Does prenatal and early postnatal treatment with testosterone affect aggressive behavior in SF-1 knock out mice?
Aggressive behavior

- Various behavioral patterns
- Kinds of aggression
  - impulsive–reactive–hostile–affective,
  - controlled–proactive–instrumental–predatory
  - dominance, territorial, female
- Different animal species
- Male mice – territorial aggression
  - Intermale
  - Offensive - defensive
Aggressive behavior

- Prefrontal cortex
- n. accumbens
- Hypothalamus
- Dorsal raphe n.
- Testosterone
Steroidogenic factor -1

- Nuclear hormone receptor family
- Regulator of the cytochrome P450 steroid hydroxylases
- Key factor in steroidogenesis
**SF-1 KO mice**

- without adrenal glands and gonads
- impaired function of pituitary gonadotropes and VMN in hypothalamus is not developed as a compact nucleus
- die shortly after birth
- SF-1 KO mice are born phenotypically female
Hypothesis

- Administering testosterone before and shortly after birth to mice which are not exposed to endogenous steroids induces intermale aggressive behavior.
Experimental design

- SF-1 heterozygous male and female mice (C57BL/6J)
- Plug – day 0
- Treated prenatally on E 13 and E 16
- Postnatally regular steroid mix with TP on P 1, 3, 5
Experimental design

pregnancy

Day 0

E13

E16

KOs and WTs additional on P9, 12 & 16

0-21

Behavioral tests

0-7

Steroid mix
T on P1, 3 & 5

P21 weaning
P25 ovx/cas/sham

After P 70

implants
T
Experimental design

testosterone prenatally

testosterone postnatally

testosterone pre&post

control
Experimental design

- AGGRESSIVE BEHAVIOR:
  - Resident-intruder paradigm for intermale aggression
    - A/J male stimulus
    - 3 consecutive days
    - Scores:
      - Bite
      - Attack
      - Aggressive grooming
      - Tail rattling
      - Chase
    - Filmed
Results

- Analyses of counts, latencies of bites, attacks, aggressive grooming, tail rattles…
- Aggression present in all groups
- Aggression “increased” from 1st to 3rd test – reduced latencies
- WT control males “the most” aggressive
Latency to the first bite

![Bar chart showing latency to the first bite for different groups: prenatal, postnatal, pre-& postnatal, and control. The chart indicates statistical significance with an asterisk (*) at p < 0.05.](image)
Conclusions

- Aggression - present in both sexes and genotypes – testosterone treatment in adulthood

- Administering testosterone early postnatally and pre- and postnatally induces aggressive behavior in SF-1 KO males and females and WT females which is more similar to WT control males.

- Only early postnatal?
Thank you for your attention.

Have a Mice Day!