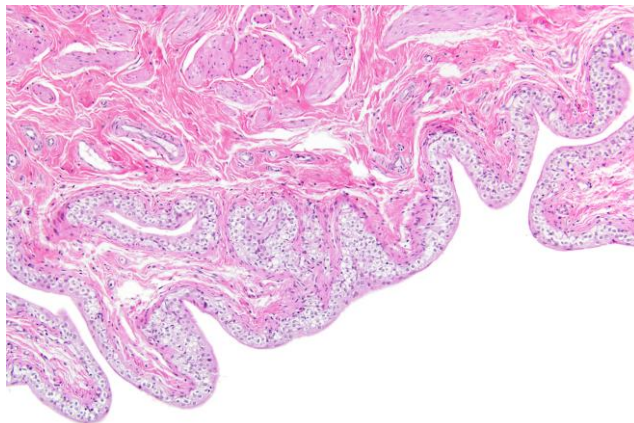
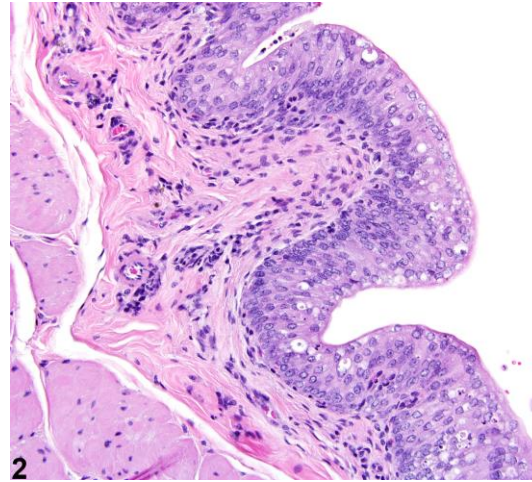
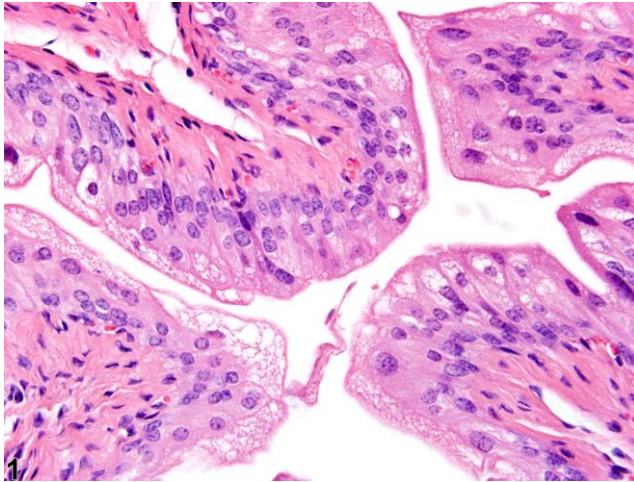


NTP Nonneoplastic Lesion Atlas

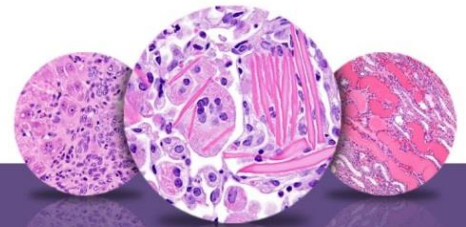
Urinary bladder – Vacuolization, cytoplasmic



3

Figure Legend: **Figure 1** Cytoplasmic vacuolation. Clear vacuoles are present in urothelial “umbrella” cells from a male B6C3F1 mouse in an acute study. **Figure 2** Cytoplasmic vacuolation of more superficial urothelial cells from a female Harlan Sprague-Dawley rat in a chronic study. **Figure 3** Diffuse artifactual vacuolation of basal urothelial cells from a male F344/N rat in a chronic study.

Comment: Cytoplasmic vacuolation of urothelial cells is regarded as a nonspecific lesion that may occur secondary to cell injury by a variety of bladder toxicants or carcinogens. It may or may not be related to degeneration. Vacuolation is usually noted in “umbrella” cells or more superficial urothelial cells (Figure 1 and Figure 2). Uniform urothelial cell vacuolation (typically within the basal cell layer) may be an artifact resulting from autolysis (Figure 3).



NTP Nonneoplastic Lesion Atlas

Urinary bladder – Vacuolization, cytoplasmic

Recommendation: Cytoplasmic vacuolation should be diagnosed and given a severity grade.

Reference:

Frazier KS, Seely JC, Hard GC, Betton G, Burnett R, Nakatsuji S, Nishikawa A, Durchfeld-Meyer B, Bube A. 2012. Proliferative and non-proliferative lesions in the rat and mouse urinary system. *Toxicol Pathol* 40:14S–86S.

Abstract: <http://www.ncbi.nlm.nih.gov/pubmed/22637735>

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