

Depression,
serotonin
and dark chocolate



Major depression (Unipolar disorder) Quizz 1

1. What are emotional/mood symptoms of depression?
2. Who's theory of depression is based on the "Cognitive triad"?
3. What is the most common course of depression?
 - a) recovery without recurrence
 - b) recovery with recurrence
 - c) chronic depression
4. What attributional style does a depressed individual use for bad events?
 - a) internal – unstable – specific
 - b) external – stable – global
 - c) internal – stable - global

Major symptoms:

- Low mood
- Inability to experience pleasure and drive
- Cognitive impairment (memory, concentration etc)
- Low self-esteem, hopelessness
- Insomnia or hypersomnia
- In most severe cases, psychosis

To experience smth. –
переживать что-то

Drive (психол.) – энергия,
внутренний импульс

Impairment – ухудшение,
нарушение функции

Self-esteem – самооценка

Insomnia – бессонница

Severe case – тяжелый
случай

Major causes:

- Psychological (stressful life events, death, relationships break, financial losses, etc.)
- Biological (brain damage, toxic agents, genetic mutations, drug abuse)

Life events – жизненные события

Sedative drugs – успокоительные лекарства

Drug abuse –
злоупотребление
наркотиками (или
мед. препаратами)

Biological mechanism

Monoamine theory – low level of three neurotransmitters:

- Serotonin
- Norepinephrine (noradrenaline)
- Dopamine

Most modern antidepressant drugs are targeting these three compounds (to increase).

Neurotransmitter –
нейромедиатор, активное
действующее вещество в
синапсе

Chemical compound –
химическое соединение

Fatigue – истощение,
утомление

Anxiety – тревога,
тревожность

Biological mechanism

Serotonin – energy, calmness,
concentration

Lack of serotonin – fatigue,
anxiety

Neurotransmitter –
нейромедиатор, активное
действующее вещество в
синапсе

Chemical compound –
химическое соединение

Fatigue – истощение,
утомление

Anxiety – тревога,
тревожность

Biological mechanism

Dopamine – happiness, pleasure,
motivation

Lack of dopamine – anhedonia,
apathy

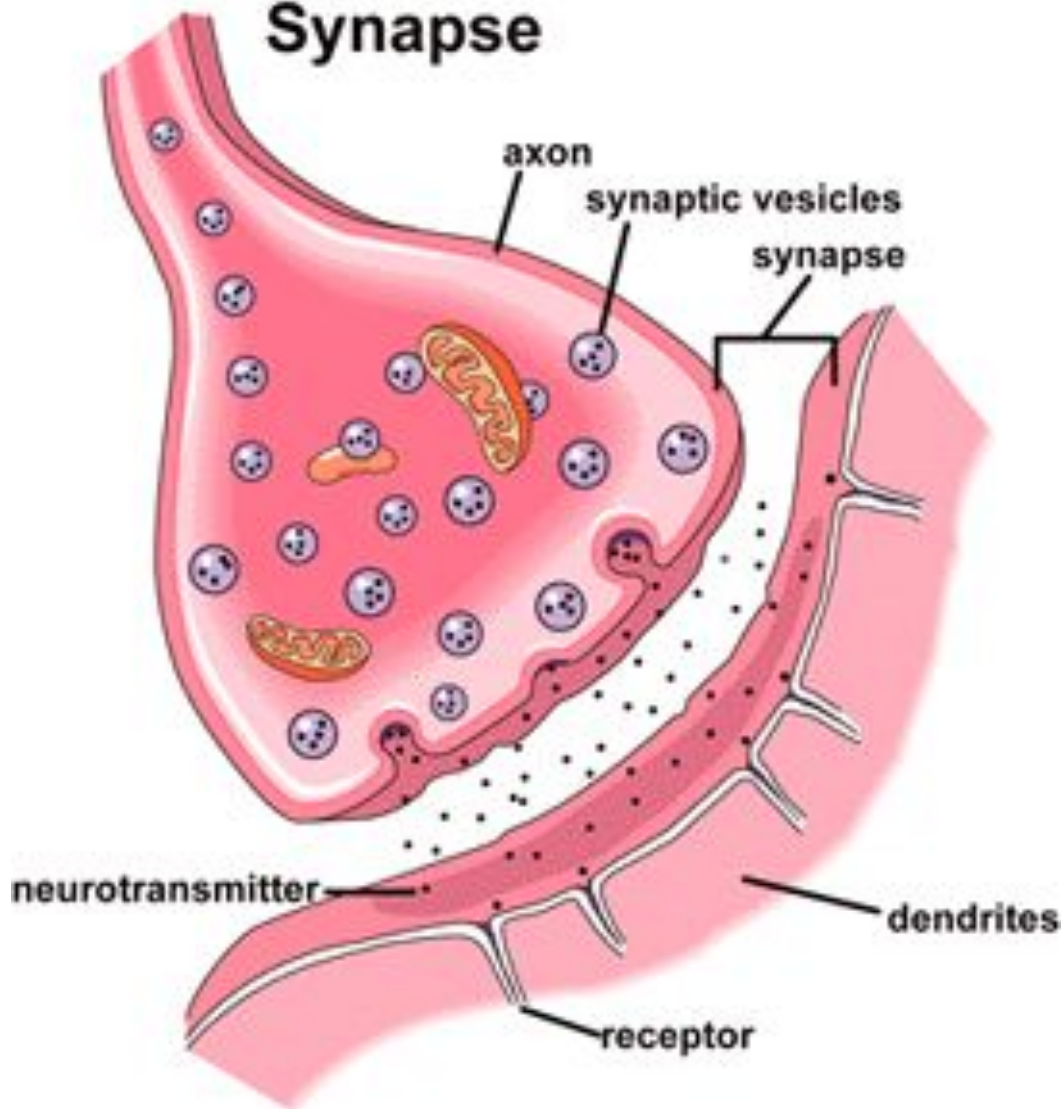
Neurotransmitter –
нейромедиатор, активное
действующее вещество в
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Chemical compound –
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Fatigue – истощение,
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Synapse

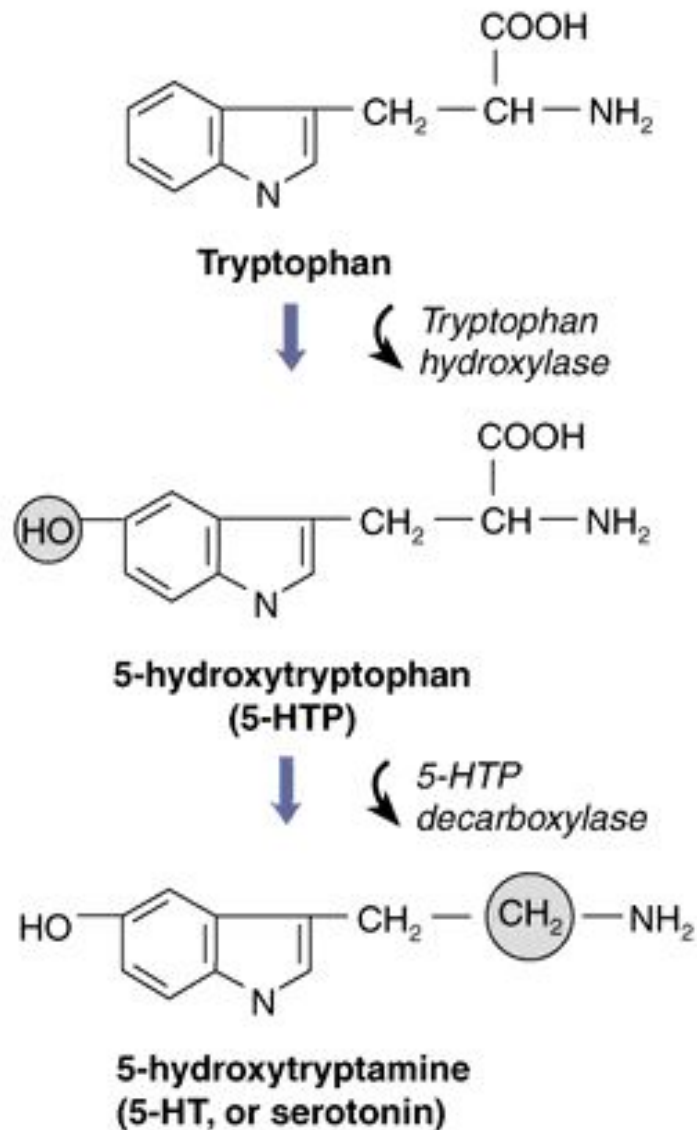


Neurotransmitter –
нейромедиатор, активное
действующее вещество в
синапсе

Cell – клетка

Neuron – нейрон

► Biosynthesis of Serotonin

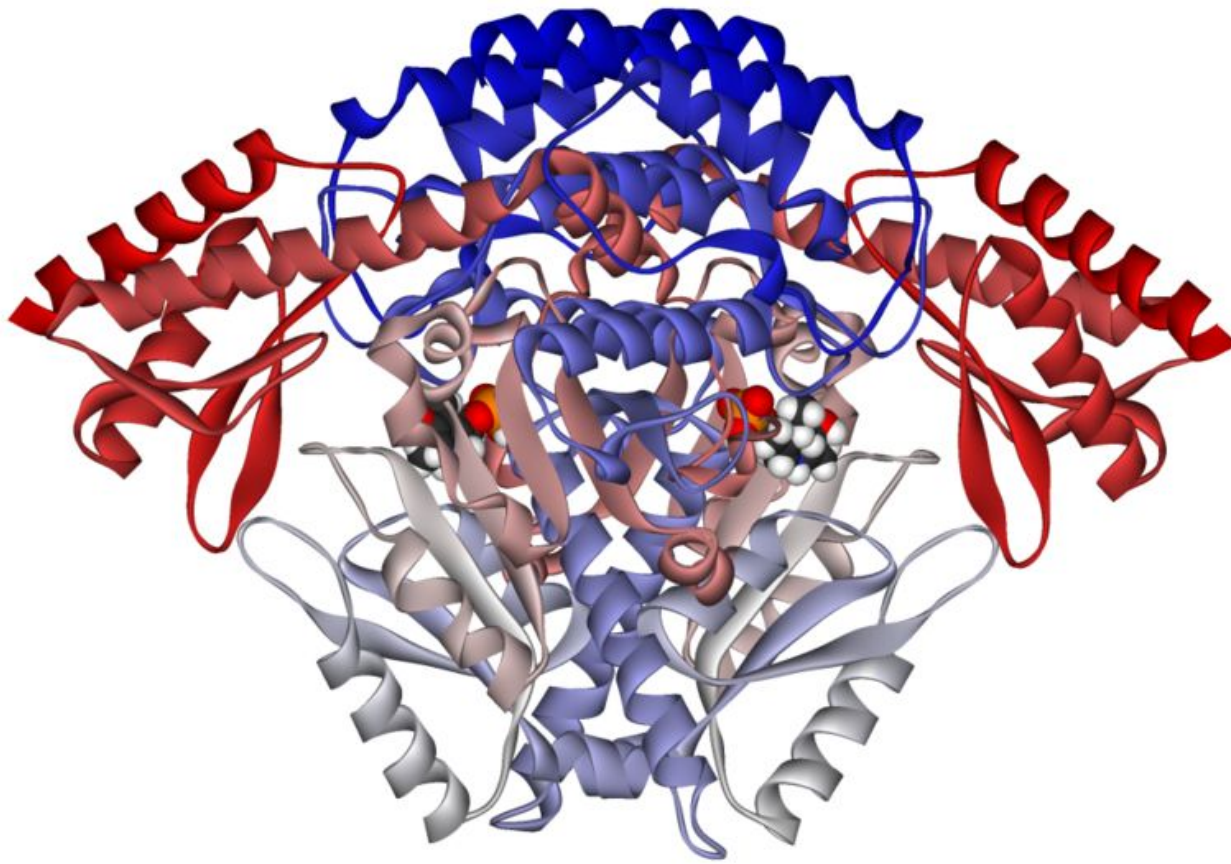


To synthesize –
синтезировать

Precursor –
предшественник

Amino acid –
аминокислота

Enzyme – энзим,
фермент



Precursor –
предшественник

Amino acid –
аминокислота

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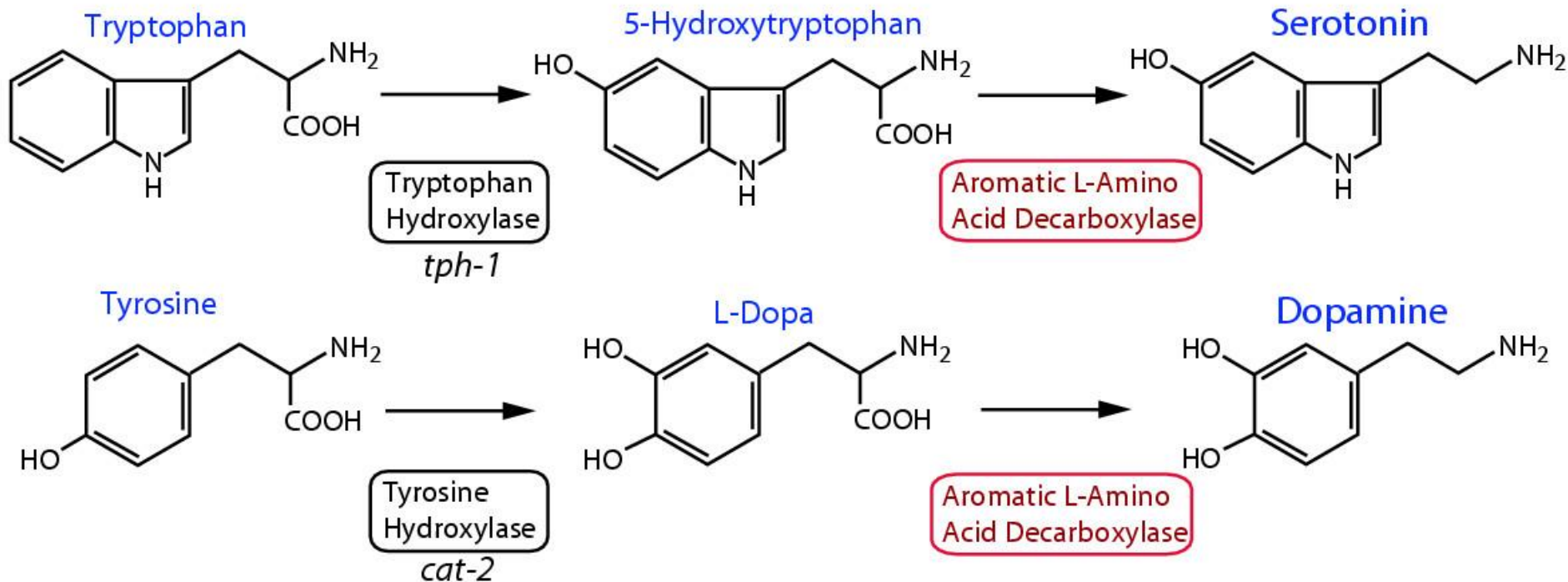
To convert –
превращать,
преобразовывать

AADC (enzyme)

(Aromatic L-amino acid decarboxylase)

Converts both **5-HTP** to **serotonin** and **L-Dopa** to **dopamine**

Serotonin & Dopamine Biosynthesis



Association study between two variants in the DOPA decarboxylase gene in bipolar and unipolar affective disorder†

Esther Jahnes¹, Daniel J. Müller^{1,2,*}, Thomas G. Schulze^{2,3}, Christine Windemuth⁴, Sven Cichon^{1,5}, Stephanie Ohlraun², Heiner Fangerau², Tilo Held⁶, Wolfgang Maier², Peter Propping¹, Markus M. Nöthen⁵ and Marcella Rietschel²

Article first published online: 7 MAY 2002

DOI: 10.1002/ajmg.10308

Issue



Possible parent-of-origin effect of Dopa decarboxylase in susceptibility to bipolar affective disorder

A.D. Børglum^{1,*}, G. Kirov⁸, N. Craddock⁹, O. Mors², W. Muir⁵, V. Murray⁶, I. McKee⁷, D.A. Collier¹⁰, H. Ewald^{2,3}, M.J. Owen⁸, D. Blackwood⁵ and T.A. Kruse⁴

Article first published online: 27 SEP 2001

DOI: 10.1002/ajmg.b.10030

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Issue



American Journal of Medical Genetics Part B: Neuropsychiatric Genetics

Volume 117B, Issue 1, pages 18–22, 15 February 2003

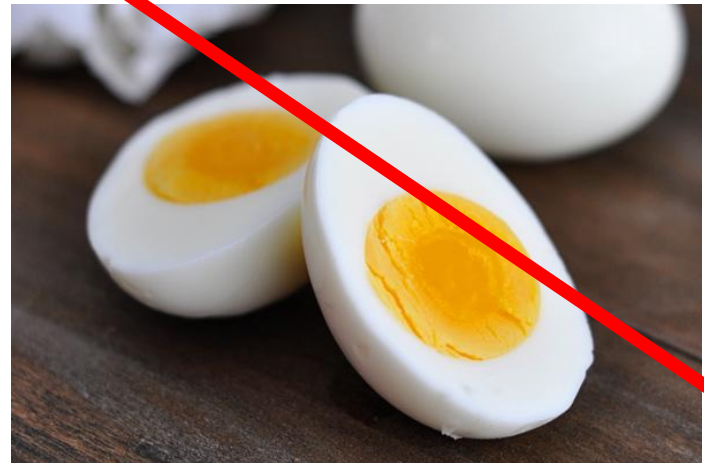
Tyrasine (to raise dopamine)



Tryptophan (to raise serotonin)



Tryptophan (to raise serotonin)



Diet

Diet rich in carbohydrates (sugars) increases level of **insulin**, and then increase **serotonin production**.

Carbohydrates –
углеводы

Diabetes –
сахарный диабет





Carbohydrates –
углеводы

Diabetes –
сахарный диабет

Diet

Rich in carbohydrates (sugars) increases level of **insulin**, and then increase **serotonin production**.

BUT! Constant high level of insulin may cause diabetes (II type)

Carbohydrates –
УГЛЕВОДЫ

Diabetes –
сахарный диабет



Low sugar. Not a good source of tryptophan.

Then why does dark chocolate help?





Anandamide – endogenous cannabinoid

Phenethylamine – «chocolate amphetamine», stimulant that promote feelings of attraction, excitement by stimulating the brain's pleasure centres

Flavonoids - anti-inflammatory, anti-allergic, good for blood flow

Endogenous –
эндогенный,
внутренний

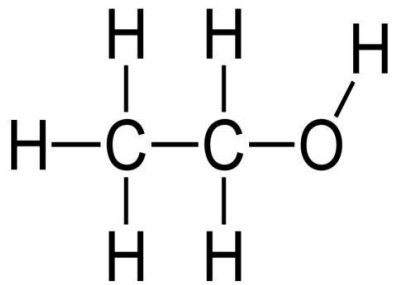
Excitement –
возбуждение

Pleasure centres –
центры удовольствия

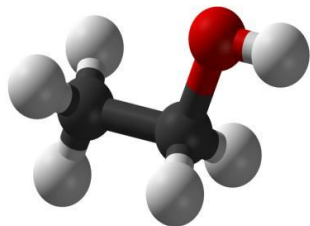
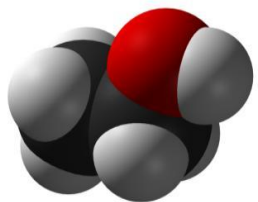
Inflammatory –
воспалительный







Ethanol



Ethanol –
этиловый спирт,
алкоголь





Anandamide – endogenous cannabinoid

Phenethylamine – «chocolate amphetamine», stimulant that promote feelings of attraction, excitement by stimulating the brain's pleasure centres

Flavonoids - anti-inflammatory, anti-allergic, blood flow

Endogenous –
эндогенный,
внутренний

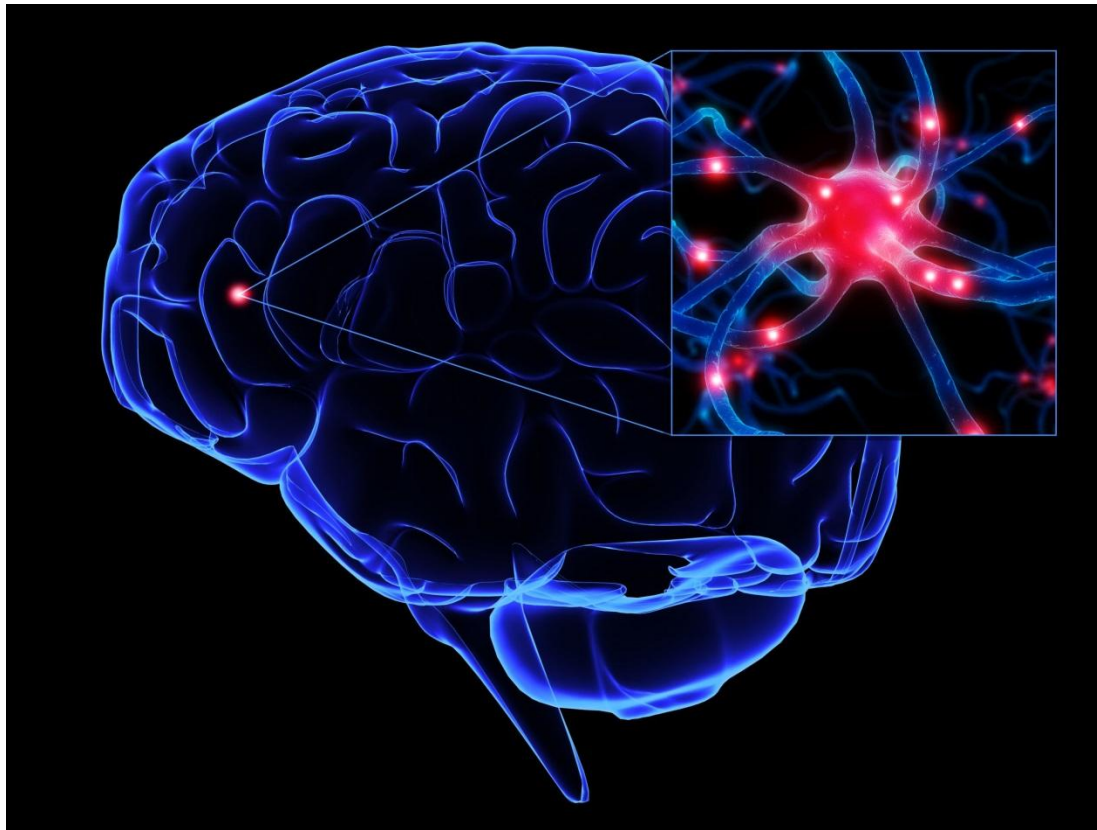
Excitement –
возбуждение

Pleasure centres –
центры удовольствия

Inflammatory –
воспалительный

Remember!

No matter how complicated the psychological phenomenon is, there is always physiological mechanism, underlying it.



Complicated –
сложный,
комплексный

Underlying –
лежащий в основе

