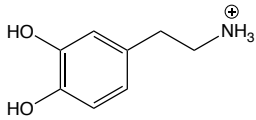


Lecture 12 handouts filled-in and presented by students in the fall of 2025.

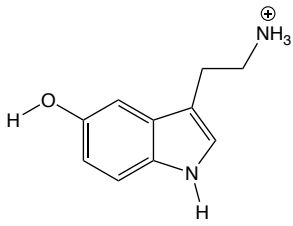
Based on the article “Biological Connection to the Feeling of Happiness”, Josmitha Maria Dsouza, Anirban Chakraborty, Jacintha Veigas, Journal of Clinical and Diagnostic Research. 2020 Oct, Vol-14(10): VE01-VE05

a. Dopamine

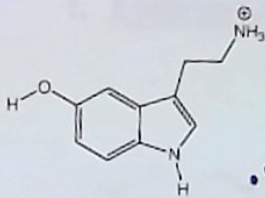


- Reward driven behavior + explores pleasure
- Pursuit of goals/repetitive behaviors for dopamine response
- Foods can influence dopamine response
- Exercise increases dopamine
- Laziness directly related w/ dopamine decline
- Lack of sleep causes dopamine insensitivity
- Sunlight effects → SAD

b. Serotonin



b. Serotonin



- * "Confidence Molecule" *
- Reduces anxiety & depression
- Secreted when "receiver" feels important

Things to do to boost Serotonin:

- Go in sunlight
- Exercise
- Practice gratitude
- Reflection on positive memories
- Good diet *
- Volunteering / activities that bring fulfillment or purpose *

Regulates:

- Mood
- Happiness
- Sleep
- Appetite
- Memory

Serotonin Prevention

- Stress
- Poor sleep
- Bad diet

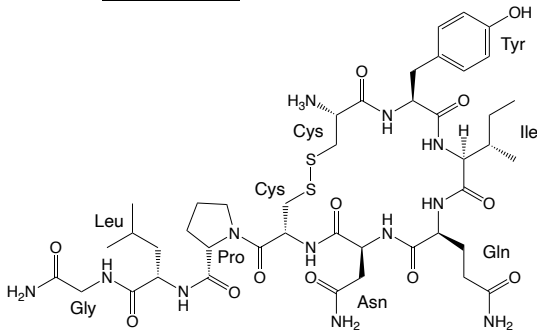
Serotonin is produced in your gut
↳ 90-95%

The gut & brain are connected along the vagus nerve (gut-brain axis).

- The gut can affect moods, stress emotions through signals
- The brain influences digestion, inflammation & gut function.

* A healthy gut = balanced microbiome = better serotonin production = improved mood, sleep, & mental health well-being

c. Oxytocin



What it is

The trust hormone, bonding hormone, love hormone found in the hypothalamus and is fired from the pituitary gland

When it fires

When we hug, cuddle, or make love. It is fired during orgasm and by mothers while in labor and breastfeeding.

What you can do to make it fire more often

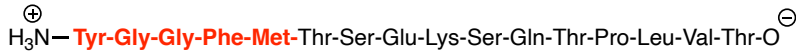
You can eat foods rich in proteins, lipids, minerals, and vitamins like figs, avocados, watermelon, spinach, green tea, etc.

Other activities or things you can do are sharing meals with others, mindful meditation, staying in touch with others, and generally connecting with other people and strengthening bonds and relationships.

Even just bonding with a pet.

d. Endorphins

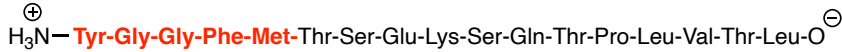
α -Endorphin



β -Endorphin

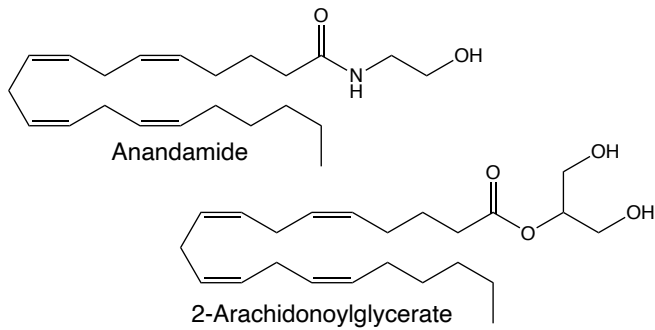


γ -Endorphin



- Endorphins are pain-killing molecules, alleviating pain + propelling happiness.
- manufactured by hypothalamus + pituitary gland
- resemble opiates in biochemical makeup, similar to morphine (even called self-produced morphine)
- released during high-levels of stress, tranquilizes the brain + induces a feeling of happiness
- triggered by various agents such as exercise, anxiety, love, music, chocolate-eating, sex, etc.
 - ↳ creating, not listening
- even essential oils can deliver more endorphins or watching a comedy movie
- sunshine + UV rays can increase endorphins, as well as massage therapy, spicy foods, dark chocolate, laughter, and acts of kindness towards others

e. Endocannabinoids

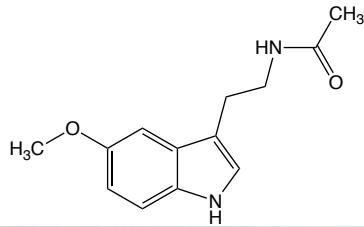


The endocannabinoids help improve mood, emotion, motivation, memory, pleasure, perception, appetite, metabolism, ect.

body's self-produced Cannabis, where the prime active component has been perceived to generate intensification of perception

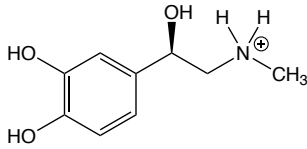
There are many things that stimulate the system like: the Cold, sipping coffee, Caffeine, extra virgin olive oil, probiotics, and dark chocolate.

f. Melatonin



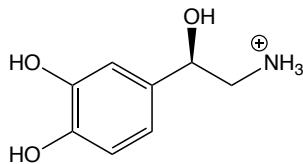
- Melatonin has a connection with our body's readiness to sleep (it is influenced by light, age, and other environmental factors).
- Melatonin is related to happiness, but is released during darkness.
- In this way, people get relaxation and sound sleep, which are healthy and restorative processes.
- To get more melatonin, people can avoid sources of light (like electronic screens) before bed and can keep faint lights in the bedroom.
- Foods such as corn, asparagus, pomegranate, cucumbers, walnuts, flax seeds, barley, etc. support the release of melatonin.
- Drink plenty of water and avoid caffeine as well.

g. Epinephrin



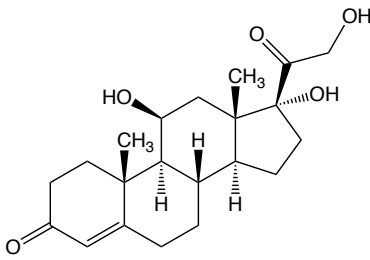
- both a hormone and neurotransmitter
 - ↳ CNS neurotransmitter, helps transmit nerve signals to other nerve cells, muscle cells, gland cells
- sympathetic nervous system; "fight or flight"
- made from norepinephrine inside adrenal gland
- small role as neurotransmitter; major action is in role as hormone
- plays role in metabolism, attention, focus, panic, excitement
- synthetic epinephrine is used as medication to treat cardiac arrest, septic shock, asthma, anaphylaxis, eye surgery

h. Norepinephrine



Lots of norepinephrine lead to delight and joy. Also, it helps people stay safe in times of danger by triggering a flight-or-flight response. This is why despair and sadness is related to the decrease of norepinephrine. You can enhance norepinephrine with cheese, nuts, banana, and chocolate. Also, extreme weather like the cold and heat enhance norepinephrine.

i. Cortisol



Cortisol is a hormone related to anxiety and depression. High cortisol level makes our body to be too high alert. There's negative correlation between cortisol level and happiness.

Healthy cycle (TH of sleep, restricting the use of digital device before bed) helps with stabilizing cortisol level. Vitamin C, Vitamin B5, Magnesium lessens cortisol level.

j. Genetics of Happiness

★ 35 - 50 % of human ~~genetics~~ happiness is genetic
↳ physical factors can play a role too

★ 5-HTT gene codes for serotonin transmitters

↳ Long or short alleles

↳ Long allele variant → 35% happy

↳ short allele variant → 19% happy

★ MAO-A gene is implicated in mood management

↳ catalyst for serotonin, dopamine, and noradreniline

↳ low activity (MAO-A-L) and high activity (MAO-A-H)

↳ MAO-A-L is predictive of higher self-reported happiness

k. Anthropometric Typology

~~_____~~

~~_____~~

lean delicate
body built

Happiness ? physical attractiveness have - Ectomorph

Significant Positive relation between them

non-attractive = intelligent, kind, socially, more social skills

Attractive people = more happy ? successful - carry positive attitude

Physical attractiveness = choosing them as a friend,
successful in choosing partner - preferred as companions

- The image you have of your body will effect specific emotions : behaviors - So have confidence