Short-Term High Fat, High Sucrose Diet Increases Markers Associated with Hepatic Lipid Accumulation in Rhesus Macaques

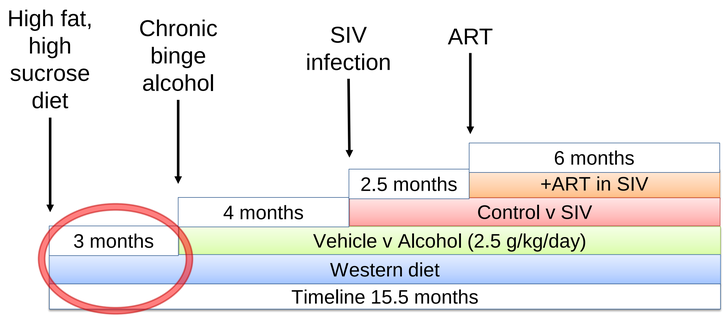
Eden Gallegos, Liz Simon, Patricia Molina.

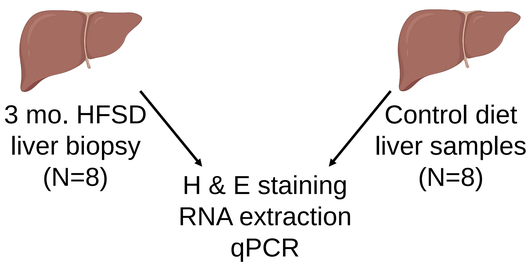
LSU Health Sciences Center, Department of Physiology, 1901 Perdido Street, New Orleans, LA 70112.

National Institute on Alcohol Abuse and Alcoholism

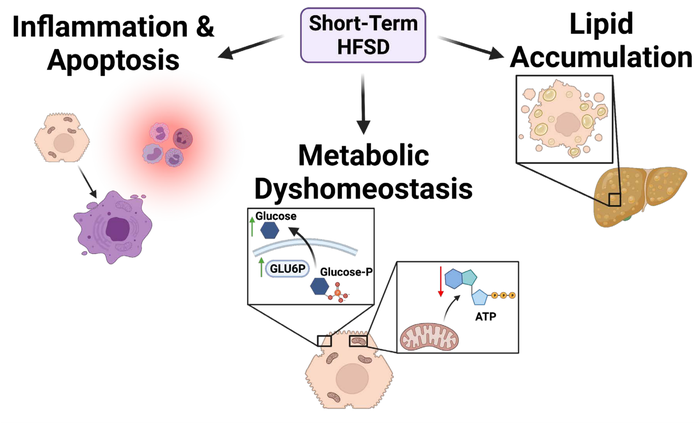
Introduction

- Non-alcoholic fatty liver disease (NAFLD) and alcoholic liver disease (ALD) are the **leading causes** for liver transplantation in the US. The etiology of liver diseases is not fully understood.
- Of interest to our laboratory, people living with HIV and people with at-risk alcohol use consume low quality diets.





Hypothesis



Short-term (3 mo.) high fat, high sucrose diet increases markers of hepatic lipid accumulation in rhesus macaques.

Cell Morphology & Lipid Accumulation

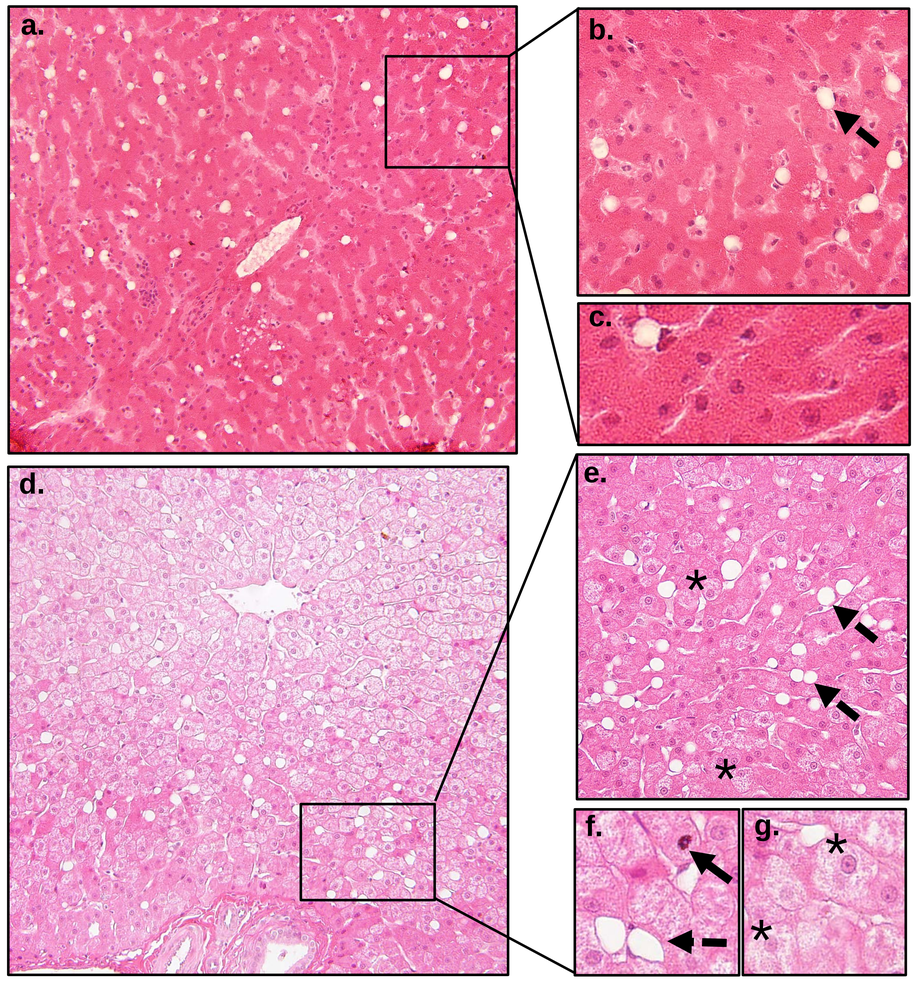


Figure 1. H. & E. sections of control and HFSD-fed liver. a.-c., control-diet; **d.-g.,** HFSD-diet. Asterisks indicate enlarged hepatocytes with washed-out cytoplasm compared to the eosinophilic cytoplasm of neighboring hepatocytes. Solid arrows indicate condensing or condensed nuclei. Dashed arrows indicate lipid droplets. **a. and d.,** 20X magnification; **b., c., e., f., and g.,** 40X magnification.

Inflammation & Apoptosis

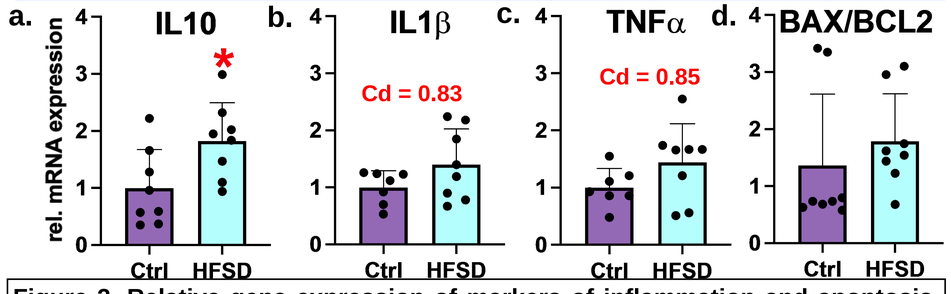


Figure 2. Relative gene expression of markers of inflammation and apoptosis. Reference gene—ribosomal protein S13 (rps13); **a.** interleukin-10 (IL10); **b.** interleukin-1β (IL1β); **c.** tumor necrosis factor α (TNFα); **d.** BCL2 associated X (BAX); B-cell lymphoma 2 (BCL2)**;** Cohen's d (Cd).

Lipid Accumulation

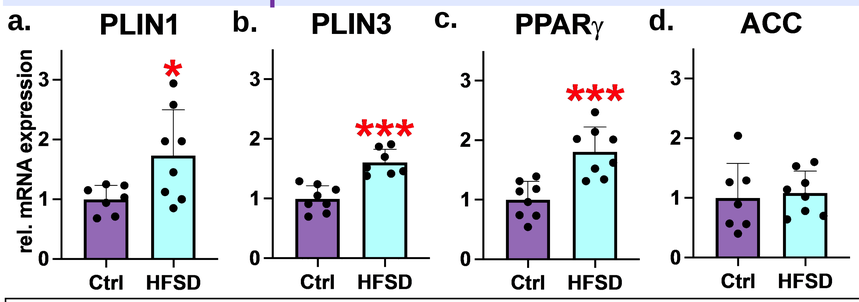


Figure 3. Relative gene expression of markers of lipid accumulation. a. Perilipin 1 (PLIN1); **b.** perilipin 3 (PLIN3); **c.** peroxisome proliferator-activated receptor γ (PPARγ); **d.** acetyl-coA carboxylase (ACC).

Metabolic Dyshomeostasis

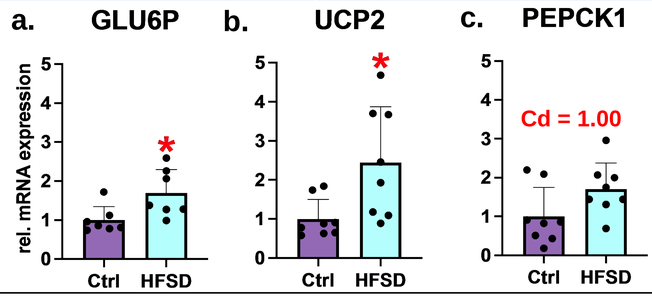
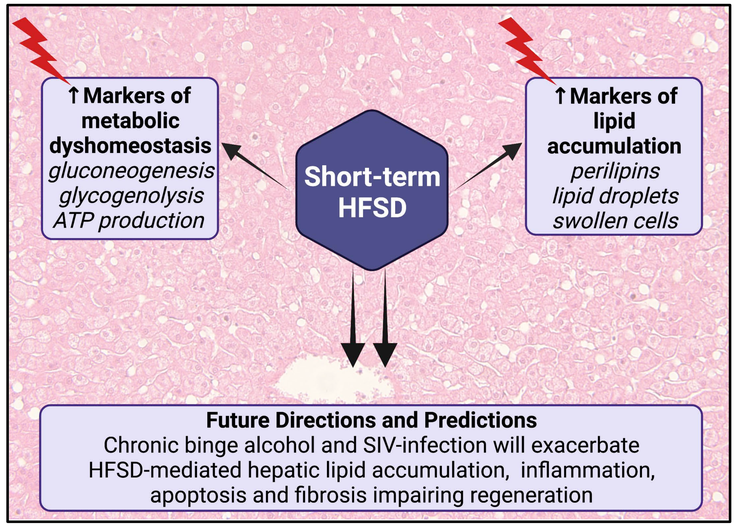


Figure 4. Relative gene expression of markers of metabolic dyshomeostasis. a. Glucose-6-phosphatase (GLU6P); **b.** uncoupling protein 2 (UCP2); **c.** phosphoenolpyruvate carboxykinase 1 (PEPCK1); Cohen's d (Cd).

Conclusions



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