CODESKILLS
4ROBOTICS

DEMOKRITOS

LASERS & Μαθησιακές δυσκολίες

ΓΙΟΛΑΝΤΑ ΣΑΛΑΠΑΤΑ Επ. Συνεργάτης Net Media Lab

MSc LASER DENTISTRY &THERAPEUTICS
MSc PEDIATRIC DENTISTRY

17ης ΝΟΕΜΒΡΙΟΥ 75 ΧΟΛΑΡΓΟΣ

ΤΗΛ 210 6533991

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LASERS
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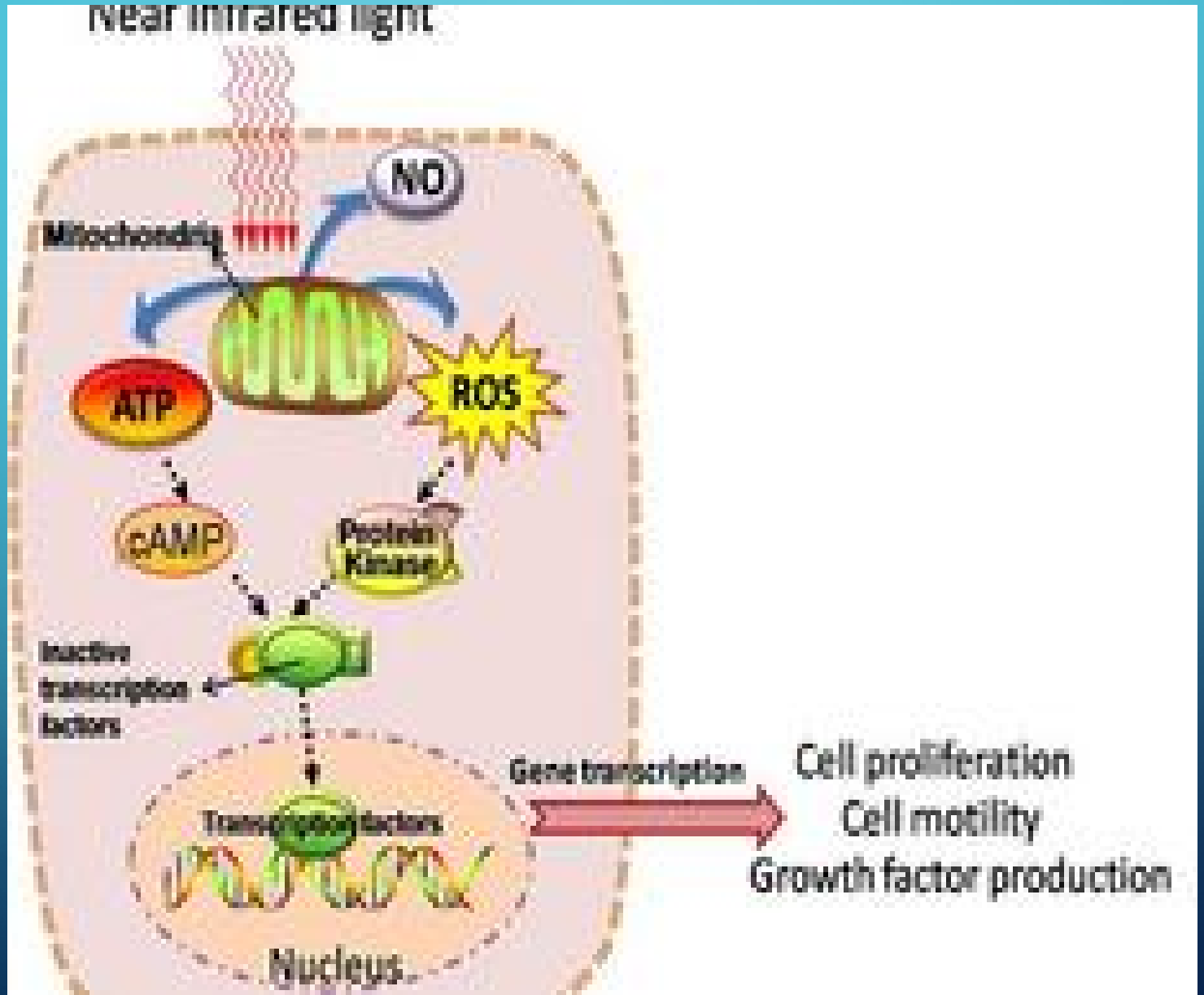
ΜΙΑ ΑΓΝΩΣΤΗ ΜΗ ΦΑΡΜΑΚΕΥΤΙΚΗ ΘΕΡΑΠΕΥΤΙΚΗ ΠΡΟΣΕΓΓΙΣΗ

ΣΤΗΡΙΖΕΤΑΙ ΣΤΗΝ ΑΝΑΓΕΝΝΗΤΙΚΗ ΙΚΑΝΟΤΗΤΑ ΤΟΥ ΥΠΕΡΥΘΡΟΥ ΚΑΙ ΕΡΥΘΡΟΥ ΦΩΤΟΣ ΣΤΑ ΕΓΚΕΦΑΛΙΚΑ ΚΥΤΤΑΡΑ, ΣΤΗΝ ΕΝΙΣΧΥΣΗ ΤΗΣ ΕΝΖΥΜΙΚΗΣ ΛΕΙΤΟΥΡΓΙΑΣ ΤΟΥΣ ,ΣΤΗΝ ΥΠΟΣΤΗΡΙΞΗ ΤΩΝ ΛΕΙΤΟΥΡΓΙΩΝ ΤΩΝ ΝΕΥΡΟΔΙΑΒΙΒΑΣΤΩΝ ΚΑΙ ΤΩΝ ΕΓΚΕΦΑΛΙΚΩΝ ΣΥΝΑΨΕΩΝ ΜΕ ΜΟΝΑΔΙΚΑ ΑΠΟΤΕΛΕΣΜΑΤΑ ΣΕ ΠΟΛΛΕΣ ΕΚΦΥΛΙΣΤΙΚΕΣ ΝΕΥΡΟΛΟΓΙΚΕΣ ΚΑΤΑΣΤΑΣΕΙΣ

- ***LOW LEVEL LASER EXPOSION TRIGERS NEURONS AND OTHER CELLS TO PRODUCE MORE ENERGY***



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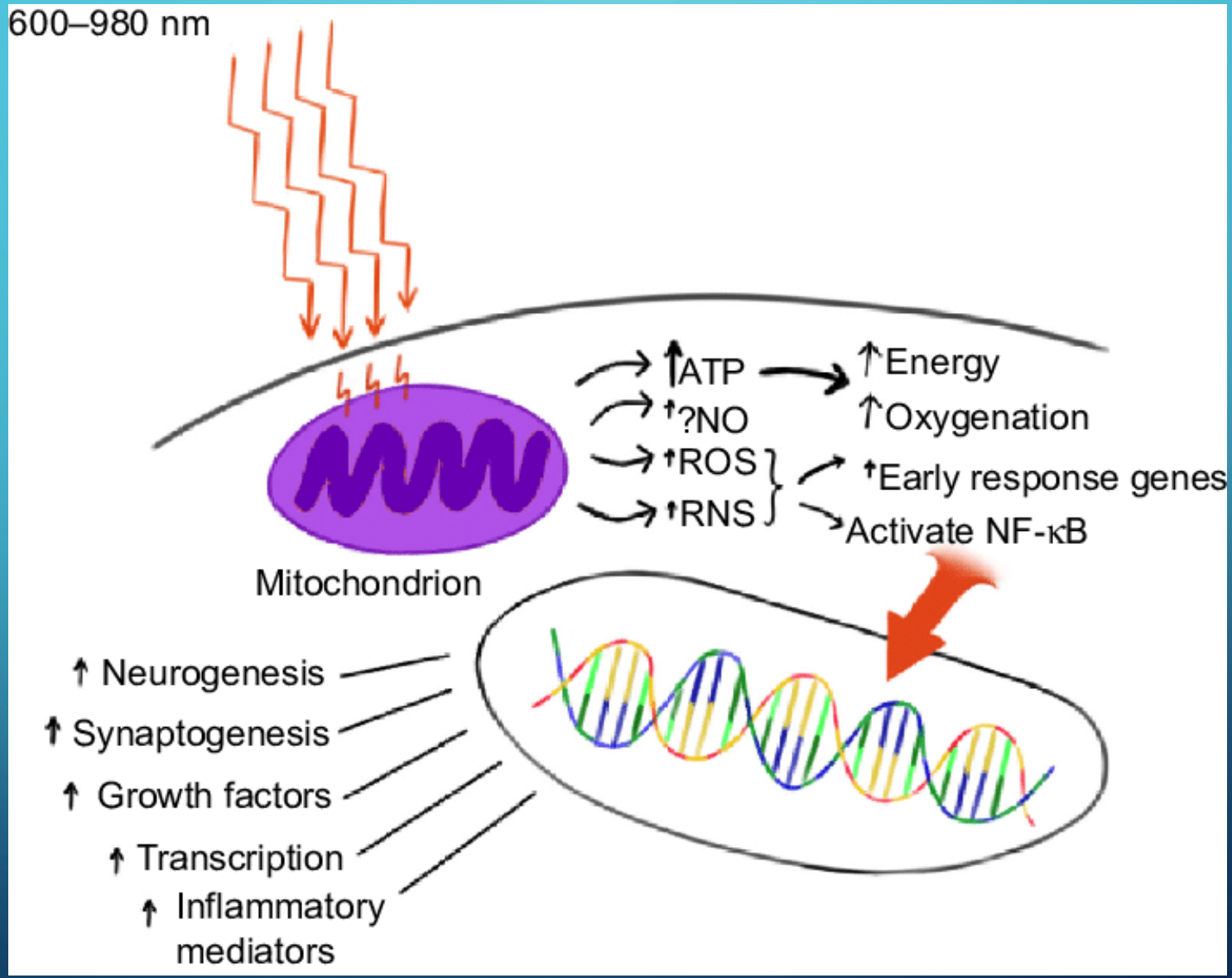
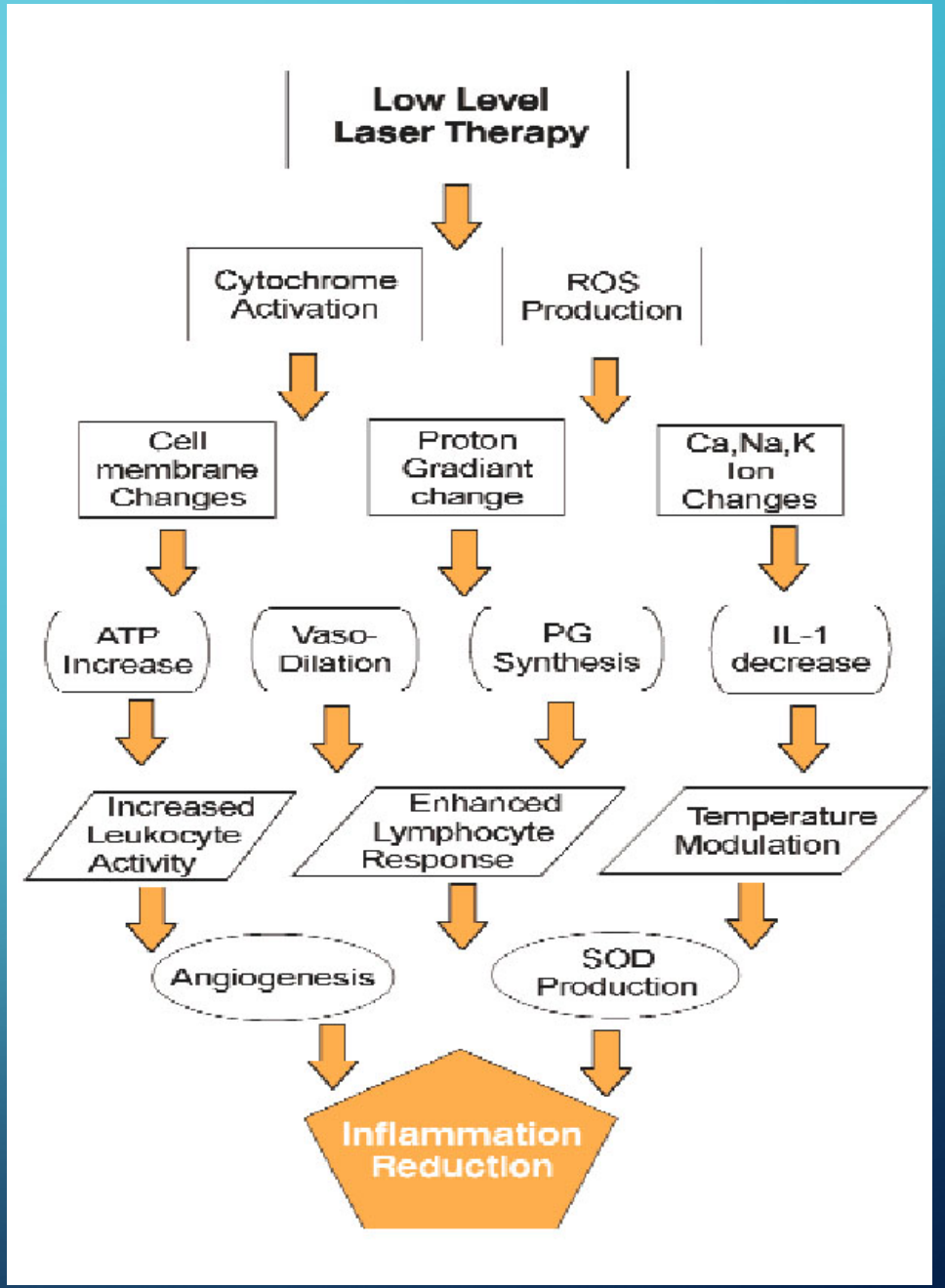


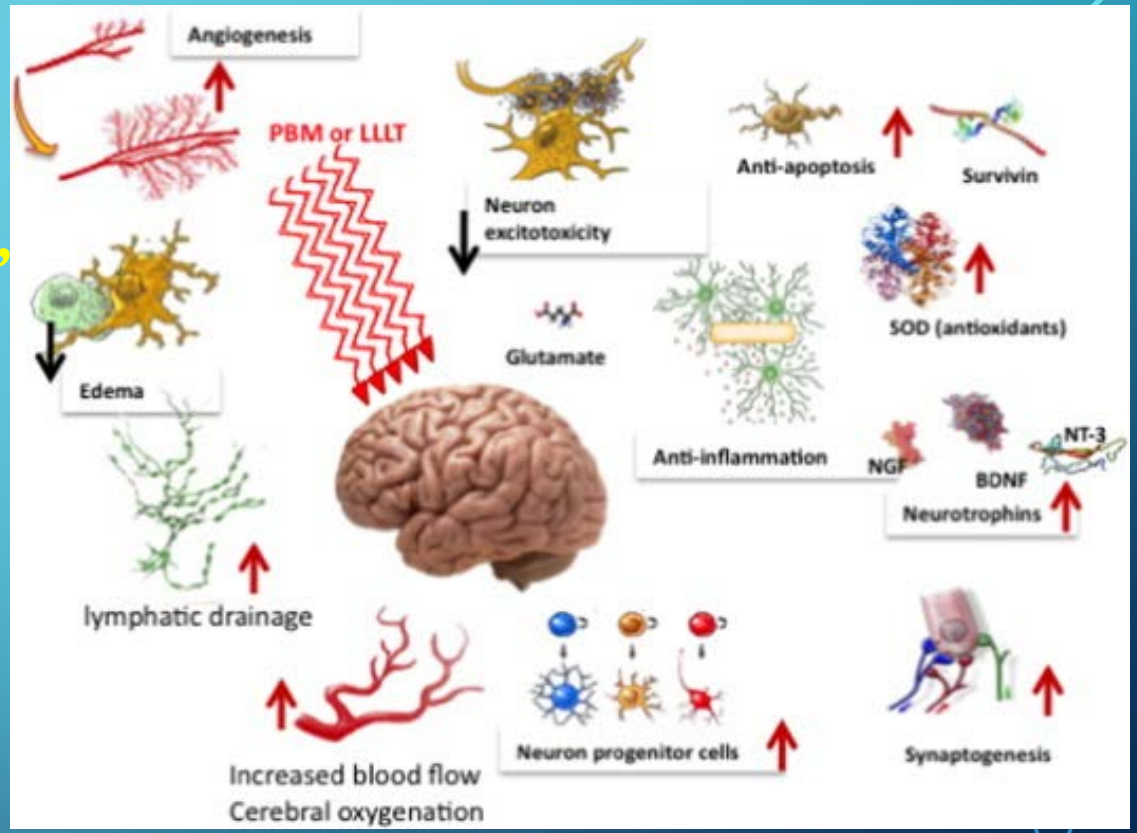
- *INFLAMATION REDUCTION HAS*
- *POSSITIVE IMPACT ON BRAIN AND NEUROLOGICAL OPERATION*
- *AND POSSITIVE IMPACT ON MENTAL OPERATION*



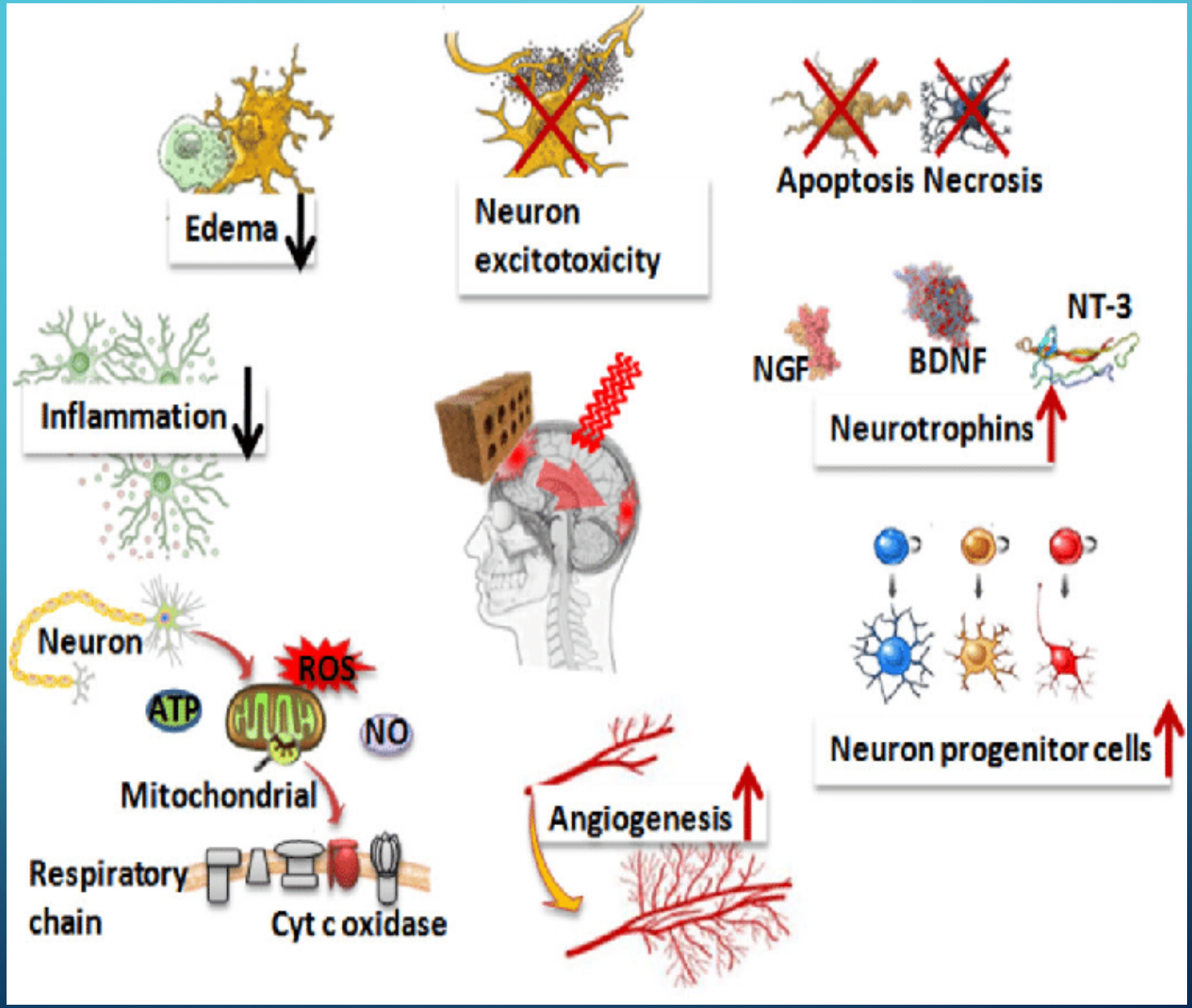
The brain suffers from many different disorders that can be classified into three broad groupings: traumatic events (stroke, traumatic brain injury, and global ischemia), degenerative diseases (dementia, Alzheimer's and Parkinson's), and psychiatric disorders (depression, anxiety, post traumatic stress disorder).

There is some evidence that all these seemingly diverse conditions can be beneficially affected by applying light to the head.

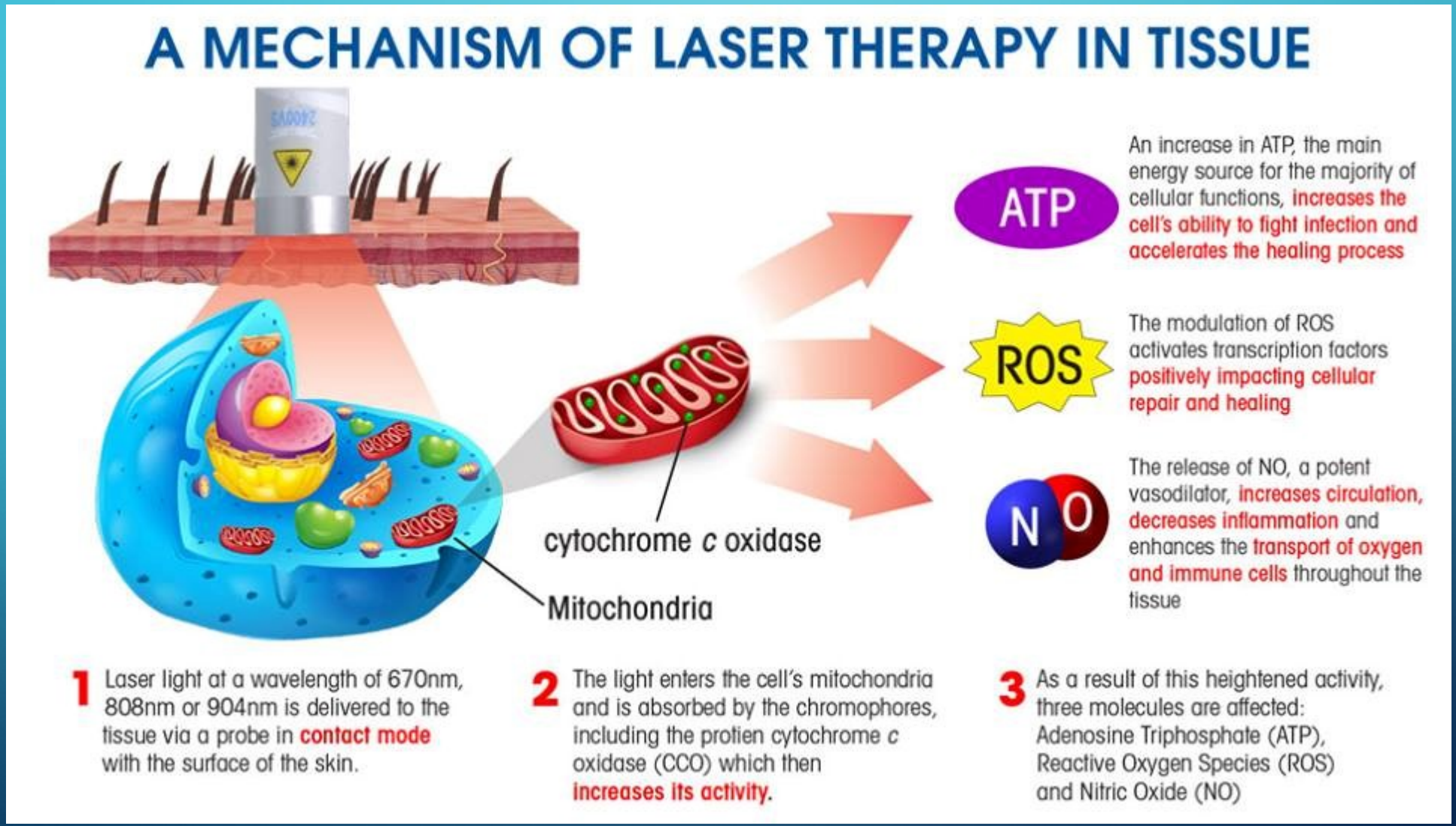
There is even the possibility that PBM could be used for cognitive enhancement in normal healthy people.



POSITIVE RESULTS OF LASER THERAPY



POSITIVE RESULTS OF LASER THERAPY



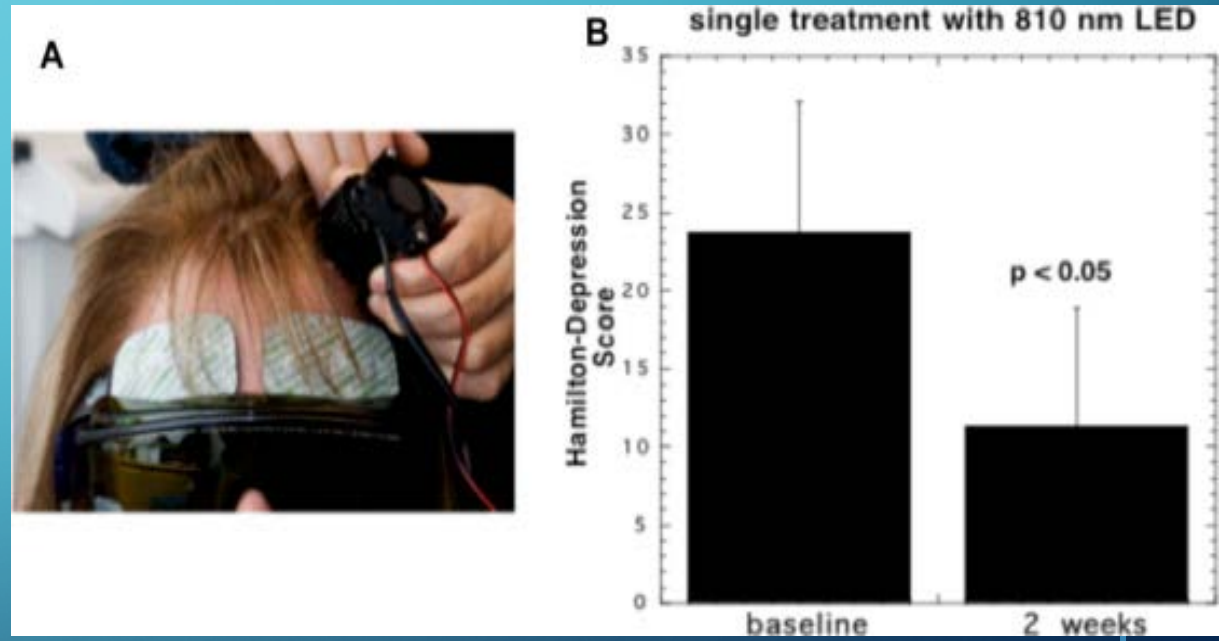
LLL stimulation can induce some biological or physiological changes.

In vitro, irradiation with He-Ne laser could increase ATP level in cells, and the absorbance of living cells changed after laser irradiation. **Effect of Low-Level Laser Stimulation on EEG** Jih-Huah Wu, et al 2012

In rats, increased endorphins were observed after laser irradiation at the Hoku acupoint

In vivo, laser acupuncture at 10 Hz to the Neiguan acupoint could increase vagal activity and suppress cardiac sympathetic function

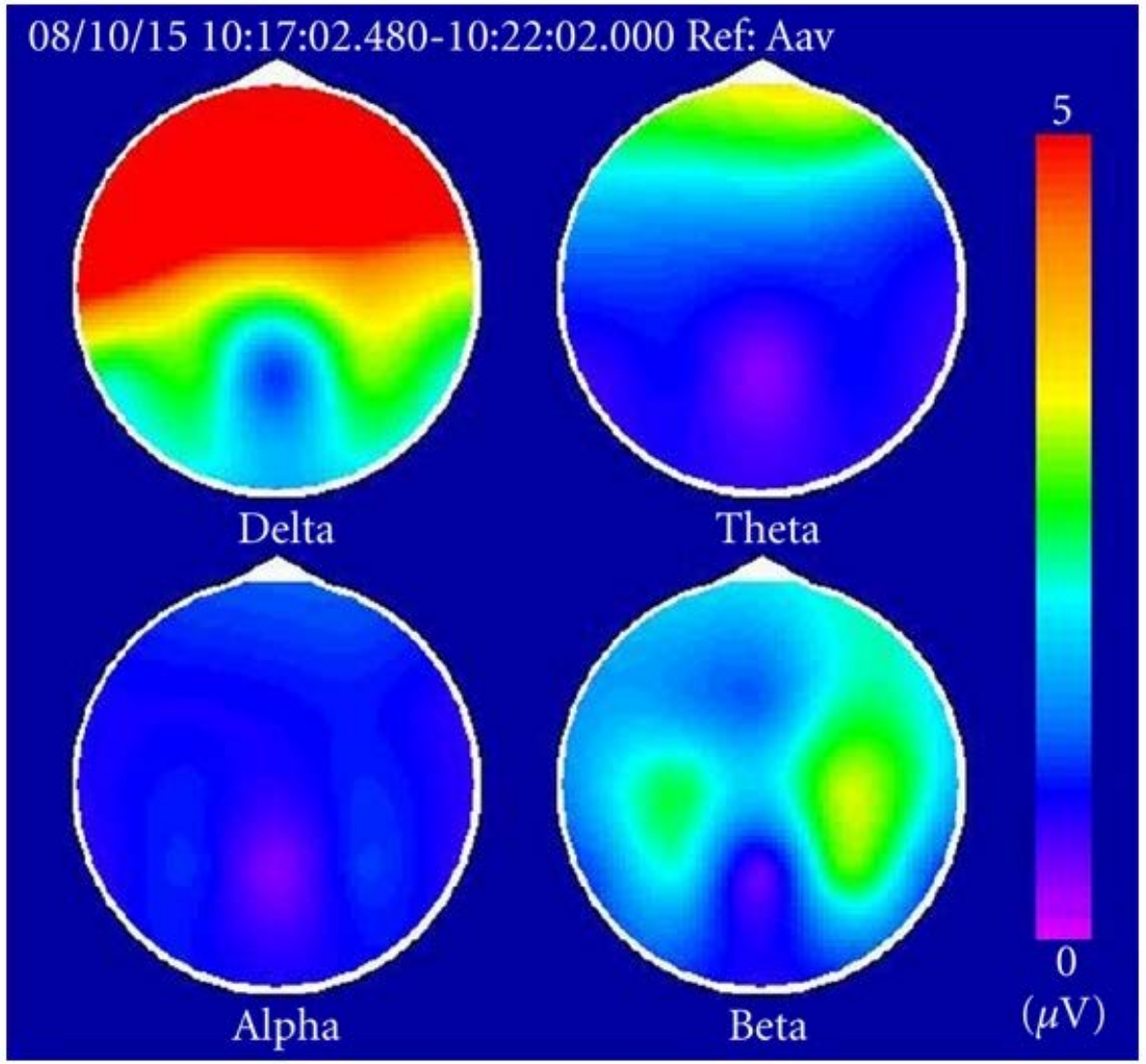
in laser therapy, physiological changes have been described including increased urinary level of degradation product of serotonin decreased inflammatory response and changes in blood circulation.



In this transcranial PBM (tPBM) application, near-infrared (NIR) light is often applied to the forehead because of the better penetration (no hair, longer wavelength).
Some workers have used lasers, but recently the introduction of inexpensive light emitting diode (LED) arrays has allowed the development of light emitting helmets or “brain caps”.
This review will cover the mechanisms of action of photobiomodulation to the brain, and summarize some of the key pre-clinical studies and clinical trials that have been undertaken for diverse brain disorders.

The effects of LLL stimulation at the palm on the different frequency bands of electroencephalogram (EEG) were investigated. Laser stimulation at 10 Hz can increase the power of alpha rhythms and theta activities in the occipital, parietal, and temporal regions. The effect can last at least 15 minutes after cessation of laser irradiation. An increase of alpha band and decrease of beta band following laser stimulation can be comparable to those EEG effects of practicing medication.

In the future, LLL radiation can possibly be applied to clinical therapy, for example, insomnia.

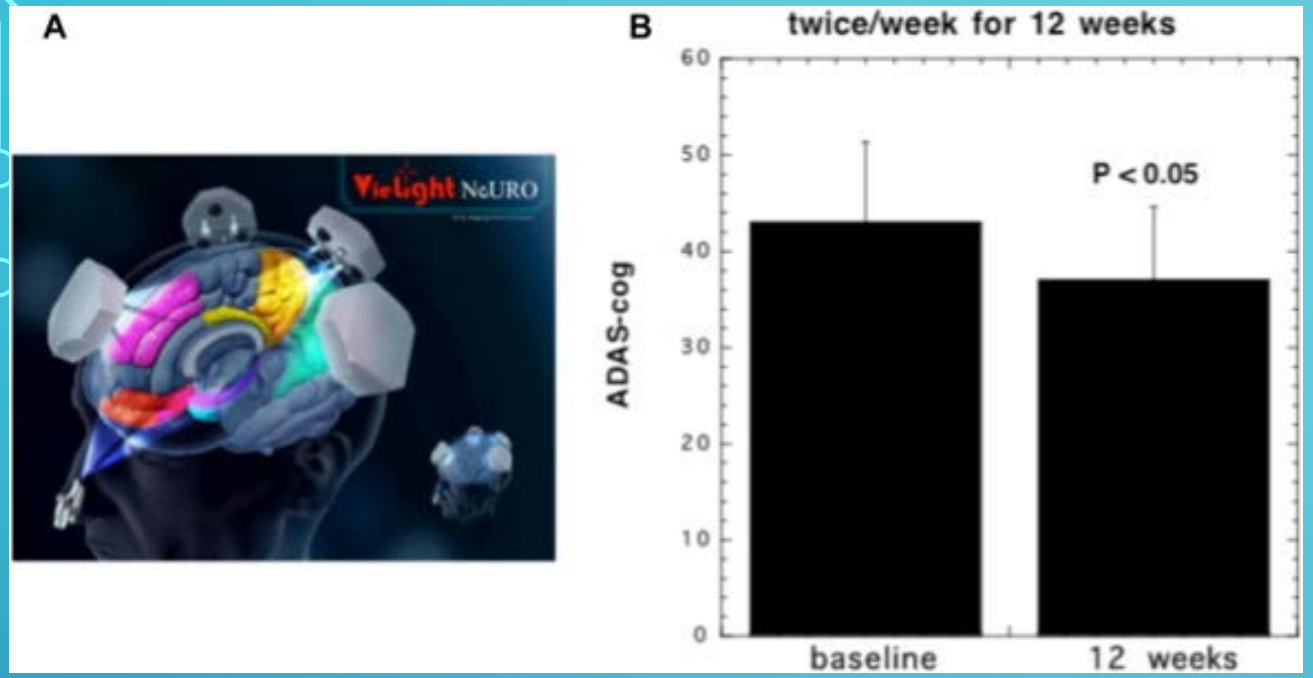


The study examined the efficacy of low-level laser therapy, a form of photobiomodulation, for the treatment of irritability associated with autistic spectrum disorder in children and adolescents aged 5–17 years. Twenty-one of the 40 participants received eight 5-min procedures administered to the base of the skull and temporal areas across a 4-week period (test, i.e., active treatment participants).

Effects of Low-Level Laser Therapy in Autism Spectrum Disorder

Gerry Leisman [1] [2] [3], Calixto Machado [4], Yanin Machado [4], Mauricio Chinchilla-Acosta [4]

The study found that low-level laser therapy could be an effective tool for reducing irritability and other symptoms and behaviors associated with the autistic spectrum disorder in children and adolescents, with positive changes maintained and augmented over time.



Laser Acupuncture Effects on Speech and Social Interaction in Patients with Autism Spectrum Disorder

Imtiaz Amrinusantara Surapaty [1], Christina Simadibrata [1], Ekky Sri Rejeki [2], Irawan Mangunatmadja [3]

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