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*The Behavioral Basis for Wegovy® (Semaglutide)-induced
Weight Loss*

The Office of Postdoctoral Affairs

The Graduate School | Florida State University

New weight-loss drugs are powerful tools in efforts to reduce obesity

- Wegovy[®] ≈ Ozempic[®] ≈ **Semaglutide**
- Based on one of the body's own signals, but lasts longer¹
- Produces ~ 15% body weight loss¹
- Can have unpleasant side-effects, but dose escalation helps¹⁻³
- How does **SEMAGLUTIDE** change eating behavior to produce weight loss?

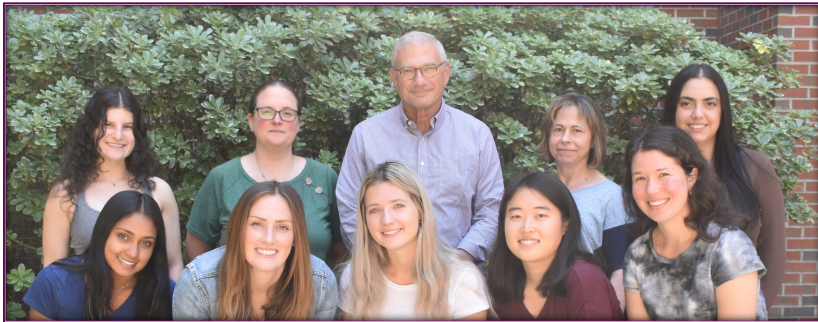


Humans behave in response to physiological and psychological factors

Preclinical models help separate physiological and psychological effects

Humans

- ❌ Want to lose weight
- ❌ Are exposed to diet advice and are motivated to follow it
- ❌ Long-term objective measures are expensive and impractical
- ❌ Rely on memory and self-report



Rats

- ✅ Don't care how much they weigh
- ✅ Don't listen to diet advice
- ✅ Long-term monitoring is relatively inexpensive and practical
- ✅ Allow objective measurement of behavior



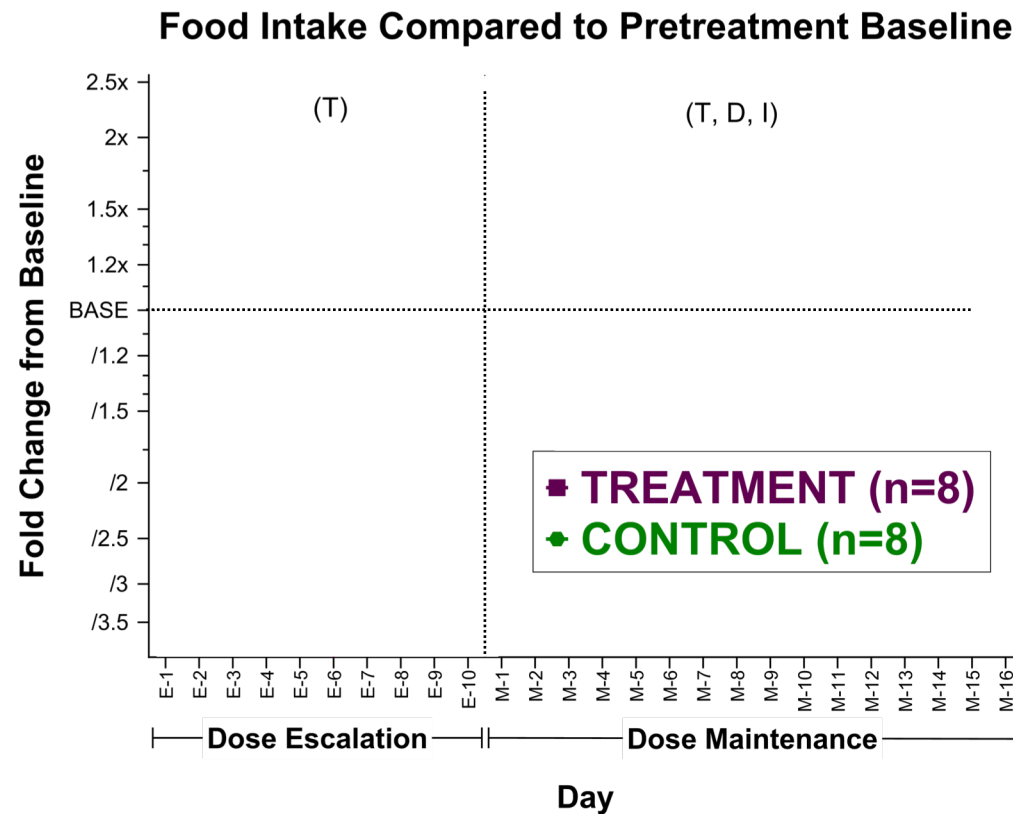
How did I study the effects of semaglutide on eating behavior?

Experimental Timeline

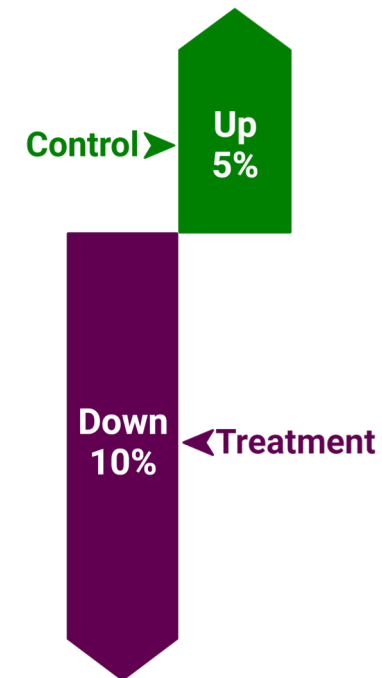


16 male rats
(8/group)
ad libitum chow
& water throughout

Semaglutide reduced food intake and body weight



Body Weight Change From Baseline at the End of the Dose Maintenance Period



T = Treatment Effect; D = Day Effect; I = Interaction

Eating less results from fewer or smaller meals

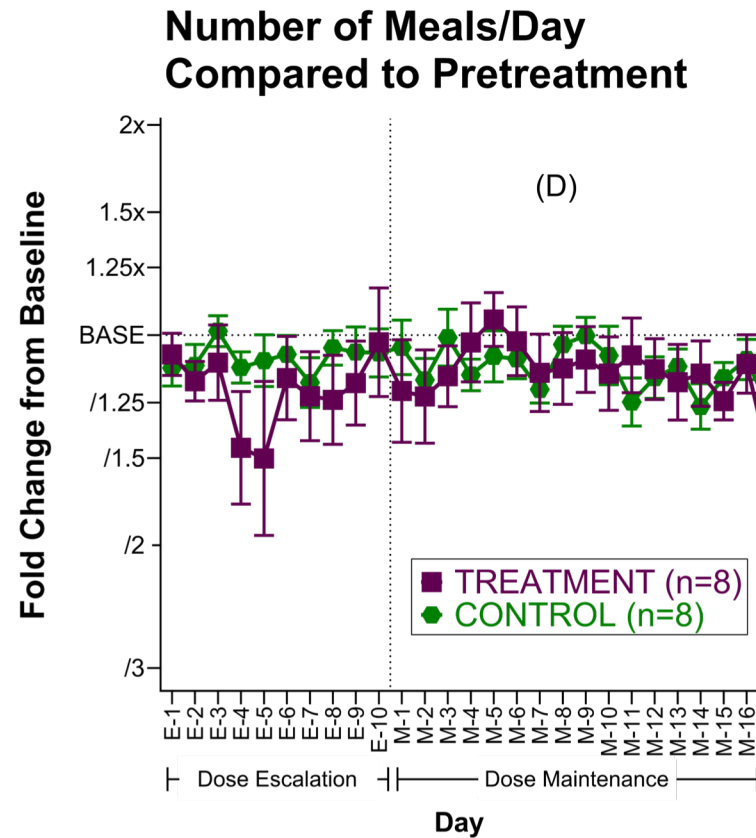


BASELINE INTAKE

**FEWER MEALS =
INCREASED SATIETY**

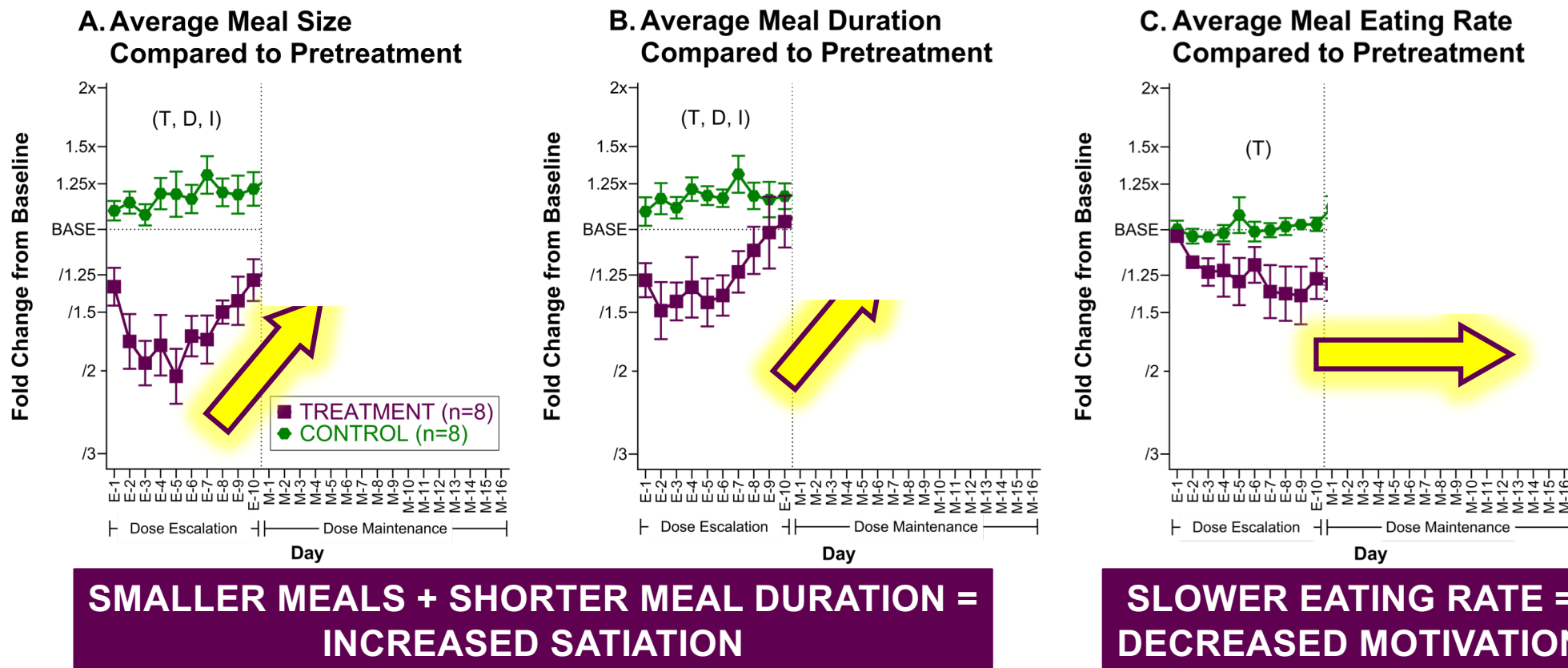
**SMALLER MEALS =
INCREASED SATIATION**

Semaglutide did not change meals per day (i.e., *satiety*)



T = Treatment Effect; D = Day Effect; I = Interaction

Semaglutide increased satiation and reduced motivation to eat



T = Treatment Effect; D = Day Effect; I = Interaction

How *does* semaglutide change eating behavior to produce and maintain weight loss?

↑ Satiation + ↓ Motivation


Produce early weight loss

Thank you!



JOURNAL ARTICLE

Chronic Semaglutide Treatment in Rats Leads to Daily Excessive Concentration-Dependent Sucrose Intake

Carolina R Cawthon, Ginger D Blonde, A Valentina Nisi, Haley M Bloomston, Belle Krubitski, Carel W le Roux, Alan C Spector 

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