

Post Traumatic Stress Disorder

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Overview Of PTSD

- I. Epidemiology and Risk Factors
- II. Conceptualization of PTSD as a psychoneurobiological disorder
- III. Brief overview of DSM-V criteria for PTSD
- IV. Discuss evidenced-based treatments for PTSD

Epidemiology of PTSD

National Comorbidity Study

- 7.8% of adults in the U.S. (lifetime)
- Type of trauma most often the basis for PTSD:
 - rape in women (46% risk)
 - combat in men (39% risk)
- 1/3 of cases have duration of many years
- 88% of cases have psychiatric comorbidity

Likelihood of getting PTSD after Experiencing a Trauma

It depends on the event and the person

Men experience more traumatic events

Women are more likely to develop PTSD

After a traumatic event, who gets PTSD?

- 20% of women
- 8% of men get PTSD

Combat-Related PTSD: Epidemiology

Lifetime Prevalence:

- 30% in Vietnam veterans
- 5-10% of Gulf War I deployed veterans
- 10-20% in Operation Enduring Freedom and Operation Iraqi Freedom

VIETNAM: Kulka RA, et al. Trauma and the Vietnam war generation: Report of the findings from the National Vietnam Veterans Readjustment Study. 1990, New York: Brunner/Mazel.

GULF WAR: Stretch RH et al. Military Medicine. 1996;161:407-410.

IRAQ WAR: Hoge, C.W., et al. R.L. N Engl J Med. 2004;351:13-22.

Likelihood of PTSD....

Rape

- Men 65%
- Women 45%

Combat

- Men almost 40%

Physical Abuse

- Almost 50% of women
- 20%+ men

Risk for PTSD: After the Trauma

Degree of Social Support

Degree of Life Stress

What puts you at risk for PTSD?

Being female

Being poor

Less education

Bad childhood

Previous psychological problems

What puts you at risk for PTSD?

- Severity of trauma (ie, threat, duration, injury, loss)
- Prior traumatization
- Ethnicity
- Prior mood and/or anxiety disorders
- Family history of mood or anxiety disorders

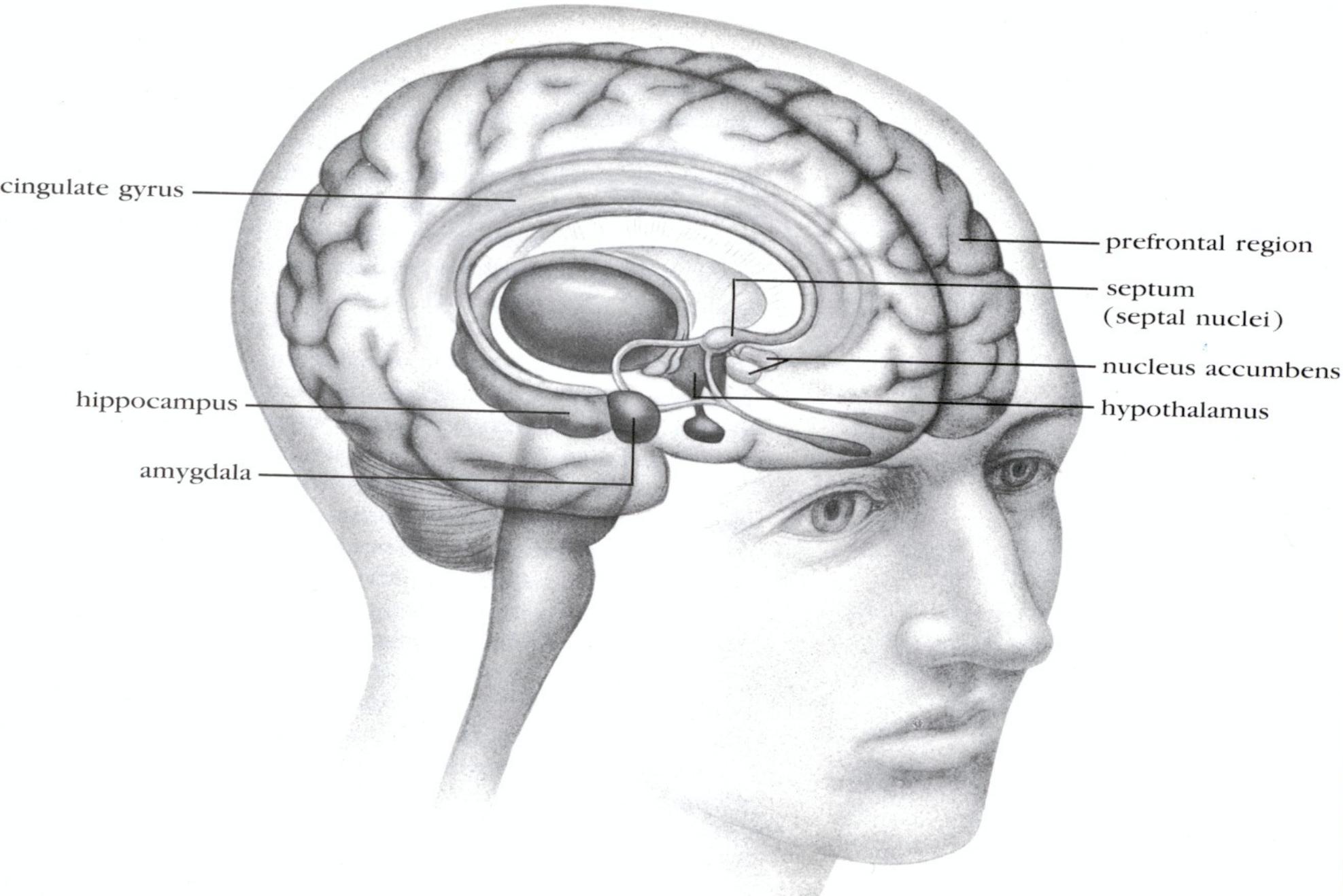
What puts you at risk for PTSD?

*Strength or severity of the stressor

Characteristics of the trauma:

- Greater perceived life threat
- Feeling helpless
- Unpredictable, uncontrollable

Neurobiological Correlates of PTSD



cingulate gyrus

hippocampus

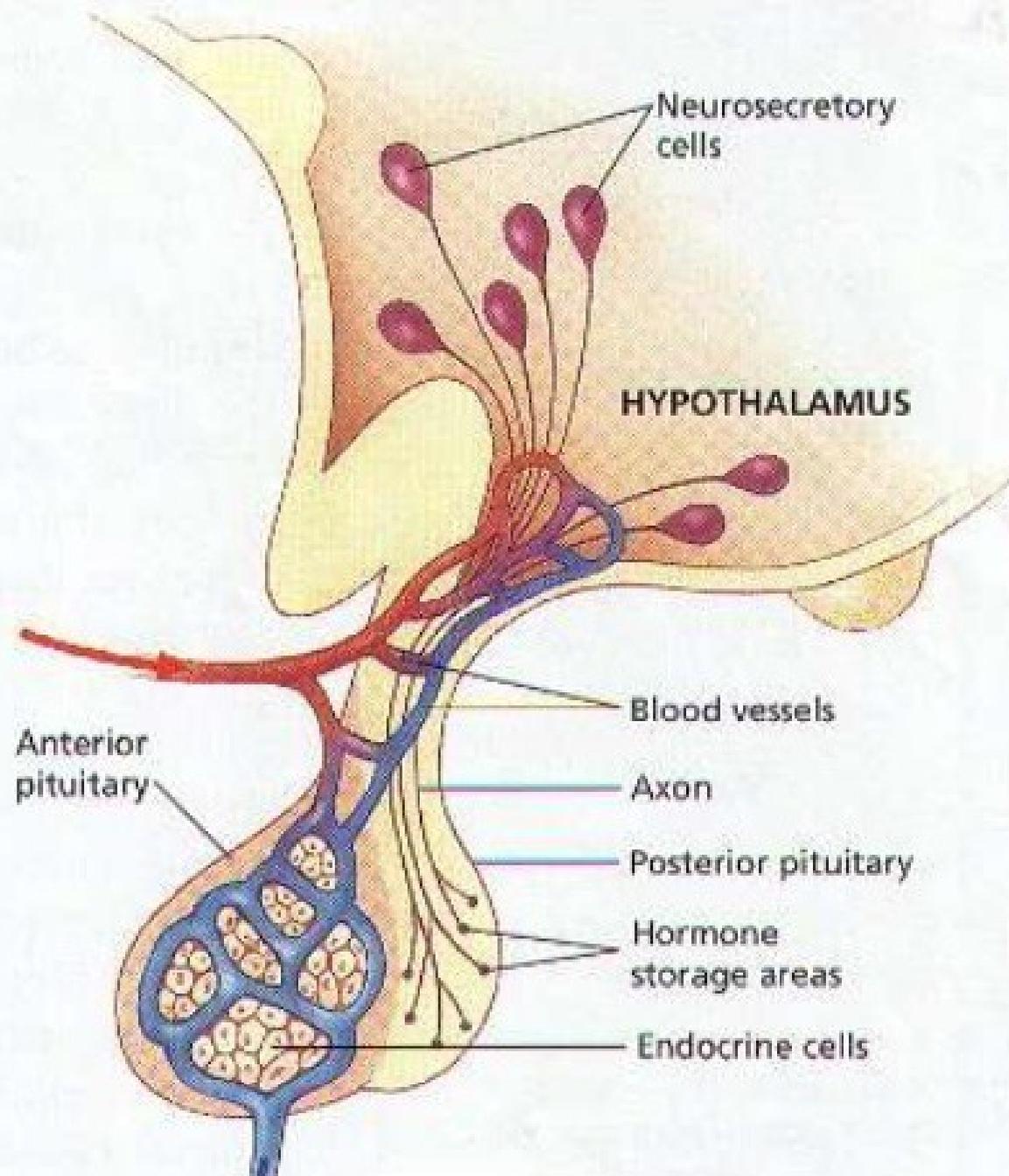
amygdala

prefrontal region

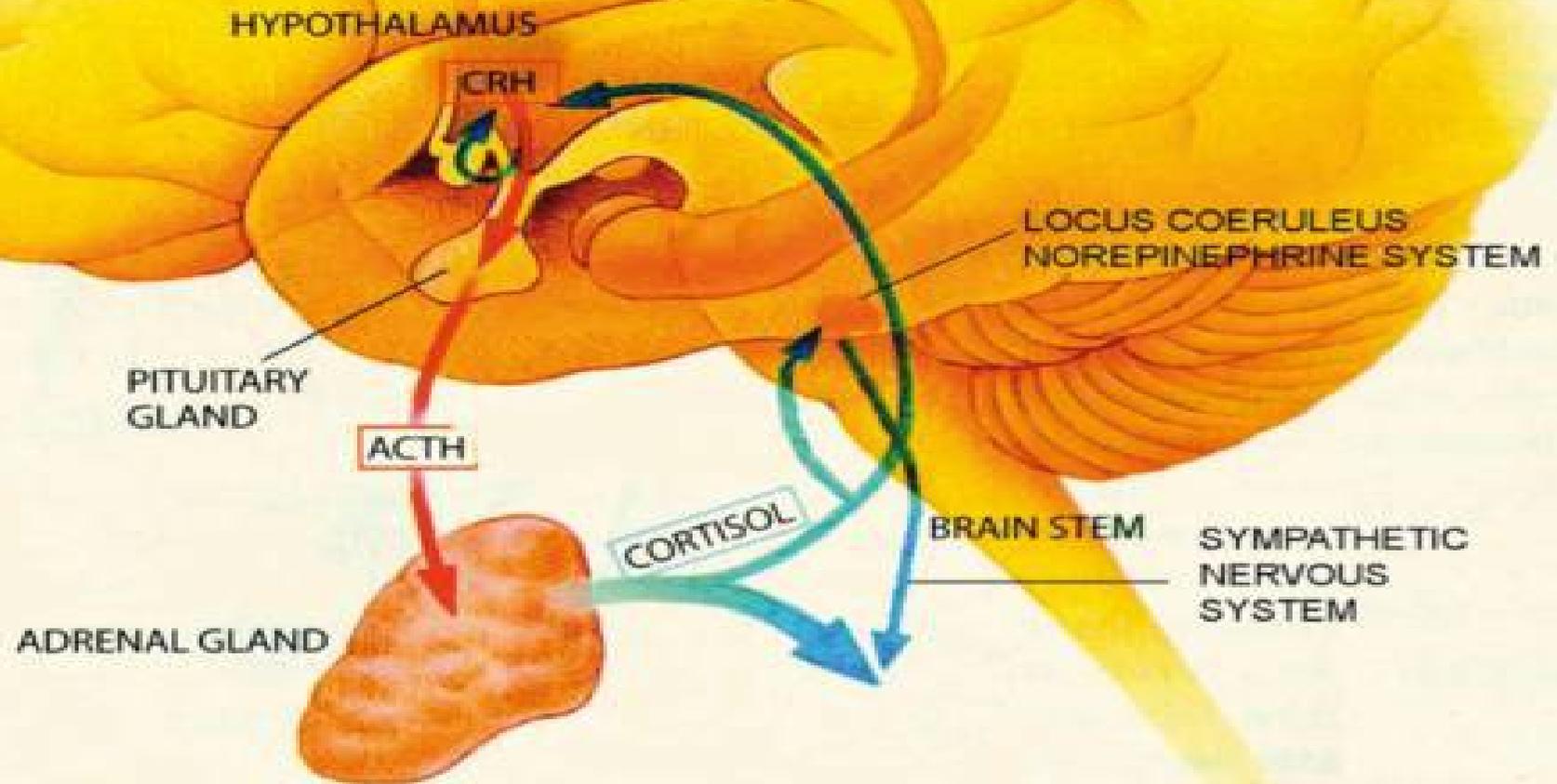
septum
(septal nuclei)

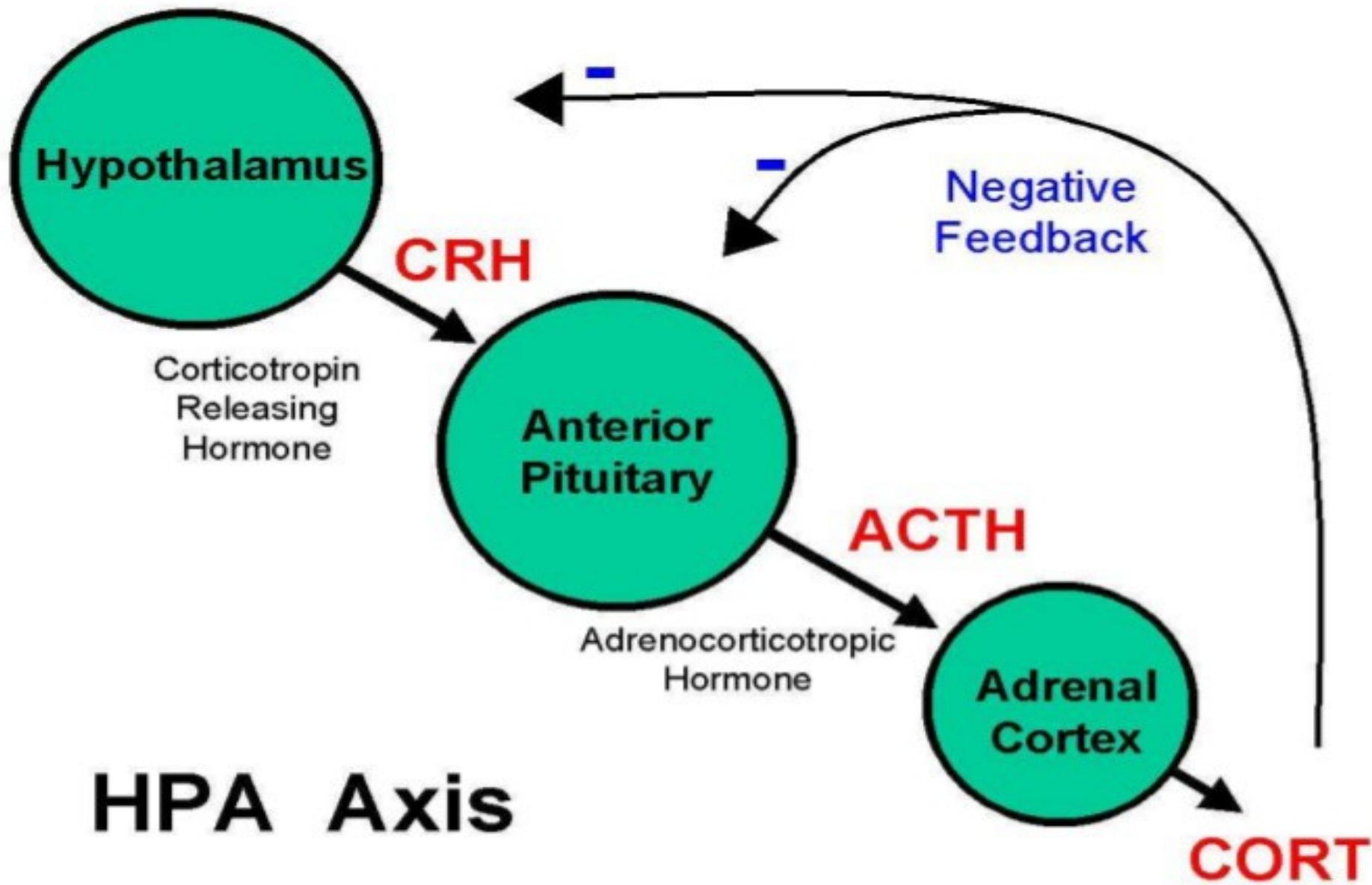
nucleus accumbens

hypothalamus



Hypothalamus-Pituitary-Adrenal (HPA) Axis





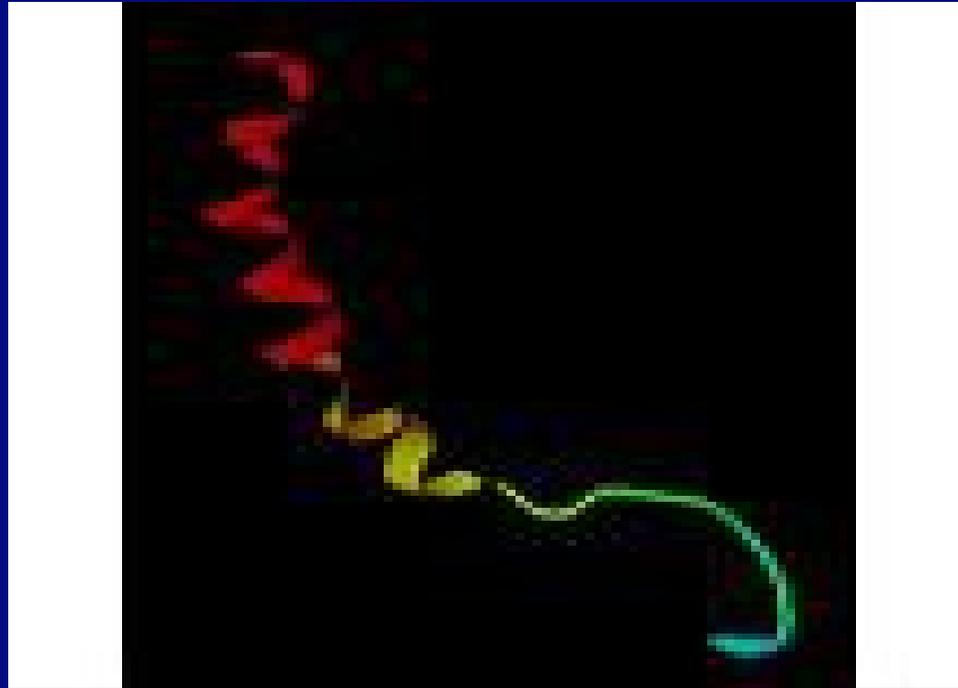
Cortisol in PTSD

Persistently low, with spikes during times of stress

A relatively small stressor to most people will trigger a biochemical cascade in someone with PTSD, manifesting as general hyper-reactivity and avoidant numbing, respectively.

No other emotional condition, including depression, panic attacks, or anxiety disorders will produce this profile.

Neuropeptide Y



depression.

Increased emotionality is seen upon inactivation of NPY transmission,

while the opposite is found when NPY signaling is made overactive

the most extensive evidence available for amygdala and hippocampus

some evidence for regions within the septum, and locus coeruleus

Antistress actions of NPY are mimicked by Y1-receptor agonists

.Blockade of Y2 receptors produces anti-stress effects

NPY vs CRF

NPY

Anxiety ↓

Reward pathway

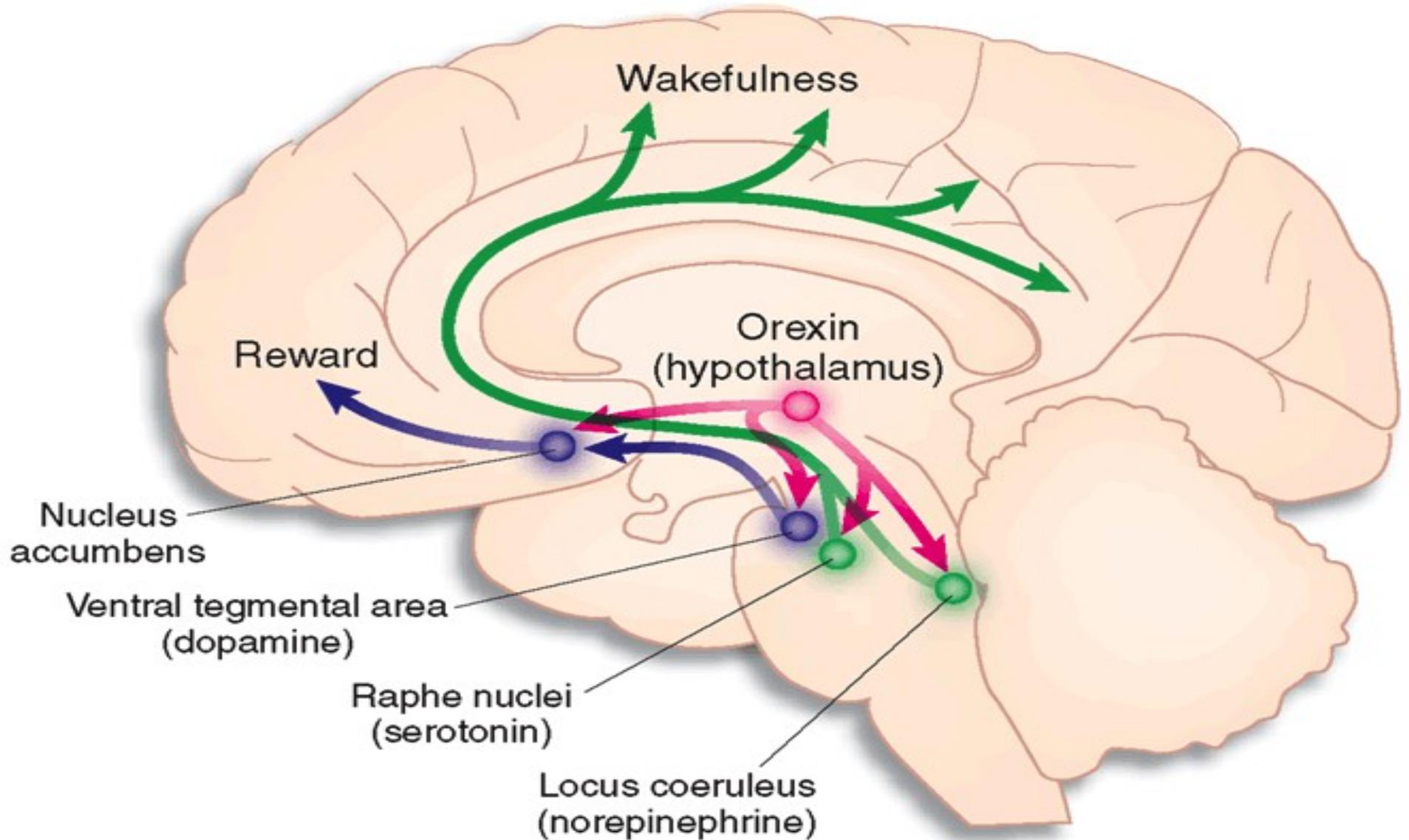
CRF

Anxiety ↑

Stress response

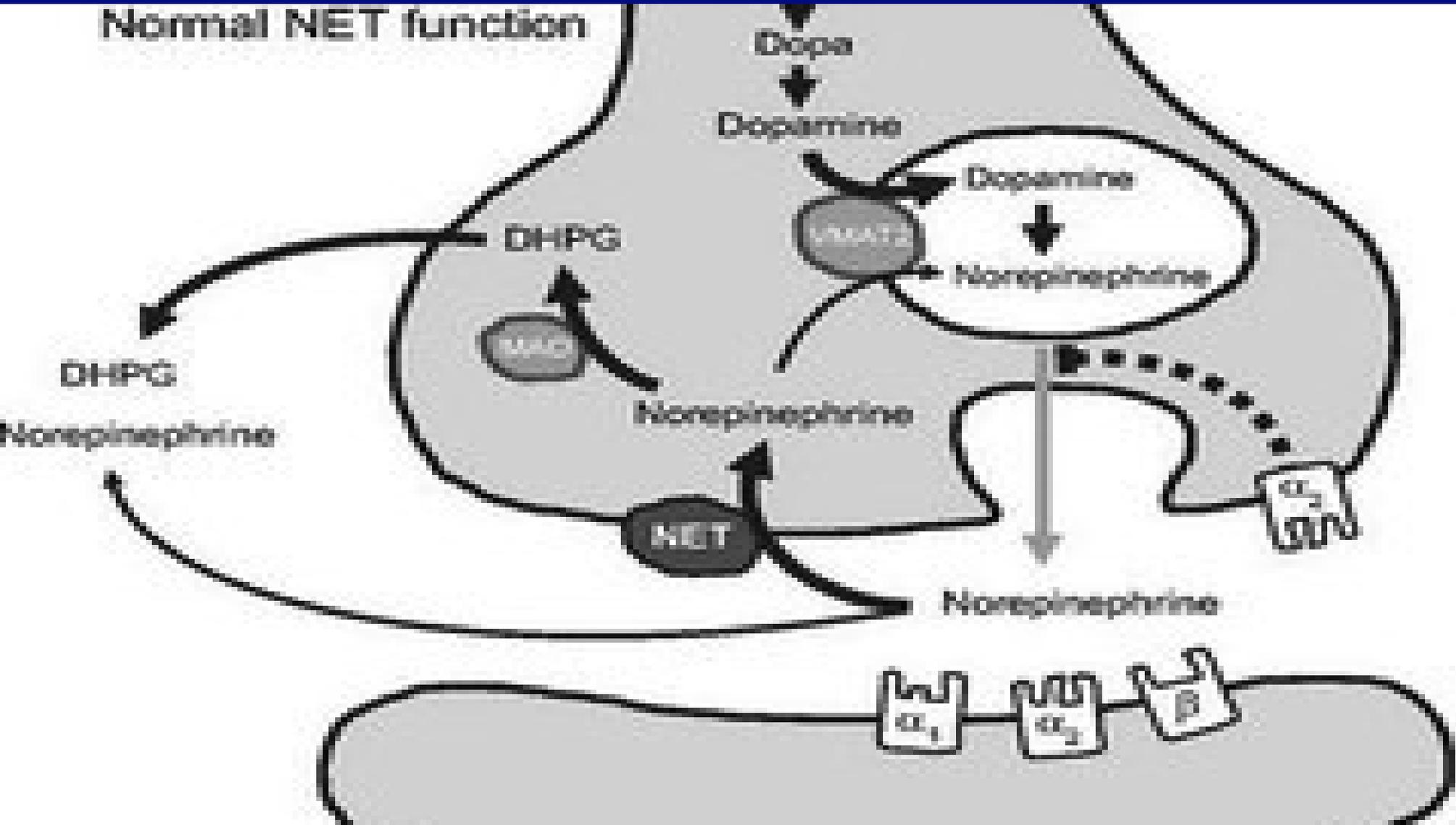
BNST (Bed nucleus of the stria terminalis) acts as a scale to create a balance of CRF and NPY

Pathways

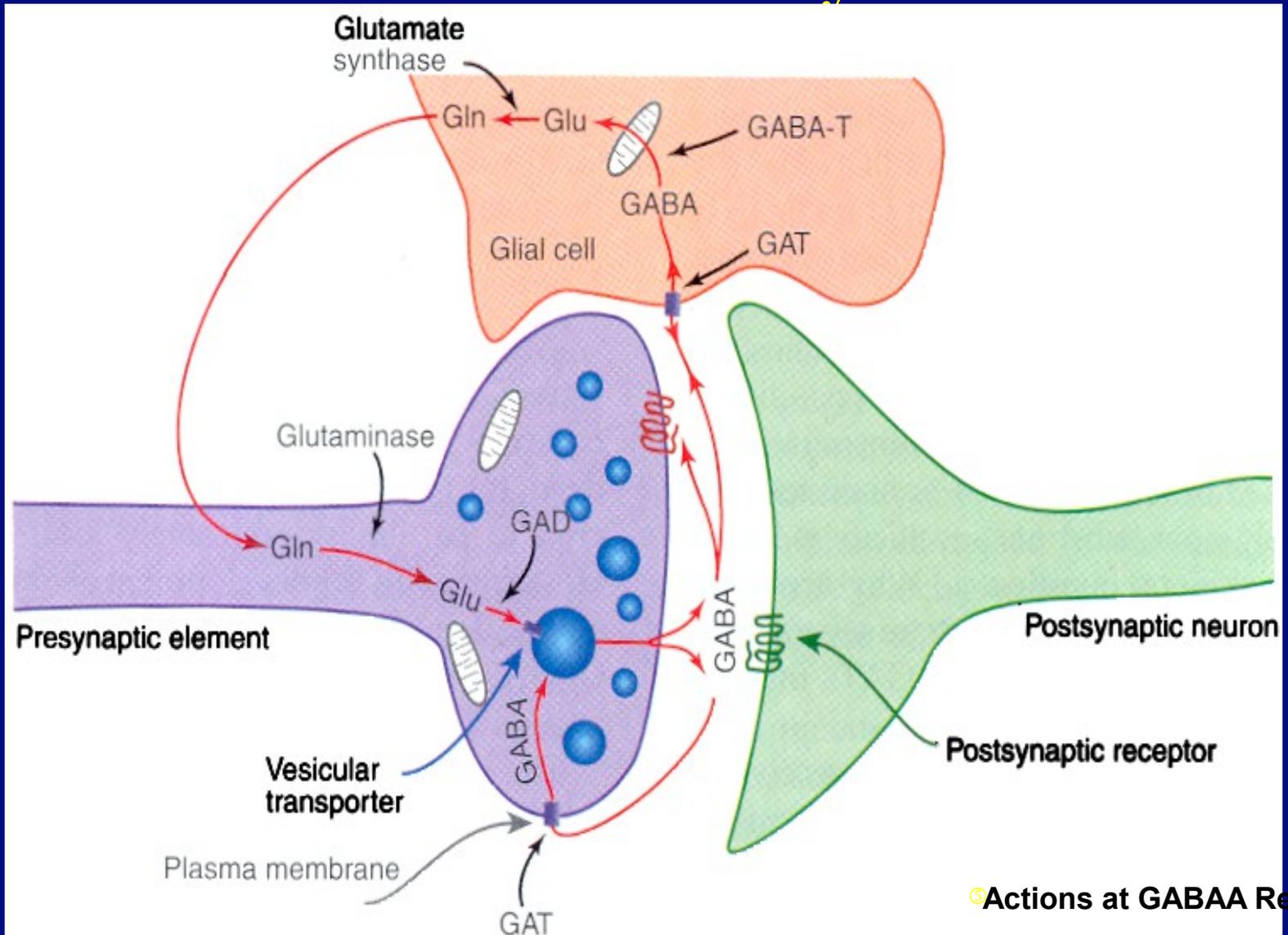


Norepinephrine

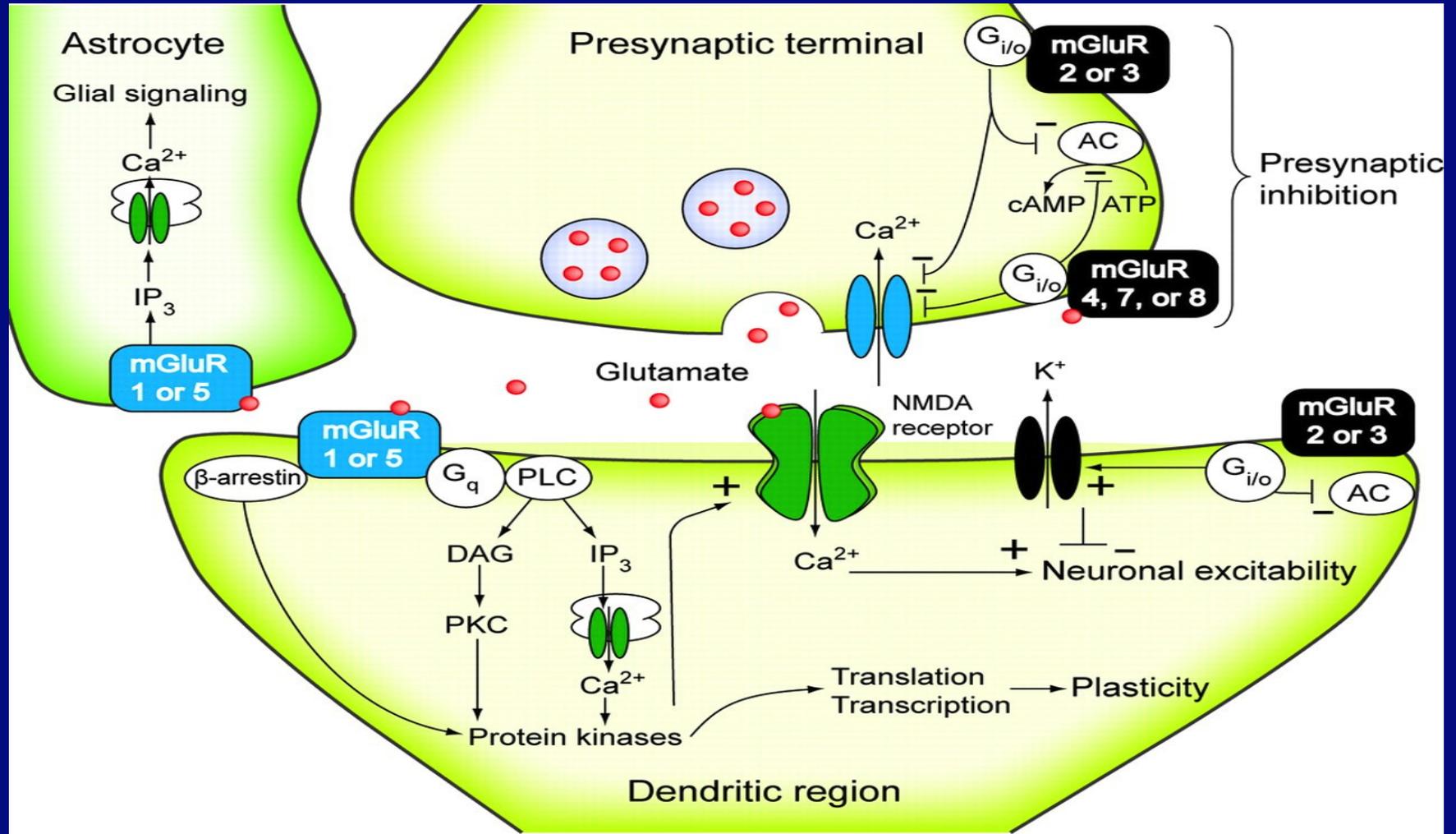
Normal NET function



GABA neurotransmitter system



Glutamate Receptors

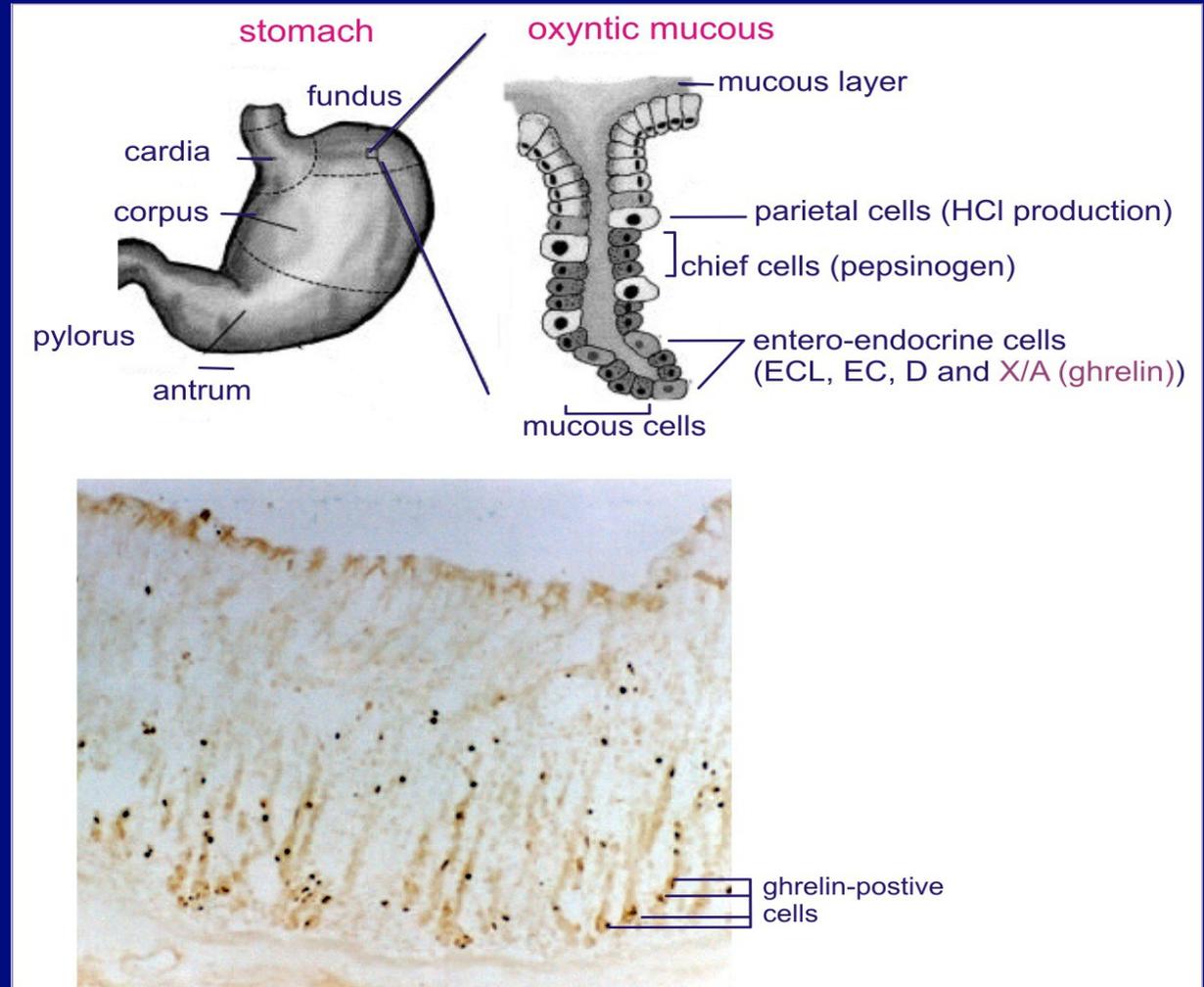


Facts of ghrelin

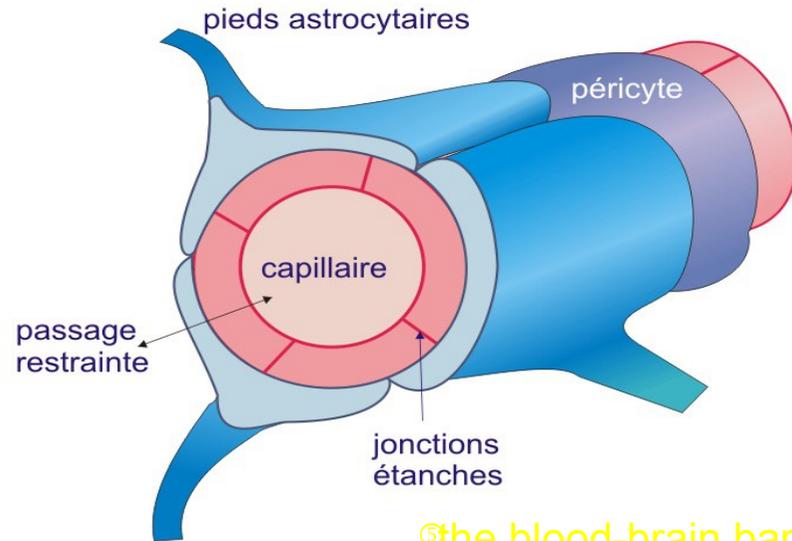
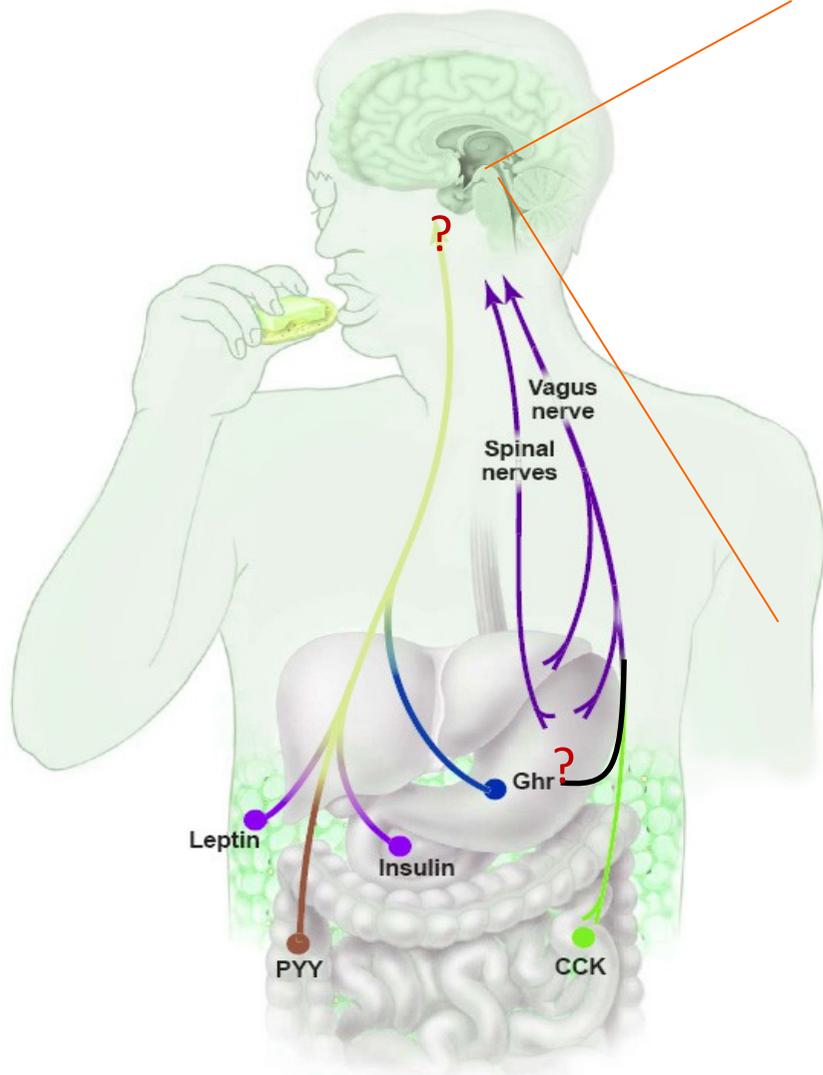
⑤ Ghrelin qualifies as an orexigenic hormone

⑤ It is produced by X/A-cells of oxyntic glands, abundantly present in the mucosal layer of the fundus region of the stomach

⑤ Ghrelin is produced in small quantities in other parts of the digestive tract. It is also produced in the pancreas, in ghrelin neurons in the hypothalamus, in glomeruli of the kidney and in syncytiotrophoblast cells of placenta



which ghrelin affects the NPY/AgRP neurons in the arcuate nucleus: the one produced by the stomach or by ghrelin-containing neurons in the hypothalamus?



©the blood-brain barrier

⑤ Problems:

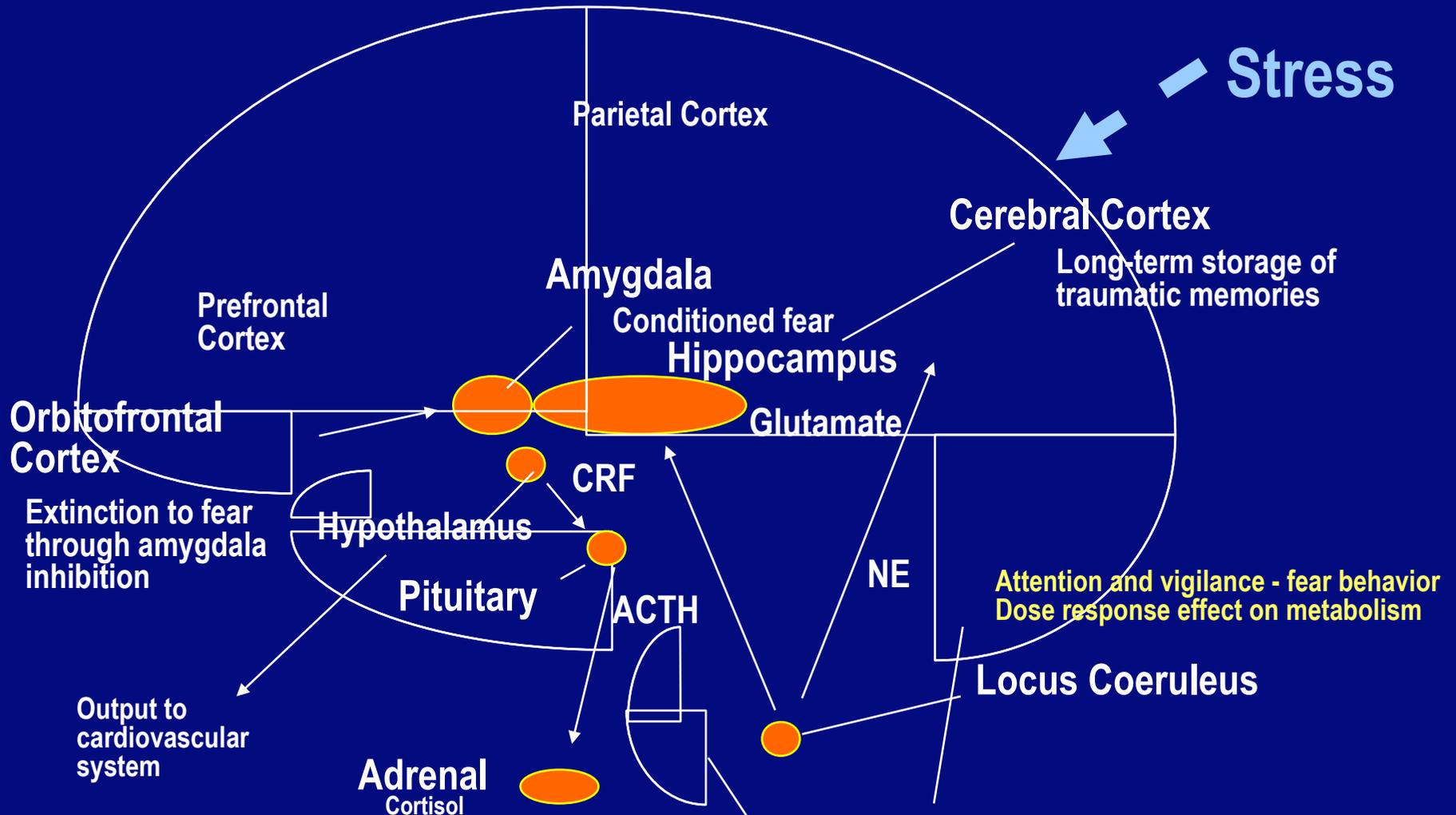
⑤ very little ghrelin is transported across the blood-brain barrier in the direction of blood-to-brain: how does it reach its receptor?

⑤ vagotomy prevents ghrelin-mediated

Ghrelin

stress-related increases in circulating ghrelin, a peptide hormone, are necessary and sufficient for stress-associated vulnerability to exacerbated fear learning and these actions of ghrelin occur in the amygdala.

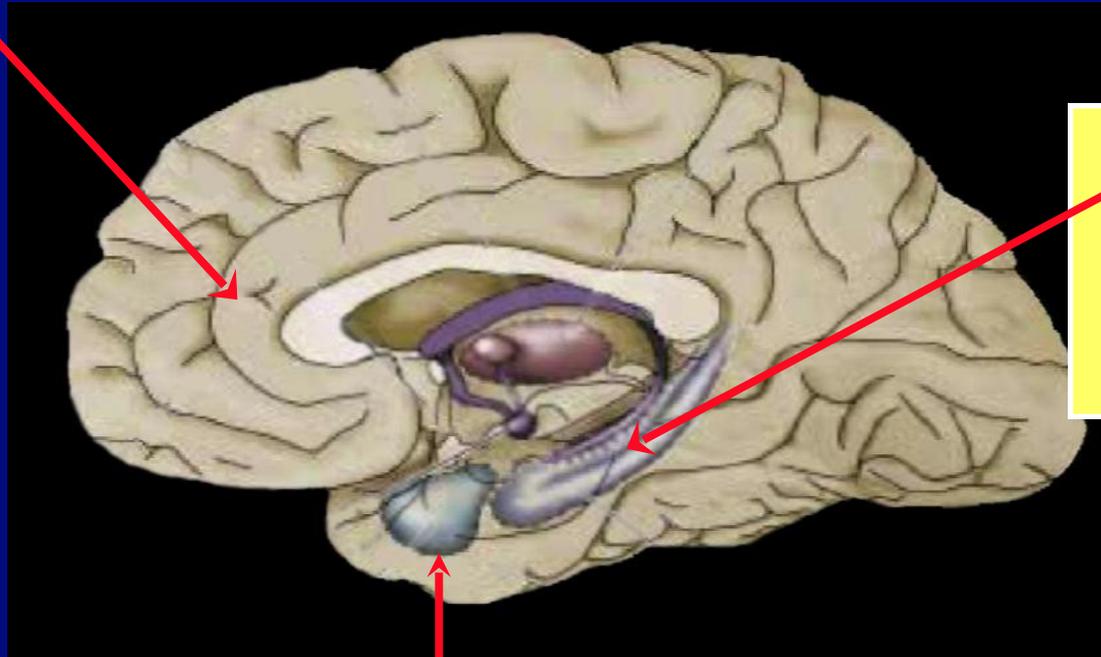
Functional Neuroanatomy of Traumatic Stress



⑤ Functional Neuroanatomy of PTSD

MEDIAL PFC & Ant Cingulate

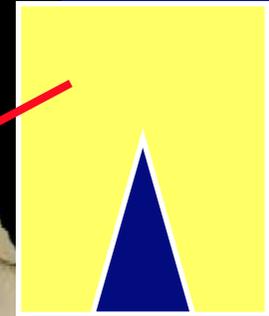
⑤ HIPPOCAMPUS



⑤

⑤

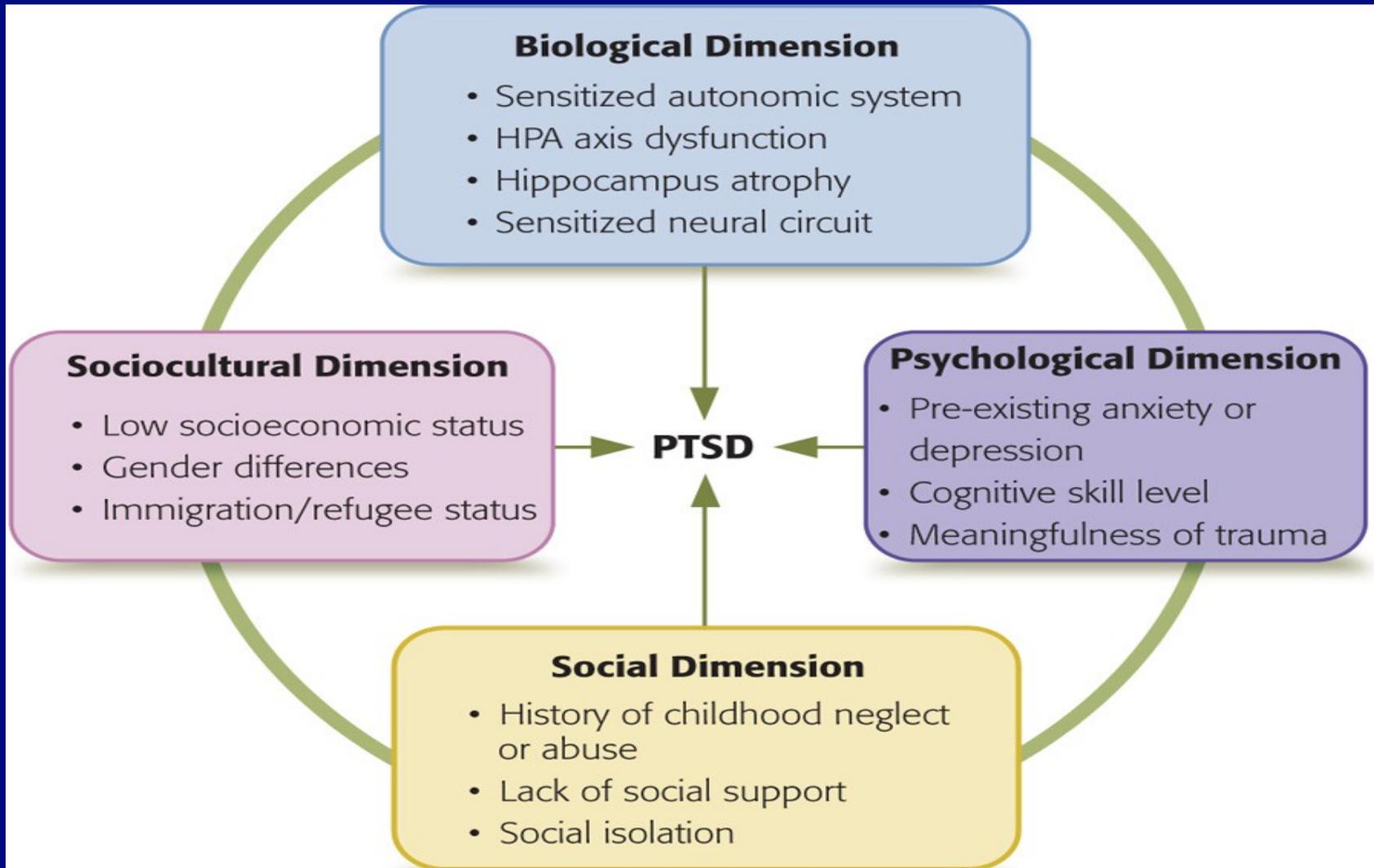
AMYGDALA



Fear Circuitry Brain Structures

- Amygdala
 - Threat detection and fear conditioning
 - Exaggerated activation in response to trauma-related memories
 - Exaggerated activation for non trauma-related stimuli
 - Activation positively related to PTSD symptom severity
- Medial Prefrontal Cortex
 - Extinction (learn stimuli no longer aversive)
 - Anterior Cingulate Cortex (rACC): Diminished activation in PTSD
- Hippocampus
 - Memory encoding (e.g., context during fear conditioning)
 - Diminished activation in PTSD and lower hippocampal volumes

Etiology of Post-Traumatic Stress Disorders



“Just when I thought I knew what I was doing it all changed again...”

Not so much, really.

Main Changes in DSM-V for PTSD

PTSD moved from the anxiety disorders to a new class, "trauma and stressor-related disorders"

Definition of "trauma" slightly changed

- No longer need "fear, helplessness, or horror" (A2)
- Types of trauma (A1) somewhat narrowed (no longer can include unexpected death of family/close friend due to natural causes)

Main Changes in DSM-V for PTSD

- The 3 clusters of DSM-IV are now 4 clusters:
 - Intrusions
 - Avoidance
 - Negative alterations in cognitions and mood
 - Alterations in arousal and reactivity

- New subtype: with dissociative symptoms

Screening Questions for PTSD

“What’s the worst thing that ever happened to you?”

“How did you react when it happened?”

“Do memories of _____ still bother you? Did you get over it?”

“Do you avoid situations that might remind you of _____?
Have your relationships suffered because of _____?”

“Have you become more nervous since _____? Is it hard for you to relax because of _____?”

PC-PTSD Screening

Brief, 4 item Screen for Primary Care

Does not ask patient the traumatic event

Asks Y/N symptoms in the past month

Nightmares, Intrusive thoughts, On guard or easily startled, Feeling detached

Cut off score of 3 recommended

- Sensitivity

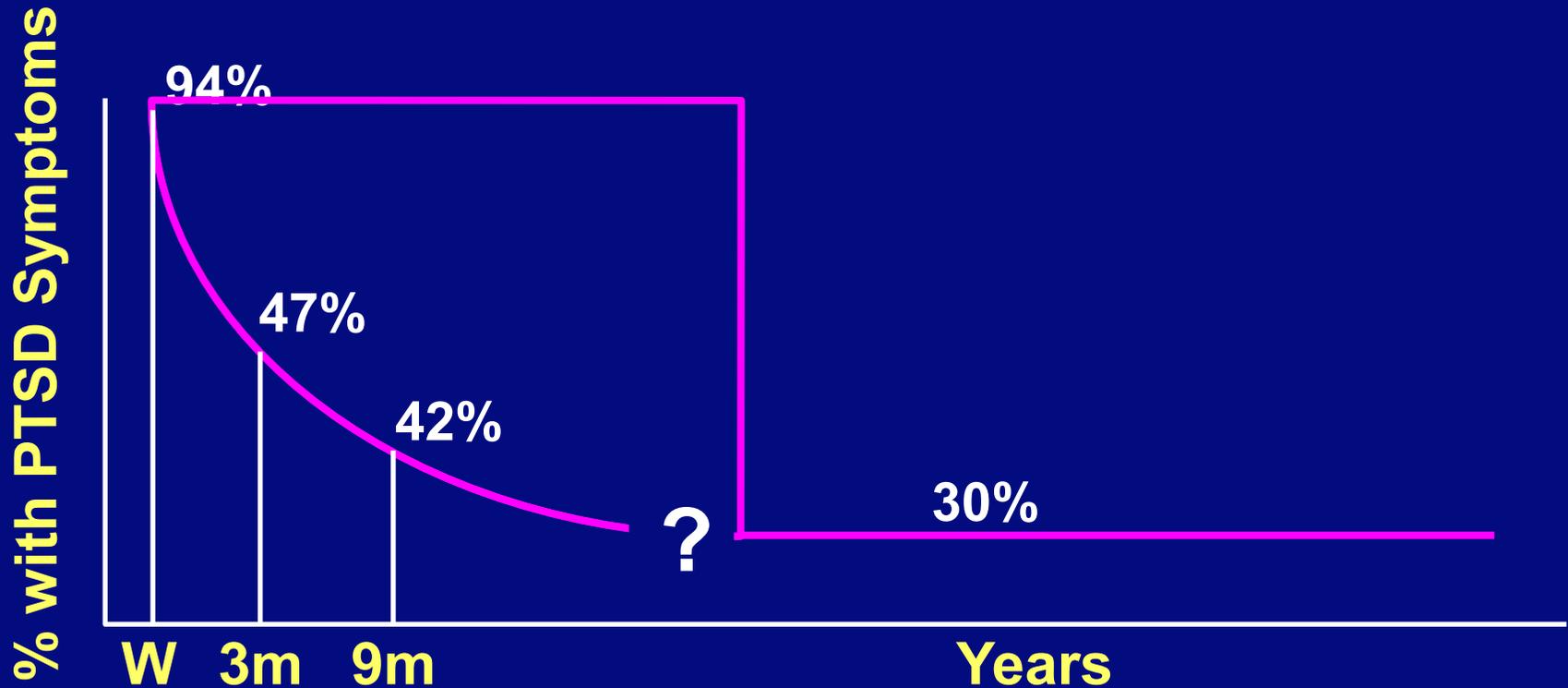
- ▣ Women: .70, Men: .94

- Specificity

- ▣ Women: .84, Men: .92

©Prins, et al. (2003). The primary care PTSD screen (PC-PTSD)

Longitudinal Course of PTSD Symptoms



Treatments for PTSD

Why PTSD Victims Might Be Resistant to Getting Help

Sometimes hard because people expect to be able to handle a traumatic event on their own

People may blame themselves

Traumatic experience might be too painful to discuss

Some people avoid the event all together

PTSD can make some people feel isolated making it hard for them to get help

People don't always make the connection between the traumatic event and the symptoms; anxiety, anger, and possible physical symptoms

People often have more than one anxiety disorder or may suffer from depression or substance abuse

Psychiatric Comorbidities

88% of men and 79% of women with PTSD meet criteria for another psychiatric disorder.

Men: alcohol abuse/dependence; MDD; conduct disorders; drug abuse/dependence.

Women: MDD; simple phobias; social phobias; and alcohol abuse/dependence.

U.S. Department of Veteran Affairs, National Center for PTSD

Trauma Affects Personality

Difficulty trusting

Persistent sense of shame

Unstable relationships

Borderline Personality Disorder

Prefrontal cortex damage:

- impulsivity, poor planning and judgment

During a Traumatic Event

Norepinephrine- Mobilizing fear, the flight response, sympathetic activation, consolidating memory

Too much = hypervigilance, autonomic arousal, flashbacks, and intrusive memories

Serotonin- self- defense, rage and attenuation of fear

Too little = aggression, violence, impulsivity, depression, anxiety

Treatment

Individual Therapy

Group Support (especially for Chronic PTSD)

Medication

Psychological Treatments for Chronic PTSD

Psychotherapy

- Exposure therapy
- Cognitive processing therapy
- Anxiety management

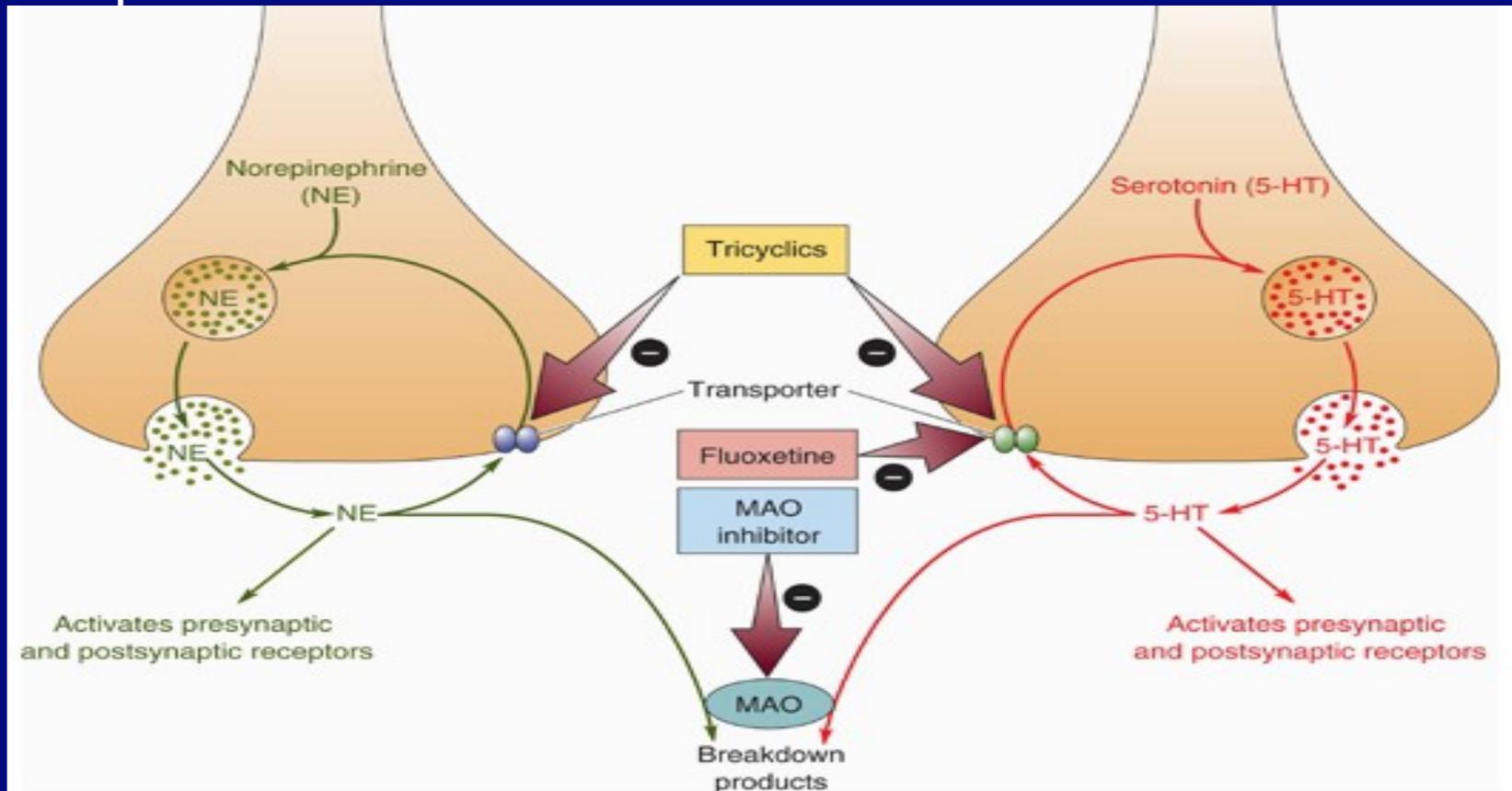
Additional treatments

- Eye Movement Desensitization and Reprocessing (EMDR)
- Hypnotherapy
- Psychodynamic therapy
- Expressive therapies

Traumatic Disorders

Treatments for PTSD

■ Antidepressants



Medications

SSRIs – Sertraline (Zoloft), Paroxetine (Paxil), Escitalorpram (Lexapro), Fluvoxamine (Luvox), Fluxetine (Prozac)

Affects the concentration and activity of the neurotransmitter serotonin

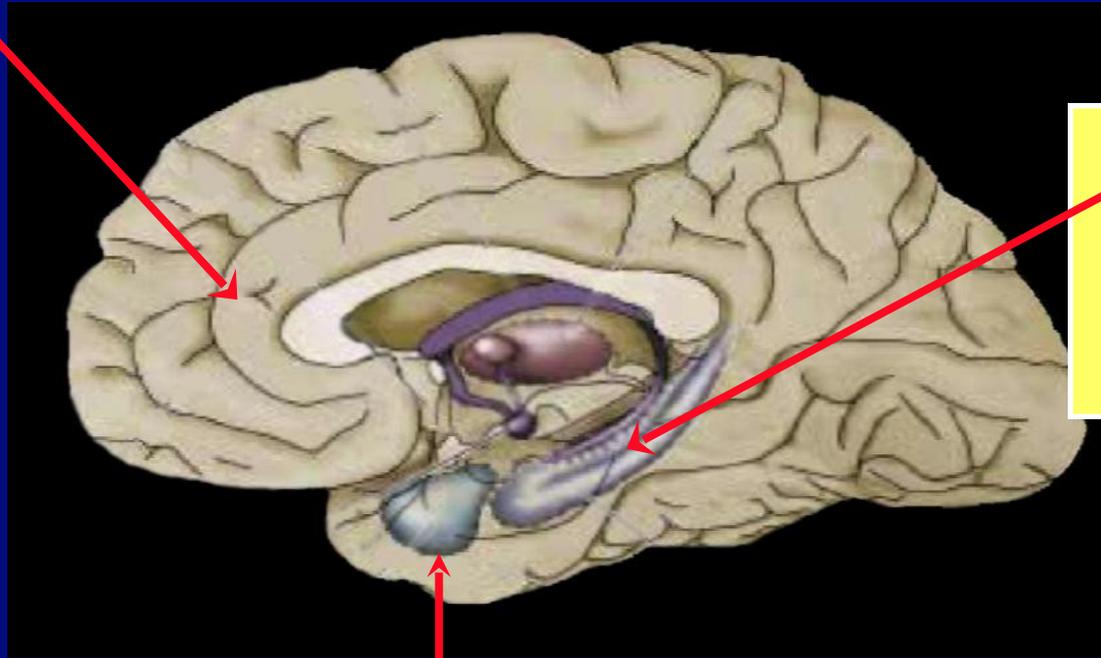
May reduce depression, intrusive and avoidant symptoms, anger, explosive outbursts, hyper arousal symptoms, and numbing

FDA approved for the treatment of Anxiety Disorders including PTSD

⑤ Functional Neuroanatomy of PTSD

MEDIAL PFC & Ant Cingulate

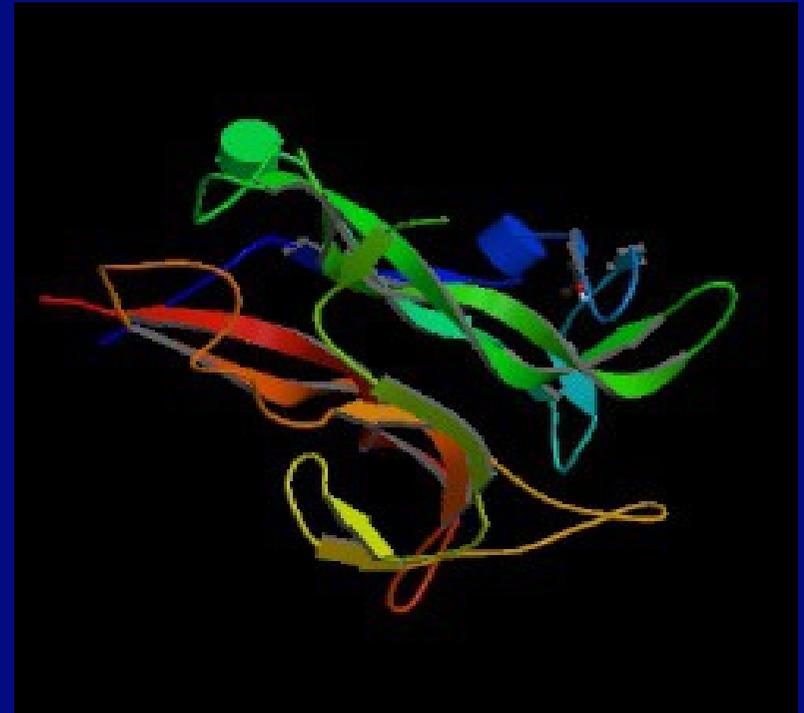
⑤ HIPPOCAMPUS



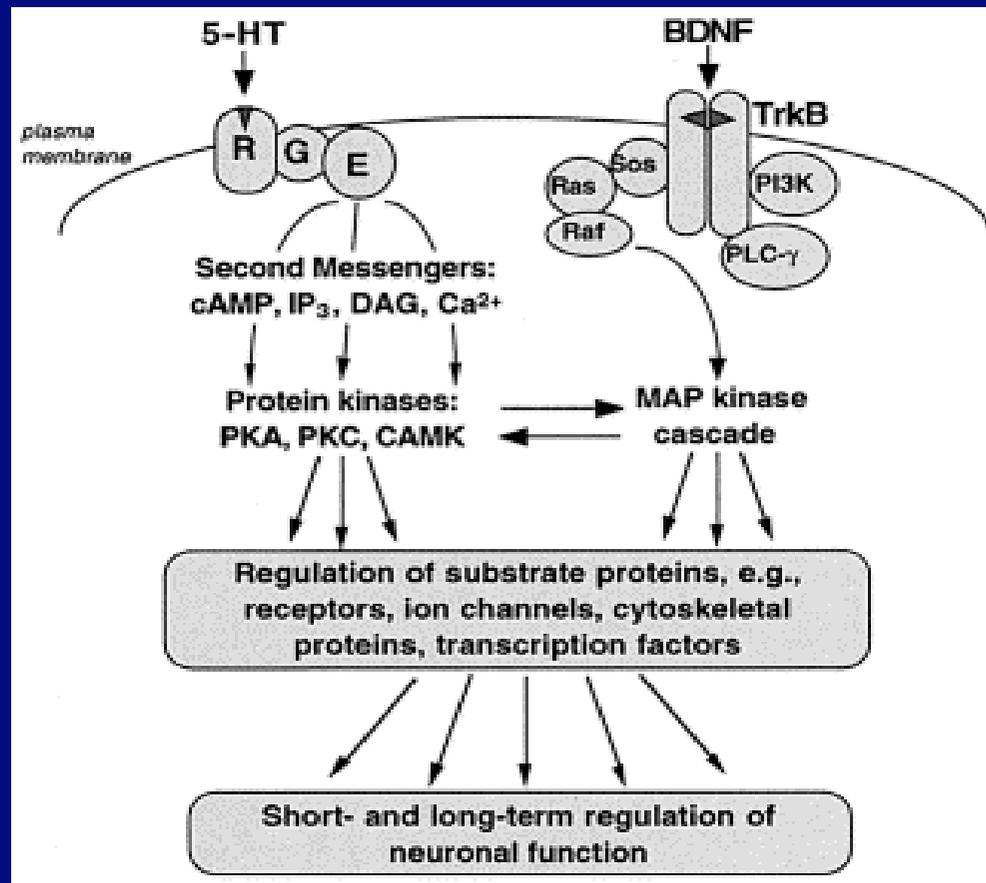
⑤ AMYGDALA

BDNF

Brain-derived neurotrophic factor (BDNF) is a 25-kDa CNS protein implicated in neuronal cell growth and differentiation



5-HT and BDNF-regulated intracellular signal transduction pathways



Adrenergic-Inhibiting Agents: *Alpha1-Adrenergic Blockers*

Prazosin* 7 to 15 mg qhs

Alpha1- post-synaptic adrenoceptor receptor antagonist

Alpha1 receptors widely distributed in the brain, including the amygdala and hippocampus

Alpha1 receptors modulate sleep and startle responses

Double-blind RCT in 40 veterans, 13.3 +/- 3 mg 1

- Robust improvement in sleep quality and distressing dreams
- Medium to large effect size in each PTSD Sx cluster
- Adverse reactions include: syncope, dizziness, drowsiness, decreased energy, headache

*Not FDA approved for the treatment of PTSD

Treatment for Children

FDA approved Prozac for depression in children

FDA approved Zoloft for OCD in children

Cognitive-Behavioral therapy- exposure, anxiety management,
Cognitive restructuring

Play Therapy

Conclusions

Many of our patients are suffering from unrecognized trauma

They most likely will not tell us unless we ask the right questions, at the right time, in the right way

If they don't have the words to tell us, we have to help them find the words

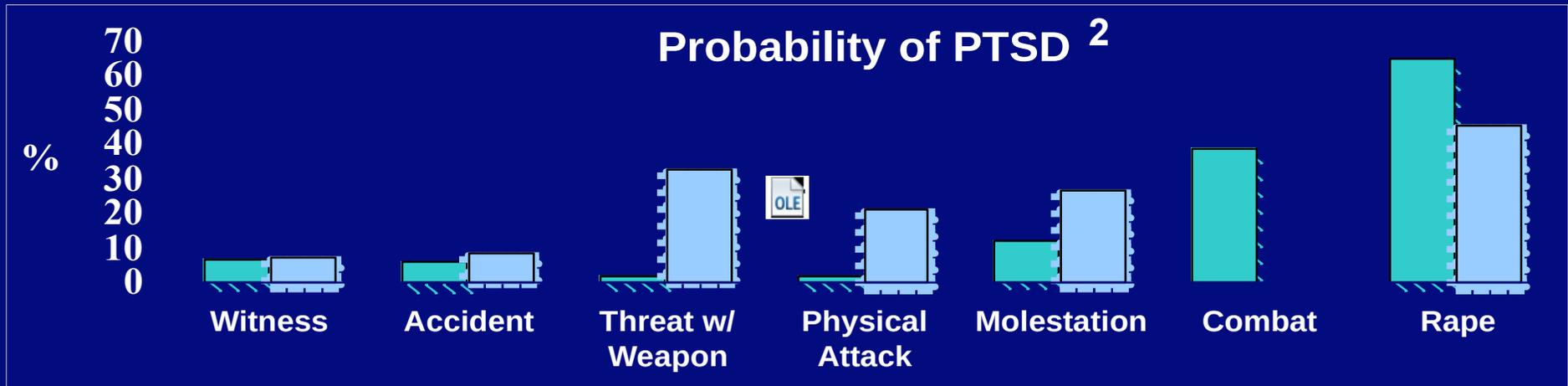
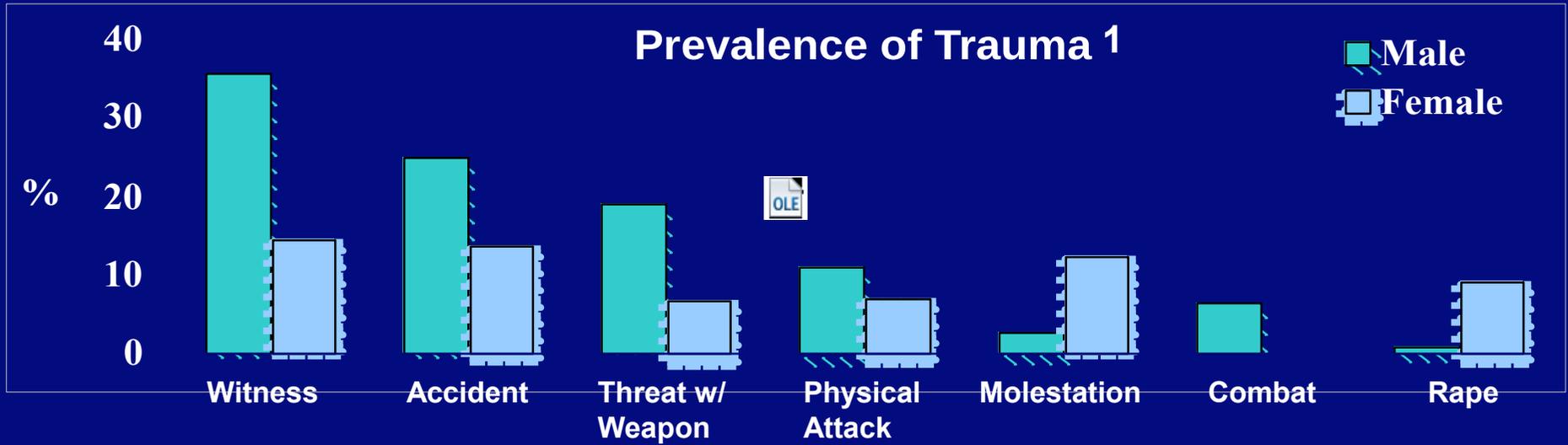
When they are ready to tell us their stories, we have to be willing to hear them

Trauma Affects Language

Alexithymia: Inability to verbally describe emotions

The “I was so upset I couldn’t think straight” phenomenon, magnified.

Prevalence of Trauma and Probability of PTSD



1. Kessler R et al. J Clin Psychiatry. 2000;61(Suppl 5):4-14.

2. Kessler R et al. Arch Gen Psychiatry. 1995;52:1048-1060.

Treatment Continued

Exposure Therapy- Education about common reactions to trauma, breathing retraining, and repeated exposure to the past trauma in graduated doses. The goal is for the traumatic event to be remembered without anxiety or panic resulting.

Cognitive Therapy- Separating the intrusive thoughts from the associated anxiety that they produce.

Stress inoculation training- variant of exposure training teaches client to relax. Helps the client relax when thinking about traumatic event exposure by providing client a script.