

**HIPPOCAMPAL-DEPENDENT COGNITIVE IMPROVEMENT
FOLLOWING SLEEVE GASTRECTOMY IN MICE WITH
OBESITY: A ROLE FOR MITOCHONDRIAL FUNCTION.**

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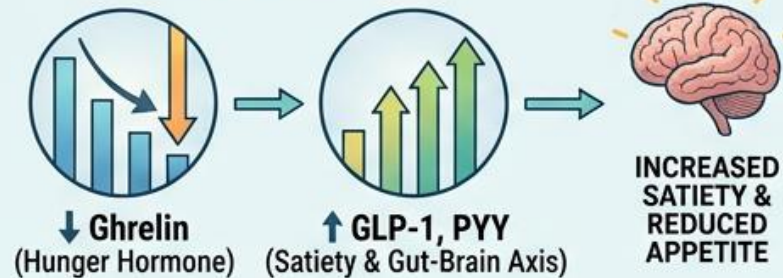
The First Affiliated Hospital of Jinan University
Harvard Medical School, Boston Children's Hospital

MECHANISMS AND MULTI-ORGAN BENEFITS OF BARIATRIC SURGERY (WEIGHT LOSS SURGERY)

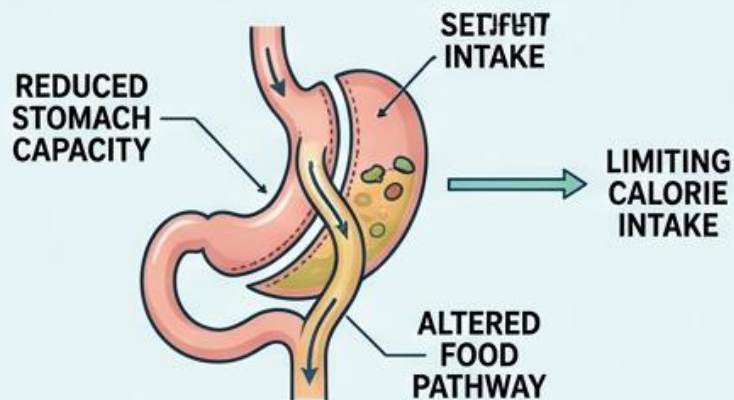
MECHANISMS OF ACTION

HORMONE REGULATION

CHANGE IN GUT HORMONE



PORTION CONTROL & IMPAIRED ABSORPTION



SYSTEMIC METABOLIC IMPROVEMENTS AND ORGAN BENEFITS

- IMPROVED INSULIN SENSITIVITY
- NORMALIZED BLOOD GLUCOSE
- LOWERED INFLAMMATION
- BETTER LIPID PROFILE

Liver

- Reduced Fatty Liver (NAFLD)
- Improved Liver Function

Heart & Blood Vessels

- Lowered Blood Pressure
- Reduced Risk of Cardiovascular Disease
- Improved Heart Function

Pancreas

- Enhanced Beta Cell Function
- Reversal of Type 2 Diabetes

Kidney

- Reduced Risk of Kidney Disease
- Improved Renal Function

Brain

- Improved Cognitive Function
- Positive Mood Effects

General Metabolism

- Improved Breathing & Lung Capacity
- Reduced Sleep Apnea

Musculoskeletal

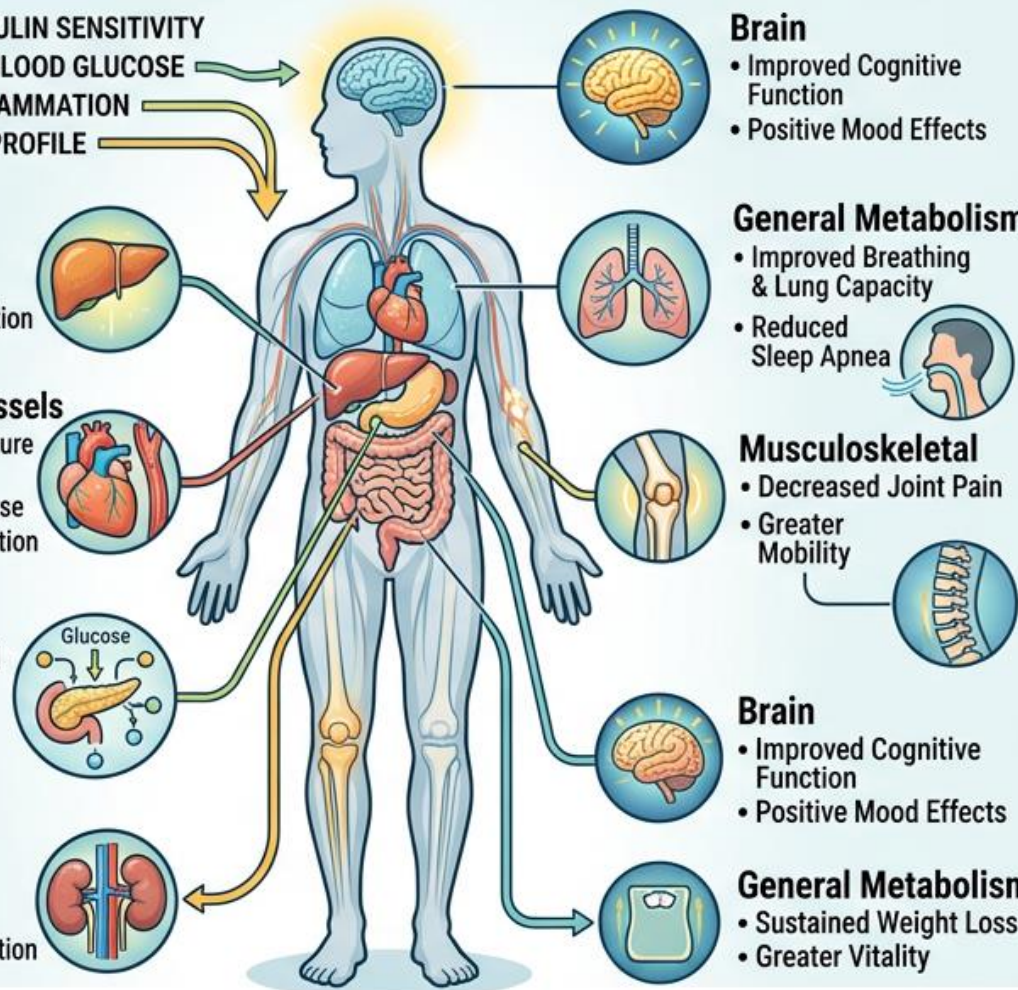
- Decreased Joint Pain
- Greater Mobility

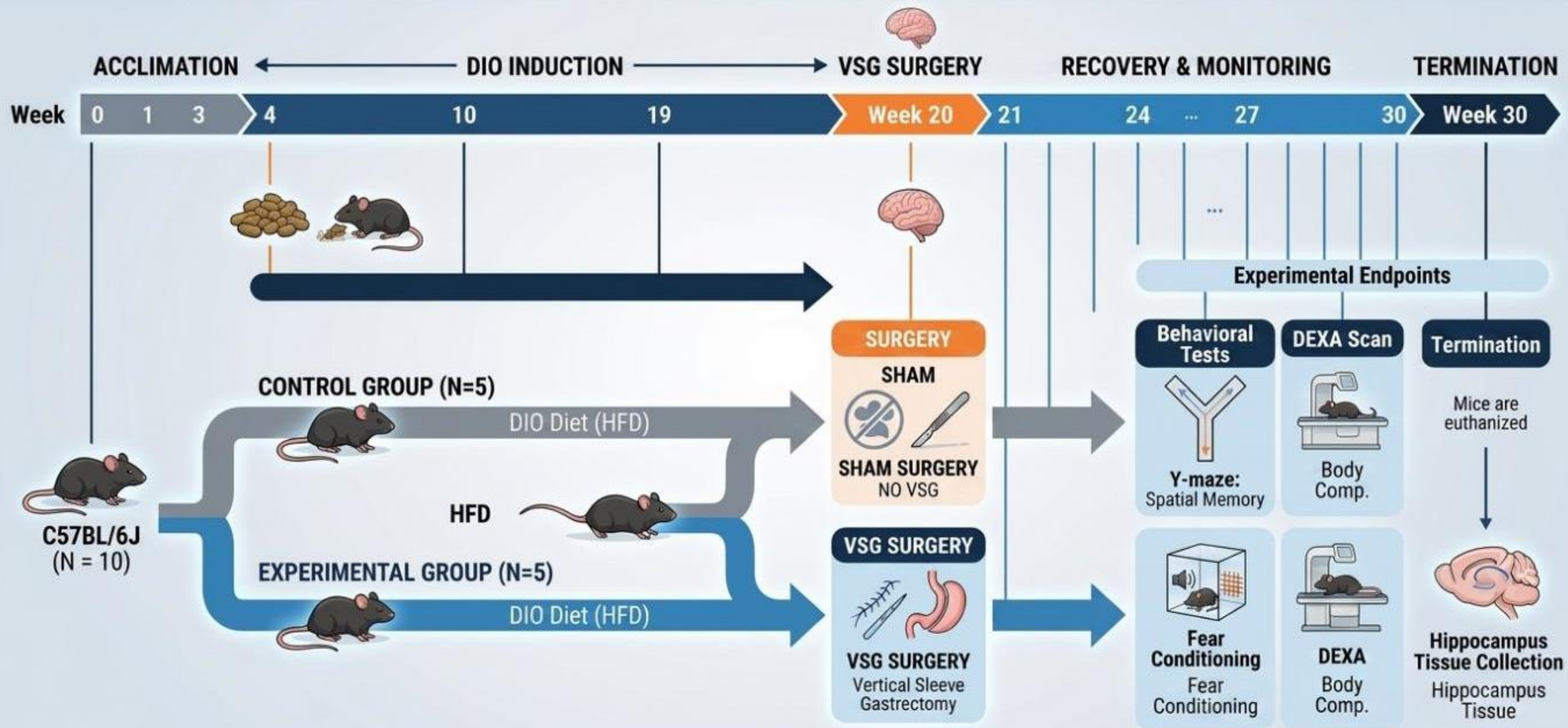
Brain

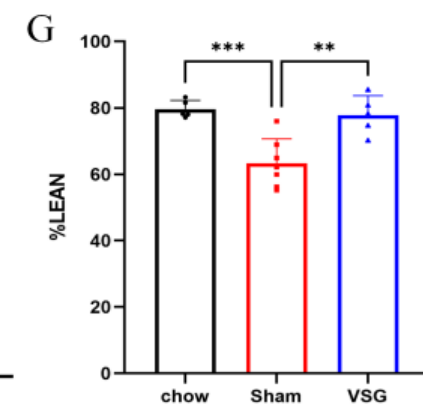
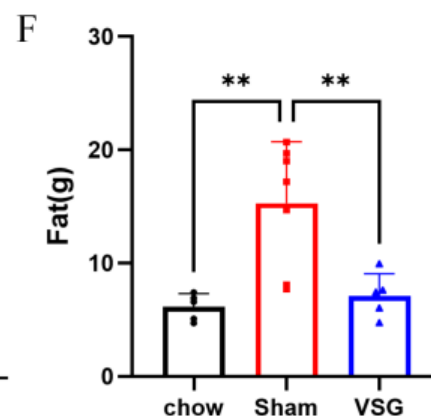
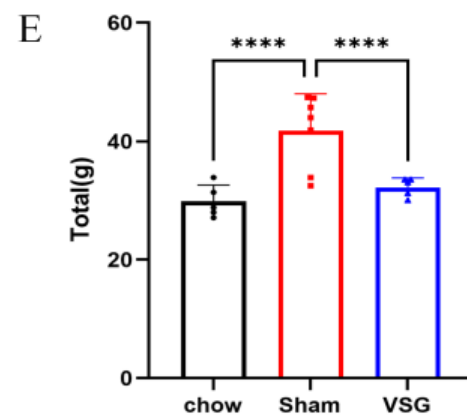
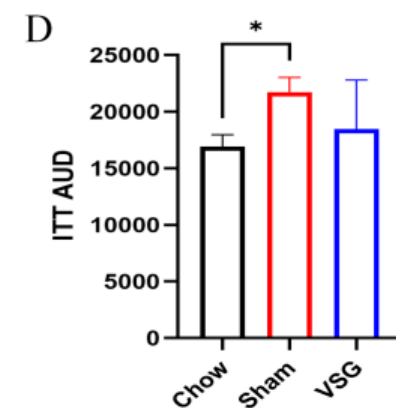
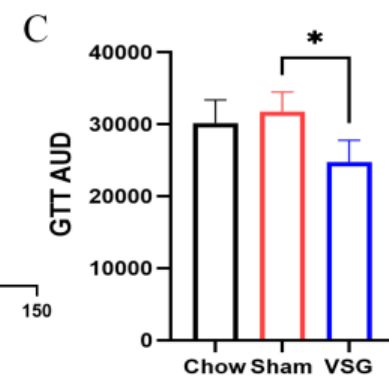
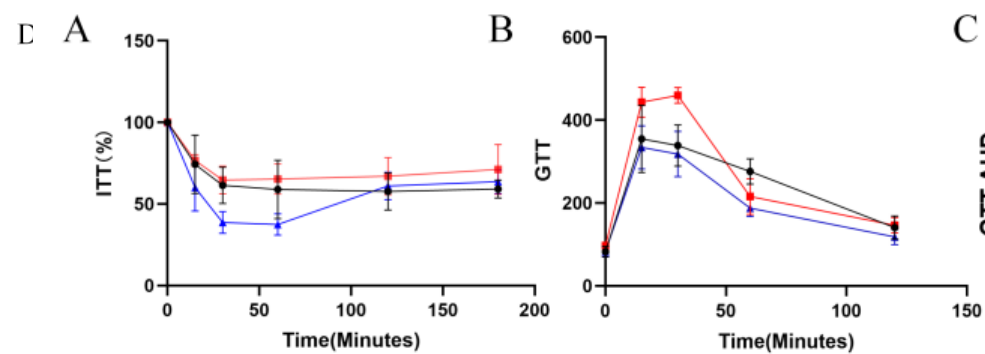
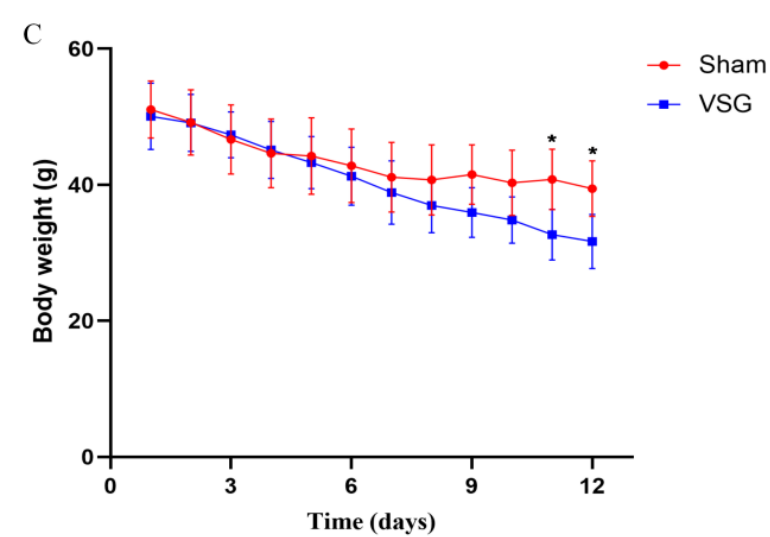
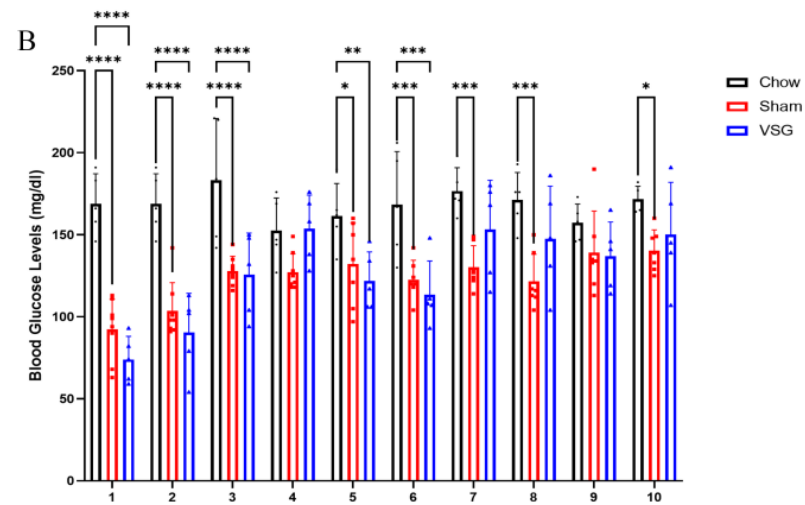
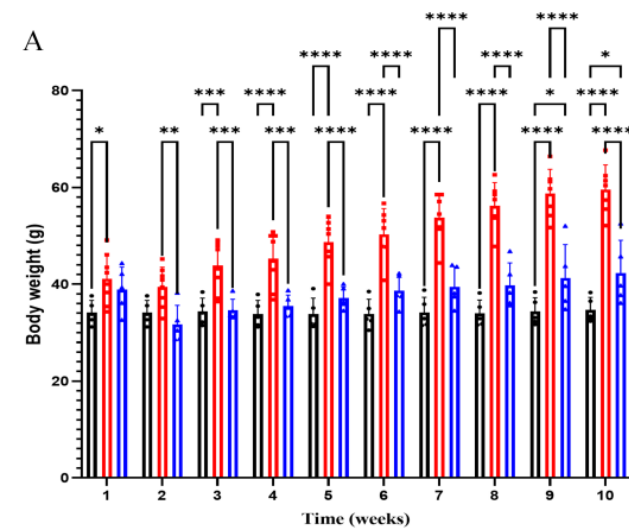
- Improved Cognitive Function
- Positive Mood Effects

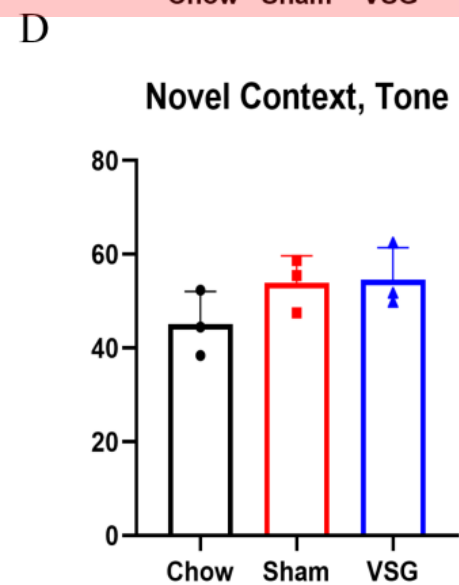
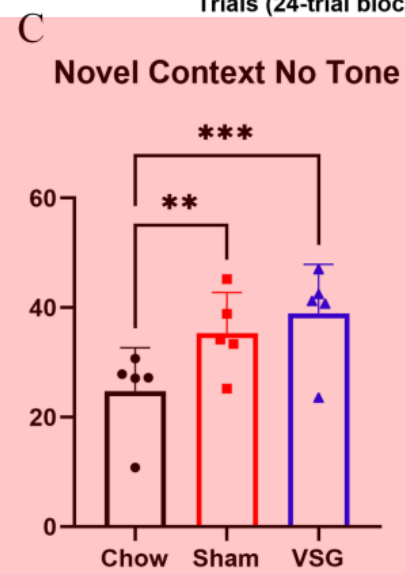
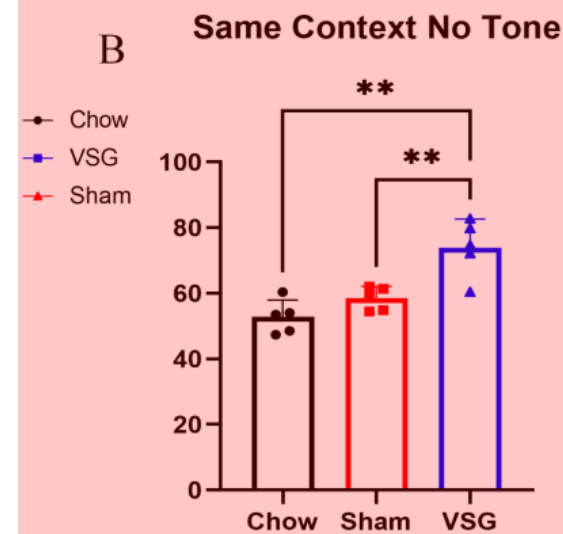
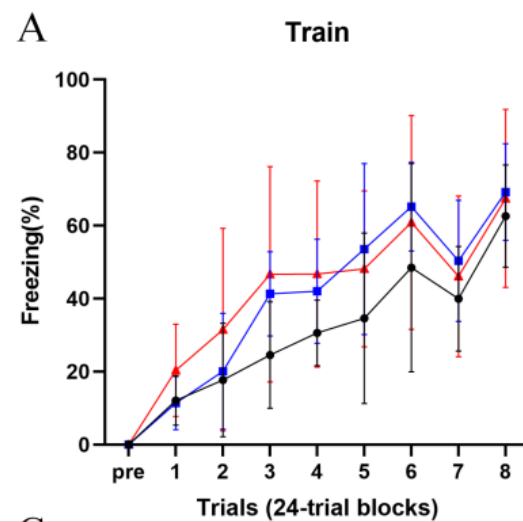
General Metabolism

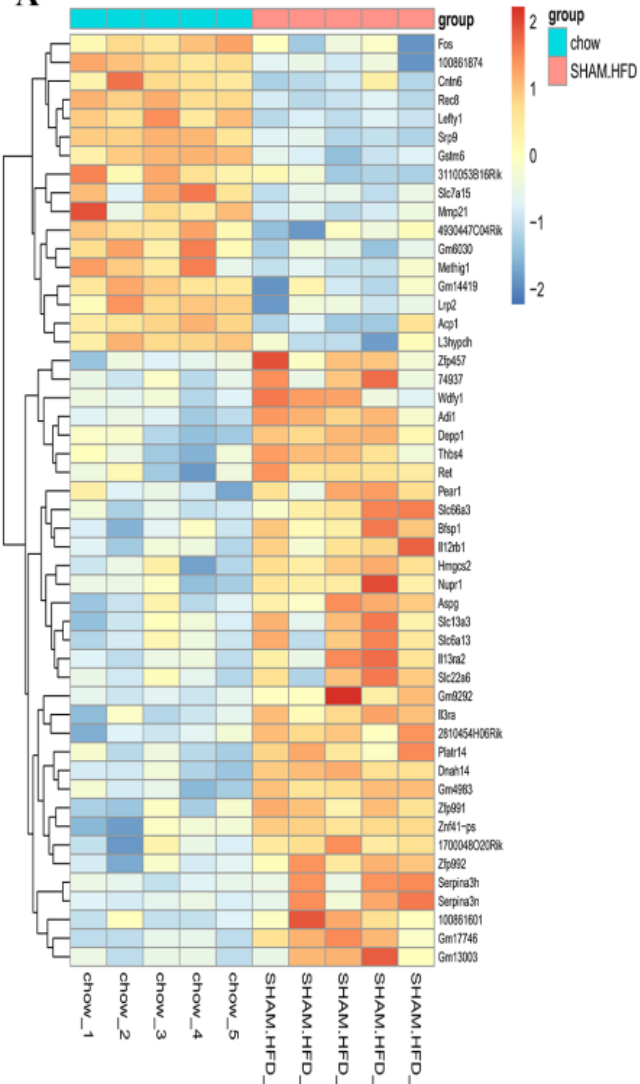
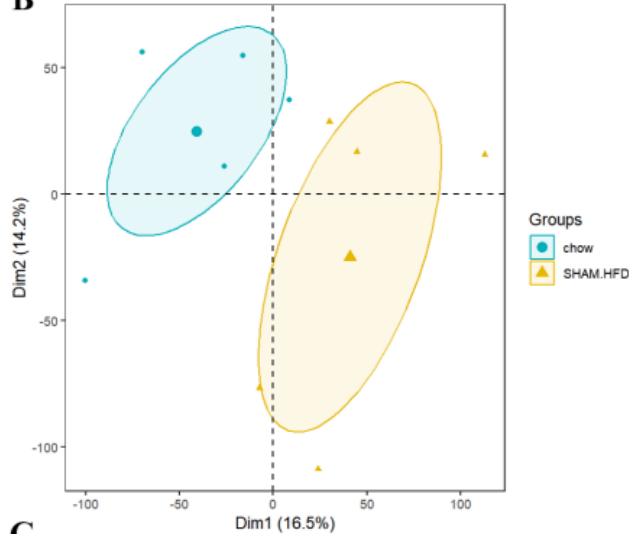
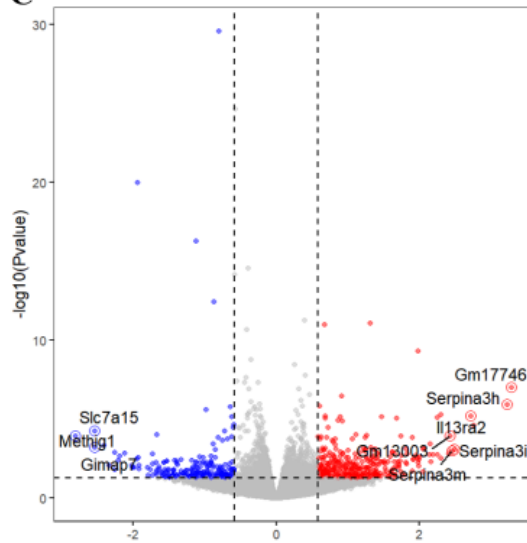
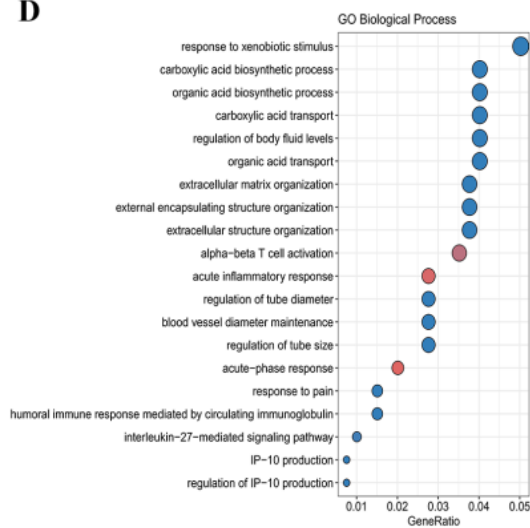
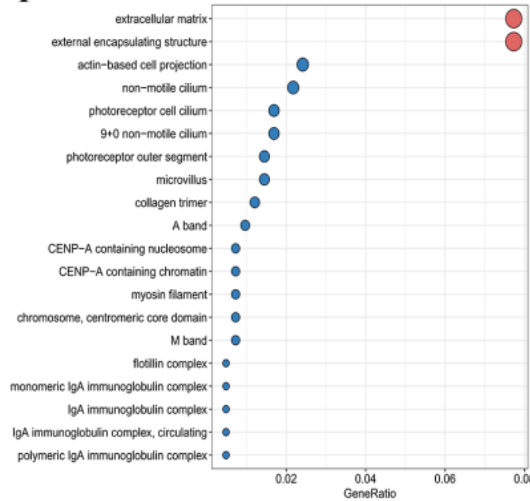
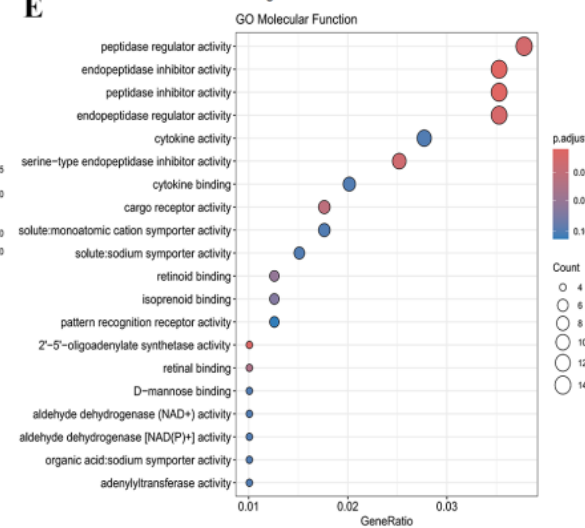
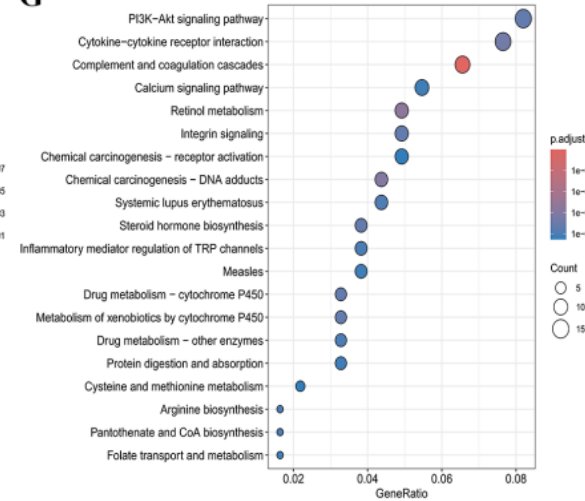
- Sustained Weight Loss
- Greater Vitality









A edgeR DEGs: SHAM.HFD vs chow**B** Individuals - PCA**C****D****F****E****G**

In conclusion

- VSG produced sustained weight loss, improved glucose tolerance and insulin sensitivity, reduced adiposity, and increased the relative proportion of lean mass in HFD-induced obese mice.
- These metabolic benefits were accompanied by a selective improvement in contextual fear memory, while spatial working memory and tone-cued fear memory remained unchanged.
- Hippocampal cognitive recovery is associated with mitochondrial OXPHOS, Nrf2/ARE signaling, and neuroinflammation pathways (TLR4/NF- κ B, NLRP3).





END