

## Diverticulum (mouse, colon)

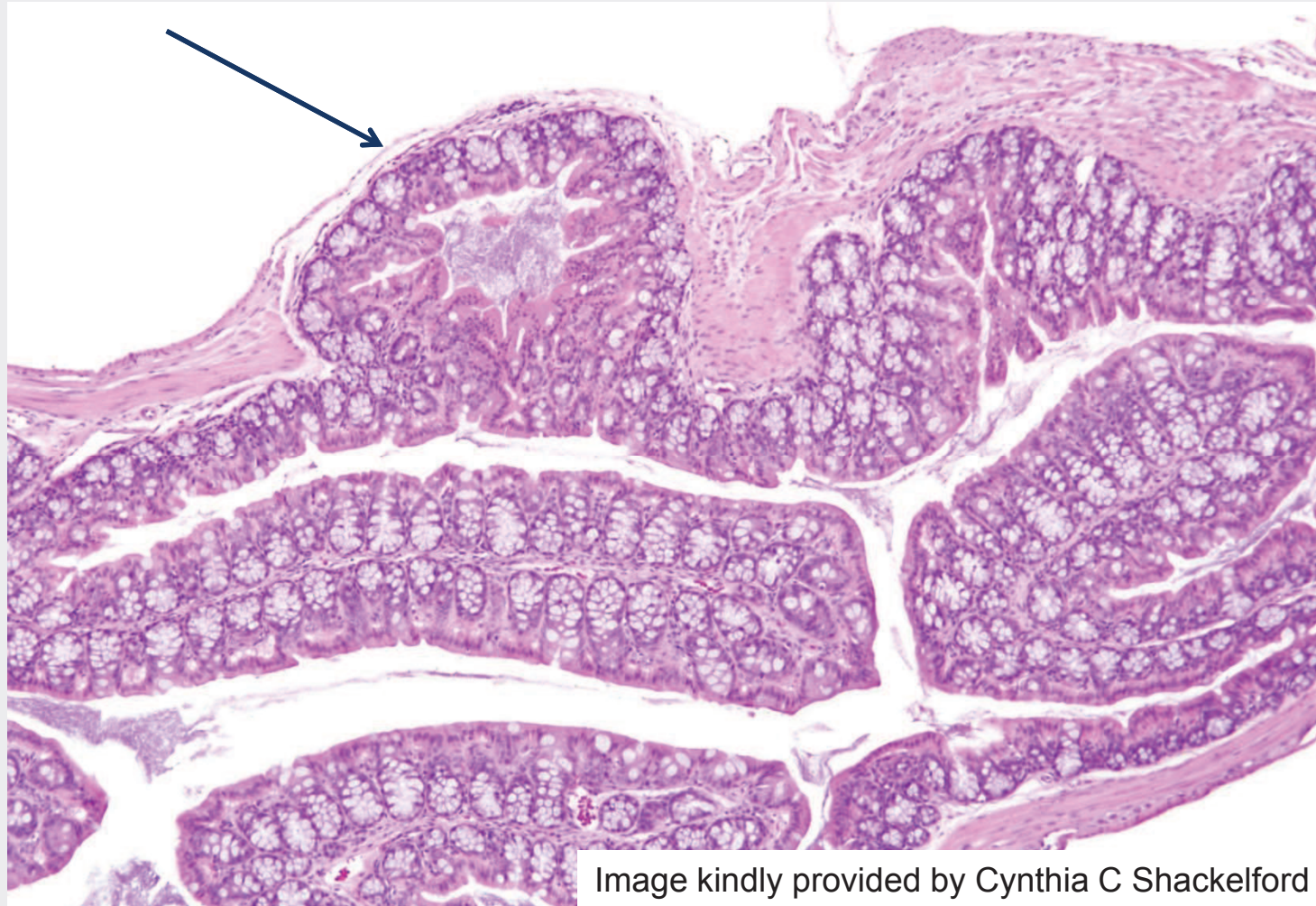


Image kindly provided by Cynthia C Shackelford

## Diverticulum (mouse, glandular stomach)

Original section

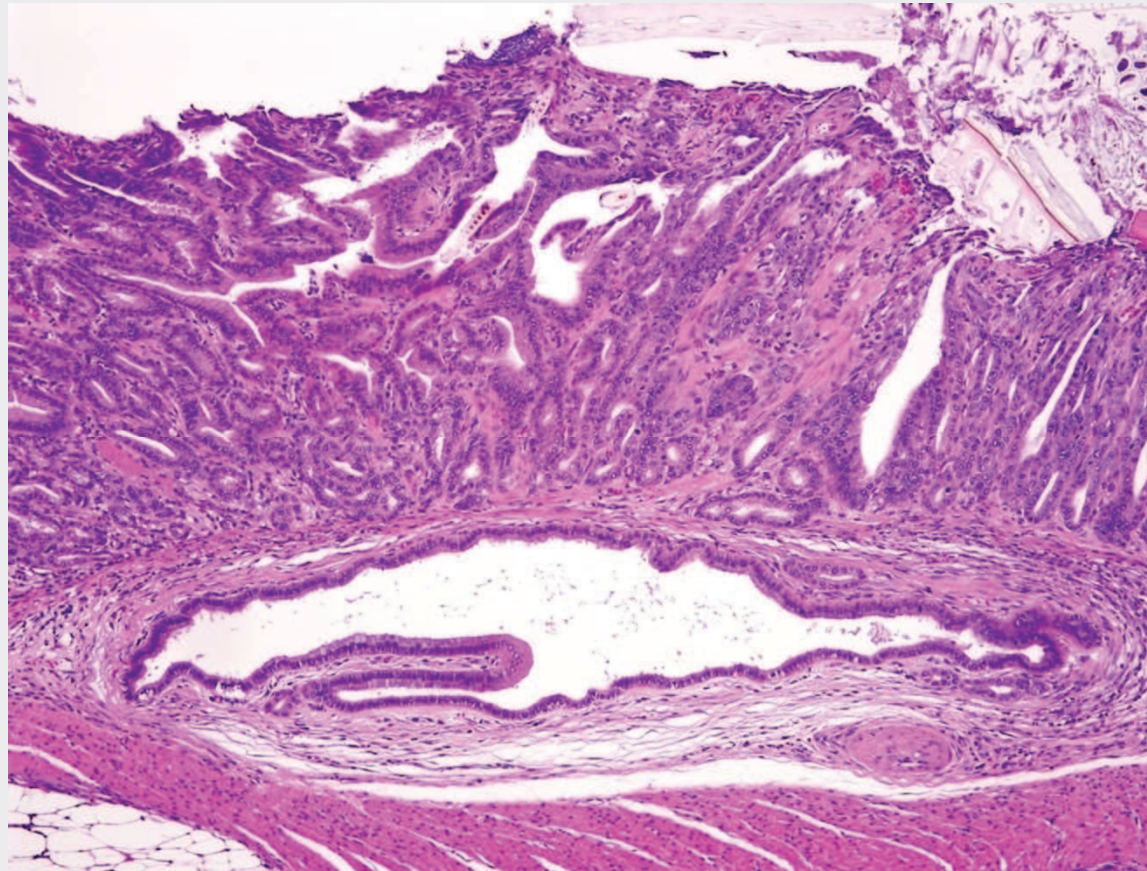


Image kindly provided by Jerrold M. Ward

**Diverticulum** (mouse, glandular stomach)  
.... after step section

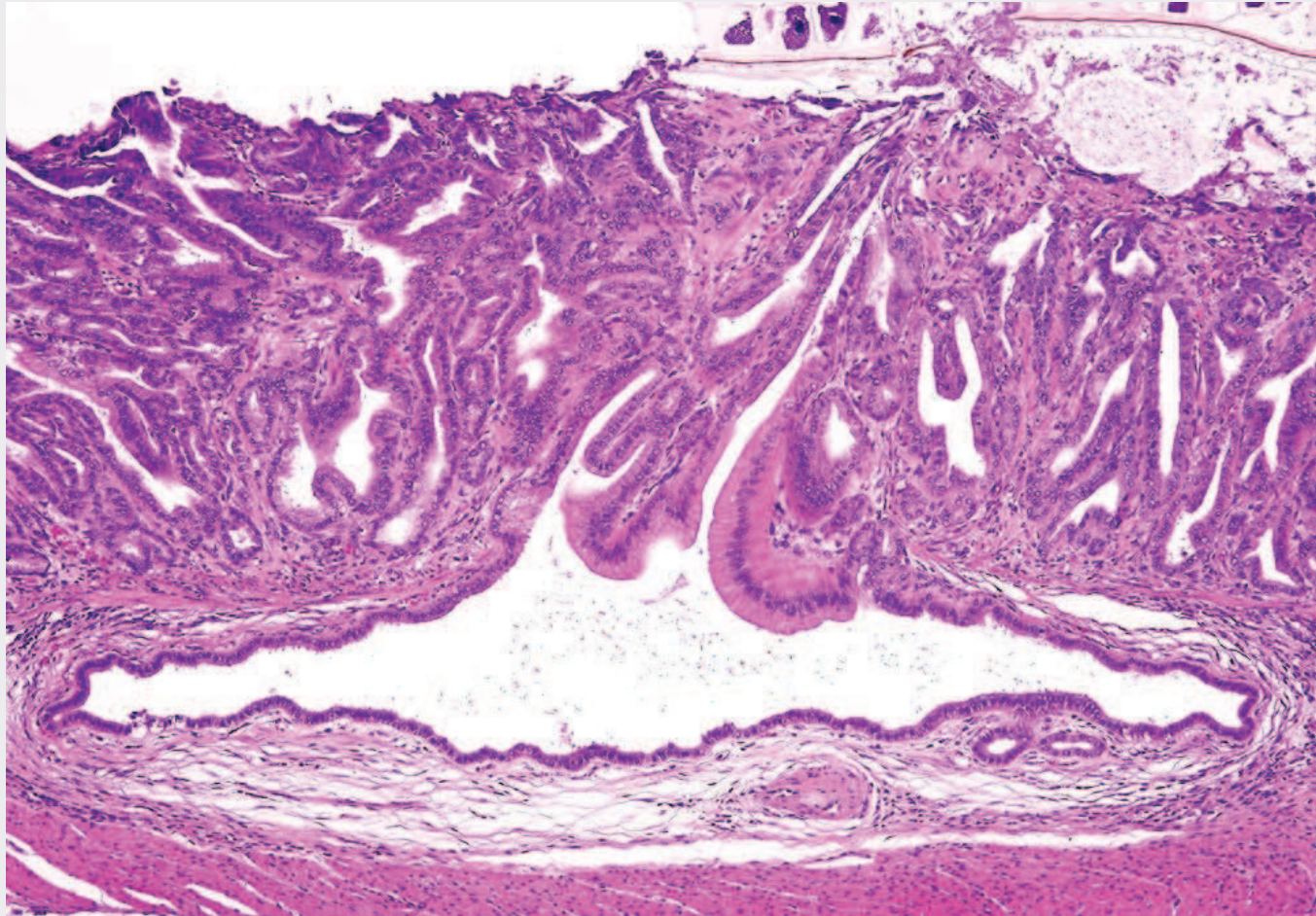


Image kindly provided by Jerrold M. Ward

## Diverticulum

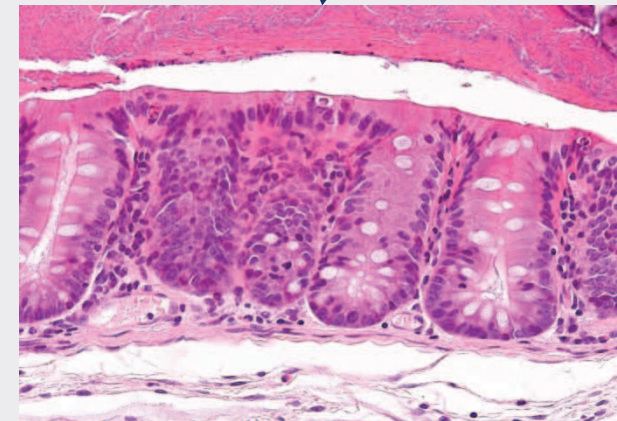
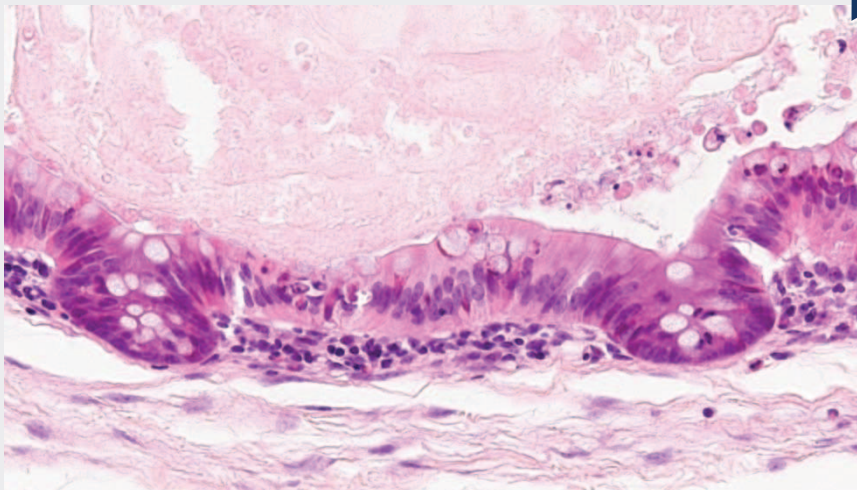
*Diagnostic features (continued)*

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.



Mouse, colon



## Diverticulum

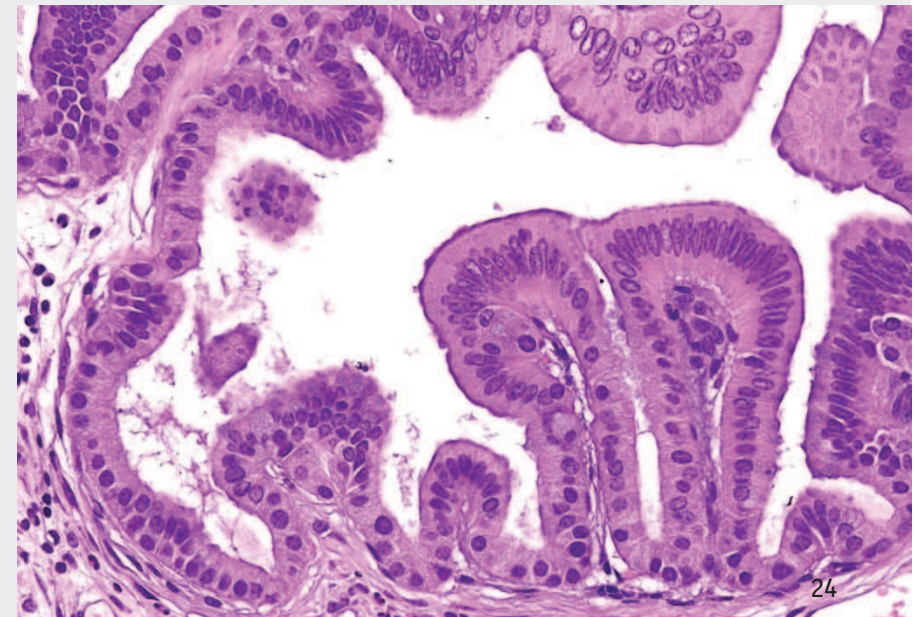
### *Diagnostic features (continued)*

#### 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.**

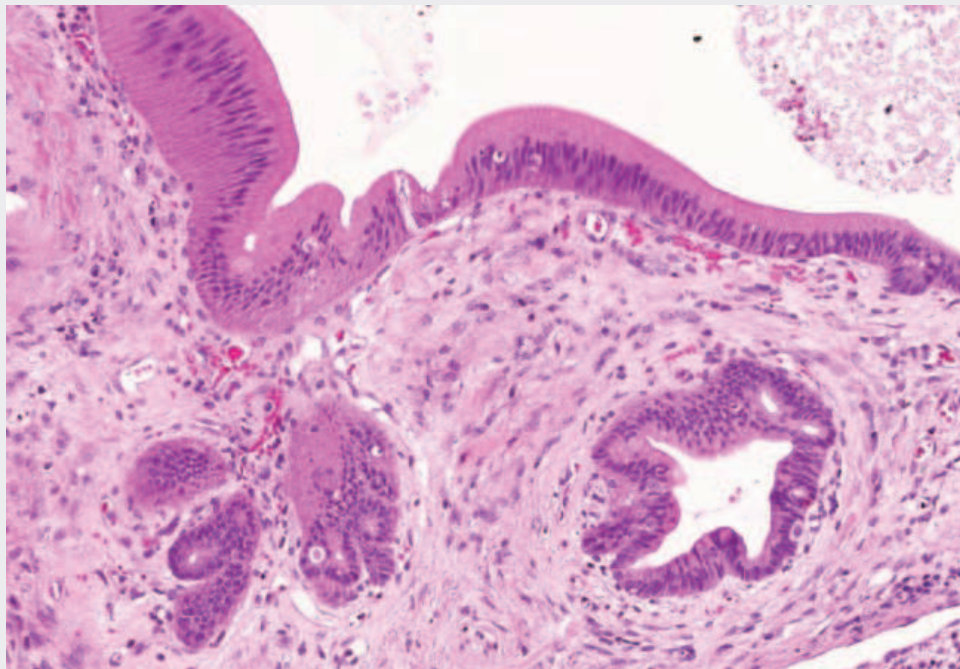
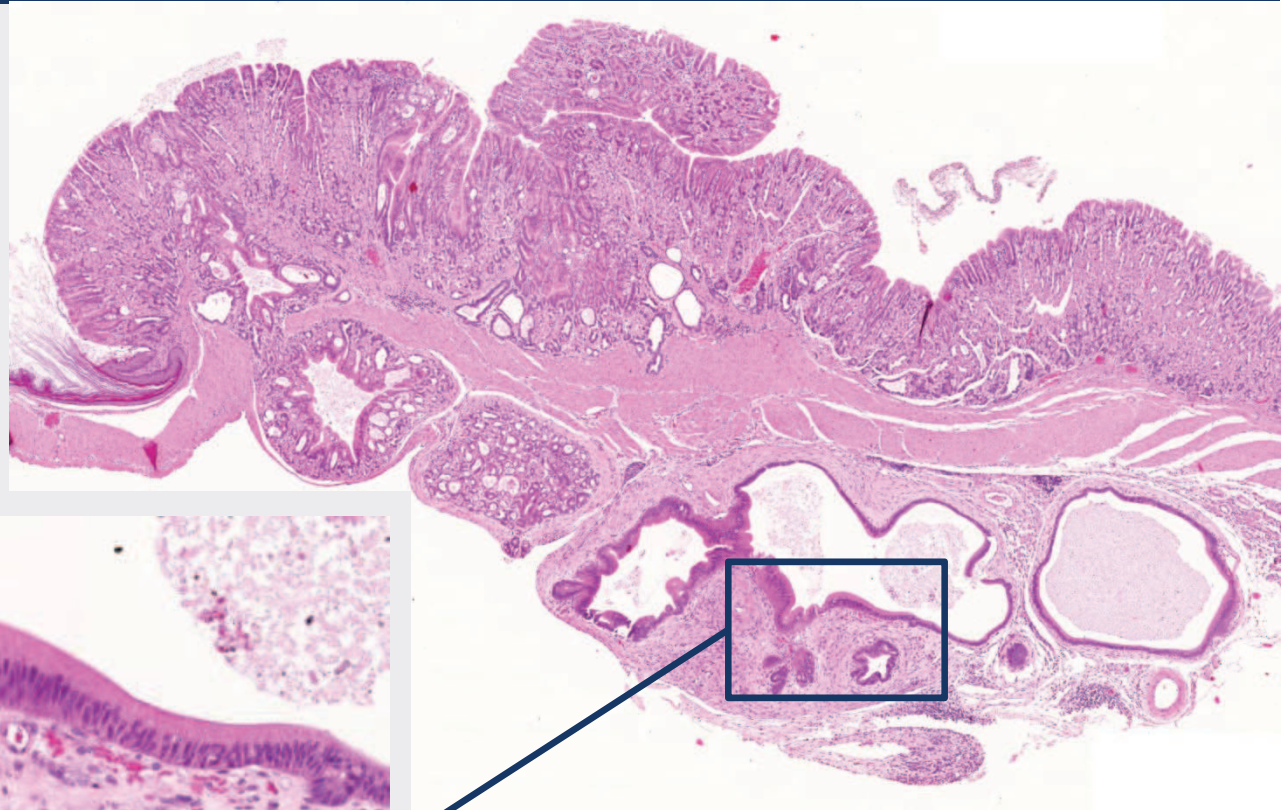
Ah-R knockout mouse,  
B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward



# Glandular stomach / intestine

## Diverticulum, atypical



Mouse, glandular stomach

Image kindly provided by RITA

## 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.

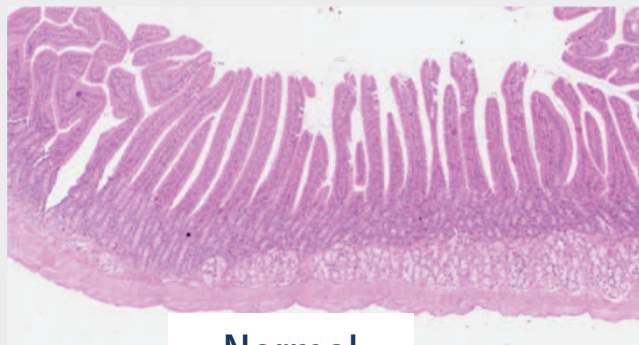
*Modifier:* Avillous, atypical

*Histogenesis:* Enterocytes of the intestinal mucosa.

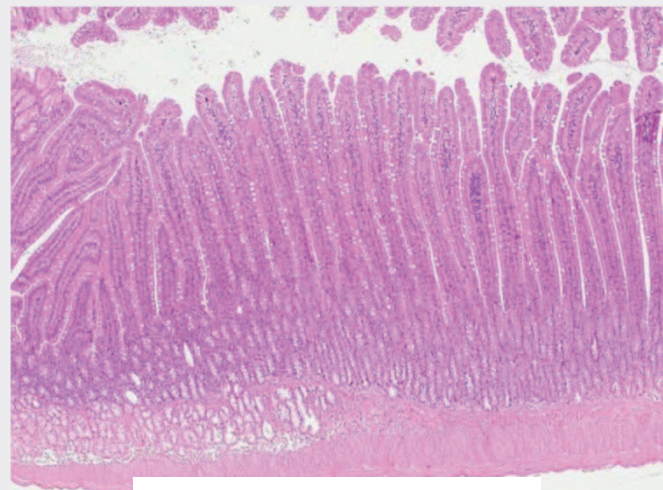
## Hyperplasia (mucosal)

### *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.



Normal



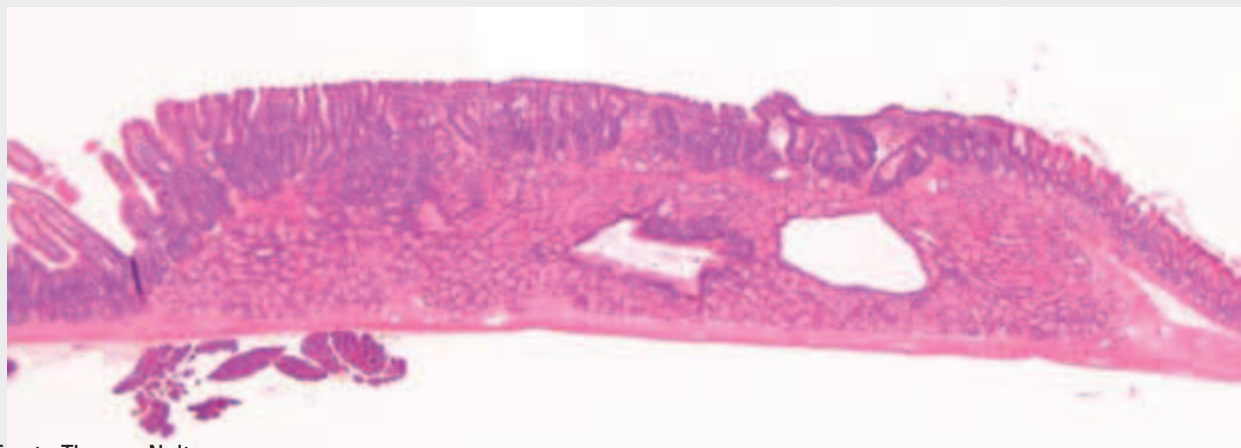
Hyperplasia, diffuse



## Hyperplasia (mucosal)

Avillous:

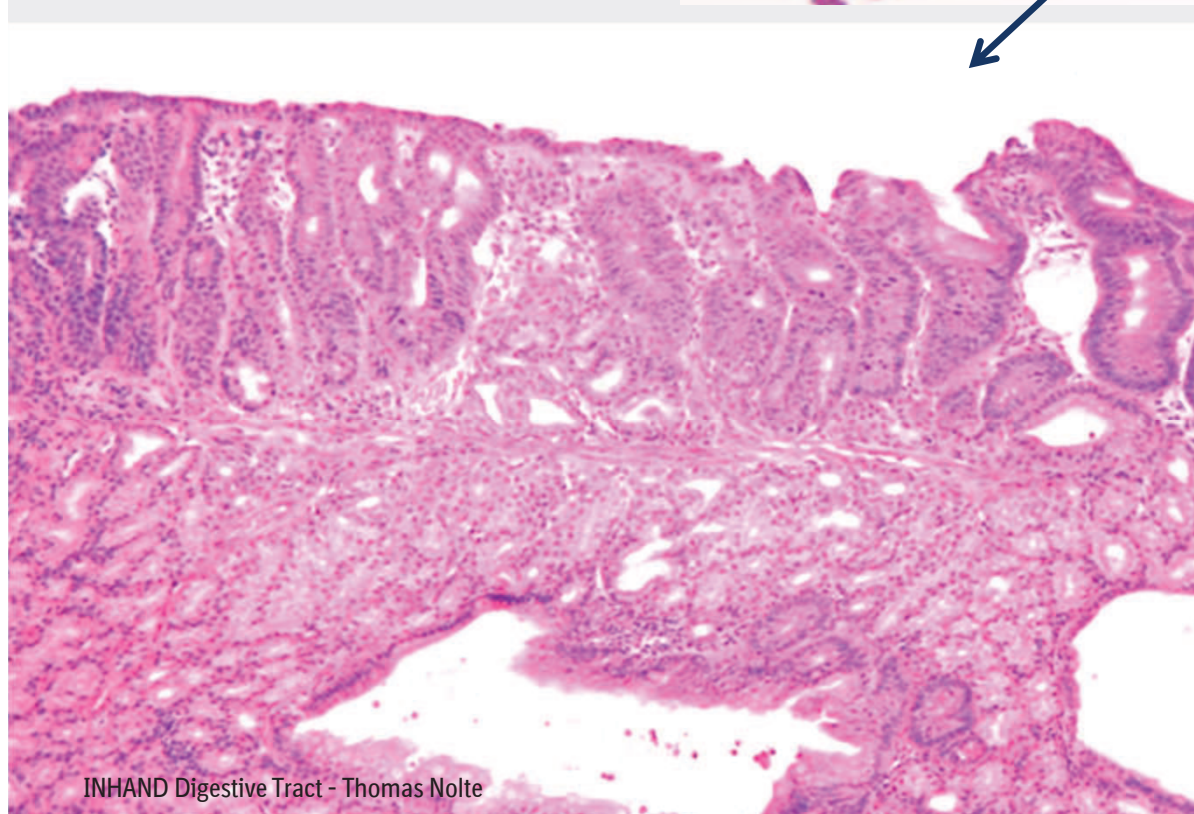
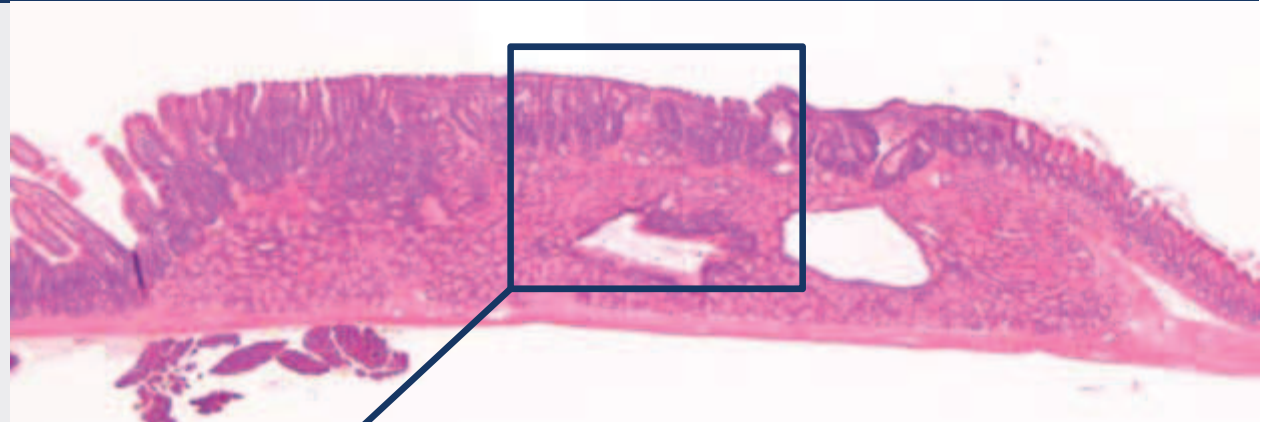
- Focal lesion of the duodenum in aging mice.
- Smooth luminal surface lacking intestinal villi.
- Hyperplastic crypts may often be interspersed between hyperplastic Brunner's glands.
- Goblet cells may be reduced or increased.
- Crypt dilatation and diverticula may be present in larger lesions.
- Frequently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



# Intestine

## Hyperplasia (mucosal)

Avillous:



Mouse, duodenum

Images kindly provided by RITA

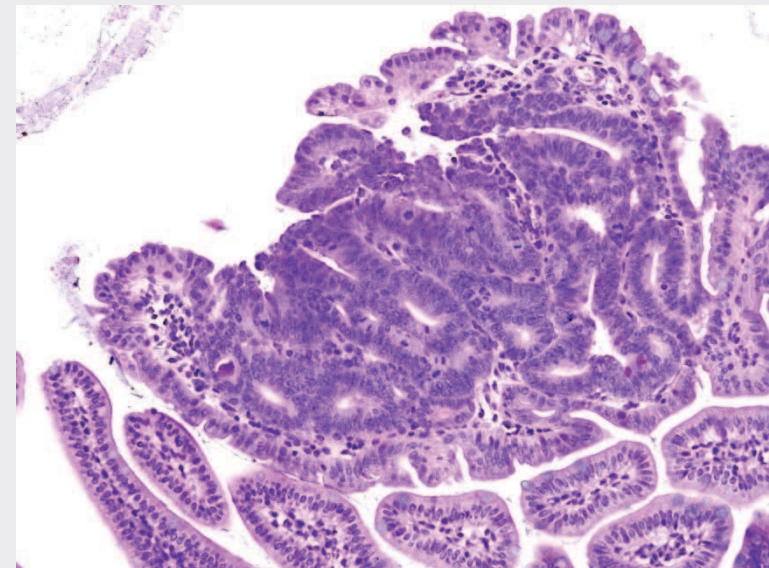
## Hyperplasia (mucosal)

### 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

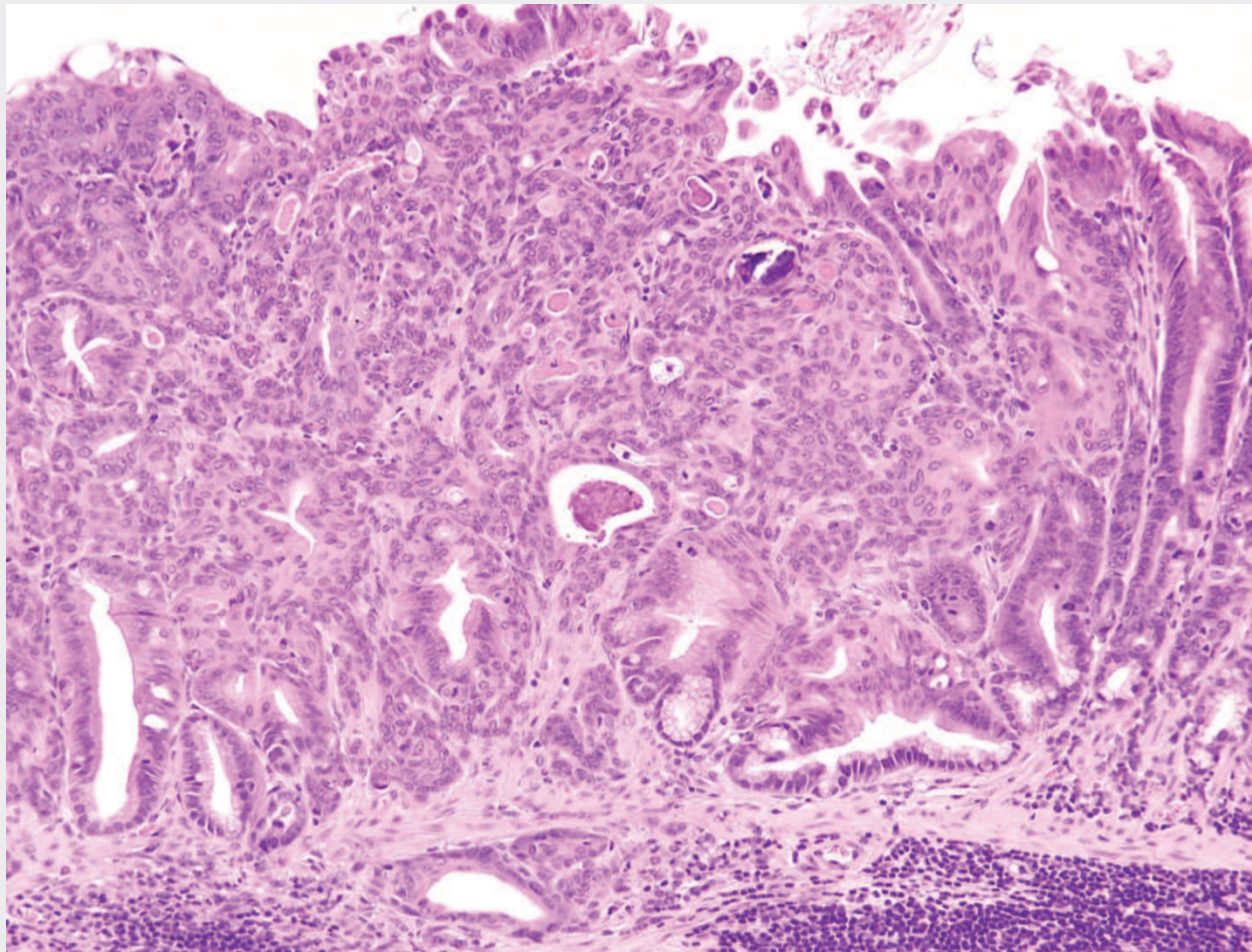
Image kindly provided by Jerrold M. Ward



# 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.

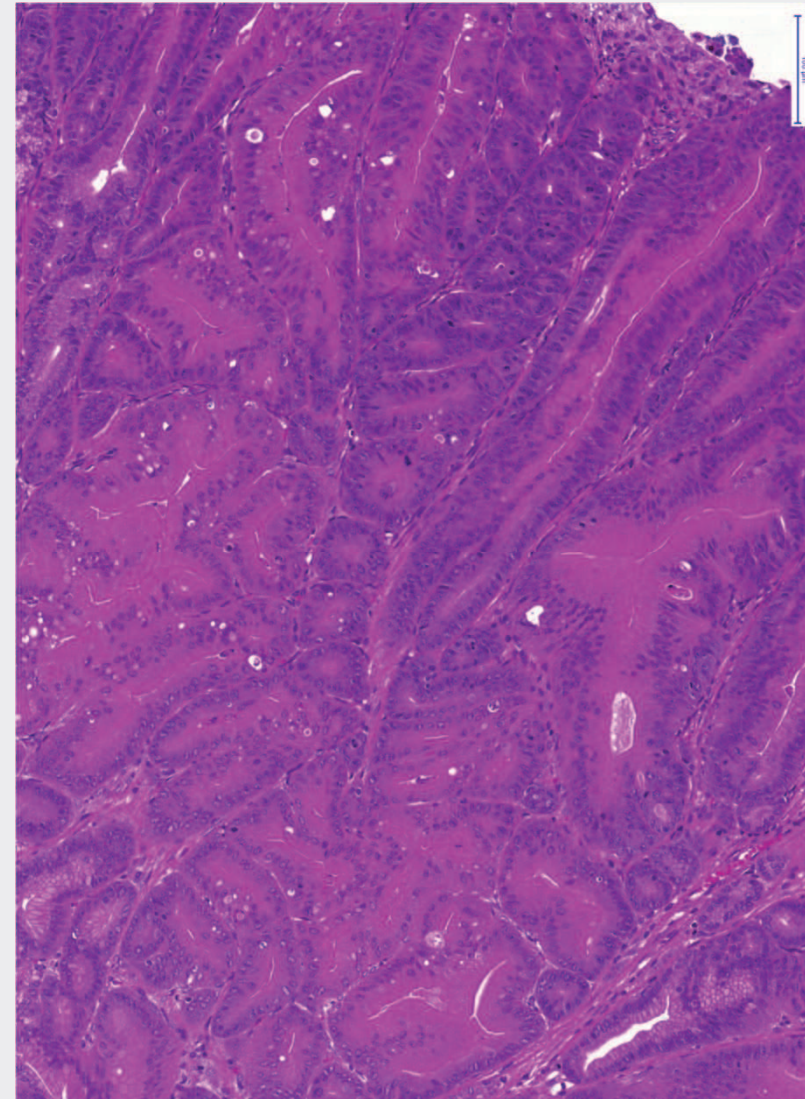
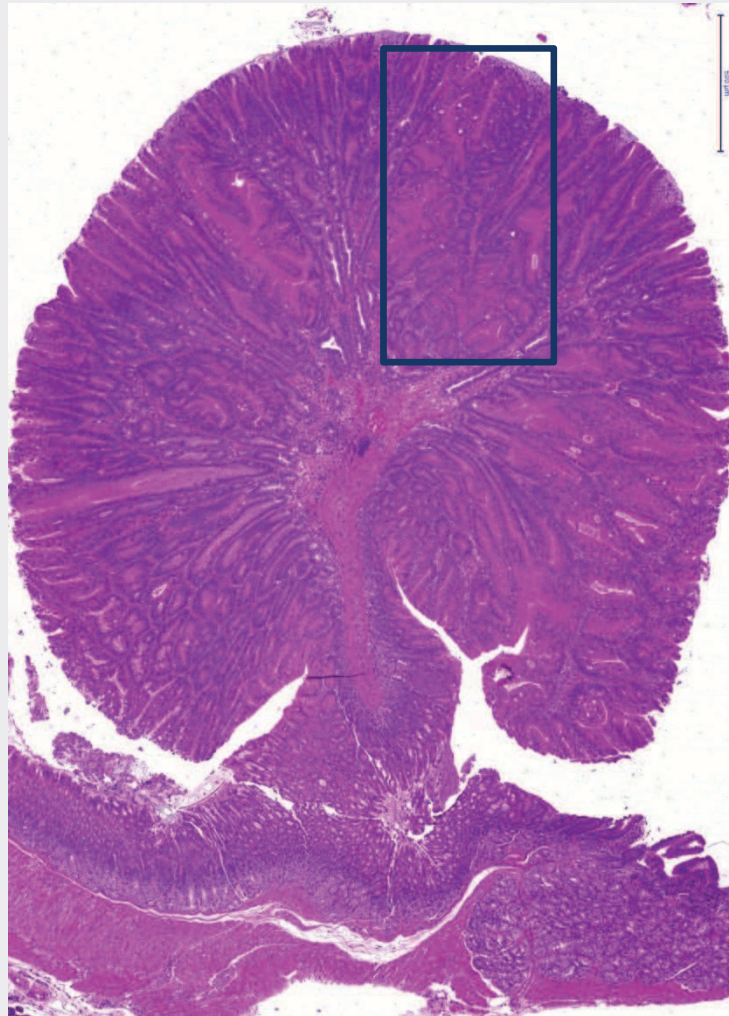
*Modifiers:* Polypoid, papillary, sessile

### *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.

# Glandular stomach

## Adenoma, *polypoid*

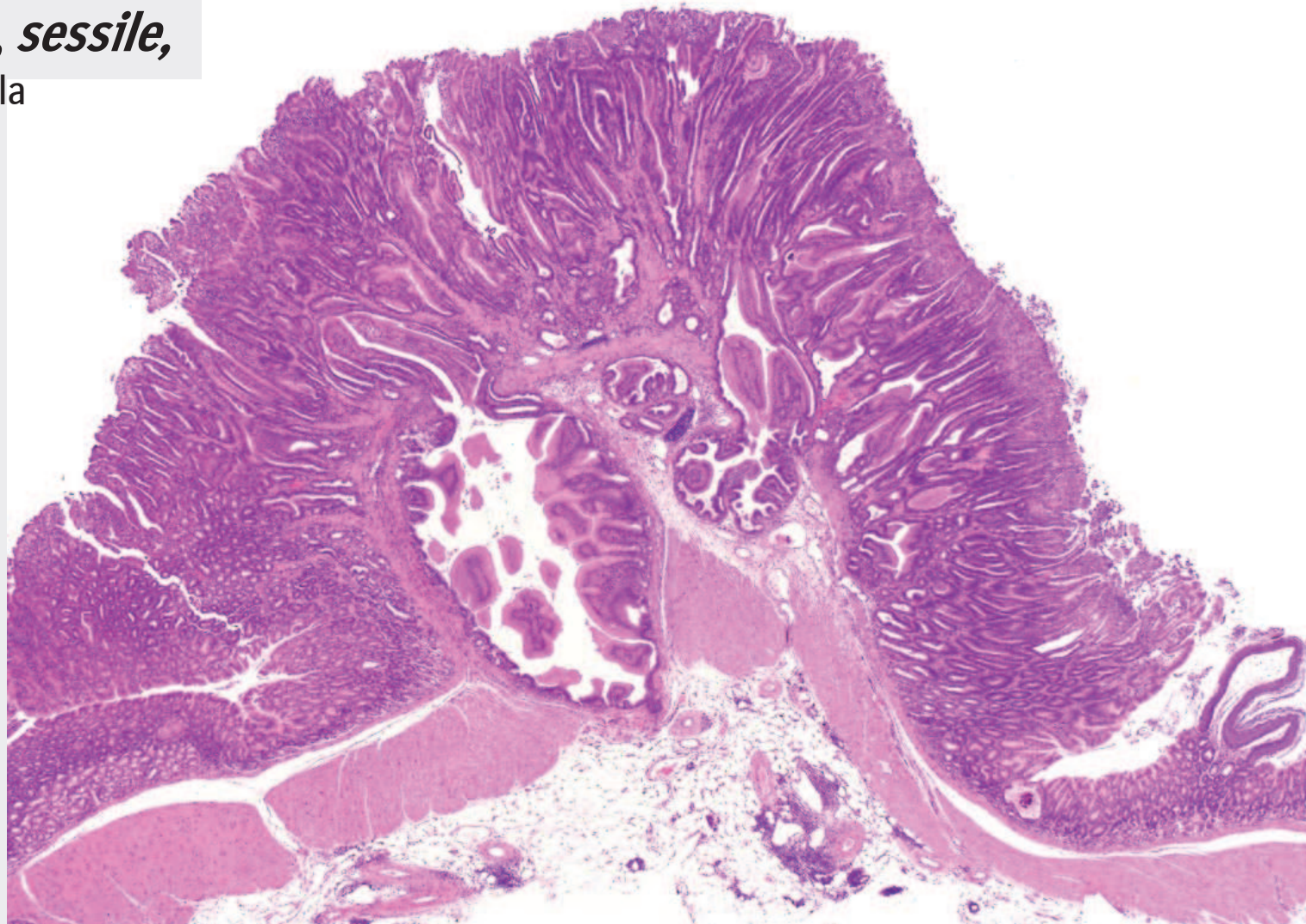


Mouse, glandular stomach

Images kindly provided by Jerrold M Ward

# Glandular stomach

**Adenoma, *sessile*,**  
with diverticula

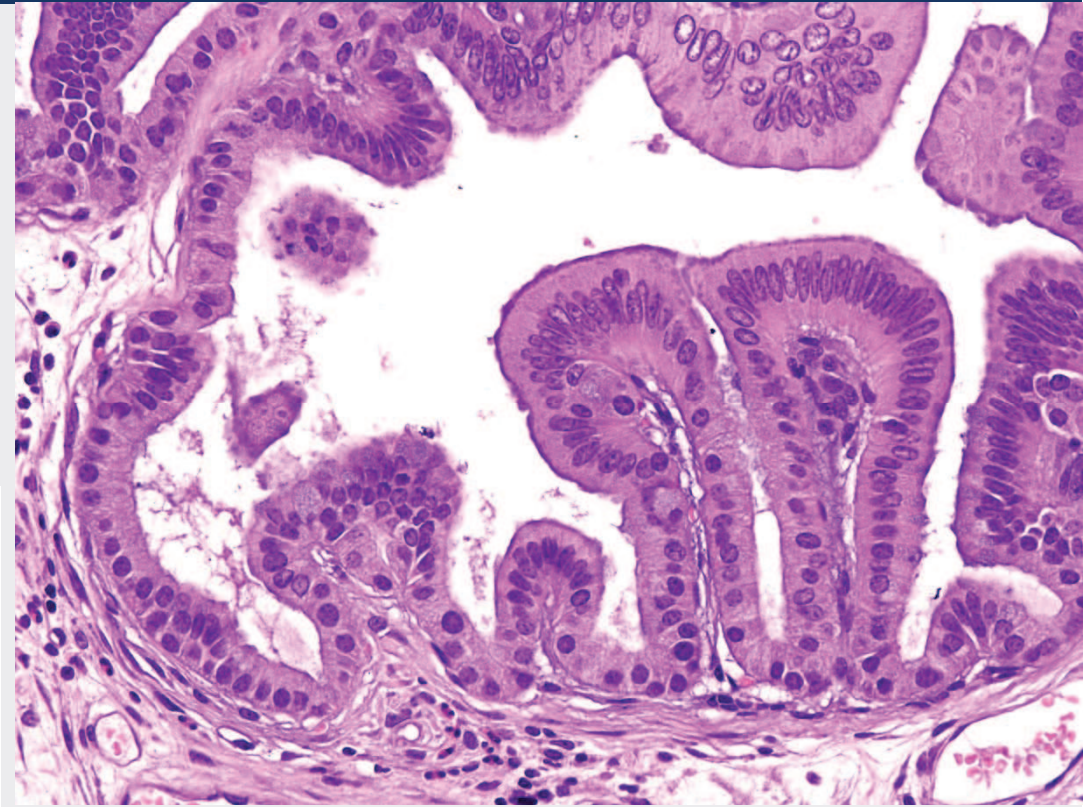
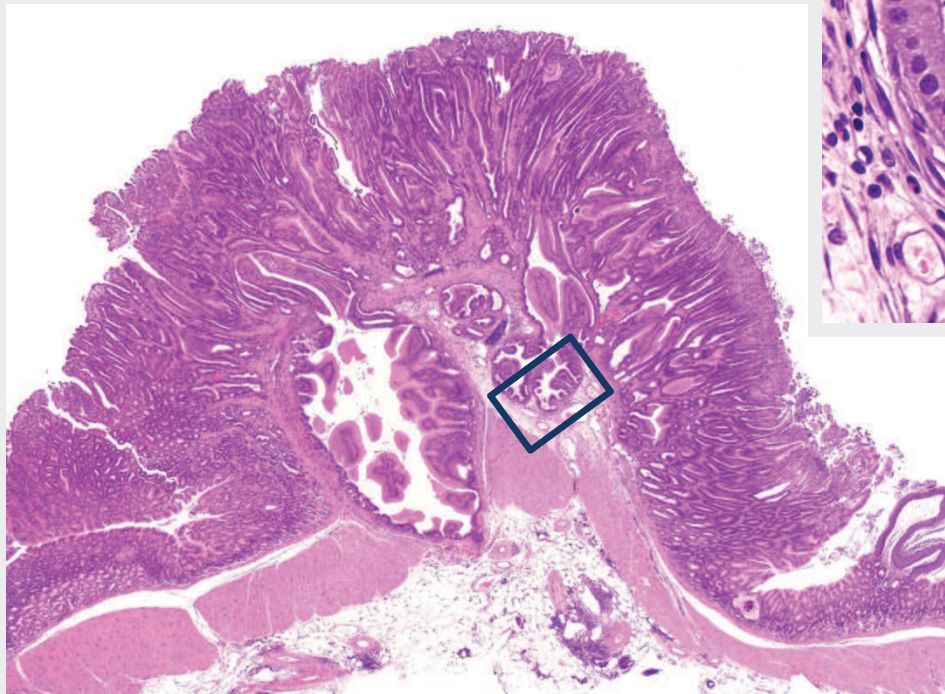


Ah-R knockout mouse, B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward

# Glandular stomach

**Adenoma, *sessile*,**  
with diverticula

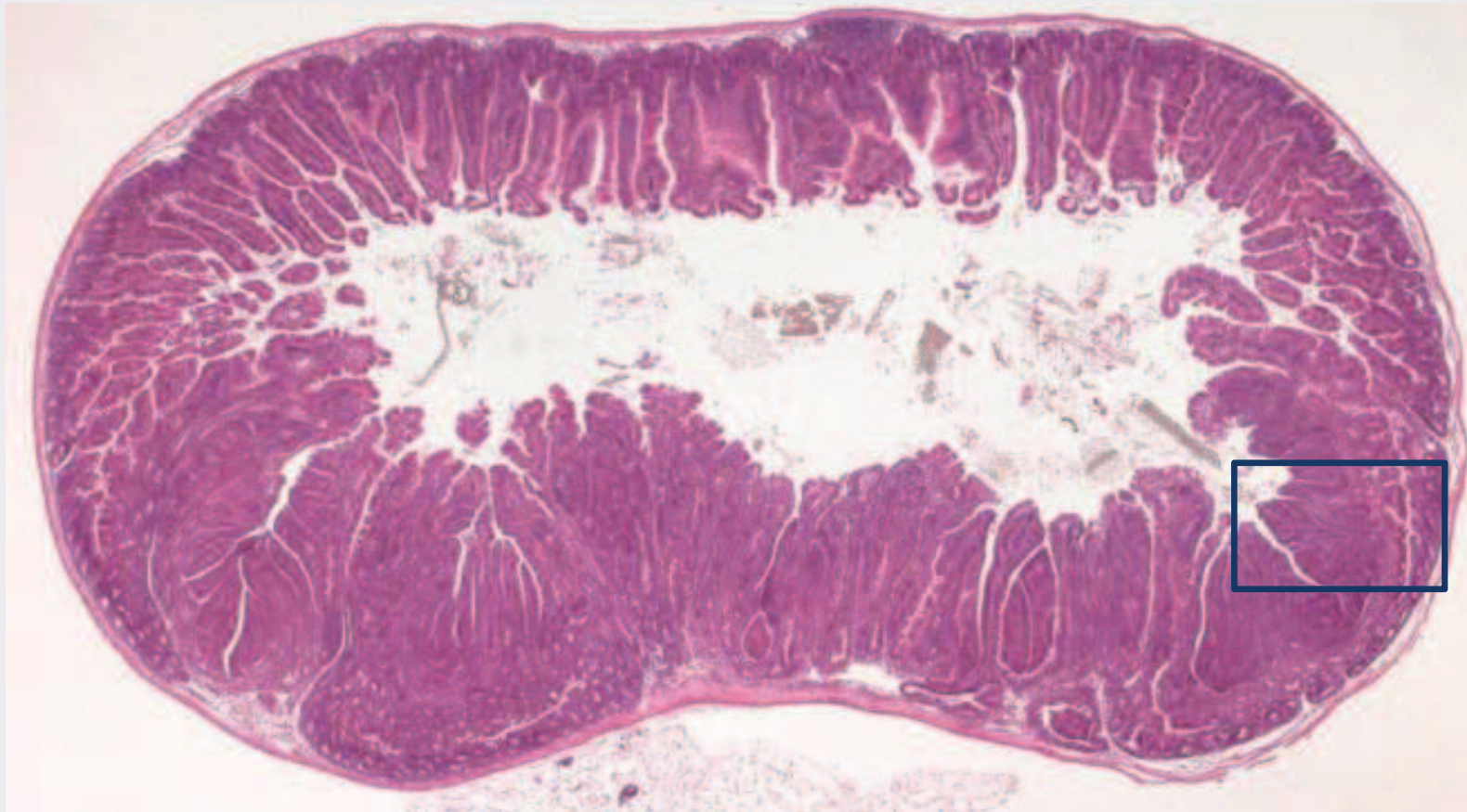


Ah-R knockout mouse,  
B6,129 background, glandular stomach

Image kindly provided by Jerrold M. Ward



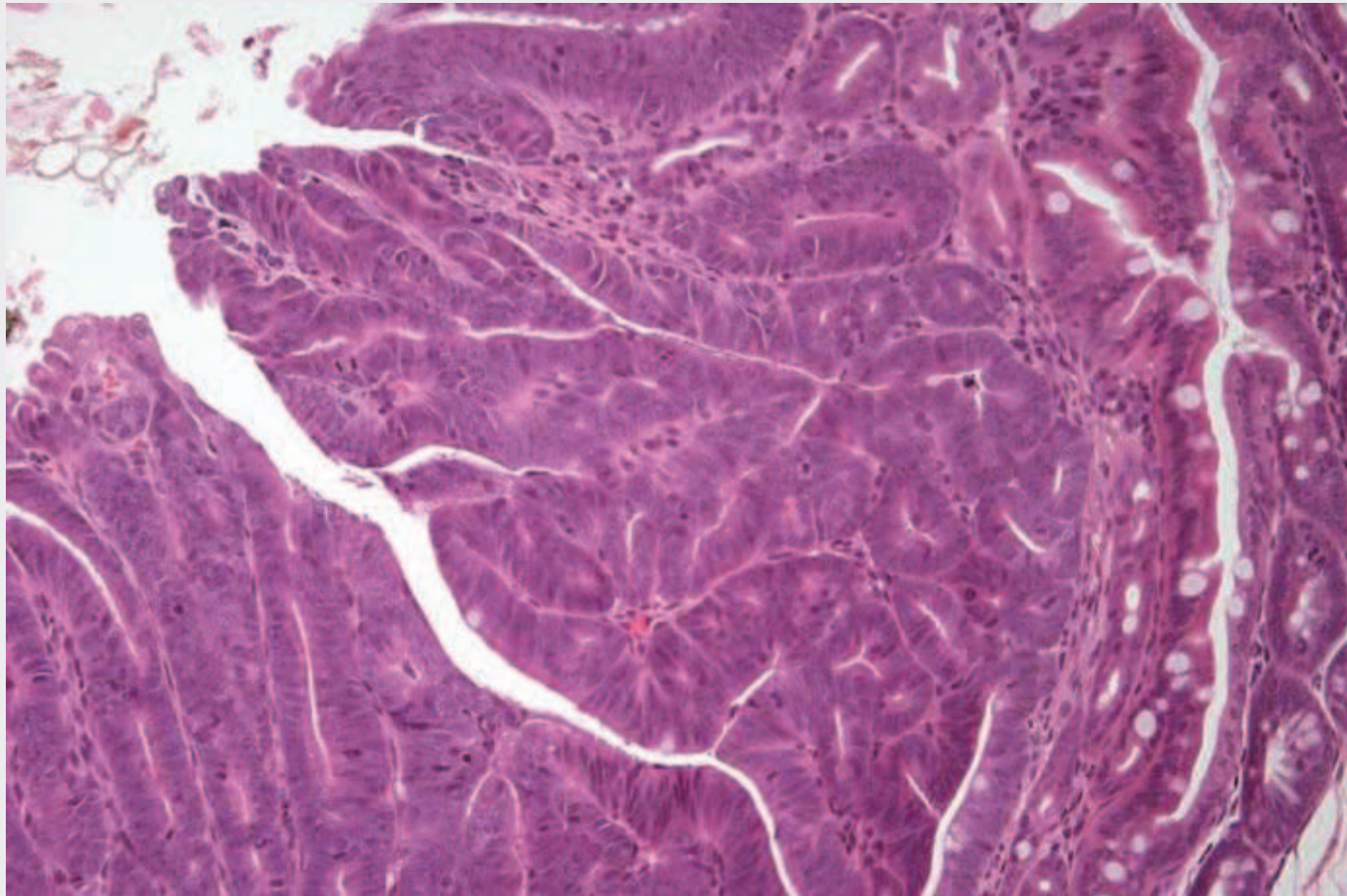
## Adenoma, *sessile*



Mouse, jejunum

Image kindly provided by RITA

## Adenoma, *sessile*

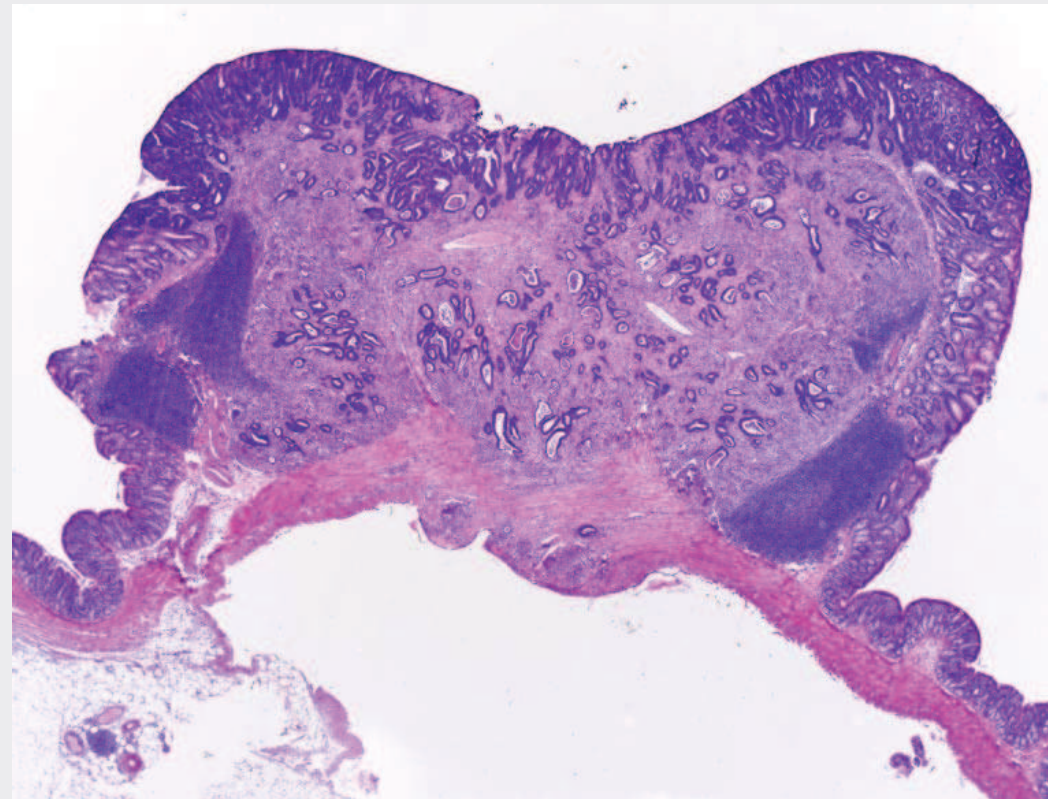


Mouse, jejunum Image kindly provided by RITA

## Adenocarcinoma

### *Diagnostic key features:*

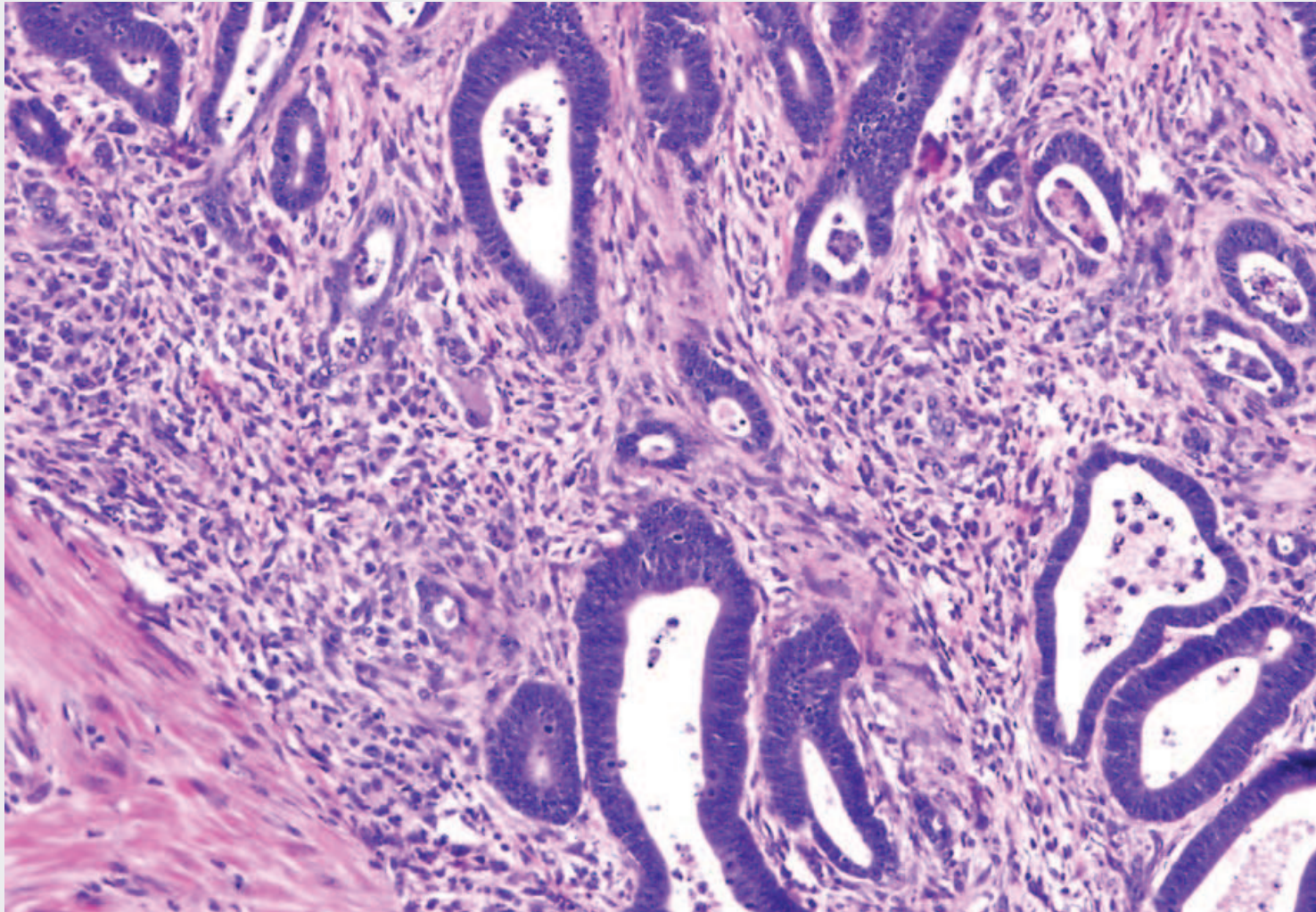
- Mucosal architecture is distorted.
- Invasion through muscularis mucosae or deeper layers of the intestinal wall, stalk of an adenoma, or adjacent organs.
- Varying degrees of cellular atypia.
- Many mitotic figures.
- Often scirrhous response in areas of invasion.



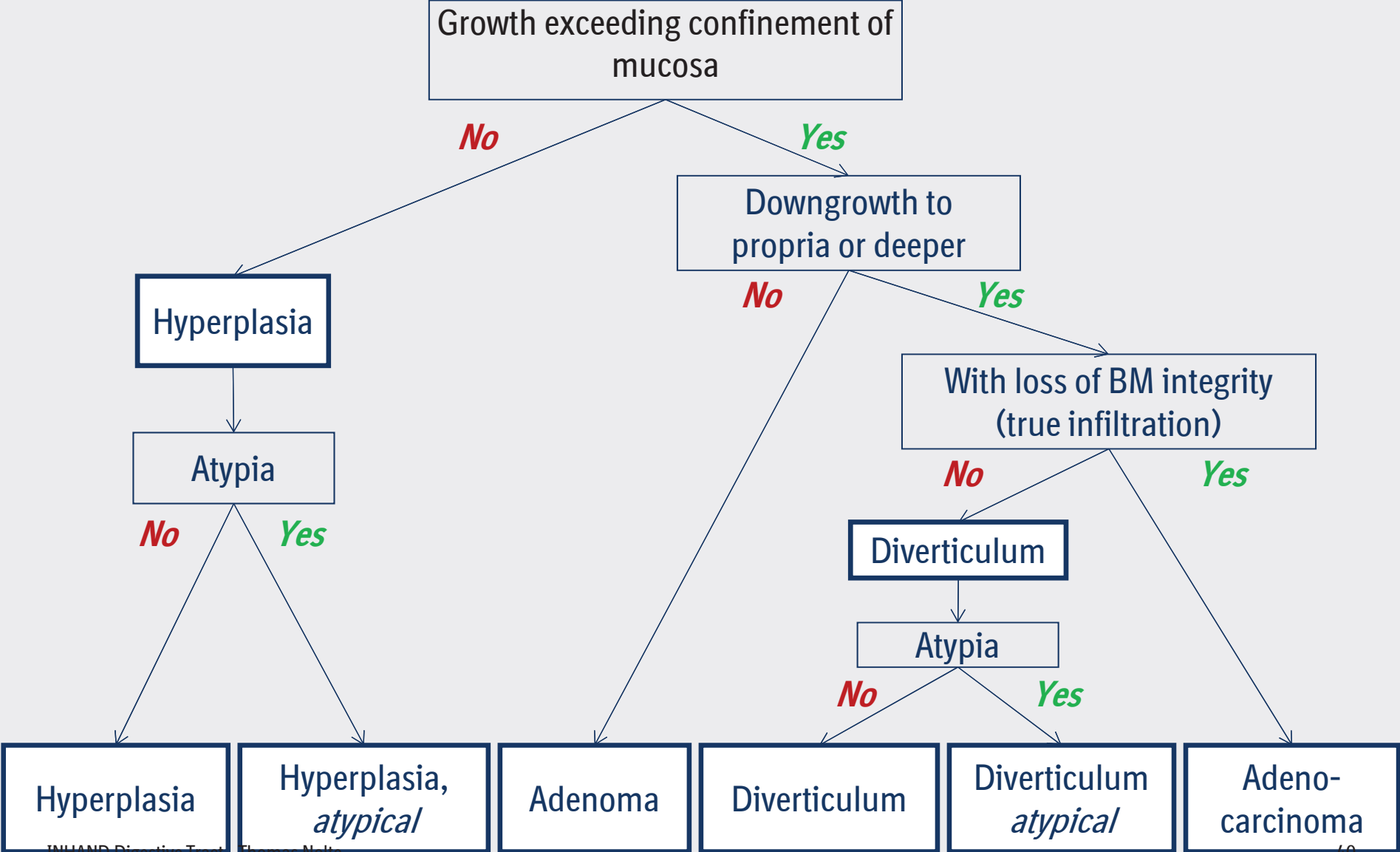
F344 rat, colon

Image kindly provided by  
Jerrold M. Ward

## Adenocarcinoma



# INHAND: Differential diagnosis of proliferative lesions in the intestine



## INHAND Digestive Tract OWG

- Patricia Brander-Weber
- Chuck Dangler
- Ulrich Deschl
- Michael Elwell
- Peter Greaves
- Richard Hailey
- Anja Knippel
- Michael Leach
- Arun Pandiri
- Arlin Rogers
- Cynthia Shackelford
- Andrew Spencer
- Jerrold Ward

## The RITA group (144 pathologists)

