
Thank you.

Olivia Weeks <weeksog@gmail.com>
To: Jill Vander Velde <vanderv@mail.sdsu.edu>

Sun, Nov 5, 2017 at 6:36 AM

Dear Jill,

Thank you very much for the opportunity to present during the CIFASD meeting. I am looking forward to the April meeting in Vancouver when I can meet everyone face to face.

Attached is a .PDF version of our slides for the archive (via google drive). If google drive is hard for you to access, I can switch to dropbox quite easily. Our institution would like us to keep the slides nonpublic until publication, so the secure website for the CIFASD group sounds like a good way to share with the community.

Cheers
Olivia

 **10_25_2017 FASD Conference Slides_10 min.pdf**

On Wed, Oct 25, 2017 at 1:34 PM, Jill Vander Velde <vanderv@mail.sdsu.edu> wrote:

Thank you for joining us for the start of our CIFASD monthly meeting today Olivia.

If you have any slides you'd like me to archive with the meeting recording (in a secure section of our website for PIs and Advisory Committee members only), please feel free to email them to me.

Sincerely, Jill

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Olivia Weeks
PhD Candidate, Biological and Biomedical Sciences
Goessling Laboratory
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Harvard Medical School
weeksog@gmail.com



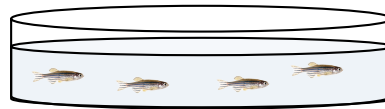
FINDING FUTURE IN THE PAST: FETAL ALCOHOL EXPOSURE ALTERS RISK FOR ADULT OBESITY AND METABOLIC SYNDROME

Olivia Grace Weeks, G5 Goessling Laboratory

Zebrafish as a Model for FASD

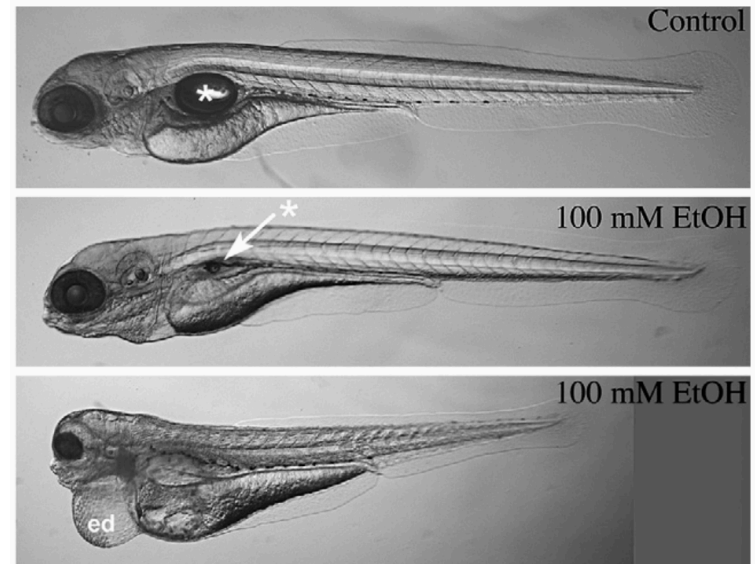
Submerge embryos in ethanol water during key developmental periods

12 hpf – 5 dpf
0% - 1% EtOH



Phenotypes

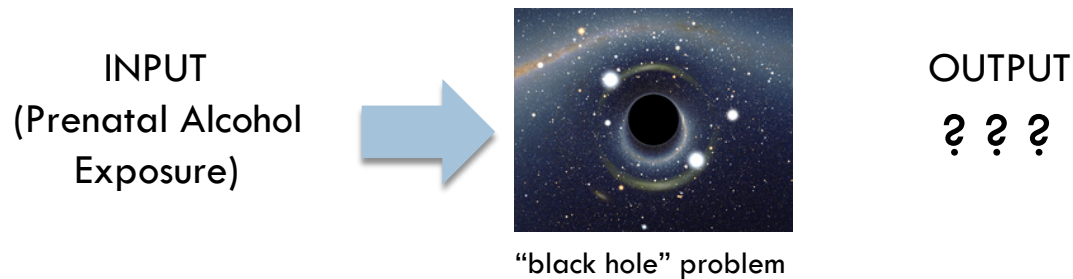
- ✓ **Short stature** (Marrs et al., 2010)
- ✓ **Cardiac defect, recovers with age** (Li et al., 2016; Dlugos and Rabin, 2010)
- ✓ **Altered eye diameter, vision** (Bilotta et al., 2004; 2002)
- ✓ **Craniofacial malformation** (McCarthy et al., 2013; Eberhart's group)
- ✓ **Narrowed arteries and aorta, recovers with age** (Li et al., 2016)
- ✓ **Altered kidney formation**
- ✓ **Disrupted hepatic maturation**
- ✓ **Abnormal exocrine pancreas structure during development**



(Marrs et al., 2010)

Underappreciated Implications of Fetal Alcohol Exposure on Adult Health Outcomes

Question: What happens to animals with fetal alcohol exposure when they grow up?



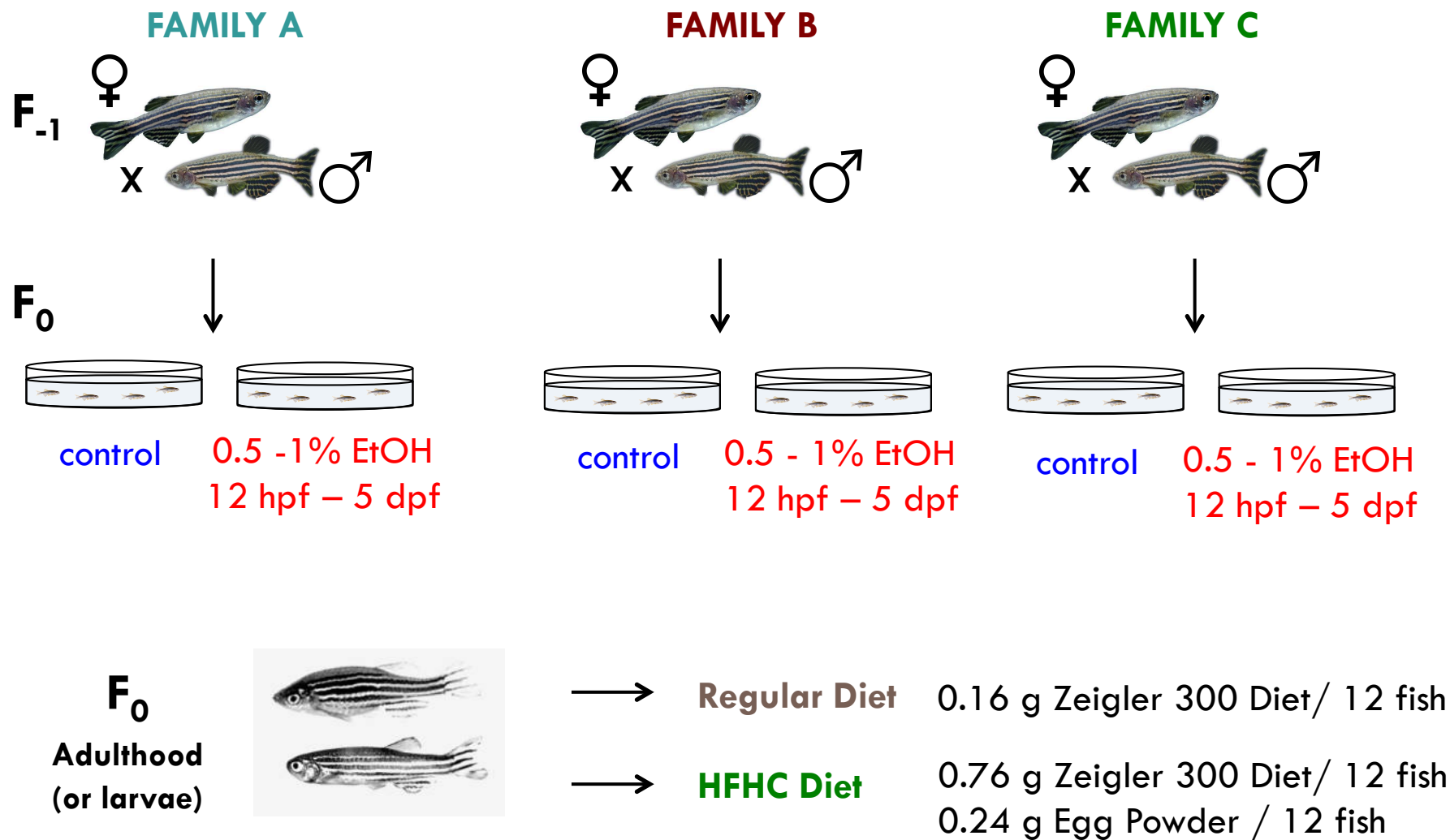
GOAL 1: Understand the Outputs (generate the “black box” problem)



GOAL 2: Decipher the Mechanism(s)

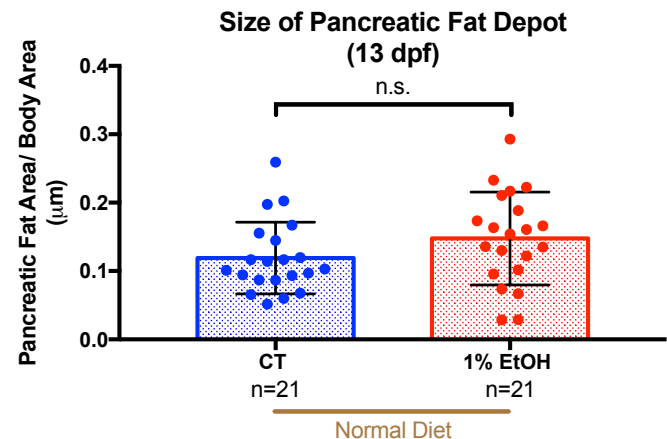
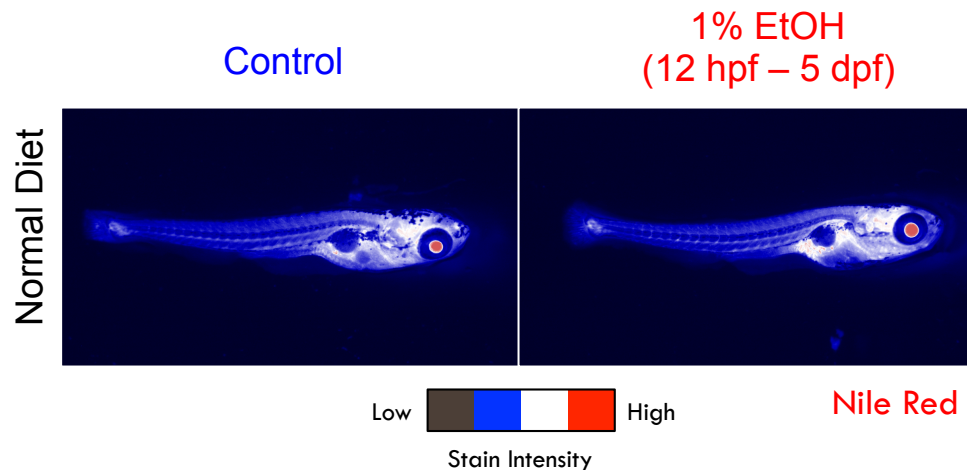
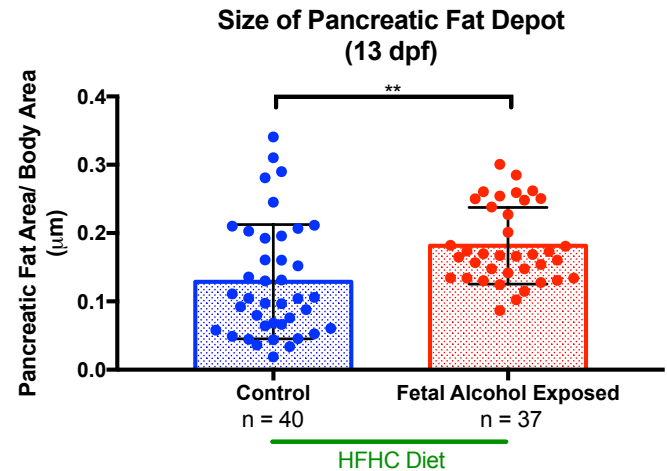
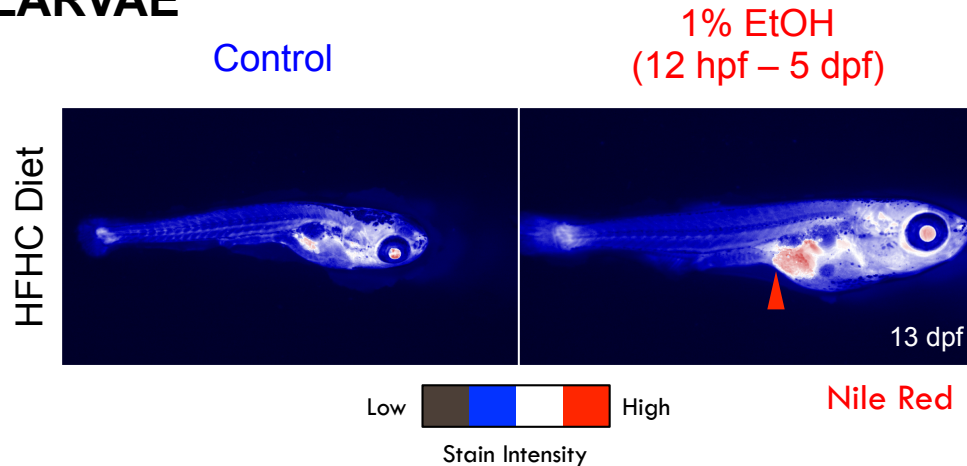


1. Generate a Zebrafish Population with Prior Fetal Alcohol Exposure (FAE) for Obesity and Diabetes Studies



Is Fetal Alcohol Exposure a Risk Factor for Diet-Induced Obesity in Larvae?

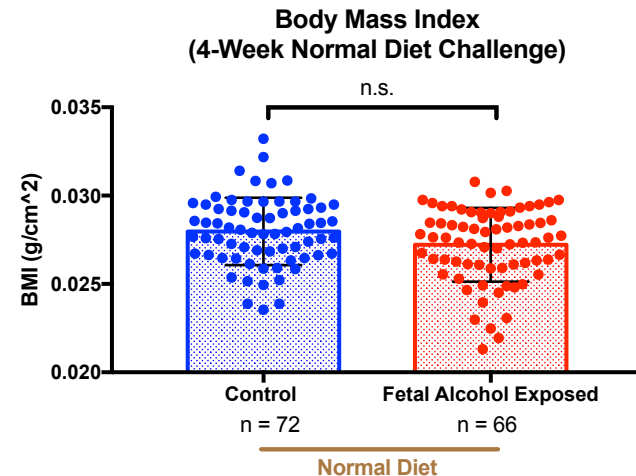
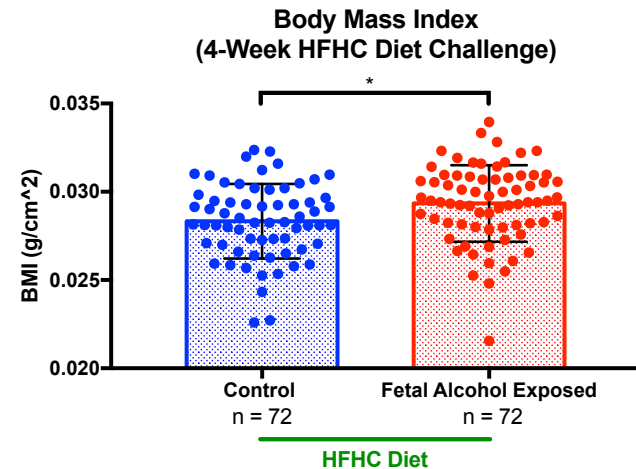
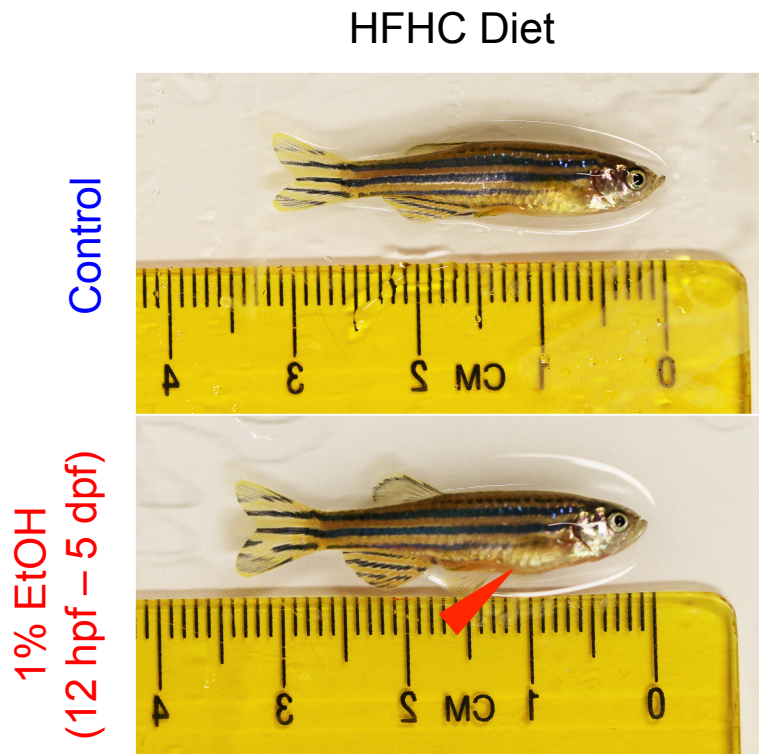
LARVAE



Is Fetal Alcohol Exposure a Risk Factor for Diet-Induced BMI Gains in Adults?

ADULT MALES

4 Week Diet Challenge

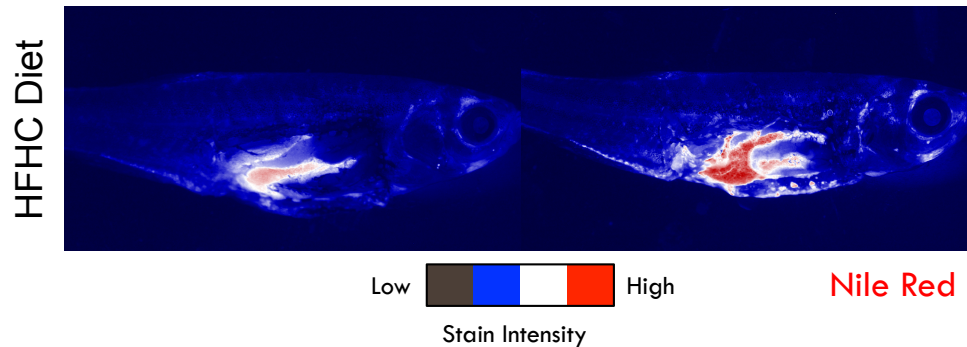


FASD Adults Rapidly Develop Increased Visceral Adiposity Following Dietary Challenge

ADULT ♂

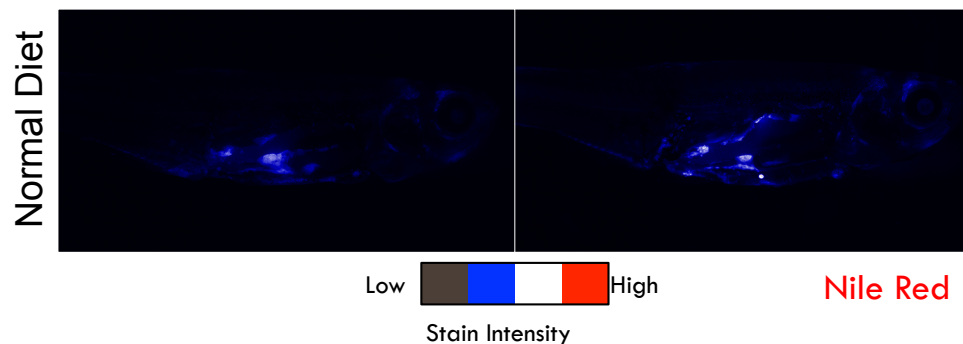
Control

1% EtOH
(12 hpf – 5 dpf)

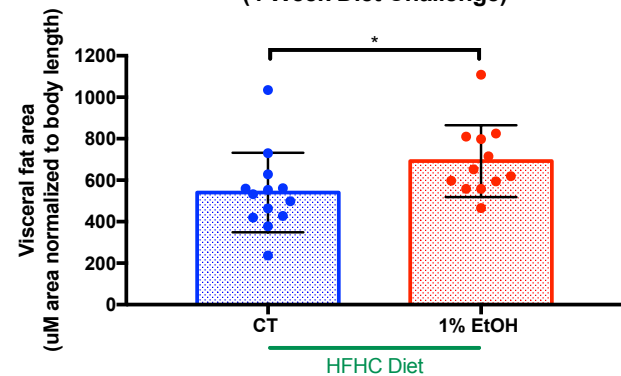


Control

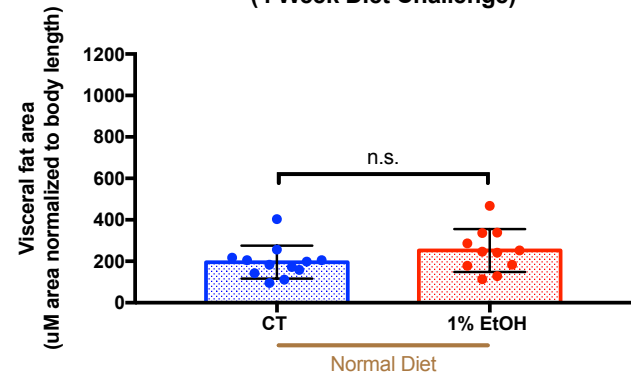
1% EtOH
(12 hpf – 5 dpf)



F₀ Visceral Fat Quantification
(4 Week Diet Challenge)

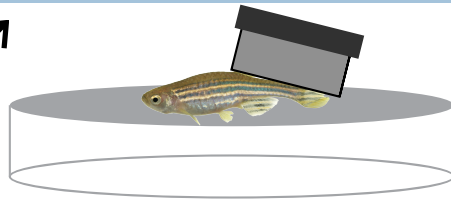


F₀ Visceral Fat Quantification
(4 Week Diet Challenge)



Is Fetal Alcohol Exposure a Risk Factor For Altered Blood Glucose Homeostasis in Zebrafish?

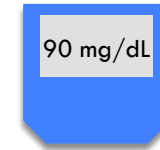
ADULT ♂



1. Remove Tail

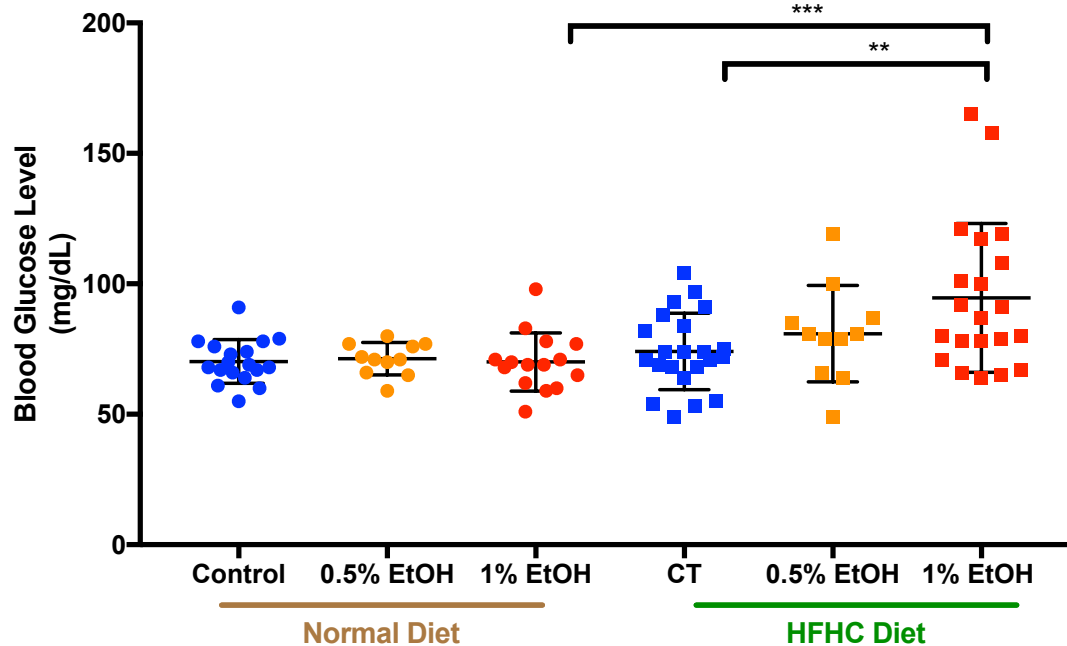


2. Centrifuge



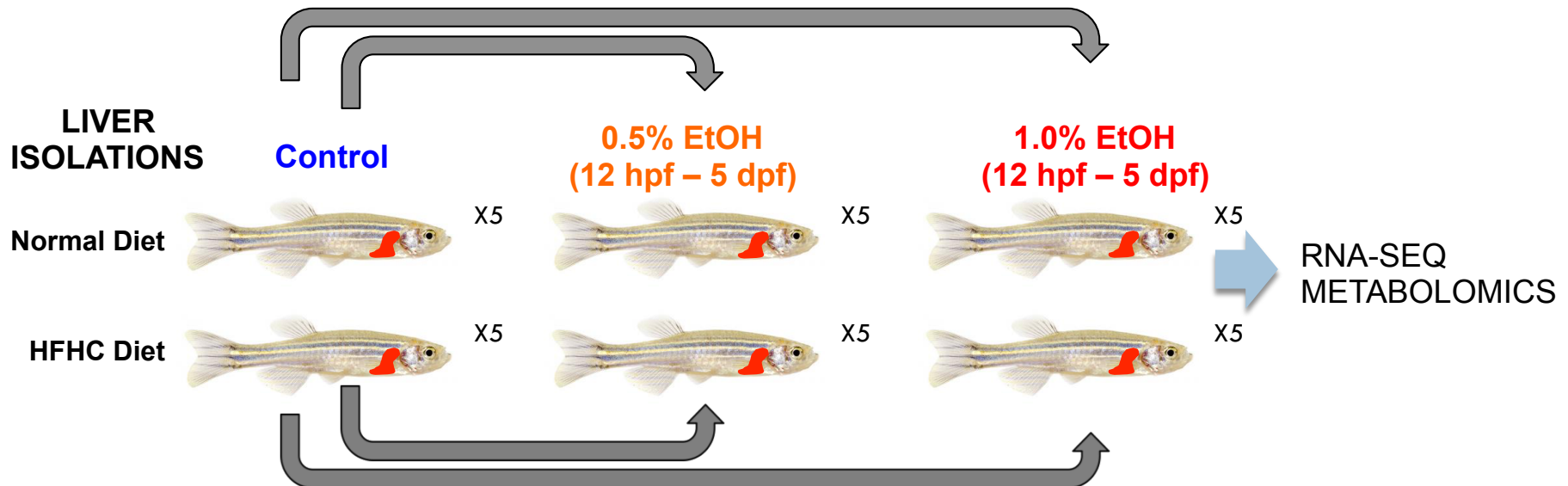
3. Measure Glucose

F₀ Fasting Blood Glucose Level



Ongoing Experiments

1. Identify the metabolic and molecular mechanisms leading to rapid progression of fetal alcohol exposed zebrafish to metabolic syndrome



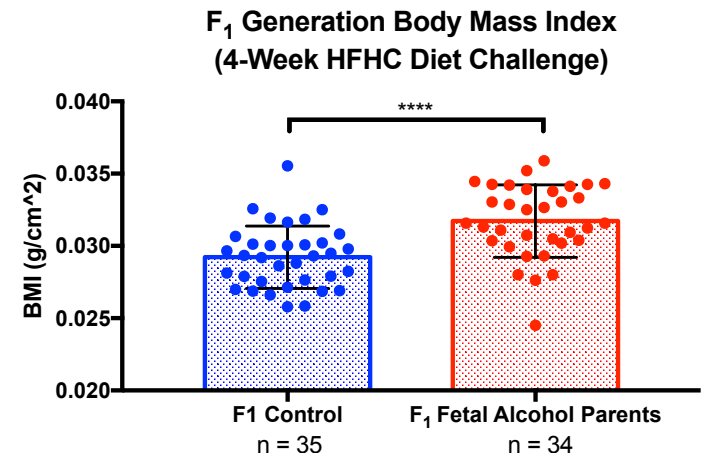
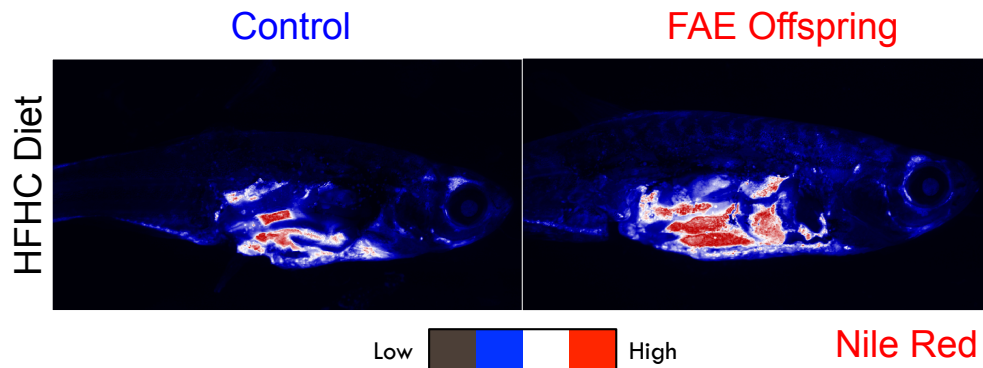
- Identified 68 commonly dysregulated transcripts under normal diet conditions and 186 under HFHC diet
- Fetal alcohol exposed fish are metabolically distinct from control siblings

Ongoing Experiments

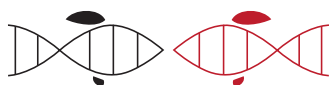
2. Evaluate the intergenerational effects of fetal alcohol exposure on metabolism, BMI, visceral fat deposition, and blood glucose regulation

PILOT STUDY (NEEDS REPLICATION, GERMLINE SPECIFIC OUTCROSSES)

ADULT ♂



Acknowledgements



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