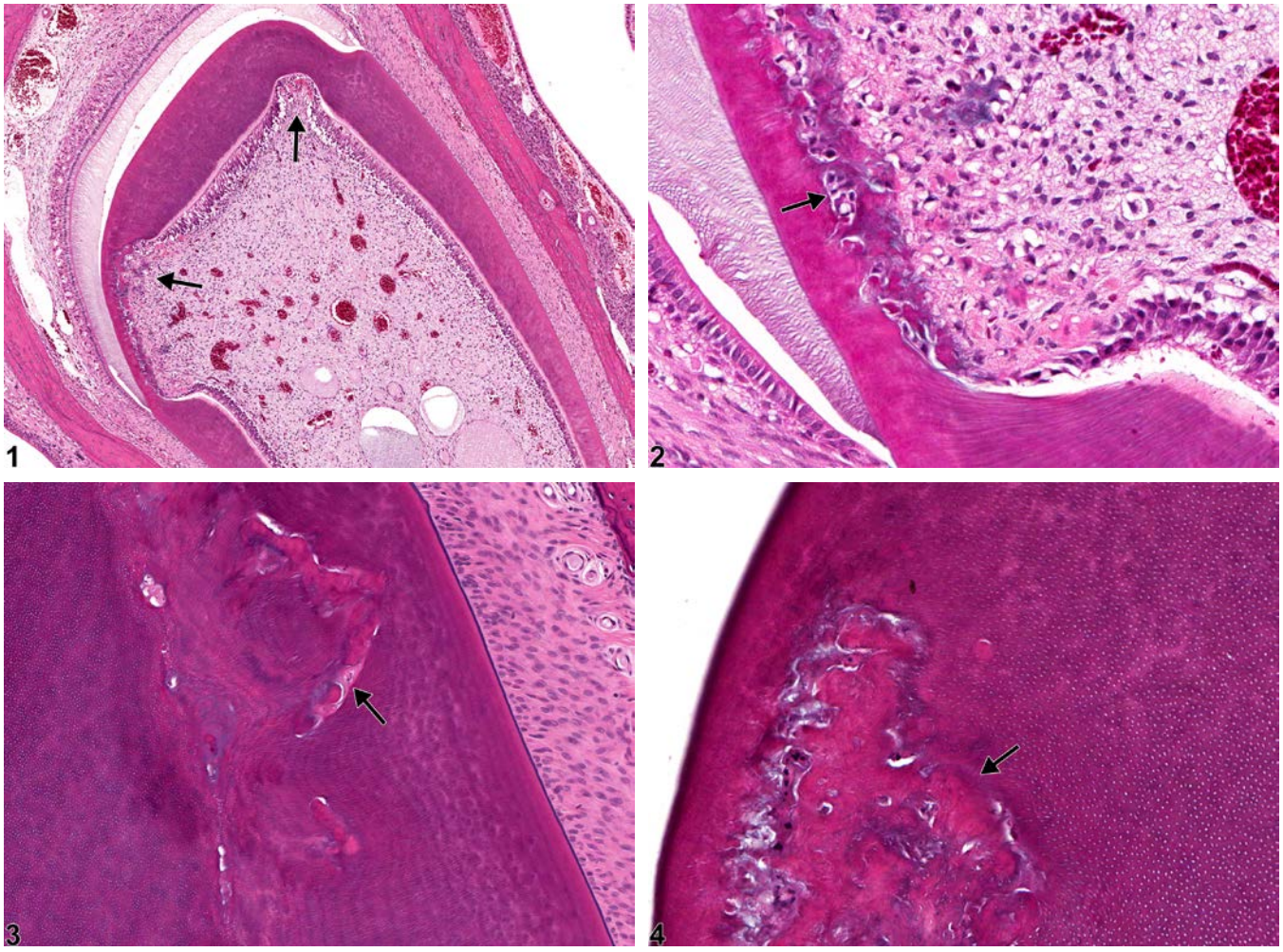
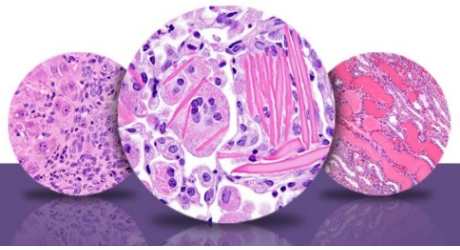



**Figure Legend: Figure 1** Tooth, Incisor - Degeneration in a female Harlan Sprague-Dawley rat from a subchronic study. Odontoblast degeneration and dentin niche formation (arrows) are present. **Figure 2** Tooth, Incisor - Degeneration in a female Harlan Sprague-Dawley rat from a subchronic study (higher magnification of Figure 1). There is thinning of the dentin layer and loss of and degeneration of odontoblasts (arrow) in a dentin niche. **Figure 3** Tooth, Incisor - Degeneration in a female Harlan Sprague-Dawley rat from a subchronic study. Abnormal dentin and osteodentin production (arrow) are present. **Figure 4** Tooth, Incisor - Degeneration in a female Harlan Sprague-Dawley rat from a subchronic study. Abnormal dentin and osteodentin production (arrow) are present.

**Comment:** Degenerative changes of the incisors are uncommon in NTP studies. Incisor degeneration comprises a set of lesions that may not all be present concurrently. Early lesions include focal





mesenchymal cell vacuolation and osteodentin formation within the pulp. More severe lesions include focal or multifocal odontoblast degeneration with dentin niche formation (Figure 1 and Figure 2), abnormal organization of the dentin matrix, and altered matrix staining (Figure 3 and Figure 4). Breaks in the dentin layer may be seen with severe lesions. Incisor degeneration may be chemically induced and, at least in one case in rats, has been suggested to be secondary to injury to a selective population of preodontoblasts.

**Recommendation:** Tooth, Incisor - Degeneration should be diagnosed and graded whenever present. If the dentin layer appears normal and the odontoblasts only are undergoing degeneration or necrosis, then “tooth, odontoblast - degeneration” or “tooth, odontoblast - necrosis” should be diagnosed.

**References**

Long PH, Herbert RA, Nyska A. 2004. Hexachlorobenzene-induced incisor degeneration in Sprague-Dawley rats. Toxicol Pathol 32:35-40.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/14713546

Ten Cate AR. 1998. Dentin-pulp complex. In: Oral Histology; Development, Structure, and Function, 5th ed. Mosby-Year Book, St Louis, MO, 150-196.

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