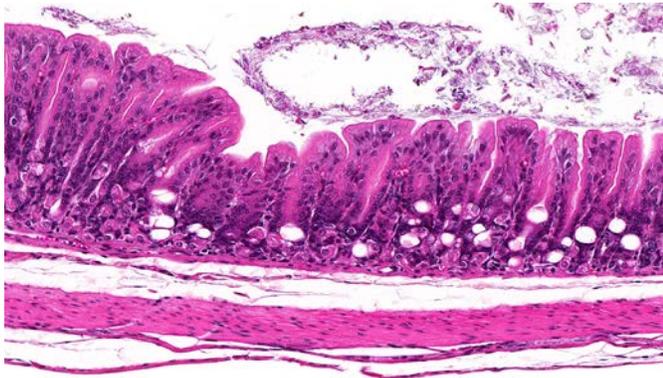


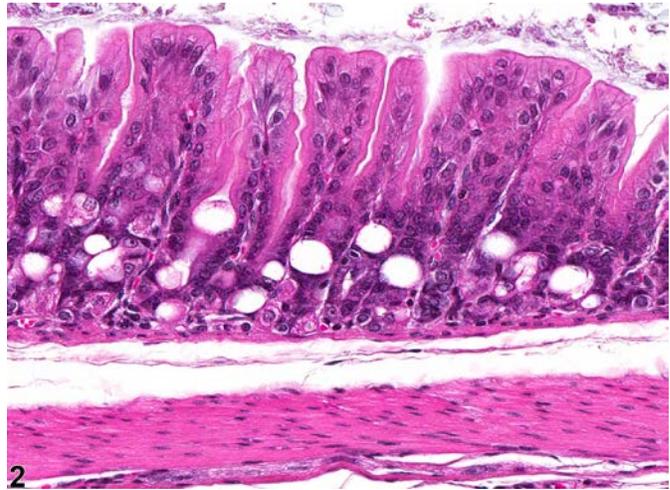


# NTP Nonneoplastic Lesion Atlas

## *Stomach, Glandular Stomach, Epithelium – Vacuolation, Cytoplasmic*



1

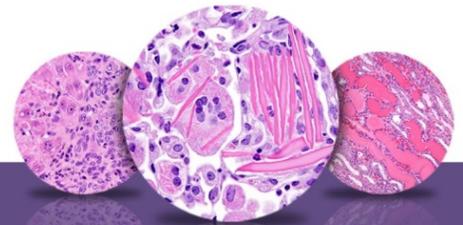


2

**Figure Legend:** **Figure 1** Stomach, Glandular stomach, Epithelium - Vacuolation, Cytoplasmic in a male F344/N rat from a subchronic study. There is vacuolation of epithelial cells in the mucosal glands. **Figure 2** Stomach, Glandular stomach, Epithelium - Vacuolation, Cytoplasmic in a male F344/N rat from a subchronic study (higher magnification of Figure 1). There is vacuolation of epithelial cells in the mucosal glands.

**Comment:** Cytoplasmic vacuolation is generally considered to be an early form of degeneration. Cytoplasmic vacuolization (Figure 1 and Figure 2) manifests as increased cell size and volume resulting from an overload of fluid caused by a failure of the cell to maintain normal homeostasis and regulate the ingress and excretion of fluid. Histologically, cells are enlarged, and the cytoplasm of affected cells contains translucent vacuoles. The vacuoles may represent distended endoplasmic reticulum or Golgi or swollen mitochondria, indicative of cell injury. In some cases, the vacuoles may represent small lipid droplets. Electron microscopy is required to definitively identify the true nature of the vacuoles.

**Recommendation:** Whenever present, this change should be diagnosed as “stomach, glandular stomach, epithelium - vacuolation, cytoplasmic” and graded based on the degree of cellular swelling and extent and number of areas affected. If there is other evidence of degeneration (e.g., sloughing or loss of cells, or nuclear changes), the lesion may be diagnosed as degeneration. If two or more lesions (e.g., cytoplasmic vacuolation, vesicles, bulla, necrosis, ulcers, inflammation) are considered different manifestations of the same lesion, the study pathologist should explain this in detail in the narrative. If



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inflammation is a prominent component of the lesion, then it should be diagnosed and graded separately.

#### **References:**

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Abstract: <http://ntp.niehs.nih.gov/go/11170>

#### **Authors:**

Linda H. Kooistra, DVM, PhD, DACVP  
Pathologist  
Charles River Laboratories, Inc.  
Research Triangle Park, NC

Abraham Nyska, DVM, Diplomate ECVP, Fellow IATP  
Expert in Toxicologic Pathology  
Visiting Full Professor of Pathology  
Sackler School of Medicine, Tel Aviv University  
Timrat Israel