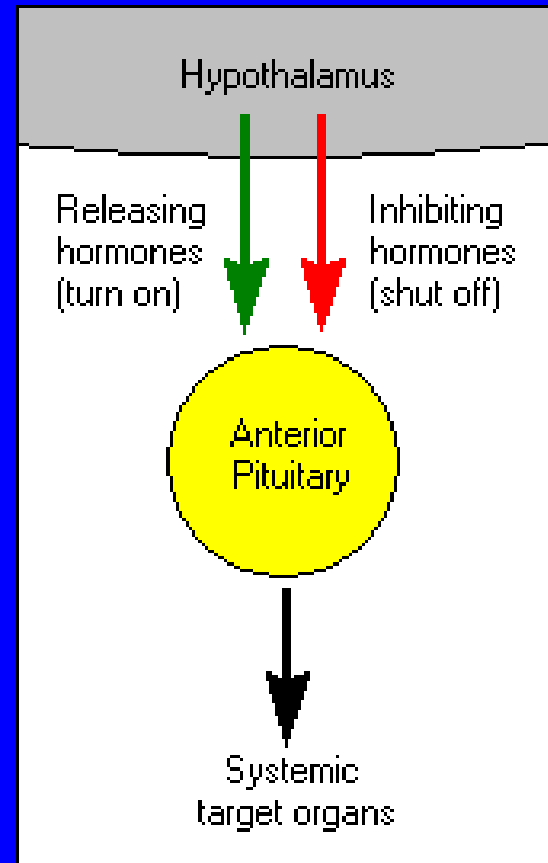


# Stress and Spawning

- External influences
- Perception
- Integration
- Reaction



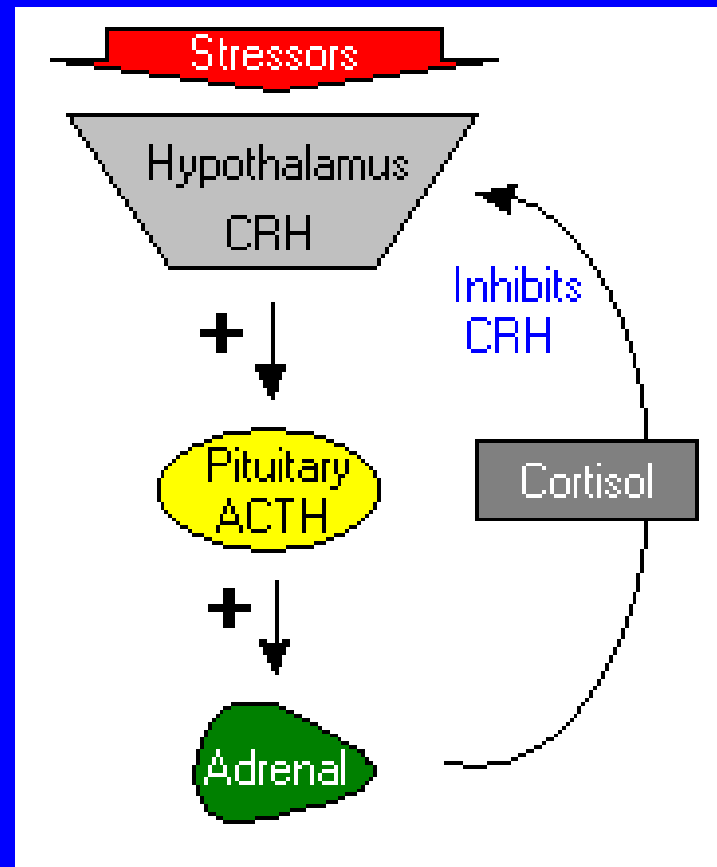
# Stress Response

- Two stages:
  1. Immediate
    - Flight or fight
  2. Sustained
    - Extended energy supply
    - Change in metabolism
    - Puts all cell division on hold



# Stress and Spawning

- Stressor is encountered
- Animal becomes stressed
- Endocrine cascade begins



# Stress Effects



- Creates an assured supply of energy
- Depletes liver glycogen
- Releases sugars from protein wasting
- Represses immunity
- Inhibits growth



# Stress and Reproduction

- Cortisol inhibits reproduction
- Direct and indirect effects
- Stops cell division
- Limit or mitigate stressors in breeders

