

# Exercise Modulates Diet and Body Composition

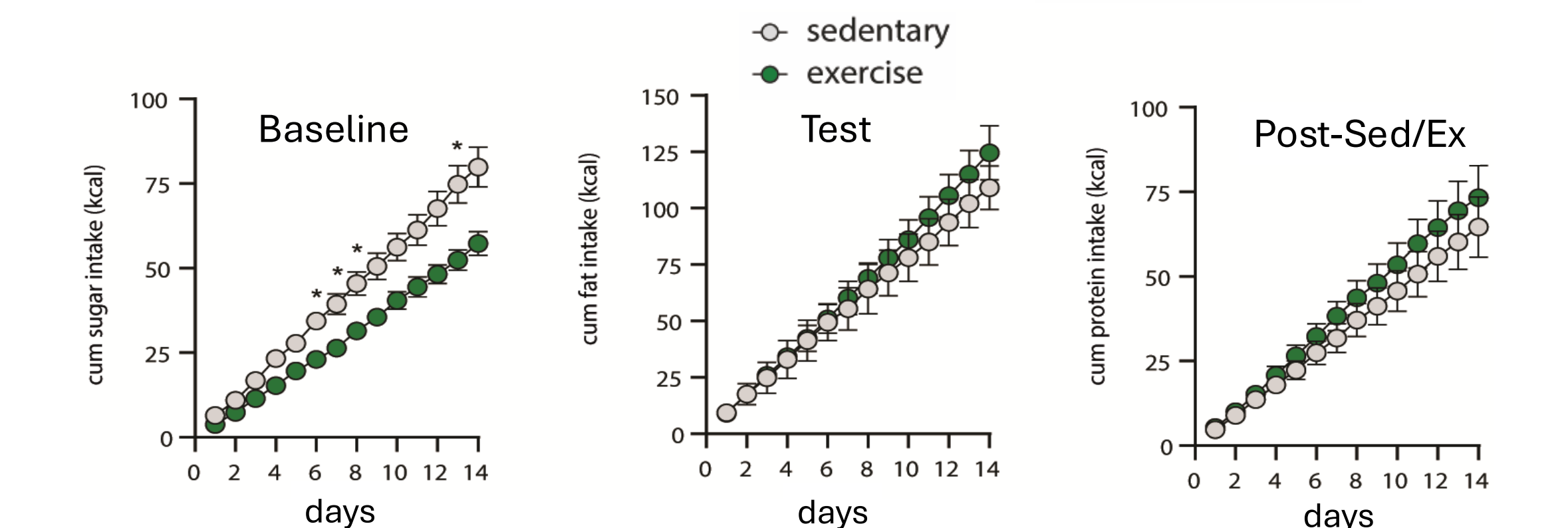
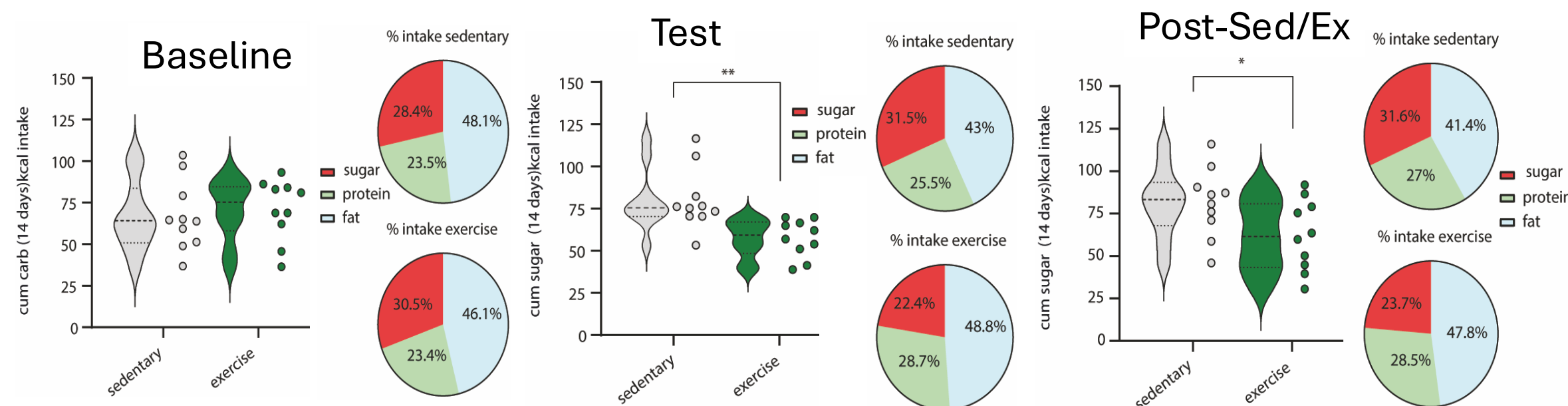
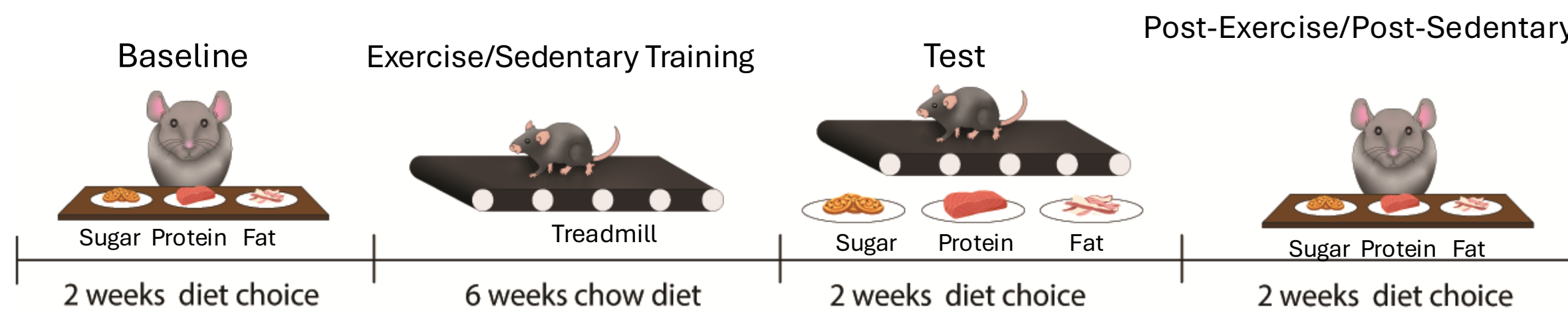
## Introduction

As global health challenges like obesity and diabetes continue to rise, the search for effective interventions becomes more urgent. Exercise, known for its extensive benefits on health, offers a promising avenue. Our study investigates the effects of long-term exercise on sugar consumption and body composition, revealing a marked decrease in sugar craving accompanied by beneficial shifts in body composition, specifically an increase in lean mass and a decrease in fat tissue. These findings suggest that exercise can reprogram dietary preferences and body composition, offering potential pathways for treating obesity and related metabolic disorders.

## Exercise reduces sugar consumption in mice

Food choices with one-nutrient diets was assessed before, during exercise (2 weeks), and at the end of exercise protocol

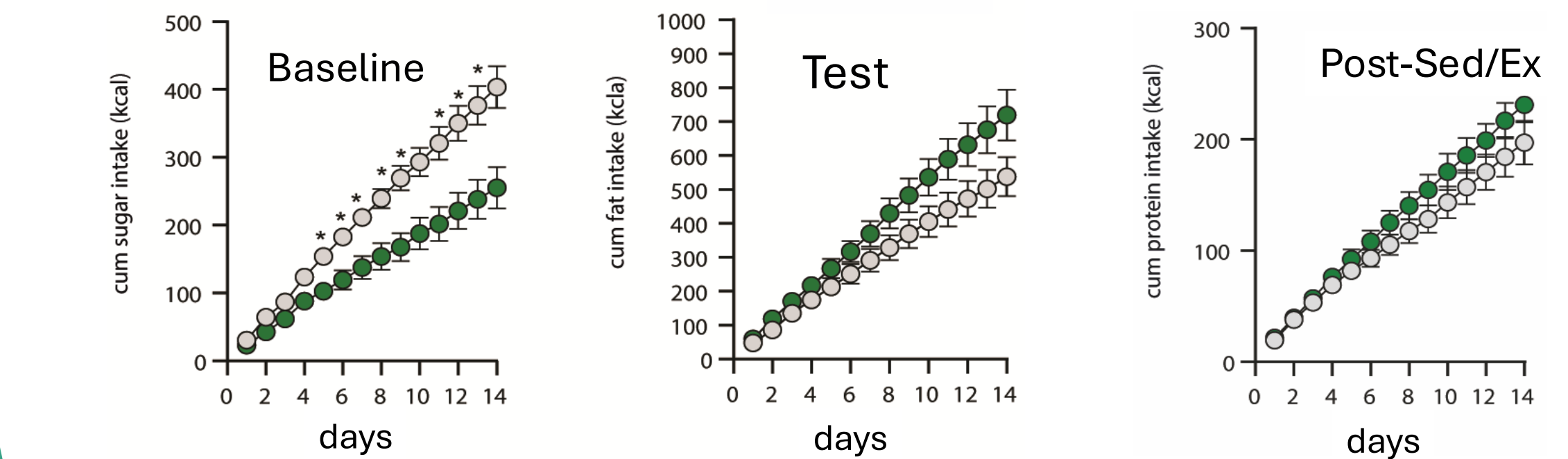
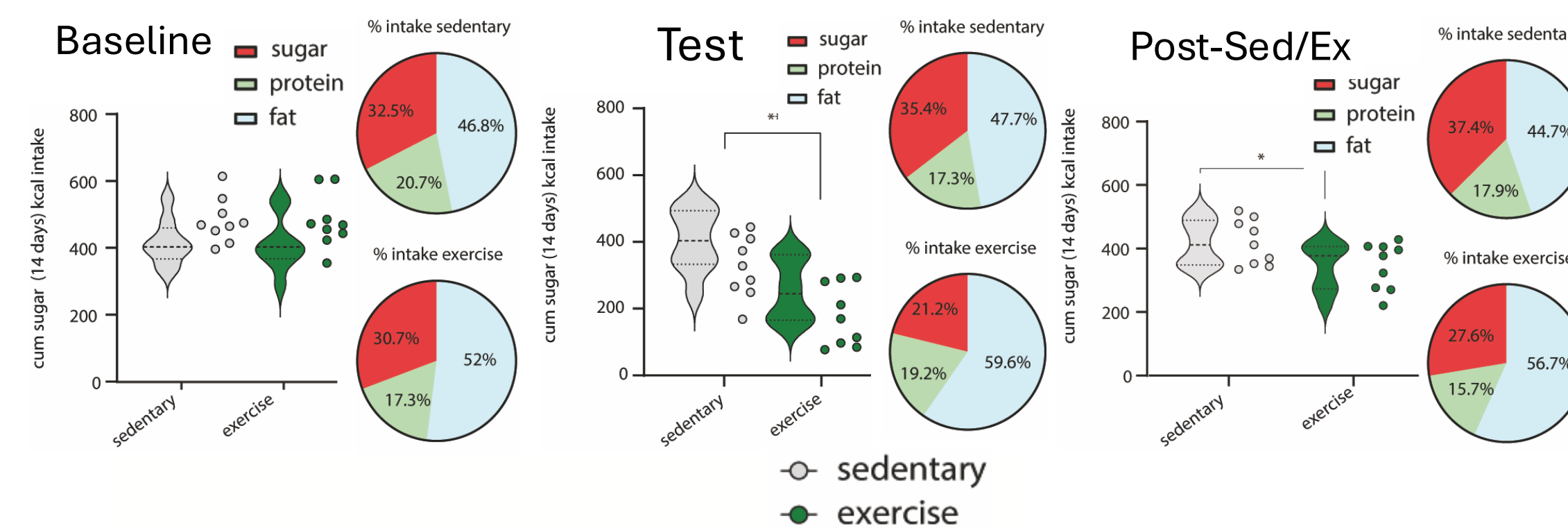
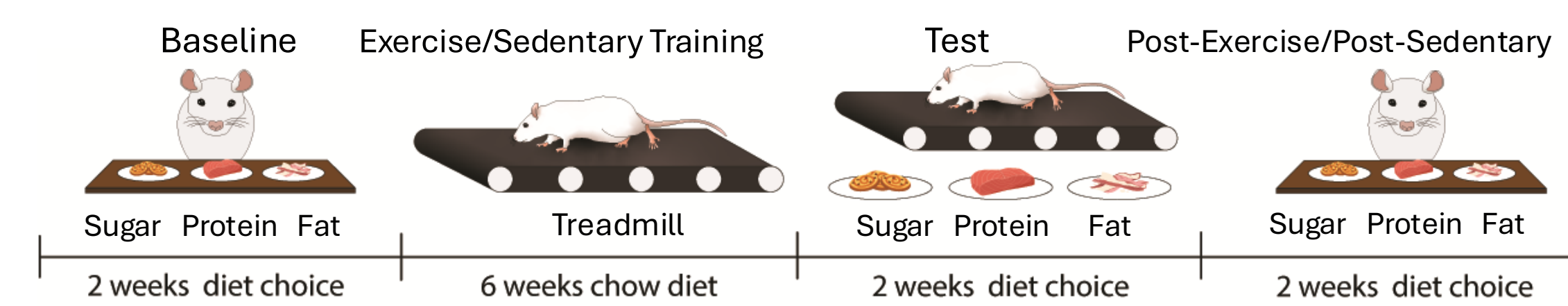
Timeline in c57b1/6 mice



## Exercise reduces sugar consumption in rats

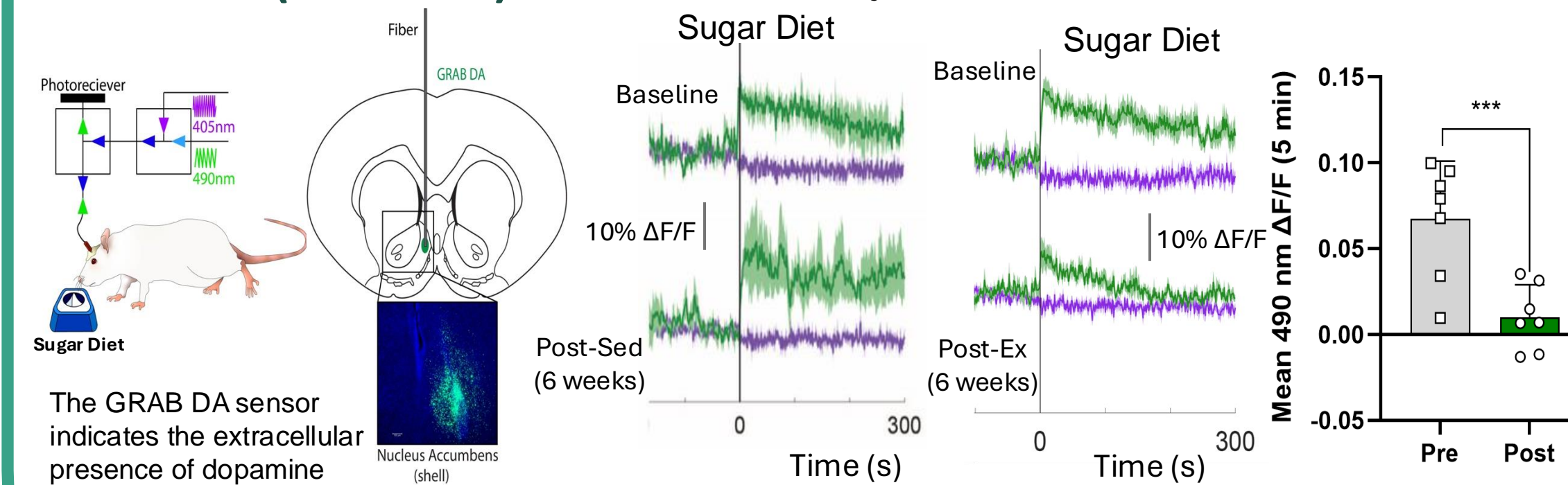
Food choices with one-nutrient diets was assessed before, during exercise (2 weeks), and at the end of exercise protocol

Timeline in Sprague-Dawley Rats



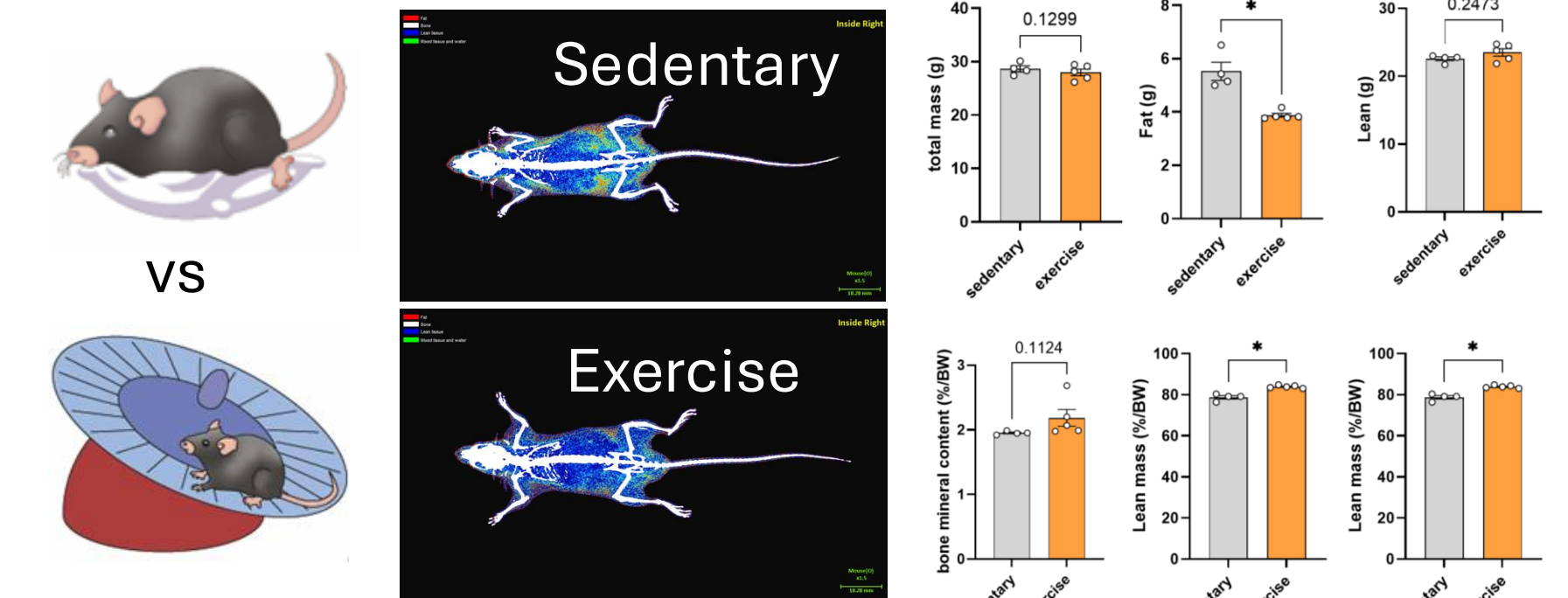
## Exercise attenuates DA response to sugar diets

Dopamine (DA) release was evaluated after sugar diet presentation in animals implanted with genetically encoded GPCR-activation-based-DA (GRAB DA) sensors

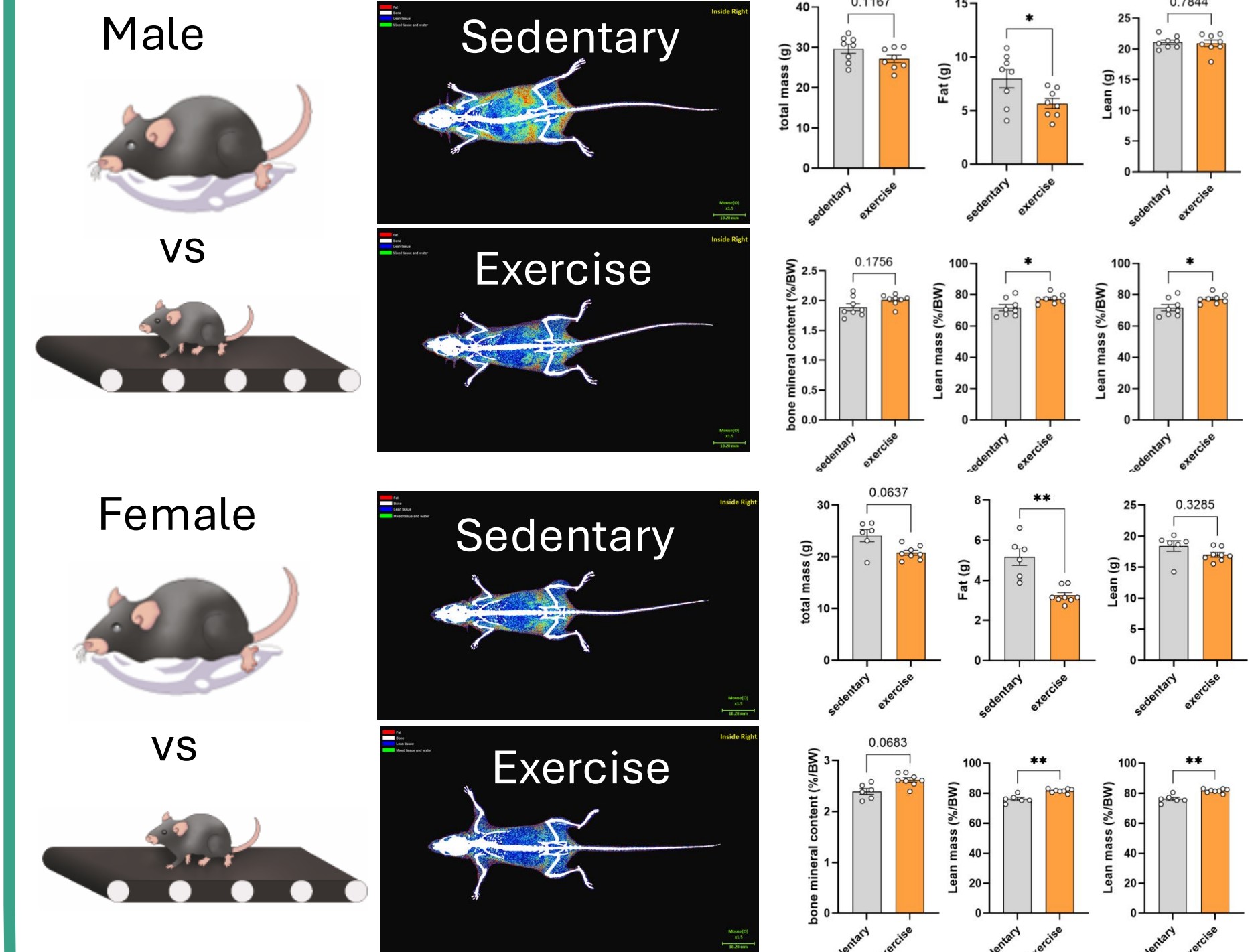


## Exercise decreases fat mass and increases lean mass

Voluntary chronic exercise on wheels (6 weeks)



Progressive chronic exercise on treadmills (6 weeks)



## Conclusion

- Long-term exercise training led to a sustained decrease in consumption of sugar diet.
- There was no change in consumption for fat or protein diets.
- Exercise diminishes dopamine release in response to sugar intake, reducing the sugar craving.
- Both voluntary and progressive chronic exercise decreased fat mass and increased lean mass.