

# ROID RAGE!!! JUST FOR BOYS?



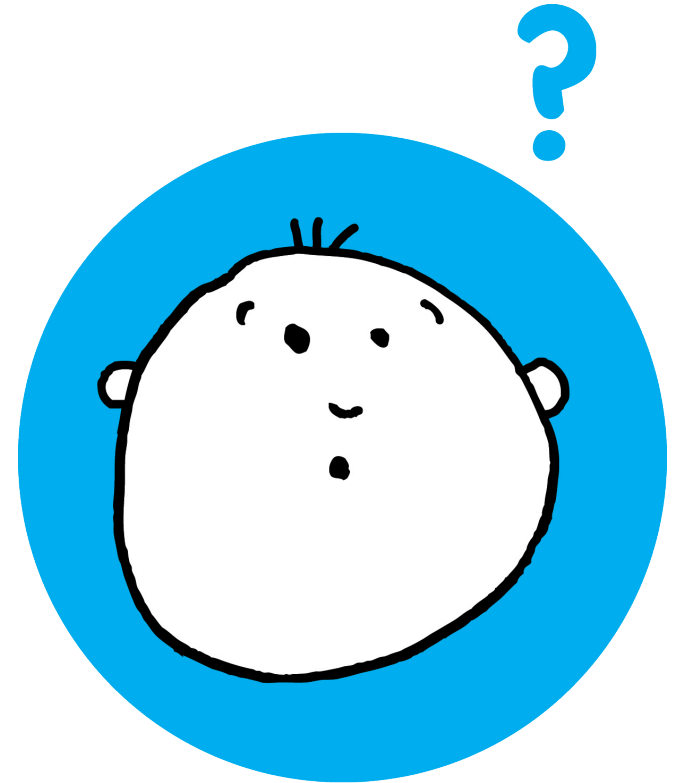
- How “true” are these stereotypes?
- Is there a biological basis for them?

# PLAN FOR THE DAY

- Survey
- Readings and discussion
- Causes of variation in aggression
- How to research animal and human behavior?
- Become a hyena behavior expert
- Game!

# READINGS AND DISCUSSION

- What do you think?
  - Survey
  - Readings (two groups)



# DISCUSSION QUESTIONS

- Summarize your article(s)
- Is there a gender difference in behavior?
- Identify data to support your answer
- Discuss whether the cause is biological or environmental.

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# WHY ARE YOU AGGRESSIVE?

- Evolution of behavior
  - Like other traits relating to survival
  - Like other traits (coloration), certain behaviors may benefit one sex more than the other
- Biology
- Environment



# FACTORS EXPLAINING INDIVIDUAL DIFFERENCES

## Environment

social status, allies,  
stress, resources

## Hormones

testosterone, estrogen



+ Interactions!

## Neurotransmitters

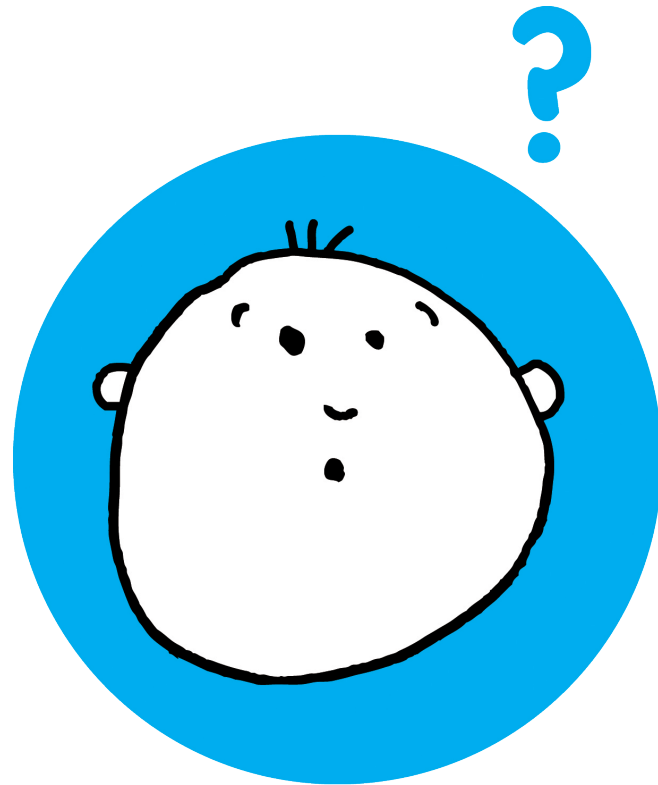
serotonin

## Genes



# BACK TO SURVEY: HORMONES

- How do hormones affect behavior?





# HORMONES AND BEHAVIOR

- Short term effects
  - Happen during or soon after hormone changes
  - Temporary



# HORMONES AND BEHAVIOR

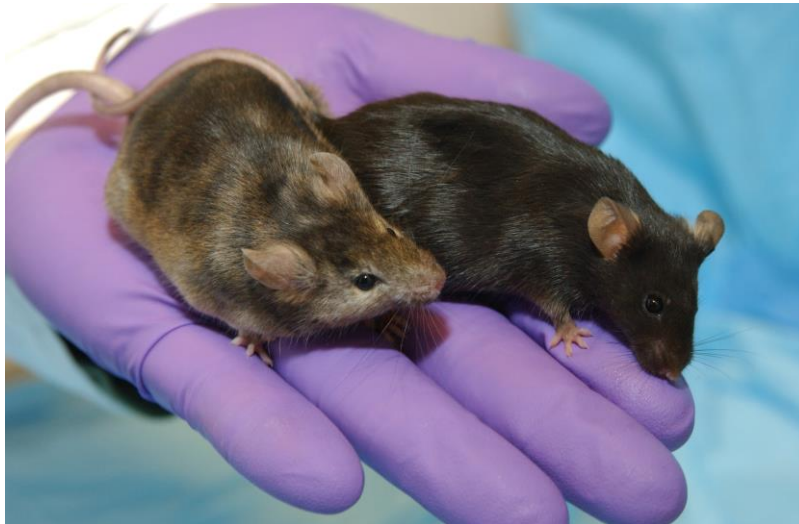
- Long term effects
  - Occur during a “critical” period
  - Longer lasting



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# STUDYING BEHAVIOR PATTERNS AND THEIR CAUSE





# AGGRESSION IN WILD SPOTTED HYENAS





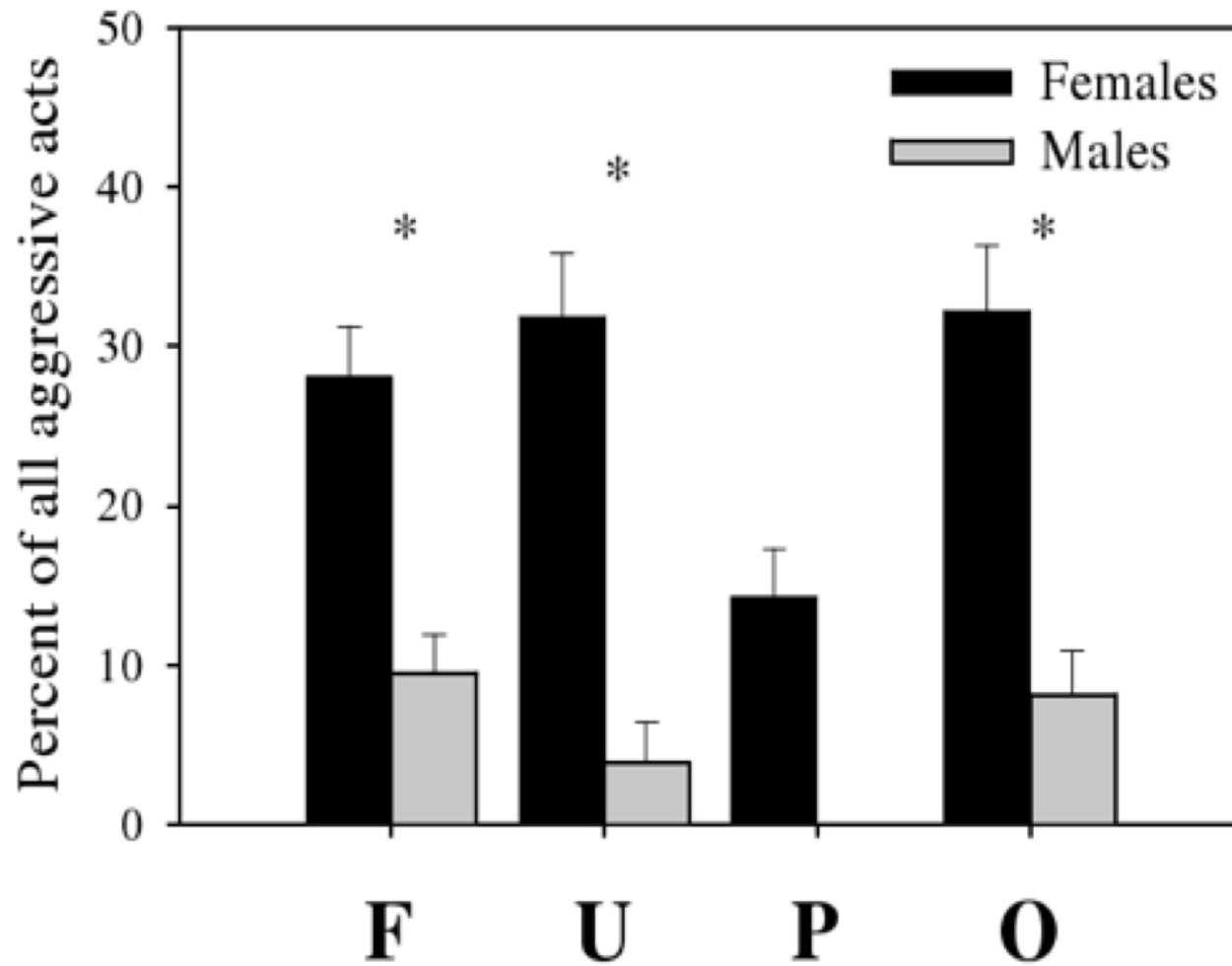




# WHY HYENAS??



# AGGRESSION INTENSITY





# WHY IS CONTEXT IMPORTANT?

- If you're aggressive on the sports field, will you be aggressive in the classroom?
- What about sex differences?



# SOCIAL DOMINANCE

Natal females and offspring



Immigrant Males

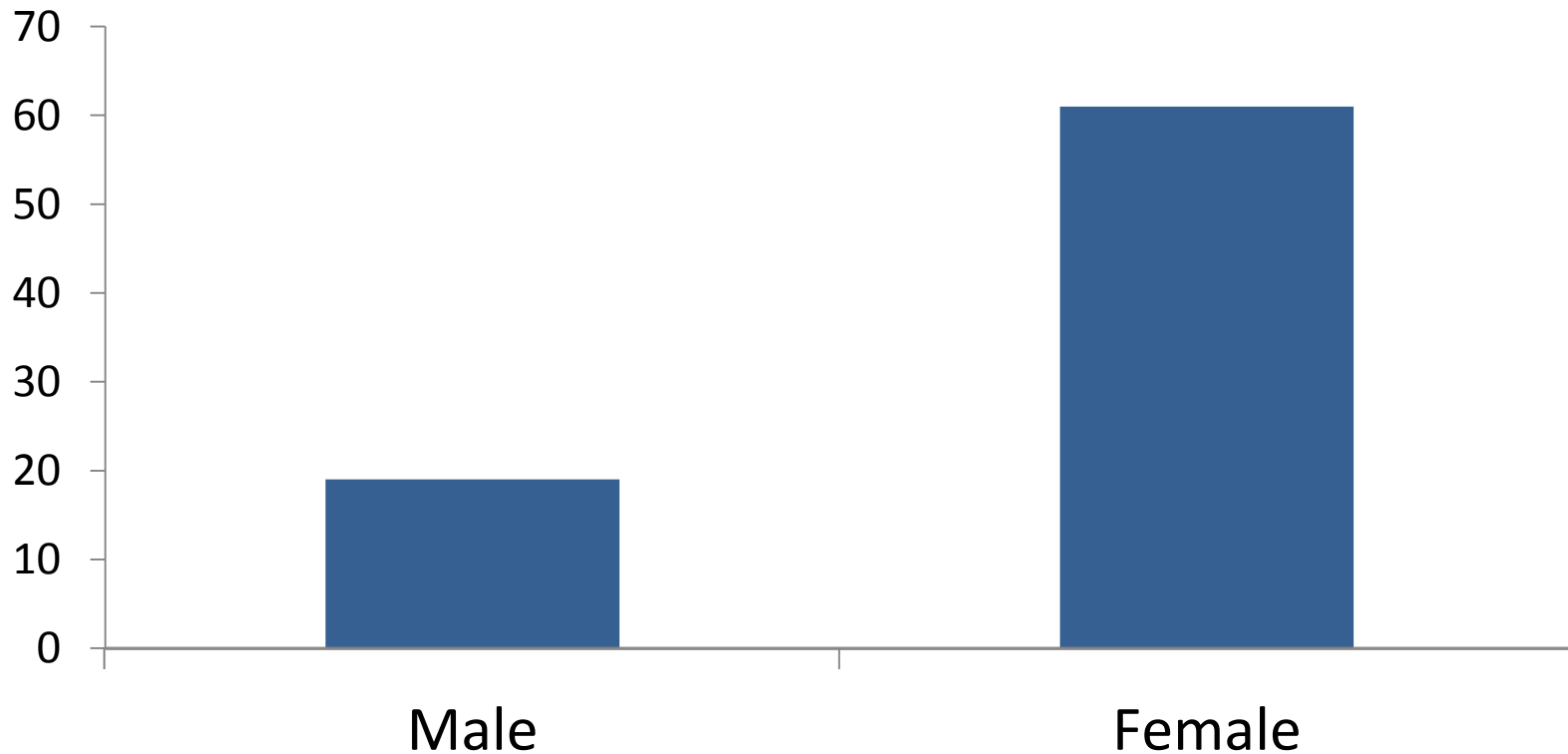




# LITTER RANK



# CUBS: FEMALE VS MALE DOMINANT LITTERS



- 76% of twin litters are female dominant

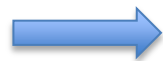


HOW DO WE KNOW ALL THIS!?



# BEHAVIORAL OBSERVATIONS

Focal  
Scan  
CI's



Tape Recorder



Digital Notes



# BEHAVIORAL OBSERVATIONS: AGGRESSION

- First we have to define aggression (probably not indirect)

 hyenaadult:playinwater\_holekamp.mov



# BEHAVIORAL OBSERVATIONS: AGGRESSION

- Then decide what it looks like



kill\_aggs\_small (1).m4v



# ETHOGRAM FOR AGGRESSIVE BEHAVIOR

- T1
  - Warning
  - Point, stand over
- T2
  - Intermediate threat
  - Chase, lunge
- T3
  - Involves actual contact
  - Bite shake





# HYENA PRACTICE



berkeley-dyadicdominance.mpg

# ETHOGRAM FOR HUMANS?

- T1 behaviors?
- T2 behaviors?
- T3 behaviors?

# ETHOGRAM FUN WITH RON BURGUNDY





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# AGGRESSION: NOT ALL BAD!

- Save your cute cubs from starvation!



# GAME!

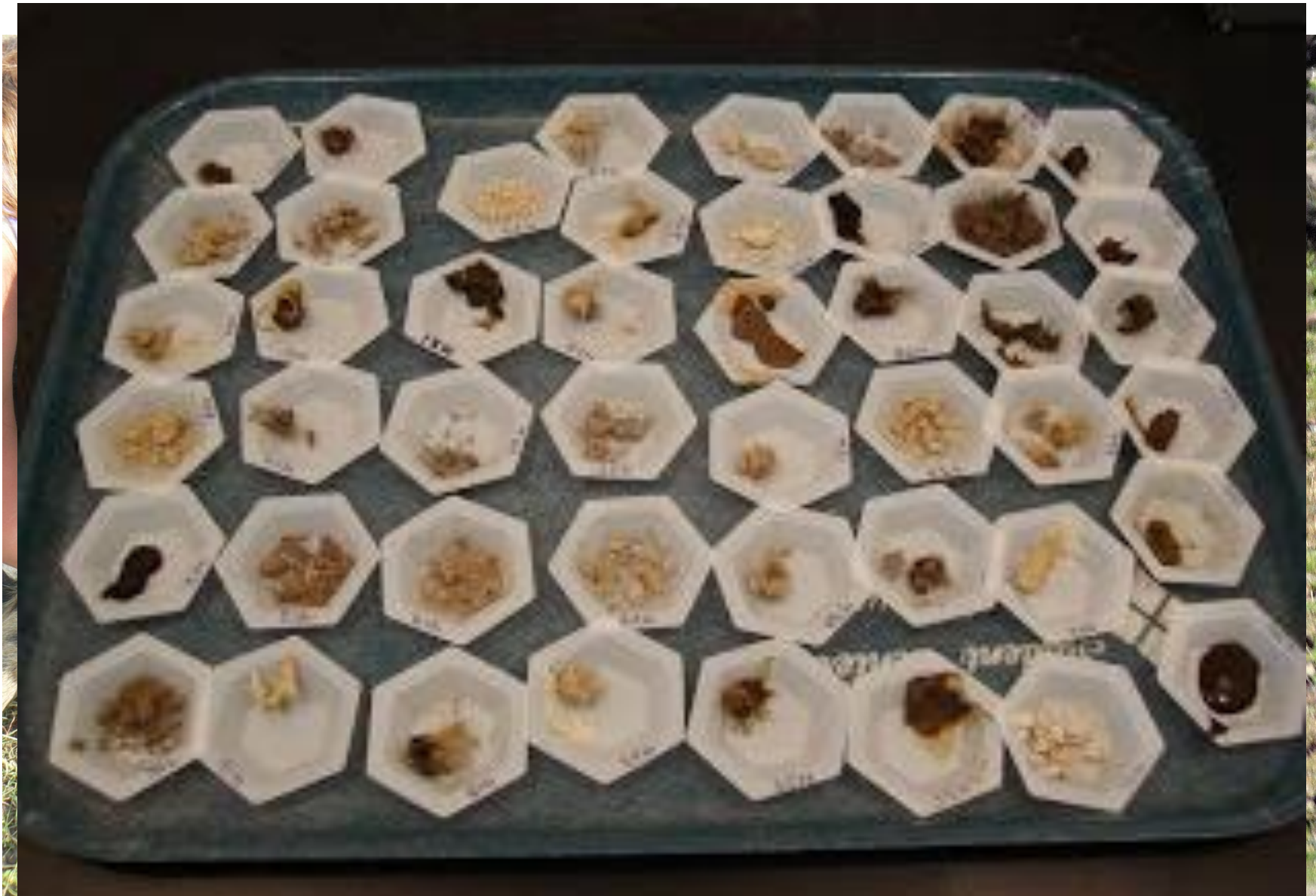
- Who was most competitive?
- Who was most aggressive?
- Is this related to performance in the game?
- Is this related to answers on the survey?
- Do we have any theories to explain sex or individual differences?
- We'd see sex and individual variation in this game with hyenas. My job is to test theories that explain this variation.



# BACK TO HYENAS: HOW DO I USE BEHAVIOR DATA?

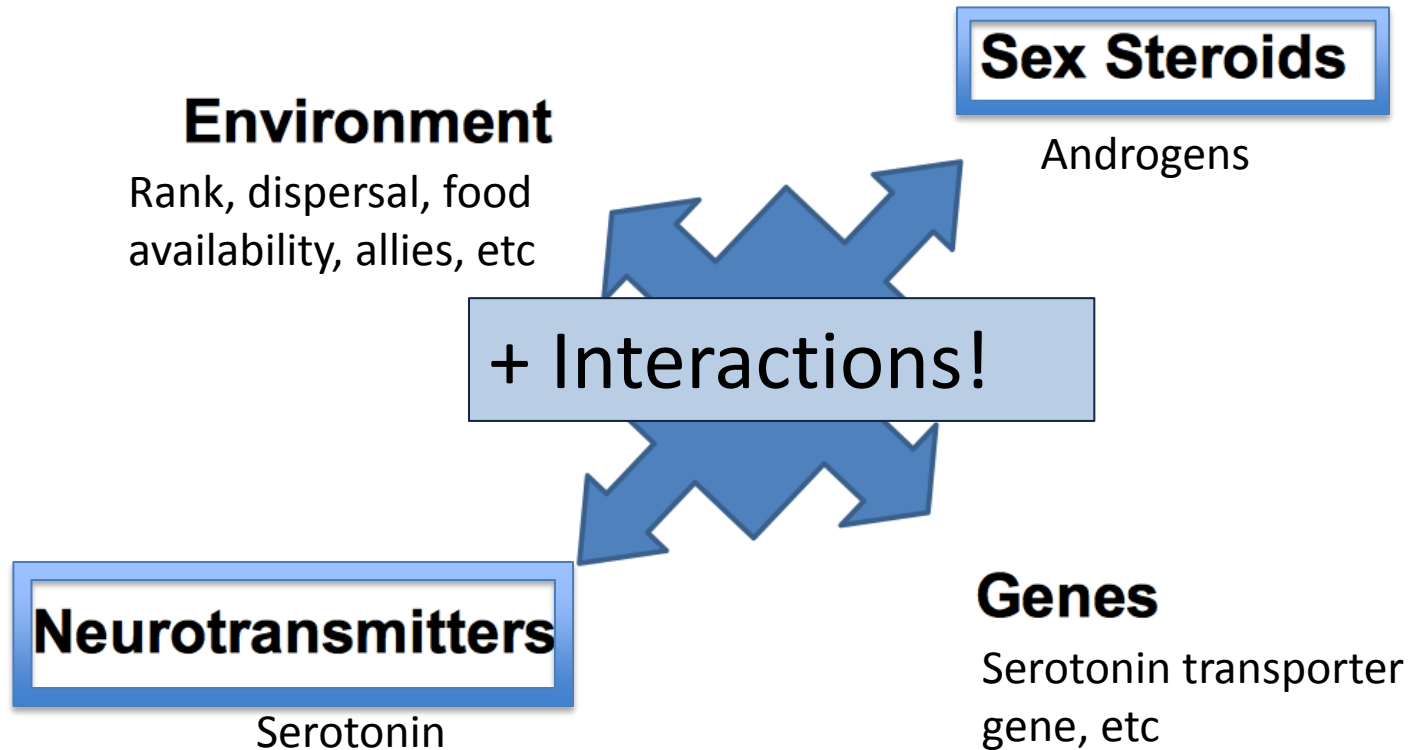


# HORMONE DATA





# PROXIMATE MECHANISMS OF AGGRESSION



THANK YOU!

