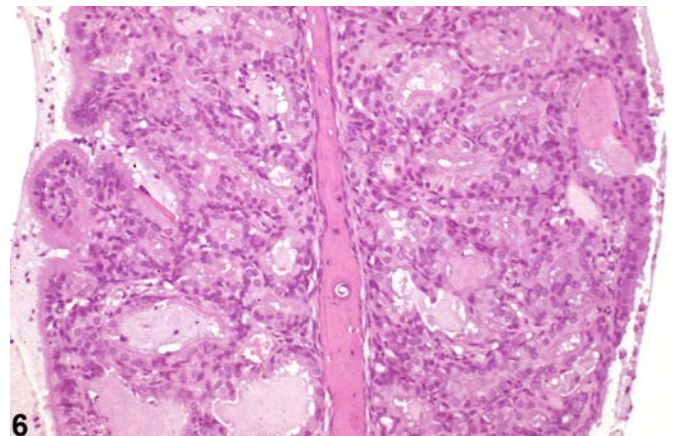
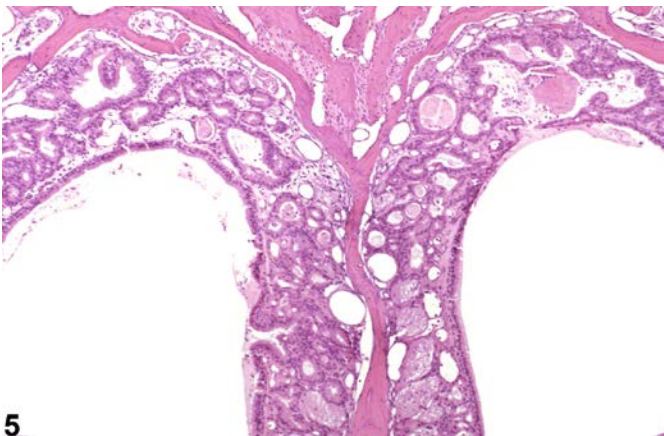
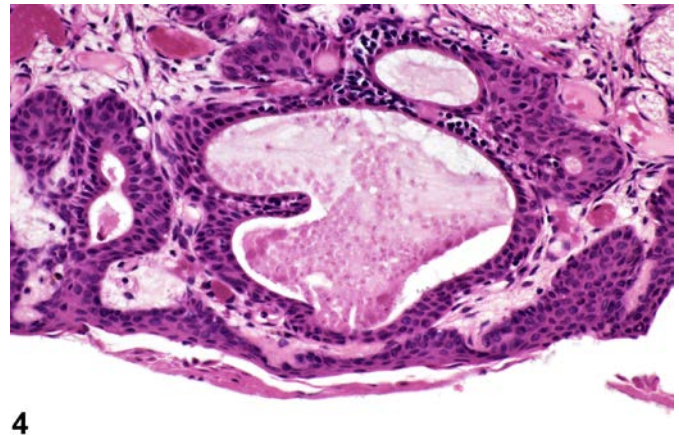
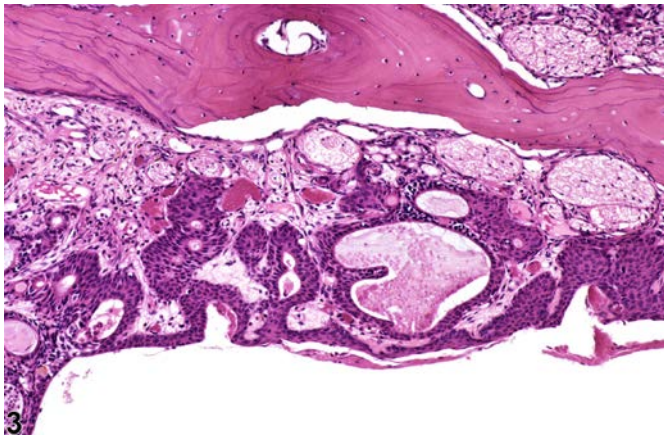
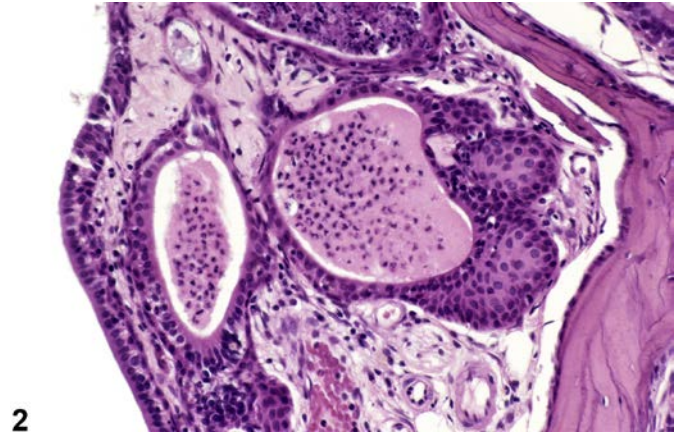
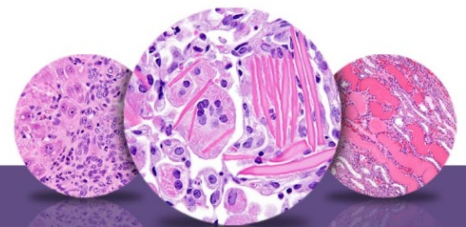


# NTP Nonneoplastic Lesion Atlas

## *Nose, Olfactory Epithelium, Glands – Metaplasia*

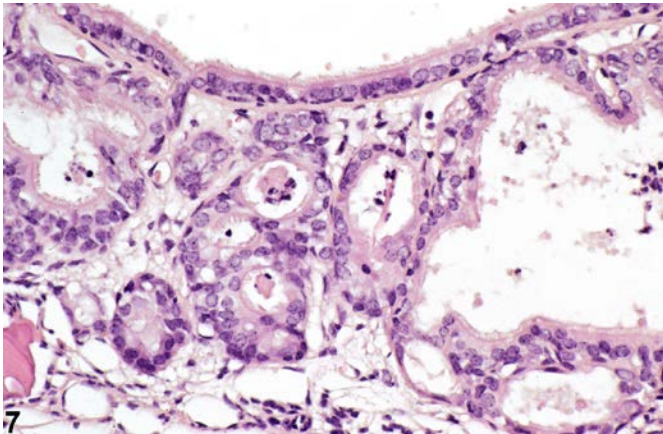






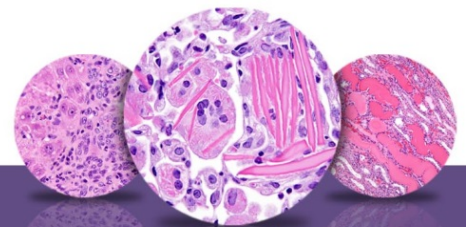
# NTP Nonneoplastic Lesion Atlas

## *Nose, Olfactory Epithelium, Glands – Metaplasia*



**Figure Legend:** **Figure 1** Nose, Olfactory epithelium, Glands - Metaplasia, Squamous in a male F344/N rat from a chronic study. The Bowman's glands are dilated and lined by squamous epithelium. **Figure 2** Nose, Olfactory epithelium, Glands - Metaplasia, Squamous in a male F344/N rat from a chronic study. The Bowman's glands are dilated and lined by squamous epithelium and contain cellular debris. **Figure 3** Nose, Olfactory epithelium, Glands - Metaplasia, Squamous in a male F344/N rat from a chronic study. The Bowman's glands are dilated and lined by squamous epithelium and contain eosinophilic material. There is squamous metaplasia of the overlying olfactory epithelium. **Figure 4** Nose, Olfactory epithelium, Glands - Metaplasia, Squamous in a male F344/N rat from a chronic study (higher magnification of Figure 3). The dilated Bowman's glands are lined by ciliated squamous epithelium and contain proteinaceous material. There is squamous metaplasia of the overlying olfactory epithelium. **Figure 5** Nose, Olfactory epithelium, Glands - Metaplasia, Respiratory in a male B6C3F1 mouse from a chronic study. The hyperplastic Bowman's glands all have respiratory epithelium. Image provided courtesy of Dr. R. Miller. **Figure 6** Nose, Olfactory epithelium, Glands - Metaplasia, Respiratory in a female B6C3F1/N mouse from a chronic study. The hyperplastic Bowman's glands are lined by tall, ciliated, respiratory epithelium. Image provided courtesy of Dr. R. Miller. **Figure 7** Nose, Olfactory epithelium, Glands - Metaplasia, Respiratory in a female B6C3F1/N mouse from a chronic study. The Bowman's glands are lined by ciliated respiratory epithelium.

**Comment:** Bowman's gland metaplasia (Figure 1, Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, and Figure 7) is similar to metaplasia of olfactory epithelium (see Nose, Epithelium - Metaplasia, Squamous, and Nose, Olfactory epithelium - Metaplasia, Respiratory) but occurs in the epithelium lining the



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Bowman's glands. In respiratory metaplasia, the normal Bowman's gland epithelium is replaced by ciliated respiratory epithelium (there may be variable numbers of goblet cells). In squamous metaplasia, the epithelium is replaced by squamous epithelium. There may be mixed squamous and respiratory metaplasia in some cases, as well as the presence of hyperplasia, dilation, atrophy, and/or inflammation. Diagnoses should be based on the most prominent lesion(s) present.

**Recommendation:** "Nose, Olfactory epithelium, Glands - Metaplasia" should be diagnosed whenever it is present in the absence of lesions to the overlying epithelium, when the type of metaplasia differs from that of the overlying epithelium (e.g., squamous in the overlying epithelium and respiratory in the glands), or if it appears to be overly severe or excessive. Otherwise, the metaplasia should be described in the pathology narrative as a component of the metaplasia of the overlying epithelium. The type of metaplastic epithelium present (respiratory or squamous) should be included in the diagnosis as a modifier. Glands associated with the olfactory epithelium are assumed to be Bowman's glands, so it is not necessary to specify "Bowman's" in the diagnosis. It should be assigned a severity grade based on the extent of the lesion.

### **Reference:**

Long PH, Herbert RA, Peckham JC, Grumbein SL, Shackelford CC, Abdo KI. 2003. Morphology of nasal lesions in F344/N rats following chronic inhalation exposure to naphthalene vapors. *Toxicol Pathol* 31:655-664.

Abstract: <http://www.ncbi.nlm.nih.gov/pubmed/14585734>

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