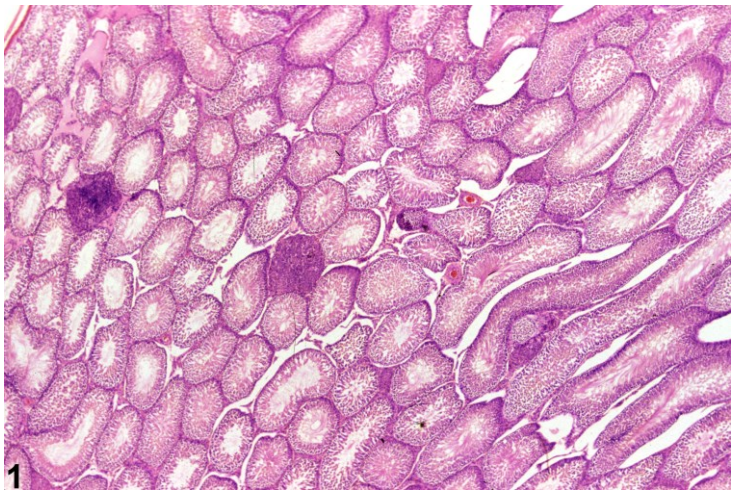
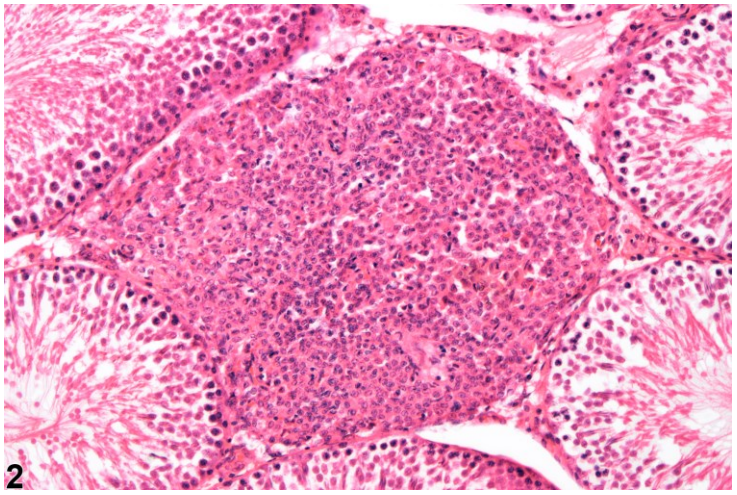
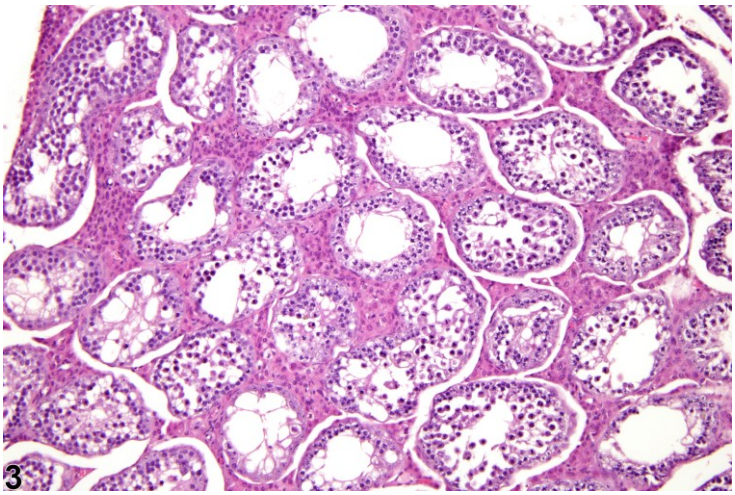
Testis, Interstitial cell – Hyperplasia







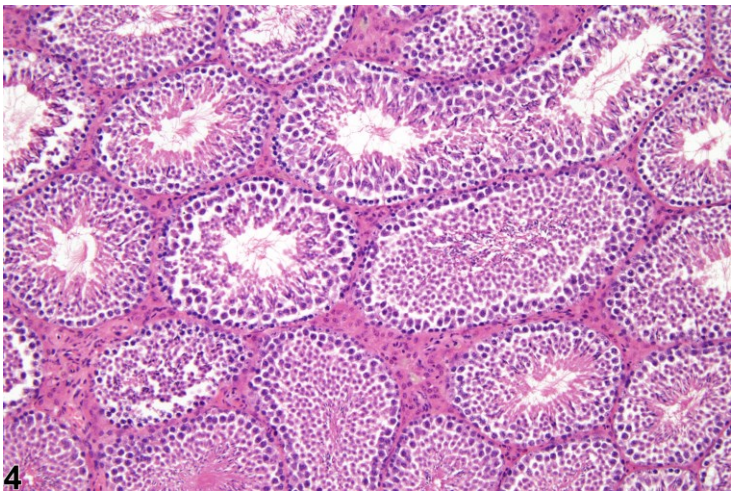
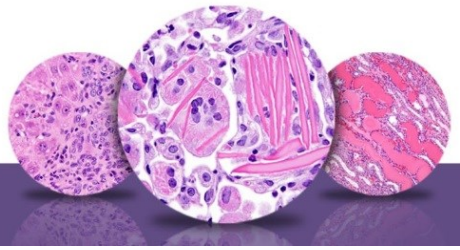


Figure Legend: Figure 1 Testis, Interstitial cell - Hyperplasia in a male F344/N rat from a chronic study. Two focal areas of hyperplasia are present in the testis. **Figure 2** Testis, Interstitial cell - Hyperplasia in a male F344/N rat from a chronic study. Higher magnification of one of the foci in Figure 1. **Figure 3** Testis, Interstitial cell - Hyperplasia in a male B6C3F1 mouse from a chronic study. The interstitial cells are diffusely hyperplastic. **Figure 4** Testis, Interstitial cell - Hyperplasia in a male B6C3F1 mouse from a chronic study. There is diffuse hyperplasia of interstitial cells.



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Comment: Hyperplasia of interstitial cells (Leydig cells) can be focal, multifocal (Figure 1 and Figure 2), or diffuse (Figure 3 and Figure 4) and consists of an increased number of interstitial cells, which are noncompressive to the adjacent seminiferous tubules. Diffuse hyperplasia is generally a physiologic response to hormonal imbalance, whereas focal hyperplasia commonly forms part of the continuum leading to interstitial cell adenoma. Distinction between focal hyperplasia and interstitial cell adenoma is frequently based on size, with hyperplasia being defined as having a diameter equal to three or fewer seminiferous tubules. The condition may be associated with testicular atrophy. Proliferative lesions of the interstitial cell are common age-related lesions of the testis, being particularly frequent in the F344 rat but also present at lower incidences in the Wistar rat and Sprague-Dawley rat. Strain differences are also present in mice. Interstitial cell hyperplasia and adenoma can be readily induced in rats by any chemical that increases circulating levels of luteinizing hormone. This includes many different structural classes of chemicals and drugs. In mice, estrogenic compounds are the most common cause of interstitial cell proliferation.

Recommendation: Interstitial cell hyperplasia should be diagnosed, graded, and discussed in the pathology narrative, if exacerbated by treatment. When present in both testes, the diagnosis should indicate the condition is bilateral, and severity should be based on the more severely affected testis.

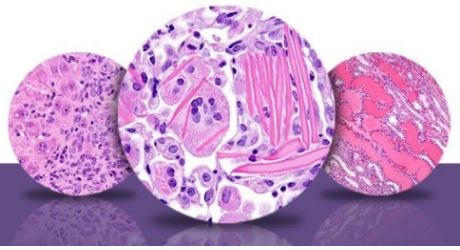
References:

Clegg ED, Cook JC, Chapin RE, Foster PMD, Daston GP. 1997. Leydig cell hyperplasia and adenoma formation: Mechanisms and relevance to humans. Reprod Toxicol 11:107-121.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/9138629

Cook JC, Klinefelter GR, Hardisty JF, Sharpe RM, Foster PMD. 1999. Rodent Leydig cell tumorigenesis: A review of the physiology, pathology, mechanisms, and relevance to humans. Crit Rev Toxicol 29:169-261.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/10213111

Creasy D, Bube A, de Rijk E, Kandori H, Kuwahara M, Masson R, Nolte T, Reams R, Regan K, Rehm S, Rogerson P, Whitney K. 2012. Proliferative and nonproliferative lesions of the rat and mouse male reproductive system. Toxicol Pathol 40:40S-121S.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/22949412

Dixon D, Heider K, Elwell MR. 1995. Incidence of nonneoplastic lesions in historical control male and female Fischer-344 rats from 90-day toxicity studies. Toxicol Pathol 23:338-348.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/7659956



Huseby RA. 1976. Estrogen-induced Leydig cell tumor in the mouse: A model system for the study of carcinogenesis and hormone dependency. J Toxicol Environ Health Suppl 1:177-192.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/11351

Juriansz RL, Huseby RA, Wilcox RB. 1988. Interactions of putative estrogens with the intracellular receptor complex in mouse Leydig cells: Relationship to preneoplastic hyperplasia. Cancer Res 48:14-18.
Abstract: http://www.ncbi.nlm.nih.gov/pubmed/3334987

Radovsky A, Mitsumori K, Chapin RE. 1999. Male reproductive tract. In: Pathology of the Mouse: Reference and Atlas (Maronpot RR, Boorman GA, Gaul BW, eds). Cache River Press, Vienna, IL, 381-407.
Abstract: http://www.cacheriverpress.com/books/pathmouse.htm

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