**Intestine**

**Diverticulum** (mouse, colon)

Image kindly provided by Cynthia C Shackelford
**Glandular stomach**

**Diverticulum** (mouse, glandular stomach)

Original section

![Image of Diverticulum](image_url)

*Image kindly provided by Jerrold M. Ward*
Glandular stomach

**Diverticulum** (mouse, glandular stomach)

…. after step section

Image kindly provided by Jerrold M. Ward
Diverticulum

Diagnostic features (continued)

Cystic:

• Rounded cystic structures in lamina propria or deeper layers.
• Compression of surrounding tissue, some degree of compression atrophy of the epithelium lining the cyst.
• May contain mucus.
Glandular stomach / intestine

Diverticulum

*Diagnostic features (continued)*

Atypical:

- Extension of atypical/dysplastic mucosal glands into or through muscularis mucosae, submucosa, and deeper in some cases.
- Hyperplastic atypical (dysplastic) epithelial cells forming cystic glands that may appear to be “invading” into deeper layers of the stomach.
- Atypical change often focal in an otherwise normal appearing epithelium.
- **Basement membrane integrity always maintained.**

Ah-R knockout mouse, B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward
Glandular stomach / intestine

Diverticulum, atypical

Mouse, glandular stomach

Image kindly provided by RITA

INHAND Digestive Tract - Thomas Nolte
Hyperplasia (mucosal)

*Synonyms*: Hyperplasia, regenerative

Synonyms for atypical hyperplasia may include: dysplasia, gastrointestinal intraepithelial neoplasia (GIN, mice), early neoplastic lesion, atypical crypts, dysplastic crypts, dysplastic foci, or aberrant crypt foci.

*Modifier*: Avillous, atypical

*Histogenesis*: Enterocytes of the intestinal mucosa.
Hyperplasia (mucosal)

*Diagnostic features*

- Focal or diffuse process accompanying epithelial damage; no evidence of compression.
- Villous and glandular architecture is not altered by the proliferative process itself but in regenerative hyperplasia may have been altered by the initiating event.
- Focal penetration by glandular diverticula into lamina propria or deeper layers may be present but basement membrane is always intact.
- No cellular or nuclear atypia.
Hyperplasia (mucosal)

Avillous:

- Focal lesion of the duodenum in aging mice.
- Smooth luminal surface lacking intestinal villi.
- Hyperplastic crypts may often be interspersed between hyperplastic Brunner’s glands.
- Goblet cells may be reduced or increased.
- Crypt dilatation and diverticula may be present in larger lesions.
- Frequently accompanied by submucosal edema and inflammatory cell infiltrate.
Intestine

Hyperplasia (mucosal)
Avillous:

Mouse, duodenum
Images kindly provided by RITA
Intestine

Hyperplasia (mucosal)

Atypical

- Structure of the intestinal villi and crypts often abnormal.
- Focal penetration by glandular diverticula into lamina propria or deeper layers may be present but basement membrane is always intact.
- Cellular atypia and pleomorphism as evidenced by hyperchromatism with increased cytoplasmic basophilia and lost polarity, nuclear pleomorphism, increased N/C ratio, hyperchromasia, increased mitotic activity.

Mouse, small intestine

Image kindly provided by Jerrold M. Ward
Glandular stomach

Hyperplasia (mucosal)

Atypical

Mouse, glandular stomach
Image kindly provided by Cynthia C. Shackelford
Adenoma

*Synonyms:* Polyp; adenomatous polyp; polypoid adenoma; exocrine adenoma

*Histogenesis:* Glandular and/or surface epithelial cells.

*Modifiers:* Polypoid, papillary, sessile

*Diagnostic features*
- Typically arise in the antral or pyloric mucosa.
- Mucosal architecture distorted.
- Growth pattern often polypoid, sessile, or papillary with or without a fibrovascular stalk; in polypoid adenomas of the antral mucosa, gland architecture may be retained.
- Focal penetration by glandular diverticula into lamina propria or deeper layers may be present but basement membrane is always intact.
- Cells are a basophilic, less differentiated glandular epithelium, but with little atypia; polarity is maintained.
- Epithelial nuclei are unilayered or organized with varying degree of stratification.
Adenoma, *polypoid*

Mouse, glandular stomach

Images kindly provided by Jerrold M Ward
Glandular stomach

Adenoma, *sessile*, with diverticula

Ah-R knockout mouse, B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward
Glandular stomach

Adenoma, *sessile*,
with diverticula

Ah-R knockout mouse,
B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward
Intestine

Adenoma, *sessile*

Mouse, jejunum

Image kindly provided by RITA
Intestine

Adenoma, *sessile*

Mouse, jejunum  Image kindly provided by RITA
Intestine

Adenocarcinoma

Diagnostic key features:

- Mucosal architecture is distorted.
- Invasion through muscularis mucosae or deeper layers of the intestinal wall, stalk of an adenoma, or adjacent organs.
- Varying degrees of cellular atypia.
- Many mitotic figures.
- Often scirrhous response in areas of invasion.

F344 rat, colon

Image kindly provided by Jerrold M. Ward

INHAND Digestive Tract - Thomas Nolte
Adenocarcinoma

F344 rat, colon

Image kindly provided by Jerrold M. Ward
INHAND: Differential diagnosis of proliferative lesions in the intestine

Growth exceeding confinement of mucosa

Hyperplasia

Atypia

Hyperplasia, atypical

Adenoma

Diverticulum

Diverticulum, atypical

Adenocarcinoma

Downgrowth to propria or deeper

With loss of BM integrity (true infiltration)

No

Yes

No

Yes

No

Yes
INHAND Digestive Tract OWG

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