The potential role of fluoride in ASD

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1. Prevalence of ASD.
2. Definition and diagnosis of ASD.
3. ASD etiology; our hypothesis of immunoexcitotoxicity.
4. The potential role of fluoride in the ASD pathophysiology.
5. The potential role of aluminum.
6. The potential role of AlF_x.
7. Conclusions.

ASD prevalence

- 1944 rare – Leo Kanner definition
- 1980 1 : 10 000
- 1990 1 : 1000
- 2002 1 : 150
- 2008 1 : 88
- 2011–2012 1 : 50

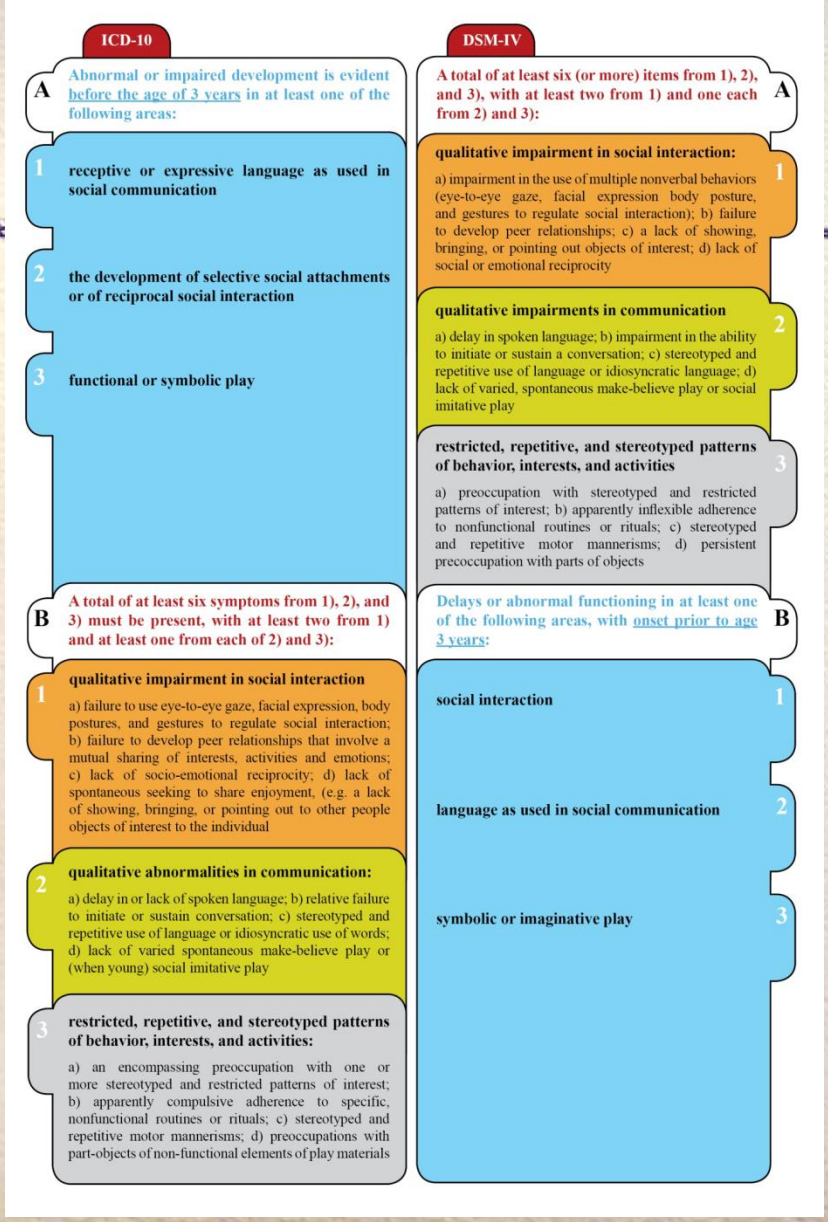
ASD EPIDEMIC

ASD – pervasive neurodevelopmental disorders

- Autism (infantile)
- Childhood disintegrative disorder
- Asperger syndrome
- Rett syndrome (girls, genetic)
- PDD-NOS
- Hyperactive disorder (ADHD) with mental retardation

ICD-10

ICD-10 International Statistical Classification of Diseases WHO



ICD-10

A Abnormal or impaired development is evident before the age of 3 years in at least one of the following areas:

1. receptive or expressive language as used in social communication
2. the development of selective social attachments or of reciprocal social interaction
3. functional or symbolic play

B A total of at least six symptoms from 1), 2), and 3) must be present, with at least two from 1) and at least one from each of 2) and 3):

1. **qualitative impairment in social interaction**
   a) failure to use eye-to-eye gaze, facial expression, body postures, and gestures to regulate social interaction; b) failure to develop peer relationships that involve a mutual sharing of interests, activities and emotions; c) lack of socio-emotional reciprocity; d) lack of spontaneous seeking to share enjoyment, (e.g. a lack of showing, bringing, or pointing out to other people objects of interest to the individual
2. **qualitative abnormalities in communication:**
   a) delay in or lack of spoken language; b) relative failure to initiate or sustain conversation; c) stereotyped and repetitive use of language or idiosyncratic use of words; d) lack of varied spontaneous make-believe play or (when young) social imitative play
3. **restricted, repetitive, and stereotyped patterns of behavior, interests, and activities:**
   a) an encompassing preoccupation with one or more stereotyped and restricted patterns of interest; b) apparently compulsive adherence to specific, nonfunctional routines or rituals; c) stereotyped and repetitive motor mannerisms; d) preoccupations with part-objects of non-functional elements of play materials

DSM-IV

A A total of at least six (or more) items from 1), 2), and 3), with at least two from 1) and one each from 2) and 3):

1. **qualitative impairment in social interaction:**
   a) impairment in the use of multiple nonverbal behaviors (eye-to-eye gaze, facial expression body posture, and gestures to regulate social interaction); b) failure to develop peer relationships; c) a lack of showing, bringing, or pointing out objects of interest; d) lack of social or emotional reciprocity
2. **qualitative impairments in communication**
   a) delay in spoken language; b) impairment in the ability to initiate or sustain a conversation; c) stereotyped and repetitive use of language or idiosyncratic language; d) lack of varied, spontaneous make-believe play or social imitative play
3. **restricted, repetitive, and stereotyped patterns of behavior, interests, and activities**
   a) preoccupation with stereotyped and restricted patterns of interest; b) apparently inflexible adherence to nonfunctional routines or rituals; c) stereotyped and repetitive motor mannerisms; d) persistent preoccupation with parts of objects

B Delays or abnormal functioning in at least one of the following areas, with onset prior to age 3 years:

1. social interaction
2. language as used in social communication
3. symbolic or imaginative play

DSM-IV

Diagnostic and statistic manual of mental diseases USA

TRIAD OF IMPAIRMENTS

- deficits in socialization
- delayed or abnormal language and communication
- repetitive or unusual behaviors

AUTISM

Persons with autism may possess the following characteristics in various combinations and in varying degrees of severity.

Inappropriate laughing or giggling

No real fear of dangers

Apparent insensitivity to pain

May not want cuddling

Sustained unusual or repetitive play; Uneven physical or verbal skills

May avoid eye contact

May prefer to be alone

Difficulty in expressing needs; May use gestures

Inappropriate attachments to objects

Insistence on sameness

Echoes words or phrases

Inappropriate response or no response to sound

Spins objects or self

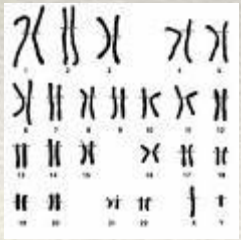
Difficulty in interacting with others

Current BIOMEDICINE

submits a lot of theories

- **Etiopathogenesis of ADS is not clear**
- **A cause is not known**
- **Effective prevention and therapy is not known**

Genetic research



MZ twins – 36–90% prevalence

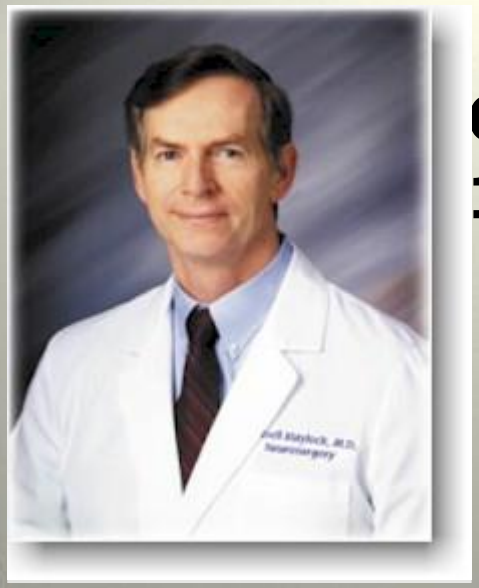
DZ twins – 1,6–6,3% prevalence

Autism Genome Project Consorcium 2007: 1 500 families

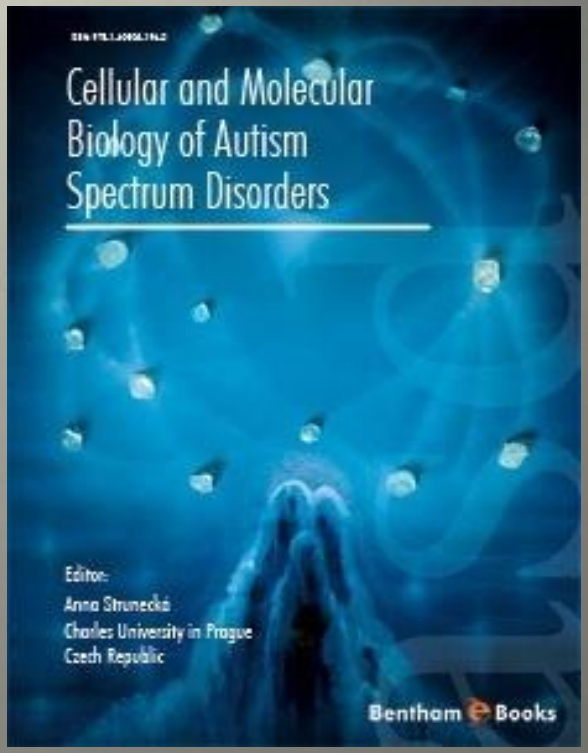
IMGSAC

International Molecular Genetic Study of Autism Consortium

Immune-glutamatergic Dysfunction as a Central Mechanism of the Autism Spectrum Disorders



CMC 2009
16 (2), 157-170



R. L. Blaylock and A. Strunecka

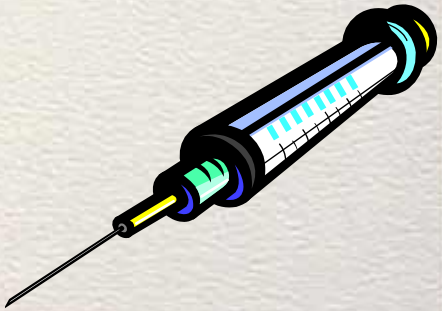
NEW VIEWS

- Vaccination
- Excitotoxins

  Fluoride and aluminum

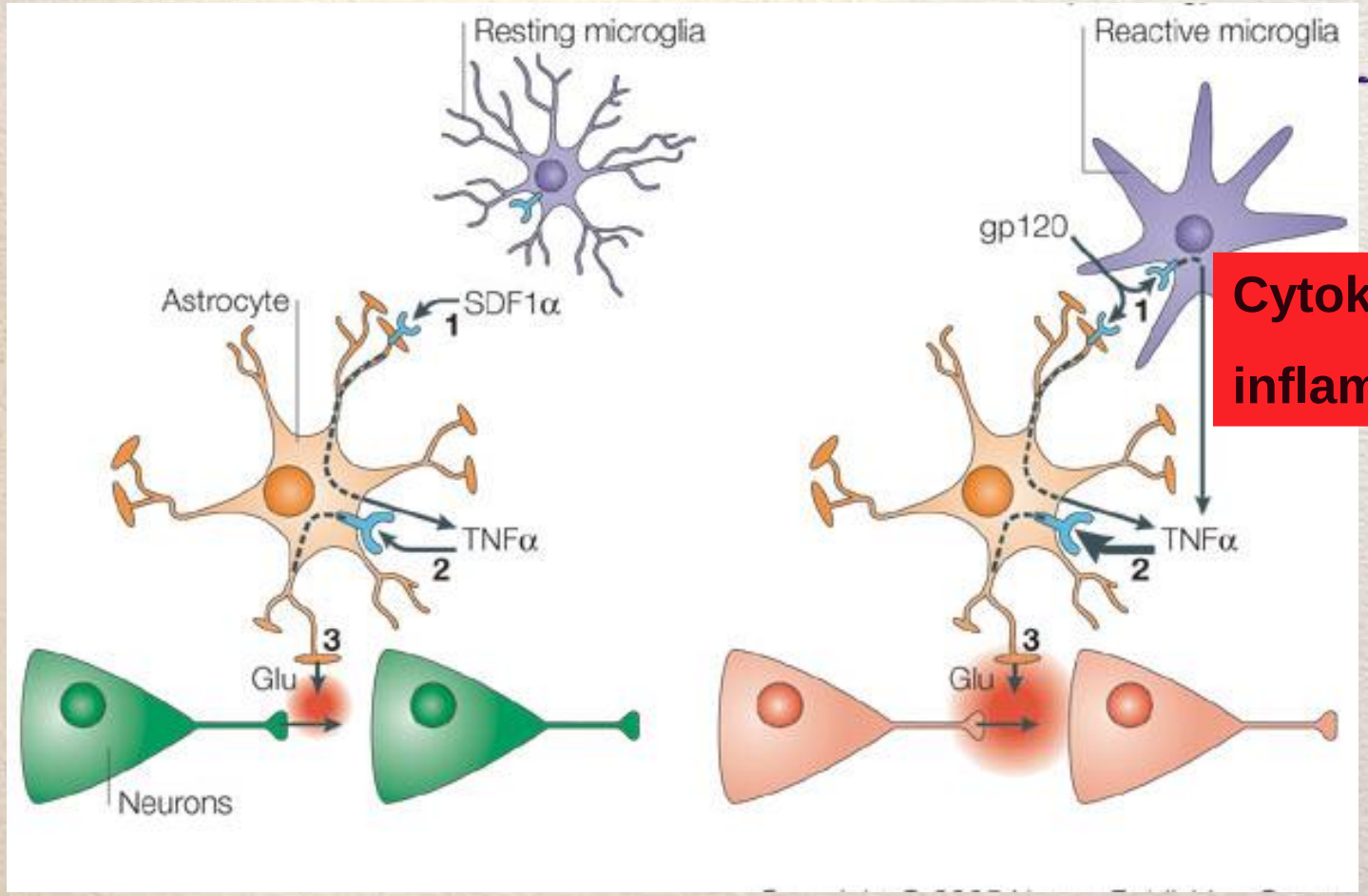
  Glutamate and aspartam

  Mercury



IMMUNOEXCITOTOXICITY

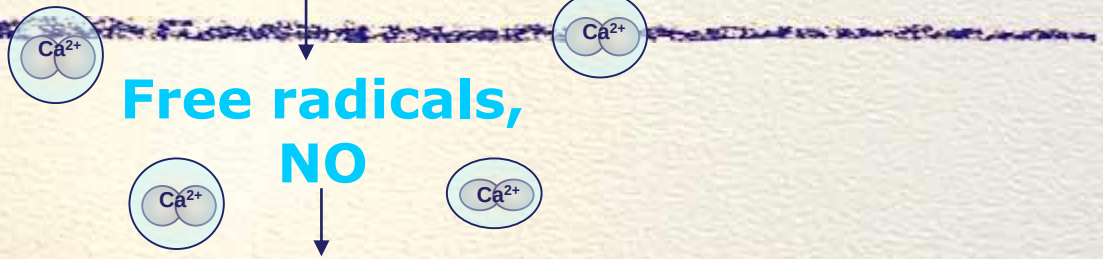
MIKROGLIA and ASTROCYTES



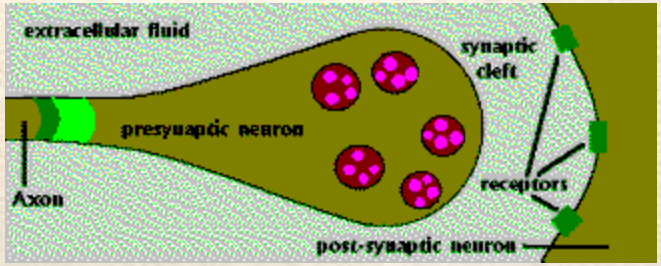
mikroglia

astrocytes

GABA ← **GLUTAMATE** → **glutamin**

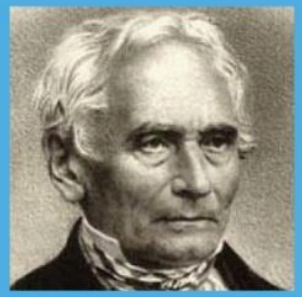


Free radicals, NO



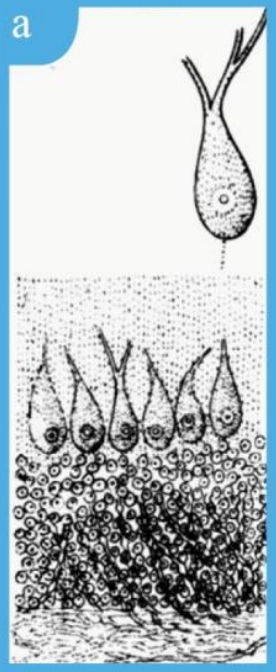
EXCITOTOXICITY

Neurodegeneration, apoptosis, necrosis



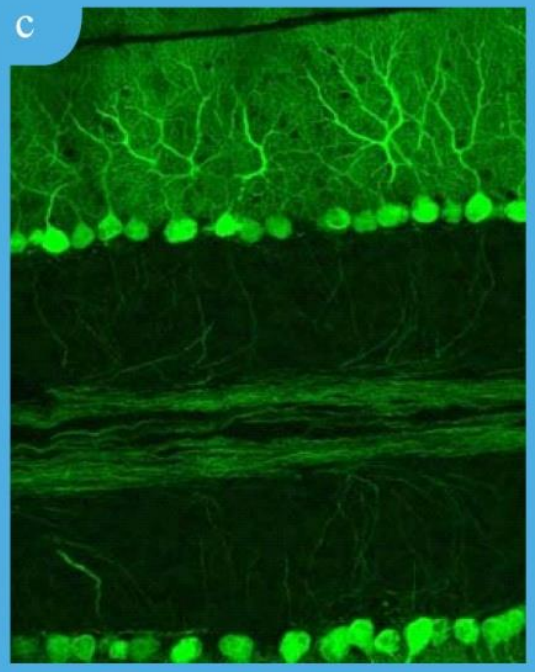
J. E. Purkinje
1787 - 1869

a



b

c

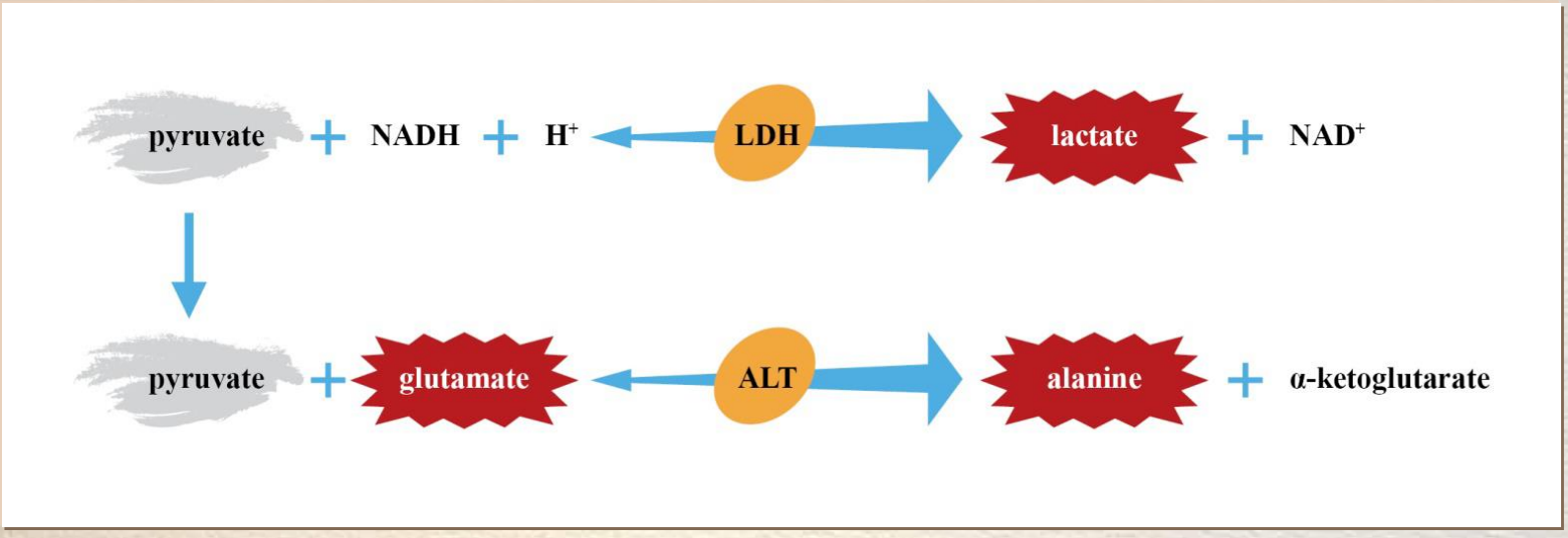


Bisphenol A

phtalates

250 × more fluoride
3 × more aluminum
aspartame
hormonal disruptors

http://www.fluoridealert.org/issues/infant-exposure/



Fluorid stimulated LDH in hepatocytes
ALT was increased in fluorotic children (Shivashankara et al.)

Mullenix PJ, et al. 1995. Neurotoxicity of sodium fluoride in rats. Neurotoxicol Teratol 17: 169-177.

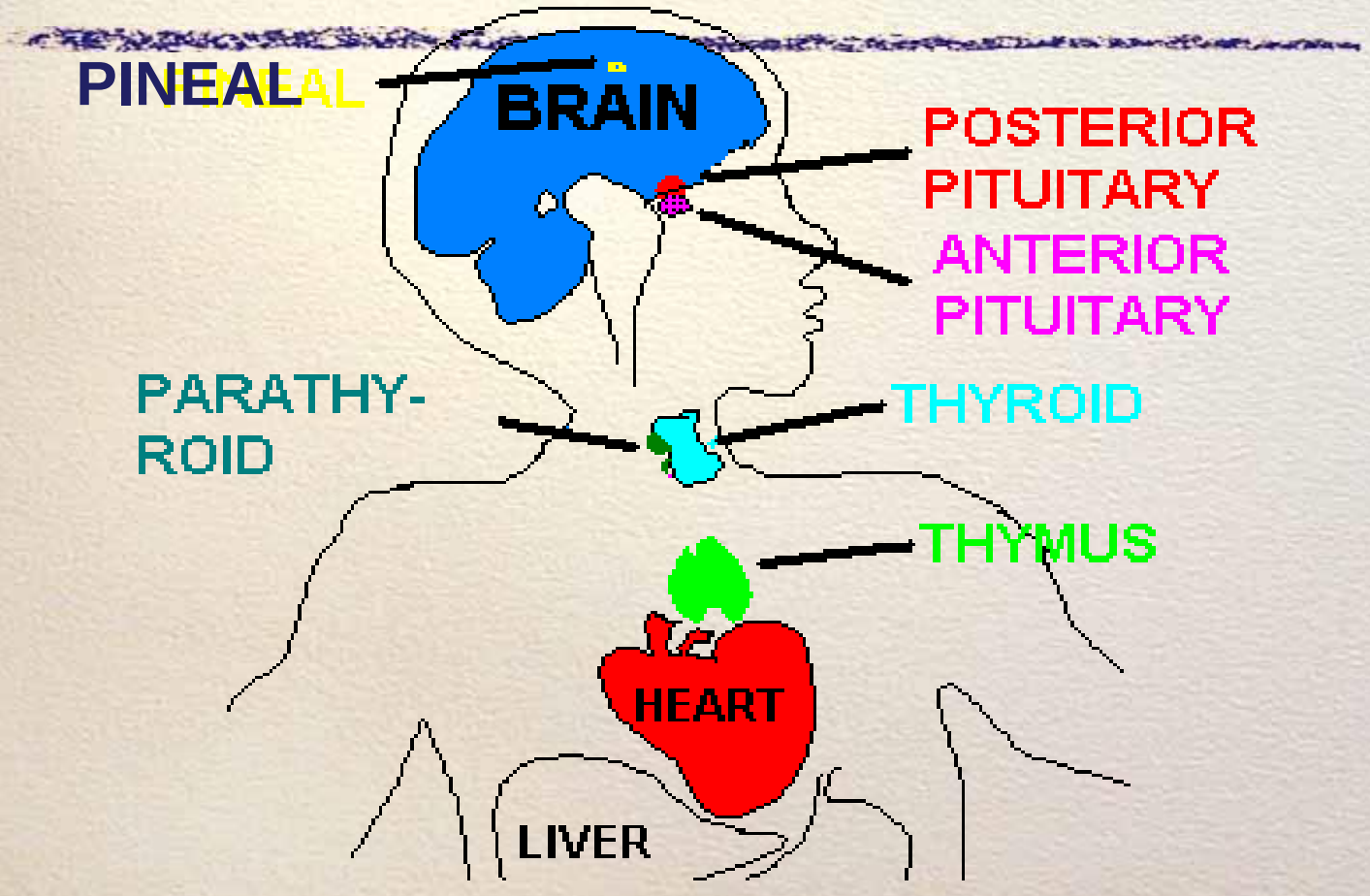
Strunecká A, Patocka J, Blaylock R, Chinoy N. 2007. Fluoride interactions: From molecules to disease. Current Signal Transduction Therapy 2: 190-213

Bryson C. 2004. The fluoride deception.

Susheela AK, et al. 2005. Excess fluoride ingestion and thyroid hormone derangements in children living in Delhi, India. Fluoride 38: 98-108.

Luke J. 2001. Fluoride deposition in the aged human pineal gland. Caries Res. 35: 125-128.

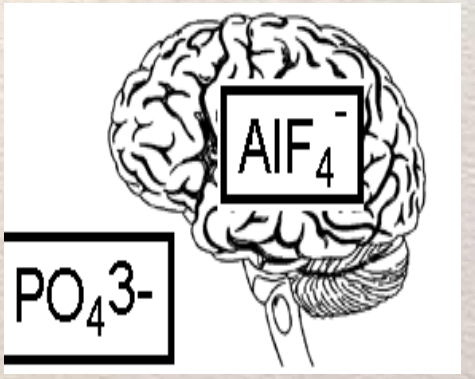
The endocrine glands are extremely sensitive to fluoride and AlF_x

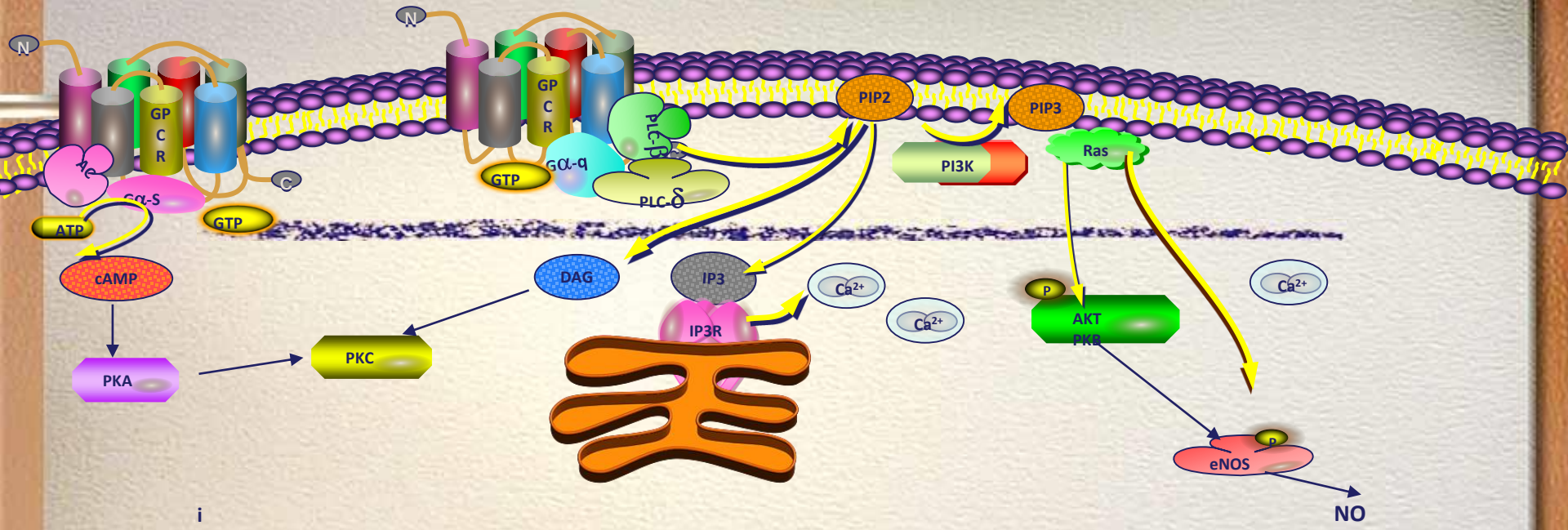


ALUMINUM

Varner JA, et al. 1998. Chronic administration of aluminum-fluoride…to rats… alterations in neuronal and cerebrovascular integrity. Brain Res 784: 284.

Khan Z, et al. 2013. Slow CCL2–dependent translocation of biopersistent particles from muscle to brain. BMC Med 11: 99.





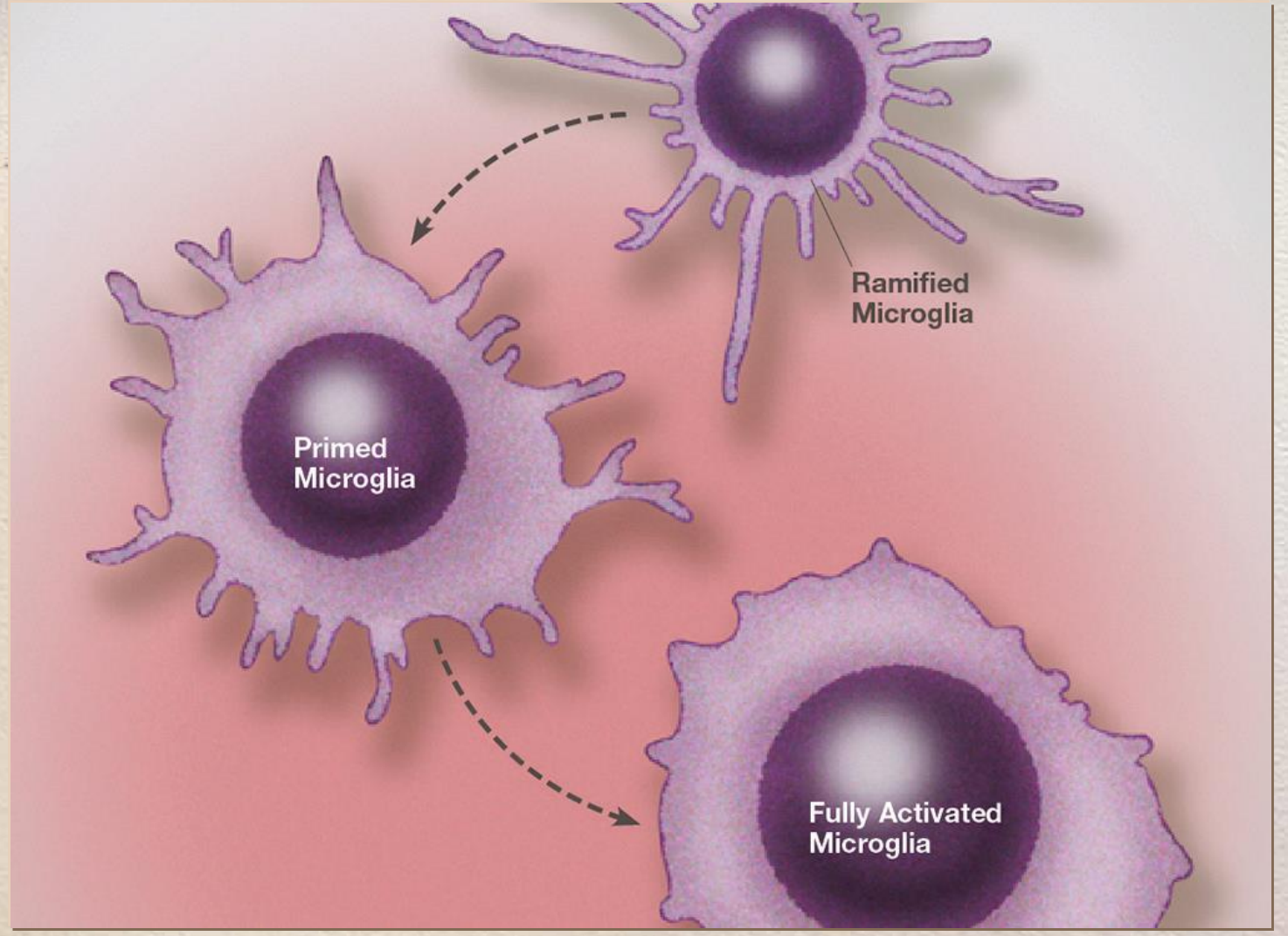
i

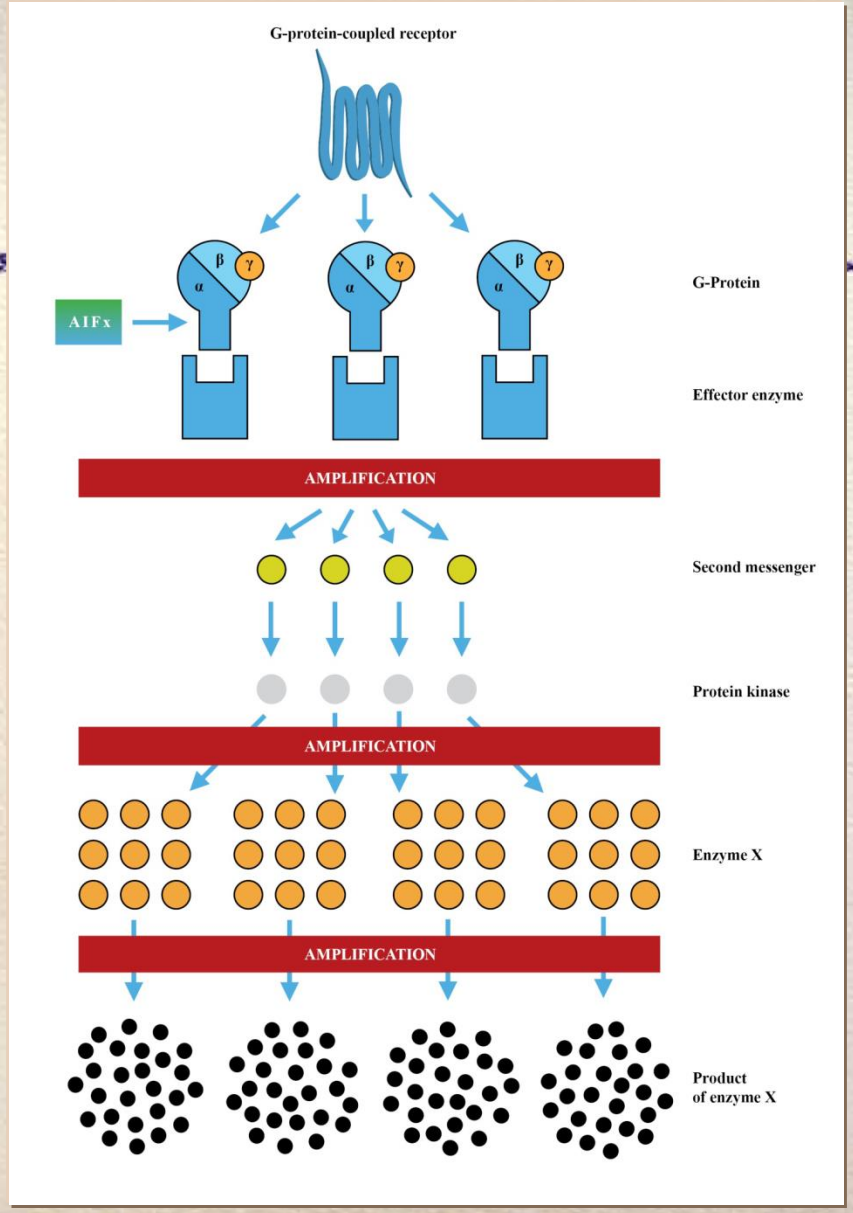
Metabotropic Glutamate Receptors

- **Group I**
  - mGlu1
  - mGlu5
- **Group II**
  - mGlu2
  - mGlu3
- **Group III**
  - mGlu4
  - mGlu6
  - mGlu7
  - mGlu8

Ionotropic Glutamate Receptors

- **NMDA**
  - NR1
  - NR2A-D
  - NR3A
- **AMPA**
  - GluR1-4
- **Kainate**
  - GluR5-7
  - KA1,2

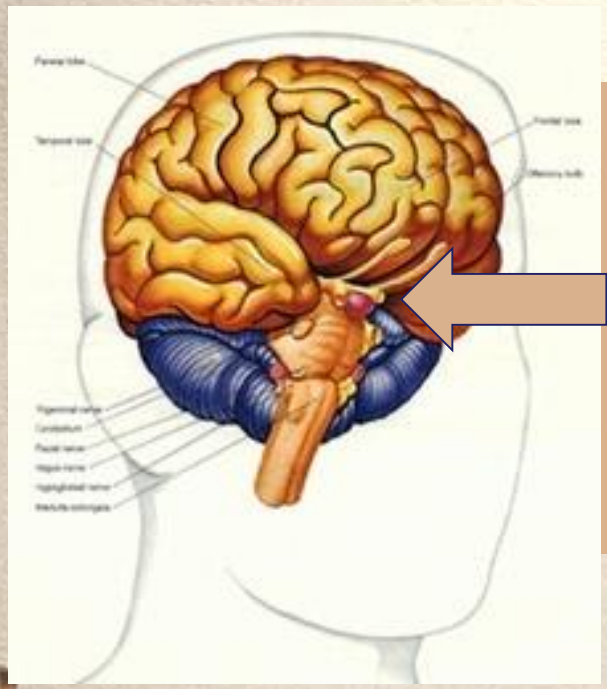

Ramified
Microglia
Primed
Microglia
Fully Activated
Microglia


G-protein-coupled receptor
β
γ
α
AlFx
G-Protein
Effector enzyme
AMPLIFICATION
Second messenger
Protein kinase
AMPLIFICATION
Enzyme X
AMPLIFICATION
Product
of enzyme X

PINEAL and MELATONIN

ADS – low melatonin

J. Luke – F accumulates in pineal gland



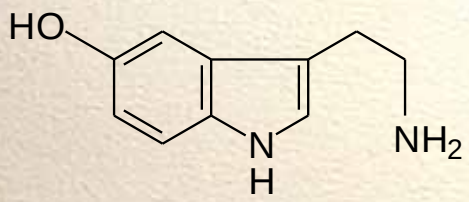
Sleep disorders

Loss of daily rhythm

Early puberty

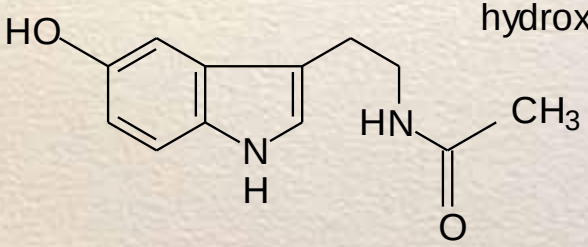
LIGHT

DARK



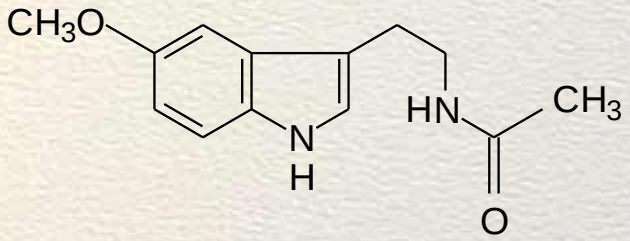
serotonin

serotonin-N-acetyltransferáza

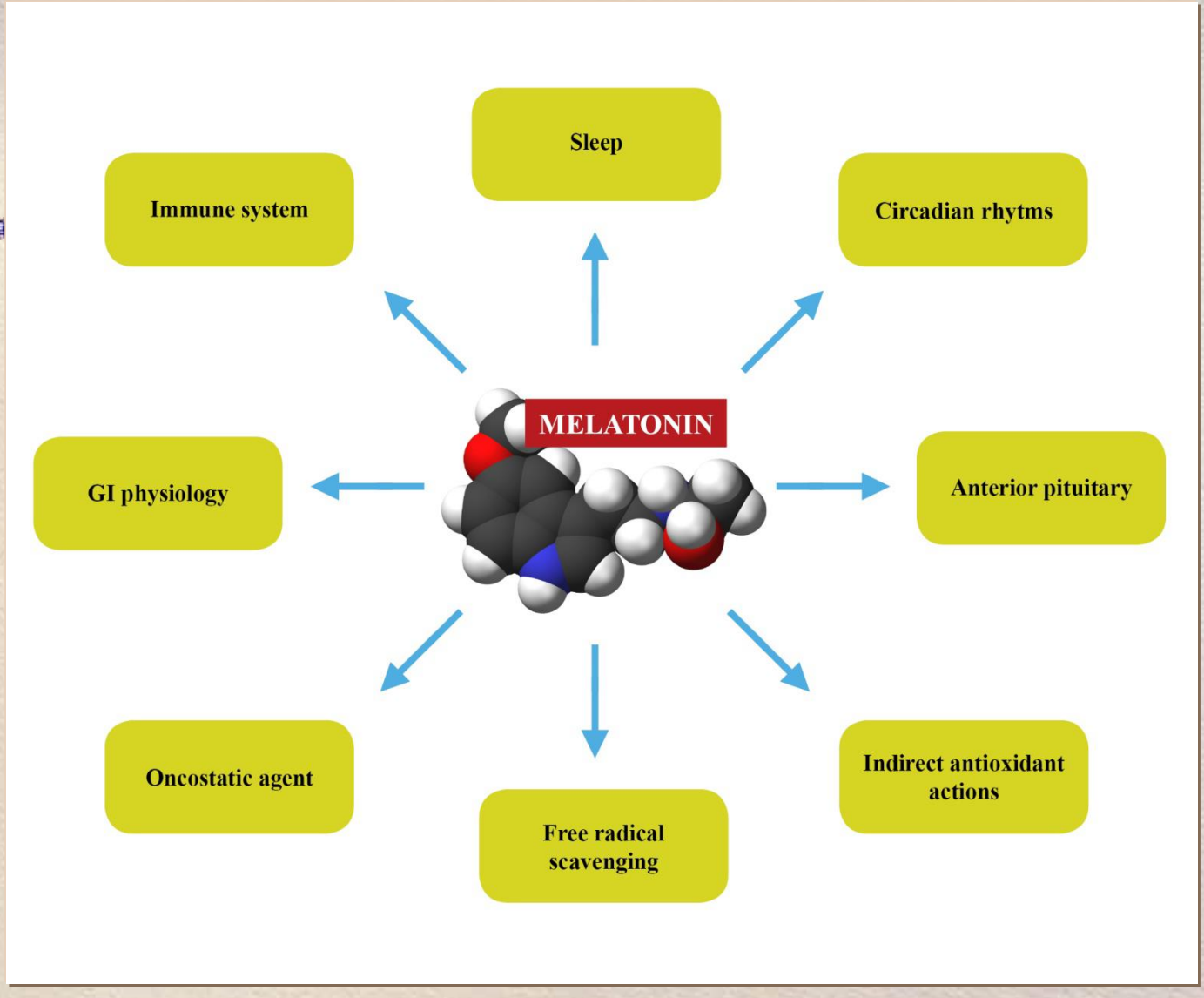


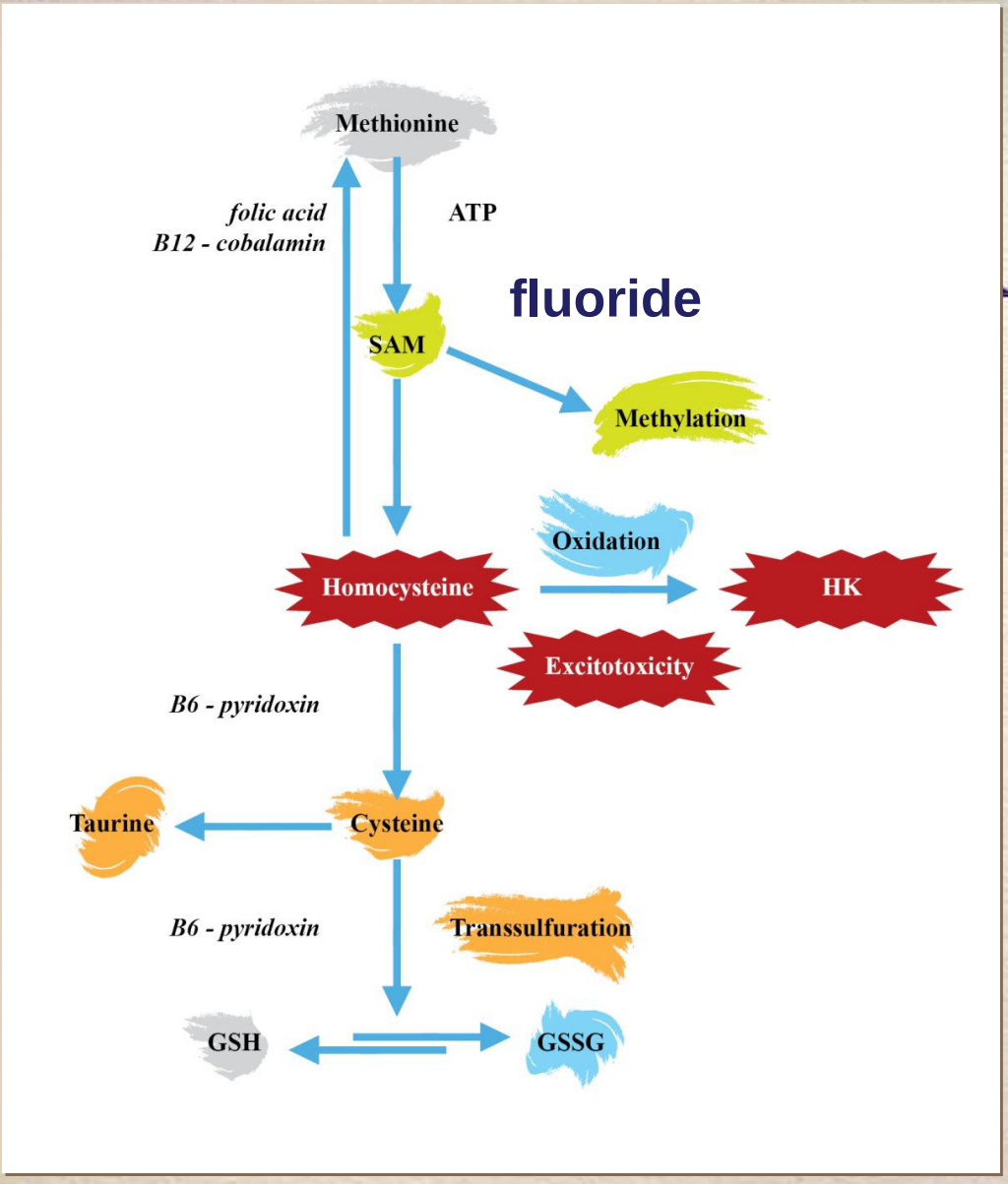
N-acetylserotonin

hydroxyindol-O-methyltransferáza



melatonin

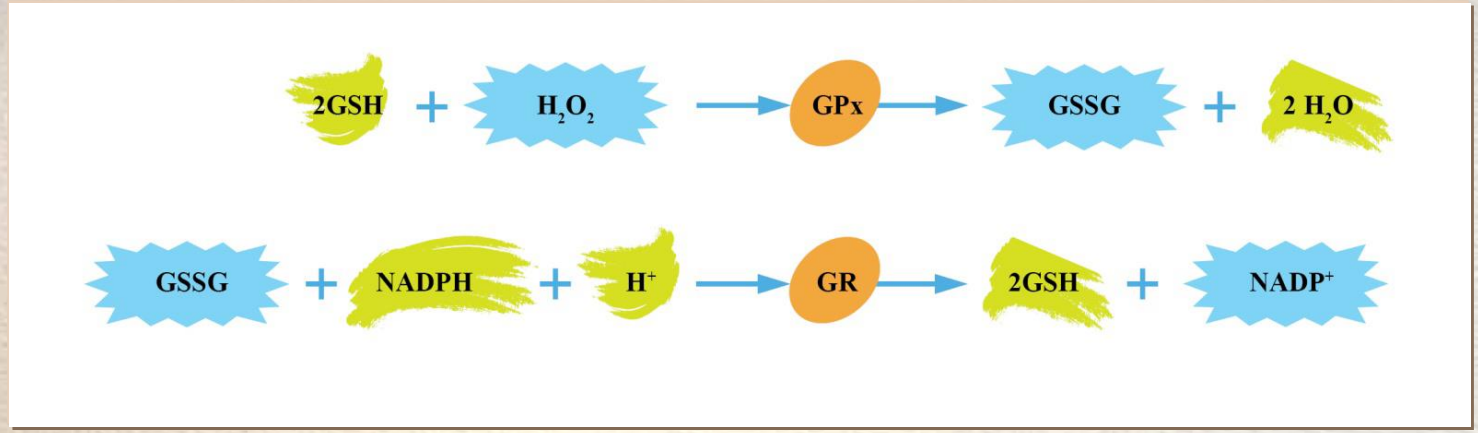

Sleep
Immune system
Circadian rhytms
MELATONIN
GI physiology
Anterior pituitary
Oncostatic agent
Free radical scavenging
Indirect antioxidant actions



Homocysteine is a potent excitatory neurotransmitter

that binds to NMDAR and leads to oxidative stress, calcium influx, and cellular apoptosis.

Fluoride contributes to oxidative stress and inflammation



	Healthy children	ASD children
GSH µmol/L	4.2	1.4
GSSH nmol/L	0.3	0.4
Taurine µmol/L	97	48
Cysteine µmol/L	207	165

Symptoms of fluoride intoxication are the same as symptoms of ASD

- Neurodevelopmental brain disorders
- Decrease of IQ
- Decreased melatonin

- Hypomagnesmia
- Hypocalcemia
- Hypothyroidismus

USA 46% of children

PREVENTION

- NO fluoride
- Reduce aluminum
- NO glutamate
- No aspartame
- No mercury
- Sleep in a dark room
- Reduce vaccination

AMELIORATION

- Antioxidants
- Vitamins
  B6 + B9 + B12
- Magnesium
- Zinc
- Vitamin D3

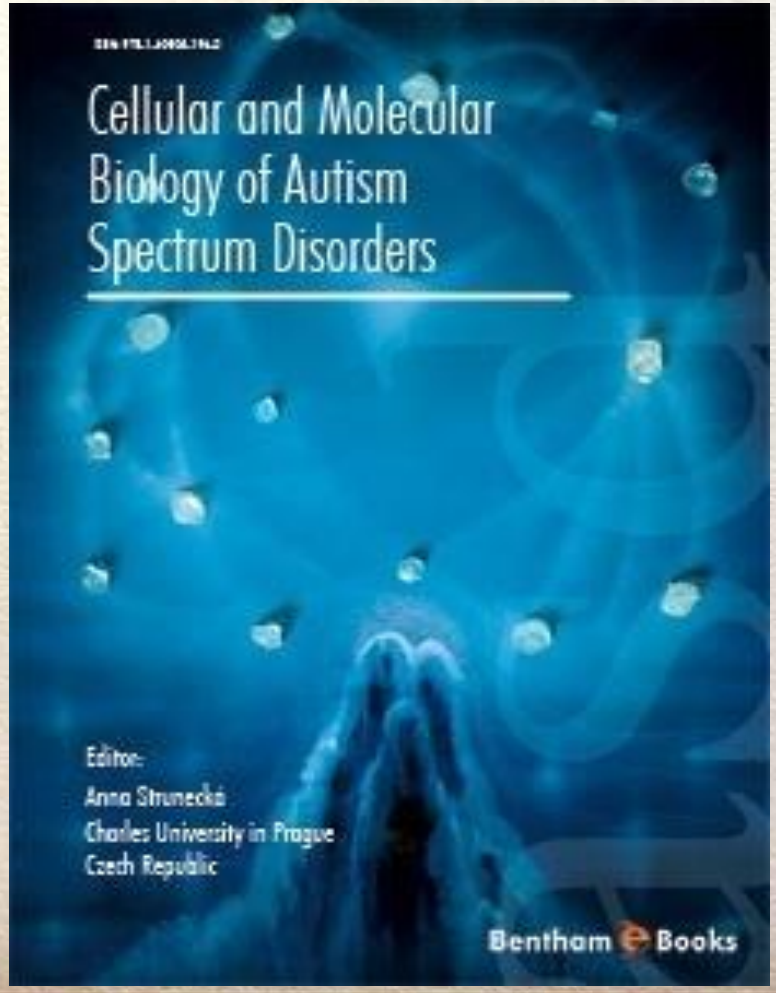
http://www.bentham.org/ebooks/9781608051960/index.htm

Anna Strunecká

Russell L. Blaylock

Ivo Paclt

Mark A. Hyman

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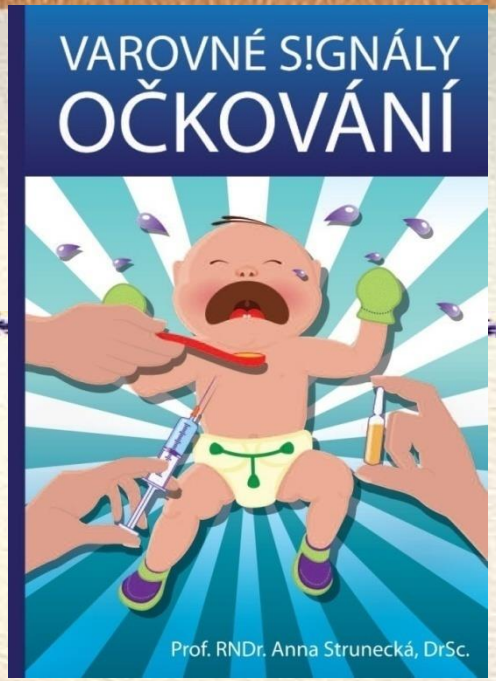
VAROVNÉ S!GNÁLY
OČKOVÁNÍ
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JAK PŘEŽÍT DOBU JEDOVOU?
HLINÍK
BARVIVA
STATINY
SÓJA
LÉKY
ASPARTAM
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Jiří Patočka
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Nakladatelství TRITON
DOBA JEDOVÁ 2
Šárka Besedová


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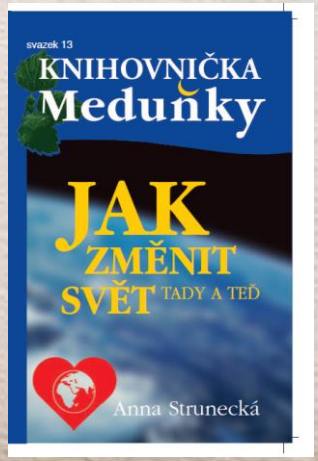
PŘEMŮŽEME AUTIZMUS?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KNIHOVNIČKA
Meduňky
JAK ZMĚNIT SVĚT TADY A TEĎ
Anna Strunecká

Thanks for your attention