



Neoplasms of the Rodent Female Reproductive System

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Classification

- Harmonization: <http://www.toxpath.org/nomen/>
- Dixon et al., 1999, Proliferative Lesions of the ovary, Uterus, Vagina, Cervix and Oviducts in Rats. In: Guides for Toxicologic Pathology, STP/ARP/AFIP. Washington, DC
- Mann, P.C. et al., 1996, Proliferative Lesions of the Mammary Glands in Rats. In: Guides for Toxicologic Pathology, STP/ARP/AFIP. Washington, DC
- Boorman et al., 1990. Pathology of the Fisher Rat. Academic Press
- Maronot et al., 1999. Pathology of the Mouse, Cache River Press
- Mohr, U (ed): 2001. International Classification of Rodent Tumors. The Mouse. Springer Verlag.

Classification: Ovary - Recommendations

<http://www.toxpath.org/nomen/>

- **Hyperplasia: tubulostromal, cystic/papillary, sex cord stromal (*diffuse mixed type, granulosa cell, mixed Sertoli cell, theca cell*)**
- **Adenoma, tubulostromal and Adenocarcinoma, tubulostromal**
- **Mesothelioma, malignant**
- **Cystadenoma and Cystadenocarcinoma**
- **Tumor, granulosa cell, benign and malignant**
- **Thecoma, benign and malignant**
- **Luteoma, benign**
- **Tumor, Sertoli cell, benign and malignant**
- **Tumor, sex cord stromal, mixed, benign and malignant**
- **Dysgerminoma (teratoma, benign or malignant)**
- **Carcinoma, yolk sac**
- **Choriocarcinoma**

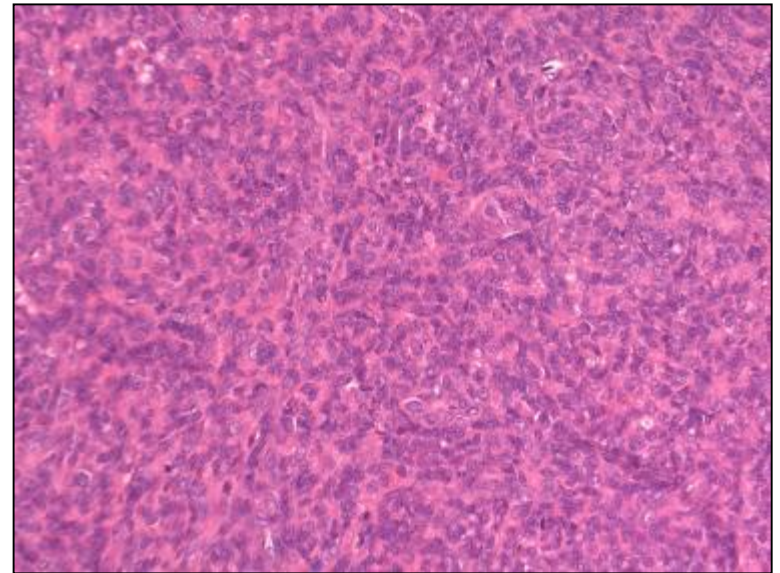
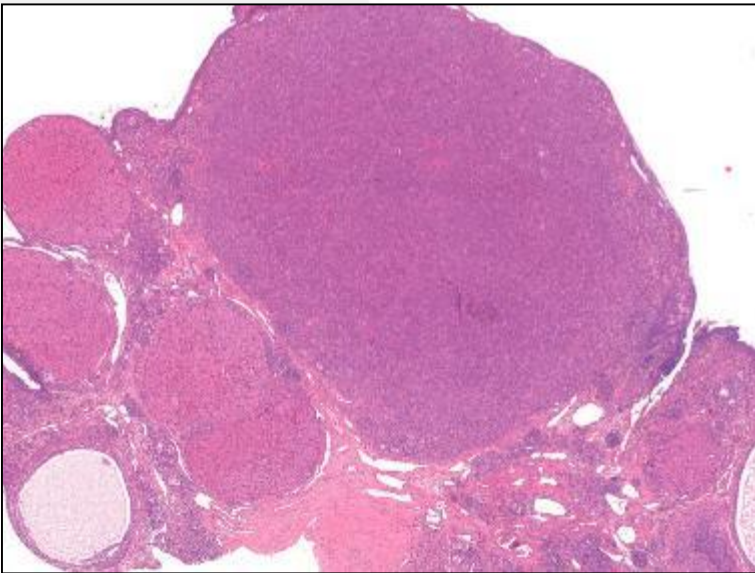
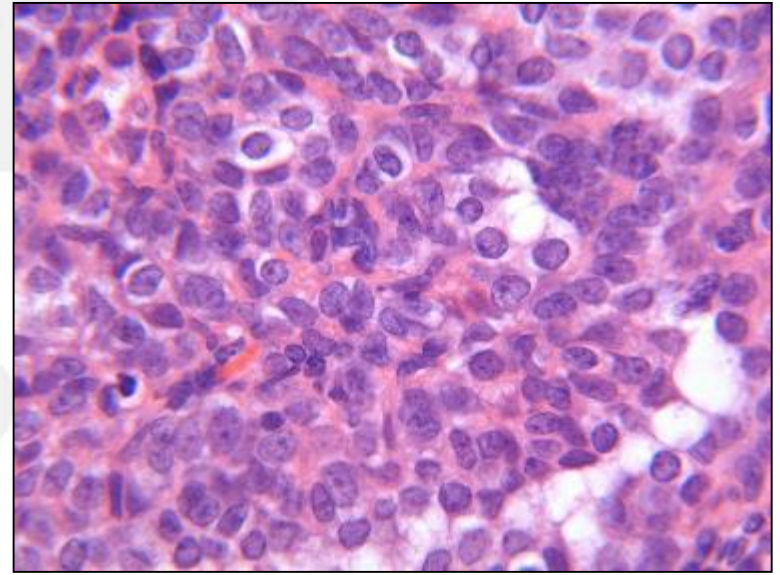
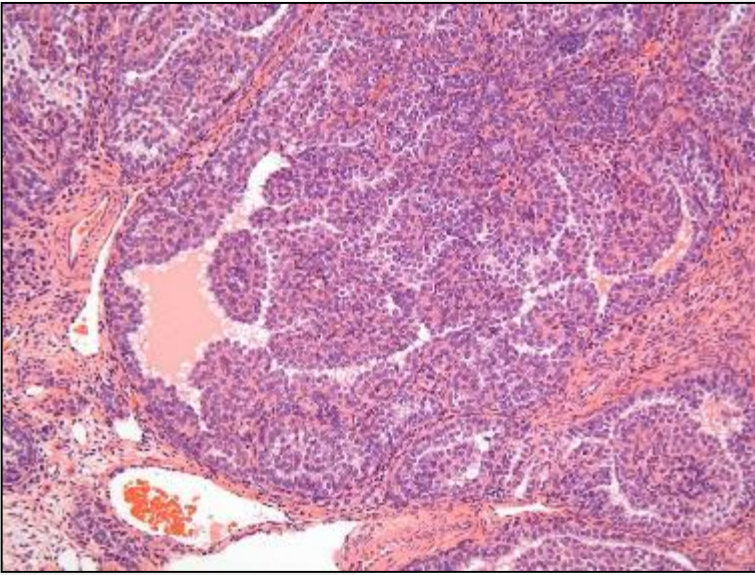
Classification: Ovarian Lesions

- **Only organ specific tumors are recommended (harmonized), i.e. neoplasms arising in mesenchymal tissues are not listed under particular organs in the, International Harmonization of Rat Nomenclature' but under, Soft Tissues and Others'**
- **Differentiation between hyperplastic and neoplastic stromal sex cord lesions:**
 - **Focal hyperplasia: focal small, 2-3 mm**
 - **Diffuse hyperplasia: 2-3fold increased size of a normal ovary**

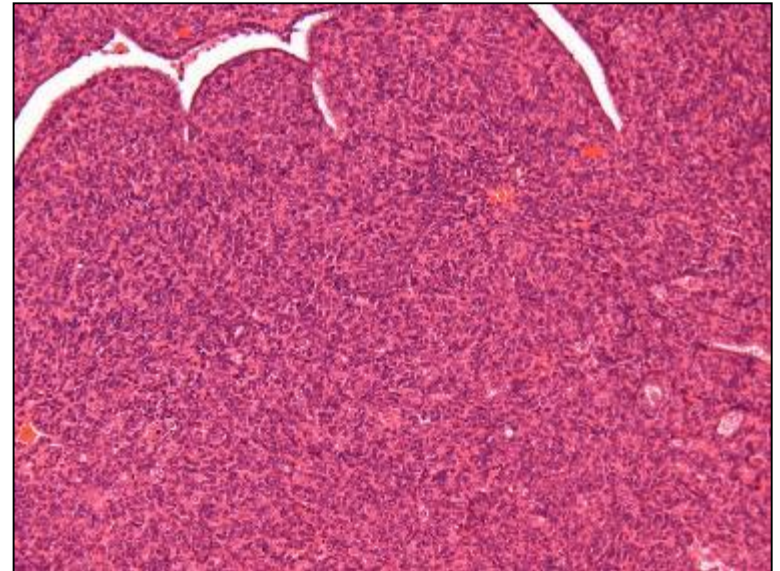
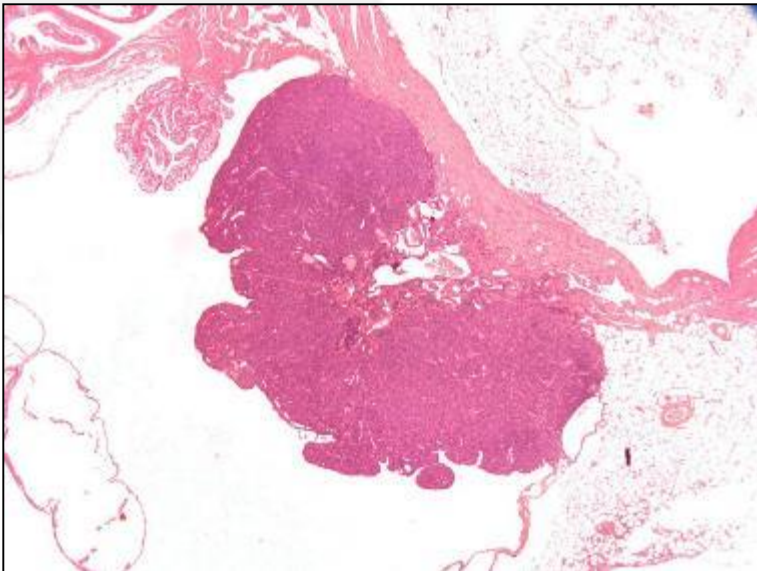
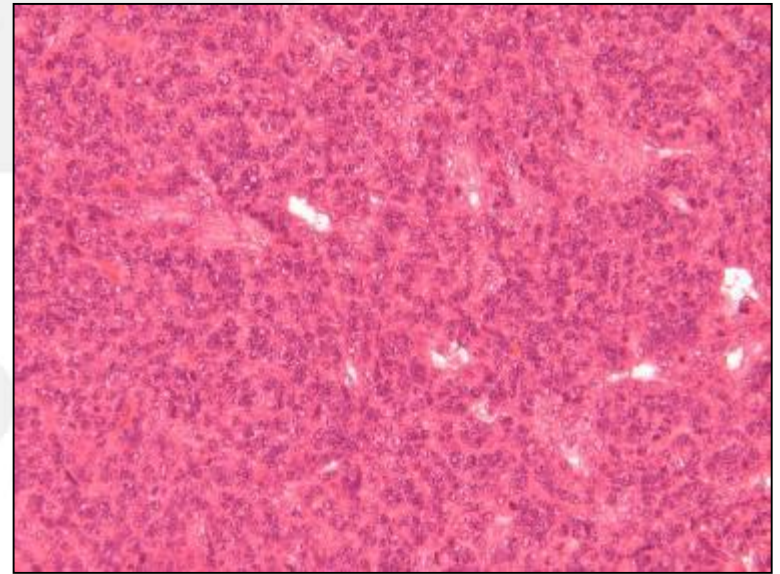
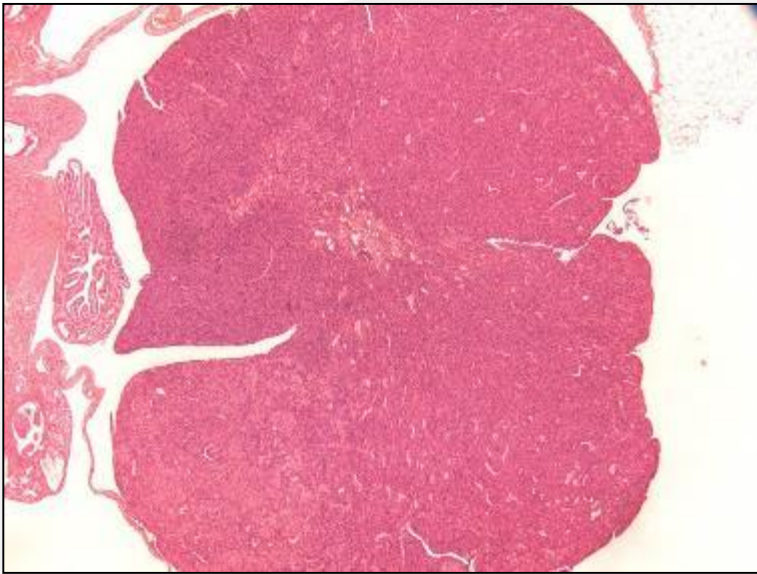
Ovary-Sex Cord Neoplasms: Granulosa Cell Tumor

- **Variety of patterns: solid, cystic, tubular, occasionally sertoliform**
- **Resemble normal granulosa cells with round nucleus and coarse stippled chromatin**
- **Cytoplasm may become luteinized**
- **Malignancy: pleomorphism, increased mitosis, necrosis, invasion**
- **Differential Diagnose: Hyperplasia, Luteoma, Thecoma**

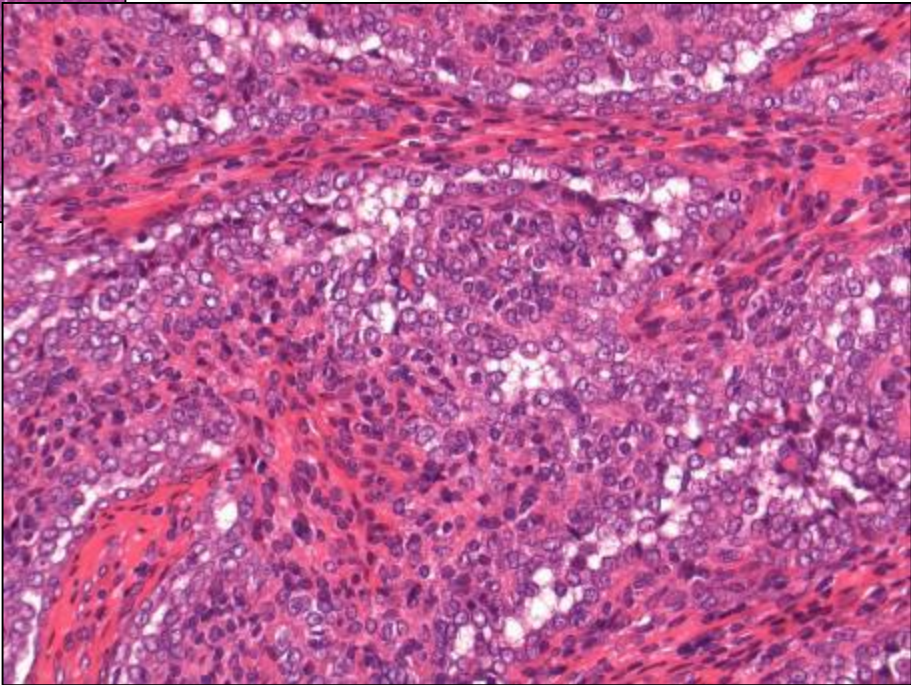
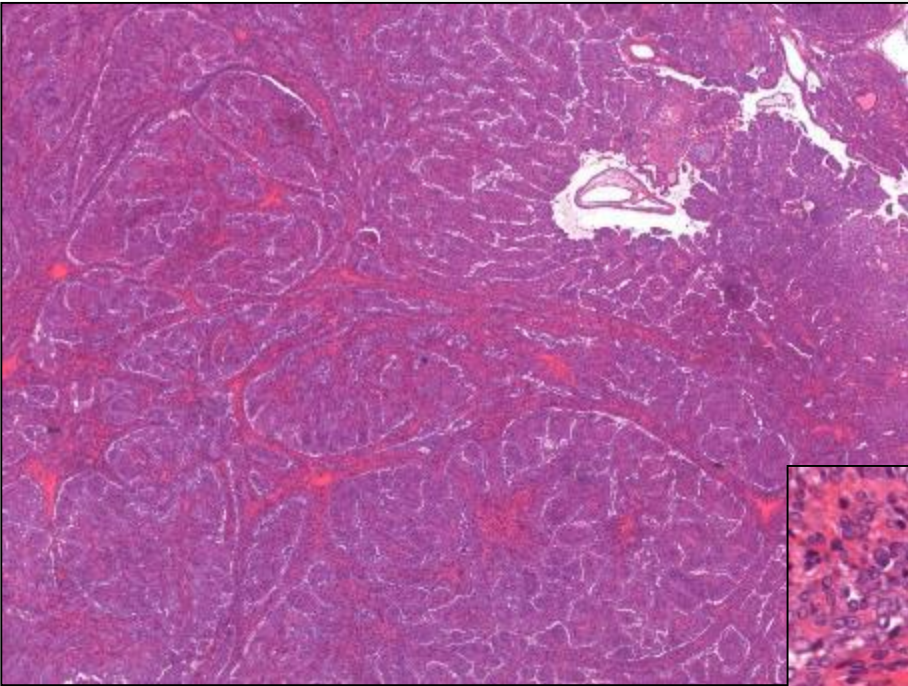
Rat: Granulosa Cell Tumor, benign



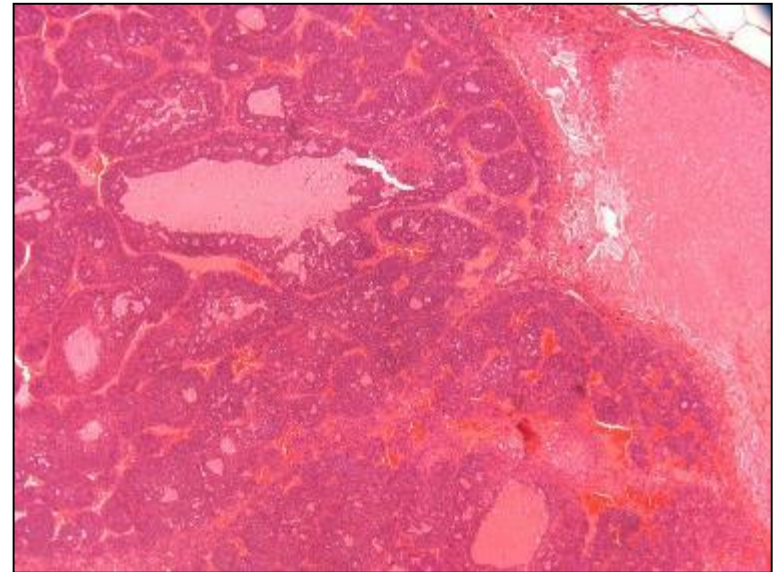
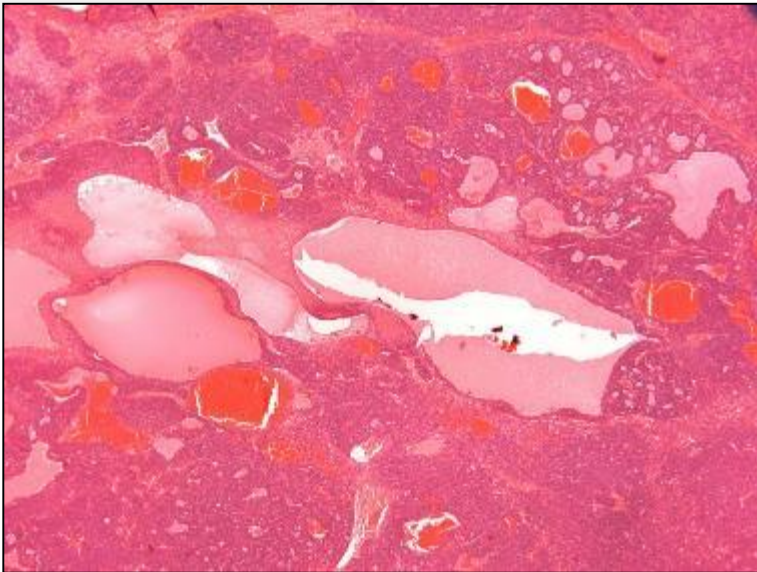
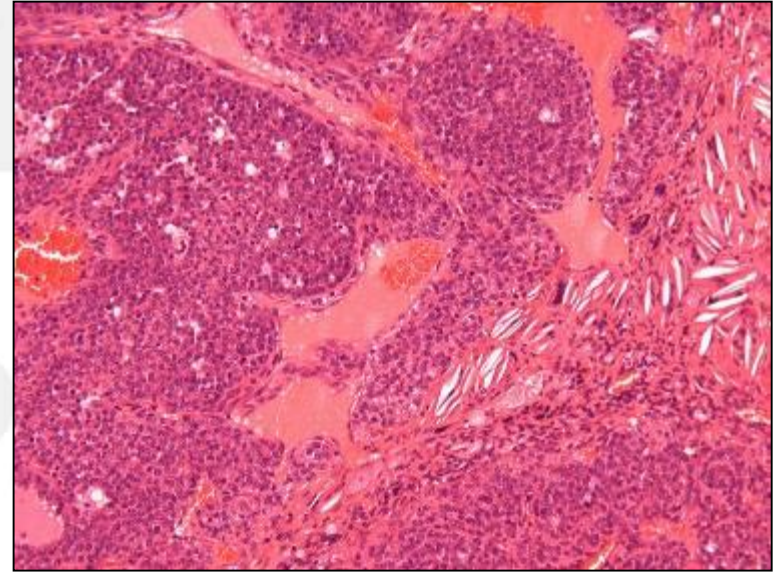
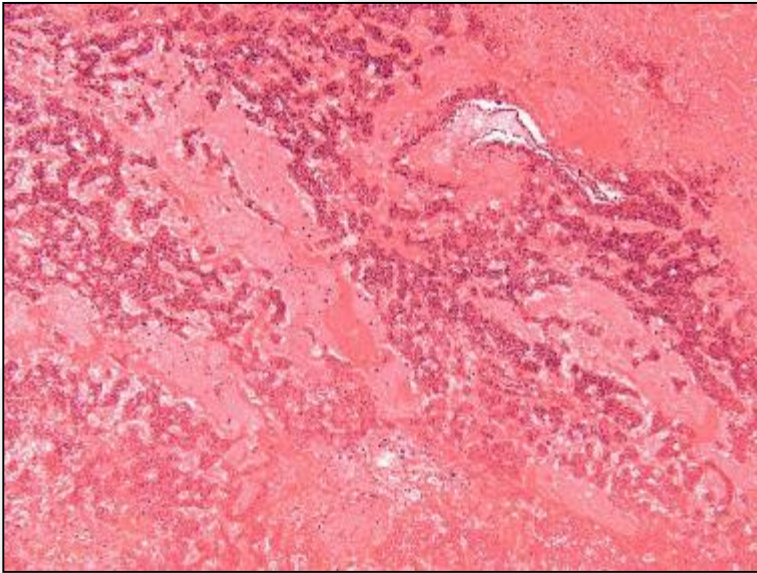
Mouse: Granulosa Cell Tumor, benign



Rat: Granulosa Cell Tumor, malignant



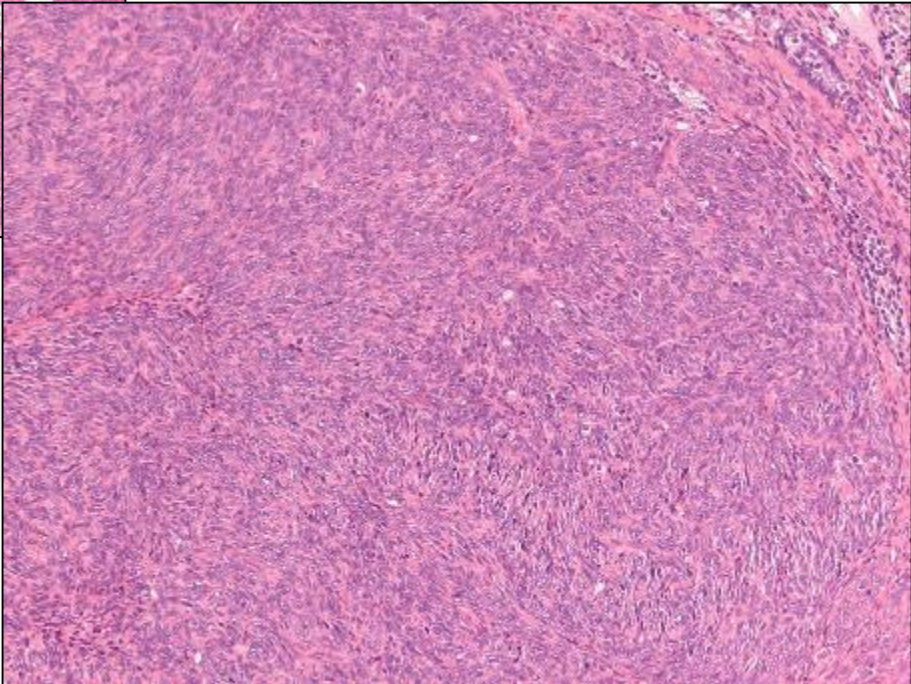
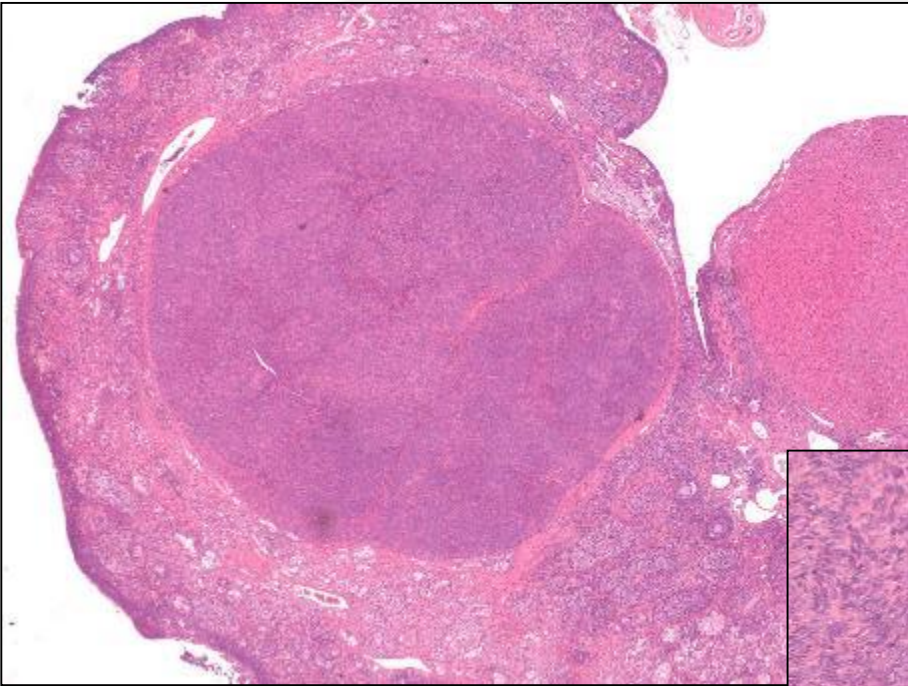
Mouse: Granulosa Cell Tumor, malignant



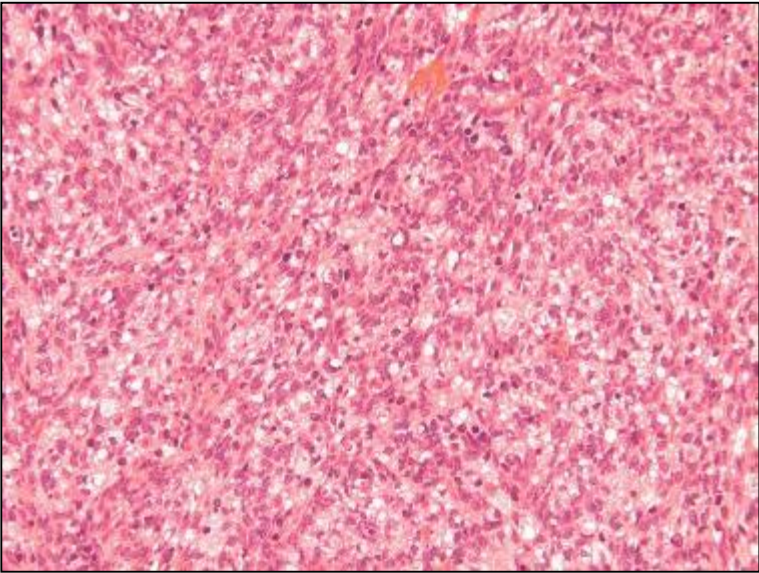
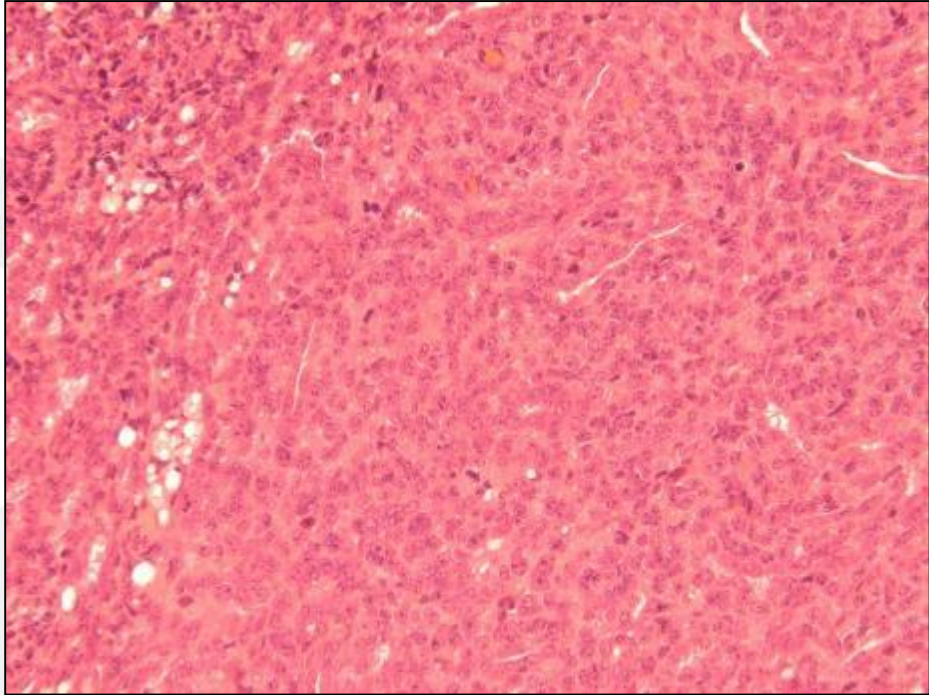
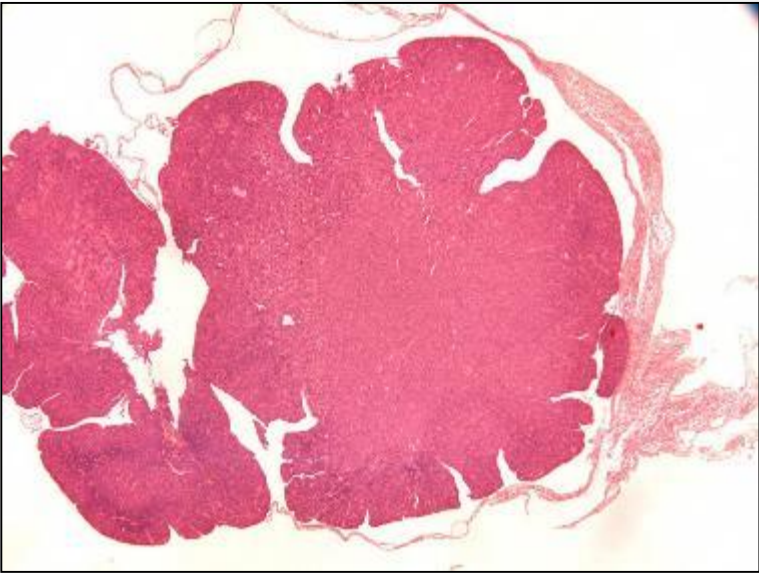
Ovary-Sex Cord Neoplasms: Thecoma

- **Densely packed masses**
- **Fusiform, spindle-shaped cells in whorls and nodular**
- **Areas of vacuolated cells may be present**
- **Malignancy: infiltrative growth pattern, invasion, atypia**
- **Differential Diagnose: Hyperplasia, Fibroma, Granulosa cell tumor, Luteoma**

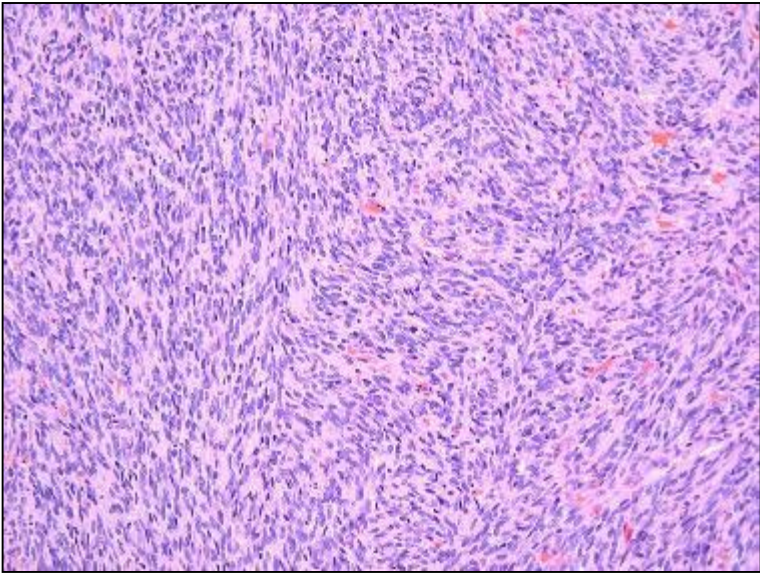
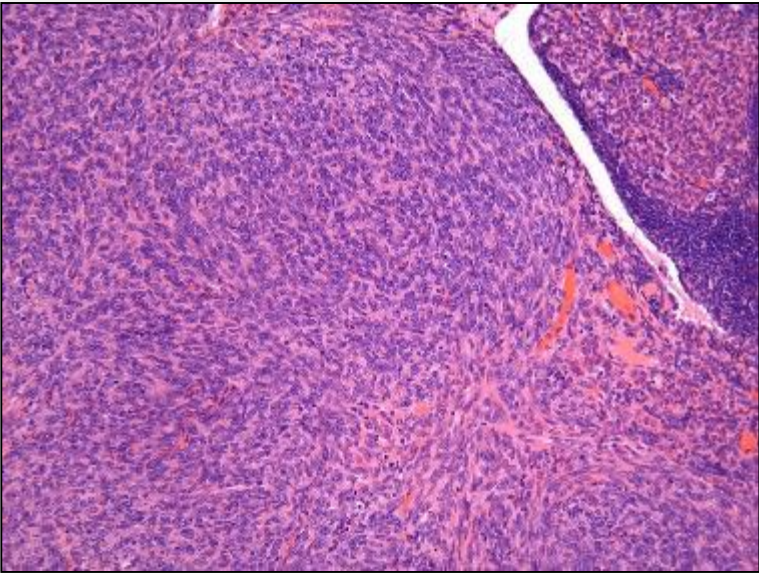
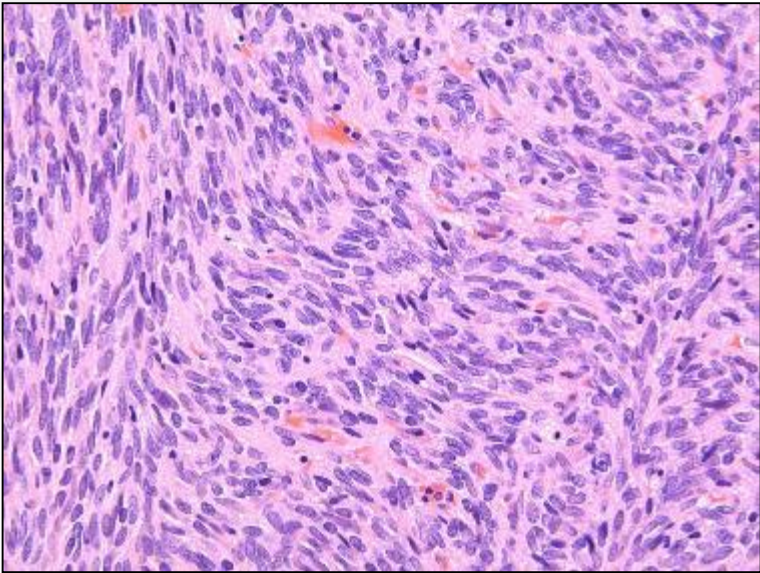
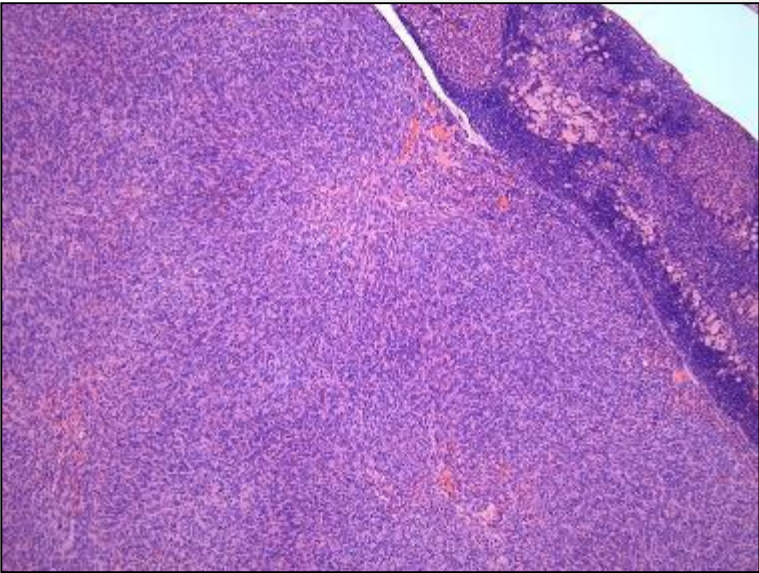
Rat: Thecoma, benign



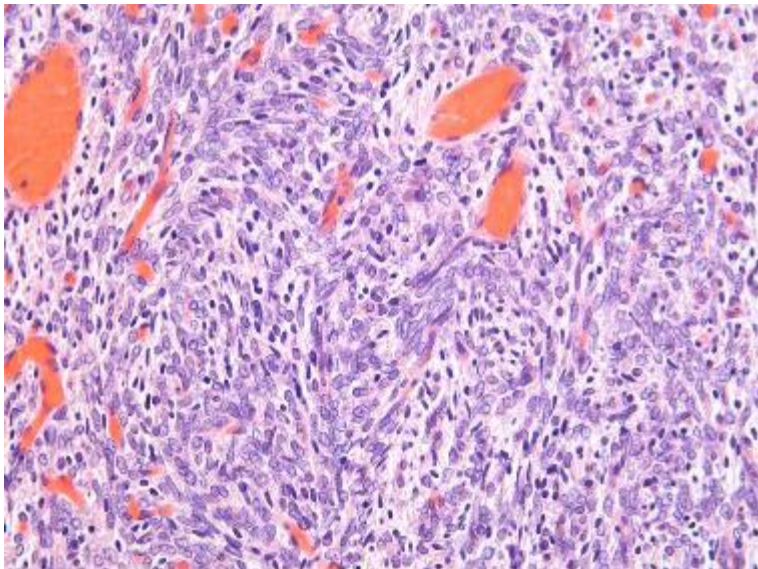
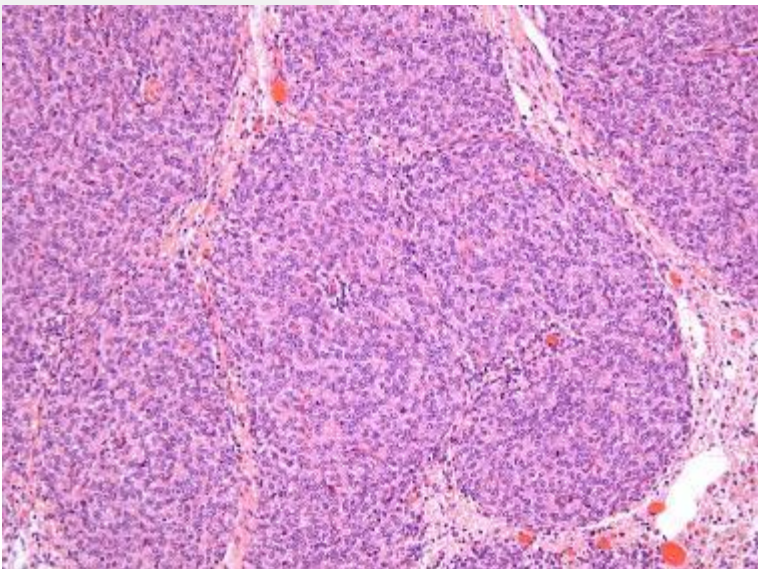
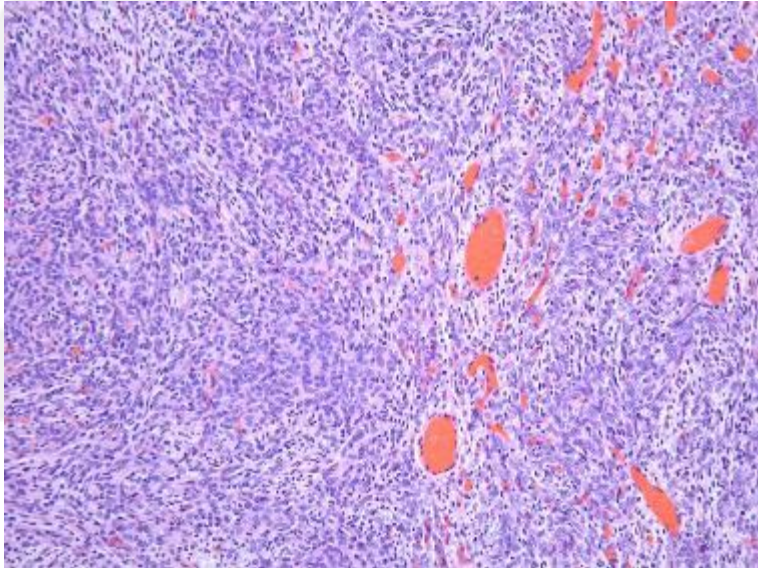
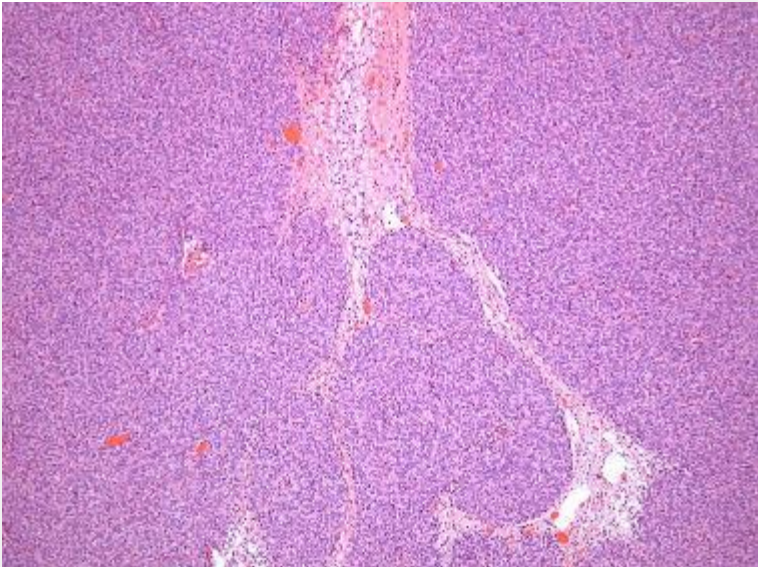
Mouse: Thecoma, benign



Hamster: Thecoma, benign



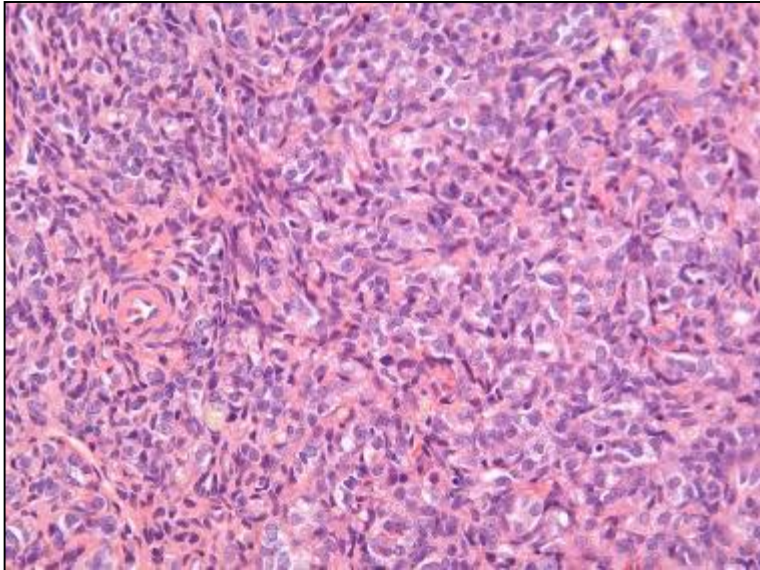
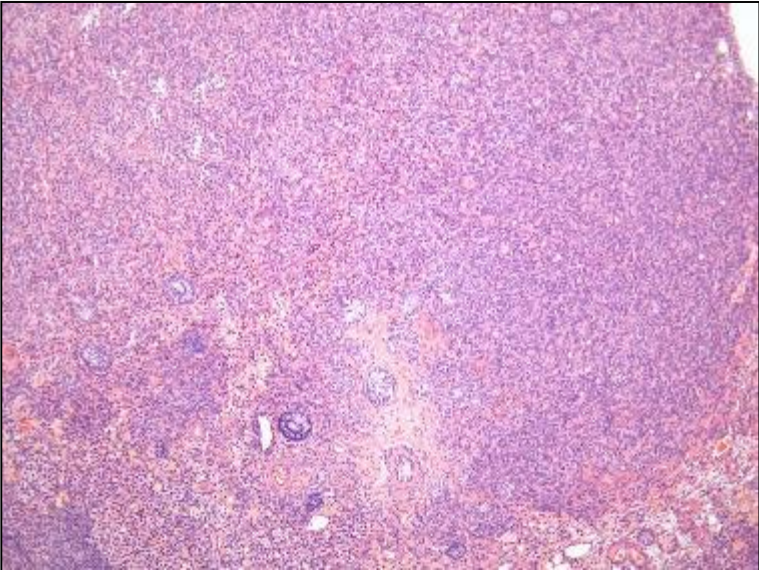
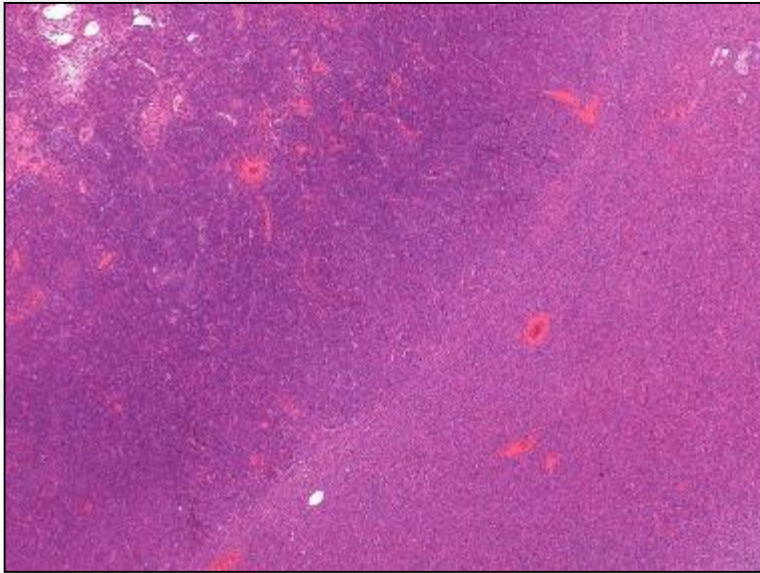
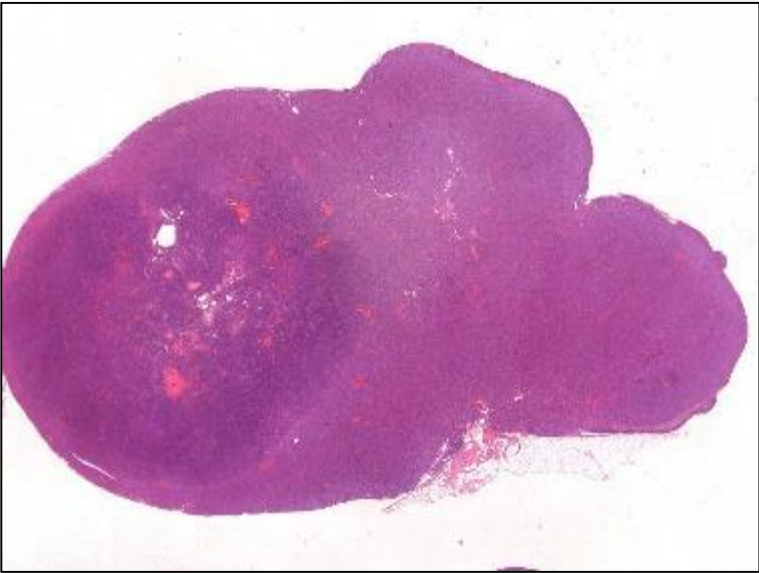
Hamster: Thecoma, malignant



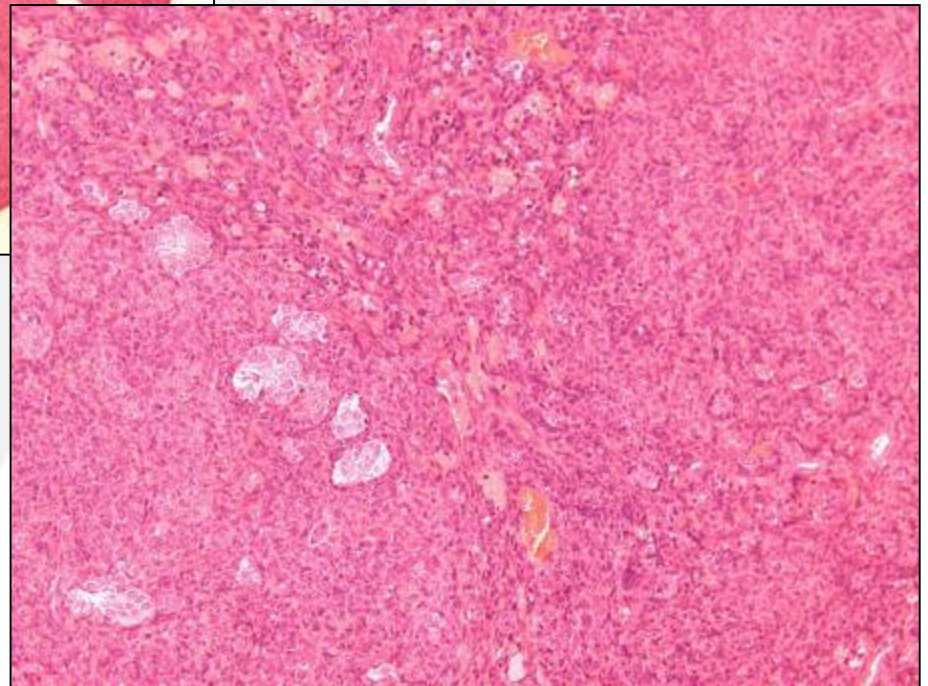
Ovary-Sex Cord Neoplasms: Granulosa-Theca Cell Tumor

- **Mixed neoplasm**
- **Partly dense areas of a particular cell type**
- **Differential Diagnose: Hyperplasia, Granulosa cell tumor, Thecoma**

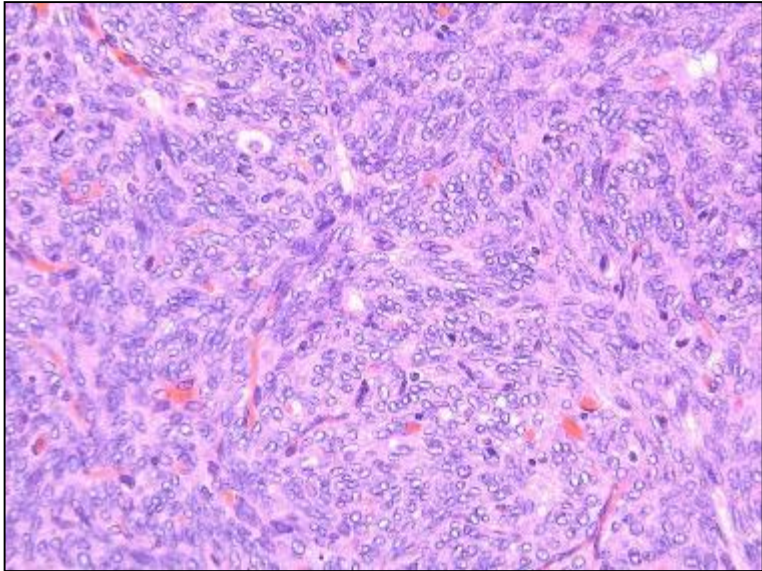
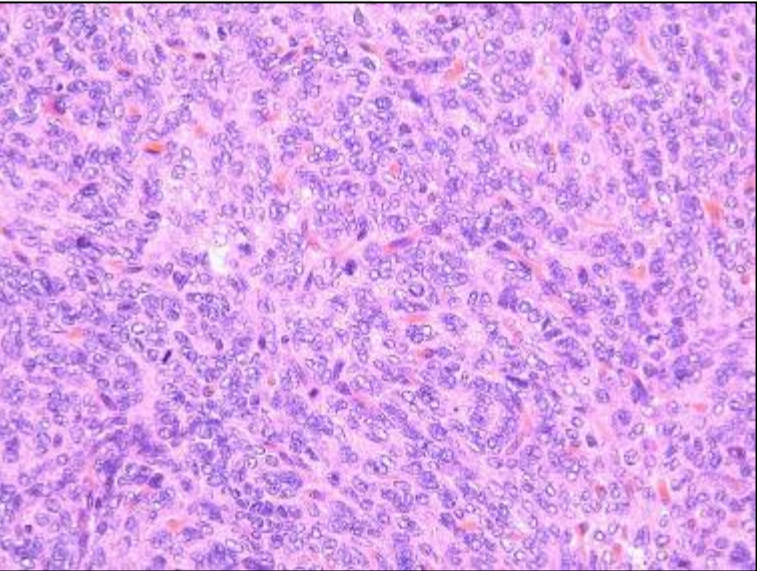
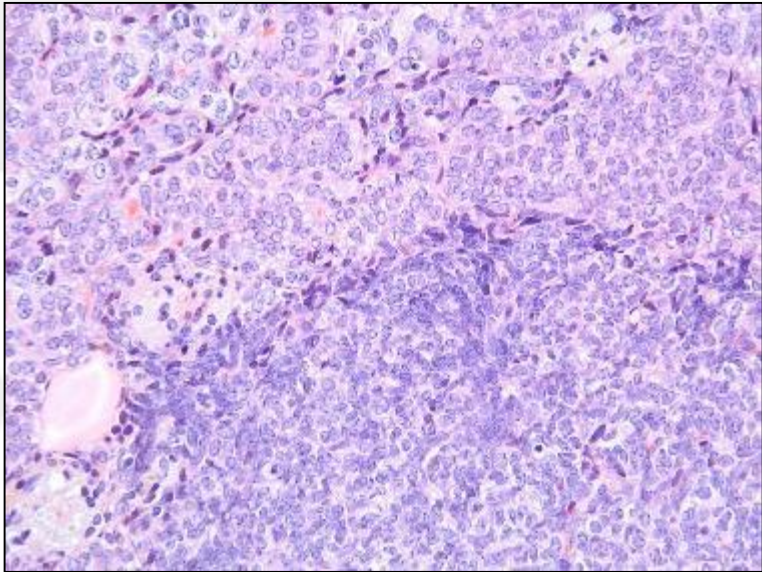
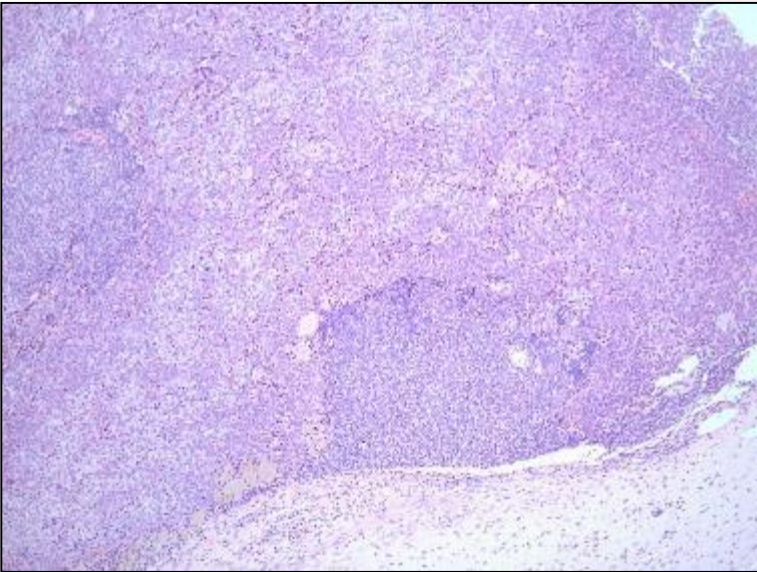
Rat: Granulosa-Theca Cell Tumor, benign



Mouse: Granulosa-Theca Cell Tumor, benign



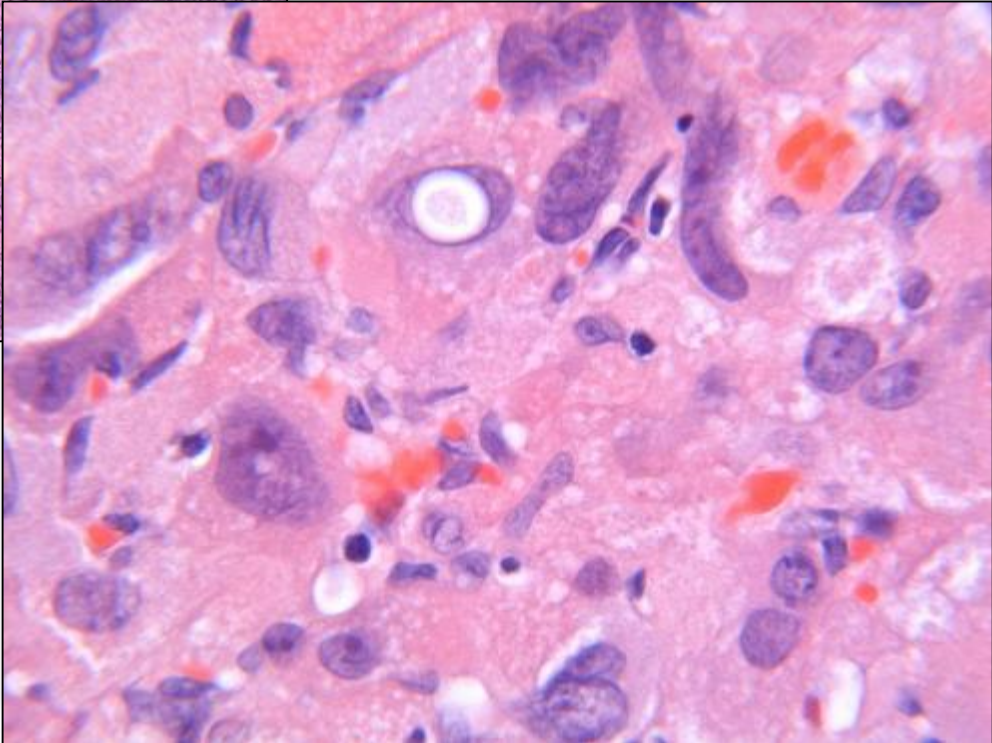
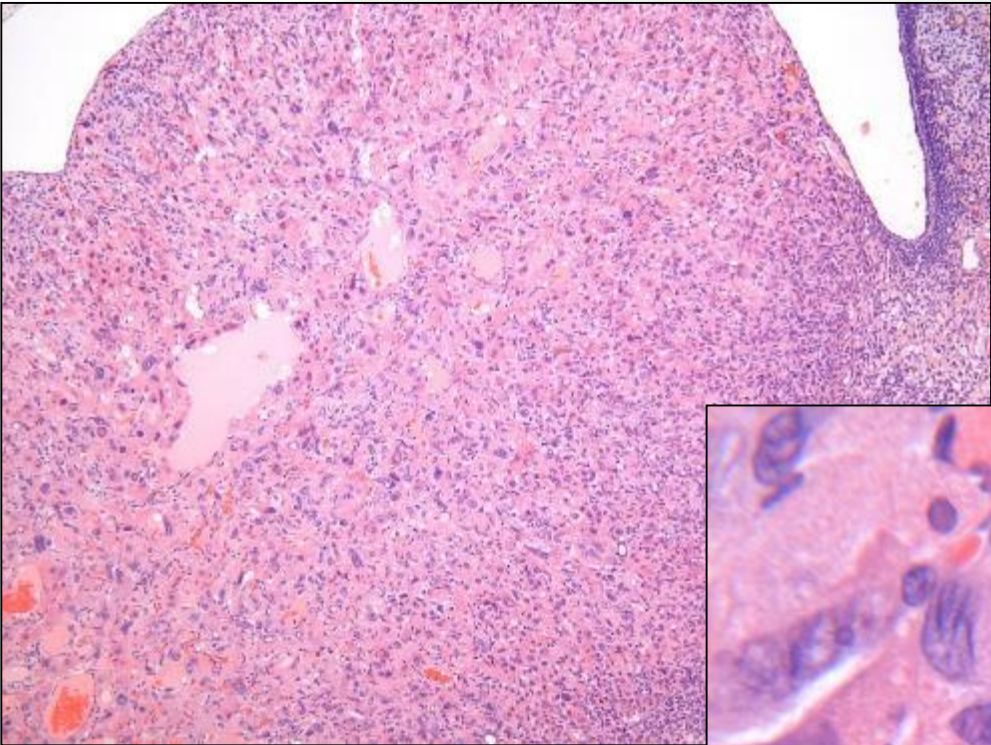
Hamster: Granulosa-Theca Cell Tumor, benign



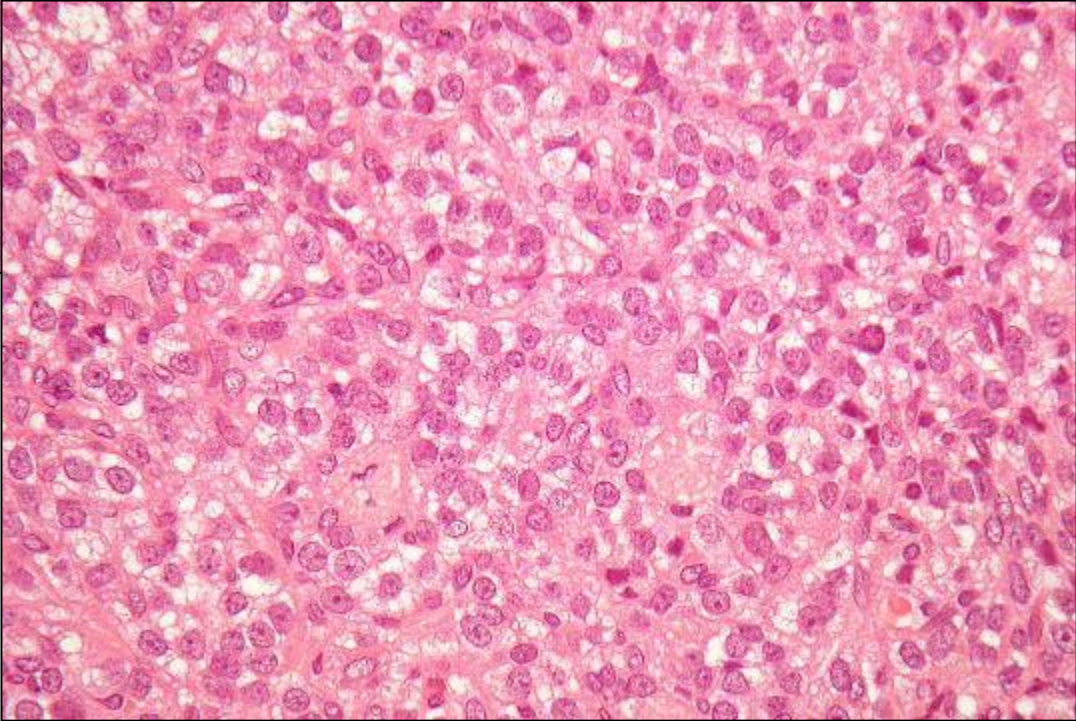
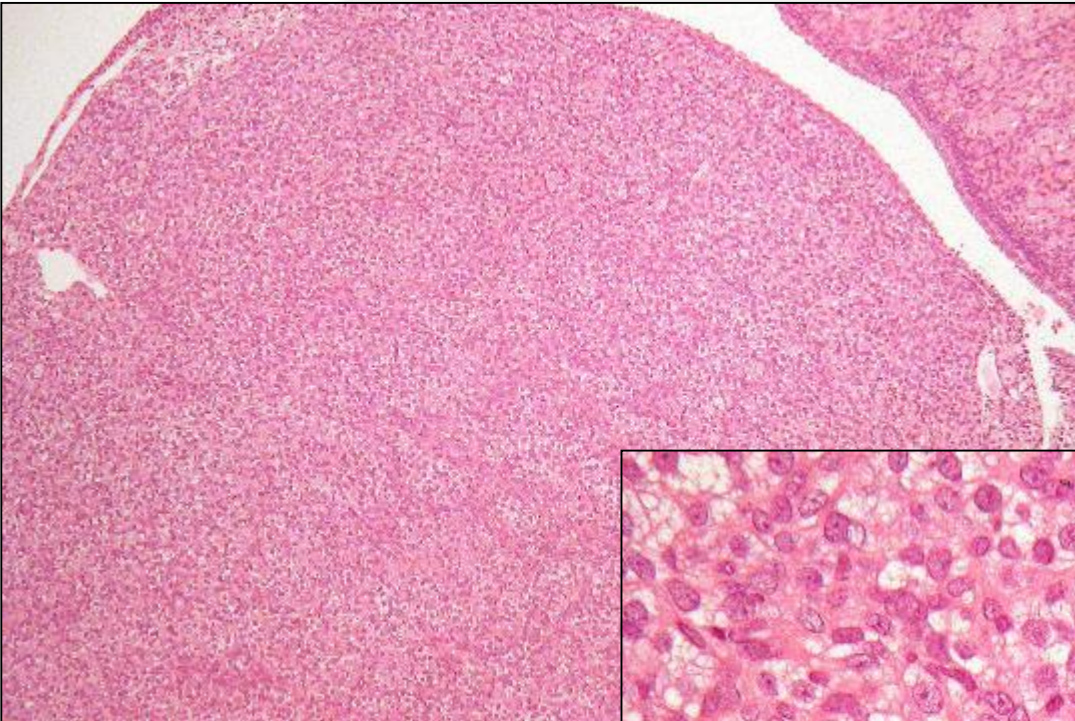
Ovary-Sex Cord Neoplasms: Luteoma

- **Similar to granulosa cell tumor**
- **Neoplastic cells with abundant eosinophilic or vacuolated cytoplasm**
- **Intranuclear cytoplasmic invaginations**
- **Lobulation of tumor mass**
- **Differential Diagnose: Granulosa cell tumor, Thecoma**

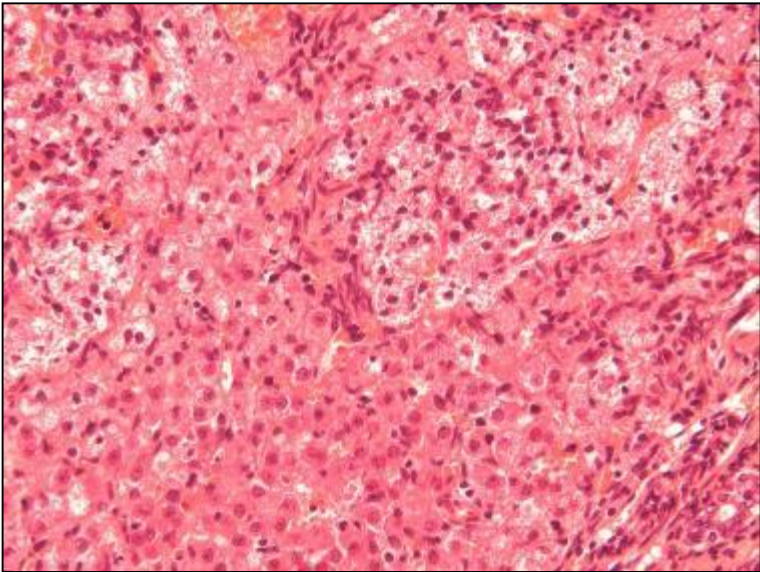
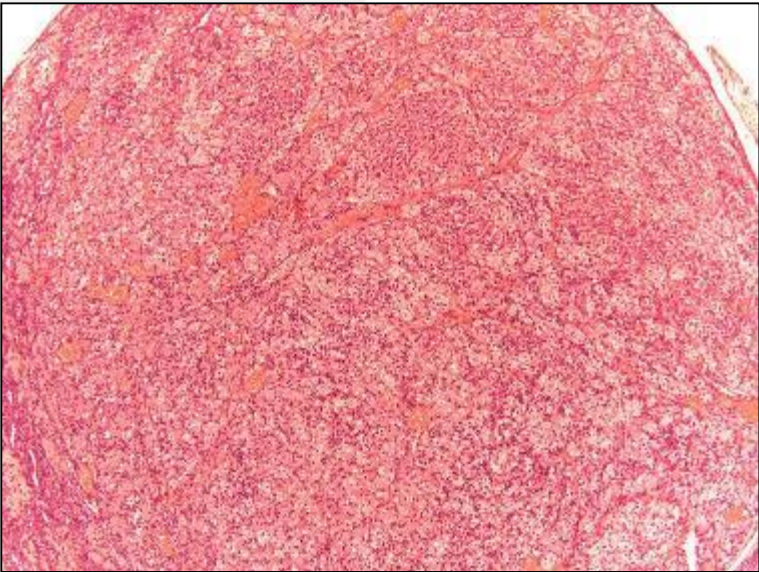
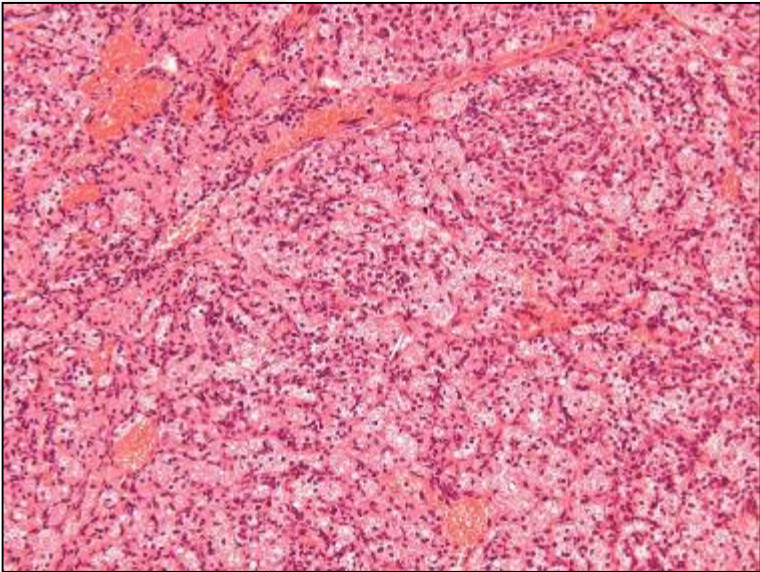
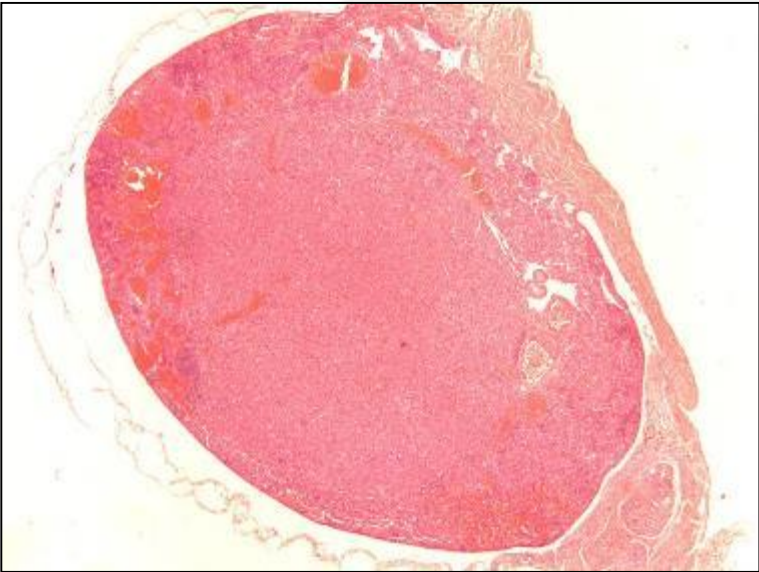
Rat: Luteoma, benign



Rat: Luteoma, benign



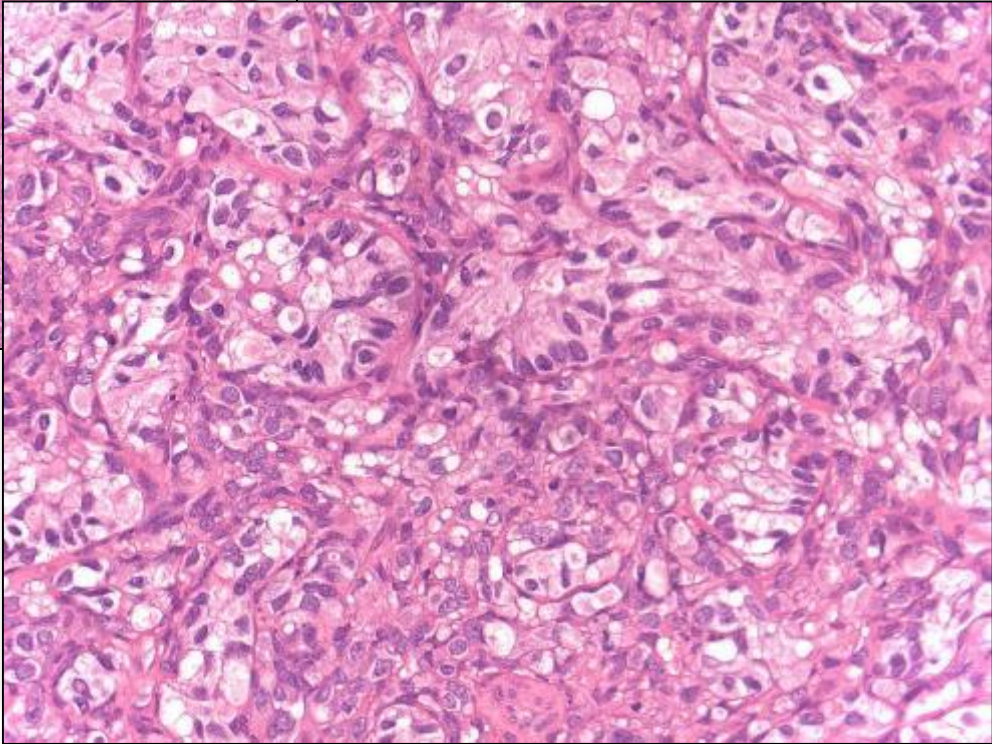
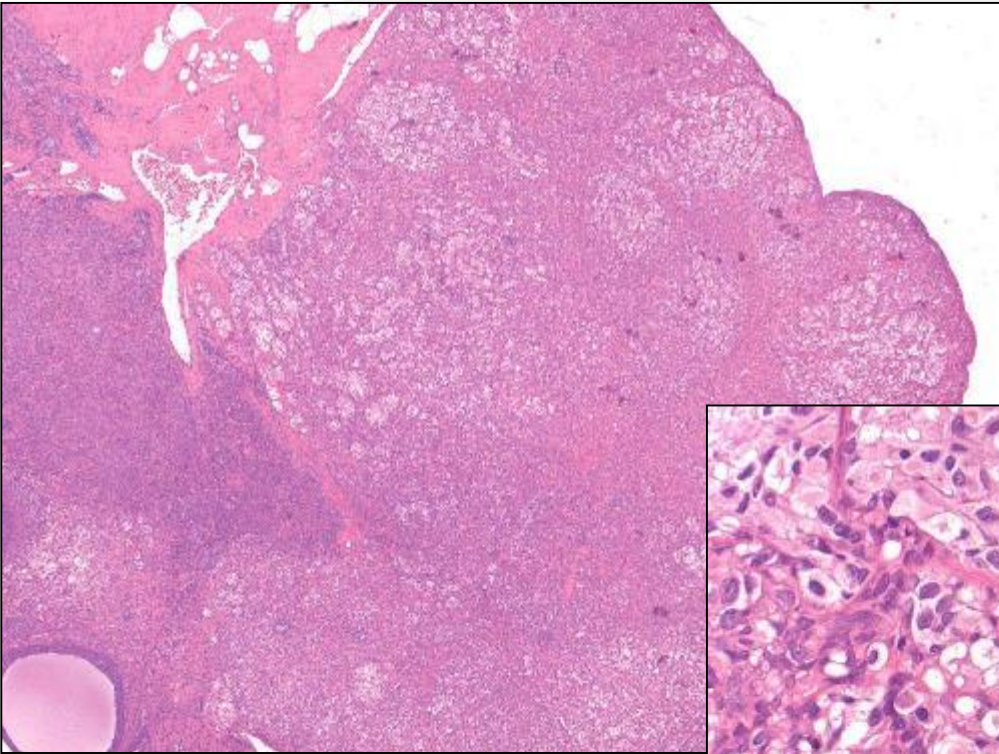
Mouse: Luteoma, benign



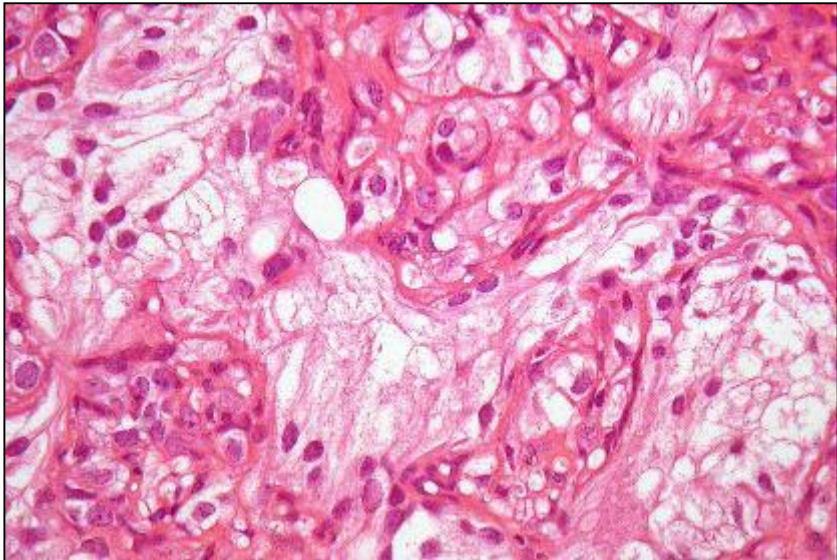
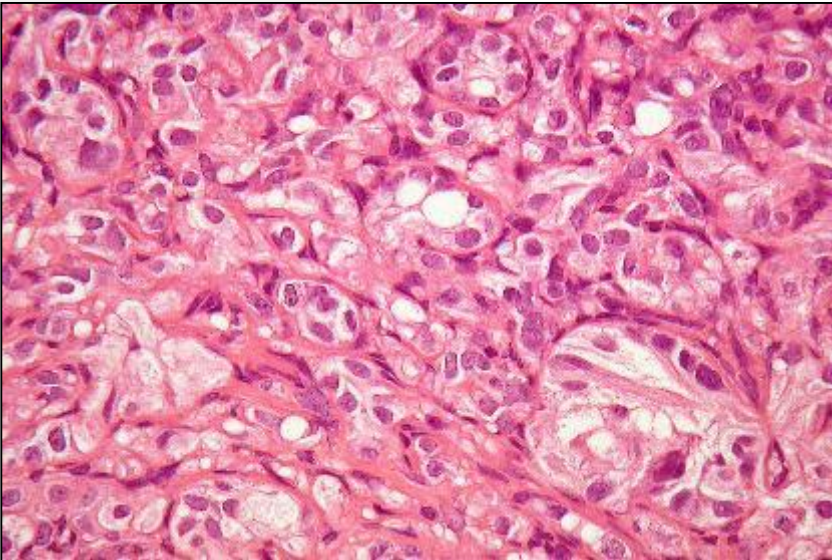
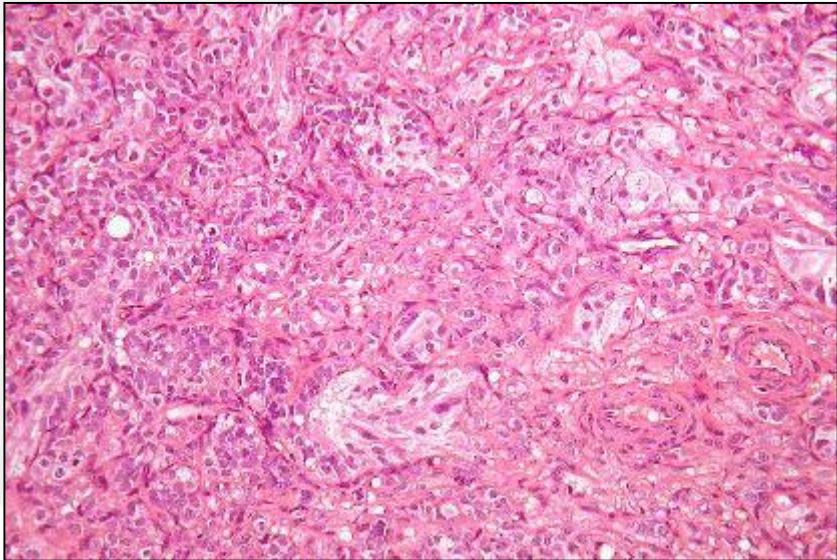
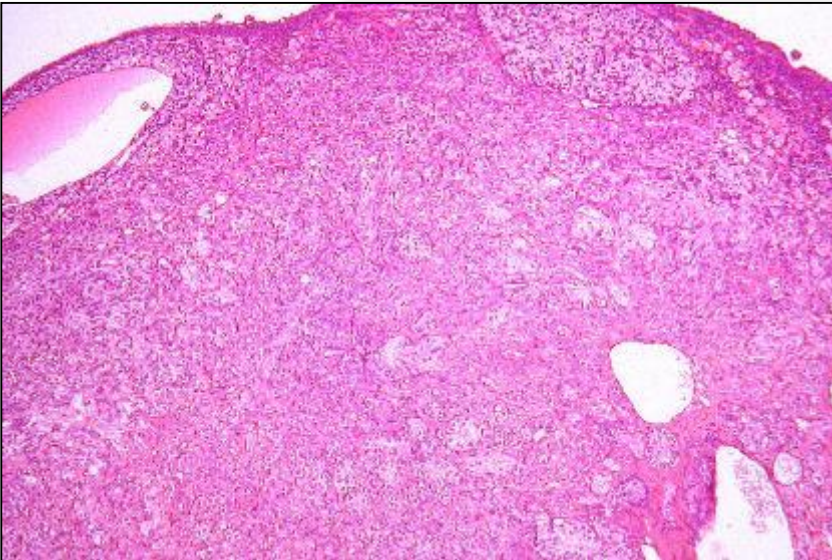
Ovary-Sex Cord Neoplasms: Sertoli's Cell Tumor

- **Usually well circumscribed**
- **Irregular lobules**
- **Tubules composed of pale, vacuolated cells with indistinct cell boundaries, seminiferous-like**
- **Malignancy: pleomorphism, increased mitosis, necrosis, invasion**
- **Differential Diagnose: Hyperplasia, Granulosa cell tumor, Thecoma**

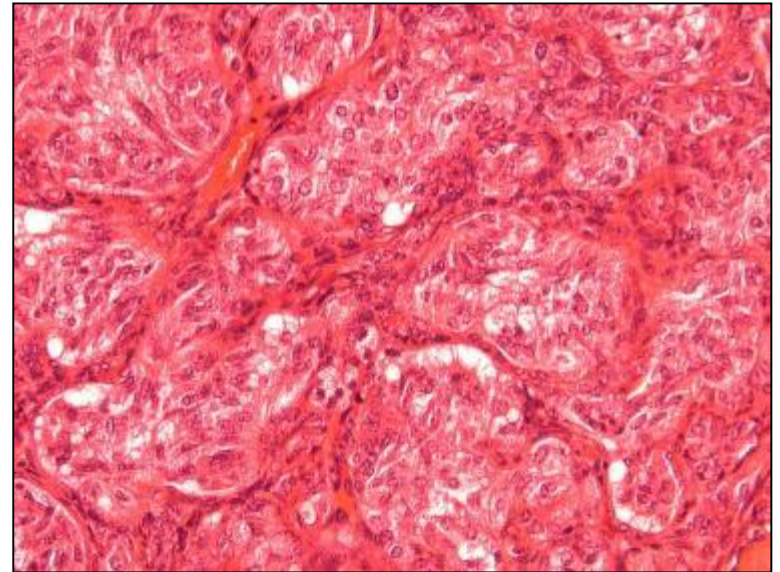
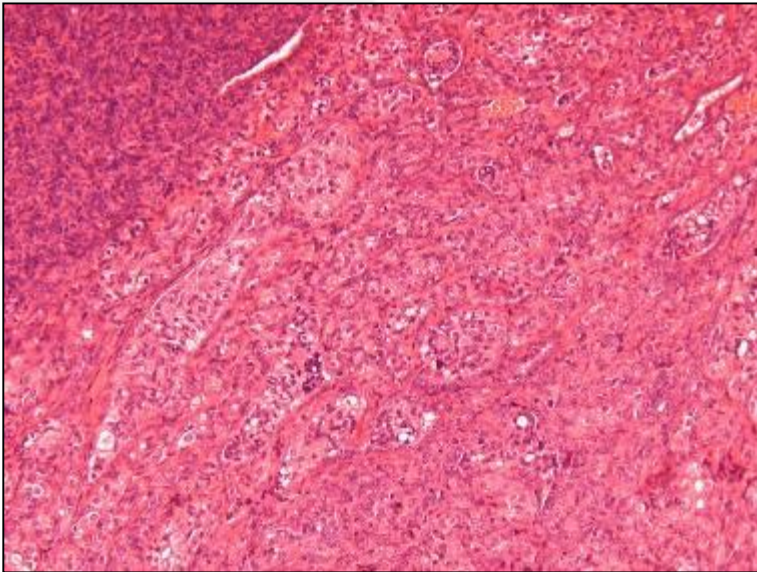
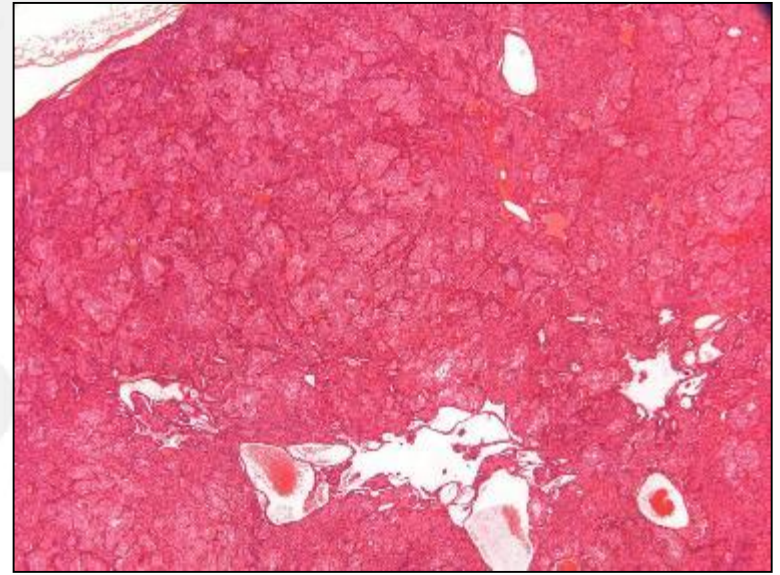
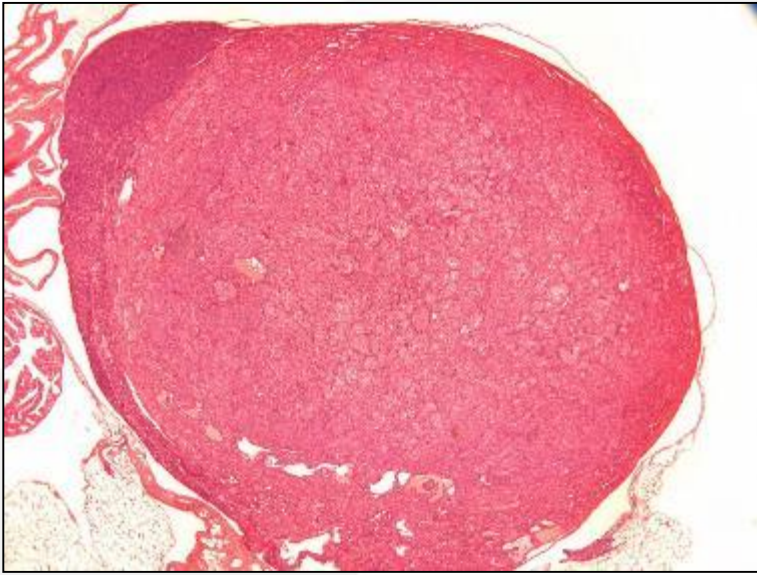
Rat: Sertoli's Cell Tumor, benign



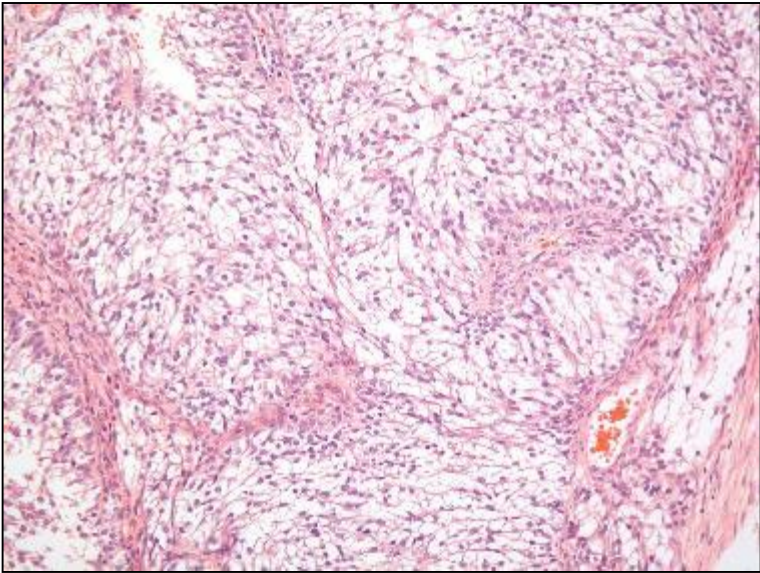
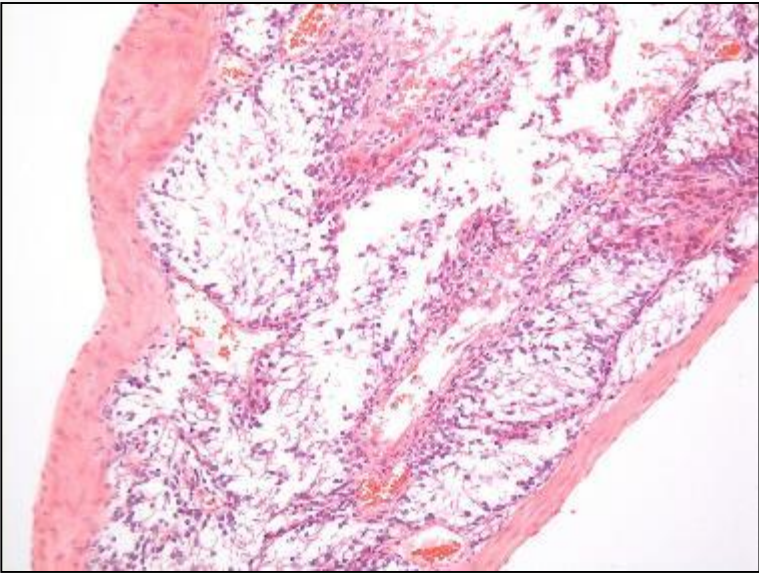
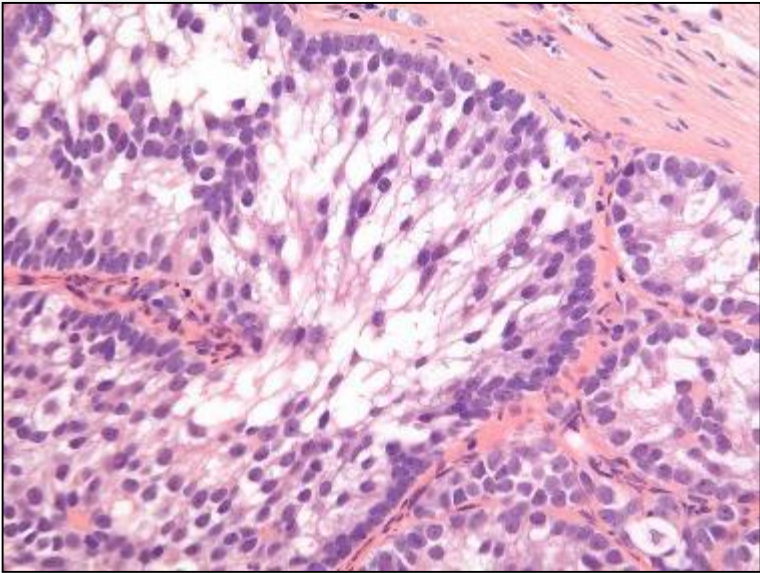
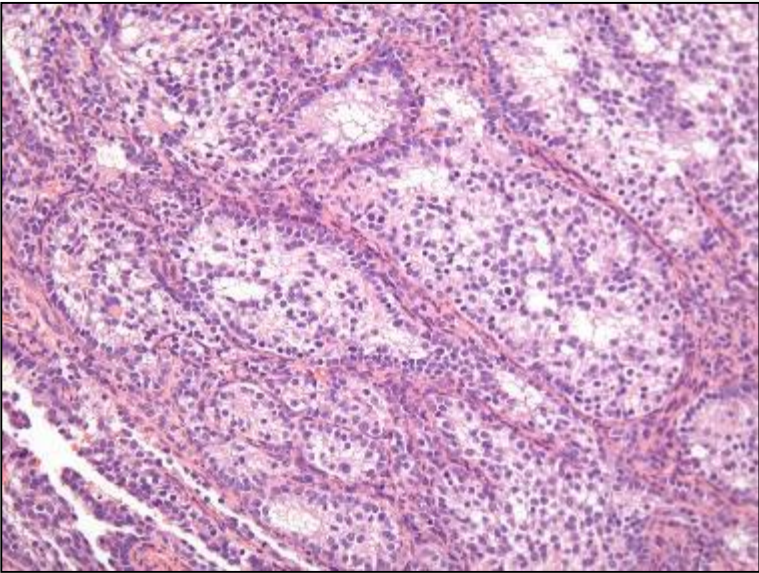
Rat: Sertoli's Cell Tumor, benign



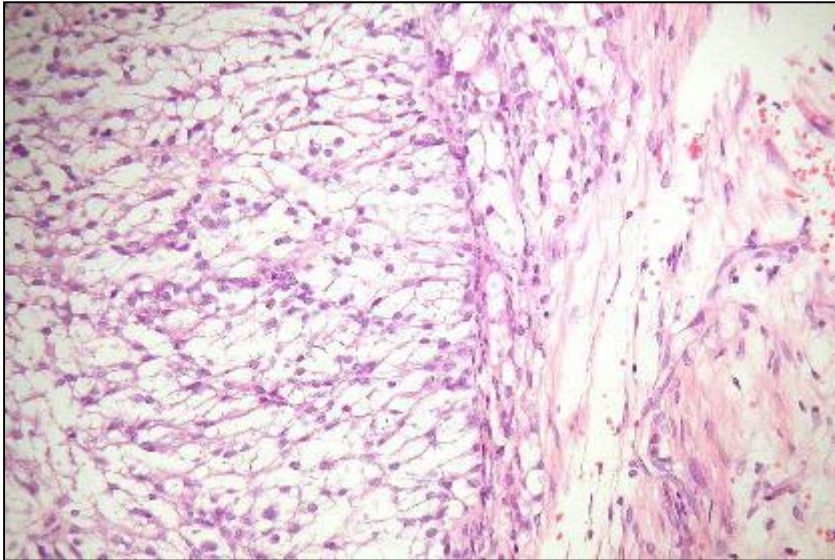
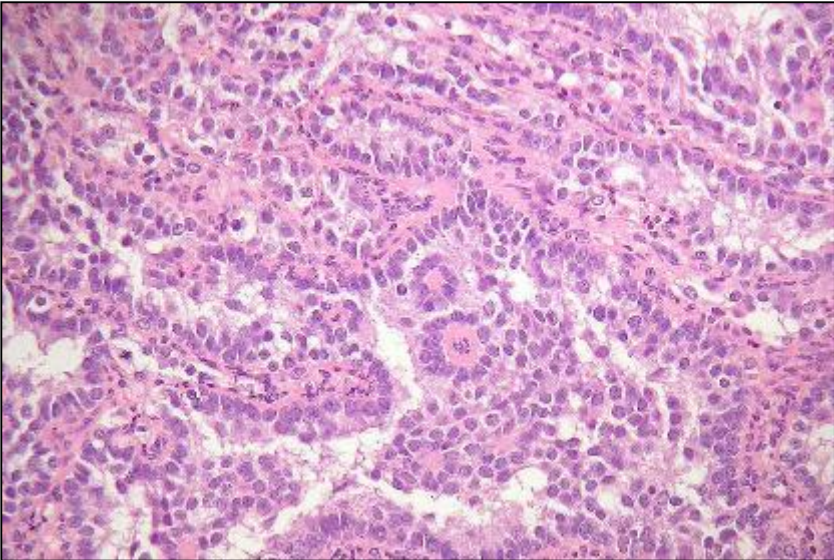
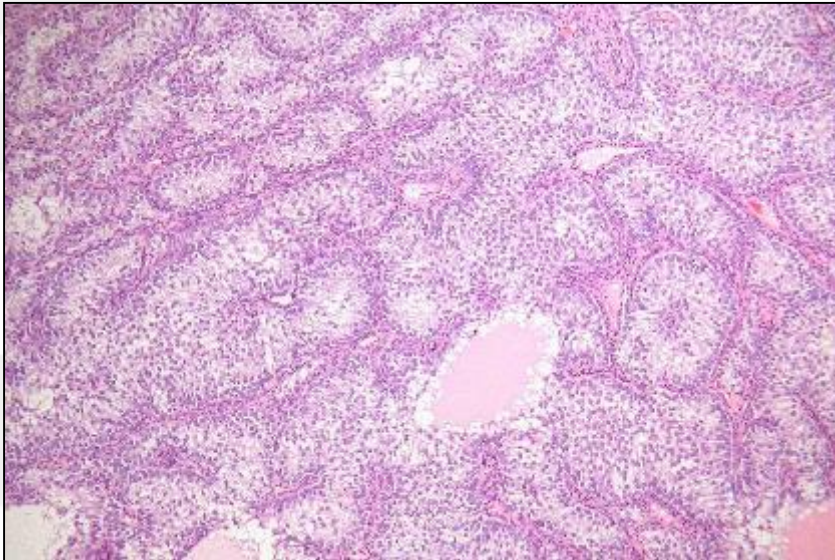
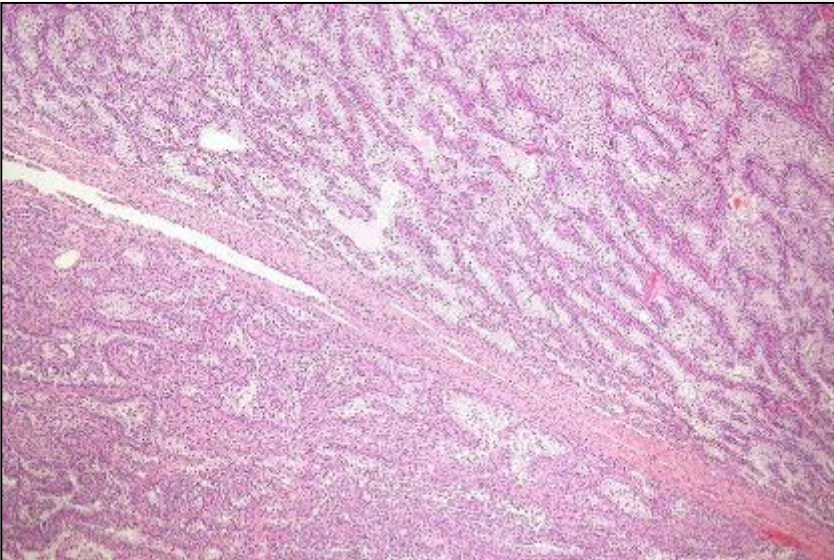
Mouse: Sertoli's Cell Tumor, benign



Rat: Sertoli's Cell Tumor, malignant



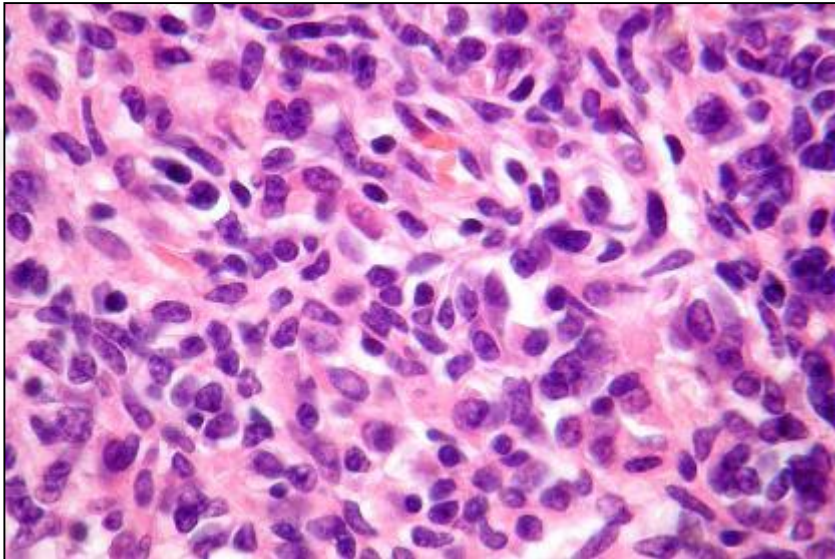
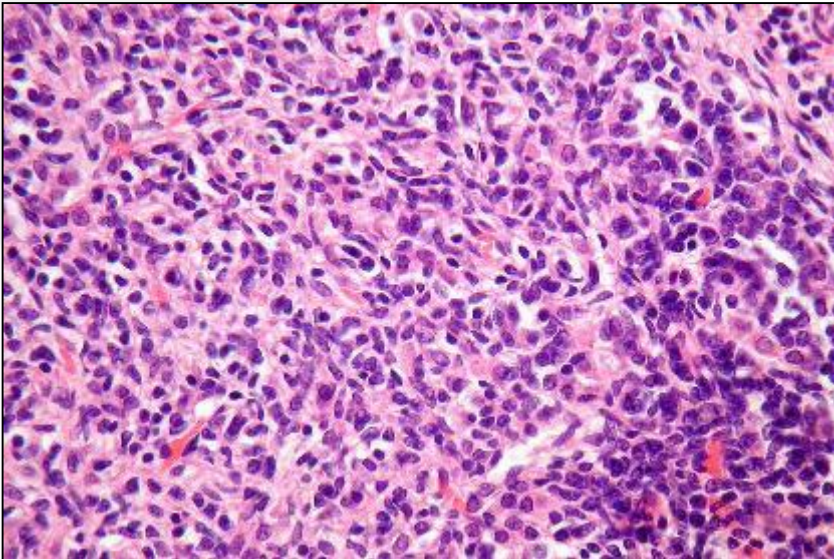
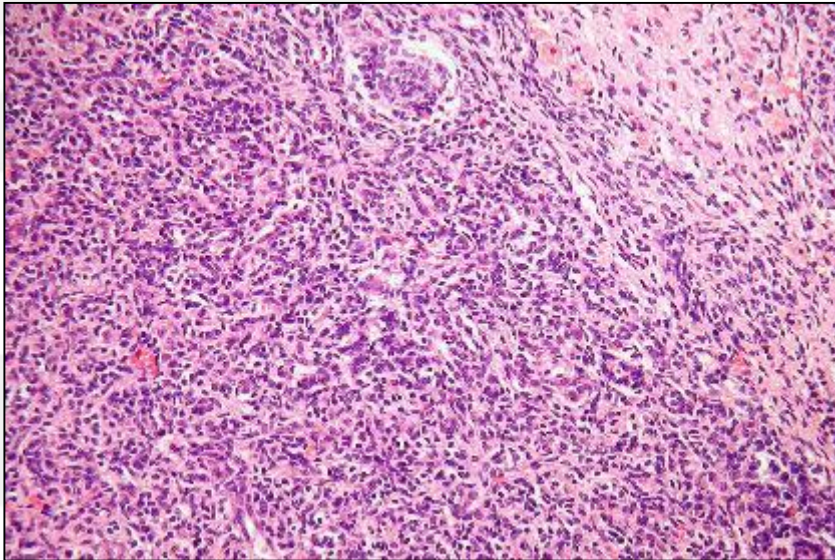
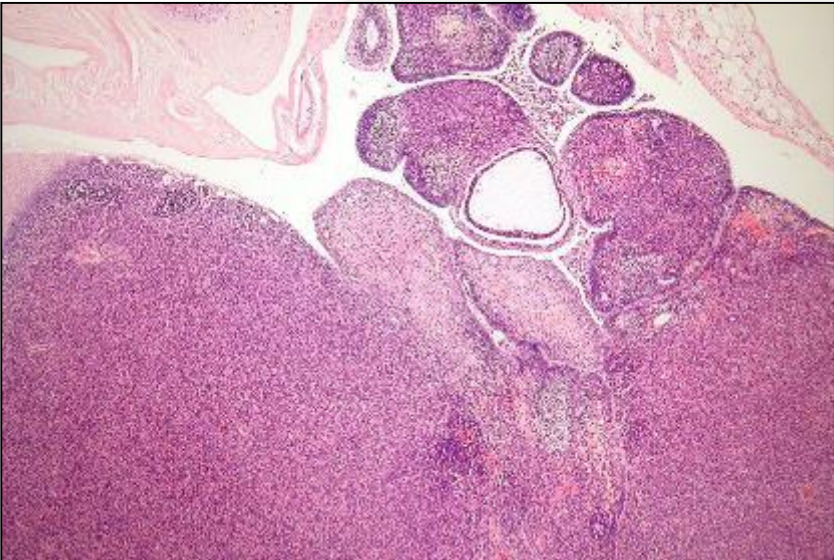
Rat: Sertoli's Cell Tumor, malignant



Ovary-Epithelial Neoplasms: Mixed Sex-Cord Stromal Tumor

- **Consist of a mixture of granulosa, theca, sertoli and stromal cells of varying degree**
- **Differential Diagnose: Sex cord stromal hyperplasia, Granulosa cell tumor, Sertoli cell tumor, Thecoma**

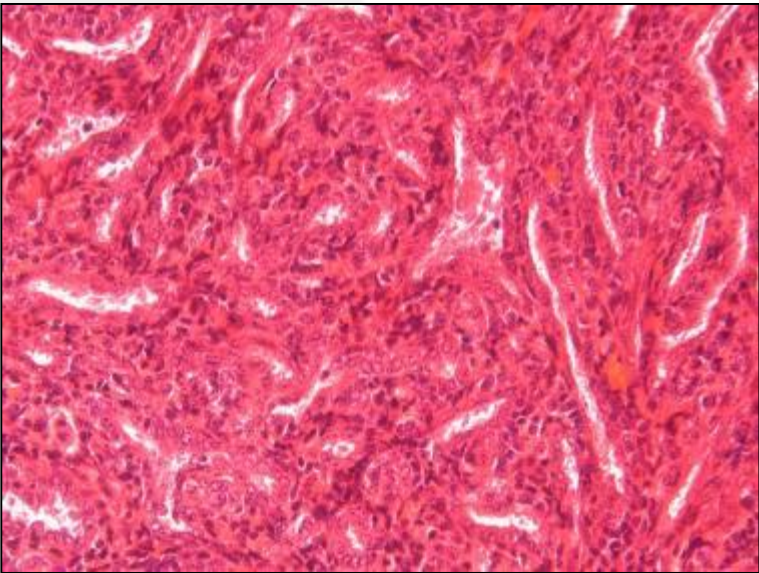
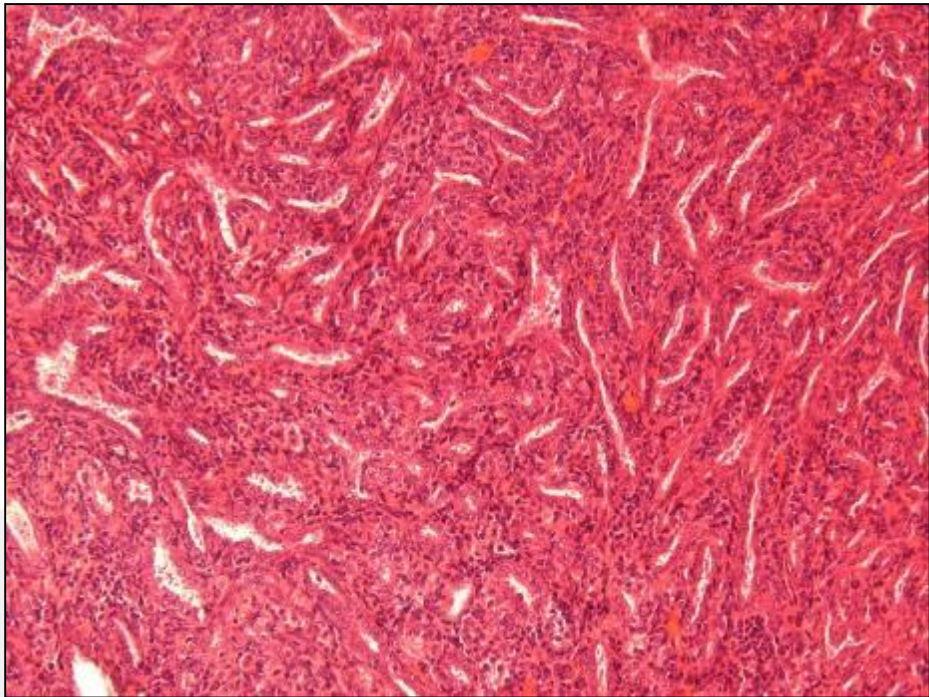
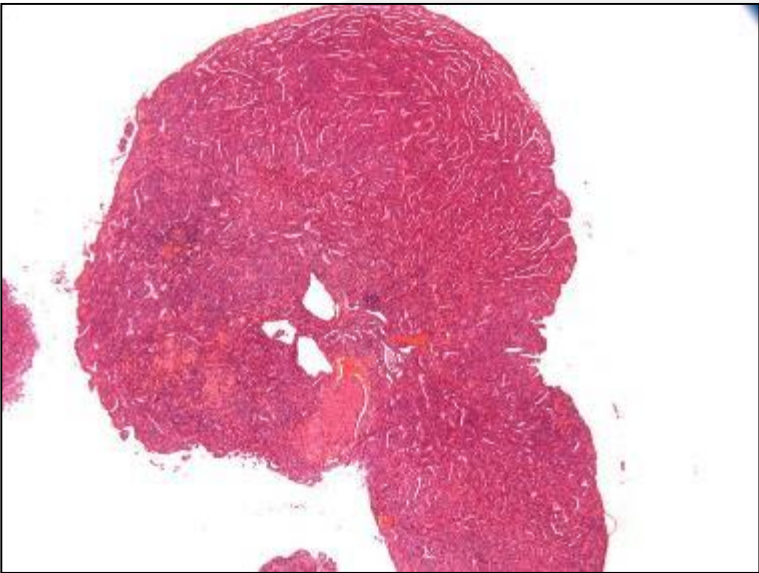
Ovary, Rat: Mixed Sex-Cord Stromal Tumor, benign



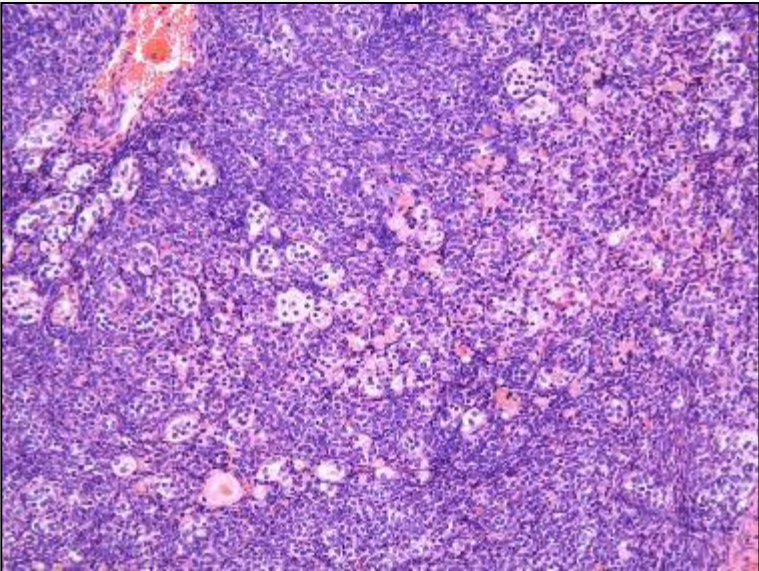
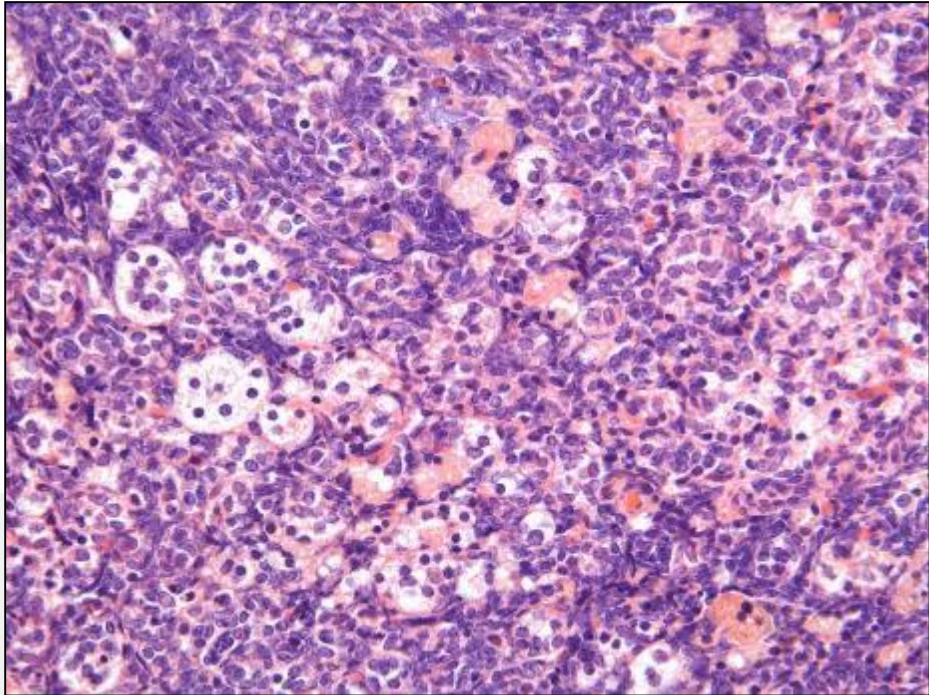
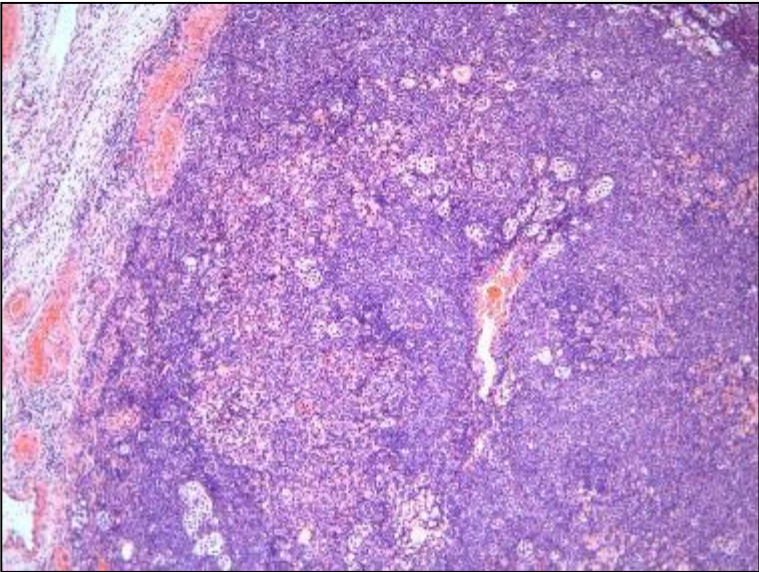
Ovary-Epithelial Neoplasms: Tubulostromal Tumor

- **Nodular, usually well circumscribed**
- **Tubules lined by cuboidal epithelium (resemble mesothelium)**
- **Tubules separated by packets of cells (sex stromal cord?)**
- **Occasionally sertoliform structures**
- **Malignancy: pleomorphism, increased mitosis, necrosis, invasion**
- **Differential Diagnose: Tubulostromal hyperplasia, Cystadenoma, Cystadenocarcinoma**

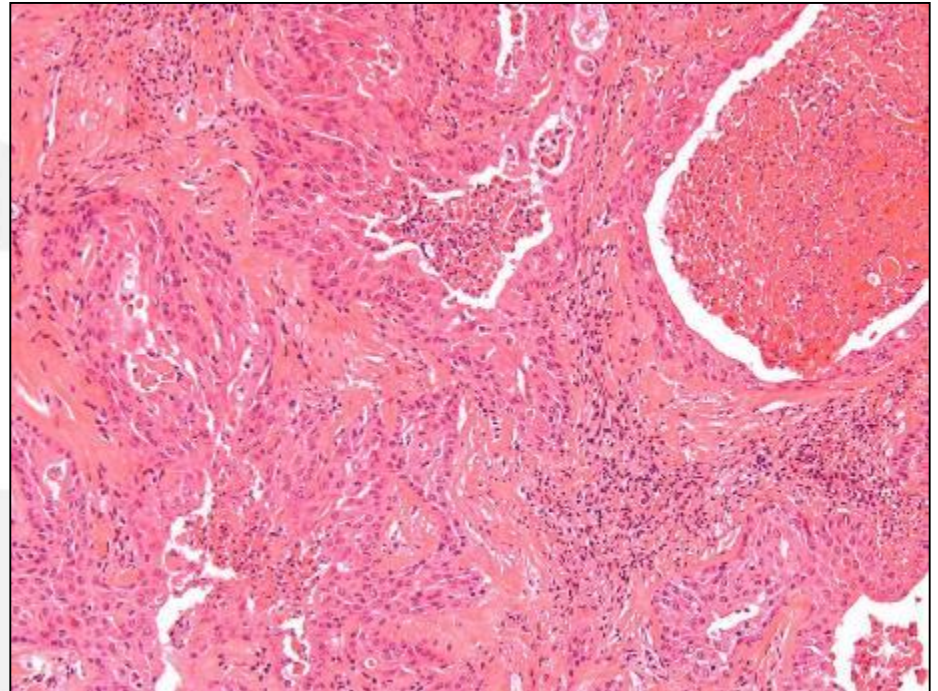
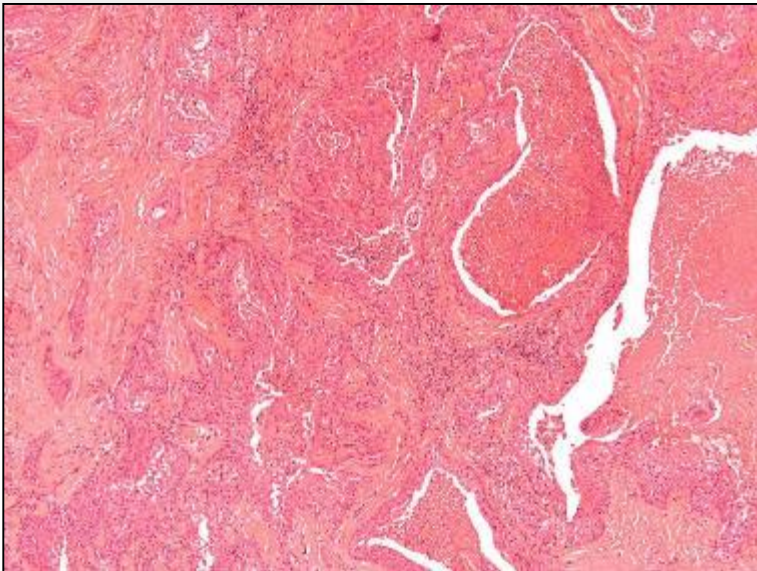
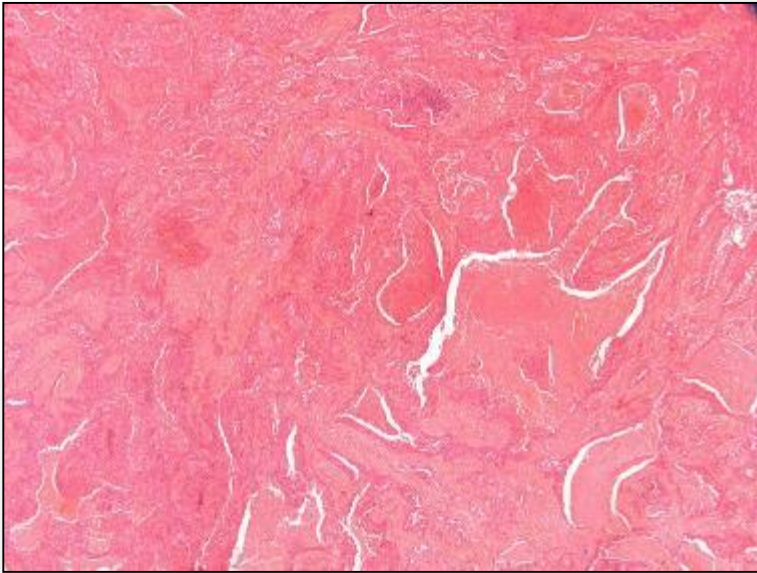
Ovary, Mouse: Tubulostromal Tumor, benign



Ovary, Hamster: Tubulostromal Tumor, benign



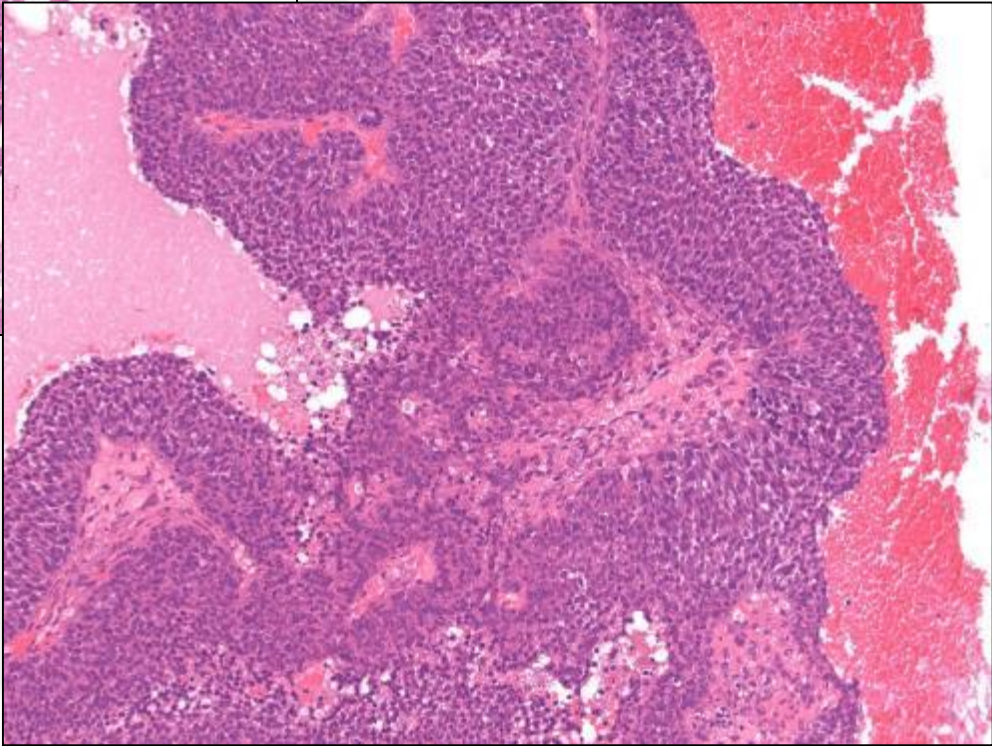
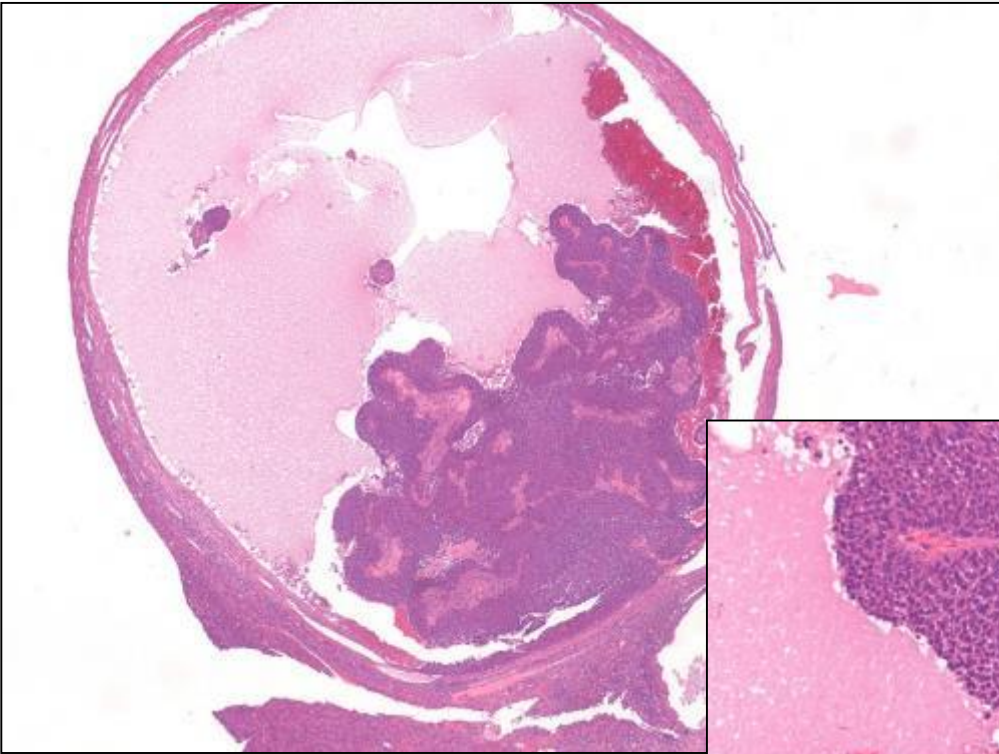
Ovary, Mouse: Tubulostromal Tumor, malignant



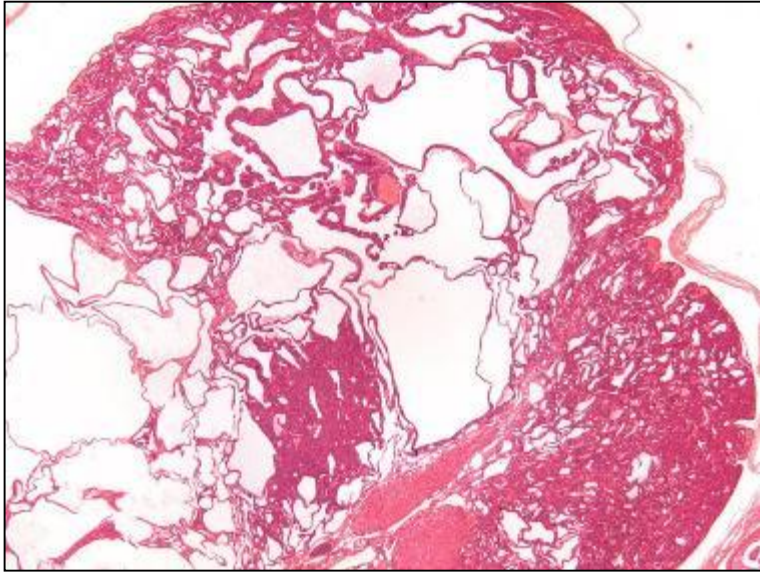
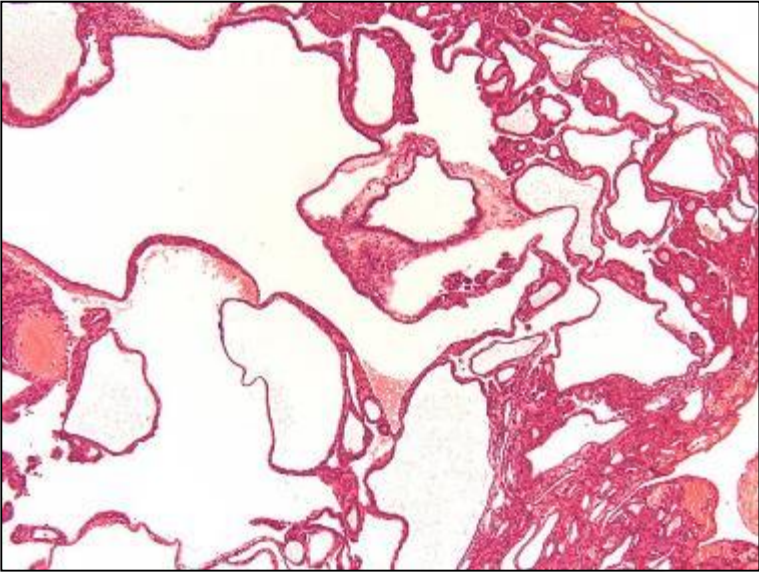
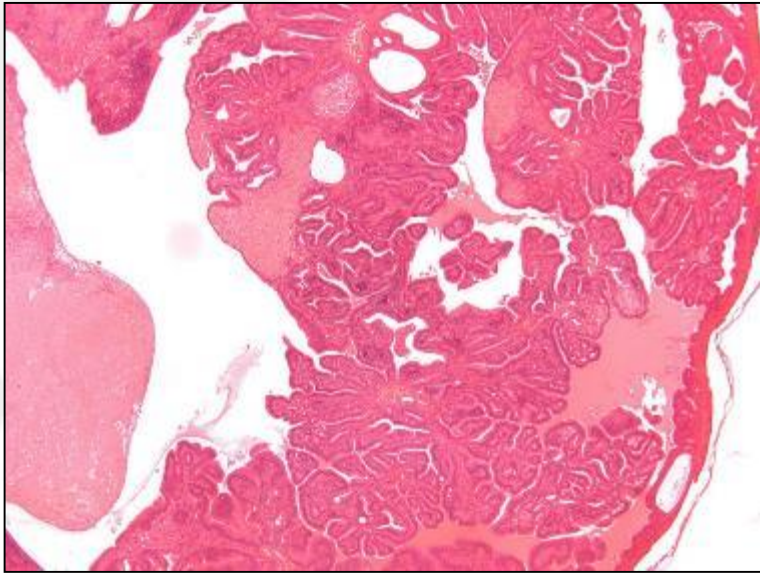
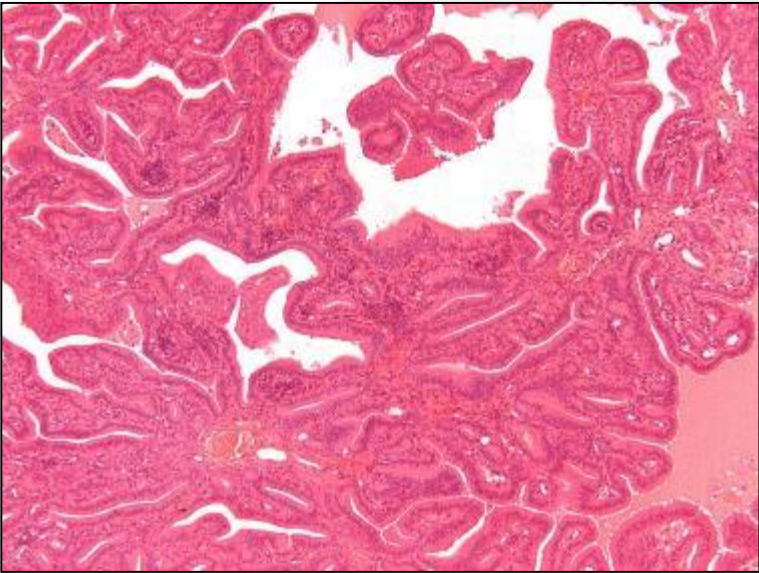
Ovary-Epithelial Neoplasms: Cystadenoma

- **Often within cyst lined by cuboidal epithelium**
- **Folds, projections**
- **Delicate stroma**
- **Malignancy: pleomorphism, increased mitosis, necrosis, invasion**
- **Differential Diagnose: Hyperplasia, Tubulostromal Adenoma and Adenocarcinoma,**

Ovary, Rat: Cystadenoma



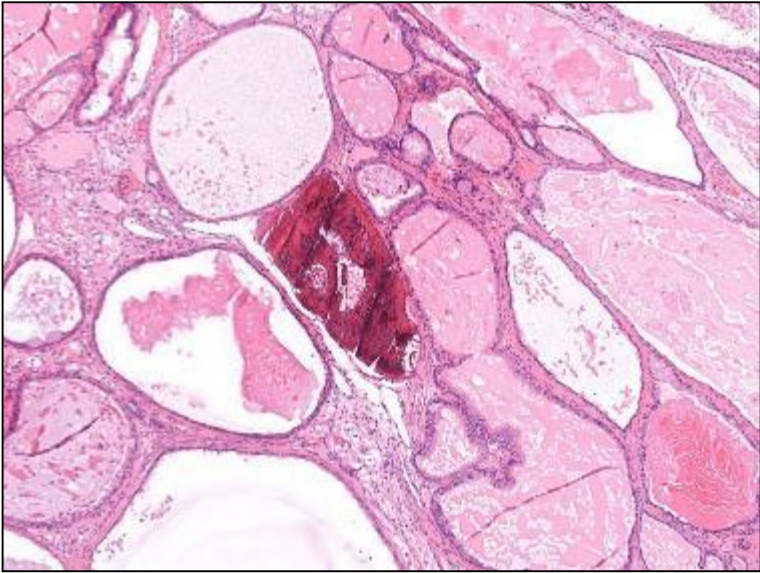
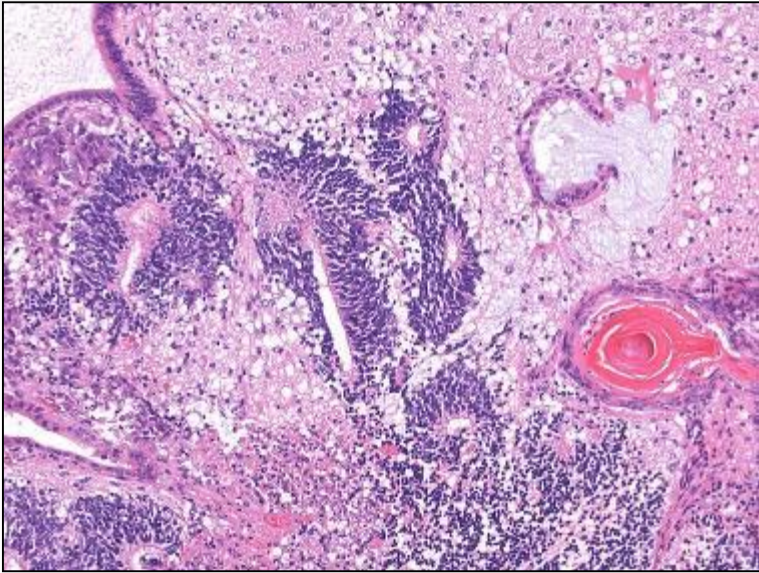
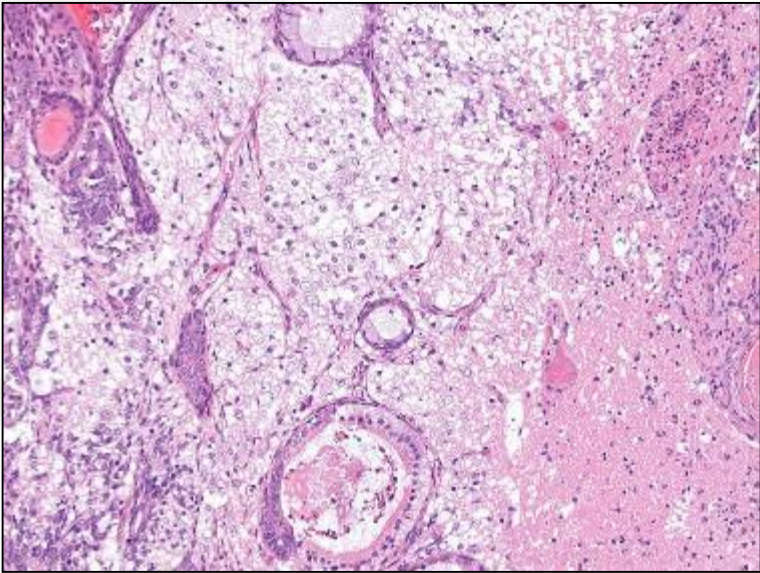
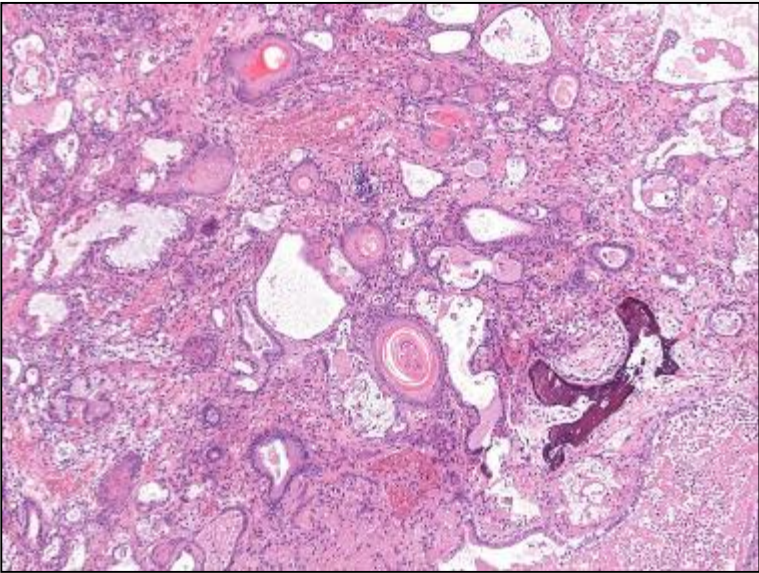
Ovary, Mouse: Cystadenoma



Ovary-Dysgerminoma (Teratoma)

- **Contains tissues from three germ layers**
- **Tissues well differentiated**
- **Benign tumors often with cysts**
- **Differential Diagnose: Muellertian tumor**

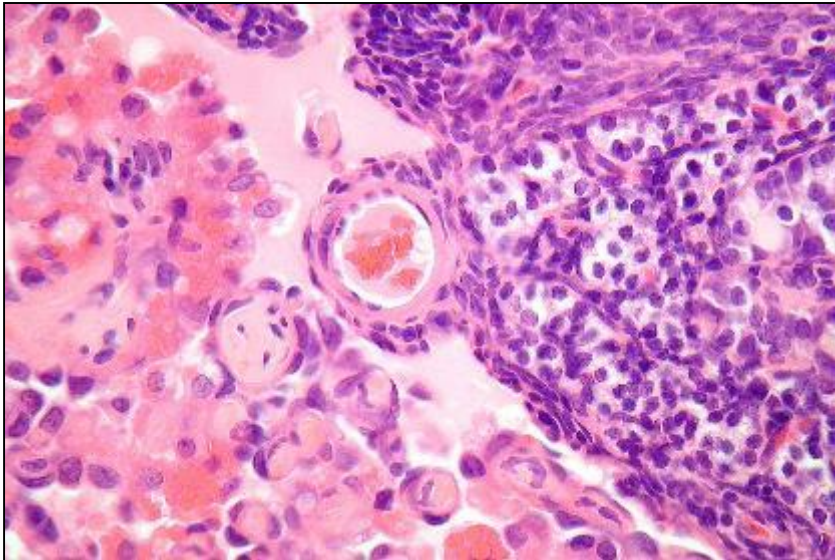
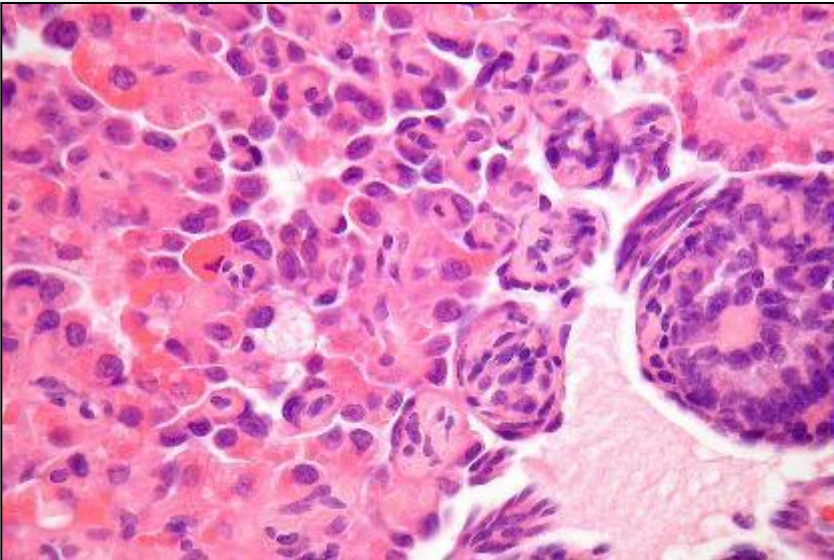
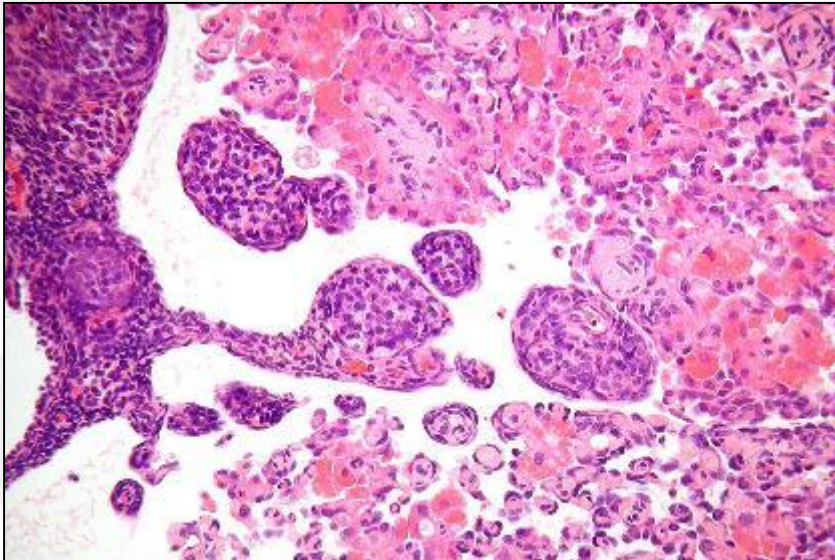
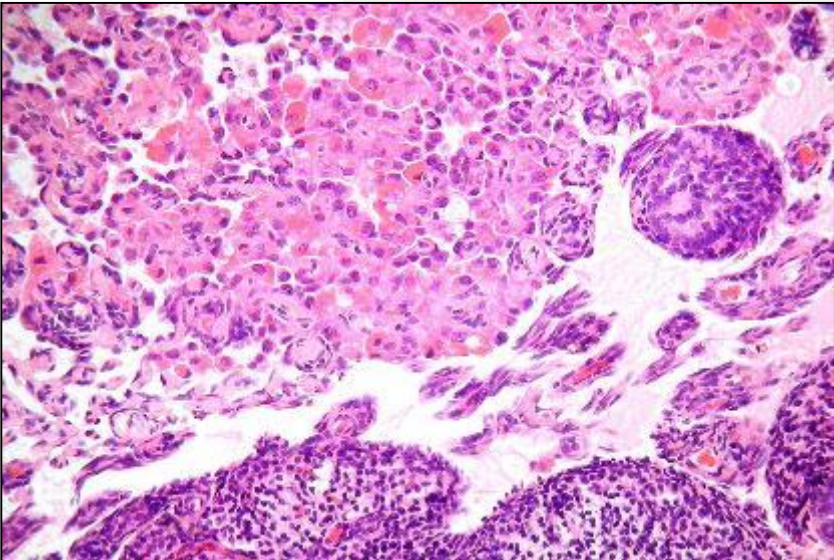
Ovary-Teratanoma: Mouse



Ovary-Mesothelioma

- **Papillary structures**
- **Local invasion**
- **Solid areas composed of epithelial-like cells with foamy or vacuolated cytoplasm and large nuclei**
- **Differential Diagnose: Adenoma, Adenocarcinoma**

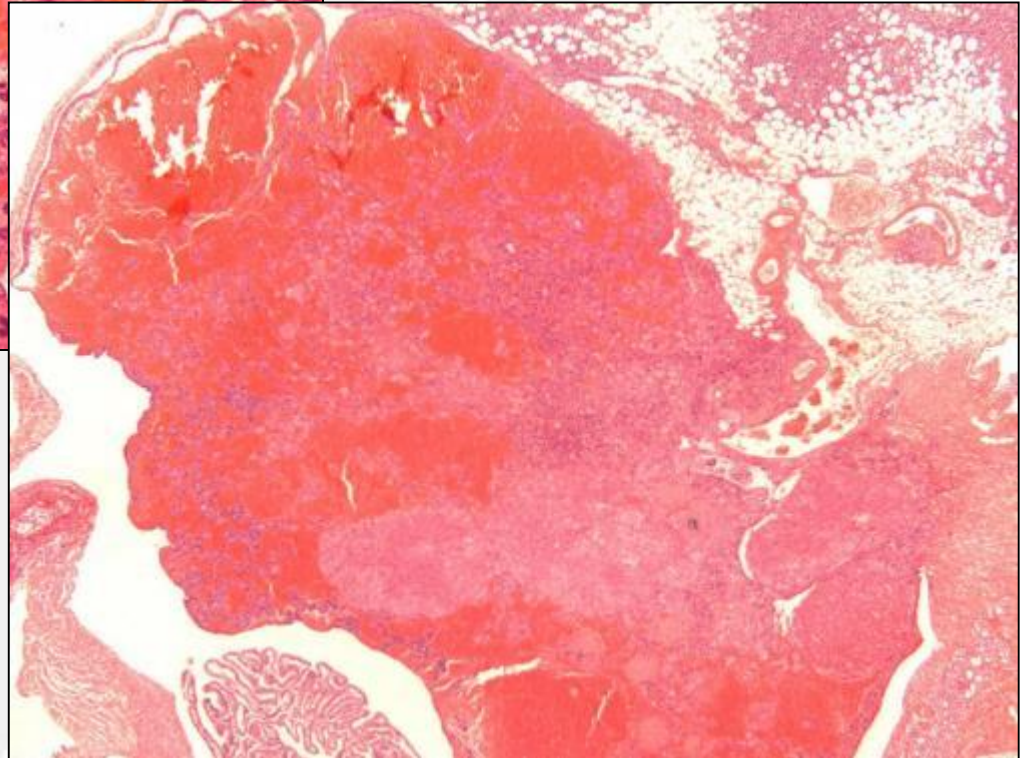
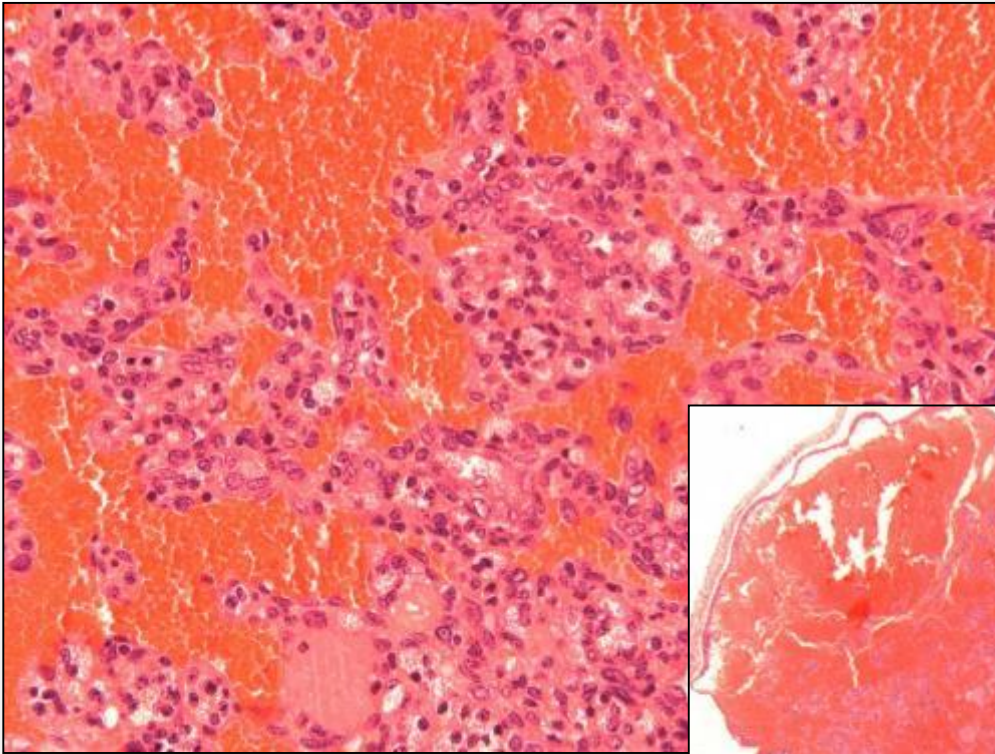
Ovary, Rat: Mesothelioma (combined with Granulosa cell tumor)



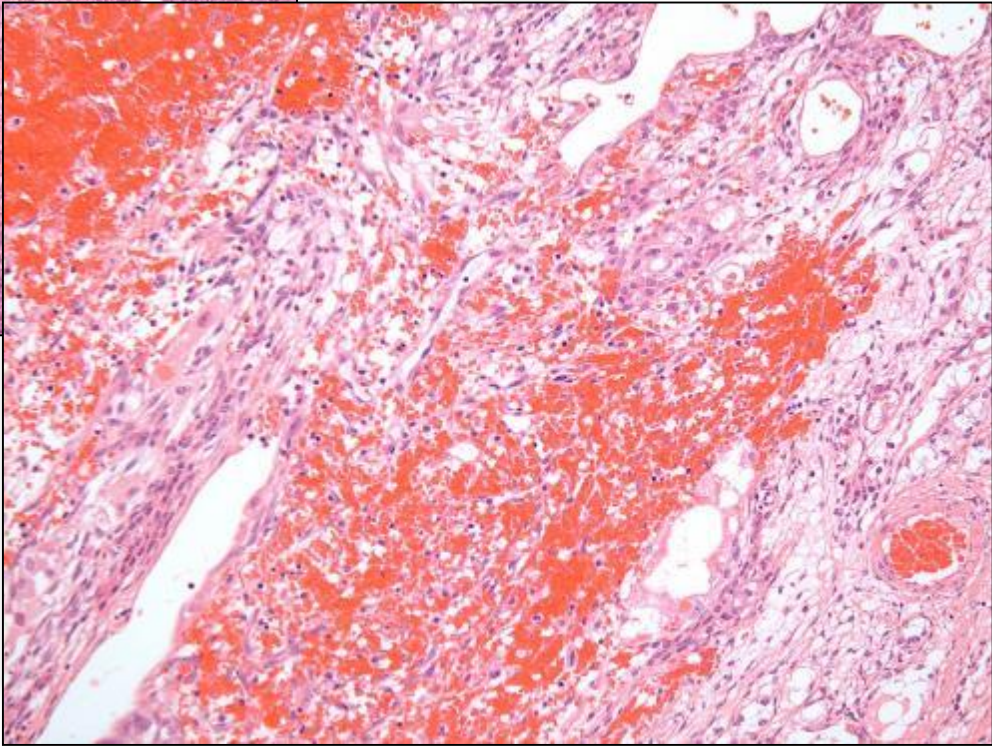
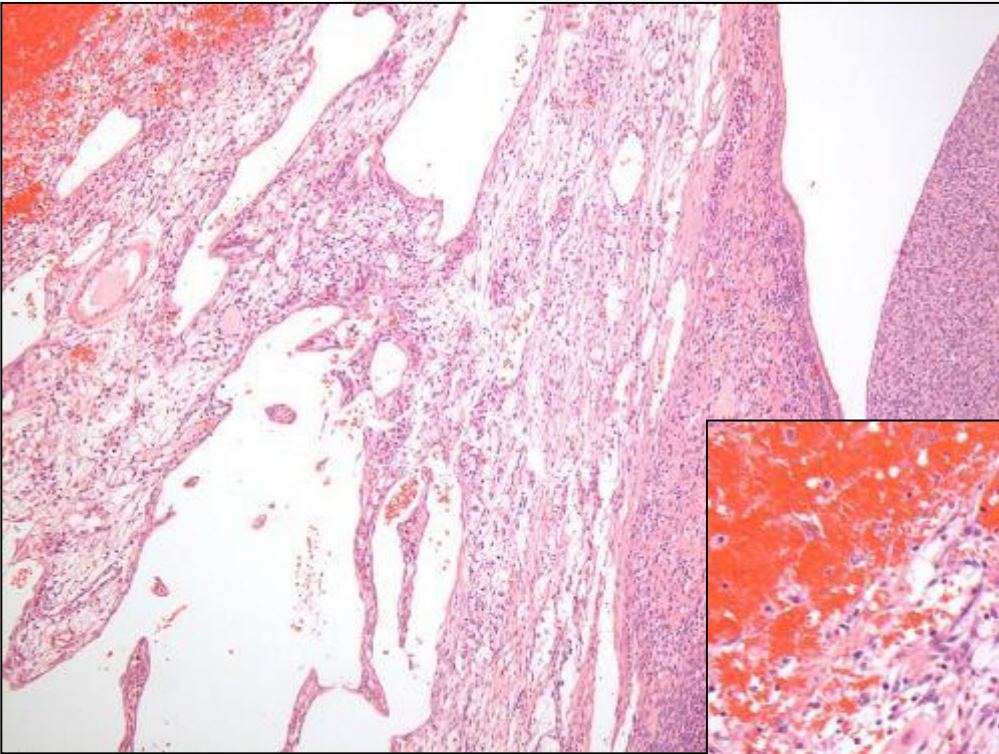
Ovary-Mesenchymal Neoplasms: Hemangioma, Hemangiosarcoma

- **Hemangioma compressing surrounding tissue**
- **Hemangioma rarely encapsulated**
- **Monolayer of endothelial cells with prominent nuclei**
- **Hemangiosarcoma with atypical endothelium**

Mouse, Ovary: Hemangioma



Rat, Ovary: Hemangiosarcoma



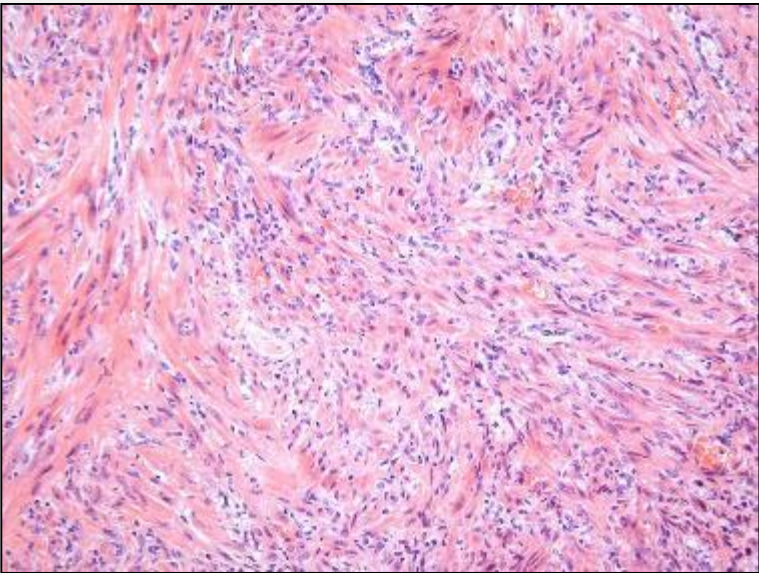
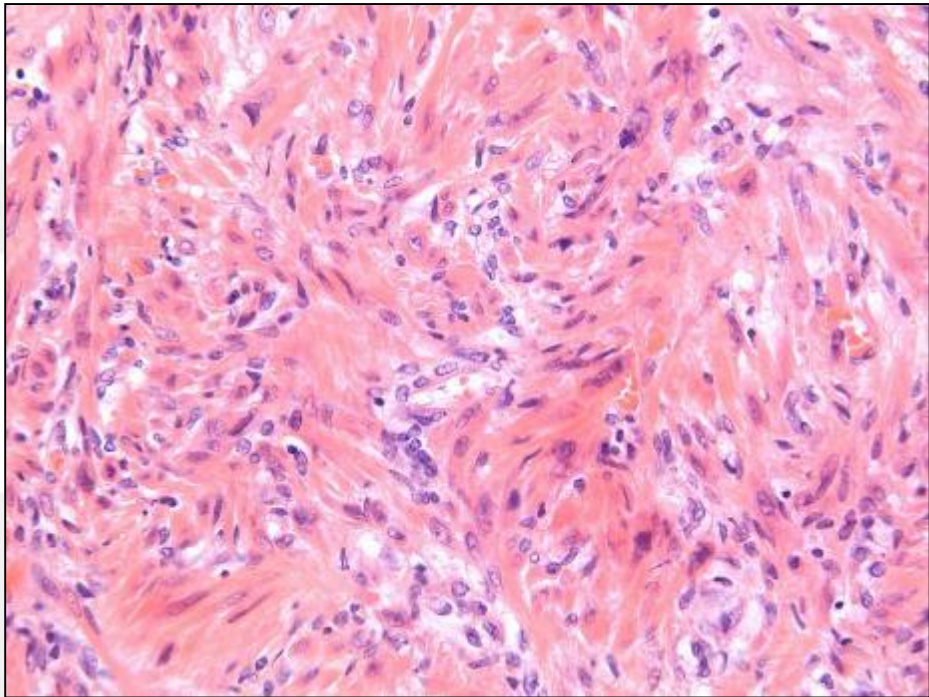
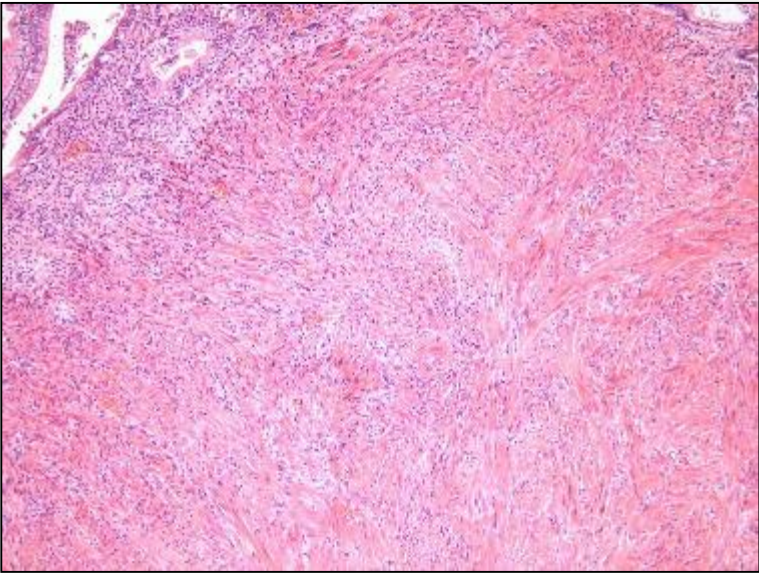
Ovary-Mesenchymal Neoplasms: Leiomyoma, Leiomyosarcoma

- **Leiomyoma: well circumscribed**
- **Interlacing bundles and whorls (often criss-cross)**
- **Often abundant eosinophilic cells**
- **Cells often with perinuclear space**

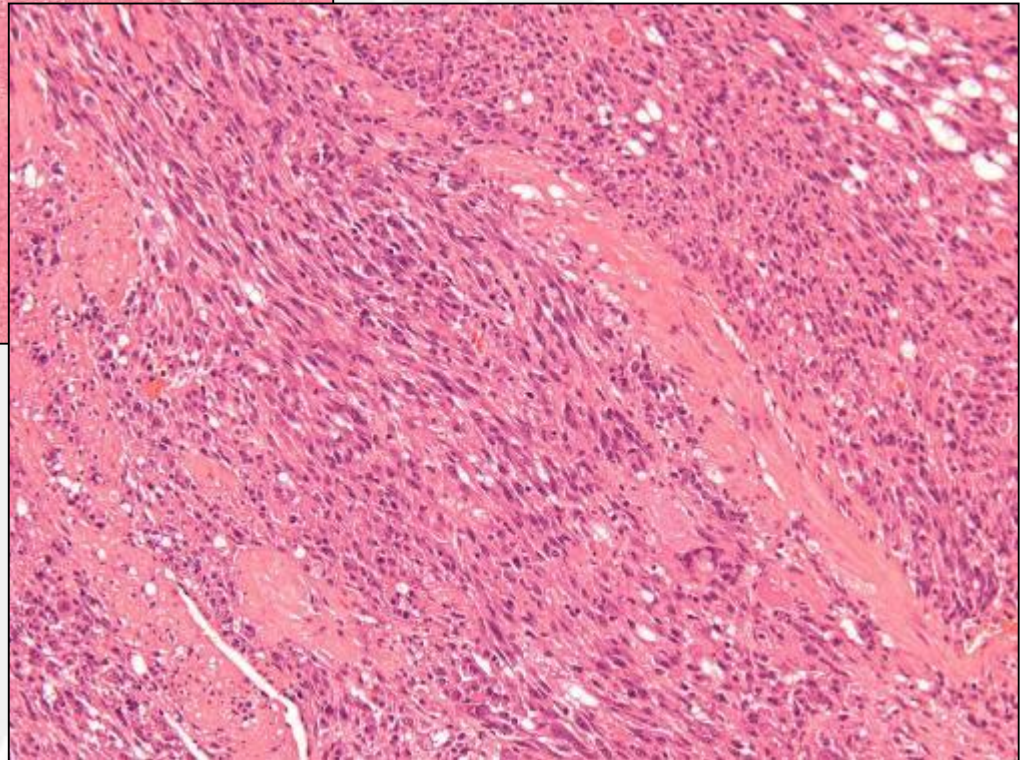
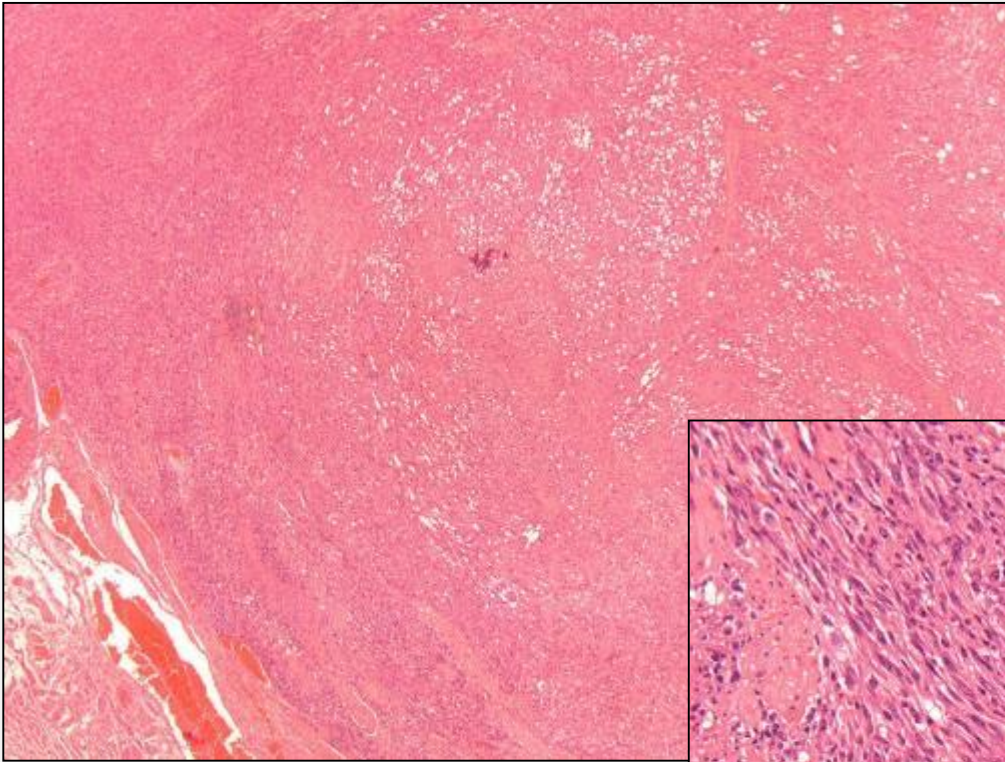
- **Leiomyosarcoma: ill defined**
- **Heterogenous pattern**
- **Often necrosis, mineralization**

- **Differential Diagnose: Fibroma, Fibrosarcoma, Histiocytic sarcoma, Schwannoma**

Ovary, Hamster: Leiomyoma



Ovary, Mouse: Leiomyosarcoma



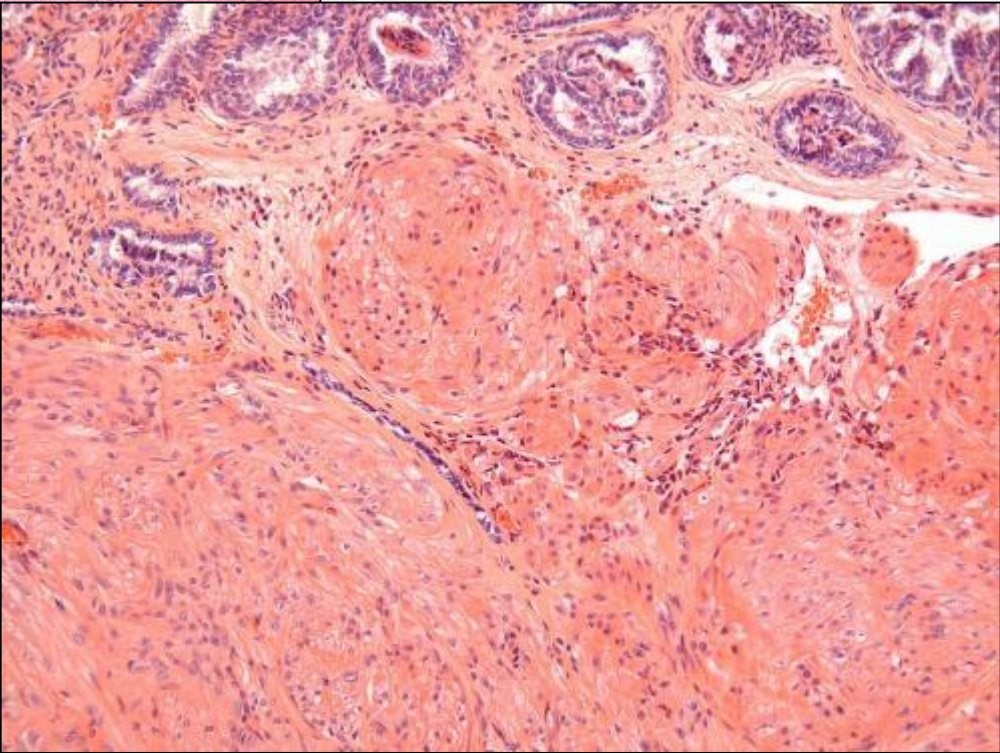
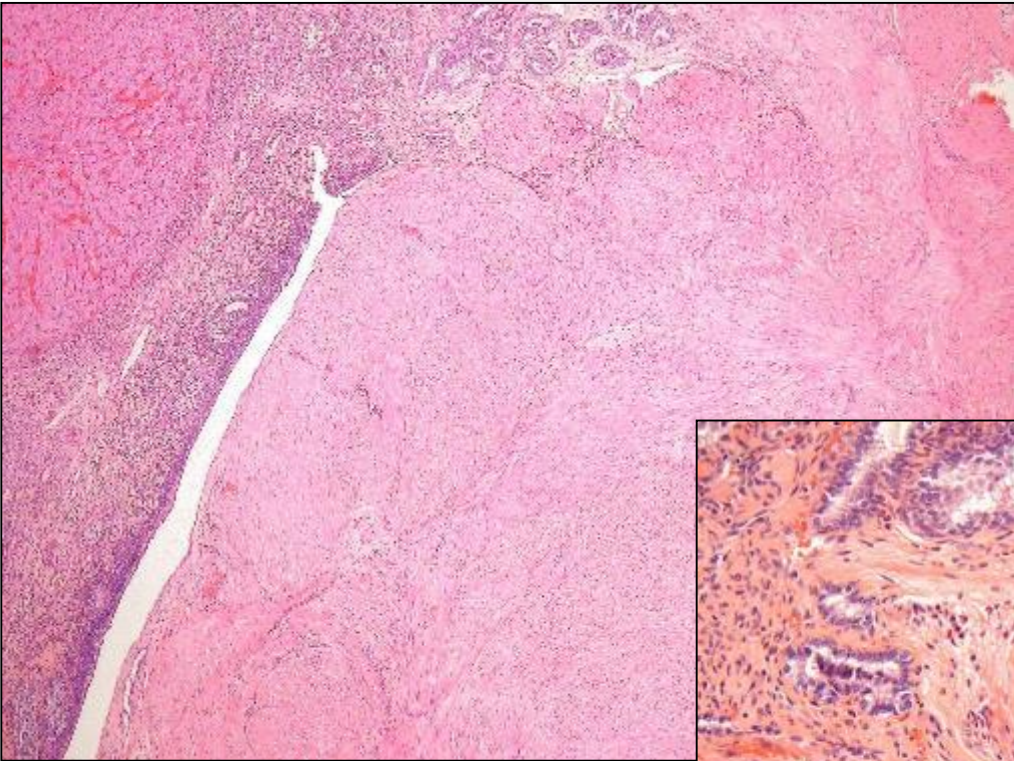
Ovary-Mesenchymal Neoplasms: Fibroma, Fibrosarcoma

- **Fibroma: poorly or moderately cellular tumor compressing surrounding tissue**
- **Interlacing bundles of well-differentiated fibroblasts**
- **Bands of mature collagen**

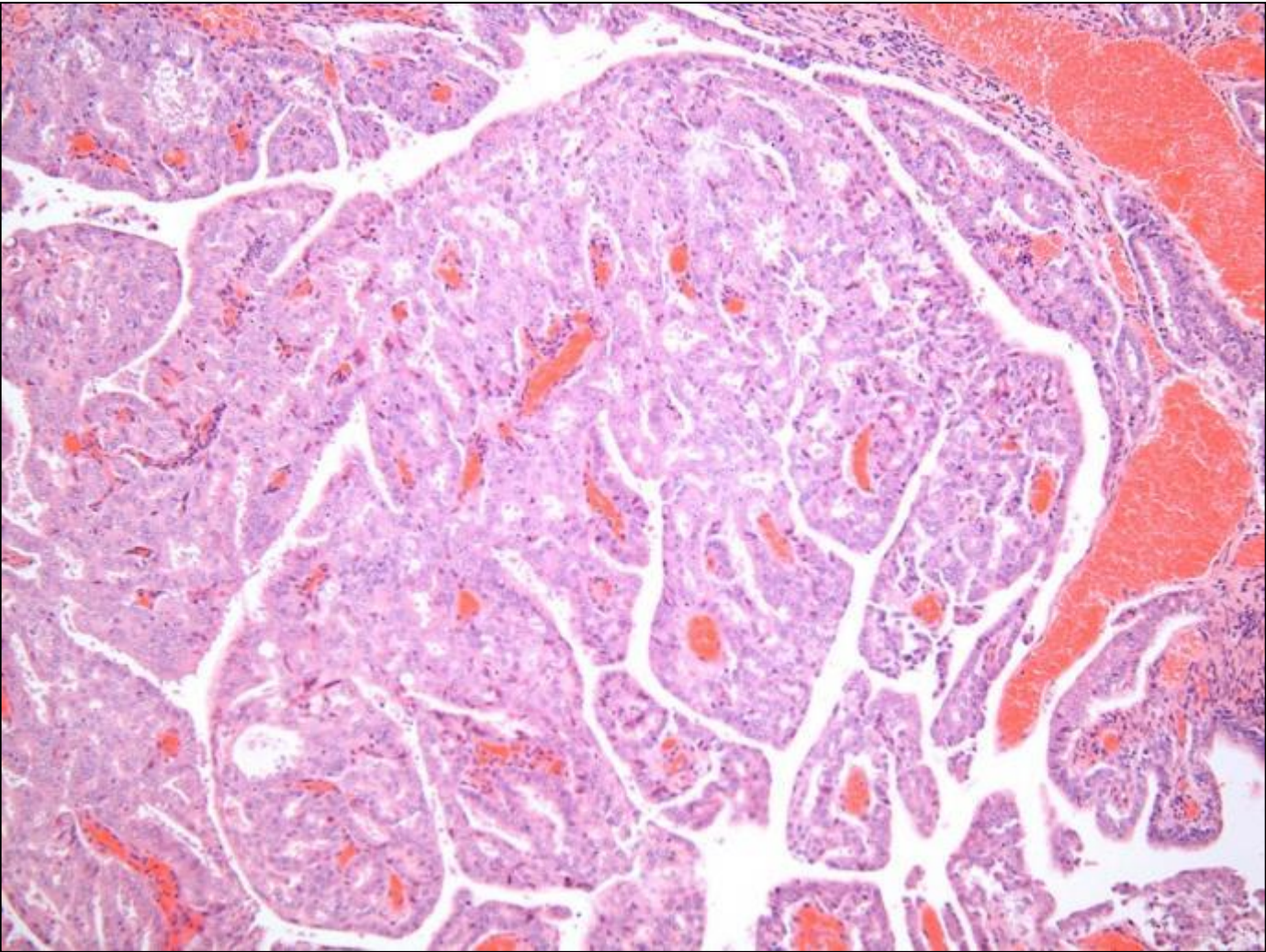
- **Fibrosarcoma: pleomorphic spindle-shaped cells**
- **Often herringbone features**
- **Occasionally myxomatous**
- **There may be necrosis, hemorrhage, invasion**

- **Differential Diagnose: Reactive Fibroplasia, Leiomyoma, Leiosarcoma, Schwannoma**

Ovary, Rat: Fibroma



Ovary-Metastasis: Hamster (Metastasizing Uterine Carcinoma)



Classifications: Uterus – Recommendations

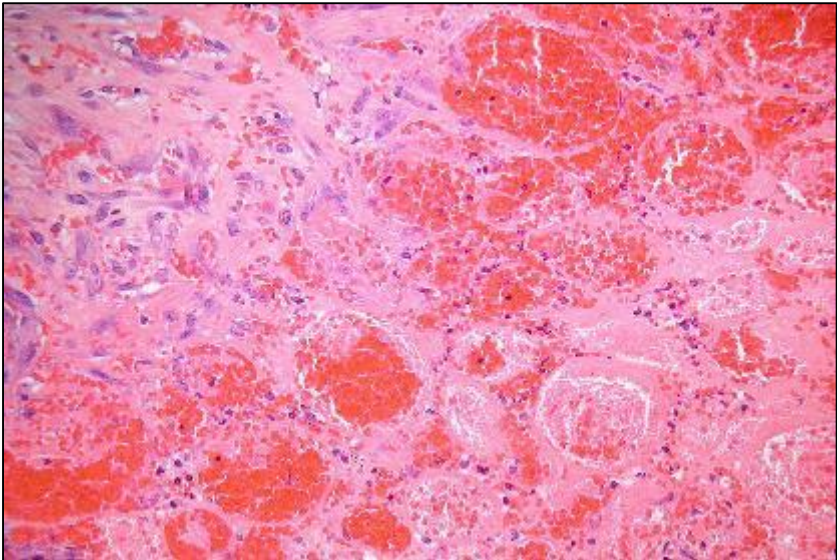
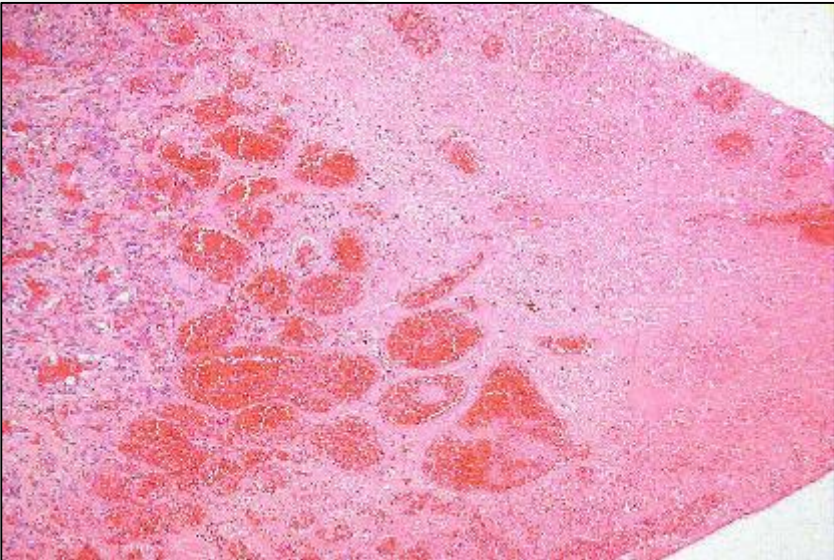
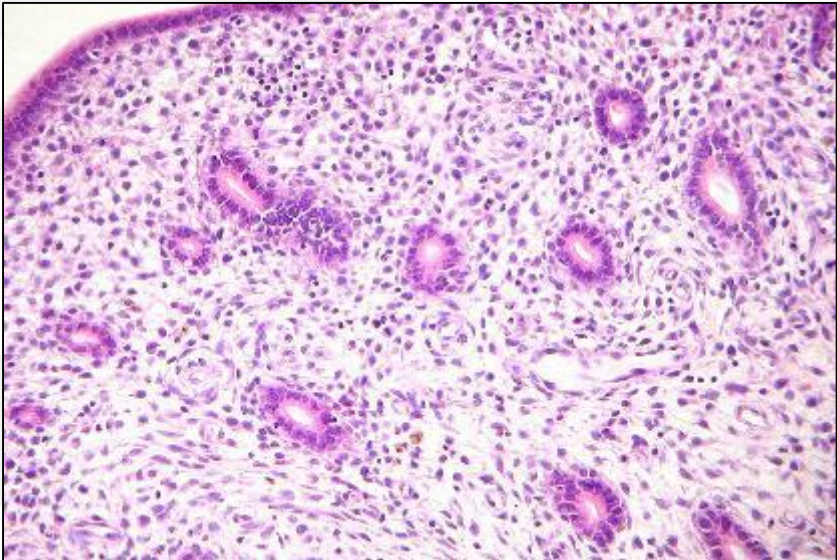
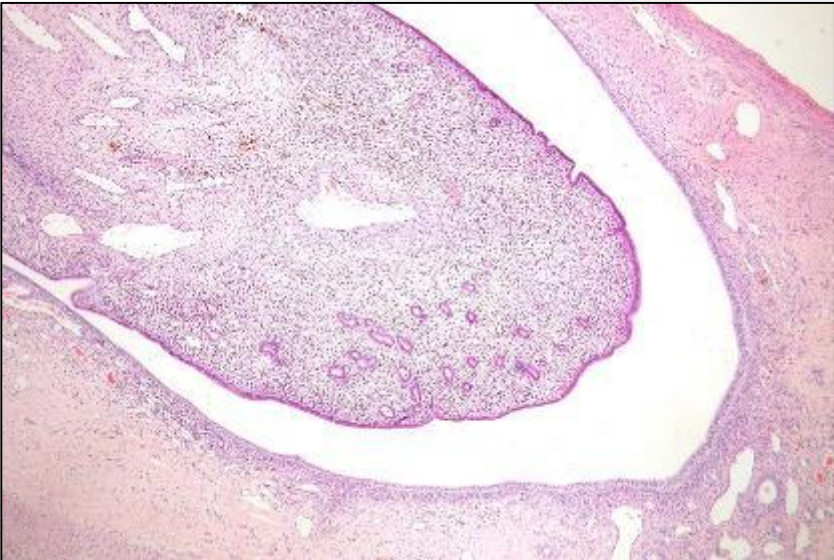
<http://www.toxpath.org/nomen/>

- **Hyperplasia, endometrial (*epithelial, glandular, stromal*)**
- **Adenoma and Adenocarcinoma, endometrial**
- **Papilloma, squamous cell (*keratinizing, non-keratinizing*)**
- **Carcinoma, squamous cell (*keratinizing, non-keratinizing*)**
- **Carcinoma, adenosquamous**
- **Polyp, glandular**
- **Polyp, endometrial stromal**
- **Tumor, endometrial stromal, benign**
- **Sarcoma, endometrial stromal**
- **Carcinoma, yolk sac**
- **Choriocarcinoma**
- **Tumor, Muellierian, mixed, benign and malignant (*heterologous, homologous*)**
- **Carcinoma, embryonal**
- **Keratoacanthoma**

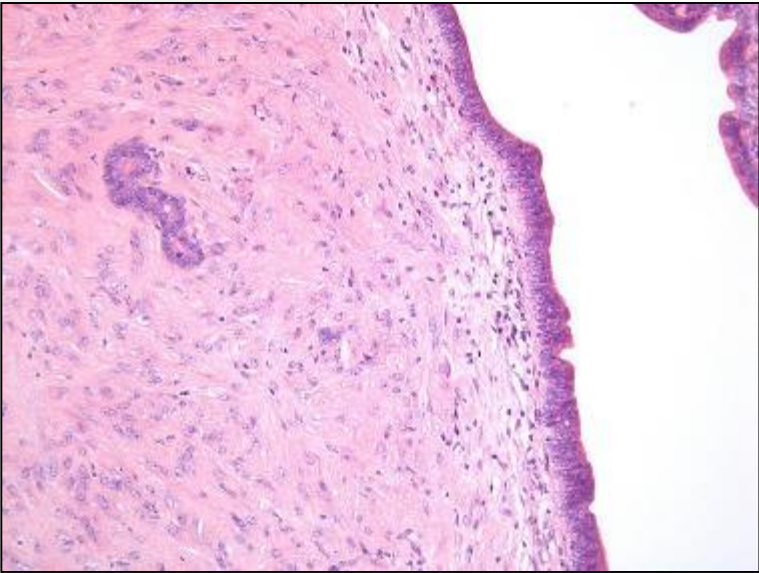
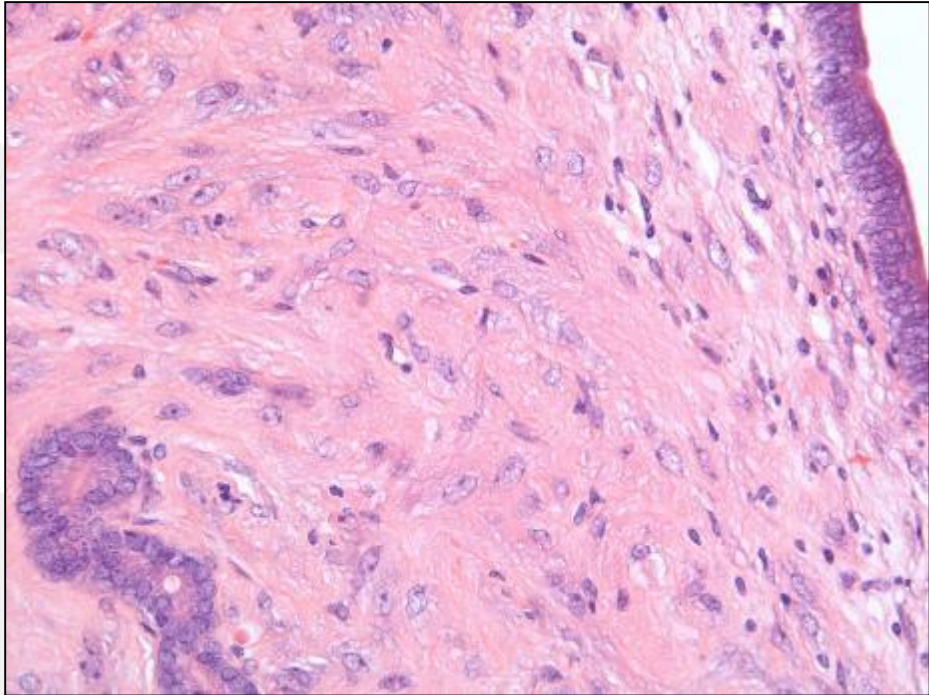
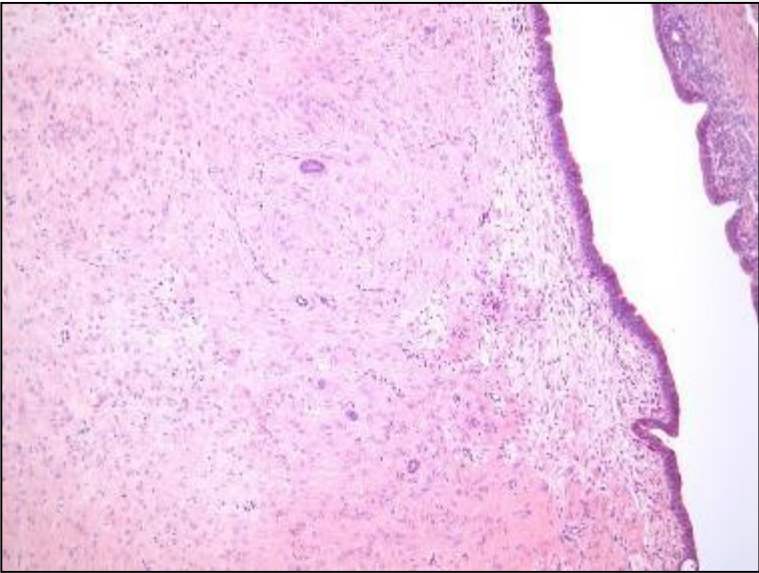
Uterus-Epithelial Neoplasms: Polyp

- **Stomal polyp: mass protruding into uterine lumen**
- **covered by cuboidal to columnar epithelium**
- **Stroma composed of spindle-shaped cells, collagen and rarely endometrial glands**
- **Glandular polyp: like stromal polyp but endometrial glands are predominating**
- **large tumors may reveal hemorrhagic necrosis**
- **Differential Diagnose: Papillary adenoma, Stromal sarcoma, Vascular tumors**

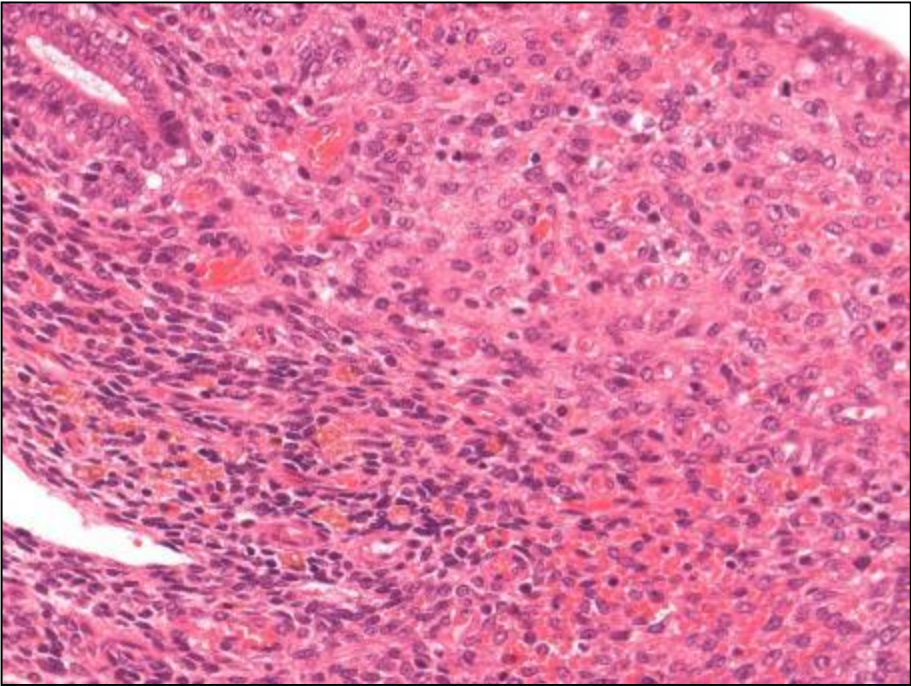
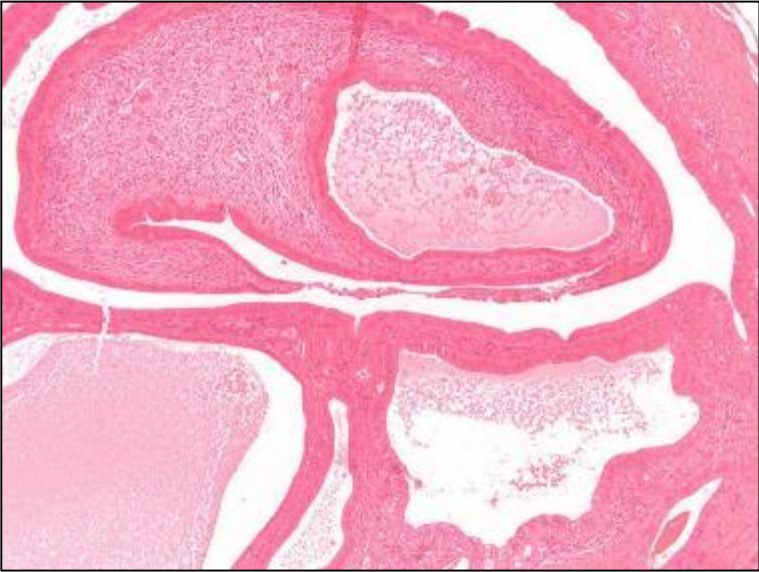
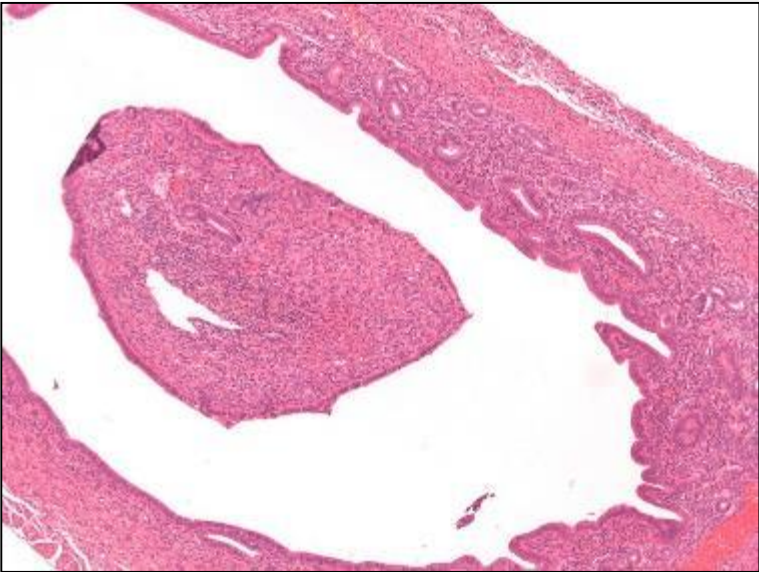
Uterus, Rat: Stromal Polyp



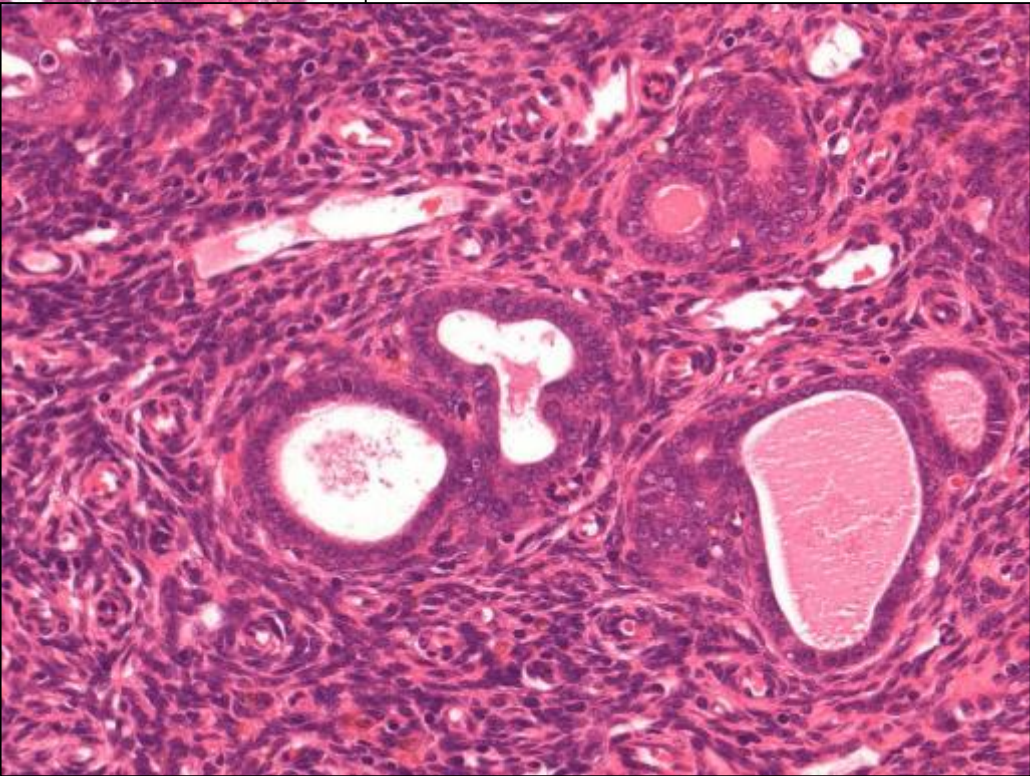
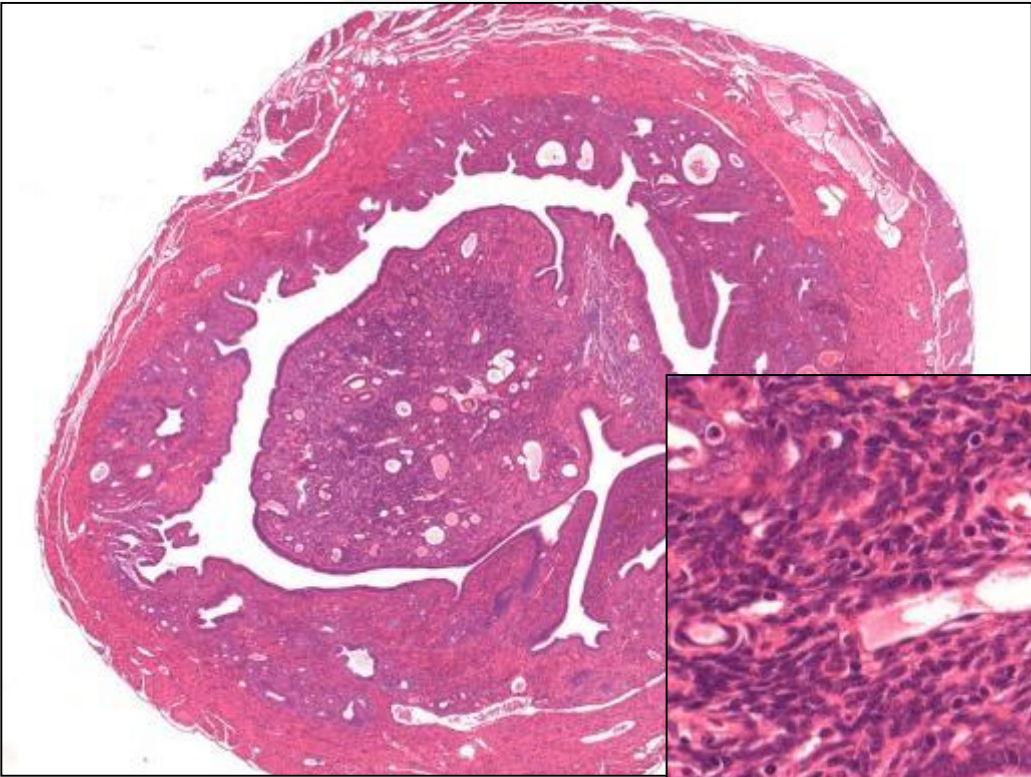
Uterus, Hamster: Stromal Polyp



Uterus, Mouse: Stromal Polyp



Uterus, Mouse: Glandular Polyp

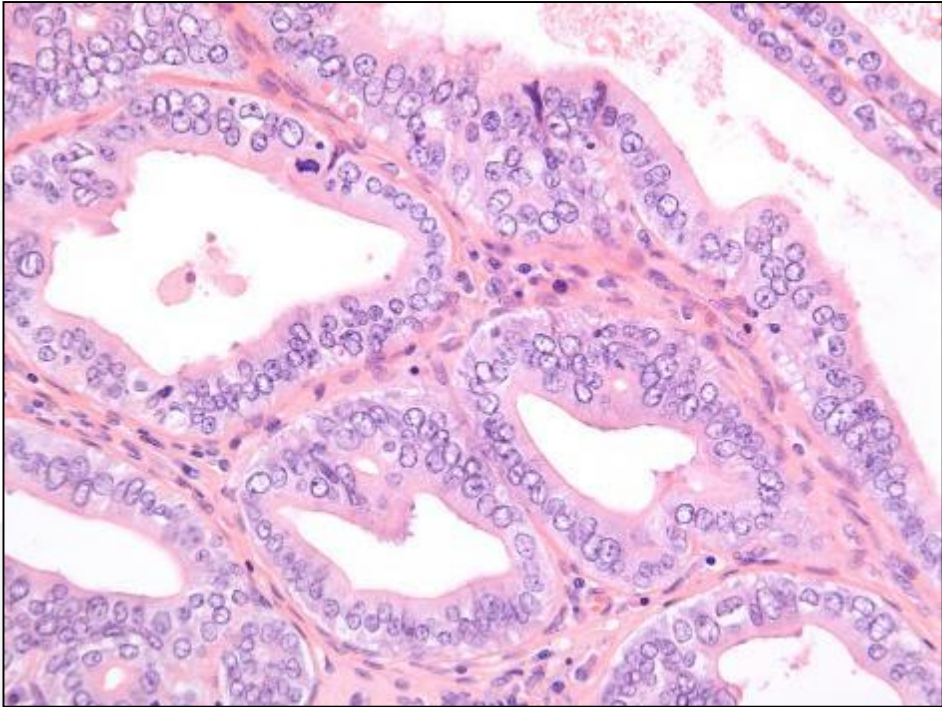
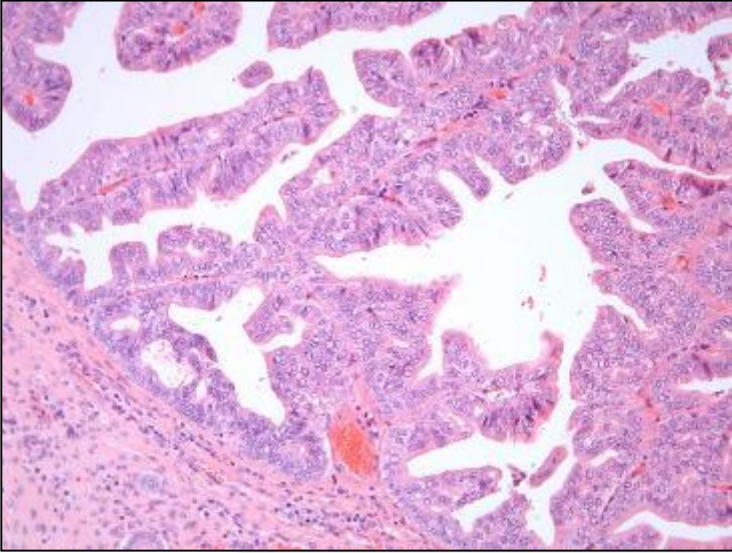
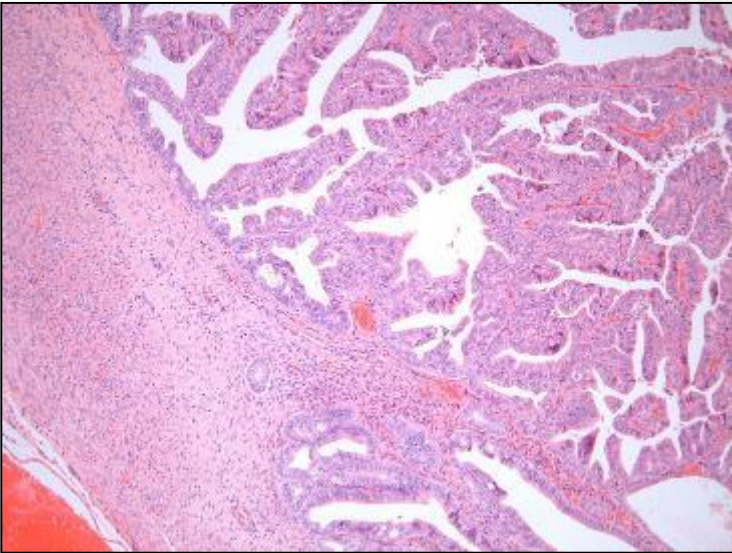


Uterus-Epithelial Neoplasms: Adenoma and Adenocarcinoma

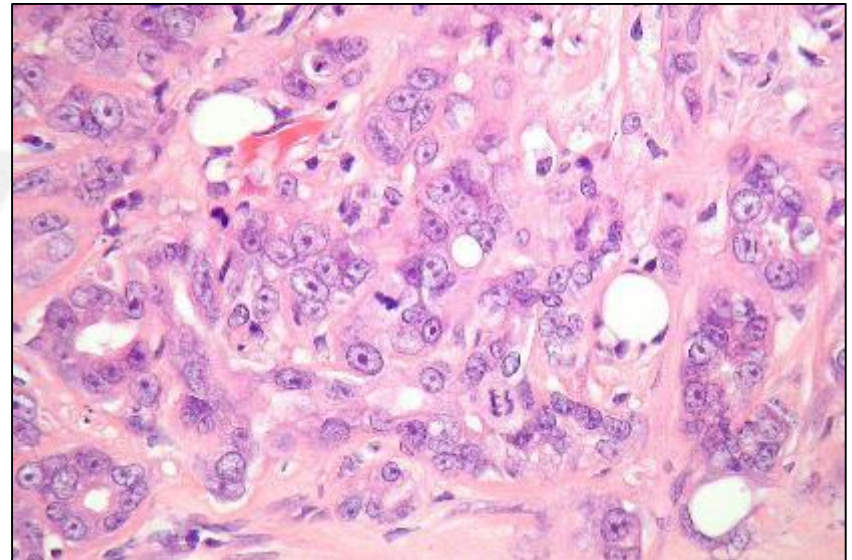
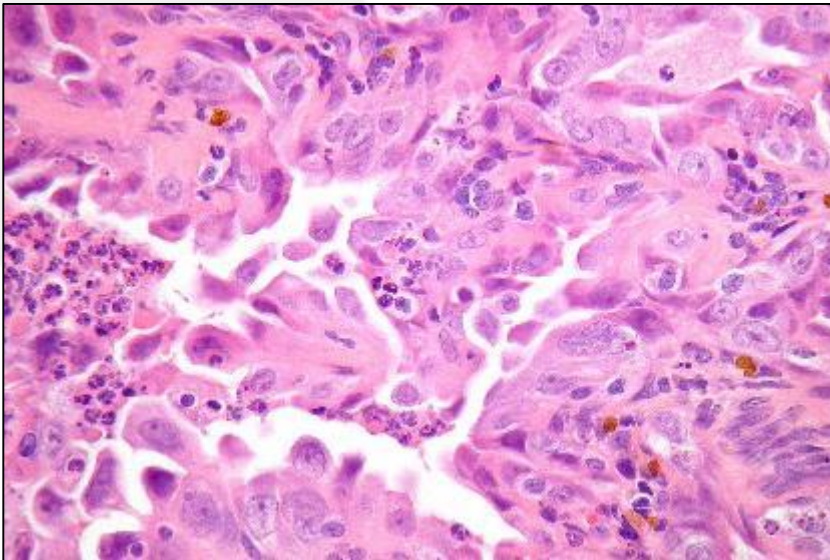
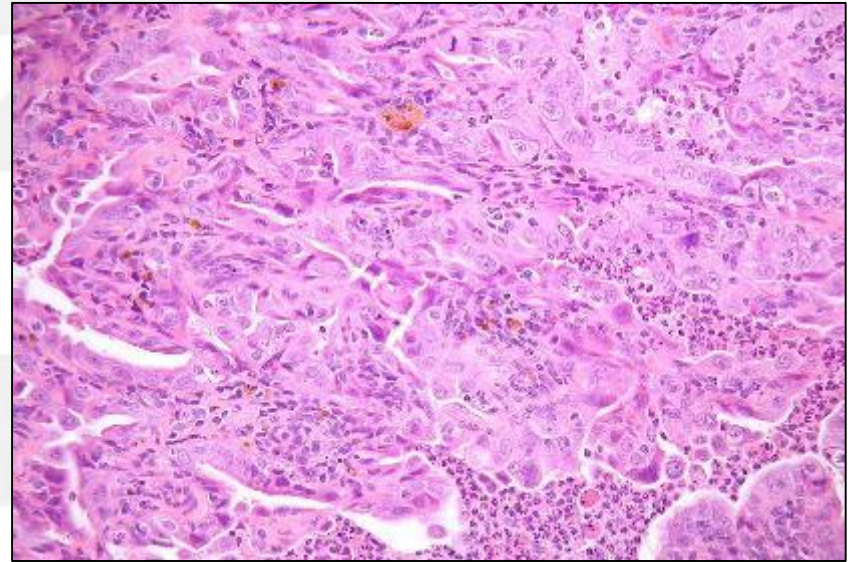
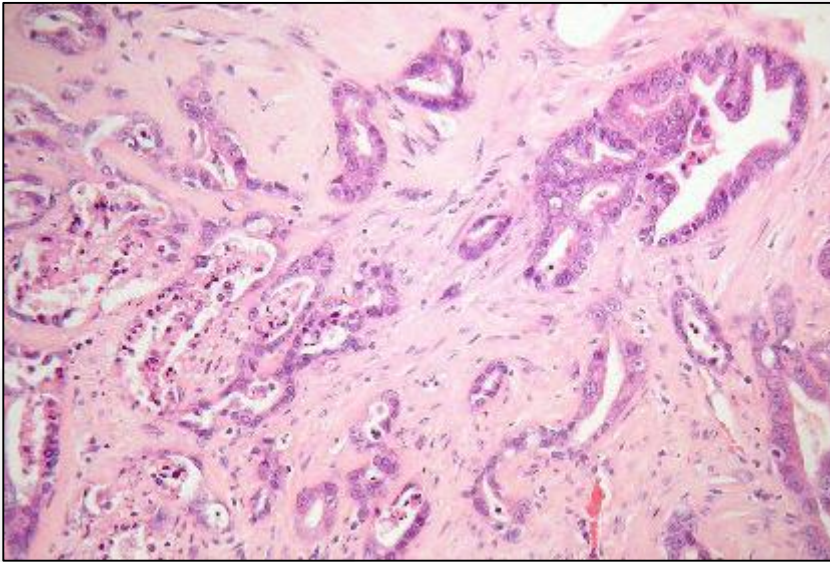
- **Arising from surface epithelium**
- **Epithelium arranged in papillary, glandular or tubular structures**
- **In some glandular structures secretion**
- **Cells often eosinophilic**
- **Delicate stroma in adenoma**
- **Often desmoplastic stromal reaction in adenocarcinoma with necrosis and hemorrhage**

- **Differential Diagnose: Glandular polyp, Endometrial hyperplasia, Glandular hyperplasia, Adenomyosis, Squamous cell carcinoma**

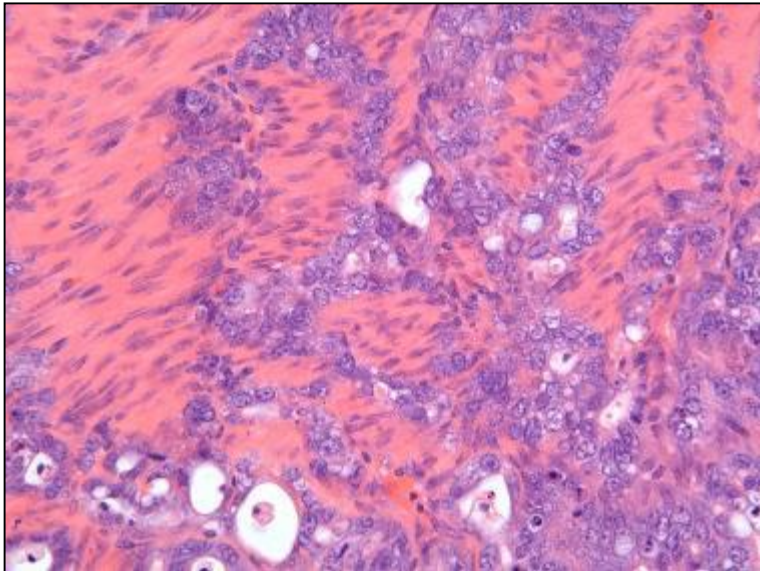
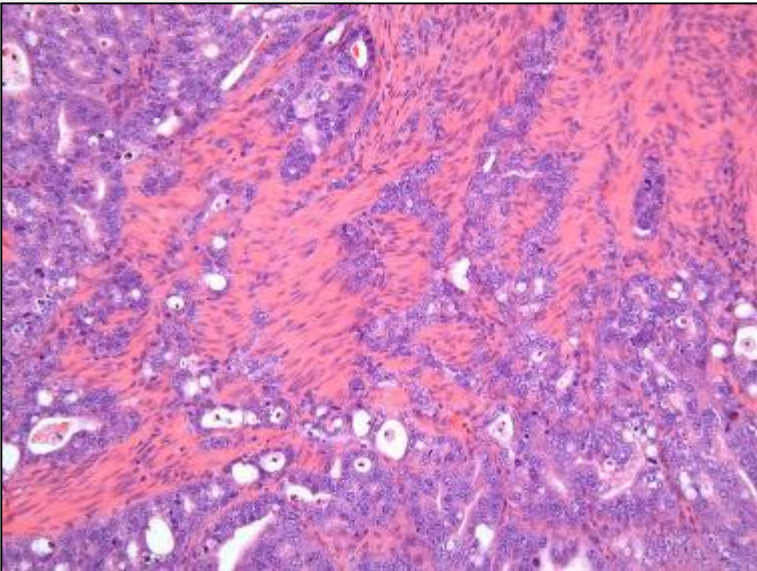
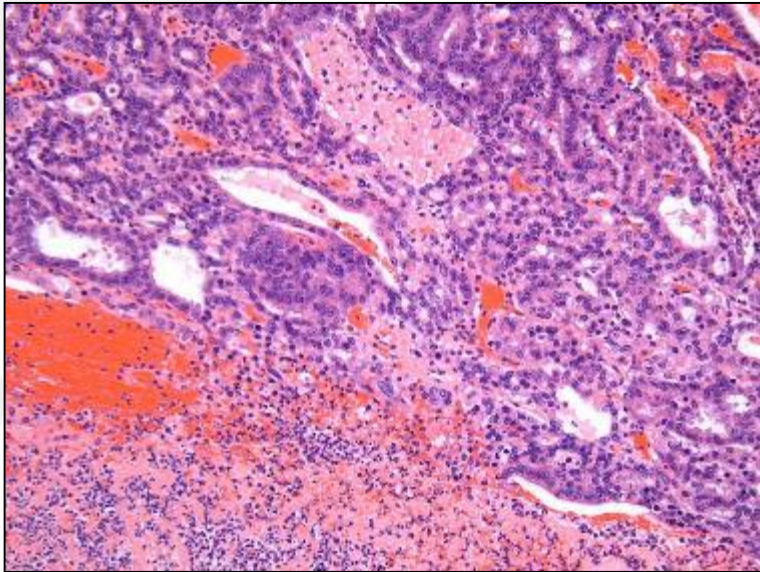
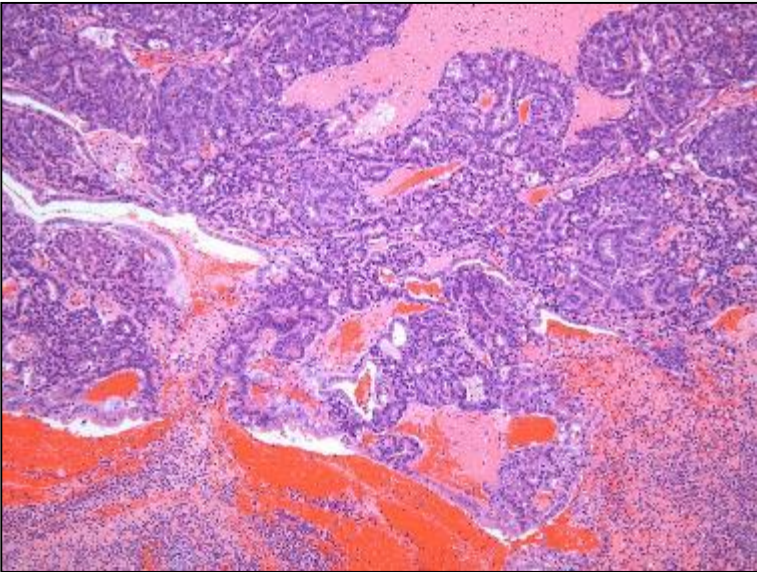
Uterus, Hamster: Adenoma



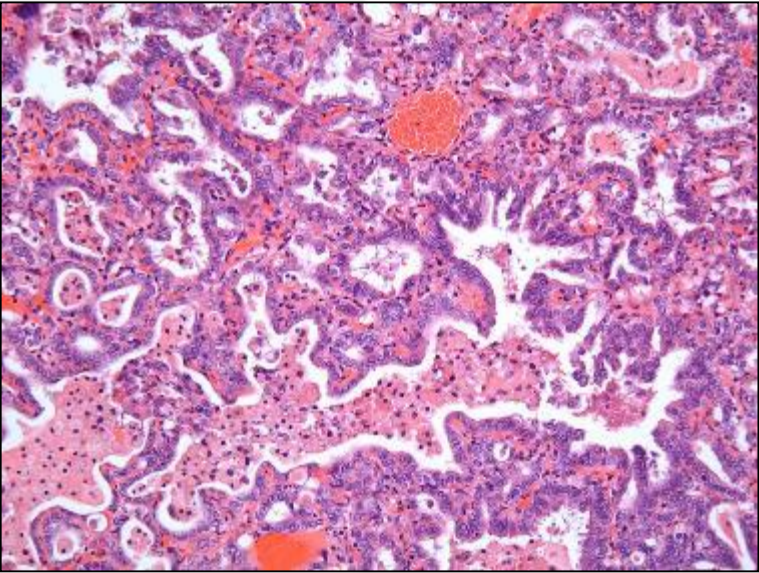
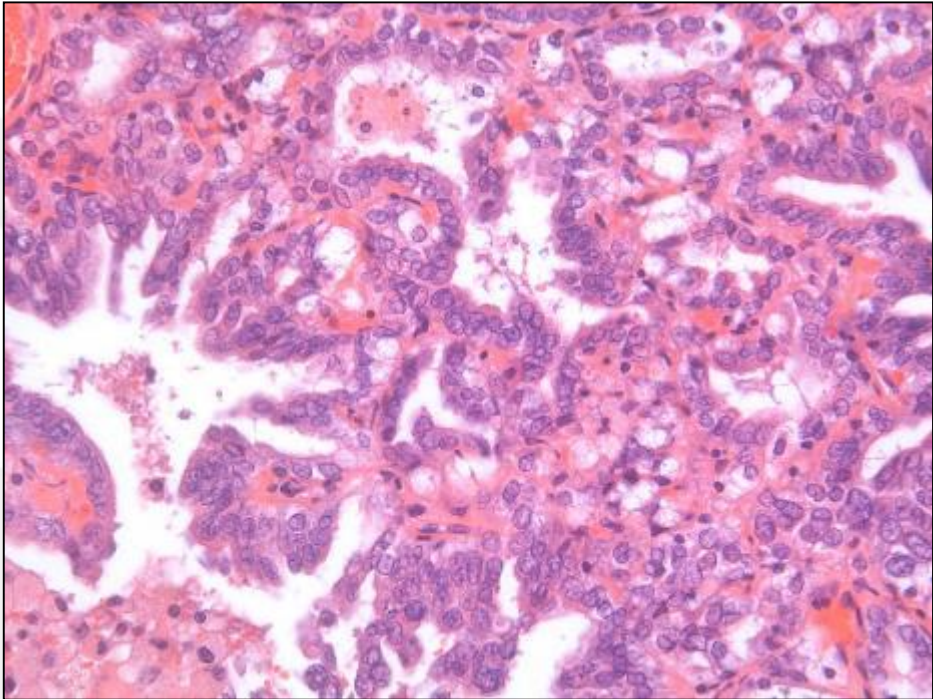
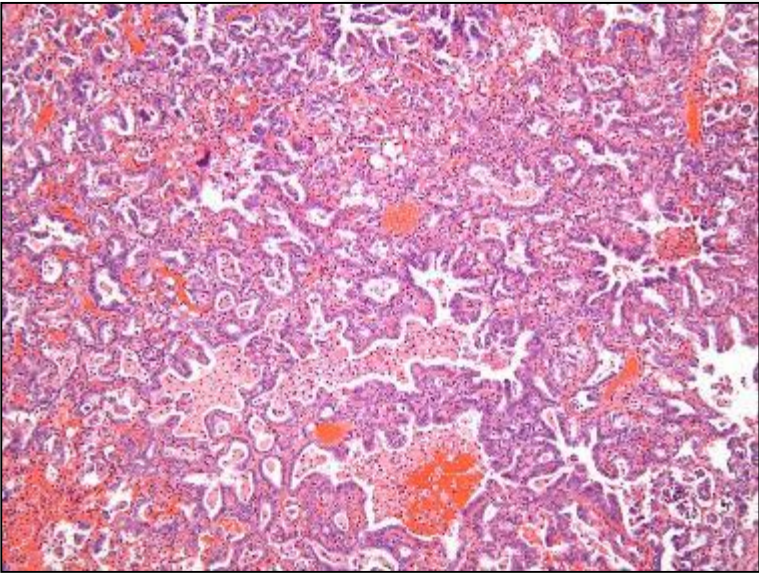
Uterus, Rat: Adenocarcinoma



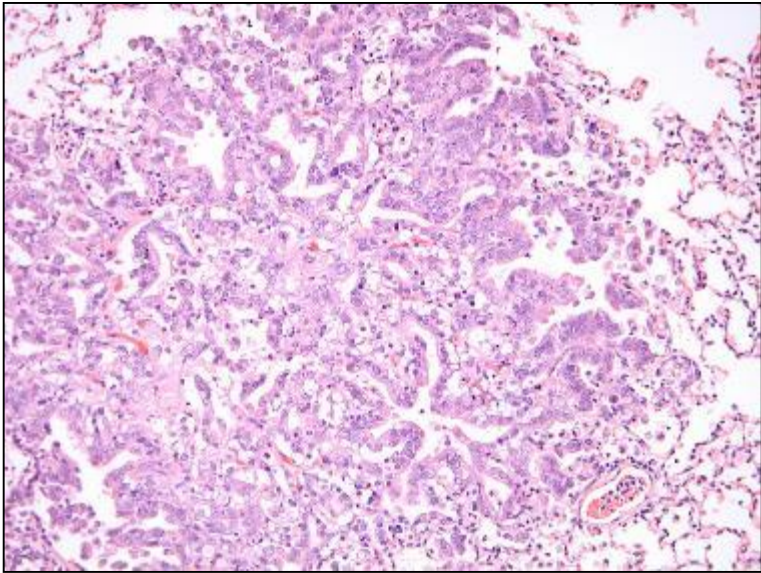
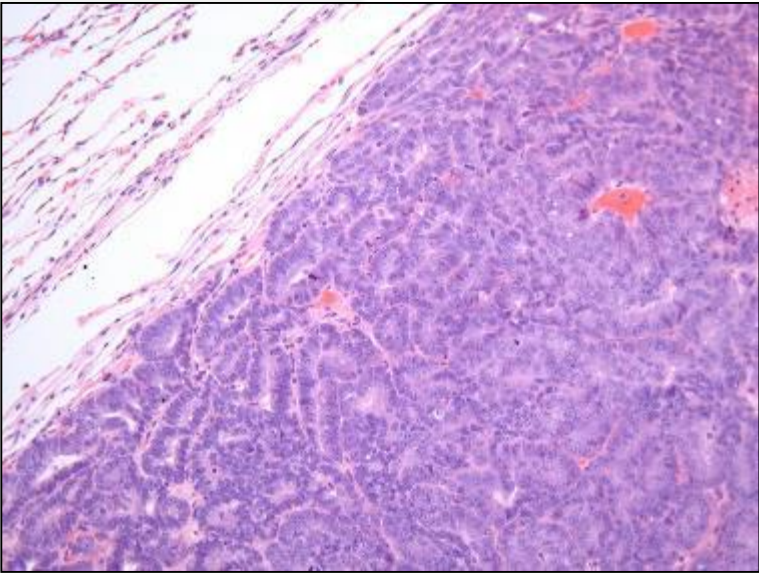
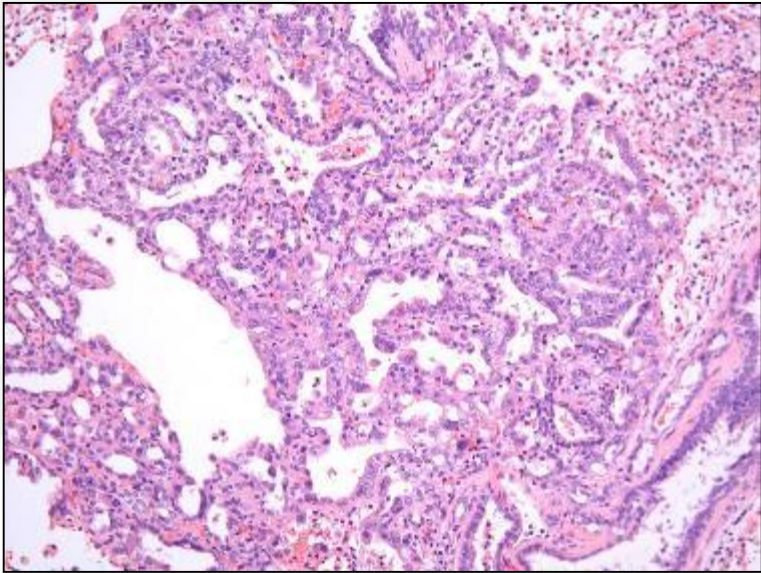
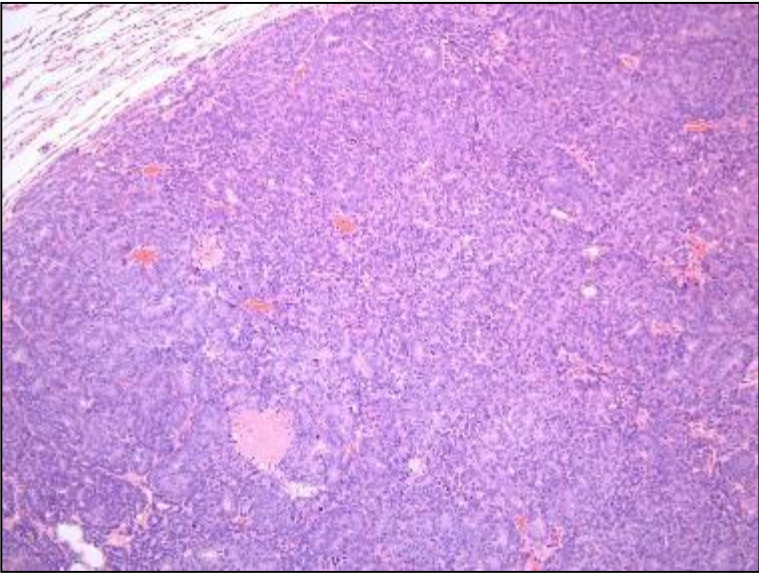
Uterus, Hamster: Adenocarcinoma



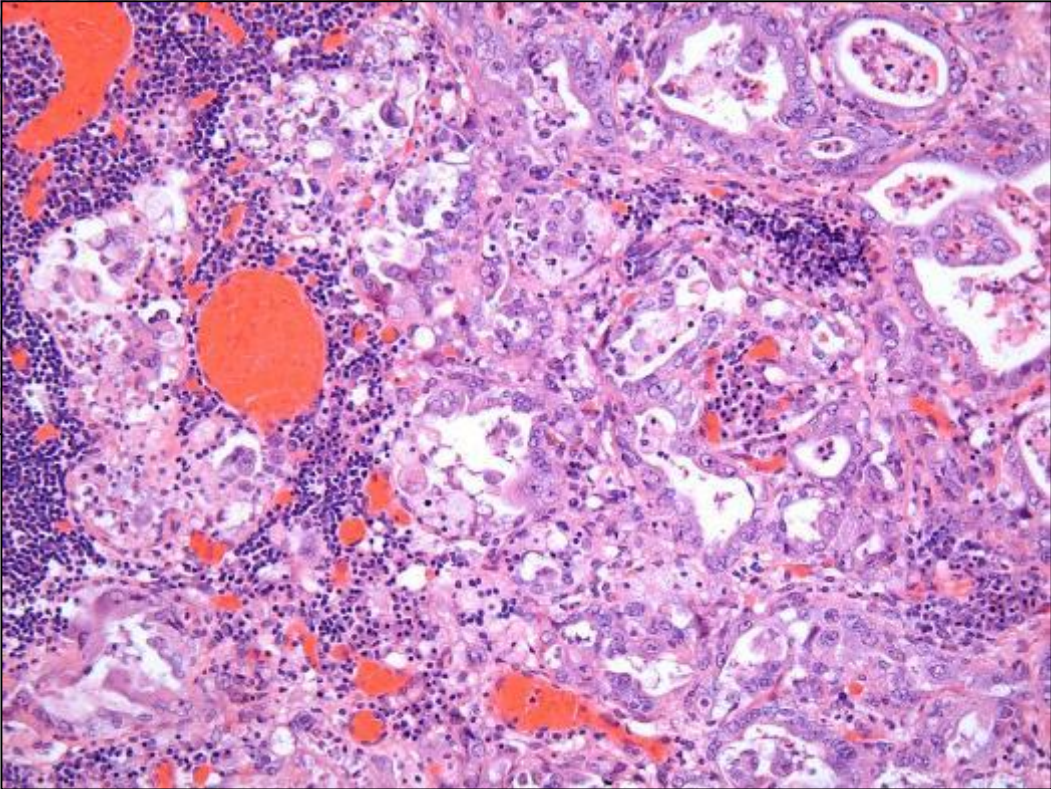
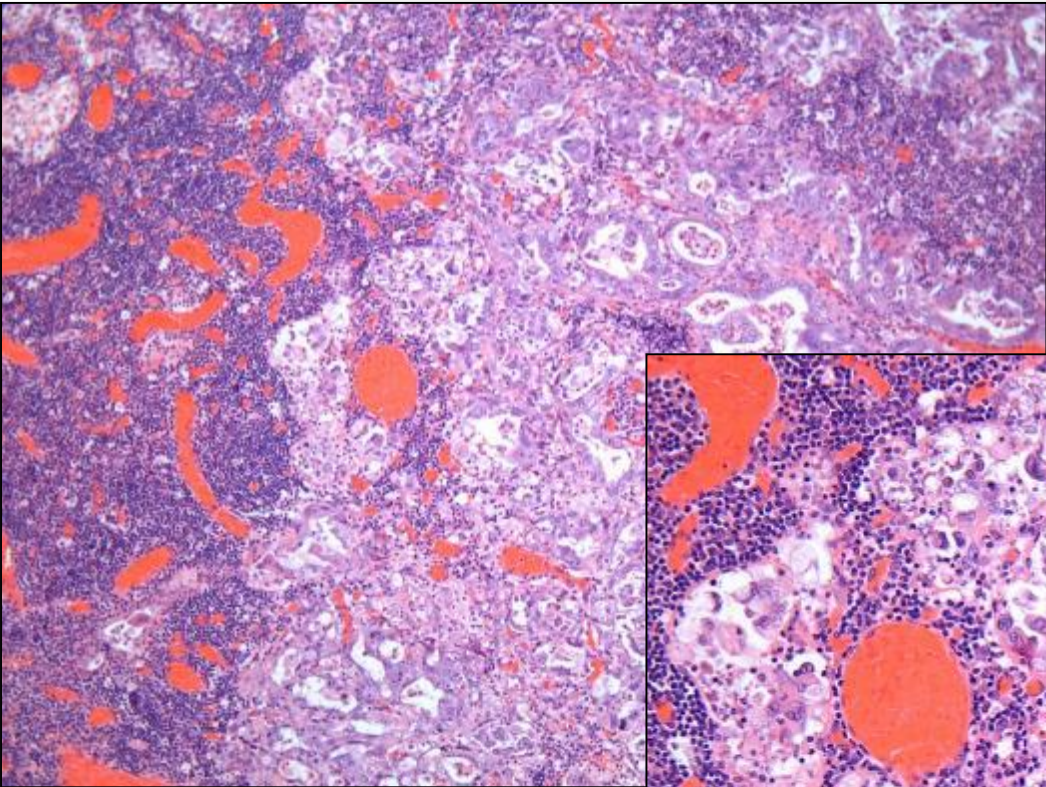
Uterus, Hamster: Adenocarcinoma



Lung Metastases, Hamster: Uterine Adenocarcinoma



Lymph Nodes, Metastases, Hamster: Uterine Adenocarcinoma

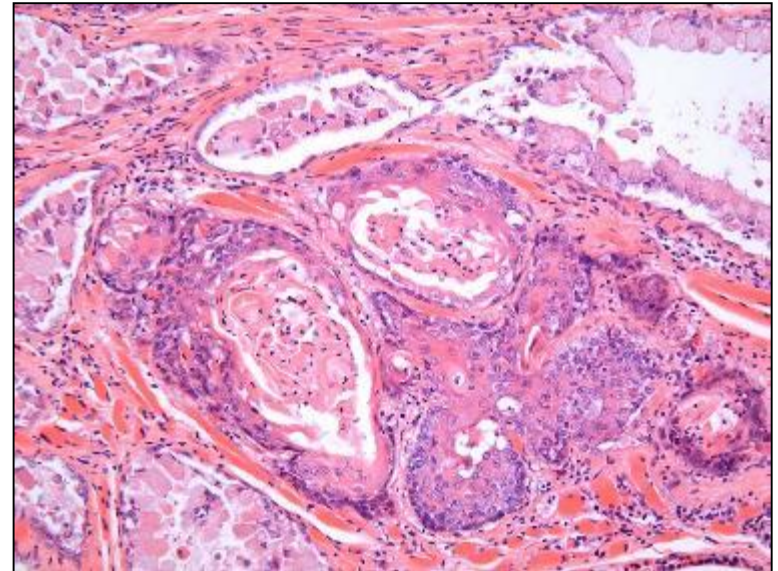
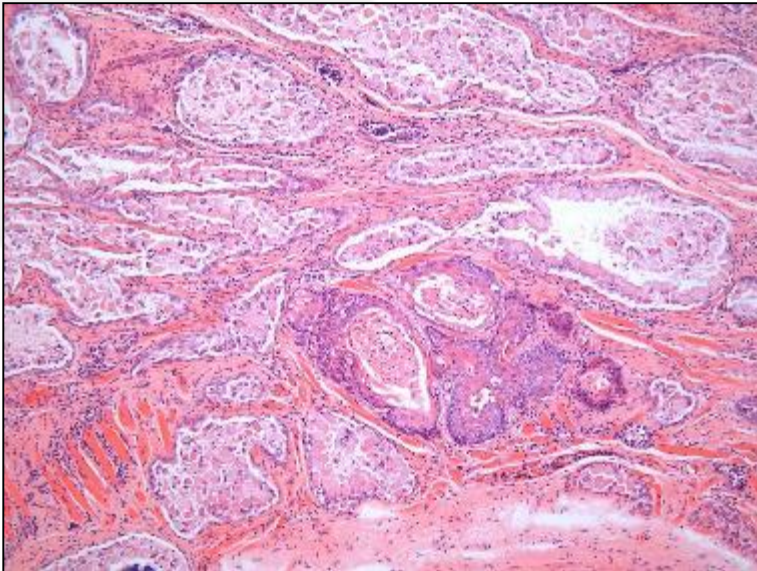
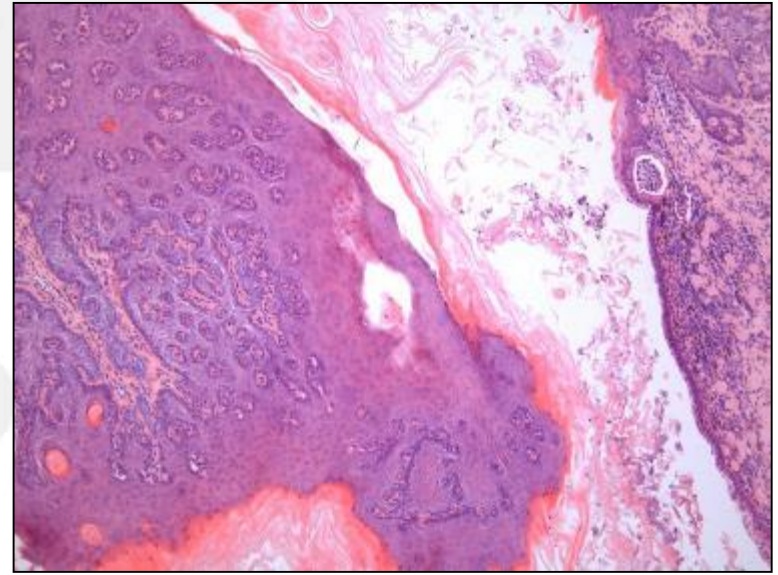
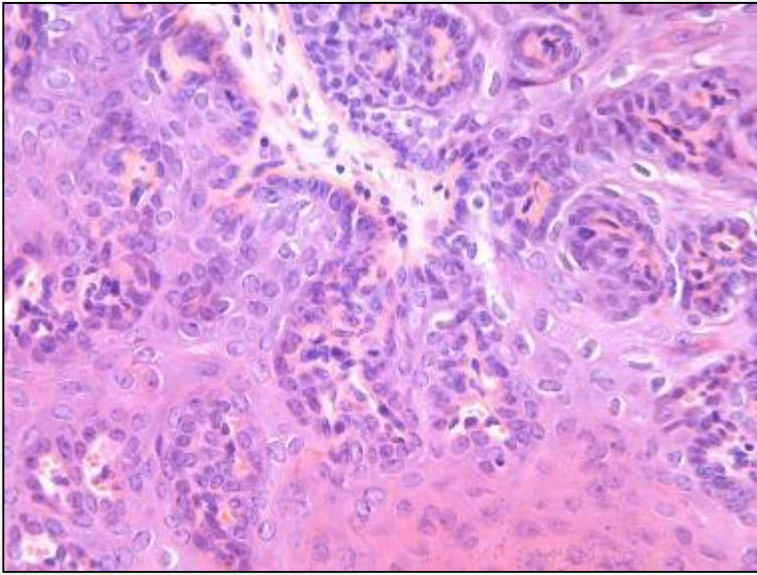


Uterus-Mesenchymal Neoplasms: Squamous Carcinoma

- **Most often in cervical region**
- **Usually well-differentiated**
- **Often non-keratinizing**
- **Occasionally keratin pearls**
- **Stroma scant or abundant**

- **Differential Diagnose: Squamous papilloma, Adenocarcinoma**

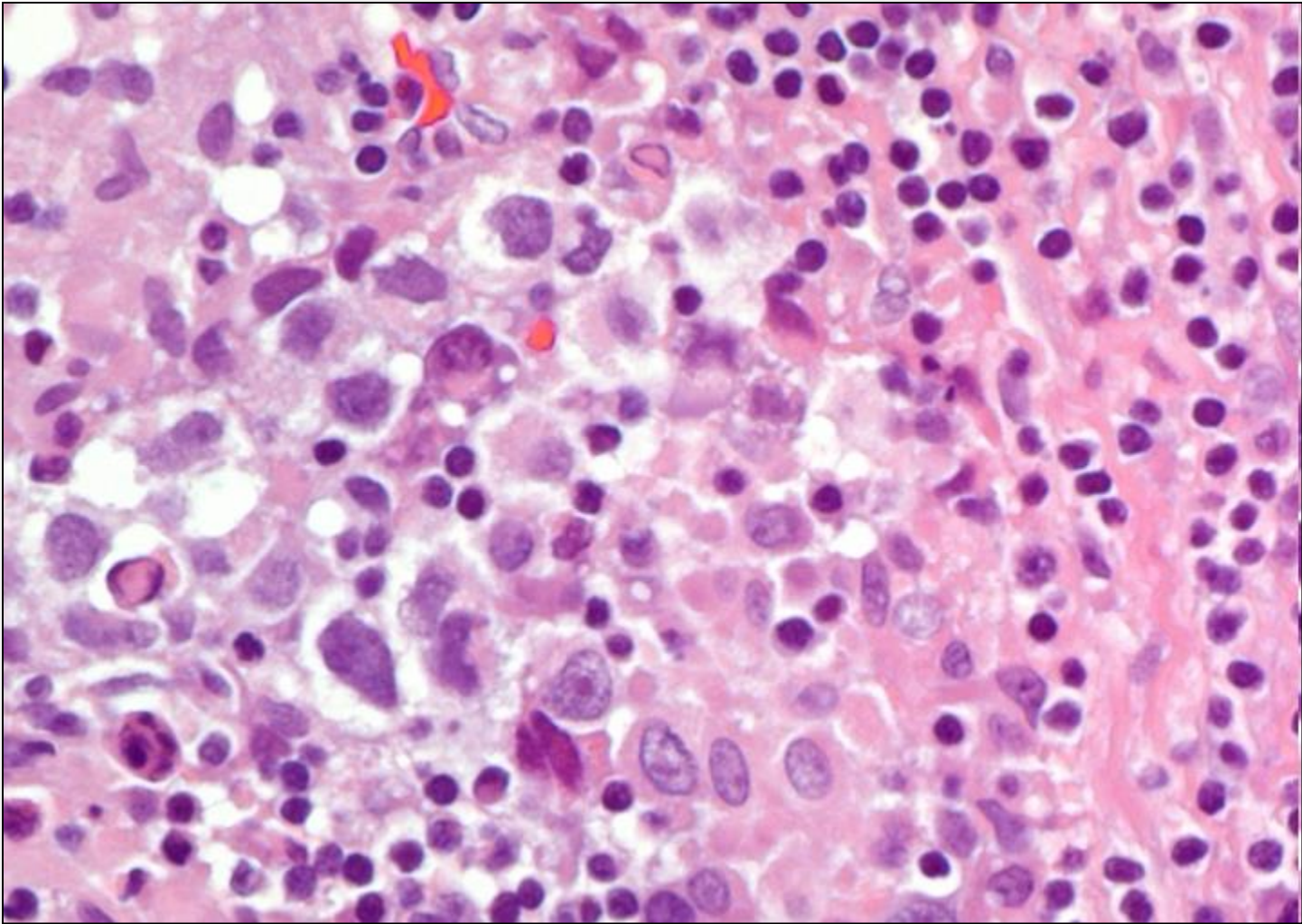
Uterus-Cervix, Hamster: Squamous Carcinoma



Uterus-Epithelial Neoplasms: Yolk Sac Carcinoma

- Rosettes, nest, cords or papillary structures of cells
- Eosinophilic, hyalinized ground substance (PAS-positive)
- Cytoplasm often vacuolated and often with droplets of a compound similar to the ground substance (extracellular matrix)
- Rare!
- Differential Diagnose: Adenocarcinoma

Uterus-Epithelial Neoplasms: Yolk Sac Carcinoma



Uterus-Epithelial Neoplasms: Muellierian Tumor

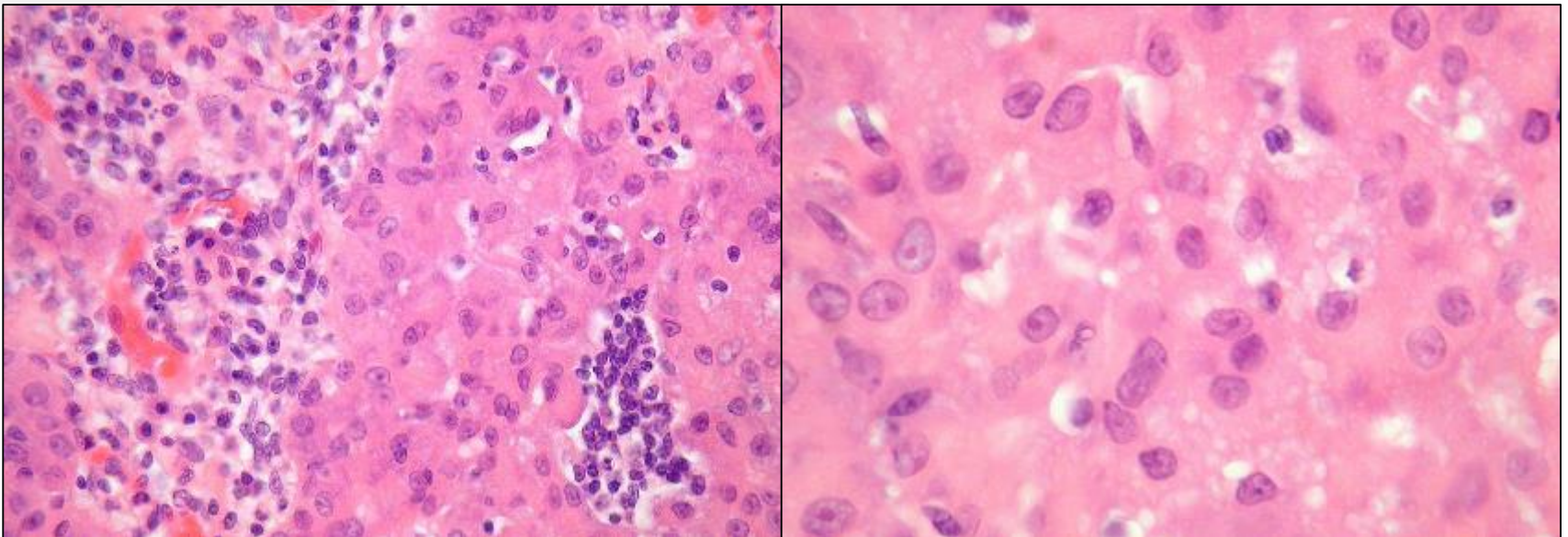
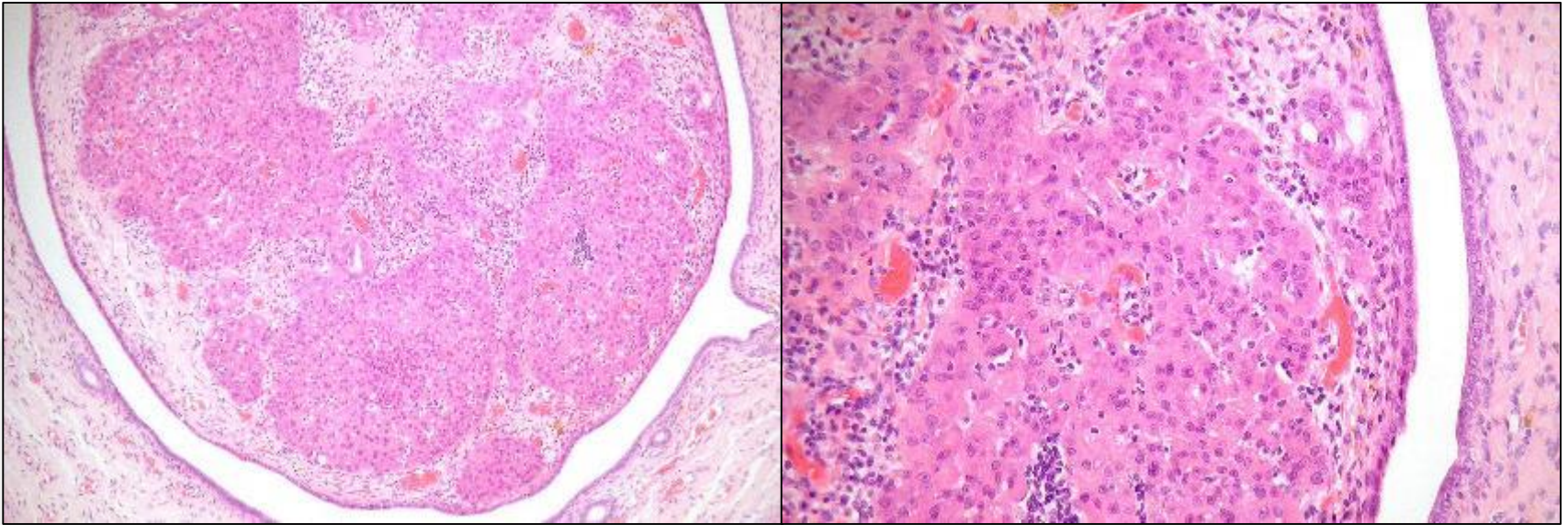
- **Carcinosarcoma type**
- **Polypoid with local invasion**
- **Epithelial and mesenchymal elements**
- **Very rare!!!**
- **Differential Diagnose:
Teratoma**



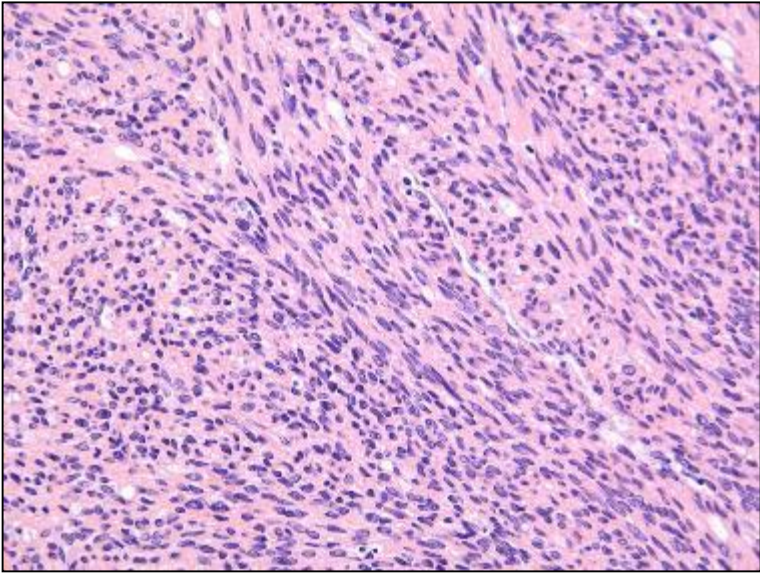
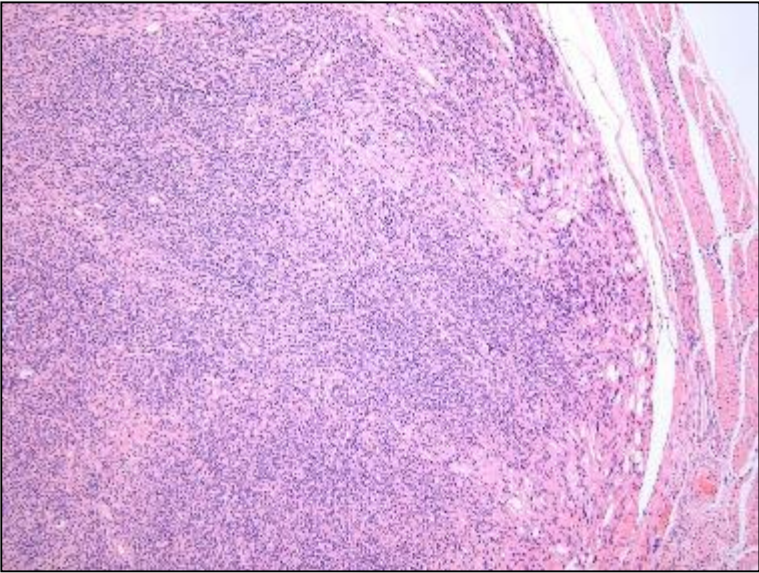
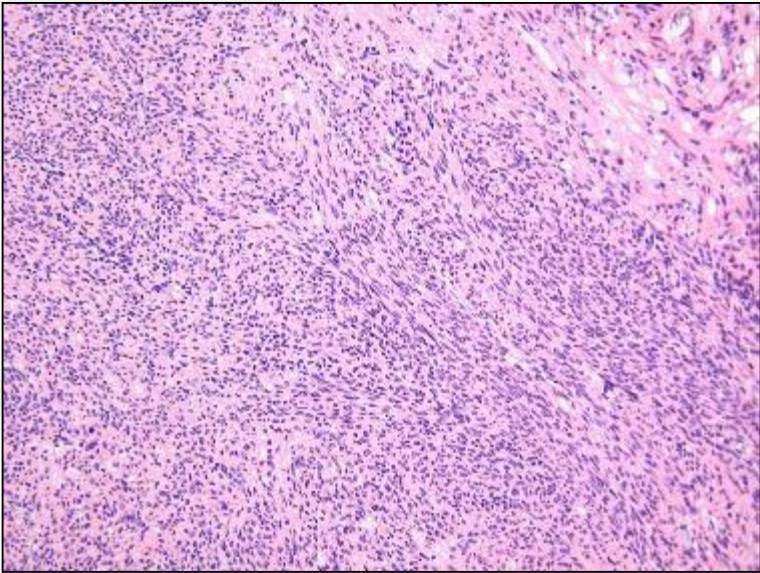
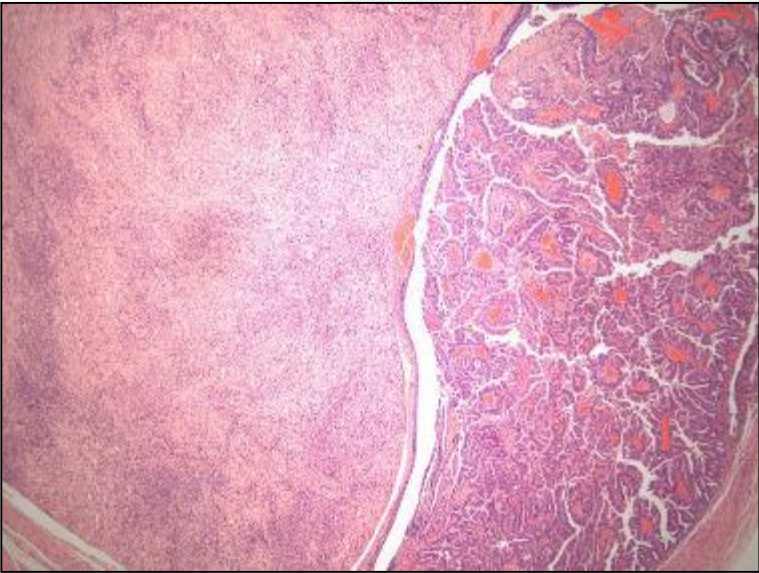
Uterus-Mesenchymal Neoplasms: Leiomyoma and Leiomyosarcoma

- **As described under 'Ovaries' as myometrial nodules**
- **Leiomyoma: nuclei usually elongated with round ends but when abundant cytoplasm, the nuclei may be round up)**
- **Leiomyosarcoma: nuclei may be pleomorphic**
- **Differential Diagnose: Malignant schwannoma, Histiocytic sarcoma, Stromal sarcoma**

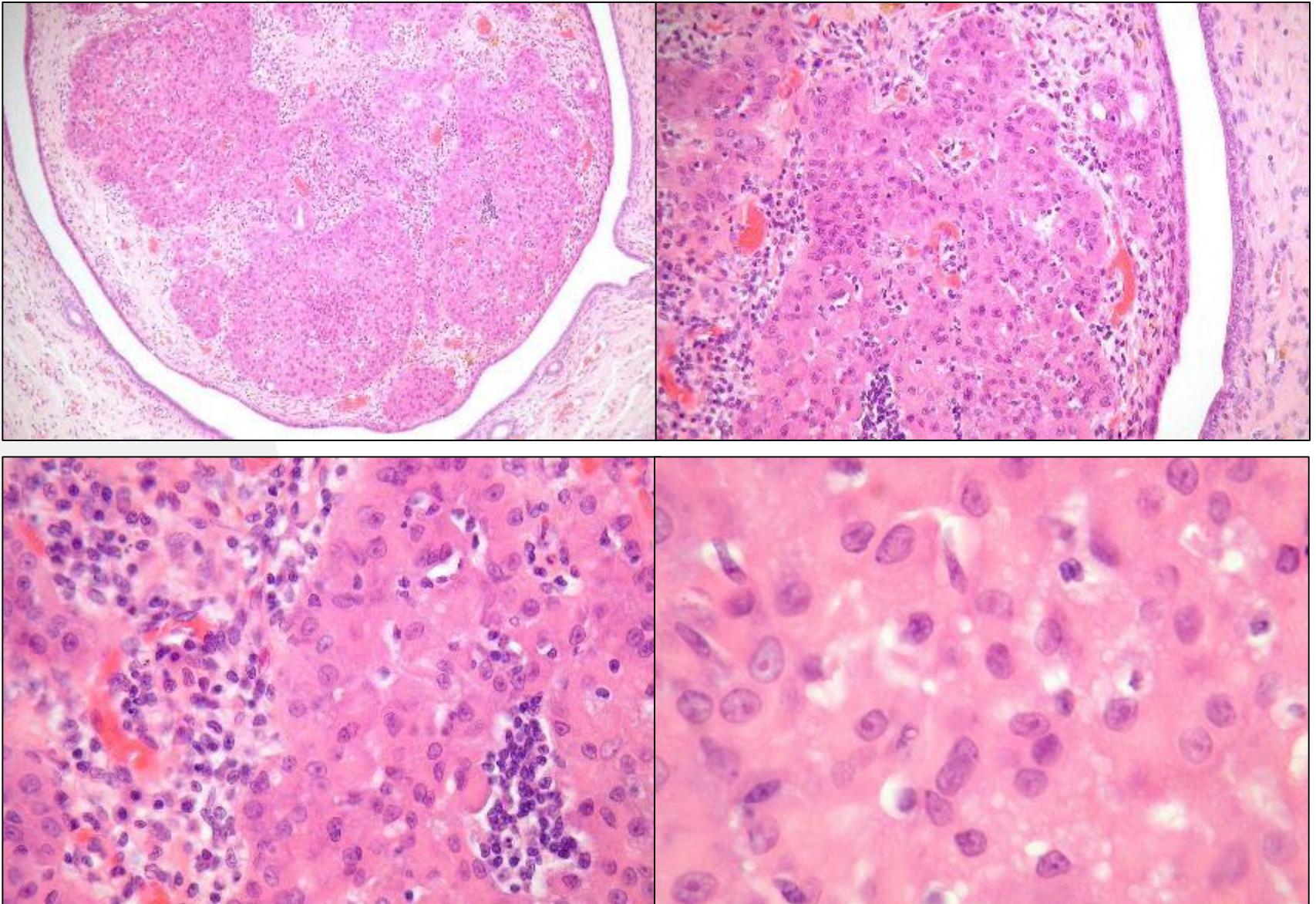
Uterus; Rat: Leiomyoma (Growth in Stromal Polyp)



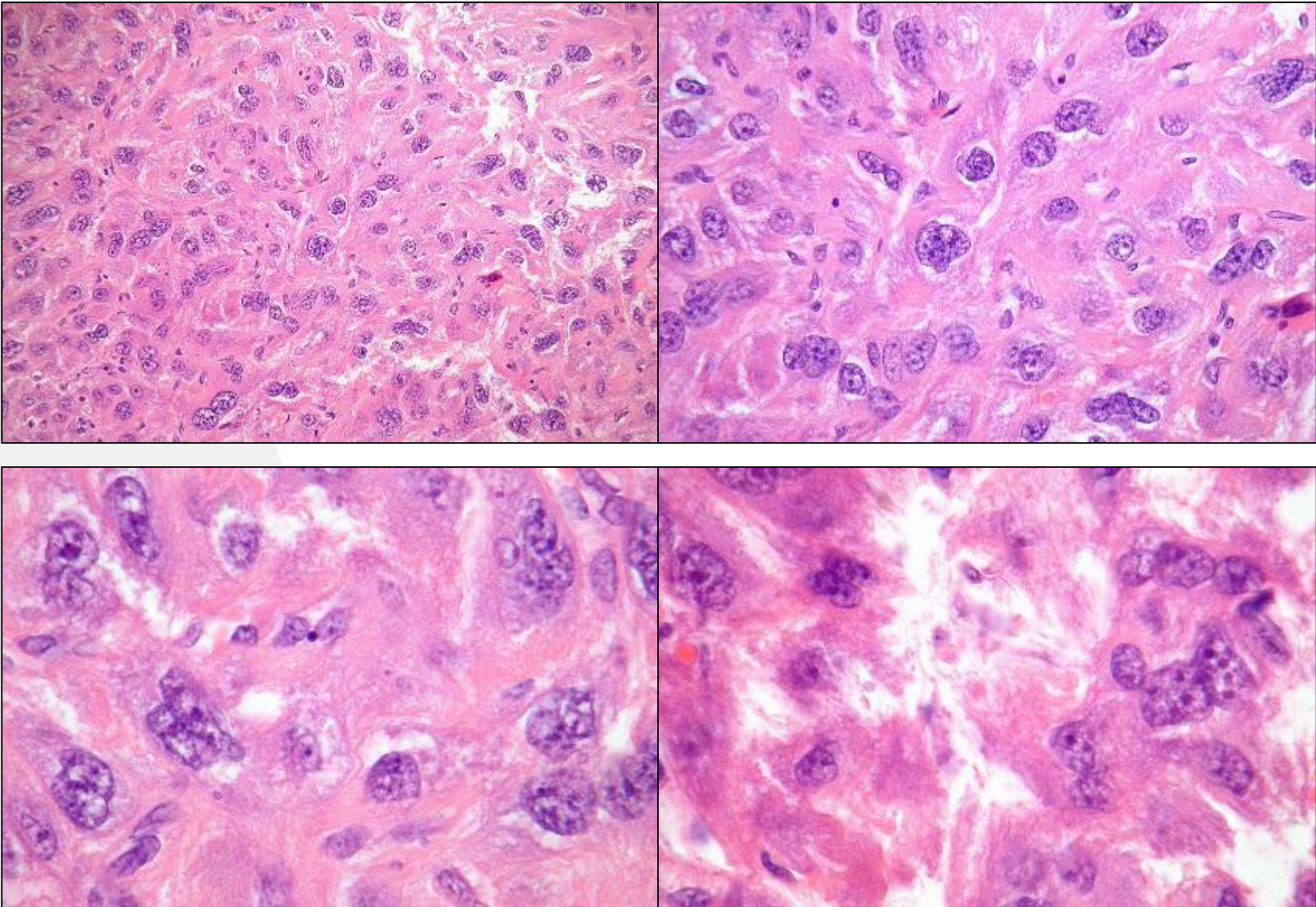
Uterus; Hamster: Leiomyoma



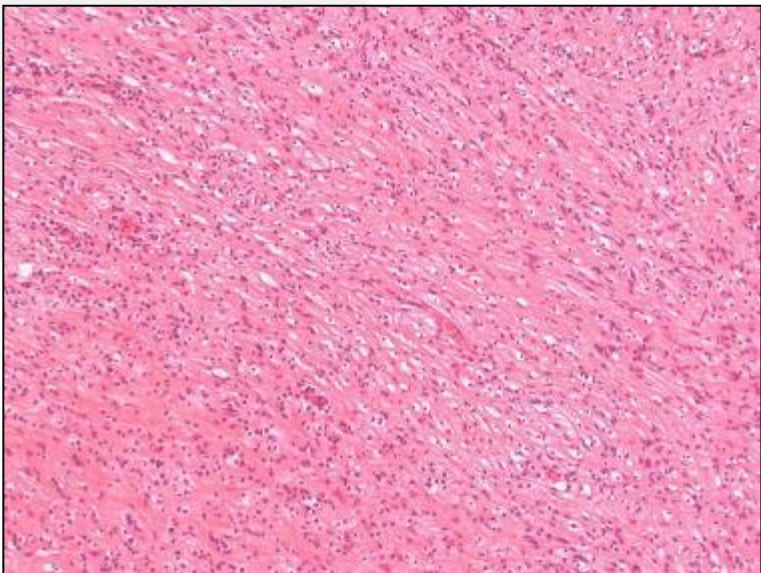
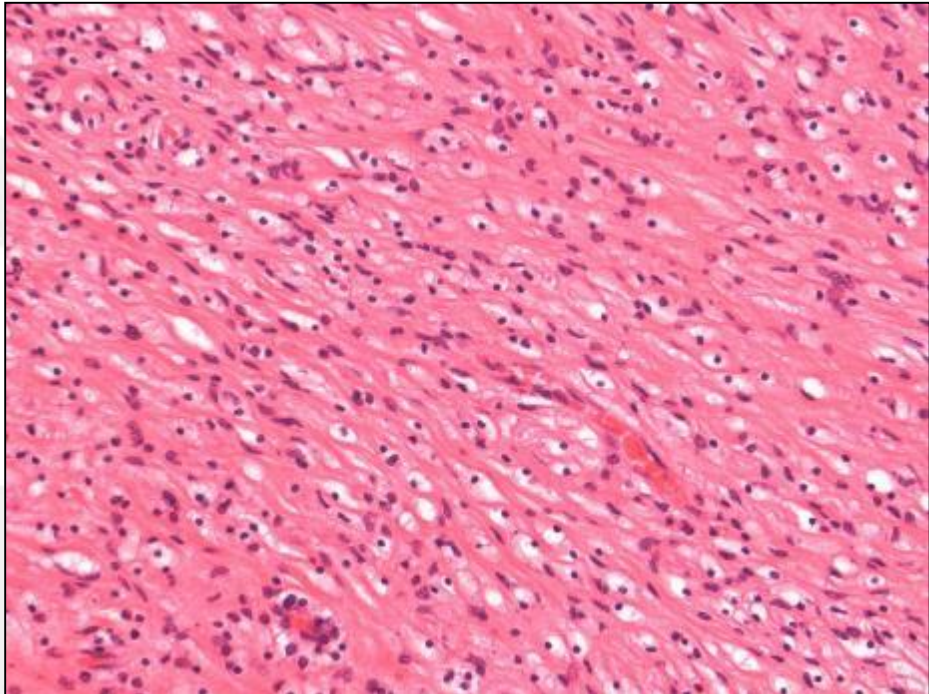
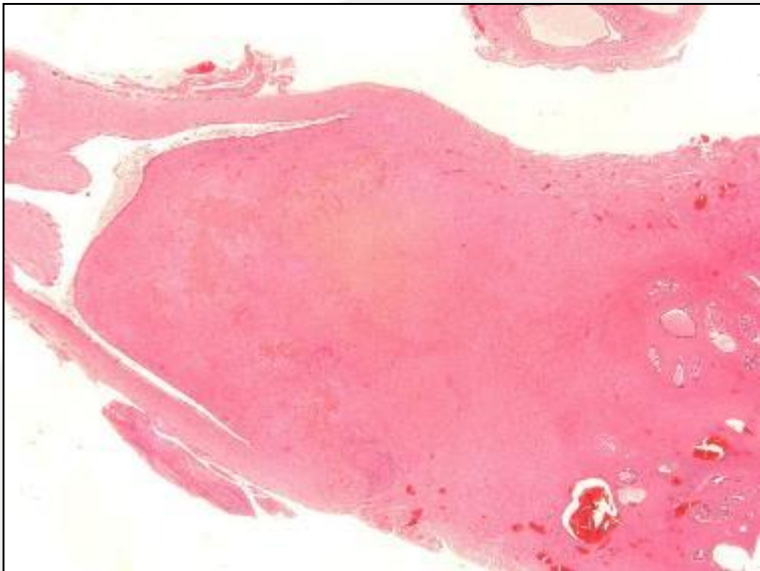
Uterus; Rat: Leiomyoma (Growth in Stromal Polyp)



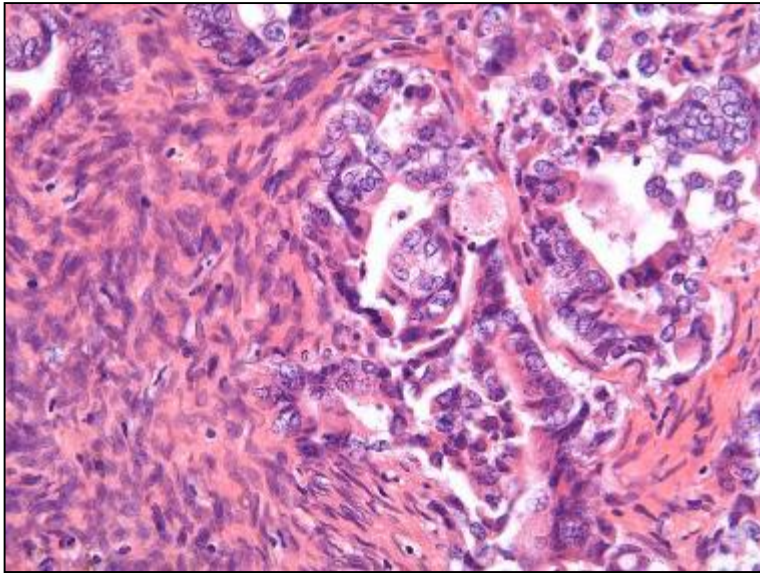
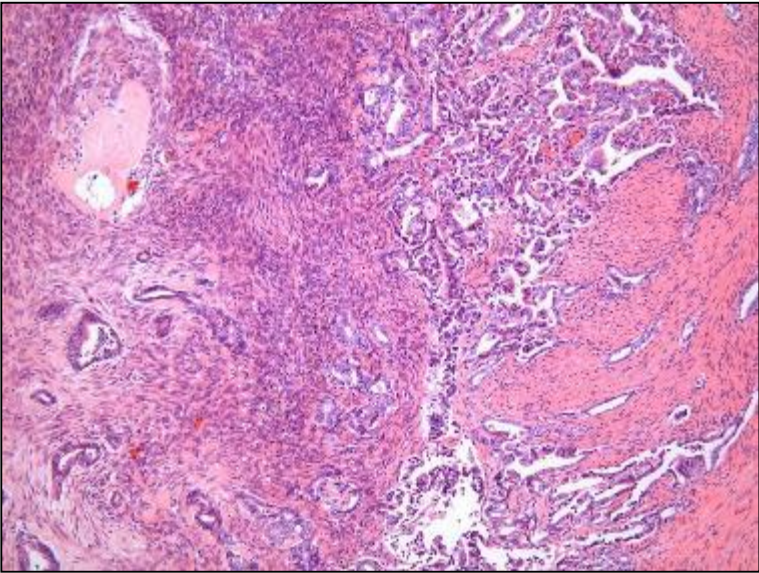
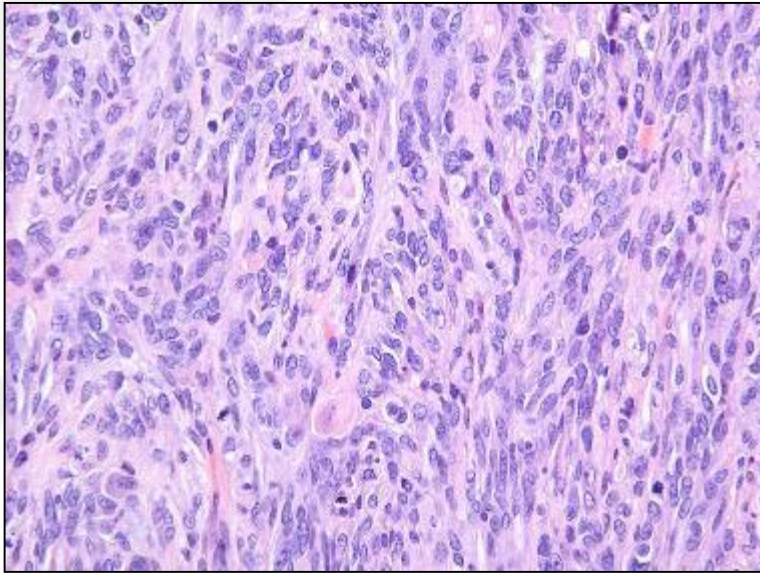
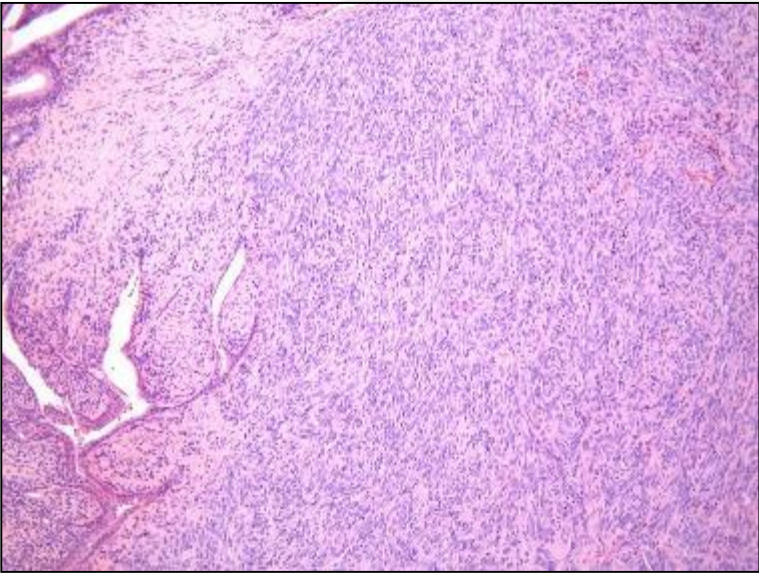
Uterus; Rat: Leiomyosarcoma



Uterus; Mouse: Leiomyosarcoma



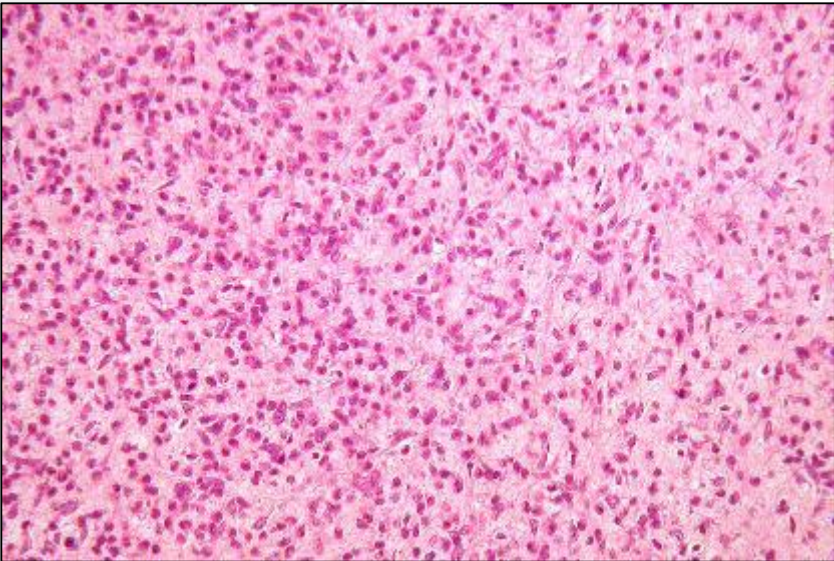
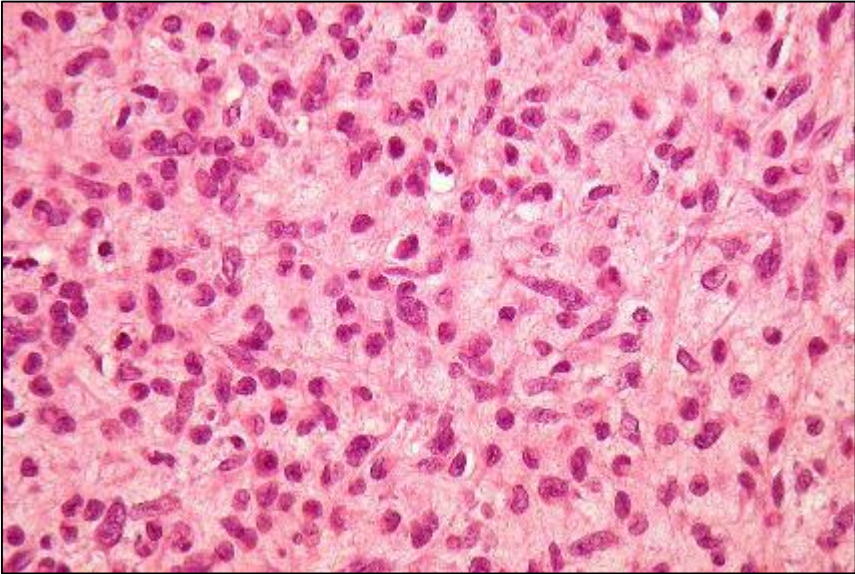
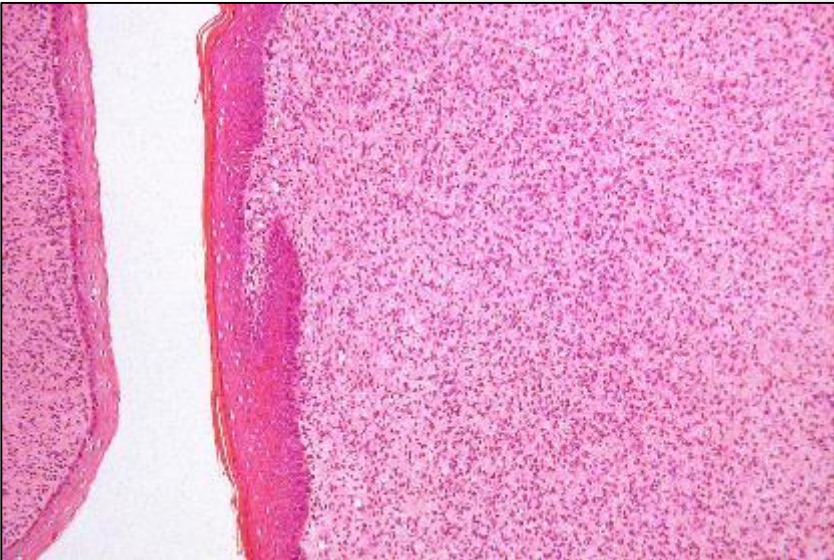
Uterus; Hamster: Leiomyosarcoma



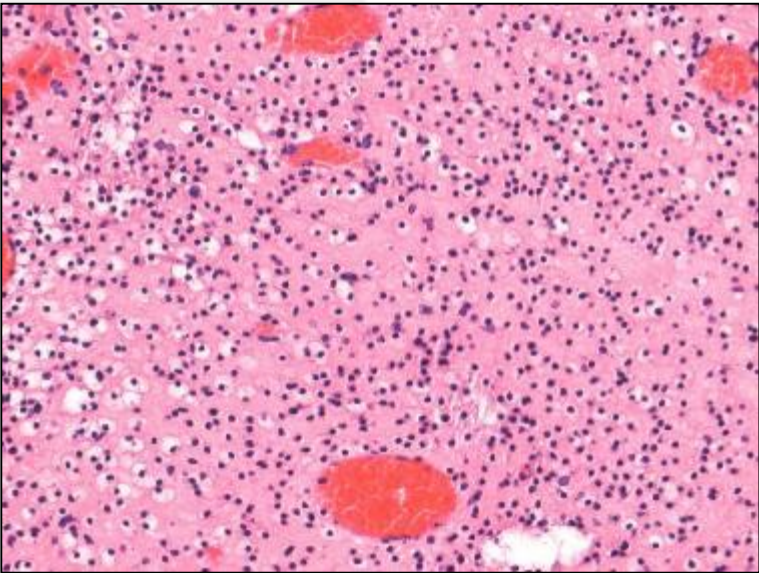
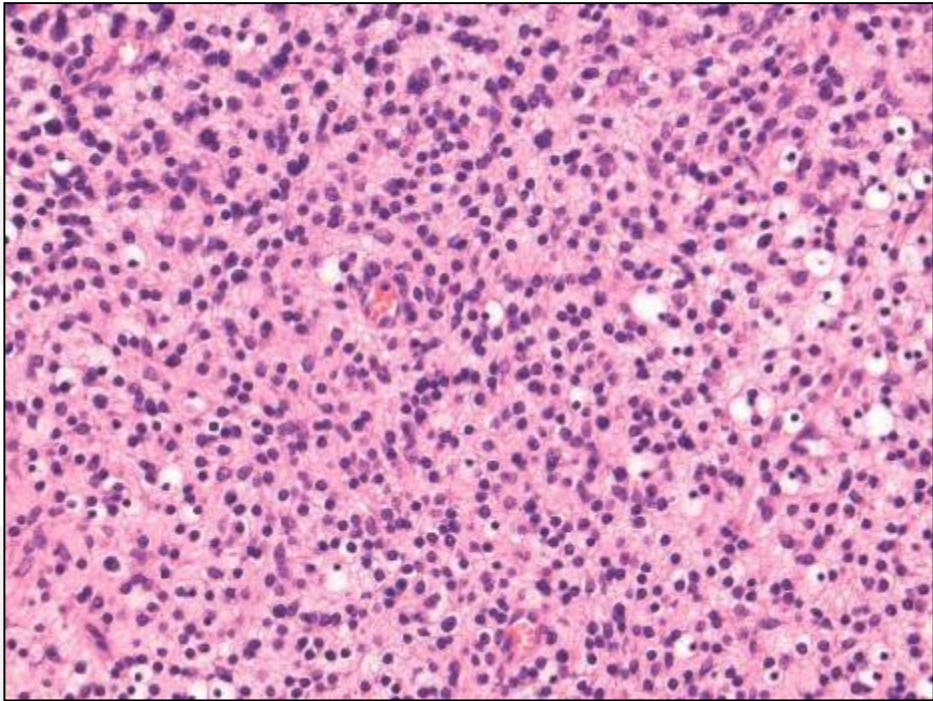
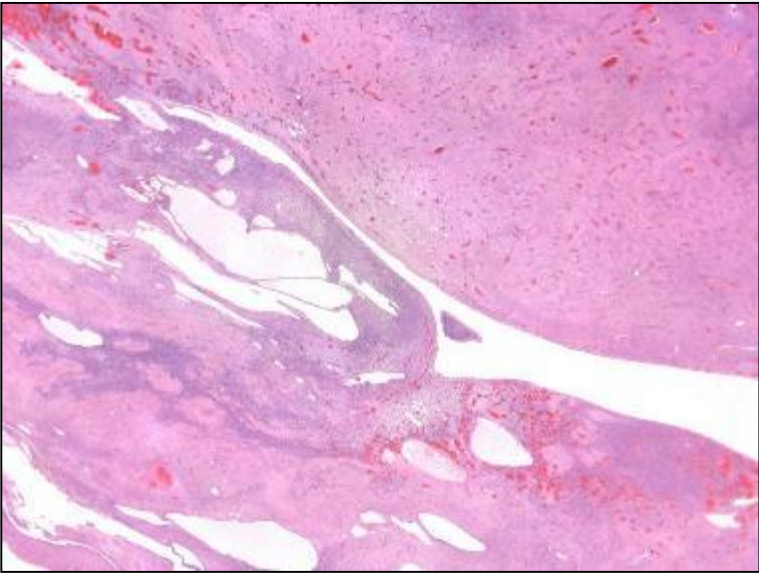
Uterus-Mesenchymal Neoplasms: Stromal Sarcoma

- **Slightly spindle-shaped plump cells**
 - **Nuclei elliptical and hyperchromatic**
 - **Cell borders indistinct**
 - **Slight pleomorphism**
 - **May arise in stromal polyps**
 - **Occasionally cystic and haemorrhagic areas**
-
- **Differential Diagnose: Stromal polyp, Schwannoma, Leiomyoma, Leiomyosarcoma, Fibroma, Fibrosarcoma**

Uterus; Rat: Stromal Sarcoma



Uterus; Mouse: Stromal Sarcoma

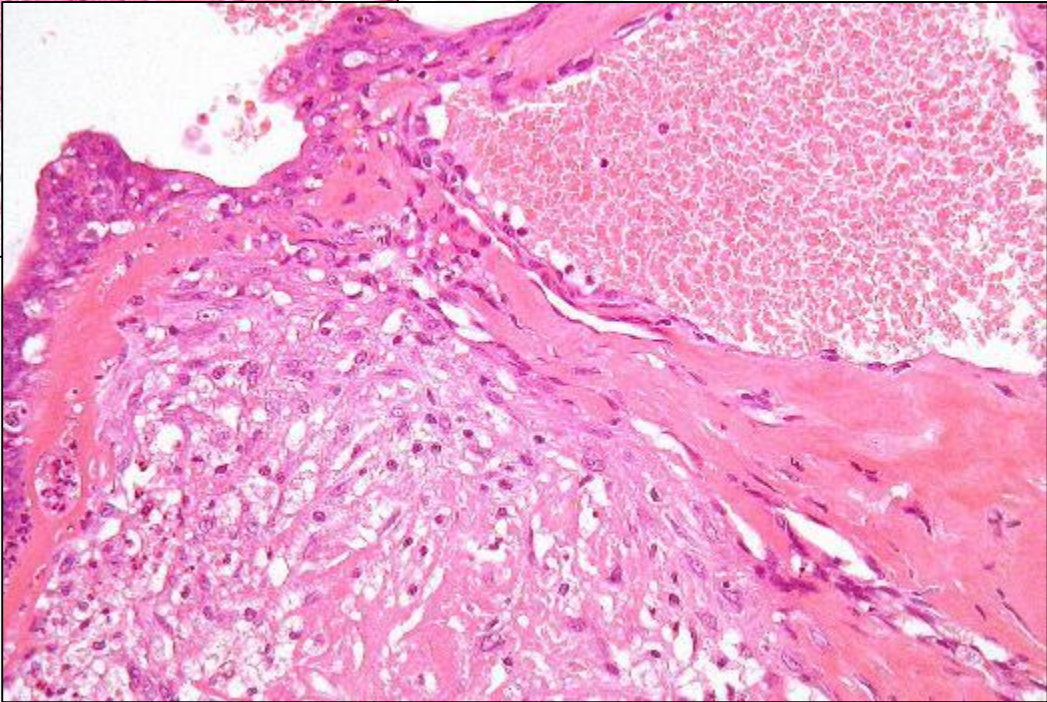
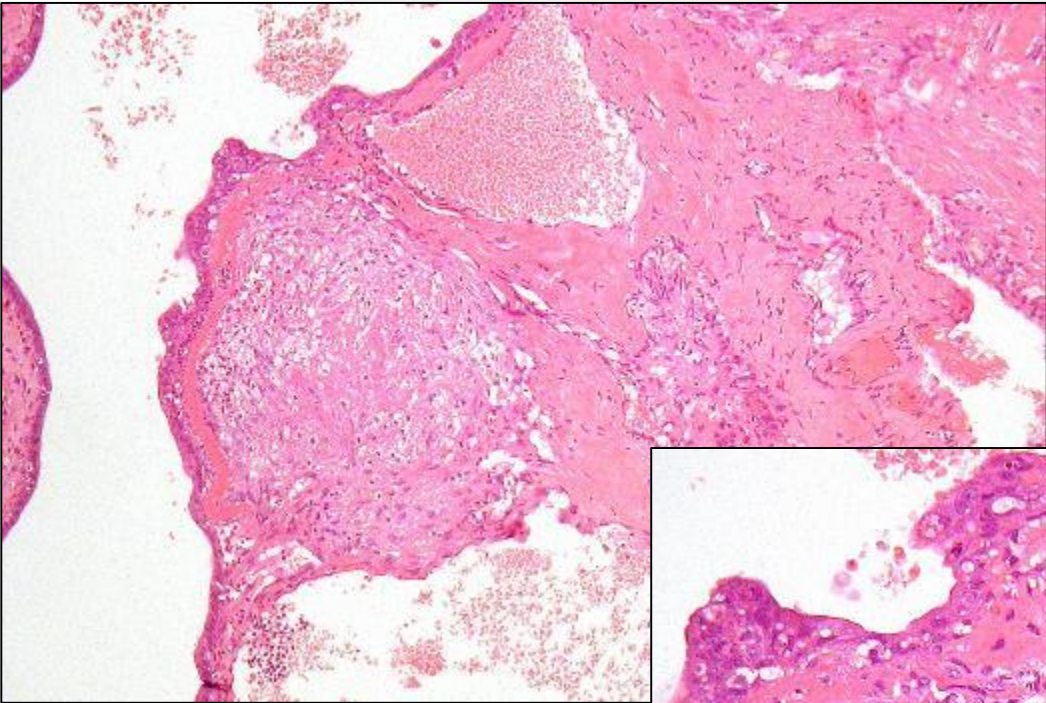


Uterus-Mesenchymal Neoplasms: Hemangioma and Hemangiosarcoma

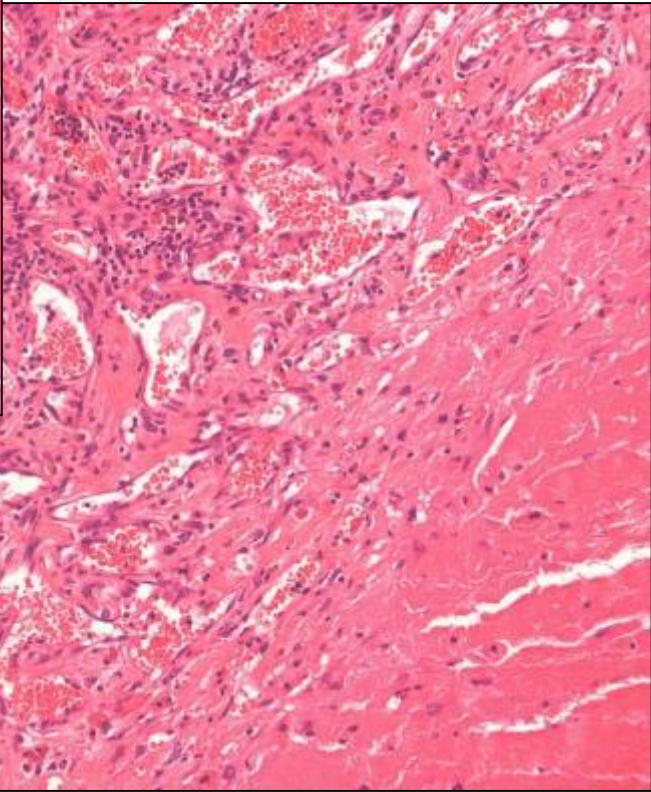
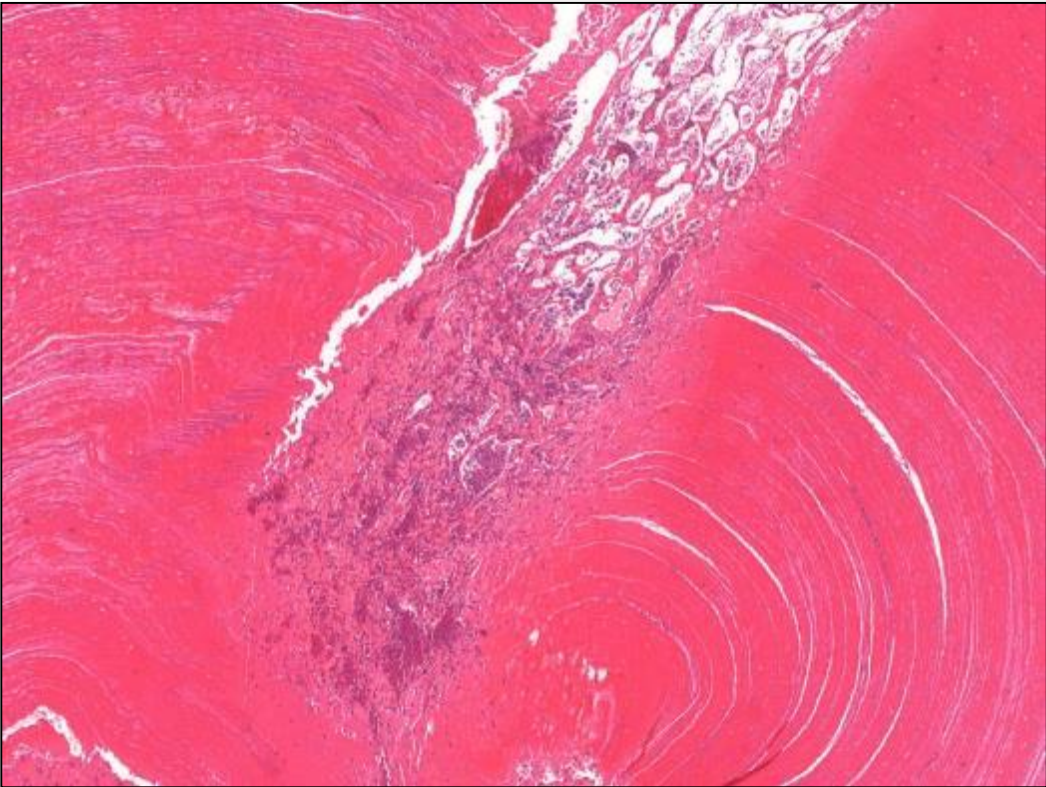
- **As described under 'Ovaries'**
- **Differential Diagnose: Stromal sarcoma and Malignant schwannoma with large necrotic areas, Torsion of polyps with hemorrhagic necrosis**

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Uterus-Mesenchymal Neoplasms: Hemangiosarcoma



Uterus; Mouse: Hemangiosarcoma

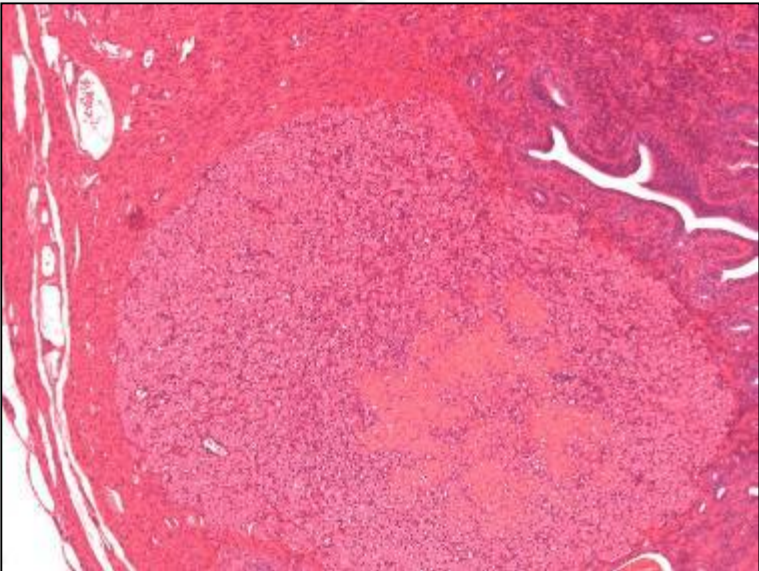
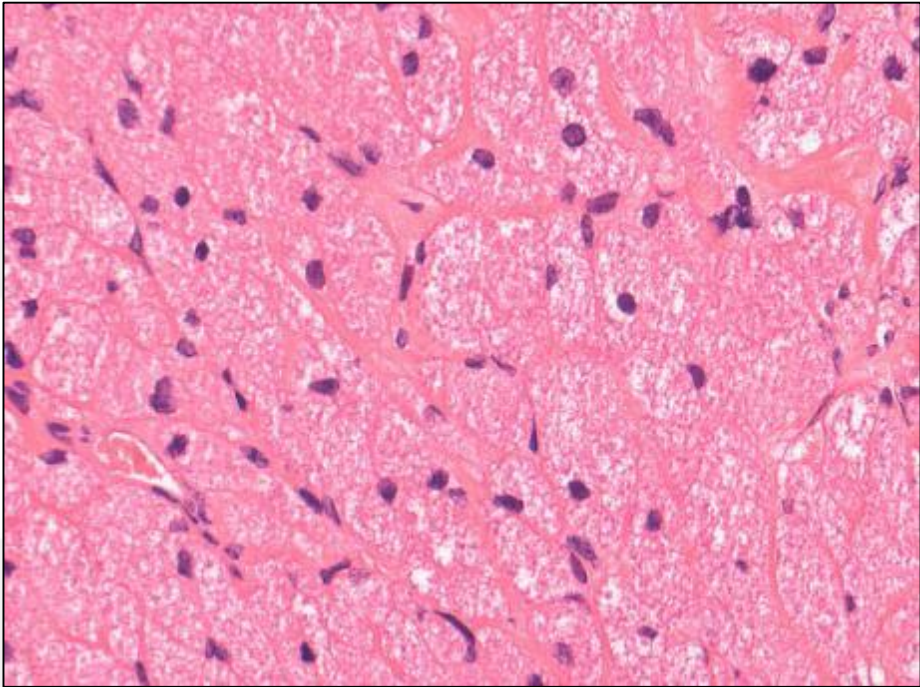
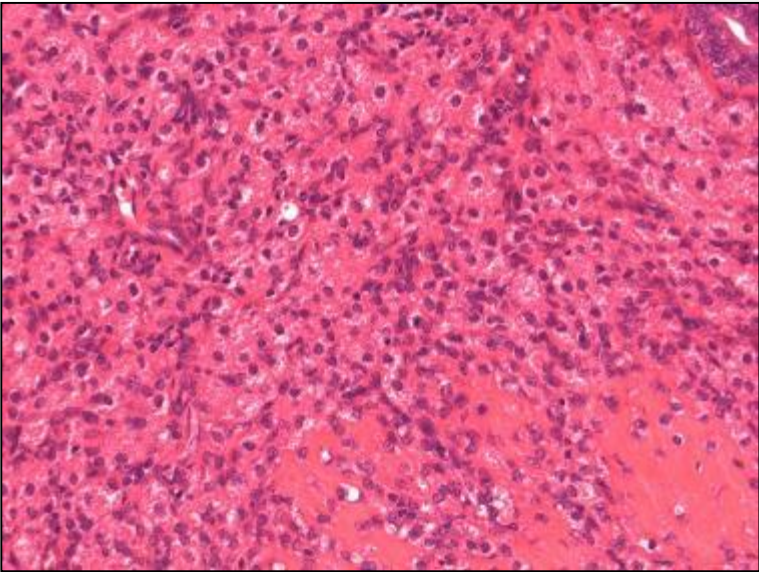


Uterus-Mesenchymal Neoplasms: Granular Cell Tumor

- **Typical nodular mass with large cells**
- **Abundant cytoplasm containing PAS-positive granules**
- **Benign and malignant tumors**

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Uterus; Mouse: Granular Cell Tumor

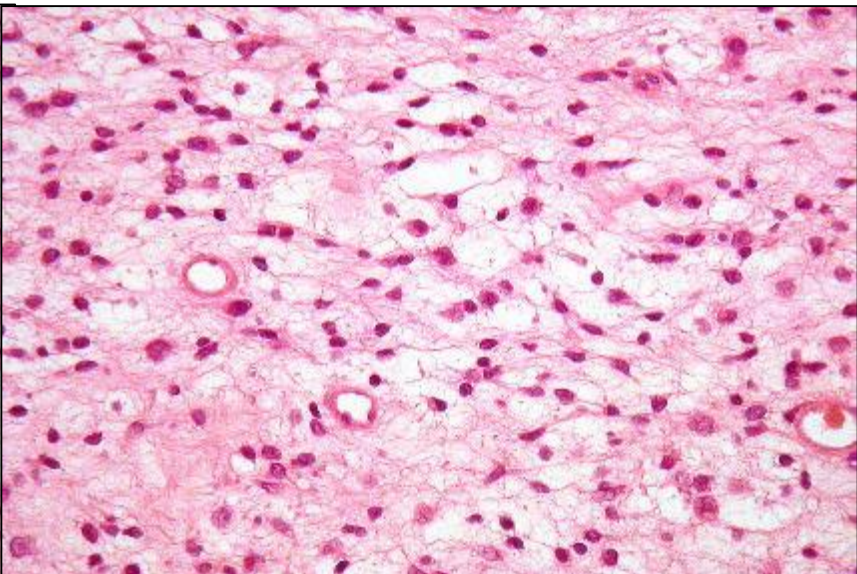
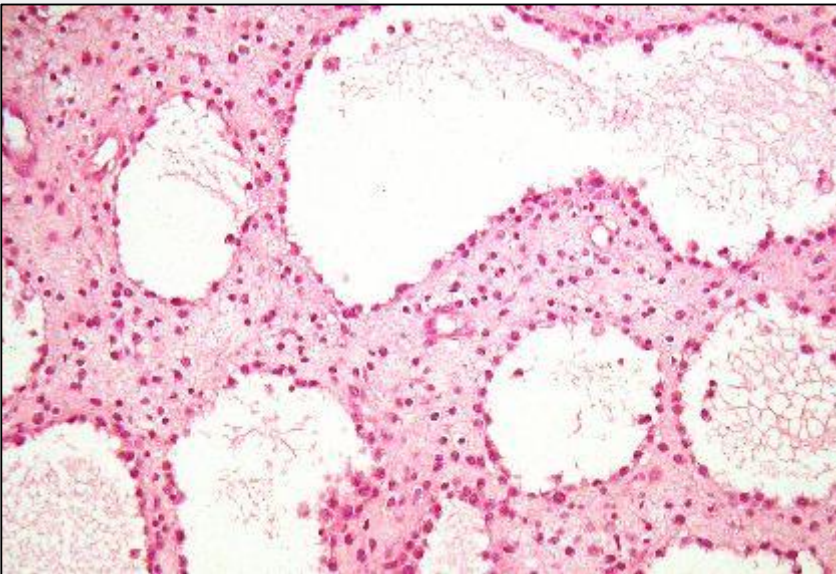
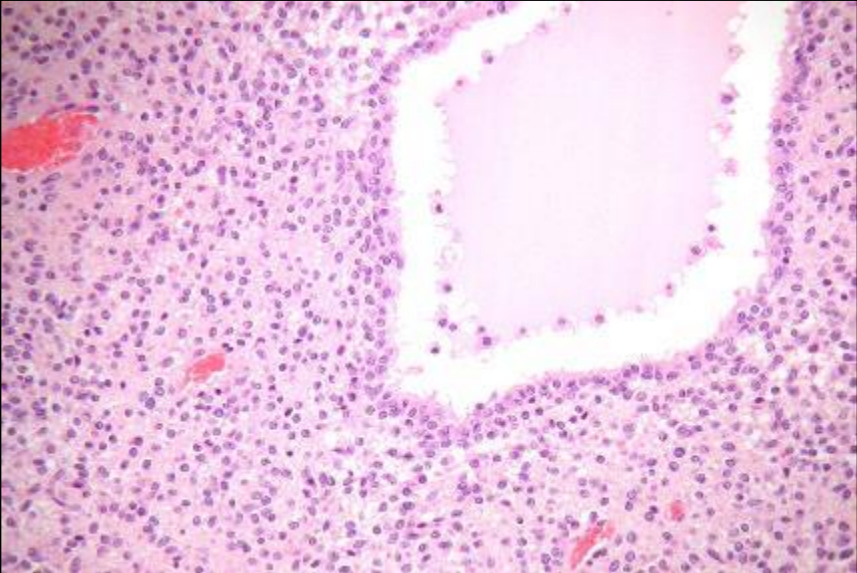
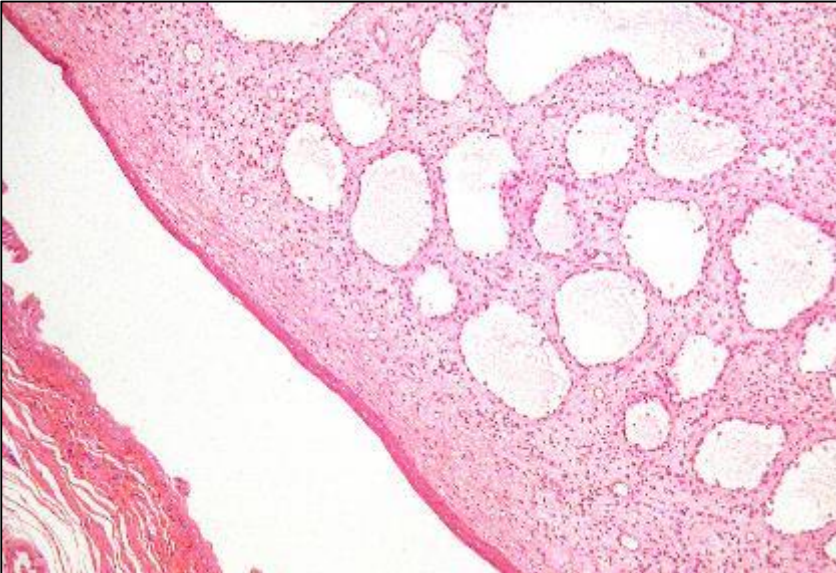


Uterus-Mesenchymal Neoplasms: Malignant Schwannoma

- **Antoni type A (Verocay-bodies with whorls)**
- **Antoni type B (cystic areas)**
- **Differential diagnose: Stromal sarcoma, Leiomyosarcoma**

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Uterus; Rat: Malignant Schwannoma



Classification: Oviduct - Recommendations

<http://www.toxpath.org/nomen/>

- **Adenoma (*papillary*)**
- **Adenocarcinoma**
- **Carcinoma, yolk sac**
- **Choriocarcinoma**

Classification: Vagina - Recommendations

<http://www.toxpath.org/nomen/>

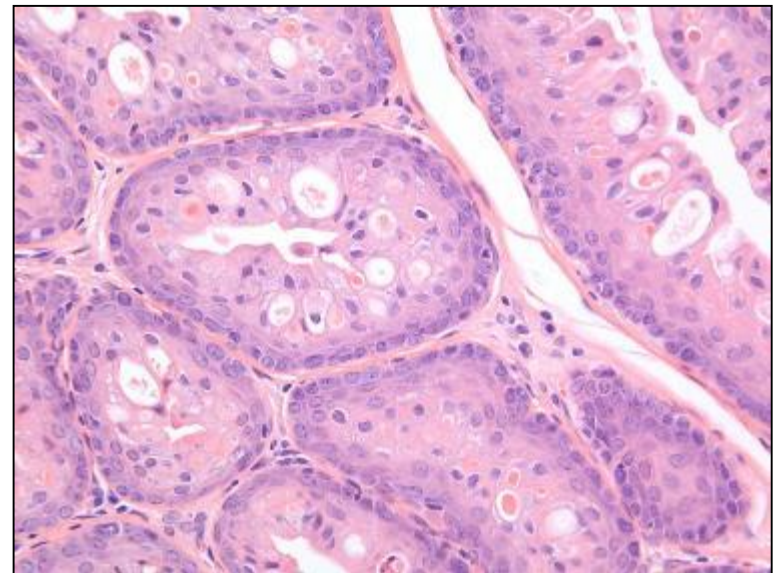
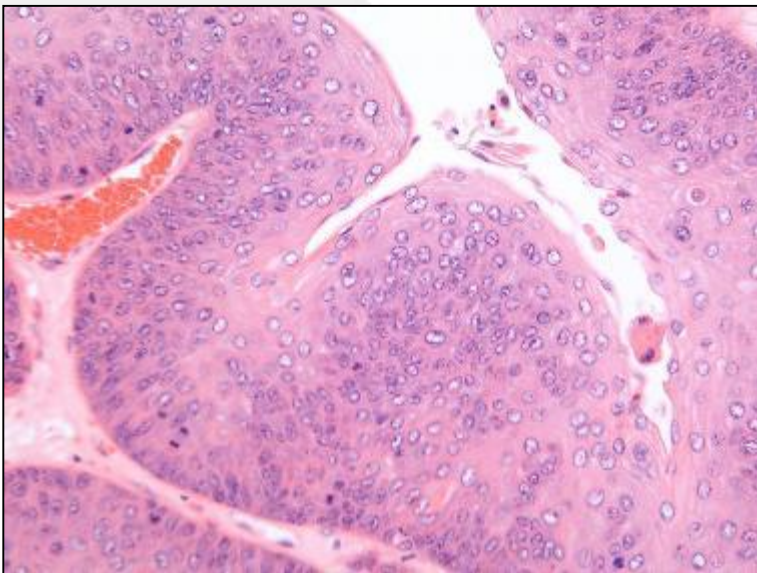
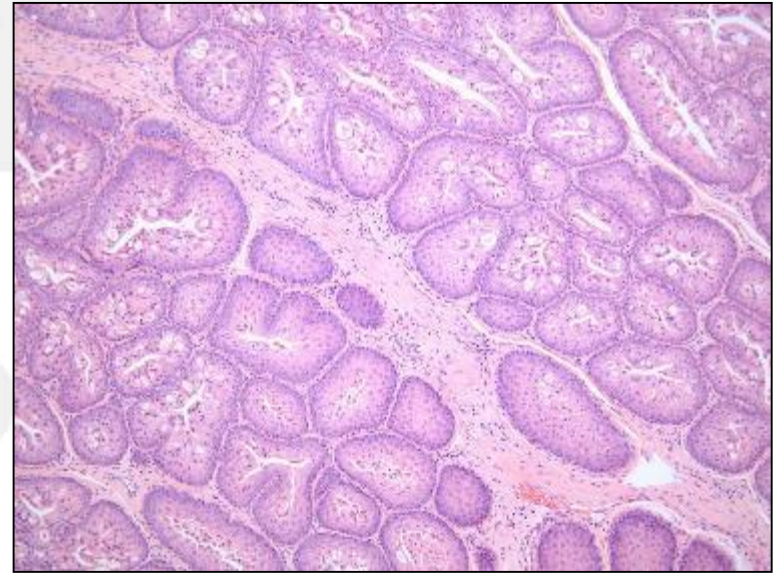
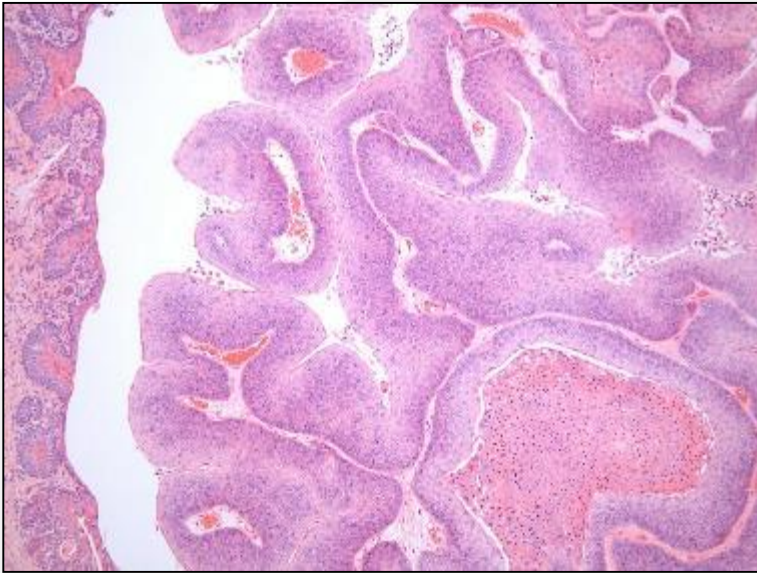
- **Hyperplasia, squamous cell (*keratinizing, non-keratinizing*)**
- **Papilloma, squamous cell (*keratinizing, non-keratinizing*)**
- **Carcinoma, squamous cell (*keratinizing, non-keratinizing*)**
- **Keratoacanthoma**
- **Polyp, vaginal**

Classification: Clitoral Gland - Recommendations

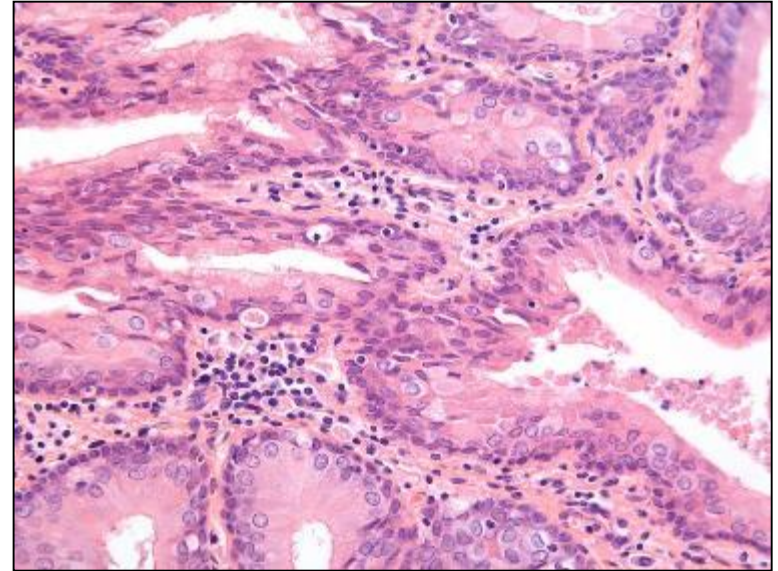
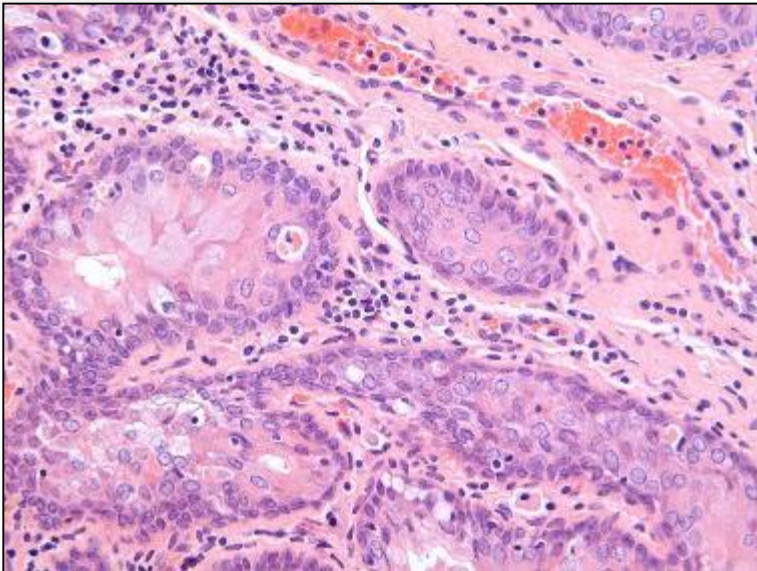
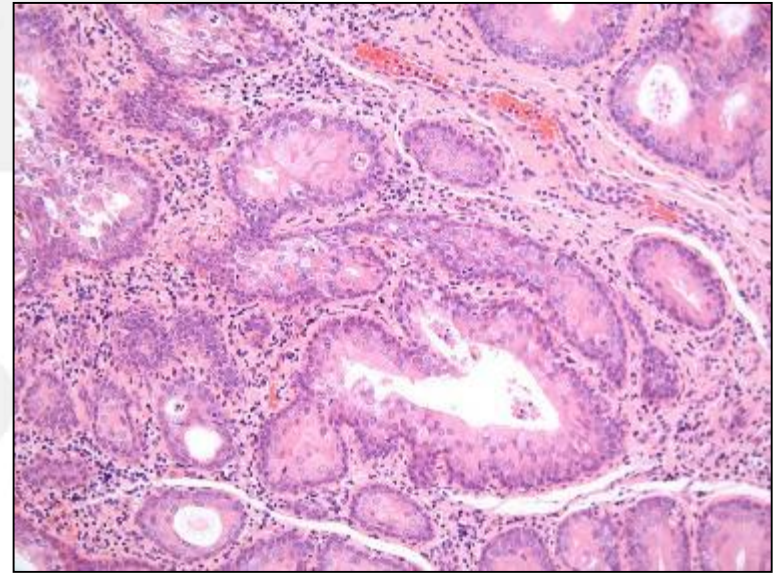
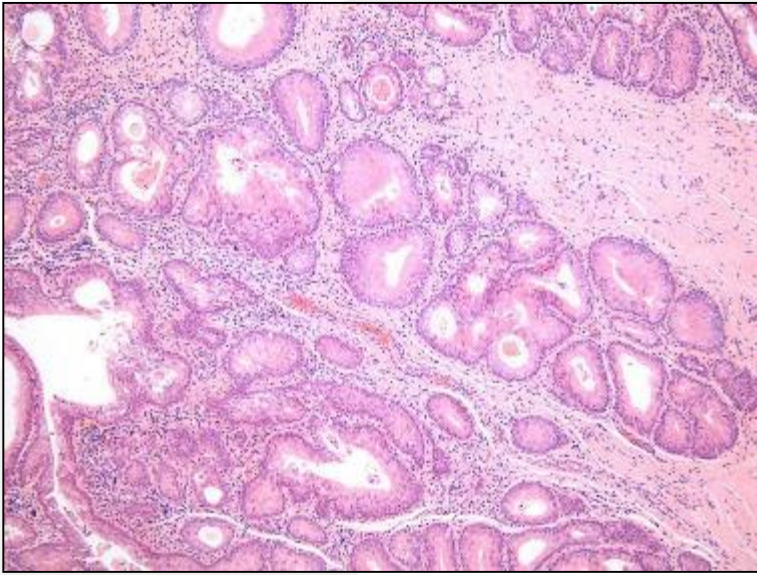
<http://www.toxpath.org/nomen/>

- **Hyperplasia, acinar cell**
- **Hyperplasia, squamous cell**
- **Adenoma (*cystic, papillary, solid*)**
- **Papilloma, squamous cell (*keratinizing, non-keratinizing*)**
- **Adenocarcinoma (*cystic, papillary, solid*)**
- **Carcinoma, squamous cell (*keratinizing, non-keratinizing*)**
- **Tumor, basal cell, benign and malignant**

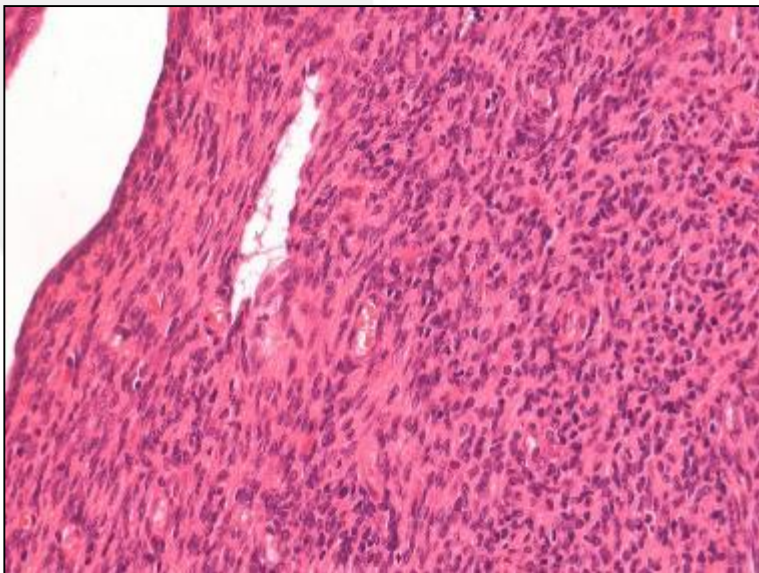
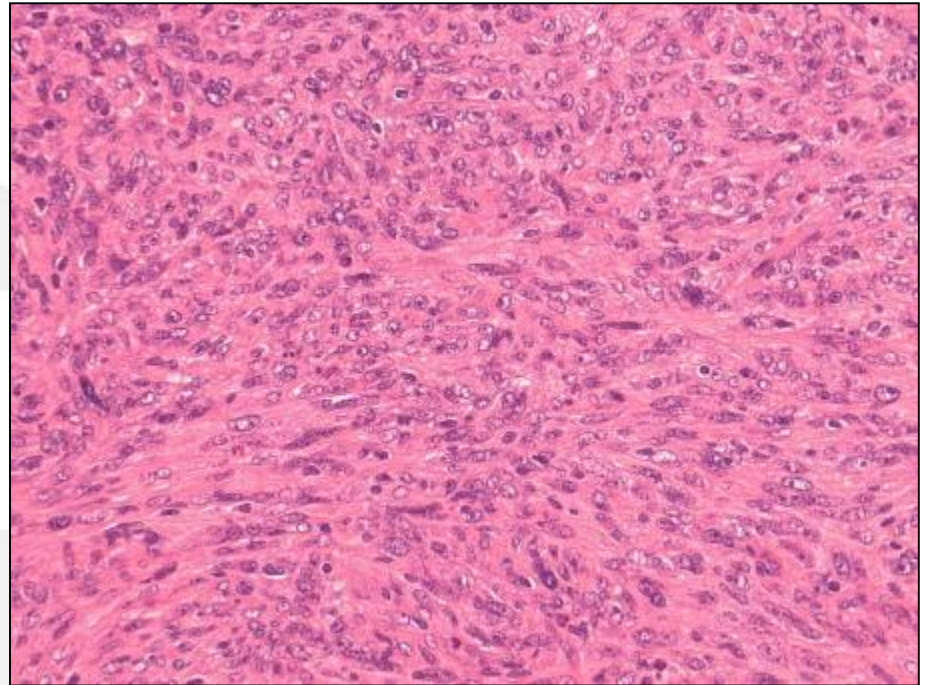
Vagina, Hamster: Papilloma



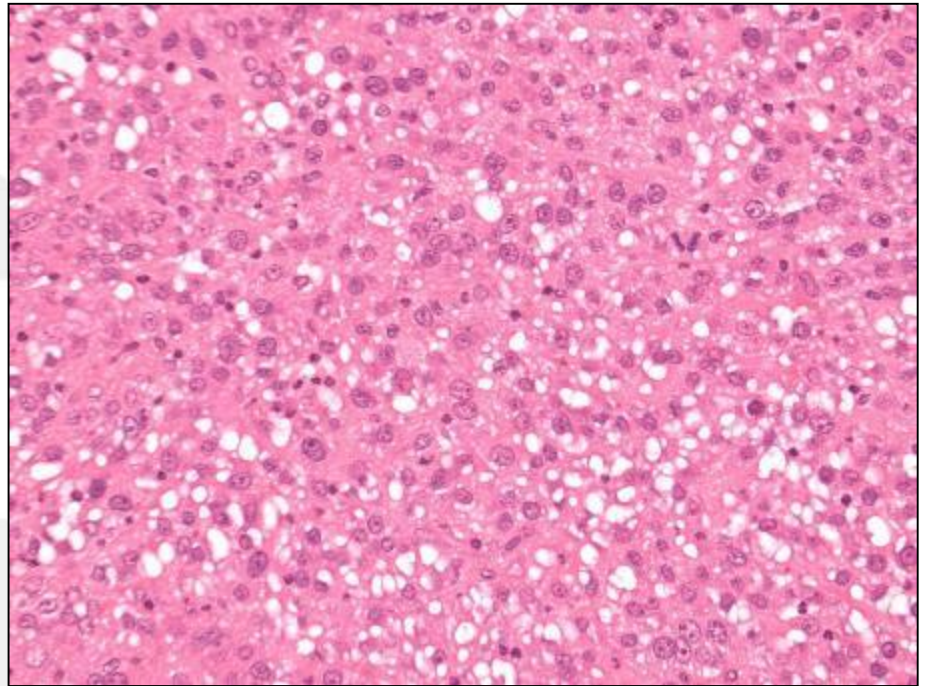
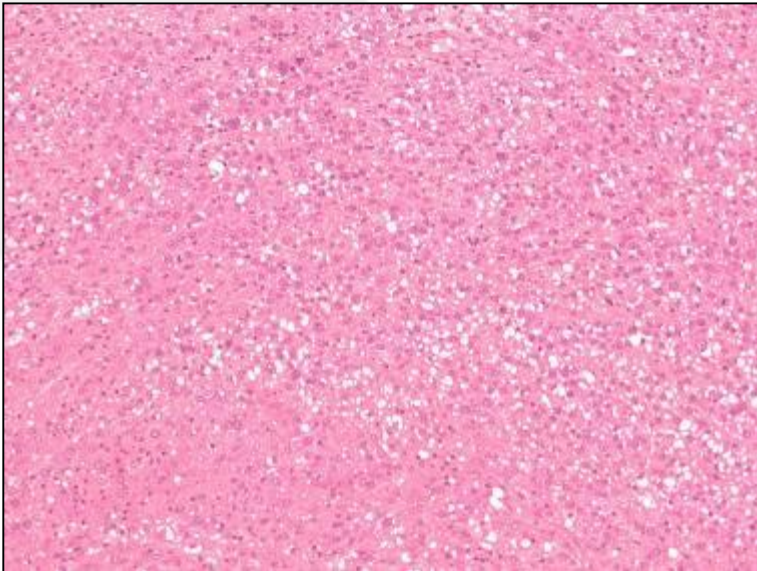
Vagina, Hamster: Squamous Carcinoma



Vagina, Mouse: Leiomyoma



Vagina, Mouse: Liposarcoma



Classification: Mammary Gland - Recommendations

<http://www.toxpath.org/nomen/>

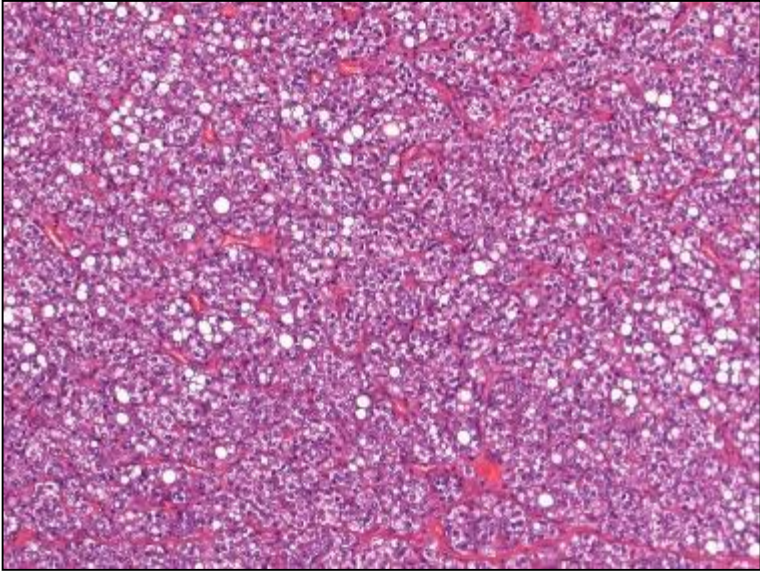
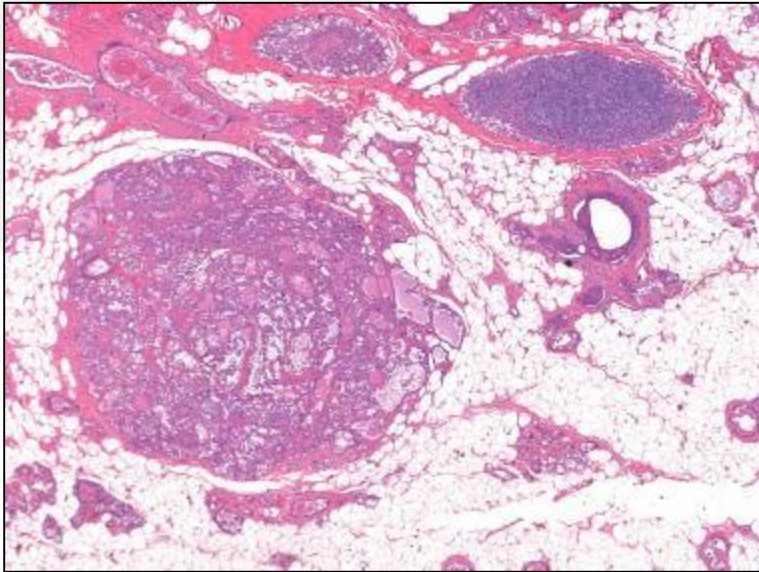
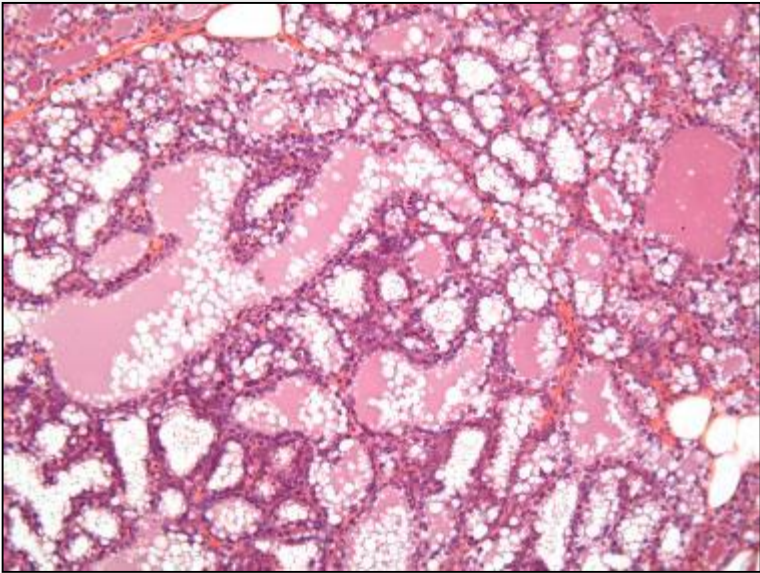
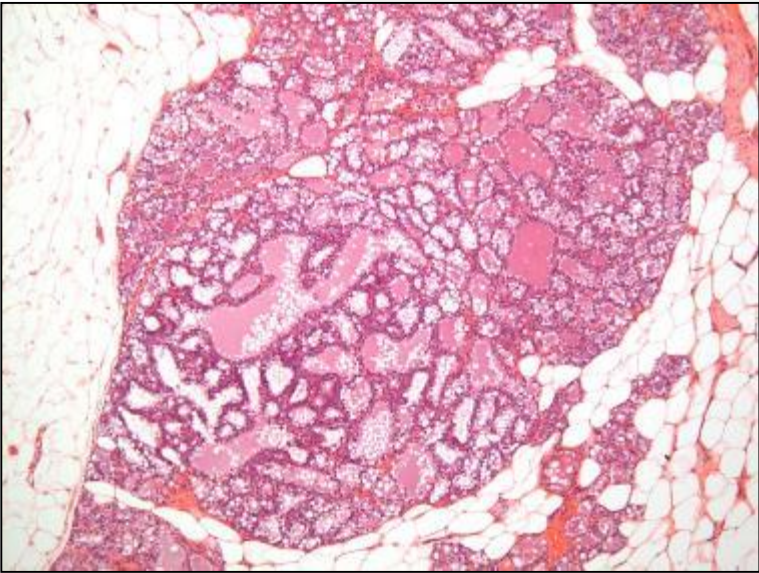
- Hyperplasia (*focal with atypia, lobular, ductal*)
- Adenoma (*alveolar, cystic, papillar, tubular*)
- Fibroadenoma (*adenomatous, fibromatous*) (B)
- Adenocarcinoma (*alveolar, comedo, cribriform, cystic, medullary, papillary, scirrhous, solid, spindle cell, tubular*)
- Adenocarcinoma arising in fibroadenoma
- Tumor, mixed, benign (*adenolipoma type*) and malignant (*carcinosarcoma type*)

Mammary Gland-Epithelial Neoplasms: Adenoma

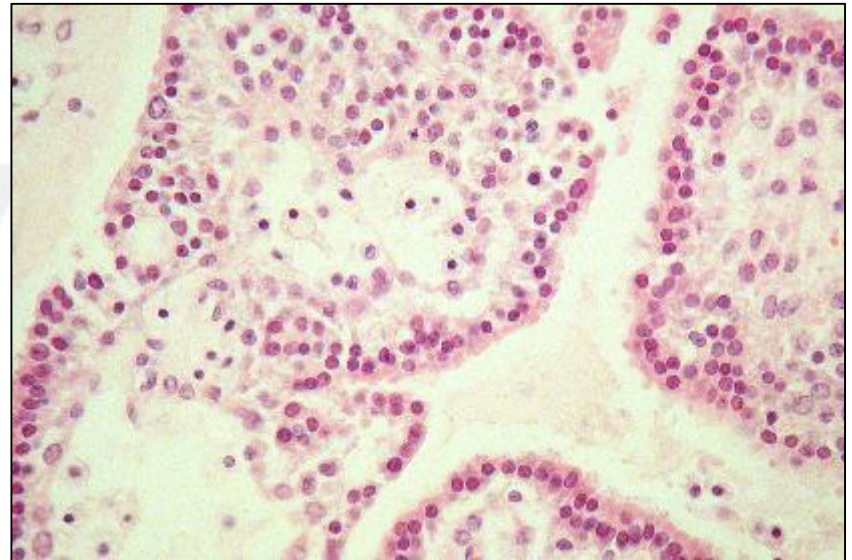
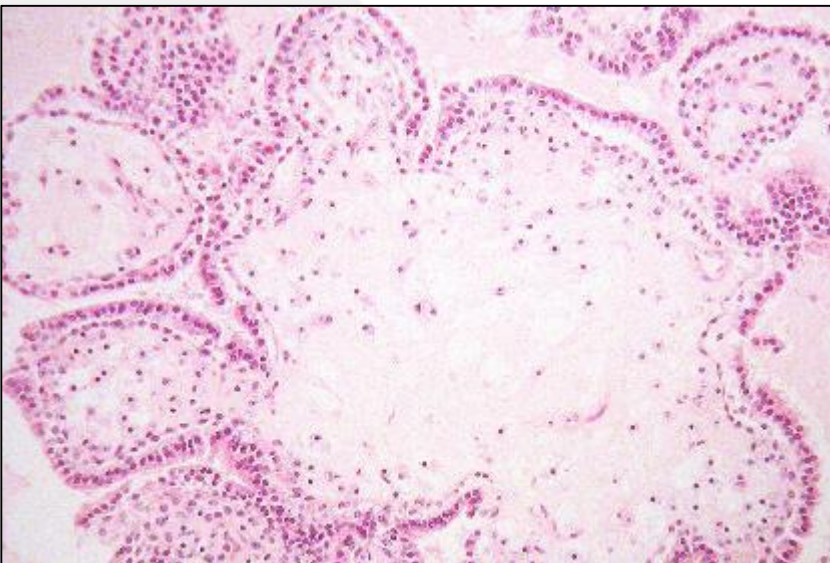
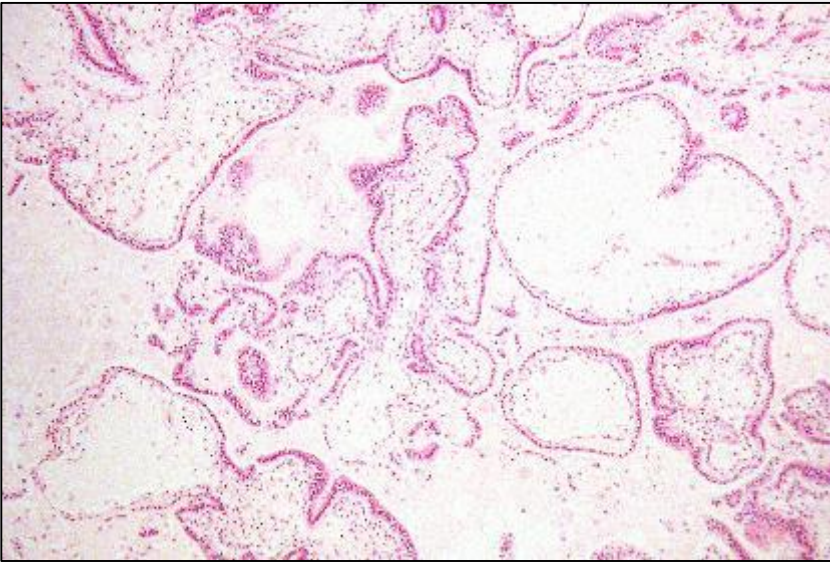
- **Well demarcated with preserved regular structure**
- **Cells well differentiated**
- **Mitosis may be present**
- **Differential Diagnose: Adenocarcinoma**

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Mammary Gland, Rat: Adenoma



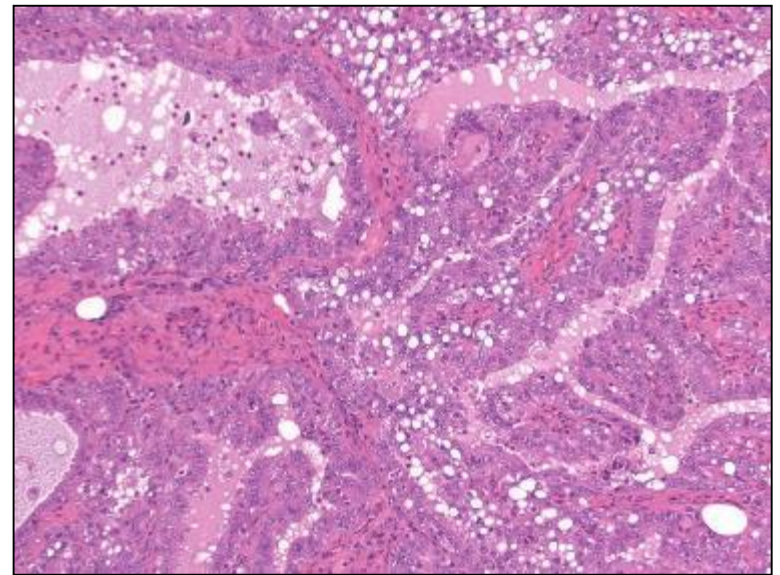
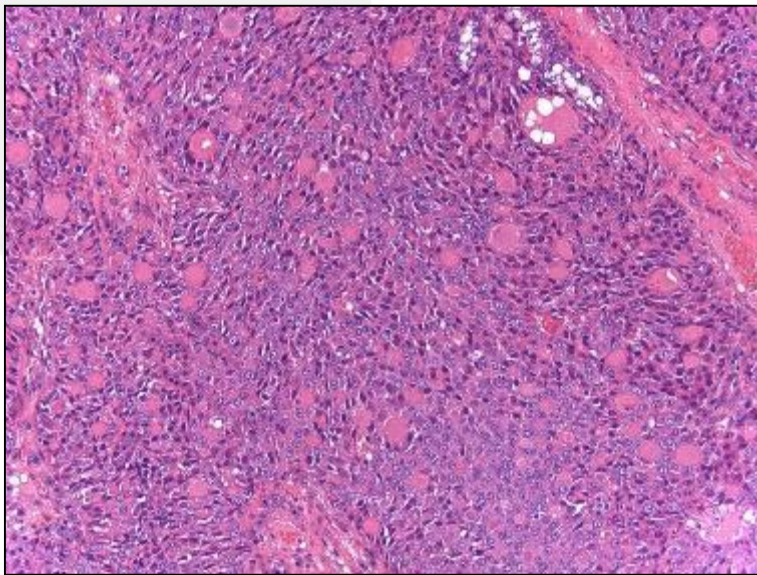
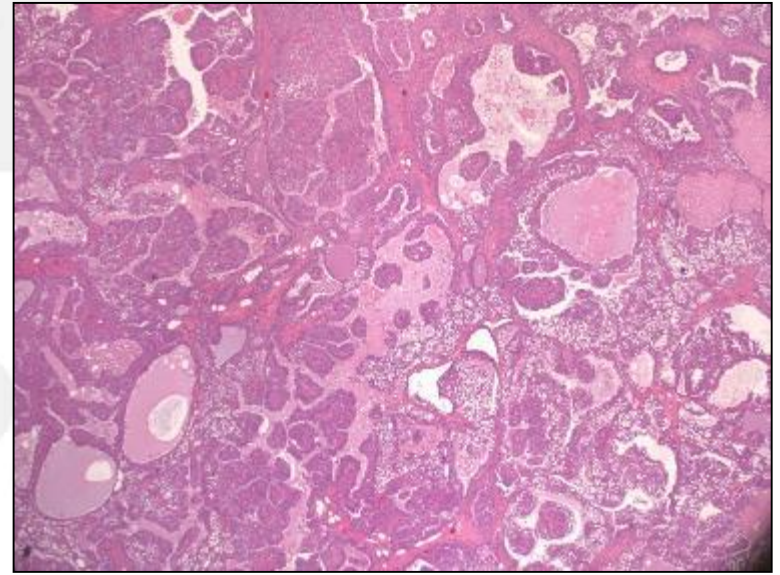
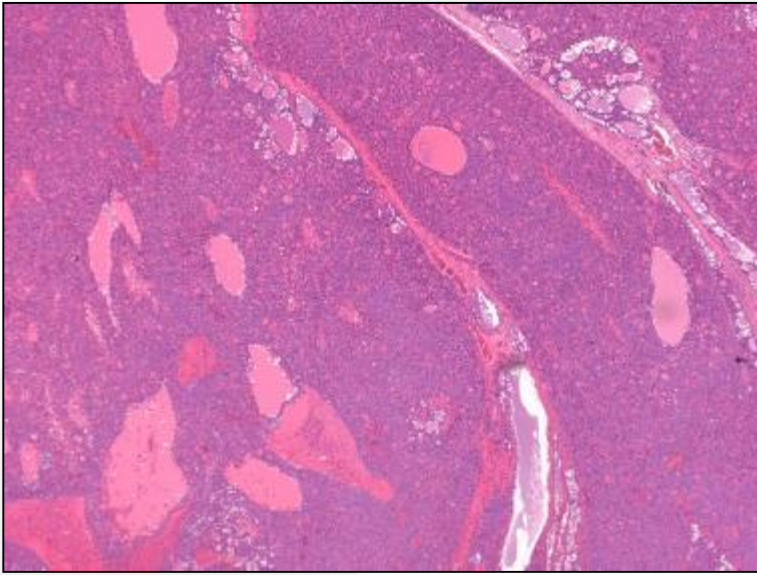
Mammary Gland, Rat: Cystadenoma



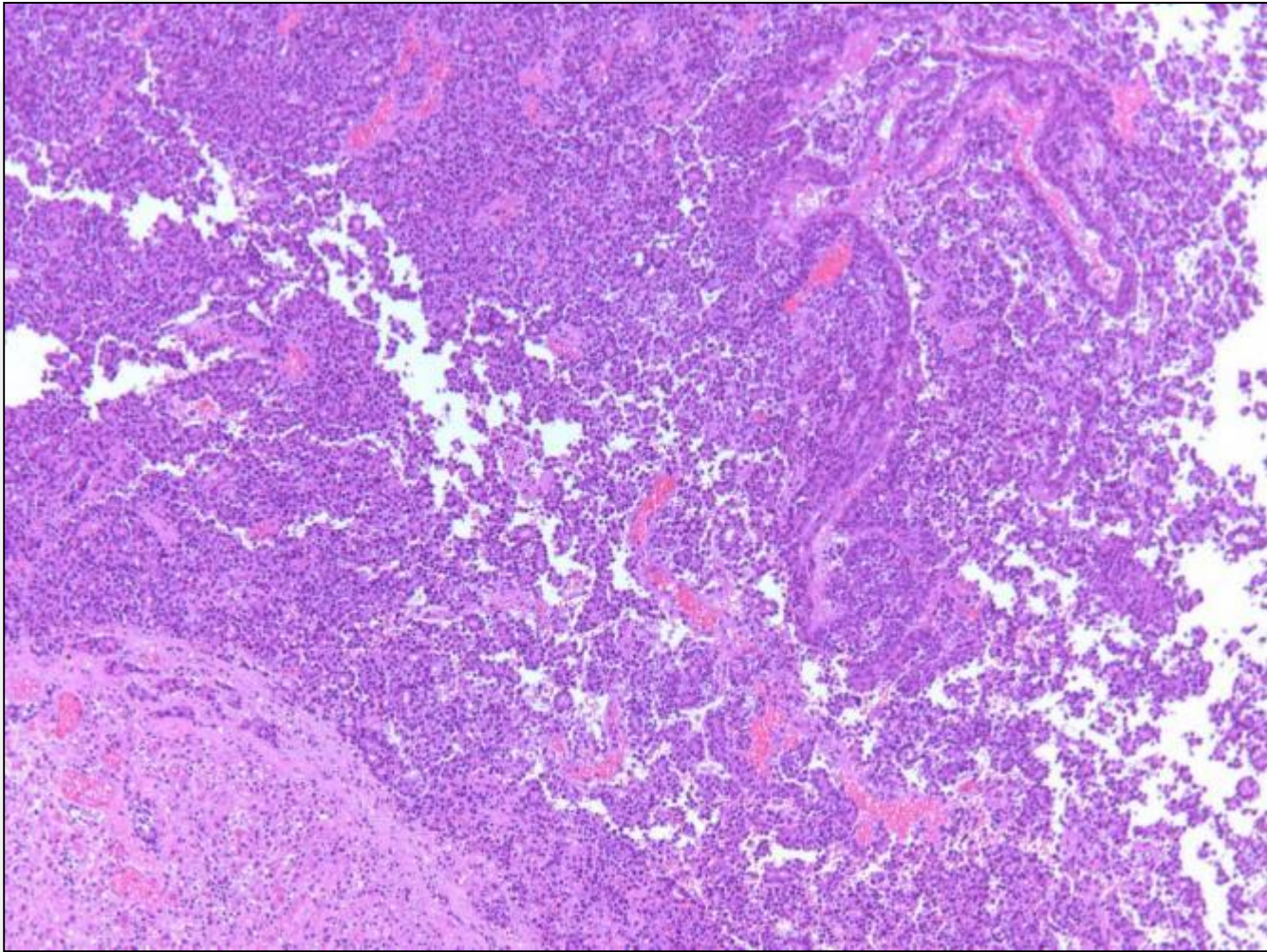
Mammary Gland-Epithelial Neoplasms: Adenocarcinoma

- **Occasionally well demarcated**
 - **Do preserved regular structure**
 - **Often different growth patterns in single neoplasm**
 - **Necrosis, hemorrhage, stromal reaction**
 - **Intracystic papillary patterns**
 - **Multilayered cell sheets**
 - **Intraductal type: Attention!**
-
- **Differential Diagnose: Adenoacanthoma, Adenoma**

Mammary Gland, Rat: Adenocarcinoma



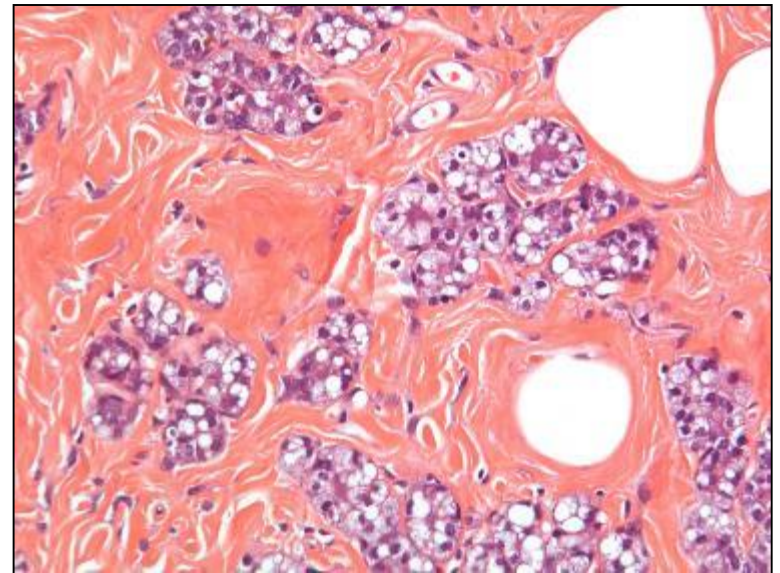
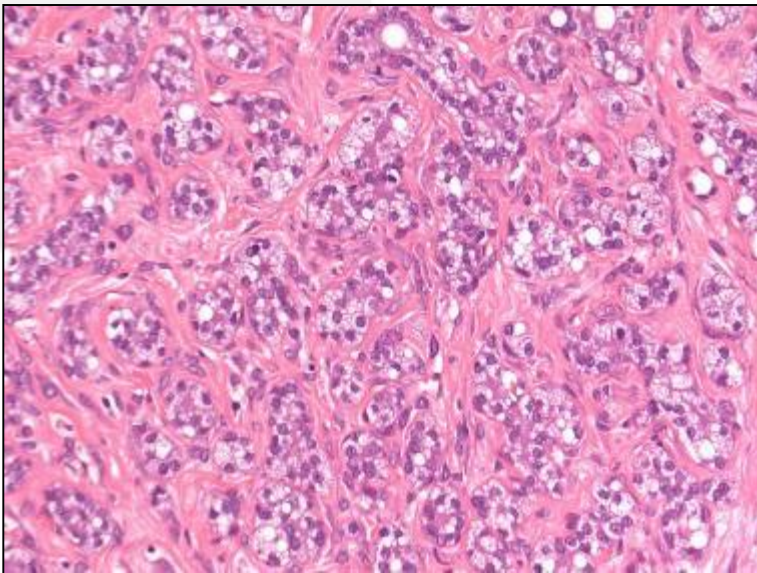
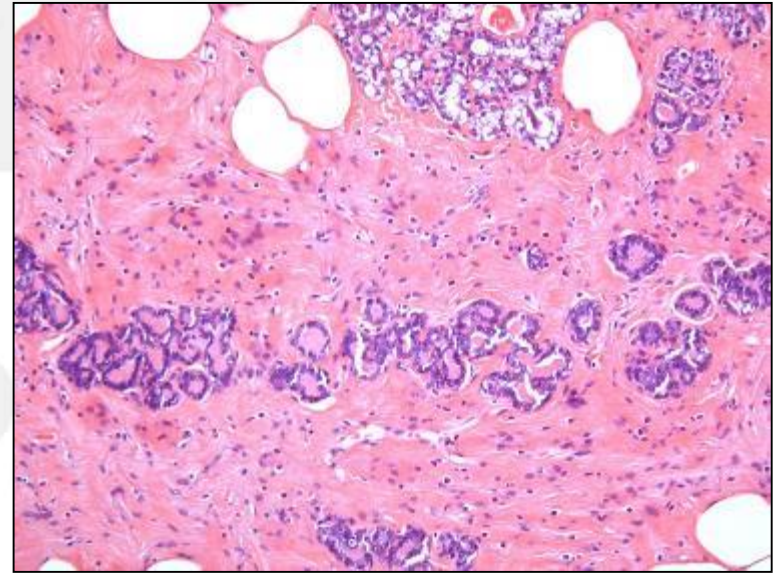
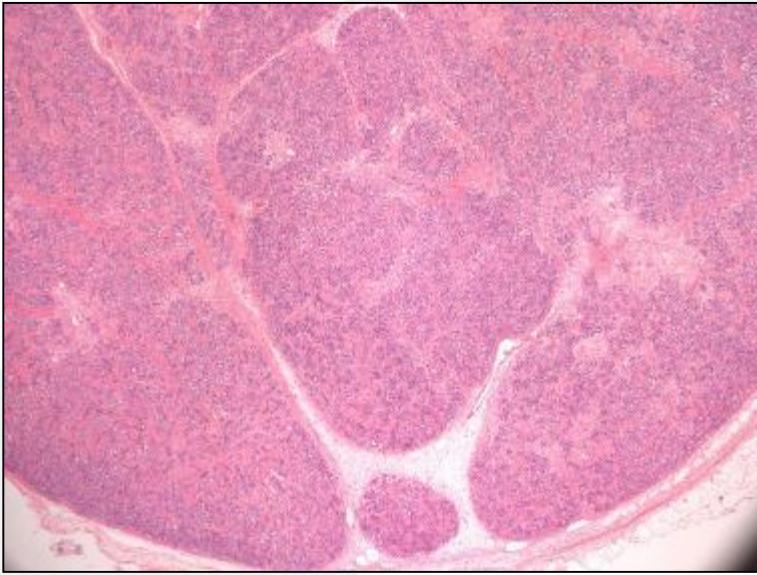
Mammary Gland, Mouse: Adenocarcinoma



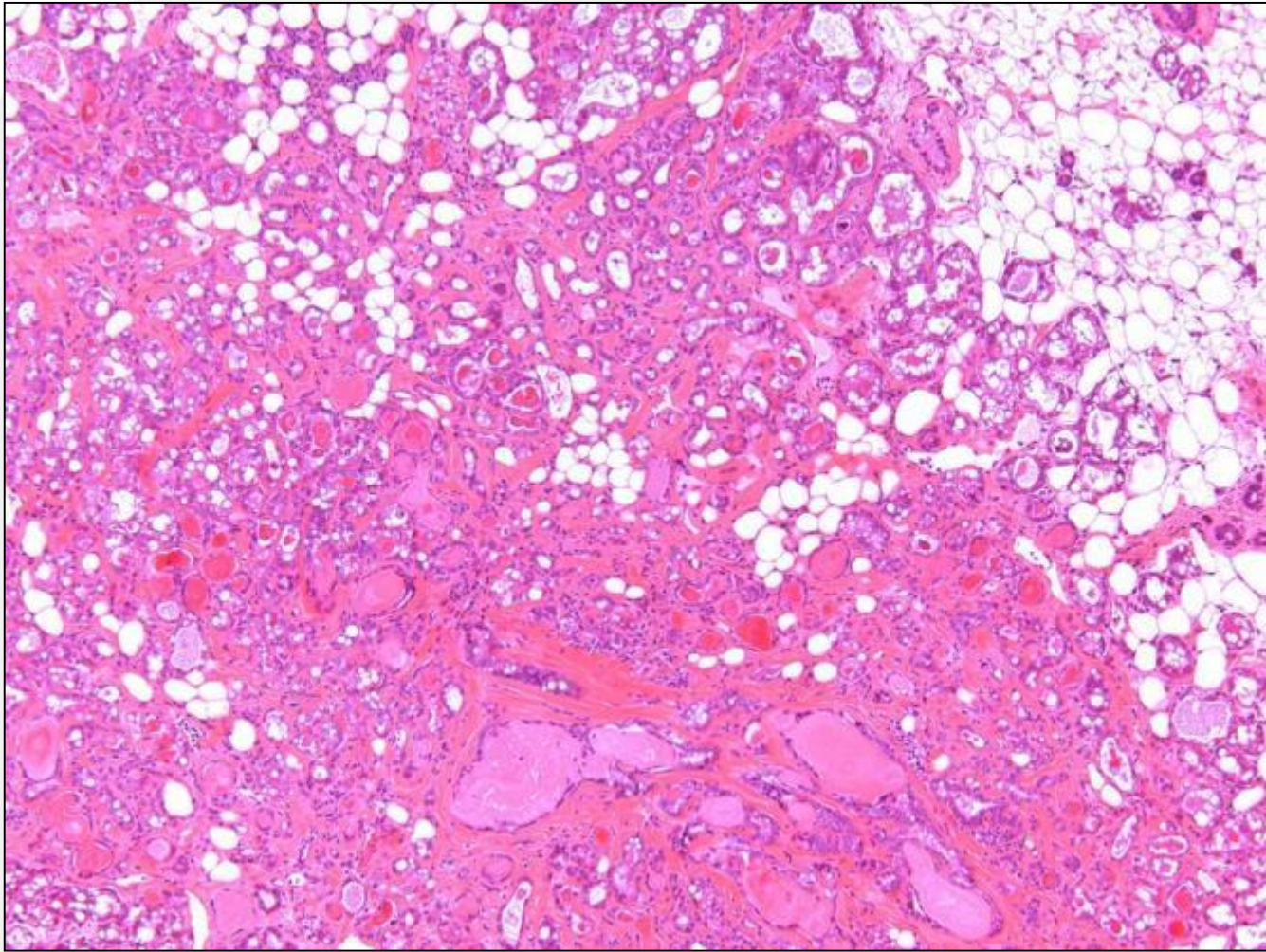
Mammary Gland-Epithelial Neoplasms: Adenofibroma

- **Glandular epithelium and fibrous connective tissue (amounts may be very variable between single neoplasms)**
- **Epithelium often forms ducts, nests, sheets, alveoli or small cysts**
- **Mitosis may be present**
- **Focal areas of atypia or pleomorphism may be present**
- **Differential Diagnose: Adenoma, Adenocarcinoma**

Mammary Gland, Rat: Adenofibroma



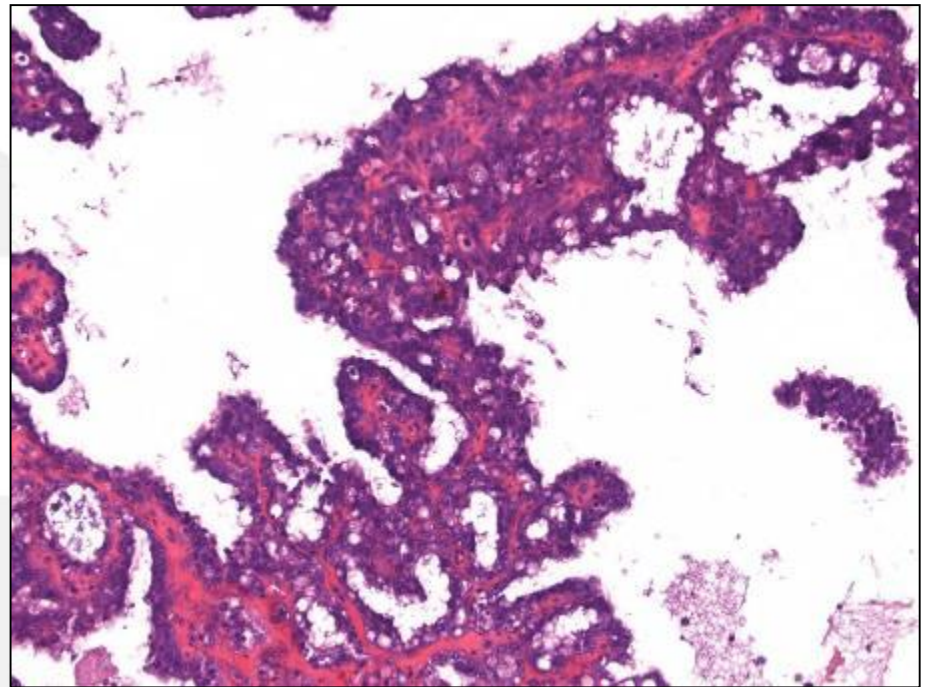
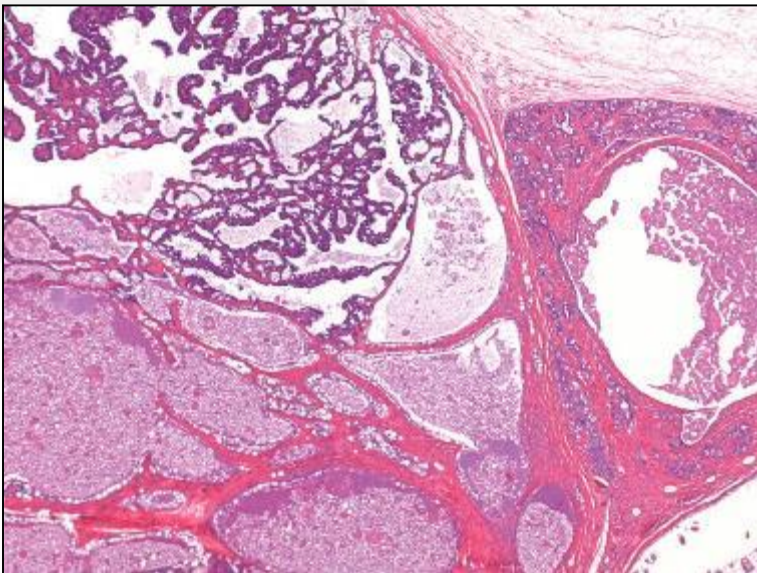
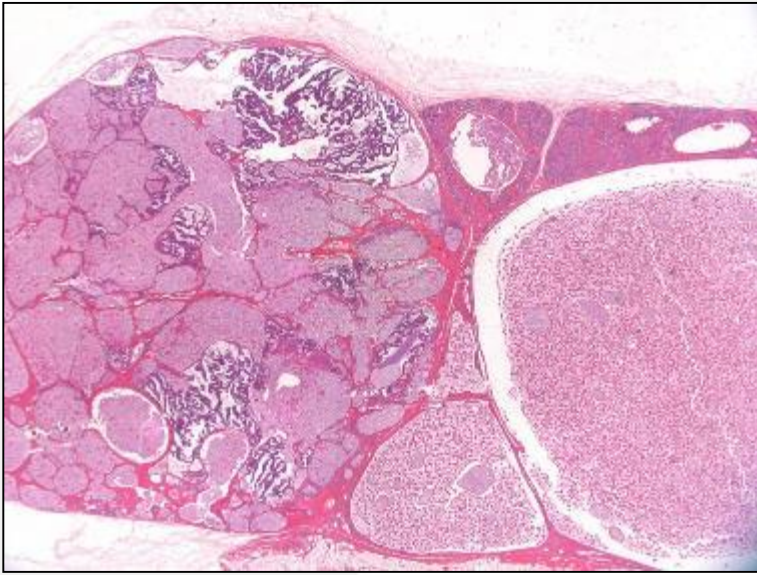
Mammary Gland, Mouse: Adenofibroma



- **Two distinct tumor types**
- **Differential Diagnose: Adenoacanthoma, Adenoma Fibroadenoma, Adenocarcinoma**

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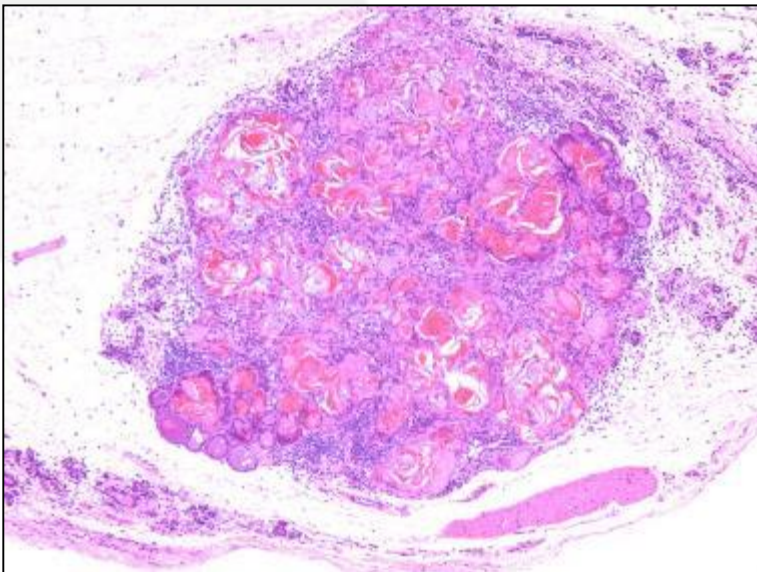
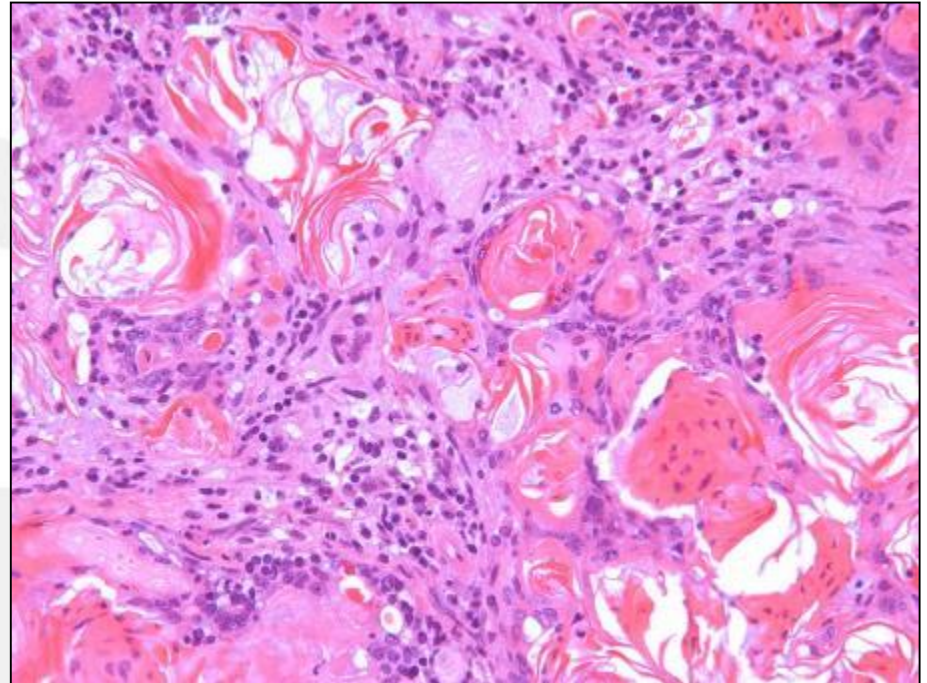
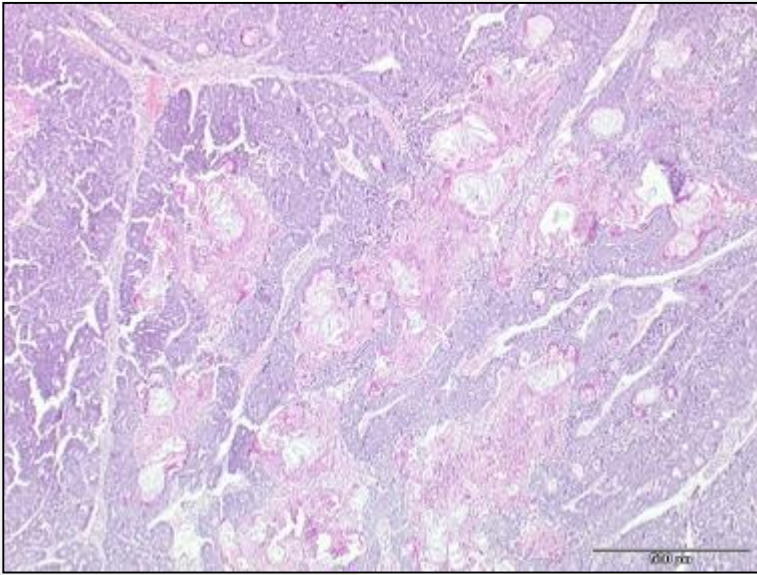
Mammary Gland, Rat: Carcinoma in Adenofibroma



Mammary Gland-Epithelial Neoplasms: Adenoacanthoma

- **May be well circumscribed**
- **Glandular and squamous differentiation**
- **Squamous areas cover more than 25% of area**
- **Differential Diagnose: Adenocarcinoma, Squamous carcinoma**

Mammary Gland, Mouse: Adenoacanthoma



Mammary Gland-Epithelial Neoplasms: Carcinosarcoma

- **Malignant mixed tumor**
- **Epithelial and mesenchymal components**

- **Differential Diagnose: Adenocarcinoma**

Mammary Gland, Rat: Carcinosarcoma

