

# PSYCHIATRY LECTURE

## 6<sup>th</sup> YEAR GENERAL MEDICINE

Pompilia Dehelean MD PhD

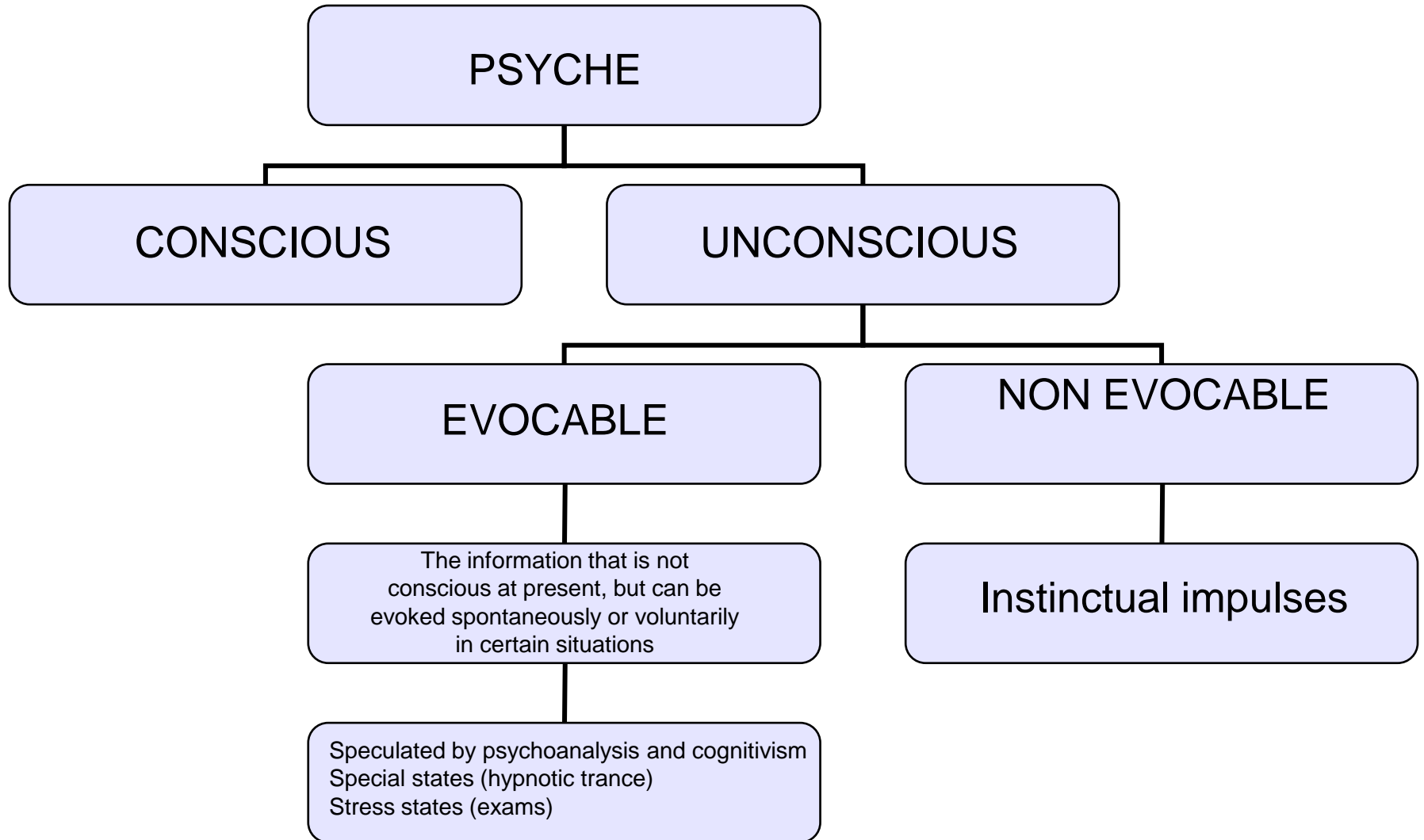
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English translation: Cătălina Giurgi-Oncu and Liana Dehelean

# THE HUMAN PSYCHE



# THE CONSCIOUS PSYCHE

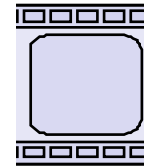
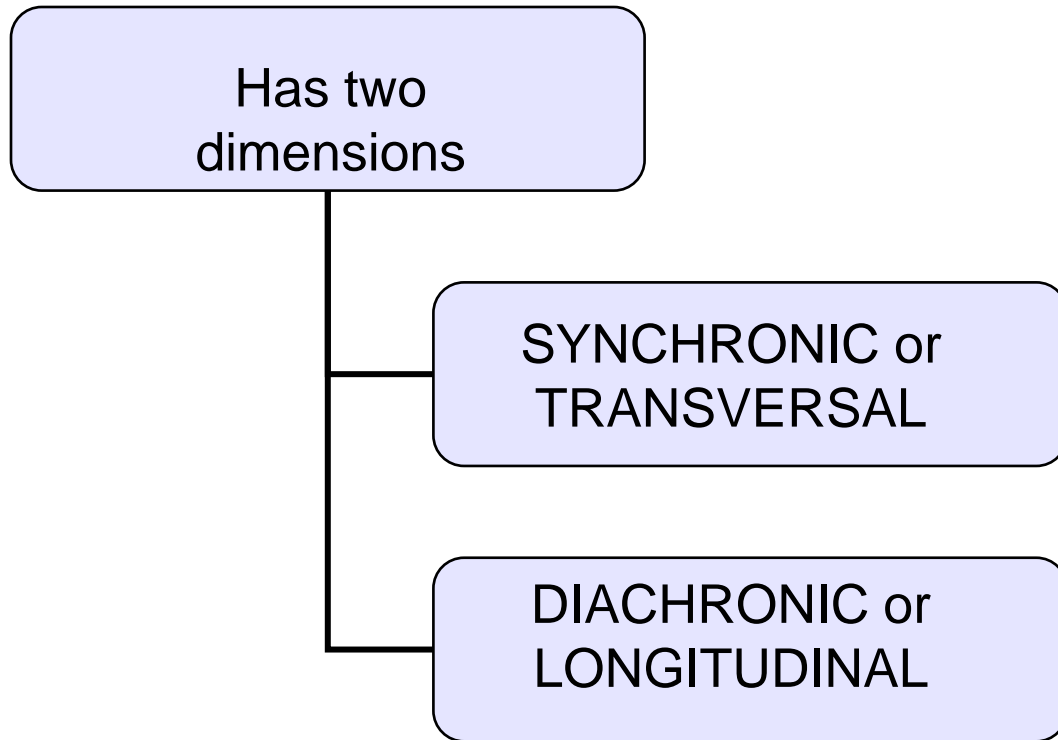
CONSCIOUSNESS: being awake and aware of oneself or the world around

CONSCIENCE: sense of the quality of one's character and conduct

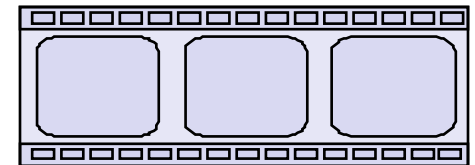
- MORAL CONSCIENCE
- AWARENESS OF THE SELF related to social status
- AWARENESS OF HAVING AN ILLNESS (INSIGHT)

# THE CONSCIOUS PSYCHE

- Is seen in the wake state



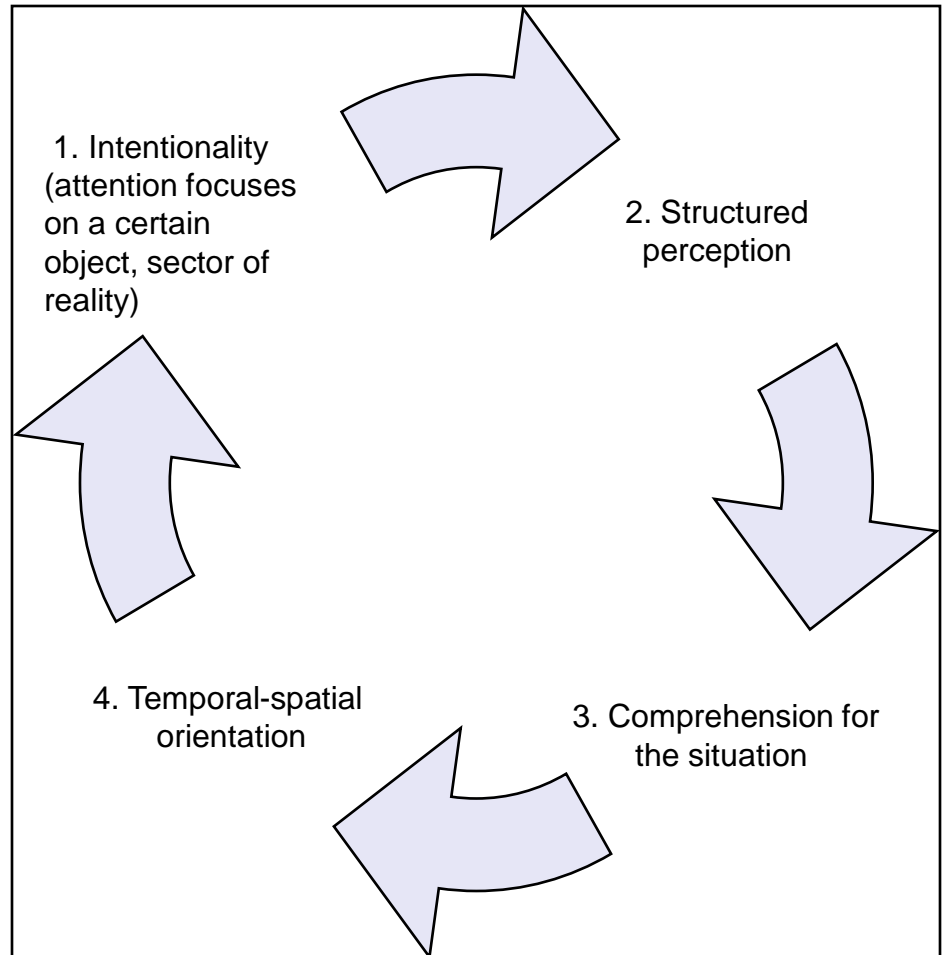
= Current state of consciousness (c.s.c)



= Succession (in time) of different content c.s.c

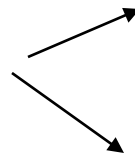
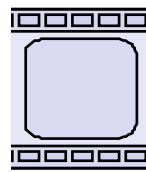
# THE CURRENT STATE OF CONSCIOUSNESS

- Has multiple attributes

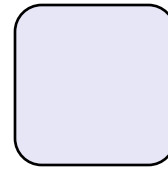


# THE CURRENT STATE OF CONSCIOUSNESS

- It has a certain content (more or less rich)  
= the area of the c.s.c

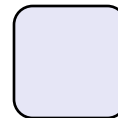
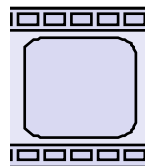


A narrowed consciousness state  
( e.g. twilight state)



The expansion of the  
consciousness state (e.g.  
the psychedelic experience)

- It has a degree/level of clarity



Clear consciousness state



Altered state of consciousness  
( e.g. obnubilation)

# RHYTHMS

## EXTERNAL

Day-night (circadian)

Spring-autumn (seasonal)

Astrological rhythms (Zodiac)

## INTERNAL

cardiac

respiratory

excretory

endocrine (ultradian)

menstrual (infradian)

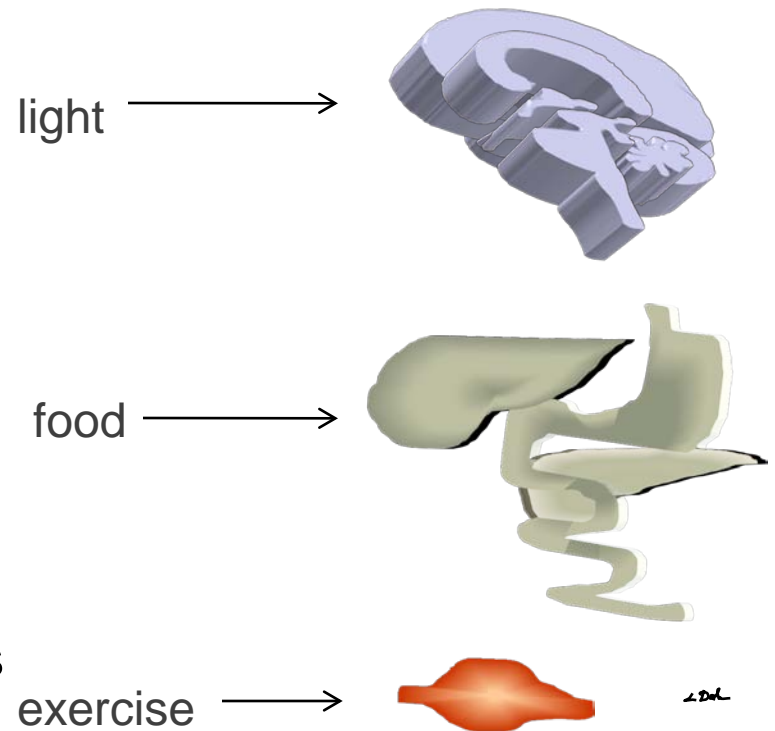
# BIORHYTHMS

- THE ULTRADIAN CYCLE (under 24 hours): 30 mins – 20 hours  
e.g. The NONREM – REM sleep cycle
- THE CIRCADIAN CYCLE (around 24 hours): 20 – 28 hours  
e.g. The SLEEP - WAKE cycle
- THE INFRADIAN CYCLE (over 24 hours): 28 hours – 2,5 days  
e.g. The menstrual cycle



# BIOLOGICAL RHYTHMS

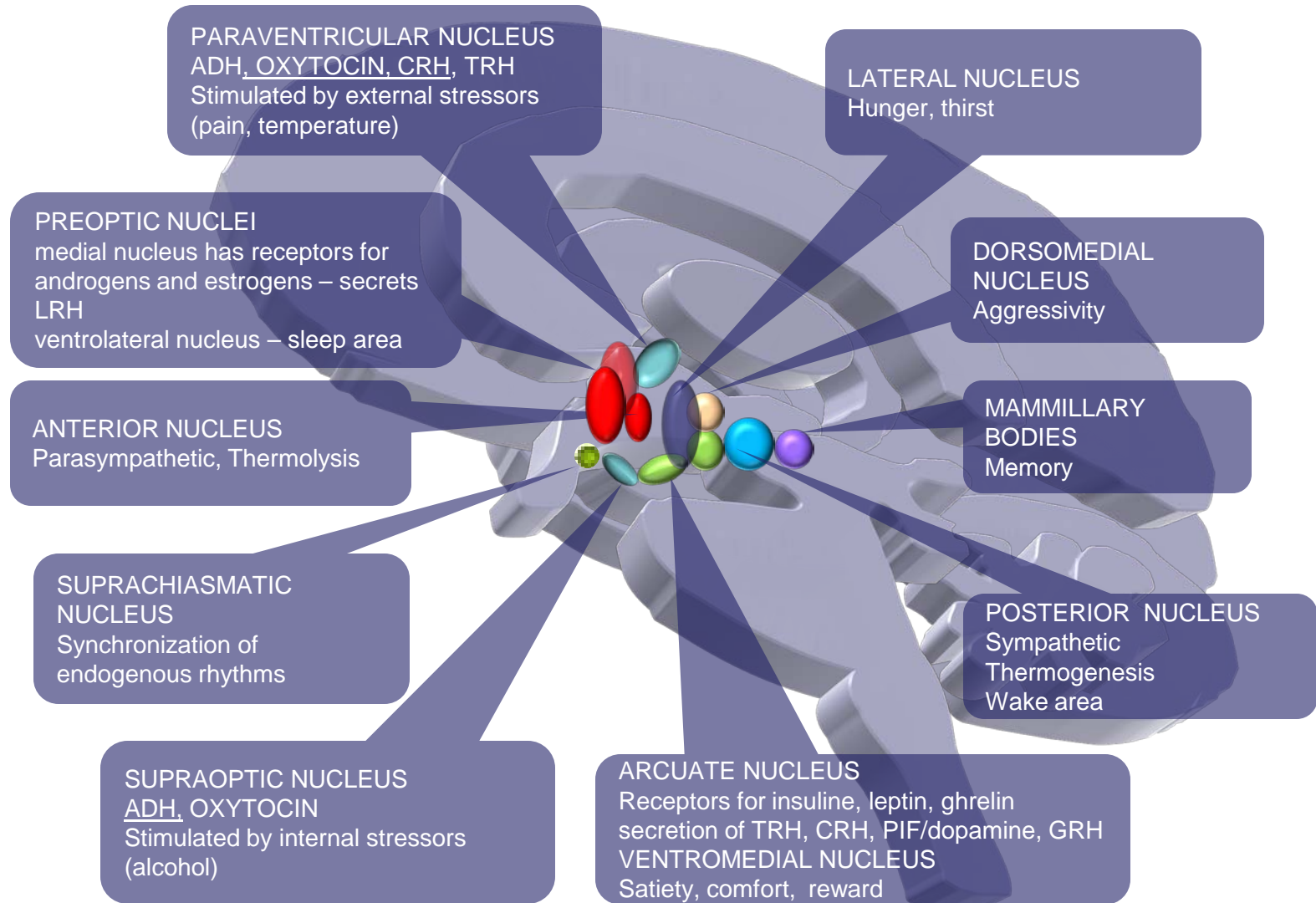
- Sleep-wake, hormonal secretion, thermic oscillations, blood pressure oscillations
- They originate in the activity of "internal clocks" situated in various organs and coordinated by THE HYPOTHALAMIC SUPRACHIASMATIC NUCLEUS
- They must be synchronized both between themselves and with the changes in the environment. This is accomplished with help from the SYNCHRONIZERS (repetitive variations in light intensity, food, exercise, social interactions)



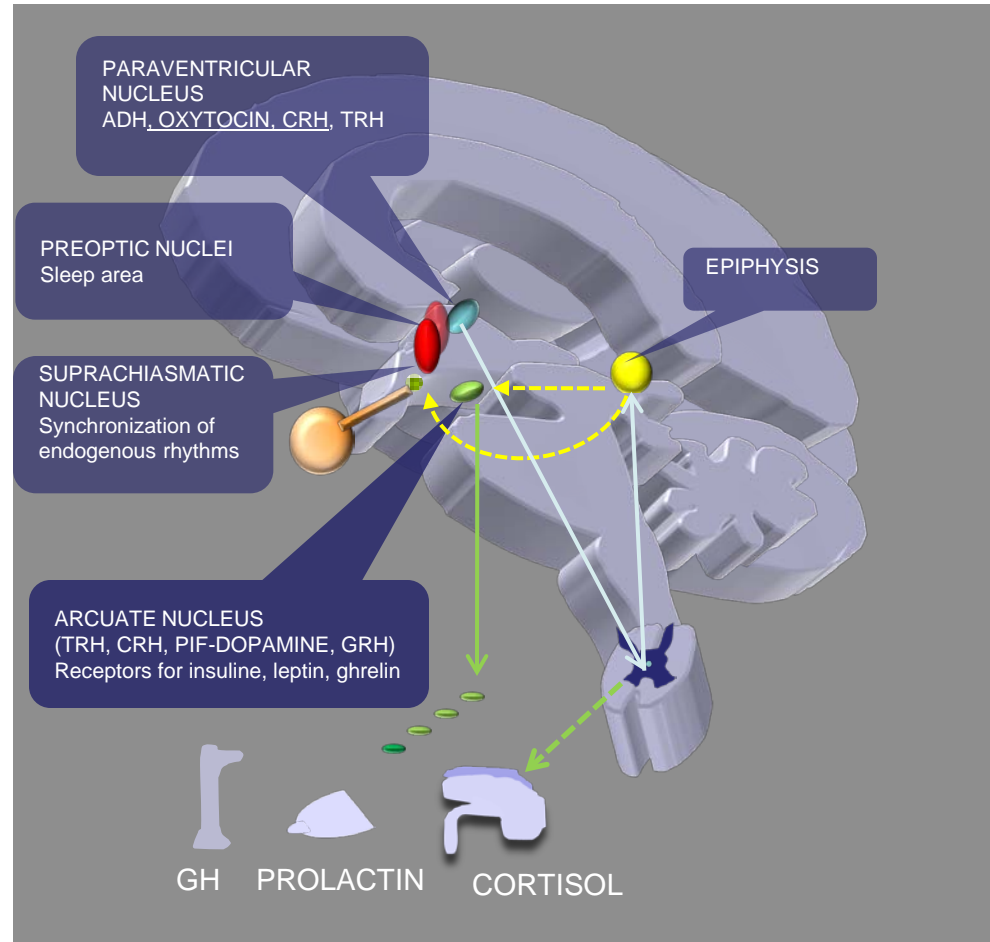
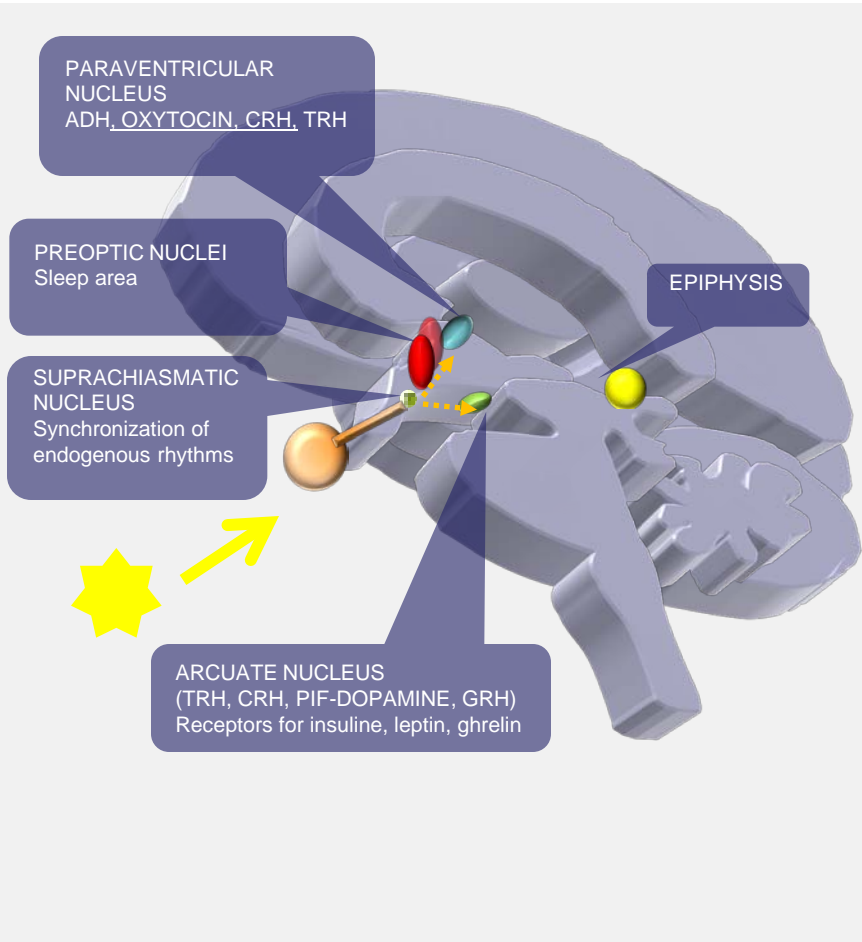
# INTERNAL CLOCKS



# HYPOTHALAMUS: NUCLEI



# THE SUPRACHIASMATIC NUCLEUS and THE COORDINATION OF ENDOGENOUS RHYTHMS



# SLEEP AND SLEEP DISORDERS

Abolishment of the c.s.c

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graph TD; A[Abolishment of the c.s.c] --> B[In normality: SLEEP]; A --> C[Pathologically (through accidents during wake state): COMA];
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In normality: SLEEP

Pathologically (through accidents during wake state): COMA

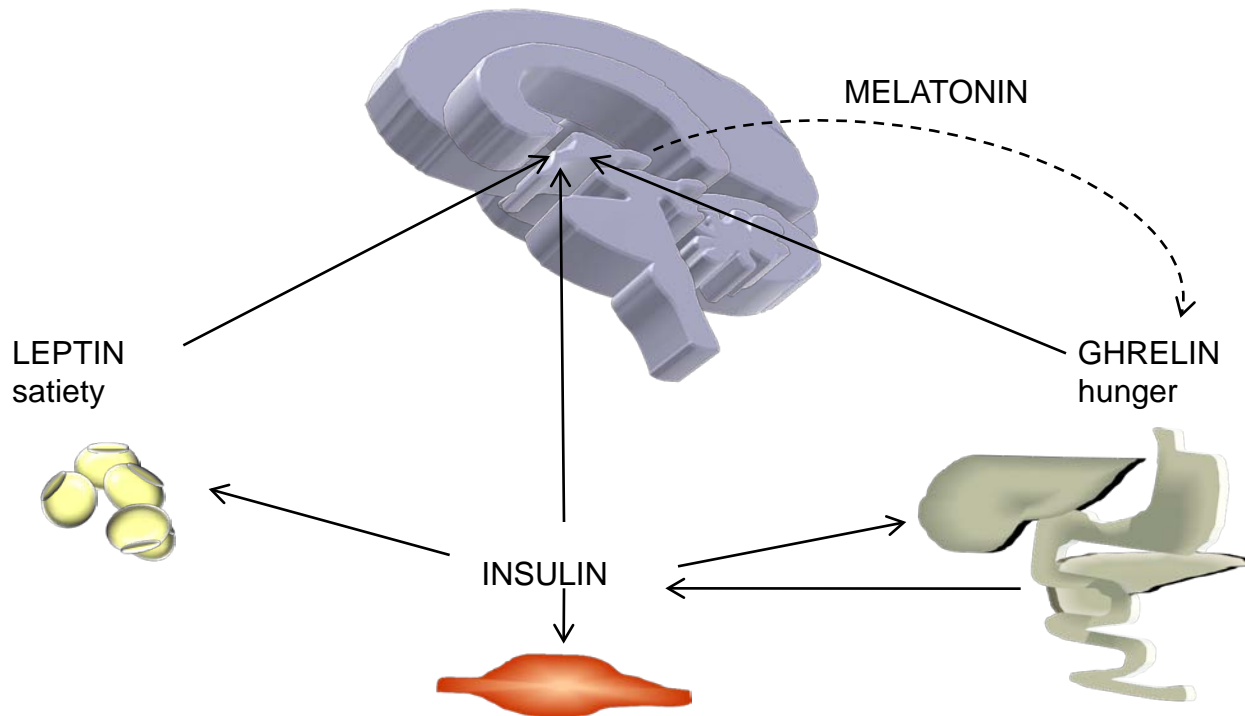
# SLEEP

- A periodic and reversible physiological state characterized by an abolished consciousness and a diminished reactivity to stimuli
- The body is more reactive to internal stimuli than to external stimuli

# IMPORTANCE OF SLEEP

- Metabolic restoration
  - Duration of sleep is in direct proportion with the metabolic rate and inversely proportional with the body weight
  - A high metabolic rate is correlated with a significant oxidative stress, which in its turn, is correlated with ageing and dementia
- 24 h energy conservation
- Mnestic consolidation

# SLEEP AND NUTRITION

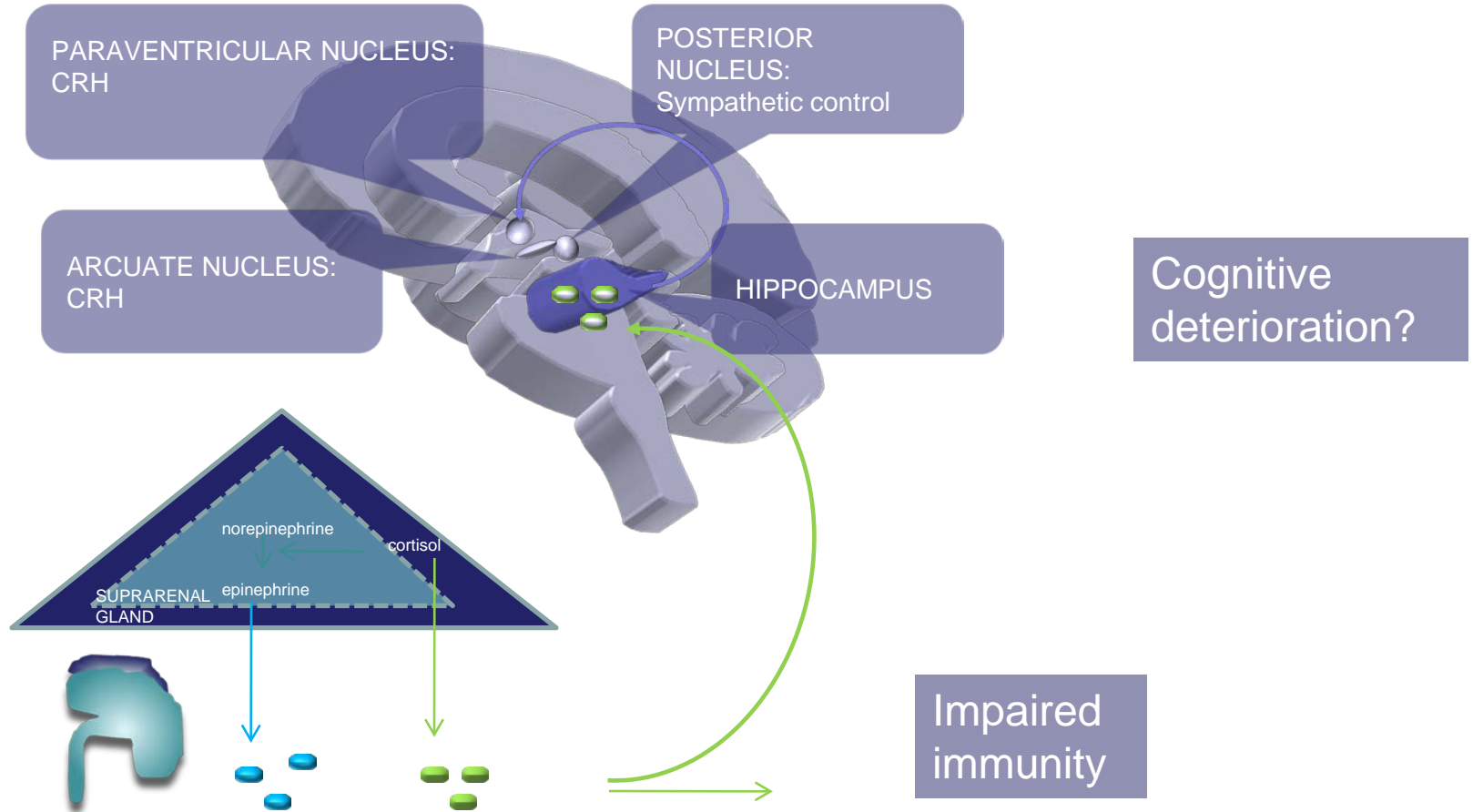


Sleep deficits affect:

- The secretion of insulin and the glucidic metabolism (obesity, diabetes)
- The secretion of  $\text{TNF}\alpha$ , IL6 (carcinogenic risk)



# SLEEP AND IMMUNITY



Normally the secretion of cortisol decreases during the first half of the night and it increases during the second half. Sleep deprivation will lead to a glucocorticoid hypersecretion with the following consequences:

- Impaired cellular immunity
- Cognitive deterioration by toxic effect on the hippocampus

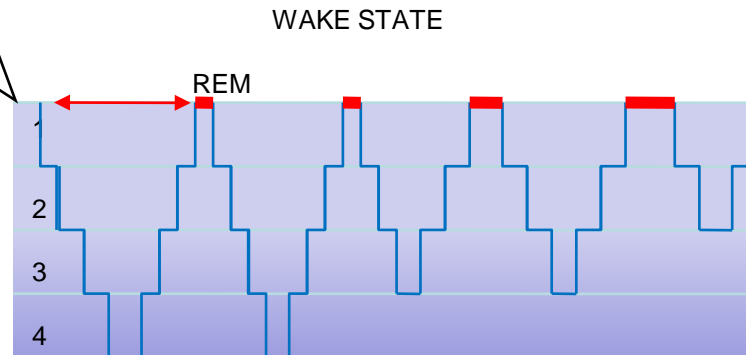
# THE PHYSIOLOGY OF SLEEP

## THE HYPNAGOGIC PHASE (from wake state to sleep state)

- duration: sec – min
- awareness decreases (drowsiness with decreased attention, clarity of perception, recording of information)
- Sometimes hypnagogic hallucinations (non-pathological)
- In anxiety: a sensation of falling

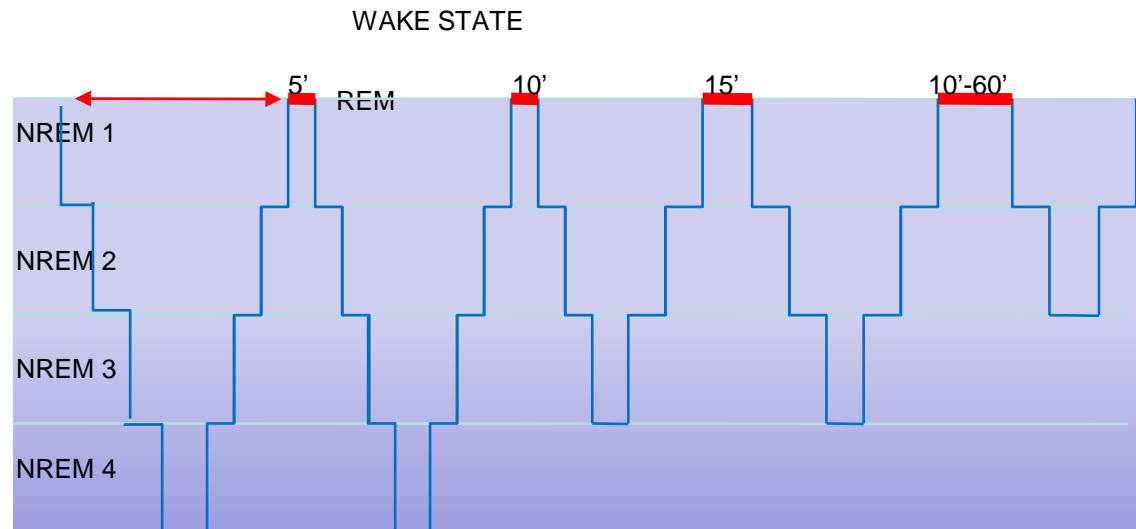
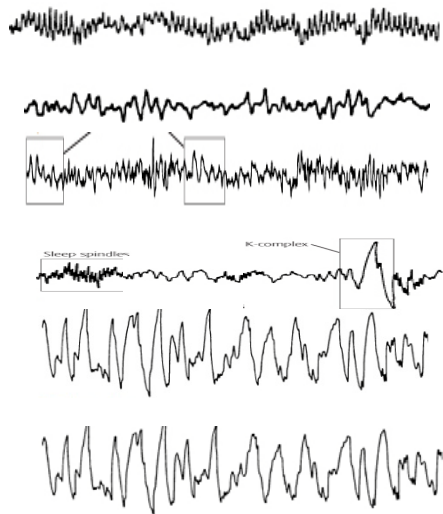
## THE HYPNOPOMPIC PHASE (from sleep state to wake state)

- awareness is still slightly disturbed
- Sometimes hypnopompic hallucinations (non-pathological)



# STAGES OF SLEEP

REM Latency = 90 minutes    Duration of REM increases towards the end of the night



**PROFOUND SLEEP**  
(stages 3 and 4 of NREM)  
predominant during the  
first half of the night

**SUPERFICIAL SLEEP**  
predominant during the  
second half of the night

# EEG DURING SLEEP

## WAKE STATE

mental activity:  $\beta$  rhythm

relaxed state:  $\alpha$  rhythm

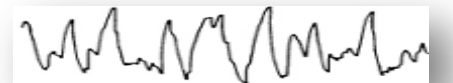
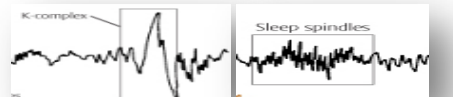
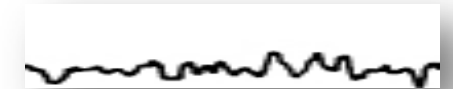
REM sleep:  $\beta$  rhythm

NREM STAGE I  $\theta$  waves and  $\alpha$  episodes

NREM STAGE II  $\delta$  waves, K complexes, sleep spindles

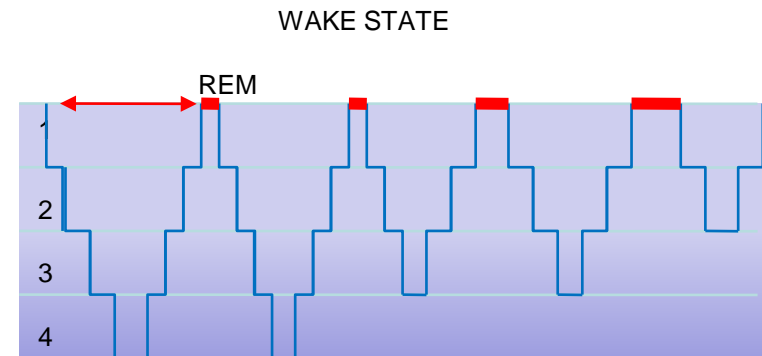
NREM STAGE III  $\delta$  waves

NREM STAGE IV  $\delta$  waves



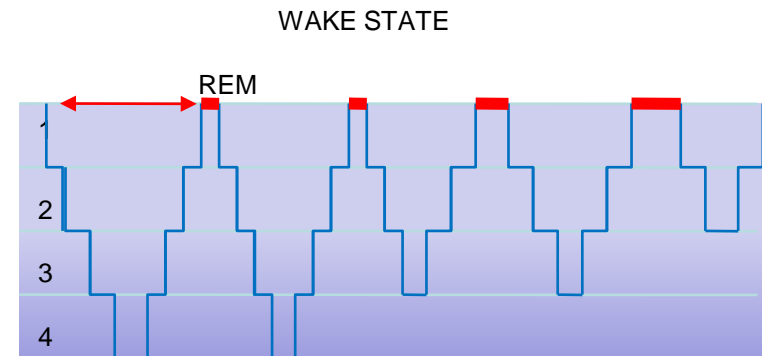
# NON REM SLEEP

- Stages 3 and 4: slow waves (delta) = SWS (slow waves sleep or profound sleep)
- 75 % of the duration of sleep
- Predominant at the beginning of the night
- Wake up difficult
- Role: body metabolic restoration (muscles, internal organs)
- Parasympathetic predominance (rest and digest)
- Decreased: arterial blood pressure, urinary excretion, rare and regulated respiratory and heart rates
- No rapid eye movements
- Potential limb movements
- No decrease in muscle tone

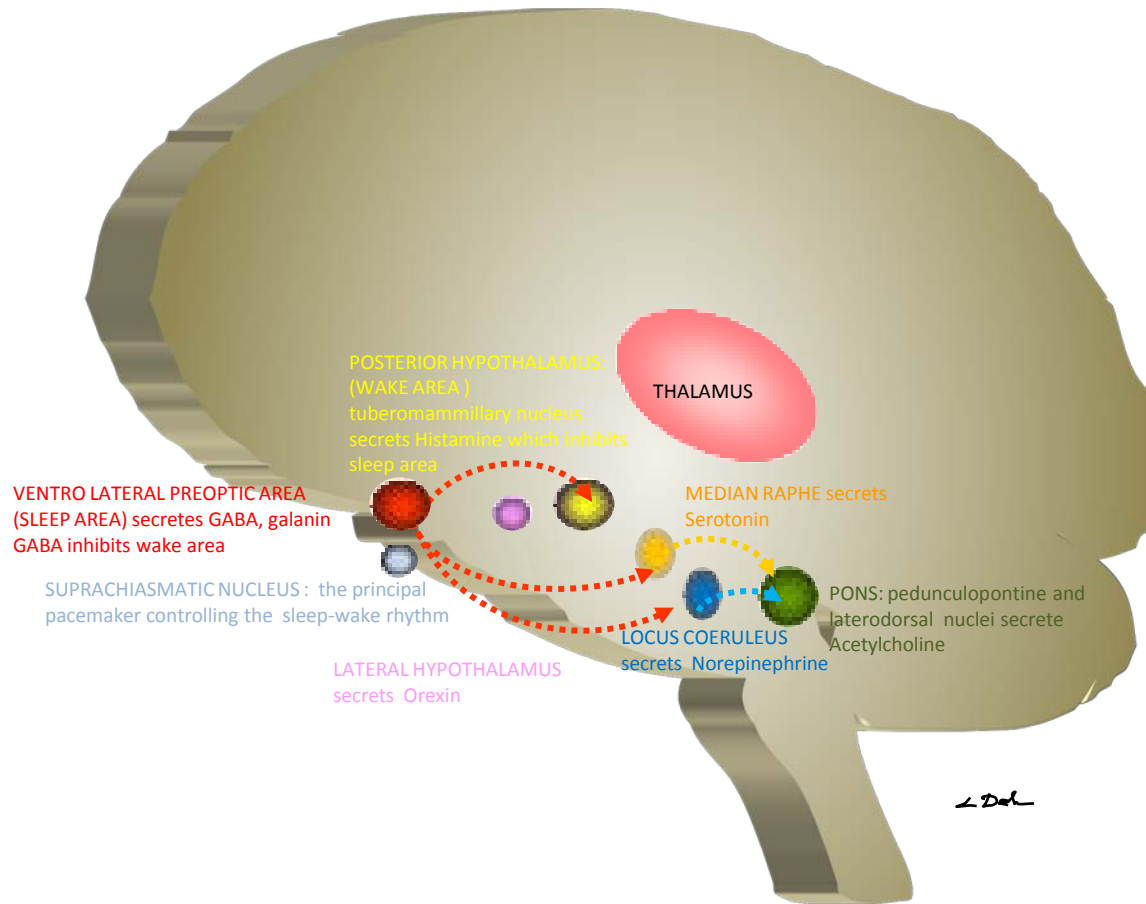


# REM SLEEP

- Fast waves (beta)
- 25% of the duration of sleep
- Predominant at the end of the night
- Superficial sleep
- Easy to wake from
- Role: consolidation of mnemonic information, brain stimulation during growth process
- Sympathetic predominance
- Increases in heart rate, blood pressure (risk for stroke, sudden death), irregularities in respiratory rate induces central apnea
- Dreams present
- Rapid Eye Movements (REM) present
- Muscle hypotonia (explaining sleep paralysis in the hypnopompic state and obstructive apnea)



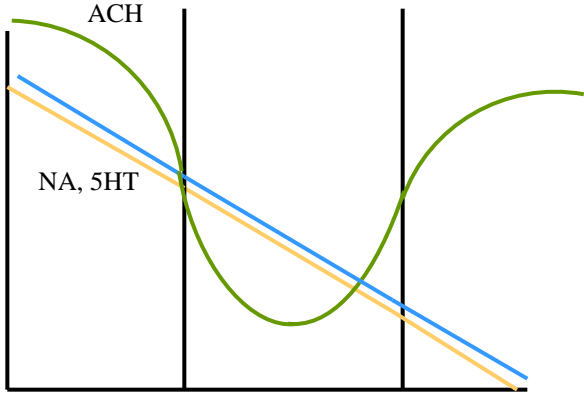
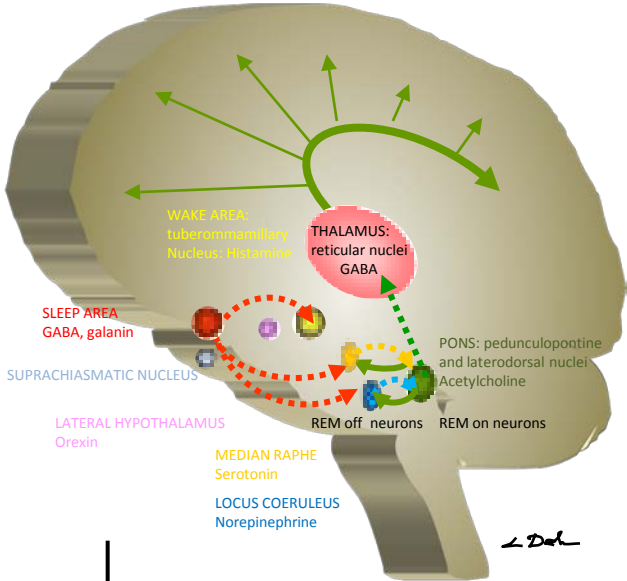
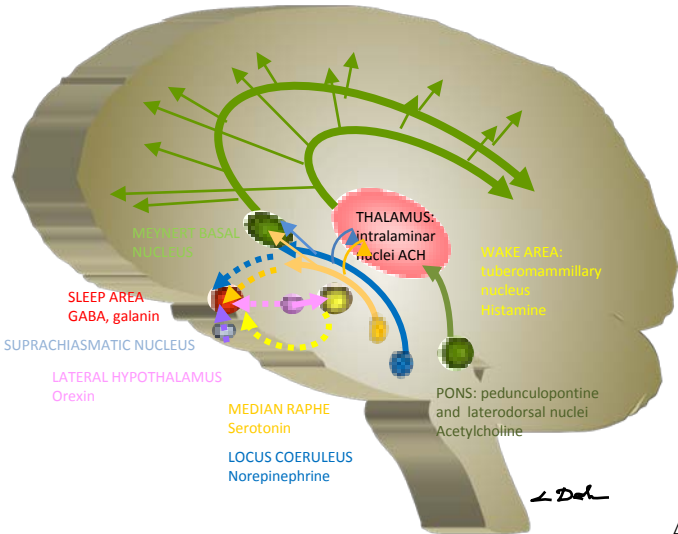
# THE HYPOTHALAMUS AND THE SLEEP-WAKE RHYTHM



# THE ACTIVATION OF THE BRAIN DURING THE WAKE STATE AND DURING REM SLEEP

During wake state the brain is activated by NA, 5HT and ACH responding to external and internal stimuli

During REM sleep the brain is activated by ACH responding to internal stimuli (mnestic material)



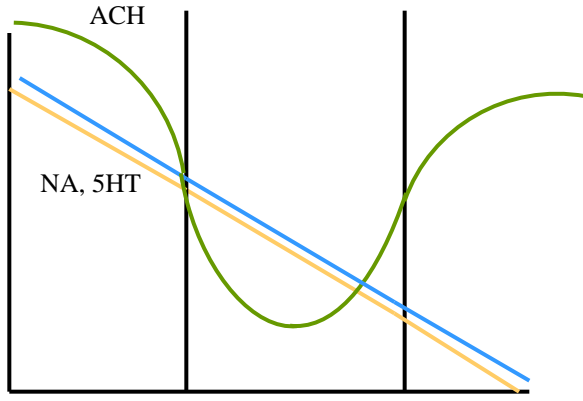
NOREPINEPHRINE OR NORADRENALIN (NA)  
 SEROTONIN OR 5 HYDROXY TRYPTAMINE (5HT)  
 ACETYLCHOLINE (ACH)  
 GAMMA AMINO BUTYRIC ACID (GABA)

WAKE STATE NON REM SLEEP REM SLEEP

E.E .Benarroch et al, *Medical Neurosciences*, 1999

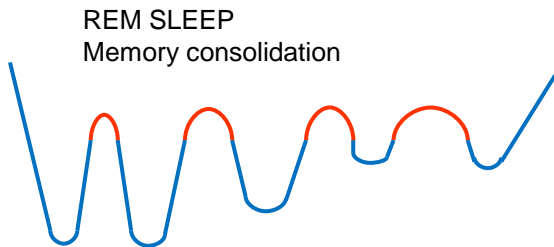


# SLEEP



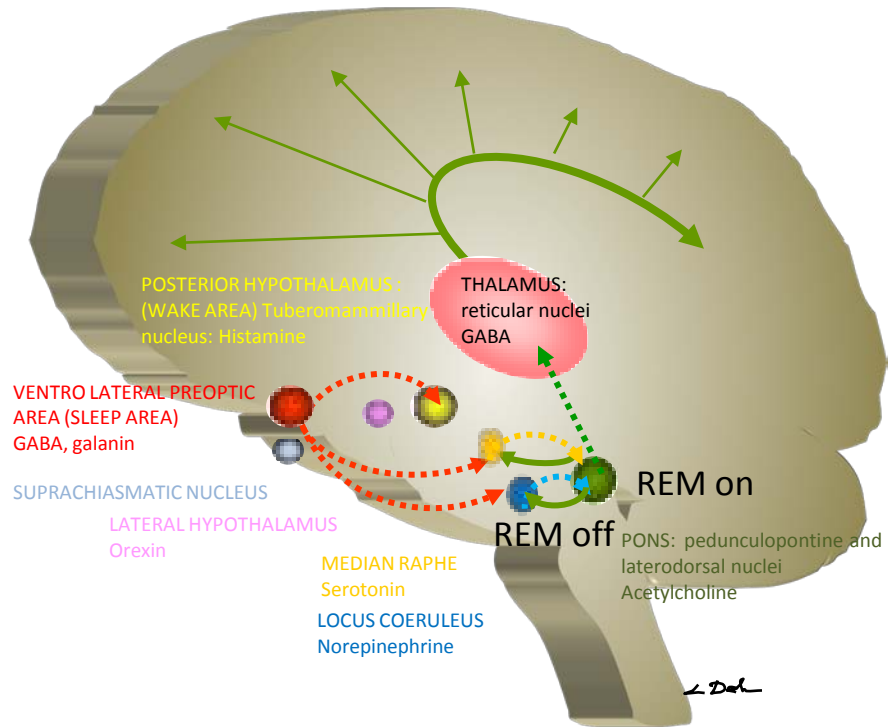
WAKE STATE NON REM SLEEP REM SLEEP

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REM SLEEP  
Memory consolidation

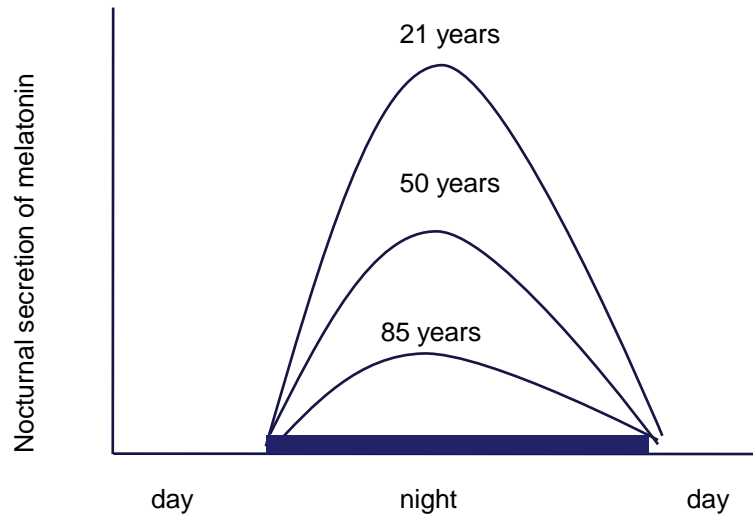
NREM SLEEP  
Metabolic restoration increased GH, reduced TSH  
Conservation of energy



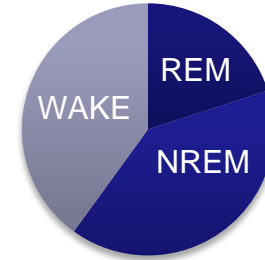
NOREPINEPHRINE OR NORADRENALIN (NA)  
SEROTONIN OR 5 HYDROXY TRYPTAMINE (5HT)  
ACETYLCHOLINE (ACH)  
GAMMA AMINO BUTYRIC ACID (GABA)

# SLEEP AND AGE

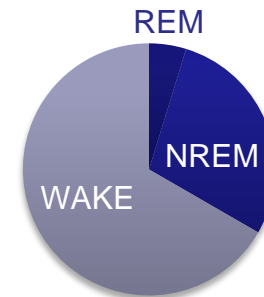
REM sleep in children: role in brain stimulation during its maturation



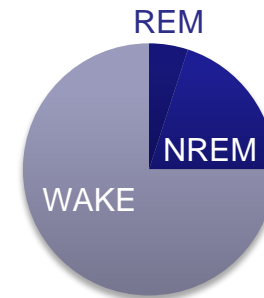
## CHILDREN

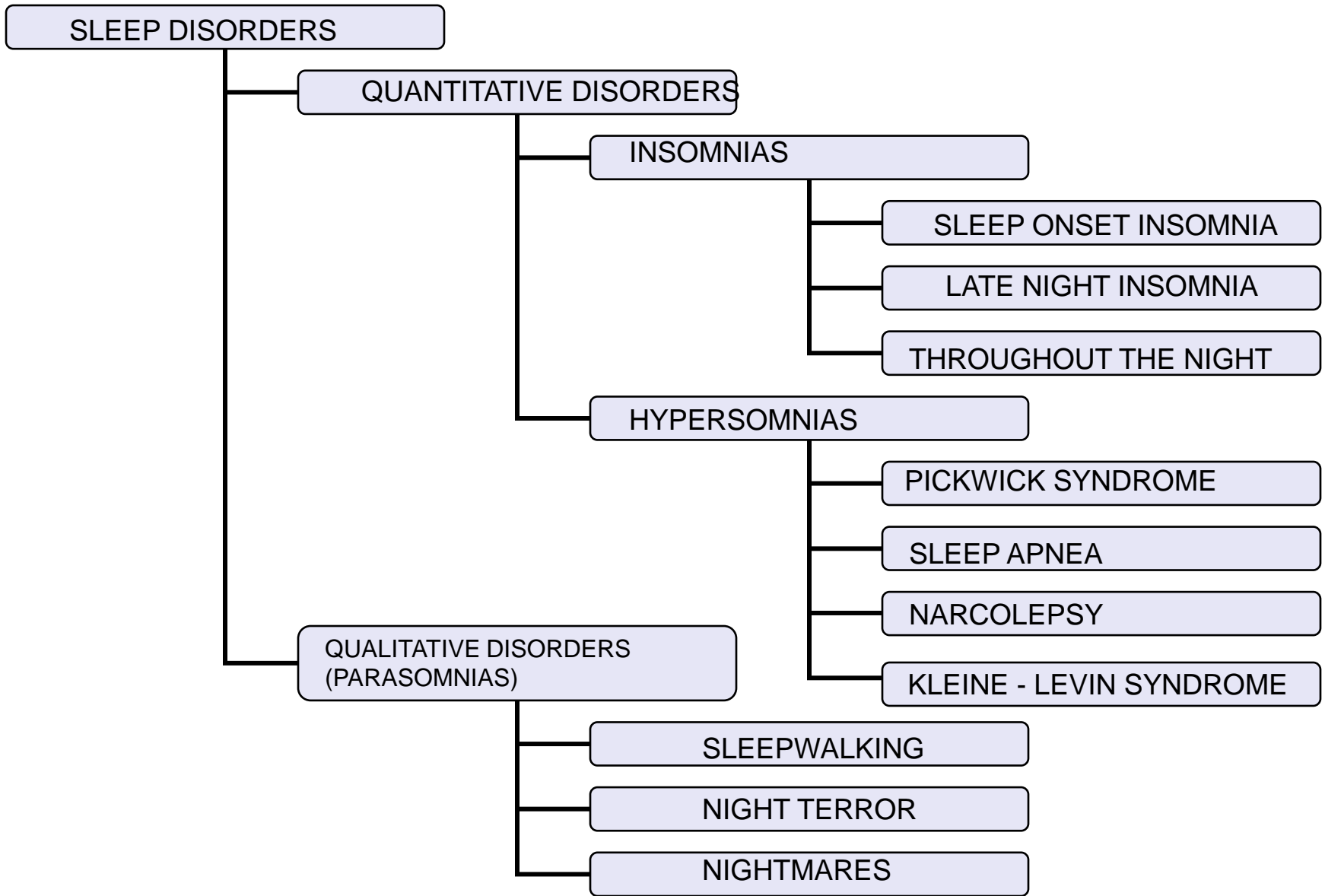


## ADULTS



## ELDERLY





# SLEEP ONSET INSOMNIA

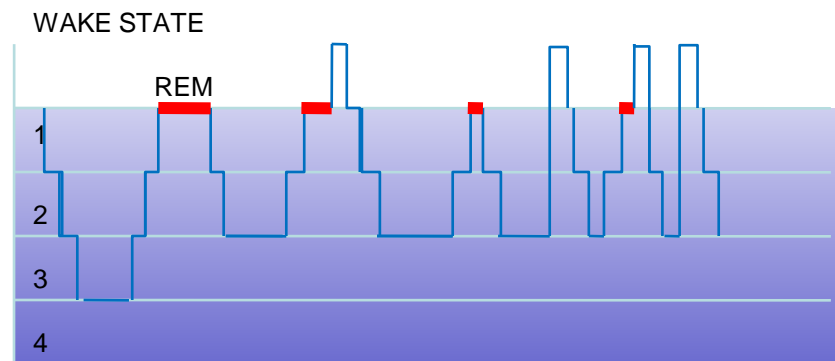
- Seen in:
  - ANXIETY
    - Causes of insomnia:
      - muscular tension with the inability to relax
      - fear of dying during sleep
      - worries
    - Associated with dreams having specific anxious themes:
      - Falling into abyss
      - Immersion in water with incapacity to save oneself
      - Being chased with the incapacity to save oneself
      - Being examined with the feeling of not being prepared well enough
  - ASTHENIA (pathological) when the activity of the ARAS (ascending reticular activating system) is increased and sustained by the individual's efforts
  - In normality after an examination accompanied by nervous consumption

# LATE NIGHT INSOMNIA

- Appears in DEPRESSION
- Waking up at 3 – 4 o'clock in the morning with the incapacity to fall asleep again
- During these moments, the intensity of depression is at a maximum, with a high suicide risk
- Accompanied by nightmares with morbid themes: dead relatives, coffins, cemeteries

# SLEEP IN DEPRESSION

- REM latency decreases (under 60 mins)
- Sleep is more superficial (reduction of stages 3 and 4 of NREM sleep)
- REM predominant during the first half of the night
- Late night insomnia



# ALL NIGHT INSOMNIA

Appears in:

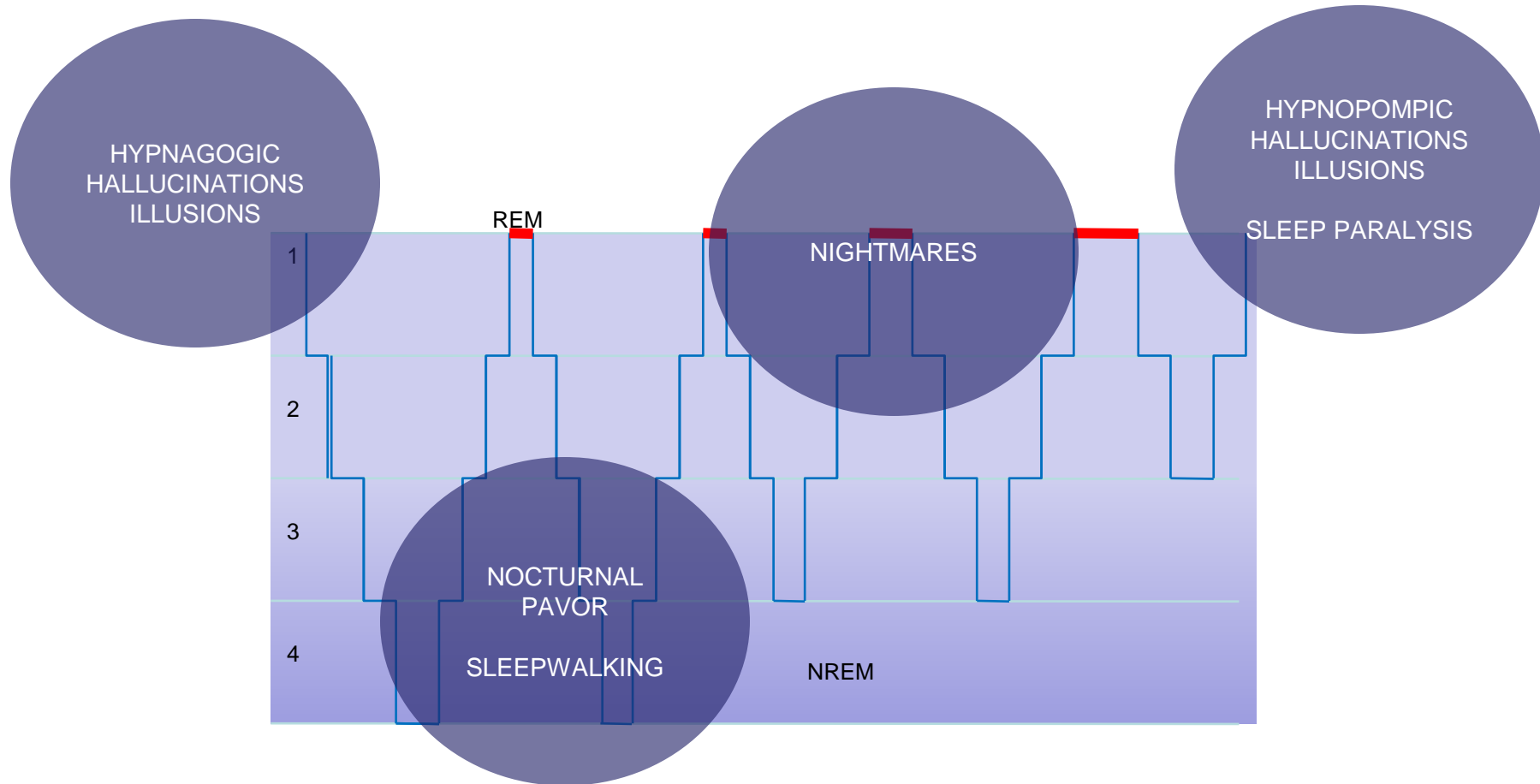
- situations where it is manifested as a decrease in the need for sleep with the absence of fatigue in spite of the sleep deficit
  - manic state
  - CNS stimulants intoxication:
    - Coffee
    - Amphetamines, cocaine
- situations where there is a sleep-wake rhythm reversal in normal conditions:
  - Shift work (12 hours work with 24 hours off)
  - Jet lag (travelling across a number of time zones, with desynchronization of body clocks with the destination time)
- Situations where anxiety is comorbid with depression (insomnia of falling asleep + late night insomnia). The subjective need for sleep and fatigue are present

# HYPERSOMNIAS

- PICKWICKIAN SYNDROME:
  - Hypersomnia (daytime sleepiness) + right cardiac failure (cor pulmonale) + obesity
  - Cause: obesity – hypoxia + hypercapnia – pulmonary vasoconstriction – right cardiac failure. Hypercapnia induces daytime sleepiness
- SLEEP APNEA SYNDROME:
  - Hypersomnia (daytime sleepiness) + nocturnal apnea (lasting 10 seconds) + snoring
  - Causes: central or obstructive (retropalatal space or retroglossal narrowing), obesity
- NARCOLEPSY
  - Irresistible attacks (20 minutes) of falling asleep during a full wake state
  - Direct transition from wake state to REM sleep produces hypotonia with falling down (CATAPLEXY) or wake-paralysis and visual hallucinations
  - NARCOLEPSY + CATAPLEXY = GÉLINEAU'S SYNDROME
- KLEINER – LEVIN SYNDROME
  - Hypersomnia + bulimia + hypersexuality + irritability occurring in cycles every few months in teenagers
  - Cause: hypothalamic-pituitary dysfunction



# PARASOMNIAS



# PARASOMNIAS

Occuring during deep sleep (NON REM), in the first part of the night

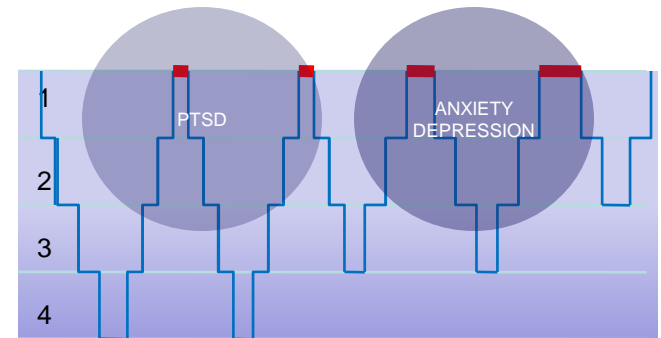
- SLEEPWALKING (SOMNAMBULISM)
  - occurs in young people
  - genetic component
  - automatic behavior (they are not aware of what they are doing during the night): they get out of bed, walk in the house, move objects, go out of the house
  - amnesia of the episode
  - protection measures (the family guards them)
  - investigations: EEG to rule out frontal or temporal lobe epilepsy
- PAVOR NOCTURNUS (NIGHT / SLEEP TERRORS)
  - especially in children (5-7 years)
  - Genetic component
  - apparent waking up + high anxiety and restlessness crying, yelling, moving)
  - amnesia of the episode and lack of remembering any dream
  - the presence of family members does not soothe or comfort the child because he is not in a wake state
  - investigations: EEG to rule out frontal or temporal lobe epilepsy

Predisposing factors: sleep deprivation, stress, fever, migraine

# PARASOMNIAS NIGHTMARES

Occuring during REM sleep

- Generalized anxiety disorder: elaborated, with the following themes falling, being chased, examinations
- Depression: elaborated, with the following themes: dead relatives, cemeteries, coffins
- Post Traumatic Stress Disorder (PTSD) the nightmares predominate in the first part of the night and are not elaborated, having the same recurrent theme (the traumatic event)



CONSCIOUSNESS DISORDERS

QUANTITATIVE: DISORDERS OF THE ALERTNESS LEVEL

OBNUBILATION

SOPOR

COMA

QUALITATIVE

CONFUSIONAL STATE (DELIRIUM)

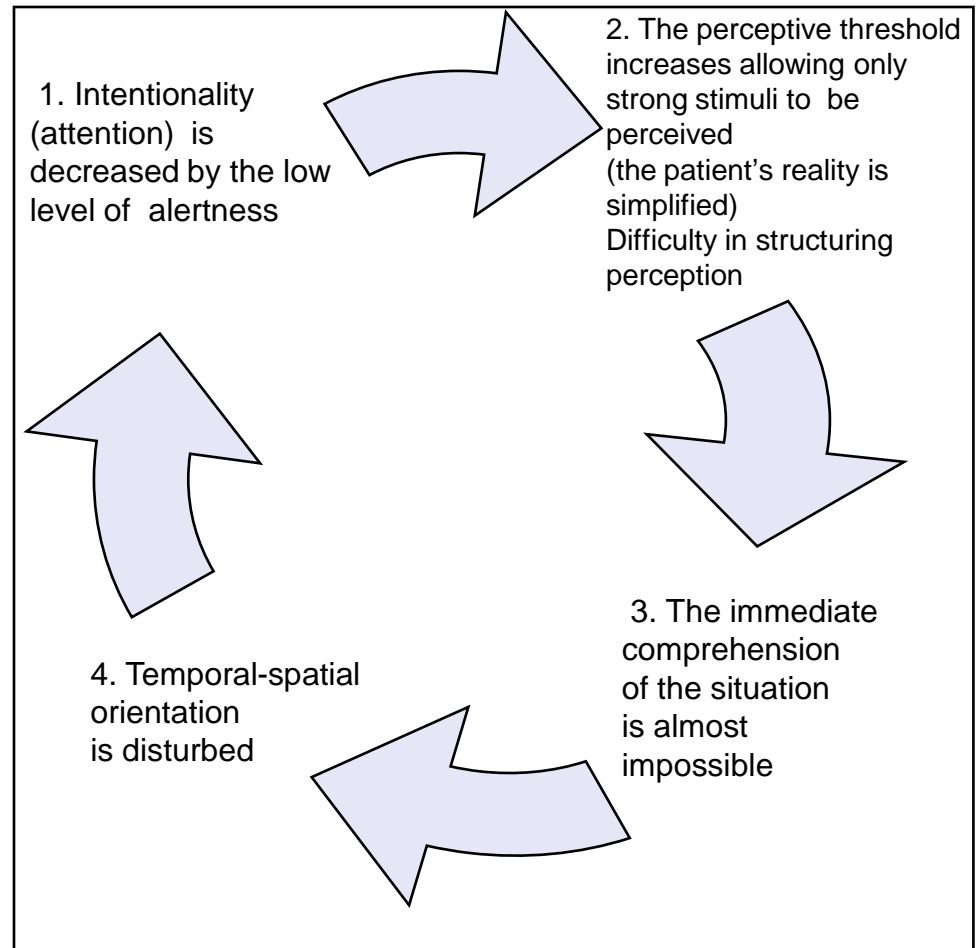
TWILIGHT STATE

# OBNUBILATION

- A state of diminished, “blurring”, “clouding” of alertness (nubes = cloud in Latin)

Appears in

- Normality
  - In the hypnagogic state
  - In the hypnopompic state
  - In fatigue
- Pathology
  - Organic cerebral disorders (brain trauma, strokes, CNS infections, CNS tumors)
  - Somatic disorders (renal, hepatic, respiratory failure)
  - Intoxication with CNS depressing drugs or medication



# THE SOPOR STATE

- A state of pathological profound sleep equivalent to the first stage of coma
- Also known in neurologic textbooks as “stupor” (in psychiatry “stupor” has another signification)
- The c.s.c attributes no longer work
- The patient can be awakened by extremely strong stimuli but only for a very short time (seconds)
- It appears in:
  - CNS Intoxications
  - indirect CNS aggressions: hepatic, renal, respiratory insufficiencies
  - direct CNS aggressions: trauma, infections, stroke, tumor

# THE TWILIGHT STATE

- Is characterized by the narrowing of the c.s.c. area with the maintenance of motor automatisms (patients can walk, climb on/climb off the tram, train).
- Sometimes serious acts of violence with legal consequences can occur (murder, destruction of goods)
- Paroxysmic and transient character (it appears and ends abruptly)
- Lacunar amnesia (for the episode) after the episode, with very rare mnesic residuals
- Causes:
  - Frontal-temporal epilepsy
  - Pathological drunkenness
  - The dissociative states of the c.s.c. in conversive-dissociative disorder (hysterical twilight state) or in acute stress reaction

# THE TWILIGHT STATE

## Pathological drunkenness

- 2 necessary conditions: microlesional brain + small alcohol quantities cannot induce drunkenness in anybody except those with a microlesional brain
- Causes of cerebral microlesions:
  - Brain trauma
  - Epilepsy
  - Stroke
  - Post encephalitic, meningo-encephalitic states
  - Cerebral tumours
- Differential diagnosis with simple drunkenness
- Diagnosis: EEG (temporal spikes), challenge test
- Prohibition of alcohol consumption!



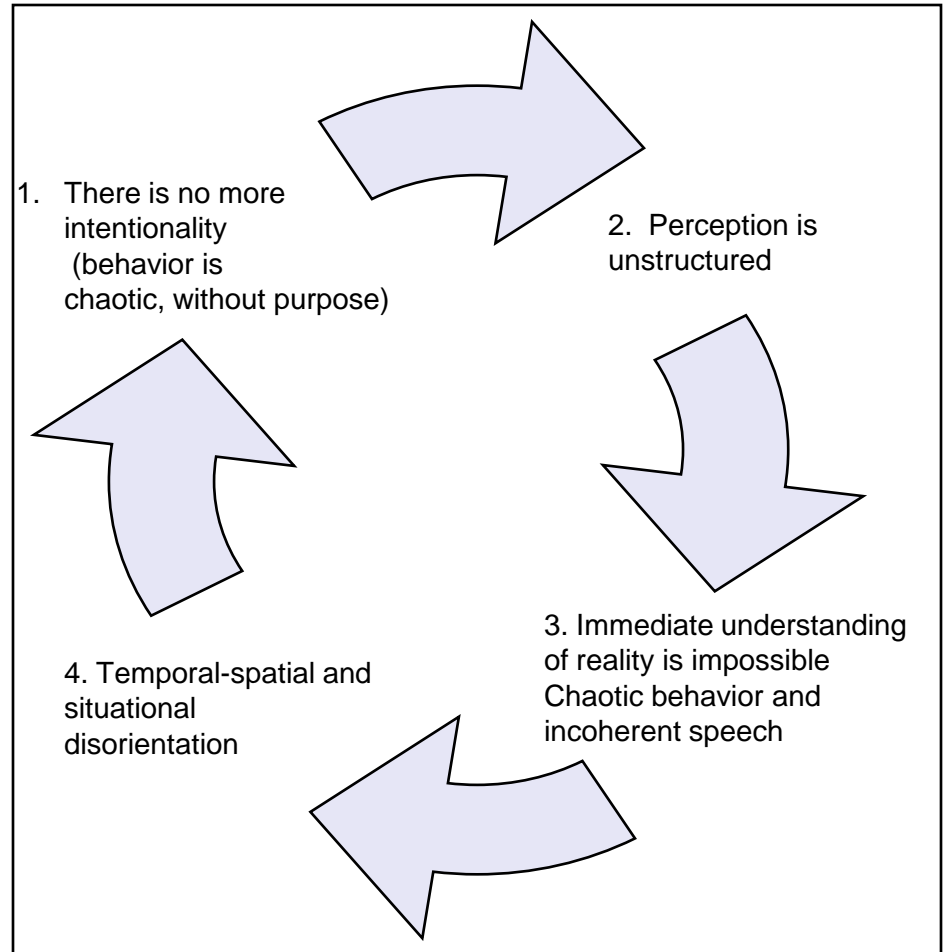
# THE TWILIGHT STATE

## The hysterical twilight

- encountered in conversive-dissociative disorder
- sudden onset following a frustrating situation
- the person leaves the place without purpose (psychogenic fugue), showing automatic behavior
- after remission of the episode, patients may find themselves in an area where they have never been before and have episode amnesia

# THE CONFUSIONAL STATE

- The c.s.c. is disturbed both in terms of area, and alertness level.
- Sudden onset
- Acute transient (if treatment measures are taken) and fluctuating (worse at night) evolution
- There is no more intentionality, Attention is severely impaired.
- Perception is unstructured
- Immediate understanding of reality is impossible
- The mental life unfolds chaotically, with purposless, chaotic behavior
- Temporal, spatial and situational disorientation
- Possible visual and tactile zoomorphic micropsic illusions and hallucinations, associated with a hallucinatory motivated behavior (defending oneself from hallucinations, agitation, aggressiveness).  
Sometimes macropsic illusions and hallucinations: horses, cows, devils) or scenic terrifying hallucinations that cause anxiety, sometimes with a professional content (confuse -oneiric or delirium state)
- no working (immediate) memory: the patient cannot understand the questions, the speech is chaotic
- Short term hypomnesia or amnesia
- Psycho-motor inhibition or agitation
- Reversal (inversion) of sleep-wake rhythm



# THE CONFUSIONAL STATE

Causes: NOT A PSYCHIATRIC DISORDER ! More frequent in children and elderly

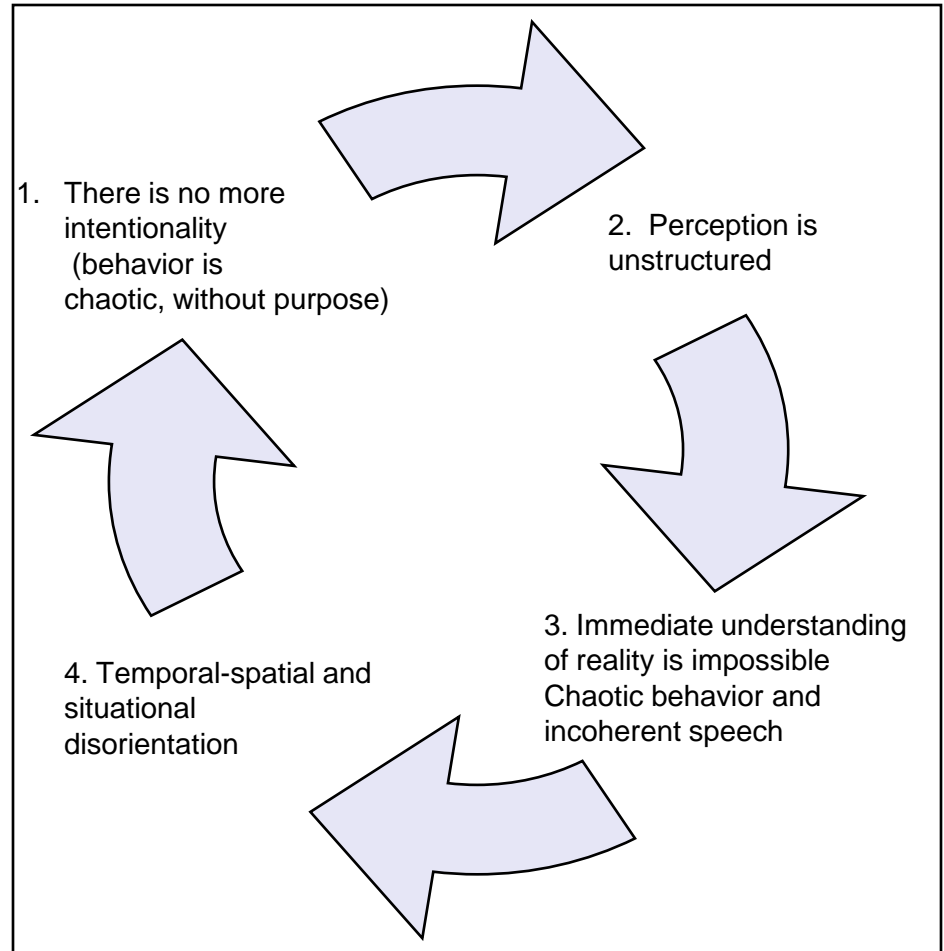
- Direct brain aggressions:
  - trauma
  - stroke
  - infections
  - tumors
  - epilepsy
- Indirect brain aggressions: homeostasis disturbances
  - hepatic, renal, respiratory insufficiencies
  - Vitamin B1 deficit
  - Hypoglycemia
  - Hydro-electrolyte imbalance
  - High fever
- Intoxications or withdrawal: drugs of addiction, medication, poisons (intoxication or withdrawal delirium)

Examples:

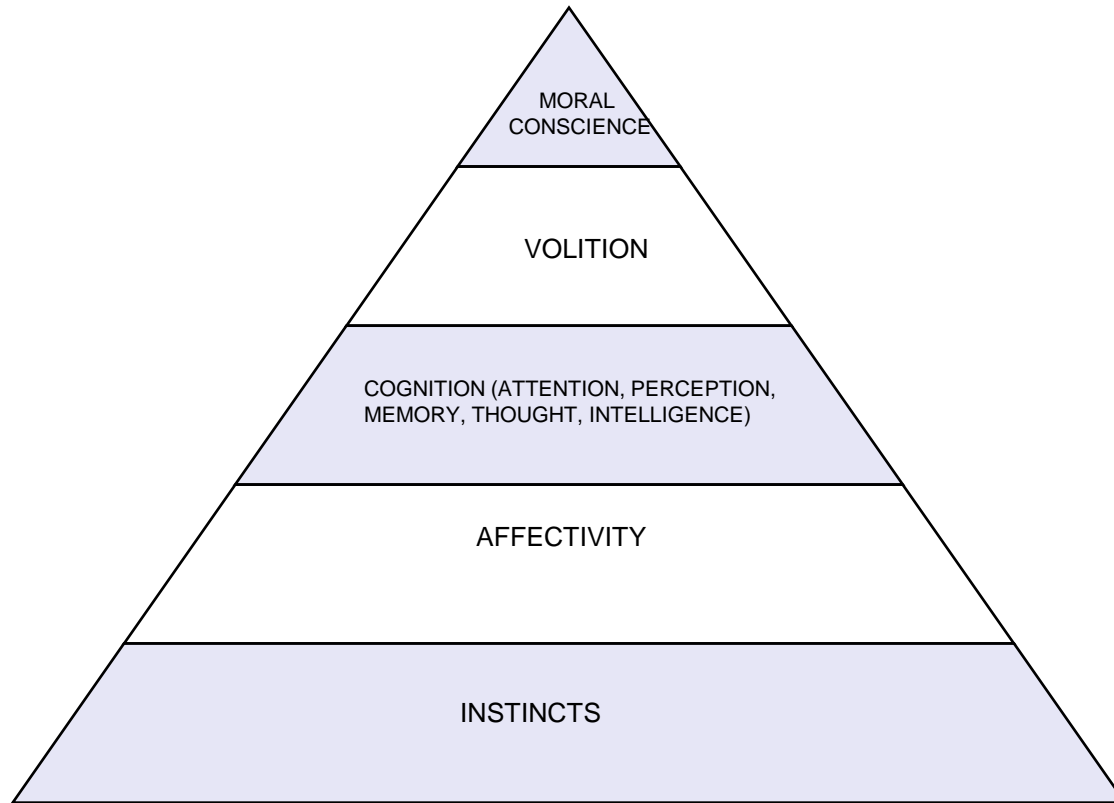
- Severe infections (of the CNS or septic states): infectious delirium
- High fever (in children): fever delirium that evolves in parallel with the fever (intensifies with the increase in fever, decreases with the decrease in fever)
- Alcohol withdrawal (confusional state appearing at 24-48-72 hours from abrupt stopping of alcohol intake alcohol dependent patient)

Differential diagnosis:

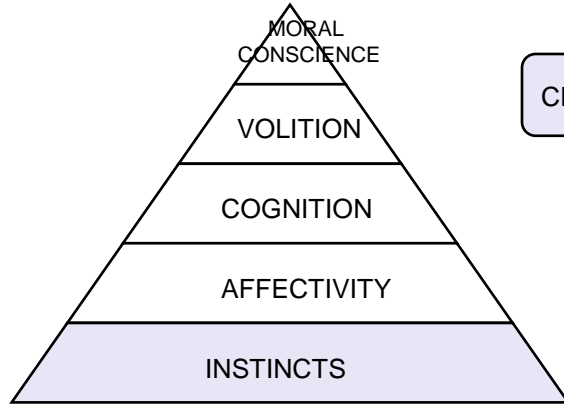
- DELUSION (pathological conviction with no real substrate, this occurs on a clear state of consciousness!)
- DEMENTIA (insidious onset, chronic progressive evolution). Sometimes the confusional state can be overlaid on dementia



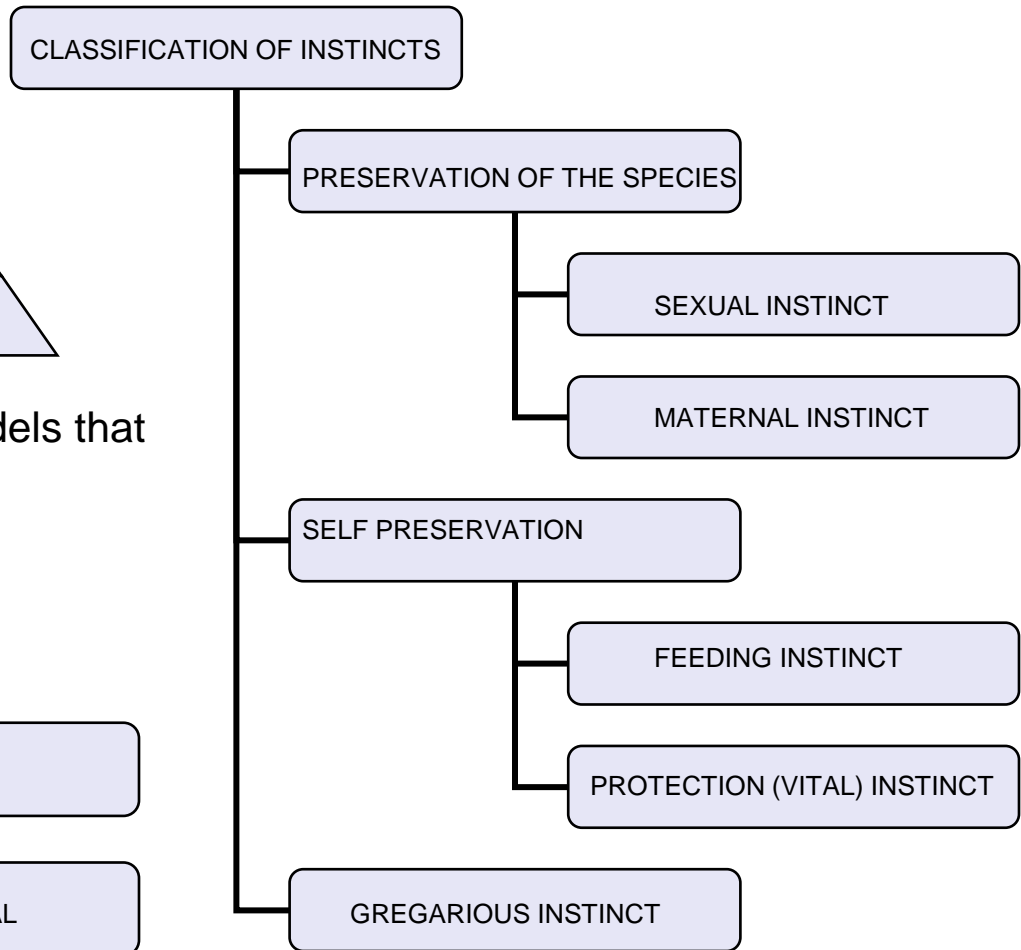
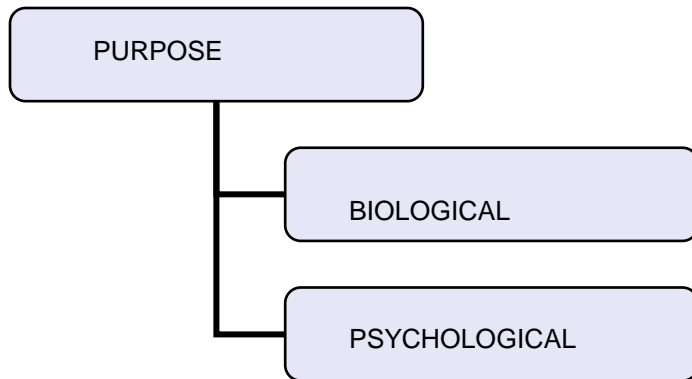
# THE FUNCTIONAL LEVELS OF THE PSYCHE



# THE INSTINCTIVE LEVEL

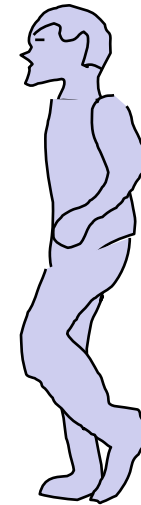
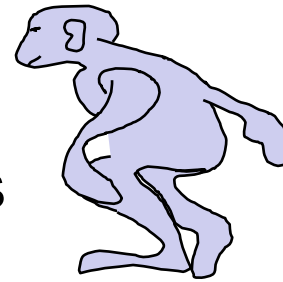


Instincts: inborn behavioral models that serve to species adaptation



# THE INSTINCTIVE LEVEL

- Is present in both animals and humans.
- In humans, the instinctive level is less developed than in animals
- Instincts offer a finite number of solutions needed for adapting to a constant environment
- Intelligence and imagination are required for elaborating new solutions to new situations (adaptation to an ever-changing environment)

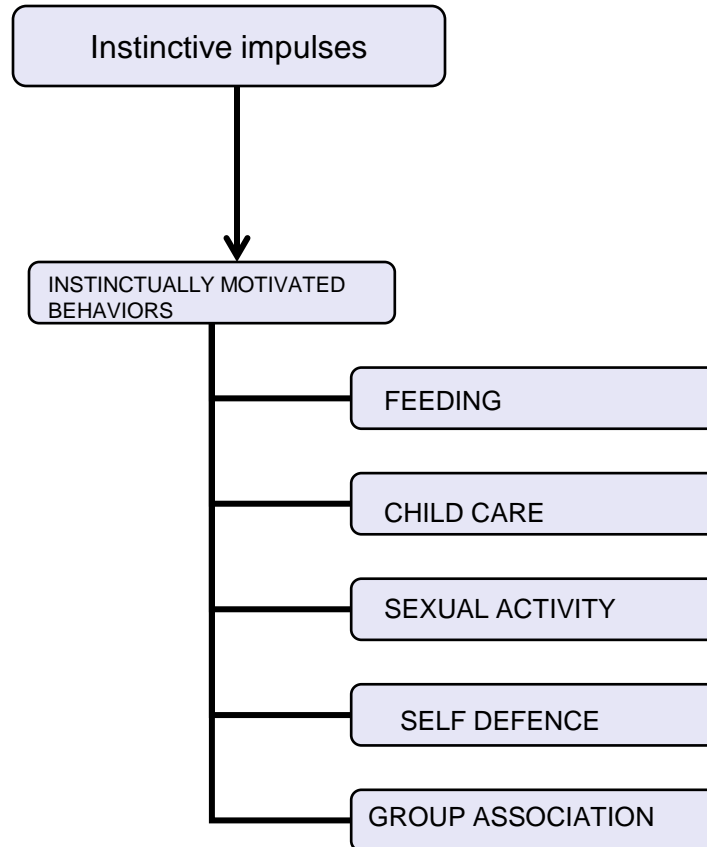


# THE INSTINCTIVE LEVEL

Instinctive impulses: tendencies / urges generated by instincts, that motivate the behavior of an individual

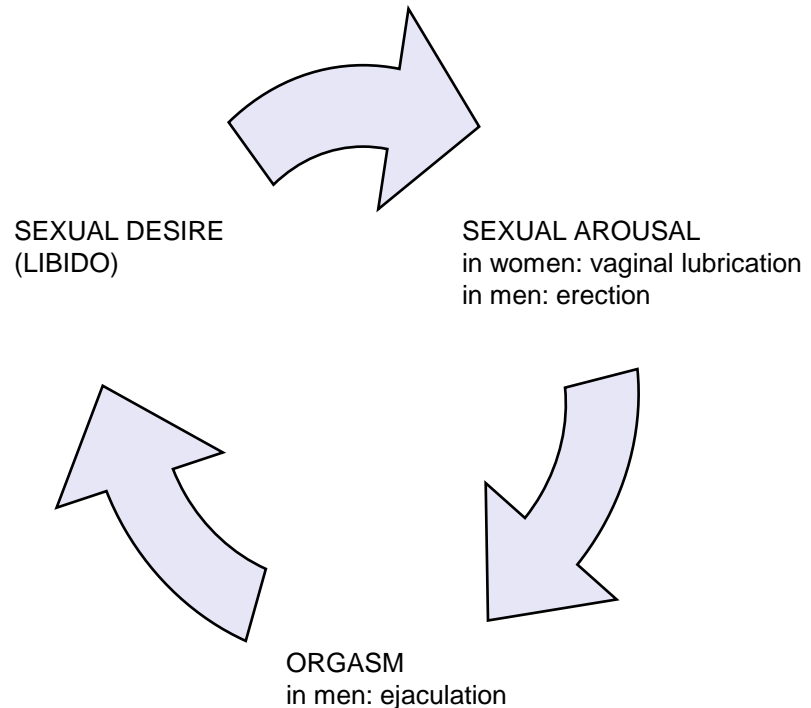
- have a high motivational power, because they represent biological imperatives
- are unconscious

They may become conscious through generation of affective sensations (needs) that produce distress to the individual until they are completely satisfied



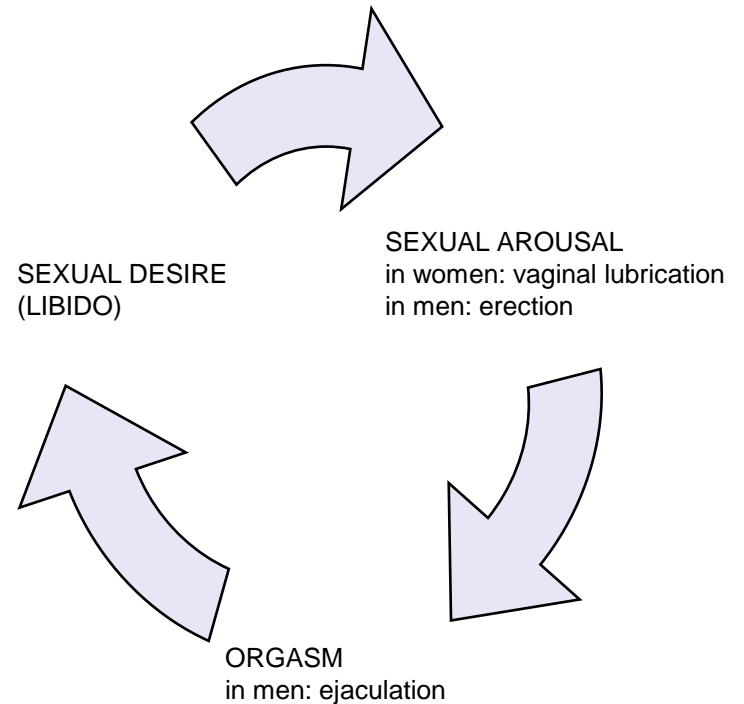
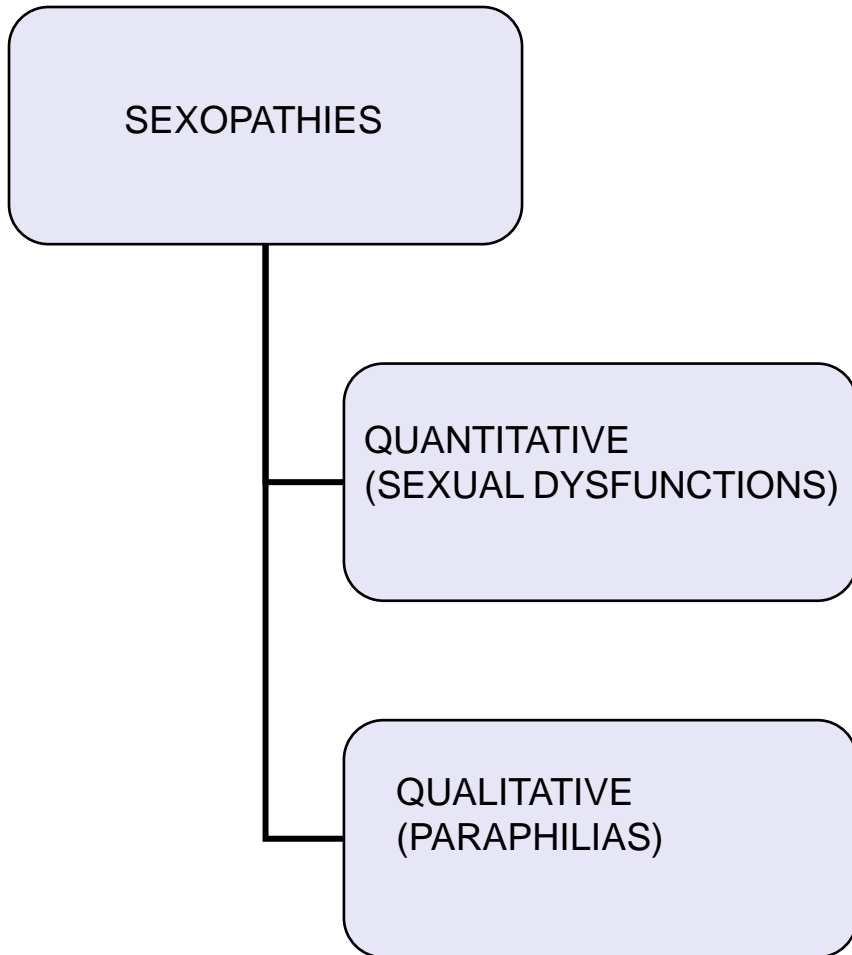
# THE SEXUAL INSTINCT

- Biological purpose: perpetuation of the species  
Psychological purpose: obtaining pleasure
- Everything that deviates from normal is against the biological purpose
- Normal intercourse: genitogenital with a partner of the opposite sex





# SEXOPATHIES



# SEXUAL DYSFUNCTIONS

## Disorders of the sexual desire

Decreased sexual desire

Increased sexual desire

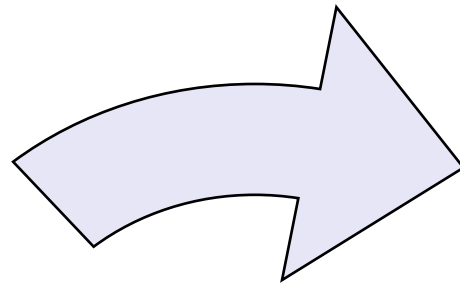
- in men: satyriasis
- in women: nymphomania

Other causes:

- decreased sexual desire:

depression

- increased sexual desire: manic state



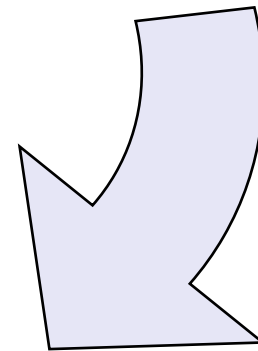
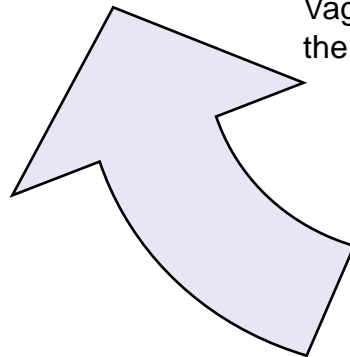
## Sexual arousal disorders

- In men: erectile dysfunction (impotence)
- In women: disorders in reaching and maintaining arousal, insufficient lubrication

## Other types of sexual dysfunction

Dyspareunia: pain during sex

Vaginismus: involuntary contraction of the vaginal muscles during sex



## Orgasm disorders

- In men: premature ejaculation, delayed ejaculation, painful ejaculation
- In women: orgasmic dysfunction

# PARAPHILIAS

## Abnormal partner:

- The subject himself: **masturbation/onanism**
  - Up to a point normal
  - Experienced with a sense of guilt
  - Frequently encountered in boarding schools, prisons, military barracks, where restrictions in normal sexual activities exist
  - Becomes pathological when it is a purpose in itself (the human no longer searches for the opposite sex partner, practicing masturbation as a unique manner of satisfying their sexual instinct, e.g. young patients with schizophrenia)
- Same sex partners: **homosexuality**
  - **Pederasty** in men
  - **Lesbianism** in women
- First degree relative: **incest**
- Inappropriate age partner:
  - **Child partner: pedophilia**
  - **Elderly partner: gerontophilia**
- Animal partner: **zoophilia**
- Object (statue): **pygmalionism**
- Corpse: **necrophilia**

## Sexual arousal is obtained under unusual circumstances:

- By public exposure of genitals:
  - **Exhibitionism**
- By manipulating feminine clothing objects:
  - **Fetishism**
- By wearing clothing of the opposite sex:
  - **Transvestism**
- By contemplation of sexual scenes:
  - **Voyeurism**
- By inflicting pain on the partner:
  - **Sadism**
- By suffering the pain inflicted on the subject by a partner:
  - **Masochism**
- By rubbing against strangers in public places:
  - **Frotteurism**

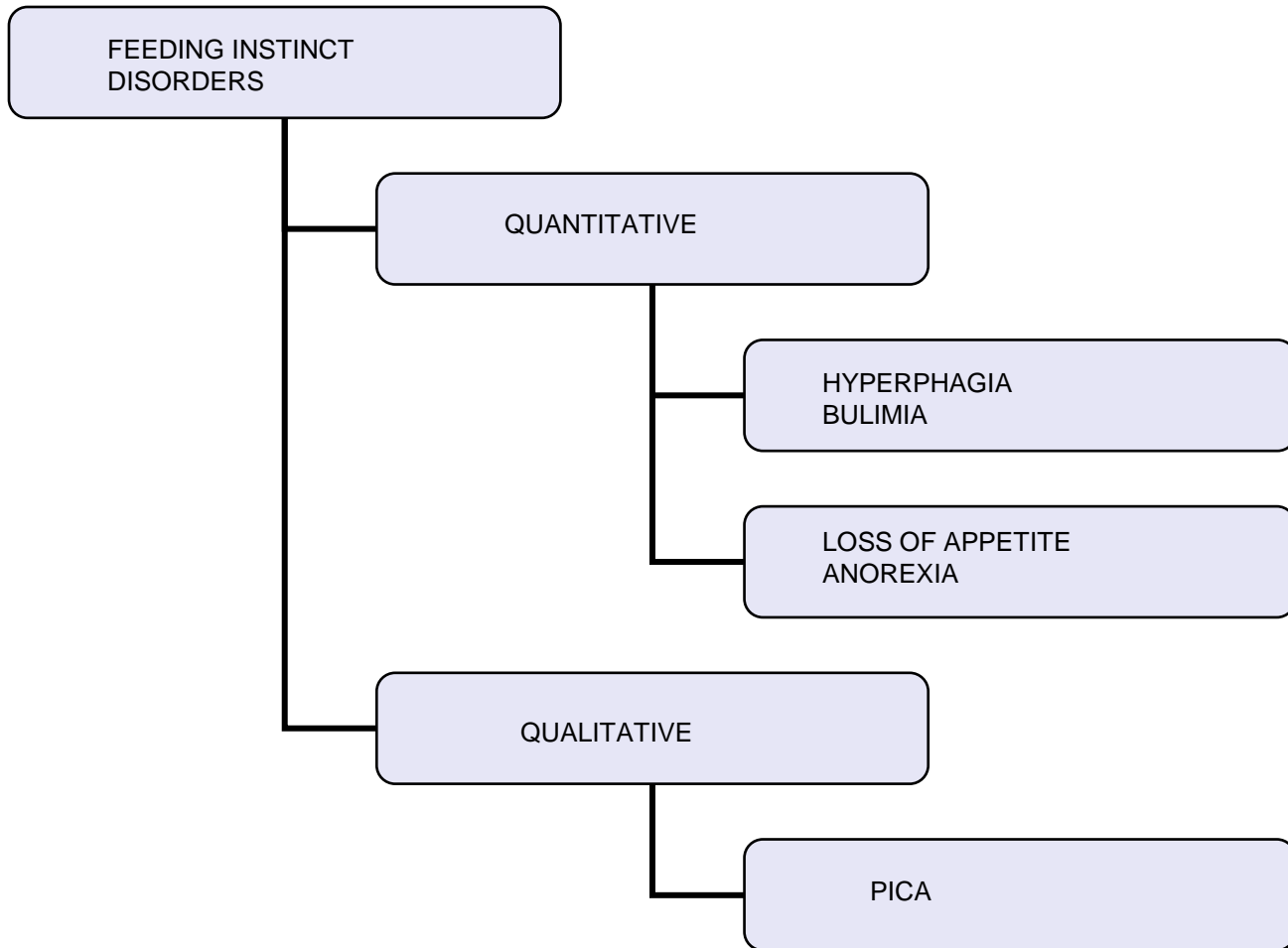
# THE MATERNAL INSTINCT

- Biological purpose: perpetuation of the species
  - Protection of the child
  - Protection of the child throughout life
- In women the maternal instinct develops gradually throughout the pregnancy (if the child is wanted)
- In men there is a paternal feeling that develops gradually

# DISORDERS OF THE MATERNAL INSTINCT

- They occur more frequently in the situation of unwanted babies
  - The child is a burden for the family
  - The child has an unknown father or has a father that refuses to acknowledge the child (in young girls)
- The child is rejected
  - abandonment in the maternity, on the street, in the garbage
  - infanticide

# THE FEEDING INSTINCT



# ANOREXIA NERVOSA

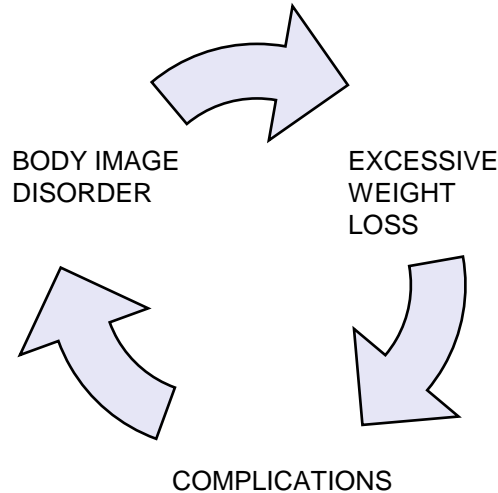
- Body image disorder: inability to identify with one's body image (schema)
- It is not an actual disorder of the feeding instinct, anorexia occurring in the evolution of the disorder
- THE MOTIVATION TO LOSE WEIGHT SURPASSES THE FEEDING INSTINCT



- Onset: puberty
- More frequent in girls
- Favoring factors:
  - Genetic
  - Serotonin and dopamine dysfunction
  - Ironic remarks or caressing from the parents
  - Mean jokes related to weight
  - Socio-cultural factors (the “mannequin” fashion)
- Sometimes comorbid with bulimia

# ANOREXIA NERVOSA

- Feeling overweight
- Fear of gaining weight or becoming fat in the conditions of normal or low weight
- Weight deficit of more than 15% of ideal body weight (20-30 kg)



- Food restriction (diet, calories and fat content calculation)
- Initially provoked, then spontaneous vomiting
- Excessive use of purgation: laxatives, diuretics
- Physical exercise
- Catabolic substances use: thyroid hormones, amphetamines

- Hypochloremic hypokalemic alkalosis (risk for arrhythmias), hypotension
- Dental Cavities, oesophagitis, gastric lesions
- Anemia, leukopenia
- Constipation
- Dry, flaky, yellow skin, lanugo, osteoporosis
- Sunken eyes
- Endocrine imbalances:
  - Reduced T3 with N TSH
  - Increased glucocorticoid secretion
  - Delayed menstruation or amenorrhea with infertility
  - Hypothermia, hypoglycemia
- Decreased cognitive performance



# ANOREXIA NERVOSA

An important weight deficit represents a **MEDICAL EMERGENCY** (risk of death)

Up to 20 % death rate



Under 35 kg – **HOSPITAL ADMISSION**

Treatment:

- Hydroelectrolytic rebalancing
- Medication:
  - antidepressants (fluoxetine)
  - antipsychotics because the conviction that they are too fat reaches **DELUSIONAL** intensity (olanzapine)
- Psychotherapy: behavioral, family therapy

# BULIMIA NERVOSA

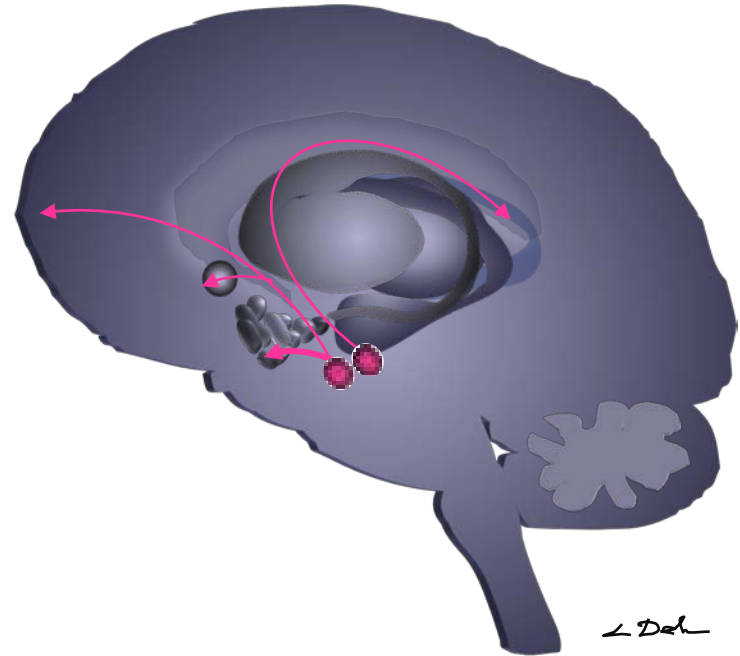
- Recurrent episodes of impulsive consumption of large quantities of food (especially sweets) in a short period of time with a sense of loss of control (binge eating).
- Weight gain consecutive to bulimia
- Attempts to correct weight gain:
  - Induced emesis (in time they may become spontaneous)
  - Use of laxatives, diuretics
  - Physical exercise
  - Food restriction
  - Use of catabolic substances: thyroid hormones, amphetamines

# BULIMIA NERVOSA

- Cause: serotonin dysfunction increases impulsivity
- Insight: present
- Comorbidity:
  - Depression
  - Anorexia nervosa
  - Kleptomania (impulse control disorder)

## Treatment:

- Antidepressants:
  - SSRI (selective serotonin reuptake inhibitors)
  - TCA (tricyclic antidepressants) that inhibit predominantly serotonin reuptake: clomipramine
- Psychotherapy: cognitive-behavioral



# QUANTITATIVE DISORDERS OF THE FEEDING INSTINCT

- Excessive food intake: hyperphagia
  - pregnancy
  - cultural-familial habits in obese people
  - anxiety
  - organic: Kleine-Levin syndrome
  - drug induced: certain antipsychotics, antidepressants, mood stabilizers
- Excessive and impulsive food intake: bulimia
  - manic state
  - atypical depression
  - Pick dementia
- Excessive liquid intake: potomania
  - Differential diagnosis:
    - Diabetes Mellitus
    - Diabetes Insipidus

# QUANTITATIVE DISORDERS OF THE FEEDING INSTINCT

- ANOREXIA: lack of alimentary appetite
  - Depression
  - Anorexia nervosa (later in evolution)
  - use of anorexigenic drugs  
(cocaine, amphetamines)

# QUANTITATIVE DISORDERS OF THE FEEDING INSTINCT

## PICA:

- Ingestion of non edible things  
(dust, chalk, clothes)
- Seen in:
  - Rarely in some women during pregnancy
  - In advanced phases of dementia: the person does no longer make the distinction between edible and non-edible
  - In profound mental retardation

# THE VITAL INSTINCT

- Biological purpose: to protect life and body integrity
- It can generate normal defensive aggression
- Aggression can be directed towards:
  - oneself (self-aggression): self-mutilation, suicide
  - others (hetero-aggression)
- Aggression can be:
  - Verbal (irony, curses, threats, offences)
  - Physical

# AGGRESSIVITY IN THE SERVICE OF INSTINCTS



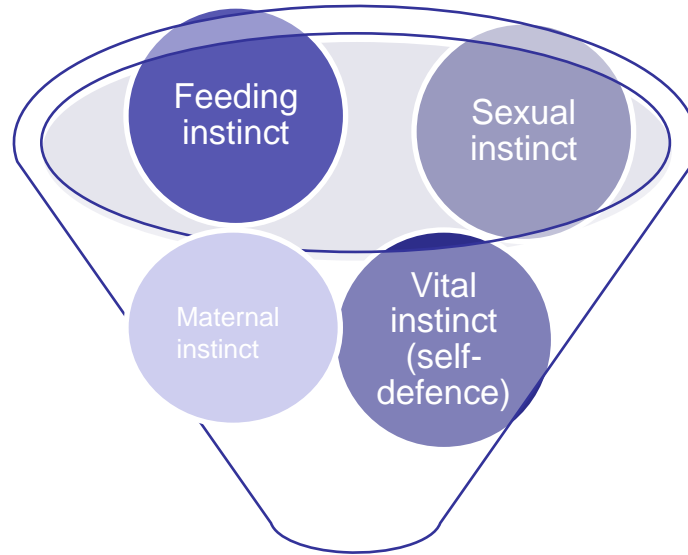
Fight for the territory



Fight for food



Protection of cubs



AGGRESSIVITY FOR  
ADDAPTATION



Rivalry between males in  
view of mating

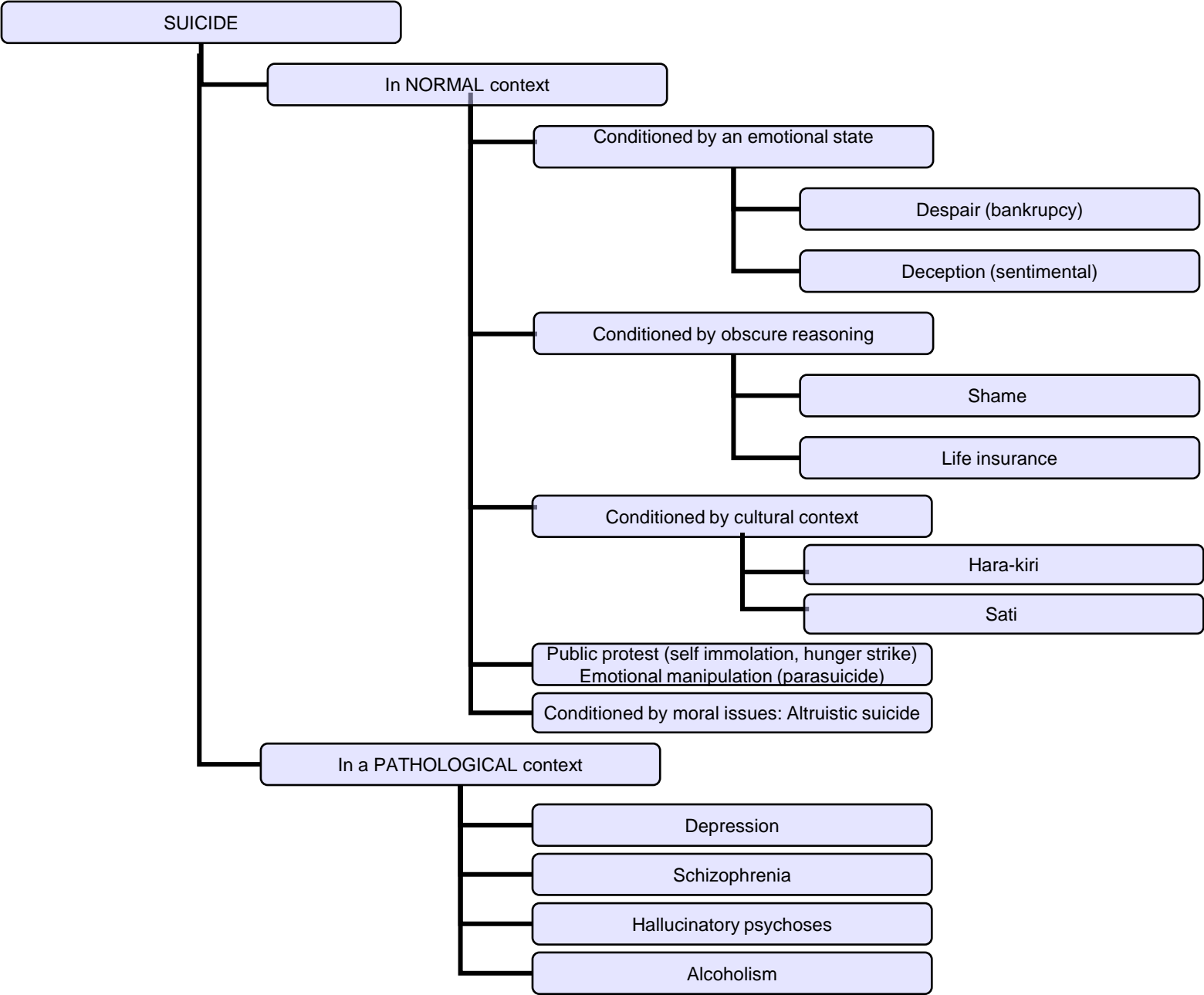


Male-Female mating

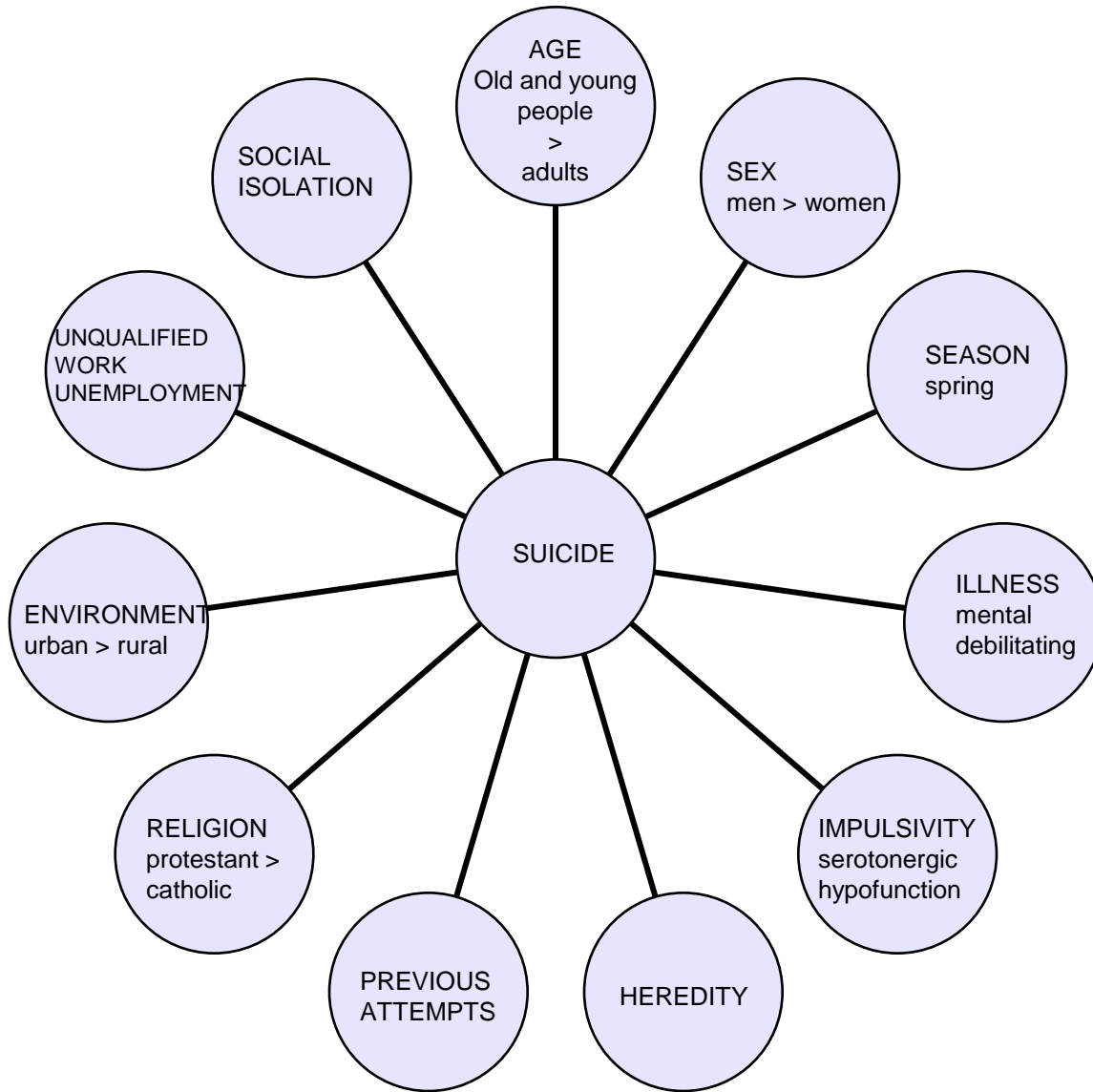


Self-defence





# SUICIDE: RISK FACTORS



# SUICIDE IN DEPRESSION

Context: Depression produces a disturbance in the individual's values (only those that are very religious can evade suicide)

For example: the prevalence of suicide is lower in the Southern Catholic population than in the Nordic Protestant population

Favoring factors:

The disappearance of death fear  
Severity of depression  
Low depressive inhibition  
(enough energy to act)

In the DEPRESSIVE STUPOR there is vital risk by refusing to eat

Characteristics of suicide

1. there is a real intention to die
2. it is planned, measures are taken in order to ensure success
3. A sure, violent method is chosen:
  - Hanging
  - Shooting
  - Throwing oneself from a height
  - Throwing oneself in front of a train, a car
  - Ingestion of large quantities of potentially lethal drugs
  - Vein sectioning
4. Choosing the moment: when alone, especially at night (depression is at a maximum)
5. Leaving or not farewell letters. When leaving letters they assume full responsibility for the suicidal act

# SUICIDE

- IN SCHIZOPHRENIA
  - Suicide borrows the bizar character of the illness
  - Suicidal intent can suddenly dissappear
- IN AUDITORY HALLUCINATION PSYCHOSES
  - The imperative hallucinations are ordering patients to take their own lives
- IN CHRONIC ALCOHOLISM
  - It is complicated by depression and, secondary to it, by suicidal risk

# PARASUICIDE

- Parasuicide = the intention to mimick suicide with the purpose to manipulate (impress) the entourage
- Frequent in histrionic personalities
- It may be repeated (with increased risk to die)
- Sometimes, by mistake (miscalculations), the person might die

## Characteristics:

1. There is no real intention to die
2. The act is done demonstratively, in public, when the family is reunited
3. Often the act is impulsive, unplanned
4. The person chooses a less violent, less sure method:
  - Ingestion of inoffensive substances or medication: pancreatin, aspirine, nifedipine
  - Indenting the skin in the vicinity of veins
5. Leaving dramatic letters where the individual is the victim of other people misunderstanding, the responsibility being thrown upon the others to punish them

# SELFMUTILATION

- It is a type of self-harm affecting body integrity
- It is seen in
  - Patients with Schizophrenia that present body image delusions
  - Dysharmonic personalities:
    - histrionic in order to impress others:
      - Repeated swallowing of sharp objects in prisons  
(secondary benefit to impress the others and avoid liberty deprivation by transfer to the surgical wards)
    - emotionally unstable / borderline
      - Impulsive and superficial blade, knife cutting, which leads to multiple scars, especially on the non-dominant limb

# PATHOLOGICAL AGGRESSIVITY

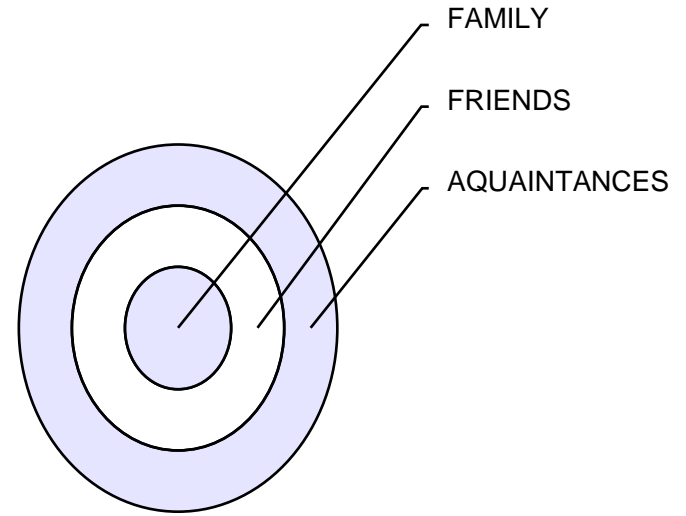
- Purpose: to obtain benefits
- Seen in
  - impulsive individuals with a low tolerance for frustration
  - psychotic individuals who do not have insight
    - Manic state
    - Schizophrenia
  - intoxication states (e.g. alcohol)
  - epilepsy
  - antisocial/dissocial individuals (who ridicule moral norms and harm for the sake of harming)

! In educated individuals aggressivity is manifested mostly verbally (ironies)

# THE GREGARIOUS INSTINCT

- It refers to the association to a group in order to obtain support (affective and/or instrumental):
  - Family
  - Friends
  - Neighbours

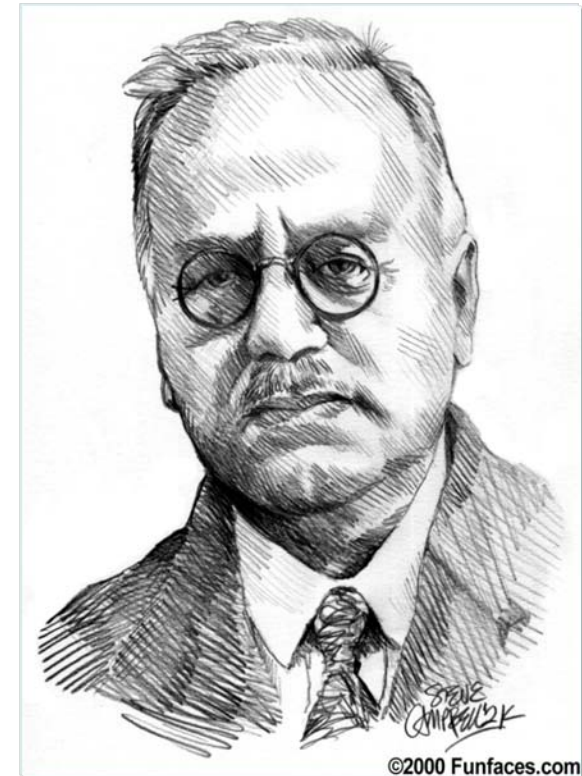
The supportive group defines the individual's social supportive network
- Each group has a dynamic with the emergence of a leader who:
  - Fights to obtain this position
  - Defends the partner and offspring
  - Fights for the territory





# THE IMPORTANCE OF THE GROUP FOR HUMAN BEINGS

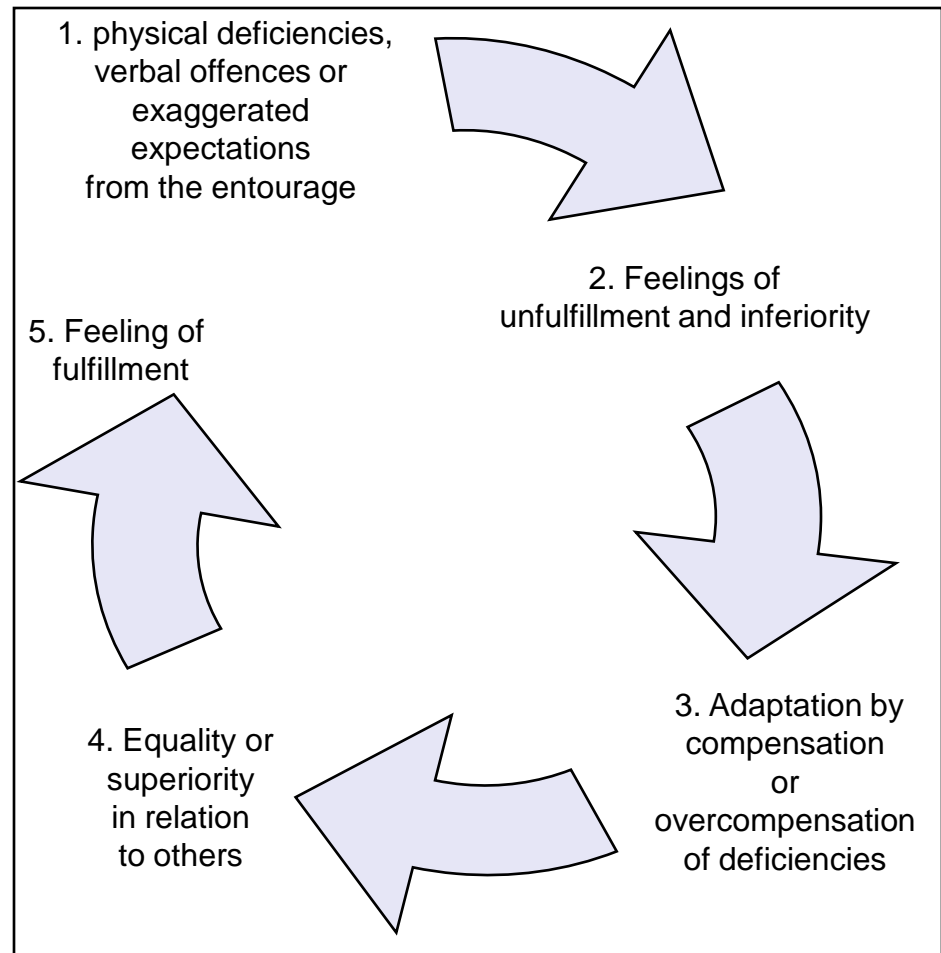
- Socialization as an imperative in the fight for survival: man is not strong enough to be able to live alone, no one is able to resist nature
- Man, compared to other animals, has a constitutional inferiority which is acknowledged as a feeling of incompleteness and insecurity that acts as a permanent incentive towards adaptation
- The child has an inborn sense of social communion



**Alfred Adler (1870 - 1937)**

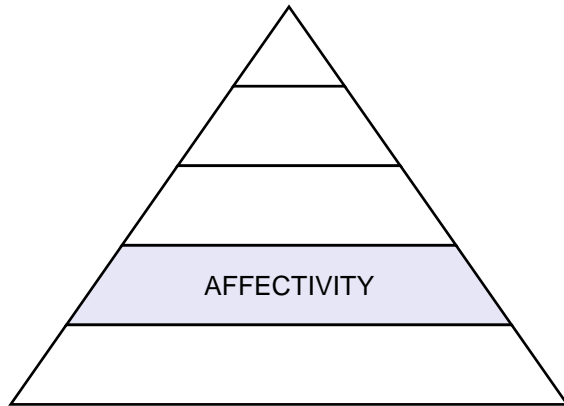
# THE INDIVIDUAL IN SOCIETY

- The child's mental development is strongly influenced by the relationship with society
- Two ways to adapt:
  - The attraction of the solicitude of others by deliberately displaying individual weaknesses
  - The fight to overcome individual weaknesses (compensation or overcompensation)



# THE AFFECTIVE LEVEL

## CHARACTERISTICS:

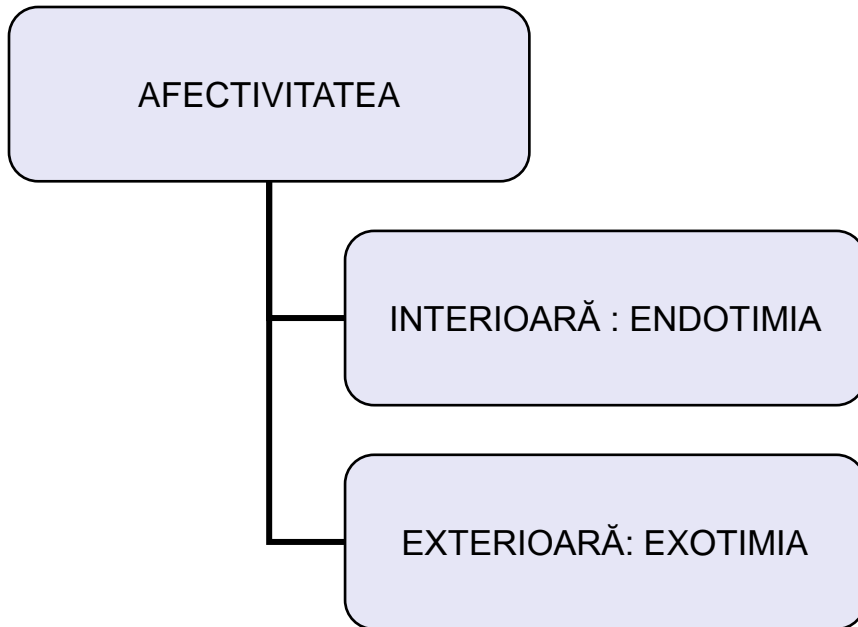


- Exists in humans and animals
- Belongs to the conscious psyche (we can become aware of our affective experiences)
- A strong energy level, but weaker than the instinctual level
- A level of subjectivity (affectivity is subjective, reasoning is objective)
- Affective experiences are polar:
  - pleasure - lack of pleasure
  - love – hate
  - joy – sadnessbut there are also neutral experiences (indifference)

# AFFECTIVITY (THYMIA)

INTERNAL: ENDOTHYMIA  
AFFECTIVITY

EXTERNAL: EXOTHYMIA



ENDOTHYMIA = the mood

It is not conditioned by external factors

It oscillates between opposite poles:

good mood – bad mood

There is a cyclicity (throughout a day, multiple days, seasonal – a good mood in the summertime, bad mood in the autumn – CYCLOTHYMIA)

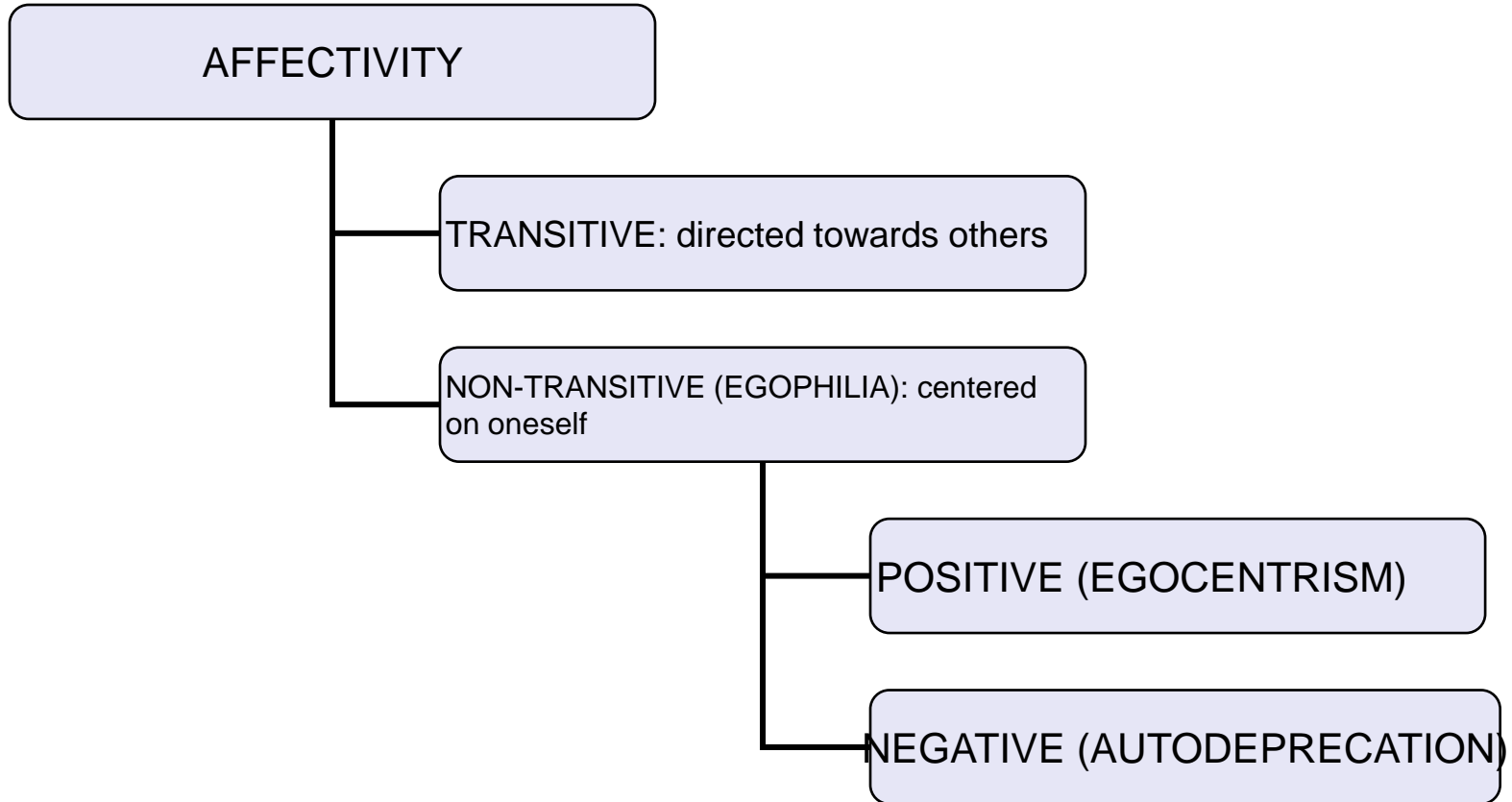
EXOTHYMIA = the affects (affective reactions)

It is conditioned by endothymia

Affective reactions are:

- Basic: pleasure – lack of pleasure
- Common: sadness, joy, fear, anger
- Existential: despair - ecstasy
- Moral: guilt, empathy
- Transitive: love-hate, esteem-contempt
- Intransitive: excessive self-love – self-deprecation, pride-shame

# AFFECTIVITY (THYMIA)



# AFFECTIVITY

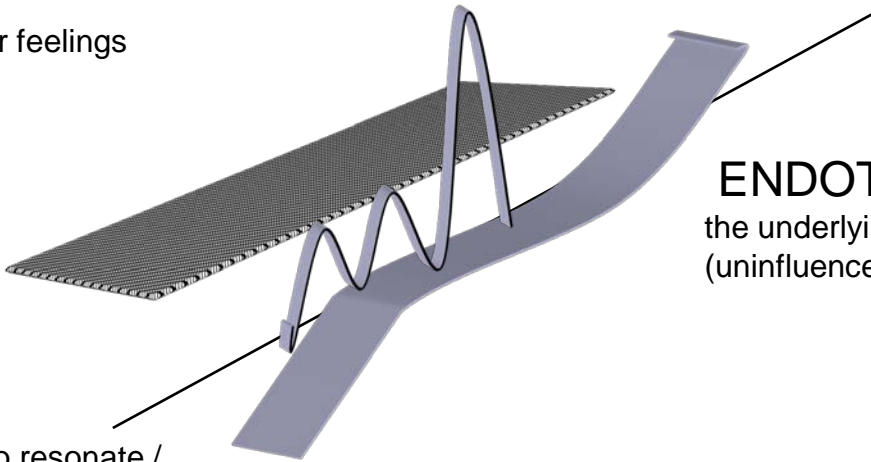
**EXOTHYMIA**  
affective reactions to stimuli

**ENDOTHYMIA**  
the underlying mood  
(uninfluenced by stimuli)

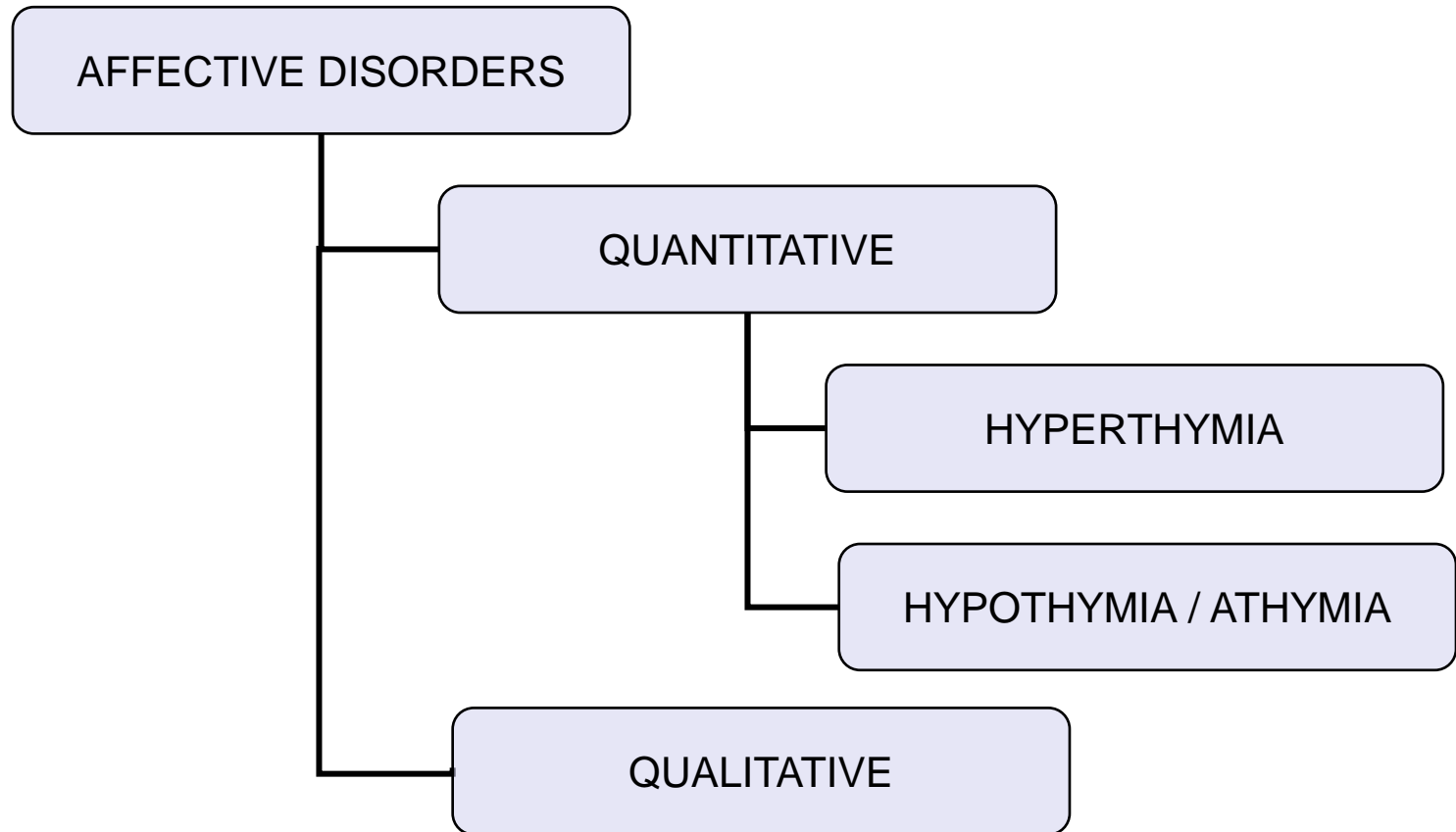
**EXPRESSIVITY** of inner feelings

**FILTER**

**SENSIBILITY:** the capacity to resonate /  
respond affectively



# AFFECTIVE DISORDERS: CLASSIFICATION



# HYPERTHYMIA

- **EMOTION**
  - Intense affective reaction
  - Sudden onset
  - Short duration
  - Determined by an external factor (exam, public speaking etc)
  - Accompanied by **VEGETATIVE REACTIONS**:  
flush, tremor, urinary urgency, diarrheal debacles
- **AFFECT**
  - Extremely intense affective reaction of **ANGER**
  - Triggered by a highly-significant person for the individual (the malice that comes from a friend)
  - It leaves deep affective scars



# HYPERTHYMIA

- **THE SENTIMENT**

- Gradual or acute onset
- Very intense, consumptive in the beginning (accompanied by insomnia, weight-loss)
- The intensity decreases gradually (e.g. the year of grieving)
- It can be controlled rationally
- It can be directed towards someone or it can have an abstract content (patriotism, science, various hobbies)

- **THE PASSION**

- Unlike the sentiment, it cannot be controlled rationally

PANIC ATTACK  
PATHOLOGICAL AFFECT  
AFFECTIVE INVERSION  
AFFECTIVE AMBIVALENCE

EMOTIONS  
AFFECTIVE COLDNESS

EXOTHYMIA  
Affective reactions to stimuli

EXPRESSIVITY  
of inner experiences

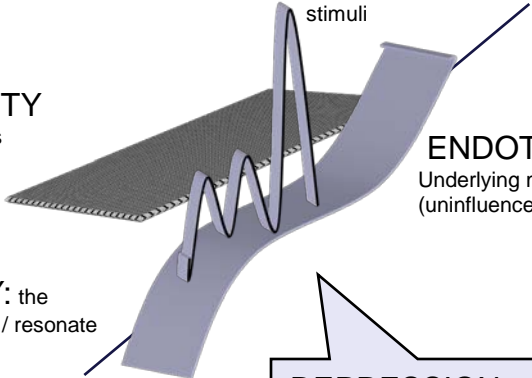
FILTER

ENDOTHYMIA  
Underlying mood  
(uninfluenced by stimuli)

SENSIBILITY: the  
capacity to respond / resonate  
affectively

LABILE AFFECT  
AFFECTIVE ANESTHESIA  
AFFECTIVE INDIFFERENCE

DEPRESSION  
DYSPHORIA  
MANIA  
CYCLOTHYMIA  
ANXIETY



# HYPERTHYMIA

- HYPEREMOTIVITY
  - hypersensitivity + affective hyperreactivity (the intensity of the affective reaction is excessive in regard to the intensity of the trigger stimulus)
  - It is seen in
    - histrionic personalities as a personality trait
    - manic state
- PATHOLOGICAL AFFECT:
  - A very intense, especially conflictual experience
  - The individual is not aware of what he is doing and does not calculate the consequences of his actions e.g. criminal acts (destruction, murder)

# HYPERTHYMIA

- Cyclothymia: abnormally longer cycles of alternating hypomanic and sub-depressive periods
- Dysphoria a low and irritable mood
- Irritability: susceptibility to explosive anger reaction that are disproportionate in relation with the intensity of the stimulus and appear on an apparently calm mood

# HYPERTHYMIA

- DEPRESSION

- The pathological equivalent of normal sadness, but qualitatively different from it (sadness is pathological by its intensity, duration, context of onset and reactivity to good news or support)
- A somber, unpleasant experience, perceived as a profound and intense, “moral” pain
- Everything loses its value: life, the person (self-deprecating feelings: incapacity, worthlessness, guilt)
- The individual
  - has pessimistic feelings about future (no, future plans, all hope is lost)
  - doesn't enjoy no more the present moment
  - is absorbed by painful events in the past that cause feelings of guilt

# HYPERTHYMIA

- MANIC STATE
  - The pathological equivalent of joy, but qualitatively different from it (pathologic because of its intensity, duration, context of onset and reactivity to bad news)
  - The individual
    - lives in perpetual celebration (with the tendency to sing and dance)
    - overvalues himself (feeling intelligent and beautiful)
    - makes multiple plans for the future without any connection to reality, having an overflowing optimism
  - The exaggerated happiness may become troublesome for others

# HYPERTHYMIA

- ANXIETY
  - Unjustified fear (fear without object)
  - The presentiment of imminent danger that, however, cannot be named + a state of tensed expectance (apprehension)
  - It appears in
    - Generalized anxiety disorder
    - Post traumatic stress disorder
- PANIC ATTACK
  - Intense and paroxysmic episode of fear with a certain theme: fear of dying, of losing control, of going crazy
  - The fear is associated with intense vegetative symptoms
  - It appears in
    - Panic disorder
    - Phobic disorder
    - Acute stress reaction (disorder)

# HYPERTHYMIA

- PHOBIA
  - disproportionate irrational fear of certain situations
  - It is a pathological fear of an object or situation (phobogenic object or situation)
  - it is pathologic because the fear is excessive (disproportional) to the actual danger posed by the object or the situation
  - It is recognized as irrational in relation to the object's or situation's degree of dangerousity) but it cannot be controlled by the subject
  - It appears in
    - phobic disorders
    - obsessive-compulsive disorder (obsessive phobias)



# HYPOTHYMIA, ATHYMIA

- **AFFECTIVE BLUNTING/ ATHYMHORMIA**
  - The incapacity to experience feelings
  - Accompanied by inertia, lack of will, inactivity
  - It gives the impression that the individual has also suffered a loss at the intellectual level
  - It is seen in the simple type of schizophrenia (with negative symptoms) – formerly dementia praecox
  - It is a hardly reversible defect

# HYPOTHYMIA, ATHYMIA

- **AFFECTIVE ANESTHESIA /ANHEDONIA**
  - The inability to experience pleasure from activities usually found enjoyable
  - It is seen in high-intensity depression
  - Affective anesthesia + self-deprecation may be a trigger for the decision commit suicide in some depressive patients

# QUALITATIVE CHANGES OF AFFECTIVITY

- LABILE AFFECT
  - The rapid passing from one emotional state to the opposite state (sadness - joy)
  - It intensifies with age
  - It appears in
    - histrionic personalities as a personality trait
    - neurotic pathology
    - manic state (should be differentiated from the depressive switch in bipolar disorder)

# QUALITATIVE CHANGES OF AFFECTIVITY

- **AFFECTIVE AMBIVALENCE**

- The existence at the same time, in the same person of two contrary sentiments/affective reactions
- It is seen in Schizophrenia

- **AFFECTIVE INVERSION**

- The inversion of the feeling of love into hate and contempt for the loved ones (parents, children, life partner)
- It is seen in Schizophrenia

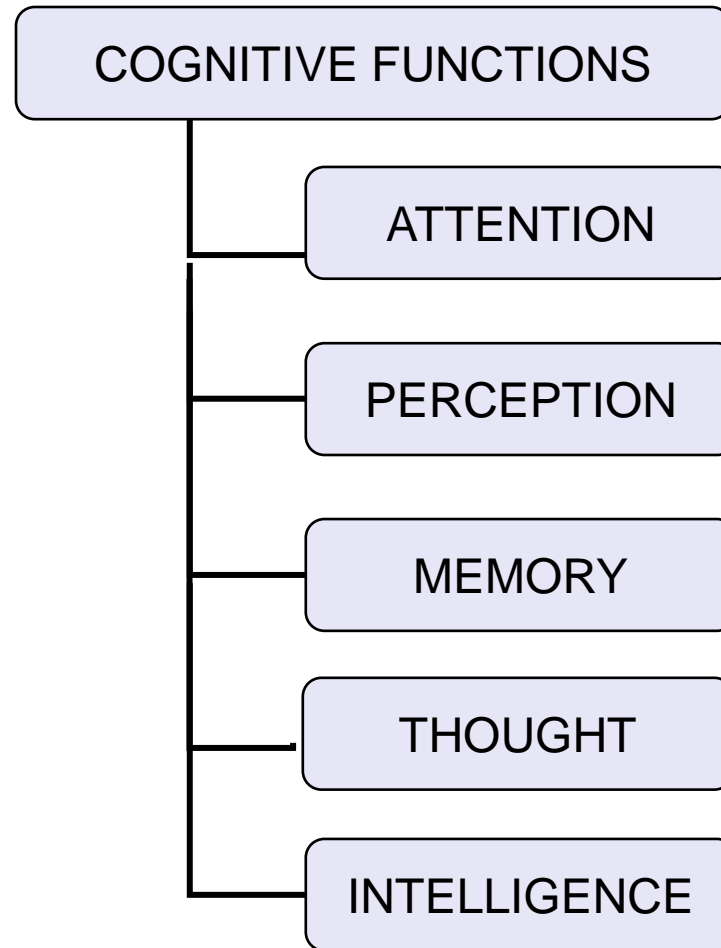
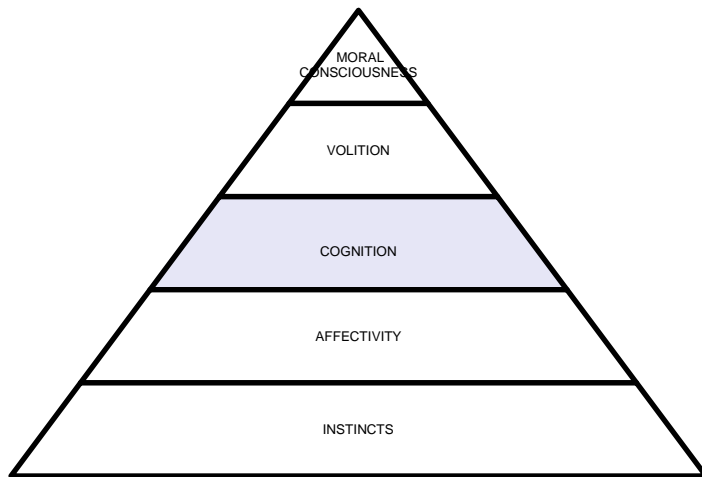
# QUALITATIVE CHANGES OF AFFECTIVITY

- AFFECTIVE INCONGRUENCE  
(DISCORDANCE)
  - An inadequate (paradoxical) affective reaction to a situation (the individual laughs when hearing bad news)
  - It is seen in schizophrenia

## QUALITATIVE CHANGES OF AFFECTIVITY

- **AFFECTIVE COLDNESS:** the strict control of the manifestation of affective reactions
  - seen in anankastic and schizoid personalities
- **AFFECTIVE INDIFFERENCE:** the incapacity to show compassion for a person who is suffering
  - seen in antisocial/dissocial personalities

# THE COGNITIVE LEVEL



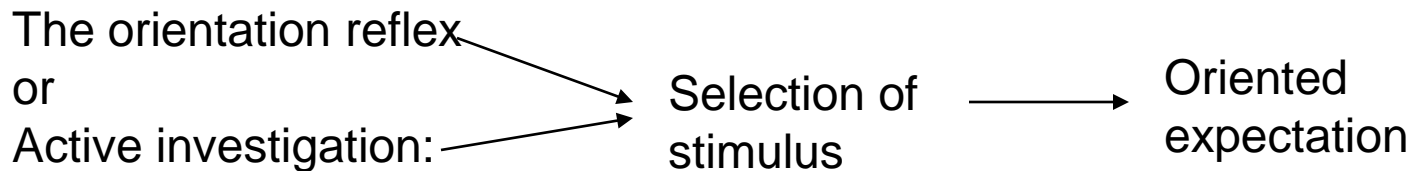
# COGNITION (KNOWLEDGE)

- It does not necessarily reflect the objective reality
- It only **STRUCTURES, ORGANIZES** the human experience
- If it is **PERTINENT** (resisting the test of experience and permitting prediction), it represents a useful **INSTRUMENT** in adaptation to the environment



# ATTENTION (PROSEXIA)

- A function that orientates (directs) and focuses (concentrates) the conscious psyche towards a specific sector of reality (intentionality)
- It is influenced by affectivity



# ATTRIBUTES OF ATTENTION

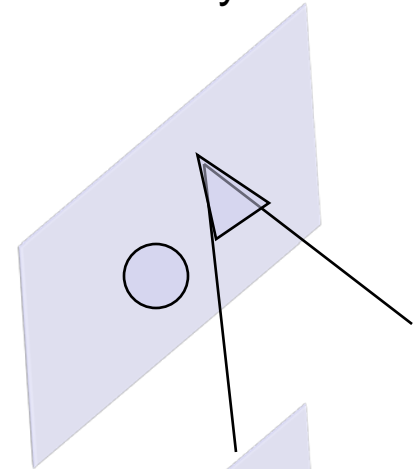
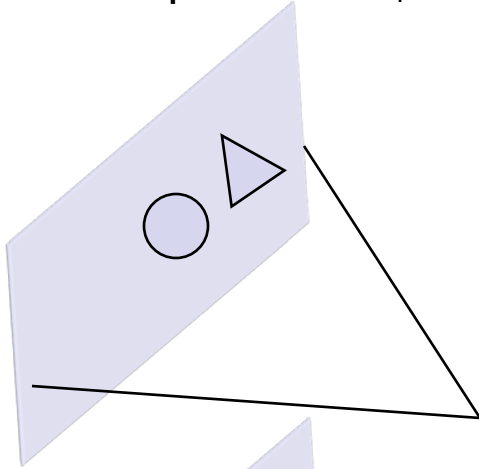
- **CONCENTRATION:** attention is focused on a certain stimulus (object) increasing the efficacy of perception
  - It can be accomplished without effort (due to curiosity, interest)
  - It may require an effort of will
- **DISPERSION:** the area of superficial attention around the focus point, where objects are perceived less clearly
- **PERSISTENCY:** the ability of maintaining attention at an optimum focus level
- **MOBILITY:** the ability of commuting attention on a different object when necessity requires it

# ATTRIBUTES OF ATTENTION

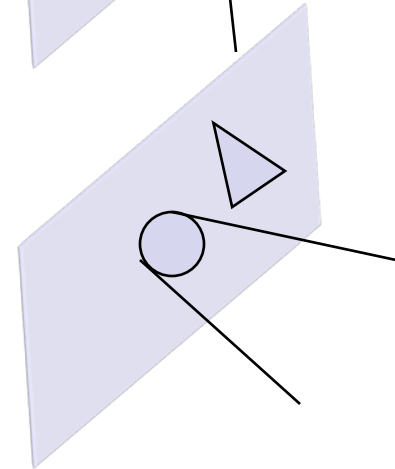
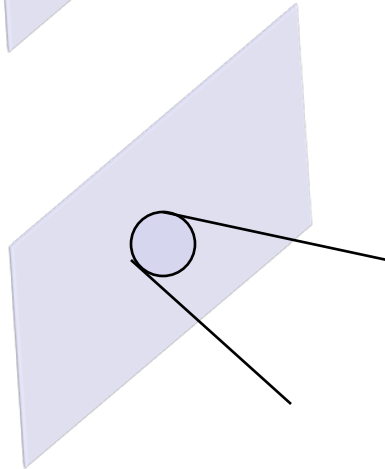
In direct proportion

Dispersion

Mobility



In inverse proportion



Concentration (focusing)

Persistency

In direct proportion

# QUANTITATIVE CHANGES IN ATTENTION

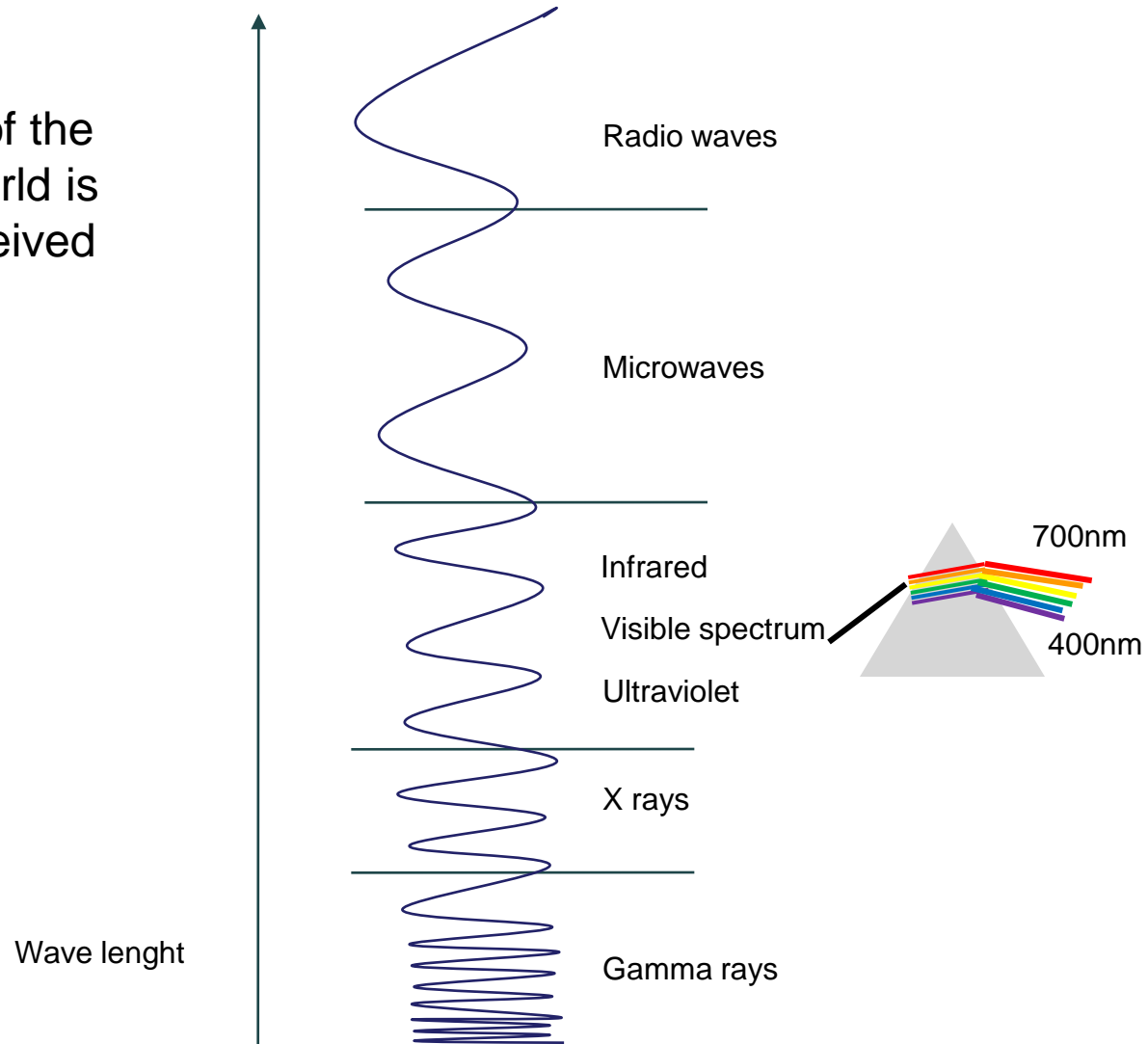
- **HYPOPROSEXIA:**
  - Of concentration and persistence (depression, anxiety)
  - Of dispersion and mobility (depression)
- **HYPERPROSEXIA:**
  - Of concentration and persistence (epileptoid personality, depression – for patient's own suffering)
  - Of dispersion and mobility (mania, anxiety)

# PERCEPTION

- **IMMANUEL KANT:** there is a distinction between perception (PHENOMENON, that which appears in the mind) and the world that gives birth to perception (NOUMENON)
- **JOHN LOCKE:** there is no distinction between perception and reality, with the mind reflecting passively the information that comes from the sensory organs

# PERCEPTION

Only a little part of the objective, real world is consciously perceived

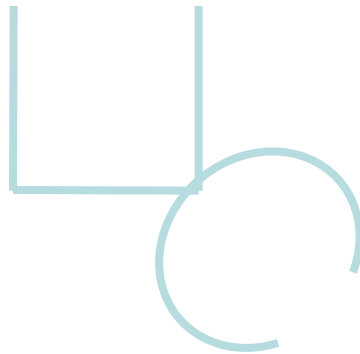


# PERCEPTION

- Is not a passive reception of stimuli, but a construct, a product of the psyche, based on experience (memory) to which it permanently make appeal

# THE LAWS OF PERCEPTUAL ORGANIZATION (visual perception) – as described by the psychology of the whole (Gestalt psychology)

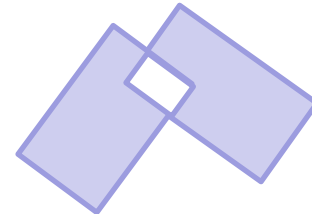
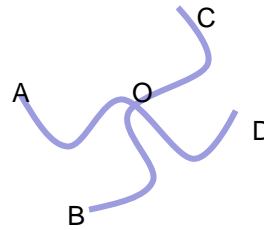
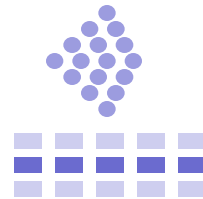
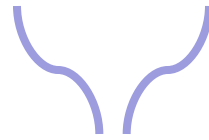
- **Clarity:** the best shape (gestalt) is the simple shape





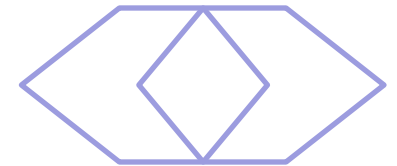
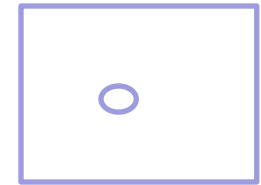
# THE LAWS OF ORGANIZATION (visual perception)

- Symmetry
- Proximity
- Similarity
- Continuity
- Closure

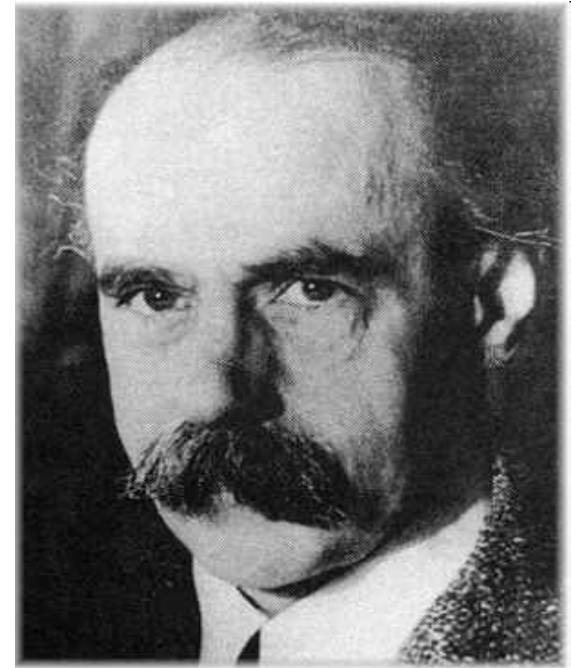
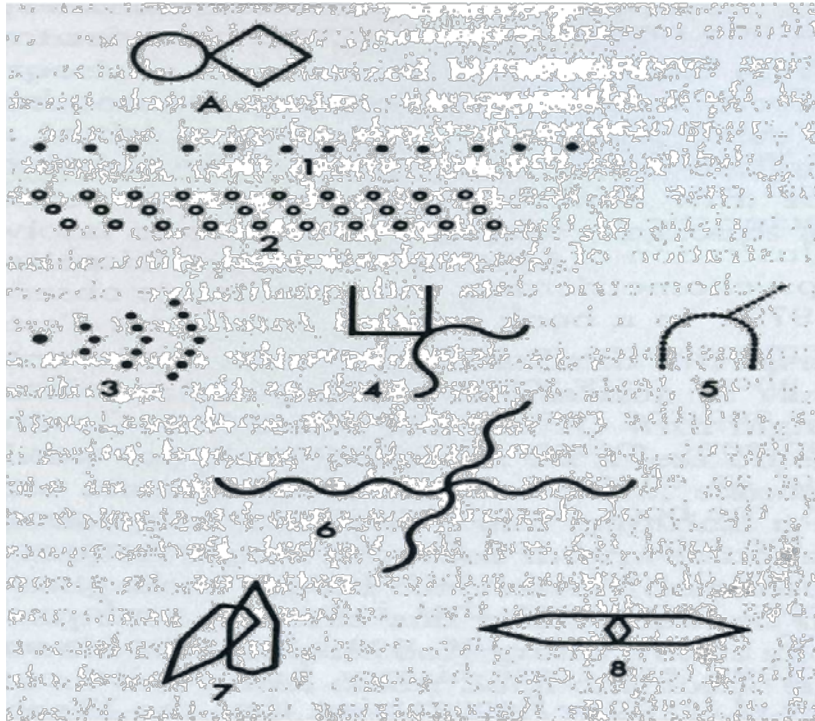


# THE SHAPE/BACKGROUND PHENOMENON

- Convexity (the shape is convex figure)
- Area (the small figure represents the shape, the big figure represents the background)
- Orientation (the vertical figure represents the shape and the horizontal figure represent the background)



# THE BENDER-GESTALT TEST USES THE FIGURES IMAGINED BY MAX WERTHEIMER



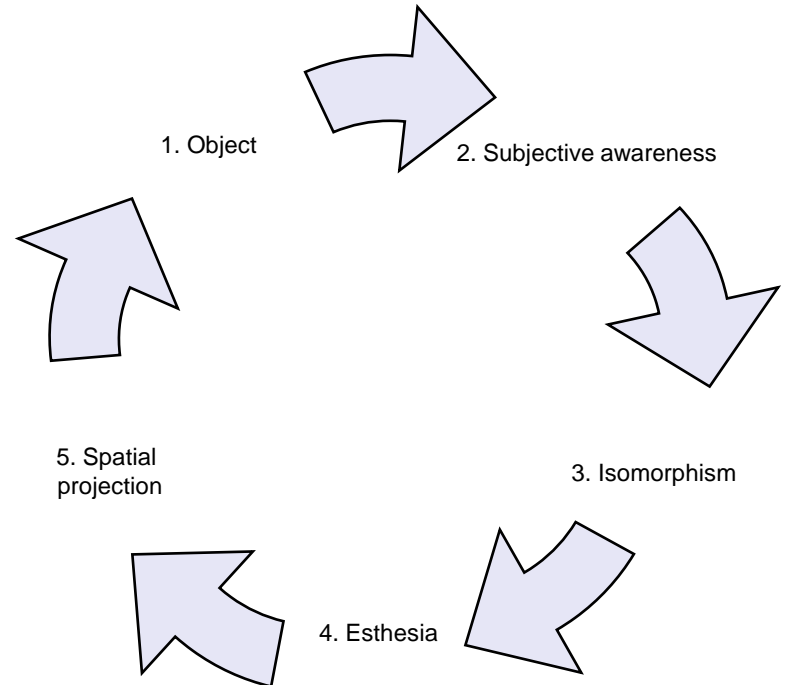
M. Wertheimer (1880-1943)

# PERCEPTION

- Does not reflect the entire reality
- It is an individual construct
- It is based on experience (making appeal to memory deposits)
- It is interpreted subjectively (giving a sense to what it is perceived)
- Perception is influenced by affectivity

# PERCEPTION

- Definition: The subjective reflection of the objective reality
- The attributes of normal perception:
  - The existence of the object in reality
  - Validation (the subjective awareness of the existence of the object, critique)
  - Isomorphic mental image (identical) of the object (it is important for the significance attributed to perception)
  - Esthesia (the intensity of perception): the mental image is less poignant
  - Spatial projection (outside the body)



PERCEPTION DISORDERS

QUANTITATIVE

HYPOESTHESIA

HYPERESTHESIA

QUALITATIVE

ILLUSION

HALLUCINATION

PSEUDOHALLUCINATION

HALLUCINOSIS

# QUANTITATIVE DISORDERS OF PERCEPTION

- **HYPERESTHESIA:**
  - Meningeal Syndrome
  - Migraine
  - Cephalgia after the intake of a quantity of alcohol that is not tolerated by the subject
- **HYPOESTHESIA:**
  - Sensory organ deficits  
(e.g. hypoacusis, presbyopia)
  - Fatigue
  - Obnubilation, confusional syndrome
  - Normality: anger, overinvolvement in an activity

# QUALITATIVE DISORDERS OF PERCEPTION

- **ILLUSION:** a perception with object, but without isomorphism (a false significance is attributed to the perceived object)
- **HALLUCINATION:** a clear, uncriticized perception without object, projected outside the individual
- **PSEUDOHALLUCINATION:** a clear uncriticized perception without object, projected inside the individual
- **HALLUCINOSIS:** a clear perception without object criticized by the individual (the individual does not lose contact with reality). In some definitions hallucinosis appears under the term of pseudohallucination



# ILLUSION

- Perception with object, but without isomorphism (a false significance is attributed to the perceived object)
  - The object exists in reality
  - There is a subjective consciousness
  - There is a spatial projection
  - There is no isomorphism

# ILLUSION

- A normal phenomenon in:
  - optical illusions
  - fear: identifying an dangerous animal in a shadow
  - hypnagogic and hypnopompic states
- A pathological phenomenon:
  - Body image illusions, dysmorphophobia, depersonalization (schizophrenia)
  - Illusion of substitutes (schizophrenia)
  - Illusion of body weight (depression: heavy body)

# THE LEGEND OF SUBSTITUTES I



ZEUS

HERMES

# THE LEGEND OF SUBSTITUTES II



In order to deceive Amphitrion's chaste wife Alcmena, Zeus helped by Hermes takes to look of Amphitrion

# THE ILLUSION OF SUBSTITUTES

- the patient with schizophrenia is convinced that a loved one (a parent) has been substituted by an enemy so he could be watched, checked, spied

# THE FREGOLI ILLUSION



FREGOLI ILLUSION: the patient with schizophrenia is convinced that the various persons he meets are, in fact, the one and the same hostile, disguised person

# HALLUCINATION

- A clear perception without object, projected outside the individual and uncriticized (the individual is convinced that the perception is real)
- Normal: only in the hypnagogic and hypnopompic states and lasting for a few seconds
  - Hypnagogic hallucination: upon falling asleep
  - Hypnopompic hallucinations: upon waking up

# CLASSIFICATION OF HALLUCINATIONS:

- VISUAL
- AUDITORY
- TACTILE
- OLPHACTORY (associated with delusions of poisoning)
- GUSTATORY (associated with delusions of poisoning)



# VISUAL HALLUCINATIONS

- Small animals that crawl on or under the skin and generate a defence behavior (micropsic visual hallucinations associated with tactile hallucinations):
  - delirium tremens
- Dream-like scenes (oneiric hallucinations):
  - delirium tremens (often with a professional character) and other delirium states
  - drug intoxication: cocaine, cannabis
- Images with a mystical content: Angels, Jesus Christ, Archangel Michael etc.
  - Paraphrenia
  - Schizophrenia (rarely)

# AUDITORY HALLUCINATIONS

- The most frequent in pathology
- Elementary: noises, cracks, bells, horns
- Complex: voices
  - Calling: the person is called by his/her name
  - Commenting: the voices are ironically commenting on the patient's intended actions
    - Schizophrenia
  - Injurious: the voices are insulting the patient
    - Schizophrenia
  - Imperative: the voices command the person to execute negative acts: to kill, to commit suicide (this type of hallucinations are the most dangerous)
    - Schizophrenia
    - Paraphrenia

# PSEUDOHALLUCINATION

- Clear perception without object, projected inside the individual and uncriticized
  - The object is not perceived by anybody else
  - The subjective consciousness is very intense
  - There is no spatial projection
    - The subject sees hallucinations in his/her head
    - The subject hears voices in his/her head or various organs
    - The subject feels animals inside the body
- Seen in Schizophrenia, and is associated with the transparency-influence syndrome

# HALLUCINOSIS

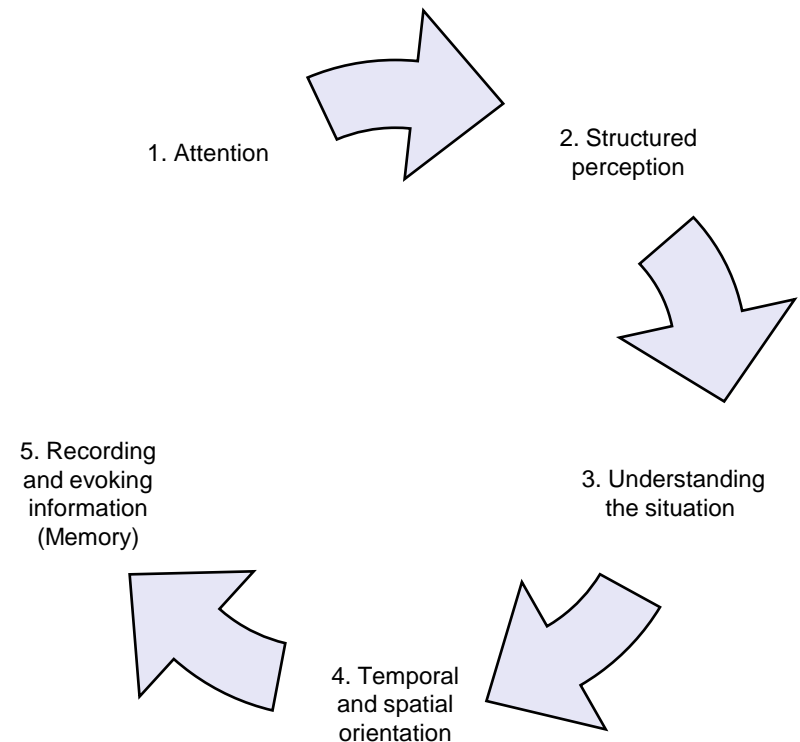
- Clear and criticized perception without object, clear (the individual does not lose contact with reality)
  - The object is not perceived by anybody else
  - Ambivalence between what the patient perceives and criticizes
  - Esthesia can be weak
  - There is spatial projection
- Appears in:
  - Elderly with cerebral atherosclerosis
  - Chronic alcoholism

# MEMORY

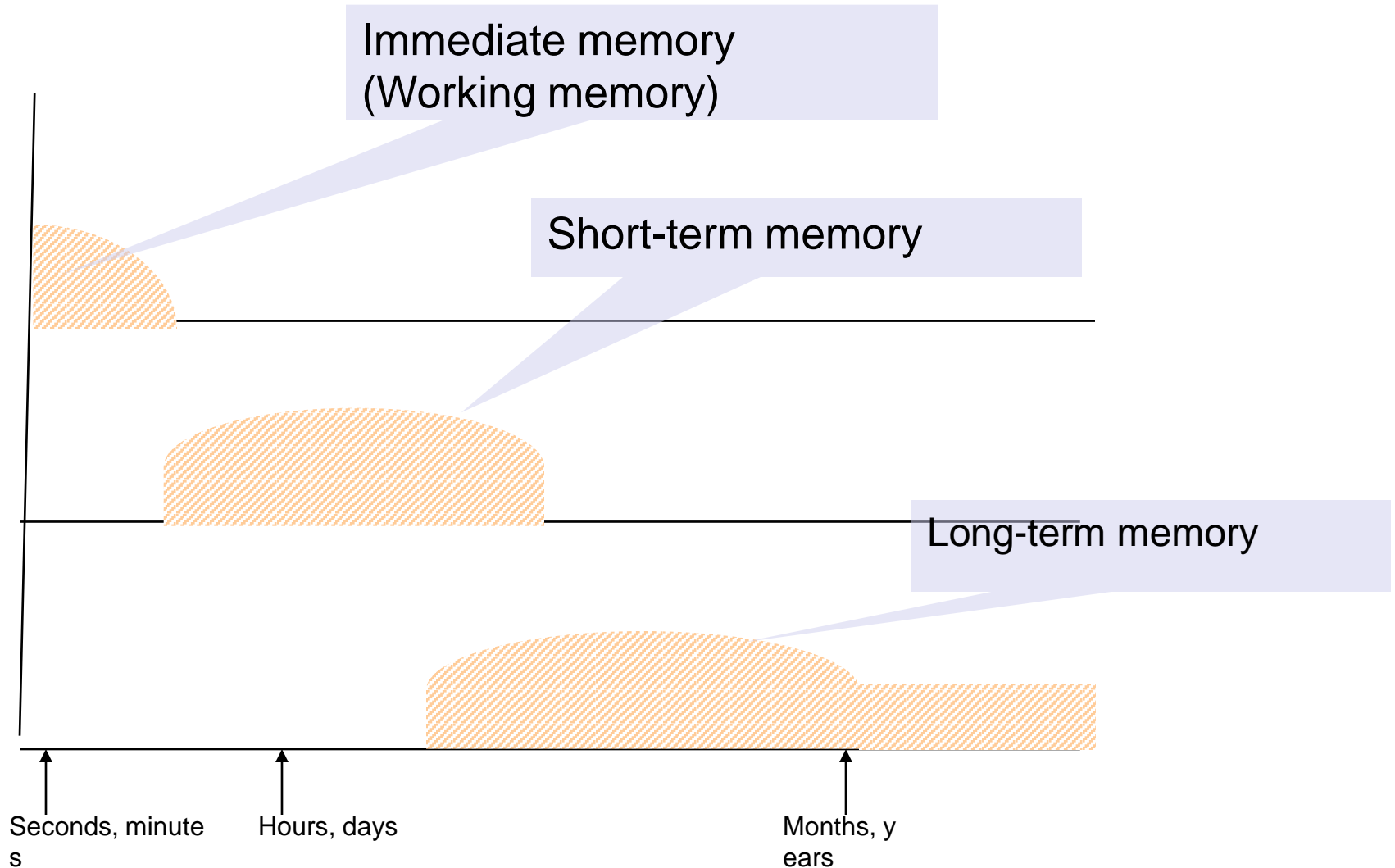
The mental function needed in:

- registration of information as long as necessary for processing it: IMMEDIATE MEMORY or WORKING MEMORY
- recording and storing information for a determined period of time:
  - short: SHORT TERM MEMORY
  - long: LONG TERM MEMORY
- evoking information from memory deposits)

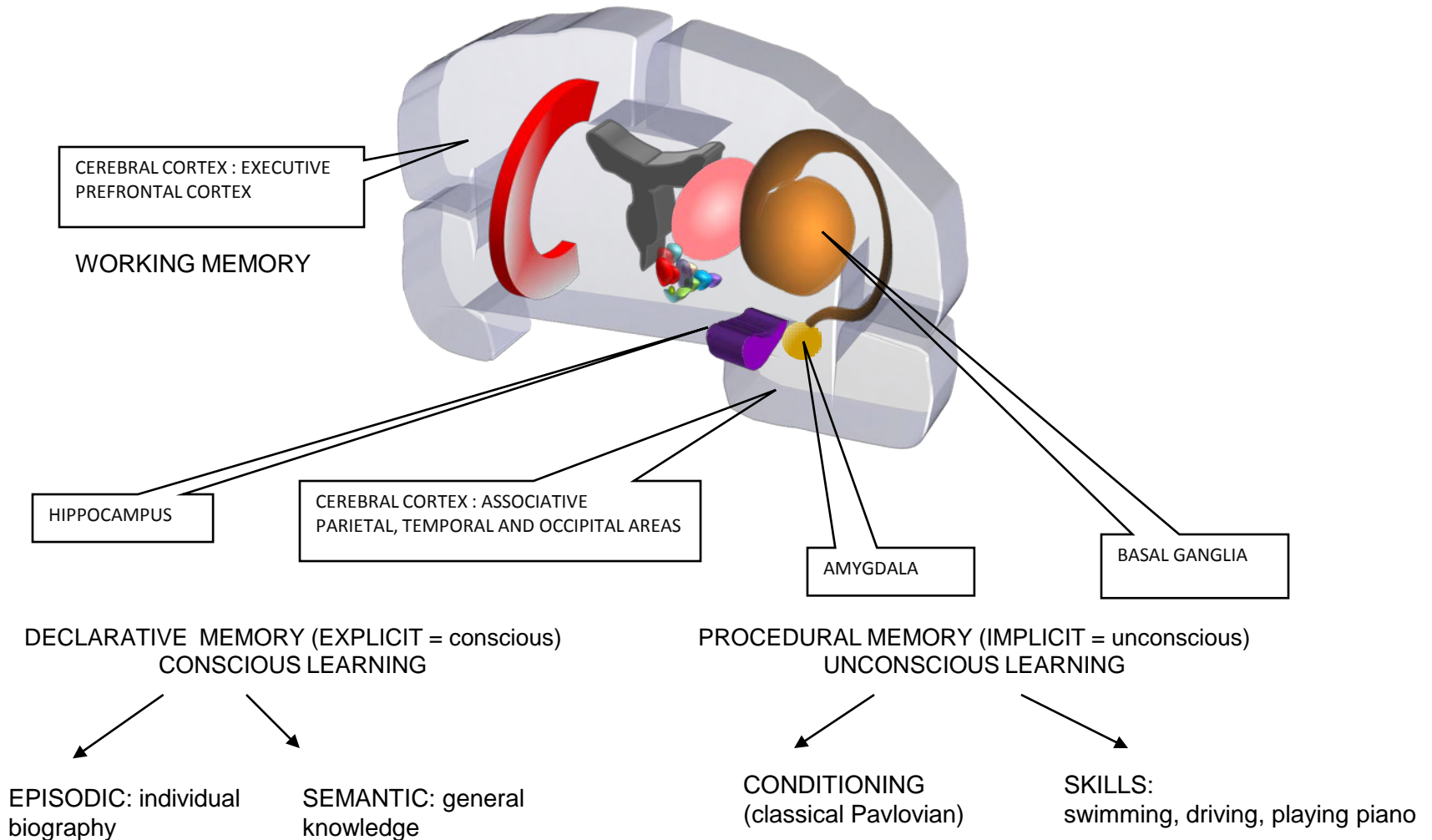
The term working memory is often used for short-term memory on experimental but not clinical grounds! (e.g. in confusional state both working and short-term memory are impaired, while in Korsakov syndrome working memory is normal, but short-term memory is absent)



# TYPES OF MEMORY



# STRUCTURES INVOLVED IN MEMORY

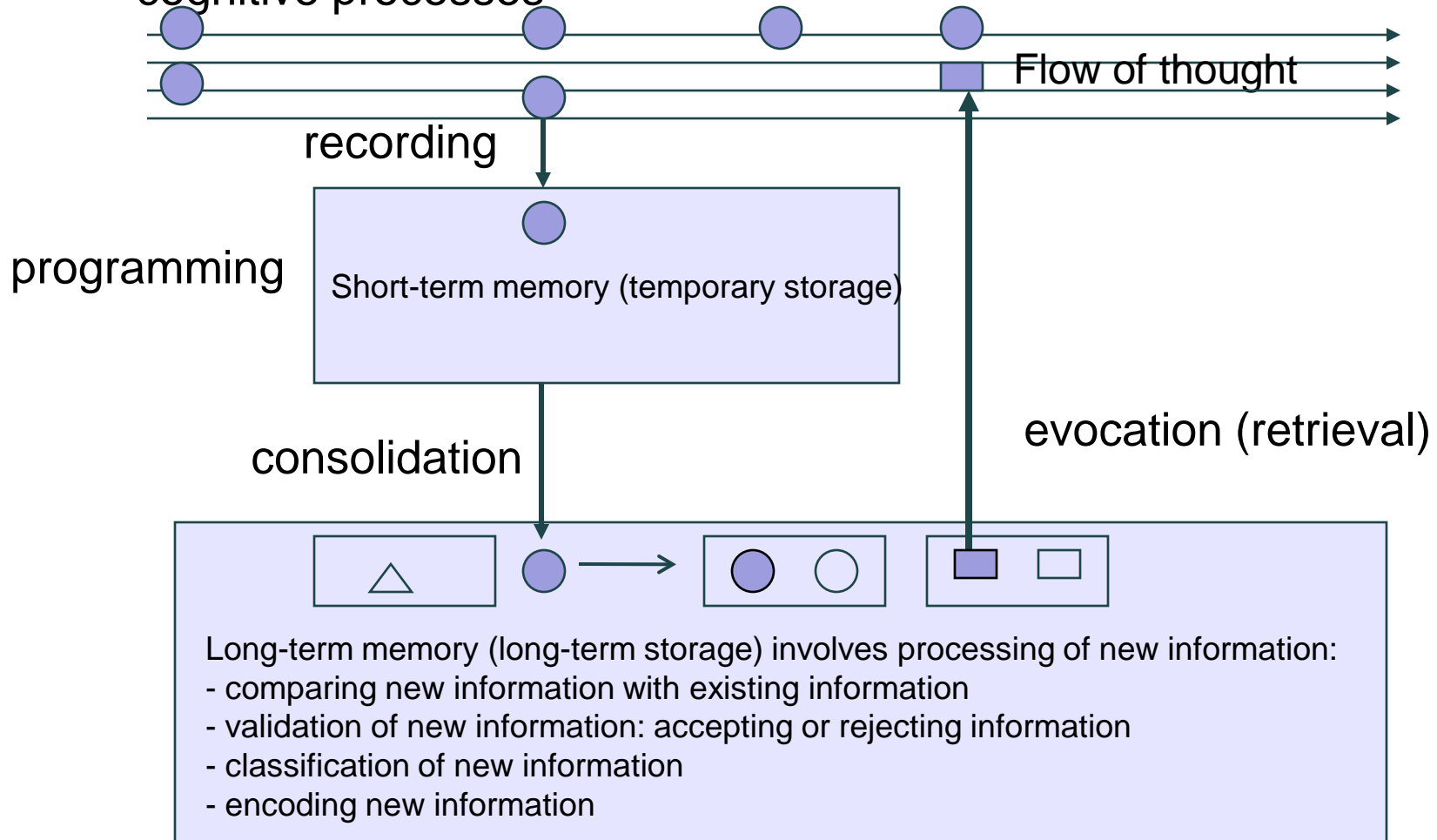


# STRUCTURES INVOLVED IN MEMORY

- HIPPOCAMPUS plays a role in
  - recording new informations: helping consolidation through recirculation in the reverberant circuit of Papez
  - evoking information from memory deposits (acts like a searching machine)
- PREFRONTAL CORTEX plays a role in
  - working memory helping to process concomitant informations
  - organizing new information to be stored on a long-term basis
- ASSOCIATION CORTEX IN THE PARIETAL, TEMPORAL, AND OCCIPITAL LOBES play roles in
  - long-term or short-term storage of information (memory deposits): declarative semantic and episodic memory
- BASAL GANGLIA play a role in
  - long-term implicit memory: acquired abilities (playing piano, driving, swimming, etc)
- AMYGDALA plays a role in
  - Long-term implicit memory: learning through conditioning (e.g. associating previously neutral stimuli with an emotion like fear and consequently transforming them in conditioned stimuli that generate a biological response)



Working Memory temporarily maintains, after the disappearance of the stimulus, the information in the current state of consciousness, allowing the simultaneous execution of multiple cognitive processes



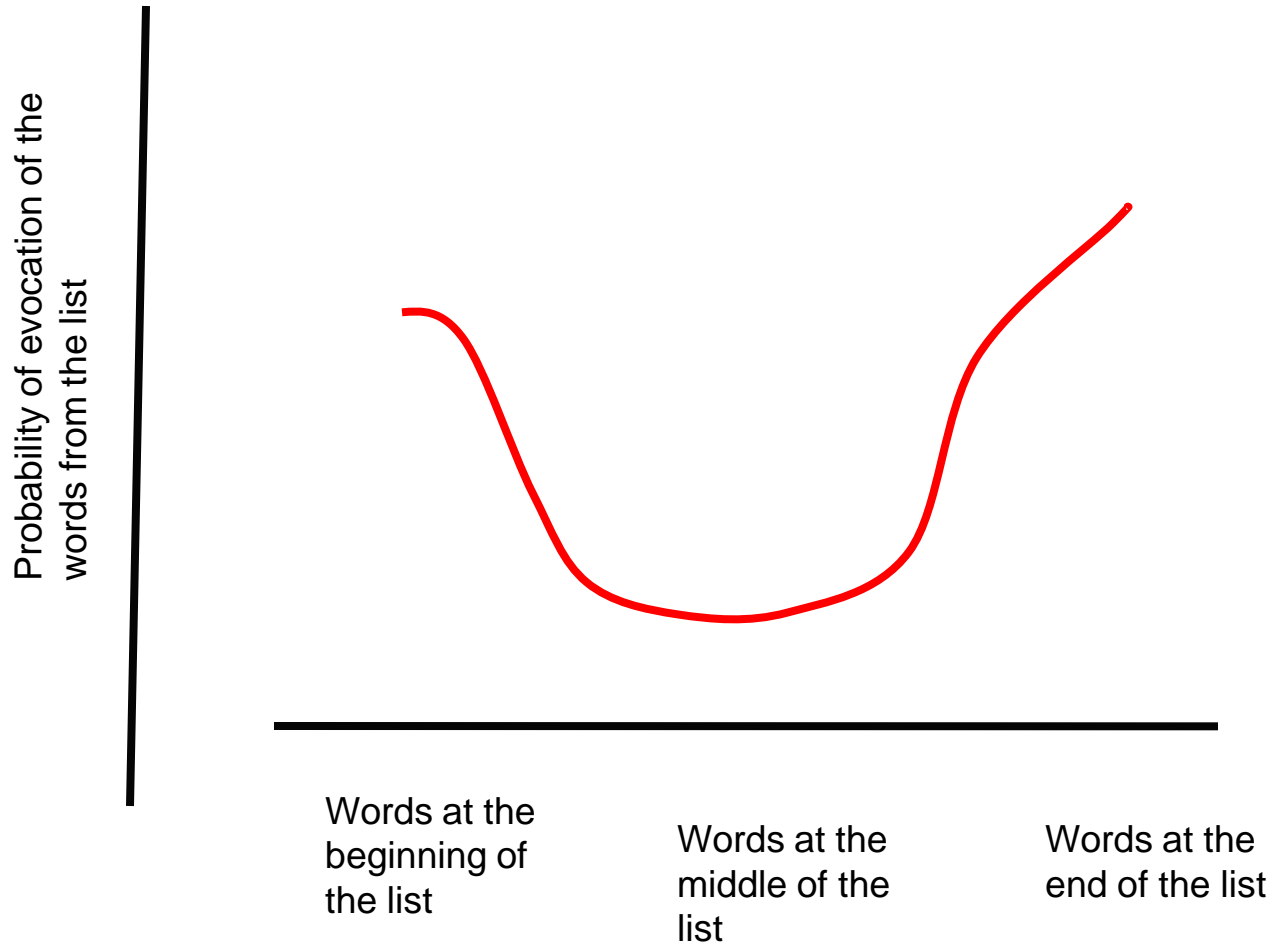
# MEMORY

- In memory deposits the knowledge is organized into cognitive schemata. They generate rules through which the individual makes interpretations (gives sense) and expectations about people, situations and events.
- Long-term memory involves processing of new information:
  - comparing new information with existing information in the cognitive schemas. Only what is new can be learned.
  - validation: accepting new information as true and important and consequently assimilating it to preexisting schemas, or rejecting new information as false or not important and discarding it. If the new information is contradiction with preexisting schemas, but is validated as true and important the process of accommodation takes place, changing the preexisting schemas to harmonize to it to the information
  - classification and encoding of new information through assimilation

# MEMORY ATTRIBUTES

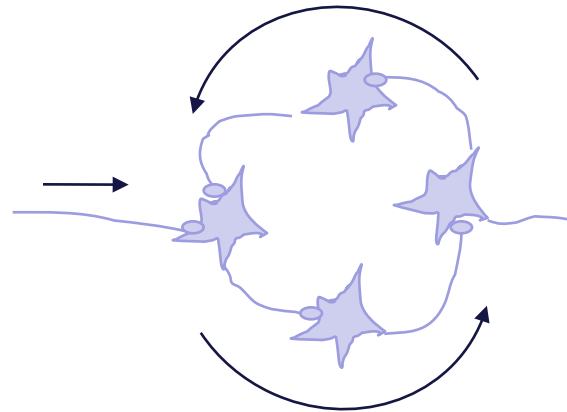
- Programming: an unconsciously or consciously storage of Information for a short or long-term
- The storage process may be mechanical or logical. Long-term memory requires logical organization of information
- Characteristics of normal evocation:
  - Prompt
  - Complete
  - Correct

# NORMAL FORGET

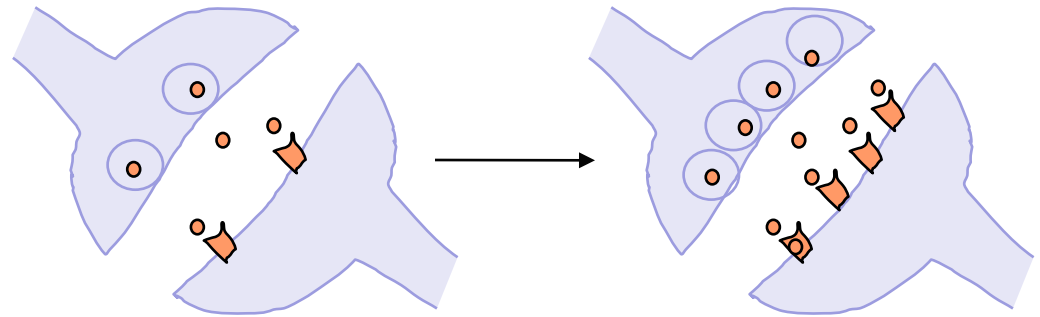


# LONG-TERM MEMORY

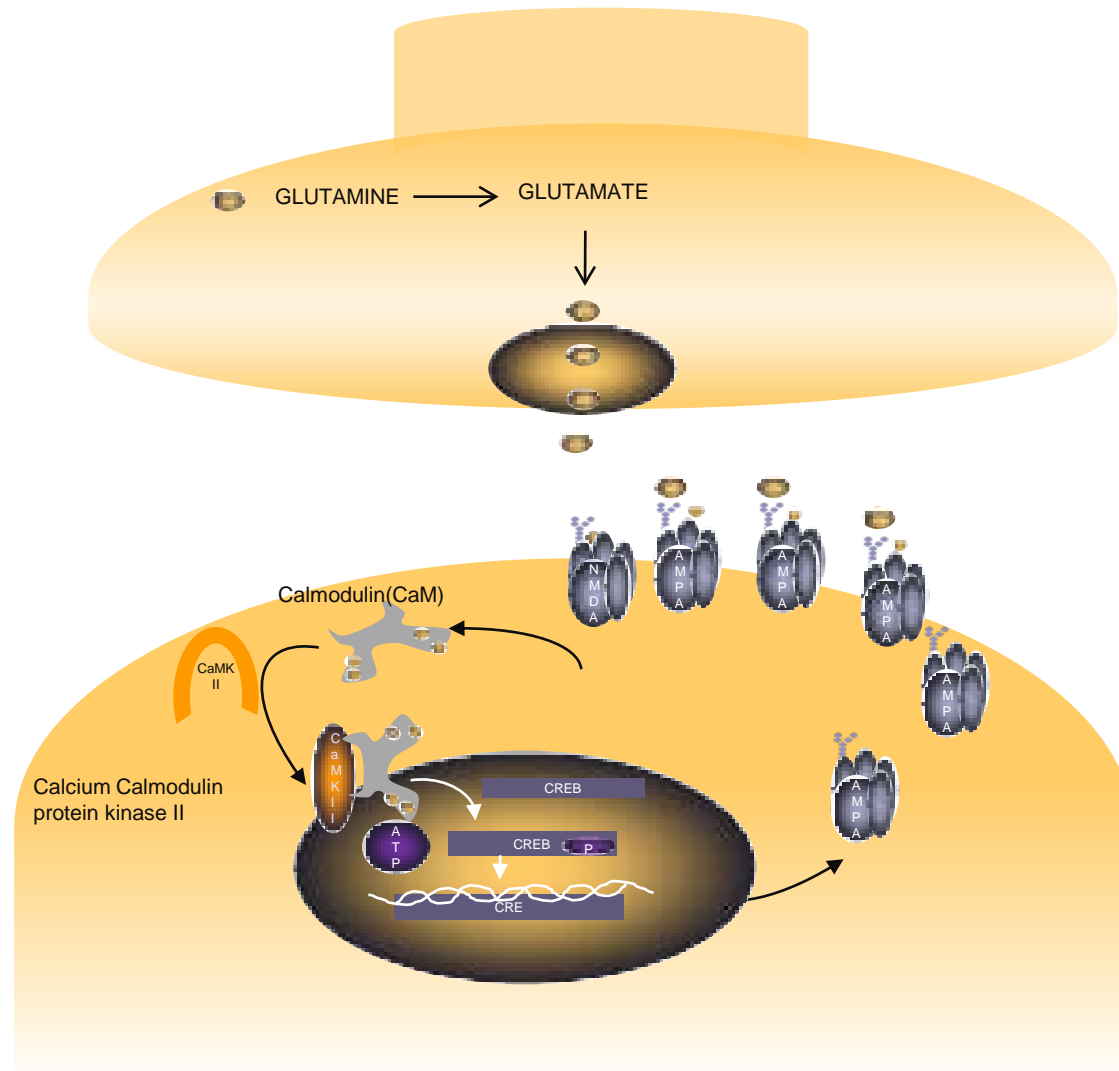
In order to consolidate the new acquisitions, informations must be recirculated through reverberant circuits (Hebb's reverberant circuits).



Consolidation of information is based on strengthening a synapse through increasing the number of postsynaptic receptors. These structural changes at the synaptic level are known as LONG TERM POTENTIATION



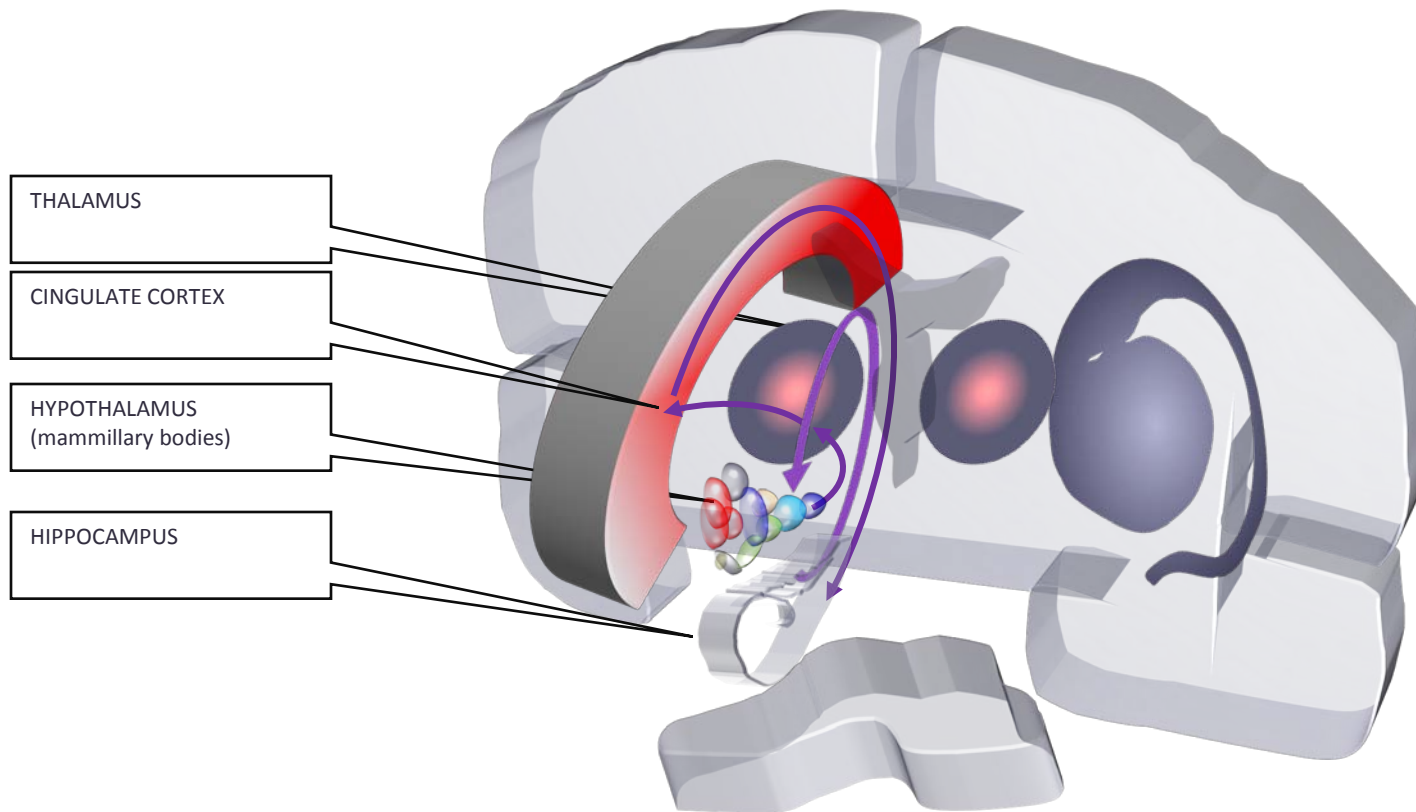
# LONG-TERM MEMORY (LONG-TERM POTENTIATION)



L. Del

# THE PAPEZ REVERBERATING CIRCUIT

The storage process requires recirculation of new informations into the Papez circuit:  
hippocampus – mammillary bodies – thalamus – cingulate cortex - hippocampus

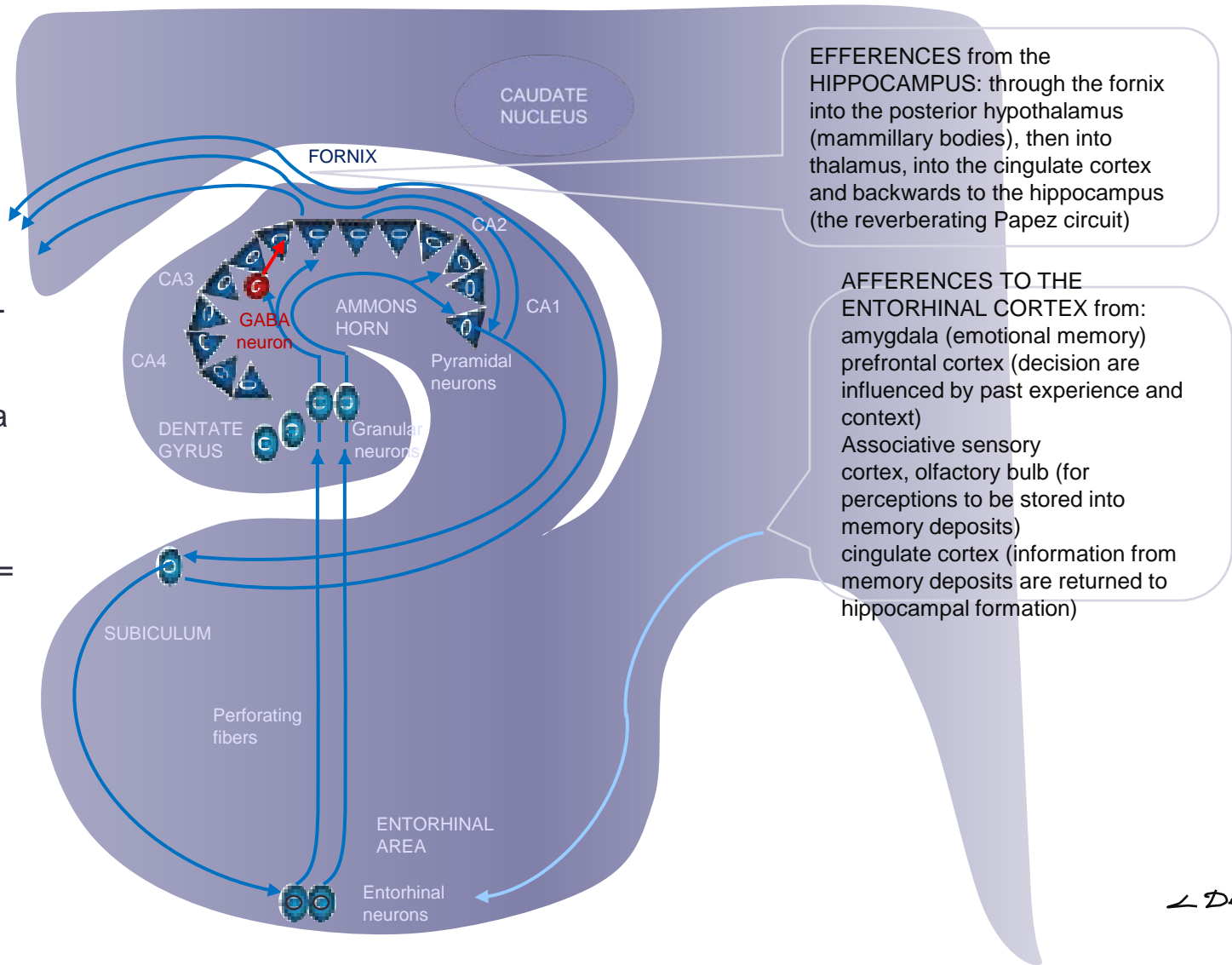


L. Del

# HIPPOCAMPAL FORMATION

HIPPOCAMPAL FORMATION includes:

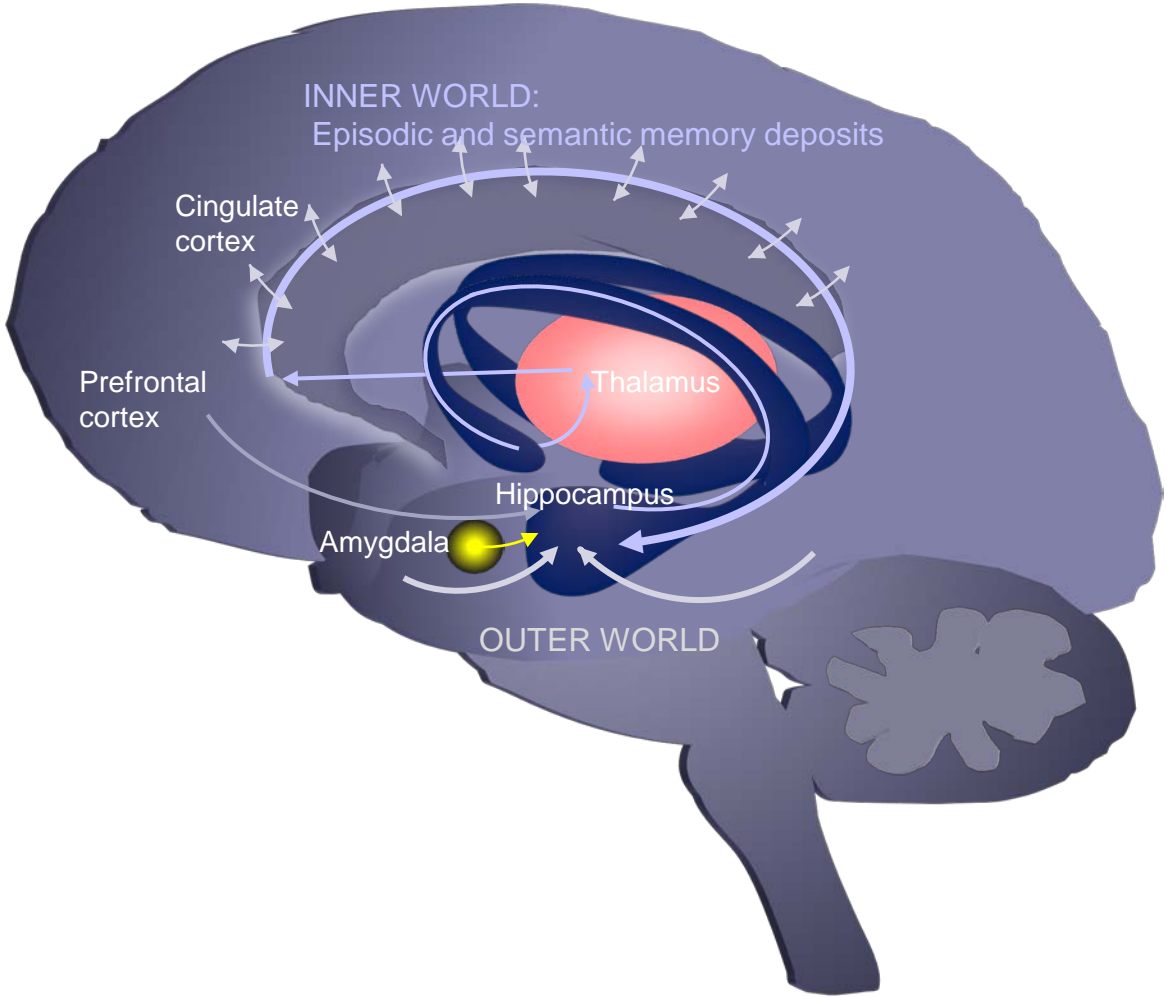
- entorhinal area
- subicullum
- dentate gyrus
- hippocampus (Cornu Amonis = Ammon's horn)



*L. Del*



# HIPPOCAMPUS: THE STORAGE AND RETRIEVING OF INFORMATION



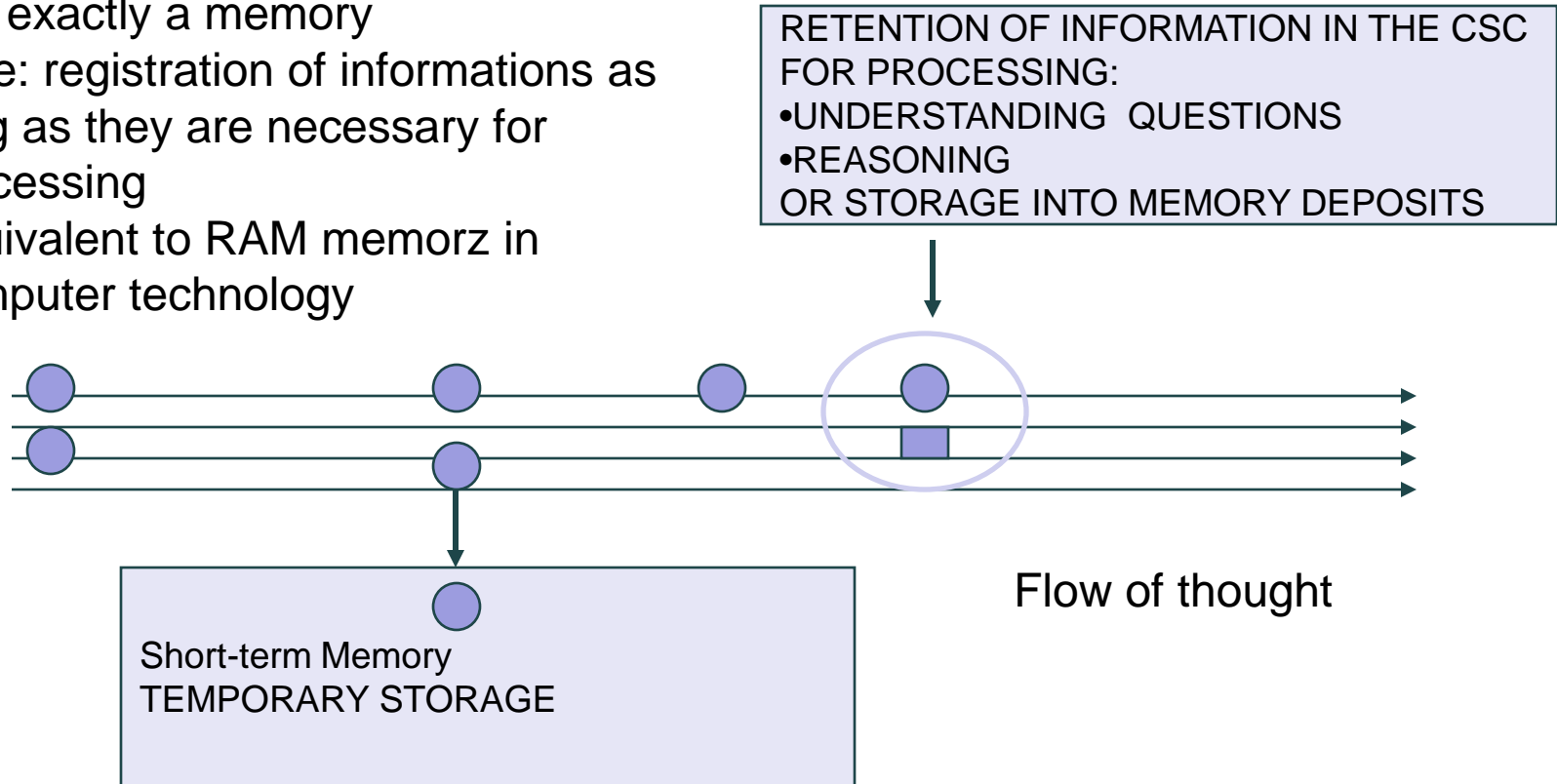
L. Del

# WORKING (IMMEDIATE) MEMORY

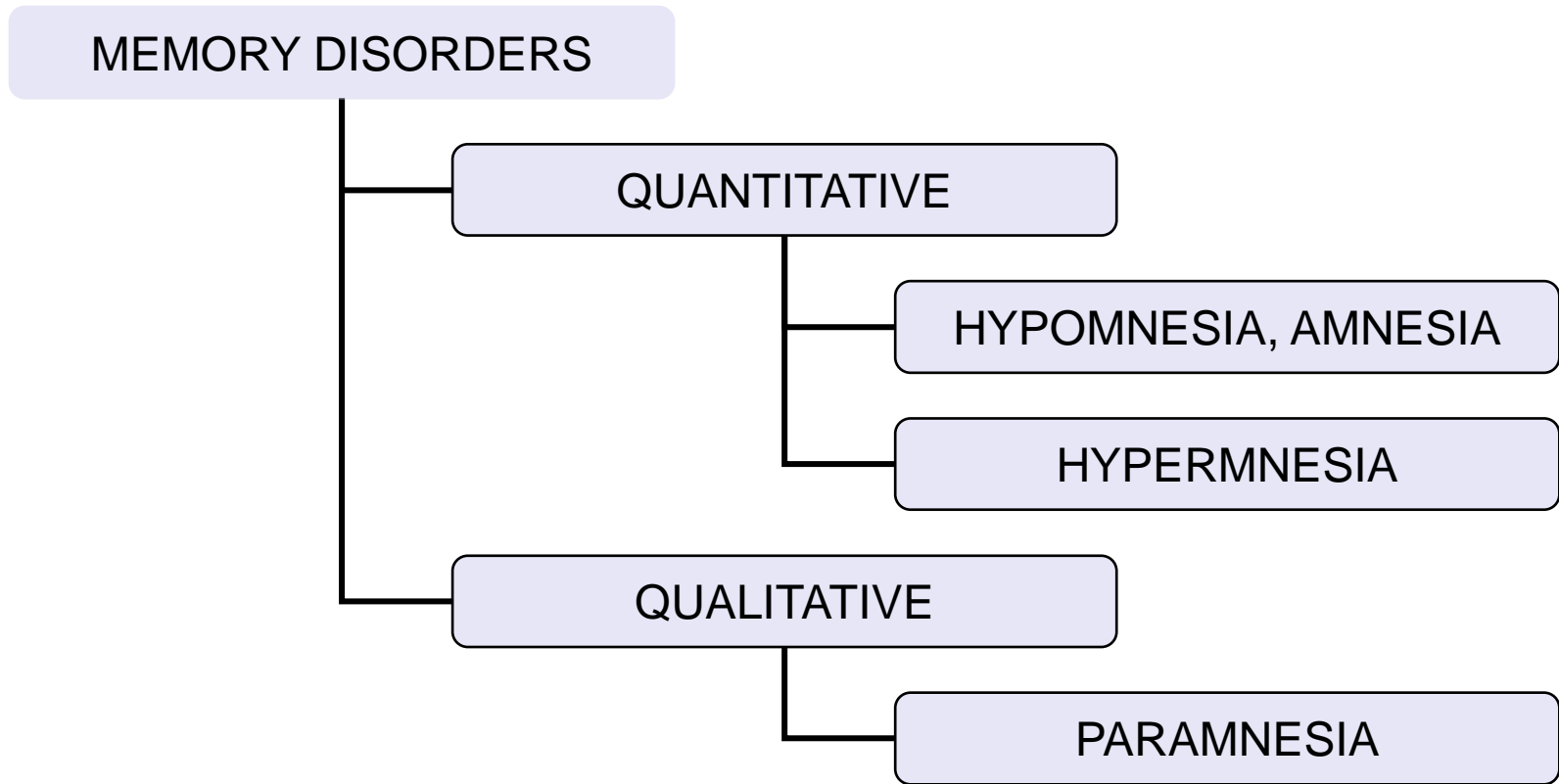
Not exactly a memory

Role: registration of informations as long as they are necessary for processing

Equivalent to RAM memorz in computer technology

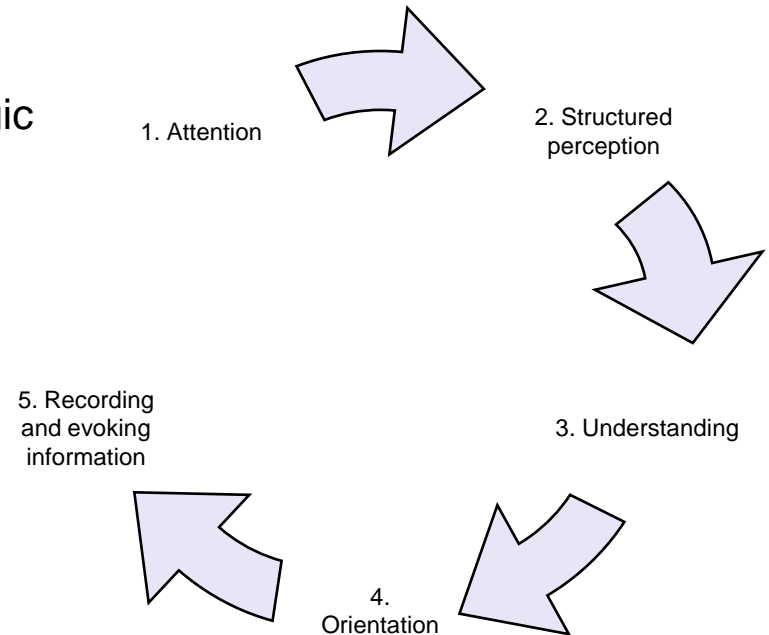


# MEMORY DISORDERS

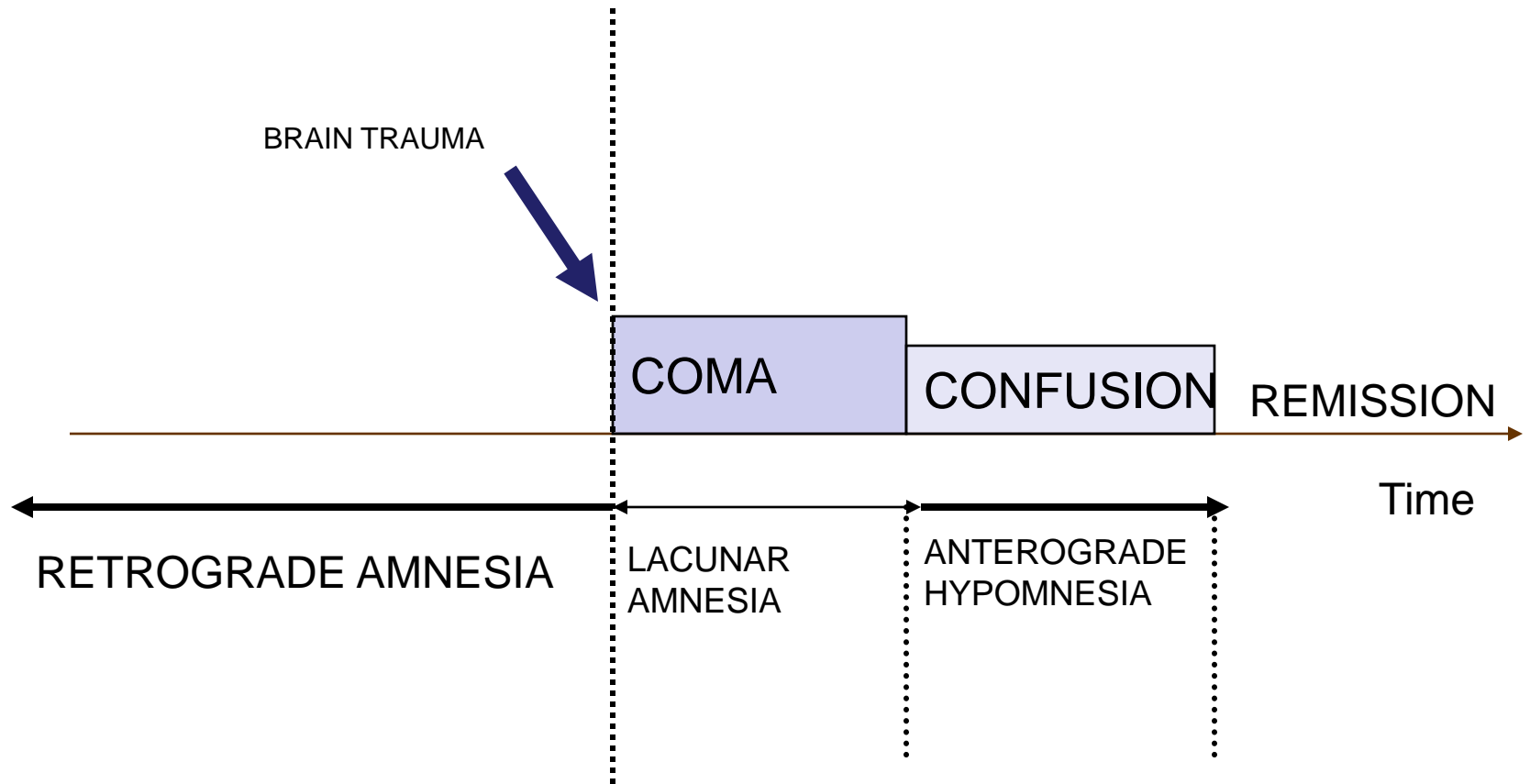


# MEMORY DISORDERS: HYPOMNESIAS

- HYPOMNESIAS:
  - information recording affected:
    - Normal: if the learning material has no logic
    - Obnubilation (concentration of attention is impaired)
    - Borderline Intellect (does not understand)
    - Depression (concentration of attention is impaired)
    - Anxiety (concentration of attention is impaired)
  - information evocation (retrieval) affected :
    - obnubilation
    - depression

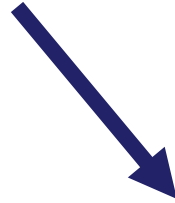


# MEMORY DISORDERS: TRAUMATIC HYPO/AMNESIAS

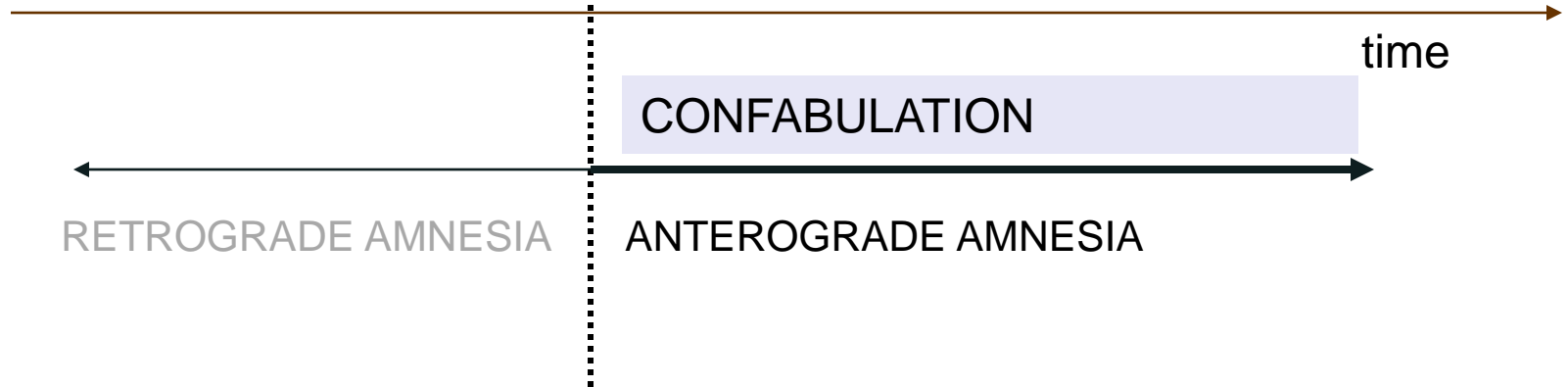


# ANTEROGRADE AMNESIA KORSAKOFF'S SYNDROME

ONSET OF THE  
MEMORY DEFICIT  
In a chronic alcoholic  
person or after a brain  
trauma



ANTEROGRADE AMNESIA  
Retrograde amnesia (disorientation in  
ordering the succession of biographical sequences)  
Confabulation (compensates memory gaps)  
Anosognosia  
Euphoria  
  
≠ Diagnosis with mythomania and lie



IMMEDIATE MEMORY (RECORDING OF INFORMATION IS NOT  
AFFECTED), ONLY THE RECORDING AND EVOCATION OF NEW / RECENT  
INFORMATION ARE IMPOSSIBLE

# AMNESIA IN DEMENTIA

ONSET OF NEURAL DEGENERATION

Initially good evocation  
of past events anterior  
to the dementia onset

Life line

RETROGRADE AMNESIA  
affecting long-term memory in advanced  
stages of dementia

ANTEROGRADE AMNESIA  
affecting short-term memory

# AMNESIAS

- LACUNAR AMNESIA:
  - Coma
  - Confusional state
  - Grand Mal seizure
- SELECTIVE /ELECTIVE AMNESIA:
  - Dissociative disorder (former hysterical neurosis): the inability to recall an event with negative emotional charge: frustration, disappointment



# AMNESIAS

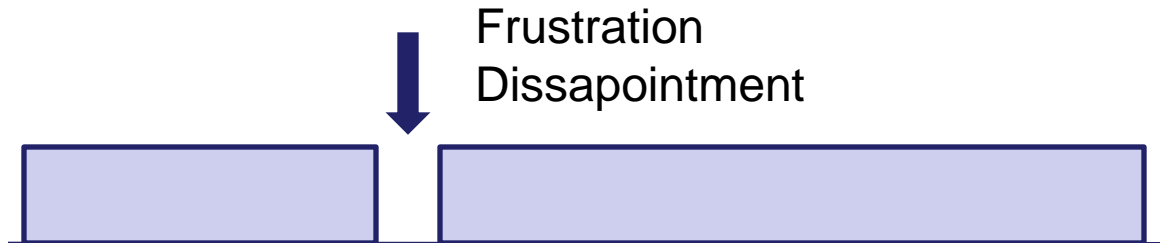
## LACUNAR AMNESIA

Coma  
Confusional state  
Grand Mal seizure



## ELECTIVE AMNESIA

Dissociative disorder  
(former hysterical neurosis)



# AMNESIAS

- LAPSUS:
  - apparent evocation amnesia
  - distressing character
  - requires an effort of will to find the answer or dictionary consultation
  - appears in normality
  - to be differentiated from lapsus in psychoanalytic sense (slips of the tongue)

# HYPERMNESIAS

- Information recording:
  - Extremely rare
  - EIDETIC phenomenon: the ability to record in every detail and to reproduce correctly identical; it is not considered to be pathological
- Information evocation:
  - In manic state (mnesic avalanche)
  - In drug intoxication: stimulant, psychedelic drugs
  - in individuals that live near death experiences: panoramic life review

# PARAMNESIAS

- ECMNESIA: placing of past memories into present (dementia)
- CRYPTAMNESIA: the person assigns to him/herself a material made by someone else (≠ diagnosis with plagiarism which is premeditated)
- DEJA / JAMAIS VU, CONNU, VECU:
  - in normality (rare déjà vue experiences)
  - in temporal lobe epilepsy (frequent déjà vu experiences announcing the epileptic crisis)

# INTELLECT

## DISTINCT FACULTIES:

- 1. Rational intelligence (logical thinking):** finding the correct solution to a problem with the fastest speed possible
- 2. Intuition:** finding a solution to a problem after the individual has stopped to seek it consciously
- 3. Imagination:** operations with images and memories leading to problem solving and predictions

# IMAGINATION

- the ability to form new images and that are not perceived through senses.
- requires the acquisition and development of symbolic thinking (at the end of the sensorimotor stage throughout next stages: preoperational, concrete operational and formal operational)
- through mentally representation of objects, persons or situations (representative intelligence) an individual may operate with images and phrases solving problems or predicting the consequences of a decision (operational intelligence)

# IMAGINATION

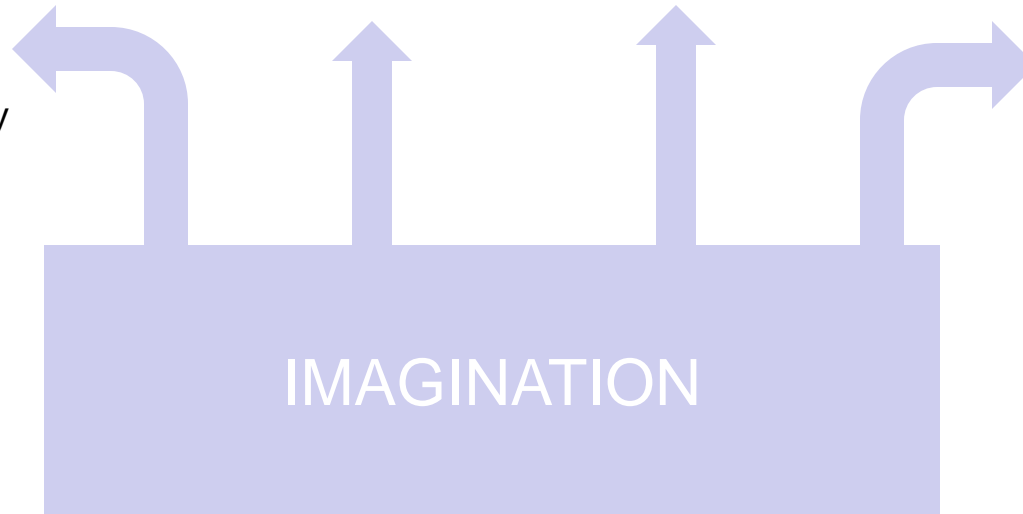
**CONFABULATION** consists in relating things about present or past life events from one's imagination, without any connection to reality. Unlike lying, it is involuntary and unconscious.

- occurs in Korsakoff's syndrome
- participates in the delusion genesis in **PARAPHRENIA**

**MORBID IMAGINATION**  
Refers to imagining catastrophic scenarios regarding the future development of events  
It appears in **ANXIETY**

**MYTHOMANIA** refers to the imaginative deformation of experienced events in order to value oneself (embroidering the truth).

**LIE** is the deformation of truth in order to mislead or to obtain a benefit. It is used frequently by **ANTISOCIAL / DISSOCIAL PERSONALITIES**



# INTELLIGENCE

DEFINITION: finding the correct solution of a problem with the fastest speed possible

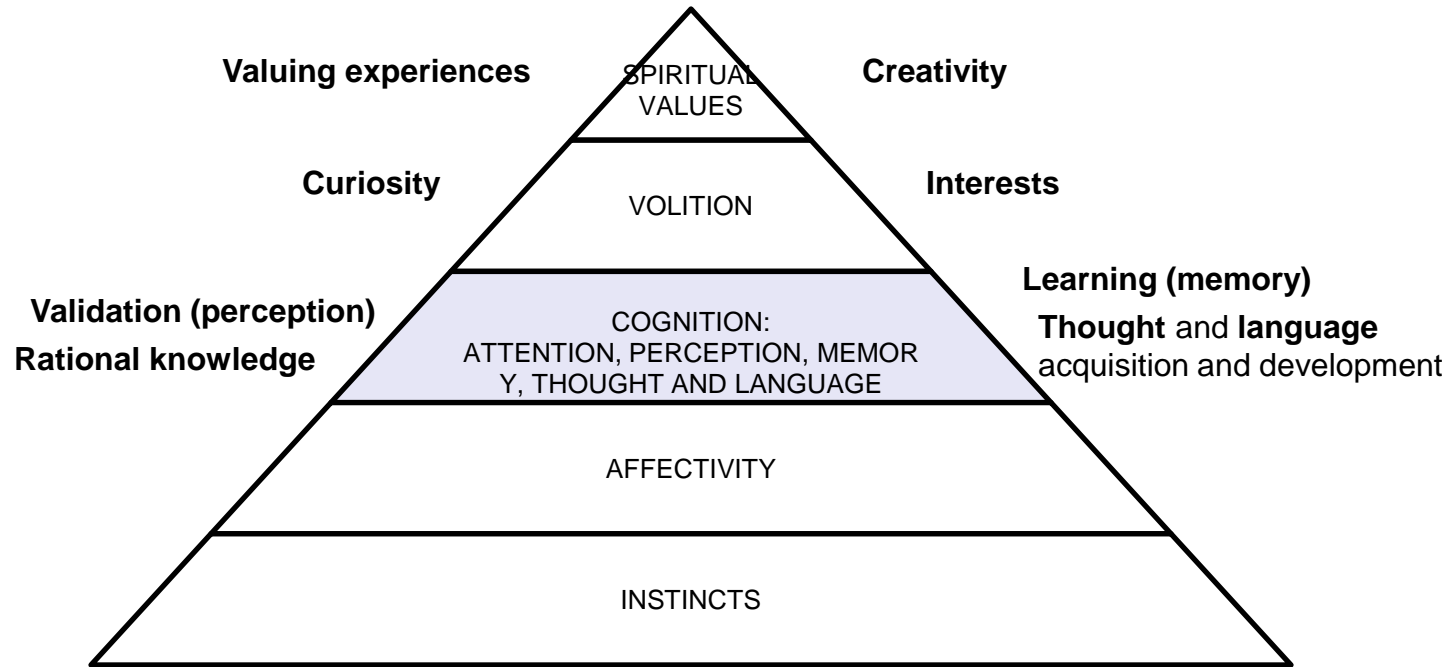
ETYMOLOGY: from latin words for understanding or discerning

OPERATIONS:

1. **Validation** of perceived or evoked informations
2. **Learning (acquiring)** new information
3. **Thought** and **language** acquisition and development
4. **Rational knowledge:** understanding the reality
5. **Motivation:** curiosity and interest are motivational incentives
6. **Creativity:** intelligence permits to create material and spiritual values manifested in the field of science and culture
7. **Valuing information:** application of value rules (ethical, aesthetic) with the ability of selection



# INTELLIGENCE



# INTELLIGENCE MEASUREMENT

$$\text{Intelligence quotient (IQ)} = \frac{\text{Mental age (MA)}}{\text{Chronological age (CA)}} \times 100$$

Normal IQ: 70-130

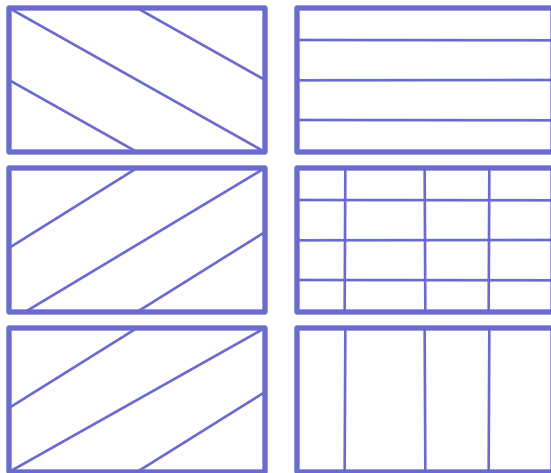
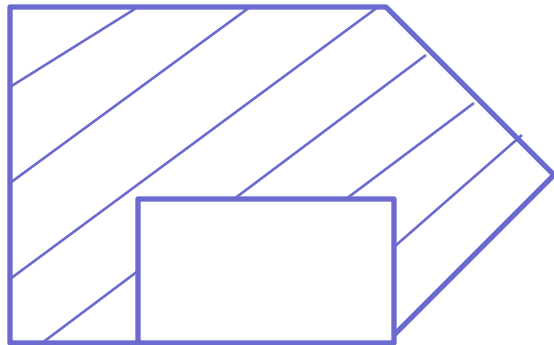
Average IQ: 100

The index is calculated based on knowledge requirements established for each age

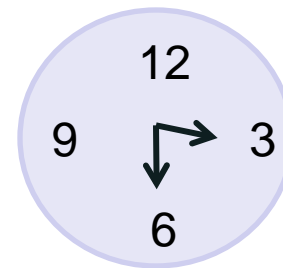
Examples of intelligence tests: Raven's Progressive Matrices, Wechsler Adult Intelligence Scale, Stanford-Binet

# INTELLIGENCE MEASUREMENT

For individuals that cannot write, images are used (Raven's Progressive Matrices)



timing



Calibration needed for each population on which the test is applied

# MENTAL RETARDATION (FORMER OLIGOPHRENIAS)

- Incomplete mental development or a cessation in the development
- It is a global impairment affecting not only the intelligence
- It is anevolutive
- It is congenital
- The causes that affect the brain development (in utero and the first 3 years of life) are ORGANIC



## Causes:

- Genetic/metabolic
  - chromosomes: Down, Klinefelter, Turner syndromes
  - glyco-lipid metabolism: Tay-Sachs, Gaucher
  - phospho-lipid metabolism: Nieman-Pick
  - glyco-proteins: Hunter, Hurler, Sanfilippo
  - purine metabolism: Lesh-Nyhan (incapacity to metabolize uric acid)
  - aminoacid metabolism: phenylketonuria (incapacity to transform phenylalanine into tyrosine)
- Endocrine: hypothyroidism
- Hypoxia
- Trauma: perinatal, postnatal
- Infections:
  - prenatal ( TORCH syndrom: toxoplasmosis, others, rubella, cytomegalovirus herpes virus),
  - postnatal (meningoencephalitis)
- Intoxications

# BORDERLINE INTELLECT

- IQ: between 70-90, or 70-84 if  $SD = 15$
- Individuals do not require assistance or social protection
- Memory and learning disorders when the individual is put in over-soliciting situations that surpass their level of intelligence
- They are good followers, executing orders without questioning them
- They may lead a quiet life

# MILD MENTAL RETARDATION (FORMER MENTAL DEBILITY)

- IQ: 50-69
- They can learn spoken language, writing, reading and calculating but in over a longer period of time than other children (special schools)
- They do not acquire abstract thinking
- They are capable of self-care (washing, sphincter control, eating, dressing)
- They have the capacity for self-administration,
- They can provide unskilled manual labor
- They are easily manipulated to become instruments of antisocial personalities
- They may show abnormal social conduct (disharmonic) not understanding the consequences of their acts, or they may behave in a way that does not disturb society (harmonic)
- They may rarely present: epilepsy, autism, hyperkinesia, facial dysmorphia, spastic cerebral palsy, hearing and visual disturbances

# MODERATE/SEVERE MENTAL RETARDATION (FORMER IMBECILITY)

- IQ: 35-49 – moderate MR
- IQ: 20-34 – severe MR
- They can only acquire spoken language (but not reading, writing or calculation)
- They acquire walking
- They are capable of self-care (washing, sphincter control, eating, dressing) but under supervision
- They are incapable of self-administration
- They can do simple stereotypical work (sewing), under supervision.
- They require care in special institutions.
- They often have: epilepsy, autism, hyperkinesia, facial dysmorphia, spastic cerebral palsy, hearing and visual disturbances



# PROFOUND MENTAL RETARDATION (IDIOCY)

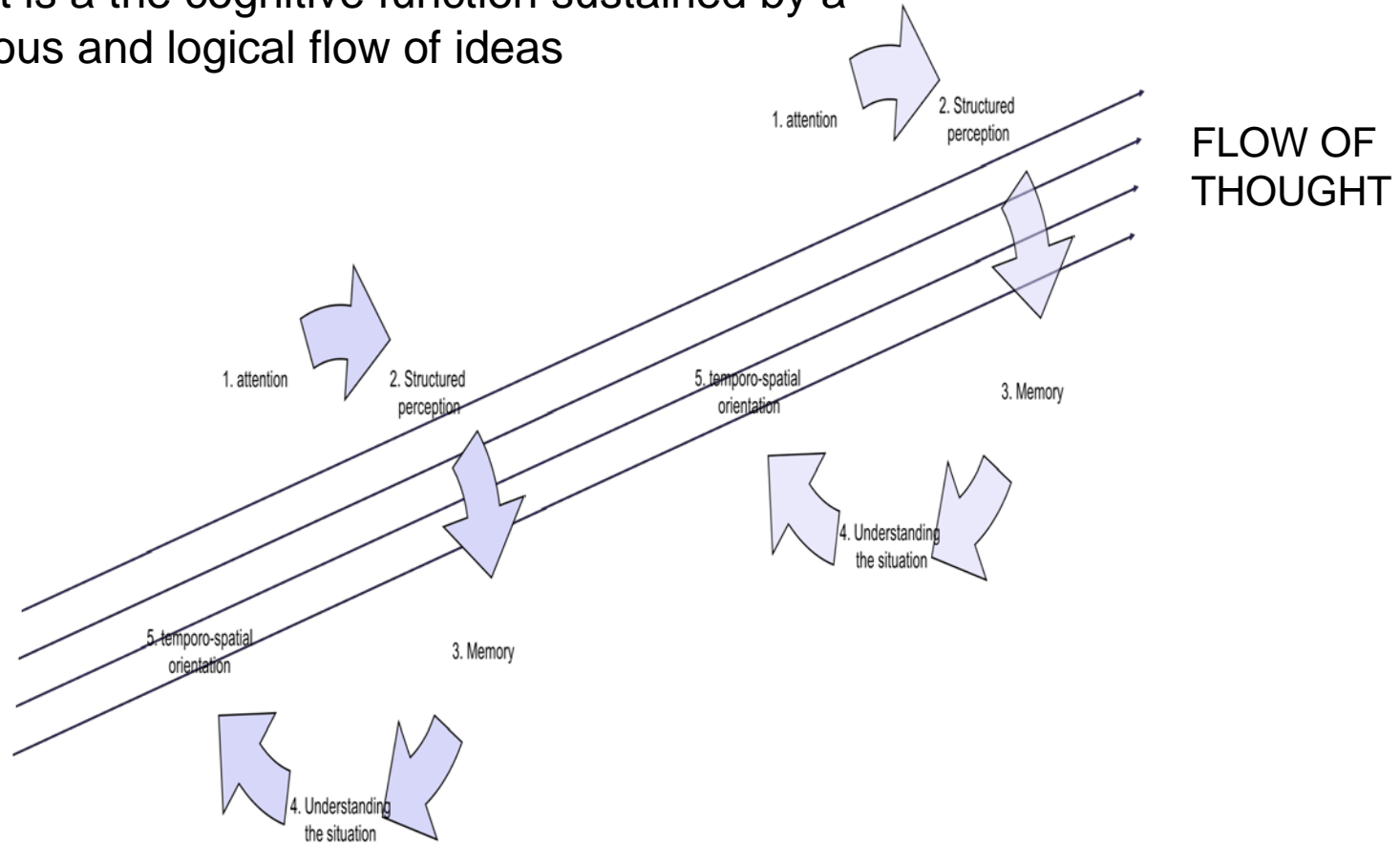
- IQ: < 20
- Mental life is rudimentary
- They do not acquire spoken language, writing, reading, calculation. Communication is non-verbal (shouting, inarticulate sounds)
- They do not acquire walking
- They do not have capacity for self-care (washing, sphincter control, eating, dressing) and cannot be taught.
  - The patient with no sphincter control = incontinent patient
  - They do not distinguish between what is edible and what is not (they lose or eat their clothes)
- They are incapable of self-administration.
- They need care in special institutions.
- They present: epilepsy, autism, hyperkinesia, facial dysmorphism, spastic cerebral palsy, hearing and visual disturbances.

# MENTAL RETARDATION (OLIGOPHRENIA)

SEVERITY	MILD	MODERATE	SEVERE	PROFOUND
IQ	69-50	49-35	34-20	19-0
FORMER NAME	MENTAL DEBILITY	IMBECILITY		IDIOCY
Abstract thinking	No	No		No
Speaking, writing, reading, calculation	Yes, but it takes double time than in normal children	May acquire speaking		No
Walking	Yes	Yes		No
Self-care (washing, sphincter control, eating, dressing)	Yes	Yes, but need supervision		No
Self-administration, manual, unqualified work	Yes	No, can do simple stereotypical work under supervision		Require care in special institutions
Conduct disorder	Yes: dysharmonics No: harmonics			
Family and children	Yes	No		No
epilepsy, autism, hyperkinesia, facial dysmorphism, spastic cerebral palsy, hearing and visual disturbances	Rare	Seldom		Yes

# THOUGHT

Thought is a the cognitive function sustained by a continuous and logical flow of ideas



# LANGUAGE

- Words are abstract symbols of phenomena and objects, or conclusions elaborated by abstract thinking
- Verbal language expresses only selectively the inner thoughts
- Nonverbal communication consists of:
  - mimic
  - gestures
  - posture
  - rhythm and intonation of speech

# EXPRESSIVITY THROUGH MIMIC AND GESTURE

- Hyperexpressivity: exaggerated mimic and gestures
  - Histrionic personality
  - Manic episode
- Hypoexpressivity: poor mimic and gestures
  - Depression
  - Simple schizophrenia
- Echopraxia, echomimia: imitation of gestures and mimic of other people
  - Catatonic Schizophrenia
- Grimacing: voluntary or involuntary contortion of the face muscles
  - Hebephrenic schizophrenia: “schizophrenic snout”
  - Incisive neuroleptic medication side effect
  - Pain
- Mannerisms: exaggerated mimic and gestures expressivity that has lost its functional significance (stereotyped behaviors that mimic gestures related to social manners)
  - Hebephrenic schizophrenia
- Depressive facies: corners down, depressive omega
- Anxious facies: tense, frowning, expressing fear

# EXPRESSIVITY THROUGH POSTURE

- Dystonias secondary to incisive neuroleptic medication
  - Oculogyric crisis with blocking of the eyeballs to the side or upward deviation of the eyes
  - Torticollis, retrocollis
  - Opisthotonus
- Parkinson posture (in question mark) with flexion of the head, elbows, knees – Incisive neuroleptic medication side effect
- Depressive posture: downward gaze, flexed head, hands in lap
- Catatonic posture: waxy flexibility: uncomfortable postures induced by the examiner, maintained for a long period of time (raised upper limb, psychological cushion)

# THOUGHT

- Rich / poor
- Fast / slow
- Elaborate / elementary, stereotypical
- Abstract / concrete
- Logical / incoherent
- Synthetic / analytical

# THOUGHT

- **REASONING or INFERENCE:** mental operation by which from two or more judgments (premises, statements), a new judgment is obtained, following logically from the first ones.
- **JUDGMENT:**
  - a sentence that states or denies something
  - the ability to think logically



# THOUGHT

- DEDUCTIVE REASONING/INFERENCE

Deduction represents a logical reasoning, independent from experience

e.g. SYLLOGISM: deductive reasoning consisting of three judgments, the third representing the conclusion that is inferred from the first judgment through the second

If  $A \equiv B$  and  $B \equiv C$ , then  $A \equiv C$

# THOUGHT

- **INDUCTION:** represent a reasoning / inference of a general law from particular instances
  - It is not a logical reasoning, being based on experience not on true / demonstrated facts

# THOUGHT

- INTUITION: a form of immediate knowledge based on experience and previously acquired knowledge, and not by reasoning (from lat. tueri = to see )
  - the conclusion comes suddenly, after the person renounced to search it consciously
  - probably it is based also on stored emotions linked with past experience

THOUGHT DISORDERS

QUANTITATIVE (rythm and quantity)

FLIGHT OF IDEAS

SLOWNESS OF IDEATION FLOW

QUALITATIVE (content)

DELUSION

OBSESSION

FORMAL DISORDERS

DIGRESSIVE THINKING

CIRCUMSTANTIAL THINKING

DISSOCIATION (INCOHERENCE)

# QUANTITATIVE DISORDERS OF THOUGHT

- They refer to the rhythm of the flux of ideas:
  - Rapid thought process: is due to an acceleration of the entire mental life = tachypsychia (in mania)  
e.g. FLIGHT OF IDEAS : rapid flow of ideas that has as verbal expression a telegraphic speech (the individual can not speak at the rate in which he thinks, therefore all unnecessary words are removed and the speech may appear to be incoherent).  
TACHYLALIA (rapid speech), LOGORRHEA (excessive speech), GRAPHORRHEA (excessive writing)
  - In normality rapid thinking appears in good mood states
  - It also appears in ethanolic intoxication (small quantities) and stimulant drugs intoxication

# QUANTITATIVE DISORDERS OF THOUGHT

- They refer to the rhythm of the flux of ideas:
  - Slow thinking process: is due to a slowdown in the whole mental life = bradypsychia. It is expressed verbally through BRADYLALIA

The patient speaks slowly, with a high latency between question and answer, and with short, monosyllabic answers. Usually the patient doesn't initiate the dialogue.

Slow thinking occurs in:

- normal conditions in states of drowsiness
- depression
- epileptoid personality: slow, unselective thinking
- ethanolic intoxication

# QUANTITATIVE DISORDERS OF THOUGHT

- THE ABUNDANCE OF THE CONTENT:
  - Rich: LOGORRHEA, mania
  - Poor: LACONIC SPEECH: concise, with short, sometimes monosyllabic answers (yes/no): depression
  - Nil: THOUGHT BLOCKING

# QUANTITATIVE DISORDERS OF THOUGHT

- **THOUGHT BLOCKING** = abrupt and unmotivated interruption of the flow of thought and speech,
  - that the patient experiences as an "emptiness" (head feeling empty)
  - thoughts can be resumed after a break
  - In schizophrenia or in people who make many digressions
- **MENTAL FADING** = progressive slowness of the thought flow up to thought blocking
- **MENTISM**= sudden appearance of many thoughts that unravel quickly and uncontrollably (a disturbing avalanche of thoughts that are unstoppable to the individual)



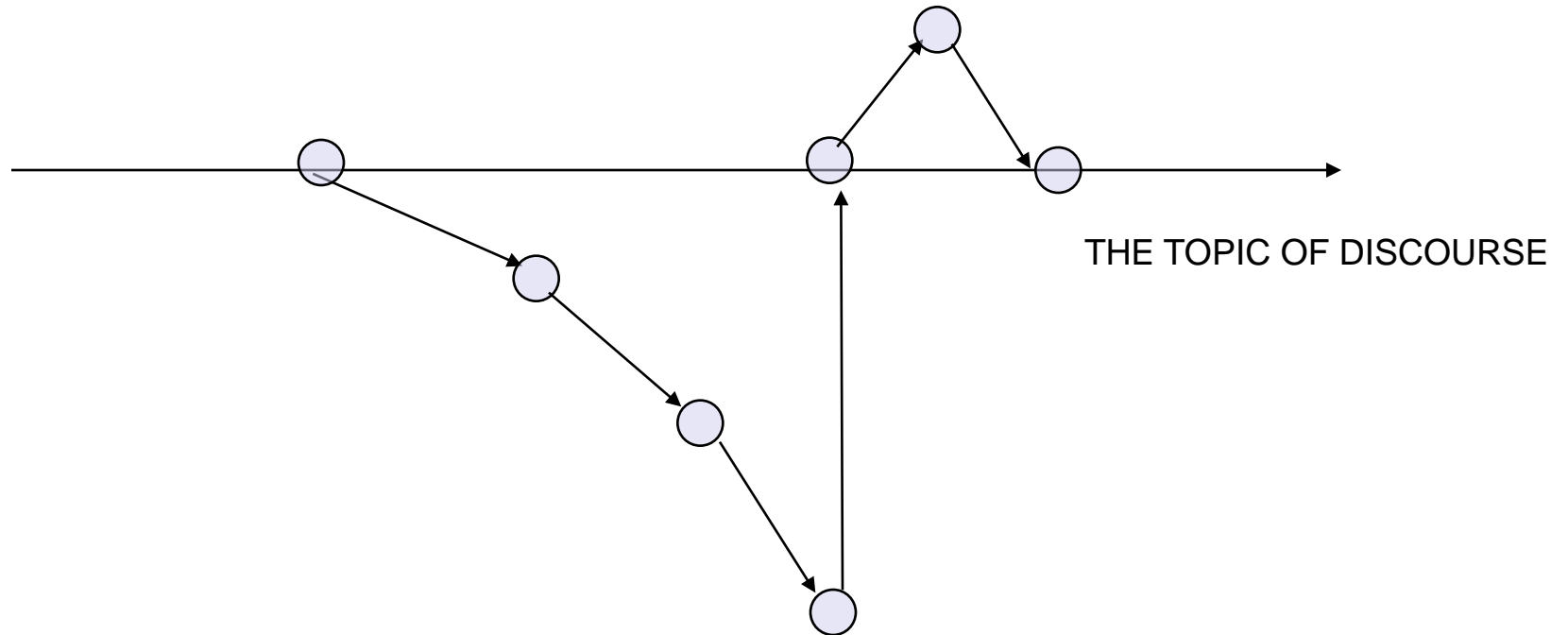
# QUANTITATIVE DISORDERS OF THOUGHT

- Mania: tachylalia+logorrhea, flight of ideas
- Depression: bradylalia+laconic speech
- Schizophrenia: thought blocking or mentism

# FORMAL THOUGHT DISORDERS

- DIGRESSIVE THINKING:
  - Sometimes correlated with tachypsychia
  - The person deviates from the topic of discourse by digressing, but eventually returns the topic.

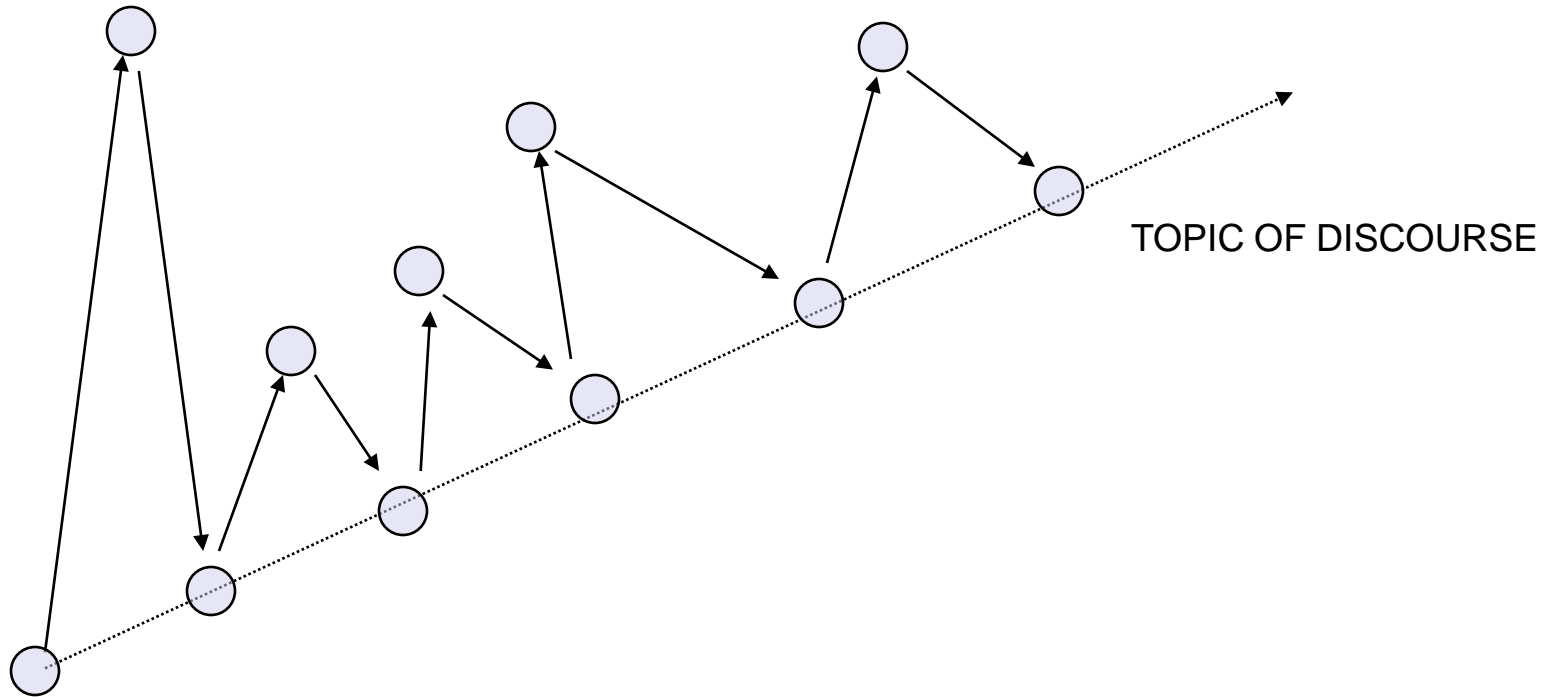
# DIGRESSIVE THINKING



# FORMAL THOUGHT DISORDERS

- CIRCUMSTANTIAL THINKING
  - Is correlated with bradypsychia
  - In case of epileptoid personality: viscous thinking (compared to honey dripping slowly):
    - Strong adhesion to the theme (once interrupted, the person answers the question then jumps back to the old theme to the point where it was interrupted)
    - Inability for synthesis, selectivity (the person raises the details to the rank of essential)

# CIRCUMSTANTIAL THINKING



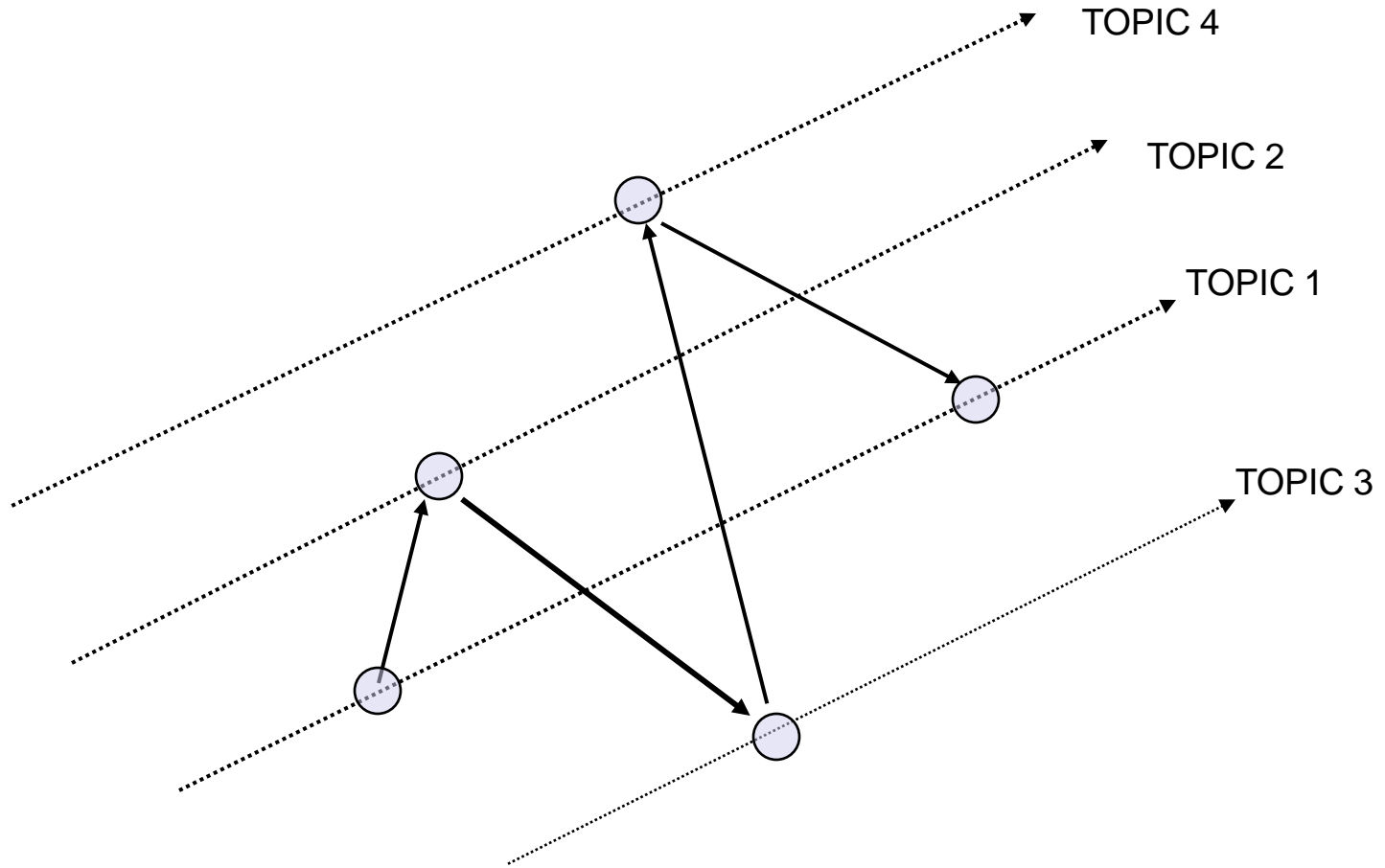
# FORMAL THOUGHT DISORDERS

- IDEO-VERBAL DISSOCIATION: a “split” in thinking, so that it loses its coherence (meaning)
- There are different degrees in severity from loosening of association to the extreme case of incoherence where:
  - ideas are randomly associated
  - there is no rule to words association
  - grammar structure is lost
  - meaning is lost
  - on speech level : WORD SALAD

# FORMAL THOUGHT DISORDERS

- IDEO-VERBAL DISSOCIATION:
  - Sometimes words are associated by rhyming : **albă, nalbă, salbă**  
(white, mallow, necklace)
  - Sometimes new words (“neologisms”) are invented (≠ true neologisms): **statovnicie**
  - Sometimes different meanings are assigned to words that normally have a meaning known by everyone: **mov = moarte**  
(purple = death)
  - Divisions are sometimes made in words:
    - Ai dușmani?** (Do you have enemies?)
    - Duș** am făcut azi dimineață, **ani** am mulți (I took a shower this morning, I have many years)
  - It is characteristic for Schizophrenia

# IDEO-VERBAL DISSOCIATION





# QUALITATIVE THOUGHT DISORDERS (ABNORMAL CONTENT OF THOUGHT)

- OBSESSIONS:
  - intrusive, persistent, recurrent, ego-dystonic thoughts, ruminations, images, impulses or doubts.
  - the individual recognizes their pathological character (≠ delusions)
  - the individual recognizes obsessions as his own thoughts (≠ transparency-influence syndrome)
  - content may be
    - abstract (where is God? Where is the end of the Universe) or banal (order, symmetry) (ruminations)
    - shameful, aggressive, embarrassing (impulsions)
  - In normality:
    - Moral conscience is the most frequent generator of obsessions
    - The lapsus = the obsession of the forgotten word
    - Music: an unpleasant tune
  - In pathology:
    - Obsessive-compulsive disorder (obsessions ± compulsions)
    - Depression (depressive ruminations)
    - Post traumatic stress disorder (flashbacks, nightmares)
    - Schizophrenia (bizarre character)

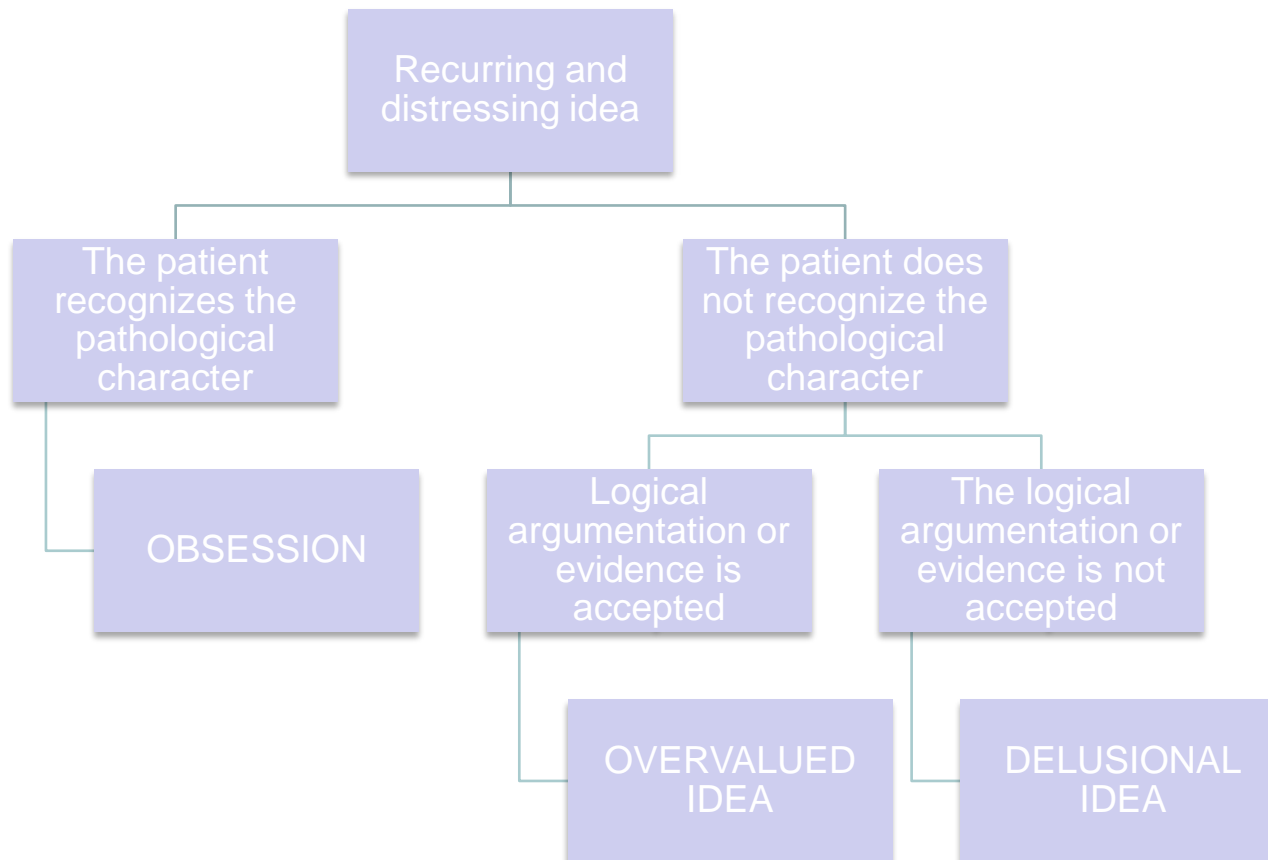
# QUALITATIVE THOUGHT DISORDERS (ABONORMAL CONTENT OF THOUGHT)

- DELUSIONAL IDEA:
  - Def: pathological belief without real background evidence: the patient strongly holds a false idea in spite of evidence or logical argumentation
  - The current state of consciousness is clear (≠ delirium / confusional state)
  - Socio-cultural background should be taken into account when assigning to an idea a delusional intensity
  - the patient does not recognize its pathological character (insight lost)
  - The premises are false : **he is being poisoned**
  - The behavior corresponds to the delusion (delusionally motivated behavior): **the patient keeps with him a bag with food from home to avoid being poisoned**
  - It parasitizes thinking: the patient lives within and for his delusion

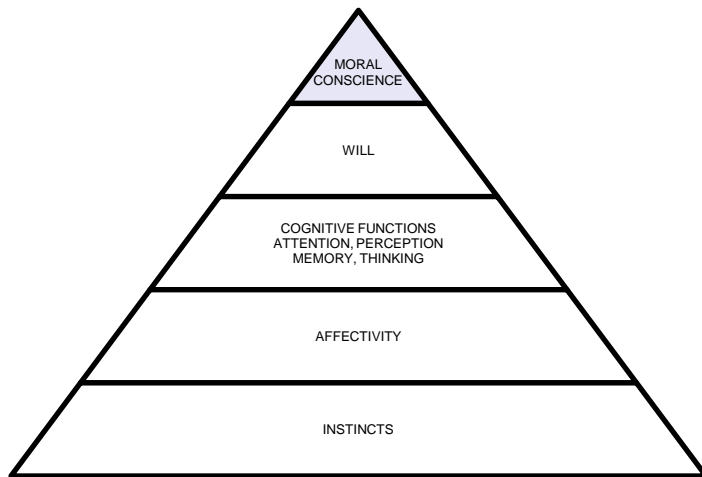
# QUALITATIVE THOUGHT DISORDERS (ABONORMAL CONTENT OF THOUGHT)

- **OVERVALUED IDEA:**
  - Def: the idea is based on a real life event from the patient's past and absorbs him completely
  - The patient does not recognize its pathological character, but may accept logical argumentation
  - It parasitizes thinking, dominating life and subordinating other ideas

# QUALITATIVE THOUGHT DISORDERS (ABNORMAL CONTENT OF THOUGHT)

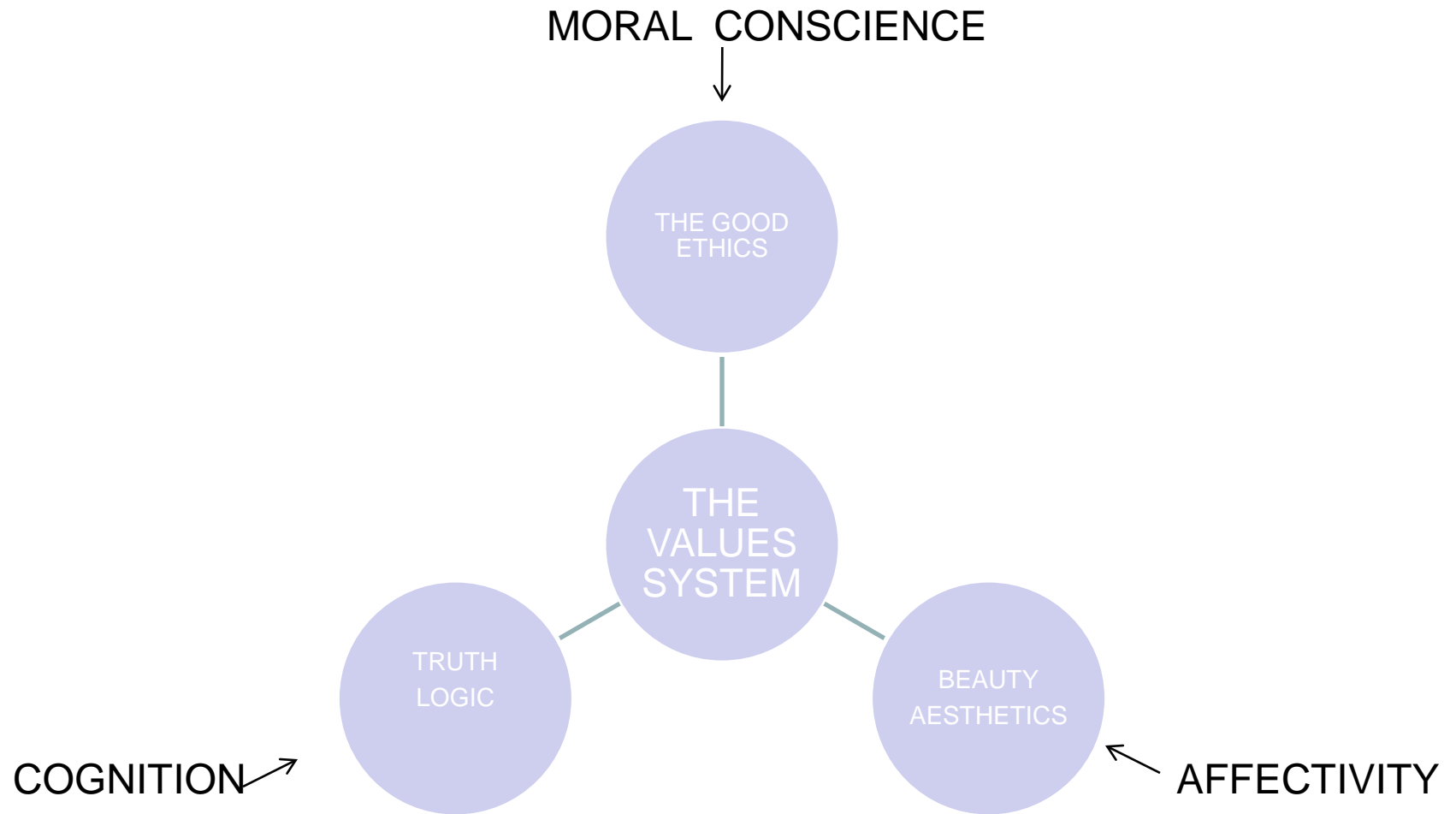


# THE SPIRITUAL VALUES AND CREATIVITY LEVEL

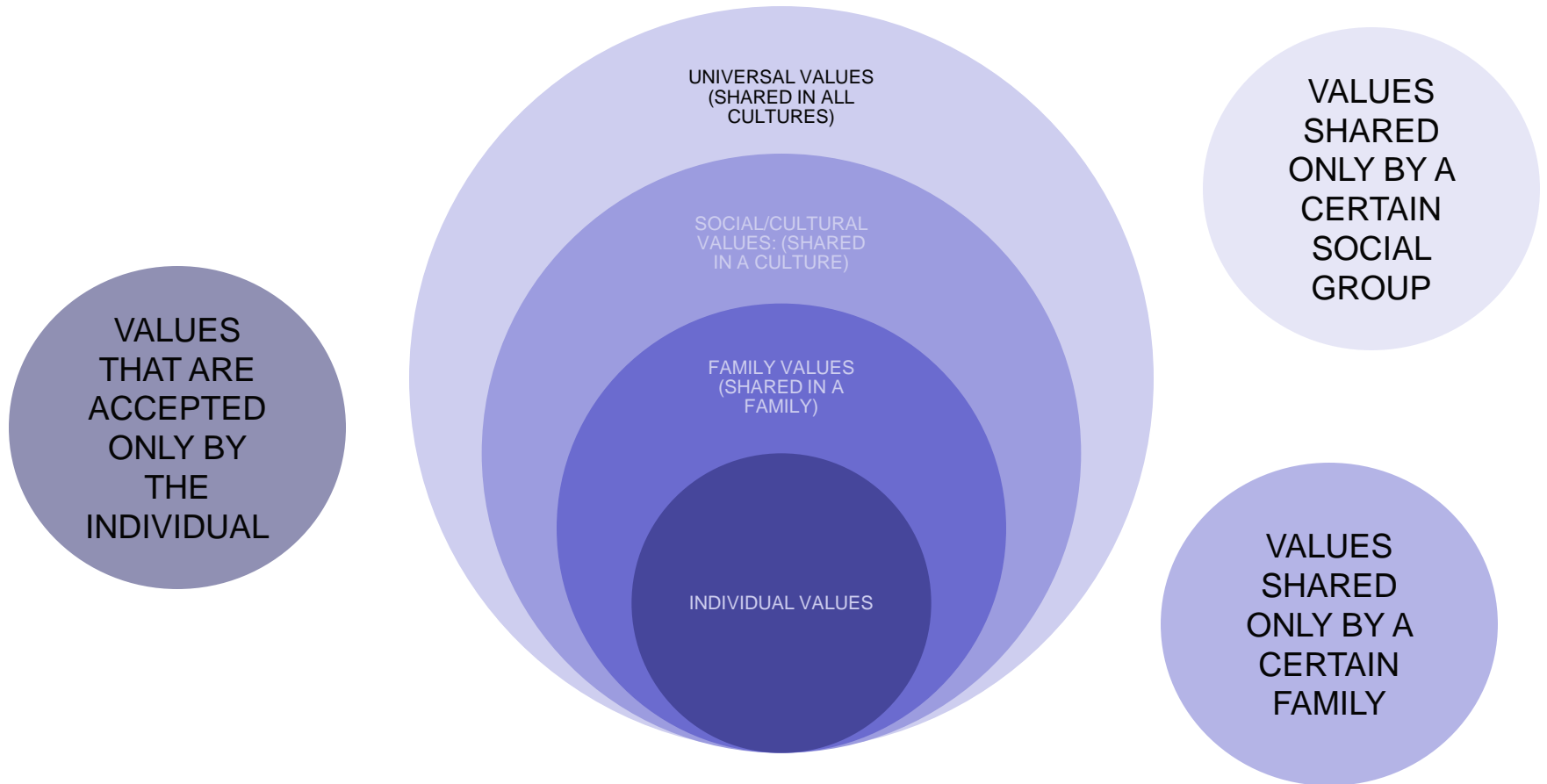


- Distinguishes man from animal
- 3 values: good, truth and beauty

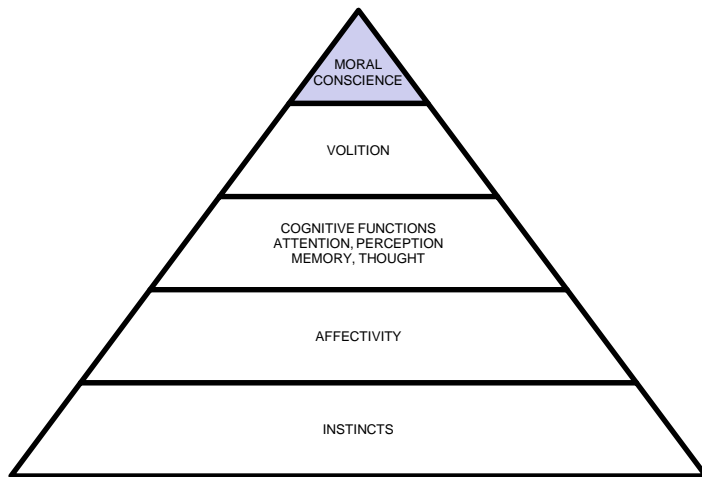
# THE VALUES SYSTEM



# THE VALUE SYSTEM



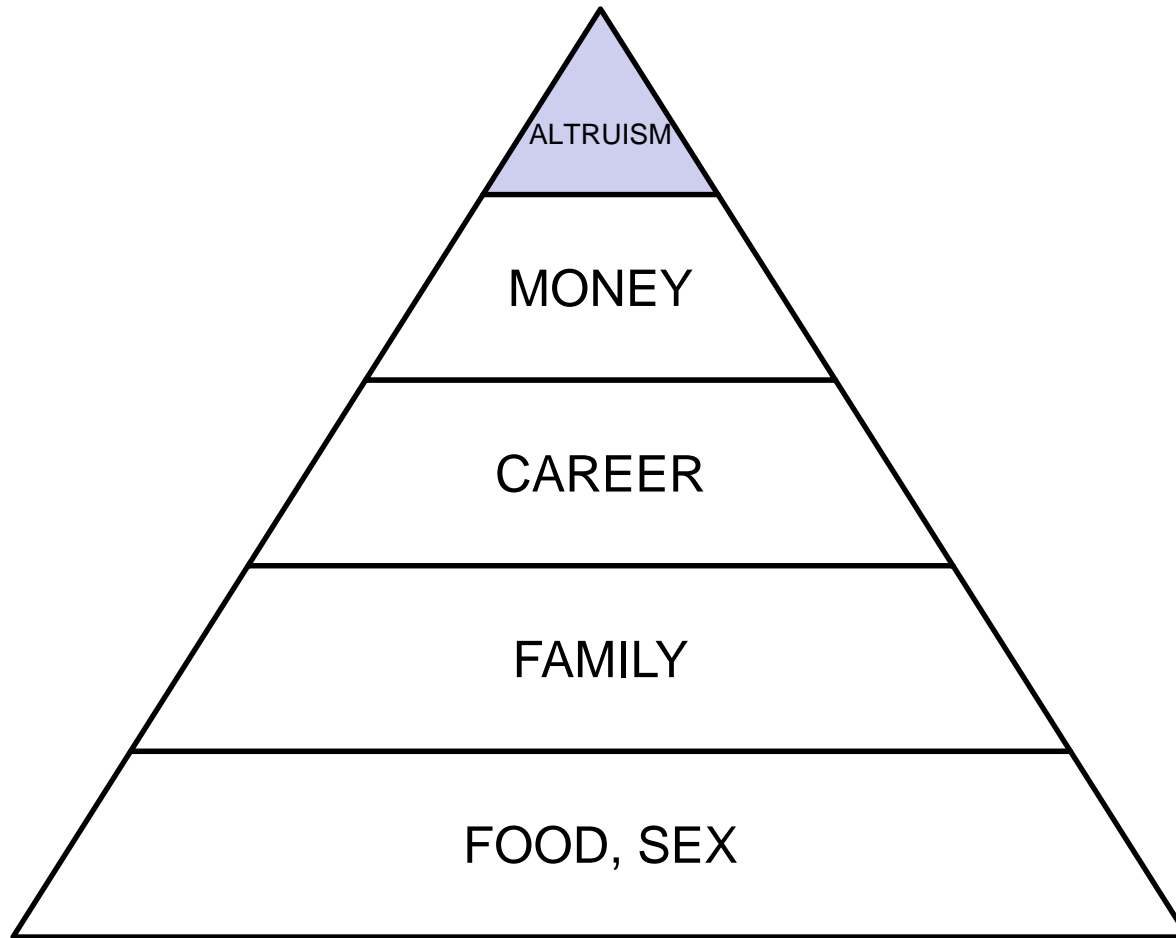
# THE MORAL DIMENSION OF THE HUMAN PSYCHE



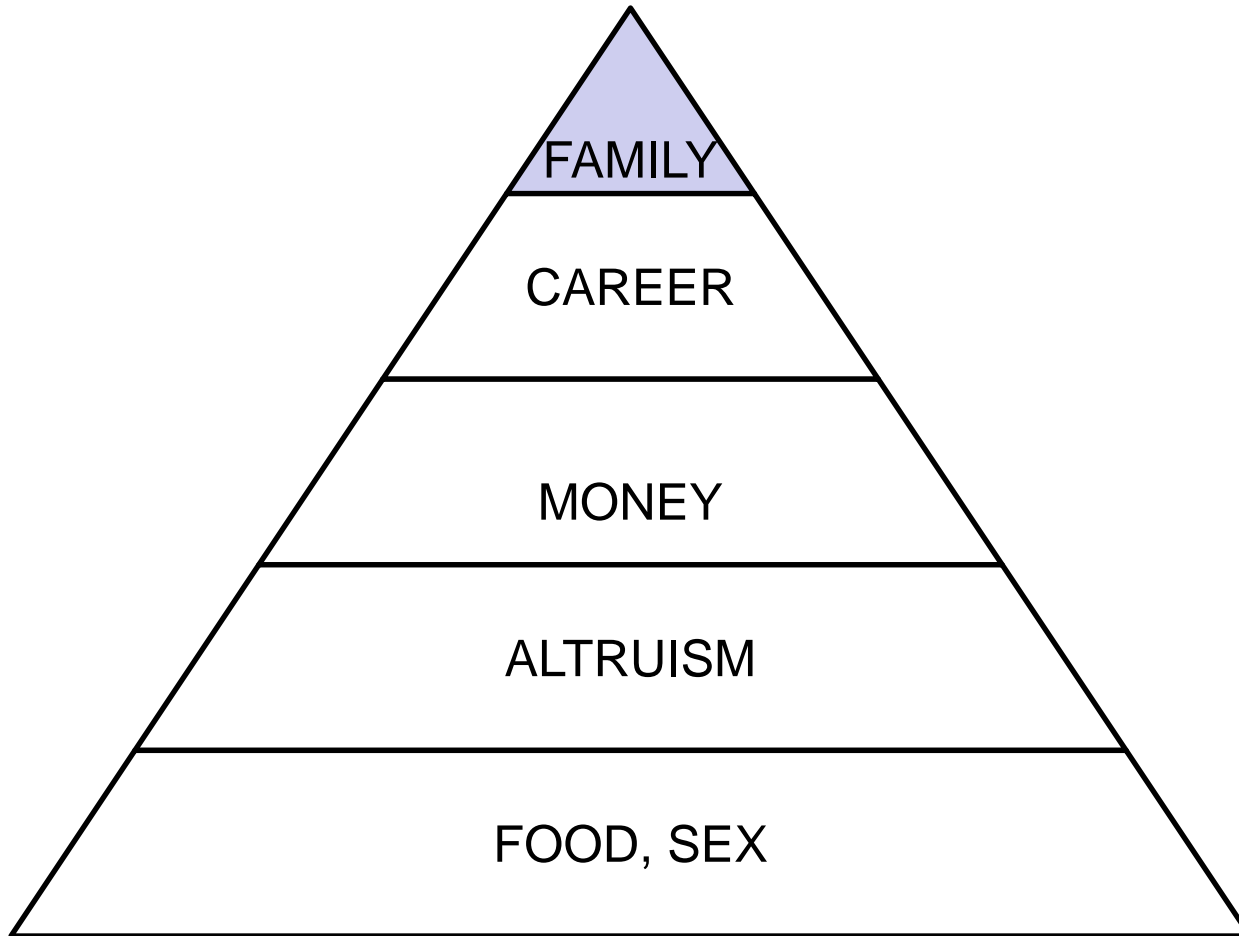
- MORAL CONSCIENCE: totality of values, moral norms that are the foundation of functioning in society
- The values system is hierarchical



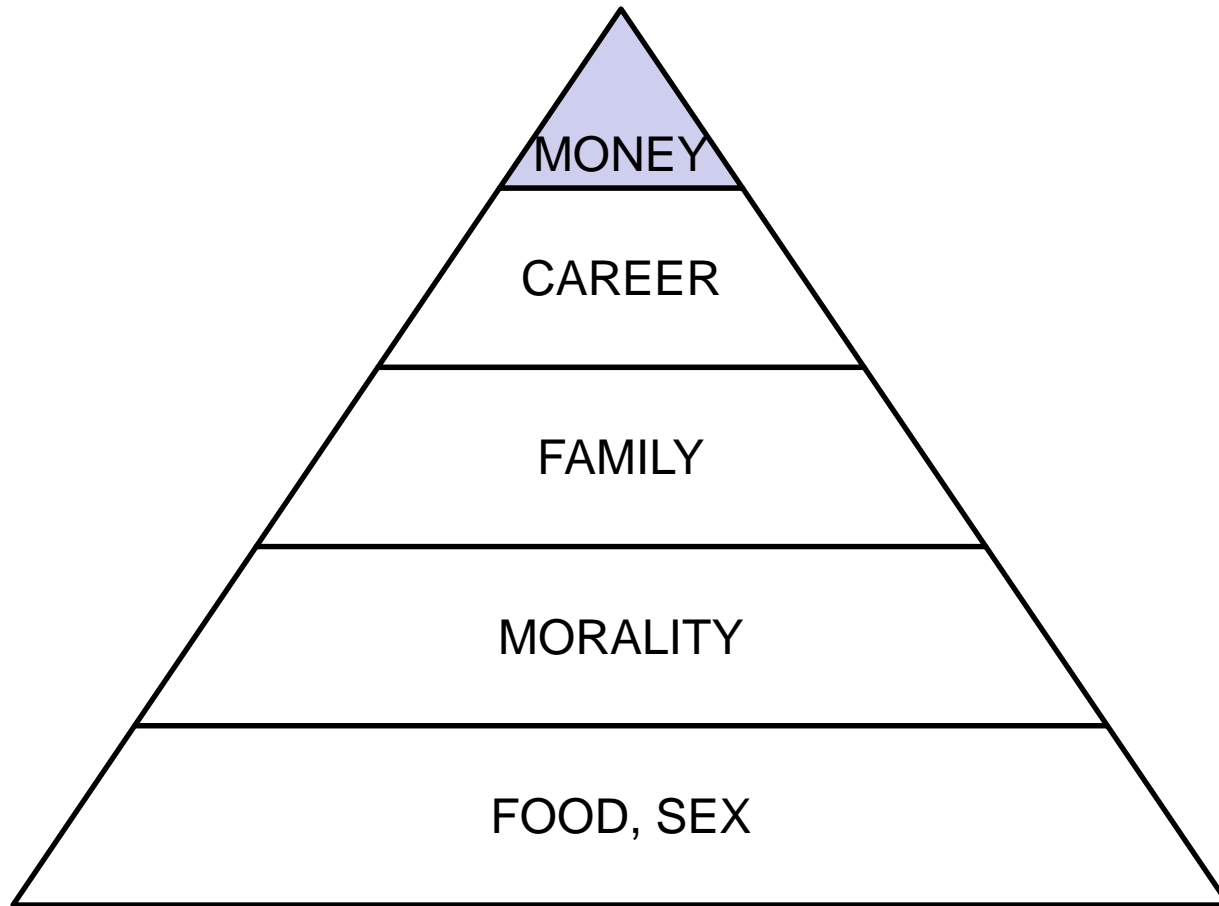
# THE HIERARCHICAL VALUES SYSTEM



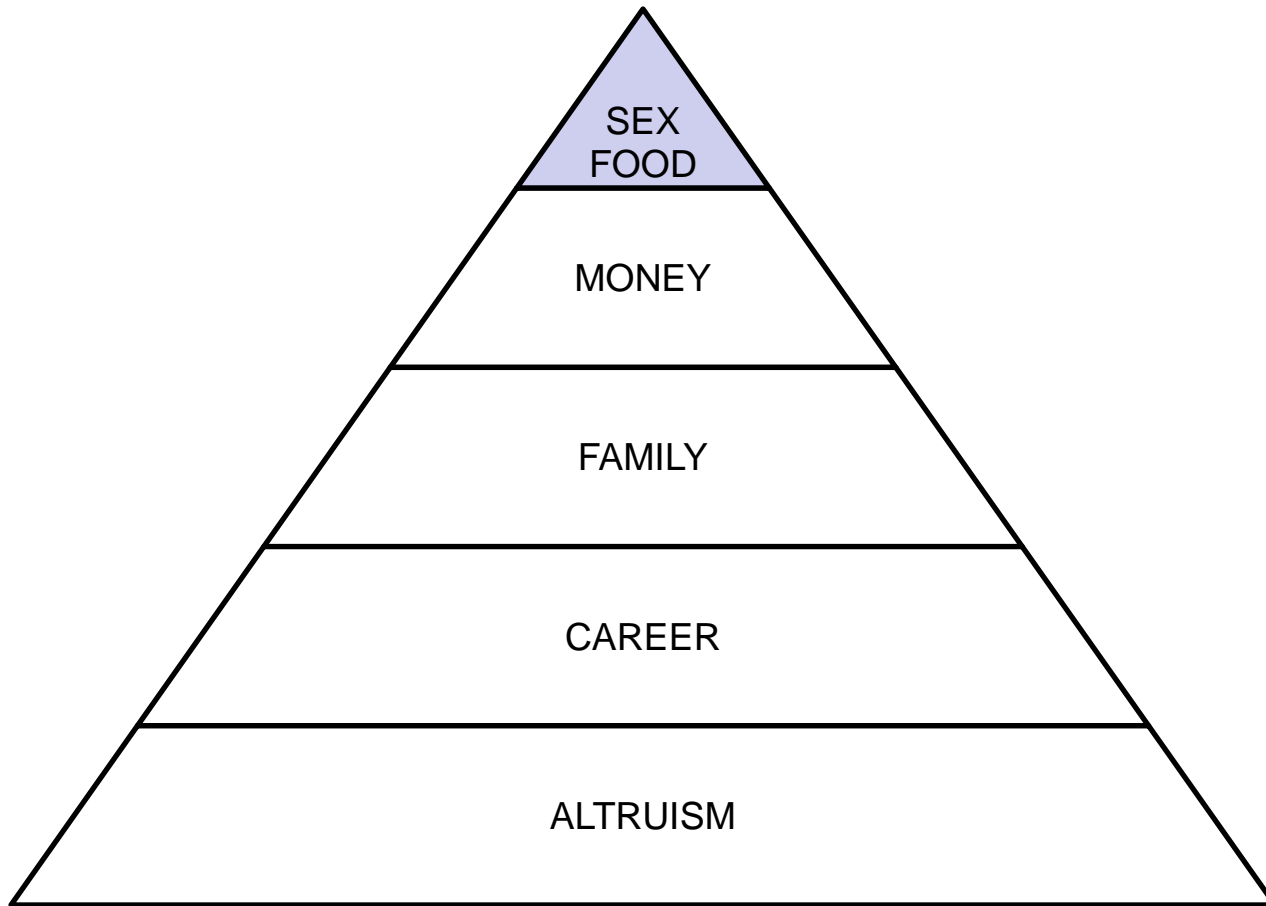
# THE HIERARCHICAL VALUES SYSTEM



# THE HIERARCHICAL VALUES SYSTEM



# THE HIERARCHICAL VALUES SYSTEM



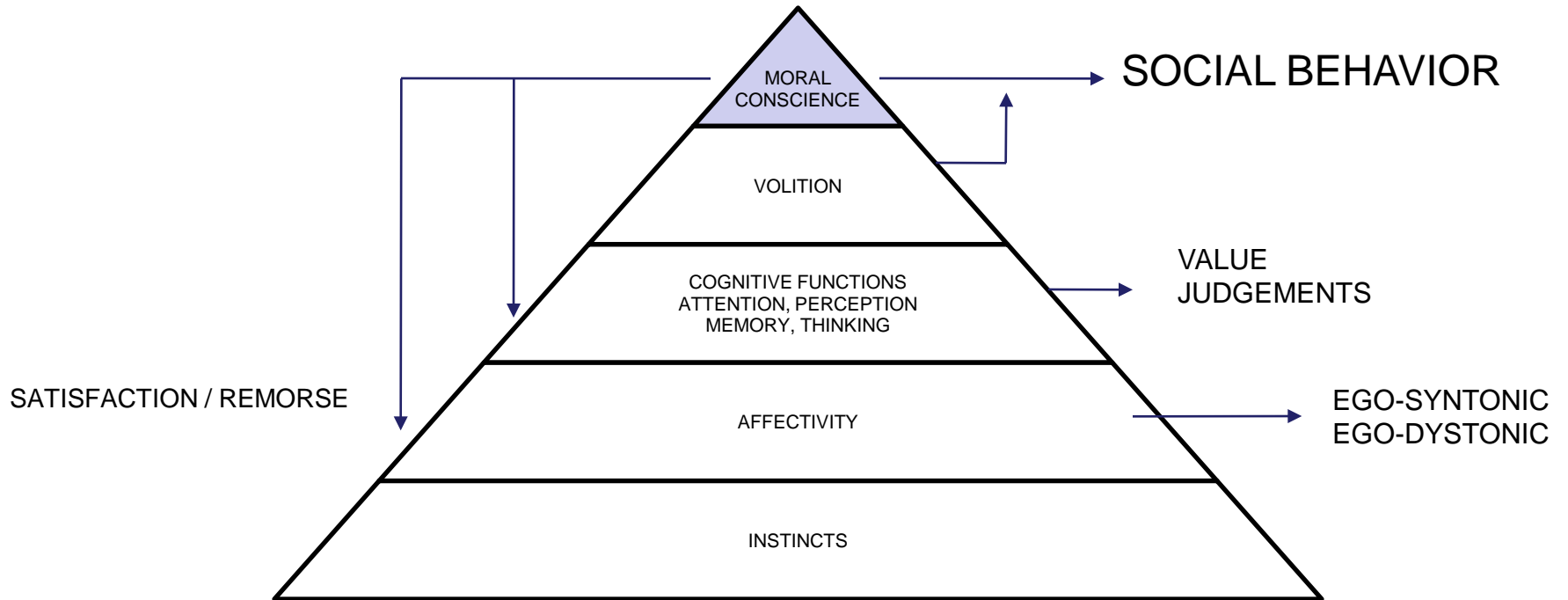
# THE MORAL DIMENSION OF THE HUMAN PSYCHE

- Child:
  - 3 years old: egocentric, no notion of good or bad
  - 7 years old: learns to abide by rules and to control himself
  - Learns to distinguish between right and wrong
- Adolescent: reorganization of value hierarchy:
  - Contesting the values of parents, school, family, society in general with
  - building their own system of values
- Adult: FREE acceptance of a particular value system that may or may not coincide with the values of SOCIETY

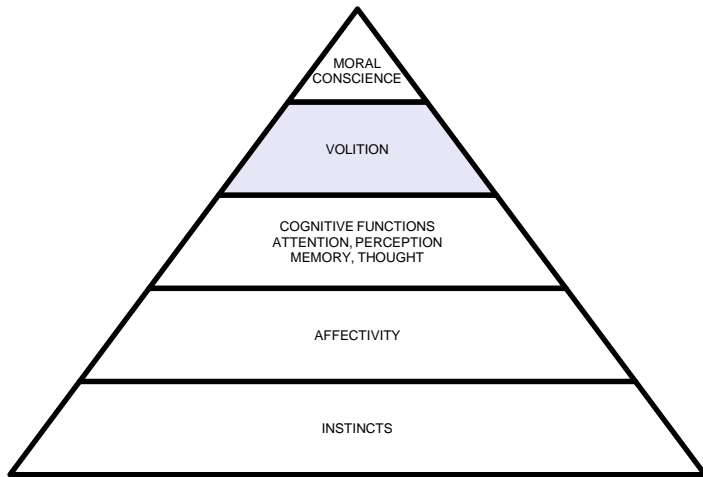
# THE MORAL DIMENSION OF THE HUMAN PSYCHE

- Individuals suffering with MENTAL RETARDATION:
  - Do not distinguish between right and wrong
  - Are not responsible for their actions
- Individuals with a ANTISOCIAL / DISSOCIAL PERSONALITY DISORDER:
  - Have an IQ that allows them to distinguish between right and wrong, but they choose the wrong
  - Are responsible for their actions!

# THE MORAL DIMENSION OF THE HUMAN PSYCHE



# VOLITIONAL LEVEL: WILL

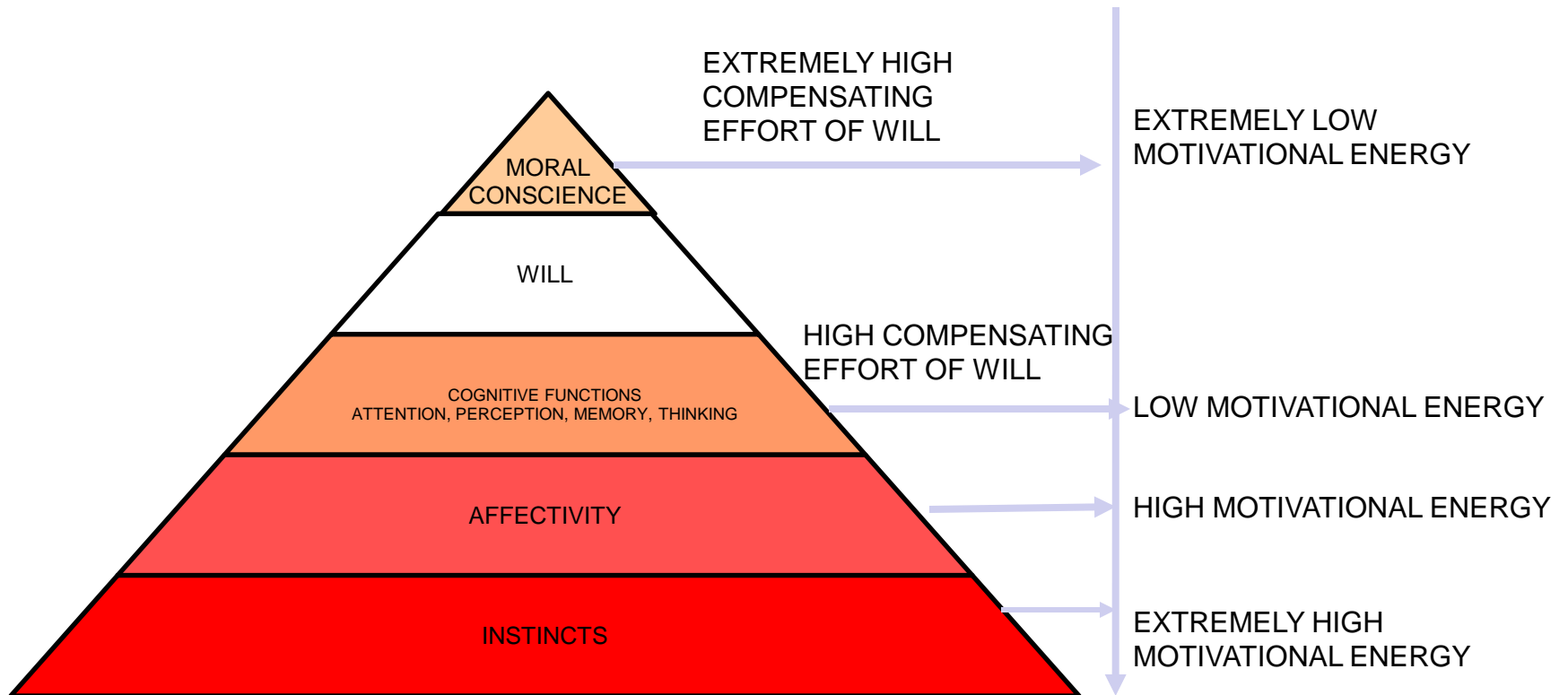


The Priene Bouleuterion

WILL = BOULE (gr.) = counsel



# MOTIVATIONAL POWER OF THE PSYCHE'S COMPONENTS



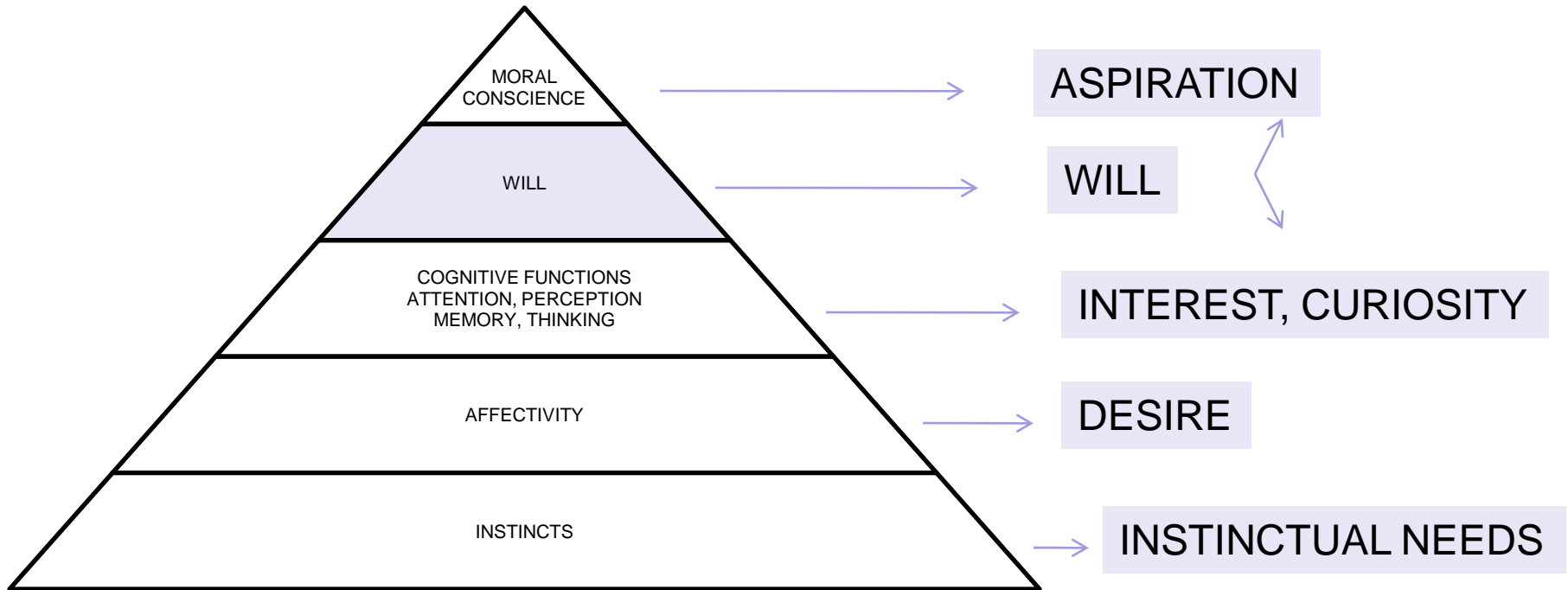
# VOLITIONAL LEVEL: THE ROLE OF WILL

- Instincts and affectivity having their own energy, can trigger a behavior
- The other mental functions (cognition, spirituality) not having an efficient energy, must be supported by will to determine a behavior

# MOTIVATIONAL THEORY AND BEHAVIOR

- THE MOTIVATIONAL INCENTIVES
- THE STAGES OF THE MOTIVATIONAL PROCESS
- THE NEUROBIOLOGY AND NEUROANATOMY OF THE MOTIVATIONAL SYSTEM

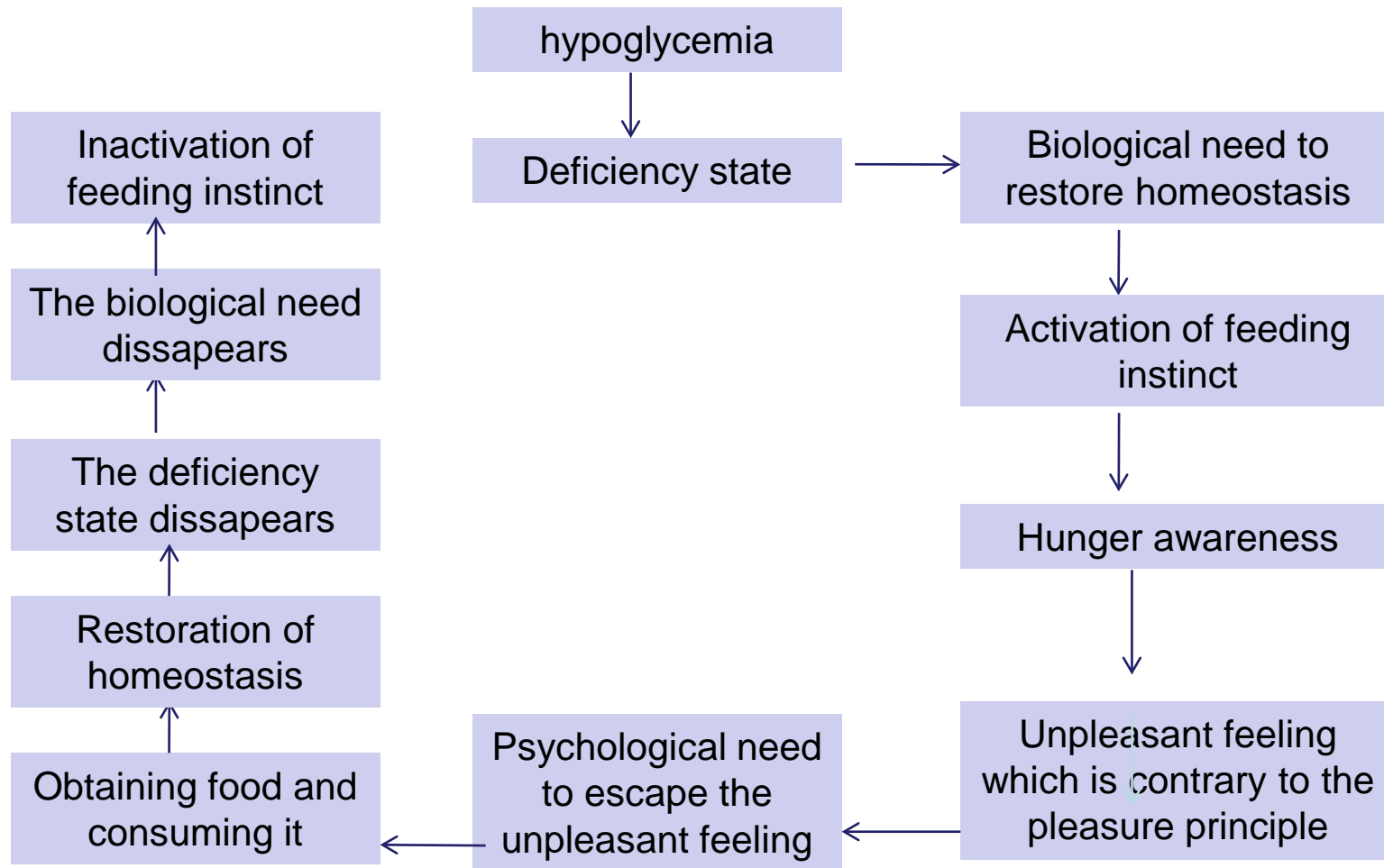
# THE MOTIVATIONAL INCENTIVES



# STAGES OF MOTIVATIONAL PROCESS

1. Activation of the motivational incentives that are in a potential conflict (moral versus affective)
2. Deliberation: at the cognitive level (value judgements, conflict resolving, strategies, plans, predictions of behavioral consequences)
3. Taking a decision
4. Acting out
5. Persistence in act necessary for achieving the goal

# ACTIVATION AND INACTIVATION OF MOTIVATIONAL PROCESS: EXAMPLE



# ACTIVATION AND POTENTIAL CONFLICT BETWEEN INCENTIVES

- Objective: disappearance of the hunger feeling
- Mental functions:
  - The instinctual point of view: any food is good
  - The affective point of view: I prefer / like a special kind of food
  - The cognitive point of view: healthy foods must be eaten
  - The moral point of view: food shouldn't be obtained by any means

# ACTIVATION AND POTENTIAL CONFLICT BETWEEN INCENTIVES

- The points of view can be different: during deliberation the points of view are exposed, as well as pros and cons
- Decision is made by reasoning, but its motivational energy is poor in comparison with instincts and affectivity (needs and desires are stronger than reason)
- Will intervenes
  - If weak: the decision will not be acted out
  - If strong: acting out in order to reach the goal



# PERSISTENCE IN DECISION

- Acting out must be supported in time in order to reach the goal
- E.g: in manic state the acting out is hasty but the persistence in act is affected and the activity is not finished
- Feedback: was the plan respected, are there new elements to take into consideration

# VOLITIONAL LEVEL

- HYPERBULIA
  - Is not considered pathological
  - It can appear in patients with paranoia
- HYPOBULIA/BULIA:
  - can be a personality trait
  - Depression
  - Simple schizophrenia
  - Pick's dementia

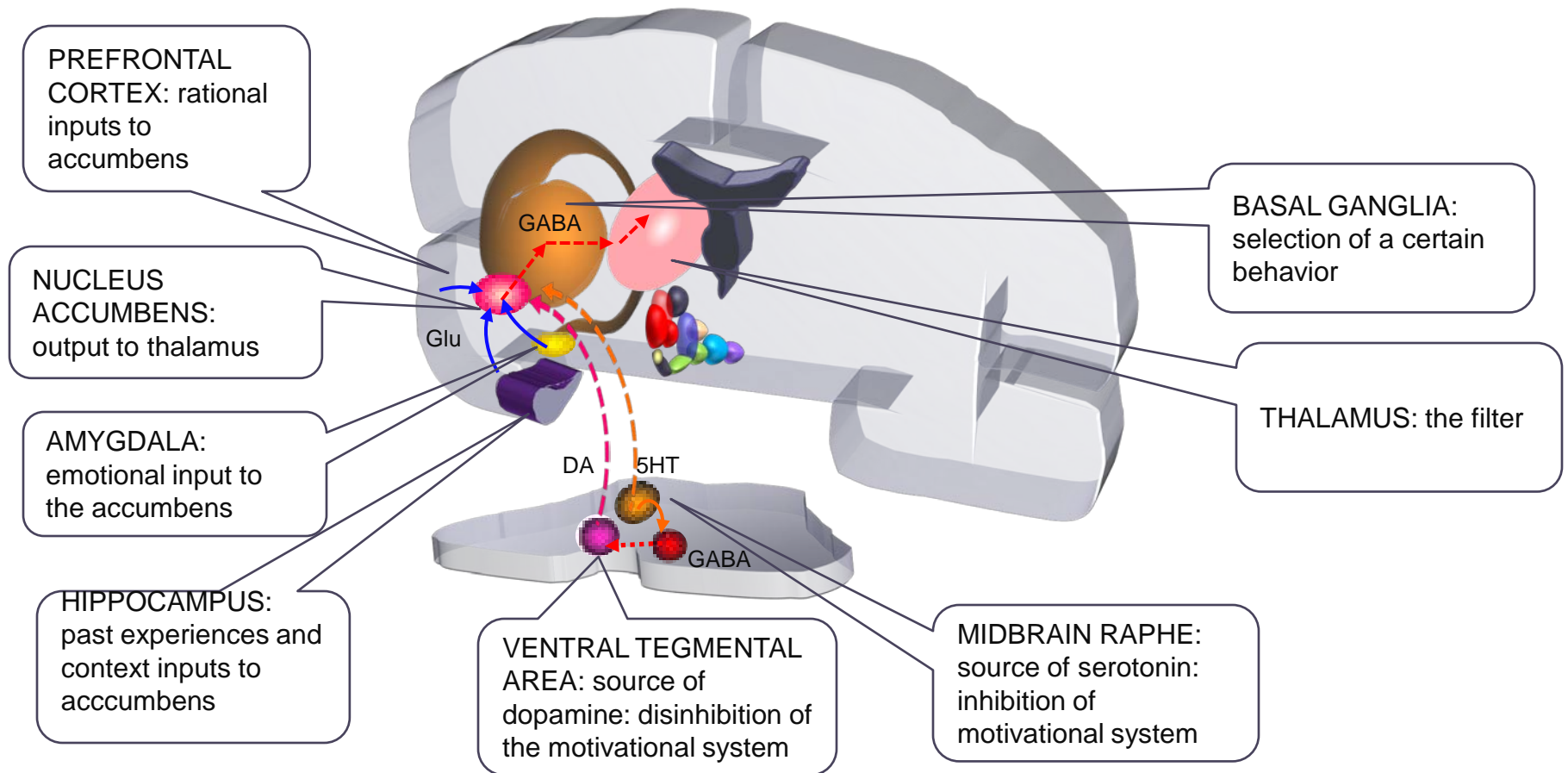
# STAGES OF MOTIVATIONAL PROCESS IN PAHTOLOGY

1. Activation of the motivational incentives: low in depression, easy in manic state
2. Deliberation: long in depression, short in manic state, inexistent in impulsive personalities
3. Decision taking: difficult for dependent personalities (they need another person to assume responsibility)
4. Acting out: difficult in depression, hasty in manic state, immediate in impulsive personalities
5. Persistence in act: difficult in manic patients

# NEUROANATOMY AND NEUROBIOLOGY OF THE MOTIVATIONAL SYSTEM

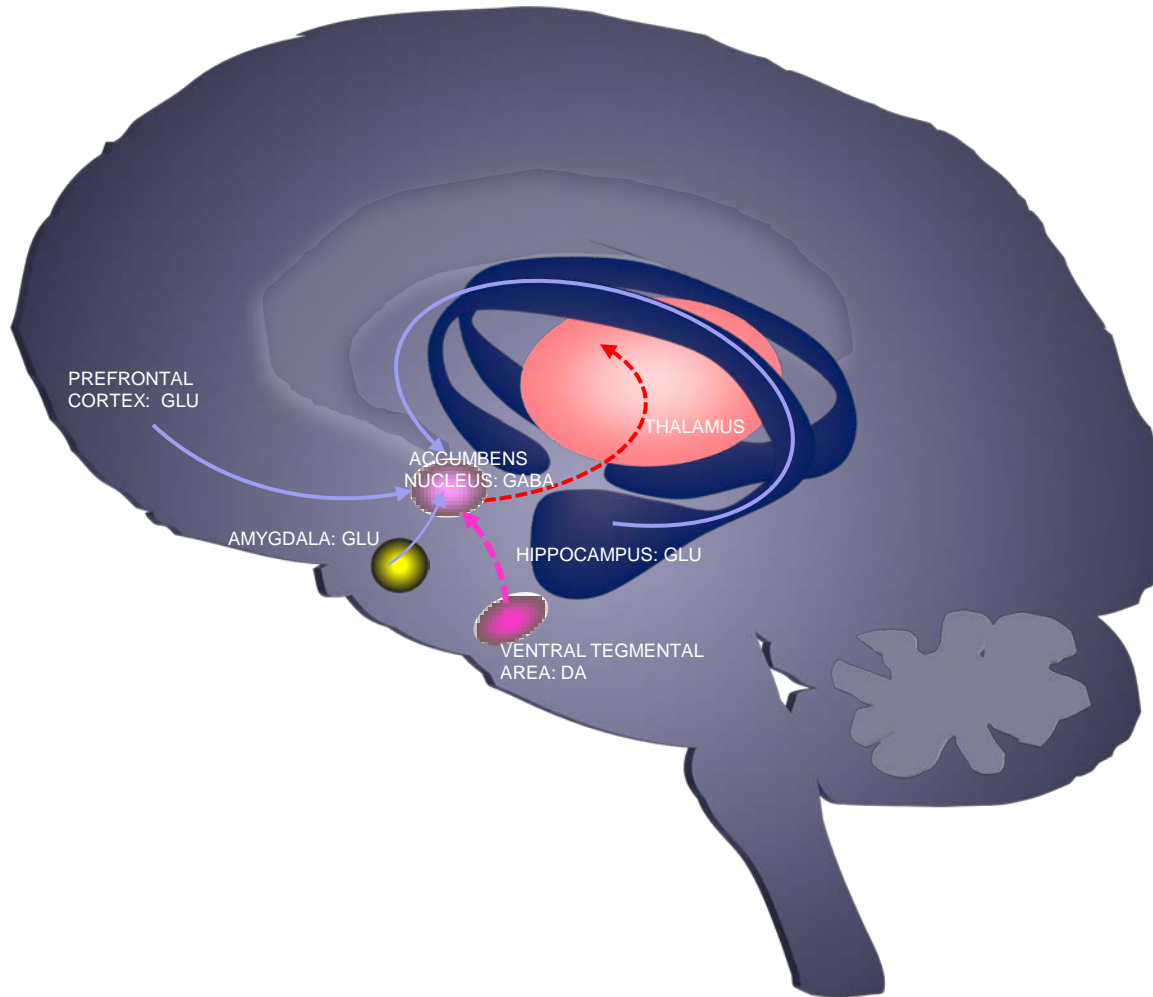
- PREFRONTAL CORTEX (glutamate input to accumbens):
  - executive functions (problem solving: planification, predictions, feedback)
  - rational decisions
- AMYGDALA (glutamate input to accumbens): decisions from the prefrontal cortex are influenced by emotions. In the absence of the reasoning provided by prefrontal cortex or by context provided by hippocampus, decisions are taken on emotional grounds.
- HIPPOCAMPUS (glutamate input to accumbens): decisions from the prefrontal cortex must take into account the context and the past experience of the individual
- NUCLEUS ACCUMBENS: is difficult to be stimulated only by the prefrontal cortex (input from hippocampus and/or amygdala needed)
- BASAL GANGLIA: role in selection of a certain behavior
- THALAMUS: filter for decisions, perceptions and behaviors
- VENTRAL TEGMENTAL AREA (VTA): dopamine (DA) input to the accumbens nucleus has the global effect of disinhibiting the motivational system (acting out)
- MIDBRAIN RAPHE: serotonin (5HT) input to the VTA inhibits dopamine release. Low serotonin is linked with impulsivity

# NEUROANATOMY AND NEUROBIOLOGY OF THE MOTIVATIONAL SYSTEM

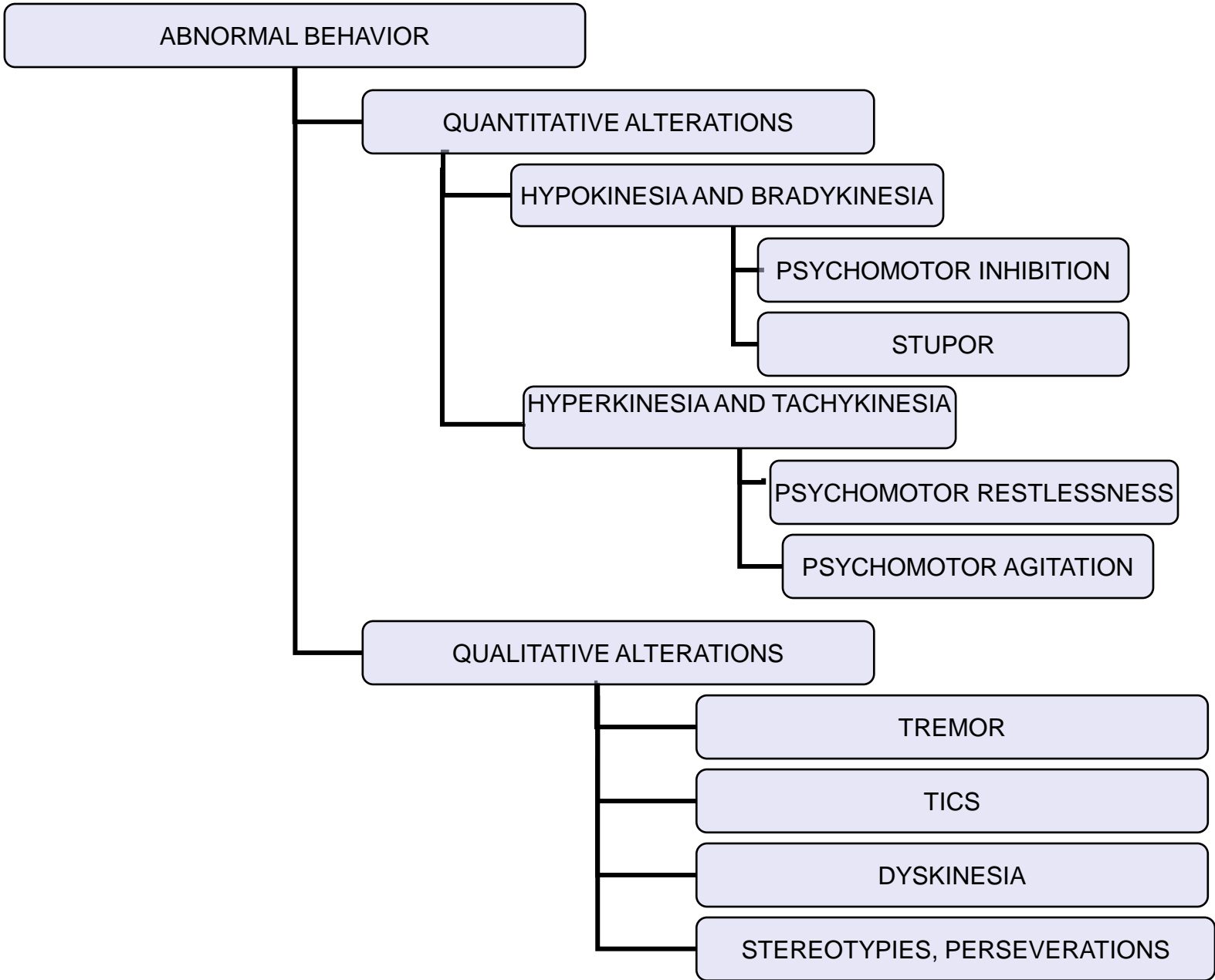


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# DECISION MAKING



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# ABNORMAL BEHAVIOR: QUANTITATIVE ALTERATIONS

- PSYCHOMOTOR RESTLESSNESS
  - Generalized anxiety
  - Hypomania
  - Psychoses, secondary to delusional and hallucinatory experiences
  - Akathisia: psychomotor restlessness induced by incisive neuroleptic medication
- PSYCHOMOTOR AGITATION: maximum degree restlessness which is: disorganized, meaningless and may be accompanied by aggressiveness
  - Anger
  - Highly intense panic attack (in acute stress reaction)
  - Mania: the patients uses all the available space; agitation is influenced by events (“furor maniacalis”)
  - Psychoses, secondary to delusional and hallucinatory experiences
  - Catatonic schizophrenia: agitation that is limited to a small space, stereotypical, brief and uninfluenced by events (raptus)
  - Confusional state: chaotic agitation, with no purpose (intoxication with stimulant drugs, withdrawal from sedative drugs)

Tachykinesia + hyperkinesia (multiple rapid movements) - mania



# ABNORMAL BEHAVIOR: QUANTITATIVE ALTERATIONS

- PSYCHOMOTOR INHIBITION
  - Depression: slow movements, slow answers with increased latency
  - Epileptoid personality: extremely slow in everything they do
  - Asthenia
  - Confusional state (intoxication with sedative medication)
- STUPOR: maximum degree of psychomotor inhibition with lack of spontaneous and requested movements and speech
  - Depression: stupor with hypotonia: severe (psychotic) depression
  - Catatonic states: with hypertonia and waxy flexibility: catatonic schizophrenia
  - Reactive: highly intense panic attack (in acute stress reaction)
  - Organic cerebral sufference
- Negativism
  - passive: the subject ignores the greeting or orders from the examiner
  - active: the subject does the contrary of what he is requested to do
    - in catatonic schizophrenia

Bradykinesia + hypokinesia (few slow movements) - depression

# THE CATATONIC SYNDROME

- Catatonic STUPOR or AGITATION
- Generalized muscular hypertonia (rigidity)
- Waxy flexibility (catalepsy)
- Position stereotypy or movement stereotypy
- Passive negativism: not moving, not responding, remains motionless when food is given, refuses sphincter control (incontinence)
- Active negativism: turns his head in the opposite direction when he is given food or when attempts are made to communicate with them, actively refusing to urinate - risk of bladder retention, to defecate - risk of fecaloma)
- Or increased suggestibility: echomimia, echopraxia, echolalia

Emergency: must be fed and hydrated!

# ABNORMAL BEHAVIOR: QUALITATIVE ALTERATIONS

- Tremor: rhythmical involuntary movements of the extremities or limbs and head (generalized tremors)
  - Resting tremor in parkinsonism secondary to administering incisive neuroleptics
  - Anxious (in panic attacks)
  - Conversive (dissociative-conversive disorder)
- Tics: sudden, repetitive, involuntary movements
  - Tic disorder (Gilles de la Tourette) : motor tics and verbal cacophony
  - Anxious tics in children
- Dyskinesia: buco-lingual (chewing, tongue protrusion) or choreo-athetosis type involuntary movements induced by incisive neuroleptic medication:
  - Choreic movements: large and sudden movements from the the root of the limb (St. Vitus dance)
  - Athetotic movements: small amplitude, slow movements at the level of limb extremities
- Stereotypes: meaningless repetition of movements or words that never had sense – hebephrenic schizophrenia, catatonic schizophrenia or in mental retardation
- Perseverations: meaningless repetition of movements or initially appropriate words - hebephrenic schizophrenia

# ABNORMAL BEHAVIOR

- Bizarre
  - Secondary to ideo-verbal disorganization in hebephrenic schizophrenia
  - Hallucinatorily motivated (the patient executes the orders given by imperative hallucinations or stares in the direction of the auditory hallucinations)
  - Delusionally motivated (a claiming behavior secondary to the delusion of prejudice in paranoia)
  - A behavior imposed from distance secondary to the transference-influence syndrome
- Dramatic, theatrical
  - In histrionic personalities: exaggerated gestures, mimic and movements
- Uncensored: disinhibition in terms of social behavior - the subject addresses strangers in overly familiar terms, sings, dances, tells jokes that are inappropriate to the situation or "truths" that bother
  - Mania
  - Prefrontal Pick Dementia

# ABNORMAL BEHAVIOR

- Compulsive
  - Physical or mental acts used by patients to reduce tension generated by obsessions, or without connection to obsessions (in Obsessive-Compulsive Disorder)
- Impulsive: detensioning by immediate acting-out
  - Impulse control Disorders: pyromania, trichotillomania, kleptomania
  - Bulimia nervosa
  - Emotionally-unstable, histrionic and antisocial type personality
- Avoidant: avoiding phobogenic situations (phobic disorders) or relationships with strangers (anxious-avoidant personalities)
- Securing: taking companions, wearing protective objects (amulets) to cope with the exposure to a phobogenic situation that cannot be avoided

# PERSONALITY

- Definition: the habitual way an individual:
  - thinks
  - Feels
  - Tends
  - acts
  - reacts
- Dimensions: physical, psychological and spiritual

# THE SPIRITUAL DIMENSION OF PERSONALITY

“Because man creates values that go beyond the biological and psychological life, the spiritual level is essential for being considered a person”

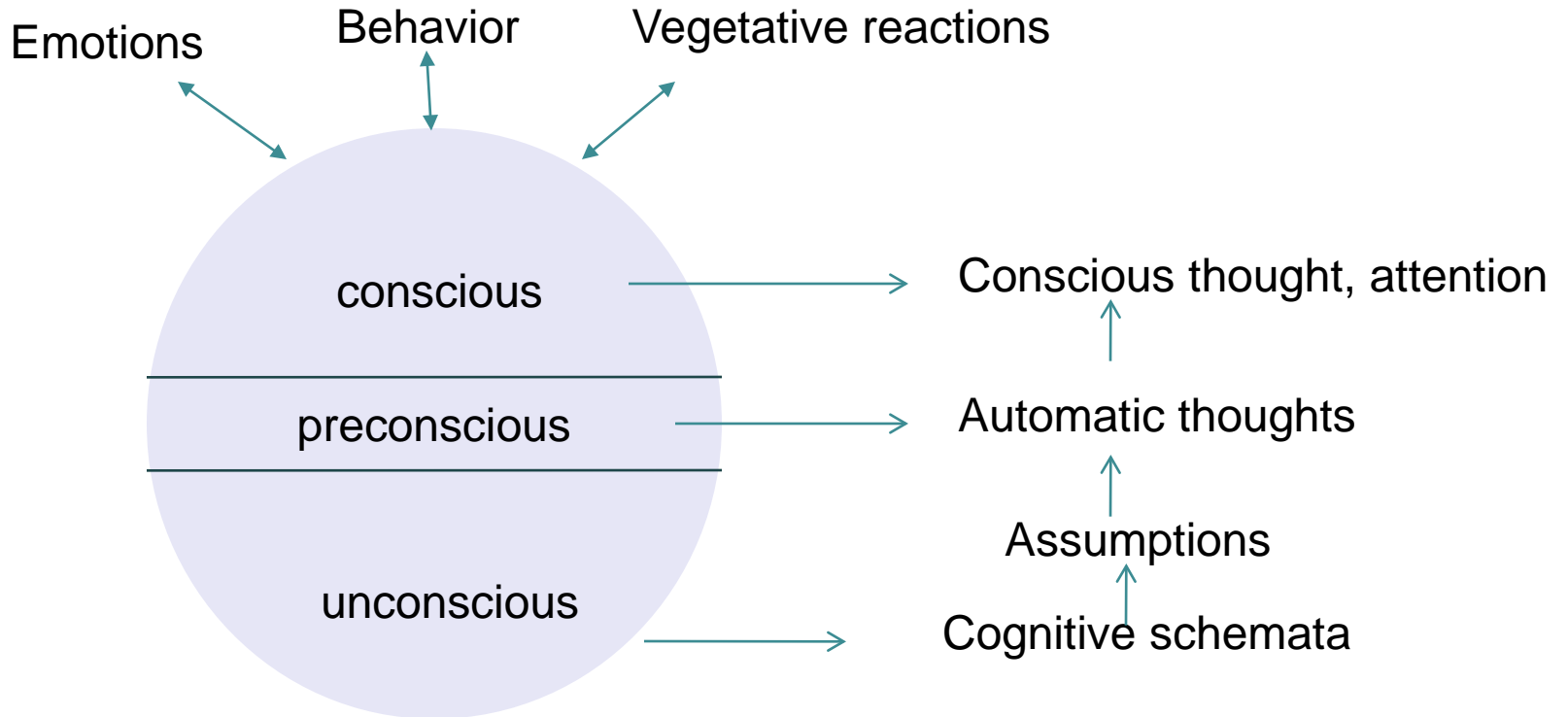
Max Scheller

# THE PSYCHOLOGICAL DIMENSION: COGNITIVISM AND PERSONALITY

- Scheme: a cognitive structure that organizes the perceived material in order to give it a sense
- The cognitive schemata
  - Organize the experience
    - to assign a sense to it (generate rules for interpretation of the world),
    - for mnemonic storage
    - for adapting
  - Dictate the behavior (the behavior reflects the schemata)



# COGNITIVISM AND PERSONALITY

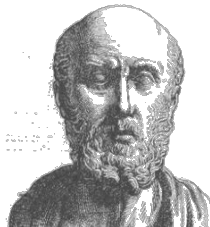


# COGNITIVISM AND PERSONALITY

Personality disorder	Self-evaluation scheme	Evaluation of others scheme	Affective scheme	Strategy
paranoid	Unfairly treated by others	Treacherous, manipulative	Fear of manipulation, anger against abuse	Hypervigilance Suspiciousness Fight
schizoid	Self-sufficient	Intrusive	Intrusiveness anxiety	Isolation
histrionic	Deserving the attention of others	Accepted if they maintain interest	Fear of rejection	Dramatization, Self-victimization, parasuicide
antisocial	Wrongly treated by others	Others are disconsidered	Anger	Antisocial acts
avoidant	Socially incompetent	Criticizing, dangerous	Fear of criticism	Avoiding to attract attention to themselves
dependent	Decisionally incompetent	Ideal	Fear of abandonment	Nurturing the relationship with the decision making person
anankastic	Responsible to self and others	Irresponsible, incompetent	Fear of disorder	High standards control, checking

# THE PHYSICAL DIMENSION: THE HUMORAL THEORY (HIPPOCRATES- GALEN)

Hippocrates		Galen	
blood	joyful	air	sanguine
black bile	somber	earth	melancholic
yellow bile	enthusiastic	fire	choleric
phlegm	calm	water	phlegmatic



Hippocrates Empedocles Galen

# PERSONALITY AND BODY CONSTITUTION

## ERNST KRETSCHMER

biotype	psychotype
picnic	cyclothymic
leptosomatic (asthenic)	schizothymic
athletic	epileptoid



picnic

leptosomatic (asthenic)    athletic



E. Kretschmer (1888-1964)

# EXTRAVERSION-INTROVERSION

- Carl Gustav Jung: 8 personality types according to
  - 2 attitudes: extraversion and introversion
  - 4 functions:
    - decisions are made using objective logic or subjective feelings
    - Information is perceived through senses or via intuition



Carl Gustav Jung (1875-1961)

# PERSONALITY – K. Schneider

1. Hyperthymic
2. Depressive
3. Sensitive
4. Anankastic
5. Fanatic
6. Seeking valorization, attention
7. With reduced will
8. Lacking affection
9. Asthenic
10. Emotionally unstable



K. Schneider (1887-1967)

This classification is at the basis of the taxonomy of personality disorders in the DSM and ICD

# 7 DIMENSIONS OF PERSONALITY

- 4 temperaments:
  - Novel seeking: exploration, extravagance, impulsivity – **dopamine**
  - Avoiding trauma: pessimism, fear, shyness - **serotonin and GABA**
  - Addiction to reward: sociability, openness – **norepinephrine and serotonin**
  - Persistence: determination, ambition, perfectionism – **glutamate and serotonin**
- 3 dimensions of character
  - Self directedness: responsibility, purpose, self acceptance
  - Cooperation: empathy, compassion, helping
  - Self transcendence: spirituality, idealism, enlightenment
- Personality disorders have low scores in the character dimensions of self directedness and cooperation
- The DSM A Cluster associated with low scores in addiction to reward
- The DSM B Cluster associated with high scores in novel seeking
- The DSM C Cluster associated with high scores in danger avoidance



CR Cloninger (1944-)

# TEMPERAMENT

- Definition: simple traits, of biological origin, observed in infants as opposed to the more complex notion of adult personality (Rutter)



# TEMPERAMENT

- 9 aspects (Chess and Thomas):
  1. Activity level
  2. Regularity of biological functions
  3. Approaching or withdrawing from new situations
  4. Responsivity to sensory stimulation
  5. Intensity of reaction to stimuli
  6. Adaptability to new situations
  7. Quality of mood
  8. Distractibility
  9. Persistence of attention

# CHARACTER

- The visible aspect of personality: the behavior
- Used in psychoanalysis in the “structure of character” expression, reuniting motivational traits that, being closely interconnected, form a structure which is resistant to change
- The moral aspect of personality: good-bad character
- The tenacity of the individual: strength of character

# CHARACTER STRUCTURES

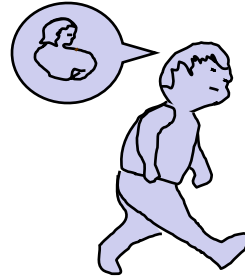
## (resistance to change)

### THE PHALLIC CHARACTER

The phallic stage: 3-6 years

Phallic-narcissistic character:

cold, reserved, arrogant, ambitious, confident, uncautious, defensive type  
aggressivity, exhibitionist, impulsive  
amorally promiscuous or asexual puritan



### THE ANAL CHARACTER

The anal stage: 1-3 years

The expulsive stage: the anal-expulsion character

- megalomania, suspiciousness, disorder, defiance,

The retentive stage: the anal-retentive character:

- self control, obstination, order, pedantry, parsimony  
meticulousness, devotion to rules



### THE ORAL CHARACTER

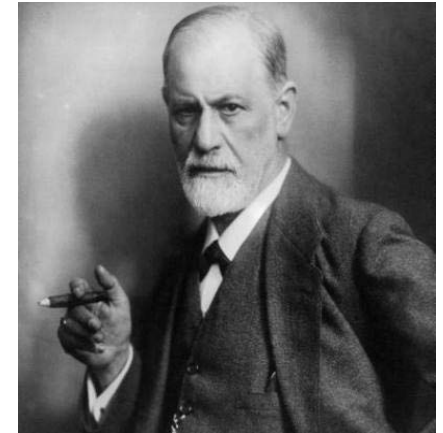
The oral stage: 0-1 years

The sucking stage: the oral-dependent

- Naive optimism, addiction, affective superficiality

The biting stage: the sadistic-oral

- pessimism, verbally  
aggressive, independent, dominating



S. Freud (1856-1939)

# PERSONOGENESIS

- The formation of personality starts in childhood and ends after adolescence
- After the age of 18-25 years the personogenesis is considered to be finalised
- A diagnosis of personality disorder can be made only after the age of 18

# THREE CLUSTERS (DSM IV)

- Cluster A (bizarre):
  - Paranoid PD
  - Schizoid PD
- Cluster B (extravagant):
  - Histrionic PD
  - Emotionally unstable PD (Borderline PD)
  - Dissocial / Antisocial PD
- Cluster C (insecure):
  - Anankastic PD (Obsessive-compulsive PD)
  - Anxious-avoidant PD
  - Dependent PD

# GENERAL CHARACTERISTICS OF PERSONALITY DISORDERS

- Personality traits are globally and excessively accentuated
- Egosyntony: the subjects is pleased with himself
- Behavior is rigid (inflexible in a variety of situations), therefore predictable
- Alloplasticity: the subject does not feel the need to change, but tries to influence others into adapting to his personality
- Maladaptative behavior: affects the functioning of the individual in society, family, work place
- Pathoplasticity: the clinical presentation of comorbid illnesses is influenced by the personality (exaggerated or masked)

# PARANOID PD

1. Megalomania
2. High sensitivity to criticism
3. Tendency to holding grudges and revenge
4. Suspiciousness
5. Hypervigilance (doesn't even confess to friends)
6. Interpretational: the subject has the tendency to interpret everything as being unfavorable to himself
7. Tenacity in the fight to defend his own rights
8. Claiming, querulant, litigious (lawsuit) behavior

Paranoid PD predisposes for persistent delusional disorders (paranoia)

# SCHIZOID PD

1. Lack of interest for close or intimate relationships
2. Indifference to criticism or praise
3. Eccentricity, non-conformist behavior
4. Solitary life
5. Emotional coldness
6. Concern for fantasy and introspection
7. Preference for solitary and abstract activities

Schizoid PD does not necessarily predispose for schizophrenia, but schizophrenic patients have relatives with schizoid PD.



# EMOTIONALLY UNSTABLE PD

- Impulsive type: emotionally unstable + lack of impulse control
- Borderline type:
  1. Intense and unstable interpersonal relationships
  2. Frantic efforts to avoid real or imagined abandonment
  3. Impulsivity with a potential for self-harm (excessive spending, sex, substance abuse, bulimia, reckless driving)
  4. Unstable self-image
  5. Affective instability with intense emotional reactions (euphoria, anxiety, irritability, anger)
  6. Self-harming behavior (self-mutilation), attempts and threats of suicide
  7. Feeling of emptiness, transient paranoid ideation

Emotionally unstable PD predisposes for depression, suicide and addiction

# HISTRIONIC PD

1. The need to be the center of attention, to be admired, loved: egocentrism with a low capacity of transitive affectivity
2. Superficial sociability (friendships are easily established just as easily lost)
3. Emotional shallowness with labile affect
4. Low tolerance to frustration, hyper-emotive (exaggeration in expressing emotions), tearfulness reflecting their affective immaturity
5. Suggestibility
6. A theatrical, affectively manipulative (sometimes emotional blackmail by parasuicide), seductive behavior, in order to attract attention to themselves

Histrionic PD predisposes for conversive-dissociative and somatization disorders (former hysterical neurosis)

# DISSOCIAL (ANTISOCIAL) PD

1. Contempt for the rights and feelings of others
2. Contempt for laws and social norms and their violation
3. Use deceit, intrigue, blackmail to obtain personal profit
4. Irresponsibility at work (cannot adapt, change many jobs) and in the family (abandoning the partner and children)
5. Low tolerance to frustration and impulsivity
6. Aggressiveness
7. Inability to feel remorse and learn from punishment

Dissocial/antisocial PD is preceded in childhood by conduct disorders and predisposes for addiction

# ANANKASTIC PD

1. Exaggerated self-imposed standards (inhibiting perfectionism), also imposing them on others
2. Devotion to work (financially unjustified) at the expense of leisure (hobbies, interpersonal relationships)
3. Adherence to social conventions and moral rules
4. Inability to rid himself of unnecessary items
5. Parsimony
6. Reluctance to delegate responsibilities to others
7. Authoritarianism and verifying the work of subordinates
8. Rigidity
9. Control of emotion expression

Anankastic PD predisposes for anxiety, depression, alcoholism (secondary to anxiety or depression)

# ANXIOUS-AVOIDANT PD

1. Excessive concern and fear of being rejected and criticized
2. Feelings of inferiority or social inadequacy
3. Reluctance to establish interpersonal relationships if he is not sure he is liked, accepted
4. Reluctance towards intimate relationships
5. Inhibition in new interpersonal relationships
6. Reluctance to take risks or responsibilities
7. Avoids activities that involve interpersonal relationships

Anxious-avoidant PD predisposes for anxiety disorders (mainly social phobia)

# DEPENDENT PD

1. Distrust in one's own ability to take everyday decisions
2. Difficulty in making decisions without supervision or in initiating their own projects
3. The need for others to assume responsibility for him
4. Feeling of helplessness when he needs to decide on his own
5. Inability to express disapproval or acceptance of unpleasant tasks in order to achieve or avoid losing support from others
6. Immediate search for a new supervisory relationship when the previous falls apart
7. Unjustified concern or fear of being left to fend for themselves

Dependent PD predisposes for anxiety, depression, addiction  
(secondary to anxiety or depression)

# PERSONALITY DISORDERS: DIFFERENTIAL DIAGNOSIS

- Organically caused personality change:
  - Moriatic syndrome (frontal lobe tumours)
  - Pick prefrontal dementia
- Enduring personality changes after a psychological trauma: hypervigilance, sensitivity, isolation or dependency, reconsideration or disconsideration of moral values

# PERSONALITY DISORDERS: DIFFERENTIAL DIAGNOSIS

- Drug abuse may induce an antisocial behavior: offering drugs to friends to gain money, stealing and selling goods from home, robbery, verbal and physical aggressivity, murder.



# PERSONALITY DISORDERS: EVOLUTION AND COMPLICATIONS

- PDs are lifelong conditions. Anankastic PD may accentuate with age
- PDs may be complicated with:
  - Anxiety
  - Depression
  - Suicide or selfharm
  - conversive-dissociative and somatization disorders
  - Psychotic disorders
  - Addictions
  - Eating disorders

# PERSONALITY DISORDERS:TREATMENT

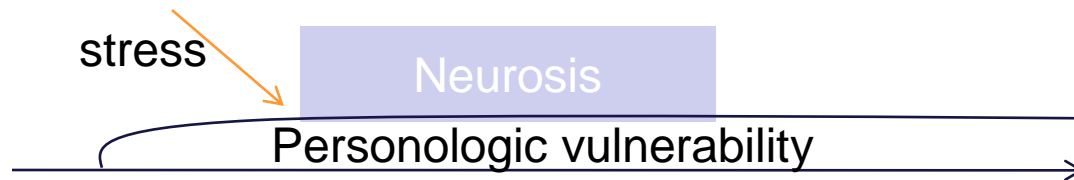
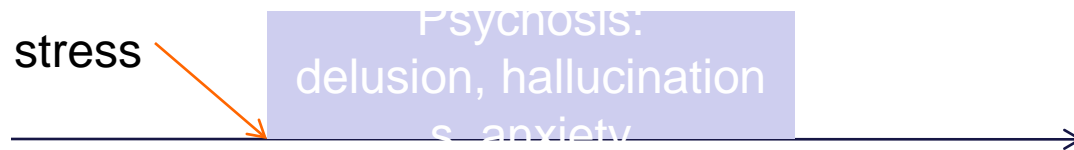
- Debatable results
- Psychotherapy:
  - individual: psychoanalysis, cognitive-behavioral, systemic familial
  - Group
- Medication: anxiolytics, antidepressants, mood stabilizers, antipsychotics

# REACTIVE DISORDERS

- Definition: psychiatric disorders with exogenous determinism, triggered by a stressful event that overwhelms the capacity to adapt or generates maladaptive responses

# REACTIVE DISORDERS

- Differential diagnosis:
  - Acute and transient psychotic disorders with associated acute stress
  - Neurotic disorders correlated with stress



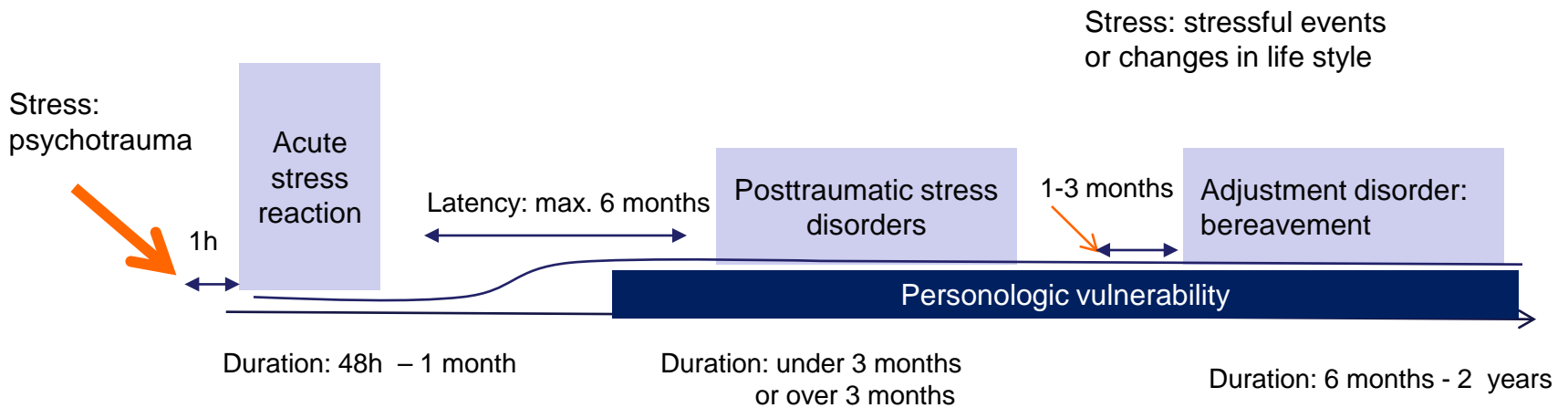
# REACTIVE DISORDERS

- Stressful events significance:
  - Loss: people, material goods, prestige, professional situation, money
  - Danger: natural or man-made
  - Sensory deprivation: deafness, blindness, foreign socio-cultural environment with absence of foreign language abilities
  - Frustration: the person doesn't get what he thinks to be entitled to obtain

# REACTIVE DISORDERS

- Acute stress reaction
- Post-traumatic stress reaction
- Adjustment disorders (pathologic bereavement, cultural shock, anxious-paranoid reaction, Ganser syndrome)

# REACTIVE DISORDERS: SYNTHESIS



# ACUTE STRESS REACTION

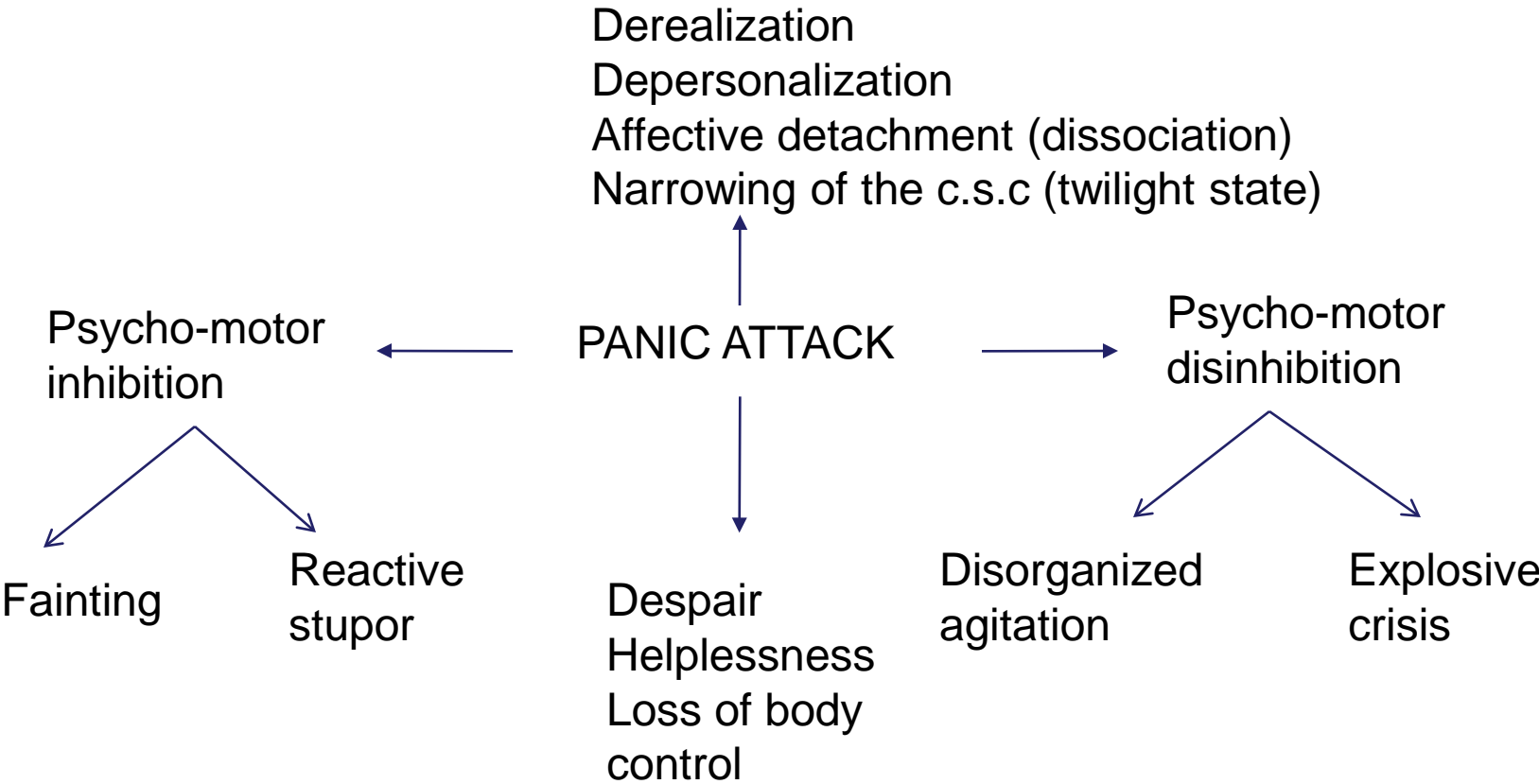
- Occurs immediately (within an hour) in response to the traumatic event
- Clinical: intense PANIC ATTACK
- Duration: 48 hours – max. 1 month
- Complications: alcoholism, adjustment disorders triggered by the consequences of the psychotrauma
- Treatment:
  - Crisis intervention
  - Debriefing: the patient is helped to talk about the event and to express his emotions
  - Prevention strategies to avoid
    - Alcohol, drug abuse
    - Adjustment disorder triggered by the consequences of the psychotrauma (PTSD)
  - Anxyolitics



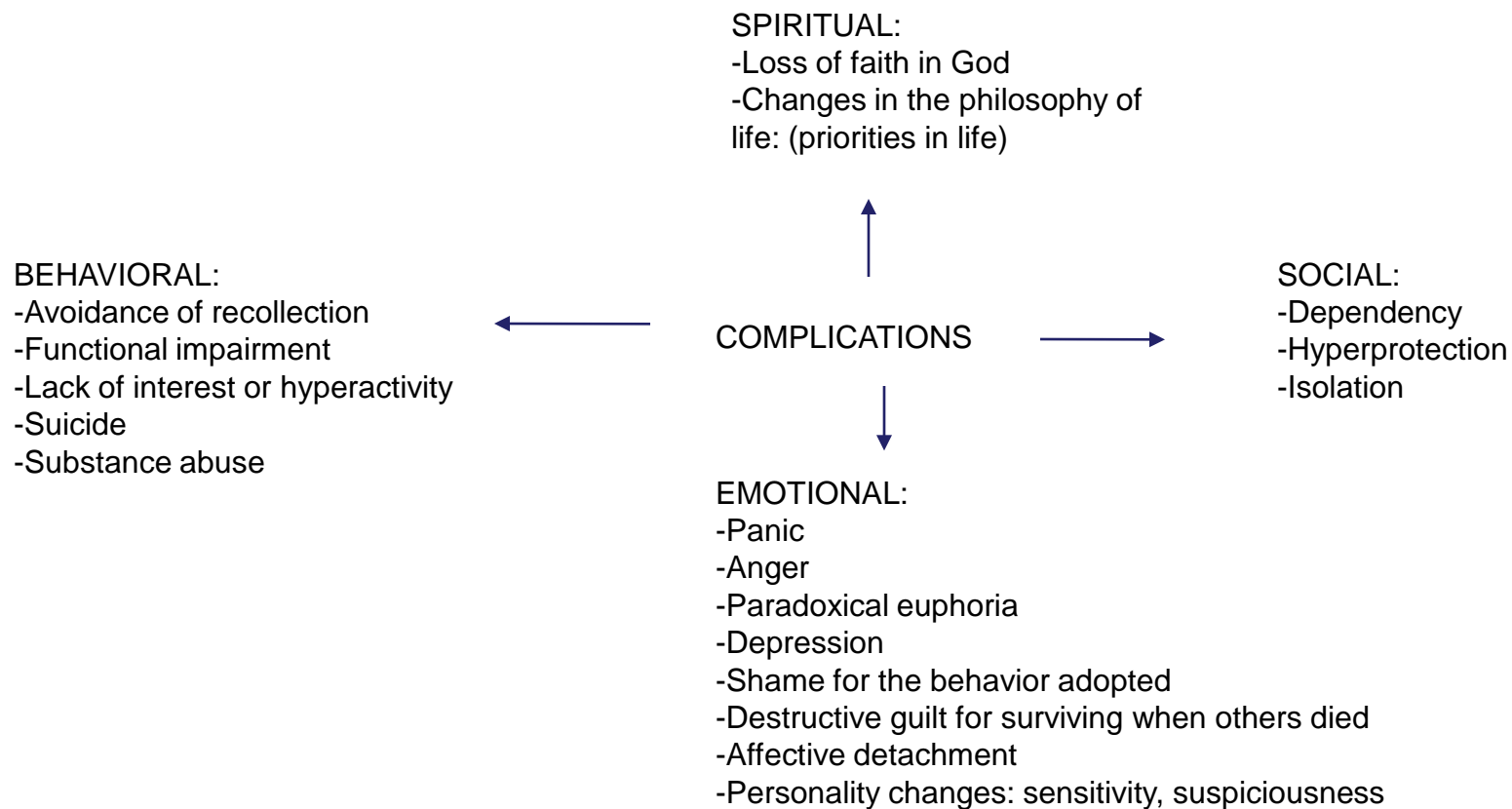
# ACUTE STRESS REACTION: PSYCHOTRAUMA

- PSYCHOTRAUMA= an event that threatens the life or integrity of the subject or of others (when the subject is only witnessing):
  - Natural disasters (hazards): earthquakes, fires, floods, tsunamis, volcanic eruptions
  - Man-made disasters: rape, robbery, serious car /train accidents, wars, torture, terrorist attacks
- The event must be perceived as traumatic (danger, loss) by the subject
- The intensity of the psychotraumatic event overwhelms even the capacity of normal subjects to cope with it.

# ACUTE STRESS REACTION: CLINICAL PICTURE



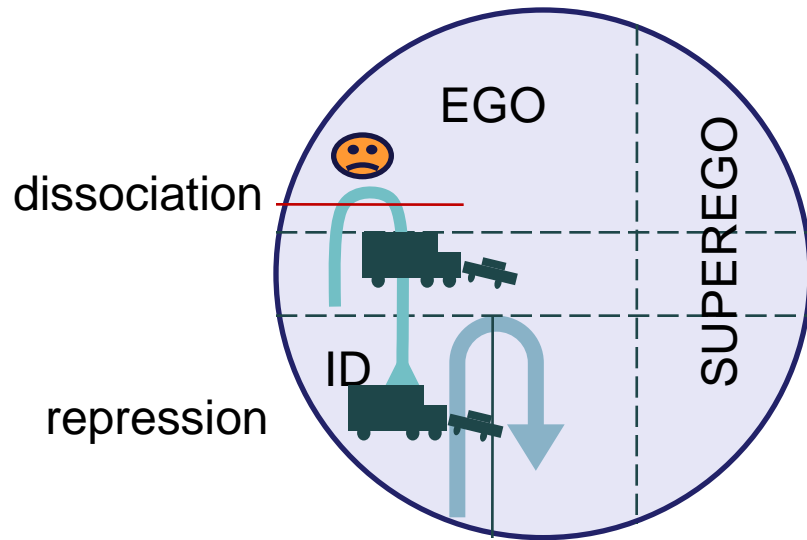
# ACUTE STRESS REACTION: COMPLICATIONS



# ACUTE STRESS REACTION: DEFENCE MECHANISMS

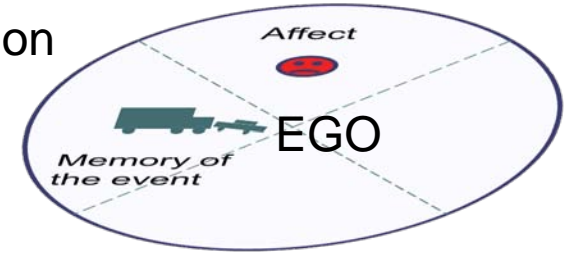
- In order to cope with the trauma the DISSOCIATIVE REACTIVE symptoms try to maintain the control over the mind, since the control over the body is lost:
  - AFFECTIVE DETACHMENT: apparently lack of affective reaction
  - NARROWING OF THE CONCIIOUSNESS STATE: twilight state
  - DEREALIZATION AND DEPERSONALIZATION: a feeling that the world or oneself are seem changed, strange, unreal
  - DISSOCIATIVE TRAUMATIC AMNESIA: amnesia for the event when trying to evoke it

# DISSOCIATION



Vertical dissociation (Freud): the mnemonic trait of the traumatic event is suppressed in the unconscious and dissociated from affect

dissociation



Horizontal dissociation (Janet): the mnemonic trait of the traumatic event is separated from affect through a phenomenon of mental disintegration

# CRISIS INTERVENTION

1. Assessing the severity of the crisis: the person is injured or violent
2. Securization
3. Exploring the issue: empathetic listening
4. Exploring the emotional expression (may affect dialogue)
  - Emotional detachment or
  - Emotional hyperexpressivity (crying is allowed)
5. Respect for the person (for personal values, avoid judgements)
6. Offering potential alternative solutions
7. Developing an action plan:
  1. specific
  2. concrete (on points)
  3. time limited, monitored
  4. accepted by the subject

# POST-TRAUMATIC STRESS DISORDER

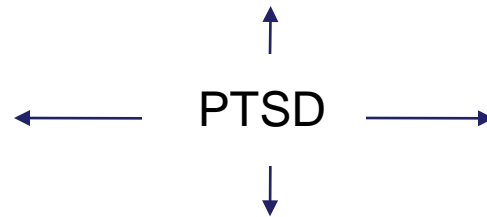
- Female: male = 2:1
- Onset: any age
- Cured at 1 year (50%) or chronic or fluctuating evolution
- Complications:
  - Depression +/- suicide
  - Drug abuse
  - Enduring personality change

# POST-TRAUMATIC STRESS DISORDER: CLINICAL PICTURE

OBSESSIVE REEXPERIMENTING THE  
PSYCHOTRAUMA: spontaneous and  
unwanted recollections:  
Flashbacks: recurrent visual recollections  
Recurrent and stereotyped nightmares

## DISSOCIATIVE PHENOMENA:

- evocation amnesia of the event
- Emotional detachment



PHOBIC AVOIDANCE  
of persons, places or  
situations related to the event

## GENERALIZED ANXIETY:

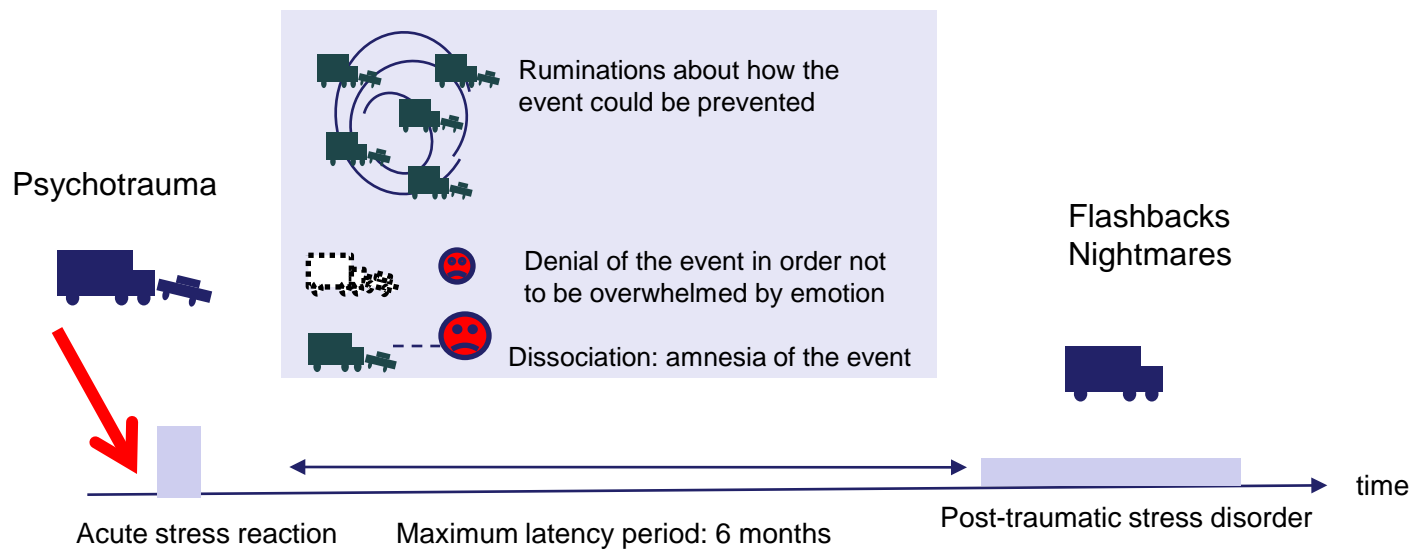
- Sleep onset insomnia
- Repeted night wakings
- Concentration hypoprosexia
- Startling
- Irritability



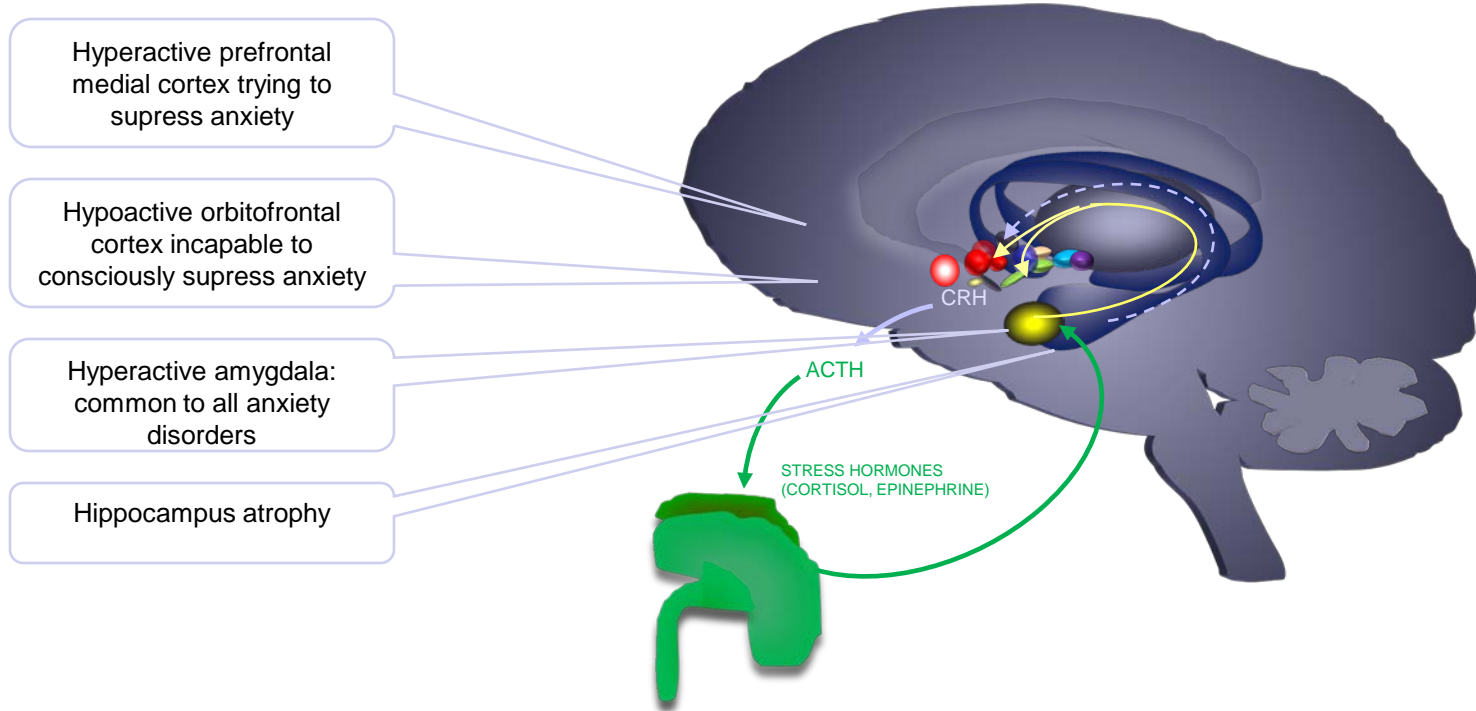
# PTSD PATHOGENY: PSYCHOLOGICAL EXPLANATIONS

After the psychotrauma the cognitive schemas (individual concepts regarding self and world) are readjusted

Defense mechanisms: denial (in order not to be overwhelmed by emotion) and dissociation may prevent the integration of the psychotrauma into the cognitive schemas



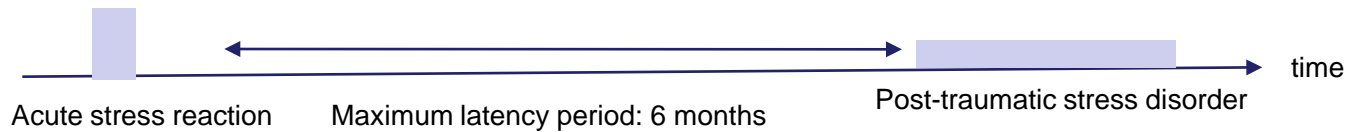
# PTSD PATHOGENY: BIOLOGICAL EXPLANATIONS



STIMULATION OF SYMPATHETIC HYPOTHALAMIC CENTER: NOREPINEPHRINE SECRETION

CRH SECRETION FROM HYPOTHALAMUS: ACTIVATING THE RELEASE OF ACTH, CORTISOL AND EPINEPHRINE

CORTISOL SECRETION AFFECTS THE HIPPOCAMPUS: AMNESIA  
 NOREPINEPHRINE RELEASE: ANXIETY  
 ENDOGENOUS OPIOID RELEASE: AFFECTIVE DETACHMENT



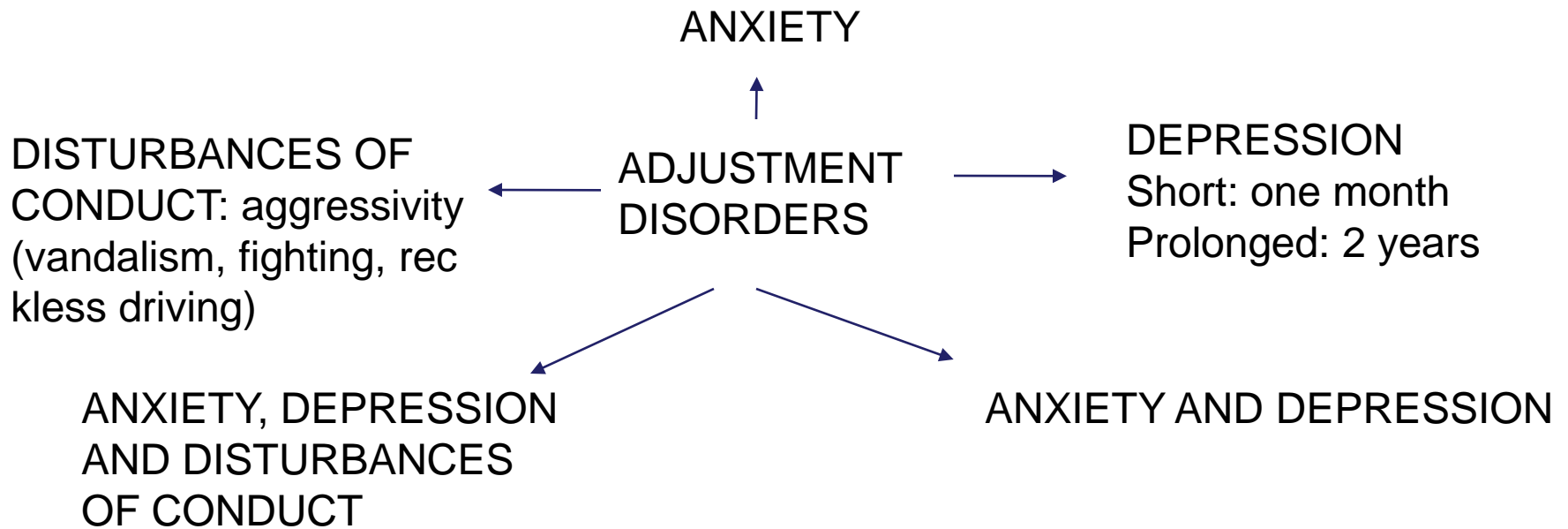
# POST-TRAUMATIC STRESS DISORDER

- Treatment:
  - Immediate: supportive psychotherapy, crisis intervention
  - During the latency period: debriefing = the patient is helped to talk about the event and to express his emotions
  - After the onset of PTSD
    - Anxiolytics, antidepressants
    - Group psychotherapy
    - Cognitive-behavioral desensitization therapy

# ADJUSTMENT DISORDERS

- Onset at less than one month after the stressful event or after life changes
- Symptoms do not last for more than 6 months (with the exception of the prolonged depressive reaction max. 2 years)
- Complications: alcoholism, depression, anxiety
- Treatment:
  - supportive psychotherapy
  - antidepressants, anxiolytics

# ADJUSTMENT DISORDERS: CLINICAL PICTURE

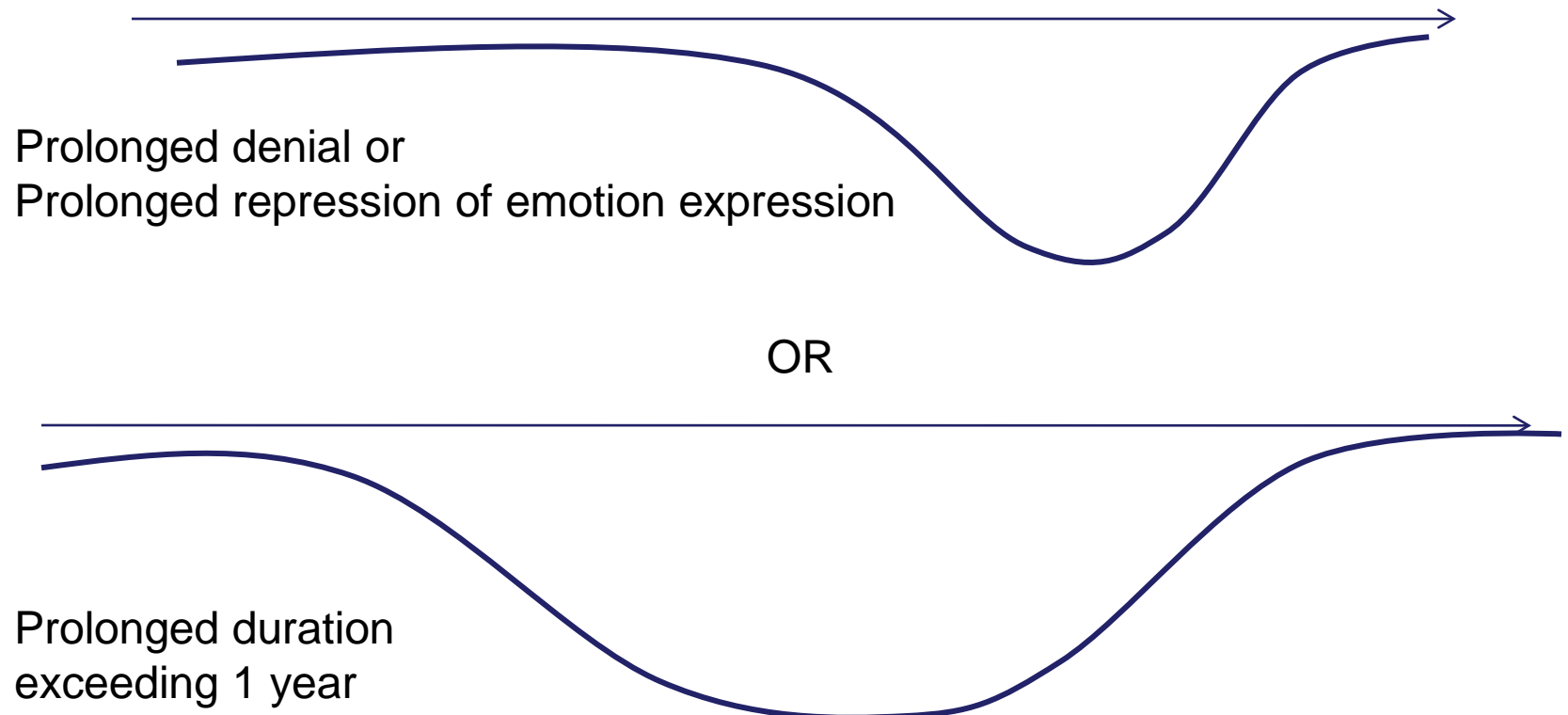


# NORMAL BEREAVEMENT REACTION



Does not require psychiatric treatment

# PATHOLOGICAL BEREAVEMENT REACTION



# GANSER SYNDROME

- In histrionic personalities under custody awaiting the final sentence (prison psychosis)
- Clinical:
  - The symptoms reflect the patient's opinion about how a mental illness should manifest, rather than
    - pseudodementia behavior (hysterical pseudodementia)
    - Nonsensical answers to simple questions but in relation with the question (approximate answers): **How many legs has a dog ? Five**
- Differential diagnosis with malingering (premeditated simulation of a disorder)



# ANXIOUS PARANOID REACTION

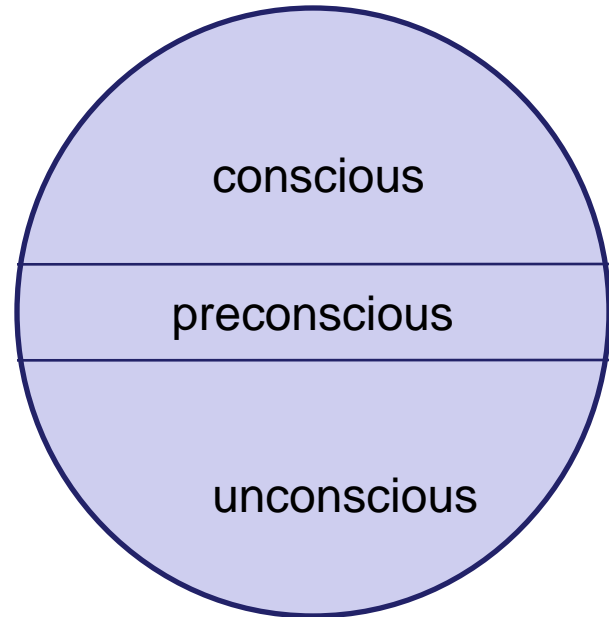
- In conditions of social danger (revolutions)
- Paranoid delusion +
- Auditory hallucinations
- Anxiety
- Psychomotor agitation

# NEUROSES

- General characteristics:
  - Reality testing is preserved
  - Insight present
  - Egodystony
  - Predisposing background: personality disorders
  - Trigger factors: intrapsychic conflict, stressful life events
  - Treatment: psychotropic medication + psychotherapy + psychoeducation

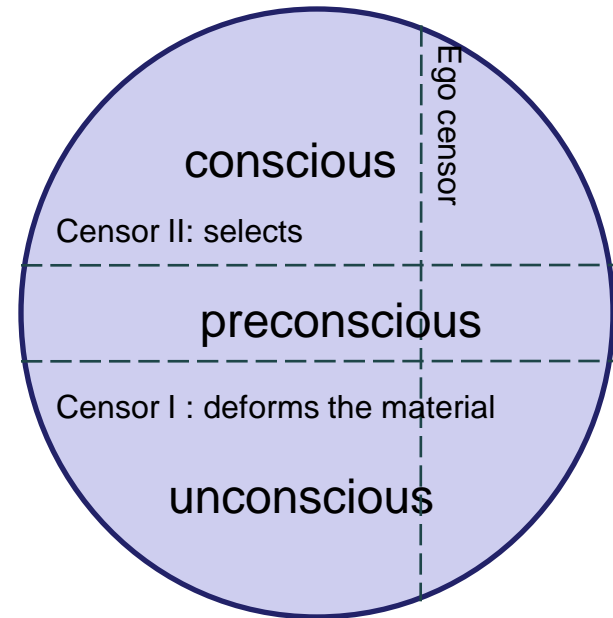
# PSYCHOANALYSIS

- THE HUMAN PSYCHE:
  - Unconscious: impulses, instincts, repressed wishes
  - Preconscious: unconscious material that can become conscious
  - Conscious: affect, perception, thought



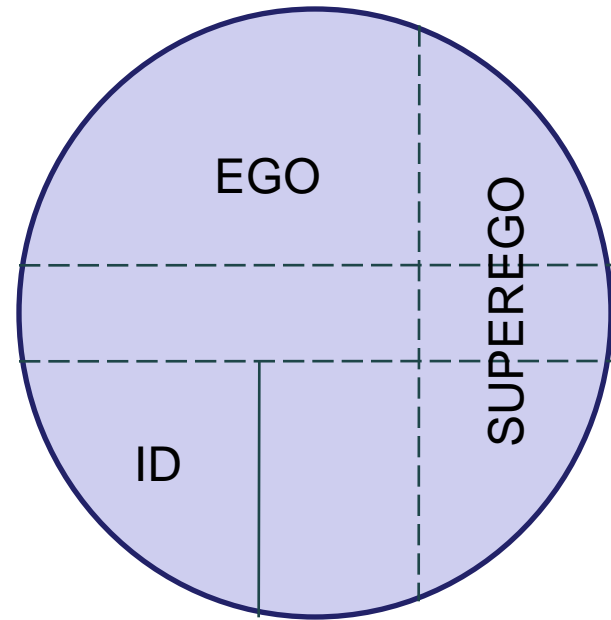
# CENSOR

- Secondary censor: at the boundary between preconscious and conscious: role of selection
- Primary censor: on the border between unconscious and preconscious: role of deformation



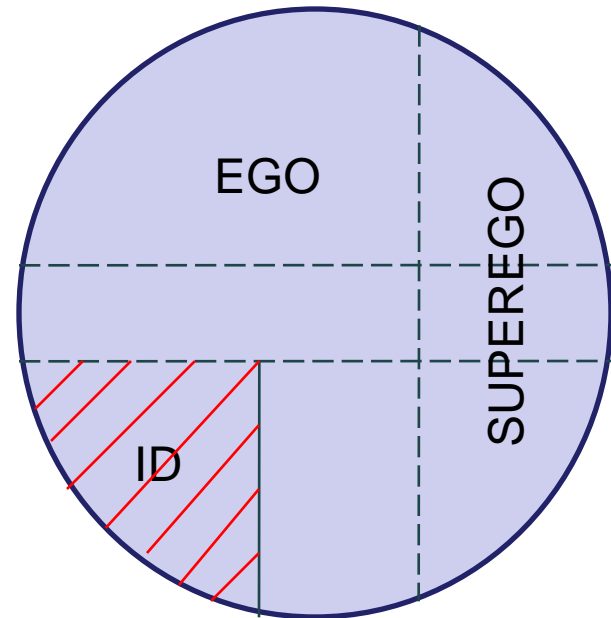
# PSYCHOANALYSIS

- THE HUMAN PSYCHE:  
(structural aspect)
  - ID (SELF)
  - EGO
  - SUPEREGO



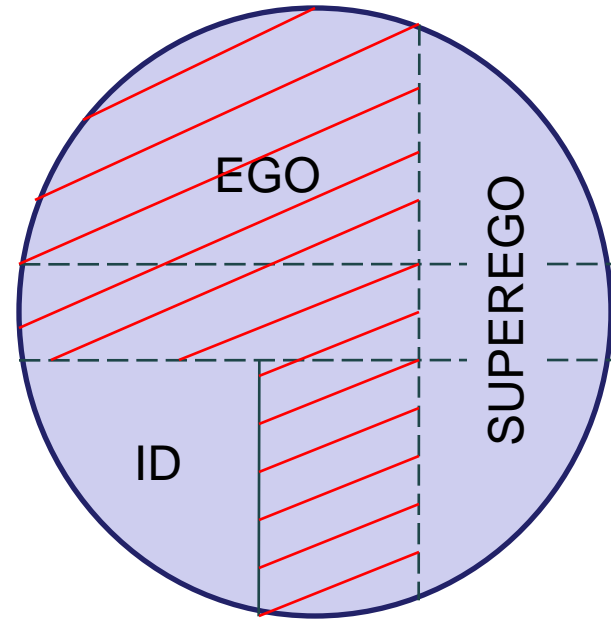
# PSYCHOANALYSIS

- ID (SELF)
  - The psychic material from which the ego and superego will differentiate
  - Determined by the past, genetic influences
  - Impersonal
  - Unconscious
  - Contains impulses (sexual and aggressive), desires, fears, repressed trauma
  - Obeys the pleasure principle
  - Primary processes



# PSYCHOANALYSIS

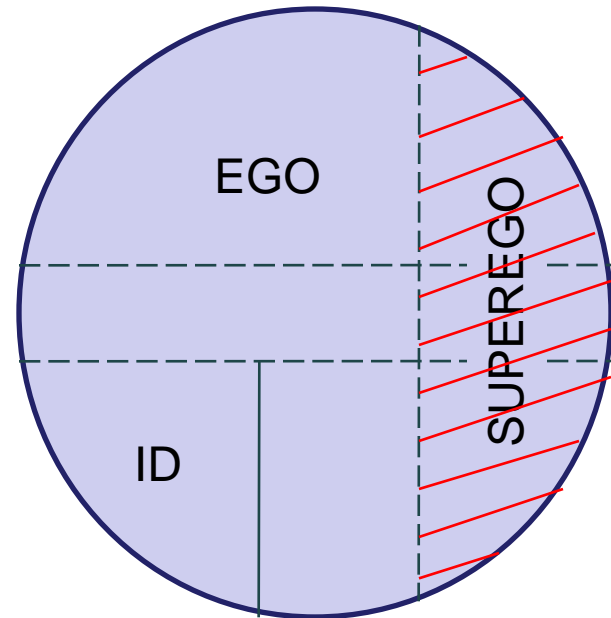
- EGO (I)
  - It differentiates itself from the Id following the contact with reality
  - Determined by one's own experience
  - Synthesis of personality
  - Unconscious, preconscious and conscious
  - Headquarter of thinking, reason
  - Obeys the reality principle
  - Role: intrapsychic conflict resolution and adaptation to the environment



# PSYCHOANALYSIS

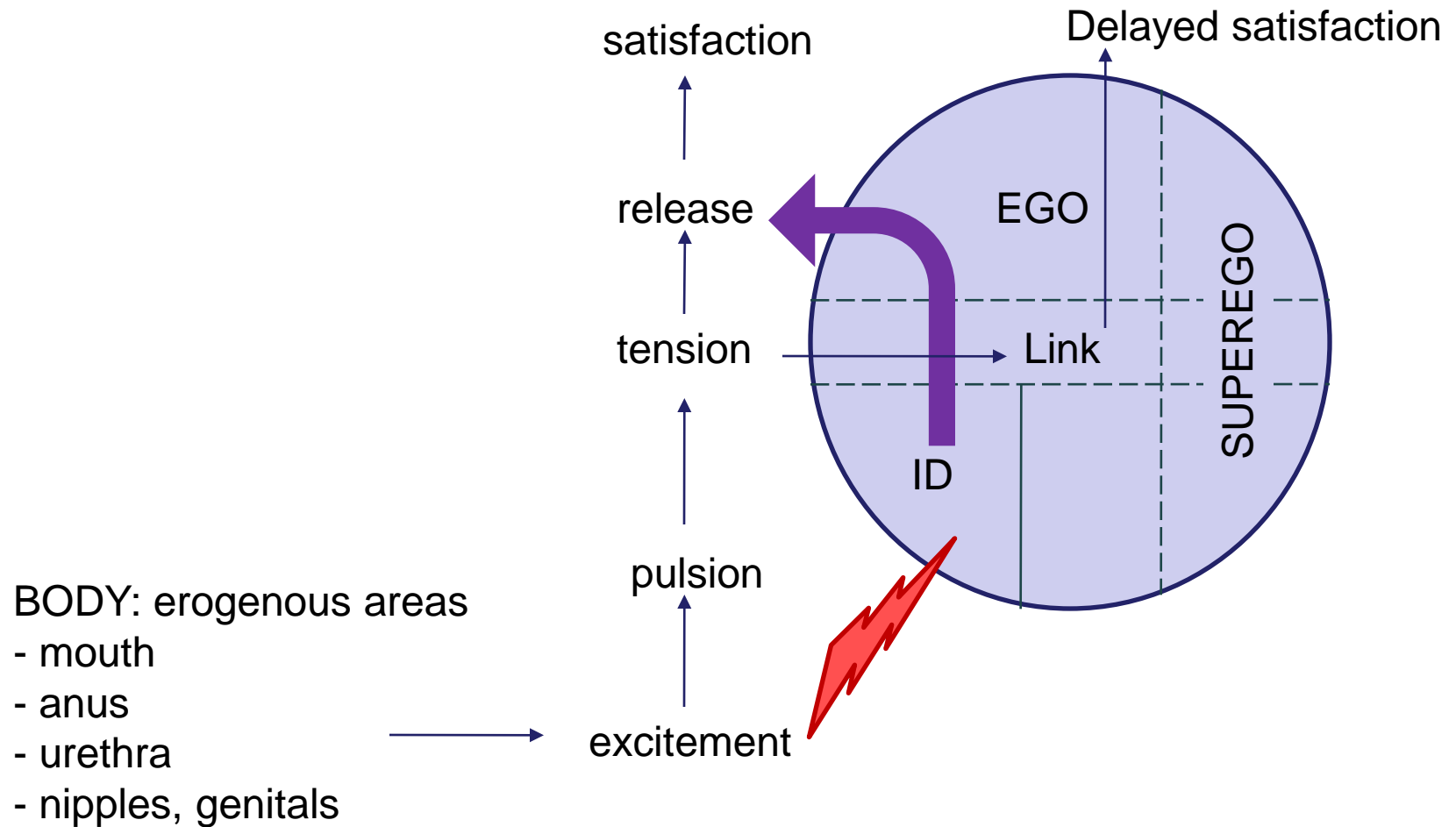
- SUPEREGO

- It differentiates from the ego by internalization of interdictions and family expectations
- Determined by the past: the influence of parents and society
- Unconscious, preconscious and conscious
- Obeys the ideal principle
- It consists of:
  - The ideal Ego: which prescribes (dictates)
  - Moral consciousness: which proscribes (forbids)

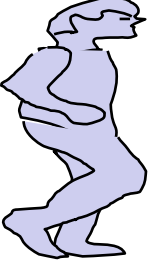




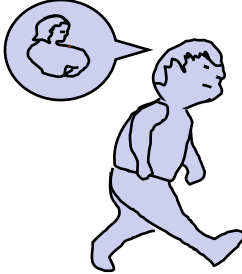
# THE ECONOMICAL ASPECT




# PSYCHO-SEXUAL DEVELOPMENT



The genital stage: puberty 12-18 years  
Pleasure is given by intercourse with the opposite sex partner, by creativity, or by social usefulness  
Erogenous zone: genitals  
Object of pleasure: the opposite sex partner



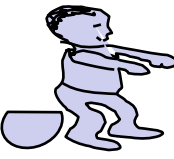
Latency stage: 6-12 years  
Sexuality is sublimated through school and educational activities




The phallic stage: 3-6 years  
Pleasure is given by selfstimulation of the genital organ and the desire of possession of the opposite sex parent  
Erogenous zone: genitals  
Object of pleasure: the boy: penis + mother (Oedipus complex)  
the girl: clitoris + father (Electra complex)



Urethral stage?



Anal stage: 1-3 years  
Pleasure is given by elimination / retention of feces  
Erogenous zone: ano-rectal mucosa  
Pleasure object: feces



Oral stage: 0-1 years  
Pleasure is given by sucking  
Erogenous zone: the oral mucosa  
Object of pleasure: mother's breast

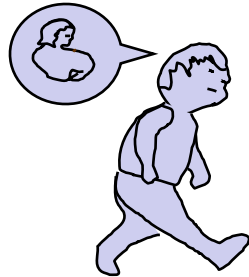
# PSYCHO-SEXUAL DEVELOPMENT



Oral stage: 0-1 years  
Characteristics: dependency  
Child's needs are adequately met: transition to next stage  
Child's needs are not met (frustration) - pessimism  
Child's needs are met excessively - excessive optimism



Anal stage: 1-3 years  
Characteristics: learning self control and obedience  
Parents may be too authoritarian or too permissive



Phallic stage: 3-6 years  
Characteristics: sexual identification and morality  
Interest for genitals and competition with the same sex parent for the opposite sex parent which is socially unacceptable  
Overcoming the Oedipus / Electra Complex (6 years) by identifying with the parent of the same sex



Latency stage: 6-12 years  
Calm

Genital stage: puberty 12-18 years  
Characteristic: well adapted, balanced person

# DEVELOPMENT DISORDERS- CONSEQUENCES THE CHARACTER OF THE ADULT

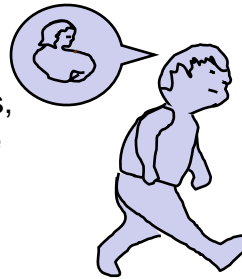
## PHALLIC CHARACTER

Phallic stage: 3-6 years

Phallic-narcissistic character:

cold, reserved, arrogant, ambitious, confident, reckless,  
defensive type aggressiveness, exhibitionist, impulsive

Amorally promiscuous or asexually puritan



## ANAL CHARACTER

Anal stage: 1-3 ani

Expulsion phase: anal-expulsive character

-megalomania, suspiciousness, disorderly, defiant,

Retention phase: anal-retentive character:

- self control, obstinacy, order, pedantry, meticulous  
parsimony, devotion to rules



## ORAL CHARACTER

Oral stage: 0-1 years

Sucking phase: oral-dependent character

-naive optimism, dependency, emotional shallowness

Biting phase: oral-sadistic character

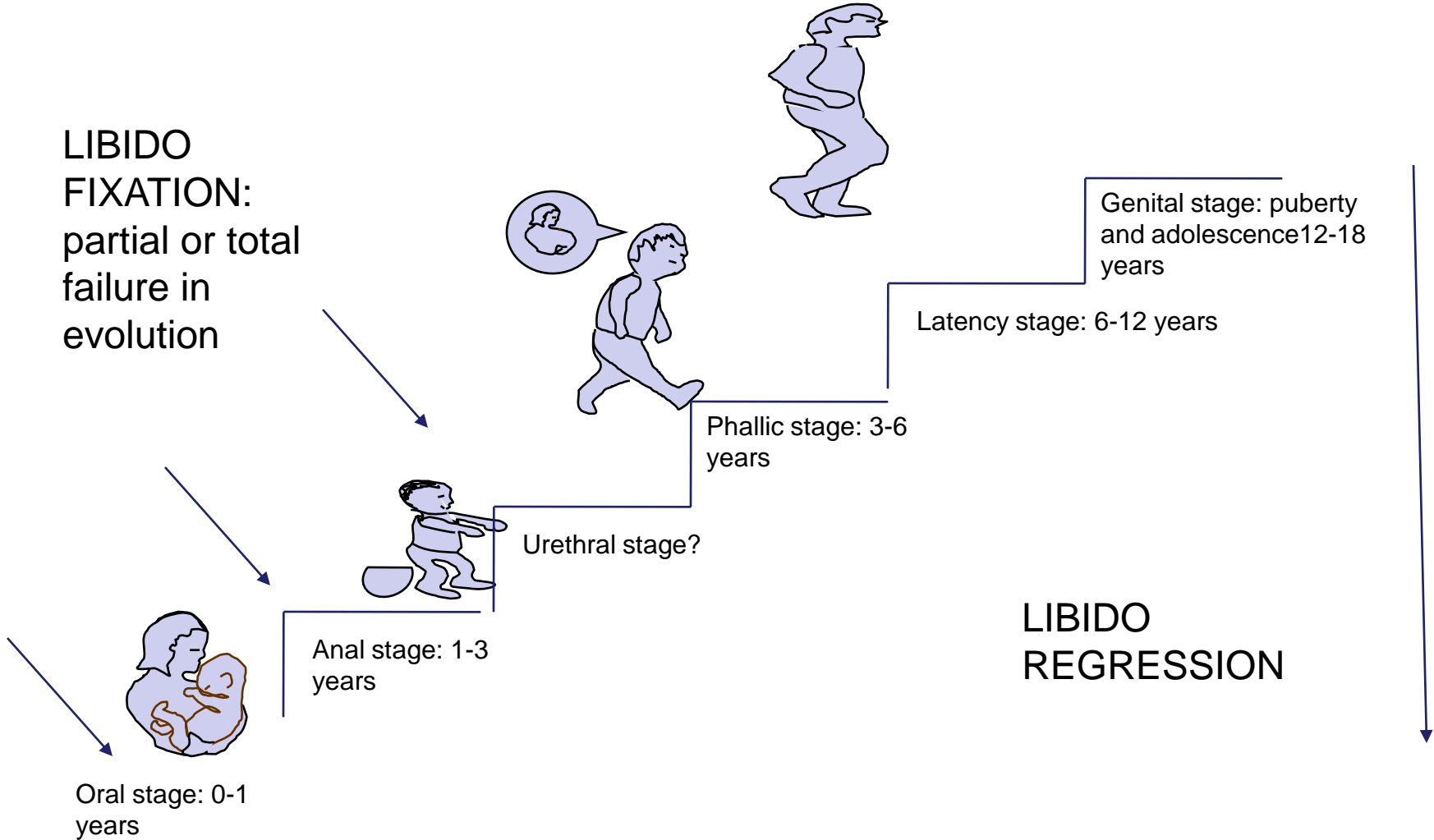
-pessimistic, verbally

aggressive, independent, domineering



# THE PRESENCE IN THE ADULT OF CERTAIN INFANTILE TRAITS IS EXPLAINED BY:

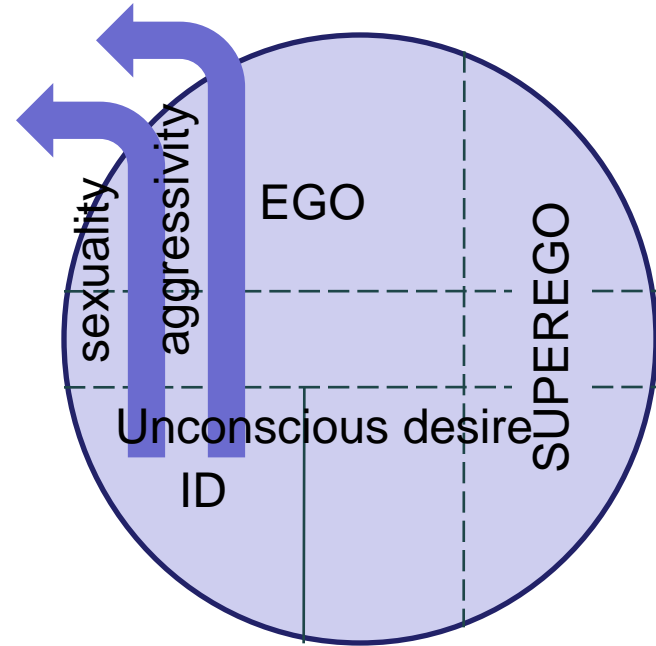
LIBIDO  
FIXATION:  
partial or total  
failure in  
evolution



LIBIDO  
REGRESSION

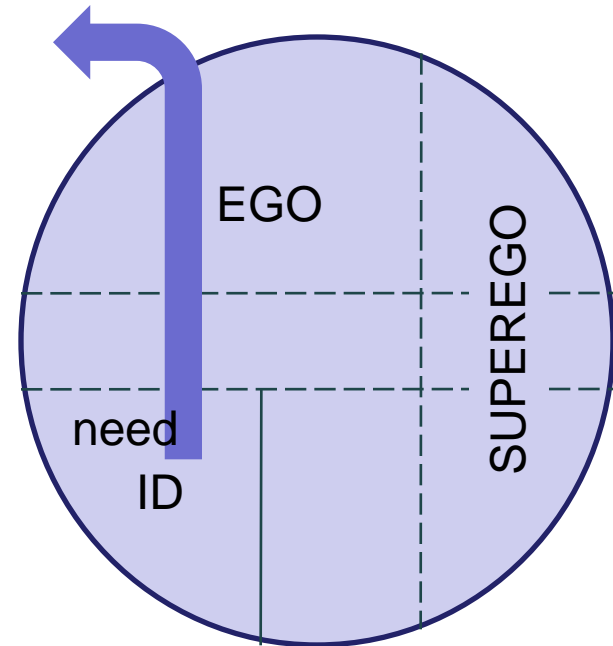
# THE PULSION

- Pulsions: mental energy
  - sexual (the principle of Eros): human desire to search for pleasure
  - aggressive (the principle of Thanatos): the human desire to search for death (to return to the previous, primordial state)
- It is the consequence of an excitation coming from the inside of the body ≠ exterior excitations
- Sexual and aggressive impulses ≠ instincts (conservation pulsion, the ego pulsions)
- The term “sexual” includes the genital, but it is not reduced to it



# THE NEED

- Vital: food, protection, reproduction (instincts)
- Affective: love, esteem
- Cognitive: to understand, to know
- Determines a state of inner tension
- Internal tension is associated with an affective nuance = emotion
- Internal tension finds satisfaction through an action that procures the adequate object (food)

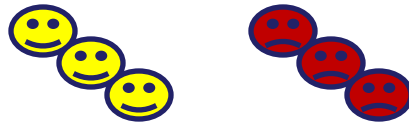


# THE ECONOMIC ASPECT

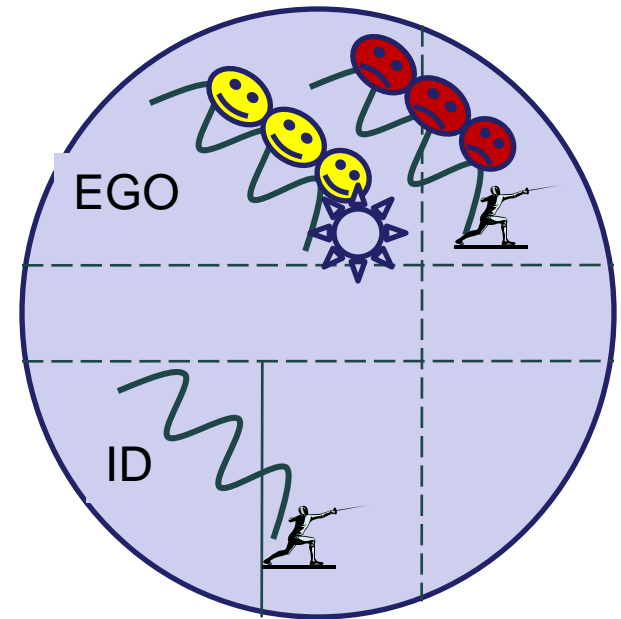
- Pulsion:
  - The quantitative aspect of the sexual impulse = LIBIDO (appetite)



- The subjective aspect is represented by AFFECT (quantum of affect)



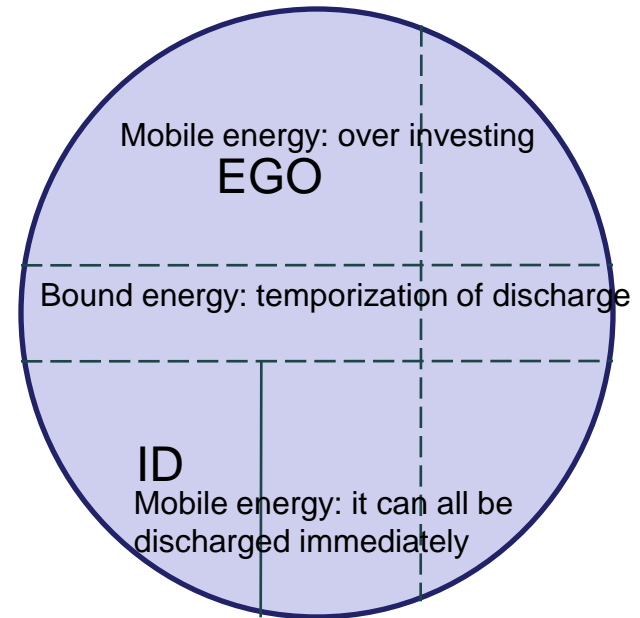
- Content = REPRESENTATION:  
(images, thoughts, memories)





# THE ECONOMIC ASPECT

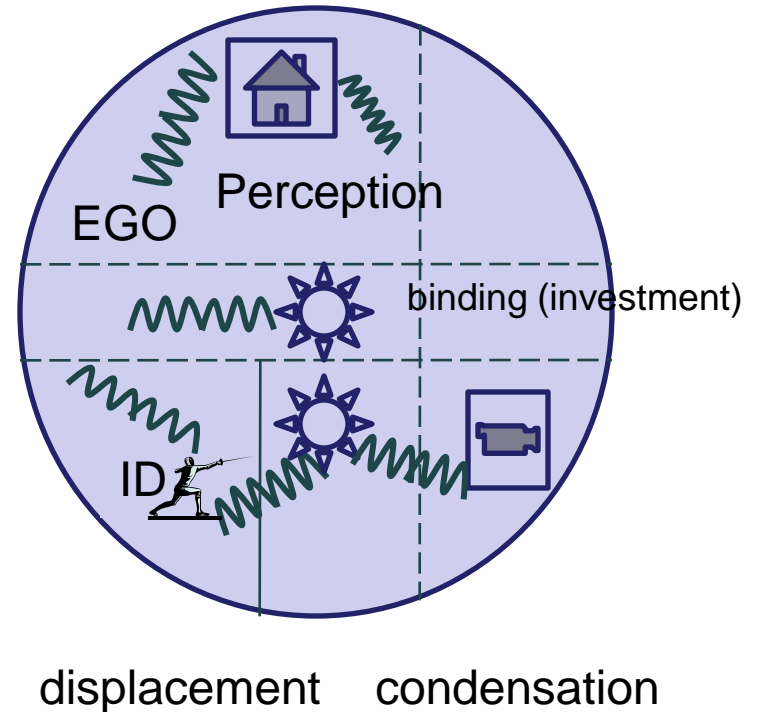
- Primary process: mental energy moves and condenses freely from one representation to another
- Secondary process: energy is bound (invested) before running in a controlled manner



# THE ECONOMIC ASPECT

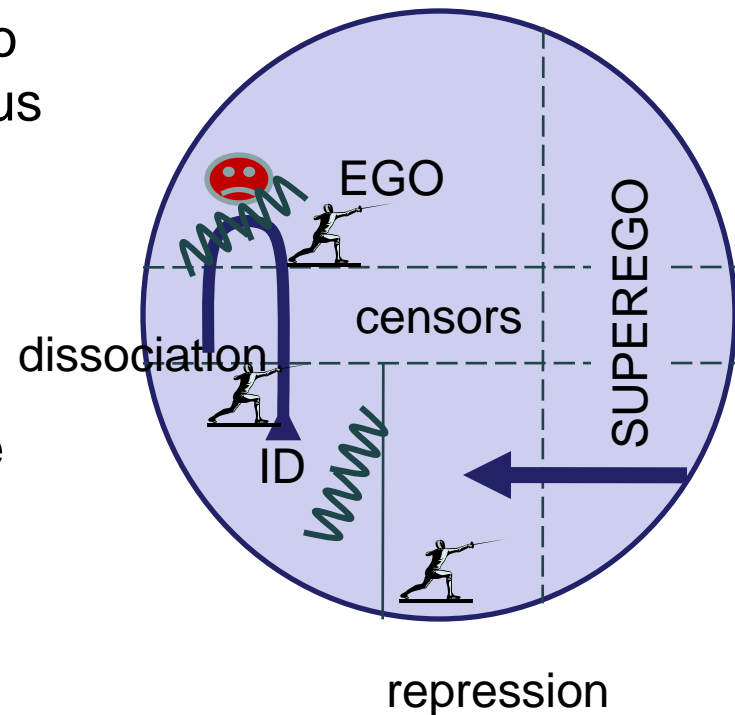
- Overinvestment: additional investment of an already invested representation
- Investment: binding mental energy to a representation, an object or a body part
- Displacement: the energy invested on a representation is detached from it and moves freely (primary process) or restricted along associative pathways (secondary process)
- Condensation: a unique representation expresses several associative chains

Overinvestment: attention



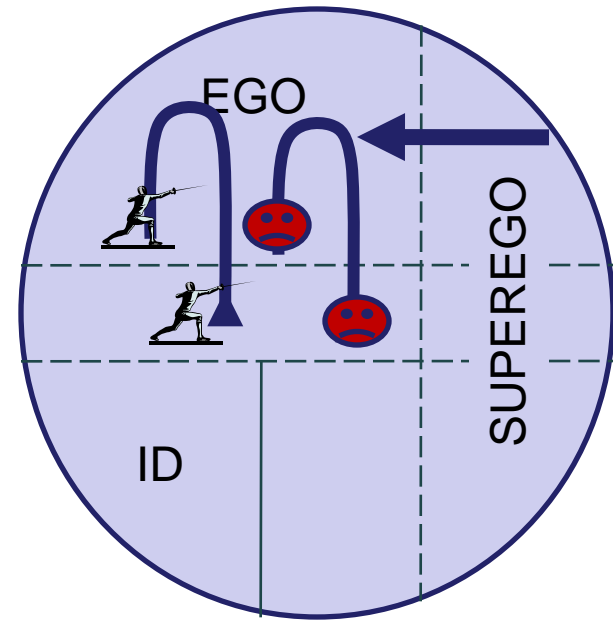
# THE DYNAMIC ASPECT: REPRESSION and DISSOCIATION

- **REPRESSION:** the unconscious process by which the subject tries to reject into or keep in the unconscious the representations of the pulsions
- consecutively, the representations are **DISSOCIATED** from the affect
- It appears when satisfying the impulse is unacceptable, unfeasible or painful to the ego, coming into conflict with the superego or reality



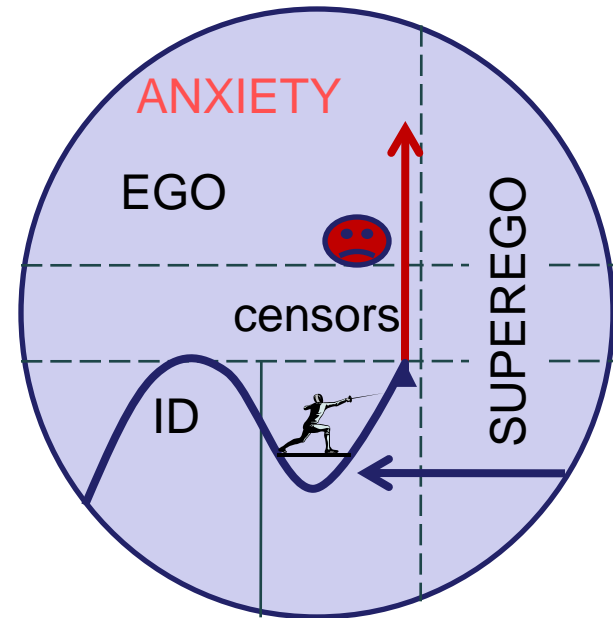
# THE DYNAMIC ASPECT: SUPPRESSION

- Suppression: conscious process by which the subject tries to reject or maintain in the preconscious a representation or unpleasant affect (thoughts or desires prohibited or impractical) causing frustration
- It occurs when representation or affect come into conflict with the moral requirements



# THE DYNAMIC ASPECT: CONFLICTS

- The Ego must mediate between
  - Id requirements: (I want) and
  - Superego's prohibitions (not allowed)
- When repressed pulsions may escape from control, SIGNAL ANXIETY appears
- The alerted Ego intensifies its defence by calling other auxiliary mechanisms (defence mechanisms)



# DEFENCE MECHANISMS

- Suppression: the conscious decision not to act on unacceptable feelings or pulsions
- Denial: the avoidance of becoming aware of hard to face external sensory information
- Displacement: moving the feelings associated with an object on another object that resembles the original
- Introjection: internalization of qualities of a significant person as a way to accept the loss of that person
- Projection: assigning one's own unacceptable feelings to another person in order to make these feelings more acceptable

# DEFENCE MECHANISMS

- Reactive formation: conversion of a desire or an unacceptable pulsion into their opposites
- Idealization: assigning perfect qualities to others in order to avoid the negative feelings towards them
- Identification: taking the behavior or ideas belonging to another person in order to easier manage a breakup
- Sublimation: the transformation of socially reprehensible or unacceptable goals for the individual into acceptable ones
- Regression: returning to an earlier stage of development to avoid tensions associated with the current level of development
- Rationalization: the unconscious justification of an unacceptable attitude or behavior in order to make them acceptable

# THE RETURN OF THE REPRESSED

BLOCKED PULSION

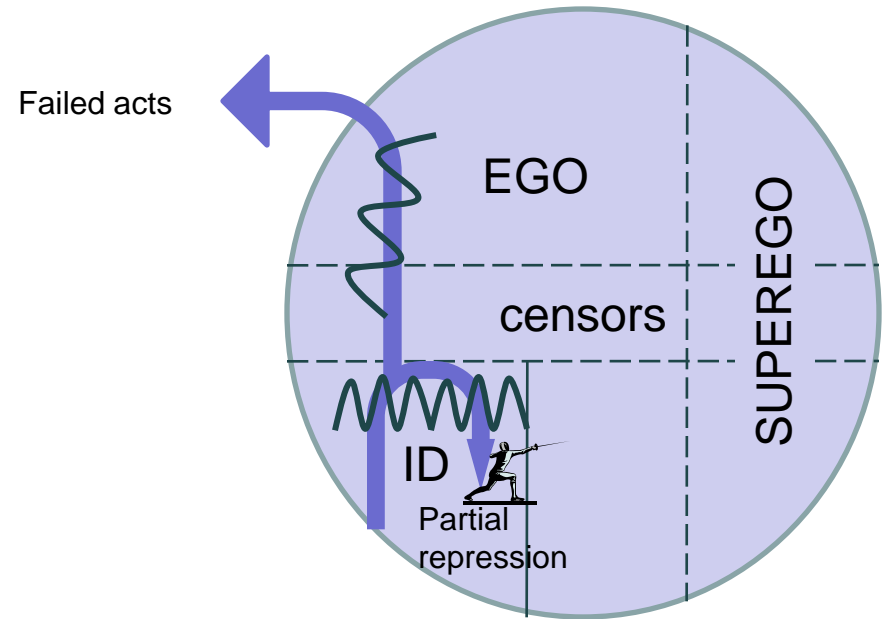


Discharge as a compromise  
between conscious intention  
and the repressed pulsion



FAILED ACTS

Speech, action and memory failures



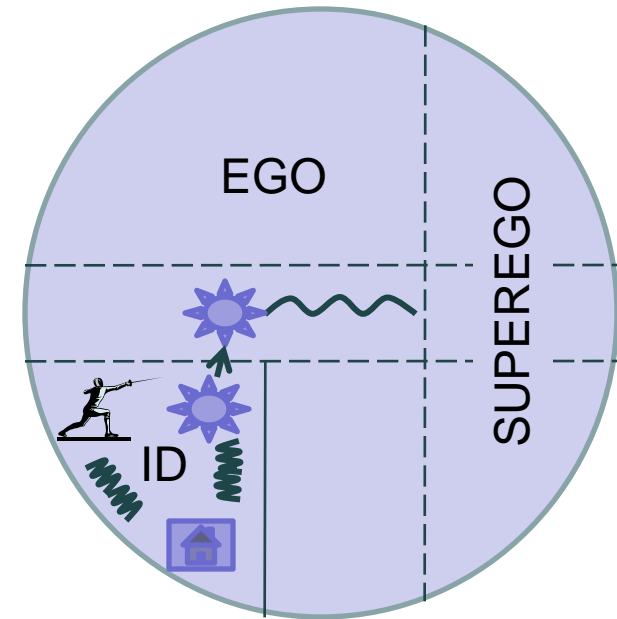


# SLEEP

- During sleep the ego is weak in relation to id and superego. Consequently, the ego is less capable to defend itself against unacceptable impulses
- The mental energy is **DISPLACED** freely from one unconscious representation to another regardless of logic: the dream appears meaningless
- **DREAMS** express the unconscious repressed desires of the individual in an encrypted and laconic form by
  - **CONDENSATION**: a unique representation expresses several associative chains
    - Overdetermination is the effect of condensation labor
  - **SYMBOLIZATION**: encryption of the latent content in order to make it harmless

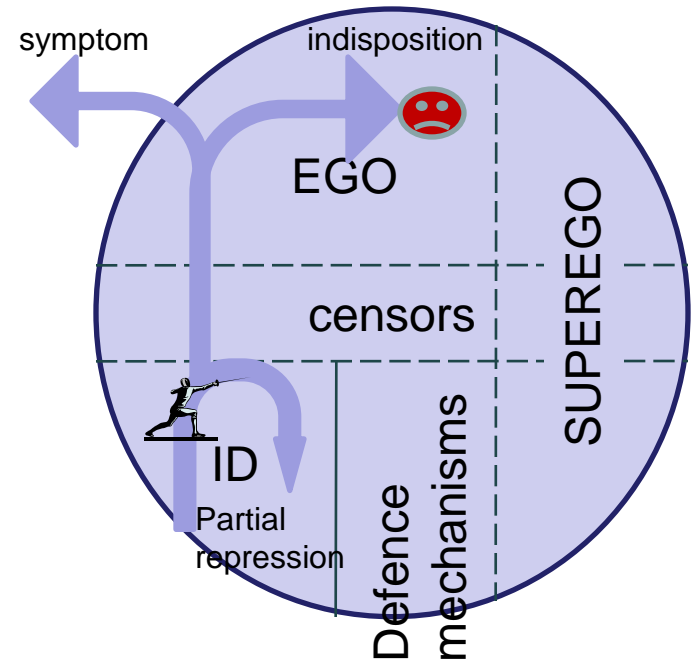
The manifest content: what the individual remembers from the dream

The latent content: repressed representations and desires



# PSYCHOANALYSIS: THE ORIGIN OF THE NEUROTIC SYMPTOM

- The psycho-neurotic symptom is a compromise between pulsion and defence because repression is incomplete
- The intrapsychic conflict is managed through DERIVATION: the impulse will be partially discharged in the disguised form of a symptom (substitute satisfaction): releasing the tension: PRIMARY BENEFIT
- Because discharge is incomplete: INDISPOSITION
- The symptom allows the individual to influence the entourage: SECONDARY BENEFIT



# SOMATIC CONVERSION (Conversion-dissociative disorder)

The PULSION is repressed  
The AFFECT is transformed  
into a somatic symptom



Discharge through a  
sensory or motor symptom  
SOMATIC CONVERSION

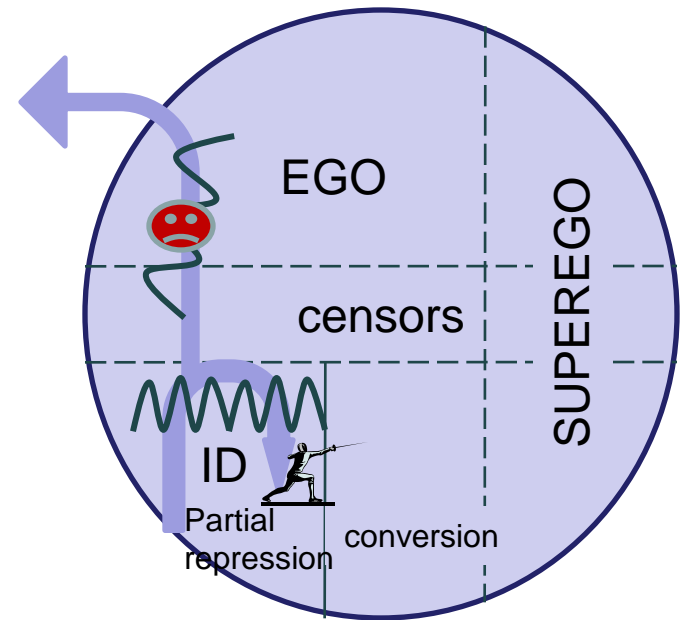


CONVERSION HYSTERIA

+

PARADOXICAL TOLERANCE  
(LA BELLE INDIFFÉRENCE)

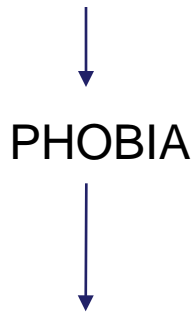
Sensory or  
motor  
symptom



# PHOBIAS

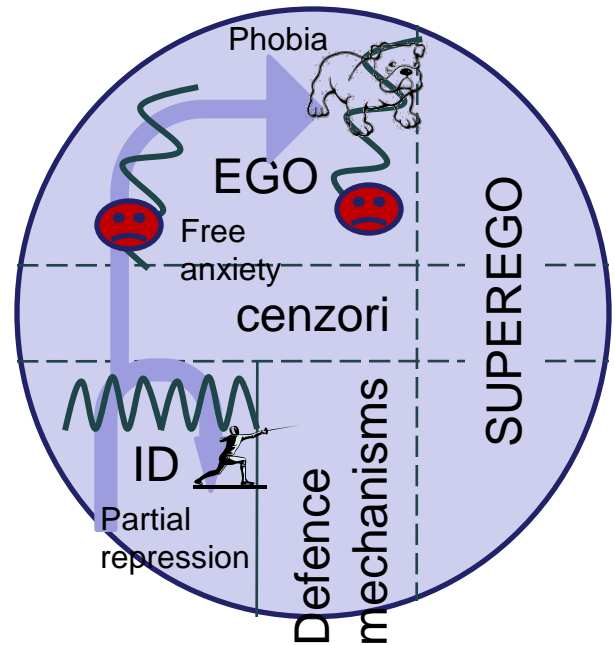
## BLOCKED IMPULSE

Separated from the traumatic memory, it is displaced on an associated neutral object becoming irrational



ANXIETY HYSTERIA  
(phobic disorder)

## Partial release of tension



# OBSESSIONS

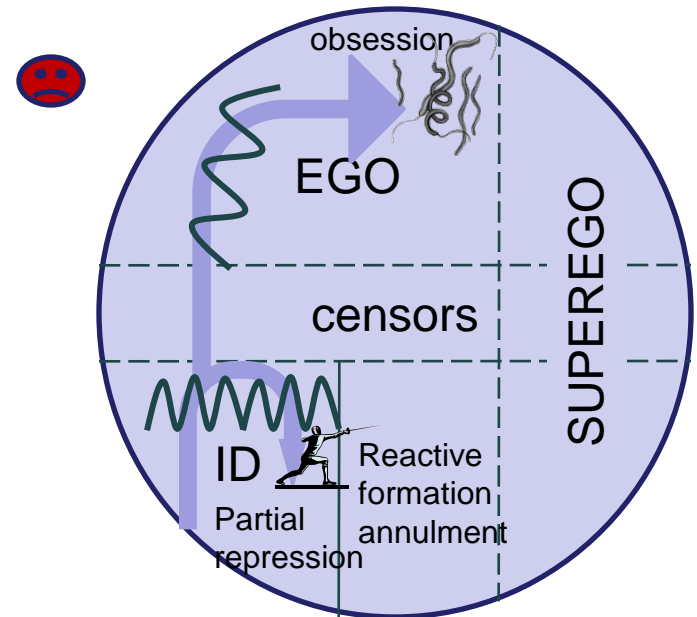
## BLOCKED PULSION

Separated from the traumatic memory, it is displaced on an associated neutral becoming irrational

↓  
OBSESSION

↓  
OBSESSIONAL NEUROSIS  
(obsessive-compulsive disorder)

## Partial release of tension



# HYSTERICAL NEUROSIS

- Conversion-dissociative disorder
- Somatization disorder
  
- Other forms:
  - “spasmophilia”
  - “colitis”

# DISSOCIATIVE-CONVERSION DISORDER

- Dissociative symptoms:
  - Dissociative elective amnesia:
    - Amnesia selective for emotionally loaded events (traumatic)
    - Retrograde character
  - Dissociative global amnesia

# DIASSOCIATIVE AMNESIA: DIFFERENTIAL DIAGNOSIS

## MEMORY DISORDERS INDUCED BY PSYCHOACTIVE SUBSTANCES:

- Alcohol (blackouts)
- Marijuana
- Anxyolitics
- Barbiturates

## PREMEDITATED SIMULATION



Dissociative amnesia



## MENTAL DISORDERS

- PTSD
- Acute stress reaction
- Depression
- Anxiety
- Somatization disorder

## ORGANIC ILLNESSES

- Korsakoff's Syndrome
- Delirium
- Dementia
- Epilepsy
- Traumas
- Stroke



# DISSOCIATIVE CONVERSION DISORDER

- Dissociative symptoms
  - Dissociative fugue (flight):
    - Leaving home or workplace, without purpose, after a stressful event (frustration, failure), outside the normal area of movement of the subject
    - Twilight state with narrowing of the current consciousness field and automatic behavior
    - A minimal social interaction is possible
    - Quasinormal behavior
    - Global amnesia with or without taking another identity
    - Differential diagnosis: frontotemporal epilepsy, vagrancy

# DISSOCIATIVE CONVERSION DISORDER

- Conversion symptoms (pseudo-neurological)
  - Mutism
  - Blindness (tunnel vision), diplopia
  - Dysphagia ("globus hystericus")
  - Aphonia (but cough is audible)
  - Deafness
  - Sock or glove anesthesia without respecting dermatomes
  - Paresthesia
  - Paralysis with preserved reflexes
  - Generalized tremor
  - Balance disorders
  - Pseudo-epileptic seizures (theatrical fall without hurting themselves, erratic convulsions without biting the tongue, without emission of urine and faeces, without loss of consciousness)

# DISSOCIATIVE CONVERSION DISORDER

- The diagnosis is one of exclusion (especially of neurological illnesses)
  - complex partial epilepsy with motor automatisms (fronto-temporal epilepsy)
  - Grand Mal epileptic seizure
  - sensory and motor deficits of neurological or toxic cause

# DISSOCIATIVE CONVERSION DISORDER

- Elements that facilitate diagnosis:
  - Histrionic personality
  - The presence of a third person
  - Paradoxical tolerance (unexplained emotional detachment in relation to severity of deficits)
  - High suggestibility of the subjects allows to enrich the clinical picture or to treat symptoms through suggestion and placebo effect

# SOMATIZATION DISORDER

- Body symptoms
  - multiple
  - varied
  - imprecisely located
  - persistent
  - recurrent
  - with no organic substrate

# SOMATIZATION DISORDER

- 4 classes of symptoms:
  - Gastrointestinal symptoms: nausea, vomiting, bloating, diarrhea
  - Algic symptoms: headache, chest pain, abdominal, back pain, or pain when urinating, during sexual activity, menstruation, in joints, in the extremities, rectal pain
  - Sexual symptoms: loss of libido, erectile or ejaculatory dysfunction, irregular cycles, hypermenorea
  - Neurological symptoms: paralysis, paresis, anesthesia, paresthesia, amnesia, aphonia, blindness, deafness, dysphagia

# SOMATIZATION DISORDER

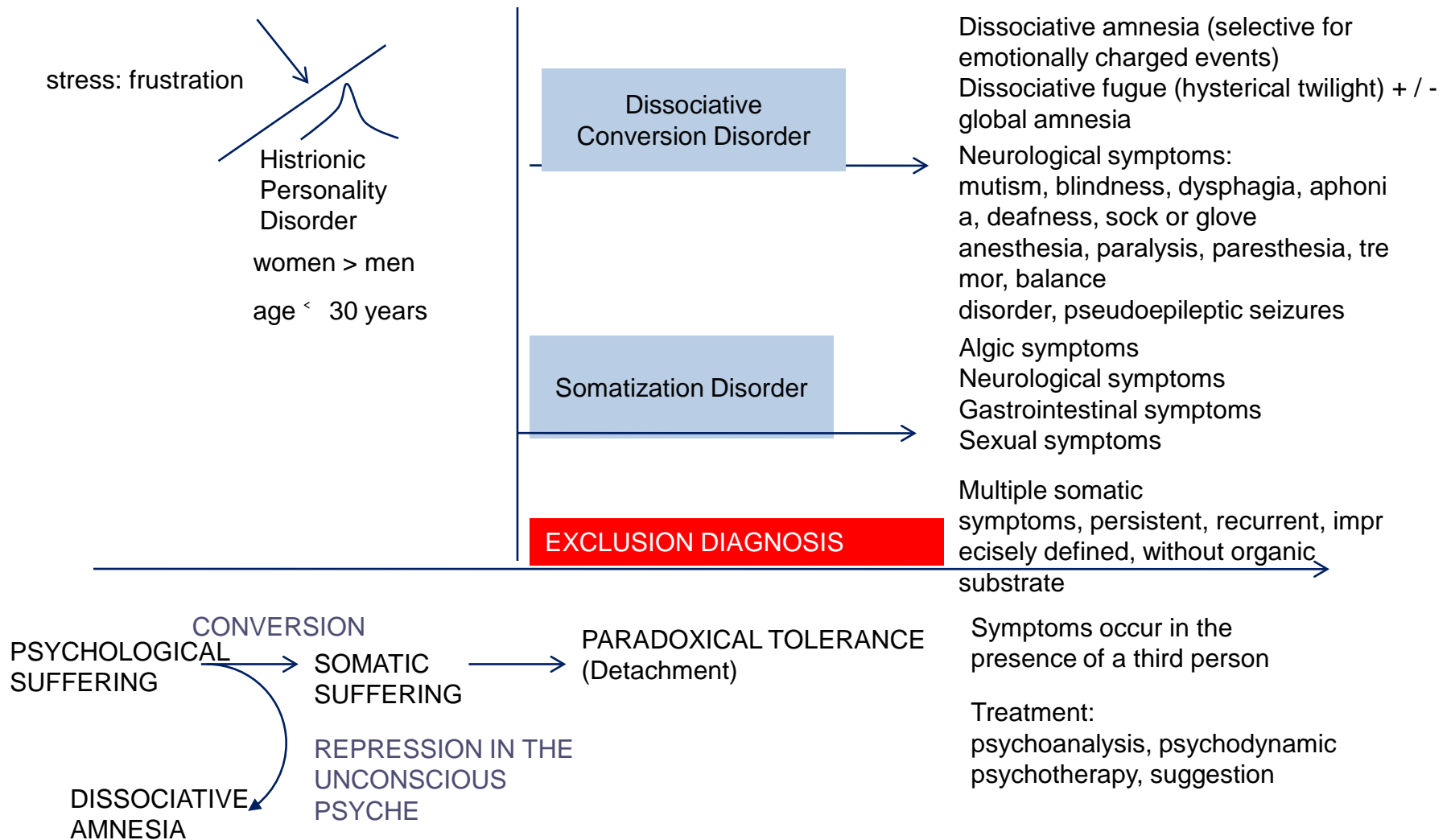
- Onset before the age of 30
- Higher prevalence in women
- Fluctuating chronic course
- Complications:
  - Medication abuse
  - Multiple surgery
  - Anxiety
  - Depression
  - Hospitalism

# SOMATIZATION DISORDER

- Differential diagnosis:
  - Anxiety
  - Depression
  - Hypochondriac disorder
  - Multiple sclerosis
  - Porphyria
  - Premeditated simulation (malingering)
- Treatment:
  - Psychotherapy (psychoanalysis, of psychoanalytic inspiration)
  - Psychotropic drugs: anxiolytics, antidepressants, hypnotics



# CONVERSION DISSOCIATIVE DISORDER SOMATIZATION DISORDER



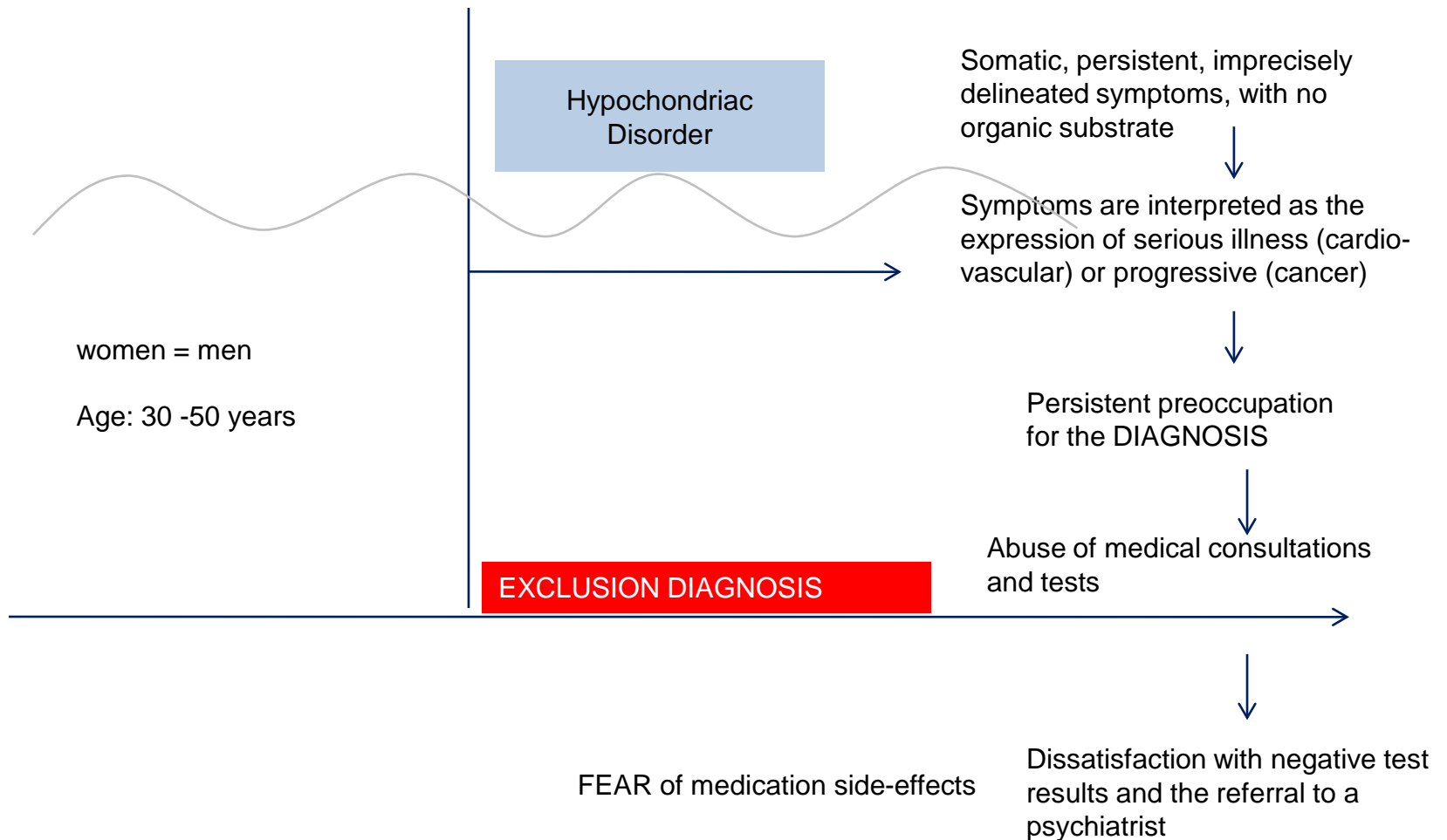
# HYPOCHONDRIASIS

- Persistent somatic complaints, imprecisely located, interpreted as signs of serious illness (cardiovascular) or progressive (gastrointestinal)
- Persistent preoccupation of the subject to diagnose the illness (countless medical tests and consultations from different doctors)
- Fear of drug side effects
- The patient is unhappy with negative test results and offended when, after many medical checkups, he is suggested to go to the psychiatrist
- Behavior to attract attention on the somatic nature (histrionic)

# HYPOCHONDRIASIS

- Onset: 30-50 years
- Equal male-female prevalence
- Chronic fluctuating evolution
- Complications: abuse of medical tests and examinations, anxiety
- Includes: nosophobia, non-delusional dysmorphophobia
- Differential diagnosis:
  - Anxiety
  - Depression
  - Somatization disorder
  - Persistent Delusional disorder

# HYPOCHONDRIAC DISORDER



# NEURASTHENIA

- Persistent and disturbing complaints of increased fatigue after mental effort, or persistent and distressing complaints of weakness and physical exhaustion after minimal effort
- muscle pain
- dizziness
- sleep disorders
- irritability
- inability to relax

Differential diagnosis:

- Burn-out syndrome
- Post hepatitis fatigue
- Post viral fatigue

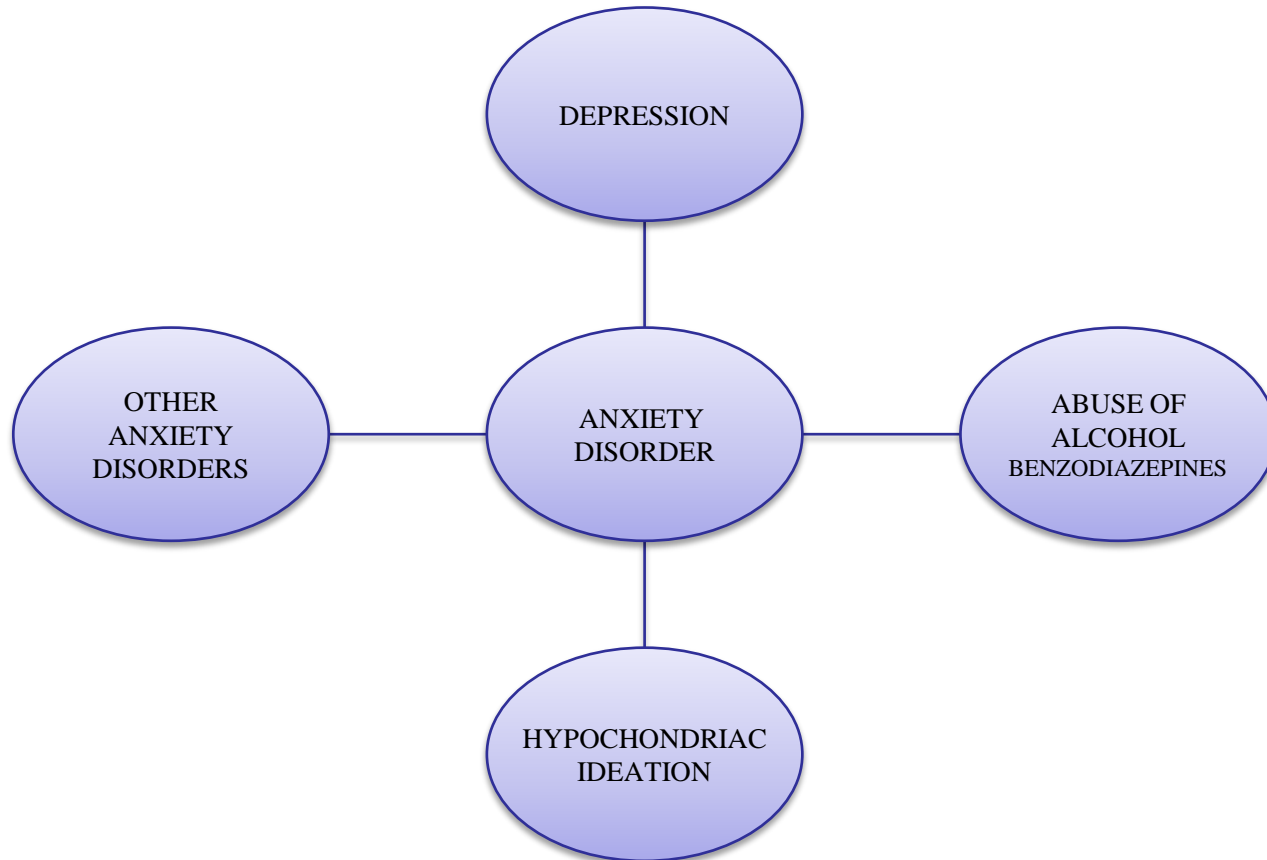
# IMPORTANCE OF ANXIETY

- It is seen in:
  - Somatic medicine
  - Addictive disorders: chronic alcoholism, bad trip (cannabis)
  - Psychiatric disorders:
    - Reactive: acute reaction to stress, post traumatic stress disorder, adjustment disorders
    - Neurotic: generalized anxiety disorder, panic disorder, phobic disorders, obsessive-compulsive disorder, hypochondriasis
    - Psychosis: schizophrenia, mood disorders
    - Personality disorders (trait anxiety: anxious-avoidant, dependent, anankastic, emotionally-unstable, paranoid)

# ANXIOUS-PHOBIC DISORDERS

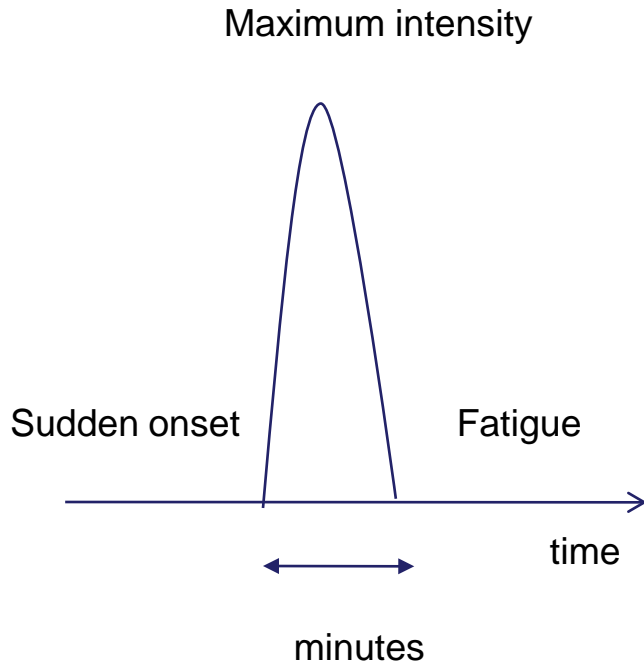
- Generalized Anxiety Disorder (GAD)
- Panic disorder (PD)
- Agoraphobia
- Social phobia (social anxiety disorder)
- Specific phobias (simple)

# ANXIOUS DISORDERS COMORBIDITY





# THE PANIC ATTACK SYNDROME



**Definition:** paroxysmal crisis of intense, thematic fear

**Panic attack syndrome:**

**Psychiatric symptoms:**

- fear of imminent death
- derealization or depersonalization
- fear of losing control,
- fear of "going mad"

**vegetative symptoms**

- palpitations, tachycardia
- cold sweats or hot flushes
- tremor
- dry mouth

**thoracic and abdominal or neurological symptoms**

- dyspnea
- chest pain or discomfort
- abdominal discomfort
- paresthesia
- fainting, loss of balance

**behavior**

- psychomotor inhibition
- psychomotor restlessness

# PANIC DISORDER

- Diagnosis
  - at least 4 panic attacks a month
  - panic attacks must be imprevisible (not triggered by a phobogenic object or situation, conflicts, psycho-active substance, organic illness etc)
  - because panic attacks cannot be linked to a particular context, fear of new panic attacks occurs ("fear of fear")

# PANIC DISORDER

- Onset: young adult
- Prevalence: women>men
- Evolution: recurrent episodes of panic attacks alternating with asymptomatic periods
- Complications
  - depression
  - hypochondriasis
  - secondary alcoholism or abuse of benzodiazepines

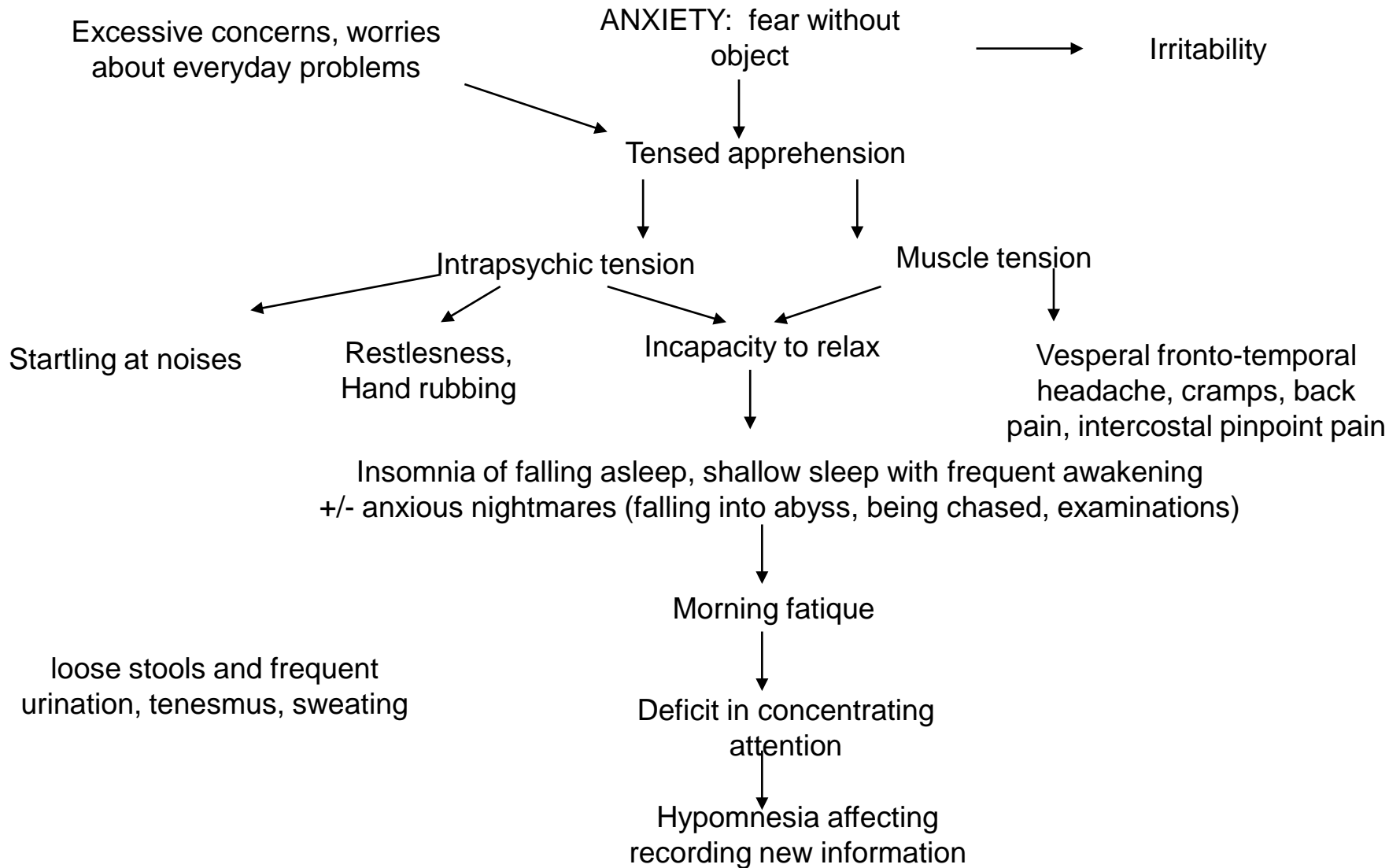
# THE GENERALIZED ANXIETY SYNDROME

**Definition: anxiety is a fear without object (the subject cannot mention what produces fear)**

## **Generalized anxiety syndrome:**

- Anxiety
- Excessive concerns, worries about everyday problems
- Marked vesperal psychomotor restlessness
- Tensed expectancy (intrapsychic tension)
- Headache generating muscle tension (frontal, fronto-temporal, occipital, in the form of band or generalized), cramps, back pain, intercostal pinpointed pain
- Inability to relax
- Insomnia secondary to worries and to the inability to relax
- Anxious nightmares (of falling, of being chased, exams)
- Shallow sleep with frequent awakenings
- Morning fatigue
- Irritability
- Hypoprosia of attention concentration
- Hypomnesia (short-term)
- Startling when hearing noises, door bell, phone
- Autonomic signs: loose stools and frequent urination, tenesmus, sweating
- Frowned, investigatory glance

# GENERALIZED ANXIETY



# GENERALIZED ANXIETY DISORDER (GAD)

- Onset: young adults
- Prevalence: women > men
- Duration of episode: 6 months
- Evolution: long-term: anxiety episodes alternating with asymptomatic periods
- Complications:
  - depression
  - secondary alcoholism or abuse of benzodiazepines
  - panic attacks may appear on the background of generalized anxiety

# AGORAPHOBIA

Definition: a fear of being in a situation where escape is difficult in the event of having a panic attack

Clinical presentation: phobic syndrome

1. Phobogenic situation
2. Panic attack in a phobogenic situation
3. Behavior of avoidance of the phobogenic situation or securing behavior (securing person or object)
4. Anticipatory anxiety if the phobogenic situation cannot be avoided

# AGORAPHOBIA

Phobogenic situations:

- Large crowded areas: markets, restaurants, cinemas, stadiums
- Standing in line
- Means of transport, bridges, tunnels

“Agora” = market (greek)



# AGORAPHOBIA

- Onset: young adults
- Prevalence: women > men
- Evolution: some cases are preceded by panic disorder, agoraphobia being a complication
- Complications:
  - job loss
  - housebound
  - depression
  - alcoholism or abuse of anxiolytics

# SOCIAL PHOBIA

Definition: exaggerated and irrational fear of public speaking

Clinical presentation: phobic syndrome

1. Phobogenic situation
2. Panic attack in the phobogenic situation
3. Avoidance behavior of the phobogenic situation or securing behavior (securing person or object)
4. Anticipatory anxiety if the phobogenic situation can not be avoided

# SOCIAL PHOBIA

- Phobogenic situations where the subject is likely to behave in an embarrassing way or to show anxiety (blushing, trembling, stammering, vomit, mictional urgency, defecation urgency):
  - to be in the spotlight:
    - public speaking
    - dining in public
  - to come into contact with strangers
- Onset: in childhood or adolescence
- Evolution: chronic
- Complications:
  - depression
  - secondary alcoholism

# SPECIAL PHOBIAS

Phobia: pathological fear with object (disproportionate in intensity to the danger posed by the phobogenic object and seen as irrational by the subject, which however can not control fear). Specific phobia is clinically characterized by:

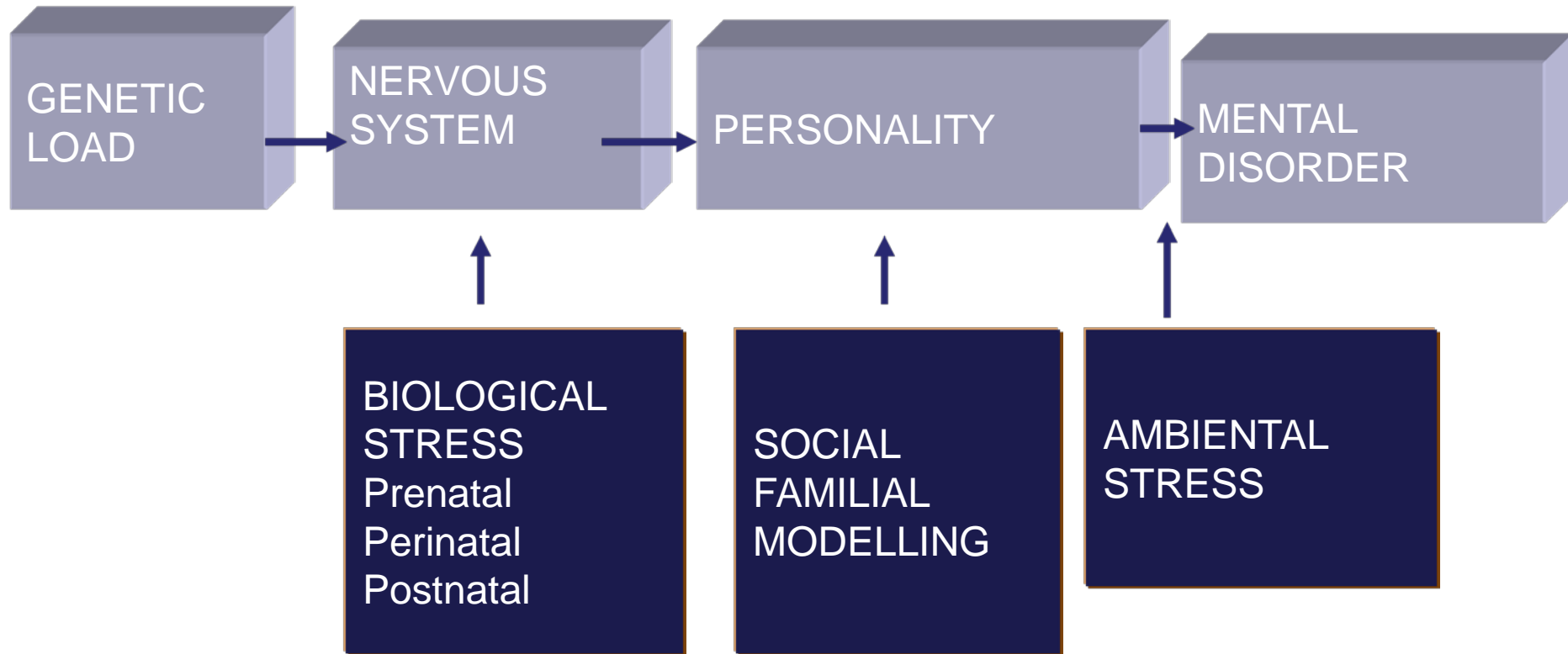
Clinical picture: phobic syndrome

1. Existence of the phobogenic situation or object
2. Panic Attack in dealing with the phobogenic object
3. Avoidance behavior of the phobogenic situation or securing behavior (securing person or object)
4. Anticipatory anxiety when the phobogenic situation or object can not be avoided

Phobogenic objects:

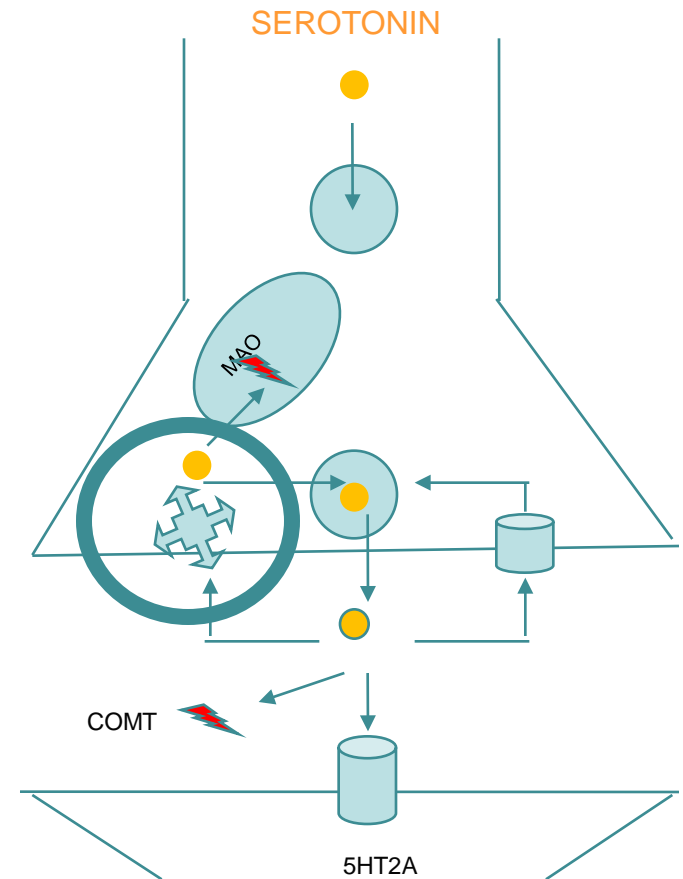
- Animals: insects, dogs, snakes
- Natural forces or elements: storms, thunder, water
- Special situations: elevators, tunnels, heights, confined spaces
- Blood – injections - injury characterized by intense vaso-vagal response

# ANXIETY DISORDERS: PATHOGENY



# GENETIC FACTORS

- The strength of the genetic factor (twin and family studies)
  - genetic heritability for
    - GAD: 20-30%
    - PD: 30-40%
- Enzyme impairments: COMT, MAO-A
- Neurotransmitters' or hormones' receptors: serotonin (5HT2A), CCK
- Transporter impairments:
  - A low activity (because of reduced transcription) of norepinephrine reuptake pump / transporter (NET) increases the risk of developing PANIC ATTACKS
  - In GENERALIZED ANXIETY DISORDER in some families there is a polymorphism of the gene for the serotonin reuptake pump / transporter (SERT)
- GENERALIZED ANXIETY DISORDER may share a common diathesis with DEPRESSION



# DEVELOPMENTAL FACTORS: ATTACHMENT THEORY



John Bowlby (1907-1990)

In the first year of life, the anxious and insecure mother can transmit nonverbally to the child her anxiety.

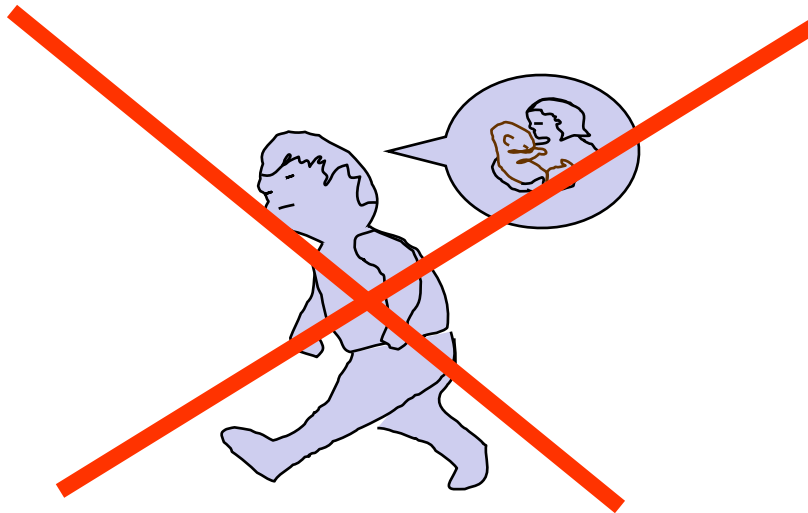
Between 8 months and 3 years old  
THE ATTACHMENT RELATIONSHIP  
with the mother may be

- Secure
- Insecure

# ATTACHMENT, EXPLORATION OF THE WORLD AND SEPARATION ANXIETY

During this period, SEPARATION ANXIETY FROM THE MOTHER appears as well as ANXIETY in contact with new people.

Insecure attachment may inhibit the investigative and exploratory behavior of the child





# PARENTAL EDUCATIONAL MODELS

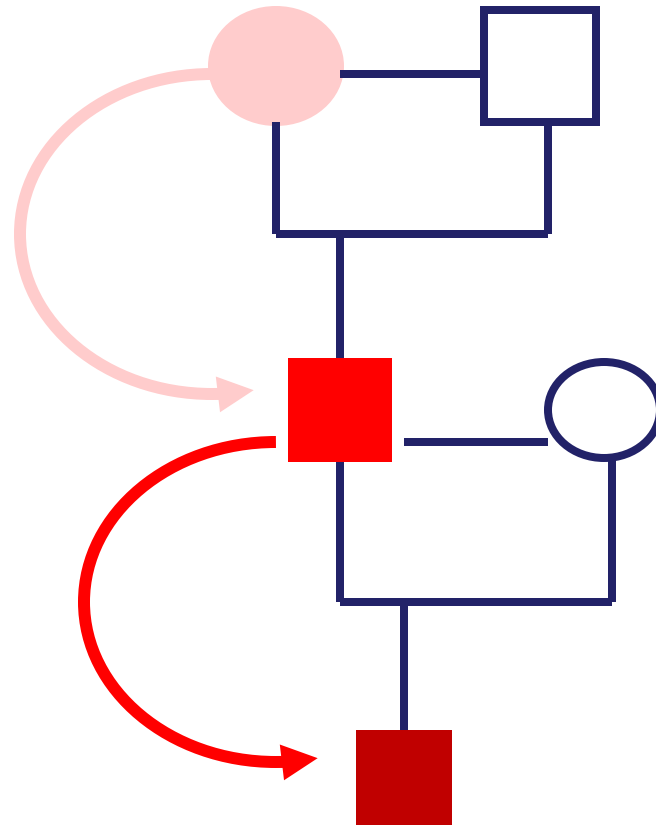
Parental educational models exercised over childhood can promote the structuring of an insecure person, who avoids new situations and responsibilities

E. g. HYPERPROTECTION OF THE CHILD

# TRANSGENERATIONAL TRANSMISSION OF ANXIETY

Enmeshed families are characterized by a very little emotional distance between family members. As a consequence the levels of affective dependence and anxiety are high in these families

Adults from these families will transmit their family model to their children, perpetuating and increasing anxiety levels



# CHILDHOOD LIFE EVENTS

Fear is learned largely through life experiences and coercion.

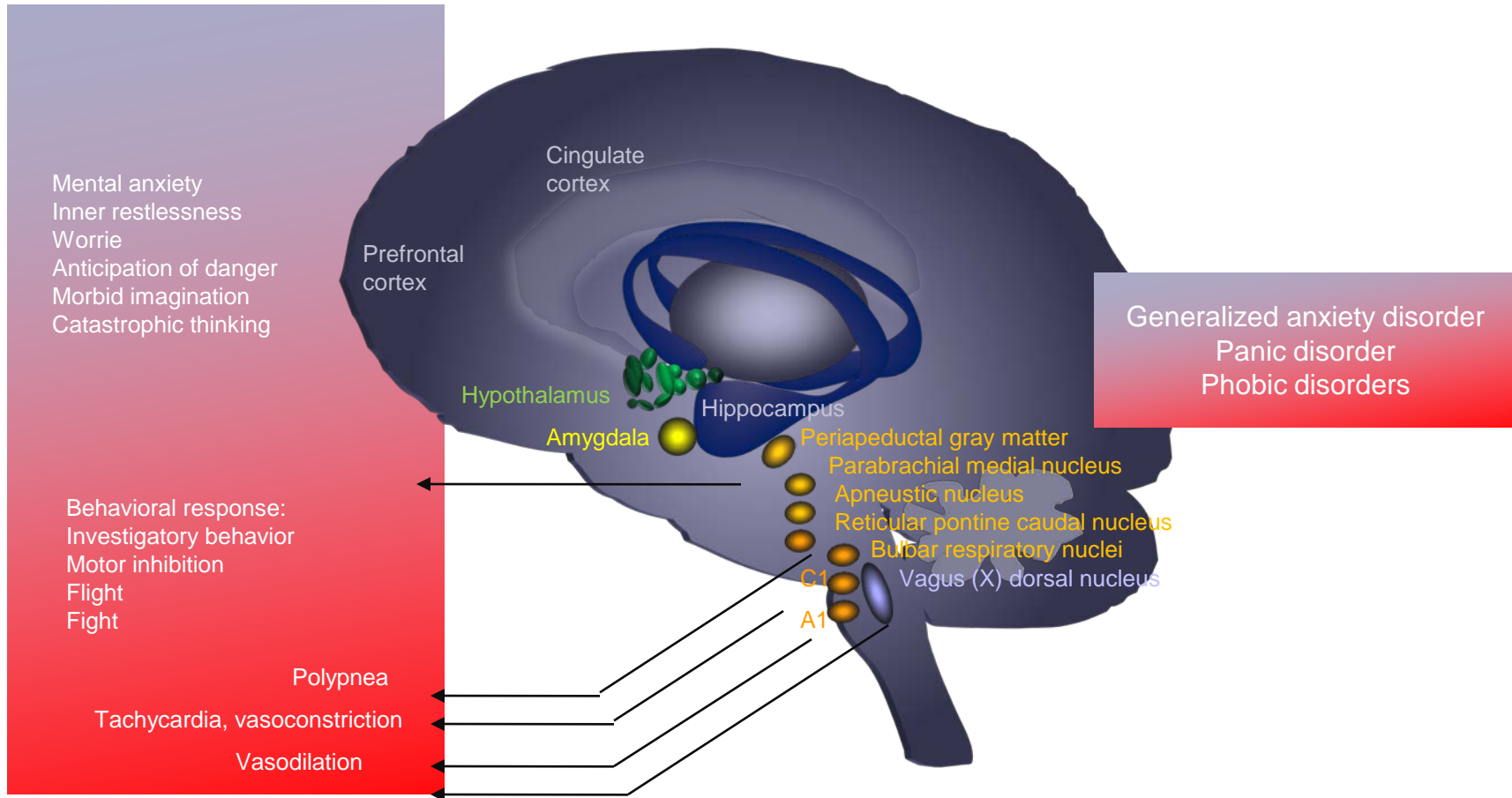
Fear generating situations:

- Anxiety of losing a parent through divorce threats
- Quarrels between parents with use of verbal and physical violence
- Verbal and physical violence against children

# VULNERABLE PERSONALITY DISORDERS

- Types most commonly found in anxious-phobic disorders, are the personalities from the cluster C (insecure) :
  - ANXIOUS-AVOIDANT
  - DEPENDENT
  - ANANKASTIC

# ANXIETY: FUNCTIONAL NEUROANATOMY



L. Del

# ANXIETY: FUNCTIONAL NEUROANATOMY

- HYPOTHALAMUS:
  - Sympathetic centers (posterior hypothalamus) and parasympathetic centers (anterior hypothalamus)
  - Paraventricular nucleus: CRH secretion which controls ACTH releasing from pituitary gland and stress hormones (cortisol and epinephrine) from suprarenal gland
  - Efferences to PAG, LC, parabrachial nuclei, caudal pontine reticular nucleus, parasympathetic nuclei in the brainstem
- AMYGDALA: associates an emotional significance to a stimulus. It activates hypothalamus, PAG, LC, parabrachial nuclei, respiratory centers, vagus effector nucleus
- BRAIN STEM
  - PERIAQUEDUCTAL GRAY MATTER (PAG): motor inhibition, analgesia, cardio-vascular symptoms
  - MIDBRAIN RAPHE: serotonin secretion balancing norepinephrine
  - LOCUS COERULEUS (LC): highest norepinephrine content. Role in monitoring homeostatic changes, focusing attention to biological relevant new stimuli and increasing cortical alertness
  - PARABRACHIAL NUCLEI: polypnea, mictional control
  - CAUDAL PONTINE RETICULAR NUCLEUS: startle reflex
- MEYNERT'S BASAL NUCLEUS: increases alertness
- PREFRONTAL CORTEX: unconscious and conscious control of anxiety

# HYPOVENTILATION AND HYPERVENTILATION

- The most important stimulus for ventilation is the arterial pressure of CO<sub>2</sub>
- Klein's **false suffocation alarm hypothesis**: Patients with panic attacks may have an increased sensitivity of respiratory centers to hypercapnia (increased concentration of CO<sub>2</sub> which stimulates the respiratory centers)
- At night, as the sleep becomes deeper (NREM sleep), the ventilatory response to CO<sub>2</sub> is reduced. In REM sleep the ventilatory response to CO<sub>2</sub> is even more reduced with the risk of developing apnea. The resulting hypercapnia may trigger nocturnal panic attacks
- Hyperventilation produces metabolic alkalosis through losing CO<sub>2</sub>. The modification in the pH will stimulate the bounding of free calcium to proteins inducing a transient hypocalcemia. Low free calcium in blood will produce tetania-like symptoms seen in some patients with panic attacks

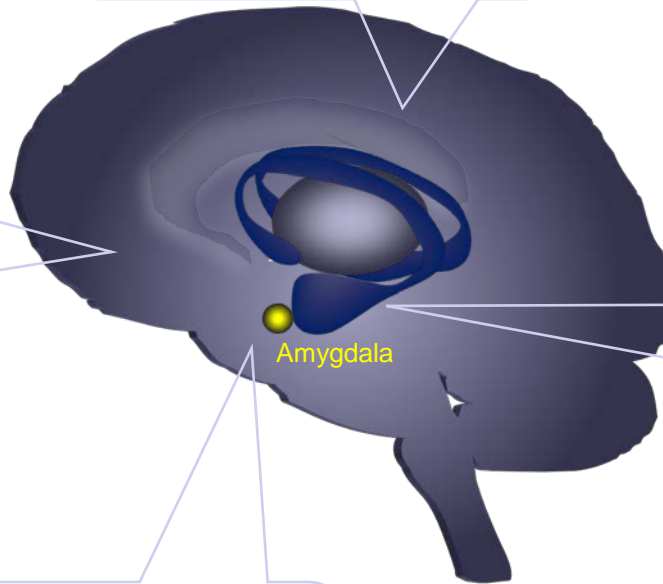
# BRAIN STRUCTURES INVOLVED IN ANXIETY DISORDERS

**PANIC ATTACKS DISORDER**  
Overactive amygdala  
Overactive right  
parahippocampic region

**GENERALIZED ANXIETY  
DISORDER**  
Overactive amygdala  
Hyperactive prefrontal cortex

**POSTTRAUMATIC STRESS  
DISORDER**  
Overactive amygdala  
Hypoactive frontal cortical  
areas  
Reduced hippocampal volume

**SOCIAL PHOBIA**  
Hyperactivity in the amygdala  
Hyperactivity of the anterior  
cingulate cortex (behavior  
monitoring)  
The basal ganglia hypoactivity

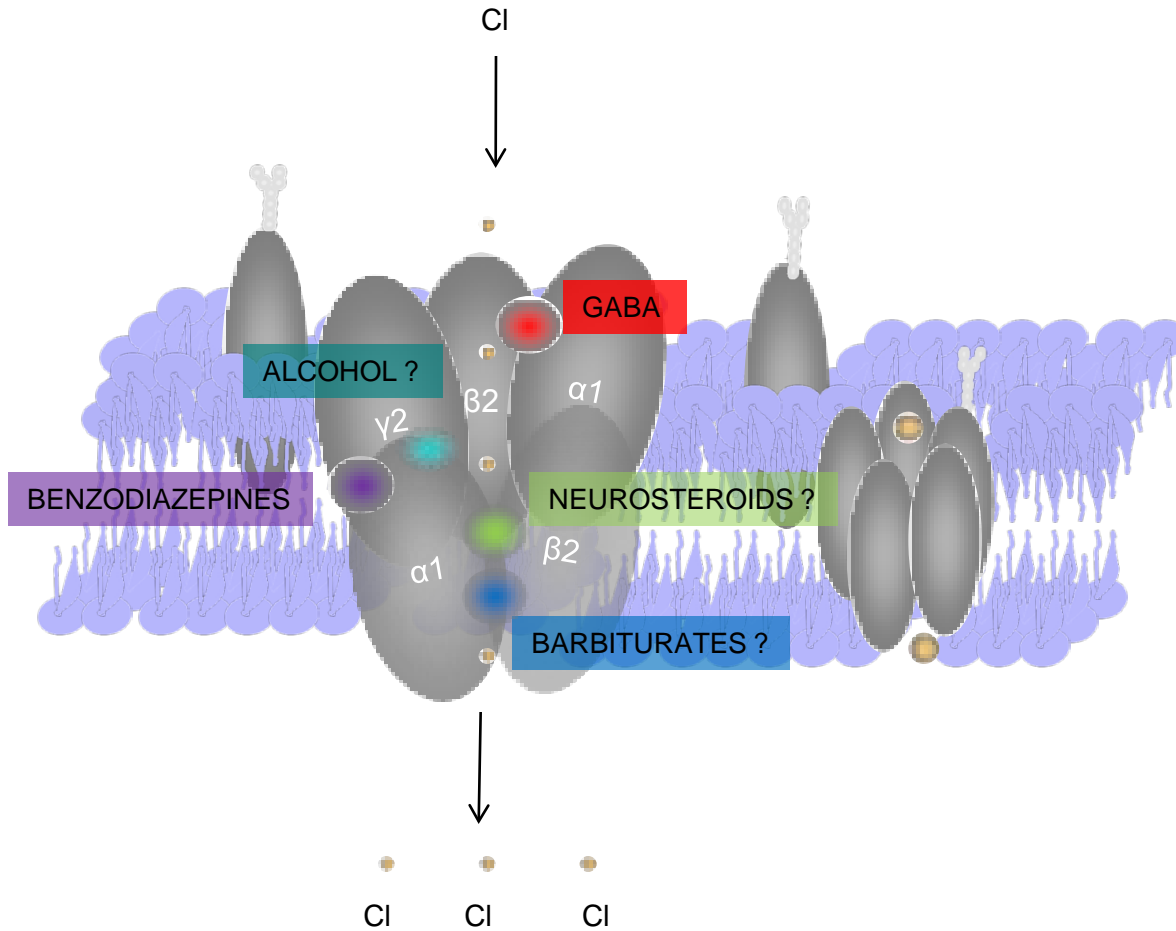




## CEREBRAL NEUROTRANSMITTER AND HORMONAL SYSTEMS DISRUPTED IN ANXIETY

- GABA SYSTEM
- NOREPINEPHRINE SYSTEM
- SEROTONIN SYSTEM
- NEUROPEPTIDES: CCK, NPY
- HORMONES: CRH, CORTISOL, EPINEPHRINE

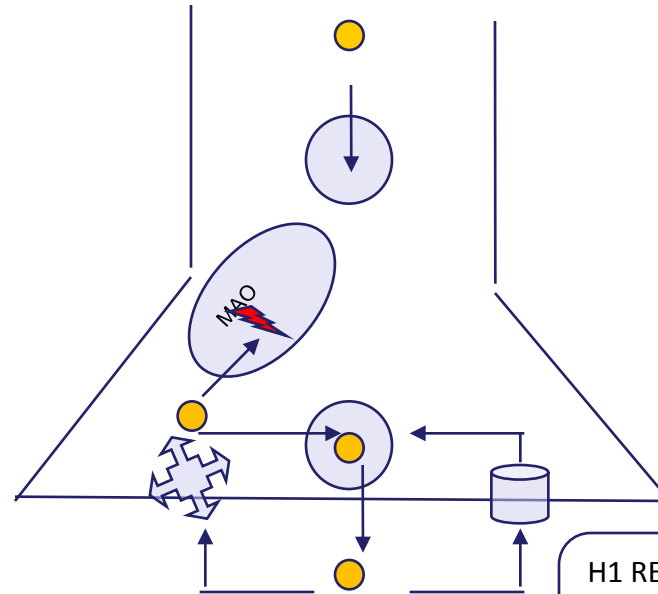
# GABA A RECEPTOR



The entrance of negatively charged chloride causes cell hyperpolarization (HYPOEXCITABILITY)

*L. Del*

# SEROTONIN, ANXIETY AND SLEEP



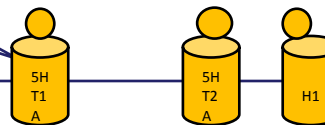
5HT1A RECEPTOR STIMULATION  
PRODUCES

- ANTIDEPRESSANT EFFECT
- ANXIOLYTIC EFFECT

(BUSPIRONE)

H1 RECEPTOR BLOCKADE CAUSES  
SEDATION AND WEIGHT GAIN

(ANTIPSYCHOTICS, ANTIDEPRESSANT  
S, HYDROXYZINE)

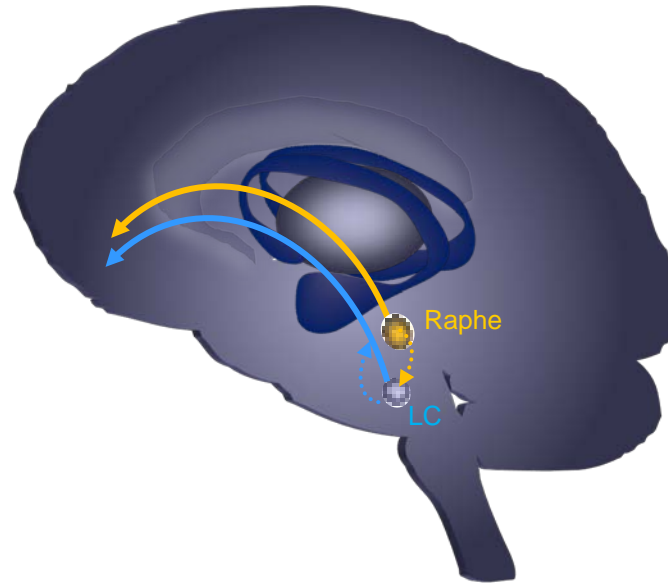


5HT2A RECEPTOR BLOCKADE PRODUCES

- ANXIOLYSIS
- SLEEP IMPROVAL

(TRAZODONE, NEFAZODONE, ATYPICAL ANTIPSYCHOTICS)

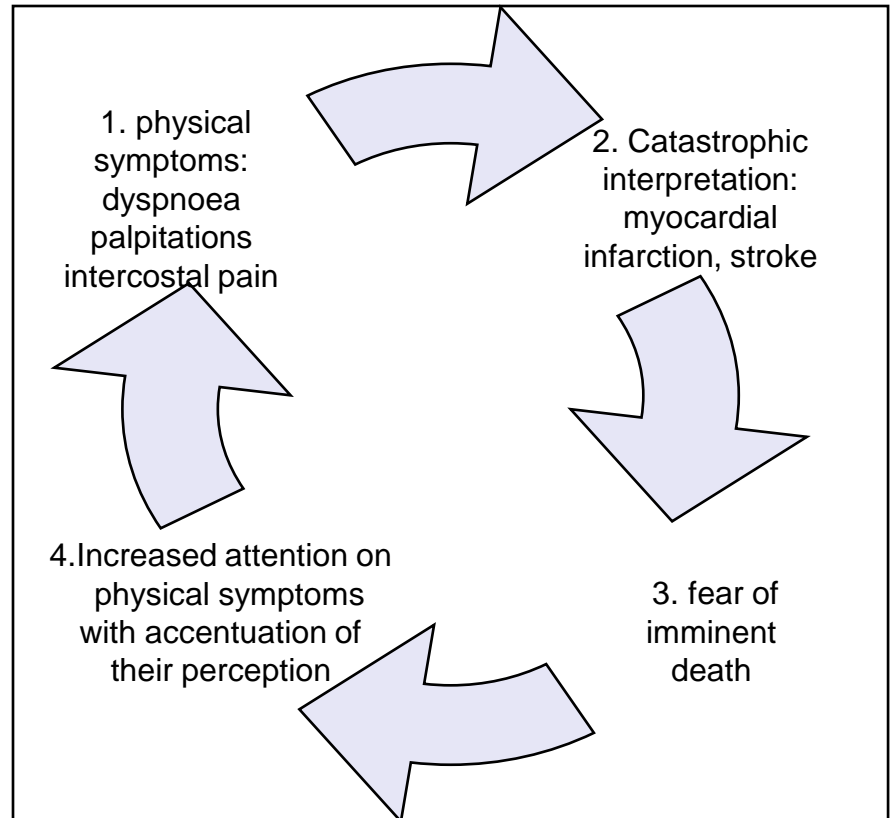
# RECIPROCAL NEUROMODULATION OF SEROTONIN AND NOREPINEPHRINE



SEROTONIN tonically inhibits NOREPINEPHRINE

# PSYCHOTHERAPEUTIC TREATMENT IN PANIC DISORDER

- cognitive restructuring:  
identifying the catastrophic automatic thoughts and training the patient to switch attention from the symptoms of panic disorder
- behavioral techniques:  
breathing techniques



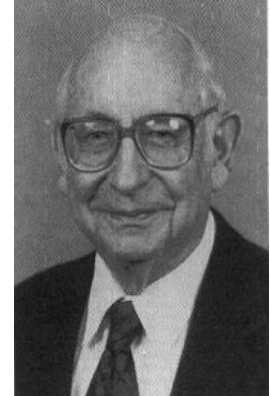
# PSYCHOTHERAPEUTIC TREATMENT IN GAD

- Relaxation programs (mind and muscles):
  - autogenic training, based on autosuggestion and focus on the sensation of muscle relaxation, weight and heat – Schultz method
  - progressive relaxation (contraction-relaxation)
    - Jacobson method
- Music Therapy

# PSYCHOTHERAPEUTIC TREATMENT IN PHOBIC DISORDERS

- Systematic desensitization (gradual exposure to the phobogenic object or situation) - Wolpe technique
  1. Hierarchy of phobias
  2. Medication induced relaxation or relaxation training
  3. Actual desensitization starting with the less anxiogenic situation
- Direct imaginative exposure or in reality in the most anxiogenic situation (implosion, immersion)
- Bandura modeling: the watching of another person ( the model) who is exposed to the patient's phobogenic situation in reality or in a movie

! Fear deconditioning is not definitive



J. Wolpe (1915-1997)



A. Bandura (1925-)

# PSYCHOTHERAPEUTIC TREATMENT IN SOCIAL PHOBIA

- Cognitive-behavioral techniques (mentioned previously)
- Assertiveness techniques (self-affirmation): instruction, modeling, role playing, feedback
- Social skills training techniques: instruction, modeling, role playing, feedback



# MEDICATION

ANTIDEPRESSANTS

ANXIOLYTICS

HYPNOTICS

# PANIC DISORDER TREATMENT

Prevention of panic attacks is made with:

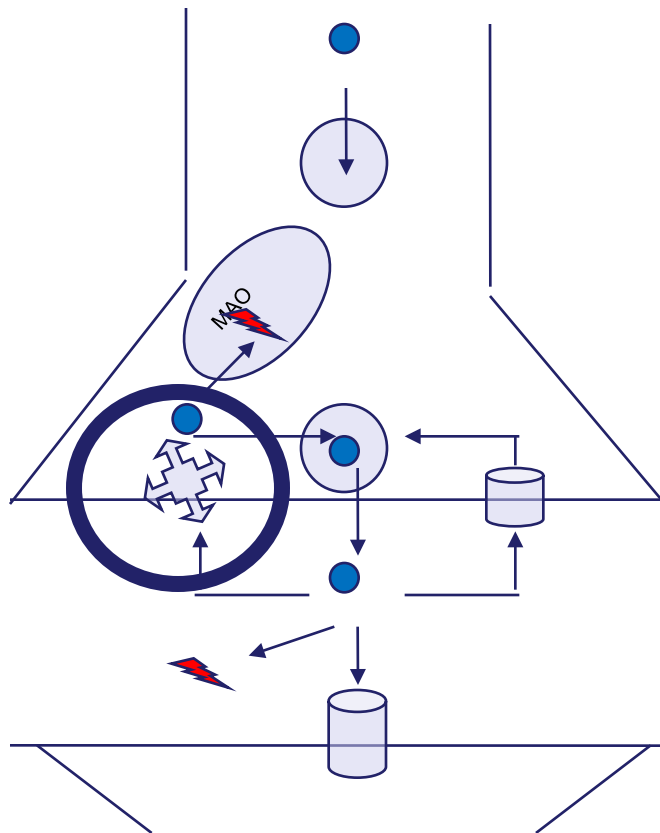
1. Antidepressants that predominantly block serotonin reuptake
  1. Tricyclic antidepressants:
    - Clomipramine
    - Imipramine
  2. Selective serotonin reuptake inhibitors (SSRI):
    - Fluoxetine
    - Sertraline
    - Paroxetine
    - Fluvoxamine
    - Escitalopram
2. Potent benzodiazepines
  - Alprazolam (intermediate half-life)
  - Clonazepam (long half-life)

# RULES OF ANTIDEPRESSANTS TREATMENT

1. Treatment is started at low doses to prevent increasing anxiety symptoms and other side effects
2. SSRIs are drugs with fewer side effects than the tricyclic antidepressant, but the latter are more potent
3. There is a latency of two weeks until the therapeutic effects develop
4. The therapeutic effect is assessed after 4-6 weeks
5. The treatment is maintained for a few months after which doses are gradually decreased

# ANTIDEPRESSANTS INCREASE SEROTONIN LEVELS IN THE SYNAPTIC CLEFT

## NOREPINEPHRINE



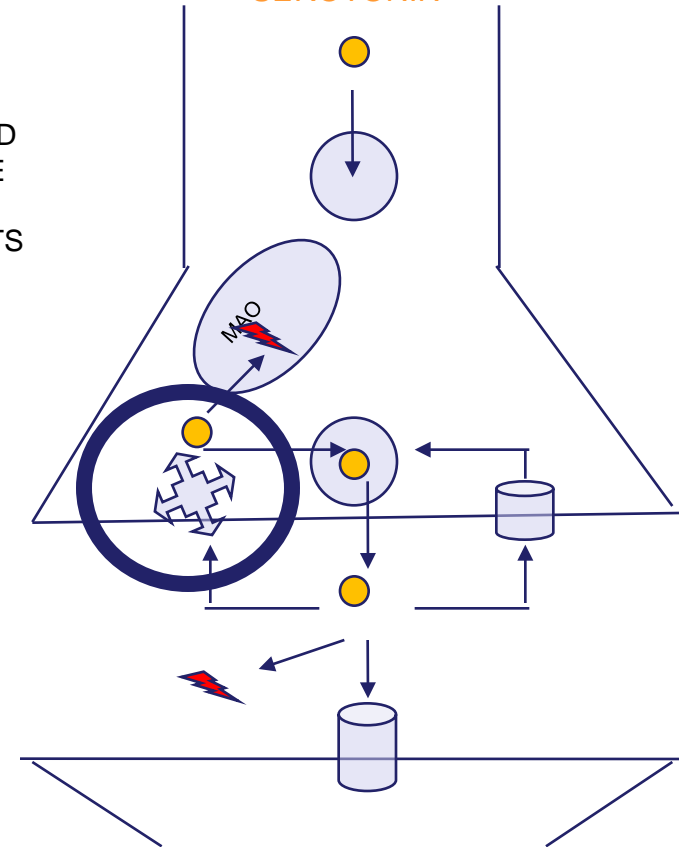
ANTIDEPRESSANTS THAT  
BLOCK BOTH SEROTONIN AND  
NOREPINEPHRINE REUPTAKE

TRICYCLIC ANTIDEPRESSANTS  
VENLAFAXINE,  
MILNACIPRAN,  
DULOXETINE

ANTIDEPRESSANTS THAT  
SELECTIVELY BLOCK THE  
REUPTAKE OF SEROTONIN

SSRI:  
escitalopram,  
sertraline,  
fluvoxamine,  
fluoxetine,  
paroxetine

## SEROTONIN



# PANIC DISORDER TREATMENT

- Since serotonergic antidepressants (SSRIs, imipramine, clomipramine) may cause an initial increase of anxiety, treatment will start with a low dose which will gradually increase.
- Treatment should be initiated with the administration of potent anxiolytics in combination with serotonergic antidepressants to combat the initial anxiety induced by the serotonergic antidepressants
- Because benzodiazepines induce addiction in case of a long term treatment in therapeutic doses, maintenance treatment will be made with antidepressants

# RULES OF BENZODIAZEPINES TREATMENT

1. Treatment should be brief using therapeutic doses so it will not result in addiction
2. The higher dose is given at night to avoid daytime sedation
3. Doses should be gradually decreased to avoid withdrawal reactions (more common and more important in short half-life and potent benzodiazepines)
4. Avoid association with alcohol because of the risk of increasing CNS depression
5. Avoid use in case of:
  1. Driving (due to muscle relaxant effect with decreased reflexes)
  2. Closed angle glaucoma (acute attack of glaucoma risk)
  3. Myasthenia gravis (due to muscle relaxant effect)
  4. Respiratory insufficiency (risk of depression of respiratory centers)

# CLASSIFICATION OF SEDATIVE AND HYPNOTIC DRUGS

anxiolytics		hypnotics	
Benzodiazepines	Non benzodiazepines	Benzodiazepines	Nonbenzodiazepines
Alprazolam	Meprobamat	Triazolam	Chloralhydrate
Lorazepam	Hydroxyzine	Temazepam	Glutethimide
Bromazepam	Buspirone	Nitrazepam	Phenobarbital
Oxazepam		Flunitrazepam	Cyclobarbital
Diazepam		Loprazolam	Zolpidem
Chlordiazepoxid		Lormetazepam	Zopiclone
Chlorazepate			
Chlobazam			
Chlotiazepam			
Medazepam			

# BZD CLASSIFICATION ACCORDING TO THE HALF-LIFE

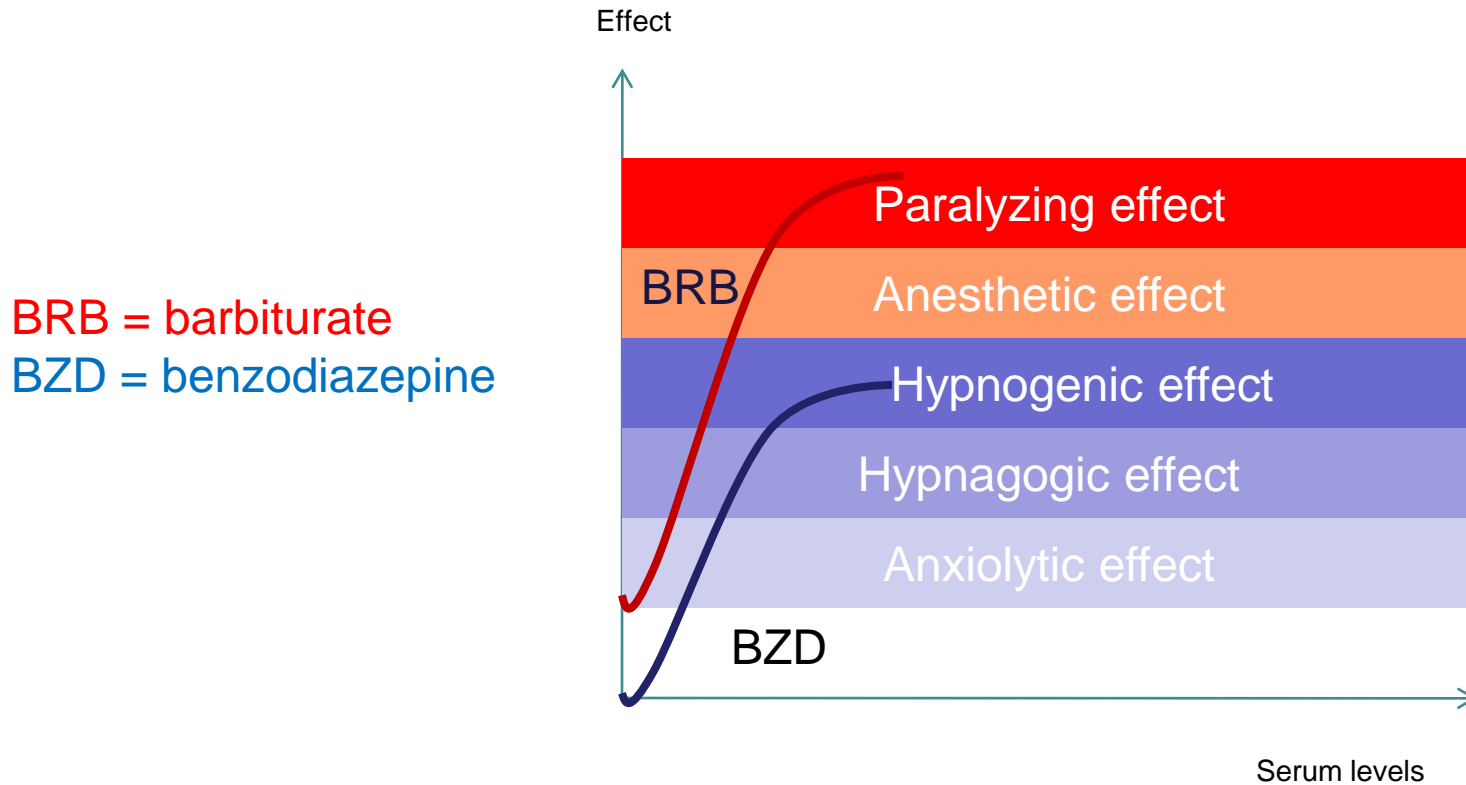
<b>T1/2 &lt; 5h</b>	<b>5h&lt;T1/2 &lt; 24h</b>	<b>T1/2&gt; 24h</b>
Midazolam	Alprazolam	Chlordiazepoxid
Triazolam	Lorazepam	Chlorazepat
Chlotiazepam	Oxazepam	Clonazepam
	Temazepam	Diazepam
		Medazepam



# BZD CLASSIFICATION ACCORDING TO POTENCY

	<b>BZD with high potency</b>	<b>BZD with low potency</b>
Dosage	1-4 mg	10-30 mg
Examples	Alprazolam Lorazepam Clonazepam	Diazepam Chlordiazepoxid Medazepam
Accumulation	No	Yes
Anxiety between doses	Frequent	Rare
Risk of addiction	High	Low
Withdrawal reaction after	1-3 days	4-7 days
Severity of withdrawal	High	Low /Moderate
Active metabolites	no or few	Many
Amnesia	Frequent	Rare
Paradoxical effect	Frequent	Rare

# DOSE-DEPENDENT EFFECTS OF BENZODIAZEPINES AND BARBITURATES

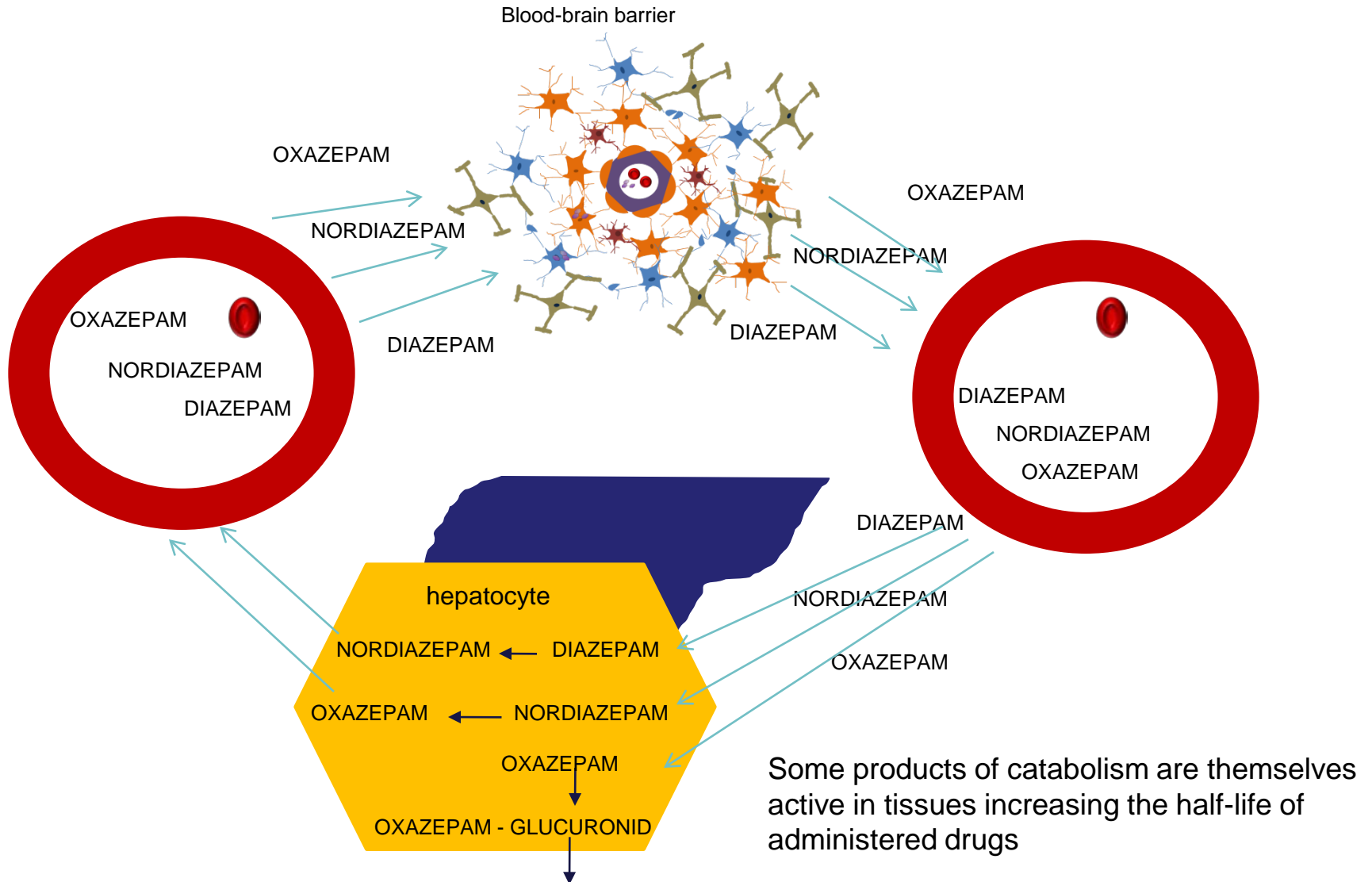


Lullmann H, Mohr K, Ziegler A, Bieger D, "Color Atlas of Pharmacology", Thieme, 2000

# WITHDRAWAL FROM BENZODIAZEPINES

- Insomnia
- Anxiety
- Restlessness, agitation
- Hyperesthesia, pain
- Tachycardia, hypertension
- Tremor
- Seizures
- Sweating, Vomiting
- Confusional state with hallucinations

# CATABOLISM OF BENZODIAZEPINES



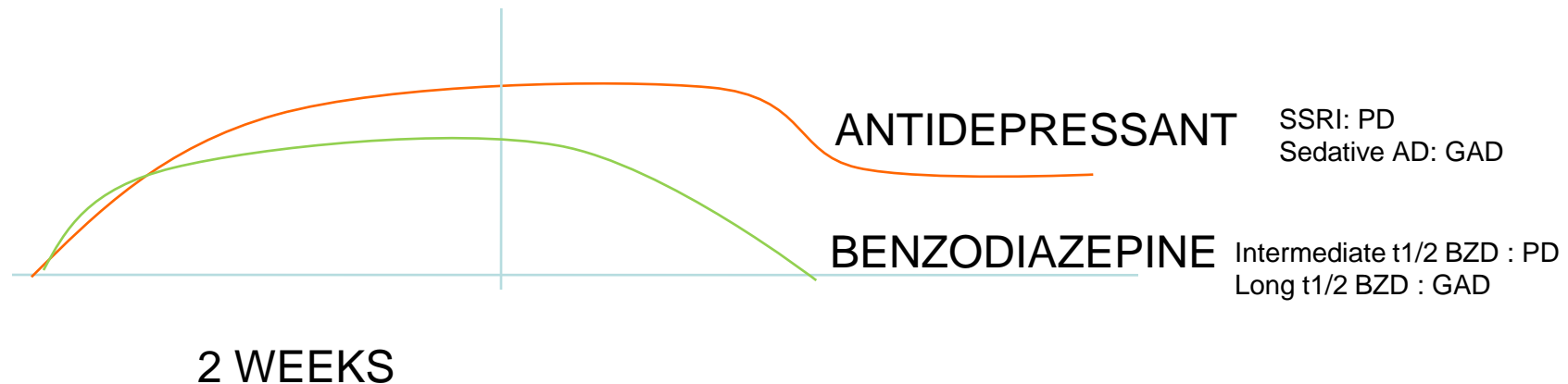
# DRUGS WITHOUT HEPATIC METABOLISM

- Antidepressants:
  - TIANEPTIN
  - MILNACIPRAN
- Sedatives – BENZODIAZEPINES
  - OXAZEPAM
  - LORAZEPAM

# GENERALIZED ANXIETY DISORDER (GAD)

- Responds better to long half-life benzodiazepines (Diazepam)
  - Rationale for using long half life benzodiazepines: anxiolytic effect + muscle relaxation relieving anxiety and insomnia
  - Risk: tolerance and biologic dependence
- Because GAD has a long evolution, benzodiazepines should be discontinued and replaced by sedative antidepressants in order to avoid addiction
- Responds better to sedating antidepressants
  - Rationale for using sedating antidepressants: sedation without risk of addiction (blocking H1 receptors) and may treat depression comorbid with GAD
  - Risk: latency of action and more side effects than benzodiazepines
- Maintenance treatment can be done with
  1. Sedative antidepressants: Doxepin, Mianserin, Trazodon
  2. Nonbenzodiazepinic anxiolytics: Buspirone

# ASSOCIATIONS: ANTIDEPRESSANT + ANXIOLYTIC IN THE TREATMENT OF ANXIETY DISORDERS



Antidepressant's side effects are felt

Antidepressant therapeutic effects are felt

Titration needed to minimize side effects

Progressive reduction of BZD dose to avoid withdrawal reaction

# OBSESSIVE COMPULSIVE DISORDER (OCD)

- Prevalence (lifetime) 2-3%
- Prevalence in women = men
- Onset:
  - 20s
  - Childhood (in boys)
- May be preceded in childhood by tics
- Considered a neurosis (insight present in the majority of cases)



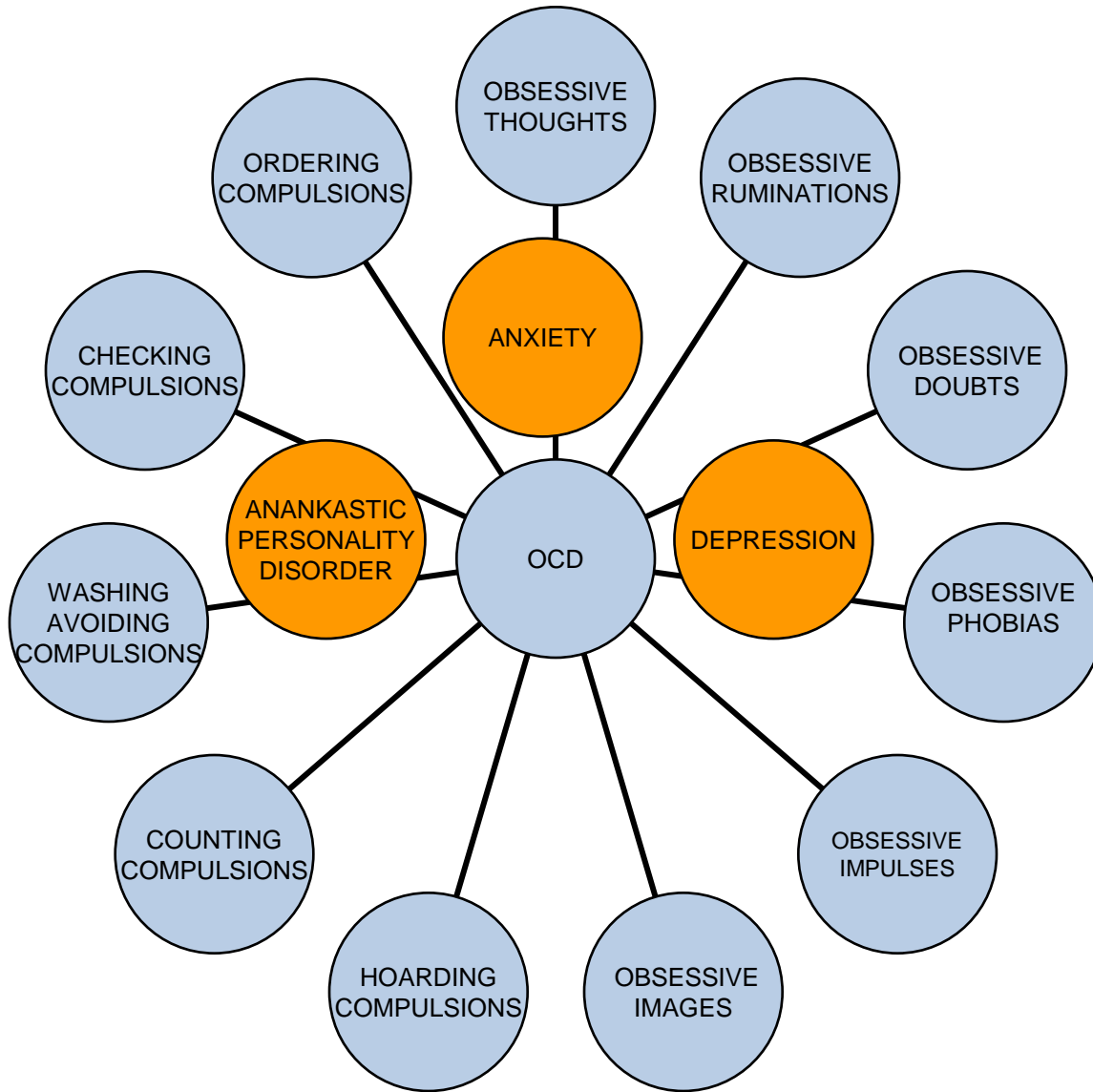
# OBSESSIVE COMPULSIVE DISORDER

- Clinical presentation:
  - Obsessions:
    - thoughts, ruminations, impulses, doubts, obsessive phobias, images
    - character: intrusive, recurrent, persistent, parasitizing (distressing), irrational belonging to the subject
  - Compulsions:
    - behavioral acts (washing, checking, hoarding, avoiding) or mental acts (counting - arithmomania)
    - Character: repetitive, stereotyped (rituals), excessive, parasitizing and time consuming
    - Can be connected (as coping behaviors against obsessions) or not with obsessions
  - Anxiety when restraining from the compulsion
  - Depression
  - Slowness

# OBSESSIVE COMPULSIVE DISORDER

- Ruminations = sterile (with no finality) and time-consuming inferences over banal (order, symmetry) or sophisticated (metaphysical) topics
- Impulses = tendencies towards a harmful or embarrassing act that produce intense fear but are never acted out:
  - Self harm (throwing oneself from height),
  - Heteroaggression (stabbing own children)
  - Sexual assault
  - Blaspheming (in people with faith)
- Obsessive phobias: disproportionate and irrational fears that appear even in the absence of the phobogenic object (fear of contamination, microbes)

# OBSESSIVE COMPULSIVE DISORDER



# OBSESSIVE COMPULSIVE DISORDER

- Evolution: Chronic
  - Phasic (episodes separated by periods of remission)
  - Fluctuating (incomplete remissions and exacerbations)
  - Constant
  - Progressive (worsening)
- Complications:
  - Isolation, celibacy
  - Depression, suicide
  - Anxiety

# OBSESSIVE COMPULSIVE DISORDER

- Poor prognostic factors:
  - Onset at young age
  - Absence of illness awareness
  - Length of episode
  - The presence of psychotic symptoms:  
delusions, hallucinations, bizarre compulsions
  - The presence of personality disorder

# OBSESSIVE COMPULSIVE DISORDER

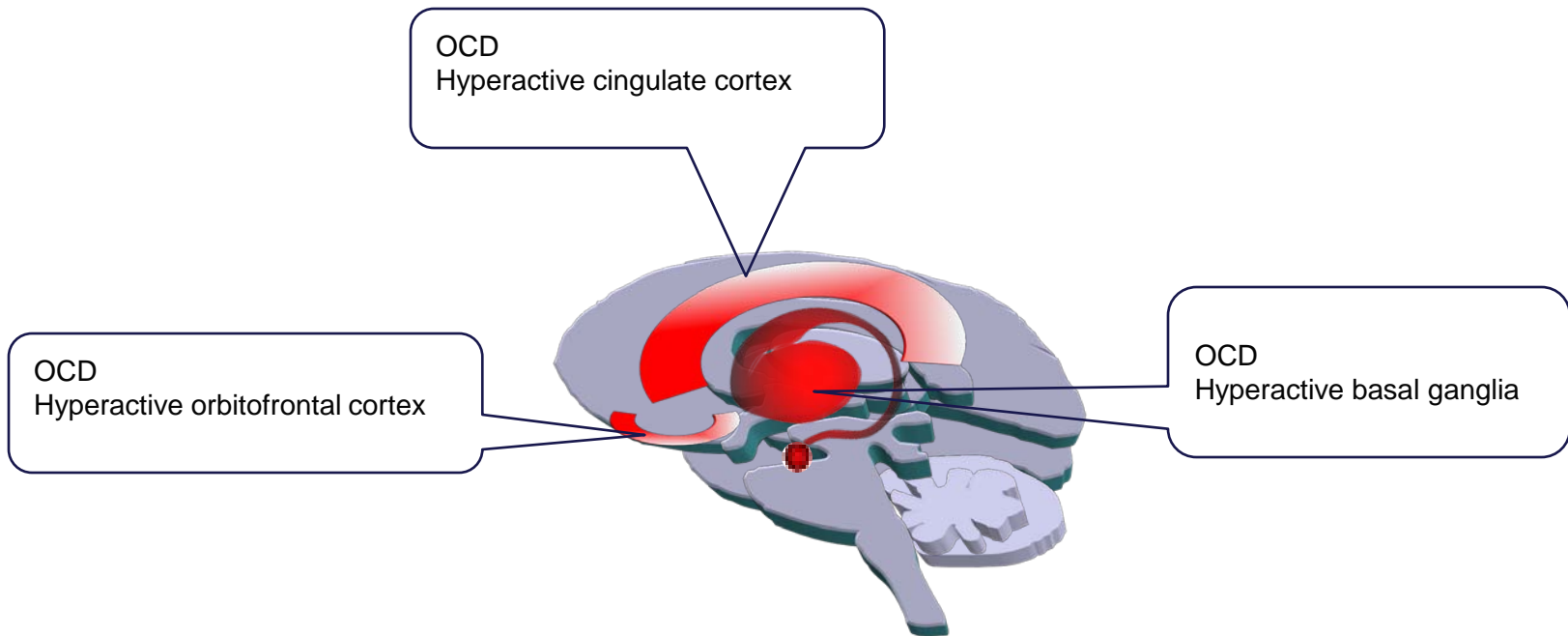
- Clinical types:
  - OCD with obsessions and compulsions
  - OCD with obsessions
  - OCD with compulsions
- Differential diagnosis:
  - Impulse control disorders: trichotillomania, pyromania, kleptomania
  - Paraphilias
  - Bulimia nervosa
  - Addiction
  - Schizophrenia

# OBSESSIVE COMPULSIVE DISORDER

## Etiopathogeny:

- Biological aspects:
  - Genetic factor
    - Genetic spectrum: Gilles de la Tourette Tic Disorder
    - Streptococcal infection
  - Anatomopathological:
    - Frontal lobe impairment
    - Damage to the basal ganglia (caudate nc.) - tic disorders and Sydenham chorea
    - Limbic system damage (cingulate)  
At the level of these structures PET revealed an increase in blood flow and glucose consumption
  - Pathophysiological:
    - serotonin dysfunction (impulsivity)

# PET: CEREBRAL STRUCTURES INVOLVED IN OBSESSIVE – COMPULSIVE DISORDER

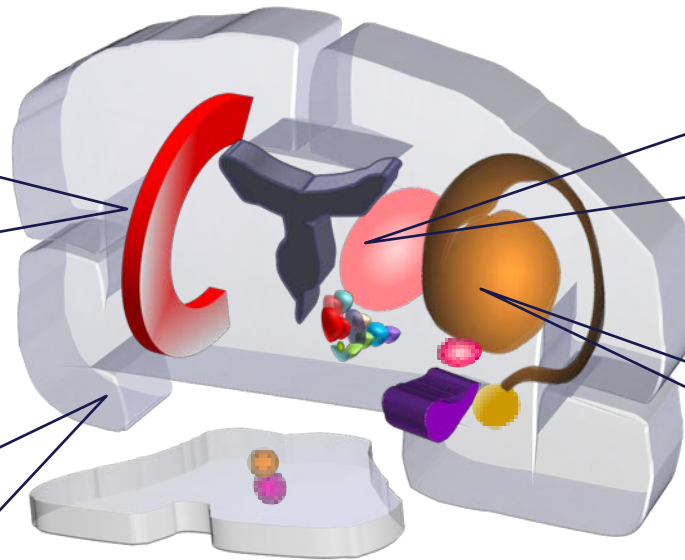




# OBSESSIVE-COMPULSIVE DISORDER: FUNCTIONAL NEUROANATOMY

**MEDIAL PREFRONTAL CORTEX AND CINGULUM**  
role in mitigating the intense emotional states such as ANXIETY

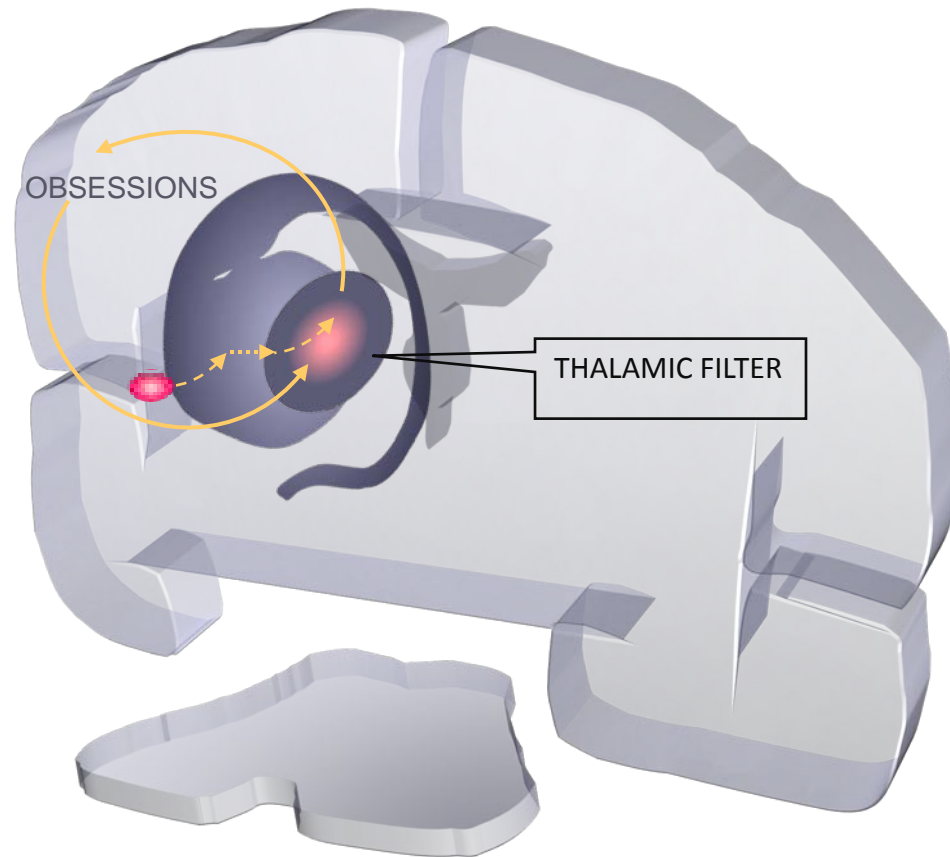
**ORBITO-FRONTAL CORTEX**  
role in inhibiting the response to aversive or pleasure stimuli, controlling the behavior  
In OCD it is incapable to control COMPULSIONS



**THALAMUS:**  
role in filtering information trying to reach the cortex  
In OCD disturbance of the cortico-striothalamo-cortical circuits may facilitate the RECURRENCE of the INTRUSIVE THOUGHTS (OBSESSIONS)

**BASAL GANGLIA**  
role in modulating motor activity and behavior  
In OCD basal ganglia may facilitate the appearance of COMPULSIONS

# THALAMIC FILTER: CORTICAL-STRIO-THALAMIC-CORTICAL CIRCUITS



# OBSESSIVE COMPULSIVE DISORDER

## Etiopathogeny:

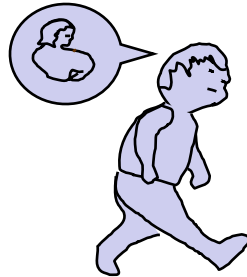
- Psychological causes:
  - Stress vulnerability theory:
    - Vulnerable personality: anankastic type PD (Schneider), psychasthenic (Janet), anal character (Freud): obstinacy, parsimony, pedantry, order
    - Stress
  - Psychoanalytic theory (Freud)
    - Fixation in the anal stage of psychosexual development and subsequent regression from the phallic to the anal stage
    - Defense mechanisms:
      1. Isolation
      2. Reactive formation
      3. Undoing

# PSYCHO-SEXUAL DEVELOPMENT

Genital stage: puberty 12-18 years old



Latency stage: 6-12 years old



Phallic stage (Oedipus complex),



Urethral stage?



Oral stage: 0-1 years old

Anal stage: 1-3 years old  
Pleasure is given by removal / retention of feces  
Erogenous zone: ano-rectal mucosa  
Pleasure object: feces

## ANAL CHARACTERS

Retention phase: anal-retentive character:  
- self control, obstinacy, order, pedantic, meticulous, parsimony, devotion to rules

# OBSESSIVE COMPULSIVE DISORDER

## Etiopathogeny:

- Psychological causes:
  - Learning theory:
    - » Stage 1. learning through classical conditioning: neutral stimuli (words, images) are associated with anxiety becoming conditioned stimuli (capable of triggering themselves anxiety)
    - » Stage 2. learning through operant conditioning: the person discovers that a particular action reduces the anxiety associated with obsessions, developing compulsions and rituals. If these are effective in lowering anxiety they will continue to be used

# OBSESSIVE COMPULSIVE DISORDER

## Treatment:

- Psychoeducation: offering the patient and his family informations about symptoms and treatment options
- Pharmacological:
  - Antidepressants
    - Tricyclic antidepressants: clomipramine, imipramine (more side effects!)
    - SSRIs: fluoxetine, fluvoxamine, sertraline, paroxetine, citalopram, escitalopram (less side effects)

The antidepressant doses are double compared with those required to treat depression and the latency period of the clinical response is twice as long as the latency period for depression (4 weeks)

- Anxiolytics
- Hypnotics
- Antipsychotics

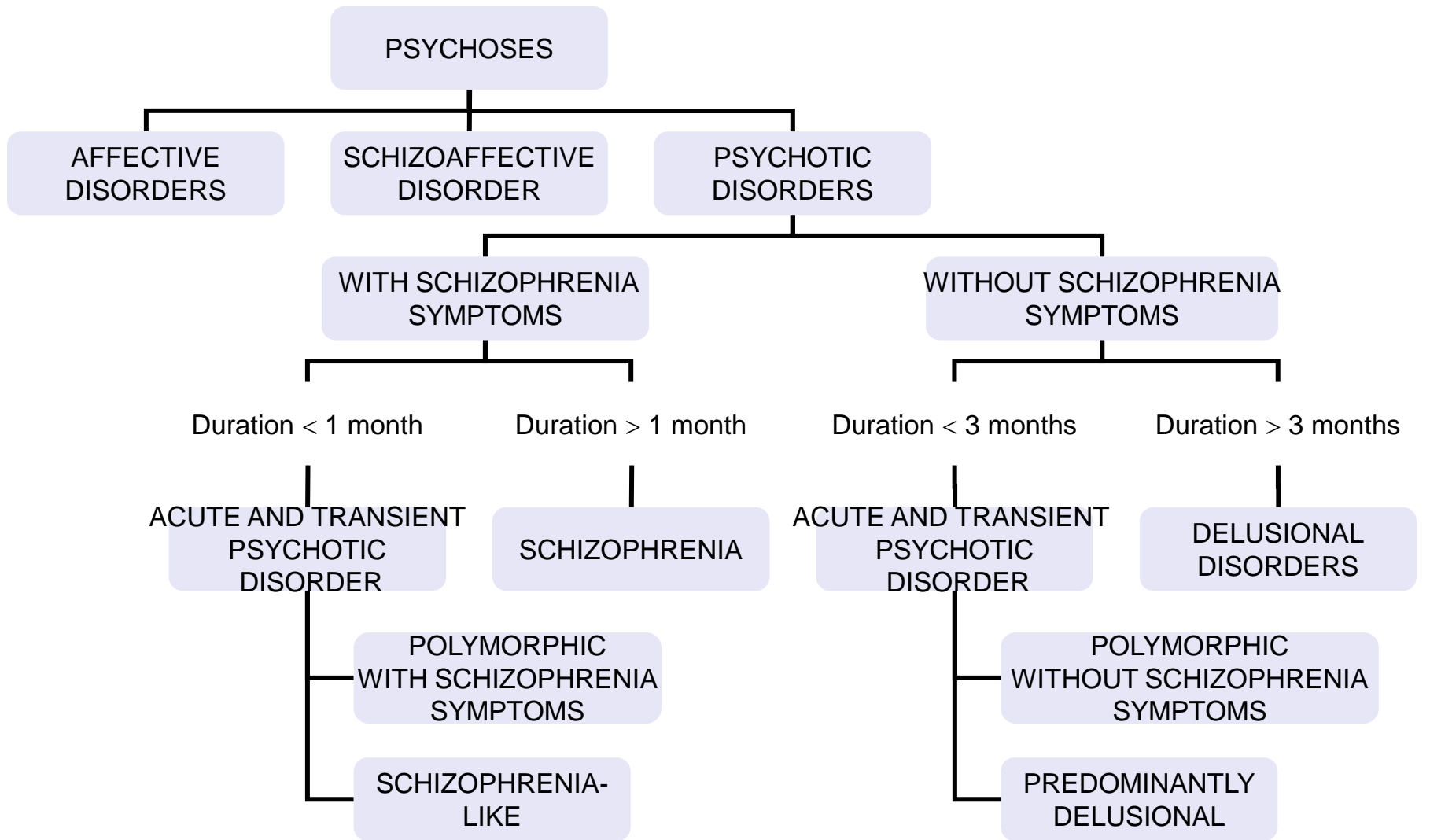
# OBSESSIVE COMPULSIVE DISORDER

- Psychotherapy Treatment:
  - Cognitive-behavioral psychotherapy
    - » Exposure + response prevention
    - » Exposure + modeling (Bandura)
    - » stopping thoughts
- ECT
- Psychosurgery: cutting fibers connecting the prefrontal cortex to the basal ganglia

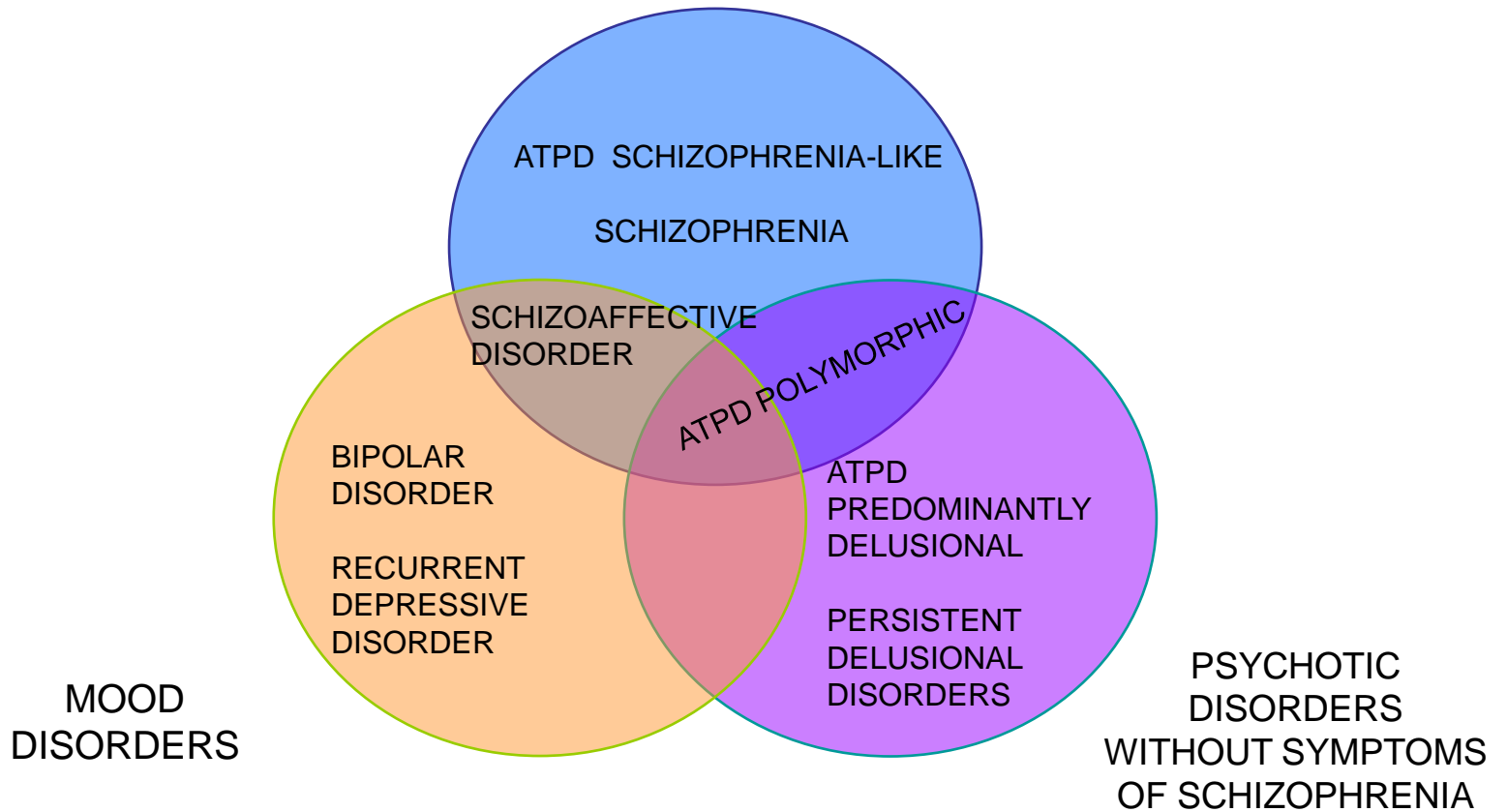
# PSYCHOSES

- General characteristics:
  - Reality testing is absent
  - Insight absent
  - Egosyntony
  - Predisposing background: genetic factors more important than in the case of neuroses
  - Trigger factors: drug abuse, stressful life events
  - Treatment: psychotropic medication + psychotherapy + psychoeducation





PSYCHOTIC DISORDERS  
WITH SYMPTOMS OF  
SCHIZOPHRENIA



ATPD: ACUTE AND TRANSIENT PSYCHOTIC DISORDER

# SCHIZOPHRENIA: EPIDEMIOLOGY

PREVALENCE: lifetime: 1%  
point: 4 ‰

INCIDENCE: 1: 10000 (incidence is lower because the illness is chronic)

SEX RATIO: women = men

Age at onset: 15-35 years (the illness has an earlier onset in men than women)

High rate of comorbidity with substance abuse (especially nicotine)

Suicide rate: 10%

# SCHIZOPHRENIA: HISTORY

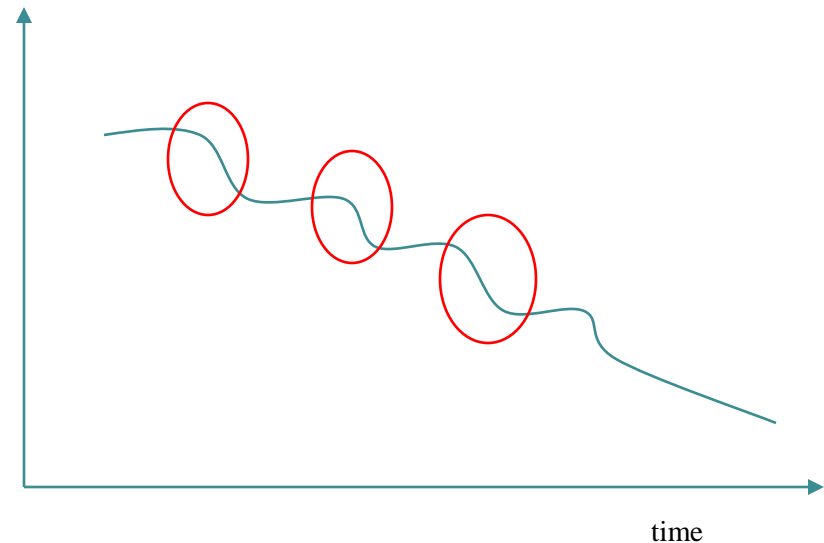


E. Kraepelin (1856-1926)

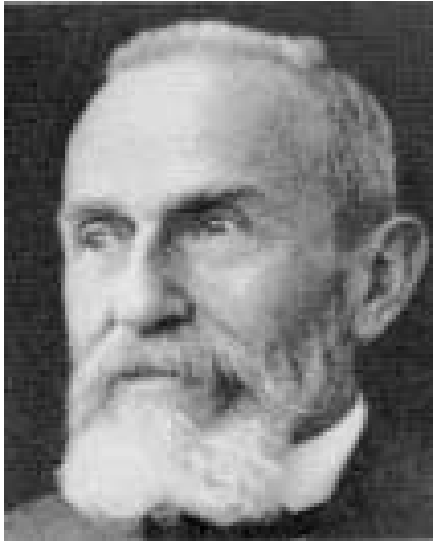
MANIC-  
DEPRESSIVE  
PSYCHOSIS

DEMENTIA  
PRAECOX

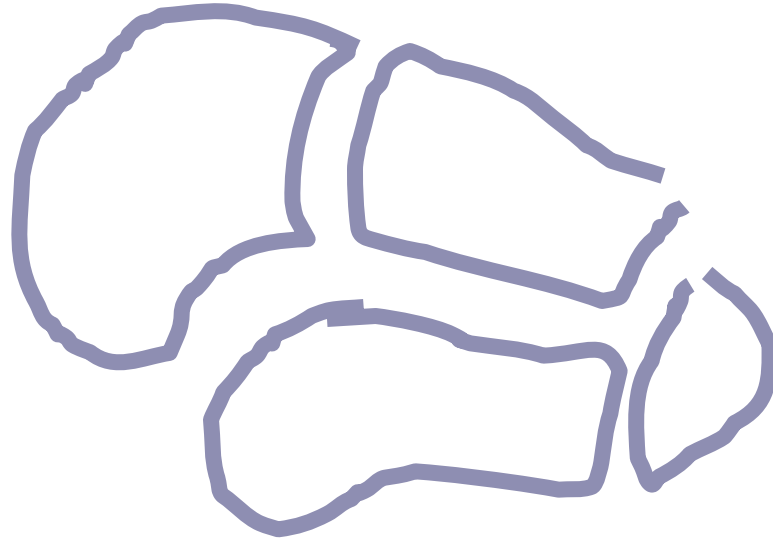
Kraepelin differentiated "dementia praecox" from manic-depressive psychosis and melancholy, saying that the first results in permanent cognitive impairment (dementia) and occurs in young people (praecox). Emphasis was placed on evolution



# SCHIZOPHRENIA: HISTORY

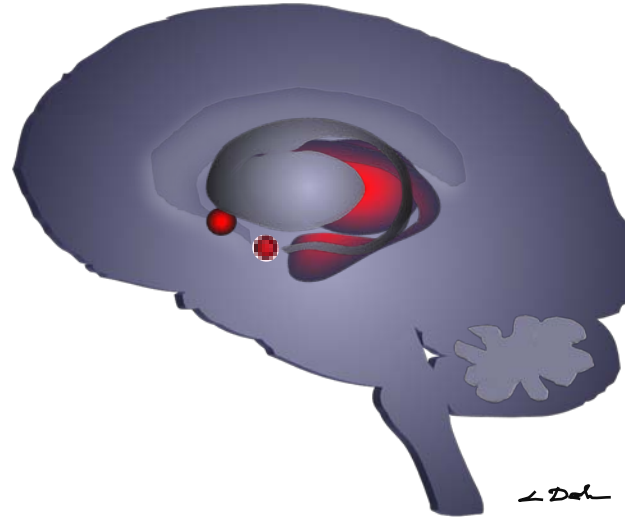


E. Bleuler (1856-1939)



Bleuler introduced the term **SCHIZOPHRENIA** by putting emphasis on dissociation (disorganized thinking) and not on deterioration

# SCHIZOPHRENIA: HISTORY



J. Hughlings Jackson (1835-1911)

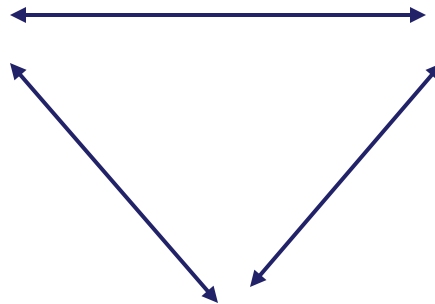
According to Hughlings Jackson, the true symptoms of the illness are not the positive symptoms (hallucinations and delusions), but the negative ones (alogia, apathia, abulia). Negative symptoms reflect the primary damage in the cerebral cortex, while positive symptoms are generated by the subcortical structures (limbic system) released from cortical inhibition

# ETIOPATHOGENESIS: PLURIFACTORIAL

**BIOLOGICAL FACTORS :**  
Genes, neurotransmitters, structural brain changes

**SOCIAL (familial) FACTORS:**  
Double bind (contradicting messages)  
Schizophrenogenic mother (cold, anxious / hyperprotecting)  
High emotional expression families (EE)

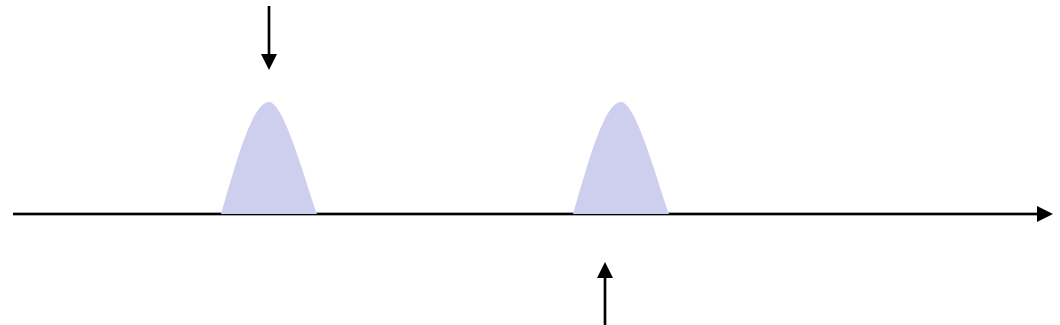
**PSYCHOLOGICAL FACTORS:**  
schizoid personality



# SCHIZOPHRENIA ETIOPATHOGENESIS

Precipitating factors:  
STRESSFUL LIFE EVENTS  
DRUG USE (cannabis, hallucinogenes)

Predisposing factors:  
VULNERABILITY:  
(genetic, age)



Maintenance factors:  
FAMILIES WITH HIGH EE



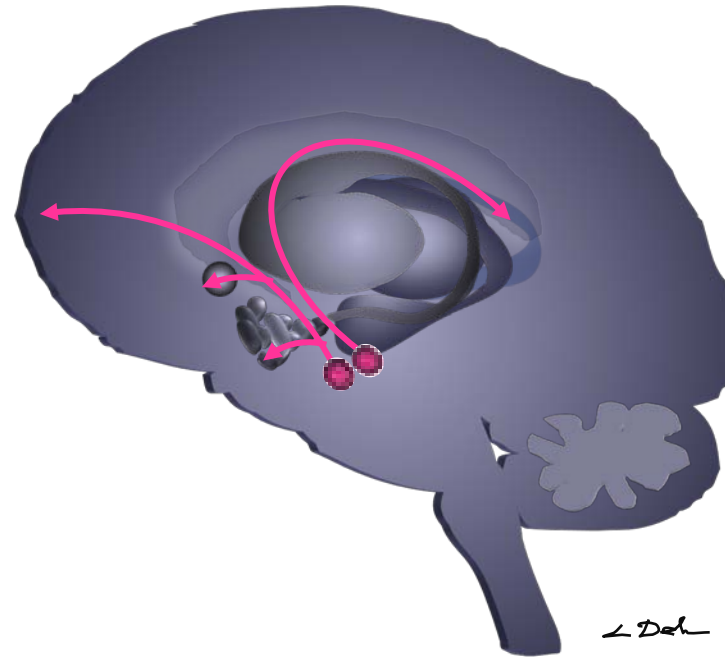
# ETIOPATHOGENESIS: DOPAMINE HYPOTHESIS

NIGROSTRIATAL PATHWAY

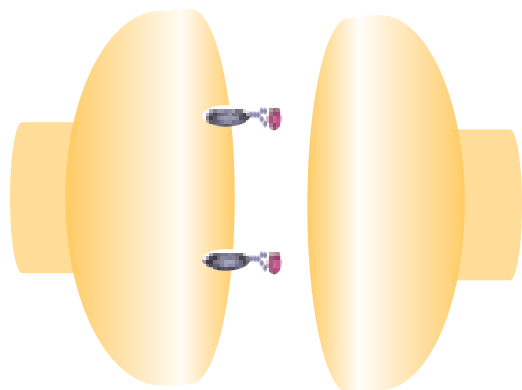
MEZOCORTICAL PATHWAY

MEZOLIMBIC PATHWAY

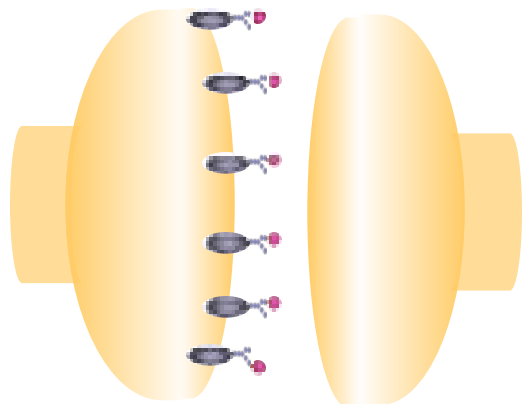
TUBEROINFUNDIBULAR PATHWAY



# SCHIZOPHRENIA: DOPAMINERGIC HYPOTHESIS



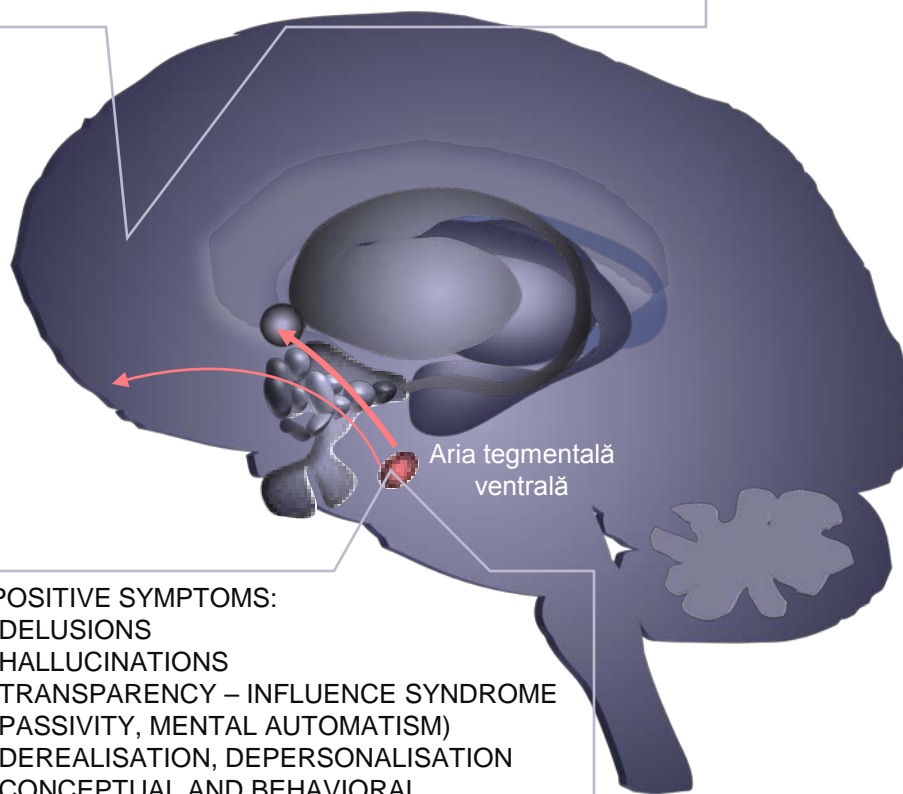
**PREFRONTAL CORTEX:**  
Dopaminergic hypofunction



**LIMBIC SYSTEM:**  
Dopaminergic hyperfunction

## NEGATIVE SYMPTOMS:

- AFFECTIVE FLATTENING
- ALOGIA
- ABULIA
- SOCIAL ISOLATION
- COGNITIVE DEFICITS:**
- DISORDERS OF ATTENTION AND WORKING MEMORY
- EXECUTIVE DYSFUNCTIONS

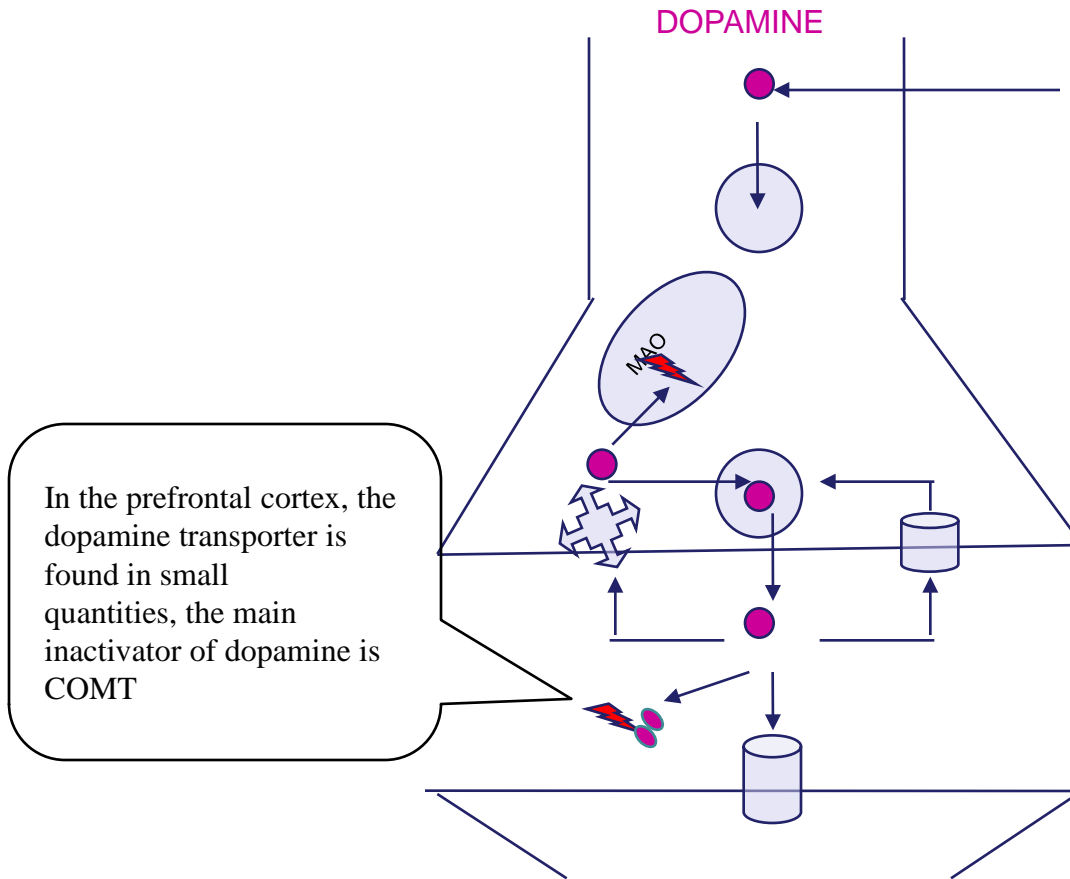


## POSITIVE SYMPTOMS:

- DELUSIONS
- HALLUCINATIONS
- TRANSPARENCY – INFLUENCE SYNDROME (PASSIVITY, MENTAL AUTOMATISM)
- DEREALISATION, DEPERSONALISATION
- CONCEPTUAL AND BEHAVIORAL DISORGANIZATION

L Del

# GENETIC FACTORS AND DOPAMINERGIC NEUROTRANSMISSION: 22q11.2 DELETION

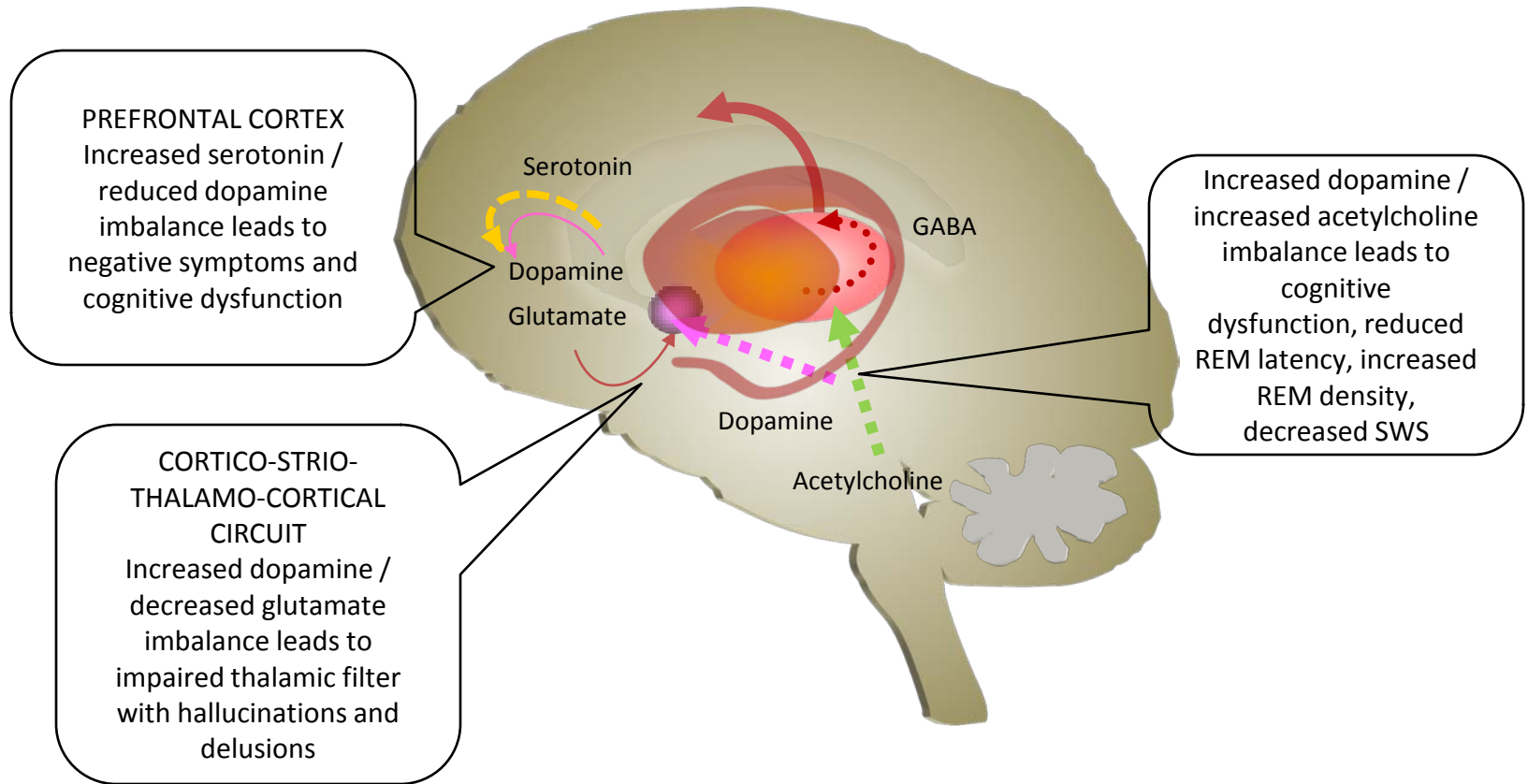


22q11 deletion: microdeletion of the chromosome 22 band q11.2

The gene that encodes COMT synthesis is on 22q11

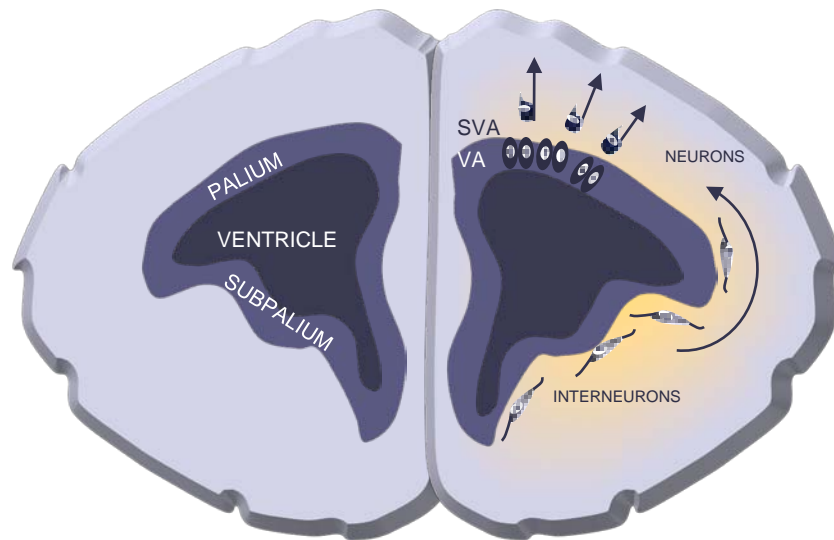
22q11 deletion may increase risk of schizophrenia (through increased brain dopamine)

# SCHIZOPHRENIA: MULTIPLE IMBALANCES AFFECTING THE PREFRONTAL CORTEX, THALAMIC FILTER, SLEEP



# NEUROGENESIS: RADIAL AND TANGENTIAL MIGRATION

RADIAL MIGRATION: neuroblasts migrating along radial glial cells will generate cortical pyramidal neurons. Requires the presence of REELIN

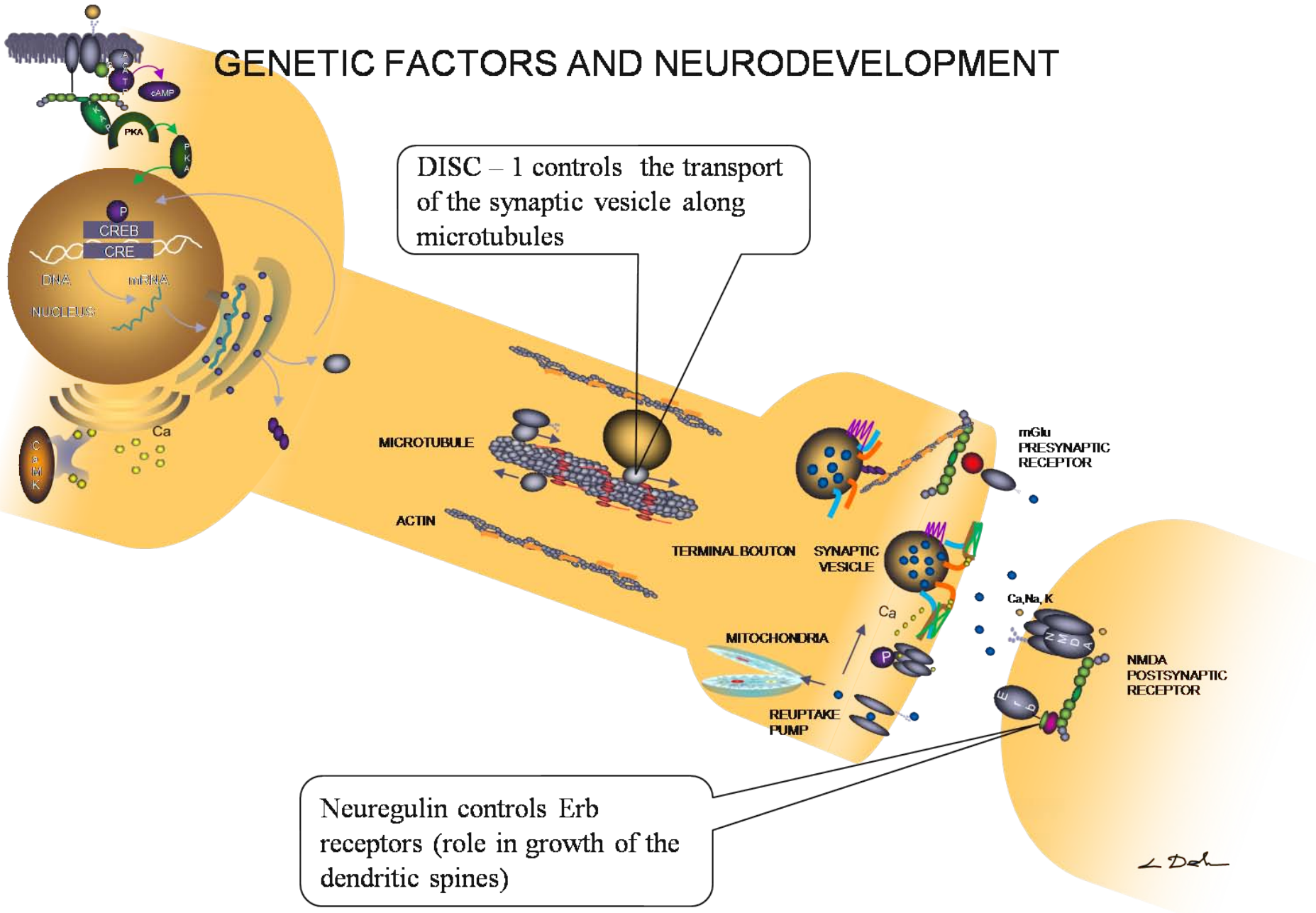


TANGENTIAL MIGRATION: neuroblasts that will generate GABAergic inhibitor "basket" or "chandelier" interneurons. Requires the presence of NEUREGULIN

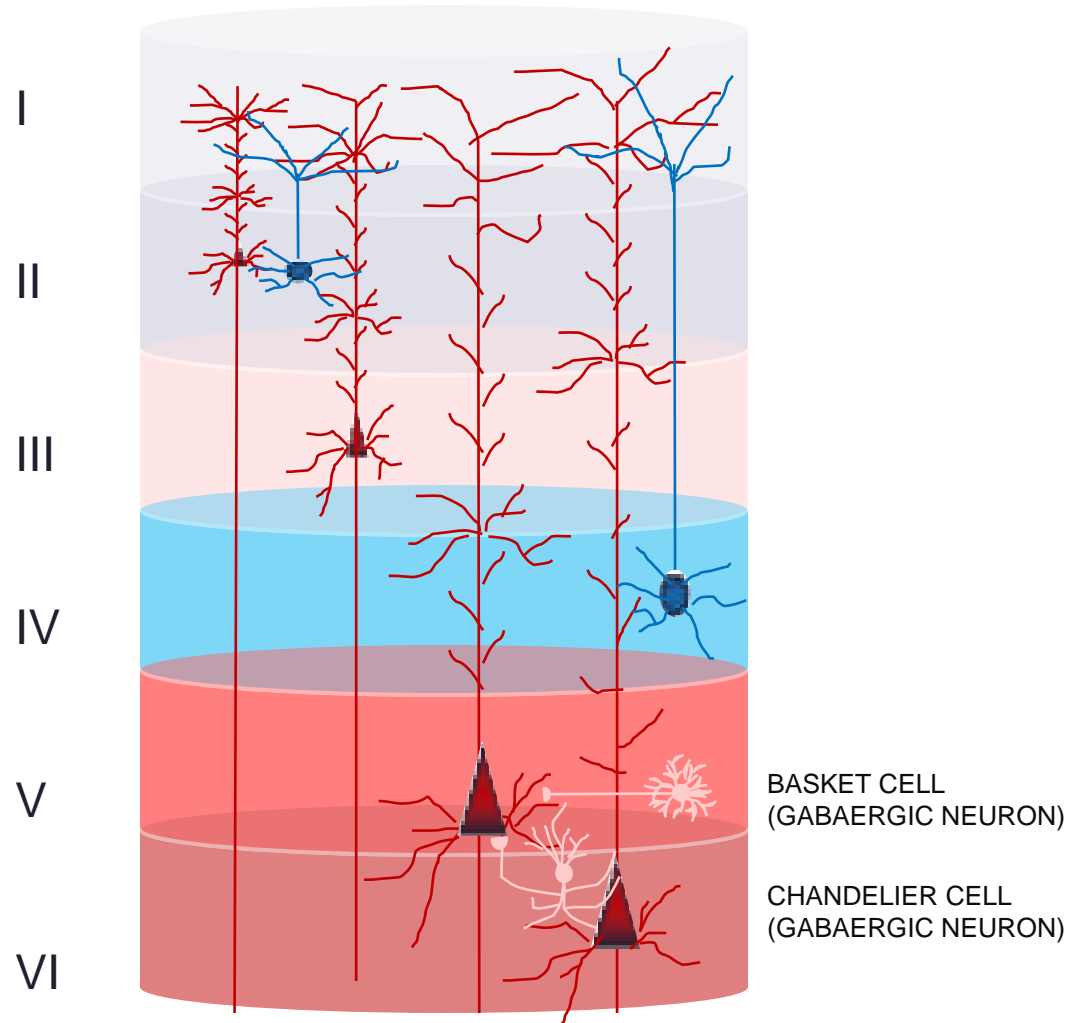
VA = VENTRICULAR AREA  
SVA = SUBVENTRICULAR AREA

L. Del

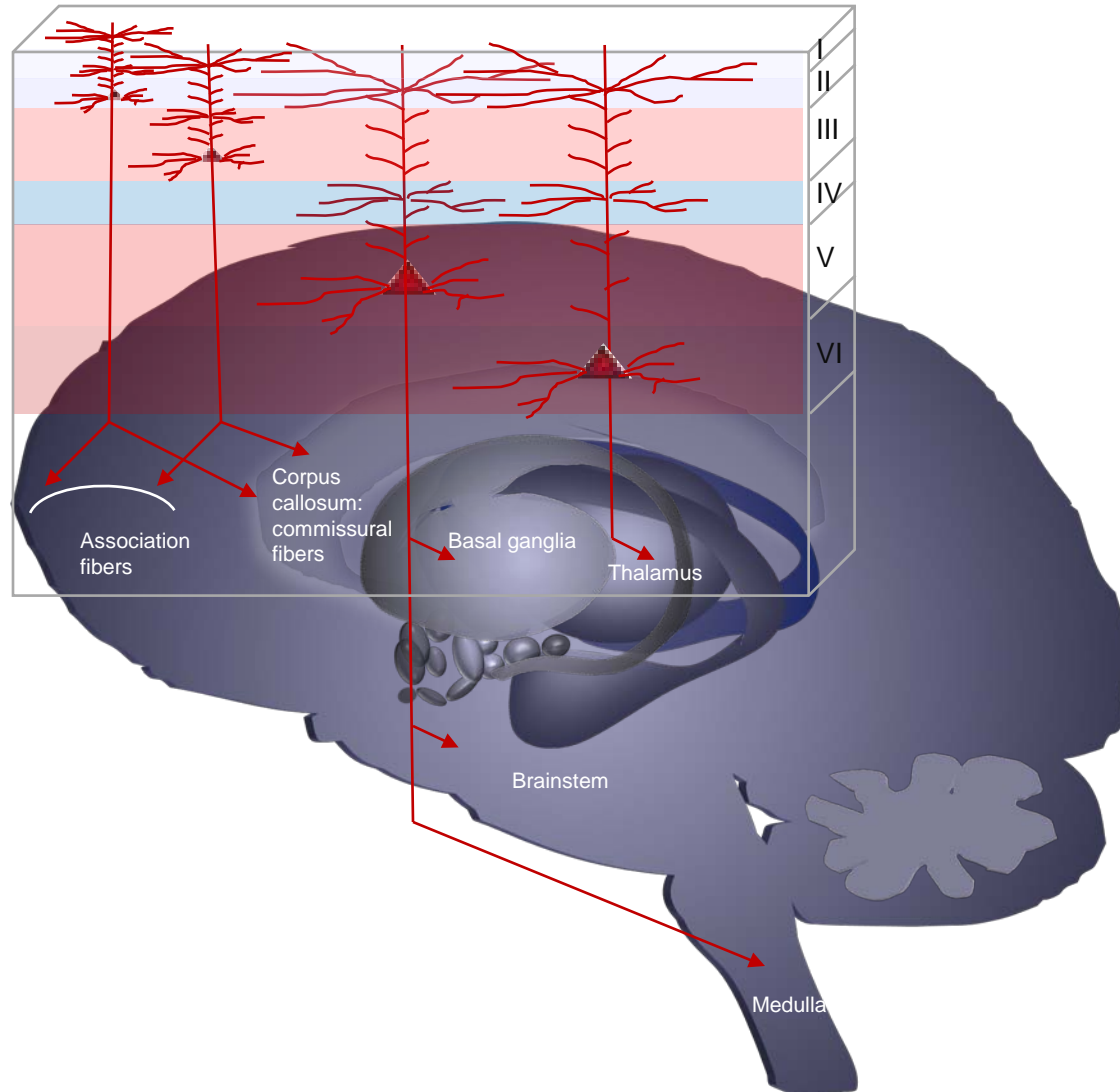
# GENETIC FACTORS AND NEURODEVELOPMENT



# MODULE OR FUNCTIONAL COLUMN



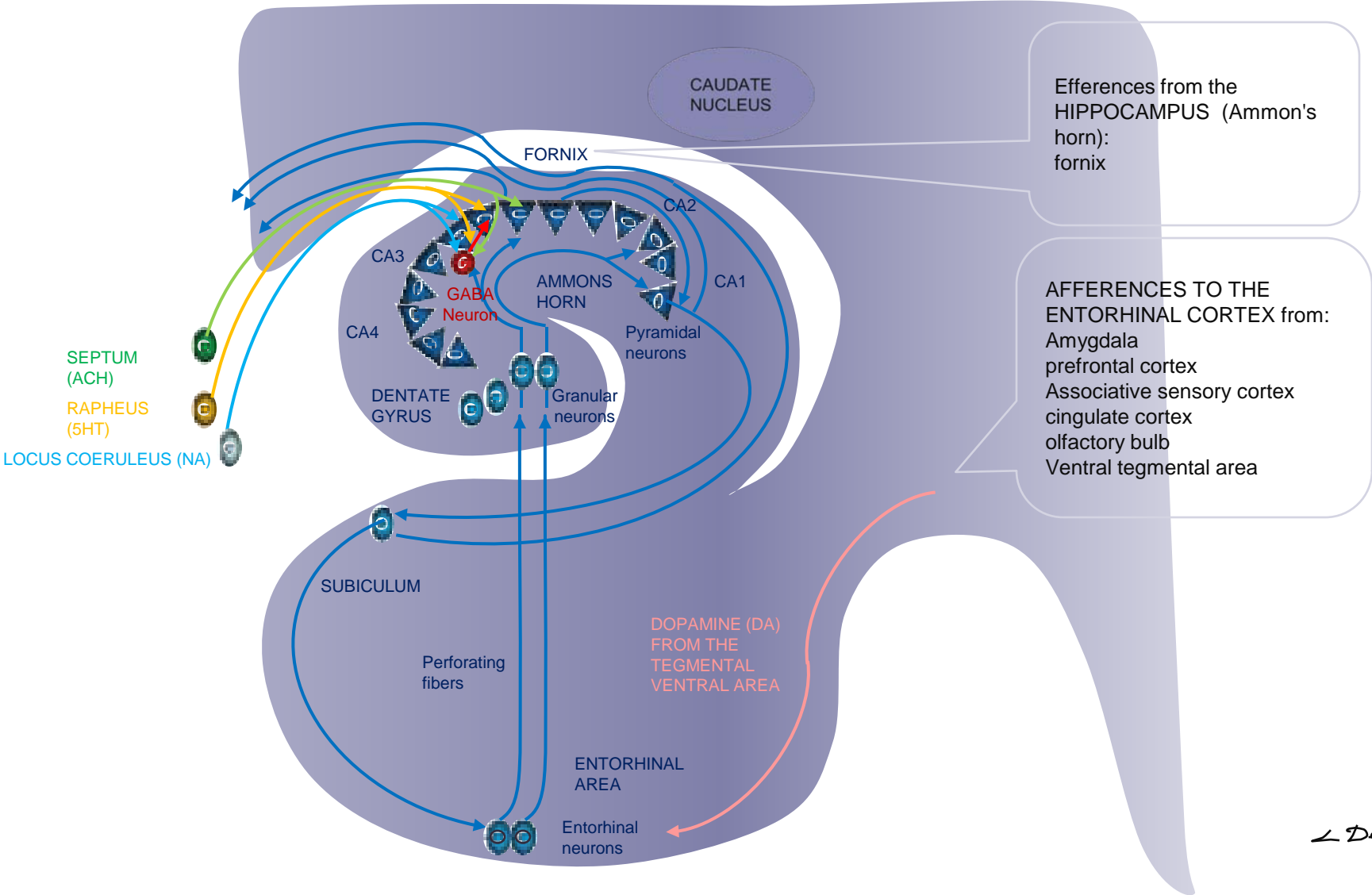
# CEREBRAL CORTEX: PYRAMIDAL NEURONS



L. Del

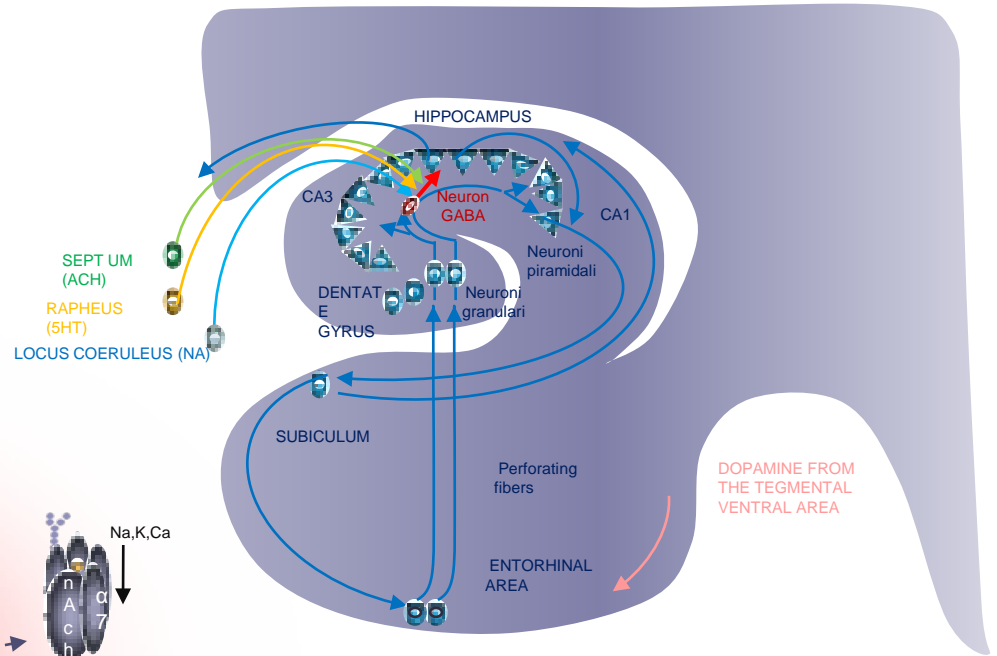
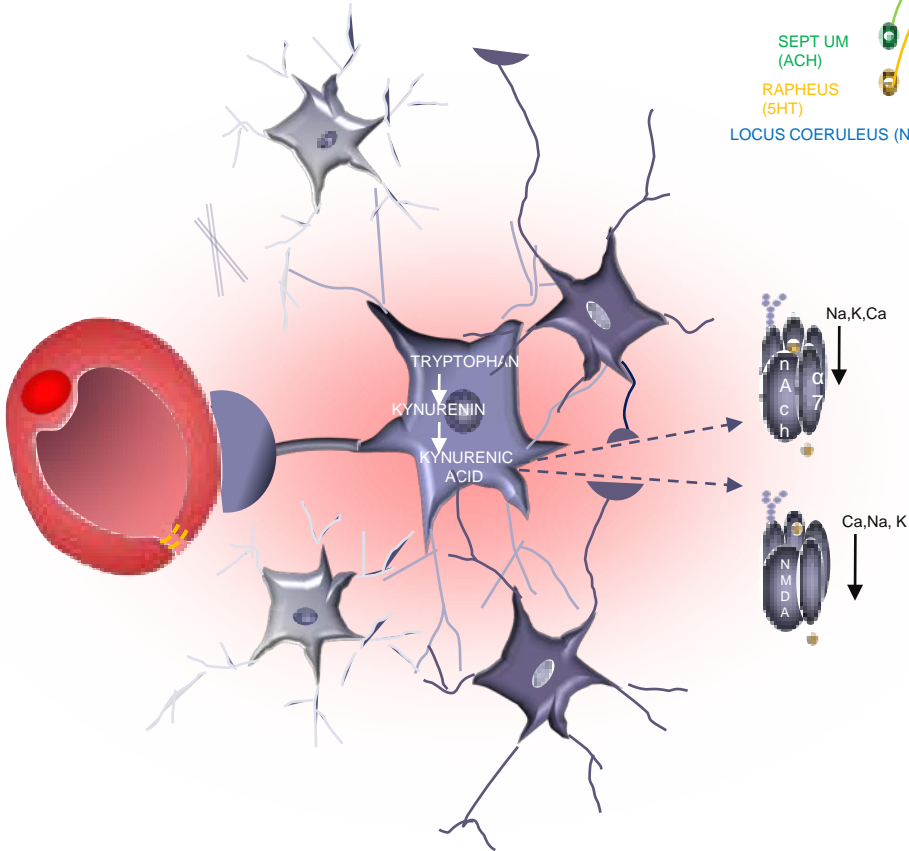
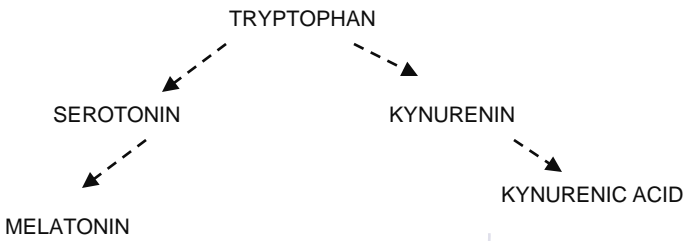


# HIPPOCAMPIC FORMATION



L. Del

# KYNURENIC ACID AND SCHIZOPHRENIA



L. Del

# KYNURENIC ACID AND SCHIZOPHRENIA

- Kynurenic acid inhibits receptors ( $\alpha 7$  nicotinic and NMDA) involved in cognitive functions
- NMDA is necessary for Long-term potentiation ( memory consolidation)
- $\alpha 7$  nicotinic receptors in the hippocampus stimulate the GABA interneurons involved in the informational filter function of the hippocampus
- Infection with *Toxoplasma gondii* may affect the tryptophan metabolism towards an excess of kynurenic acid

# MORPHOLOGICAL CHANGES IN SCHIZOPHRENIA

- Atrophy observed in:
  - Hippocampus
  - Prefrontal cortex
  - Thalamus
  - Habenula
- Ventricular enlargement: bad prognosis
- The absence of normal asymmetry between hemispheres
- Changes in cytoarchitecture:
  - Small neurons with reduced arborization
  - deficit of GABAergic "chandelier" or "basket" neurons

The changes are neither specific for schizophrenia, nor constant in schizophrenia

# SCHIZOPHRENIA ETIOPATHOGENESIS-SUMMARY

## PRENATAL



## PERINATAL



## POSTNATAL



SCHIZOPHRENIA

GENETIC VULNERABILITY +  
(MZ > DZ)  
NEUROINFECTION IN  
UTERO (FLU)

OBSTETRICAL TRAUMA  
HYPOXIA, INFECTIONS

+  
PUBERAL ENDOCRINE AND IMMUNE CHANGES  
DRUG ABUSE  
IMMIGRATION  
URBAN ENVIRONMENT  
HIGH EE FAMILIES



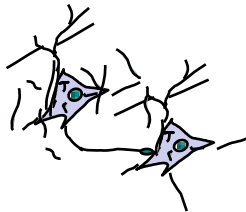
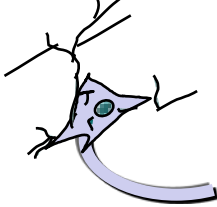
## NEUROGENESIS



MIGRATION

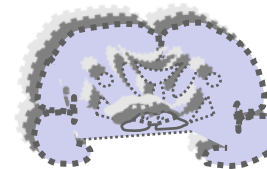
ARBORIZATION  
AND MYELINATION

CONNECTION AND  
DYSCONNECTION



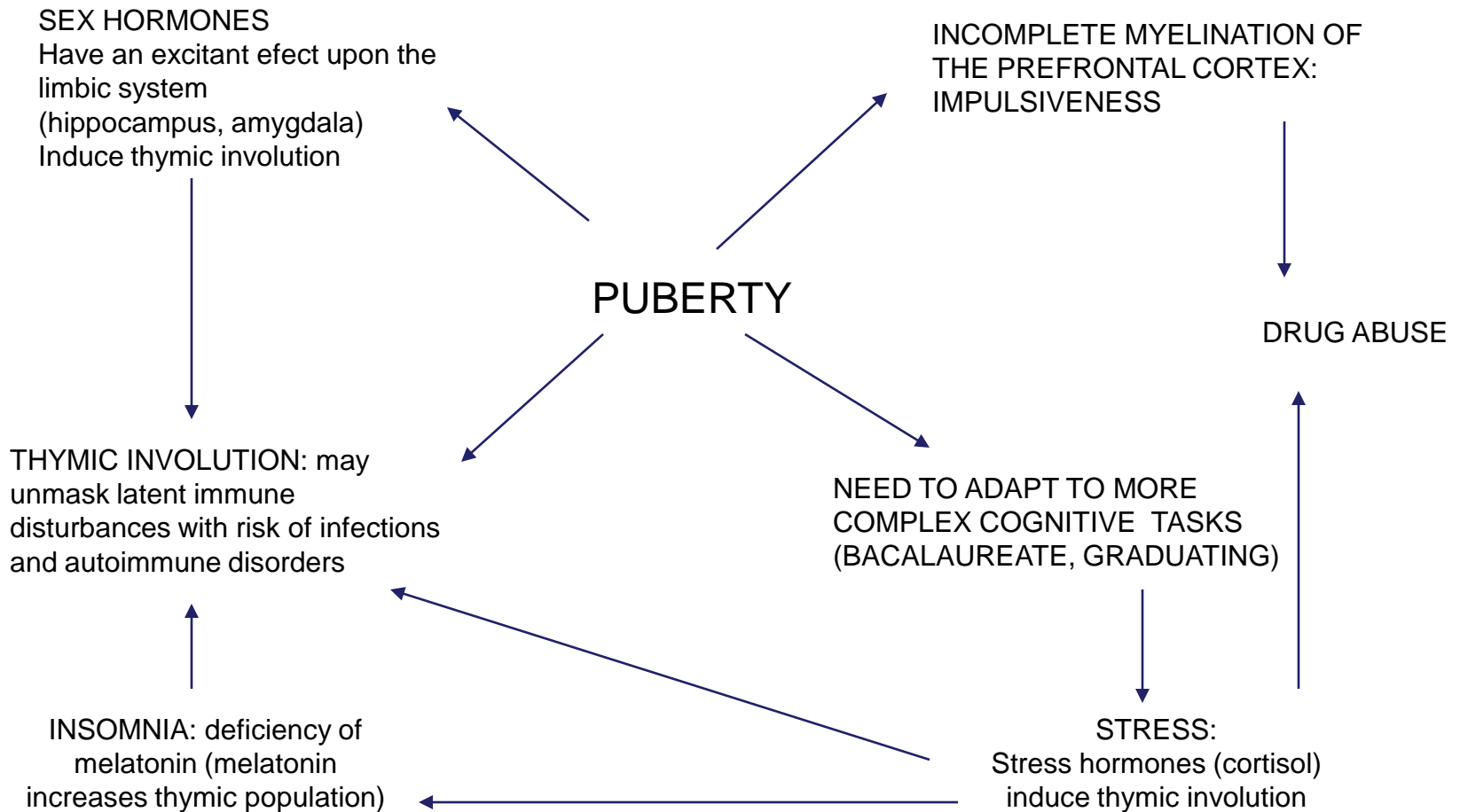
## NEUROANATOMIC FINDINGS:

- microscopic: cytoarchitecture alterations with small neurons with reduced arborization
- macroscopic: ventriculomegaly, atrophy in the hippocampus, prefrontal cortex, thalamus



NEUROTRANSMITTER IMBALANCES

# SCHIZOPHRENIA: ONSET IN ADOLESCENCE OR YOUNG ADULT (15-30 YEARS)



# SCHIZOPHRENIA: ONSET

- Insidious with (6 months - 2 years)
  - cognitive deficits
  - negative symptoms
- Subacute with
  - Depersonalization, derealization
  - Delusional mood (anxiety)
- Acute: with
  - hallucination,
  - delusions
  - anxiety
  - bizarre behavior

# CLINICAL FORMS OF SCHIZOPHRENIA

## PARANOID SCHIZOPHRENIA:

- the most frequent form
- positive symptoms predominate
  - bizarre and unsystematized delusions: paranoid, mind reading or being controlled (the delusion of xenopathic influence is included in the transparency influence syndrome), mystical, demonic possession, reference, grandiosity
  - hallucinations
    - auditory commenting, imperative, injurious, calling,
    - visual
    - olfactory, gustatory
    - kinesthetic, tactile
  - transparency-influence (mental automatism) syndrome:
    - loss of intimacy of inner life (mind reading, thought broadcast, thought echo)
    - loss of control over one's mind and body (thought insertion or withdrawal, passivity phenomenon: induced thoughts, emotions, actions) from exterior using electronic devices (antennas, chips, phones), telepathy or magic
  - associated symptoms: pseudohallucinations, mentism



# CLINICAL FORMS OF SCHIZOPHRENIA

## CATATONIC SCHIZOPHRENIA:

- rare
- Catatonic syndrome:
  - catatonic stupor: stereotype position (no spontaneous or command movements and speech) + muscle hypertony with waxy flexibility (catalepsy) + passive negativism
  - raptus (sudden exit from stupor with agitation and aggression)
  - catatonic agitation: stereotyped, in confined space + command automatism or + suggestibility (echomimia, echolalia, echopraxia) or + active negativism

# CLINICAL FORMS OF SCHIZOPHRENIA

## HEBEPHRENIC (DISORGANIZED) SCHIZOPHRENIA

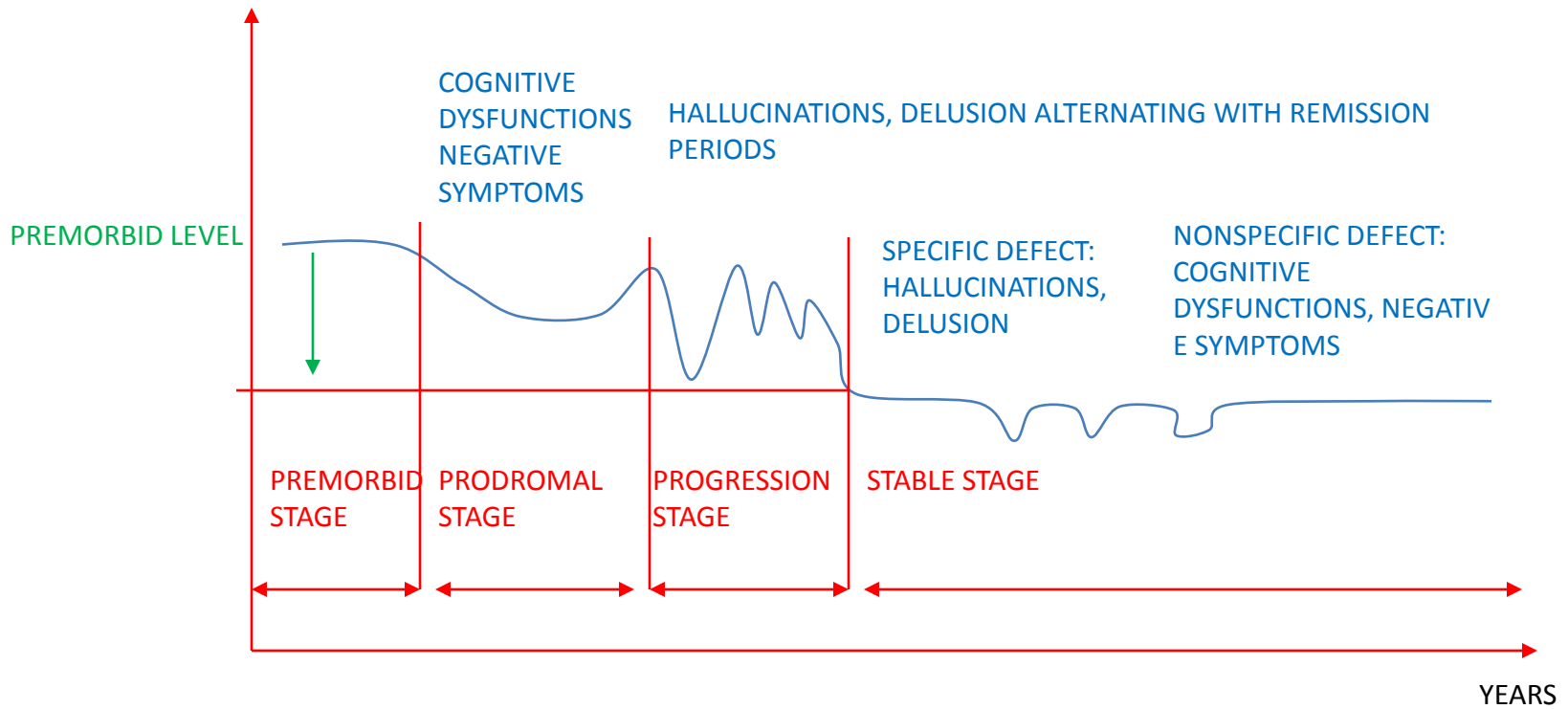
- the most characteristic form
- onset at young ages
- low prognosis
- ideo-verbal dissociation, ambivalence, affective incongruity, mannerisms, bizarre behavior (pseudo-manic syndrome)

## SIMPLE SCHIZOPHRENIA:

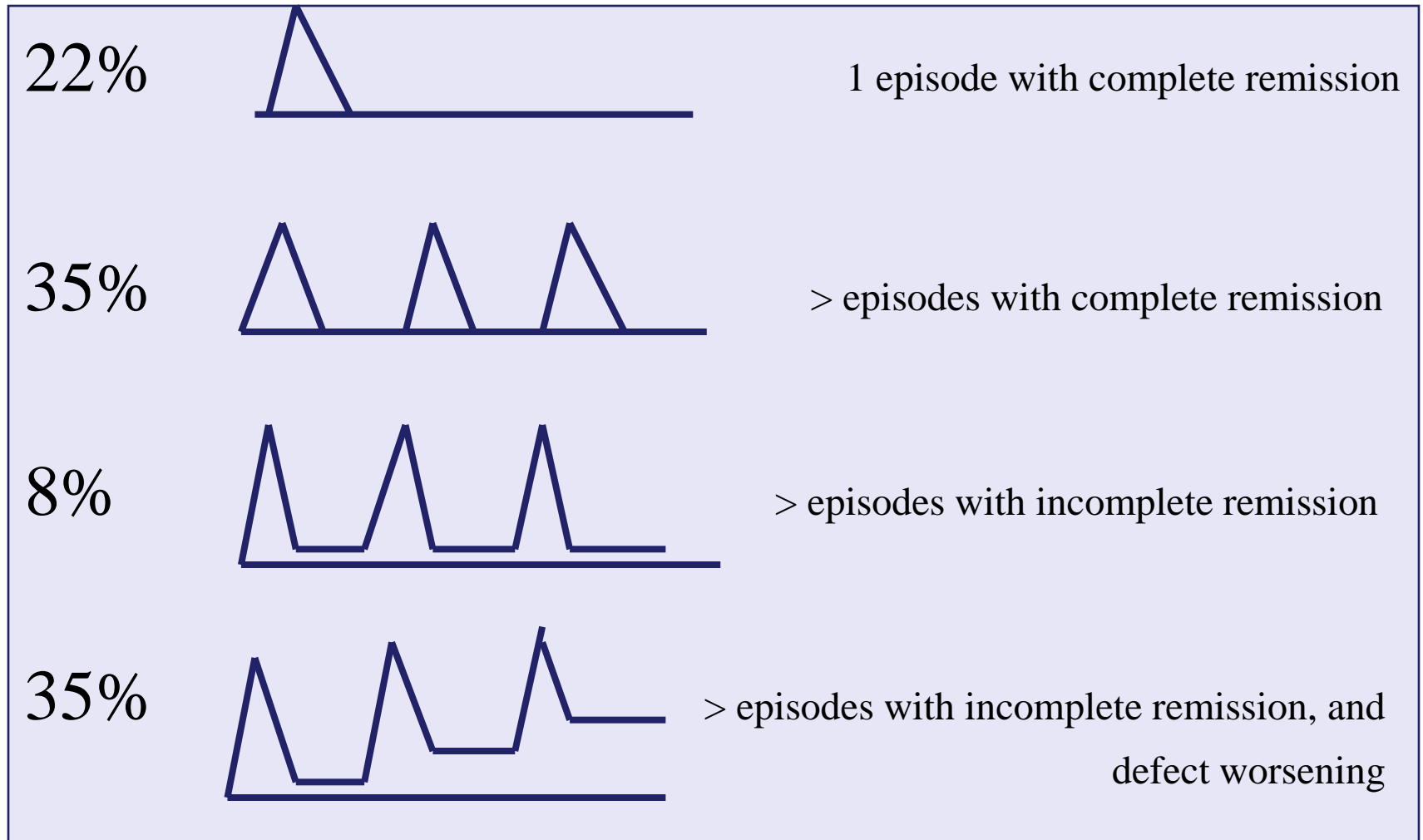
- low prognosis
- negative symptoms: alogia (poverty of speech), affective flattening, abulia, social isolation
- cognitive deficits: attention disturbances, memory impairment, concrete thinking, executive dysfunctions (incapacity of organizing information, of planning, monitor or predict consequences)

MIXED TYPE: SCHIZOAFFECTIVE DISORDER: schizodepressive episodes alternating with schizomanic episodes

# SCHIZOPHRENIA: EVOLUTION



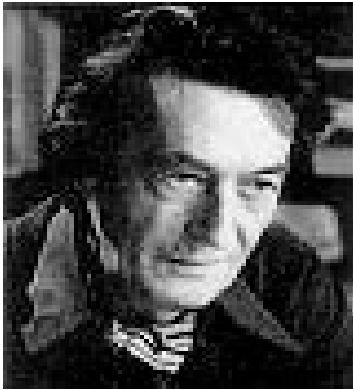
# NATURAL EVOLUTION (WITHOUT TREATMENT) IN THE FIRST 5 YEARS AFTER ONSET



# SCHIZOPHRENIA:PROGNOSIS FACTORS

POSITIVE	NEGATIVE
Onset in the 3rd decade	Onset at young ages
Acute onset	Insidious onset
Paranoid type	Negative symptoms type
Rich affectivity	Poor affectivity
Social support network	Reduced social support network
Short episode duration	Long episode duration
Good premorbid functioning	Low premorbid functioning
Good adherence to treatment	Low adherence to treatment

# THE DISCOVERY OF ANTYPHYCHOTICS

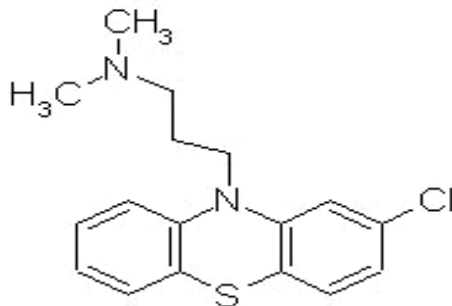


H. Laborit (1914-1995)

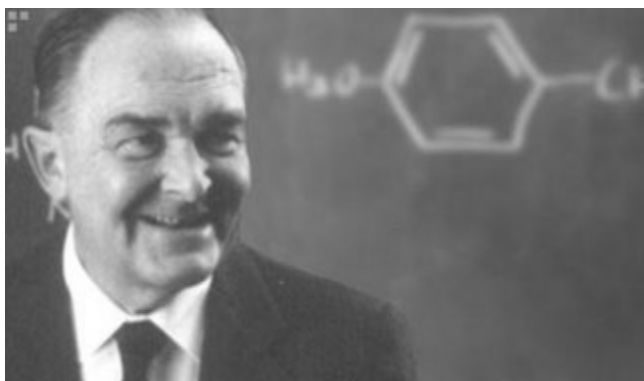
“They sometimes complain that I invented the chemical straitjacket. No doubt, but those that blame me have forgotten the times when, as a doctor on duty in the Navy, I would go with a revolver on the pavillions with agitated patients, accompanied by the two big nurses, because patients struggled in their straitjackets, sweating and screaming...” H.

Laborit

Chemical structure of chlorpromazine

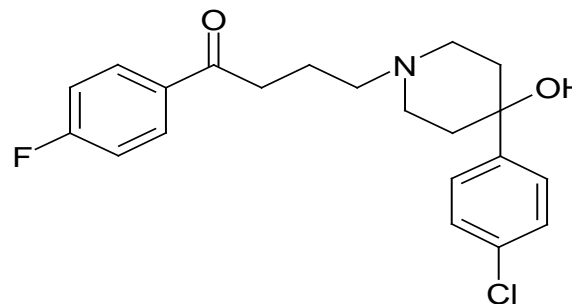


# THE DISCOVERY OF ANTYPHYCHOTICS

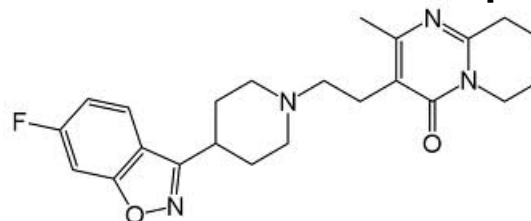


P. Janssen (1926-2003)

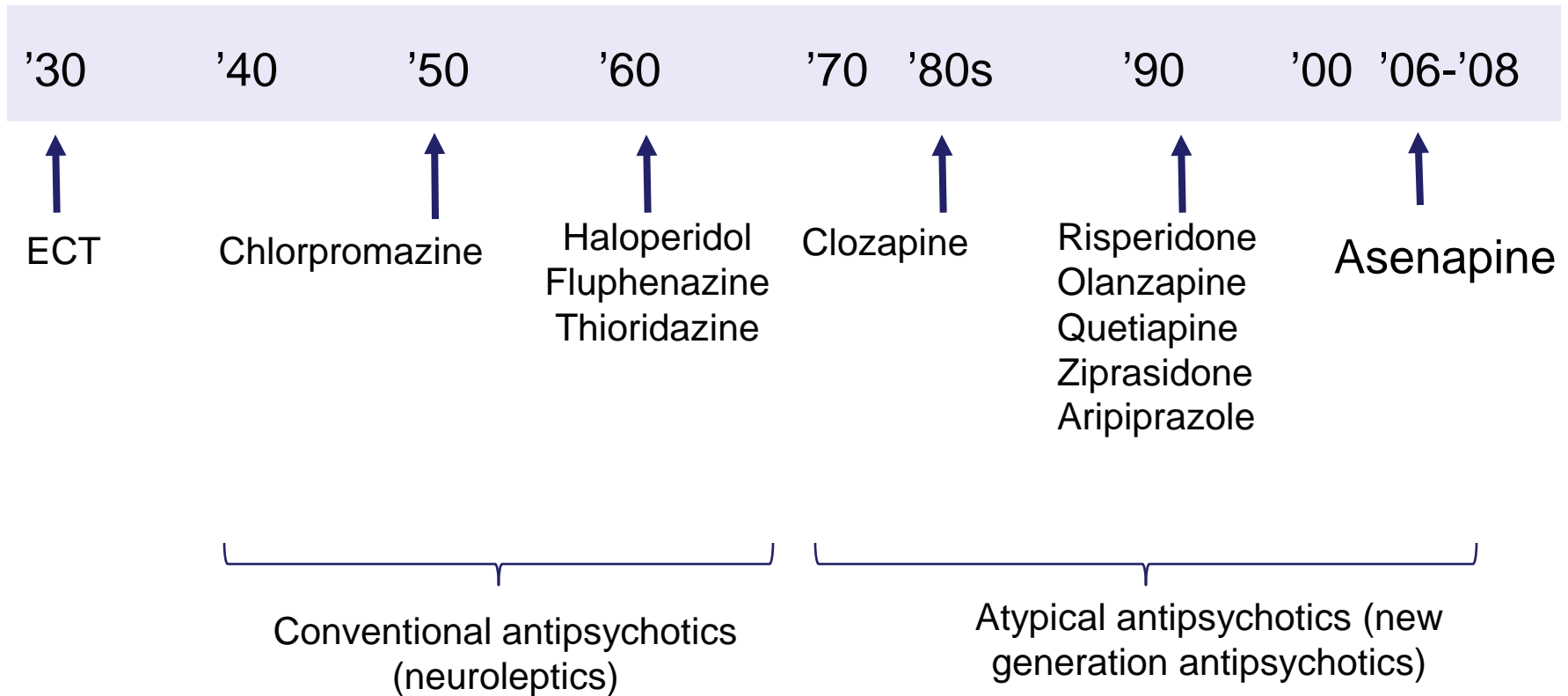
Chemical structure of haloperidol



Chemical structure of risperidone



# ANTIPSYCHOTICS IN PSYCHIATRY





# ANTIPSYCHOTICS: CLASSIFICATION

## SEDATIVE:

Chlorpromazine  
Levomepromazine  
Thioridazine

## BIMODAL:

Sulpiride  
Amisulpride

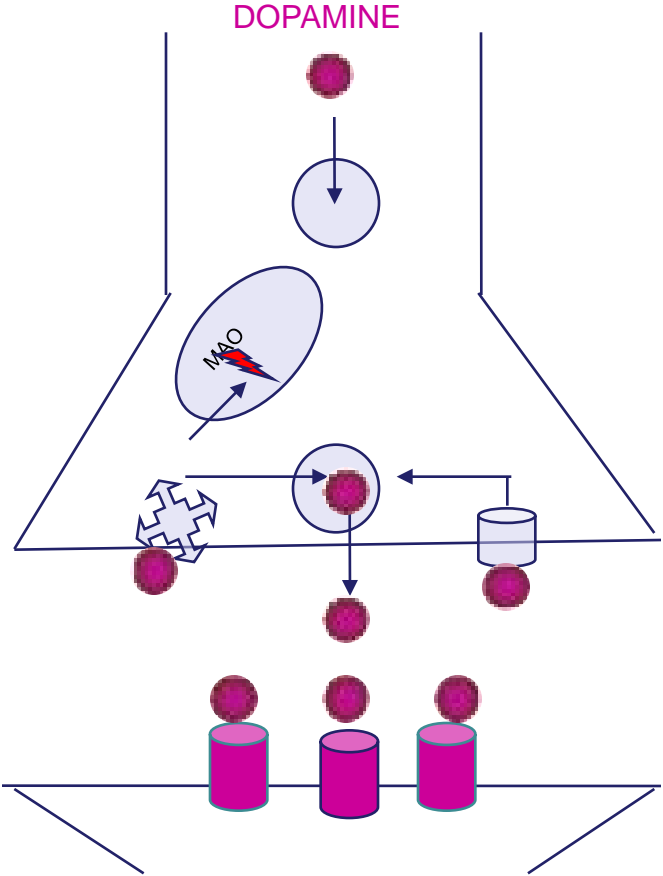
## INCISIVE:

Haloperidol  
Trifluoperazine  
Flupentixole  
Fluphenazine

## ATYPICAL

Clozapine  
Olanzapine  
Quetiapine  
Risperidone  
Ziprasidone  
Sertindol  
Asenapine

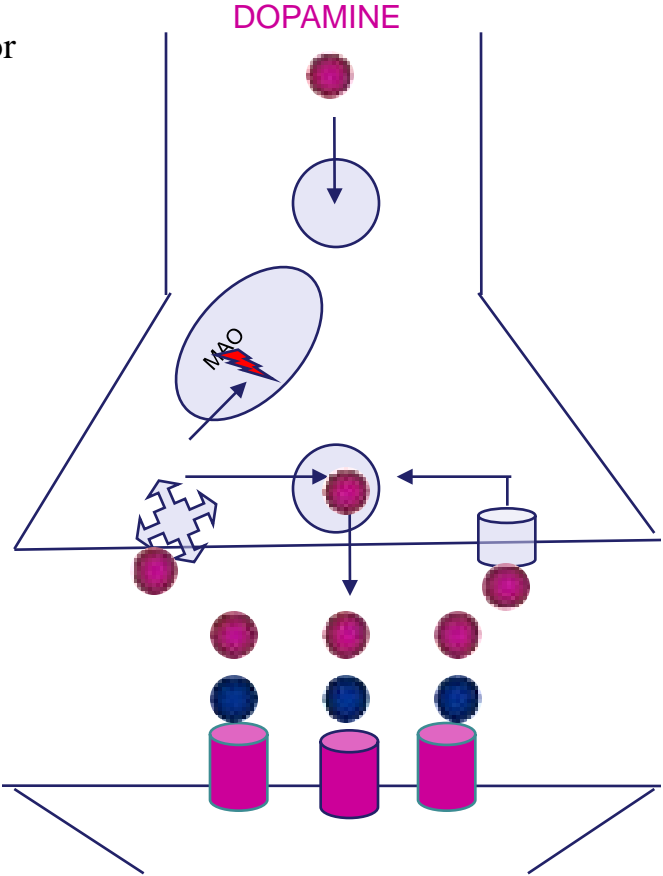
# NEUROLEPTICS – MECHANISM OF ACTION



# NEUROLEPTICS – MECHANISM OF ACTION

## NEUROLEPTIC

blocks dopamine receptors by entering in competition with it for dopamine receptors

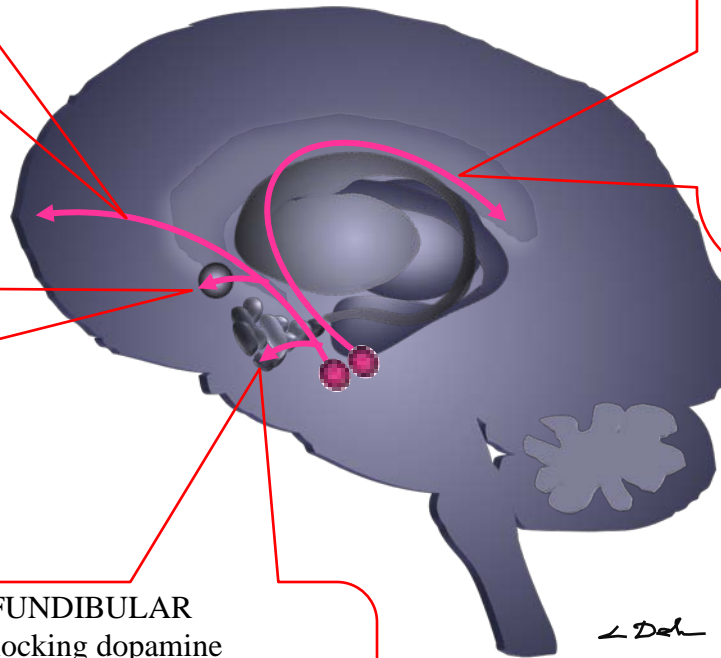


# EFFECTS OF NEUROLEPTIC MEDICATION

**MESOCORTICAL PATHWAY :** blocking dopamine receptors accentuates the negative symptoms and the cognitive deficits

**MESOLIMBIC PATHWAY:** blocking dopamine D2 receptors generates the antipsychotic effect

**TUBERO-INFUNDIBULAR PATHWAY:** blocking dopamine receptors may induce AMENORRHEA-GALACTORRHEA SYNDROME (dopamine being PIF – prolactin inhibiting factor)

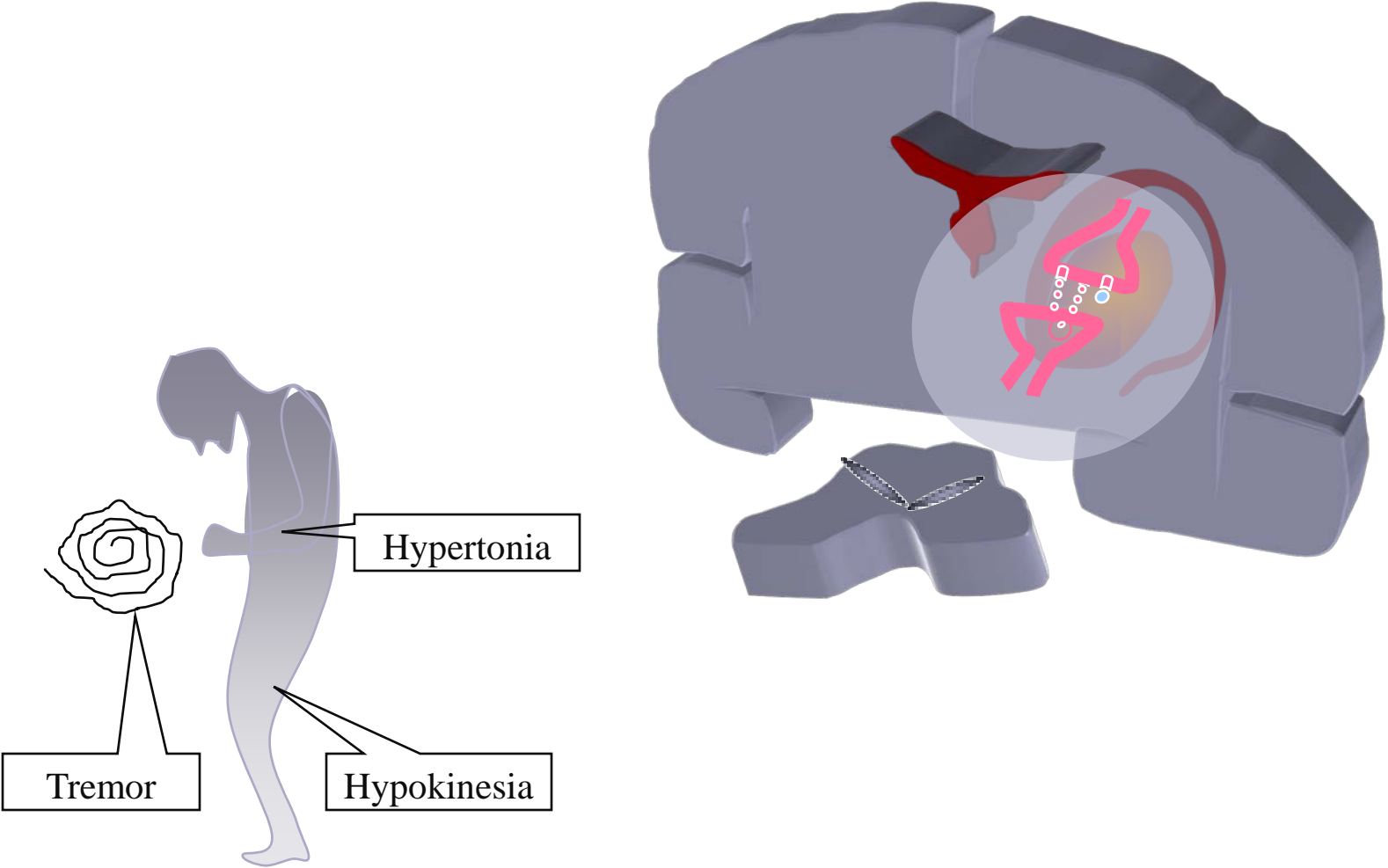


**NIGROSTRIATAL PATHWAY:** blocking dopamine D2 receptors may induce the **EXTRAPYRAMIDAL SYNDROME:**

- acute dystonia (onset in 24-48h)
- Akathisia (onset in weeks)
- Parkinsonian syndrome (onset in weeks)
- tardive dyskinesia (onset in months, years)

L. Del

# PARKINSONIAN SYNDROME INDUCED BY NEUROLEPTICS

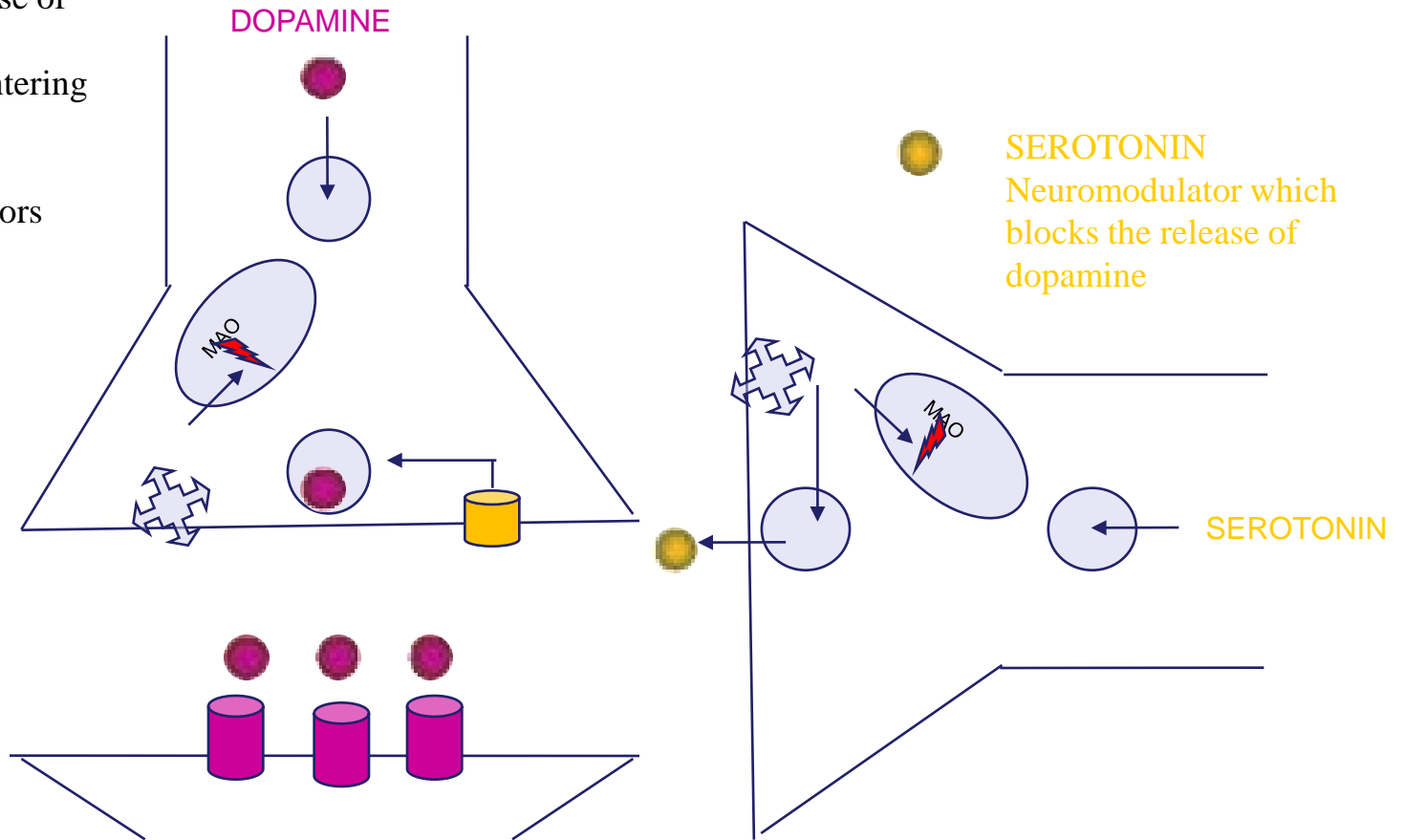


L. Del

# ATYPICAL ANTIPSYCHOTICS - MECHANISM OF ACTION

## ATYPICAL ANTIPSYCHOTIC

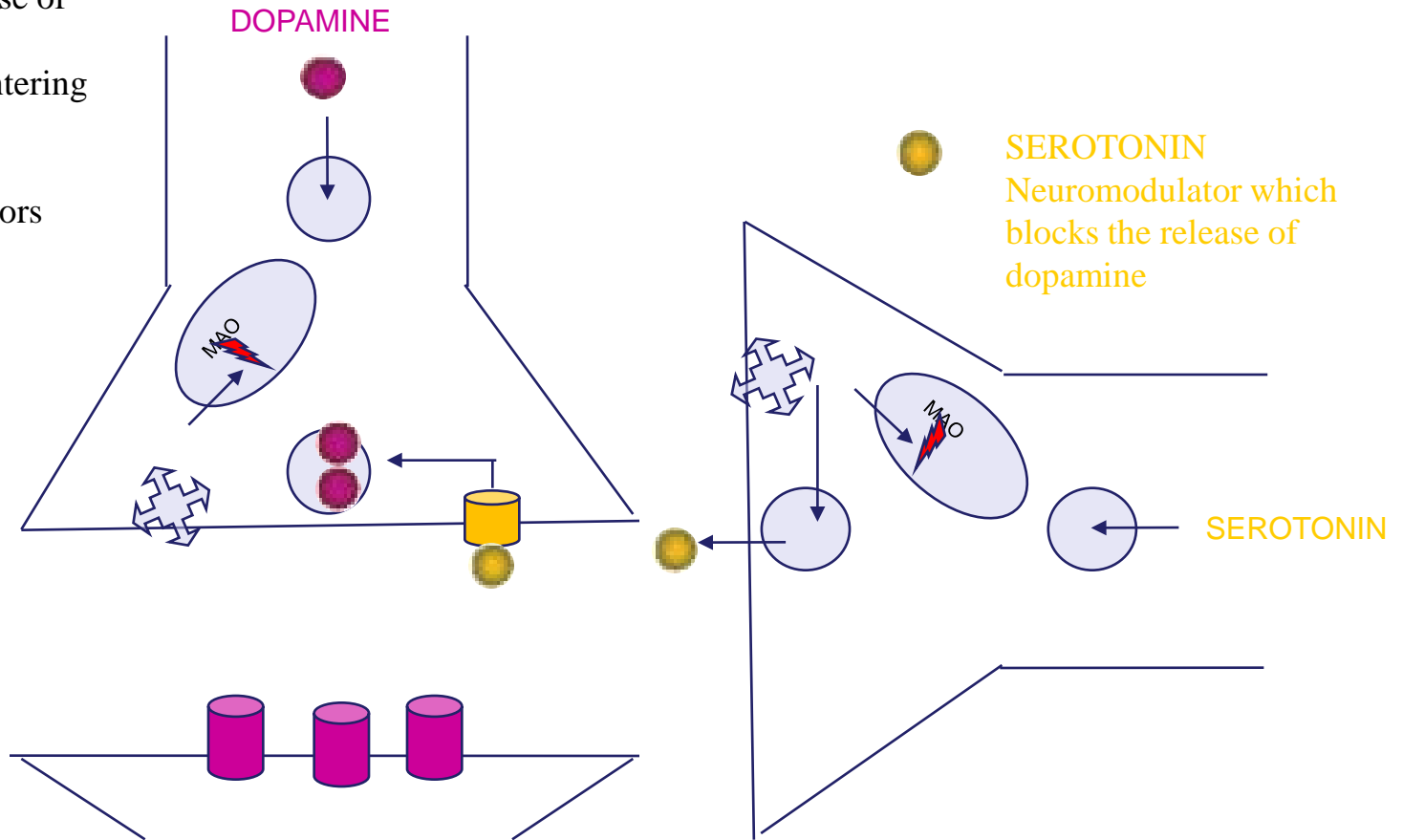
- Blocks the receptors of - Serotonin (5HT<sub>2A</sub>) stimulating the release of dopamine
- Dopamine (D<sub>2</sub>) entering in competition with dopamine for the dopaminergic receptors



# ATYPICAL ANTIPSYCHOTICS - MECHANISM OF ACTION

## ATYPICAL ANTIPSYCHOTIC

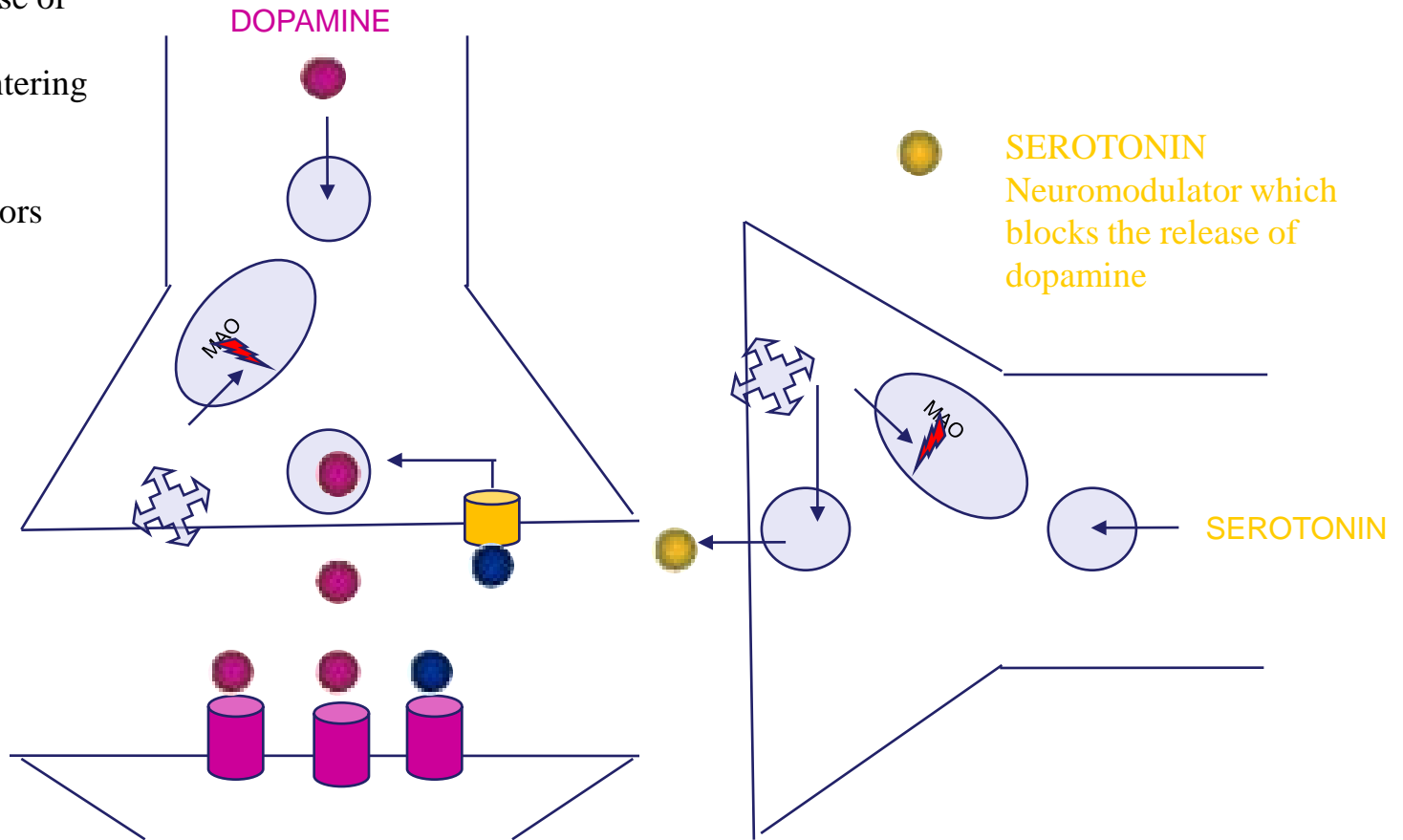
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# ATYPICAL ANTIPSYCHOTICS - MECHANISM OF ACTION

## ATYPICAL ANTIPSYCHOTIC

- Blocks the receptors of
- Serotonin (5HT<sub>2A</sub>) stimulating the release of dopamine
- Dopamine (D<sub>2</sub>) entering in competition with dopamine for the dopaminergic receptors





## NEUROLEPTICS – SIDE EFFECTS

### H1 antihistamine effect:

- sedation
- weight gain

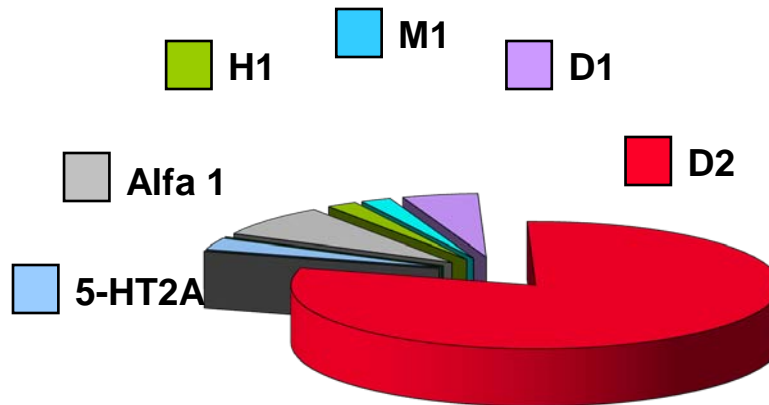
### Anticholinergic effect:

- dry mucosa
- urinary retention
- constipation
- mydriasis
- erection dysfunction

Accentuation of negative symptoms and cognitive deficits

### Antiadrenergic Alpha 1 effect:

- orthostatic hypotension
- ejaculatory dysfunction

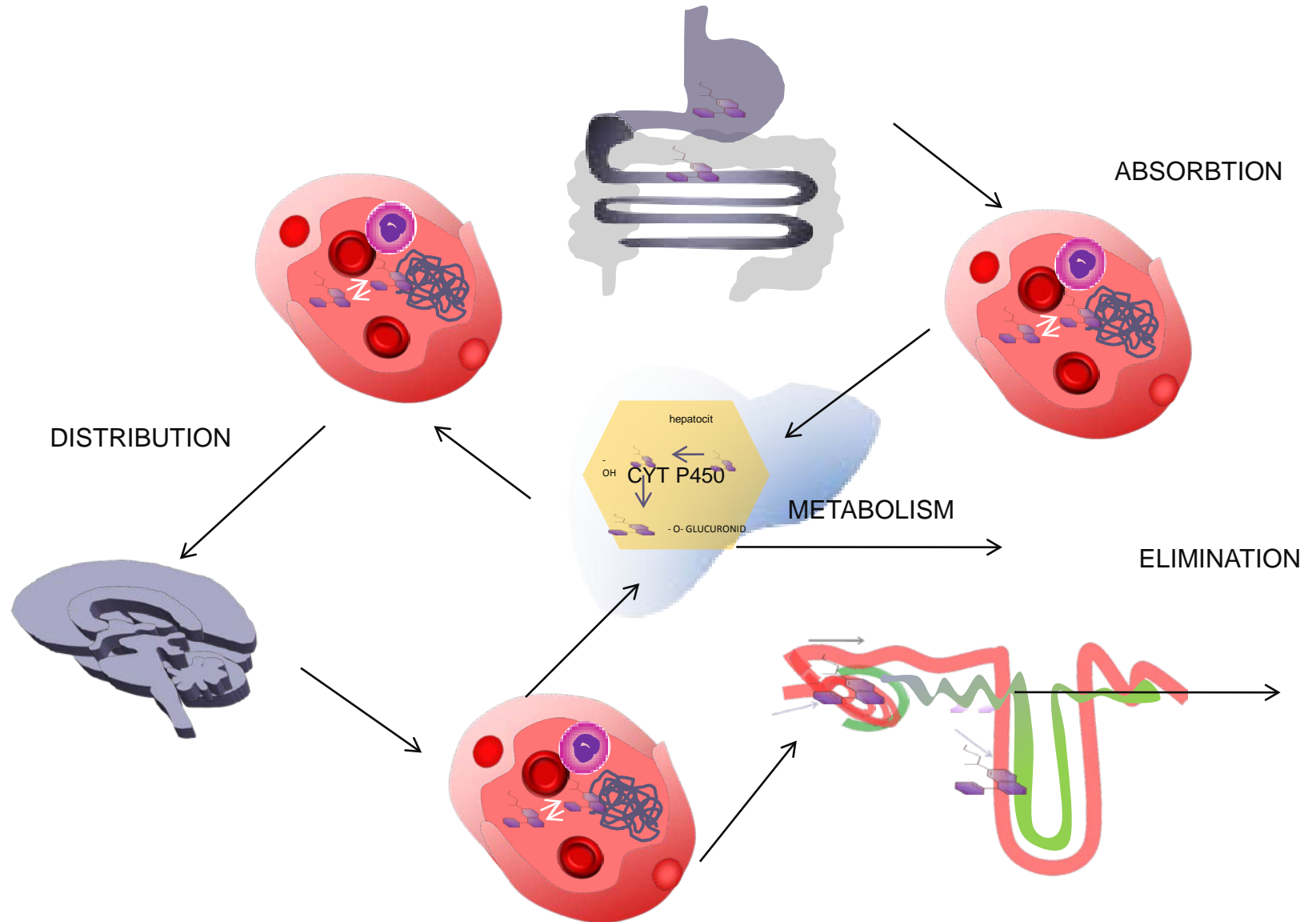


### Extrapyramidal effects:

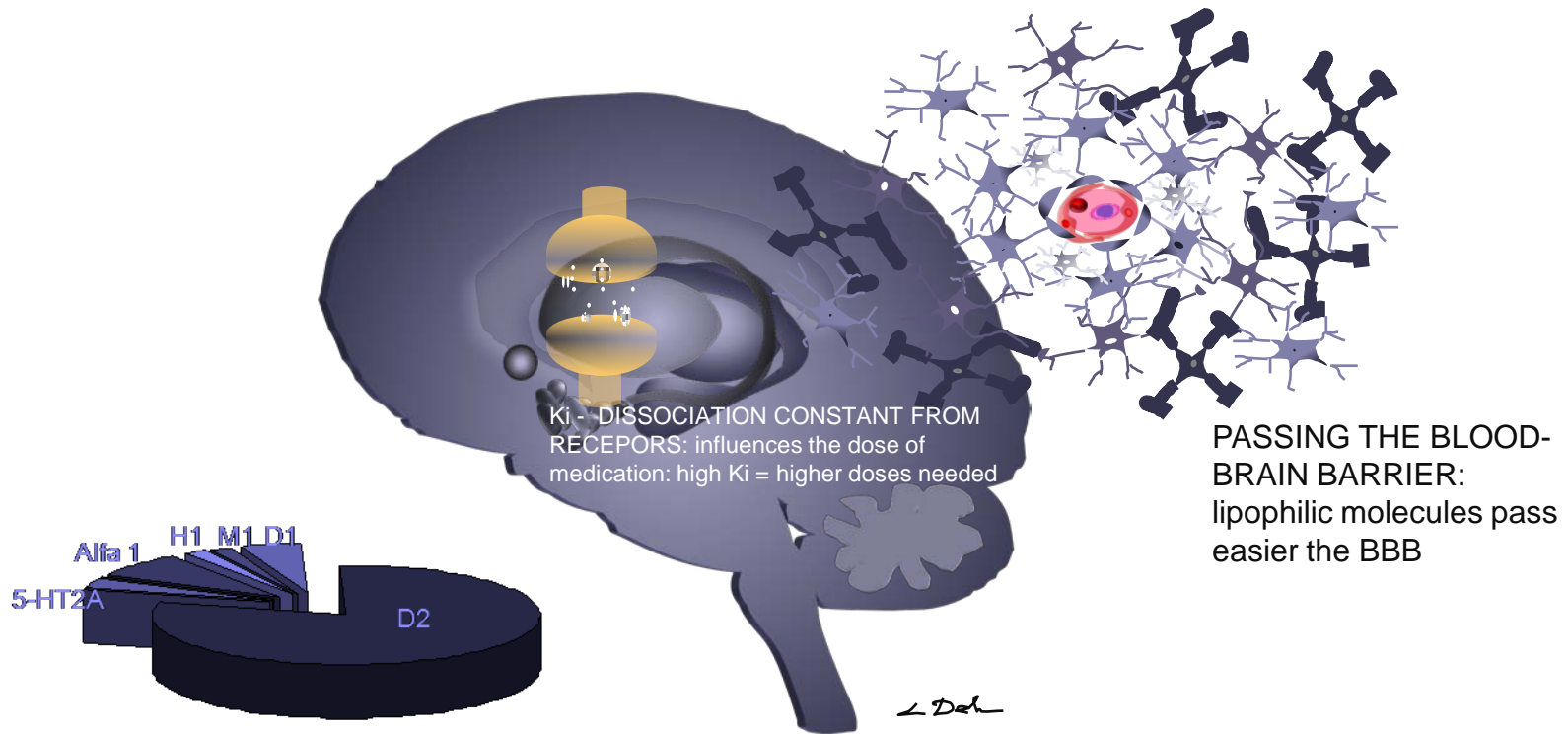
- acute dystonia
- akathisia
- Parkinsonian syndrome
- tardive dyskinesia

amenorrhea-galactorrhea syndrome

# PHARMACOKINETICS OF ANTIPSYCHOTICS



# PHARMACODYNAMY OF ANTIPSYCHOTICS



RECEPTOR PROFILE: more sedating or less sedating medication

*L Del*

# SCHIZOPHRENIA TREATMENT

Medication (oral or injection) for:

Positive symptoms:

incisive neuroleptics or  
bimodal antipsychotics (high doses) or  
atypical antipsychotics

Negative symptoms:

atypical antipsychotics or  
bimodal antipsychotics (small doses)

Psychomotor agitation and anxiety:

Sedative antipsychotics, anxiolytics

Neuroleptic side effects:

Anticholinergic drugs

Electro-convulsive treatment in catatonic  
or nonresponsive forms

Maintenance medication:

-Depot neuroleptics:

-haloperidol decanoate

-flupenthixol decanoate

-fluphenazine decanoate

- LA atypical antipsychotics:

-risperidone long acting

-paliperidone long acting

-olanzapine long acting

-aripiprazole long acting

Psychoeducation

Psychotherapy

(individual, groupe, family)

-Art therapy

-Ergotherapy

Objectives:

1. Positive symptoms remission
2. Accepting the illness, learning about symptoms and medication
3. Good cognitive functioning
4. Social, family, w ork integration

ACUTE PHASE

REMISSION

Monitoring: blood pressure, glycemia, lipids, weight, ECG, prolactin, thyroid hormones

Duration of drug treatment: first episode – at least one year, multiple episodes – lifelong

# ACUTE AND TRANSIENT PSYCHOTIC DISORDERS

- Short-term evolution (under 1-3 months) with complete remission
- Sudden onset (2 days - 2 weeks), sometimes precipitated by stressful life events
- Clinical presentation:
  - Polymorphic psychotic (psychotic and affective symptoms that vary in intensity and thematic content from a day to another)
  - Schizophrenia-like symptoms
  - Delusions of persecution, of reference
- Evolution towards:
  - Other acute psychotic episodes
  - Schizophrenia
  - Persistent delusional disorders
  - Affective disorders
- Treatment: antipsychotic

# PERSISTENT DELUSIONAL DISORDERS

- PARANOIA AND PARAPHRENIA
- Onset after 40 years old
- Do not alter the nucleus of personality
- Chronic evolution
- Differential diagnosis with:
  - Schizophrenia
  - Acute and transient psychotic disorders
  - Mood disorders with incongruent delusions

# PARANOIA

- Premorbid personality: paranoid personality (megalomania, suspiciousness, interpretational, quarrelsome)
- Paranoiac delusion: chronic, monothematic or polythematic systematic delusions with the following themes:
  - Megalomaniac (inventions, famous personality, social reform)
  - Persecution
  - Prejudice: requests rights, recognition, money reparations (pensions, malpractice reparations, inventions)
  - Erotomaniac (especially in women: love and are convinced of being loved by men with a superior socio-economic status)
  - Jealousy (especially in men: convinced about the infidelity of wives)
  - Reference (negative allusions from others)
  - Somatic (delusional dysmorphophobia)
- There is no insight
- Frequently the delusional person
  - is persuasive and induces the delusional belief in the spouse (shared delusional disorder, “folie à deux”)
  - Disrupts the social microgroup (quarrels, lawsuits)
- Subtypes:
  - Active paranoia (“fight paranoia”): delusion of persecution or prejudice; the person fights for his rights, writes complaints, denunciations, lawsuits (the persecuted becomes the persecutor)
  - Passive paranoia (sensitive): delusion of persecution or reference in a shy person with low self esteem and lacking energy (does not respond aggressively), blaming failures on others; anxious-depressive episodes, hypochondriac symptoms
- Does not respond to treatment



H. Daumier – THE PORTRAIT OF VICTOR SCHOELCHER

# PARAPHRENIA

- Clinical presentation:
  - Chronic systematic delusion with a fantastic theme
  - Predominantly visual and auditory hallucinations
  - Transparency-influence syndrome
- Double accountability: the person distinguishes between the real world and the fantastic psychotic world
- Decompensation happens when double accountability is lost (confounding of the real world with the fantastic psychotic world)
- Types of illness:
  - Systematic: the transparency-influence syndrome is predominant
  - Expansive: the megalomaniac delusion prevails, elevated mood
  - Fantastic: fantastic delusions prevails (magic, cosmic)
  - Confabulatory: the delusion is enriched with material drawn from imagination, memories, readings
- Treatment: aimed to restore the double accountability



# MOOD DISORDERS

	RECURRENT DEPRESSIVE DISORDER	BIPOLAR DISORDER
Prevalence	5-10 %	1%
Women : men	2:1	1:1
Age at onset	40	30 years
Average duration of episodes	Depressive: 6 months	Depressive: 6 months Manic: 4 months
Average number of episodes	4-5	8-10
Remission	Often incomplete	Often complete

# THE DEPRESSIVE SYNDROME

- INSTINCTUAL LEVEL
  - social withdrawal
  - lack of appetite with weight loss
  - diminished libido
  - reduced maternal instinct
  - suicidal ideation
- AFFECTIVE LEVEL
  - depression (pathological sadness)
  - irritability (+ / -)
- COGNITIVE LEVEL
  - attention: focus on the painful past
  - perception: perception is faded
  - memory: recording and evoking sad events
  - thought: slow, containing sad ideation, pessimistic, sometimes delusions:
    - delusions of guilt, worthlessness, incapacity
    - hypochondriac delusion (cancer, AIDS, syphilis)
    - Cotard's delusion (denial, immortality, enormity)

# DEPRESSIVE SYNDROME

- VOLITIONAL LEVEL
  - long deliberation
  - Difficulty in acting out
- APPEARANCE
  - negligent clothing, dark colors
- SPEECH
  - bradylalia, laconic, with latency in responses
  - Whispered
- EXPRESSIVITY OF MIMICS AND GESTURES
  - Depressive facies, depressive position
- HYPOKINESIA to stupor (with hypotonia)
- BEHAVIOR
  - Inhibited
- SLEEP
  - Late night insomnia (3-4 am), nightmares
  - morbid content (dead people, cemeteries)

# MANIC SYNDROME

- INSTINCTUAL LEVEL
  - increased sociability
  - bulimia
  - hypererotism
- AFFECTIVE LEVEL
  - mania (pathological elevated mood)
  - labile affect
  - irritability (+ / -)
- COGNITIVE LEVEL
  - attention: dispersed and mobile
  - perception: vivid, strong
  - memory: difficult recording, easy evocation of pleasurable memories
  - thought: accelerated flow or even flight of ideas, ideation with optimistic content, sometimes delusional:
    - » megalomaniac delusion (illustrious personality, illustrious lineage, omnipotence, omniscience)
    - » delusion of wealth, messianic delusion, delusion of social reform

# MANIC SYNDROME

- VOLITIONAL LEVEL
  - hasty deliberation
  - lack of perseverance in action
- APPEARANCE
  - extravagant make-up, colorful clothing, decorations in excess
- SPEECH
  - tachylalia, logorrhea, telegraphic speech
  - apparently incoherent (in case of flight of ideas)
  - on a high tone
- EXPRESSIVITY OF MIMICS AND GESTURES
  - hyperexpressivity
- HYPERKINESIA to agitation
- BEHAVIOR
  - expansive
  - uncensored
- SLEEP
  - reduced need for sleep (e.g. 3 hours of sleep per night) without feeling tired the next day

# 4 TYPES OF MOOD DISORDERS



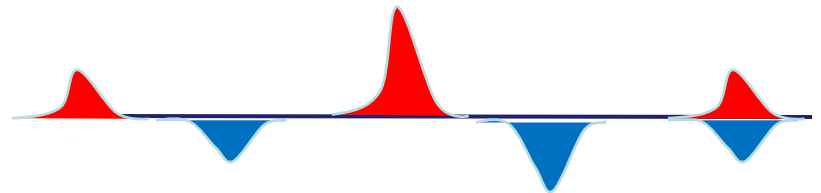
DYSTHYMIA



RECURRENT DEPRESSIVE DISORDER (UNIPOLAR)



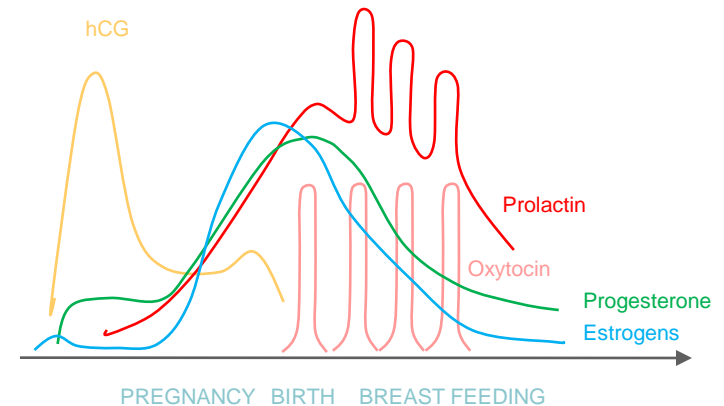
CYCLOTHYMIA



BIPOLAR DISORDER

# POSTPARTUM DEPRESSION

- Onset within 4 weeks after child birth
- Prevalence 10%
- Risk factors:
  - Family history of mood disorder
  - Unwanted pregnancy
  - Lack of breast feeding
  - Dysfunctional relationship with child's father
  - Lack of support
  - Lack of work
- Causes:
  - serotonin dysfunction + brutal decrease of hormones involved in maternal behavior (estrogens, oxytocine, alopregnanolon, prolactin)
  - hypothyroidism
  - hypercortisolemia
- Complications: suicide and / or infanticide
- Differentiate from
  - Baby blues: labile affectivity occuring in the first days after delivery
  - Postpartum (puerperal) psychosis: affective (manic / depressive) symptoms + psychotic symptoms (hallucinations, delusions). It is closer to bipolar disorder and thyroid dysfunctions
- Treatment: antidepressants + psychotherapy



# MOOD DISORDERS: ETIOPATHOGENESIS

GENETIC FACTORS

DISORDERS OF CEREBRAL NEUROTRANSMISSION

HYPOTHALAMIC-PITUITARY AXIS DISTURBANCES

CIRCADIAN RHYTHM DISTURBANCES

KINDLING PHENOMENON

PERSONALITY

LIFE EVENTS IN CHILDHOOD (mother's death at ages younger than 11 years old is correlated with depression in adulthood)

LEARNED HELPLESSNESS (experiments on animals, previously subjected to electric shocks they cannot avoid, show that these animals will not avoid electric shock even in situations where they have this option)

COGNITIVE DISTORTIONS

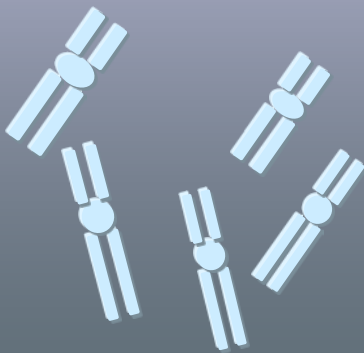


# MOOD DISORDERS: GENETIC FACTORS

## LINKAGE STUDIES

## CHROMOSOMES INVOLVED:

X, 11, 18,



## FAMILY STUDIES:

over 50% of monopolar depressives have a first degree relative with an affective mood disorder, most commonly monopolar depression

90% of bipolars have a first degree relative with an affective disorder, most commonly bipolar disorder

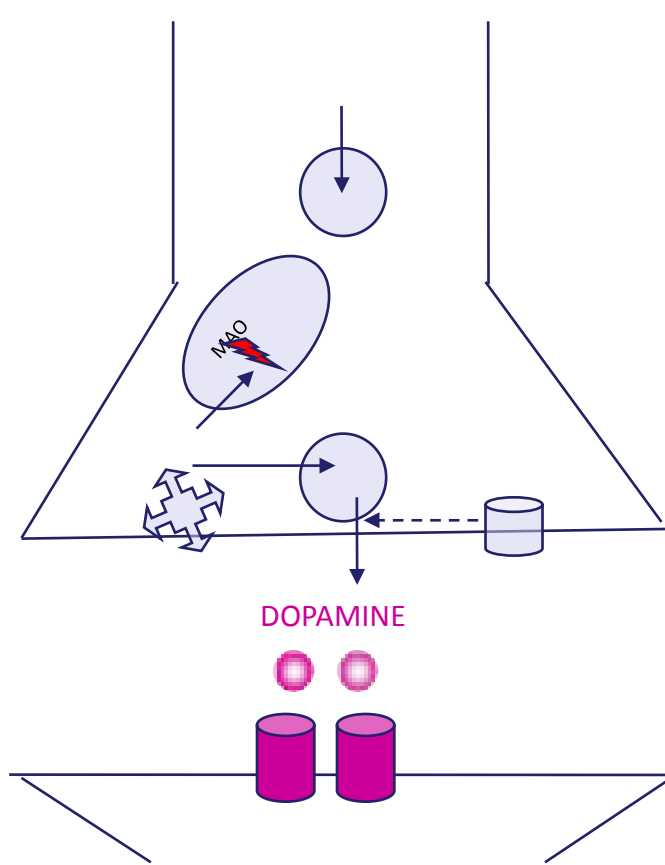
## TWIN STUDIES:

Unipolar depression: concordance in monozygotic twins 50%

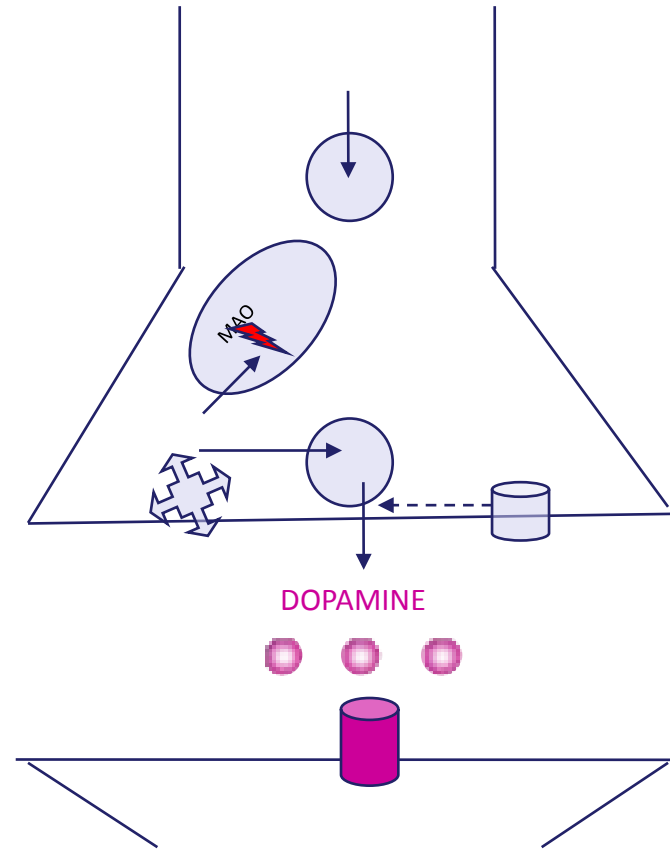
Bipolar disorder: concordance in monozygotic twins 60-70%

ADOPTION STUDIES: confirm the importance of genetic factors

# BIOCHEMICAL FACTORS: MONOAMINES HYPOTHESIS



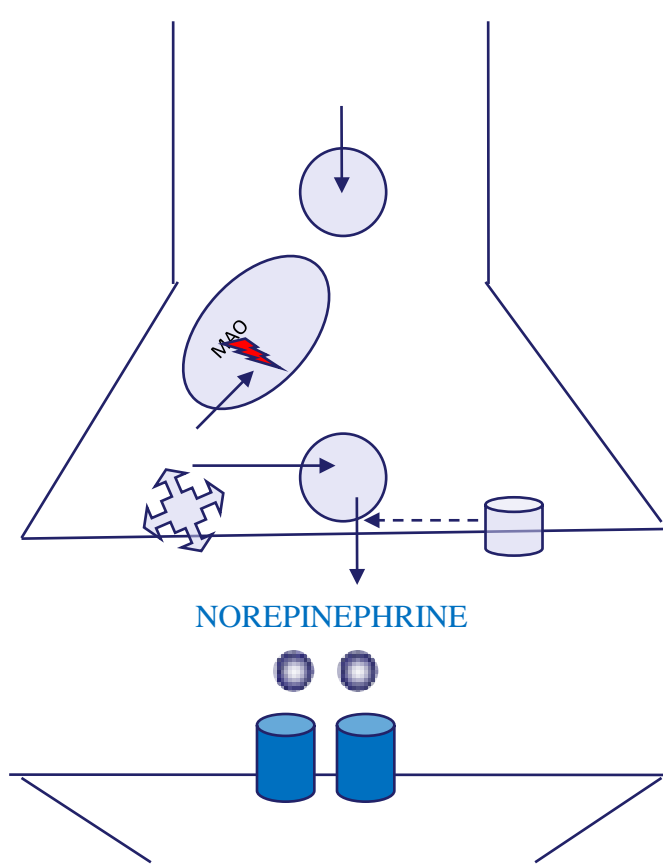
NORMALITY



MANIC STATE:  
Excess of dopamine: hedonic  
behavior

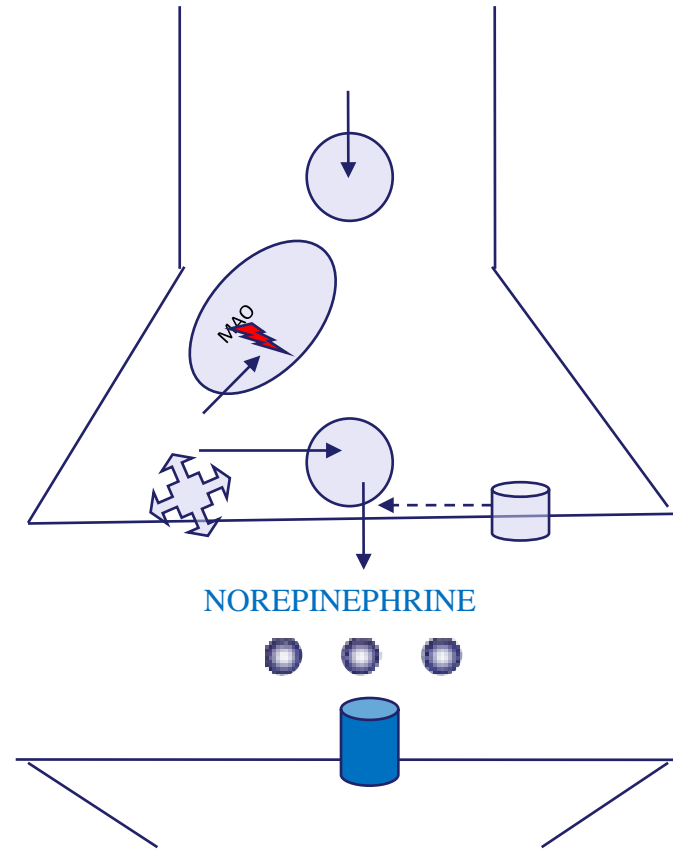
*L. Del*

# BIOCHEMICAL FACTORS: MONOAMINES HYPOTHESIS



NOREPINEPHRINE

NORMALITY



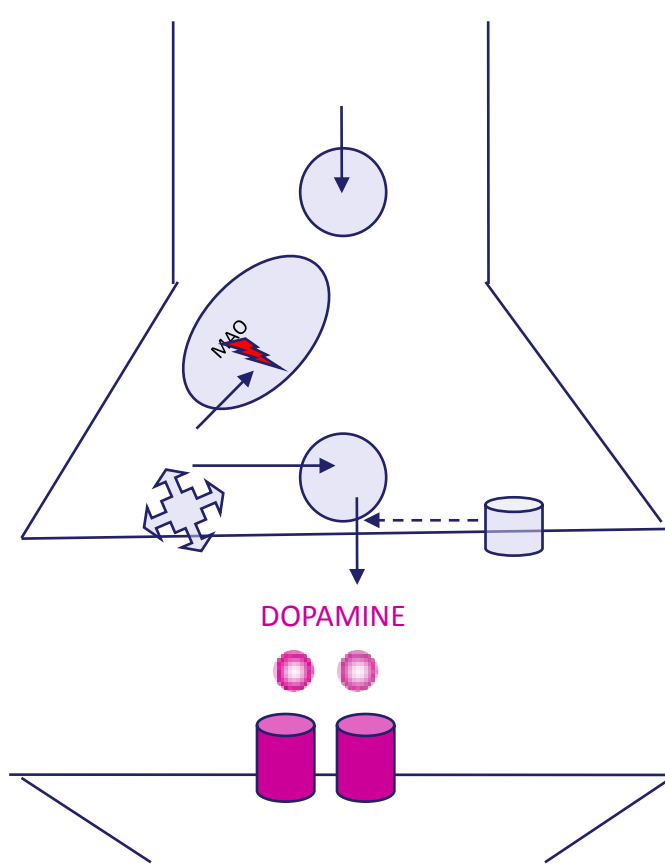
NOREPINEPHRINE

MANIC STATE:

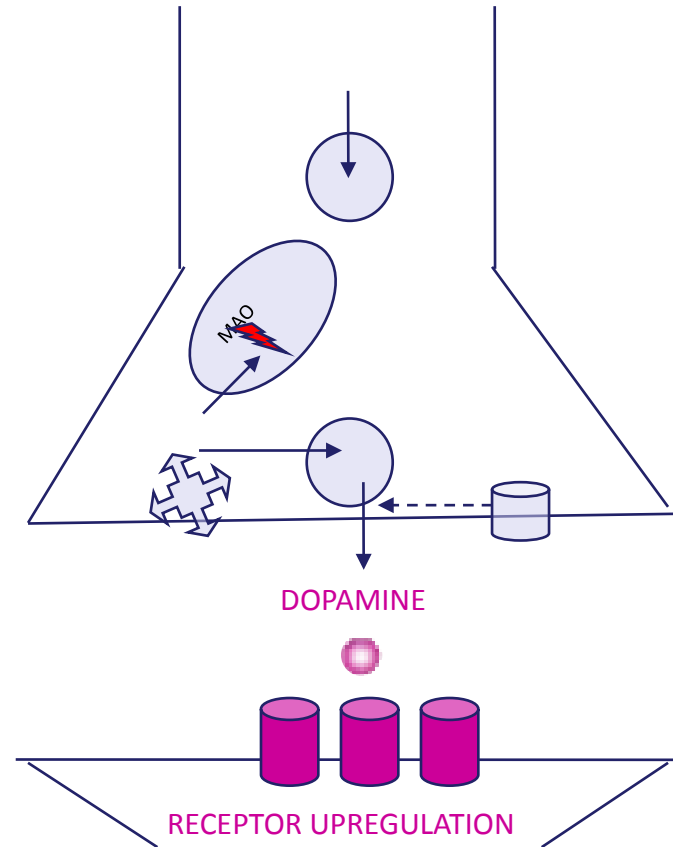
Excess of norepinephrine: high energy

*L. Del*

# BIOCHEMICAL FACTORS: MONOAMINES HYPOTHESIS

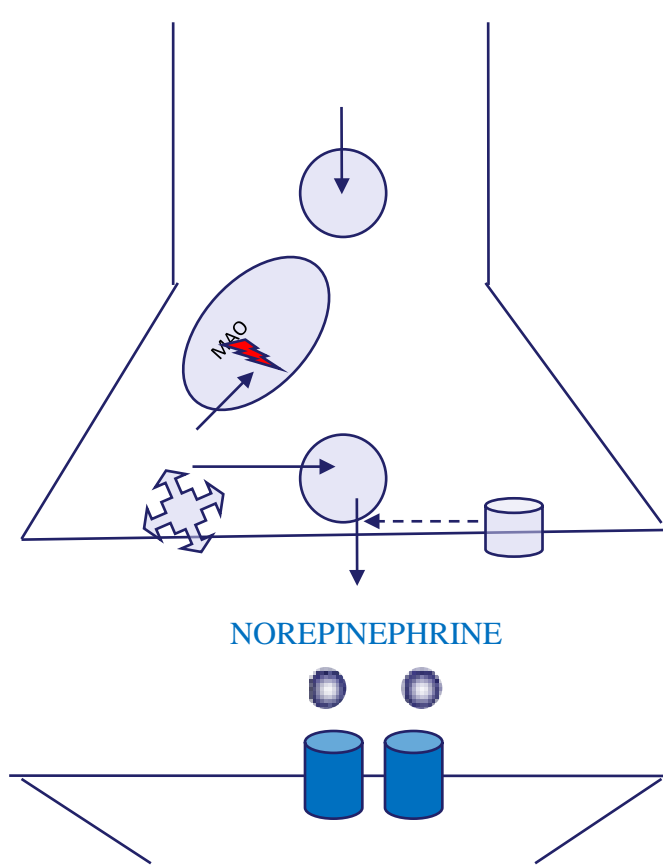


NORMALITY

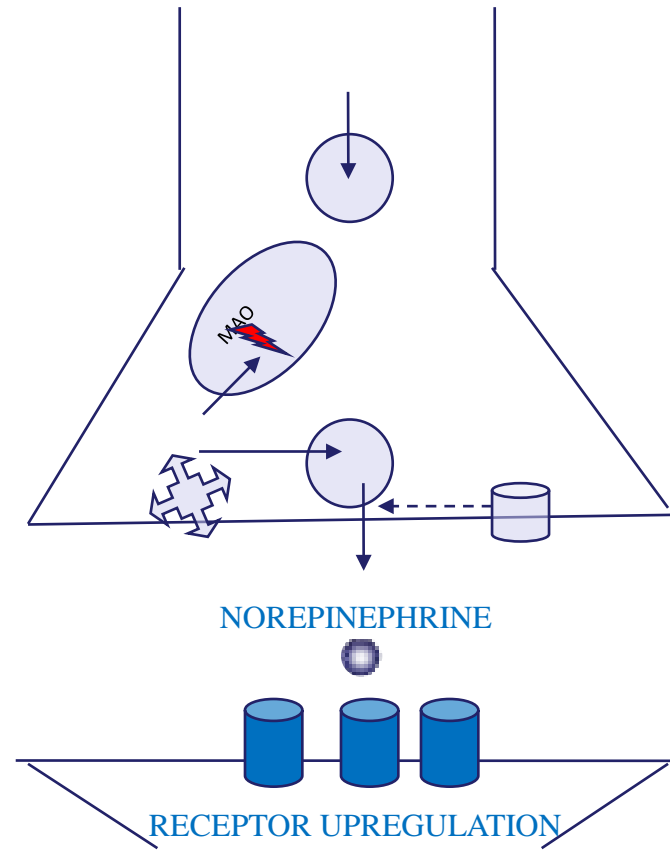


DEPRESSION:  
Low dopamine: anhedonia

# BIOCHEMICAL FACTORS: MONOAMINES HYPOTHESIS



NORMALITY

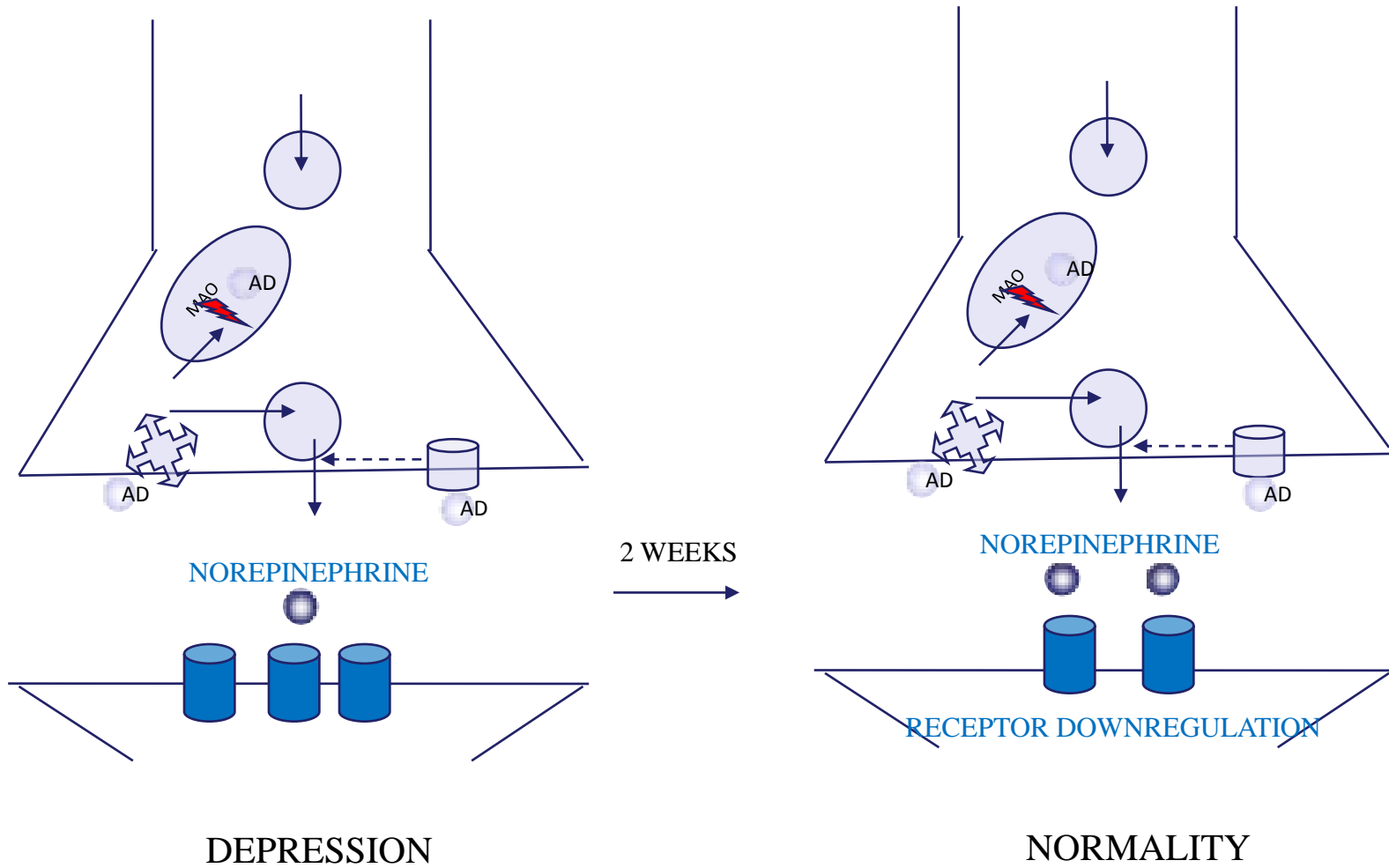


DEPRESSION

Low norepinephrine: deficits in attention and energy

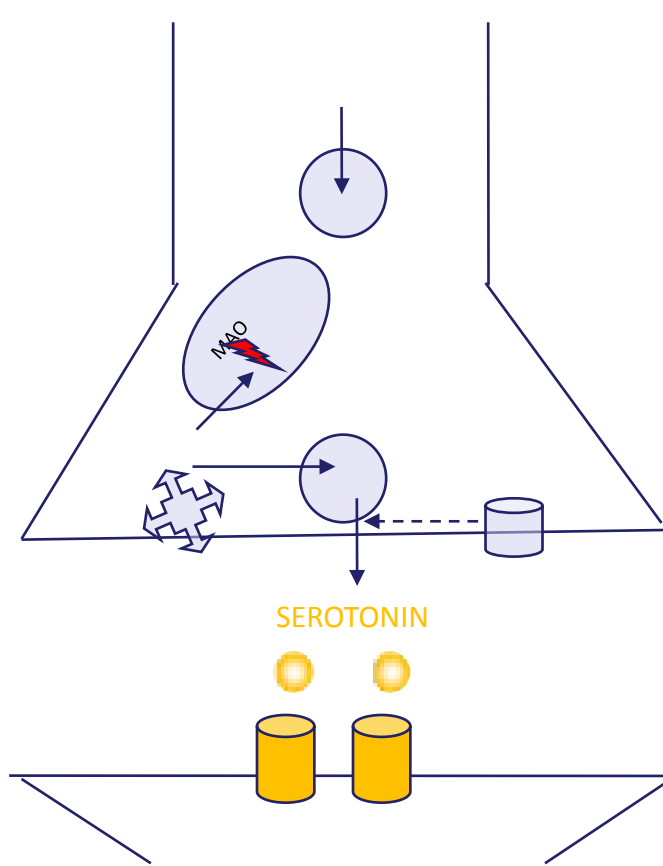
*L. Del*

# EFFECT OF ANTIDEPRESSANTS

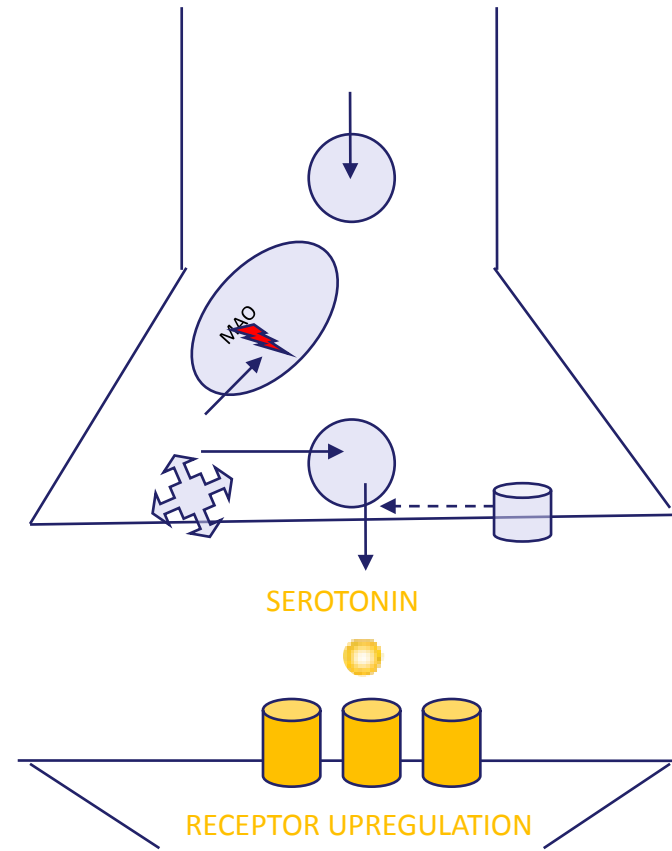


L. Del

# BIOCHEMICAL FACTORS: MONOAMINES HYPOTHESIS



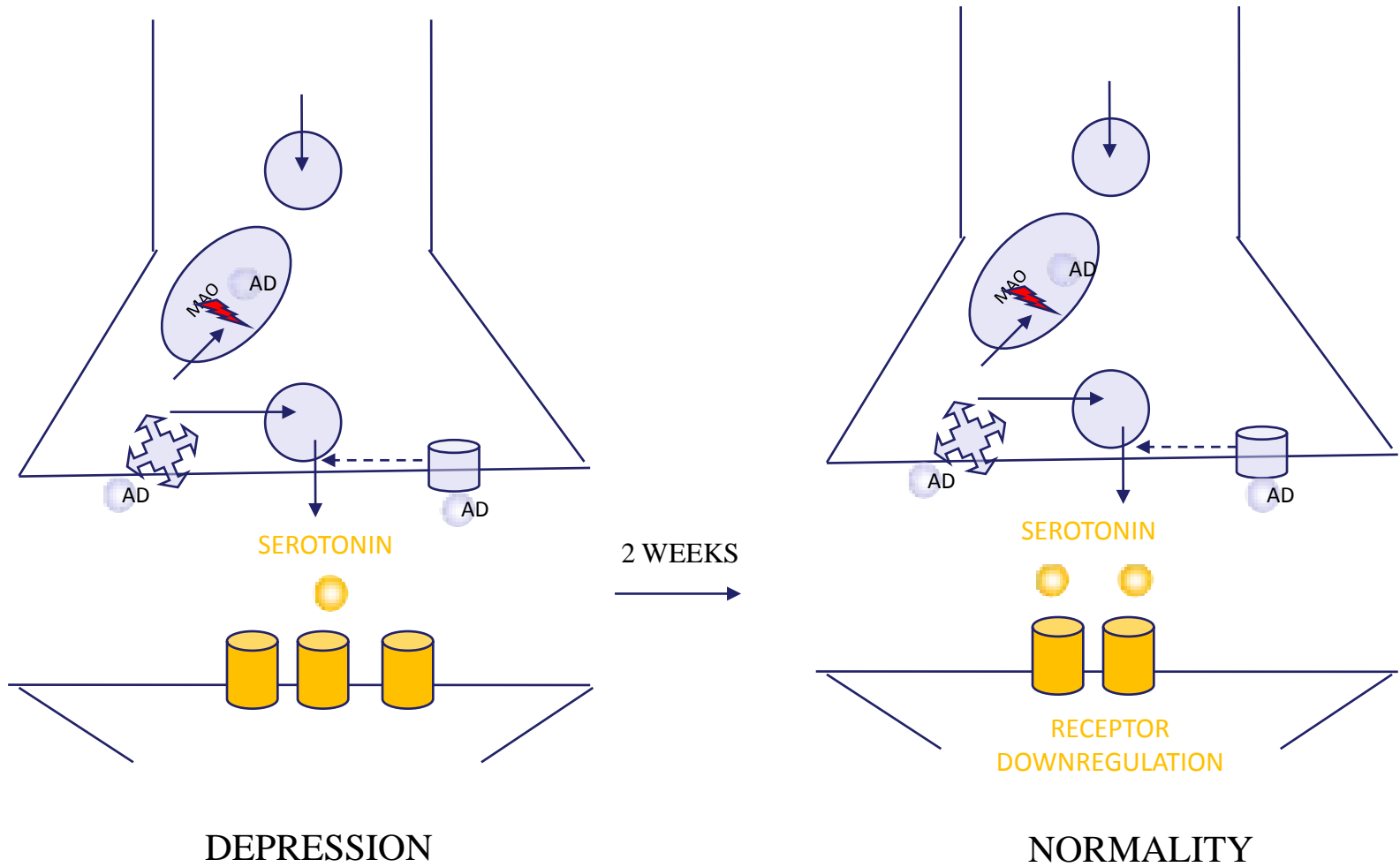
NORMALITY



DEPRESSION  
Low serotonin:  
depression, impulsivity

*L. Del*

# EFFECT OF ANTIDEPRESSANTS



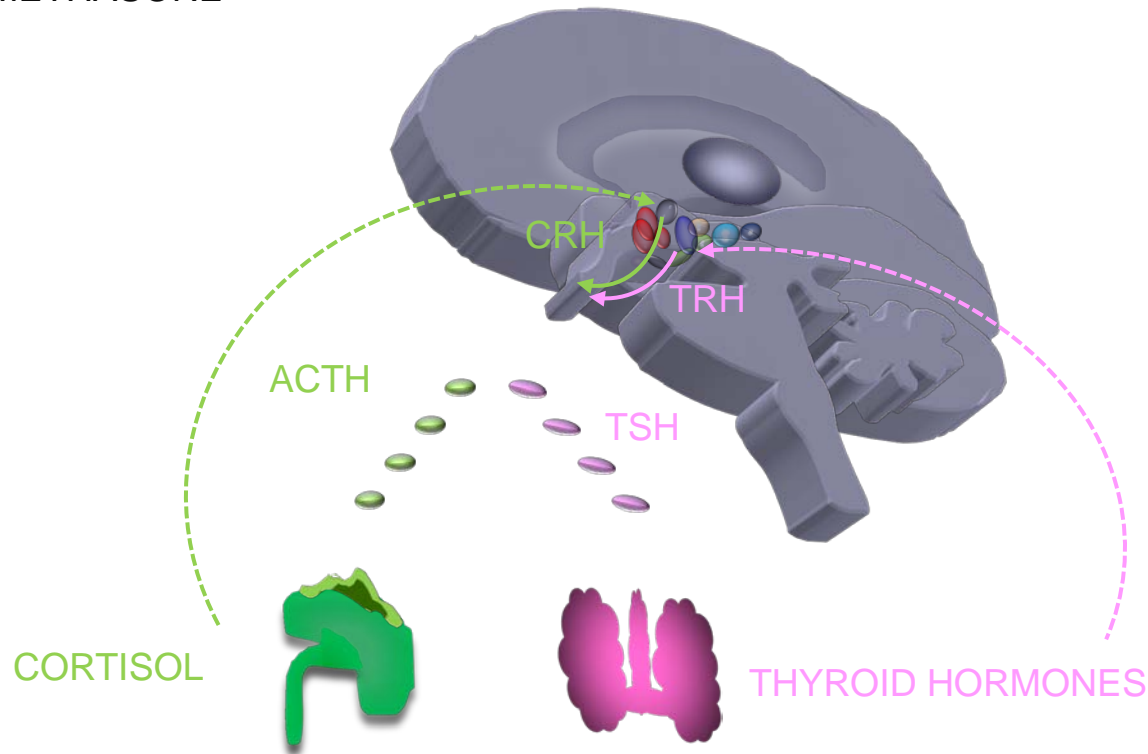
L. Del



# SEVERE DEPRESSION WITH ENDOCRINE ANOMALIES

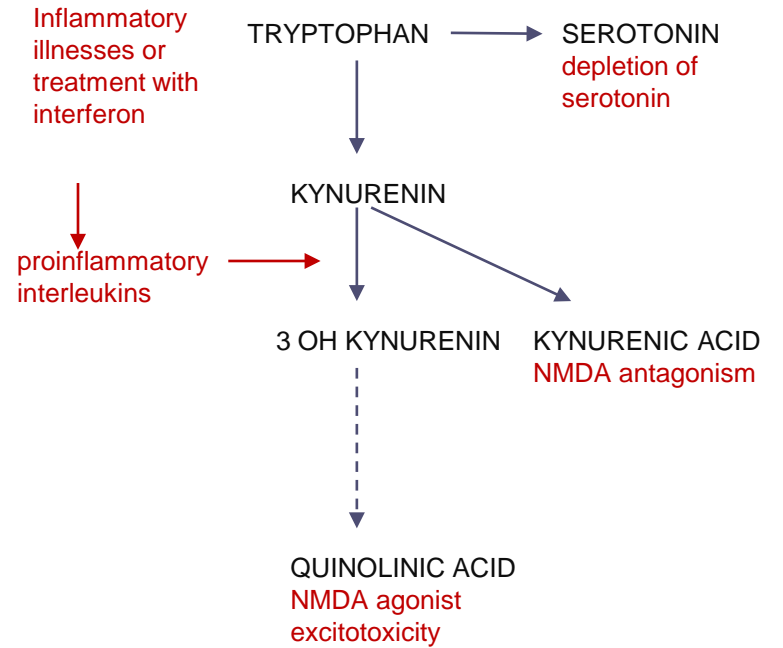
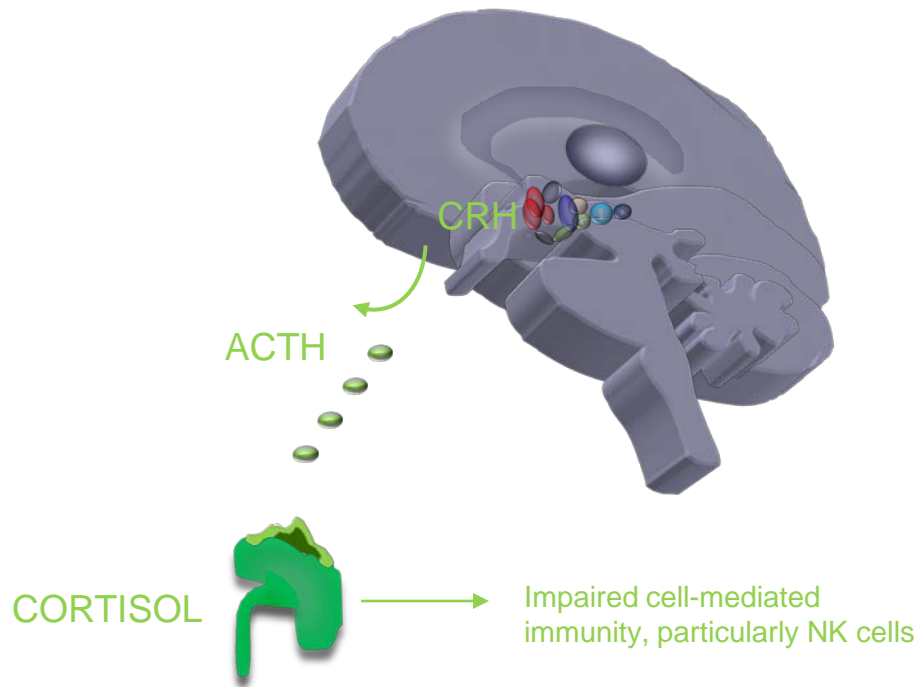
HYPOTHALAMIC-PITUITARY-ADRENAL AXIS  
unresponsive to inhibition with  
DEXAMETHASONE

HYPOTHALAMIC-PITUITARY-THYROID AXIS  
hyporesponsive to stimulation with TRH



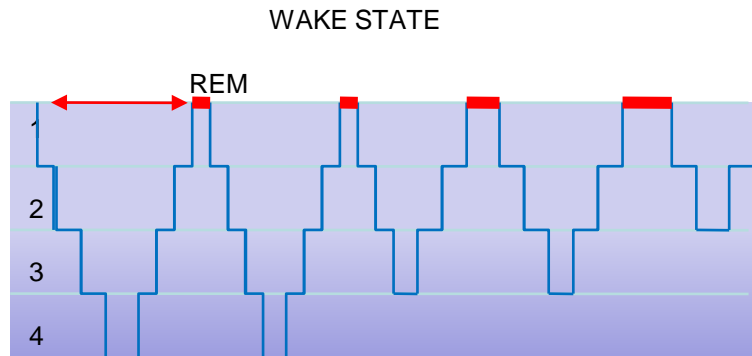
L. Del

# DEPRESSION: IMMUNE ANOMALIES



L Del

# DEPRESSION AND SLEEP DISORDERS

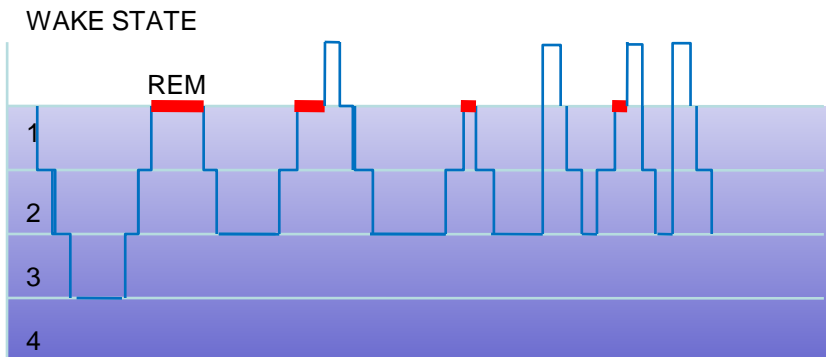


## NORMAL:

REM latency: 90 min

REM sleep predominates during the second half of the night

NREM sleep has 4 stages of depth



## DEPRESSION:

REM latency decreases: 60 min

Duration of REM decreases towards the second half of the night

NREM sleep depth decreases

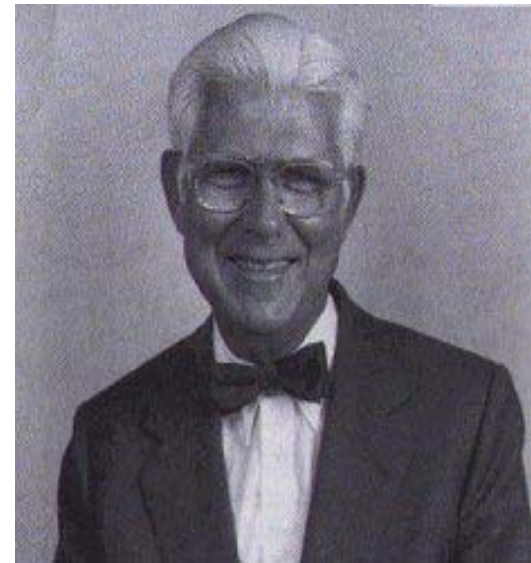
Late night insomnia

# DEPRESSION: COGNITIVE DISTORTIONS

BECK described the cognitive triad of depression:

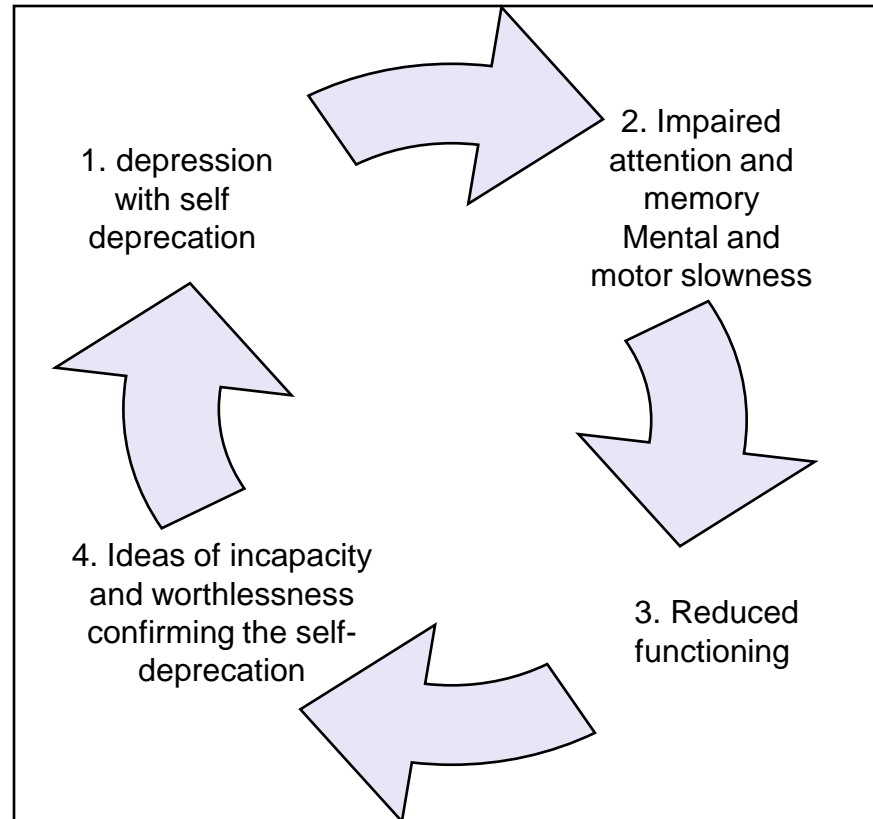
1. Self deprecation
2. Negative interpretation of life events
3. Negative future expectations

It can not be established with certainty whether negative thinking about the self, world and future precedes or is the result of depression



A.T. Beck (1921-)

# DISTORTIONS OF THINKING AND THE VICIOUS CIRCLE OF DEPRESSION



# PREMORBID PERSONALITY

Typus melancholicus (Tellenbach) ----- depression

Cyclothymic personality ----- bipolar disorder

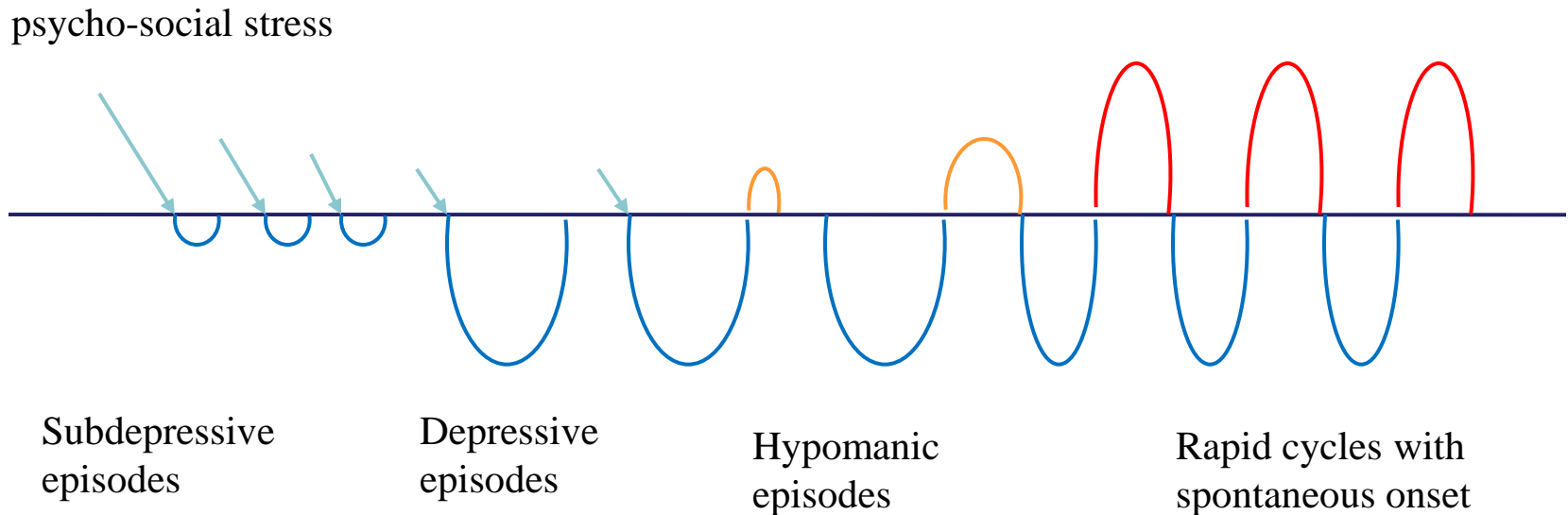
Personality disorders prone to depression:

Anankastic PD

Dependent PD

# KINDLING PHENOMENON

KINDLING= a phenomenon by which, after repeated subliminal brain stimulation, epileptic seizures occur. This phenomenon explains why antiepileptics (carbamazepine) are used as mood stabilizers



In evolution, episodes tend to be triggered by progressively weaker stressors  
This sensitization of the limbic system, may result in spontaneously occurring later episodes

# PERIODIC AFFECTIVE DISORDERS ETIOPATHOGENESIS- SYNTHESIS

PRENATAL

POSTNATAL

MATURITY

CHILDHOOD



MOOD  
DISORDERS

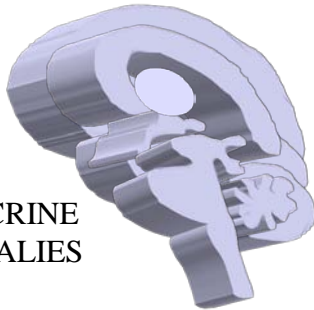
GENETIC VULNERABILITY +  
(MZ > DZ)

LOSS OF MOTHER AT AN  
AGE < 10 YEARS

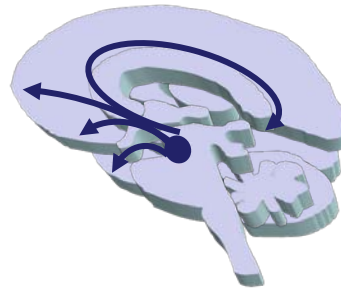
+ LACK OF A JOB  
RAISING YOUNG CHILDREN

PERSONOLOGIC VULNERABILITY

ENDOCRINE  
ANOMALIES



NEUROTRANSMITTER  
IMBALANCES



CEREBRAL TUMORS (mania)  
PARKINSON DISEASE (depression)  
HYPOTHYROIDISM (depression)  
HYPERTHYROIDISM (mania)



CRHONOBIOLOGICAL  
HYPOTHESES  
(seasonal depression, manic switches)



MEDICATION INFLUENCING THE CNS

- central antihypertensives (depression)
- interferon (depression)
- prednisone (depression /mania)

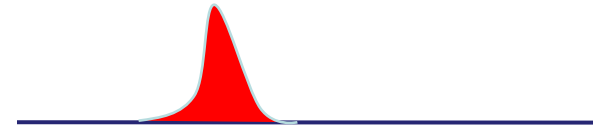


# TYPES OF MOOD EPISODES

- Hypomanic episode
  - Does not require hospitalization
- Manic episode:
  - Requires hospitalization
  - With or without congruent or incongruent psychotic symptoms
  - With or without psychomotor agitation
- Depressive episode:
  - Mild (with / without somatic symptoms)
  - Moderate (with / without somatic or anxiety symptoms)
  - Major (stupor, suicidal risk, congruent or incongruent psychotic symptoms: paranoid delusions, hallucinations)
- Mixed episode (manic and depressive symptoms simultaneously present)



HYPOMANIC EPISODE



MANIC EPISODE



DEPRESSIVE EPISODE

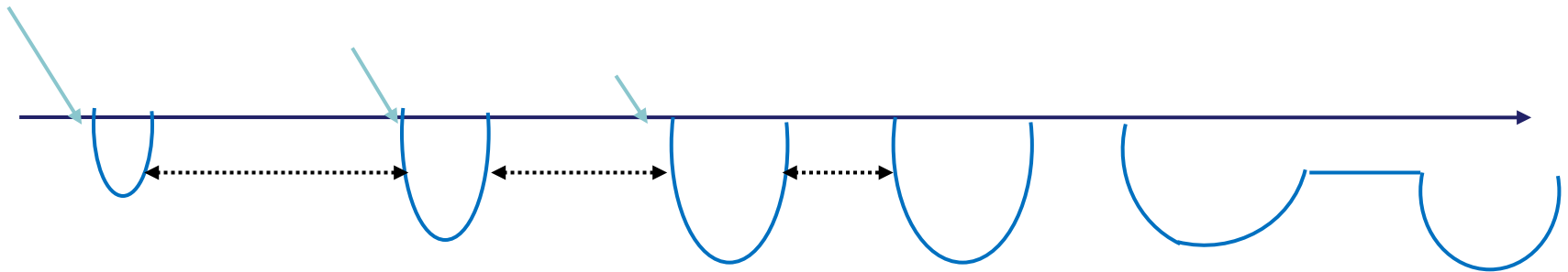


MIXT EPISODE

# RECURRENT DEPRESSIVE DISORDER (RDD)

Untreated depressive episode:  
lasting approximately 6  
months

Recurrence risk increases if remission is  
incomplete



Average age of onset: 40  
Women/men: 2/1

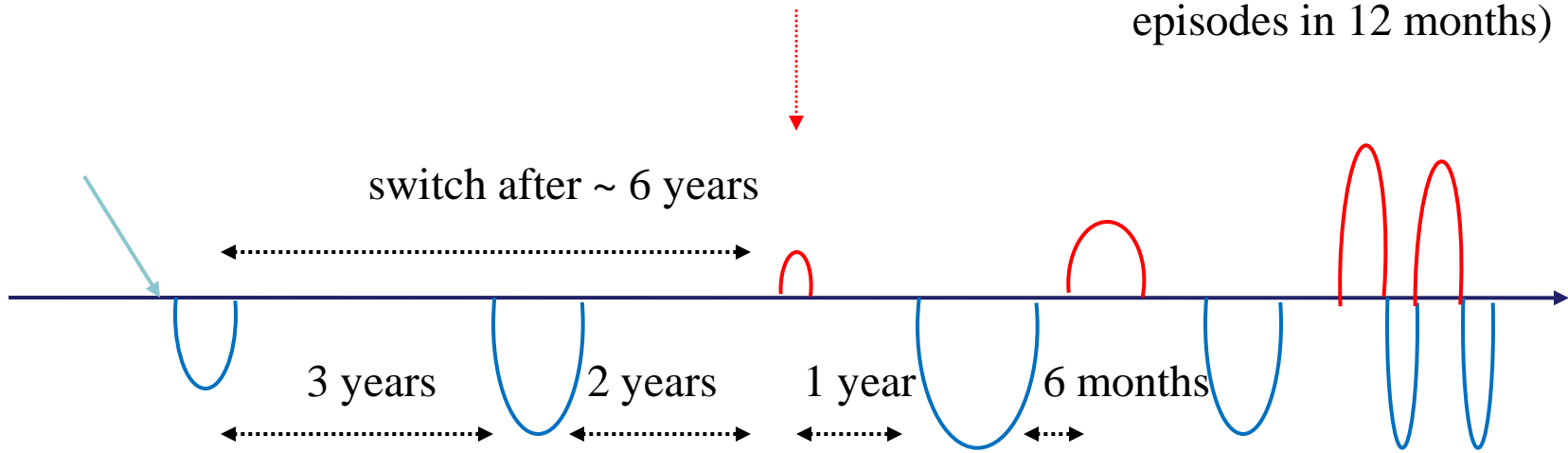
As the number of recurrences is higher, the  
interval between episodes will be shorter

# NATURAL EVOLUTION OF BIPOLAR DISORDER

50% of patients have at onset a depressive episodes

diagnosing BD

20% of bipolar patients have rapid cycles ( $\geq 4$  episodes in 12 months)



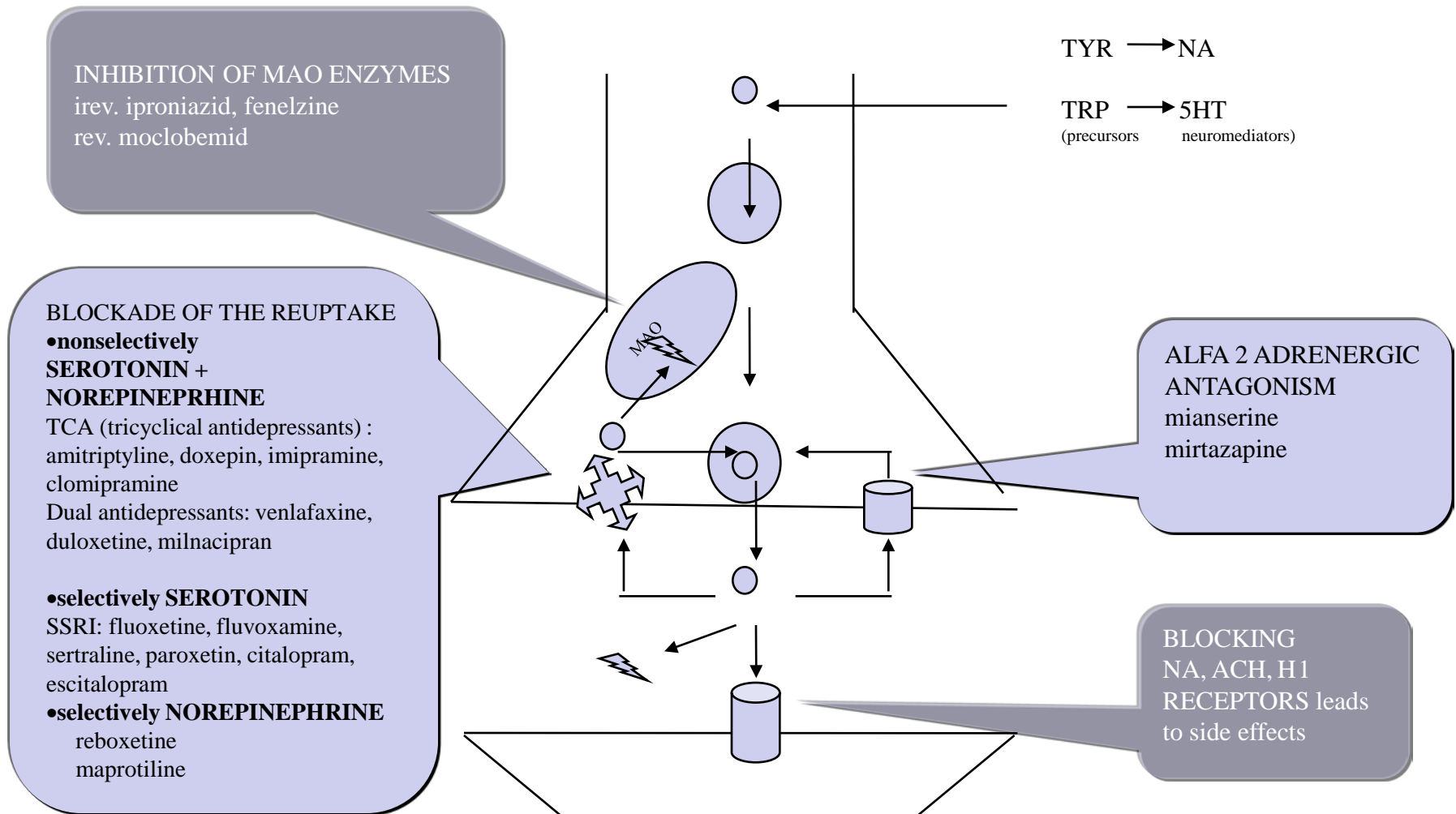
Age of onset has decreased  
from 30 to 19 years  
female / male: 1/1

The interval between episodes shortens  
during disorder's progression, then  
becomes fixed (6-9 months)  
More frequent depressive episodes

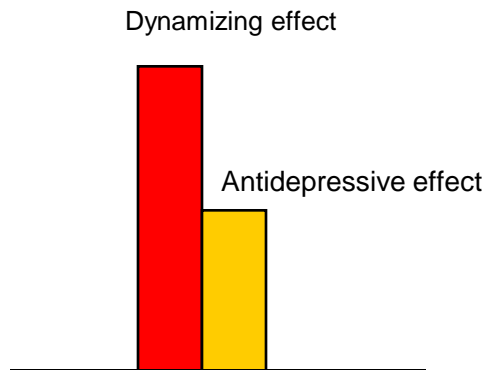
# MOOD DISORDERS: COMPLICATIONS

- High MORBIDITY AND MORTALITY if having depression (higher mortality in cardiac patients or those who have suffered strokes if depressed)
- ADDICTION: 25% of unipolar depressives  
50% of bipolar patients
- SUICIDE: 15% of depressives, maintaining their family  
higher risk in bipolar disorder when compared with unipolar depressive patients, family breakdown

# ANTIDEPRESSANTS - MECHANISM OF ACTION



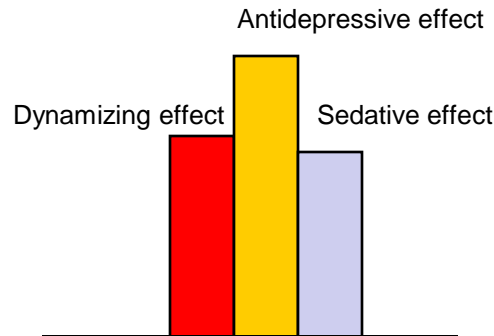
# CLASSIFICATION OF ANTIDEPRESSANTS



MAO inhibitors

- irreversible
- IPRONIAZID
- IZONIAZIDE
- FENELZINE
- reversible
- MOCLOBEMID

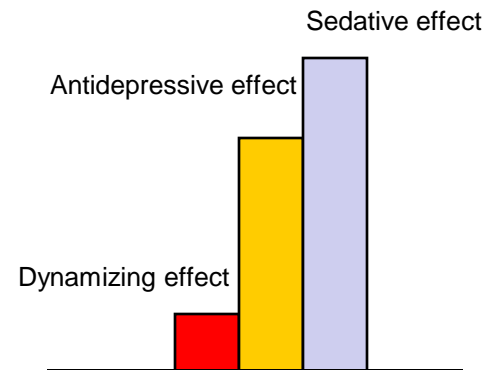
Multiple contraindications !  
They should not be associated  
with other antidepressants



TYMOANALEPTICS  
(day antidepressants)

- Tricyclics:
- IMIPRAMINE
- CLOMIPRAMINE
- NORTRIPTILINE
- Tetracyclics
- MAPROTILINE

Indications:  
inhibited depression  
depression with panic attacks



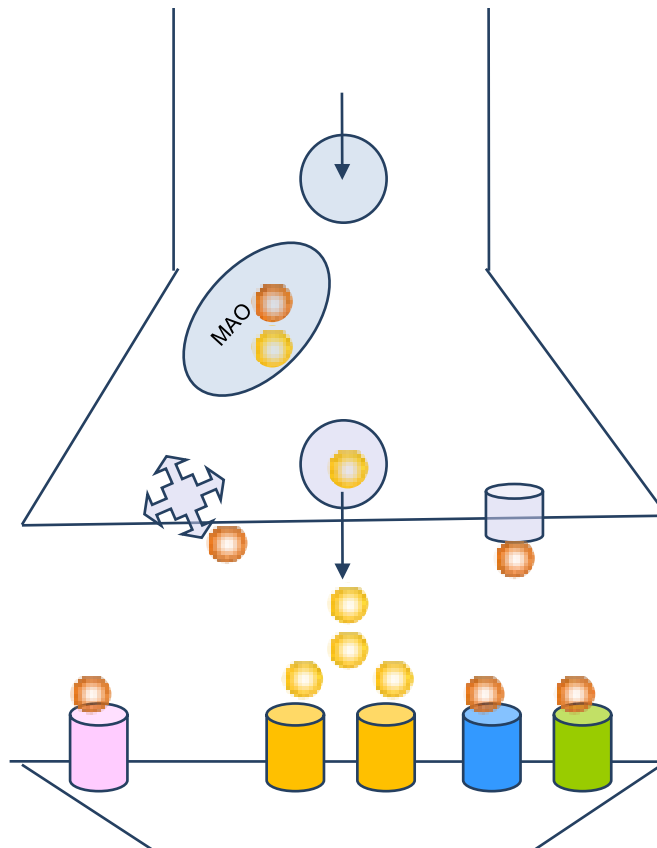
TYMOLEPTICS  
(night antidepressants)

- Tricyclics:
- AMITRIPTILINE (75-150-200 mg/day)
- TRIMIPRAMINE
- DOXEPIN
- Tetracyclics
- MIANSERINE (30-60 mg/day)
- Others:
- TRAZODON (300-600 mg/day)
- TIANEPTINE

Indications:  
depression with generalized anxiety

# TRICYCLIC ANTIDEPRESSANTS – SIDE EFFECTS

- antidepressant
- neurotransmitter



H1 antihistamine effect:  
- sedation  
- weight gain

Anticholinergic effect:  
- dry mucosa  
- urinary retention  
- constipation  
- mydriasis  
- erectile dysfunction

Antiadrenergic Alpha 1 effect:  
- orthostatic hypotension  
- ejaculatory dysfunction

*L. Del*

# QUINIDINE SYNDROME (pro-arrhythmic)

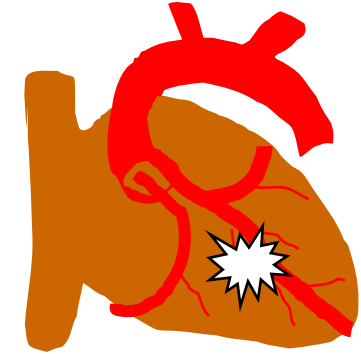
## RISK FACTORS:

- Congenital long QTc
- Heart disease
- Medication that lengthens QT
- Fluid and electrolyte imbalances

Long QTc:  
Women > 470 ms  
Men > 450 ms

Sympathetic stimulus

R/T phenomenon



torsades de pointes





# RULES OF PRESCRIPTION FOR ANTIDEPRESSANT MEDICATION

1. The choice of antidepressant will take into account:

- Clinical form (inhibited depression, depression with anxiety or irritability)
- Background disorder (unipolar depression or bipolar disorder: in the bipolar type SSRI antidepressants are preferred)
- Psychiatric comorbidity (panic attacks, phobias, obsessions)
- Somatic comorbidity (cardiovascular, hepatic, neurologic)
- Age
- Socio-economic factors

2. Antidepressant monotherapy is preferred (otherwise side effects will add-on)

Medication that can be added to antidepressant: anxiolytics, hypnotics, new generation antipsychotics if there are psychotic symptoms

The association of mood stabilizers is often useful (to prevent manic switches)

3. Doses should be increased gradually as tolerated, maintained at the therapeutic dose and then gradually decreased.

Changing antidepressant is done after 4-6 weeks of lack of treatment response.

Replacement will be made after the first antidepressant has been removed from the blood system.

# SELECTIVE SEROTONIN REUPTAKE INHIBITORS (SSRIs)

The mechanism of action is the blocking of serotonin reuptake pumps (serotonin transporters named SERT).

Products:

- Fluoxetine - therapeutic doses 20-40 mg/day
- Sertraline - therapeutic doses 50-200 mg/day
- Fluvoxamine - therapeutic doses 100-200 mg/day
- Paroxetine - therapeutic doses 20-50 mg/day
- Citalopram - therapeutic doses 20-60 mg/day
- Escitalopram -therapeutic doses 10-20 mg/day

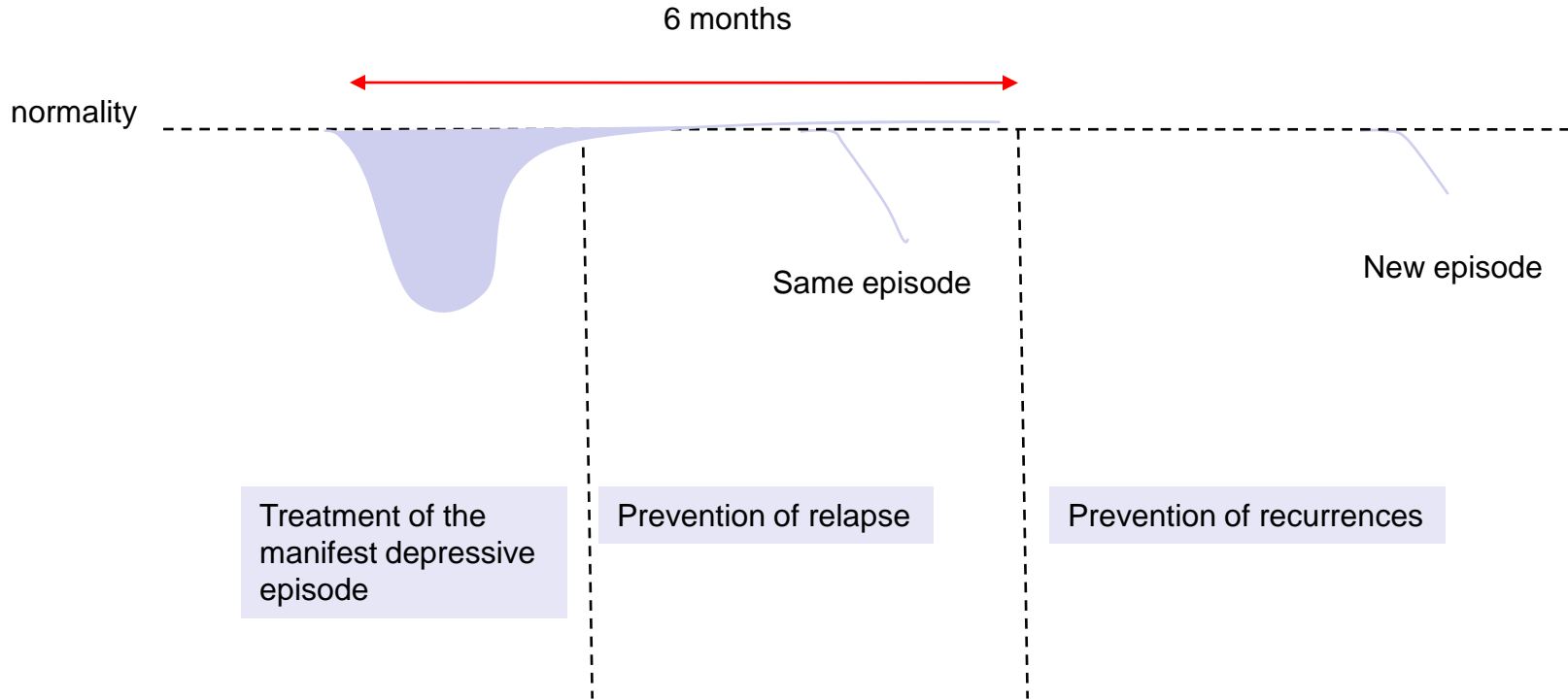
They are also useful in: panic attacks, social phobia, obsessive-compulsive disorder, bulimia nervosa

Side Effects:

- anxiety, restlessness, insomnia (activation of 5HT<sub>2A</sub> receptor by serotonin)
- tremor, myoclonus, akathisia (activation of 5HT<sub>2A</sub> receptor by serotonin)
- sexual dysfunction (activation of 5HT<sub>2A</sub> receptor by serotonin)
- anorexia, nausea, vomiting, diarrhea (activation of 5HT<sub>3</sub> receptor by serotonin)
- headache (activation of 5HT<sub>3</sub> receptor by serotonin)
- serotonin syndrome:  
diarrhea, restlessness, tremor, ataxia, myoclonus, seizures, fever, confusion, coma

# DURATION OF TREATMENT IN DEPRESSION

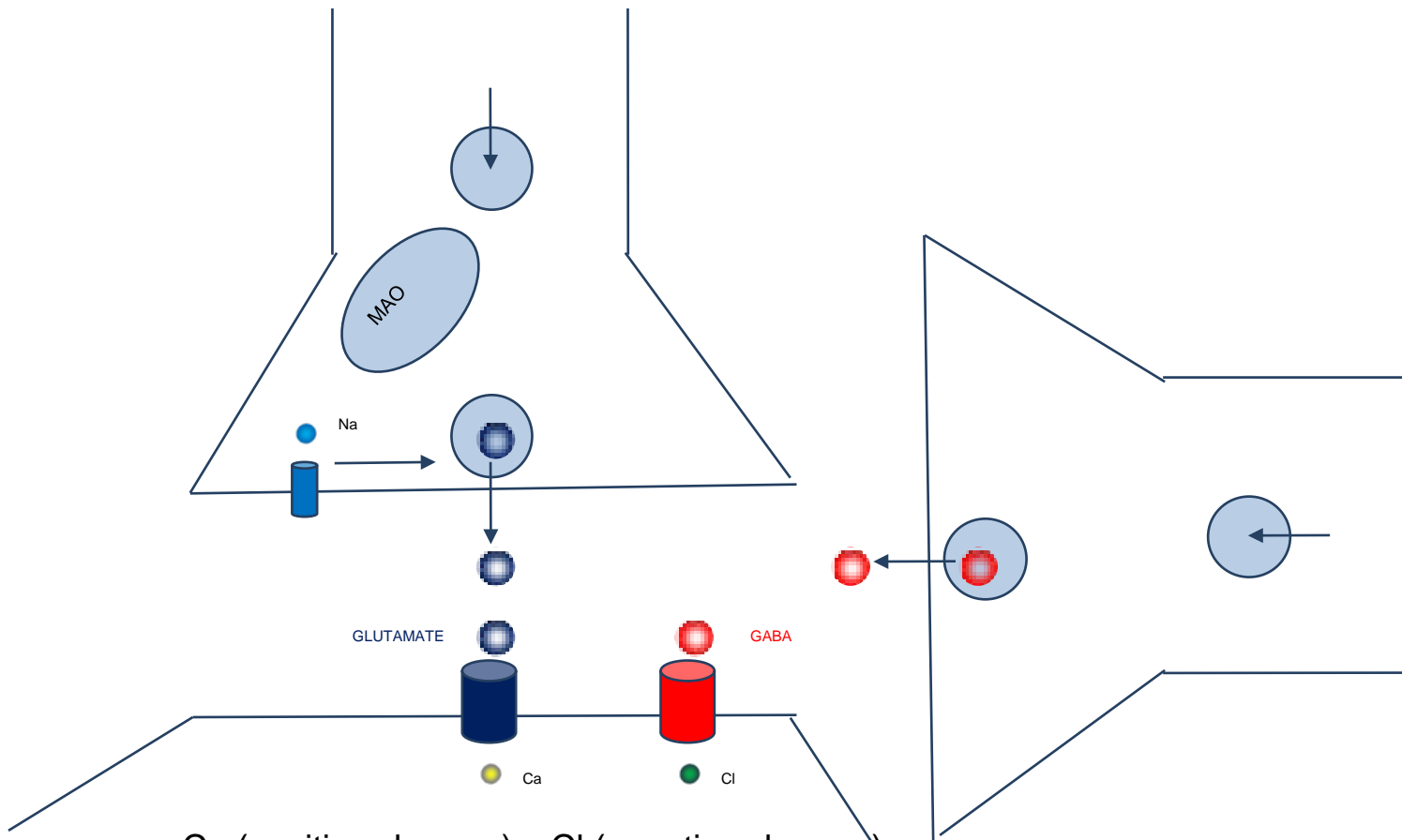
To prevent relapse and recurrence, treatment with antidepressants should be continued for at least 6 months to 2 years or more



# THE TREATMENT OF MANIC EPISODE

- Antipsychotic:
  - Conventional: Haloperidol (antipsychotic and antimanic effects) + anticholinergic (extrapyramidal syndrome prevention)
  - Atypical (antipsychotic, antimanic and mood stabilizer effects)
- Mood stabilizer:
  - Valproate
  - Carbamazepine
  - Lithium salts (gold standard in trials)
- Benzodiazepine (sedative effect)
- Hypnotic

# NEURON EXCITABILITY (RESPONSIVENESS TO STIMULI)

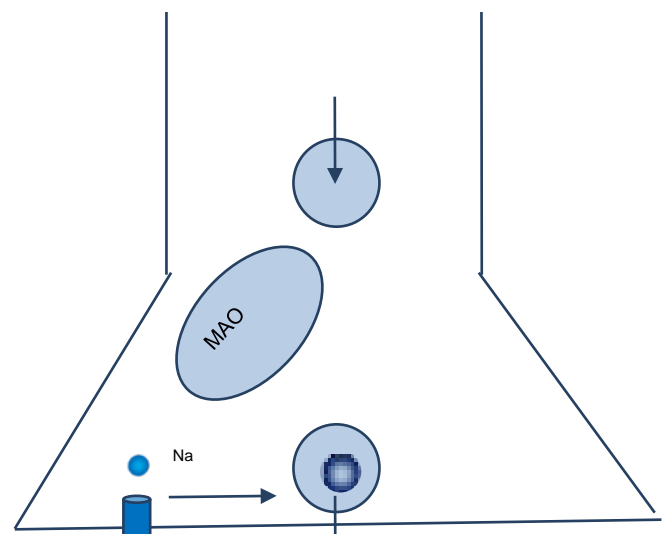


Ca (positive charges)  
induces  
DEPOLARIZATION  
with EXCITABILITY

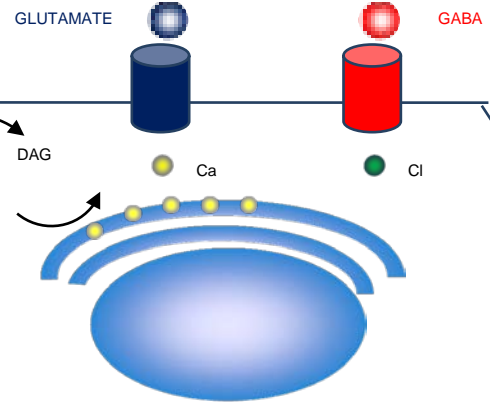
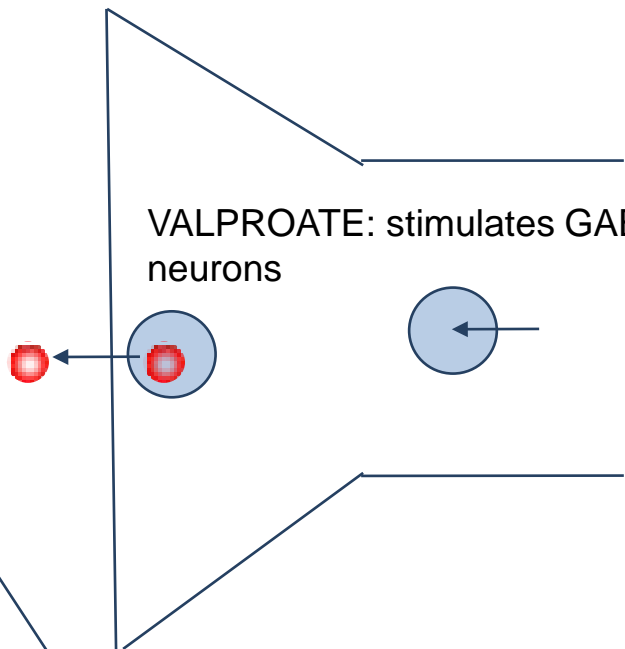
Cl (negative charges)  
induces  
HYPERPOLARIZATION  
with HYPOEXCITABILITY

# MOOD STABILIZERS

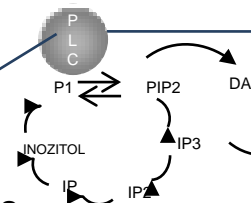
CARBAMAZEPINE  
 LAMOTRIGINE  
 VALPROATE  
 Inhibit the voltage  
 dependent Na  
 channels, inhibiting  
 glutamate release



VALPROATE: stimulates GABAergic  
 neurons



LITHIUM inhibits  
 inositolmonophosphatase  
 which regenerates inositol  
 from inositolmonophosphate



*L. Del*

# MAIN MOOD STABILIZERS

LITHIUM CARBONATE	CARBAMAZEPINE	VALPROATE
<p>Dose must produce a plasma concentration of:</p> <p>1-1,2 mEq/l in manic episode 0,6-0,8 mEq/l for maintenance</p>	<p>Dose in manic episode: 600-2400 mg/day</p> <p>Maintenance dose: 600-1800 mg/day</p>	<p>Dose in manic episode: 20mg/Kg/day</p> <p>Maintenance dose: 600-2400 mg/day</p>
<p>Side effects:</p> <p>Tremor, ataxia, seizures, nausea, vomiting</p> <p>Hypothyroidism with weight gain</p> <p>Diabetes insipidus</p>	<p>Leukopenia</p> <p>Ataxia</p> <p>Sedation</p> <p>Drug Interactions (induction of CYT P 450)</p>	<p>Weight gain</p> <p>Sedation</p> <p>Thrombocytopenia</p> <p>Increased transaminase level</p>
<p>Laboratory tests:</p> <p>Serum Li</p> <p>Thyroid hormones</p> <p>Renal function</p>	<p>Cell blood count</p>	<p>Cell blood count</p> <p>Liver function</p>

# PSYCHOTHERAPIES

## COGNITIVE PSYCHOTHERAPY

- aims to change cognitive distortions (distorted preconscious attitudes) inherited from childhood, implemented during biography and that predispose to low self-esteem, self undervaluation and overvaluation of achievements made by others

INTERPERSONAL THERAPY (enhances the socialization skills of the subject with others)

FAMILY THERAPY targeting family relationships

LOGOTHERAPY helps the patient to find a purpose in life



# OTHER TREATMENTS

ELECTROCONVULSIVE THERAPY (ELECTROSHOCK) - in treatment-resistant or stuporous forms

BRIGHT LIGHT EXPOSURE for several hours a day for seasonal depression

SLEEP DEPRIVATION one or more days of the week: intervention on biorhythm disorders

MUSIC THERAPY

# ADDICTIVE DISORDERS



# ETIOPATHOGENESIS

## INDIVIDUAL

### Genetics

- enzymes

### Personality

- Impulsivity
- Sociopathy
- Shyness
- Abulia

### Age

- beginning of the third decade of life (socialising)

### Mental and/or physical suffering

- Anxiety
- Depression
- Mania
- Schizophrenia
- Cancer

DRUG  
Availability



ADDICTION



## SOCIETY

### Permissiveness/ban

- Religion
- Legislation
- Cultural norms:  
who, when, how  
much, what and why they  
use the drug

### FAMILY

- disorganized
- family use of drugs

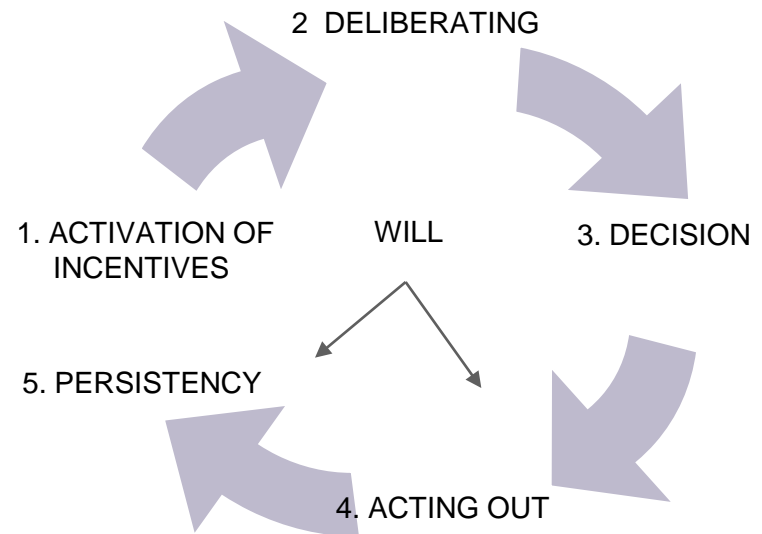
### WORK

- accessibility
- protocol

“We enter addiction through  
the gate of pain, of  
voluptuousness and of  
sadness”  
Ball

# THE MOTIVATIONAL SYSTEM

- MOTIVATION is the process which generates, maintains and controls behaviours.
- The motivational process has the following steps: activation of motivational instances, deliberating when different conflicting solutions, taking a decision, acting upon it and persisting in the action.
- The motivational incentives are:
  - At instinctual level: biological needs
  - At affective level: desire
  - At cognitive level: interest and curiosity
  - At moral values spiritual level: aspirations
- THE WILL compensates the energetic deficit of the cognitive and moral values spiritual levels, helping in taking decisions and in initiating behaviours



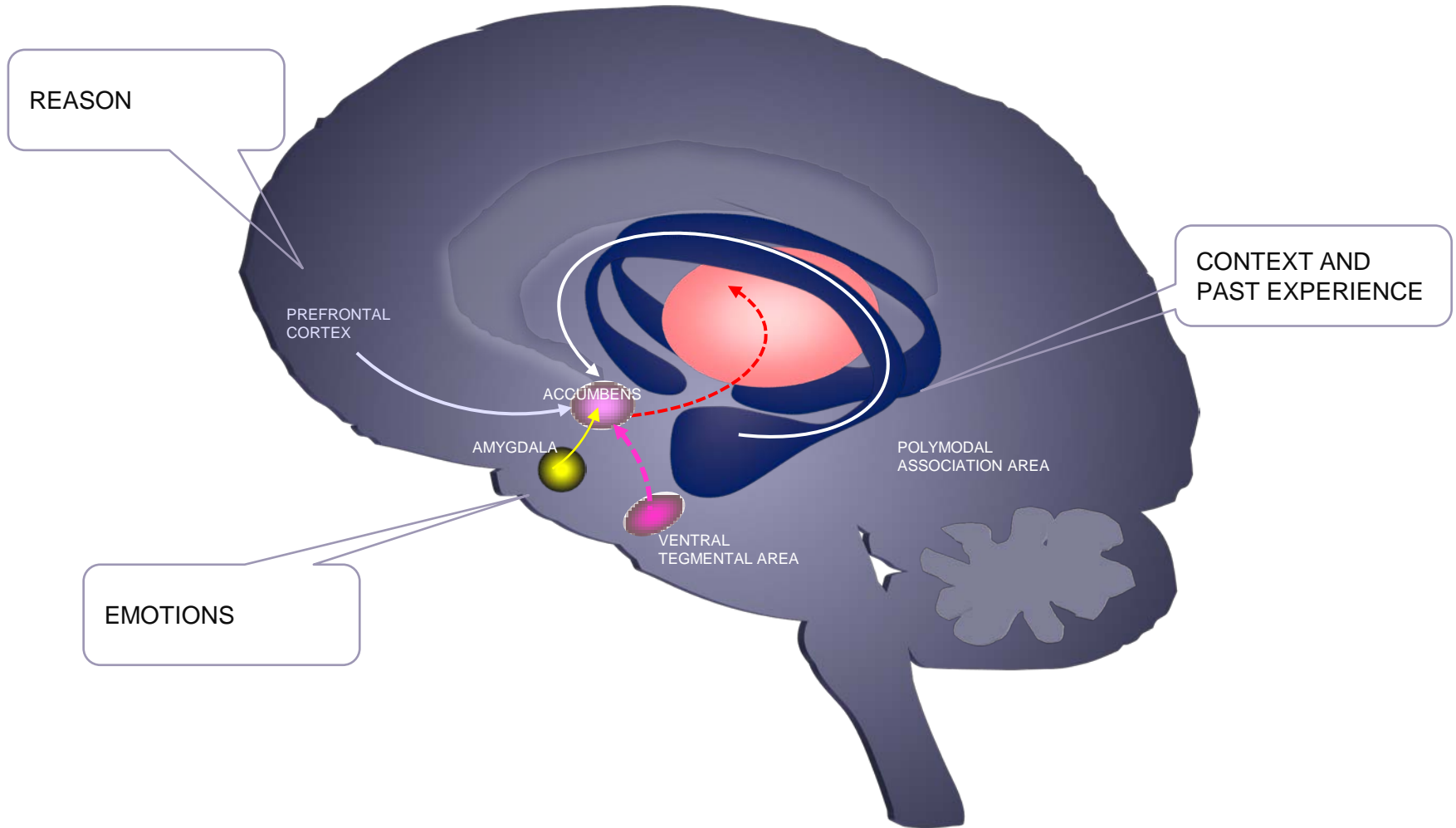
# THE MOTIVATIONAL SYSTEM

- prefrontal cortex: deliberation, rational decision, anticipating its consequences, monitoring the results of an action;
- parieto-temporo-occipital cortex: stores past experiences of the individual (long term memory)
- cingulate gyrus: awareness of the positive or negative stimuli experiences' significance;
- amygdala: orientates the response of the body according to the biological importance of the stimuli;
- hippocampus: orientates the response of the body according the context or the past experience;
- basal ganglia the selection of a certain behavior
- nucleus accumbens: motivational part of the basal ganglia. Receives inputs from prefrontal cortex, amygdala, hippocampus.
- thalamus: filtering information and commands before reaching cortex
- mesencephalon (ventral tegmental area and the raphe): regulates the nucleus accumbens activity through dopamine and serotonin secretion .

# THE MOTIVATIONAL SYSTEM

- The motivational system's neuromediators are:
  - Dopamine (neuromodulator)
  - Serotonin (neuromodulator)
  - Acetylcholine (neuromodulator)
  - GABA (neurotransmitter)
  - Glutamate (neurotransmitter)
- Dopamine has a disinhibition effect on the motivational system raising the possibility that a certain decision would be transformed into a behavior.
- Serotonin
  - Acting at ventral tegmental area inhibits the dopamine discharge, thus having an inhibitory effect on motivational system
  - Acting at nucleus accumbens level disinhibits the motivational system
- The drugs influence the neuromediators of the motivational system, increasing the release of dopamine in the ACCUMBENS NUCLEUS.

# PREFRONTAL CORTEX AND DECISION MAKING



L. Del





# ACUTE AND CHRONIC ALCOHOLISM



# TYPES OF ALCOHOL USE

- **EXPERIMENTAL USE:** testing the effects of different types of beverages and one's tolerance to alcohol
- **SOCIALLY INTEGRATED USE:** alcohol use is regulated by social and cultural norms (dose, context, age, type of alcohol)
- **ABUSE (HARMFUL USE)** repeated alcohol intoxications despite evident damages to the user's:
  - physical and mental health
  - familial and social well-being
  - occupational well-being
  - legal problems
- **DEPENDENCE:** chronic intake with progressive dose increases and preference for high alcohol content beverages

# EPIDEMIOLOGY

Past:

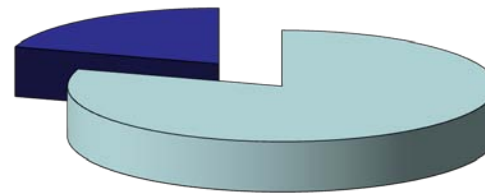
Male / female: 10/1

Age of onset of use: adult

Currently:

Male / female: 4/1

Age of onset of use: teens

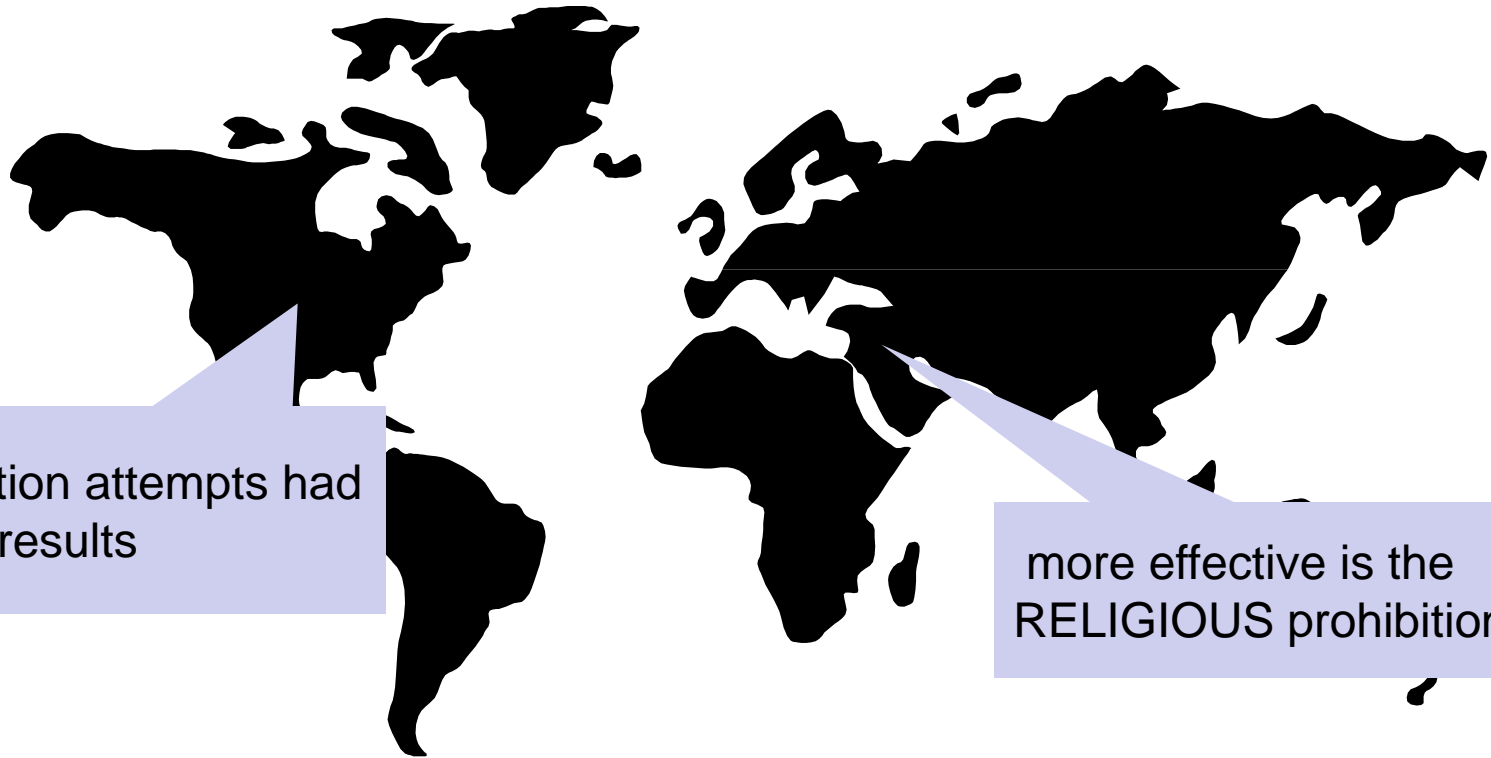


□ socially integrated use  
■ chronic alcoholism

Traditionally there were areas of consumption of wine, beer and distilled spirits. Presently no more differences between world regions



# THERE ARE DIFFERENCES BETWEEN COUNTRIES IN TERMS OF CONSUMPTION PER CAPITA



Prohibition attempts had limited results

more effective is the RELIGIOUS prohibition

# CIRCUIT OF ALCOHOL IN THE BODY

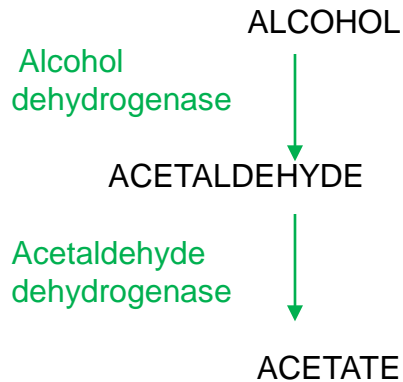
## DISTRIBUTION:

Alcohol spreads in all tissues of the body, including neurons  
BLOOD ALCOHOL LEVEL is an index of the level of alcohol in the tissues

## ELIMINATION

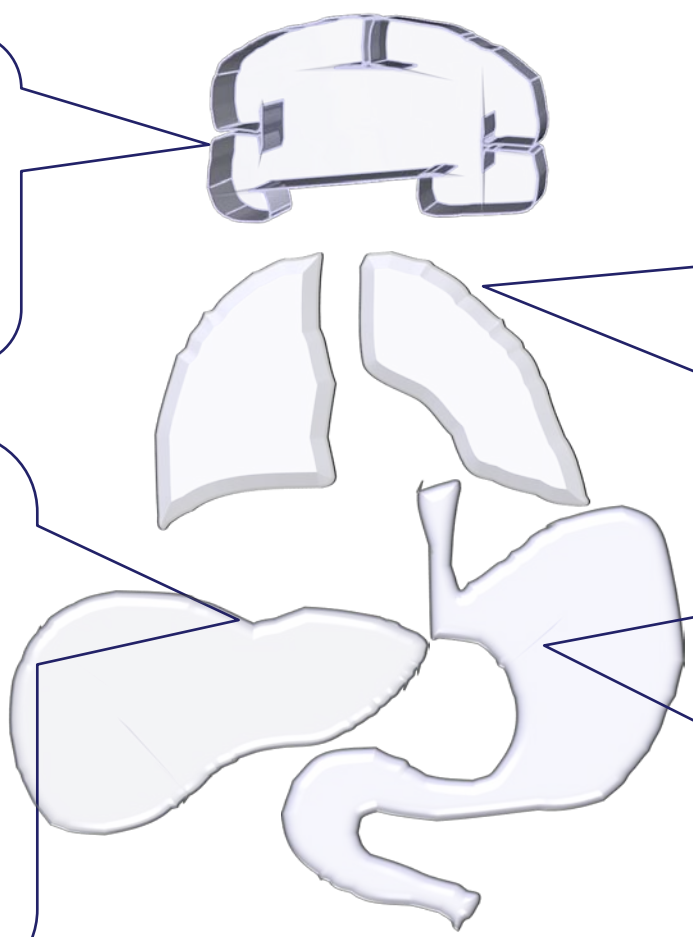
Alcohol is eliminated through  
breathing  
sweating  
urine  
feces  
ACETALDEHYDE is more toxic than alcohol when it accumulates.  
In the lung alveoli it evaporates and it is expired

## Metabolism (In the liver)

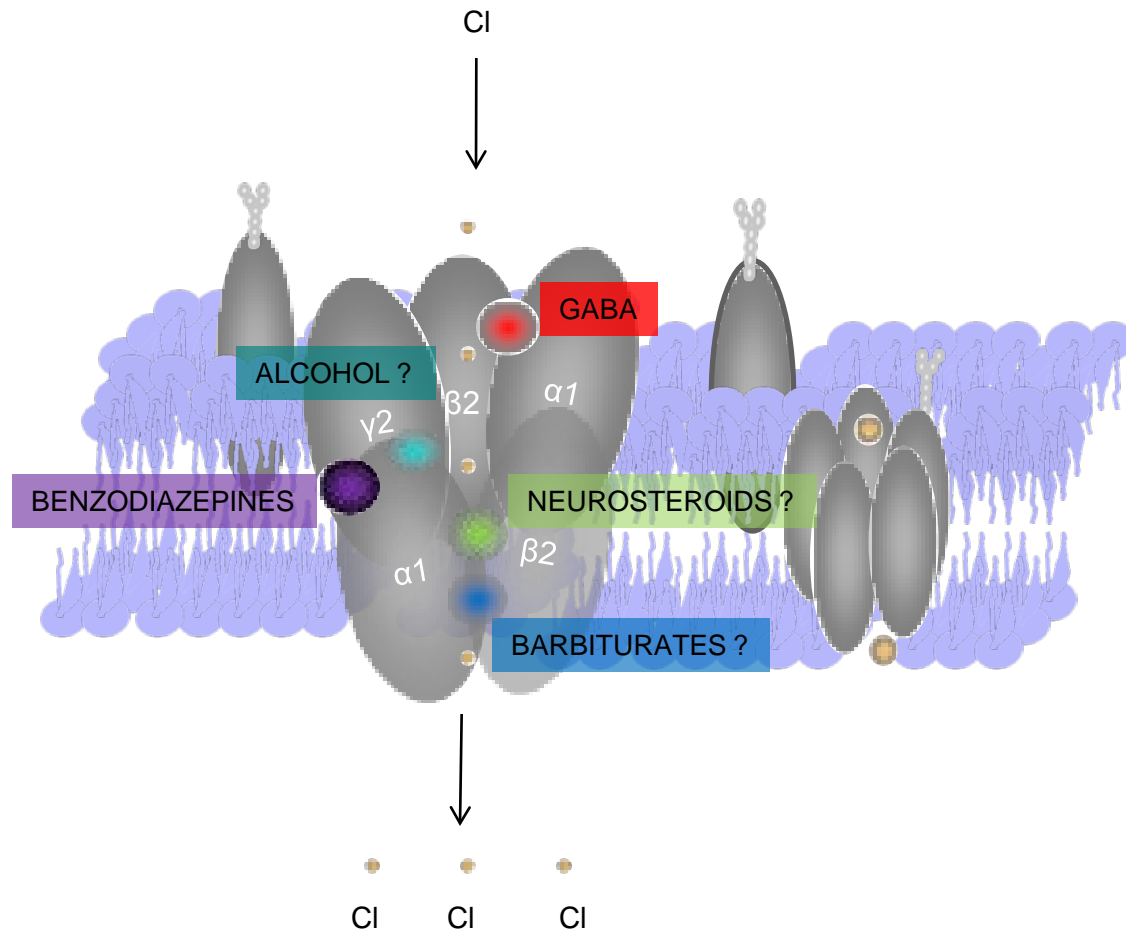


## ABSORPTION

mainly in the duodenum and jejunum  
In the stomach for carbonated drinks (champagne)  
Absorption is slower in the presence of food or if the beverage is highly concentrated in alcohol



# GABA A RECEPTOR

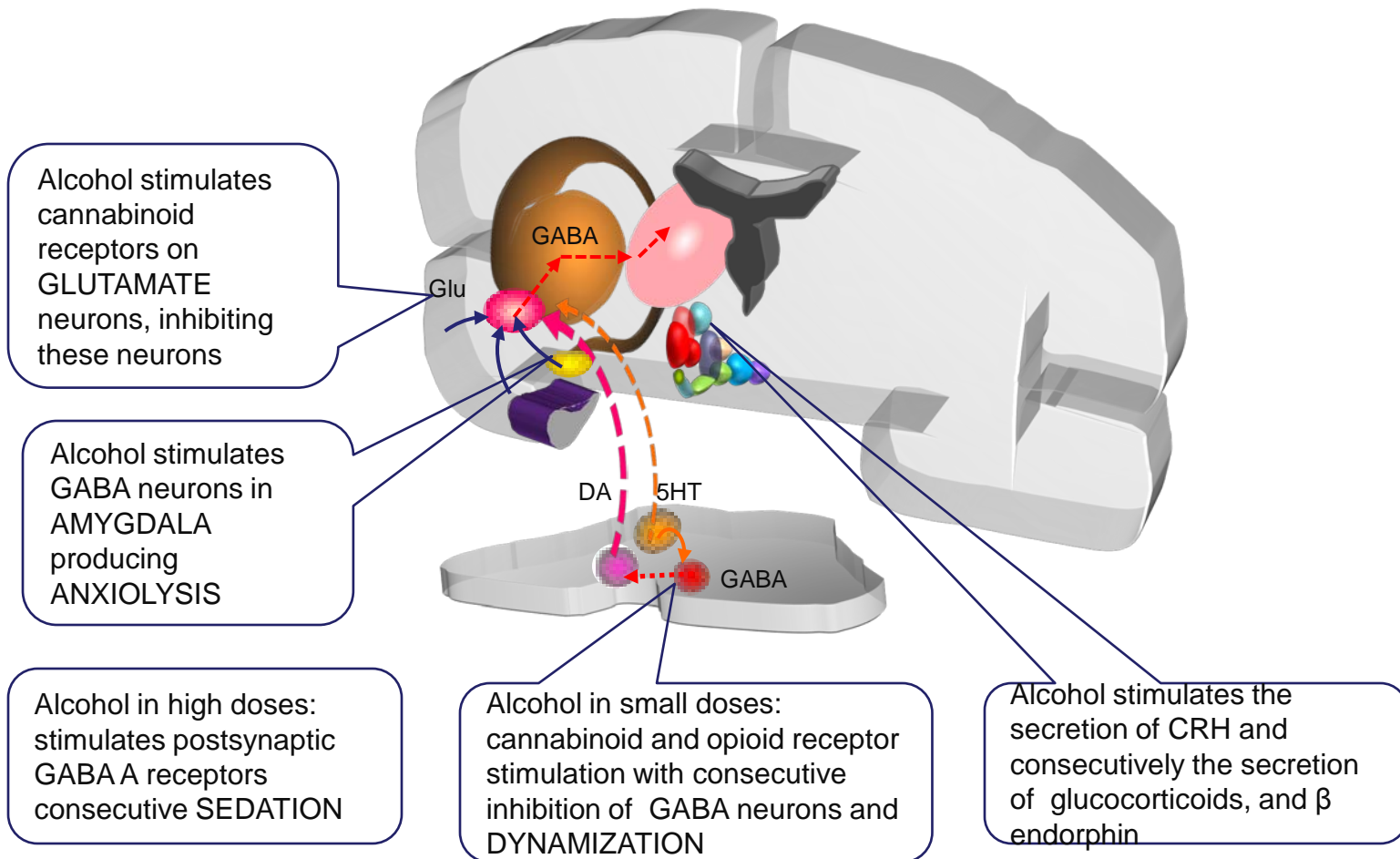


HYPERPOLARIZATION OF THE CELL (HYPOEXCITABILITY)

L. Del

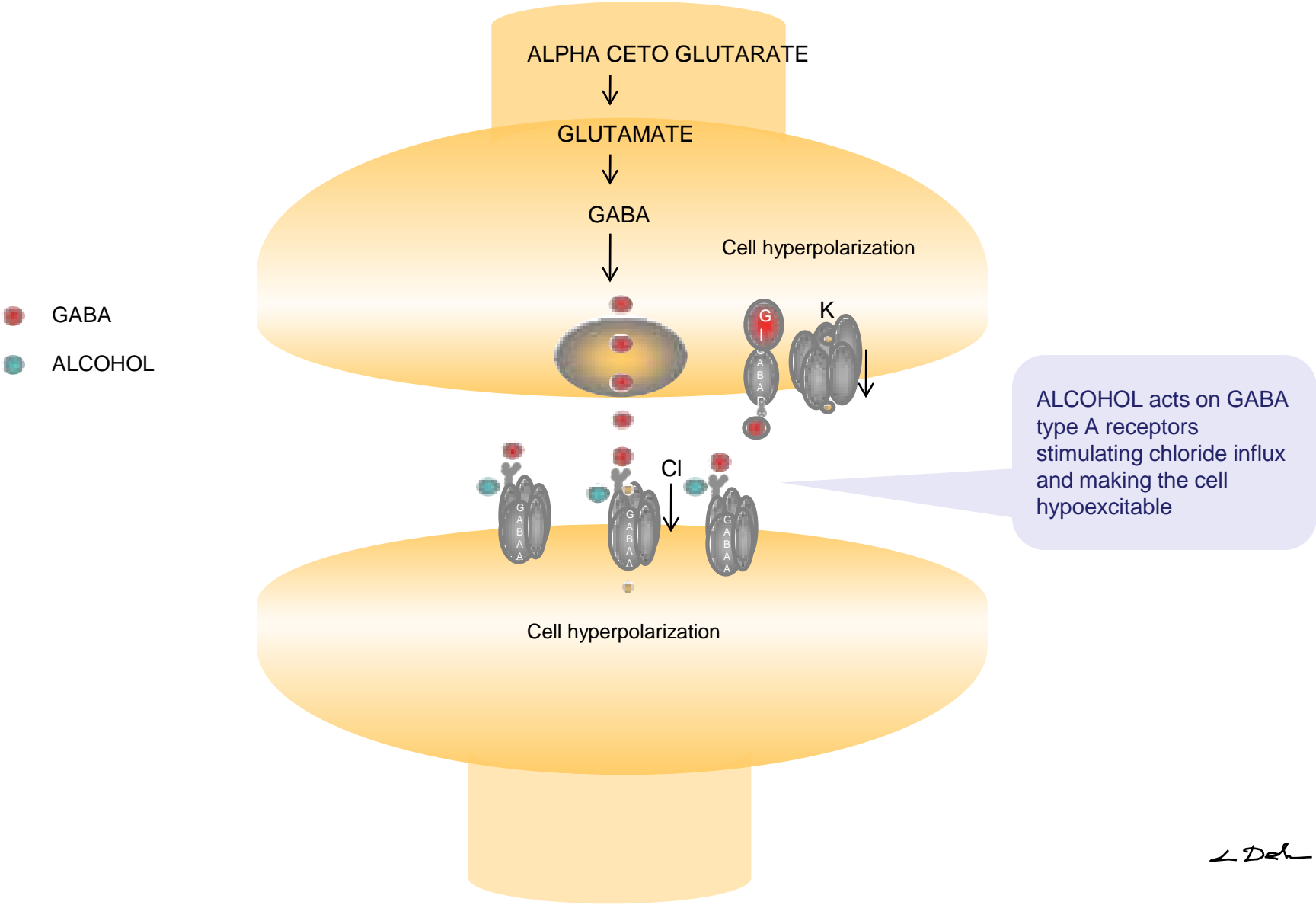


# ALCOHOL: MECHANISM OF ACTION



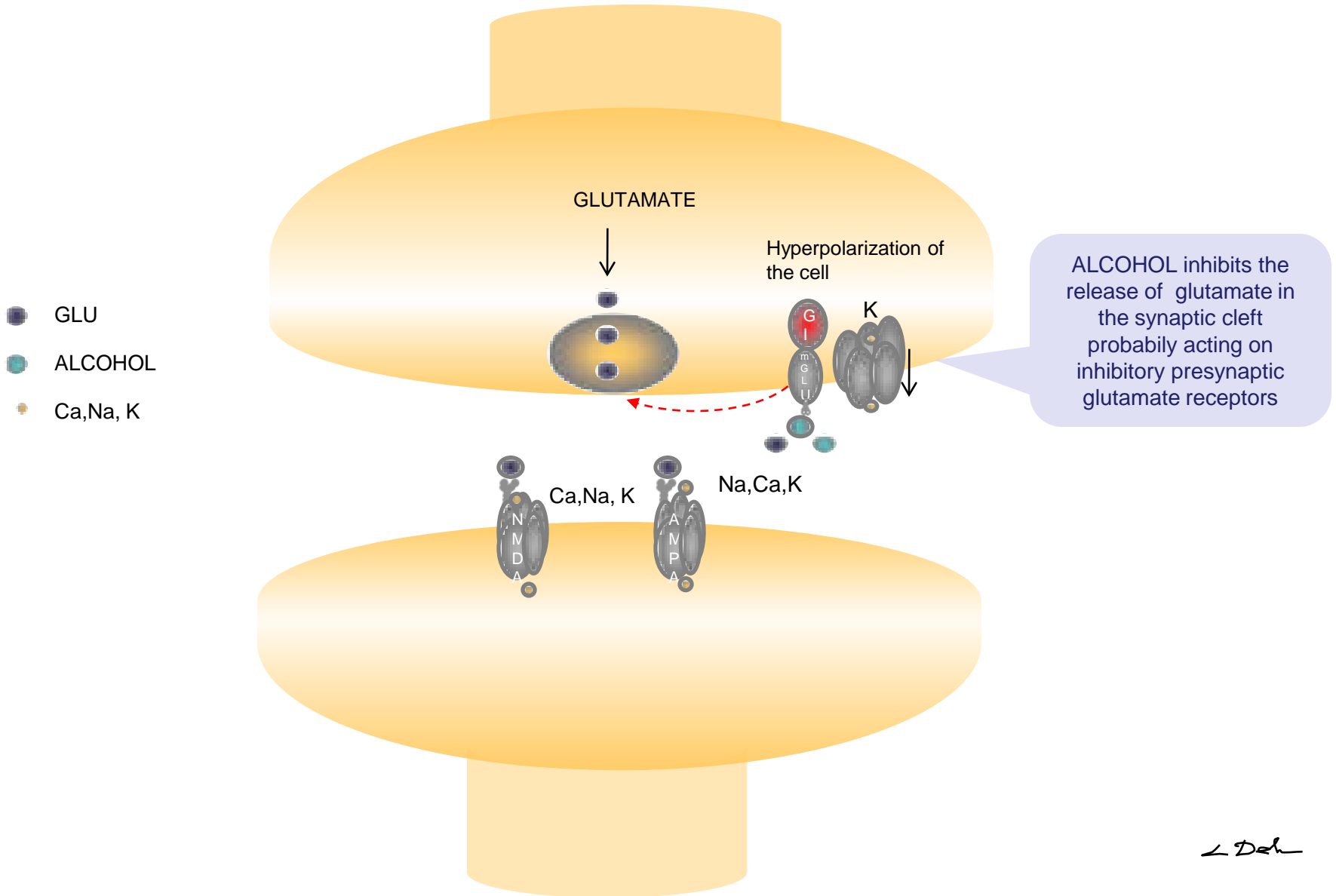
L. Del

# EFFECT OF ALCOHOL ON THE GABA NEURONS

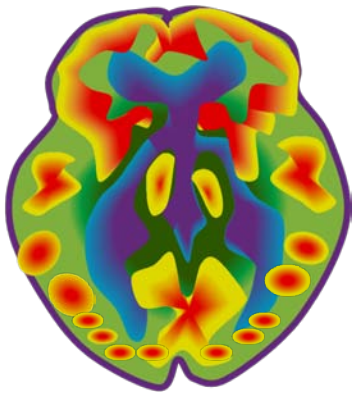


L. Del

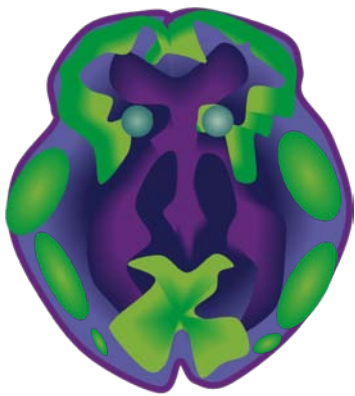
# EFFECTS OF ALCOHOL ON GLUTAMATE NEURONS



# PET IN ACUTE ALCOHOL INTOXICATION



Normal subject



Alcohol intoxicated subject

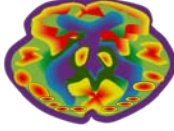
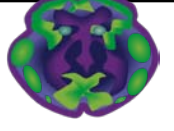
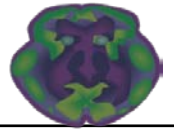
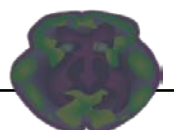
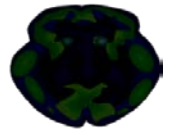


Increased metabolism

# ACUTE ALCOHOL INTOXICATION

May occur in:

- people who do not consume alcohol (accidental, occasional use)
- usual consumers
- addicts

	Blood alcohol 0,8‰	decreased lateral vision
	1,5‰	psychological disinhibition, logorrhea, euphoria
	2‰	difficult orientation, difficult speech, inebriated walk, clumpsy gestures
	2,5‰	confusion, atasia-abasia, sleep
	3-4‰	coma: hypotonia, reduction of reflexes, slow breathing, hypotension, hypothermia, death

# PATHOLOGICAL DRUNKENNESS

Occurs in a person with cerebral microlesions (often after head injury)



After small amounts of alcohol, a TWILIGHT STATE with great potential of AGGRESSION occurs, followed by LACUNAR AMNESIA of the episode

Used by antisocial/dissocial personalities to defend themselves in court

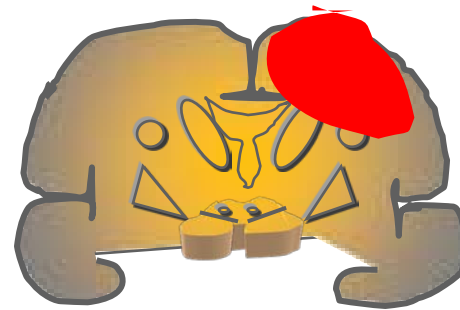
EEG: spikes in the temporal lobe

Challenge test

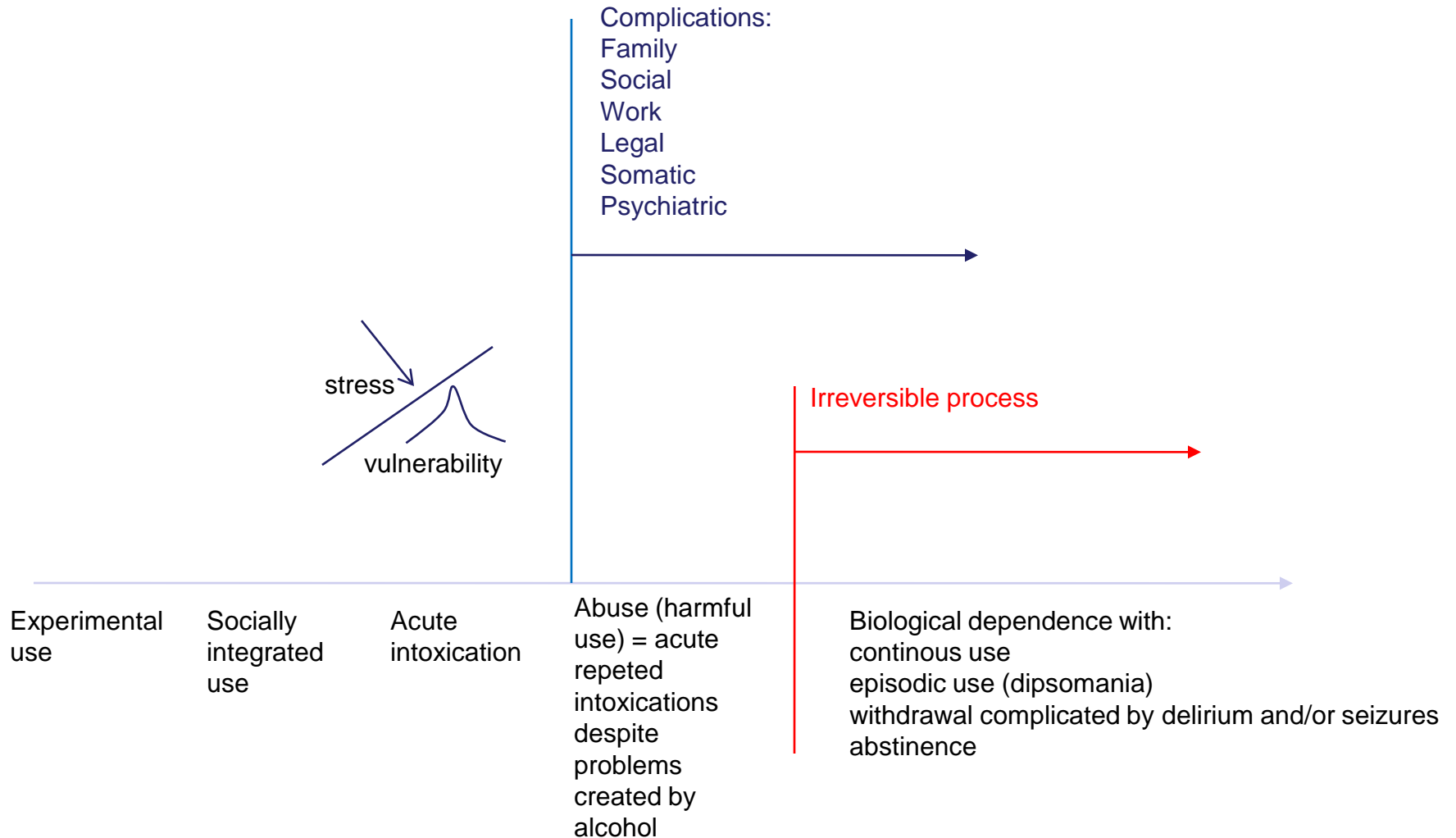
**INTERDICTION OF ALCOHOL INTAKE !**

# COMPLICATIONS OF ACUTE ALCOHOL INTOXICATION

- COMA
- HYPOTHERMIA
- SUBARAHNOID HEMATOMA



# ALCOHOL USE: EVOLUTION





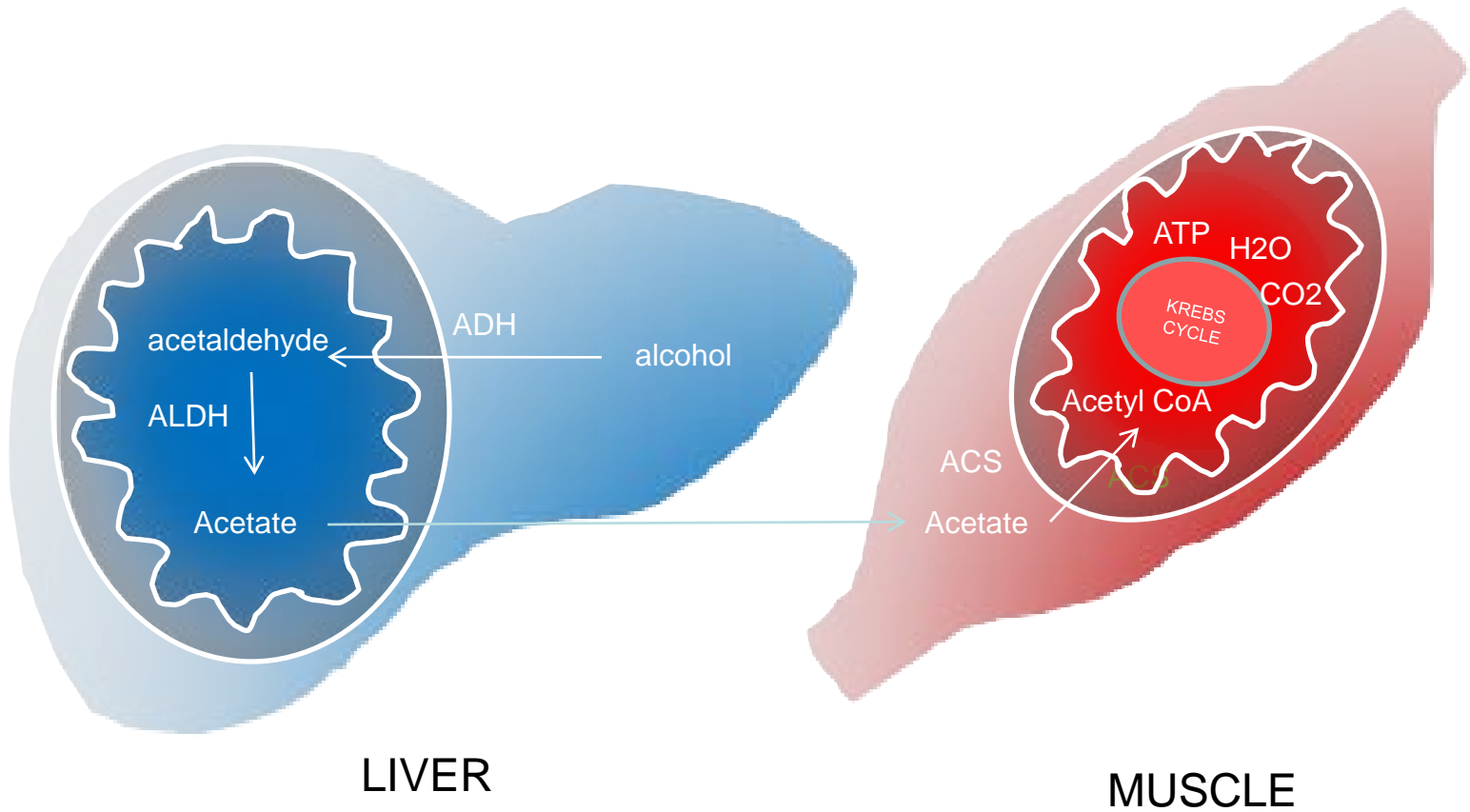
# ALCOHOLISM: ETIOPATHOGENESIS

- Genetic factors: multigenic
  - Twin twins: concordance rate in monozygotic twins compared to dizygotic twins
  - Family studies: history positive for depression also
  - Adoption studies: the effect of education (learning by imitation)
- Biochemical factors:
  - Acetaldehyde dehydrogenase deficiency: acetaldehyde side effects after alcohol intake (Chinese, Japanese population)
- Personologic vulnerability
  - dependent, anankastic, anxious-avoidant: are prone to develop develop anxiety, depression and secondary alcoholism
  - Emotionally unstable and antisocial/dissocial: impulsivity



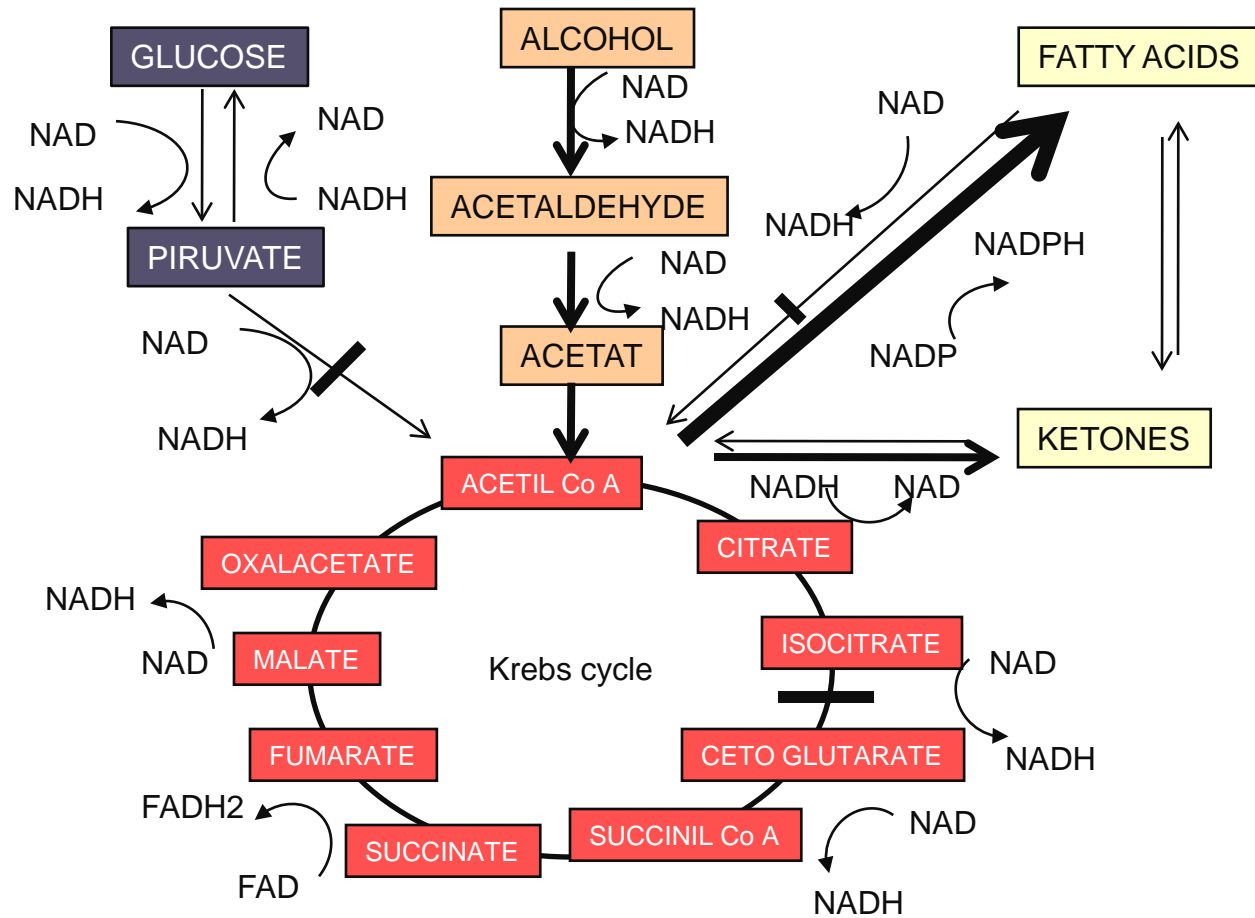
Carl Wernicke (1848-1905)

# ALCOHOL CATABOLISM



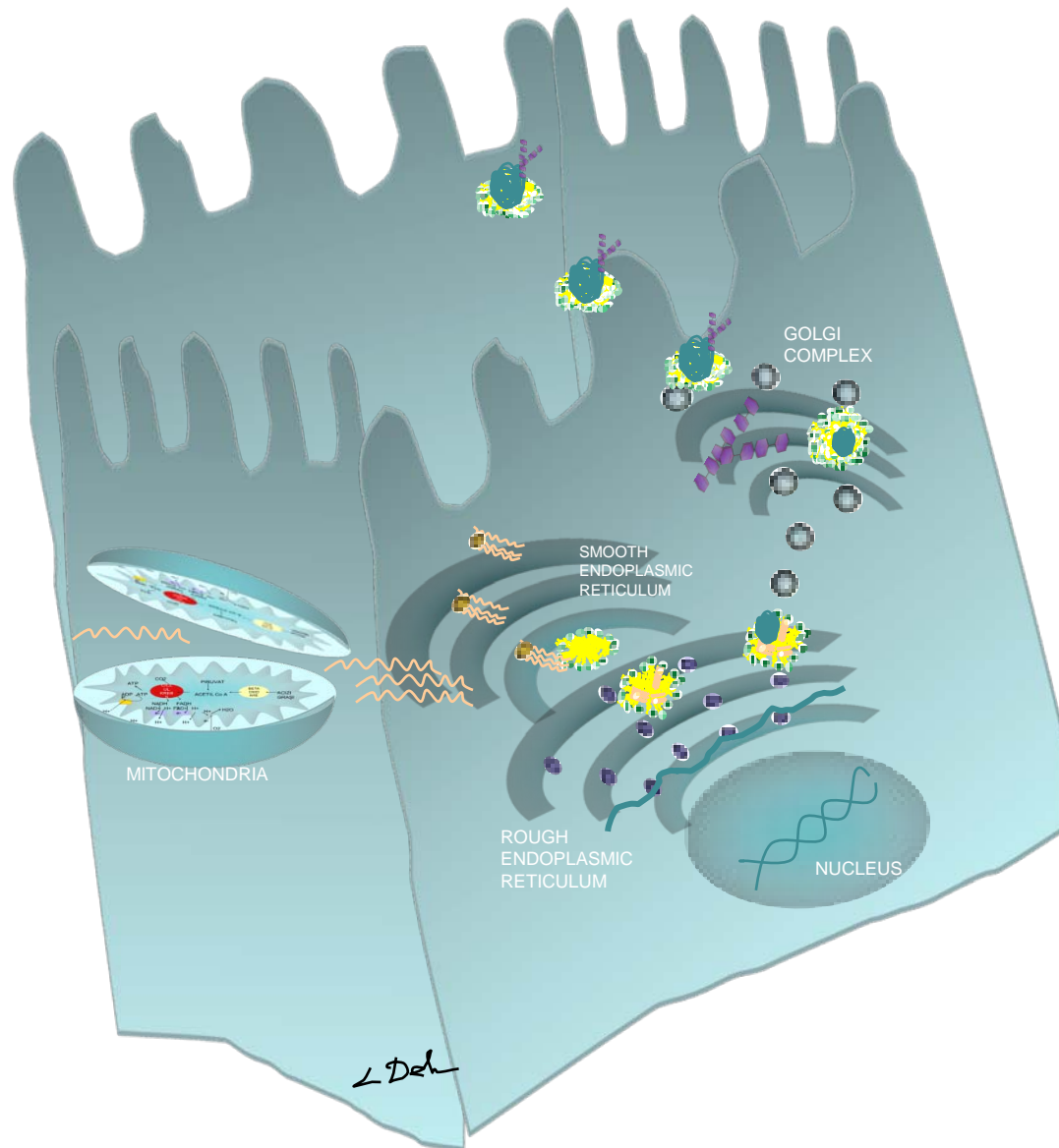
ADH alcohol dehydrogenase  
ALDH aldehyde dehydrogenase  
ACS: acetyl-CoA synthetase

# EFFECT OF CHRONIC ALCOHOLISM ON METABOLISM



Hydrogen atoms resulting from dehydrogenation deplete the stocks of NAD (NADH / NAD<sup>+</sup> ratio increased)  
 Metabolism will therefore be oriented towards synthesis of fatty acids, lipids and ketones which will accumulate in hepatocytes

# EFFECTS OF CHRONIC ALCOHOLISM ON LIPID METABOLISM

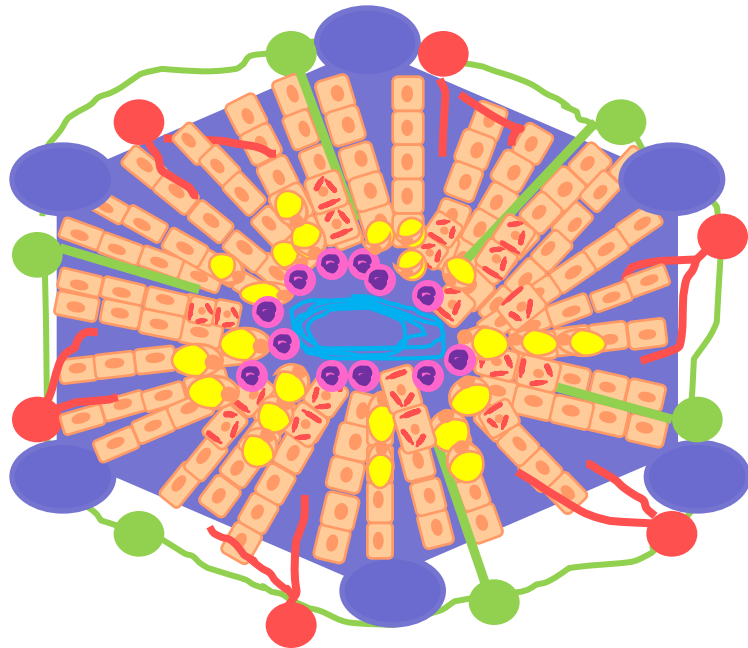



Decreased fatty acid oxidation


Increased synthesis of triglycerides

- Glycosylated lipoprotein (VLDL)
- Lipoprotein
- Polysaccharide
- Phospholipid
- Triglyceride
- Fatty acid


# ALCOHOLIC HEPATITIS



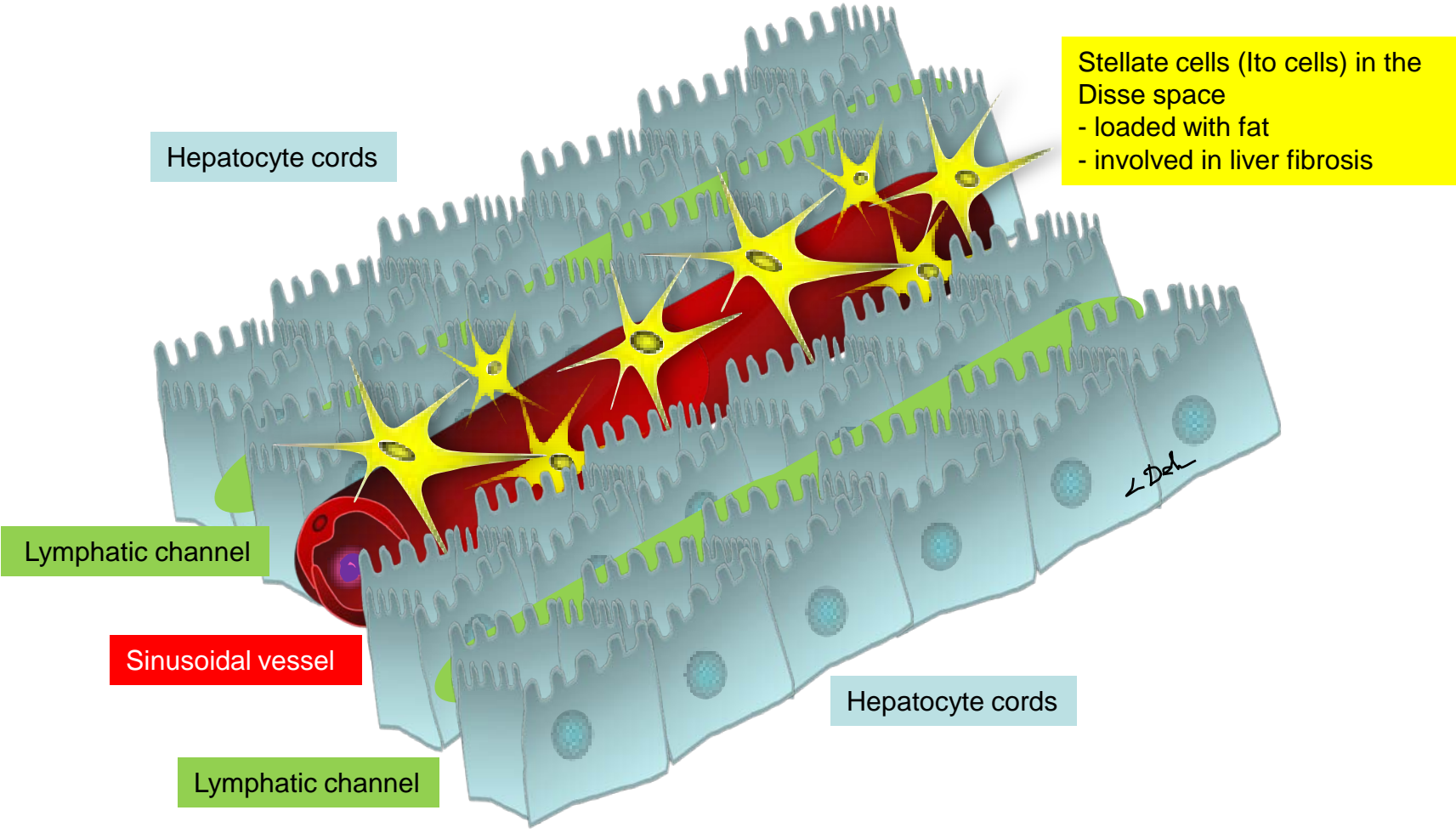
Accumulation of fat in hepatocytes (signet ring) 

Mallory bodies within hepatocytes 

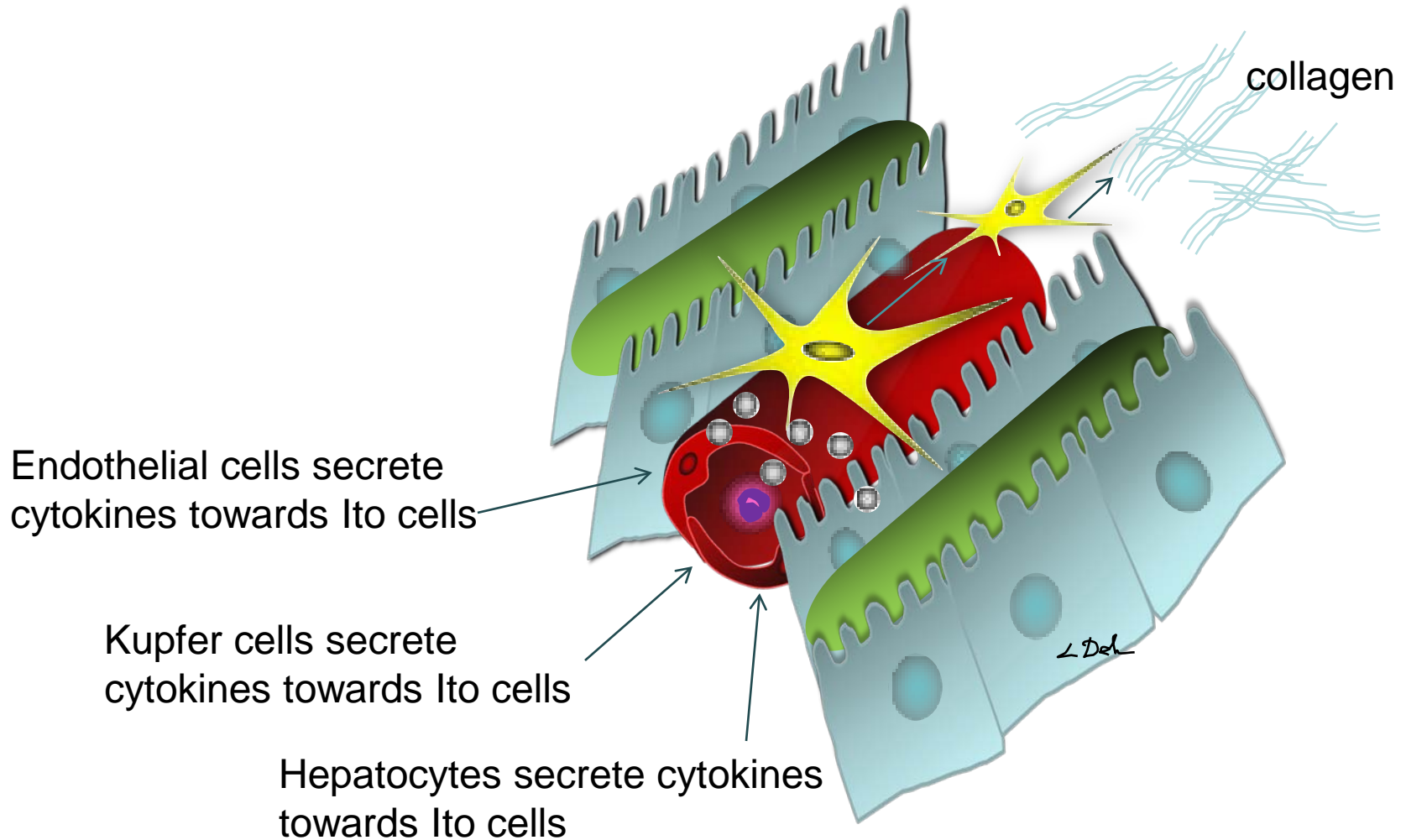
Neutrophils 

Macrophages (Kupfer cells) 

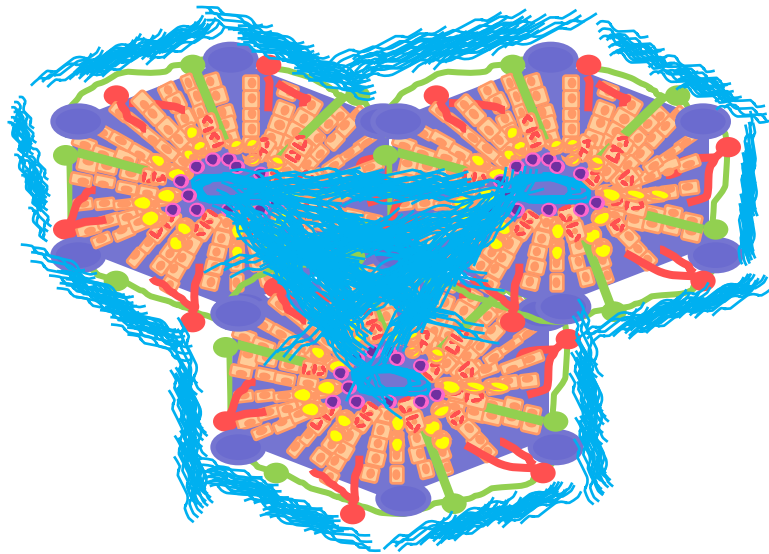
# SINUSOIDAL VESSELS, THE DISSE SPACE



# INFLAMMATION AND FIBROSIS



# ALCOHOL INDUCED CIRRHOSIS



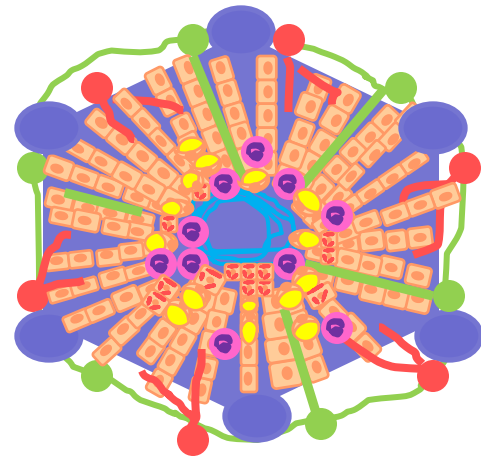
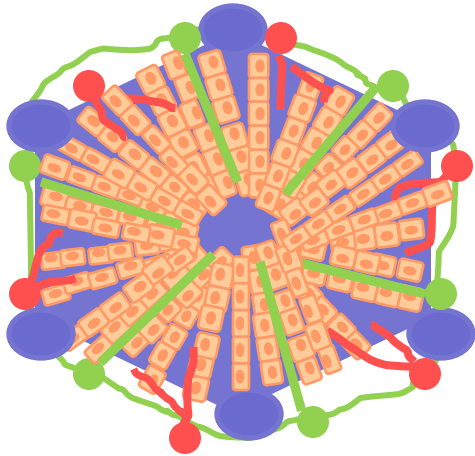
Fibrosis between the central veins: destruction of lobular architecture

Fibrosis around the central veins: portal hypertension

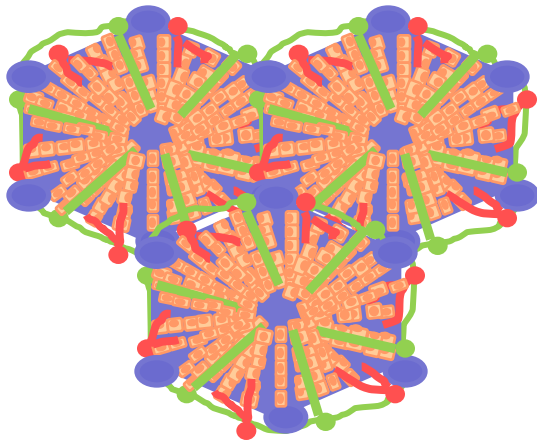
Periportal fibrosis



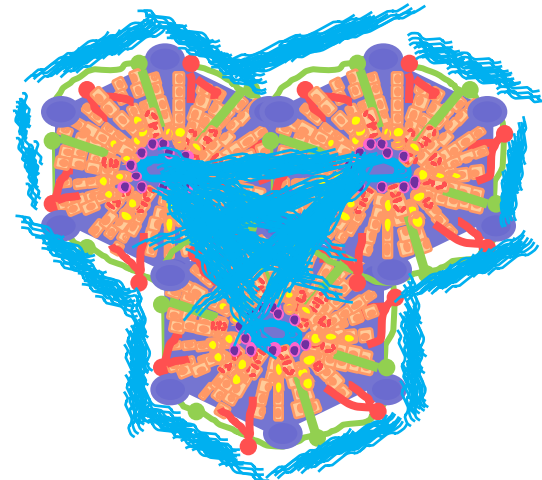
# CHRONIC ALCOHOLISM: HISTOPATHOLOGY



ALCOHOL HEPATITIS

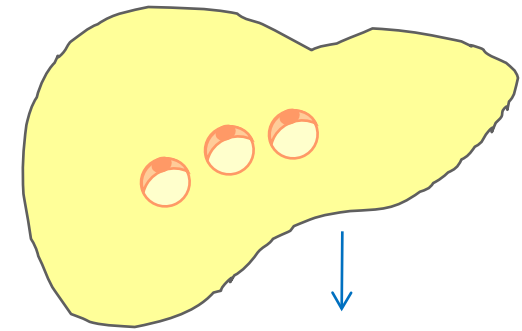
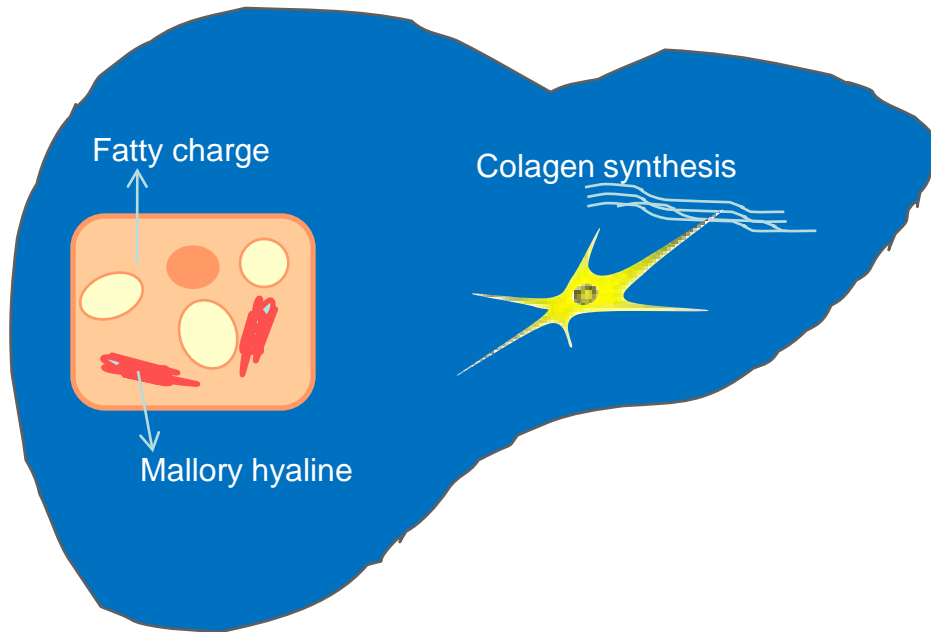


NORMAL

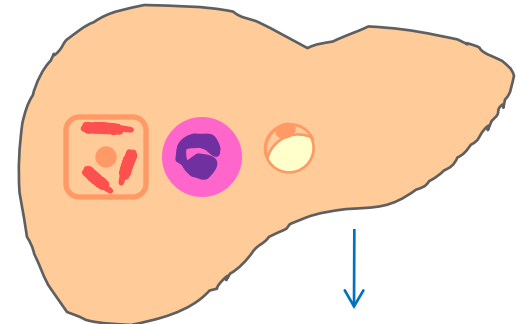


CIRRHOSIS

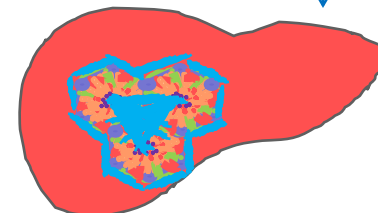
# CHRONIC ALCOHOLISM: LIVER



STEATOSIS

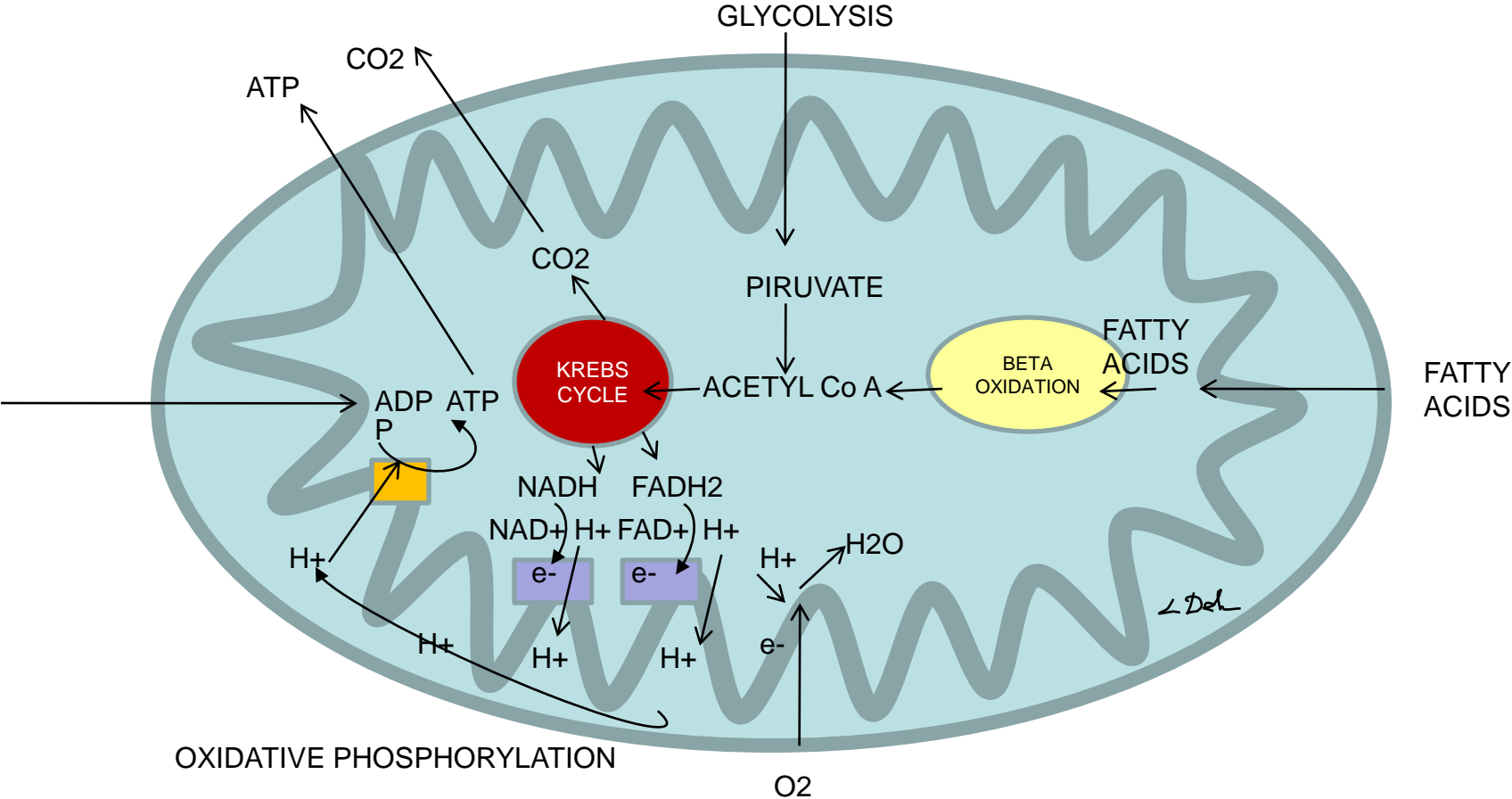


ALCOHOLIC  
HEPATITIS

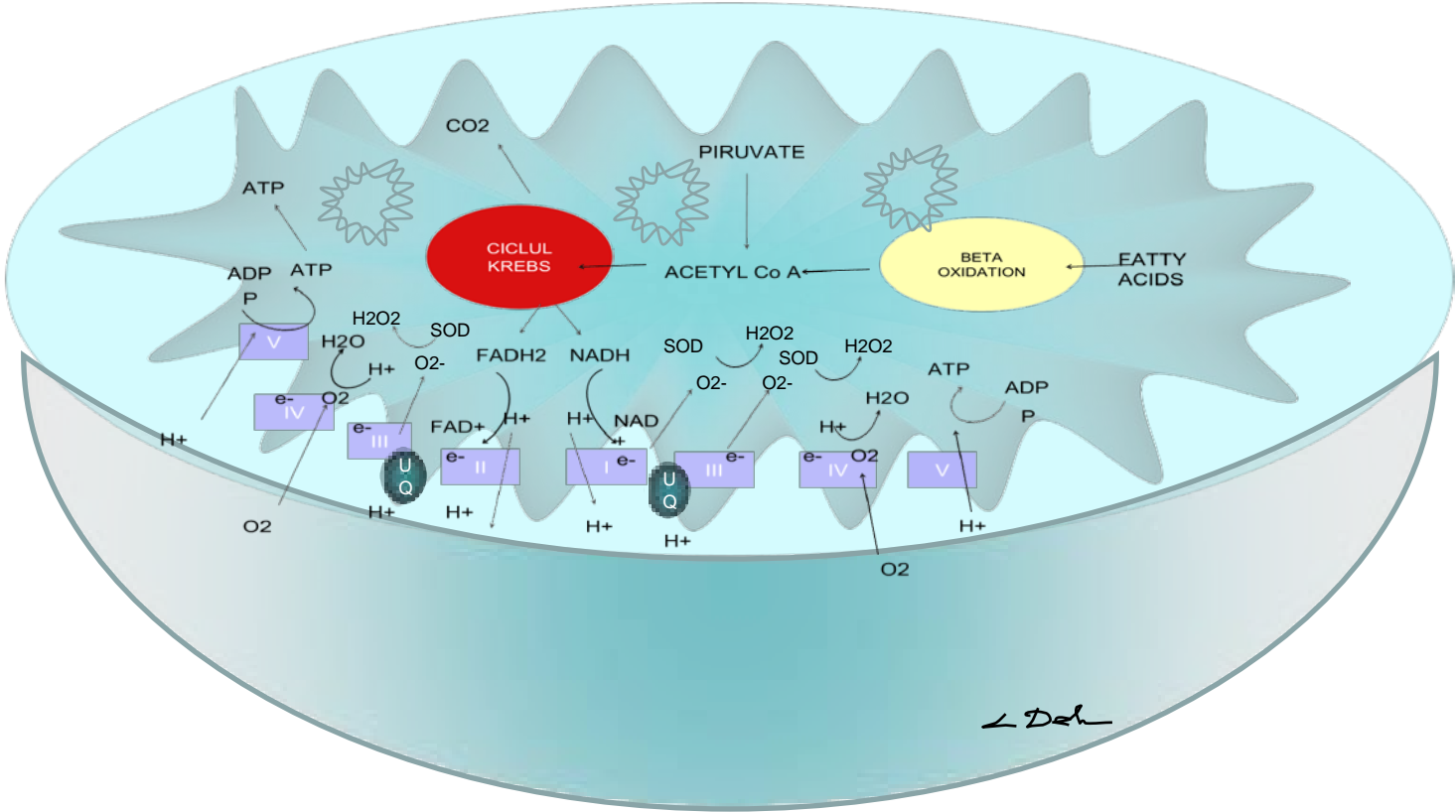


CIRRHOSIS

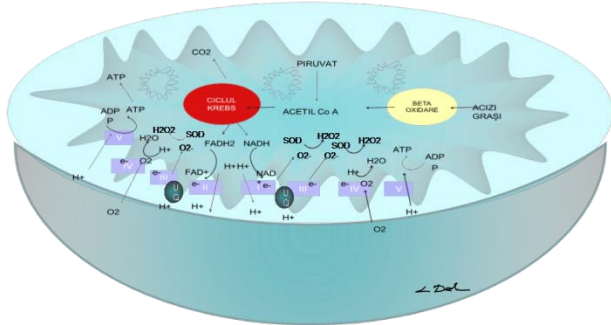
# KREBS CYCLE AND OXIDATIVE PHOSPHORYLATION



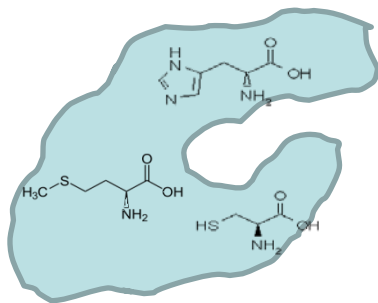
# KREBS CYCLE AND OXIDATIVE PHOSPHORYLATION



# ROS (REACTIVE OXYGEN SPECIES) SUPEROXIDE $O_2^-$ , PEROXIDE $H_2O_2$ , HYDROXIL $OH^-$

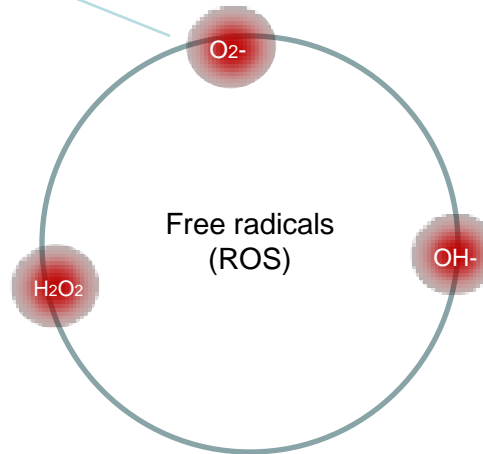
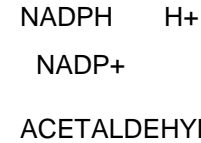
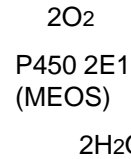


Metalloproteins (containing Fe and S) are enzymes (reductase and hydrogenase) involved in the oxidative phosphorylation in mitochondria (complexes I, II, III contain Fe and S)



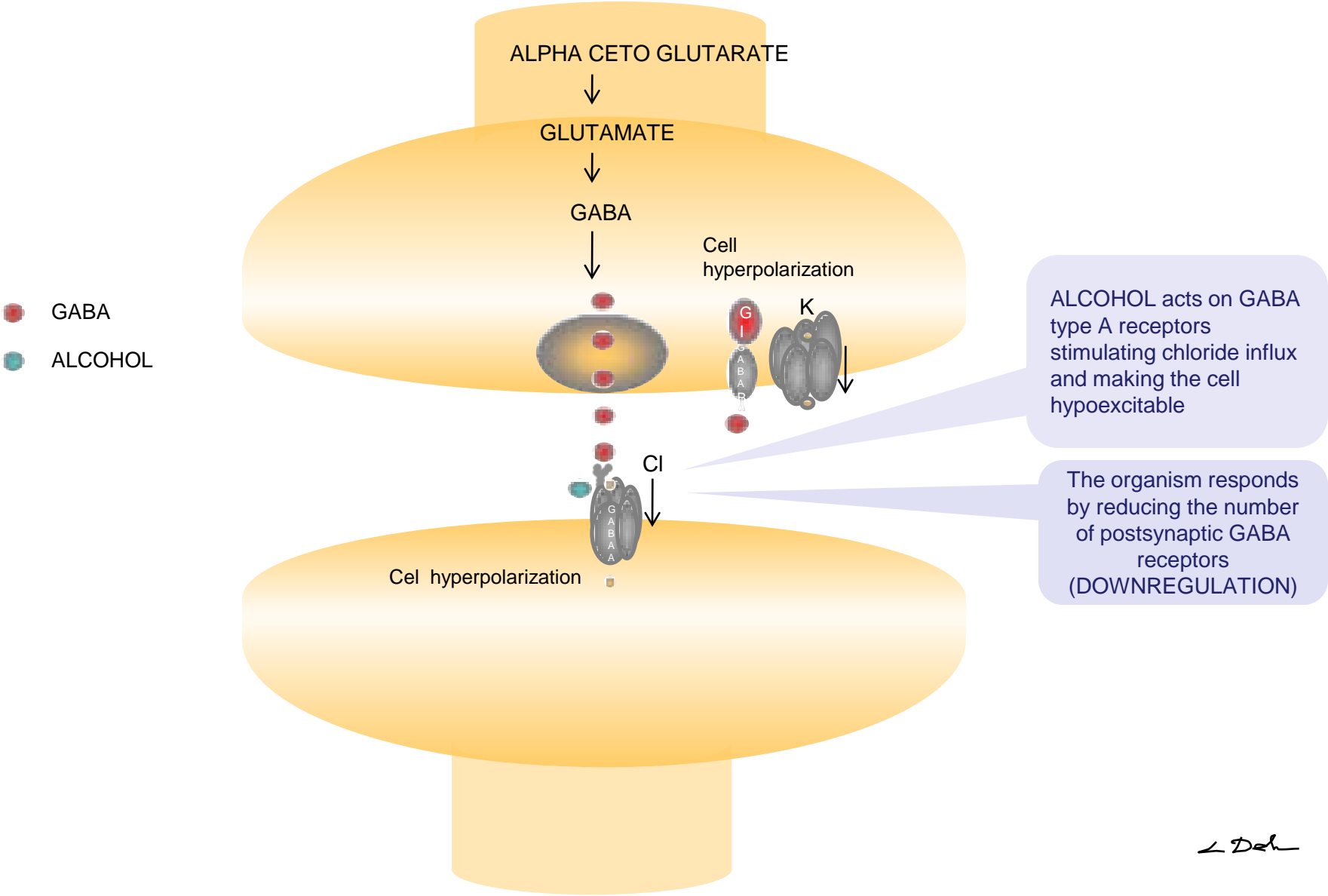
Enzyme inactivation by conformational changes due to the oxidation of amino acids: cysteine, methionine, histidine

ALCOHOL in excess

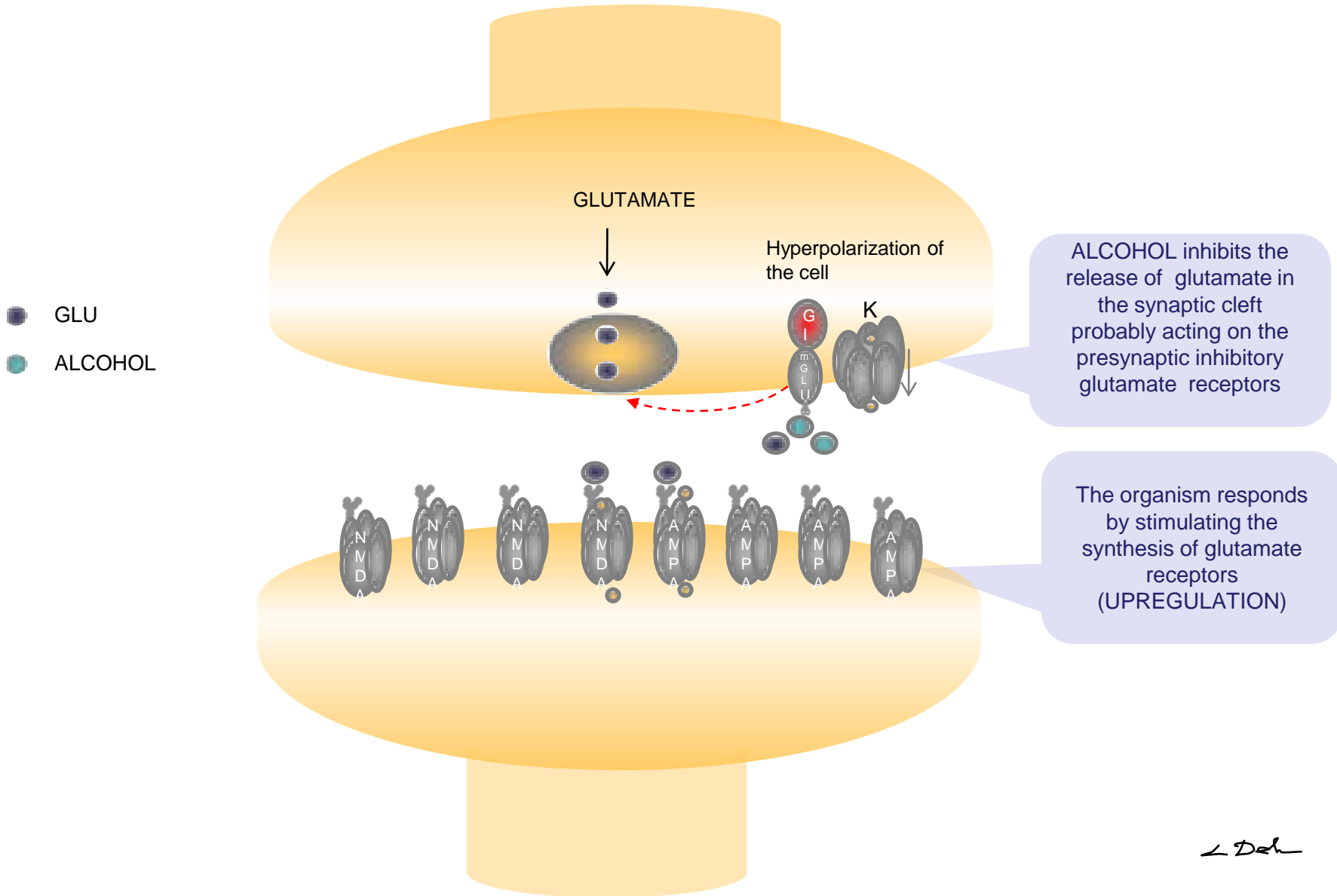


Peroxidation of membrane phospholipids

# EFFECT OF CHRONIC ALCOHOLISM ON GABA NEURONS

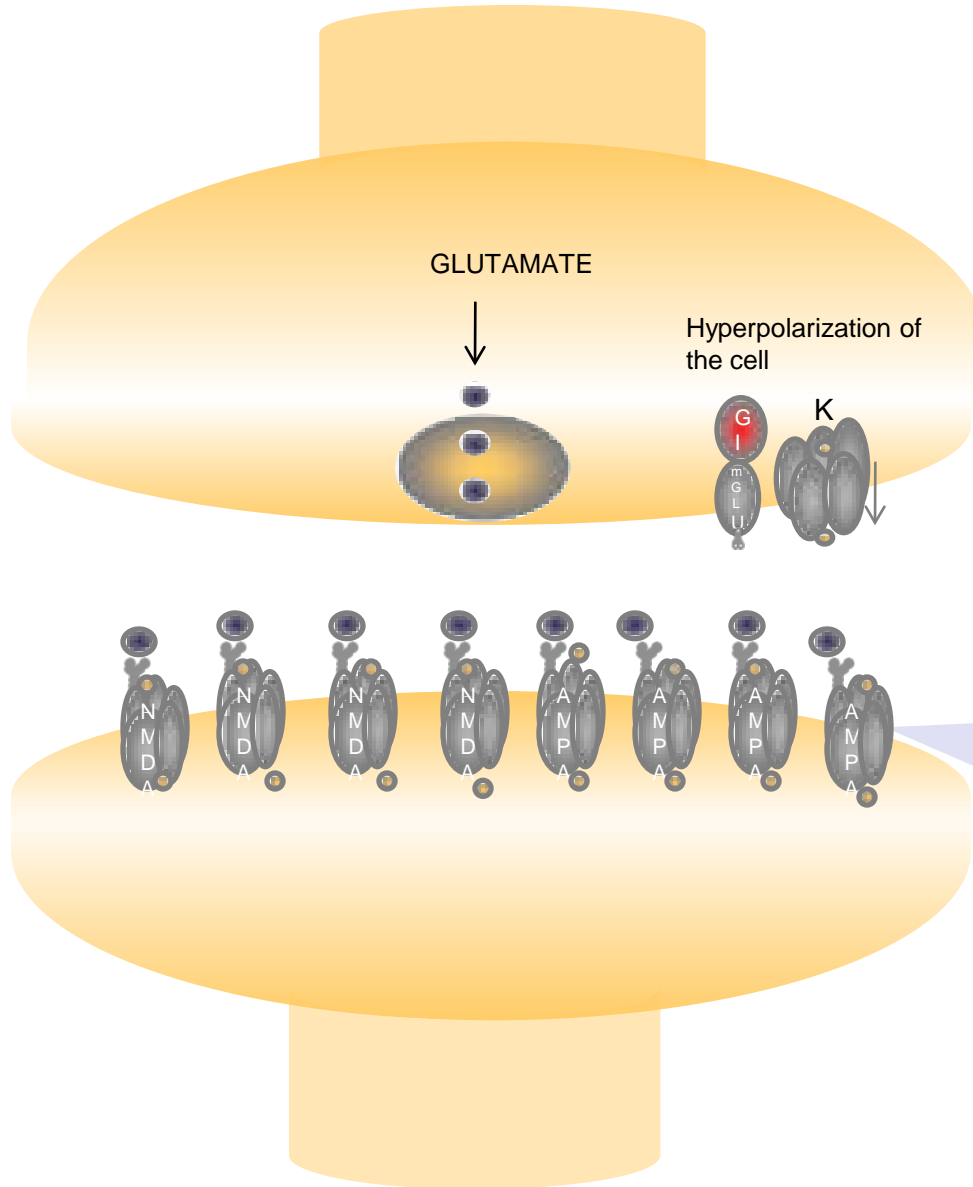


# EFFECT OF CHRONIC ALCOHOLISM ON GLUTAMATE NEURONS



# ALCOHOL WITHDRAWAL

- GLU
- ALCOHOL



Disinhibition of glutamate by the absence of alcohol leads to glutamatergic hyperactivity with neuronal stimulation



# ALCOHOL DEPENDENCE

Alcohol dependence may be

- PRIMARY when there is no another preexisting mental disorder
- SECONDARY to
  - anxiety
  - depression
  - cyclothymia
  - personality disorders

# ALCOHOL DEPENDENCE

1. The person feels a strong desire / compulsion to use alcohol
2. The person uses alcohol in larger amounts and for longer periods than he intends. A stereotyped drug use.
3. The person spends a great deal of time to obtain and use alcohol
4. The person uses alcohol despite harmful effects of alcohol on health
5. The person uses alcohol despite the problems caused in the family, or at work
6. The person wishes and makes several unsuccessful attempts to stop drinking
7. Tolerance to alcohol occurs, which at first increases and then decreases after liver damage (tolerance: the body gets used to alcohol and, in order to experience the same effects, one must consume a higher dose)
8. When the person suddenly stops drinking, withdrawal reaction occurs
9. After detoxification and abstinence, resumption of alcohol use reinstates the previous pattern of drug use

Data that should  
be analysed in  
case of  
ALCOHOL  
ADDICTION

TYPE OF USE: initially intermittent use (dipsomania)  
with progressive reduction of free interval and  
continuous use

DURATION OF USE: the patient reaches biological  
dependence state after several years of daily use

QUANTITY patient consumes daily a few hundred  
grams of pure alcohol

TYPE OF BEVERAGE:

- beer: 4 grams of pure alcohol
- wine: 12 grams of pure alcohol
- vodka, brandy, whiskey: 40 grams of pure alcohol

INTAKE:

- morning: to reverse the effects of the night  
withdrawal
- alone or in a group of chronic alcohol users

# ALCOHOL DEPENDENCE

Daily consumption quantity is assessed in terms of units (DRINKS) consisting of the equivalent of a glass of wine, 30 g beer, 20 g of concentrated beverages

Safe drinking less than 21 units per week in men and 14 units per week in women



# COMPLICATIONS OF CHRONIC ALCOHOLISM

## SOMATIC

Neoplasms: oral, esophageal, liver

Gastrointestinal: Mallory-Weiss syndrome, gastritis / ulcer, hepatic steatosis, alcoholic hepatitis, cirrhosis, acute and chronic pancreatitis, enteritis with malabsorption of vitamins (B1, B6)

Cardio-vascular : dilated cardiomyopathy

Blood: macrocytic anemia

## NEUROLOGICAL:

tremor, cerebellar symptoms,

Wernicke encephalopathy, Korsakoff's Syndrome, polyneuropathy (B1 deficiency)

seizures

## PSYCHIATRIC:

intoxication at lower doses of alcohol (by decrease of tolerance)

confusional state by withdrawal or intoxication

sexual dysfunction

REM sleep disorders affecting memory

dementia

depression with suicidal risk

anxiety

systematized delusions of jealousy

Wernicke halucinosis (schizophrenia-like symptoms)

personality changes (theft, lying, antisocial)

# SOCIAL PROBLEMS OF CHRONIC ALCOHOLISM

- Reduced participation in social life outside home and workplace. The social network is reduced progressively by job loss and family rejection.
- The individual focuses his social relations on other alcoholic partners. They are not, however, a real social support network
- Dissocial behaviors: conflicts, physical aggression, crimes, accidents at work or driving, suicide, murder
- Decreased work performance, absenteeism, professional demotion, change and loss of job
- Disruption of family life: family conflict, rejection from family and spouse - divorce
- Isolated existence, with one or two supporters, along with biological and psychological degradation, frequent hospitalizations
- Homelessness, vagrancy

# ALCOHOL WITHDRAWAL

Sudden stop of  
alcohol use

48 h

72 h

## PREDELIRIUM

Mental:

- restlessness
- anxiety, panic attacks
- insomnia
- inability to do something productive

Somatic

- sweating
- tremor

Sometimes  
inaugural seizures

## DELIRIUM TREMENS

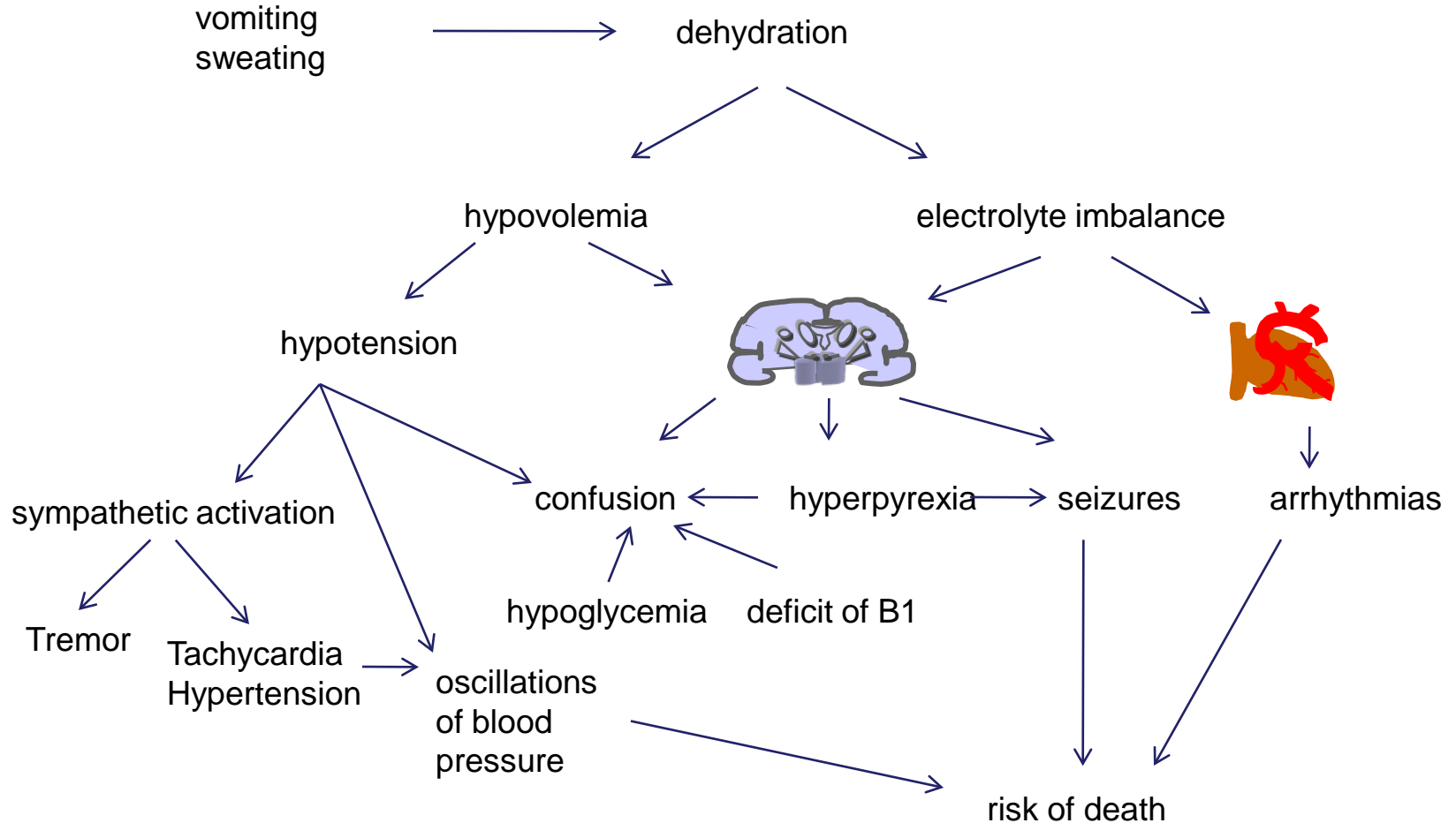
Mental:

- Confusional state: reduction of attention + temporo-spatial-situational disorientation, false recognitions
- Incoherent thinking with chaotic speech, hectic and chaotic behavior
- Predominantly visual and tactile hallucinations (small animals that crawl on the body), but also panoramic scenes (confused oneiric state)

Somatic:

- vomiting, sweating, dehydration with oscillations of blood pressure, hyperpyrexia, seizures, arrhythmias, tachycardia, tremor

# ALCOHOL WITHDRAWAL





# TREATMENT OF ALCOHOL WITHDRAWAL

HYDROELECTROLYTIC AND CALORIC REBALANCING orally or iv infusion (3-4 l/day)

VITAMINS: B1, B6

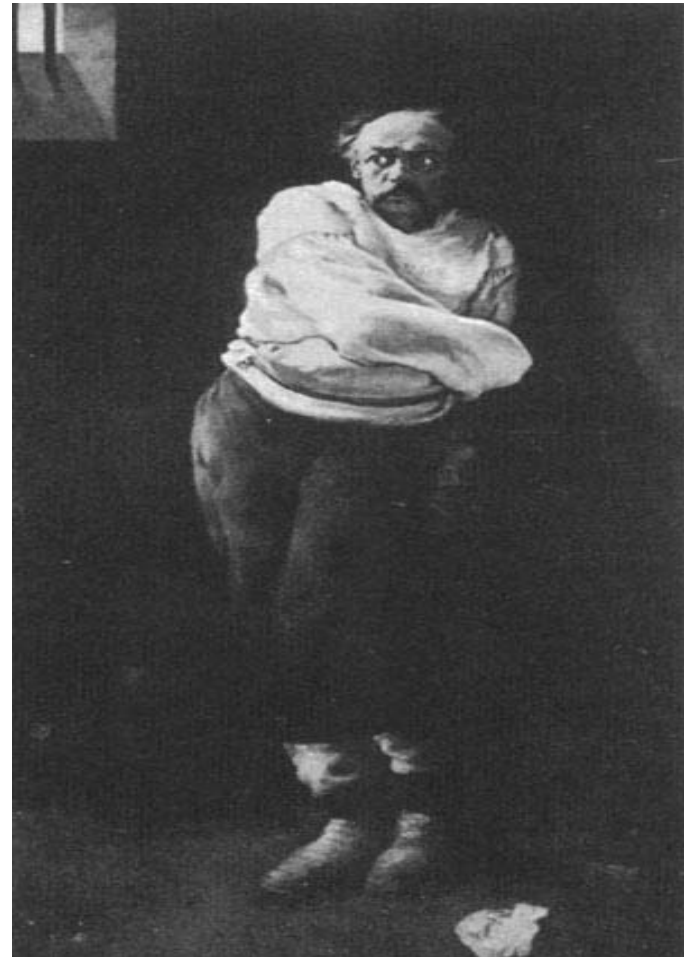
ANXIOLYTICS: to reduce anxiety: lorazepam, oxazepam, meprobamate (avoid the liver metabolism), or treat psychomotor agitation: diazepam im

ANTIPSYCHOTICS: if psychomotor agitation and hallucinations (tiapride, haloperidol)

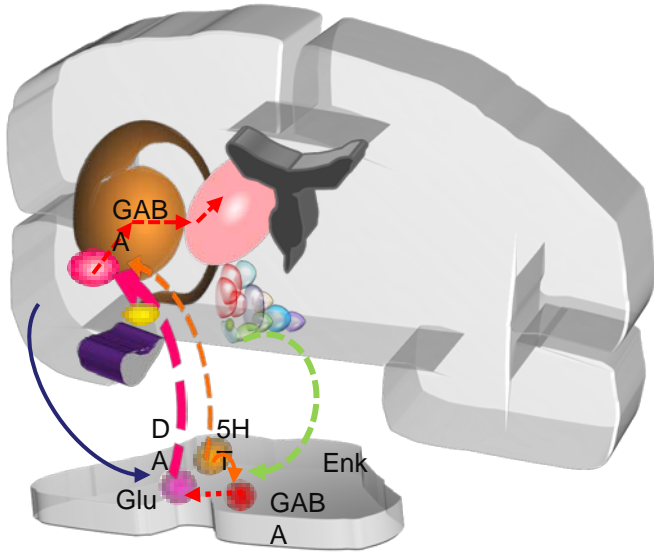
ANTICONVULSANTS to prevent convulsions (carbamazepine)

AVOID medication with hypotensive effect due to the risk of collapse

Mortality: up to 5%



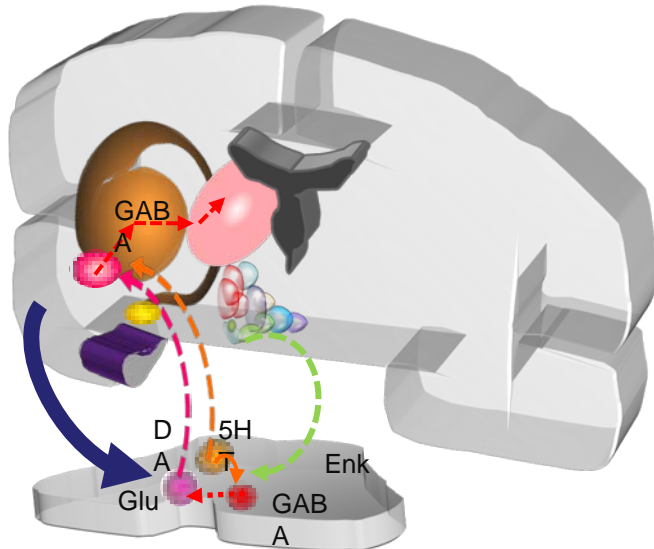
# MEDICATION USED IN THE TREATMENT OF CHRONIC ALCOHOLISM



## DURING ALCOHOL USE

**ALCOHOL + NALTREXONE:** treatment aimed to block the euphoric effects of alcohol by inhibiting opioid receptors with naltrexone

**ALCOHOL + DISULFIRAM:** aversive treatment (aimed at alcohol negative conditioning): blocking acetaldehyde dehydrogenase by disulfiram will cause headache, vomiting, flush (antabuse reaction)

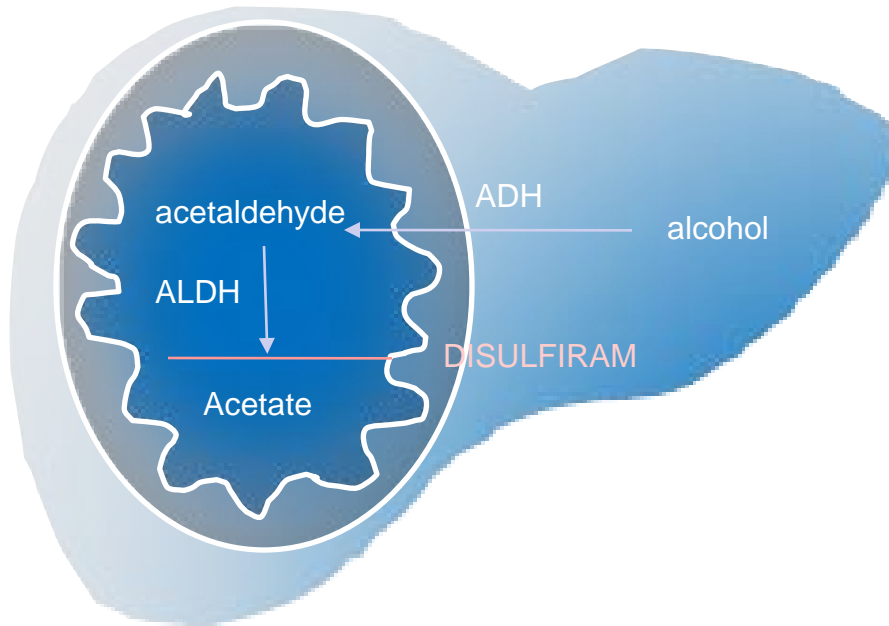


## DURING ALCOHOL WITHDRAWAL:

**ACAMPROSATE:** inhibits Glu and stimulates GABA as a replacement therapy in alcohol withdrawal

*L. Del*

# DISULFIRAM TREATMENT



## ALCOOL + DISULFIRAM:

Used for negative conditioning: blocking acetaldehyde dehydrogenase by disulfiram will cause headache, vomiting, flush (antabuse reaction)

RISK ↑  
-----  
BENEFITS ↓

# ALCOHOL AS A SOLUTION

- Alcohol is a BAD solution, but QUICK and CHEAP for individual problems:
  - hedonic behavior intended to obtain pleasure for individuals who cannot obtain it through hobbies
  - sleep refuge in face of problems (depression, anxiety)
- Search the problem underlying alcohol misuse !

# THERAPEUTIC INTERVENTIONS

Medications: Drugs which don't affect the liver function

- treatment of psychiatric complications or premorbid conditions:

Anxiolytics: oxazepam, lorazepam

Antidepressants: tianeptine, milnacipran

- treatment of somatic, neurological complications

Psychotherapy

- Individual: logotherapy (finding a sense in life, finding other solutions to problems)

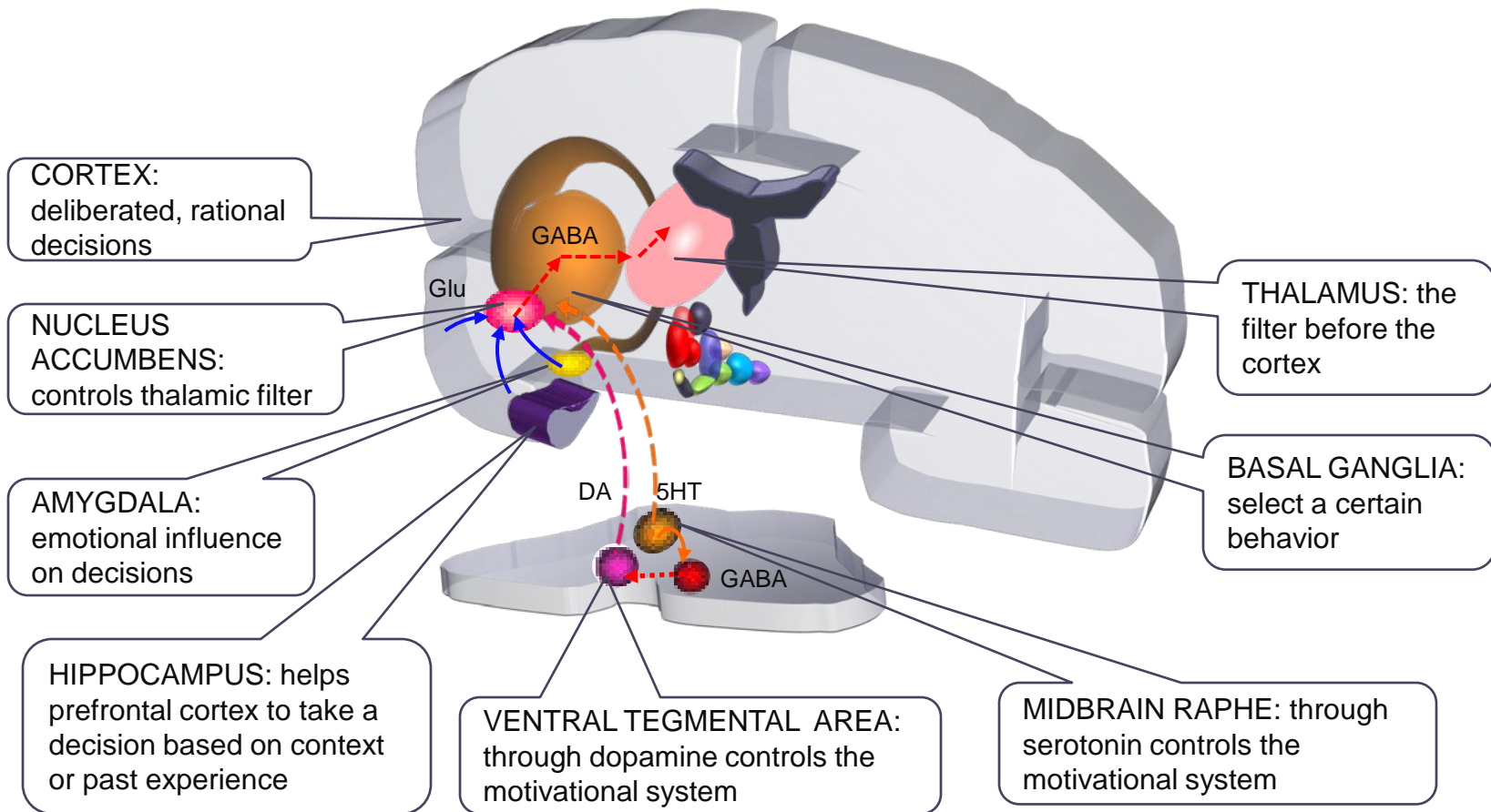
- Group Therapy: Alcoholics Anonymous - ABSTINENCE ! (“**For an alcoholic a glass is too much, and a thousand are not enough**”)

- Family Therapy: improving communication within the family, identifying sequences of violence escalation to prevent physical abuse

# OTHER ADDICTIONS

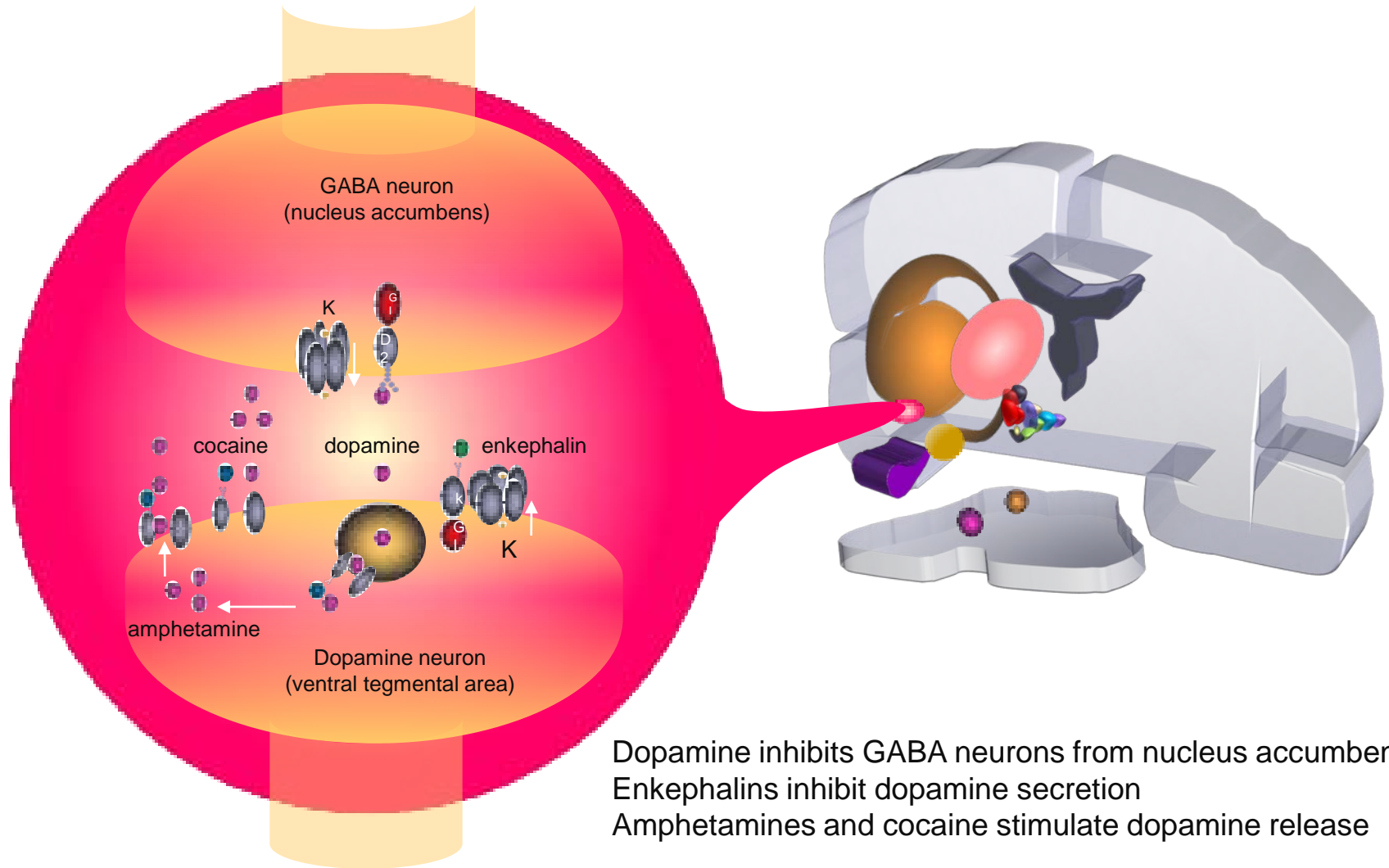


# THE MOTIVATIONAL SYSTEM: STRUCTURES



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# NUCLEUS ACCUMBENS

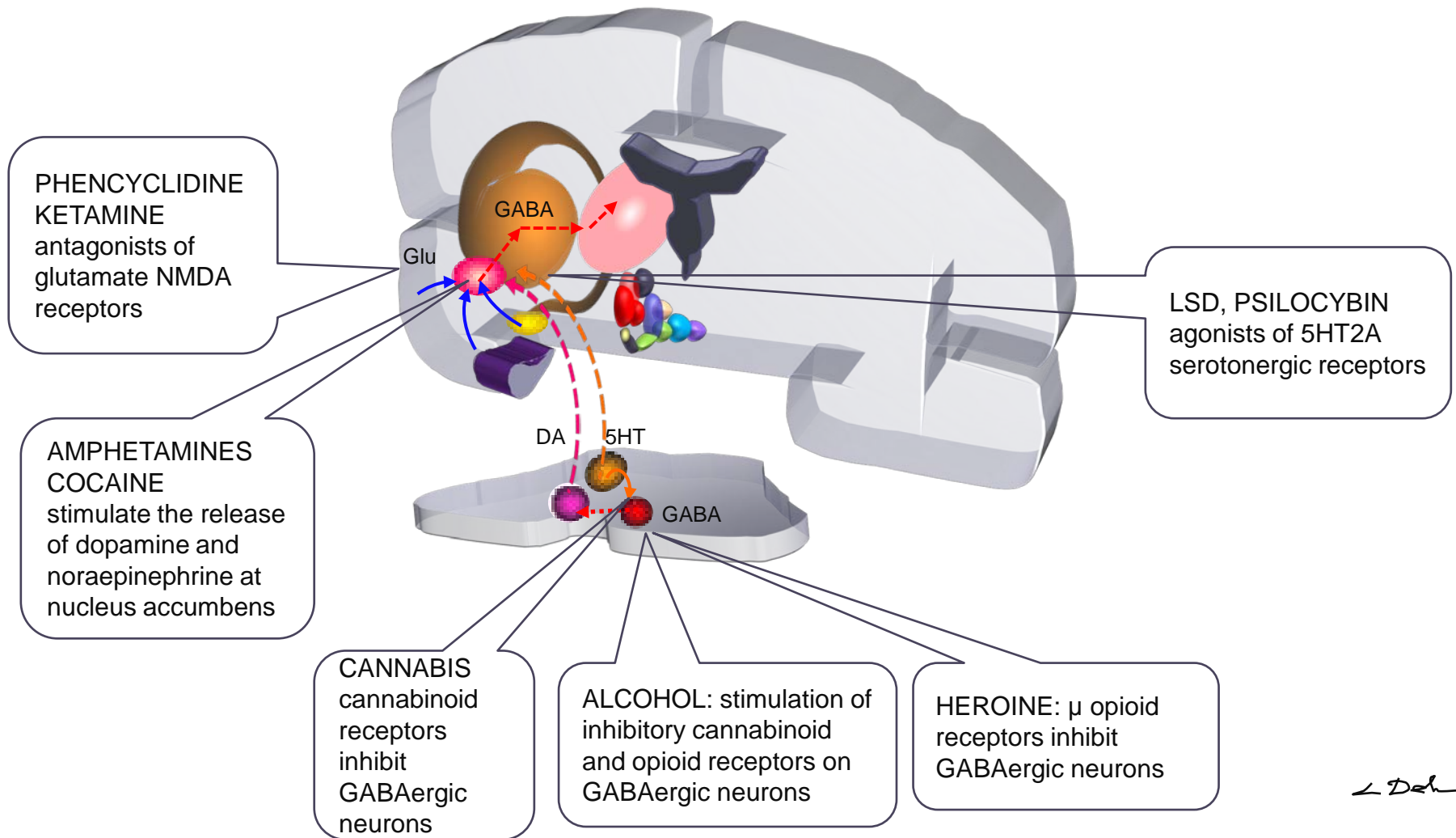


Dopamine inhibits GABA neurons from nucleus accumbens  
Enkephalins inhibit dopamine secretion  
Amphetamines and cocaine stimulate dopamine release

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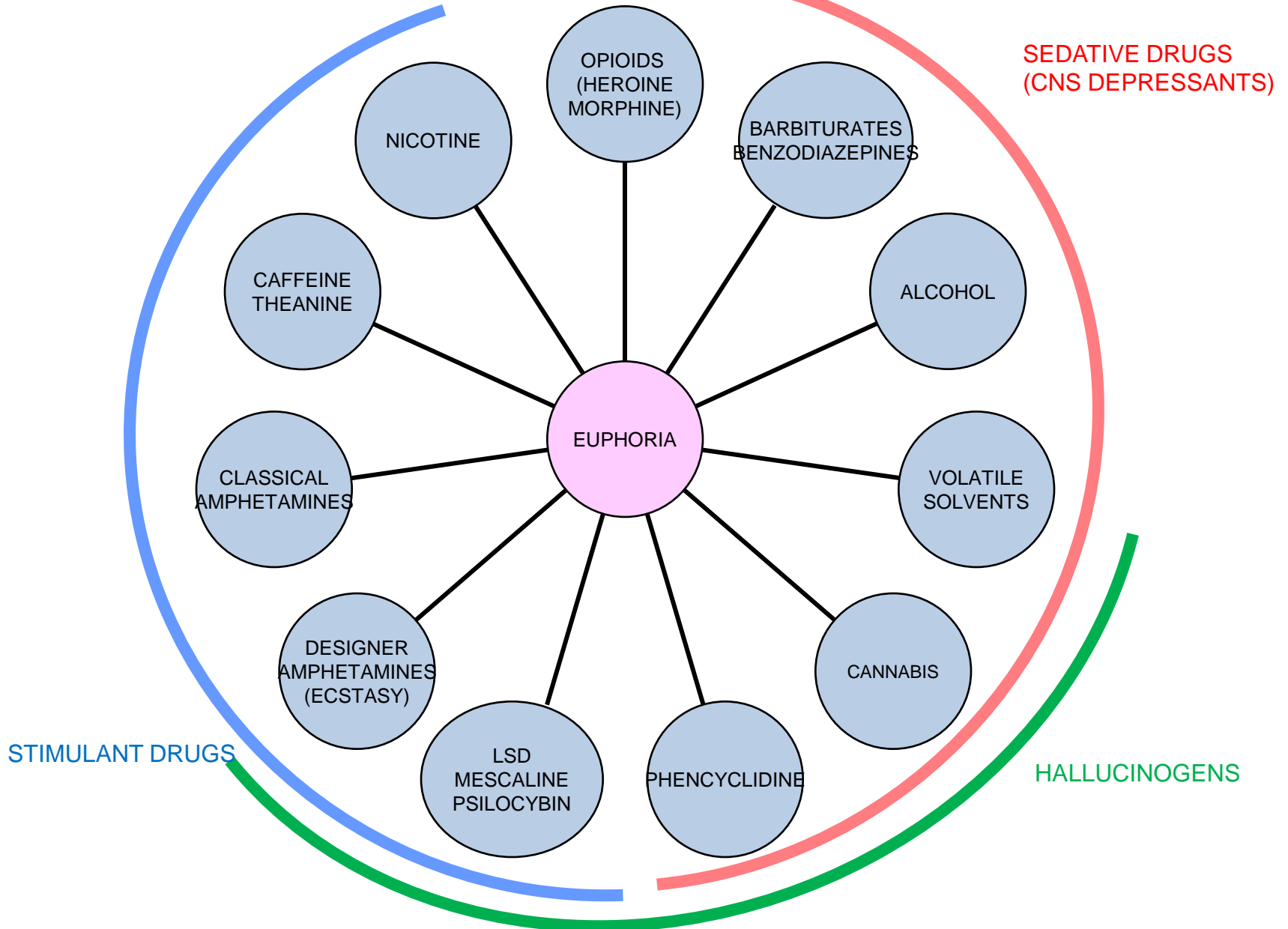




# DRUGS AND THE MOTIVATIONAL SYSTEM



L. Del

# DRUGS



 DYNORPHIN  
 DOPAMINE

**THE DEVELOPMENT TO DRUG TOLERANCE AND LONG TERM EFFECTS ON THE NEURONS:**  
 the body adapts to excessive dopamine stimulation through alterations of gene expression in the neurons of the meso-limbic and meso-cortical pathways

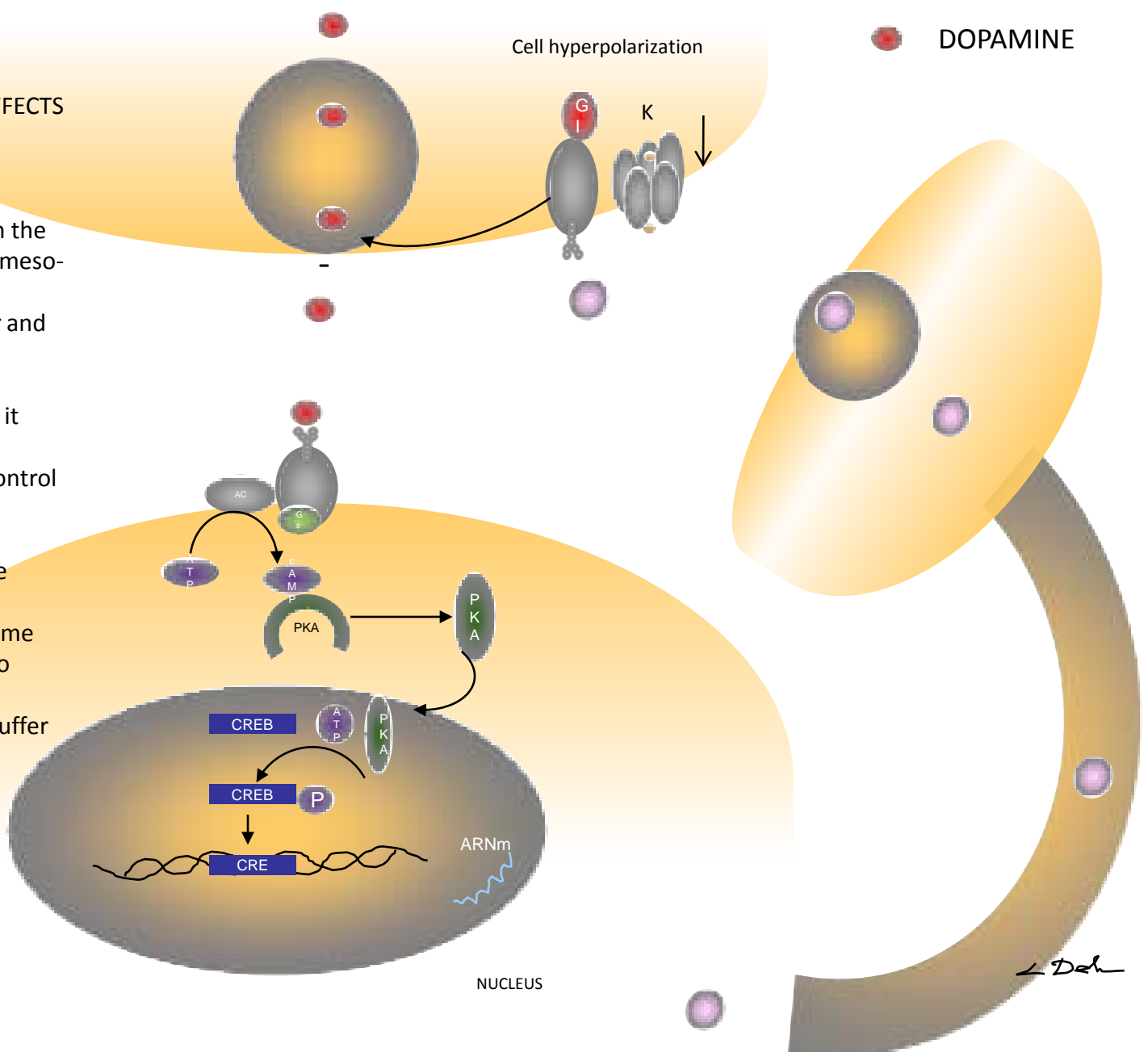
1. Dopamine acts on its receptor and stimulates the cAMP pathways  
 2. cAMP activates PKA.

3. PKA enters the nucleus where it phosphorylates CREB protein.  
 4. CREB protein binds to a CRE control element.

5. Protein (dynorphin) synthesis results. Dynorphin will inhibit the release of dopamine

6. In order too experience the same effects, the individual will have to increase the dose

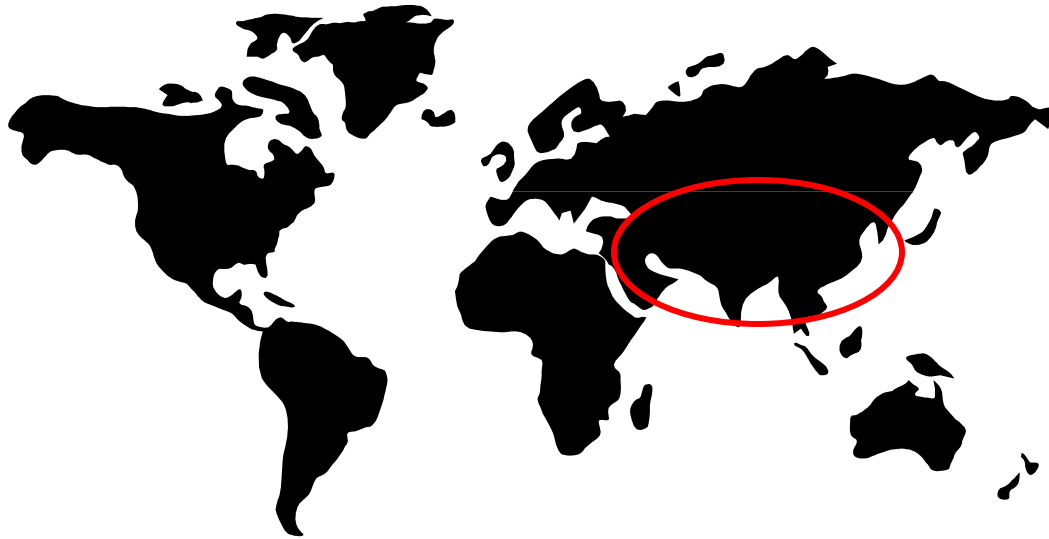
7. On a long term, neurons will suffer durable modifications (smaller neurons in opioid drugs' case or numerous synaptic contacts in stimulating drugs' case)



NUCLEUS

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# OPIOID SUBSTANCES, NARCOTICS



# OPIOIDS:

OPIUM= PAPAVER SOMNIFERUM

OPIUM ALKALOIDS (42):

MORPHINE

CODEINE

PAPAVERINE

(SEMI-)SYNTHETIC PRODUCTS:

DIACETYLMORPHINE (HEROINE)

PENTAZOCINE

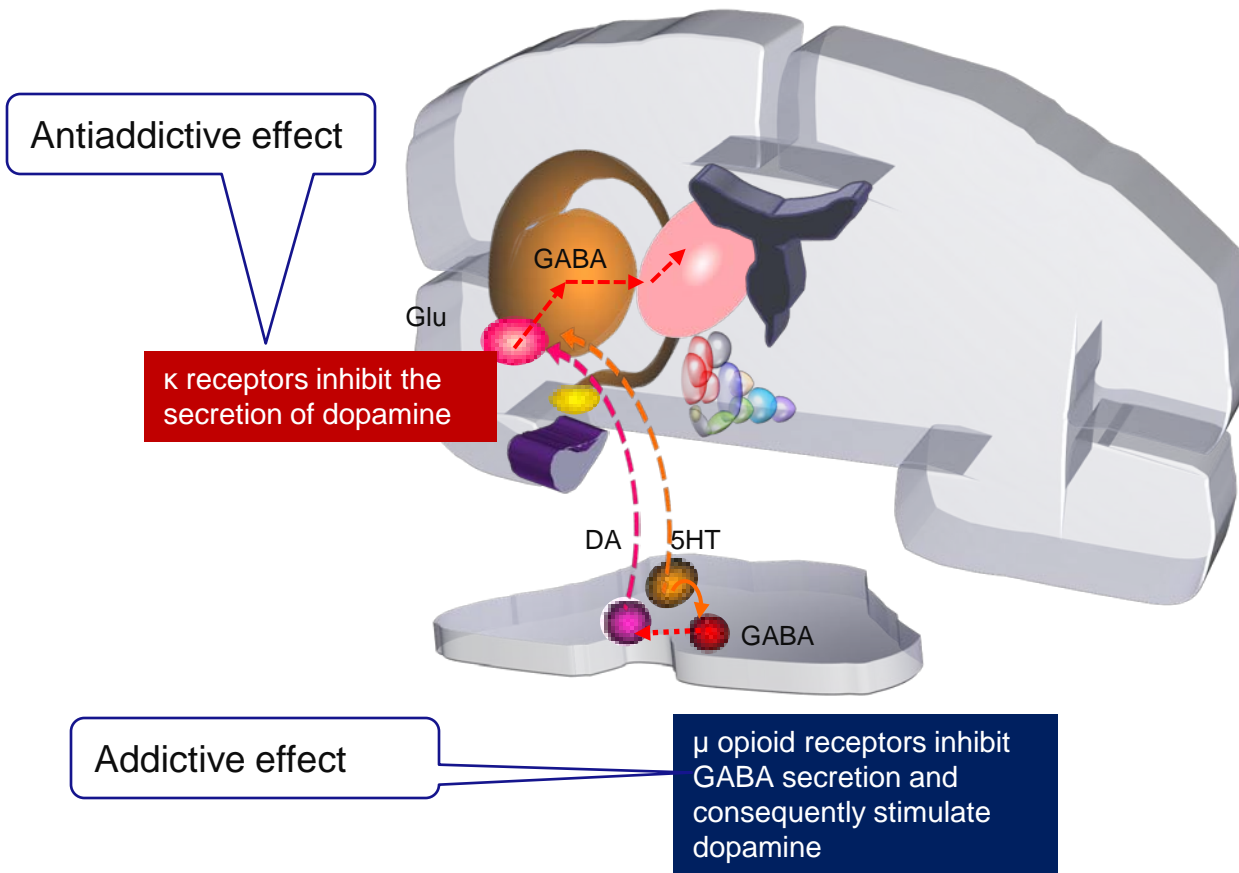
PETHIDINE / MEPERIDINE

BUPRENORPHINE

METHADONE

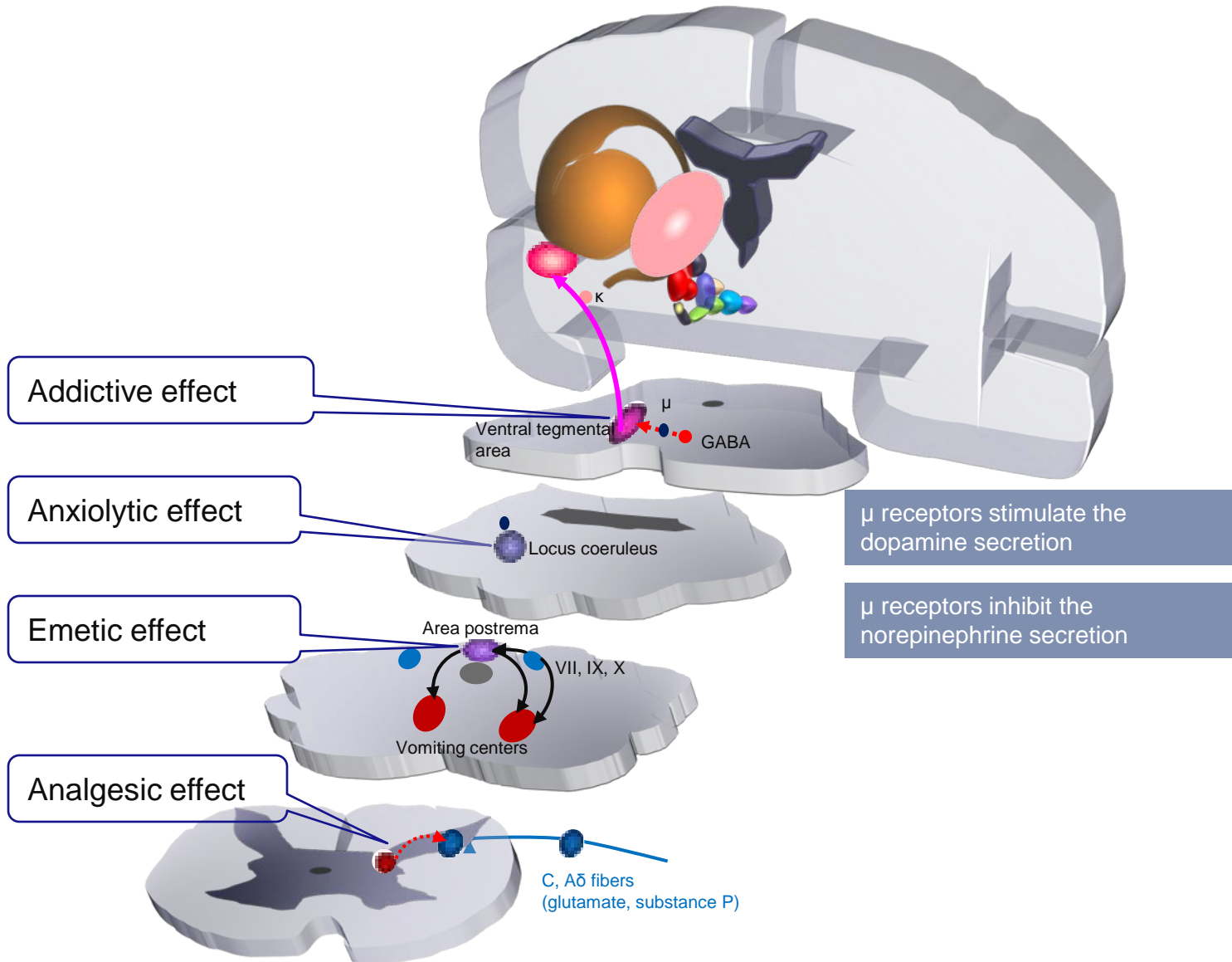
FENTANYL

# OPIOIDS AND THE MOTIVATIONAL CIRCUITS



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# OPIOIDS



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# OPIOIDS

## ADMINISTRATION

OPIUM: ingested, smoked

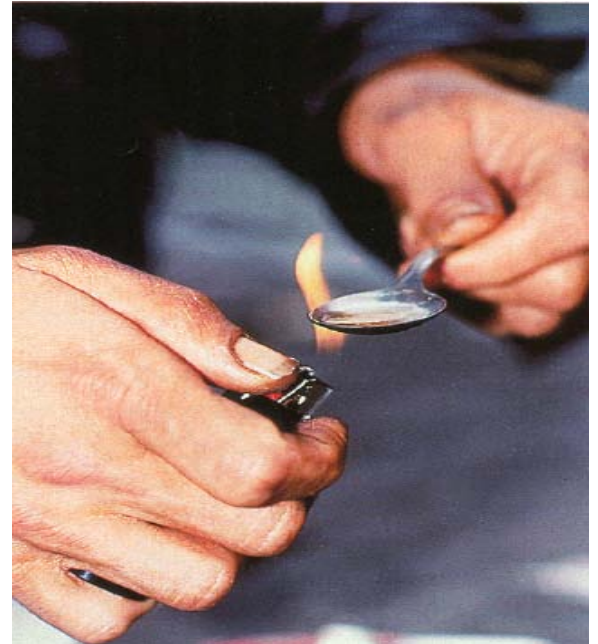
MORPHINE: ingested, injected sc or im

HEROIN: injected iv (shoot), smoked

Pure heroin is a white powder with a bitter taste. It is frequently mixed (cut) with quinine, glucose, talcum, flour, bicarbonate and it becomes colored.

! Anaphylactic reaction risk

SPEED BALL (duble flash): the injection of a opioids and cocaine or amphetamine mix.





# OPIOID INTOXICATION

## INTOXICATION: PSYCHIC

euphoria with sedation (passive happiness)

apathia, detachment of the outside world, distractibility

feeling of peace, oblivion

The IV shoot produces an intense sensation of pleasure associated with a warmth (flash) sensation. It is frequently compared with an orgasm.

## INTOXICATION: SOMATIC

analgesia

bradycardia

respiratory depression

cough reflex depression

constipation

nausea, vomiting

periferical vasodilatation (with a warmth sensation, tingling, sweat)

myosis

## SEVERE INTOXICATION:

obnubilation, coma

myosis

respiratory depression

collapse

acute pulmonary edema

## INTOXICATION TREATMENT

With antagonists:

NALORORPHINE

NALOXONE

# OPIOID WITHDRAWAL REACTION

OPIOIDS INDUCE TOLERANCE,  
PSYCHOLOGICAL AND BIOLOGICAL  
DEPENDENCE

The duration of action is important:  
PENTAZOCINE 2-3 hours  
MEPERIDINE 2-3 hours  
HEROINE AND CODEINE 3-4 hours  
MORPHINE 3-4 hours  
METHADONE 12-24 hours

HEROINE WITHDRAWAL appears at 8-10  
hours from the last substance usage:  
abdominal pains, cramps, myalgias in the  
members  
rhinorrhea, tearing, diarrhea, sweat,  
fever,  
nausea,  
mydriasis, goose flesh  
anxiety, insomnia, agitation,  
craving for the drug

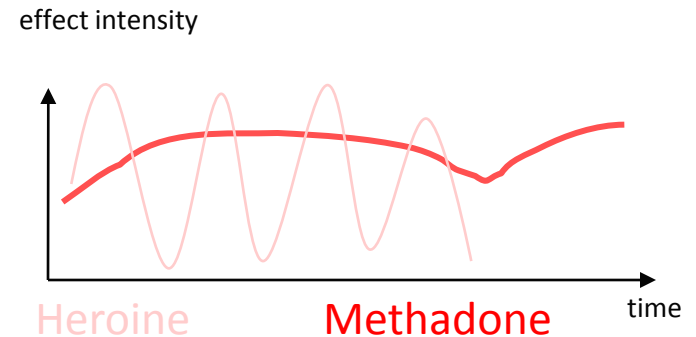
TREATMENT  
Hydro-electrolytic rebalance,  
Injectable anxiolytics, neuroleptics, non-morphinic  
analgesics, non-barbituric hypnotics

# OPIOIDS: COMPLICATIONS

- OVERDOSE
- ANAPHYLACTIC SHOCK
- NEPHROPATHY
- THROMBOPHELEBITIS, ABSCESSES
- SEPTICEMIA, ENDOCARDITIS
- HEPATITIS B, AIDS
- AMENORRHEA GALACTORRHEA SD

# OPIOID DEPENDENCE TREATMENT

- Substitution of heroine (half life 3h) with methadone (half life 24 h) or LAAM (half life 72h)
- Substitution of heroine with partial agonists of  $\mu$  receptors (Buprenorphine)
- Substitution of heroine with opioid antagonist with long half life (Naltrexone 24-72 h)



# CANNABIS



## CANNABIS INDICA

It is encountered in Hindustan, Iran, North Africa highlands. It is short and it secretes a resin with physiological active properties.

CANNABIS SATIVA (hemp) is found in temperate remote regions, it is tall and has a textile value.

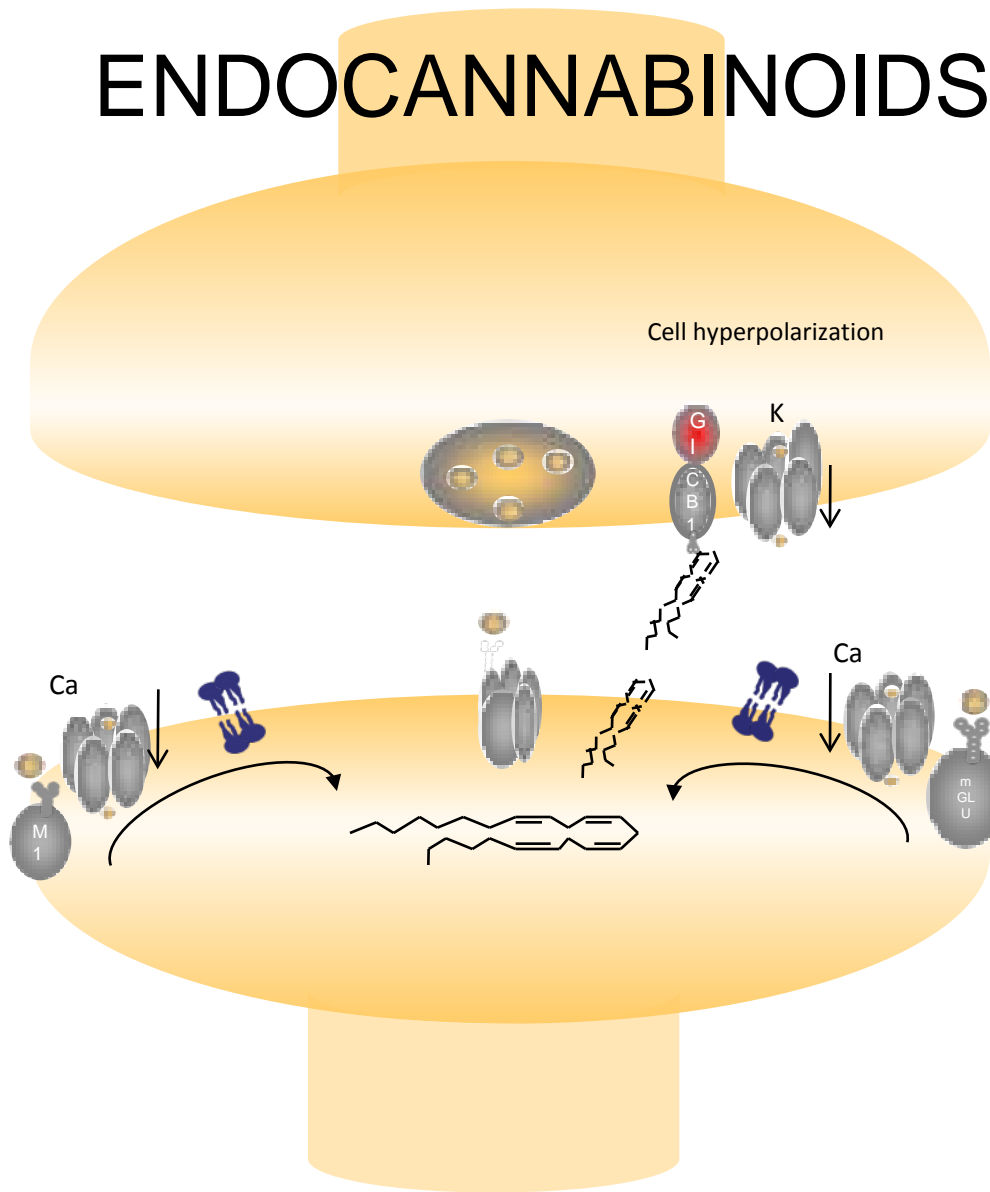
# CANNABIS

- Active substance = DELTA 9 TETRAHYDROCANNABINOL (THC)
- Female plant as it is: leafs, flowering tops have a low content of THC:
  - MARIJUANA
  - KIF
  - BHANG
- Secreted resin has a high content of THC:
  - HASHISH
- The hashish oil has a high content THC.

# CANNABIS

- The effect is obtained through GABA neurons
- Endogenous analogs exists: e.g ANANDAMIDE (ananda= happiness from sanskrit)
- Is psychological addictive and causes slow installed tolerance
- It is considered to be a weak drug, but is the gate towards more powerful drugs
- It can be traced in urine sample

# ENDOCANNABINOIDS



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# CANNABIS

Ways of using:

- **INHALATION:** the effect is rapidly installed ( after a few minutes and it lasts several hours)
  - Cigarette: cannabis blended with tobacco or cocaine (JOINT)
  - Special pipe
- **INGESTION:** the effect is delayed (3 hours) and weaker
  - Sweets
  - Drinks

# CANNABIS

<p>ACUTE INTOXICATION</p>	<p>SOMATIC</p> <p>Injected conjunctive</p> <p>Tahychardia</p> <p>Hunger (hypoglycemia)</p> <p>Dry mouth</p> <p>Hypothermia</p> <p>Hypotension</p>	<p>PSYCHIC</p> <p>Cannabic inebriation</p> <p>Toxic delirium</p> <p>Paranoid psychosis</p> <p>Panic attack (horror, bad trip)</p>
<p>CHRONICAL INTOXICATION</p>	<p>Cerebral atrophy</p> <p>Spermatogenesis suppression</p> <p>COPD, broncho-pulmonary cancer</p>	<p>Amotivational syndrome: (apathy, carelessness)</p> <p>Intellectual slowness</p> <p>Impaired memory</p>

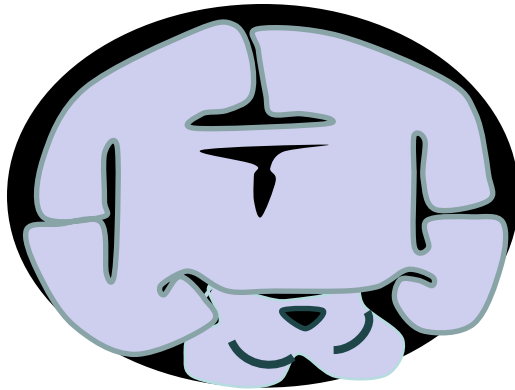
# CANNABIC INEBRIATION

I	EUPHORIC EXCITATION	Euphoria Expansiveness Logorrhea
II	SENSORIAL AND AFFECTIVE EXALTATION	Sensorial hyperesthesia Hyperemotivity, hilarity, impulsivity, aggressiveness
III	QUIET ECSTASY	Time and space perceptive distortions Synesthesias Hallucinations
IV	SLEEP	

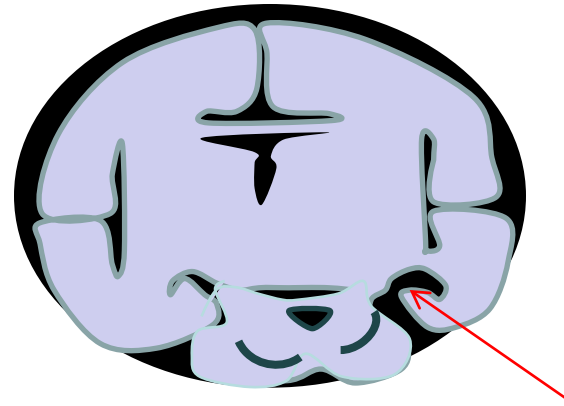
According to Timothy Leary, the effects depend on the user's general mindset or expectations from the drug (set), and on the physical and social environment in which the drug is consumed (setting)

# CANNABIS: LONG TERM EFFECTS

Normal subject



Chronic cannabis user



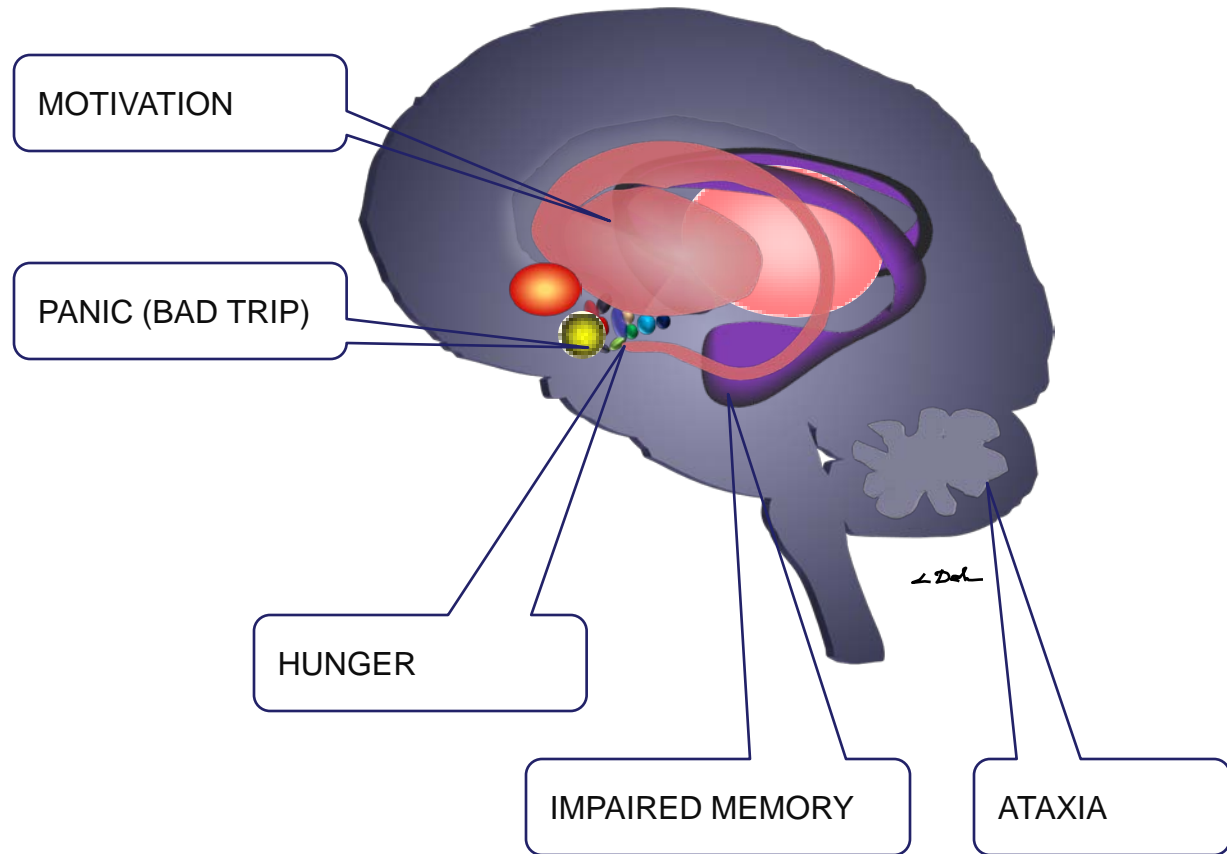
Enlargement of the left perihippocampic fissure due to neuron degeneration of the left hippocampus

# CANNABIS: EFFECTS

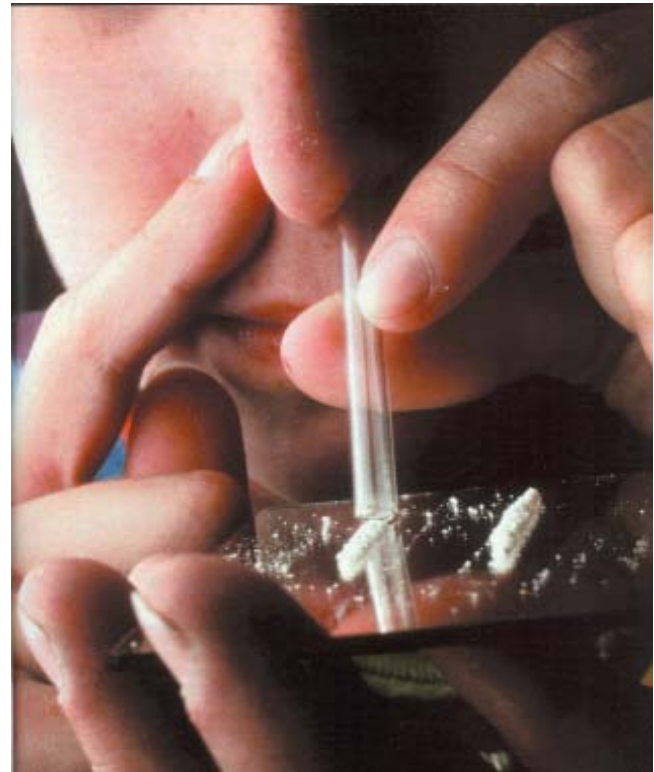
CB1 RECEPTORS are

widespread in:

- Cerebellum
- Basal ganglia
- Amigdala
- Hypothalamus
- Hippocampus



# COCAINE



# COCAINE



COCA TREE  
(ERITHROYLON)

# COCAINE - FORMS OF PRESENTATION

## COCAINE HYDROCHLORIDE (COKE, SNOW)

- Snorting powder
- Rapid effect 15-60 min
- It lasts 4-6 hours
- It is dissolved and administrated in a refreshing drink or
- Iv shoot (flash): iv cocaine with heroin – speedball
- Powder that is applied on mucous membranes

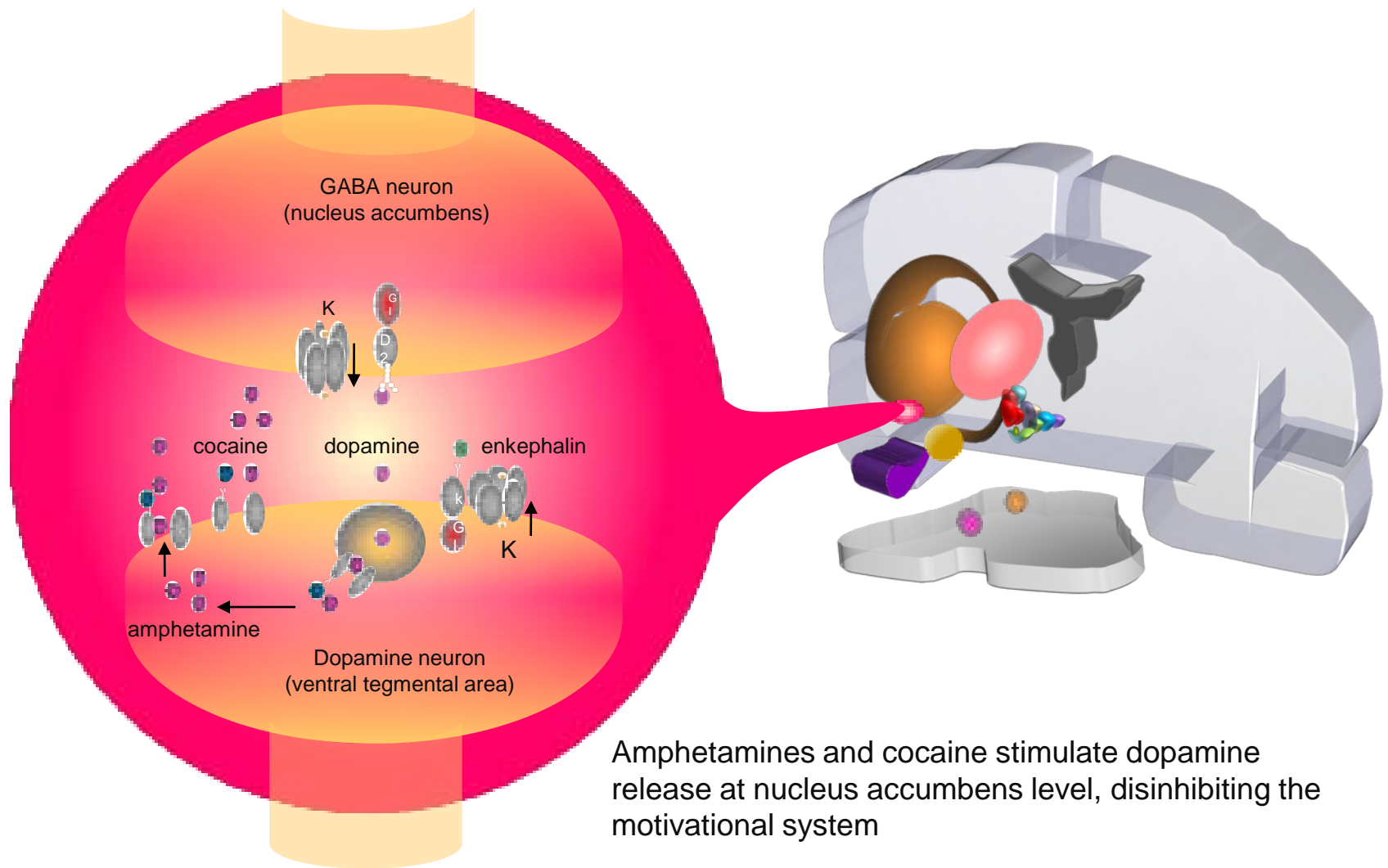
## COCAINE ALKALOIDS

- FREEBASE (cocaine hydrochloride with alkaloids and ether)
- CRACK (cocaine hydrochloride with sodium bicarbonate ammonia and water)

It is smoked in marijuana pipes or cigarettes



# COCAINE AND AMPHETAMINES: SITE OF ACTION



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# COCAINE

ACUTE INTOXICATION	PSYCHIC Active euphoria Increased self confidence Increased energy Logorrhea Insomnia Reduced appetite Anxiety Toxic delirium	SOMATIC Mydriasis Tachycardia Hypertension +/- stroke Arrhythmias +/- myocardial infarction Fever Sweating Seizures Pruritus and scratching lesions
CHRONICAL INTOXICATION	Apathy or violence Cocaine psychosis (visual, tactile hallucinations, paranoid delusion)	Cachexia Perforations of nasal mucous membrane Pulmonary emphysema

Euphoric effect (HIGH STATE ) is followed by an irritability sensation that pushes the cocaine user to continue the consumption till his own exhaustion or till stock depletion. After that the CRASH STATE installs with depression, hunger, fatigue, anxiety and an excruciating desire to procure the drug (psychological addiction, craving)

# AMPHETAMINES

CLASSICAL AMPHETAMINES stimulate the secretion of dopamine:

LEVOAMPHETAMINE, DEXTROAMPHETAMINE  
METHAMPHETAMINE  
(SPEED), DEXTROMETHAMPHETAMINE (ICE)  
METHYLPHENIDATE

DESIGNER AMPHETAMINES stimulate the secretion of dopamine, norepinephrine and serotonin combining the effects of classical amphetamines with hallucinogen drug ones

MDMA (ECSTASY, ADAM)  
MDEA (EVE)  
MDA  
DOM



# AMPHETAMINES - USAGE

## USERS:

- Students before exams
- Exhausted business people
- Athletes before competitions
- Soldiers in long marches
- Long distance drivers to combat sleep
- Women for losing weight

## Ways of administration.

- Oral (the effect is after an hour and it lasts 6 hours)
- IV shooting
- IM
- Inhalation
- Smoking (it lasts hours)  
- ICE

## MEDICINE USAGE

- Nasal decongestion (methamphetamine)
- Narcolepsia
- Hyperkinetic syndrome (methylphenidate)
- Resistant to treatment depression

Amphetamine addicts are called “speed freaks”.

# AMPHETAMINES

ACUTE INTOXICATION	<b>PSYCHIC</b> Active euphoria High self-esteem Excitation Disappearance of hunger, fatigue, sleep Raised pain threshold Anxiety	<b>SOMATIC</b> Mydriasis Tachycardia Hypertension Tachypnea Hyperthermia Weight loss, emaciation
	<b>AMPHETAMINIC PSYCHOSIS (1-3 days)</b> Visual or tactile hallucinations <b>PARANO</b> effect Persecutory ideas, auditory hallucinations	<b>IN SEVER CASES:</b> Ventricular fibrillation Myocardial infarction Cardiac failure Seizures Stroke

# AMPHETAMINES

RUN = using permanently several days/week, until the drug runs out or until exhaustion (body unable to sustain any more activity), followed by the CRASH:

- DEPRESSION, IRRITABILITY
- FATIGUE
- HYPERSONNIA
- HUNGER

In order to avoid depression HYPNOTICS are associated.  
Depression can be complicated by SUICIDE.

POLYTOXICOMANIA:

amphetamines + heroin iv = SPEED BALL

Amphetamines + barbiturates = GOOF BALL

# HALLUCINOGENS

psychedelic drugs: induce the expansion  
of current state of consciousness

psychodysleptic drugs: disturb the mind

psychotomimetic drugs: mime psychosis

AMANITA MUSCARIA – Afghanistan

ATROPA BELLADONNA

MESCALINE – Central America - used by Aztecs

PSILOCYBIN - Central America - used by Maya indians

AYAHUASCA – Amazonian jungle

LSD (Lysergic acid diethylamide) - synthesized in 1938 by Albert Hofmann from  
ergotamine

# HALLUCINOGENS

- AMANITA MUSCARIA
  - Possible component of “soma” (indian) or “haoma” (iranian) ritual drinks (R.Gordon Wasson)
  - Active components:
    - Muscarine (agonist to muscarinic receptors)
    - Ibotenic acid (NMDA glutamate receptor agonist) which transforms into muscimol (GABA agonist)
  - Intoxication:
    - nausea
    - low blood pressure, sweating and salivation
    - illusions (macroscopic / microscopic), hallucinations
    - euphoria, relaxation
    - ataxia, loss of equilibrium
    - Intoxication delirium



# HALLUCINOGENS

- ATROPA BELLADONNA
  - contains atropine, scopolamine (hyoscine) and hyoscyamine
  - Intoxication: anticholinergic effects:
    - Mydriasis, tachycardia
    - Headache
    - Rash
    - Dry mouth, urinary retention, constipation
    - Slurred speech, loss of balance
    - Hallucinations
    - Convulsions
    - Delirium
  - Antidote: physostigmine , pilocarpine
  - Other similar hallucinogens with same components: DATURA

# HALLUCINOGENS

- Mescaline - resembles dopamine
- Psilocybin - resembles serotonin (4 hydroxy N,N-Dimethyltryptamine)
- Ayahuasca
  - Harmala alkaloids (are MAO-inhibiting beta-carbolines): harmine, harmaline (selective and reversible inhibitors of MAO-A), and tetrahydroharmine is a weak SSRI
  - DMT (N,N-Dimethyltryptamine) which needs an MAO inhibiting effect to be active: serotonergic effects
- LSD – resembles serotonin

# HALLUCINOGENS

## PSYCHEDELIC EXPERIENCE

### Phase I (2 hours)

- Euphoria
- Sociability
- Increased awareness
- Somatic effects sympathomimetic

### Phase II (2 hours)

- Hyperesthesias: increased intensity of perceptions
- Synesthesias: seeing sounds, hearing colors, touching smells
- Illusions: visual distorted forms and distances
- Hallucinations: visual – geometrical, kaleidoscopic

### Phase III

- Distorted time perception (too slow, fusion of the past with the present or the future, reliving very distant events)
- Symptoms of splitting, out of body experience, depersonalization, dissolution of self in a mystical ecstasy
- Ideas of having great capacities, invulnerability (risk of accidents)
- Paranoid psychosis, delirium

## BAD TRIP

Experiences similar with panic attacks

Sometimes hallucinations and delusion are associated

The set and setting effect.

## FREE TRIP (FLASH BACK)

Spontaneous and transitory recurrences of the psychedelic experience (seconds, minutes) that appear long time after the drug was remove from the body

# ANESTHESICS

- PHENCYCLIDINE (PCP, Angel dust), higher half-life, more potent
- KETAMINE (Special K) lower half-life, less potent
- Phencyclidine is a dissociative anesthetic: clear mind + feelings of dissociation from the body + rigidity
- Mechanism of action:
  - antagonism on NMDA glutamate receptors : CNS depression
  - agonism on 5HT2 and D2 receptors: hallucinogenic effects

# BARBITURATES

## INTOXICATION

Barbiturates inebriation:

Psychomotor disinhibition with labile affects, logorrhea, irritability, aggressiveness

Dysarthria

Ataxia

Attention and memory disorders

Coma with respiratory depression

Frequently, the addiction to barbiturates is associated with addiction to alcohol, amphetamines

Addiction to barbiturates may be a complication of anxiety when patients try to take refuge in sleep.

## WITHDRAWAL

Brutal with vital risk:

Anxiety, irritability

Tachycardia, sweating

Tensional oscillations

Nausea

Myoclonus,

Seizures

Delirium

Deficit syndrome:

Apathy

Asthenia

Slowness

Intellectual impoverishment

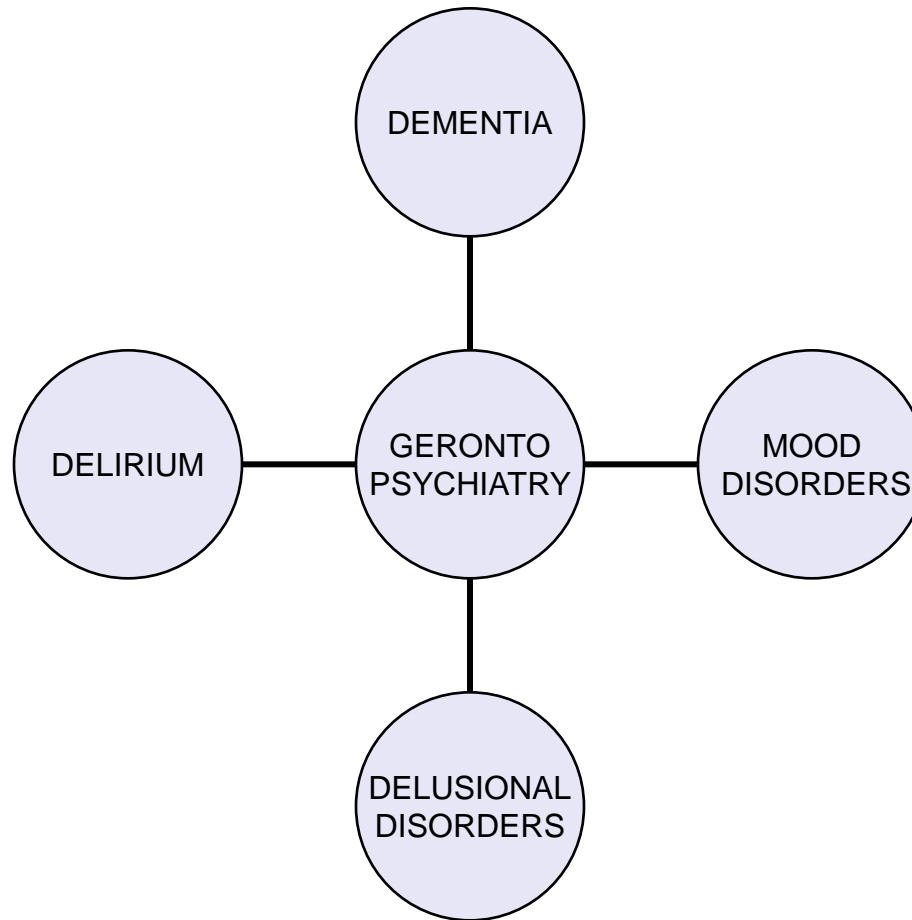
# VOLATILE SOLVENTS

- Substances based toluene, acetone and carbon tetrachloride
- Are used as :
  - Adhesives for airplane models or naval models
  - Nail varnish
  - Spray propellants
  - Stain removal products (trichloroethylene)
  - Solvents for paint
  - Oil products (kerosene, lighter gas, white spirit)
- They are included in the inhalant drug class (nitric oxide, ether, chloroform, halothane, cyclopropane, amyl nitrate).
- Usually are abused by preadolescent children (11-16 years)
  - Having family and school problems as anxiolytics. The use is solitary and on long-term.
  - Without family or school problems, because of curiosity. The use is in a small group in a ritualistic manner and disappears after group breakdown.
- these substances have an euphoric and sedative effect (depressants of CNS)
- Because of the liposolubility the drug rapidly reaches brain inducing a quick drunk
- Psychological dependence is rapidly acquired
- The substances are administered through inhalation from the bag.
- Because of the way of administration and because of the side effects, there is a risk of imminent death through asphyxiation, cardiac arrhythmias and accidents.

# VOLATILE SOLVENTS

<p>ACUTE INTOXICATION</p>	<p>PSYCHIC</p> <p>Quick drunk</p> <p>Euphoria with excitation similar to alcohol intoxication but with an earlier onset in 2-4 minutes and lasting 5-15 minutes</p> <p>Hallucinations: visual – geometrical, kaleidoscopic Sedation</p> <p>Toxic delirium</p> <p>Coma</p>	<p>SOMATIC</p> <p>Dysarthria</p> <p>Ataxia</p> <p>Diplopia</p> <p>Nystagmus</p> <p>Inebriate walk</p> <p>Tremor</p> <p>Depression of reflexes</p>
<p>CHRONICAL INTOXICATION</p>	<p>PSYCHIC</p> <ul style="list-style-type: none"> <li>- Intellectual slowness</li> <li>- Impulsivity, violence</li> </ul>	<p>SOMATIC</p> <ul style="list-style-type: none"> <li>- Liver, pulmonary, cardiac, renal and hematological complications,</li> <li>- Perinasal and perioral rash</li> <li>- Persistent cough with nasal and oral secretions</li> <li>- halitosis, the smell of the volatile substance</li> </ul>

# GERONTOPSYCHIATRY





# GERONTOPSYCHIATRY (GERIATRIC PSYCHIATRY, OLD AGE PSYCHIATRY)

- Gerontopsychiatry is the domain of psychiatry treating psychiatric disorders in elderly people.
- Conventionally, the old age stage of life begins after 65 years.

# NORMAL AGING

- Biological aging is the process through which the body loses, in time, its functional ability (autoregulation, repair) that permits its adaptation to the environment.
- Primary aging is based on genetically programmed survival limit.
- Secondary aging is caused by the effects of the environment toxicity or diseases affecting the organism.

# NORMAL AGING AND ASSOCIATED PATHOLOGY

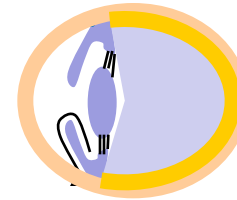
systolic hypertension ← arteriosclerosis

ischemia ← atherosclerosis



cataract appearance risk

Loss in elasticity and increase in crystalline lens' opacity



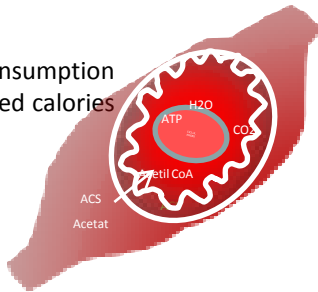
Presbyopia

adjusting the drugs' dosage

↑  
the excess is deposited in the form of fat

↑  
decrease in the consumption percentage of burned calories in the muscle

↑  
the decrease in muscle mass



Osteoarthritis with the individual's motility limitation



femoral neck fracture risk

↑  
slight loss in heights

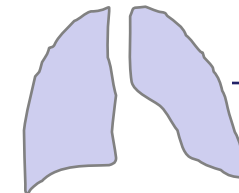
↑  
Osteoporosis (loss in the protein matrix and bone demineralization)

auditory acuity diminishes especially for high sounds; taste and olfactory acuity diminish

favoring the emergence of hallucinations and delusions

caught reflex diminishes

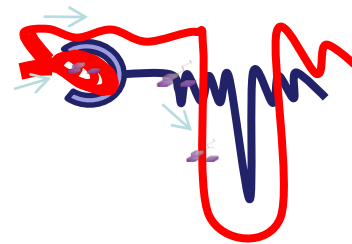
pulmonary infections risk



atrophic gastritis, hiatal hernia risk, malabsorption, avitaminosis and diverticulosis risk

← enzymatic activity in the stomach and intestine decreases

← the bowel motility decreases: constipation

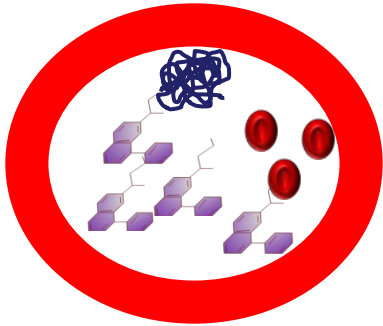


decrease in the number of glomeruli, thickening of basal membrane of glomeruli and tubes  
enlargement of prostate

→ adjusting the drugs' dosage

→ dysuria

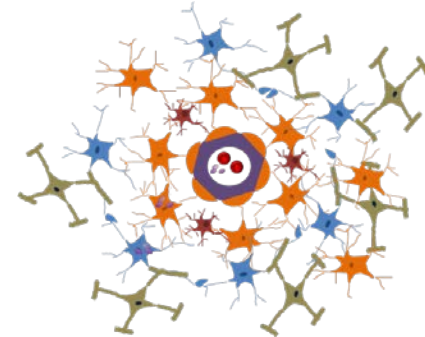
# FARMACOKINETIC FEATURES IN ELDERLY



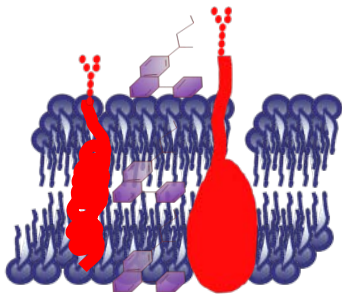
Less protein for the drug to bind to: free and active drug fraction is in high amounts



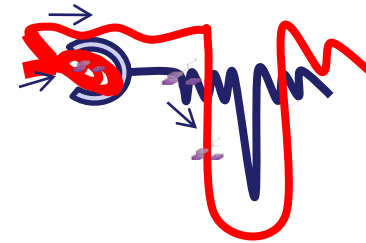
The adjustment of dosage in the sense of reducing them!



Blood brain barrier is more permeable



The volume of fat increases with age



Reduced glomerular filtration rate

## THE MAIN CHRONIC DISEASES THAT AN ELDER PERSON SUFFERS FROM ARE:

- osteoarthritis
  - cardiovascular diseases (including hypertension),
  - hearing loss with or without tinnitus,
  - cataract, presbyopia,
  - osteoporosis
- 
- Old age is accompanied by a cumulative pathology, less clinical evident than that of a young person's but it is a chronically one.

## NERVOUS SYSTEM: AGING FROM COGNITIVE PERSPECTIVE

- The brain is a dynamic structure that along the life span accumulates and loses information
- The decrease of dopamine activity causes slowness in the conduction of mental operations
- FUNCTIONAL RESERVE:
  - In young adults, the decline of cognitive functions it is not apparent because of a greater functional reserve
  - In elder people, the decline of cognitive functions will be more apparent because of a smaller functional reserve.
  - The compensation is done through accumulated experience

# COGNITIVE FUNCTIONS: MEMORY

- decline in:
  - working memory
  - associating the past events to their context (for example the person remembers an information but not it's source, the person that gave it)
  - voluntary active acquiring of new information (needs mental effort)
  - voluntary active evocation of information from memory deposits (needs mental effort)
- are less or not at all affected:
  - semantic memory (vocabulary)
  - implicit memory
  - passive evocation
  - recognition of the information (recognition of some drawings)

# PSYCHOLOGICAL CHANGES

- The passing towards old age represents one of the key moments of one's cycle existence
- It requires adaptation to
  - secondary biological changes of aging
  - diseases that exist on this background
  - professional, social and familial role changes.



## RETIREMENT

The lost of social status  
Losing social relations  
Financial losts  
Same age friend losts  
Losing the structured program imposed by a working place

## BYOLOGIC DECLINE

The health state deterioration  
Medication costs  
Functional limits  
Sensorial limits

## EXISTENTIAL BALANCE

The future offers limited satisfaction, the attention is concentrated on the past: accomplishments and failures

---

### compensation

New family role: raising grandchildren  
Participation in public reunions, club or charity activities.

Medication  
Hearing aids  
Glasses  
Stick

---

### lack of compensation

Feelings of worthlessness  
Feelings of abandonment  
Conjugal conflicts reactivation

Social isolation  
The sense of incapacity

Anxiety, avarice, depression, suicide, hypochondriac and prejudice delusions

# DEMENTIAS

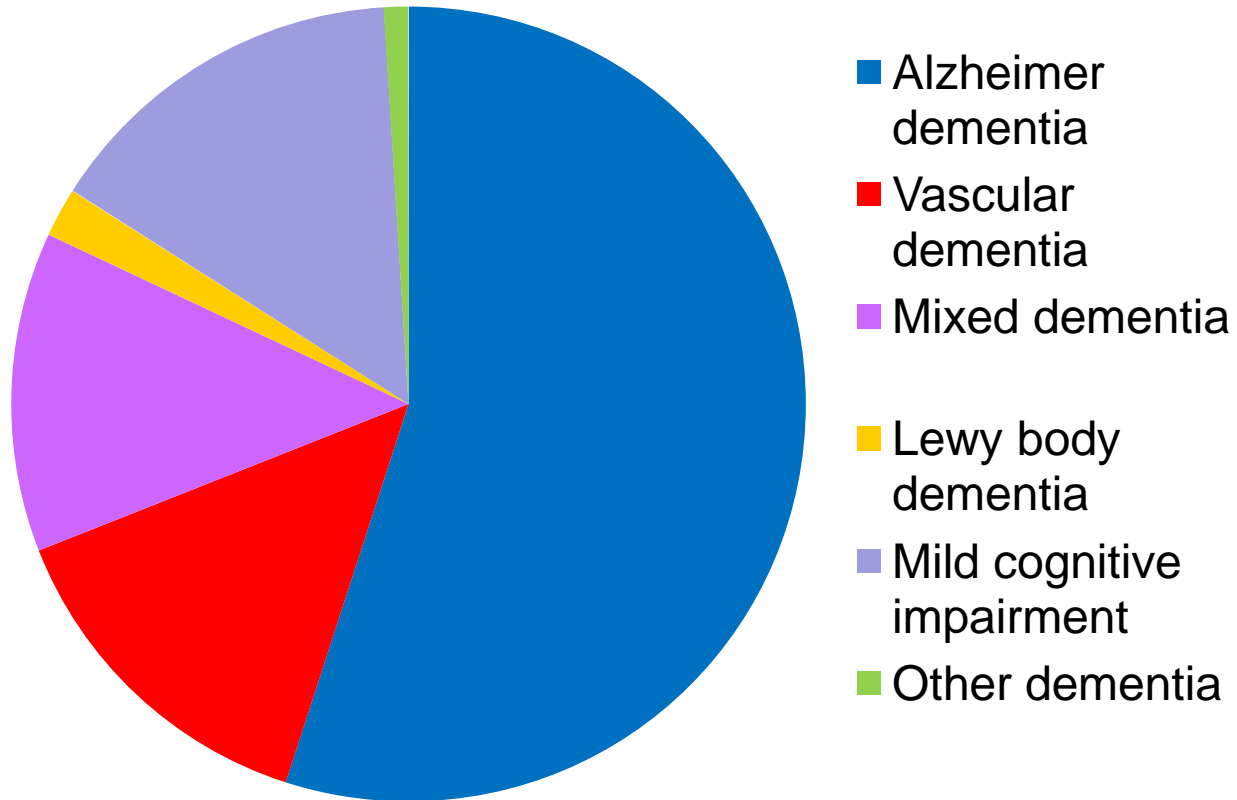
- DEMENTIA: an acquired global, progressive and spontaneously irreversible deterioration of the mind/psyche which affects the cognitive functions, the affective life and the social behaviour, leading finally to cachexy (deglutition disorders), loss of sphincter control and death

Differential diagnosis:

Partial cognitive impairment (amnesic vascular syndrome)

Mental retardation: global impairment in brain development, which is congenital and unevolutive.

# DEMENTIAS



DEGENERATIVE  
DEMENTIAS:

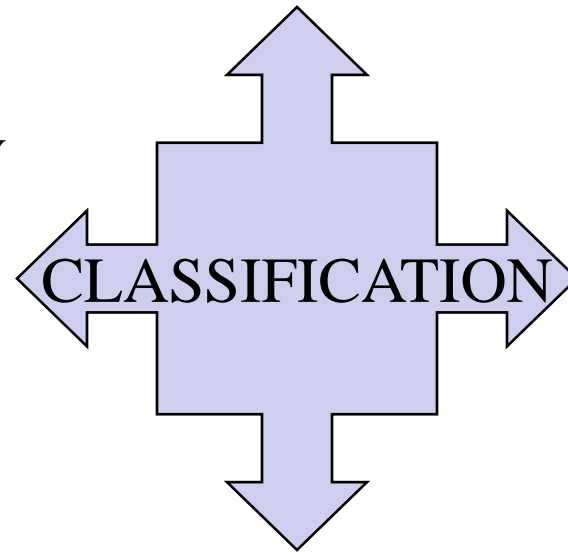
ALZHEIMER'S DISEASE  
PICK DISEASE  
PARKINSON DISEASE  
HUNTINGTON CHOREA  
LEWY BODY DEMENTIA

DEMENTIAS SECONDARY TO SOMATIC  
DISEASES:

AIDS, SYPHILIS, SUBACUTE SCLEROSING  
PANENCEPHALITIS  
(SSPE), CREUTZFELDT-JAKOB  
CEREBRAL TUMORS  
CEREBRAL HEMATOMA  
CEREBRAL ABCESS  
CEREBRAL TRAUMA: DEMENTIA  
PUGILISTICA  
NORMAL PRESSURE HYDROCEPHALUS  
HYPOTHYROIDISM  
HYPERCALCEMIA  
HYPOGLYCEMIA  
UREMIA  
HEPATIC DISEASES

DEMENTIAS SECONDARY  
TO PSYCHOACTIVE  
SUBTANCES USE:

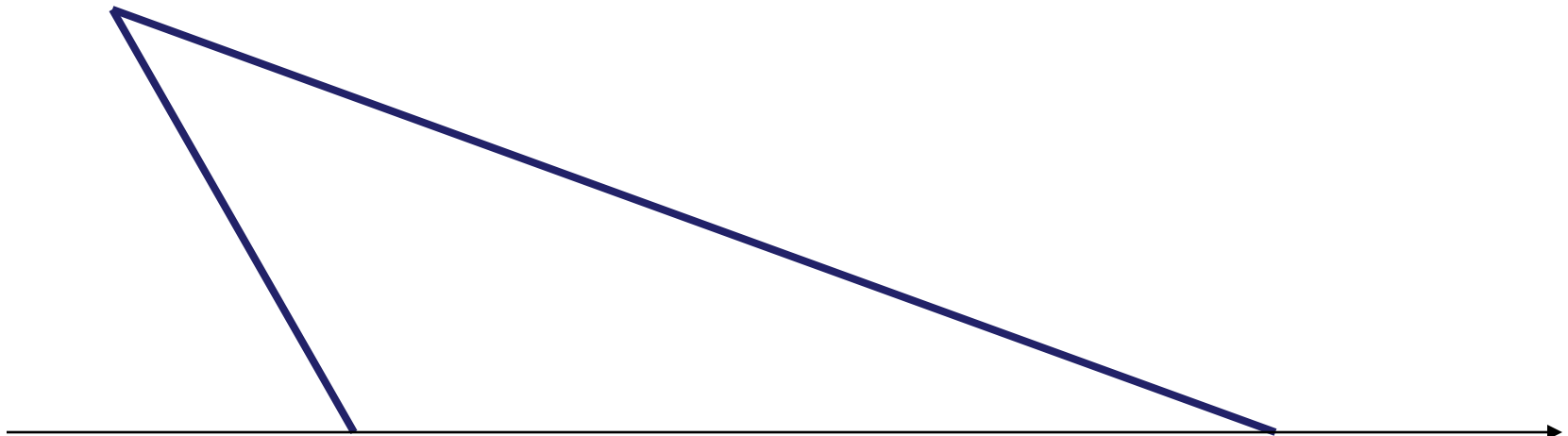
ALCOHOL  
CARBON MONOXIDE  
CANNABIS



VASCULAR DEMENTIAS

MULTI INFARCT DEMENTIA  
CEREBRAL LACUNARISM  
STRATHEGIC STROKES

# EVOLUTION



time

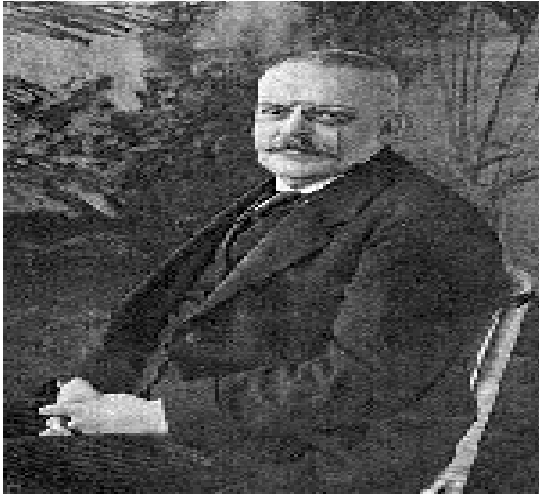
FAST PROGRESSING

- Encephalitis (SSPE)
- Creutzfeld-Jakob disease
- Alzheimer's disease with family history
- Dementia in AIDS

SLOW PROGRESSING

- Alzheimer's disease
- Dementia in normal pressure hydrocephalus

# ALZHEIMER'S DEMENTIA

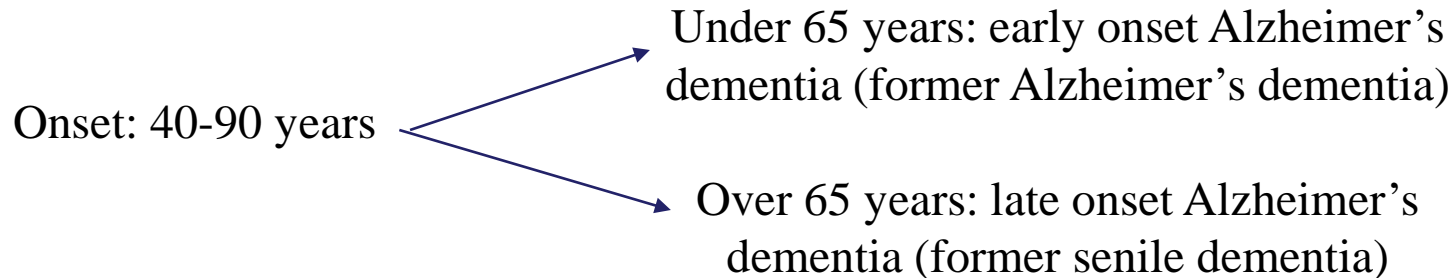


Alois Alzheimer (1864-1915)



# ALZHEIMER'S DEMENTIA EPIDEMIOLOGY

- The most frequent form of dementia (55%)
- More frequent in women
- Onset



- Age as a risk factor
  - 5% of the persons over 65 years old
  - 25% of the persons over 80 years old
  - 50% of the persons over 90 years old

# ALZHEIMER'S DEMENTIA ETIOPATHOGENY

- GENETIC FACTORS
- BIOCHEMICAL FACTORS: acetylcholinergic transmission
- Hormonal deficit (estrogen)
- Trauma
- Vascular
- Aluminum excess
- Infection with slow virus
- Autoimmune processes



# GENETIC FACTORS IN ALZHEIMER'S DEMENTIA

- 2% genetic forms with dominant autosomal transmissions
  - Early onset and rapid evolution (death in 4 years from diagnosis)
    - Chromosome 21: genes for APP (dementia complicating the Langdon-Down Sd.)
    - Chromosome 14: genes for presenilin 1
    - Chromosome 1: genes for presenilin 2
- 98% multifactorial forms
  - Late onset and slow evolution (death in 8 years from diagnosis)
    - Chromosome 19: genes for apolipoprotein - allele  $\epsilon$  4 apolipoprotein: sporadic forms of Alzheimer dementia

# HYPERPHOSPHORYLATION OF TAU PROTEIN: NEUROFIBRILLARY TANGLES

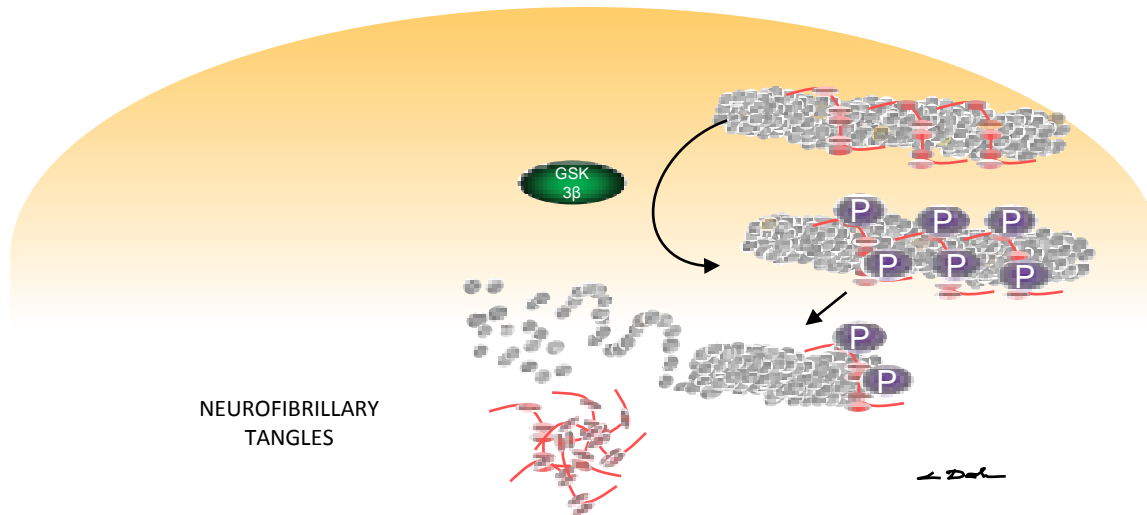
Normally, the tau protein is associated with the microtubules, consolidating them.

## THE MICROTUBULES

- play a role in the intracellular transport from the nucleus to the synaptic bouton and
- are components of the cytoskeleton

The excessive phosphorylation of tau protein decreases its interaction with the microtubules

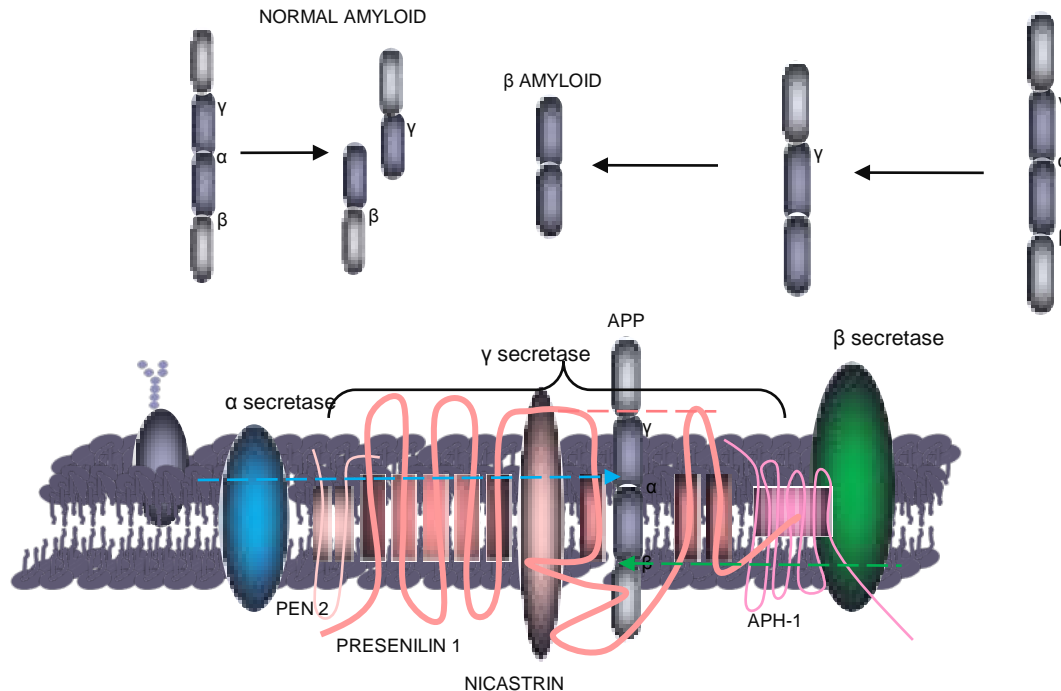
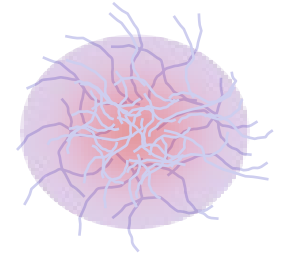
In ALZHEIMER'S DISEASE, the hyperphosphorylated tau protein forms neurofibrillary tangles, leading to neuronal degeneration and death.



# MEMBRANE SECRETASES AND AMYLOID

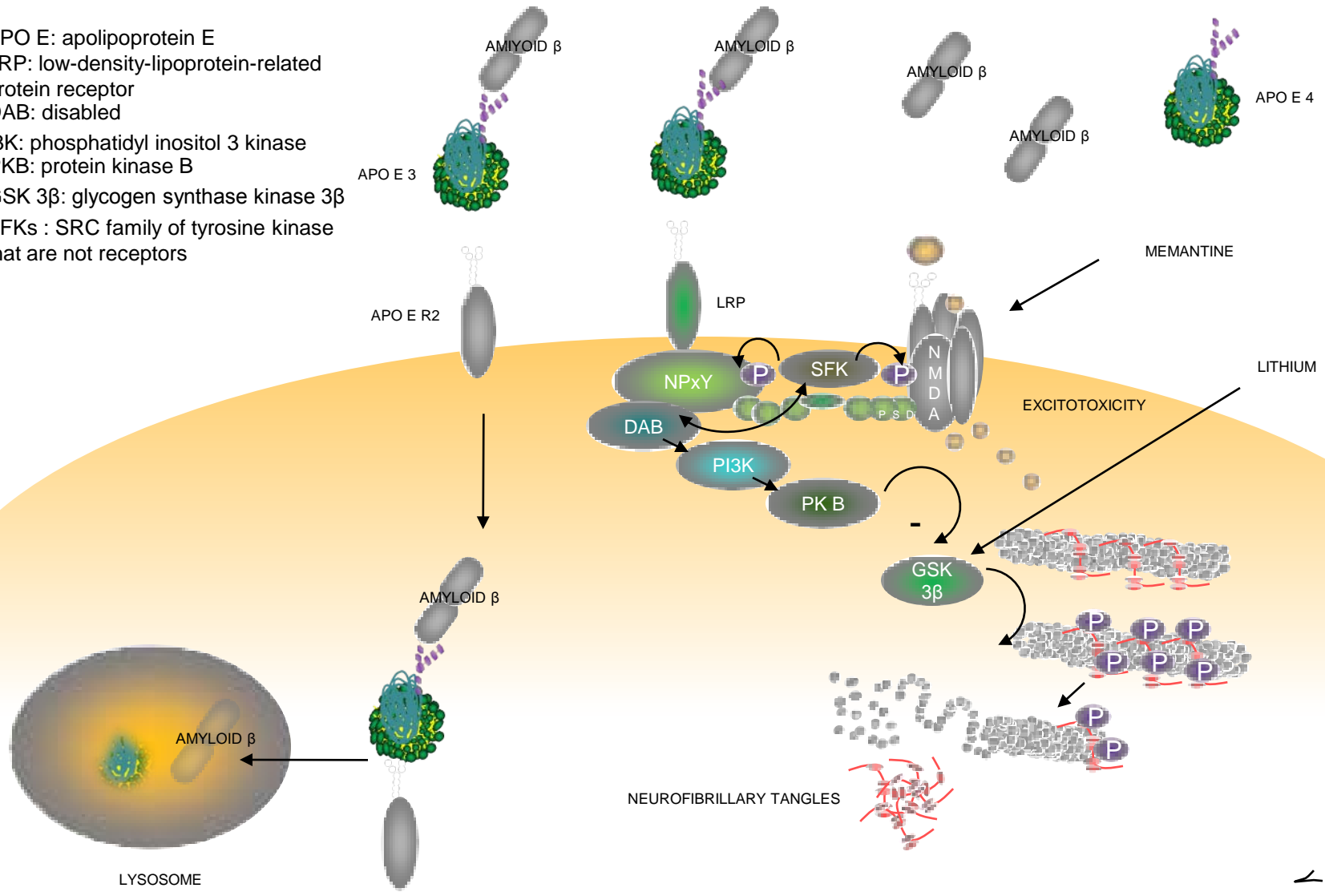
$\beta$ - amyloid protein derives from amyloid precursor protein (APP), which is normally cleaved by secretases.

The  $\beta$  - amyloid will accumulate forming the senile plaques, leading to the dysfunction of the neuronal transmission through a direct or indirect toxic effect, stimulating the microglia to produce cytokines and free radicals.



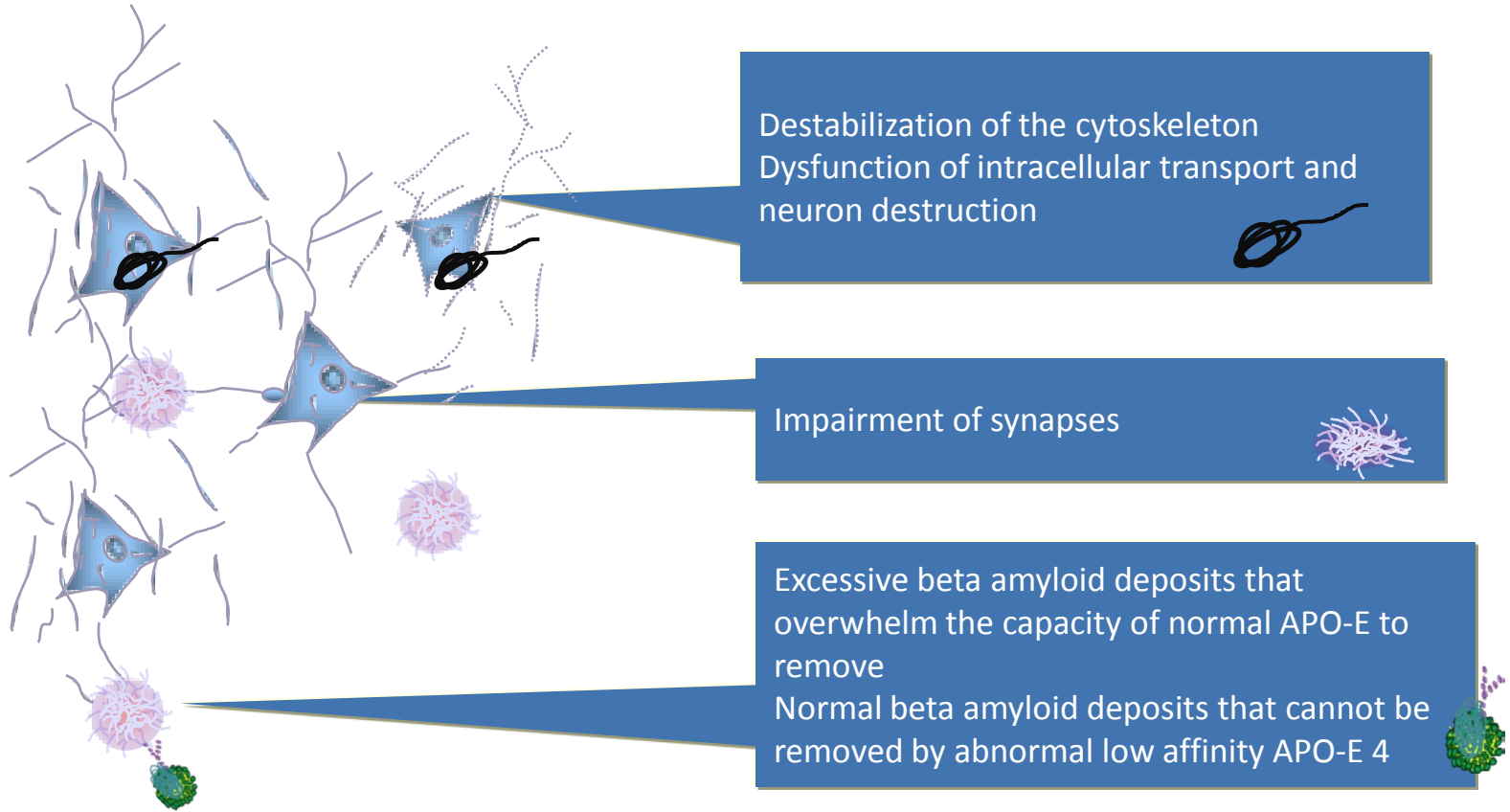
# APOLIPOPROTEINS E AND ALZHEIMER'S DEMENTIA

APO E: apolipoprotein E  
 LRP: low-density-lipoprotein-related protein receptor  
 DAB: disabled  
 PI 3K: phosphatidyl inositol 3 kinase  
 PKB: protein kinase B  
 GSK 3 $\beta$ : glycogen synthase kinase 3 $\beta$   
 SFKs : SRC family of tyrosine kinase that are not receptors



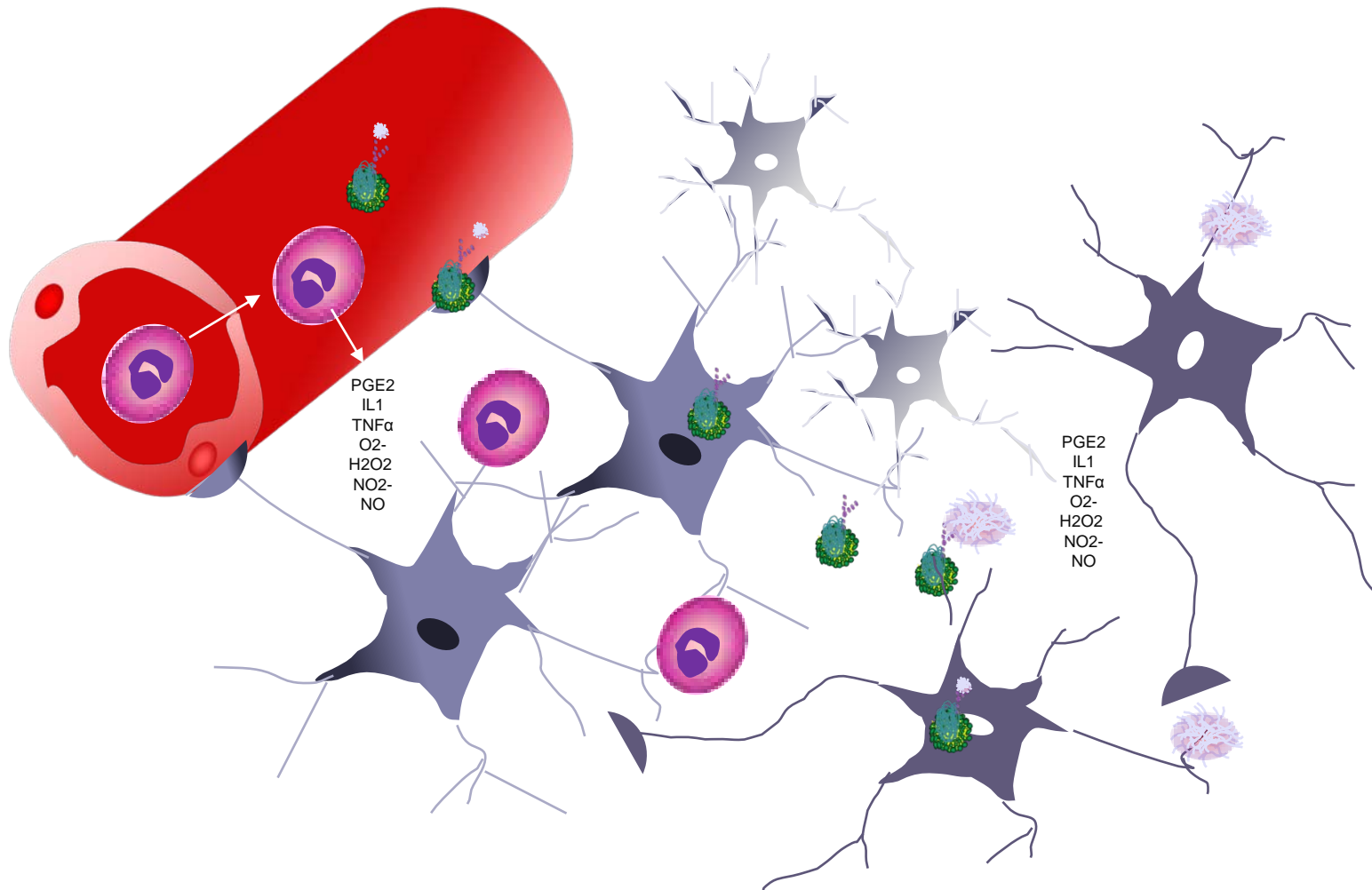
*L. Del*

# ALZHEIMER'S DEMENTIA: PHYSIOPATHOGENY



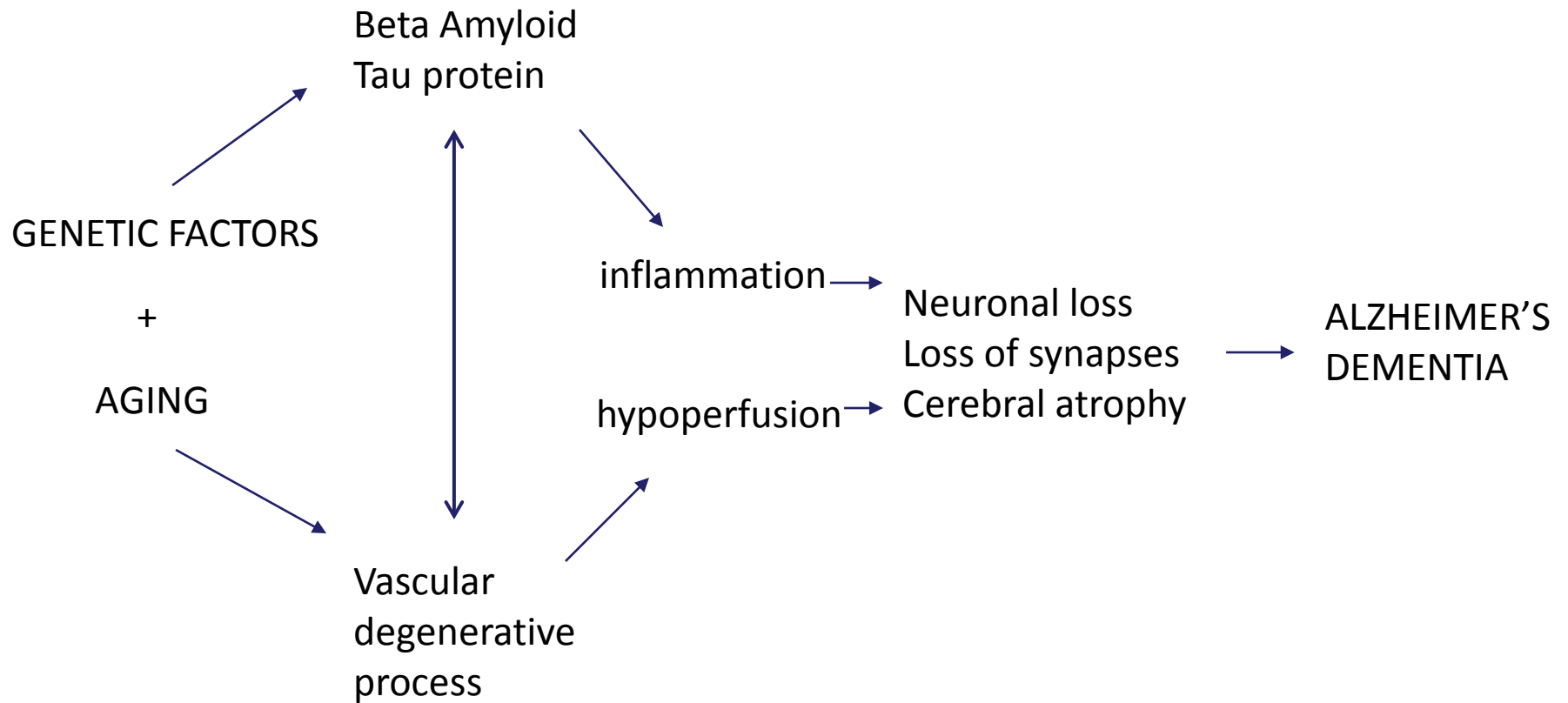
L. Del

# ALZHEIMER'S DEMENTIA: INFLAMMATORY PROCESSES



L. Del

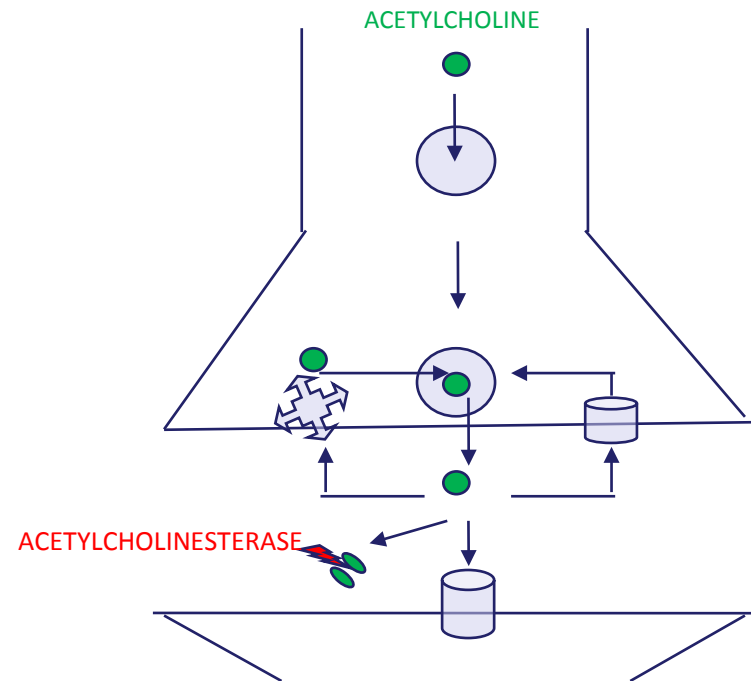
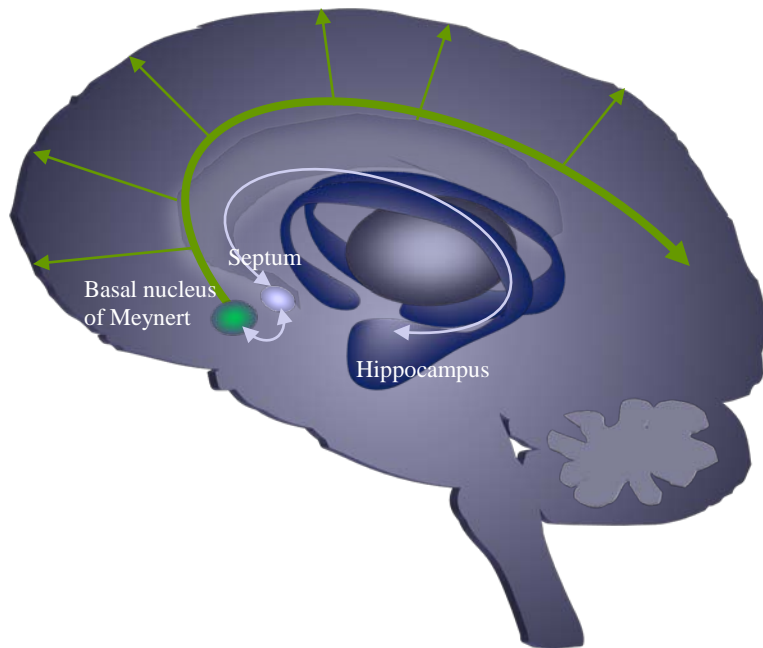
# ALZHEIMER'S DEMENTIA CUMULATIVE ROLE OF DIFFERENT FACTORS IN PATHOGENESIS



(after Emmerling, Gracon and Roher, 1999)

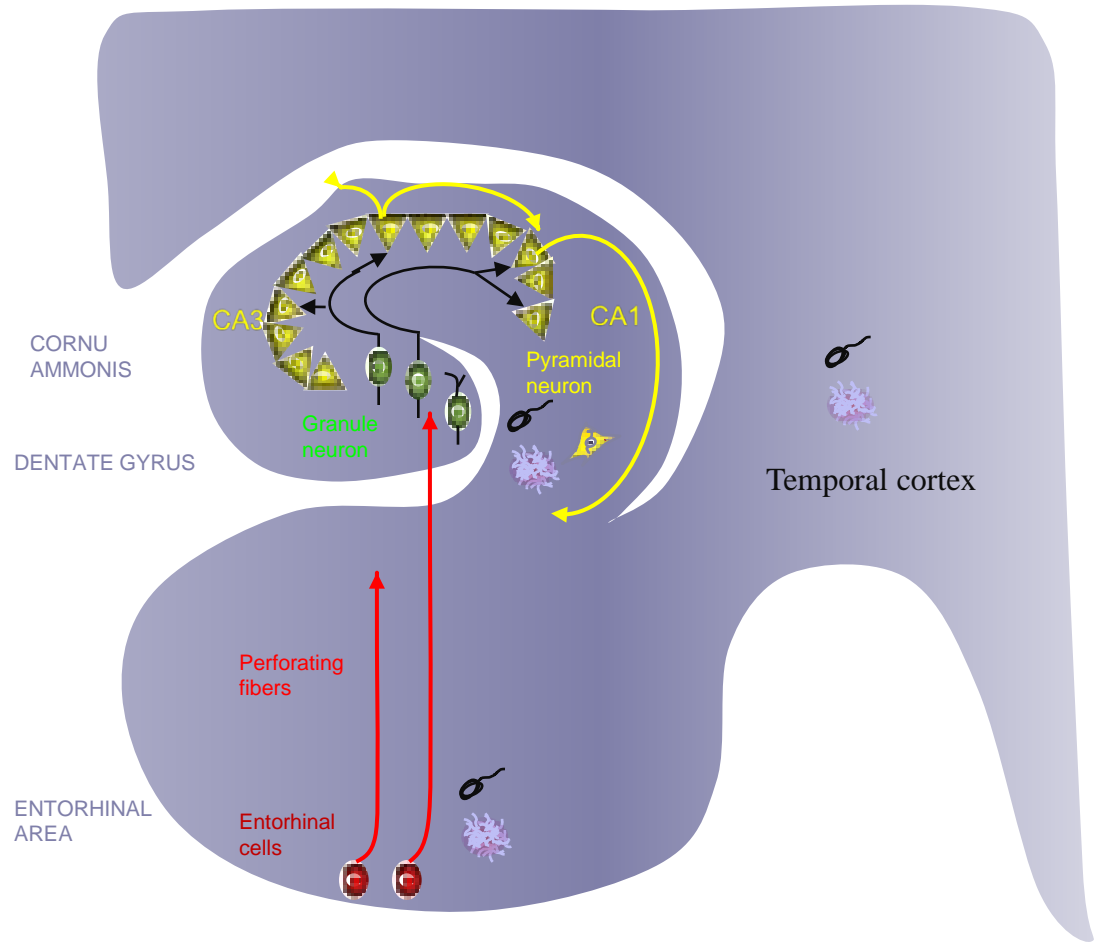
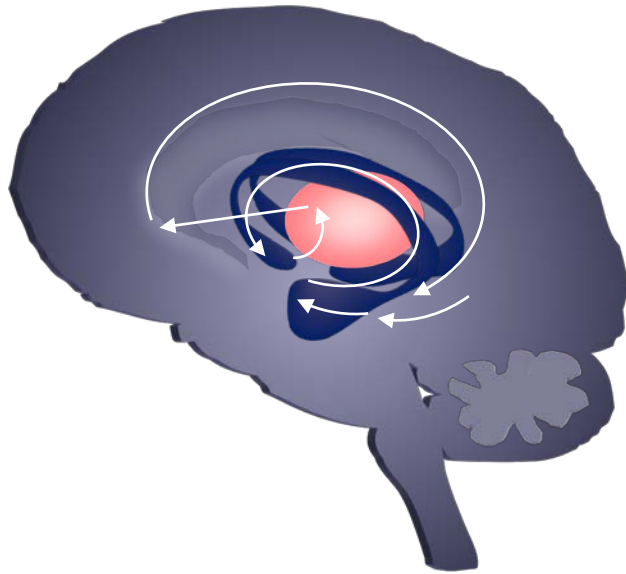
# ALZHEIMER'S DEMENTIA: CHOLINERGIC TRANSMISSION

The loss of cholinergic synapses and degeneration of the cholinergic neurons from Meynert's nucleus result in attention and short-term memory deficits.





# ALZHEIMER DEMENTIA: HIPPOCAMPUS



## CHARACTERISTIC LESIONS

Senile plaques (beta amyloid)

Neurofibrillary tangles



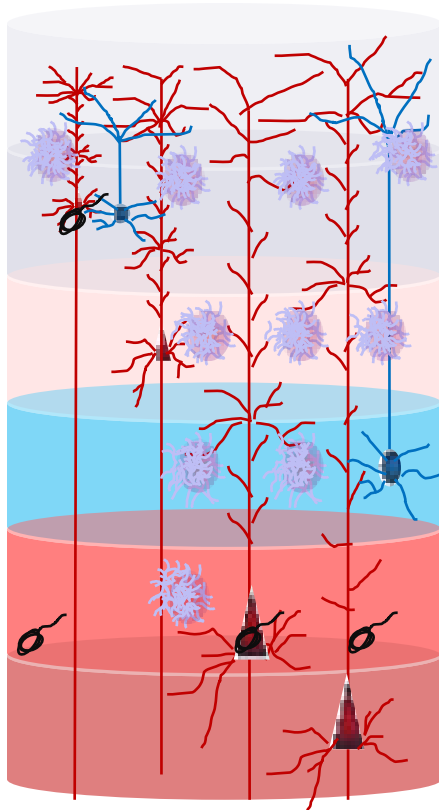
granulo-vacuolar degeneration of pyramidal neurons in hippocampus

L. Del

## ALZHEIMER'S DEMENTIA: ANOMALIES OF THE HIPPOCAMPUS

- There is a correlation between the number of histological cortical lesions (especially the fibrillary lesions in the temporal associative areas) and the clinical severity of dementia.
- There is a regional and temporal distribution of the lesions in Alzheimer's disease:
  - the first structures affected are: the entorhinal cortex, the hippocampus and the temporal cortex;
  - later in the evolution, the lesions extend to the frontal and parietal cortex
- The primary motor and sensory areas are not affected (absence of neurological focal signs)


# ALZHEIMER DEMENTIA: ASSOCIATION CORTEX




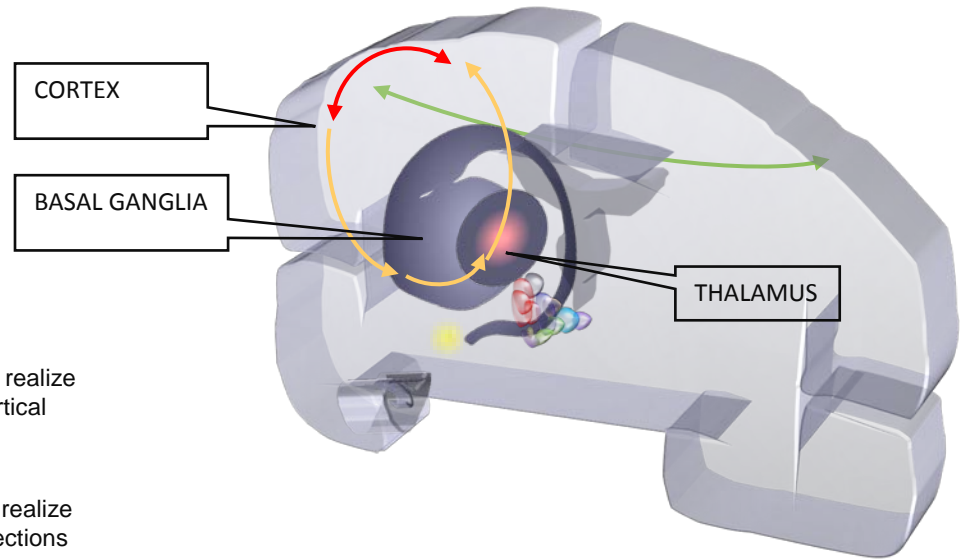
3<sup>rd</sup> layer : neurons that realize contralateral cortico-cortical connections

4<sup>th</sup> layer: neurons that realize thalamo-cortical connections

5<sup>th</sup> layer : neurons that realize cortico-striate and cortico- brain stem connections

 Senile plaques (beta-amyloid)

 Neurofibrillary tangles

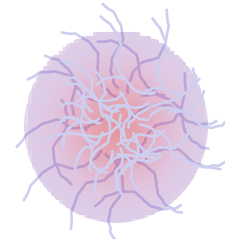


# ALZHEIMER'S DEMENTIA: HISTOPATHOLOGICAL MARKERS

DIAGNOSTIC TRIAD:  
MARKERS FOR CERTAINTY DIAGNOSIS



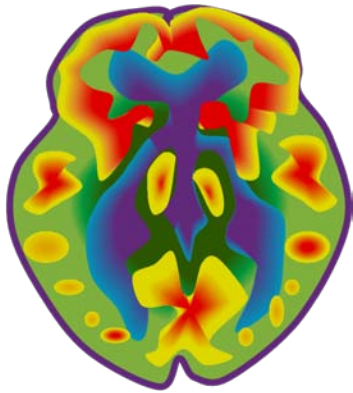
Neurofibrillary tangles  
(intracellular)  
in cortex and hippocampus



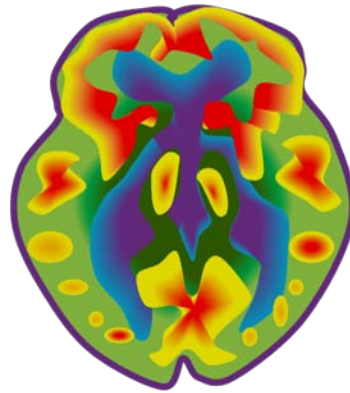
Senile plaques: a fibrillary circle  
centered by amyloid  
(extracellular)  
in cortex and hippocampus

Granulovacuolar degeneration  
(in hippocampus)

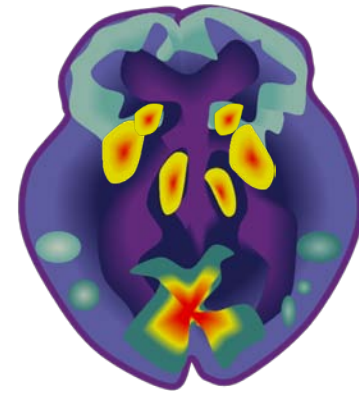
# ALZHEIMER'S DEMENTIA FUNCTIONAL EXPLORATION (PET)



20 years old subject



80 years old subject

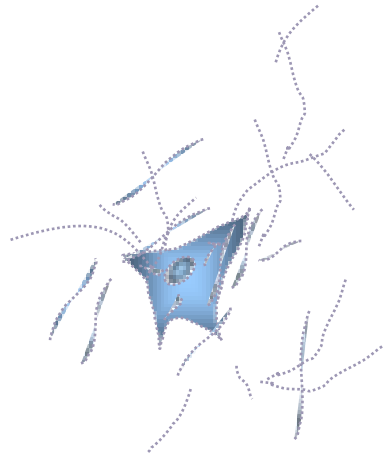


Patient with Alzheimer's  
dementia

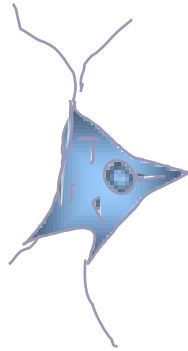


High metabolism

# ALZHEIMER DEMENTIA HISTOPATHOLOGY

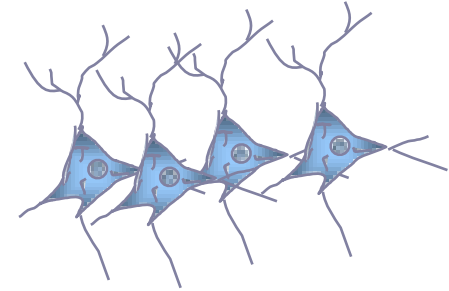


Normal neuron

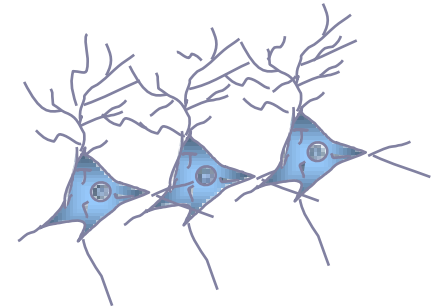


Neuron in Alzheimer dementia

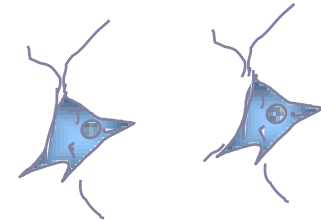
Adulthood



Senescence  
(neuroplasticity)



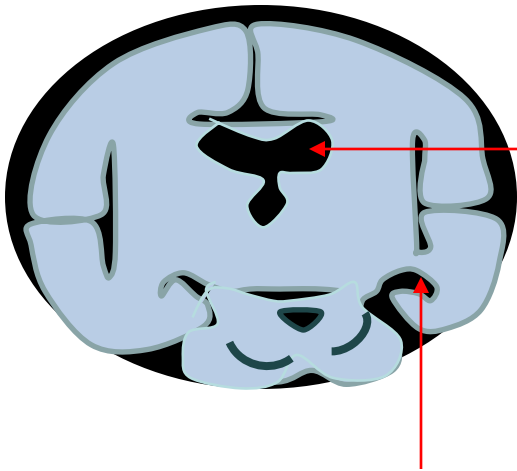
Alzheimer dementia



# IMAGISTIC DIAGNOSIS (CT SCAN)

## EARLY STAGE

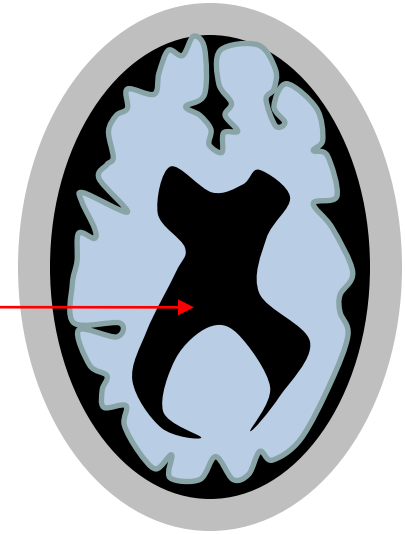
## LATE STAGE



Dilatation of the left perihippocampal fissure, secondary to the neurons' degeneration in the left hippocampus

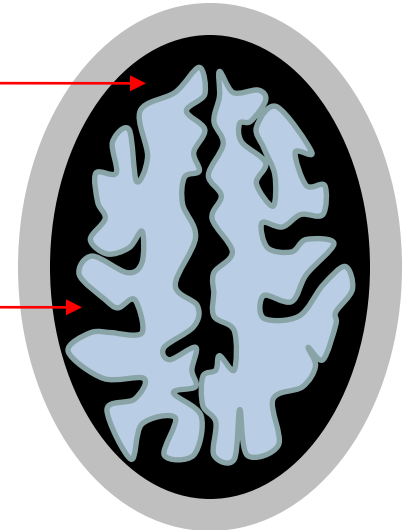
The brain has the aspect of a nutmeat

Ventricular dilatation

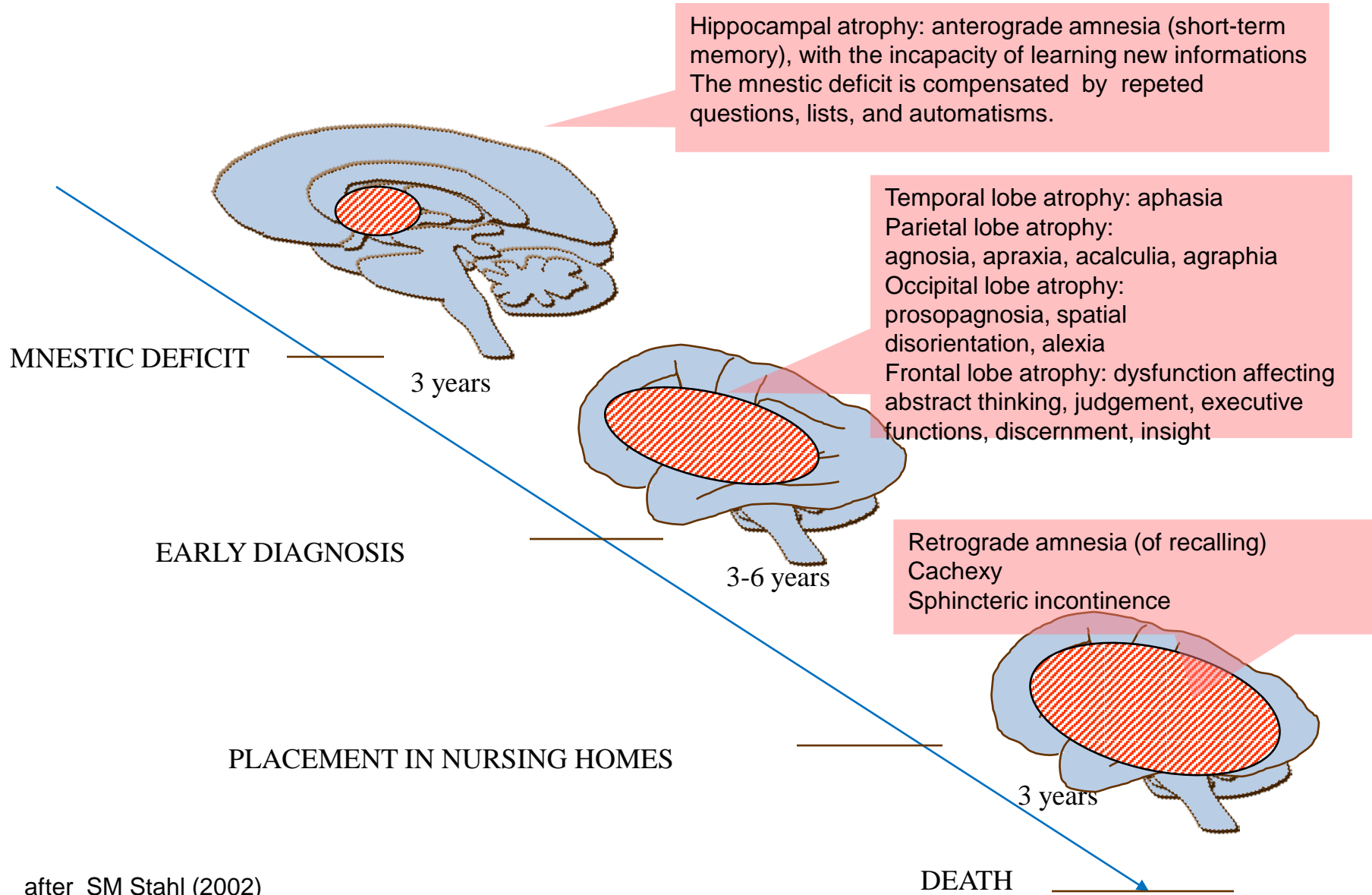


Increase of pericerebral space

Dilatation of cerebral sulci



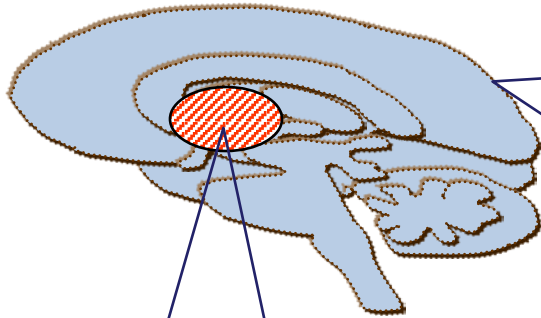
# ALZHEIMER'S DEMENTIA: EVOLUTION





# ALZHEIMER'S DEMENTIA

## CLINICAL FEATURES: HIPPOCAMPUS' DAMAGE



### EPISODIC MEMORY DISORDERS

Impairment of short-term memory, with a decreased ability to acquire new information:

Forgetting

names, addresses, faces, words, the places where he put things

or

Making mistakes, being negligent

The onset is **INSIDIOUS**, the memory disorders are underestimated: tolerated by the persons around and thought to be secondary to the old age

or

the patient, being aware of them, tries to compensate them through making lists, asking questions, repeating or hiding (making excuses)

**THE DEFICITS ARE OFTEN COMPENSATED BY AUTOMATISMS**

The **ACUTE** onset emerges in special situations (when leaving home – visiting relatives, hospitalization). The patients decompensate because of losing their reference points.

# ALZHEIMER'S DEMENTIA

## CLINICAL FEATURES: DAMAGE OF CORTICAL LOBES

### FRONTAL LOBE

Impairment of working memory:  
difficulties in processing different  
things simultaneously.  
The retrograde amnesia concerns  
mostly the recent memories.  
Less interests and activities  
impairment of executive functions  
(incapacity in  
organizing, planning, predicting, f  
eedback)  
Loss of abstract thinking,  
Loss of discernment  
Lost insight

### TEMPORAL LOBE

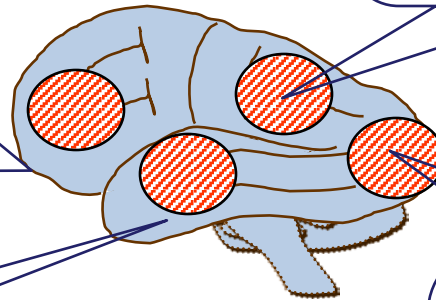
Aphasia  
Paraphasia

### PARIETAL LOBE

Agnosia (semantic amnesia)  
Apraxia  
(constructional, dressing, motor, id  
eomotor)  
Acalculia  
Agraphia

### OCCIPITAL LOBE

Prosopagnosia (lack to recognize  
faces)  
Impairment in distances perception  
(pentagons drawing, clock drawing)  
Spatial disorientation (patient gets  
lost when leaves home , nocturnal  
agitation)  
Alexia



# ALZHEIMER'S DEMENTIA

## CHANGES IN THOUGHT, AFFECTIVITY AND PERSONALITY

THOUGHT and SPEECH become poor, concrete, stereotyped (repeating old memories)

Sometimes, secondary to memory disorders, delusions of prejudice may appear (money, papers are stolen etc) involving the persons around him (family, neighbours).

PERSONALITY AND BEHAVIOUR: egocentrism and psychorrigidity, greed, hoarding exacerbate. The whole life becomes a ritual.

AFFECTIVITY: irritability, depression, emotional instability, affective blunting

# ALZHEIMER'S DEMENTIA

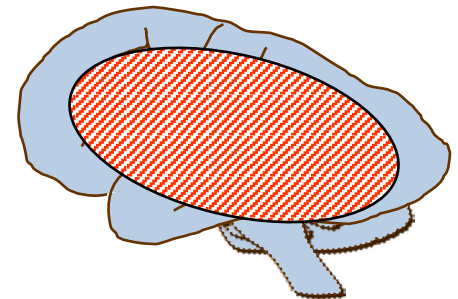
## CLINICAL FEATURES: SEVERE DEFICIT

PLACEMENT IN A NURSING HOME

RETROGRADE AMNESIA  
concerning old memories, personal  
data

Sphincter incontinence  
Primitive reflexes  
Epileptic seizures

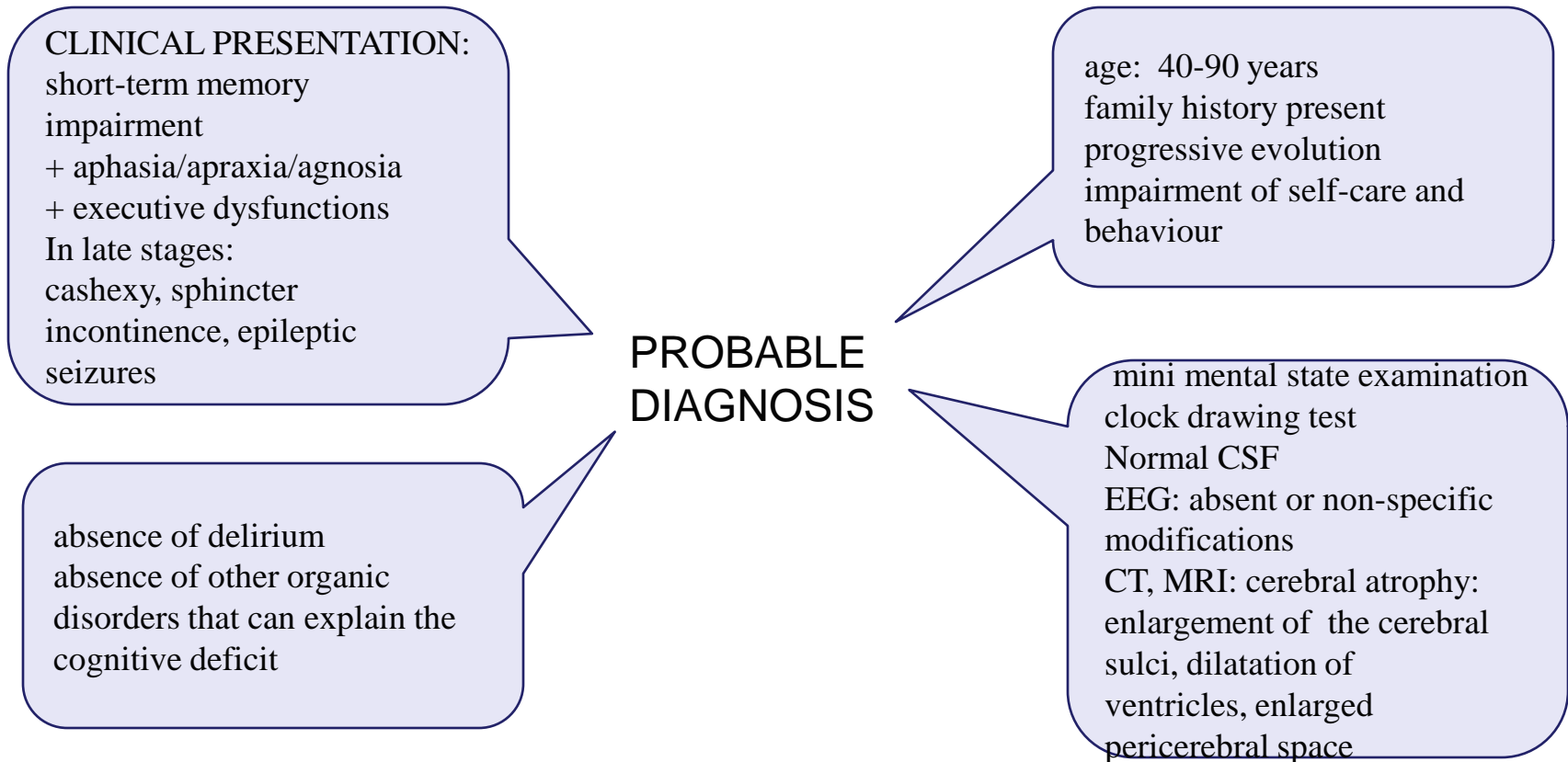
Cashexy  
Extrapyramidal hypertonia  
Deglutition disorders



# ALZHEIMER'S DEMENTIA: DEFICIT SEVERITY

MILD DEFICIT	MODERATE DEFICIT	SEVERE DEFICIT
The patient is able to take care of himself, he can do simple assignments	The patient has to be assisted in self-care and simple assignments	The patient is completely dependent on the caregiver (he needs to be dressed, cleaned, fed)
Actions: -education of the family or caregiver -use of calendars -testament (will) -treatment	- accidents' prevention (falling, fires) - tutela -treatment of cognitive deficit, depression, agitation, psychosis, superimposed confusion	-placing the patient in an institution -the treatment of the cognitive deficit is not efficient.

# ALZHEIMER'S DEMENTIA: PROBABLE DIAGNOSIS



## CERTAINTY DIAGNOSIS: HISTOPATHOLOGICAL

Neurofibrillary tangles+ senile plaques+ granulovacuolar degeneration

# ALZHEIMER'S DISEASE: DIFFERENTIAL DIAGNOSIS

- Normal aging
- Confusional state (Delirium)
- Korsakoff's amnesic syndrome (traumatic or alcoholic)
- Depression in the elderly (pseudodementia)
- Other dementias:
  - Vascular dementias
  - Pick dementia
  - Lewy body dementia
  - Dementia in Parkinson's disease, Huntington's disease
  - Dementia in syphilis, AIDS, Creutzfeldt-Jakob disease
  - Cognitive deterioration in myxedema

# DIFFERENTIAL DIAGNOSIS WITH DELIRIUM

DEMENTIA	DELIRIUM
Insidious onset	Acute onset
Chronic, progressive, irreversible evolution	Acute, fluctuant, reversible evolution
Duration: months, years	Duration: days, weeks
At the beginning, the vigilance and orientation are not affected	Vigilance and orientation are affected
Impairment of short and long-term memory	Impairment of short-term memory due to attention disorders



## DIFFERENTIAL DIAGNOSIS BETWEEN DEMENTIA AND DEPRESSION

DEMENTIA	DEPRESSION
The patient denies the cognitive deficit, rarely complains about it	The patient complains about the cognitive deficit
Impairment of short-term memory more than that of the long-term memory	Short-term memory and long-term memory are affected in the same degree Long-term memory better for negative events.
Insidious onset, progressive evolution	Acute onset (well determined) Duration of cognitive deficit: weeks, months
The affective mood abnormalities are superficial, unstable	The affective disorder is important and precedes the cognitive deficit.
The symptoms are worse in the evening	The symptoms are worse in the morning

# ALZHEIMER'S DEMENTIA: TREATMENT

## THE TREATMENT OF COGNITIVE DEFICIT:

### ANTICHOLINESTERASE DRUGS

DONEPEZIL

RIVASTIGMINE

GALANTAMINE

### NMDA ANTAGONISTS

MEMANTINE

### NOOTROPIC DRUGS

PIRACETAM

PRAMISTAR

CEREBROLYSIN

### ANTIOXIDANTS

SELEGILINE

GINGKO BILOBA

OESTROGENE

VITAMIN E

### VASODILATOR DRUGS

PYRITINOL (ENCEPHABOL)

PAPAVERINE

CINNARIZINE

PENTOXIFYLLINE

NIMODIPINE

## THE TREATMENT OF COMORBID DISORDERS:

ANTIDEPRESSIVE DRUGS (tianeptine, trazodone, venlafaxine),

ANXIOLYTIC DRUGS (alprazolam)

## OTHER MEASURES:

Initially, home care: feeding, clothes, washing

Correcting other deficits: glasses, auditory prosthesis

Preventing accidents (trauma, fire setting, flood)

Preventing other somatic comorbid disorders' decompensation (stroke, cardiac insufficiency, infections)

Tutela

Finally, placement in a nursing home

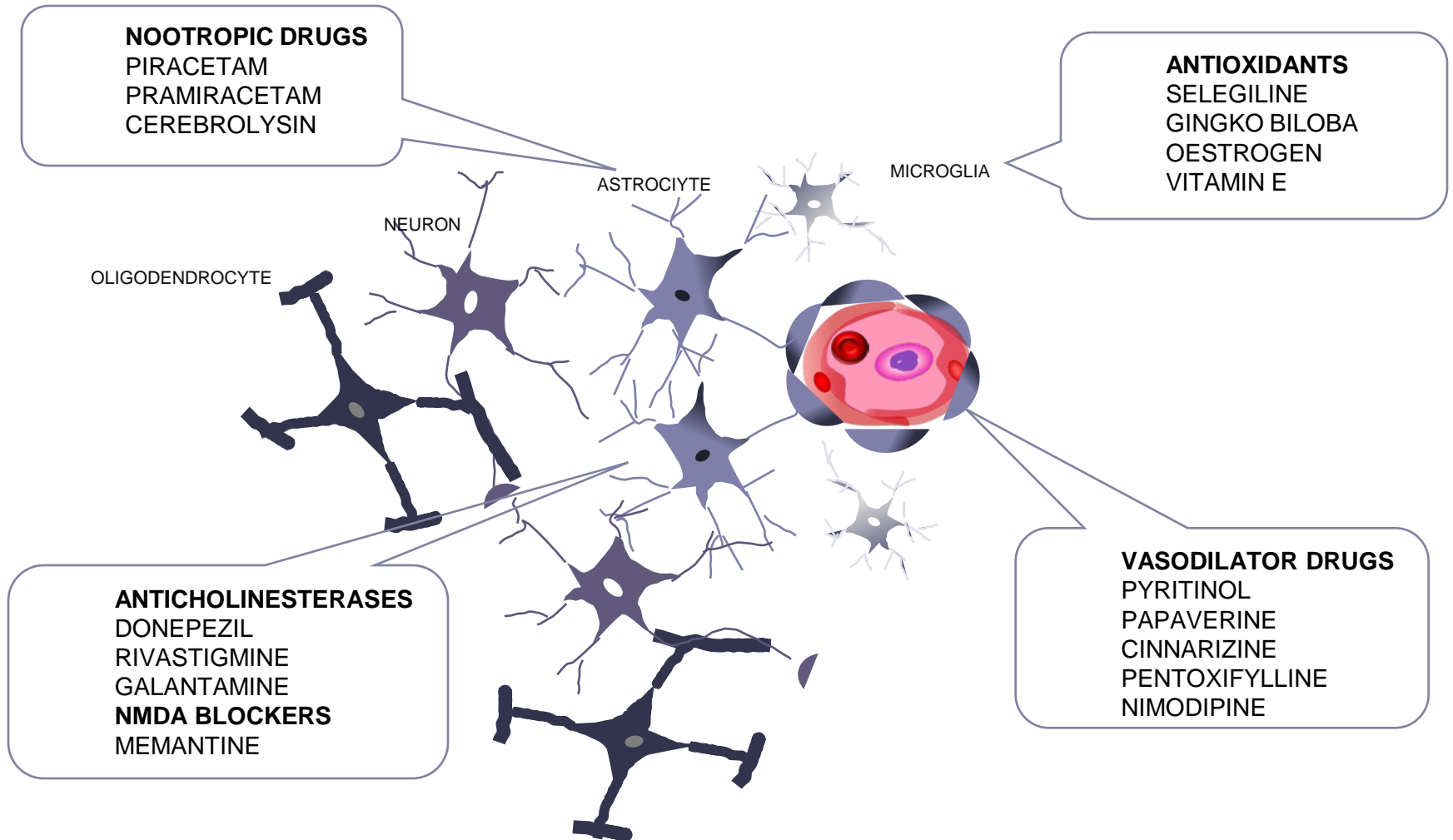
## FOR THE CARE-GIVERS

Information,

Education and

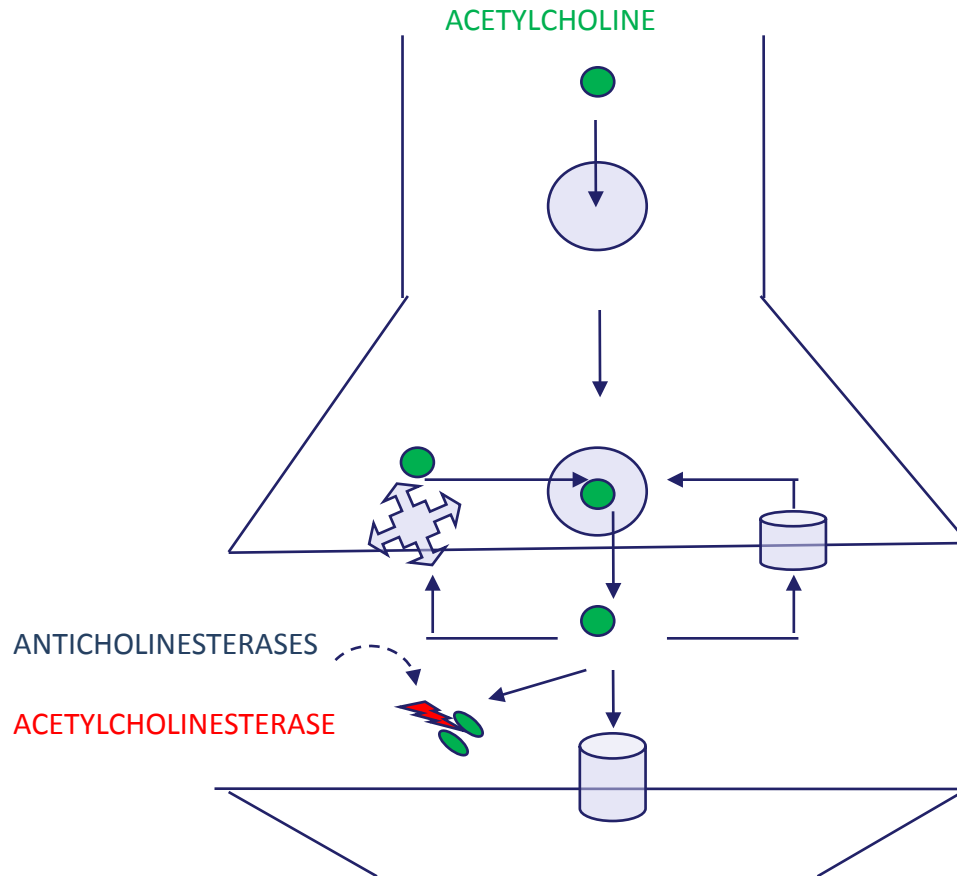
Support

# MEDICATION IN ALZHEIMER'S DEMENTIA



L. Del

# ANTICHOLINESTERASE DRUGS: MECHANISM OF ACTION



# ANTICHOLINESTERASE DRUGS

RIVASTIGMINE	DONEPEZIL	GALANTAMINE
Nonselective acetylcholinesterase and butyrylcholinesterase inhibitor	Selective acetylcholinesterase inhibitor	Selective acetylcholinesterase inhibitor and modulator of the nicotinic receptor
Intermediate action 2 doses per day	Long action 1 dose per day (in the evening)	Intermediate action 2 doses per day
Systemic secondary effects	Rare systemic secondary effects	Cholinergic secondary effects, exacerbates asthma
Without drug interaction	Drug interactions (liver metabolism, P450 cytochrome)	Drug interactions (liver metabolism, P450 cytochrome) enhances the effects of anesthesia.

## CHOLINERGIC SECONDARY EFFECTS:

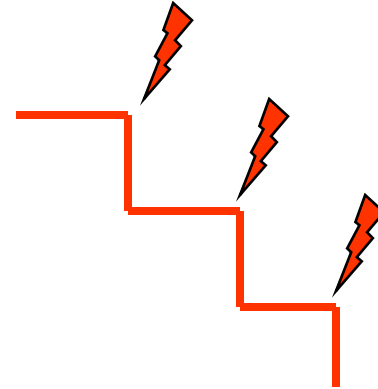
Respiratory depression, bradycardia, hypotension, nausea, vomiting, abdominal pain, sialorrhea, sweating, weeping, convulsions

CONTRAINDICATIONS: asthma, sinus or atrioventricular block, duodenal ulcer.

# VASCULAR DEMENTIA

## CHARACTERISTIC FEATURES

- acute onset (after a stroke)
- progressive aggravation
- symptoms' intensity is fluctuant
- cognitive deficits in different areas
- neurological focal signs: pyramidal syndrome, pseudobulbar syndrome, extrapyramidal syndrome
- awareness of the deficit, sometimes with a catastrophic reaction (crying)
- paraclinical investigations suggest a cerebral vascular disease
- history of stroke, hypertension



# VASCULAR DEMENTIAS

## MULTI-INFARCT DEMENTIA:

Cortical strokes in the territories of the cortical branches of ACA, MCA, PCA

Etiopathogenesis: embolisation form:

- carotid atheromatous plaques
- heart: AMI, AFi

Clinic:

- signs of CVA (stroke)
- signs of atherosclerosis
- signs of the disease that caused the CVA

Paraclinic: lipid profile, cerebral CT (hypodense cortical images)

## DEMENTIA IN CEREBRAL LACUNAR STATE:

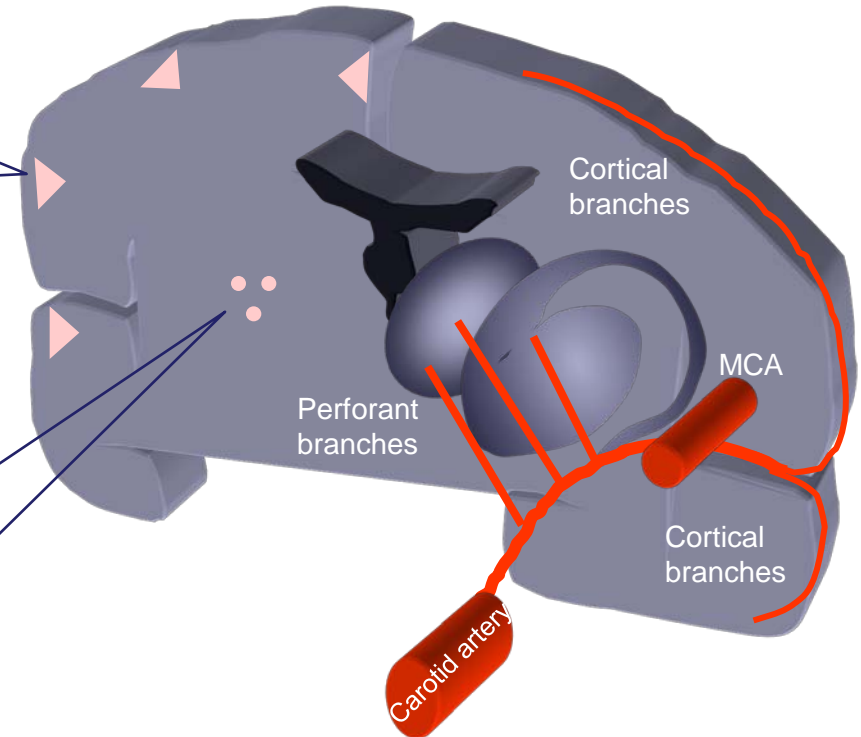
Subcortical strokes (thalamus, internal capsule, basal ganglia), of small dimensions, in the territory of the perforant branches of MCA, ACA

Etiopathogenesis: AHT, lipohyalinosis of small vessels

Clinic:

- Pyramidal, extrapyramidal, thalamic syndromes
- Complications of AHT

Paraclinic: lipid profile, cerebral CT scan  
(hypodense subcortical images = infarctions  
hyperdense subcortical images = hemorrhages)



MCA: middle cerebral artery

ACA: anterior cerebral artery

PCA: posterior cerebral artery

CVA: cerebrovascular accident

AMI: acute myocardial infarction

AFi: atrial fibrillation

AHT: arterial hypertension

*L. Del*

# PREFRONTAL DEMENTIA- PICK DISEASE



Arnold Pick (1851-1924)

Onset <65 years

Women > men

Family history present

Predominant frontal atrophy

The most affected areas: PERSONALITY AND SOCIAL BEHAVIOUR

Histopathology:

Pick cells: neurons with cytoplasmic argentophilic inclusions

Rarifying of the neurons

Astrocytes gliosis



# PREFRONTAL DEMENTIA- PICK DISEASE

Impairment of the executive functions

- Organizing
- Planning
- Predicting consequences
- Feedback

Impaired judgment

Impaired discernment

Impaired capacity for abstract thinking

Secondary to dorsolateral prefrontal cortical atrophy

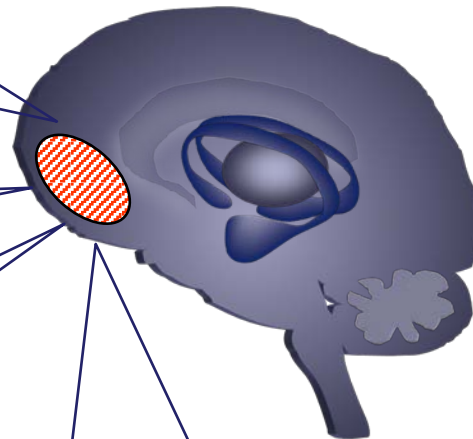
Apathy and abulia secondary to medial prefrontal cortical atrophy

Irritability, unjustified euphoria or depression, instinctual disinhibition, (alimentary, sexual) or behavioural disinhibition (bad jokes, antisocial acts) secondary to orbitofrontal cortical atrophy.

SPECT: fronto-temporal hypoperfusion

PET: fronto-temporal glucose hypometabolism

CT, MRI: predominant fronto-temporal atrophy



Other signs of frontal lobe impairment:  
Primitive reflexes release  
Sphincter incontinence  
Insight absent

# LEWY BODY DEMENTIA

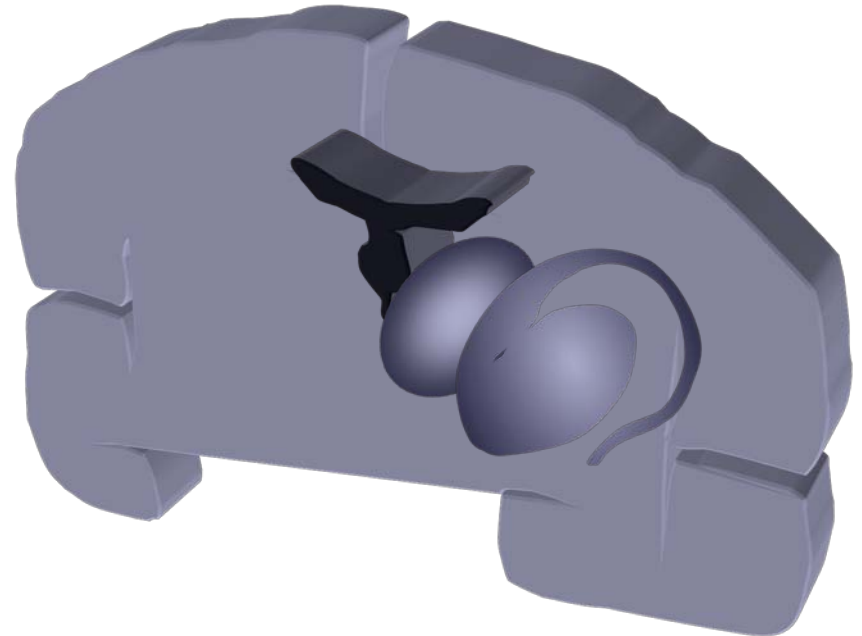
## Clinical pictures:

- fluctuant cognitive performances
- frequent syncope episodes
- frequent visual hallucinations
- paranoid delusions unrelated with the cognitive deficit
- high sensibility to neuroleptic drugs (risk of side effects)
- frequent parkinsonian signs that are bilateral and moderate (rigid muscles, slowed movement)

Fast progressive evolution

Confounded with

- Alzheimer dementia
- vascular dementia
- Parkinson dementia



Histopathology: in the fronto-temporal cortex and brainstem

Lewy bodies (intracytoplasmic inclusions containing alpha synuclein, ubiquitin and microfilaments)

Senile plaques

# DEPRESSION IN OLD AGE

- Is frequent, but often undiagnosed:
  - it is often masked by somatic symptoms
  - the memory impairment secondary to depression is thought to be due to normal aging

# CHARACTERISTICS OF OLD AGE DEPRESSION

- Depression accompanied by anxiety and psychomotor restlessness
- Depression masked by somatic symptoms
- Depression with hypochondriac and material ruin delusions
- Cotard's syndrome (delusion of negation – of the world, of the presence or the functionality of an organ, delusion of immortality, delusion of enormity)
- Depression with a high suicidal risk!
- Depression with melancholic stupor