

Effects of Diet Induced Obesity in Experimental Colitis

By:

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Intestinal Inflammation and Adipose Tissue

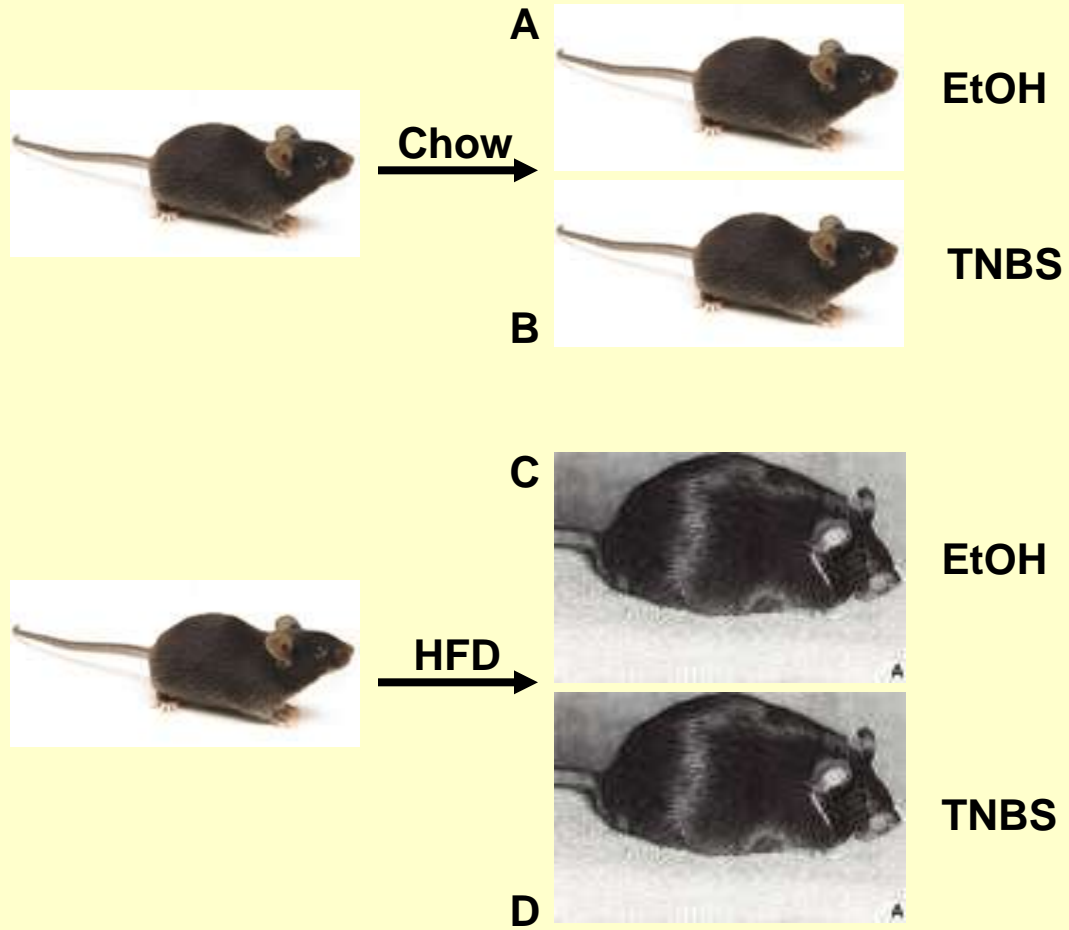
Fat hypertrophy, fat wrapping of the bowel (“creeping fat”) have been recognized by surgeons as a response to delineate the extend of active Crohn’s disease



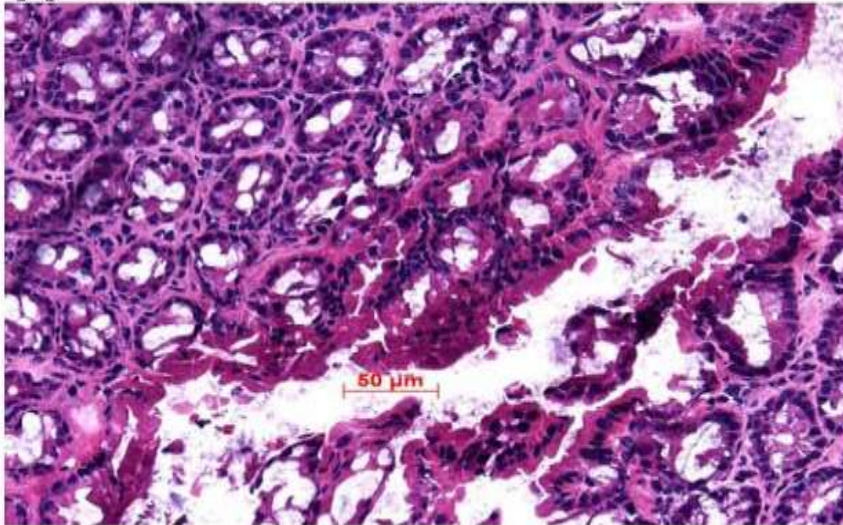
Obesity Inflammation and IBD

- Chronically obese patients demonstrate changes in immune function resembling a “low grade inflammatory state”
- Inflammatory cells and cytokine levels increase both in the circulation as well as the fat depots of obese patients
- Increased adiposity is linked to several disease states with an inflammatory etiology, including atherosclerosis, and insulin resistance
- Recent clinical studies associate increased Body Mass Index (BMI) with the development of active CD and the requirement of these patients for hospitalization. In addition, high BMI in IBD patients is significantly associated with decreased time span between diagnosis and surgery

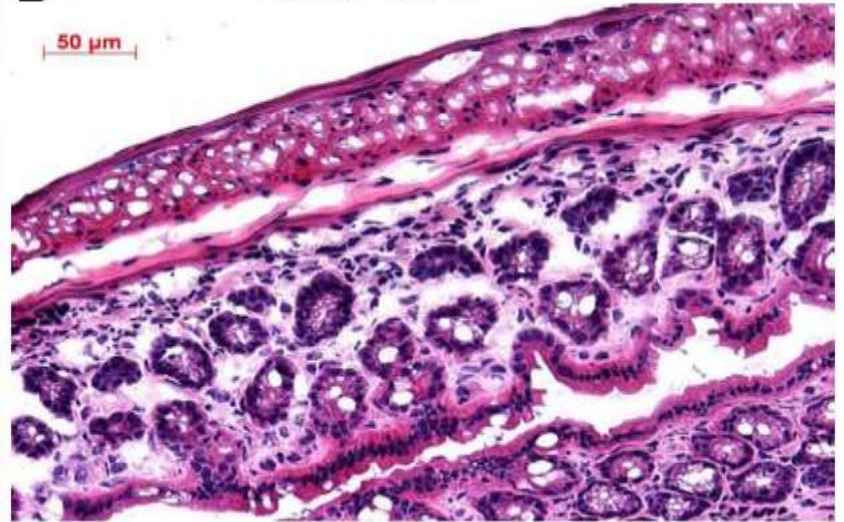
Our Model:



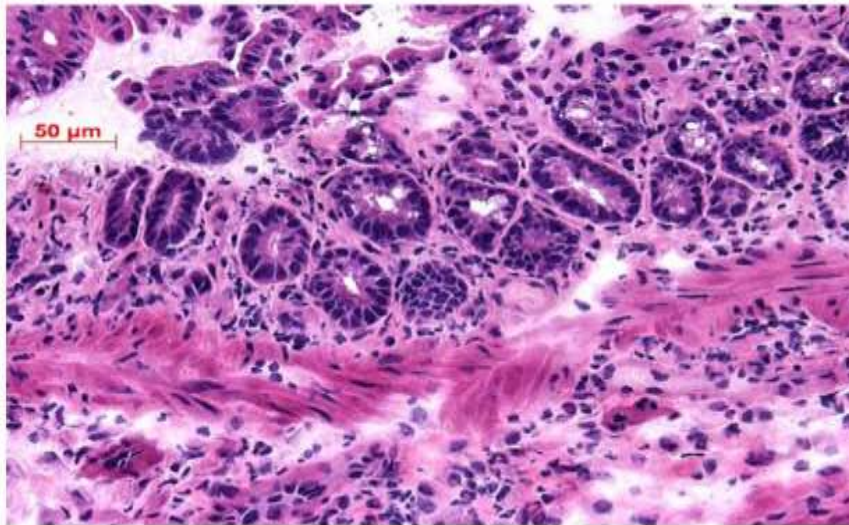
A Chow-control



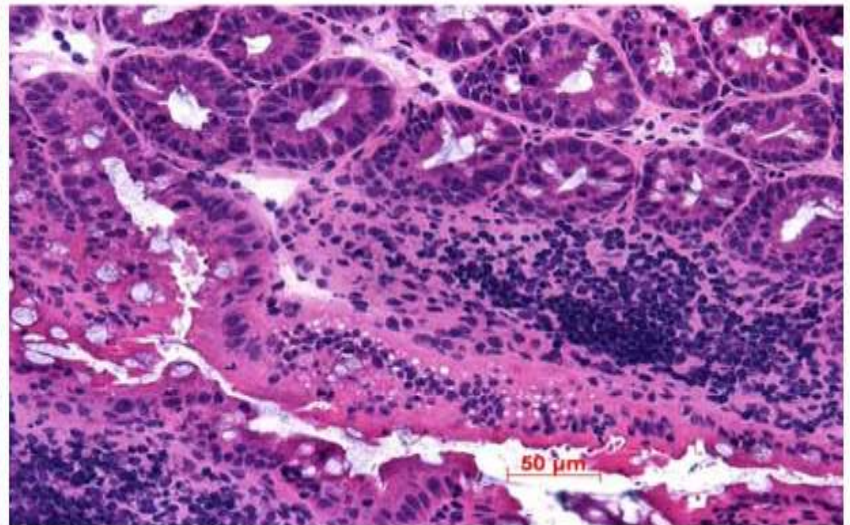
B Chow-TNBS

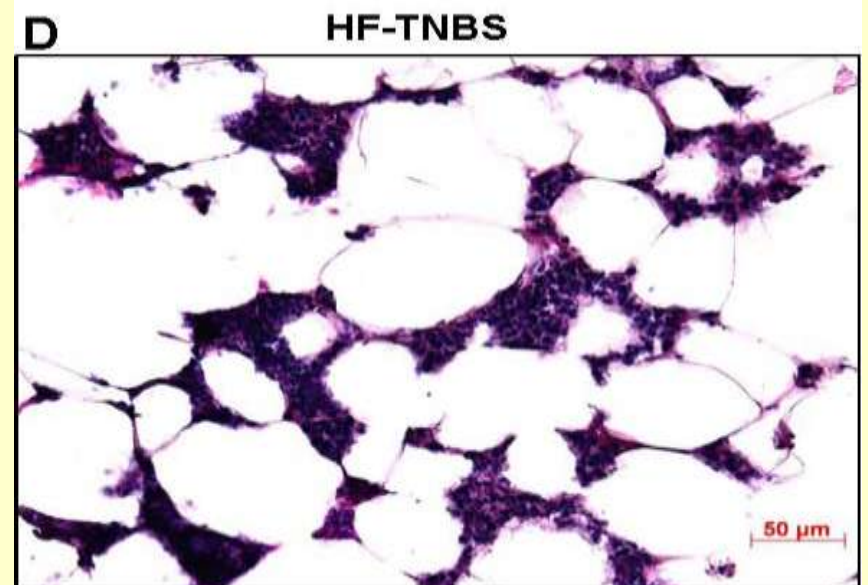
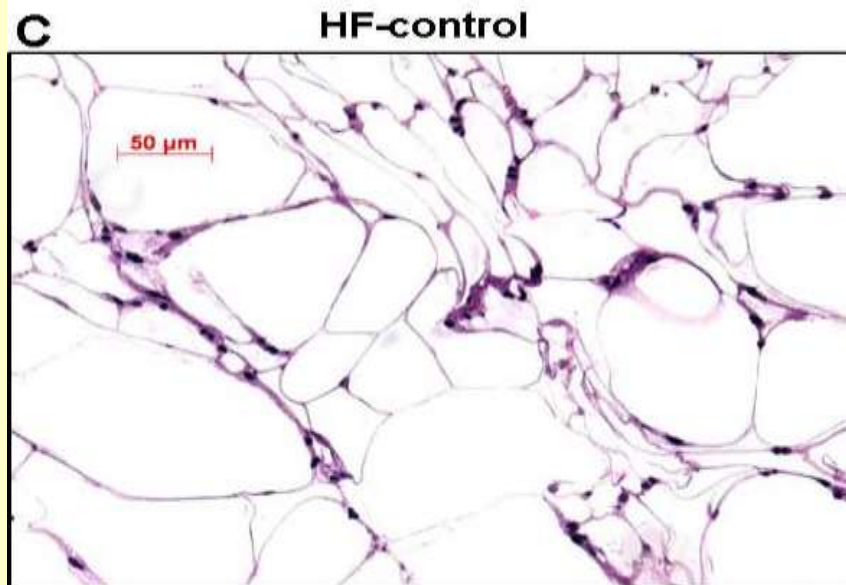
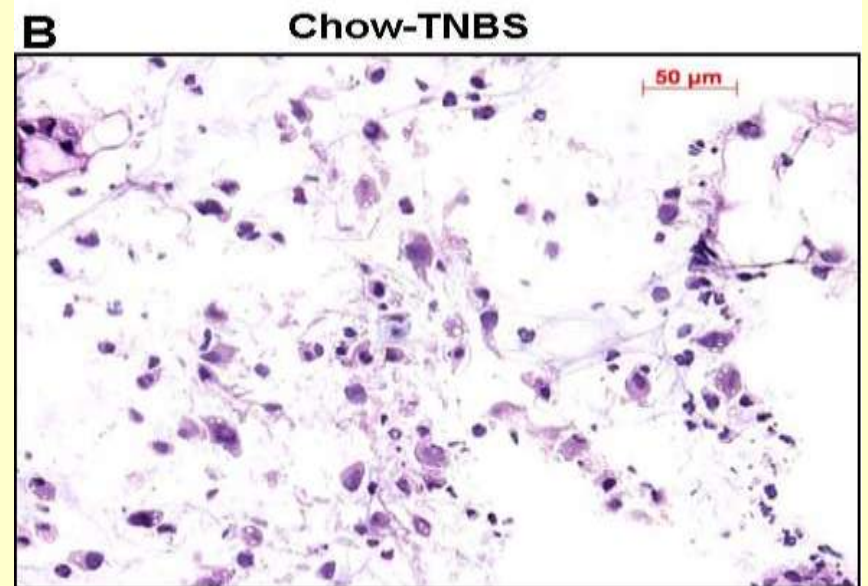
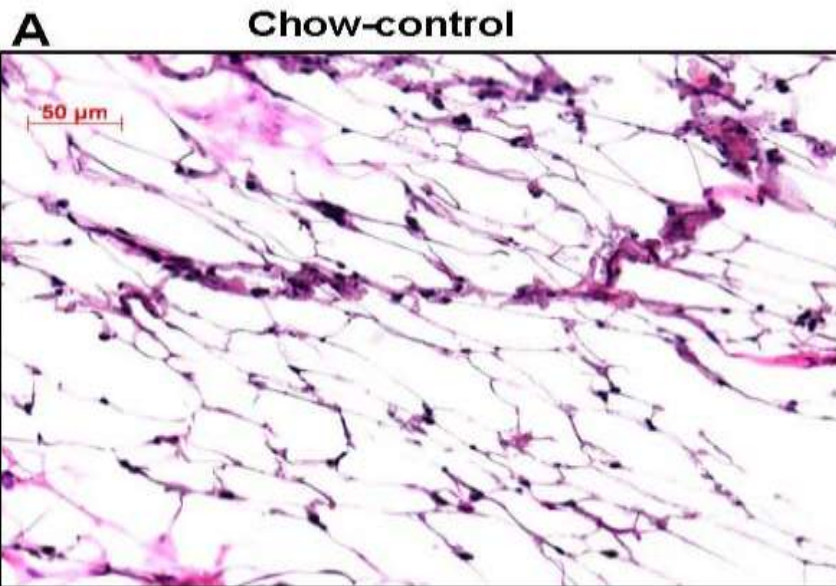


C HF-control

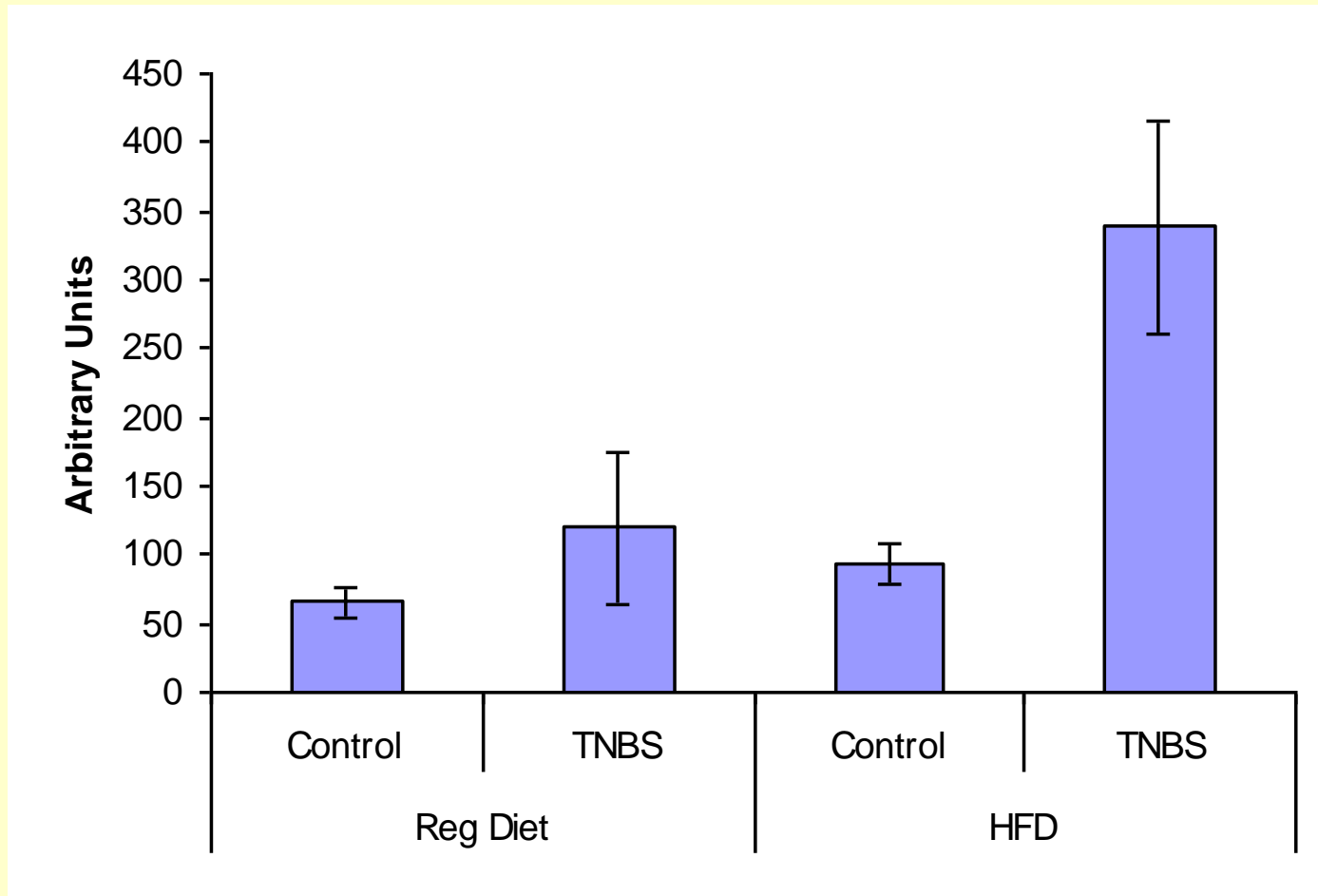


D HF-TNBS

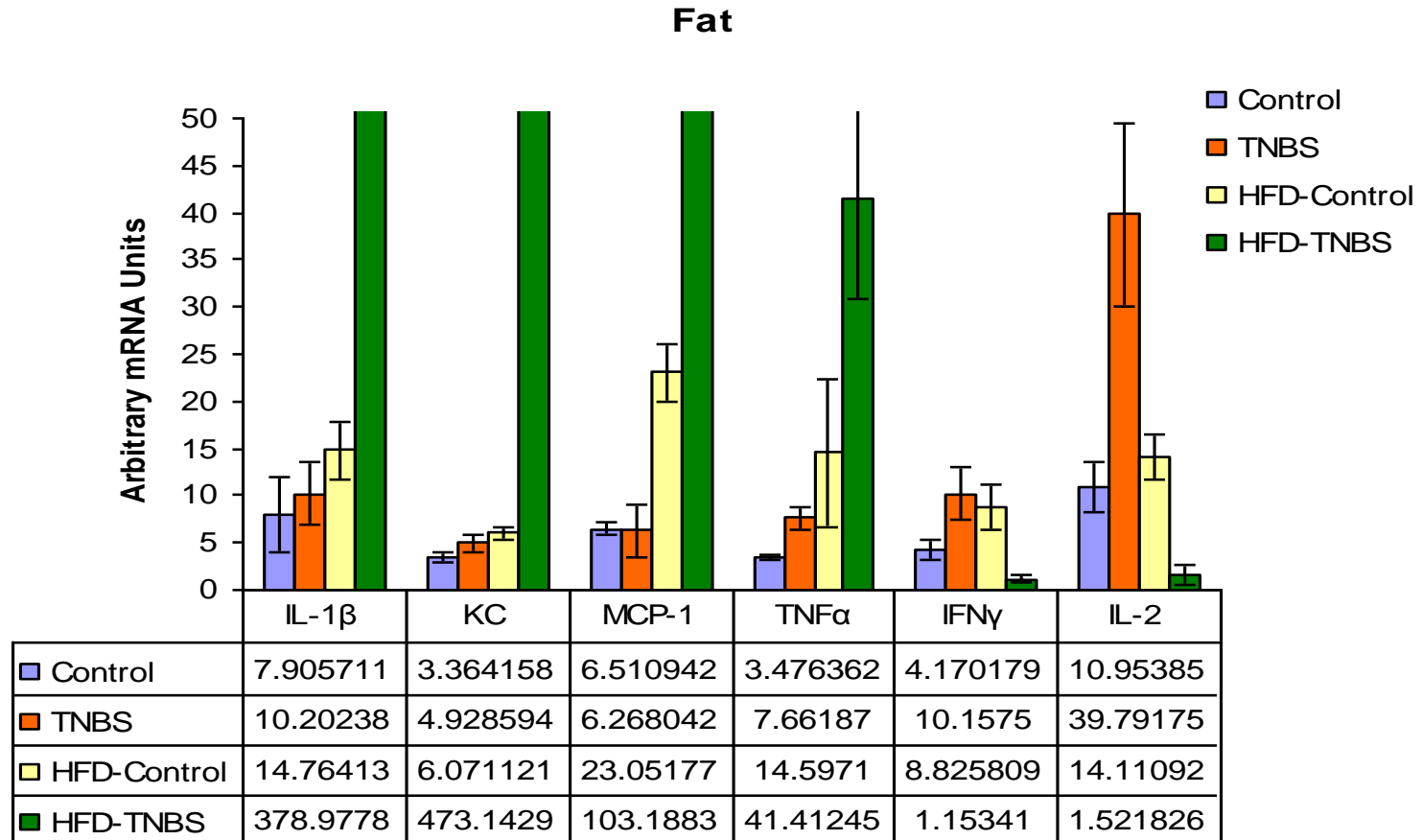




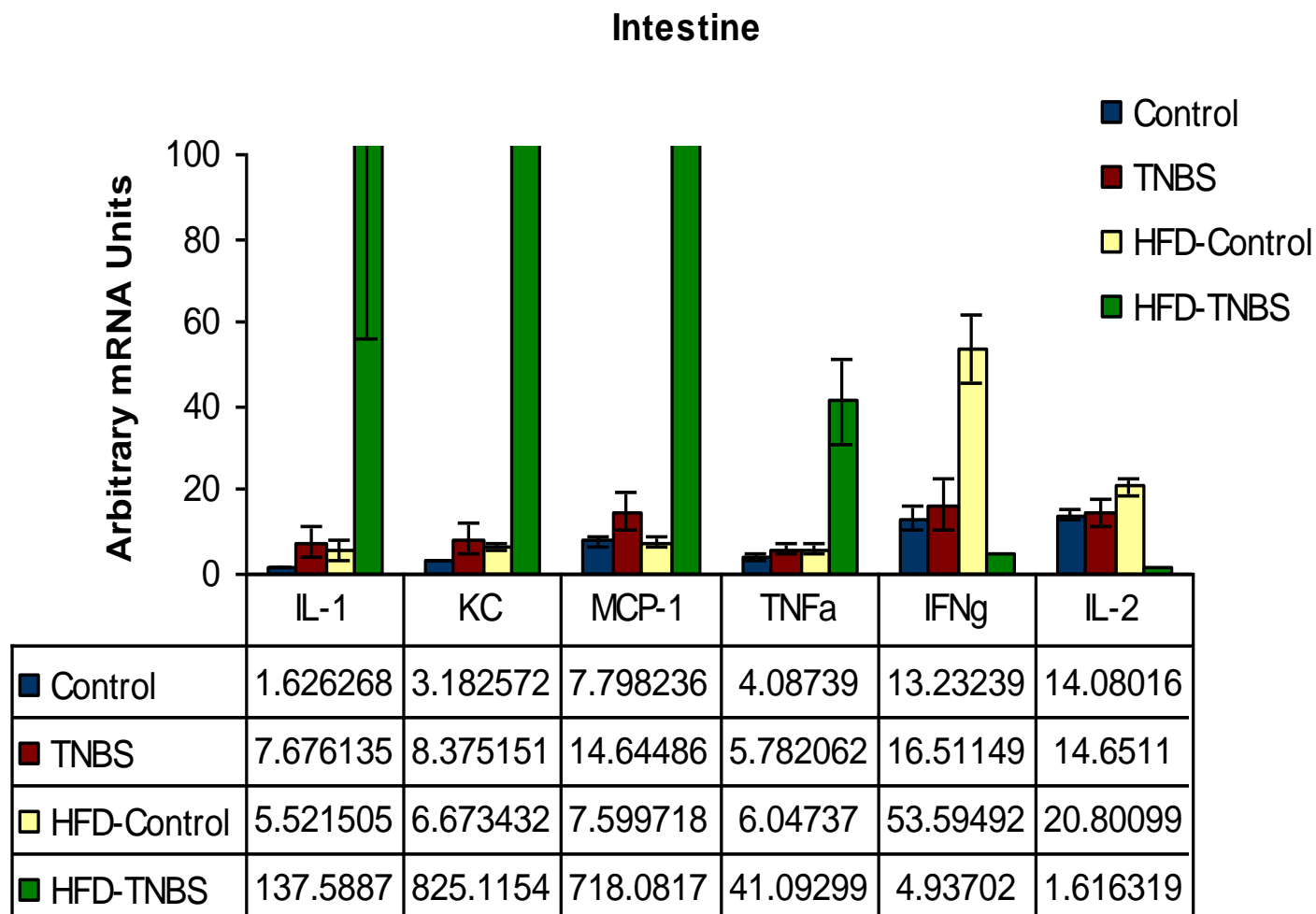
Obesity exacerbates myeloperoxidase (MPO) activity (inflammation) in the mesenteric adipose tissue of mice with colitis



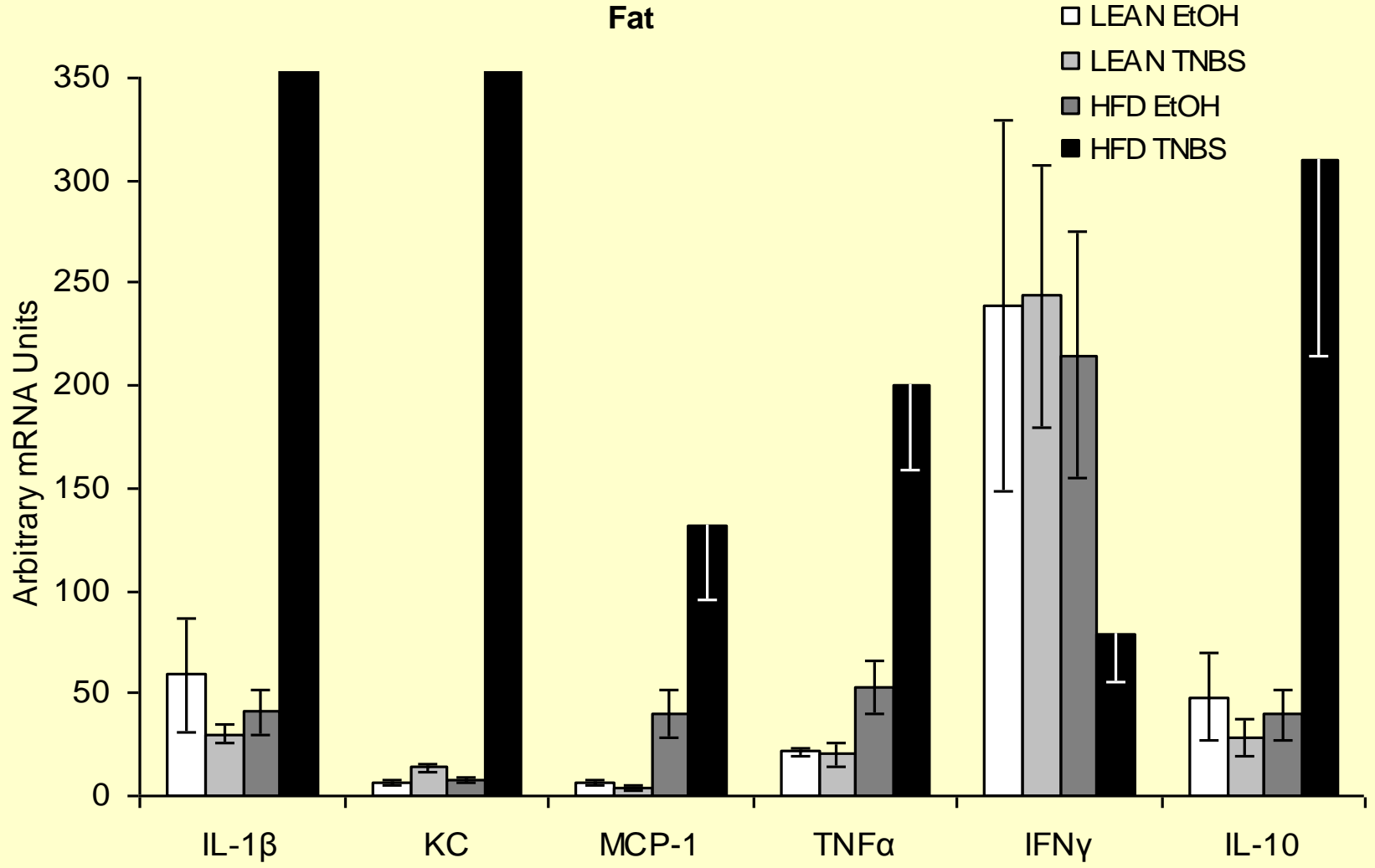
Diet-induced obesity exacerbates the expression of TNBS-associated proinflammatory cytokines such as IL-1 β , TNF α , MCP-1 and KC while it reverses the TNBS-induced increases in IL-2 and IFN γ in mouse mesenteric adipose tissue.



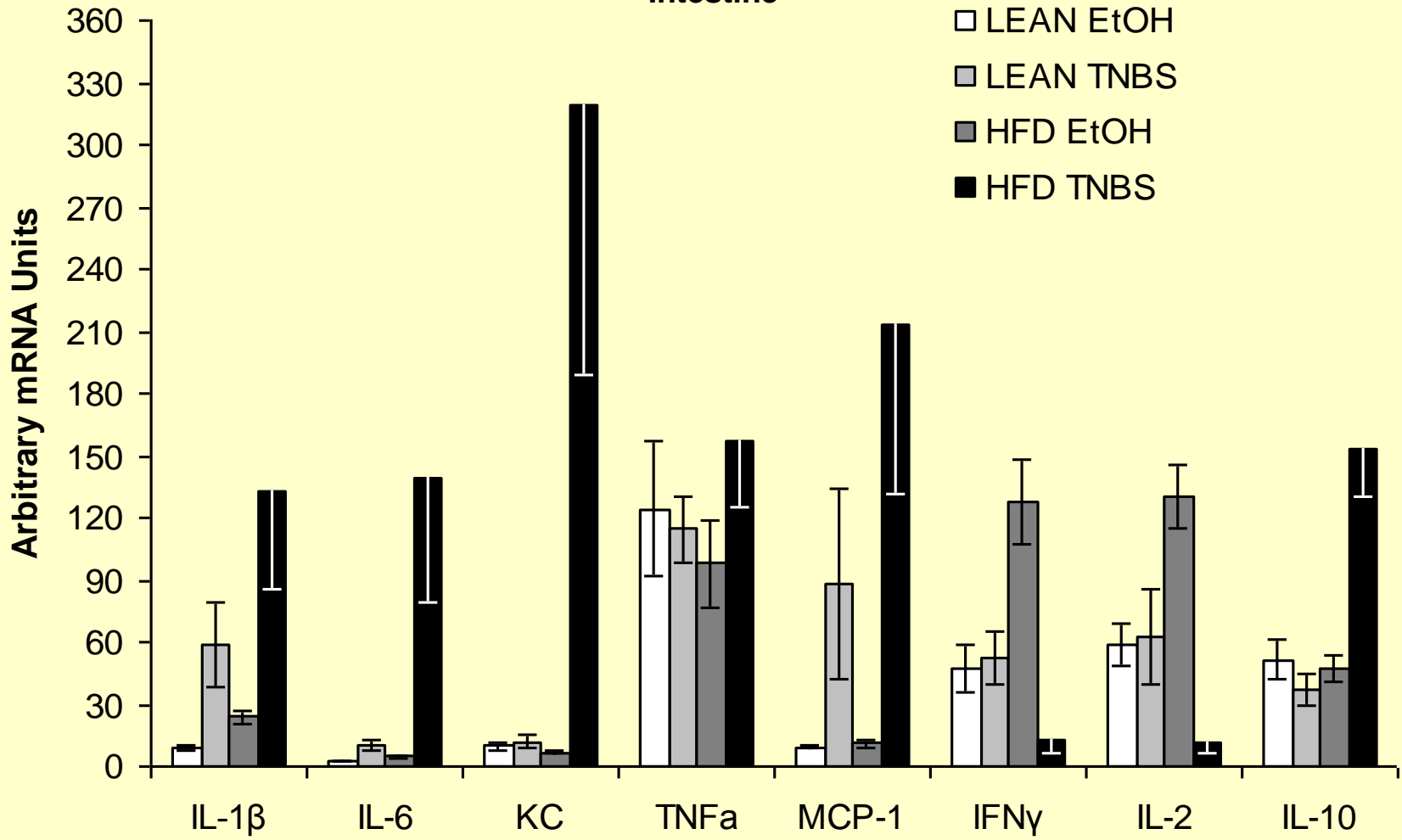
Diet-induced obesity exacerbates the expression of TNBS-associated proinflammatory cytokines such as IL-1 β , TNF α , MCP-1 and KC while it reverses the TNBS-induced increases in IL-2 and IFN γ in mouse intestine.

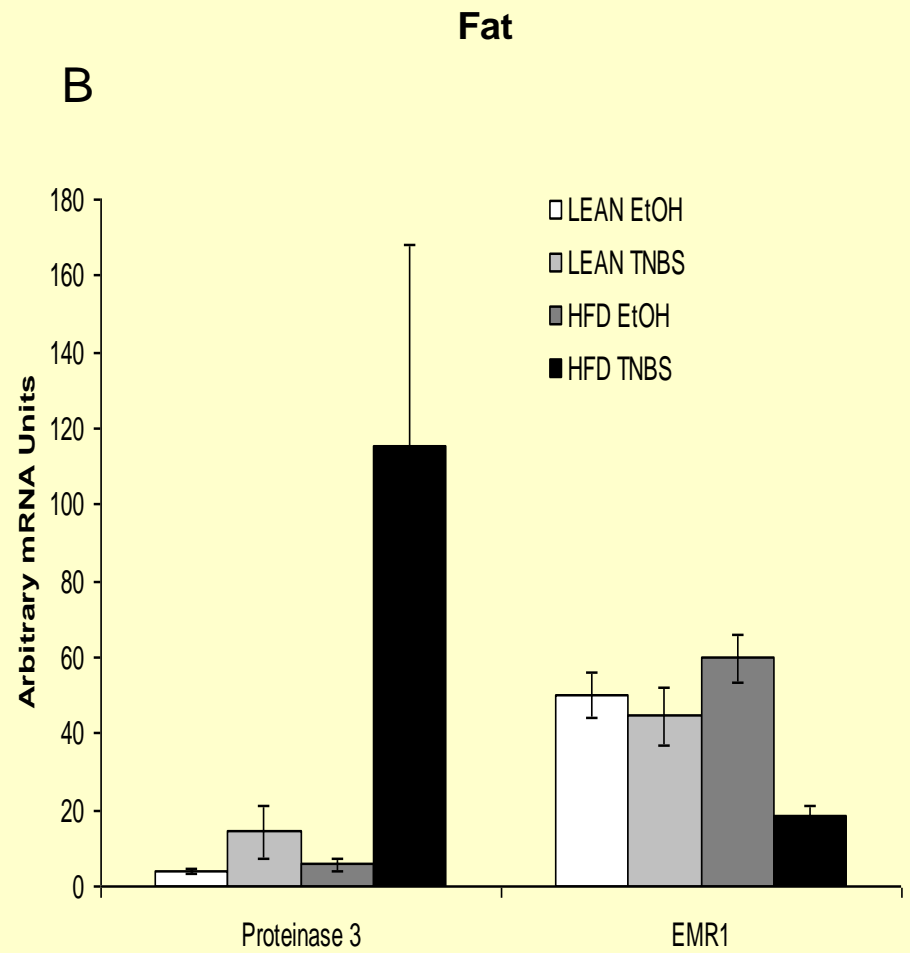
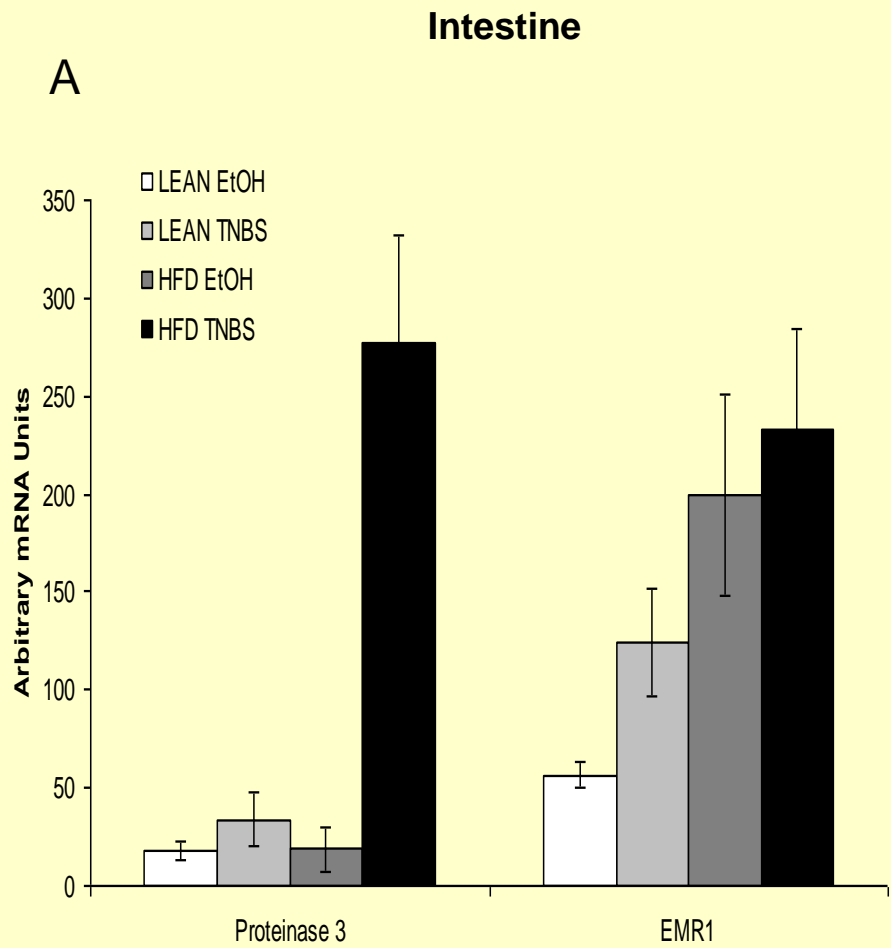


Fat



Intestine

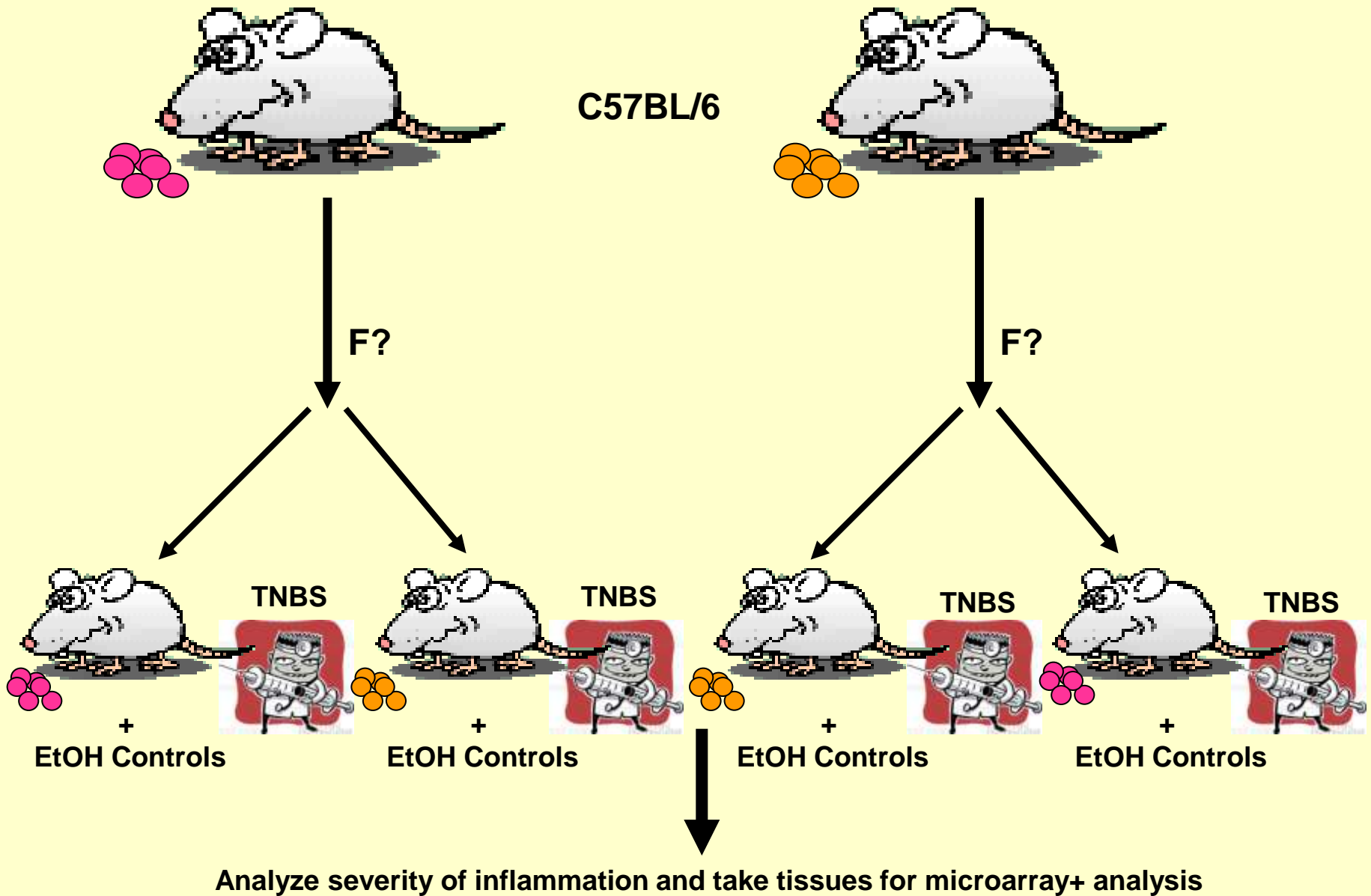




Ongoing Experiments

- Establish the chronic obesity with TNBS colitis animal model
- Evaluate the ability of adipocytes from different groups to attract inflammatory cells
- Run cytokine arrays in order to identify obesity-associated, adipocyte-derived markers that may influence the progression of intestinal inflammation
- Collect fat tissue from IBD patients and isolate preadipocytes and adipocytes. investigate the changes on the adipocyte level when compared to non-IBD controls. We will then examine whether patient BMI correlates with differences in gene expression profiles of adipocytes isolated from IBD patients.

Trans-generational effects of diet on intestinal inflammation



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