

Effect of latent infections on the development of experimental inflammatory bowel disease

Martina Perše

Animal models of IBD

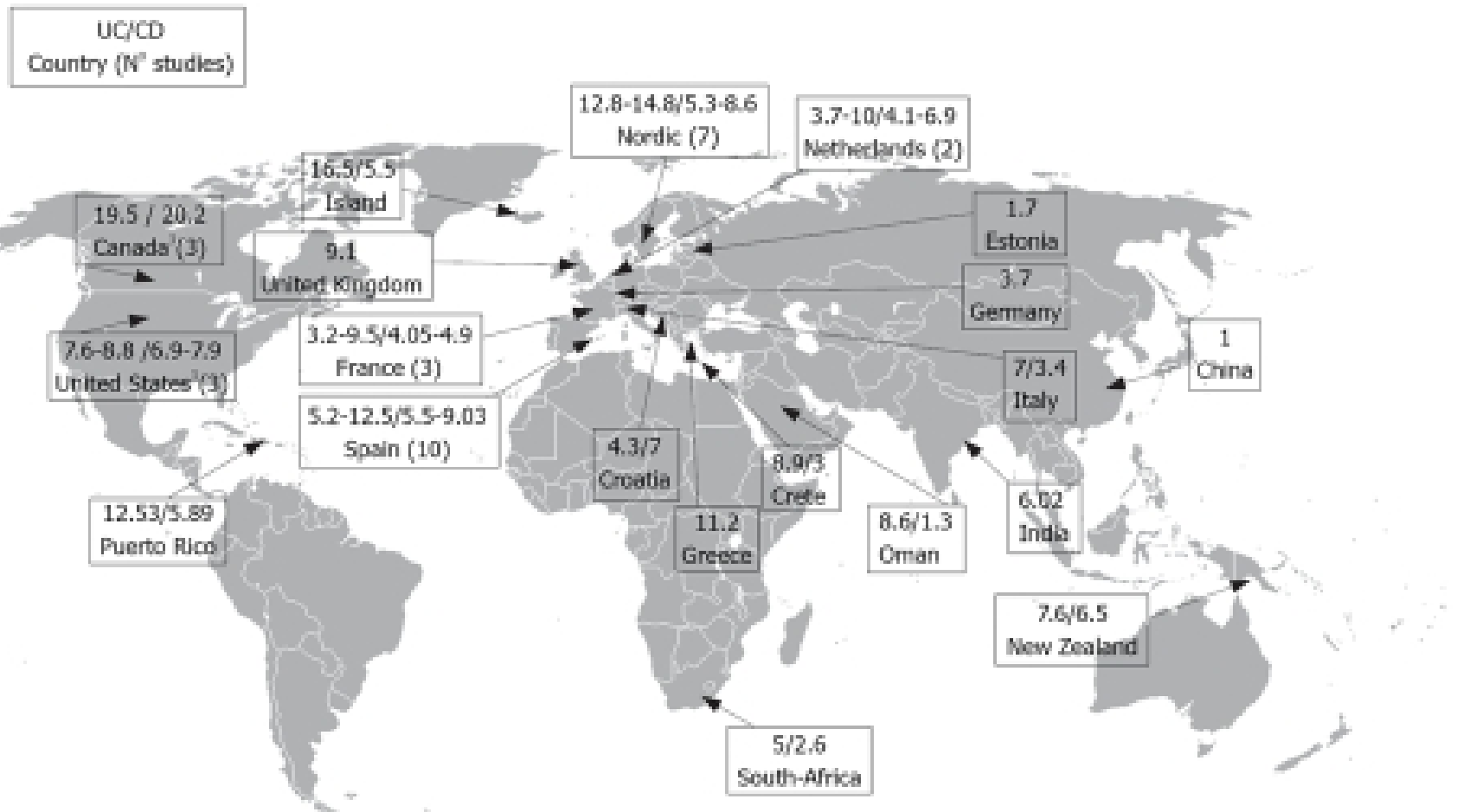
generation:

- spontaneous
- induced
 - Chemically (DSS, TNBS)
 - microbiologically
- Genetically modified
- combinations

damage of immune system of mucosa:

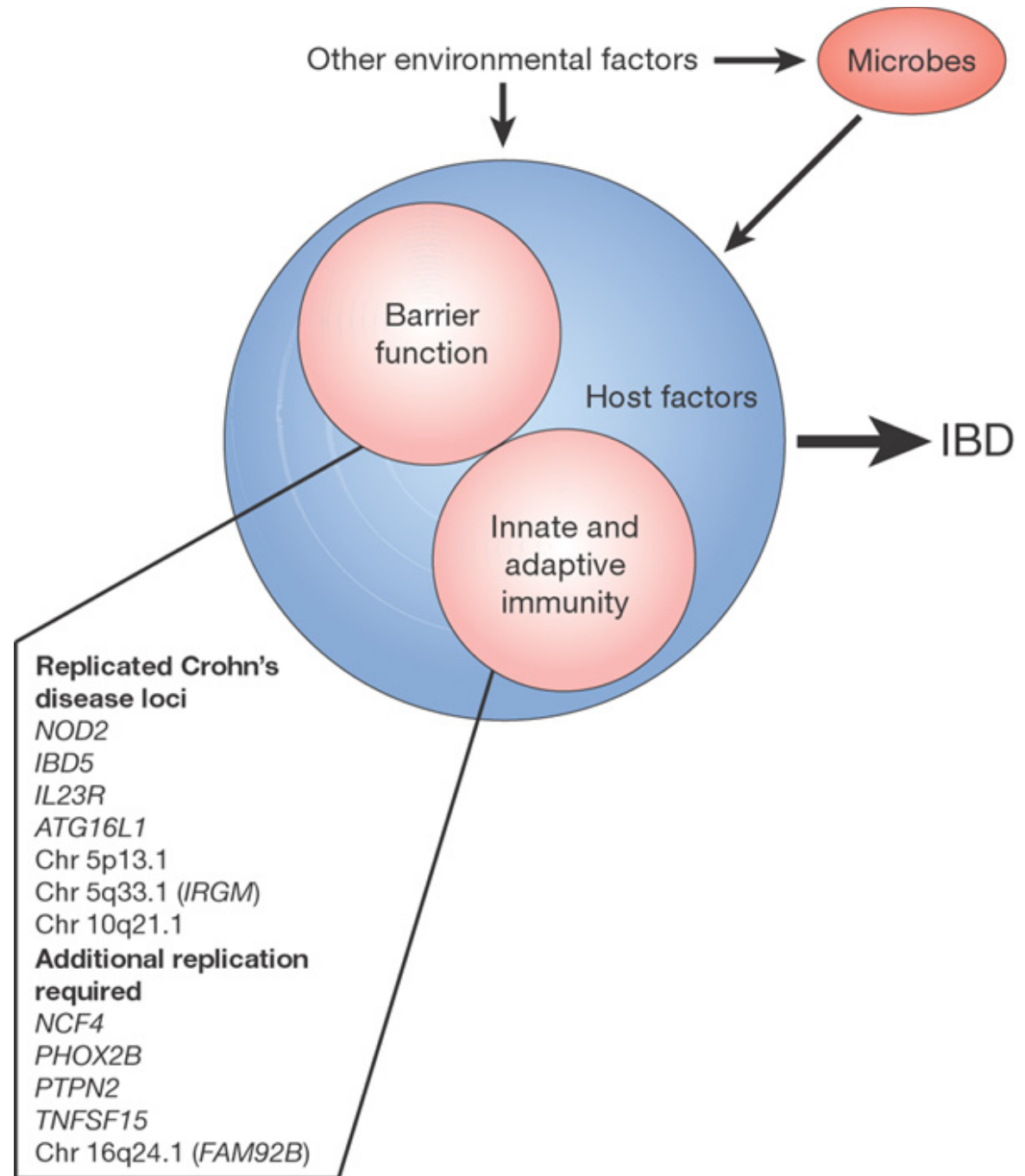
- Damage in integrity of epithel
- Damage of NK defence
- Damage of cells of acquired immune system

IBD - incidence



aetiology

- intrinsic
- Mikroflora
- extrinsic



Review Article

Dextran Sodium Sulphate Colitis Mouse Model: Traps and Tricks

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Inflammatory bowel disease (IBD) is a complex multifactorial disease of unknown etiology. Thus, dozens of different animal models of IBD have been developed in past decades. Animal models of IBD are valuable and indispensable tools that provide a wide range of options for investigating involvement of various factors into the pathogenesis of IBD and to evaluate different therapeutic options. However, the dextran sulphate sodium (DSS-) induced colitis model has some advantages when compared to other animal models of colitis. It is well appreciated and widely used model of inflammatory bowel disease because of its simplicity. It has many similarities to human IBD, which are mentioned in the paper. In spite of its simplicity and wide applicability, there are also traps that need to be taken into account when using DSS model. As demonstrated in the present paper, various factors may affect susceptibility to DSS-induced lesions and modify results.

DSS colitis

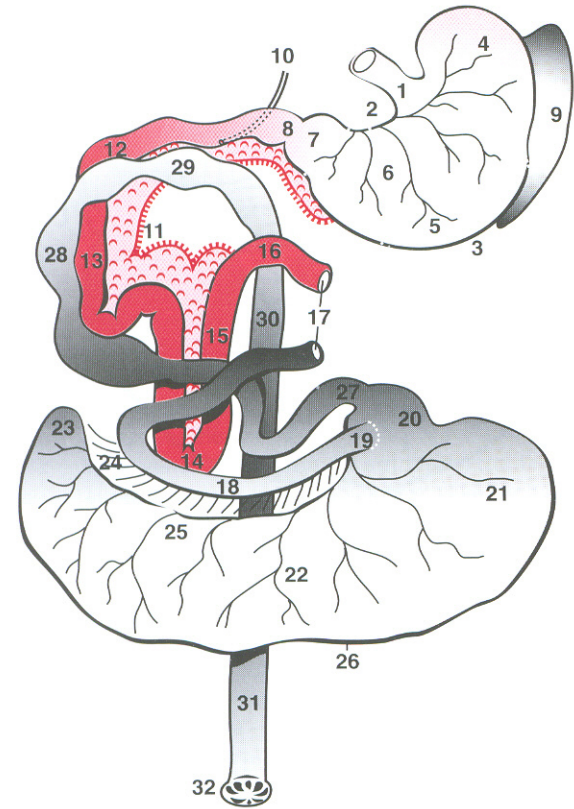
strain: C57BL/6JOlaHsd

age: 7-12 weeks

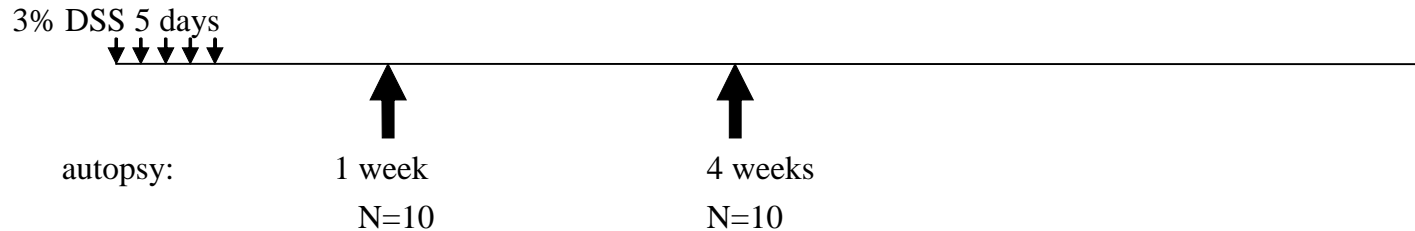
microbiological state: SPF

induction:

DSS 3% solution for 5 days



Example – protocol



- Monitoring and scoring
 - On daily basis (weekends included)
 - The amount of consumed solution/water
 - Body weight
 - Clinical picture of animals
 - Feces

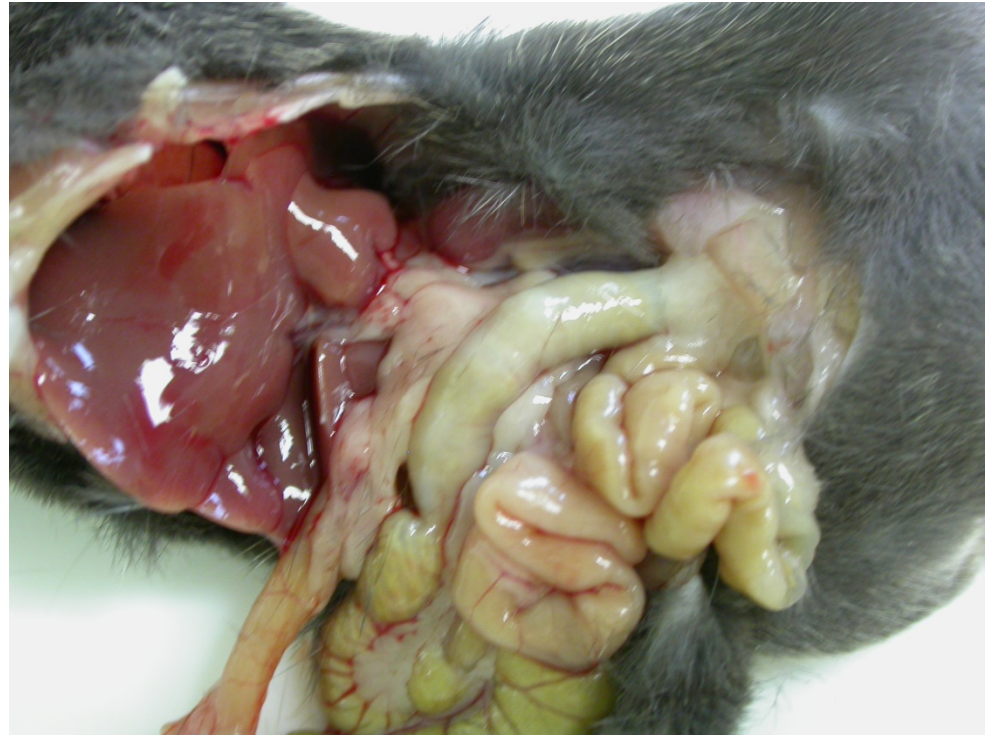
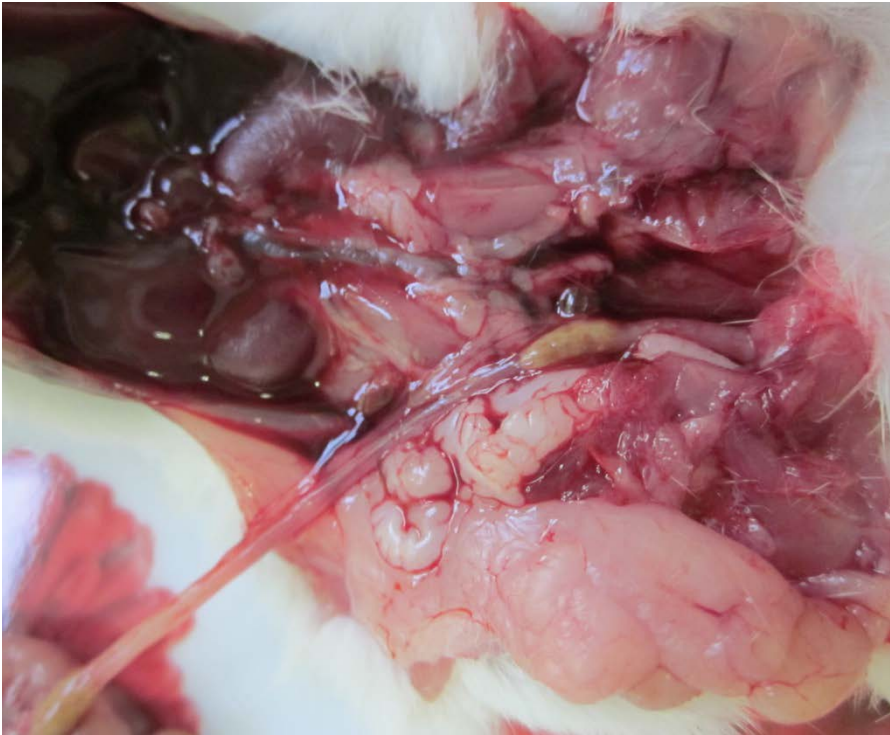
FECES



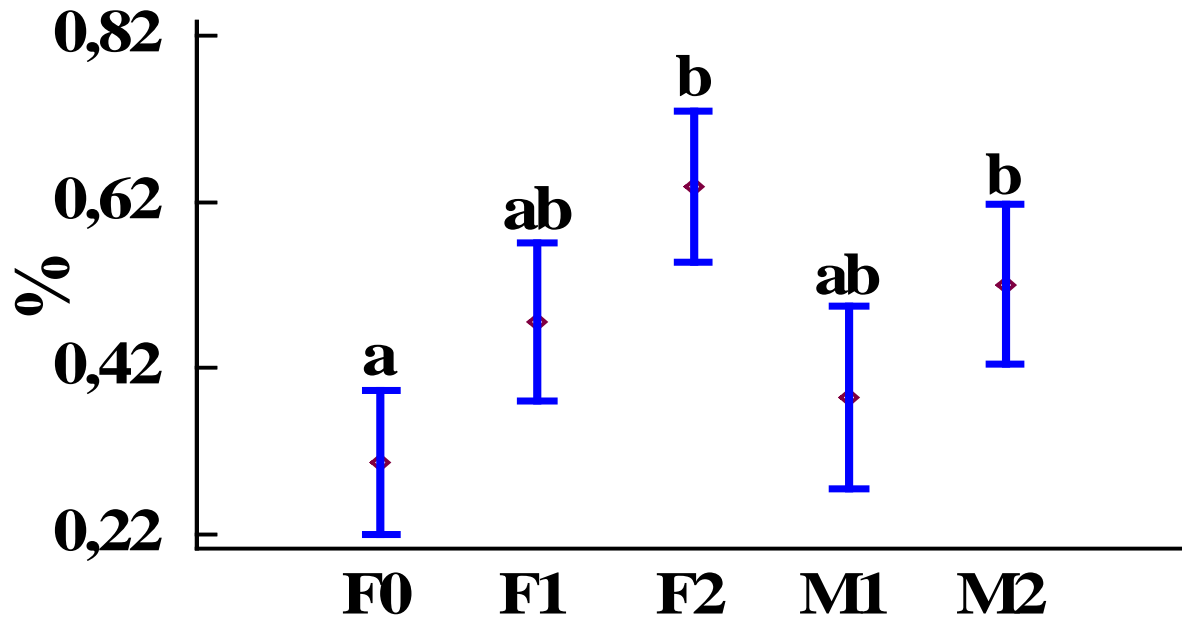
Autopsy

- Body weight
- General morphological examination
- Weight of organs
- Lymph nodes
- Gastrointestinal tract
- COLON – length, luminal content, appearance, fixation

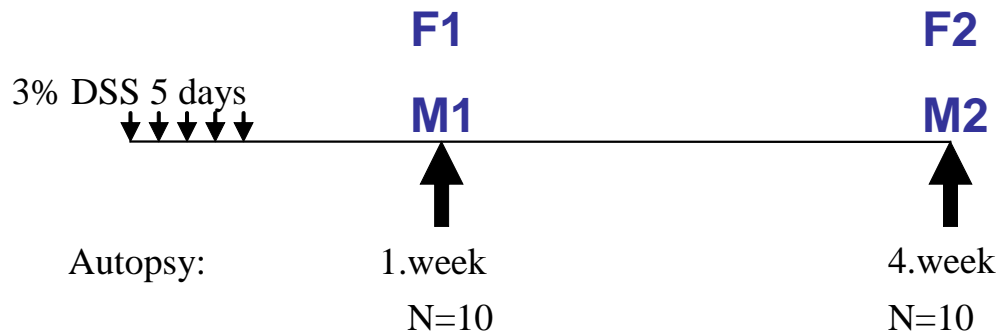
Autopsy



Relativna teža vranice



F0 = zdrave netretirane miši



Lymph nodes



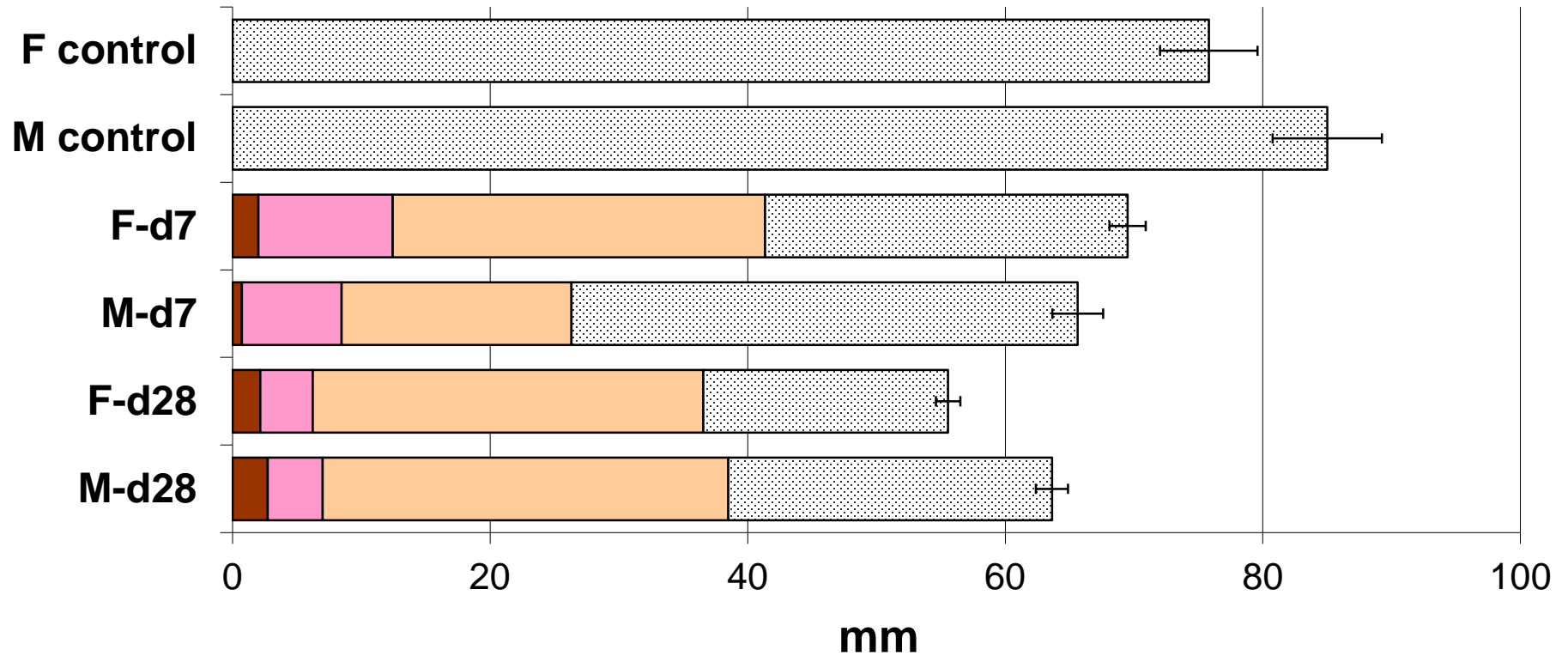
Colon



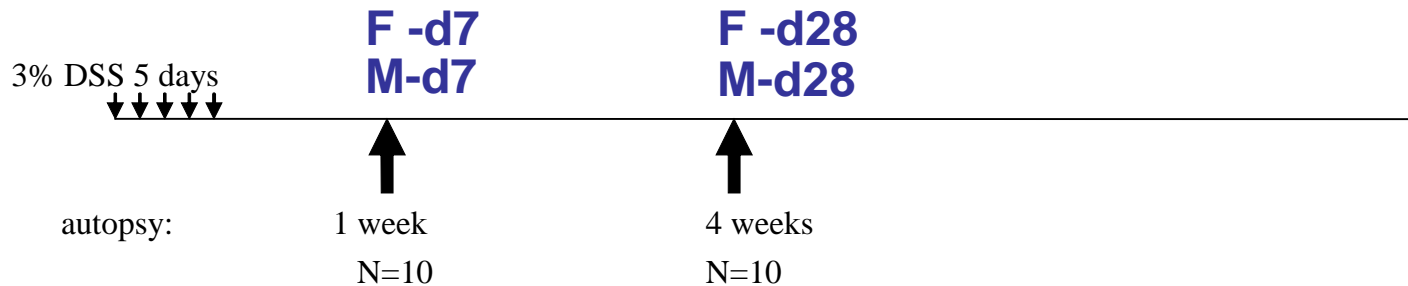
- Length of wet colon
- Histological evaluation
 - inflammation
 - Depth (mucosa – transmural)
 - Acute/chronic
 - Erosion
 - Squamous metaplasia of rectum



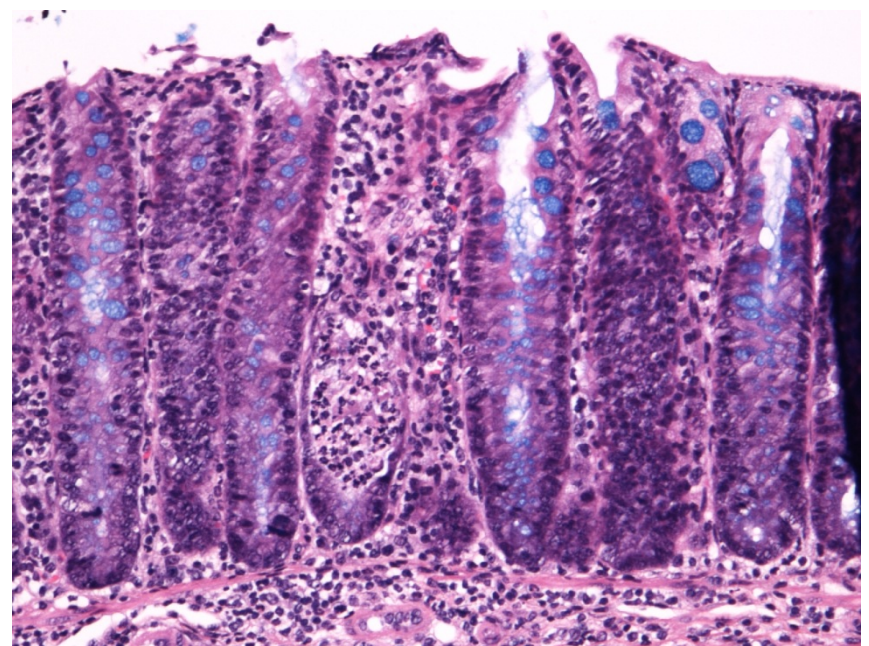
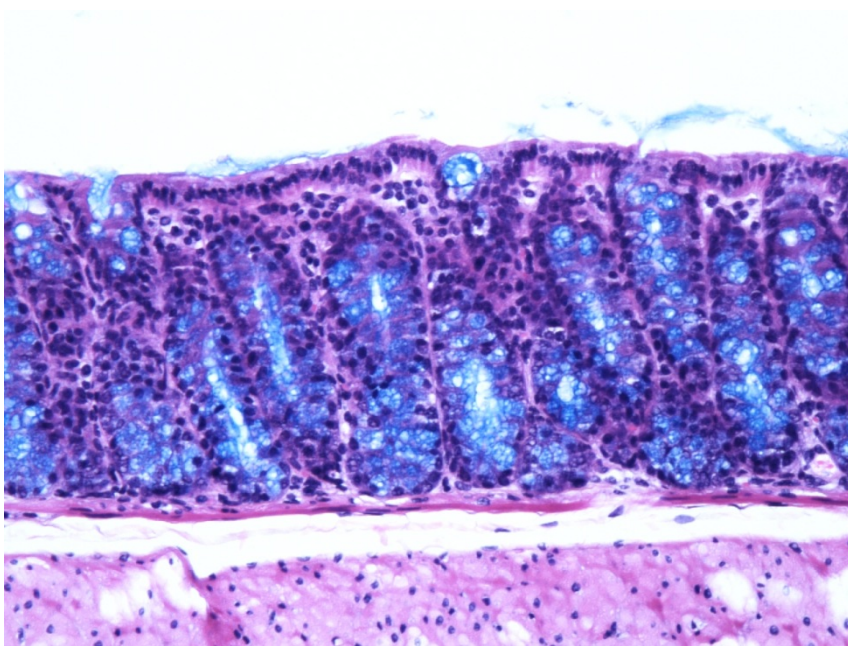
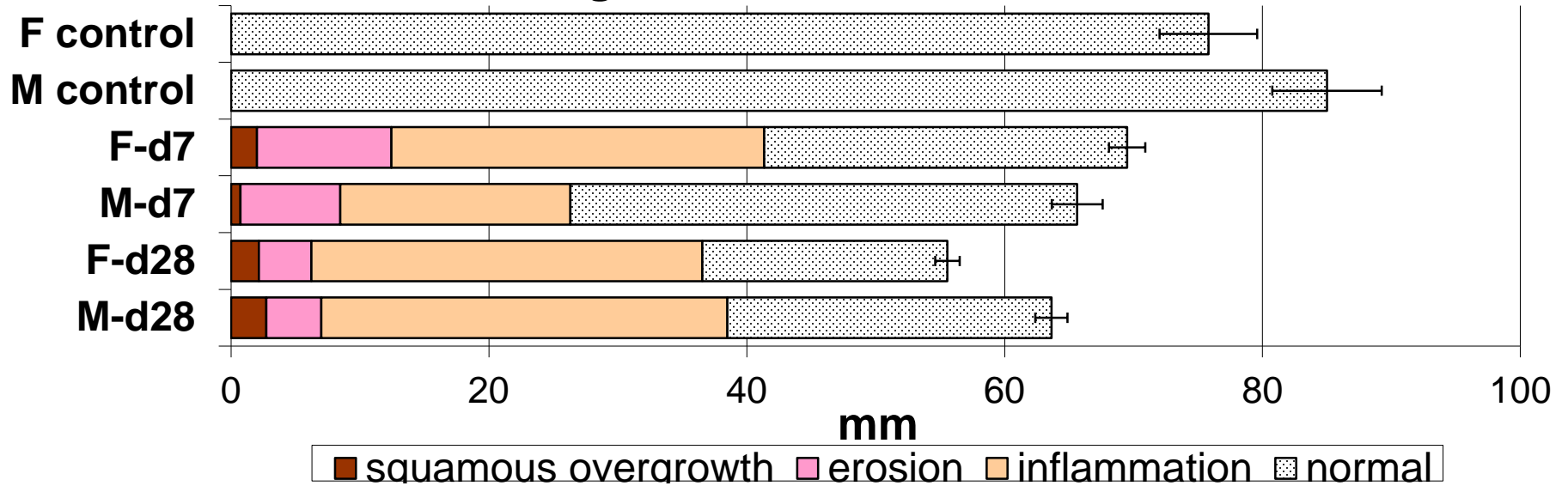
Length of colon and lesions



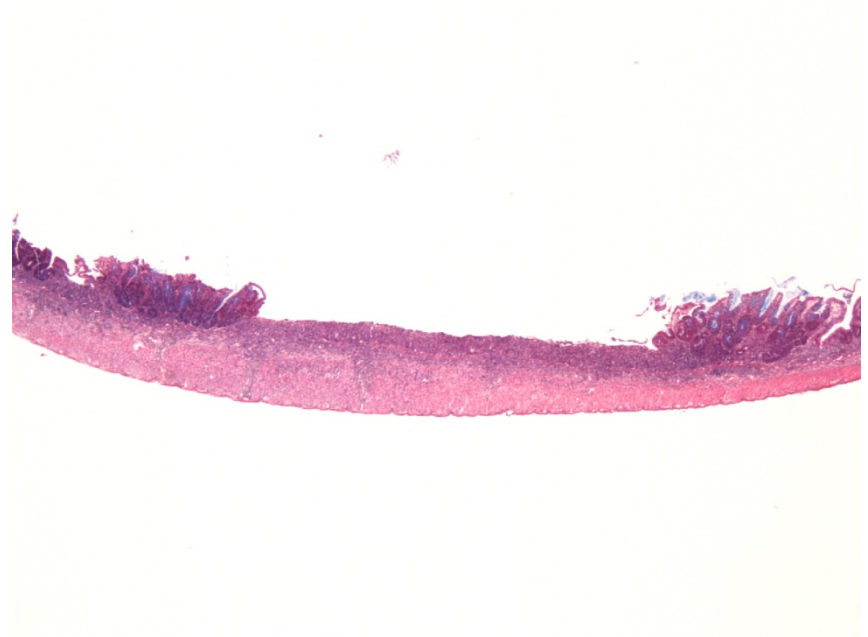
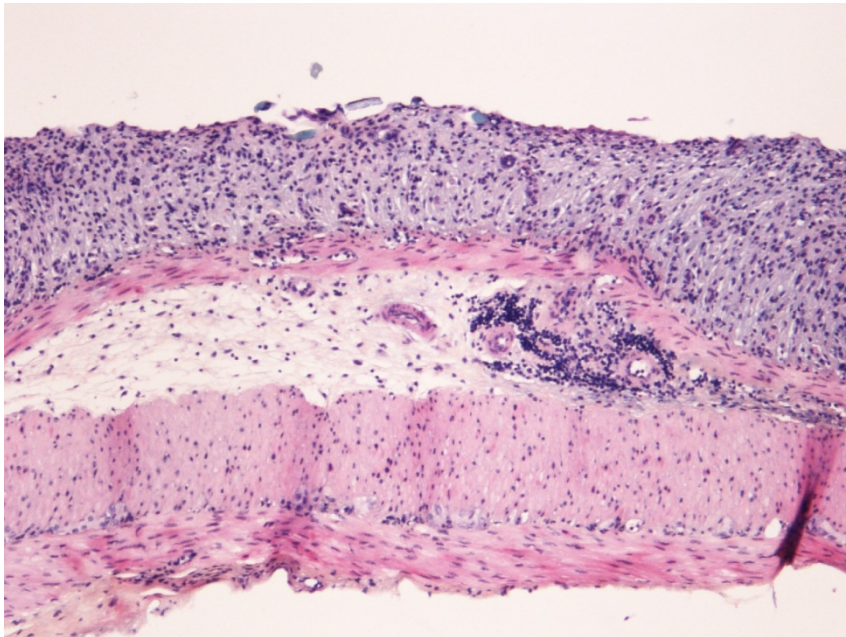
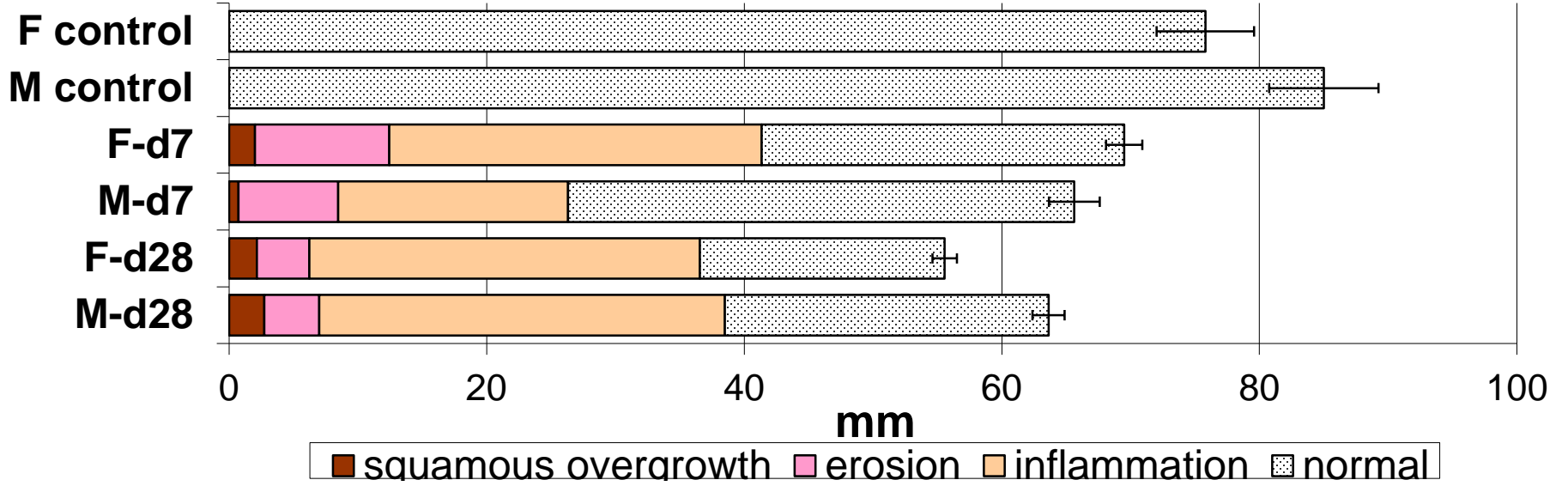
■ squamous overgrowth ■ erosion ■ inflammation ■ normal



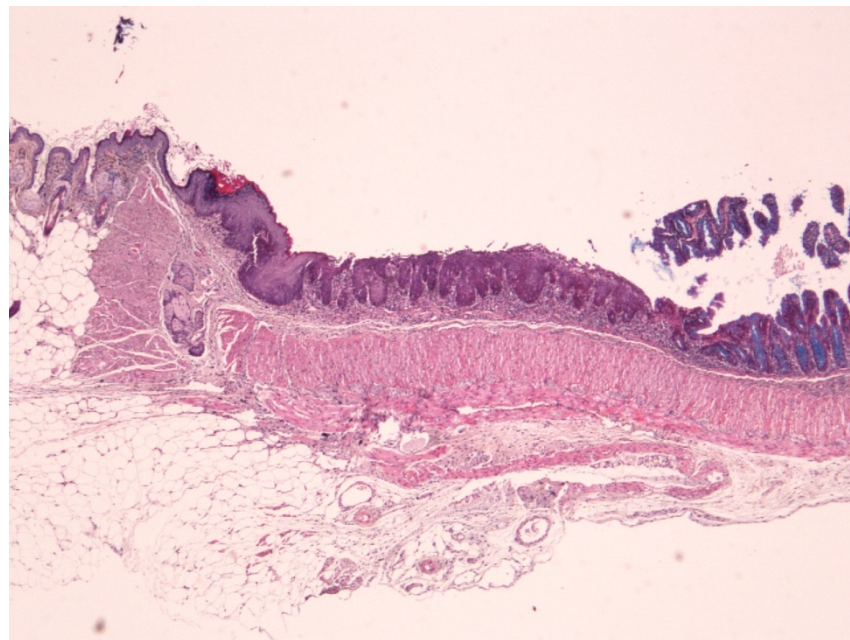
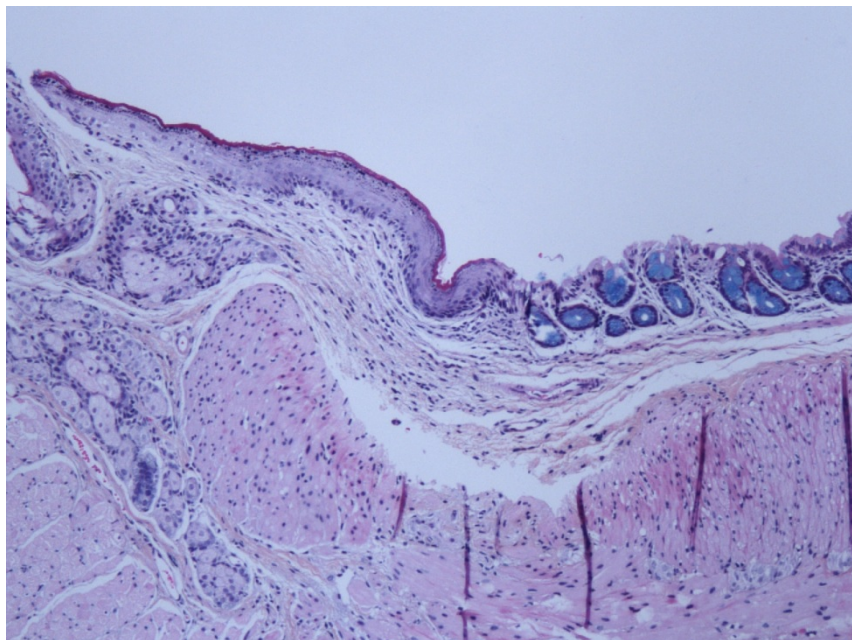
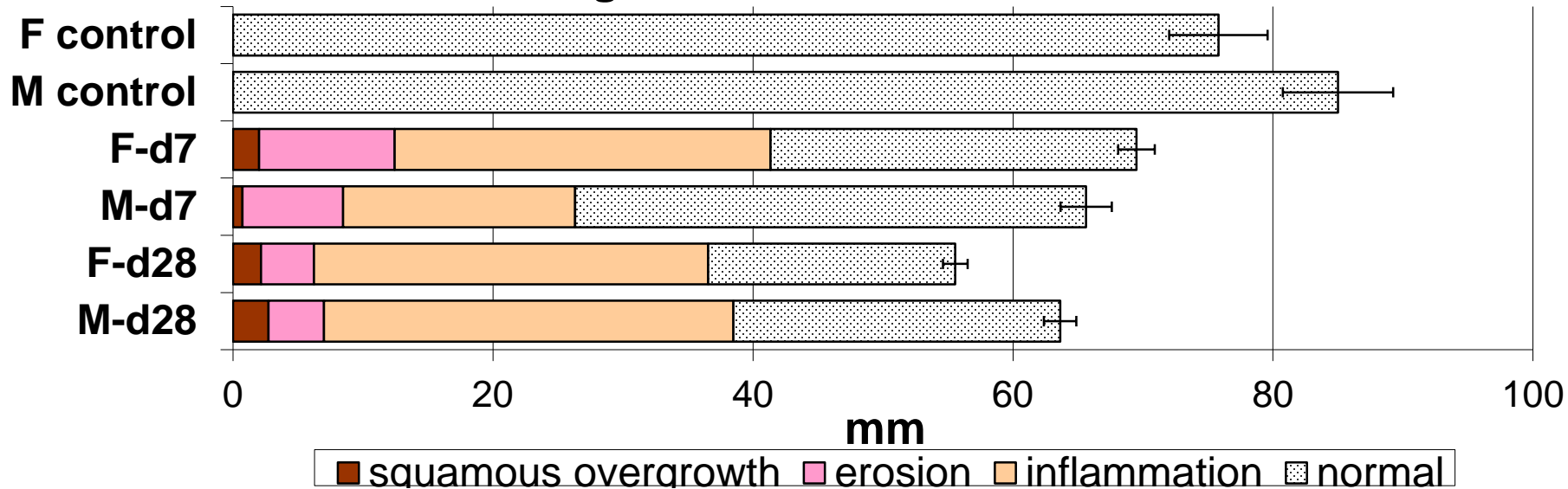
Length of colon and lesions



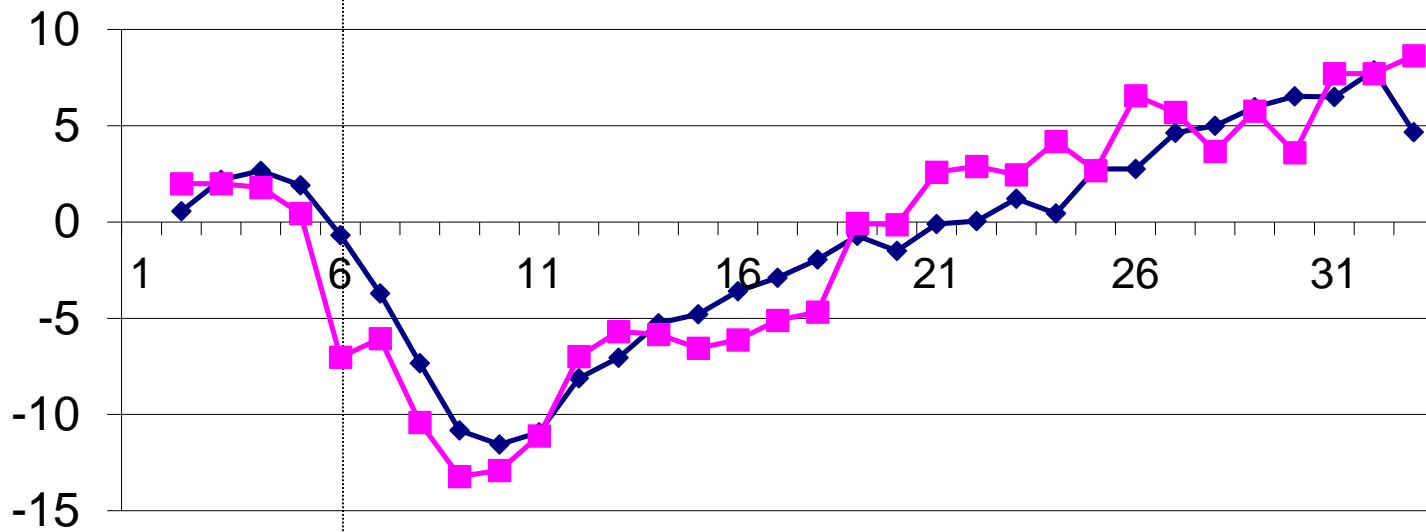
Length of colon and lesions



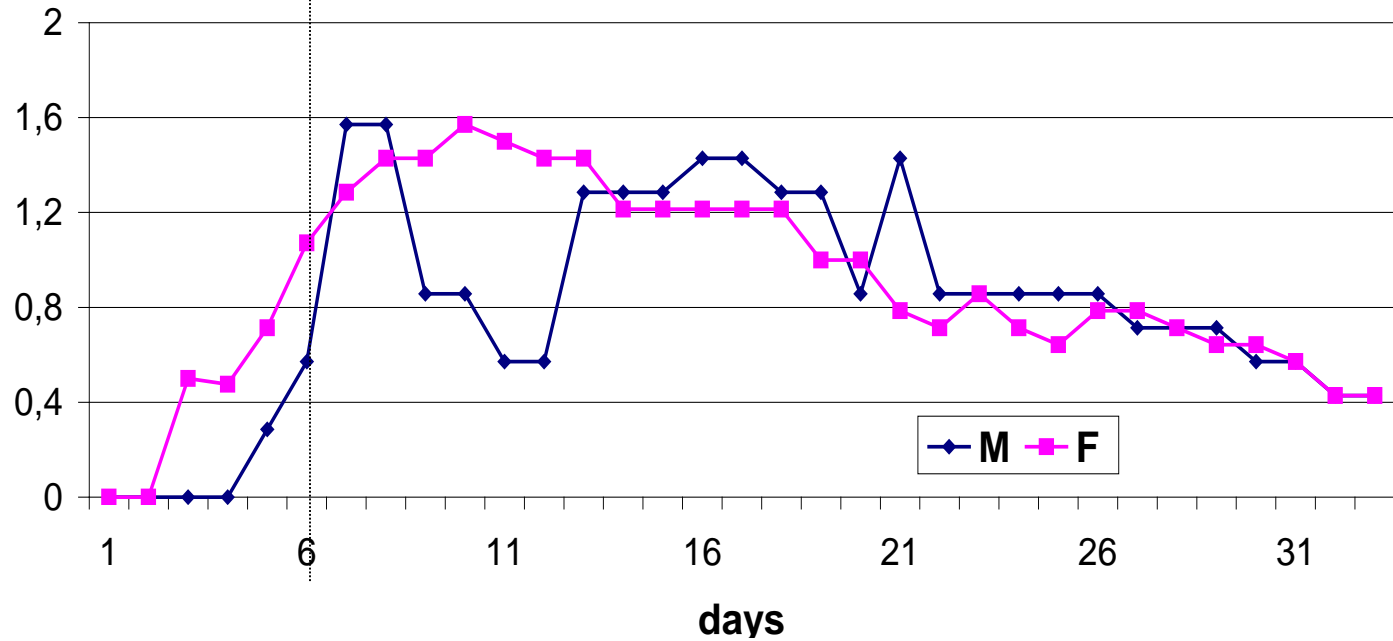
Length of colon and lesions



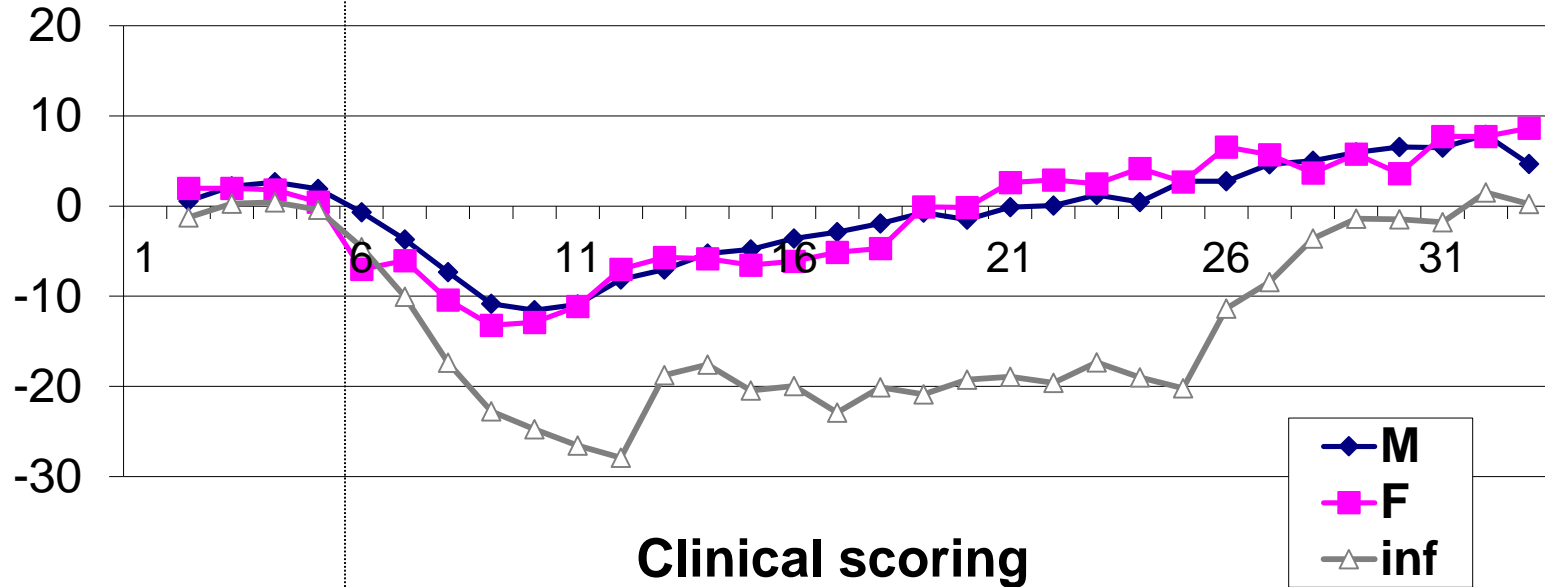
Body weight loss



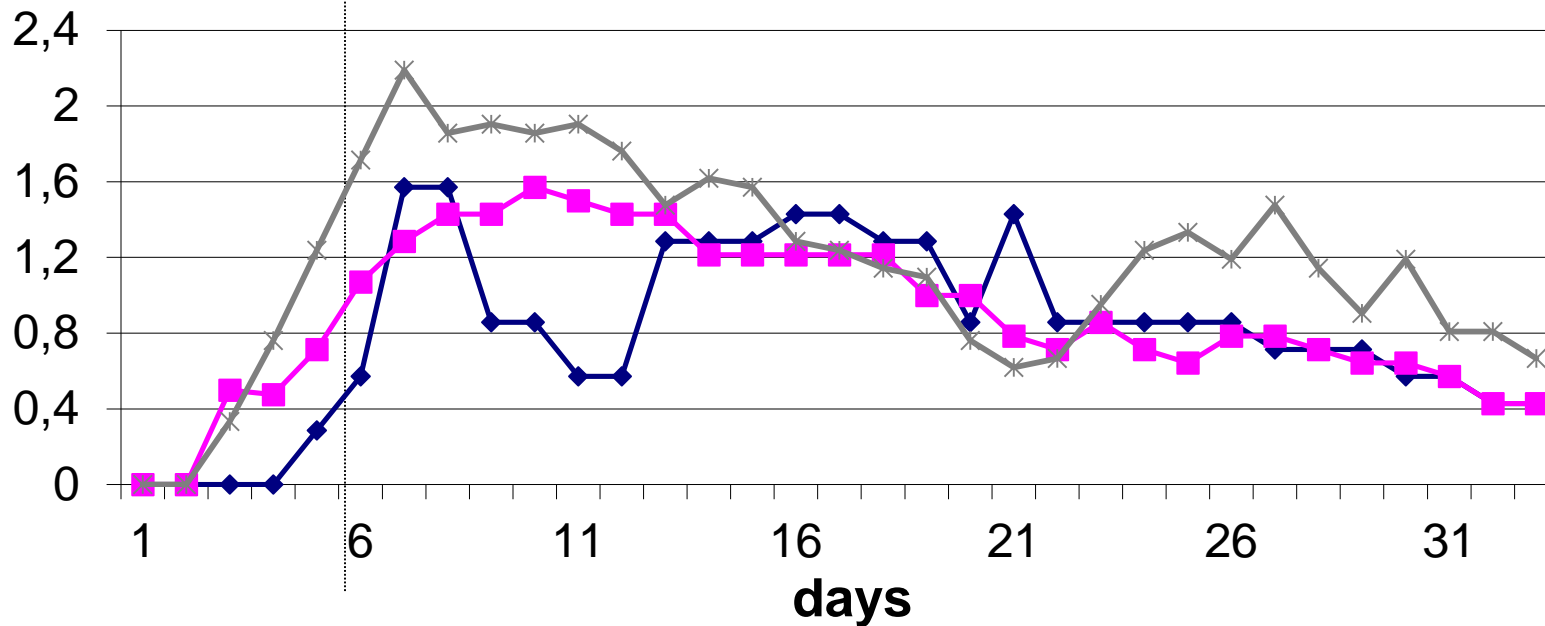
Clinical scoring



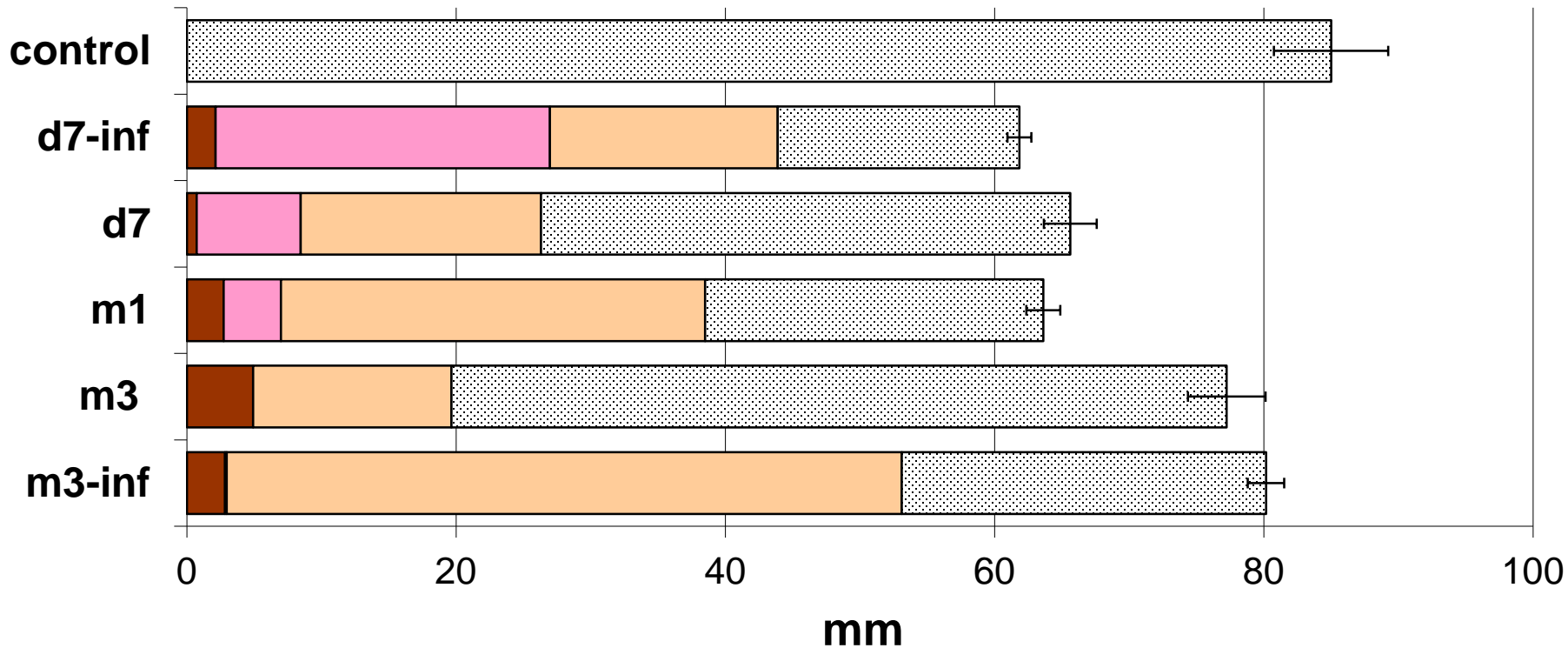
Body weight loss



Clinical scoring



Length of colon and lesions



■ squamous overgrowth ■ erosion ■ inflammation ■ normal

3% DSS 5 days
↓ ↓ ↓ ↓ ↓

d7

m1

m3

autopsy:

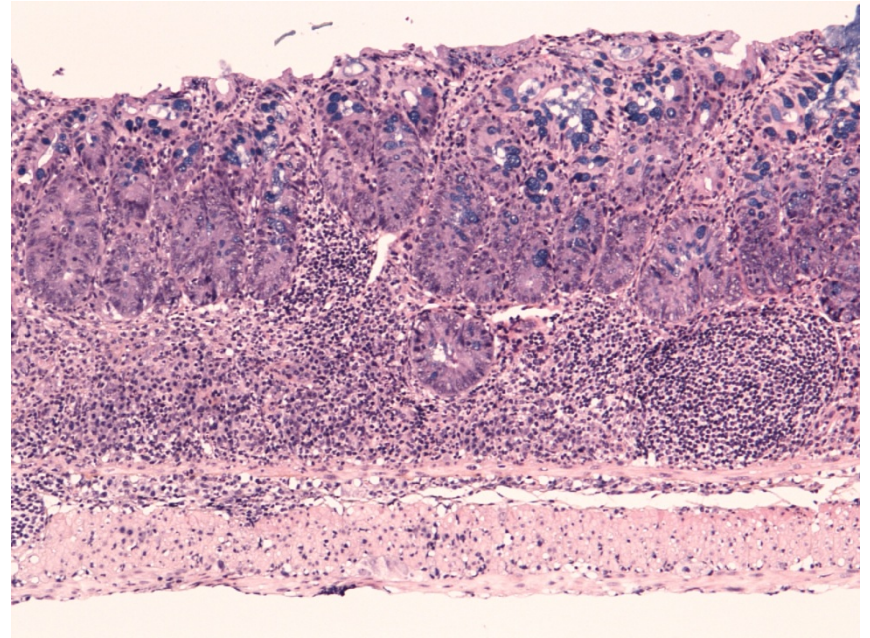
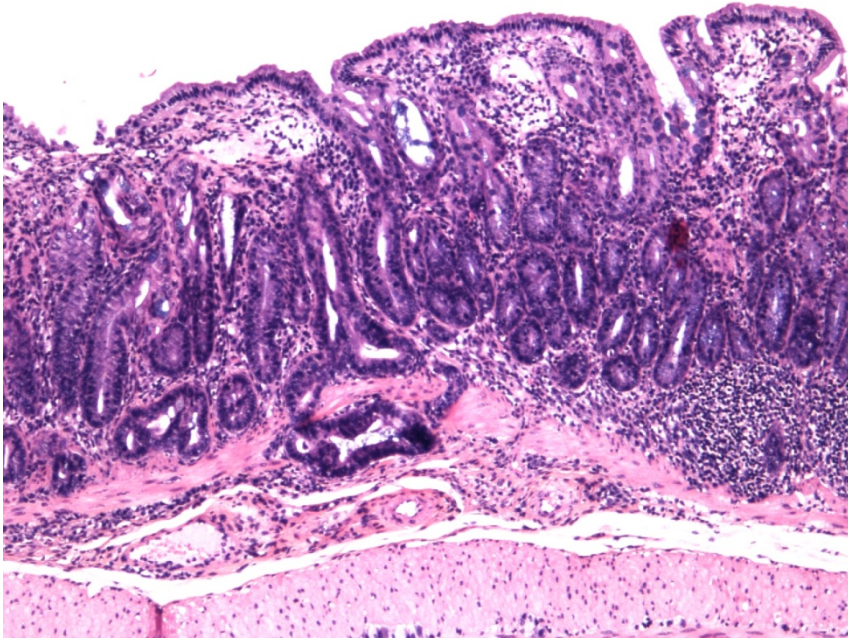
↑
1 week
N=10

↑
4 weeks
N=10

↑
3 months
N=10

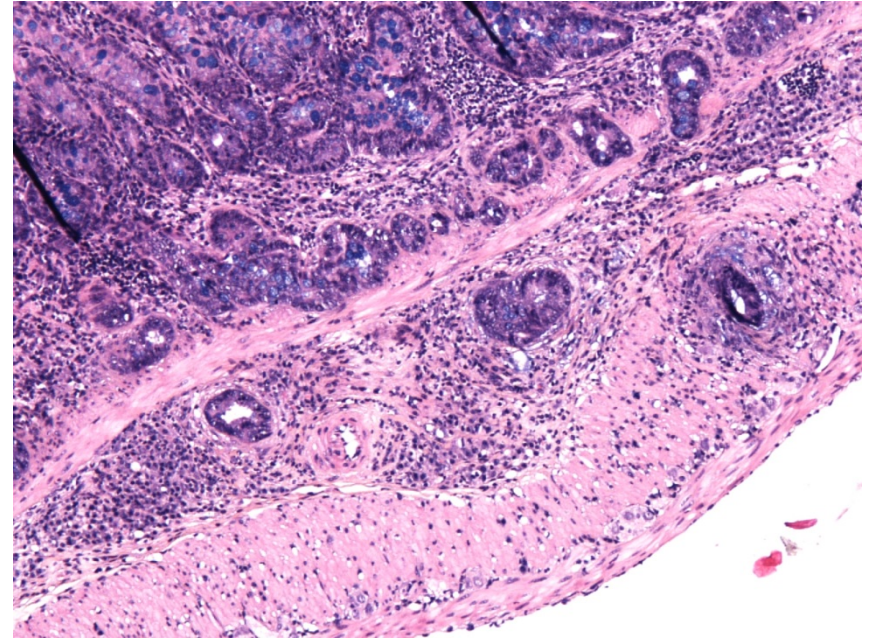
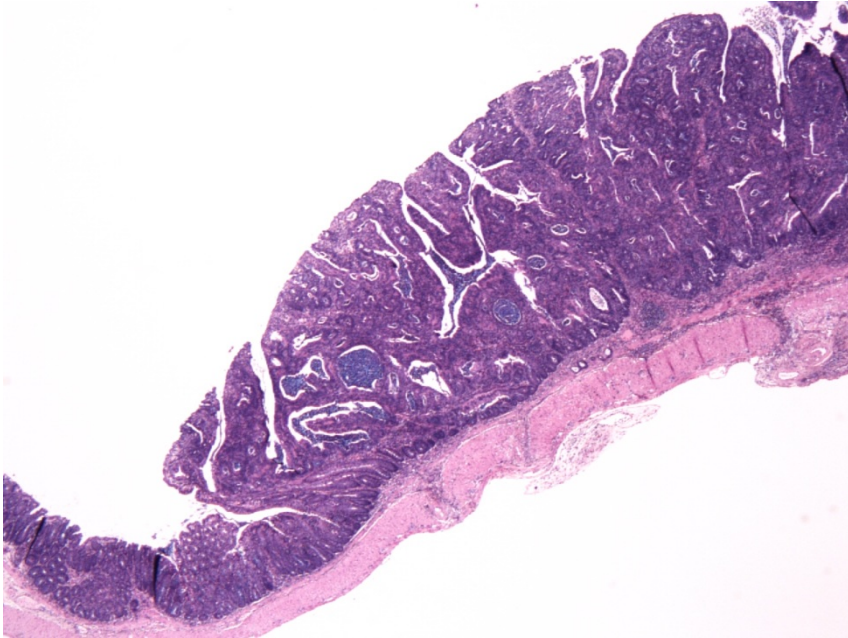
Colon

DSS-infected



Colon

adenocarcinoma



Thanks to:



Thank you for your attention



