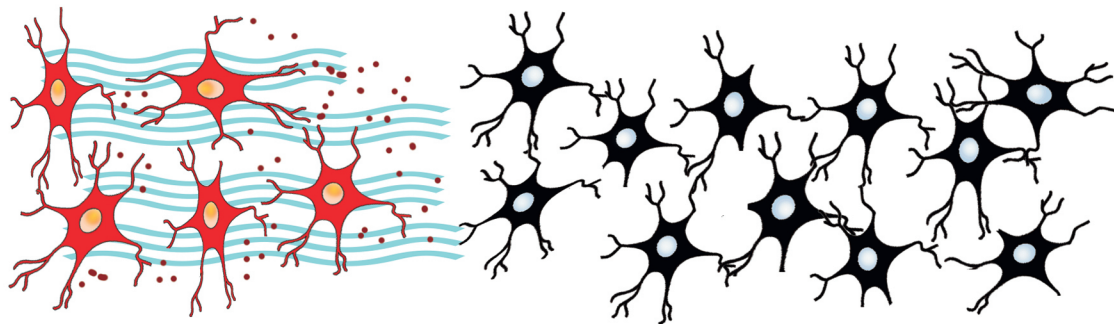
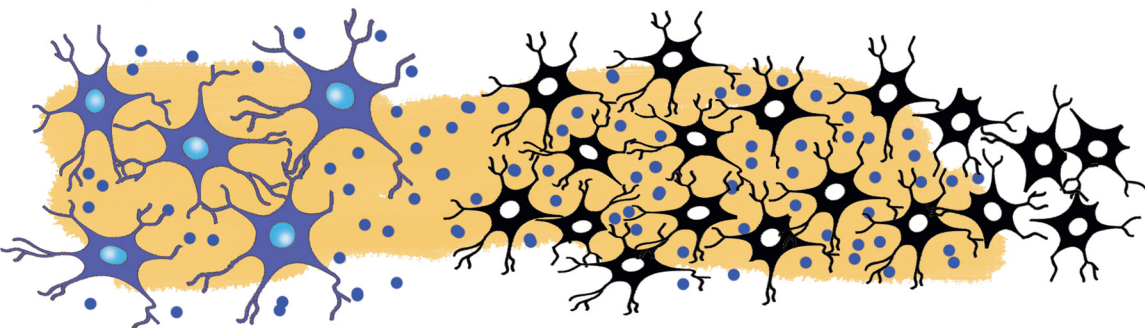


A. Neurotransmitter secretion: 30–50 μ m maximum diffusion distance



● = neurotransmitter

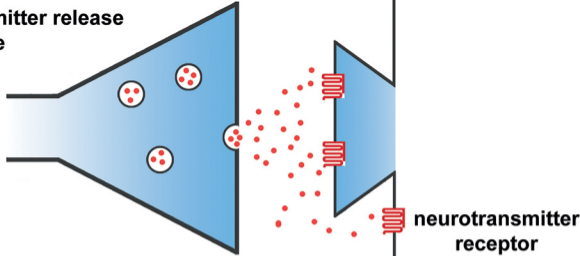
B. Neuropeptide secretion >1,000 μ m diffusion distance



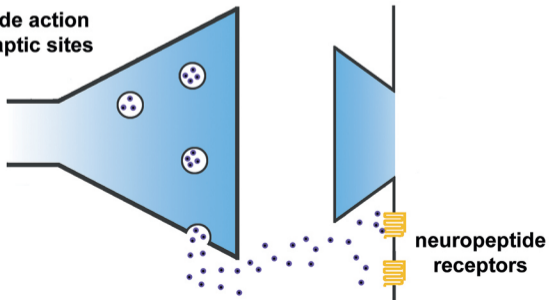
● = neuropeptide

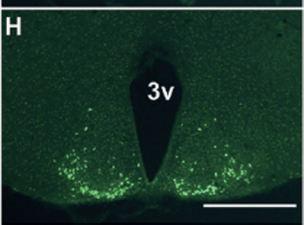
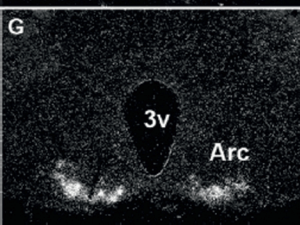
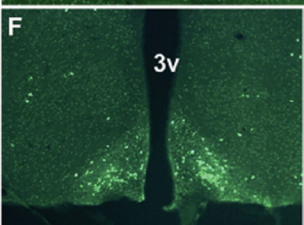
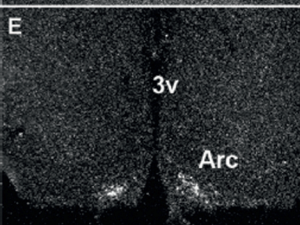
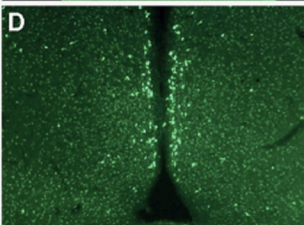
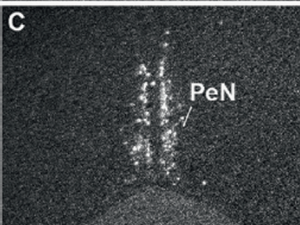
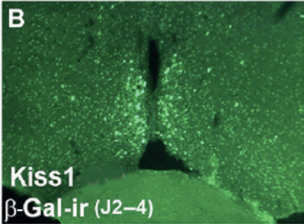
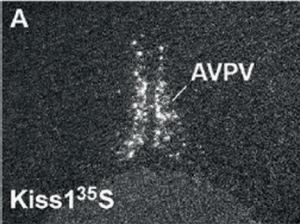
Diffusion \longrightarrow

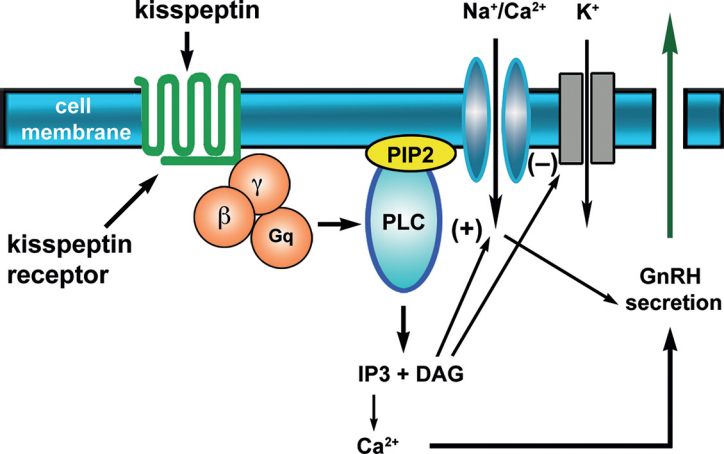
A. Neurotransmitter release at a synapse

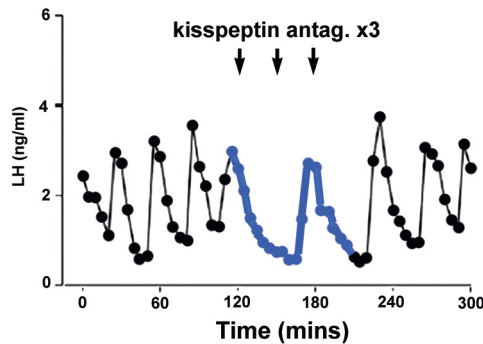
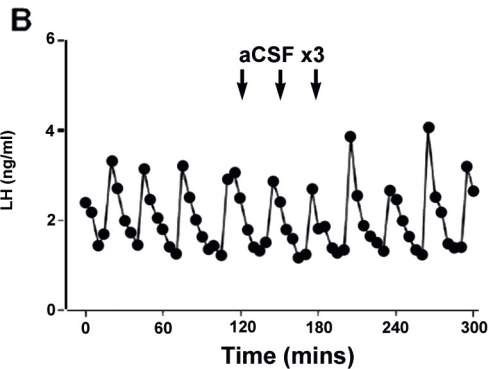
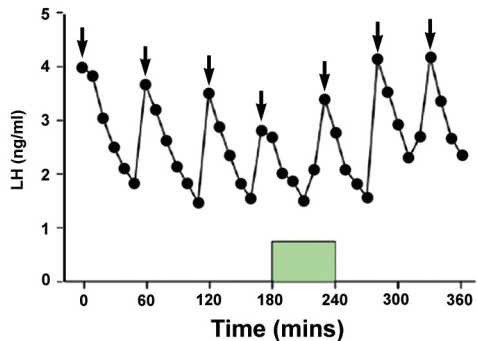
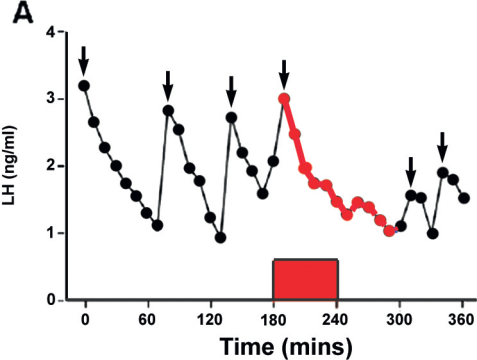


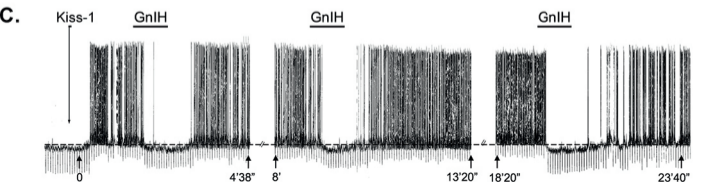
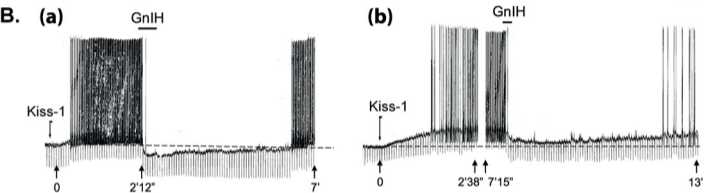
B. Neuropeptide action at non-synaptic sites

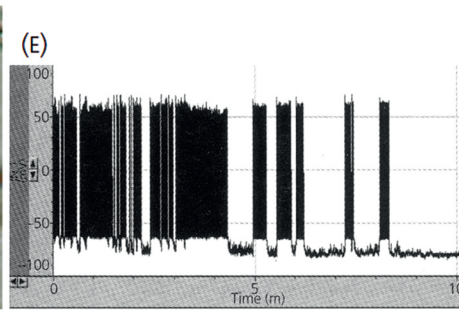
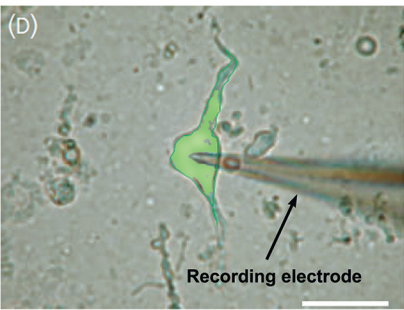
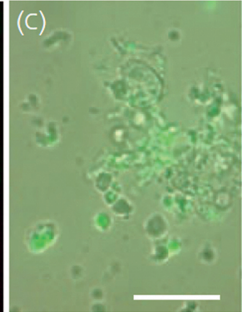
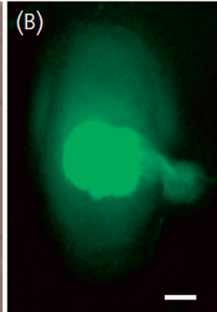
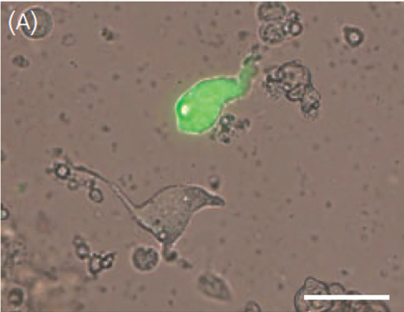


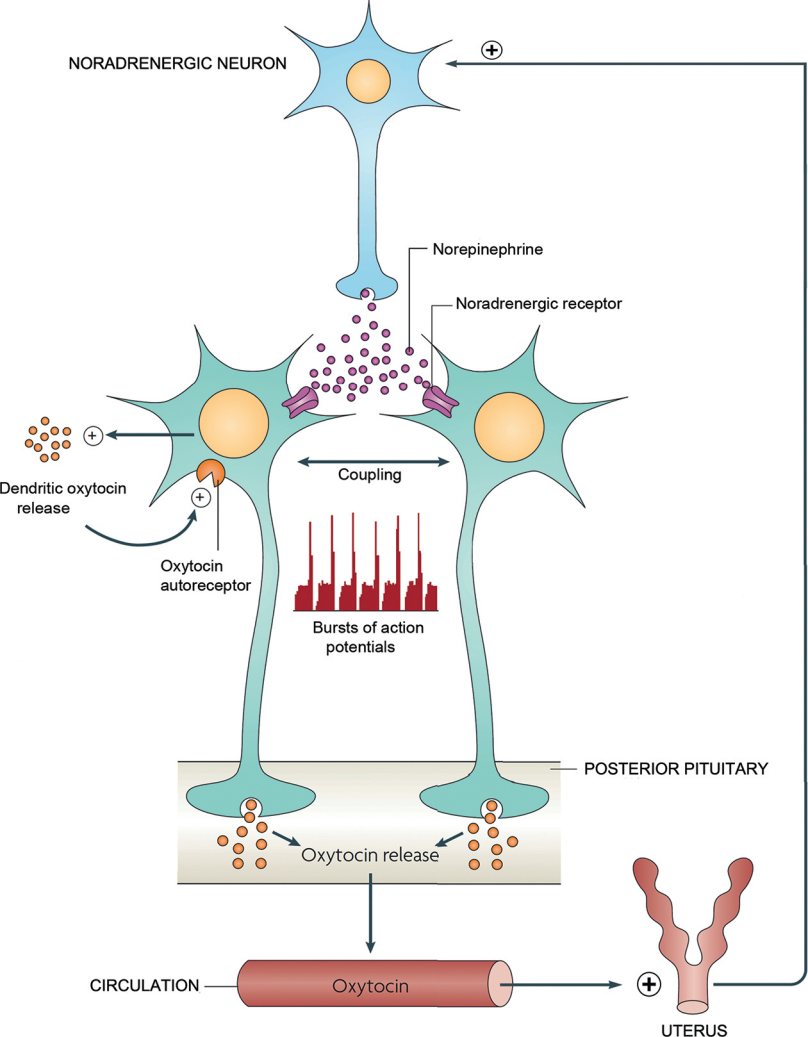


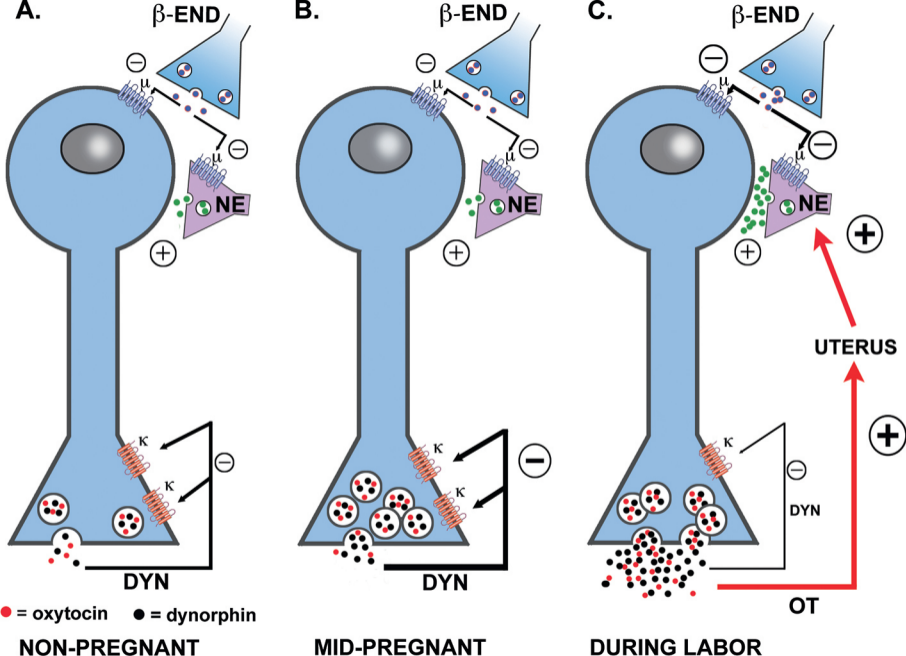


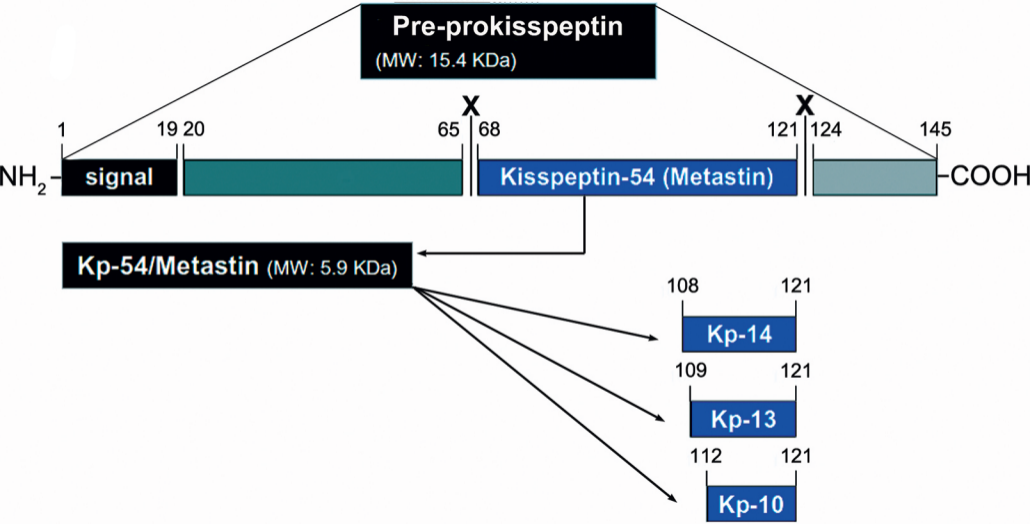










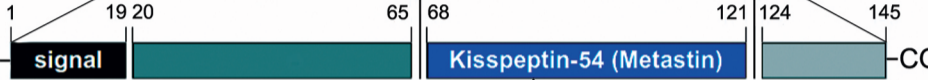


Pre-prokisspeptin

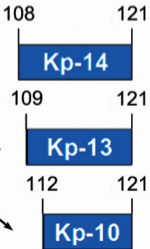
(MW: 15.4 KDa)

X

X

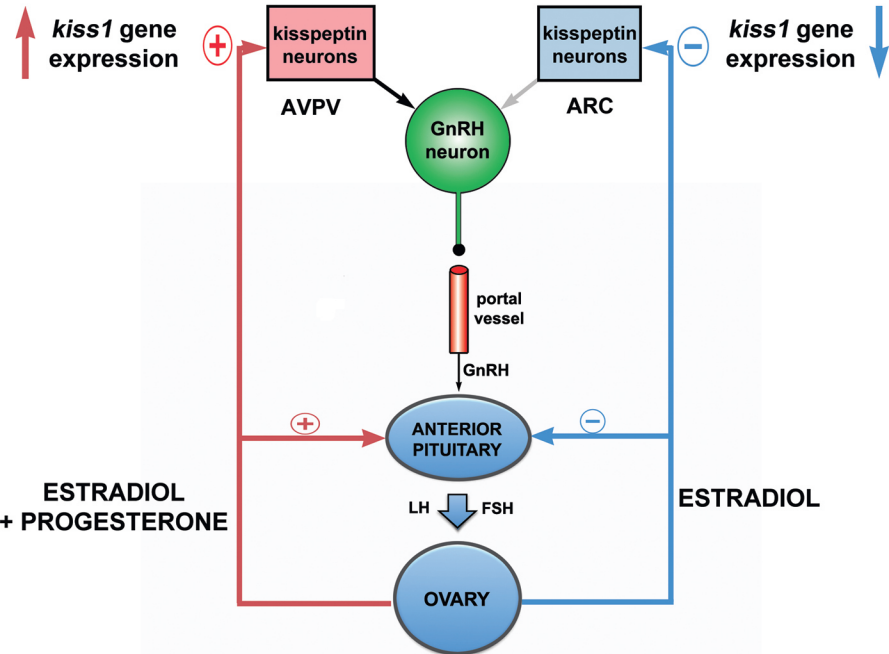


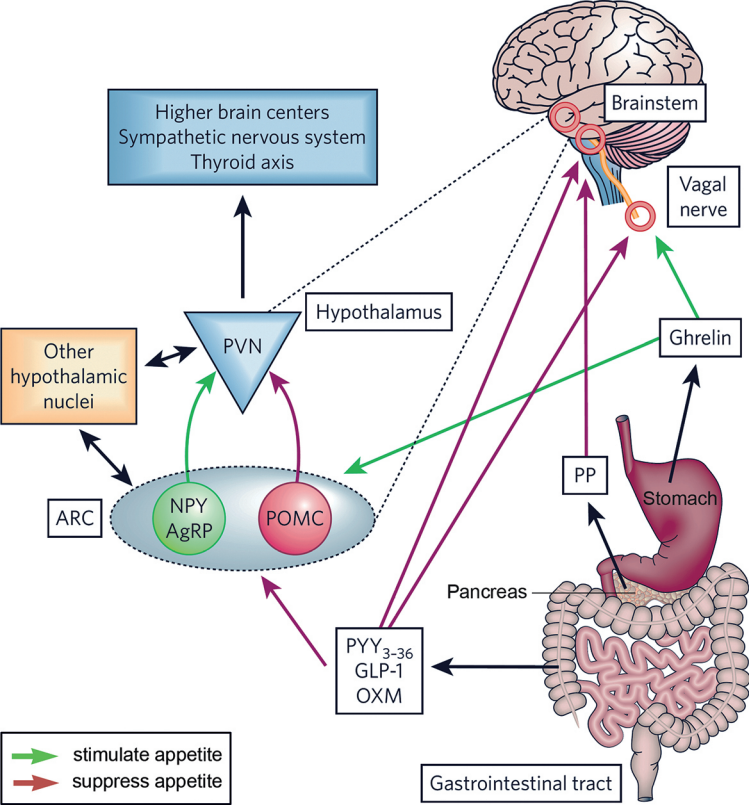
Kp-54/Metastin (MW: 5.9 KDa)

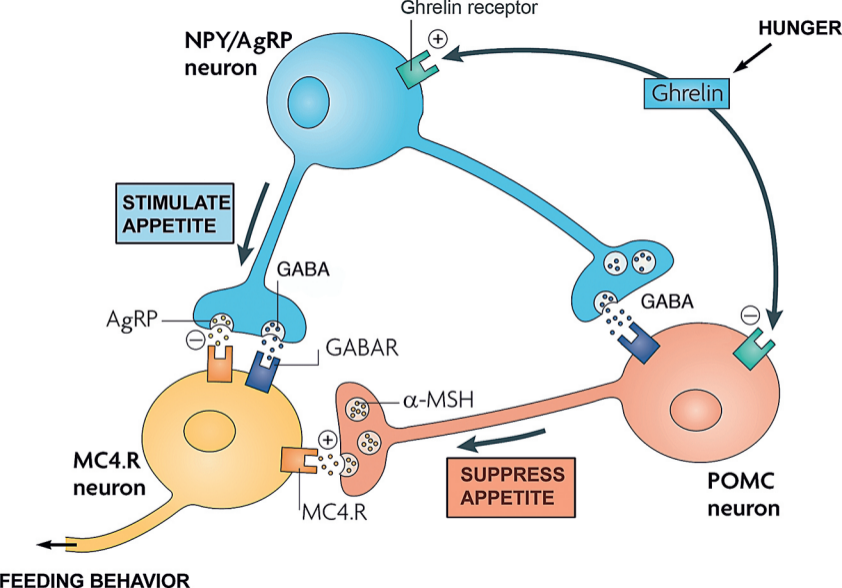


POSITIVE FEEDBACK

NEGATIVE FEEDBACK







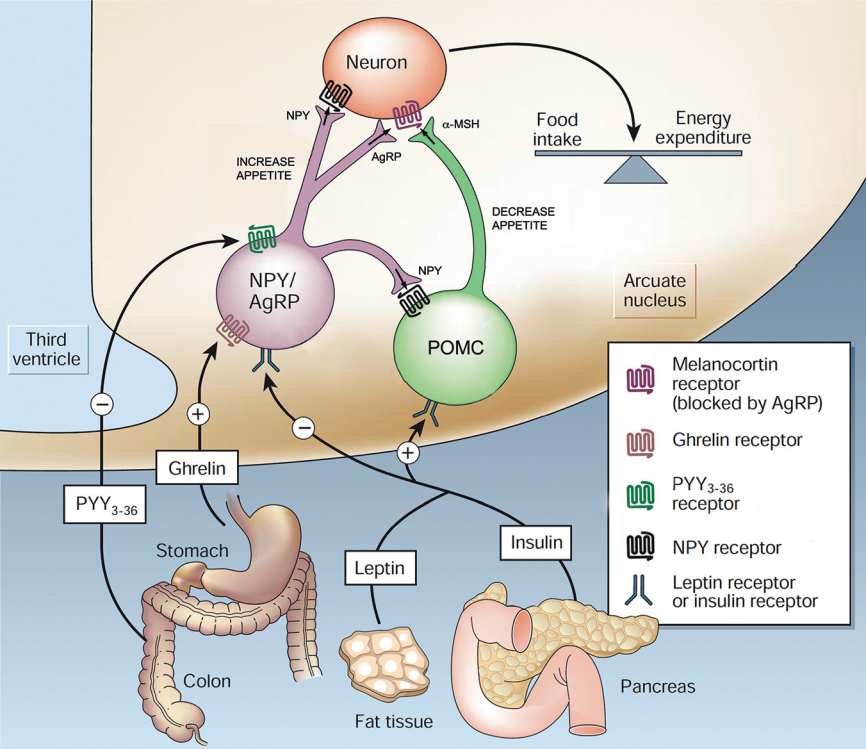


a



b



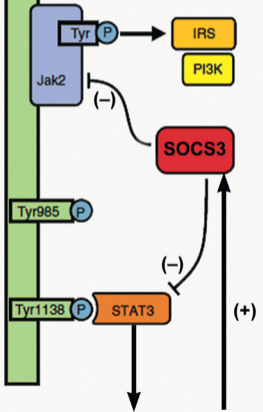
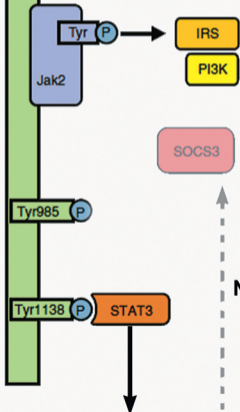


LEPTIN RECEPTORS

low circulating leptin levels

chronic high circulating leptin (obesity)

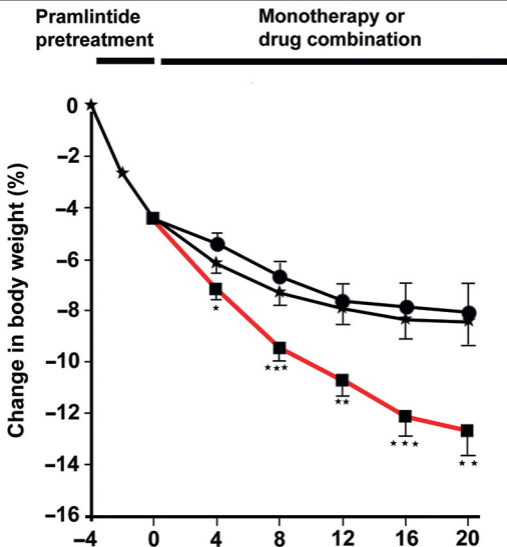
cell membrane



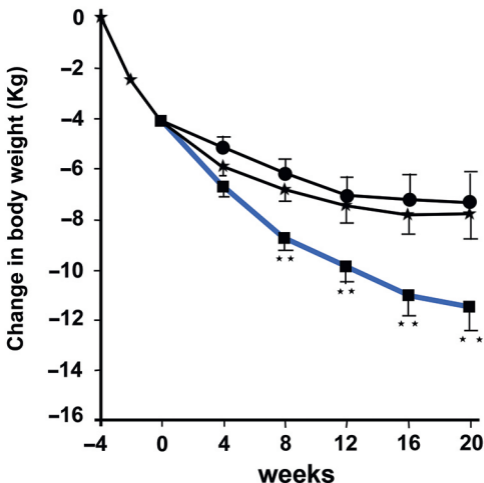
GENE EXPRESSION

GENE EXPRESSION

a. Relative weight change



b. Absolute weight change



OXYTOCIN / VASOPRESSIN

BEHAVIOR

EMOTIONAL

Anxiety (ADH, OXT)

Stress coping
(ADH, OXT)

Mood (human, OXT)

SOCIAL

Pair bonding
(ADH, OXT)

Maternal behavior
(OXT)

Maternal aggression
(OXT)

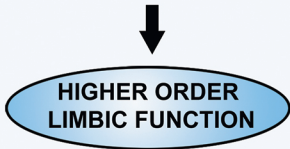
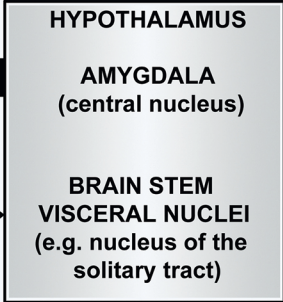
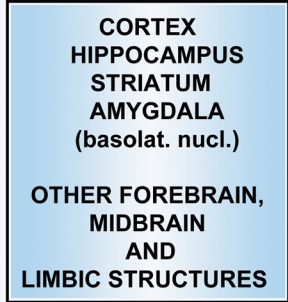
Social interaction
(ADH)

COGNITIVE

Spatial memory
(ADH, OXT)

Olfactory memory
(OXT)

Social
discrimination
(ADH, OXT)



- Emotional responses
- Motivational states
- Affective biasing of sensory input
- General arousal level
- Integrated motor responses
- Adaptive behavior



- Blood pressure and heart rate
- Thermoregulation
- Gastrointestinal function
- Hunger and feeding
- Fluid balance and thirst
- Pain and fear responses

Limbic/Cortical System

Frontal Cortex

Cingulate

Septal Area

Hippocampus

Amygdala

Dorsal Raphe

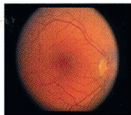
Caudal Raphe

Spinal Cord

Brain Stem/Midbrain/ Spinal Cord System

Chronobiological System

Pineal

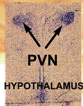


Retina



SCN

Hypothalamic- Hypophysiotropic Neuroendocrine System



PVN

HYPOTHALAMUS

TRH



PITUITARY

TSH



Thyroid