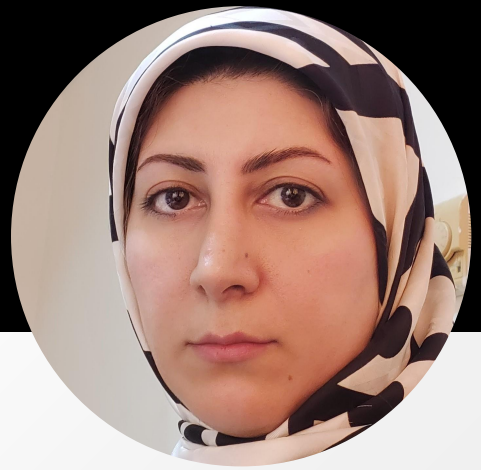
Brain photobiomodulation headset

Zeinab Chenari

LighTech
Pioneers in photonics technology

Our Team



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Ph.D. in Information Technology Management

A progressive disease that affects memory and Destroys thinking skills

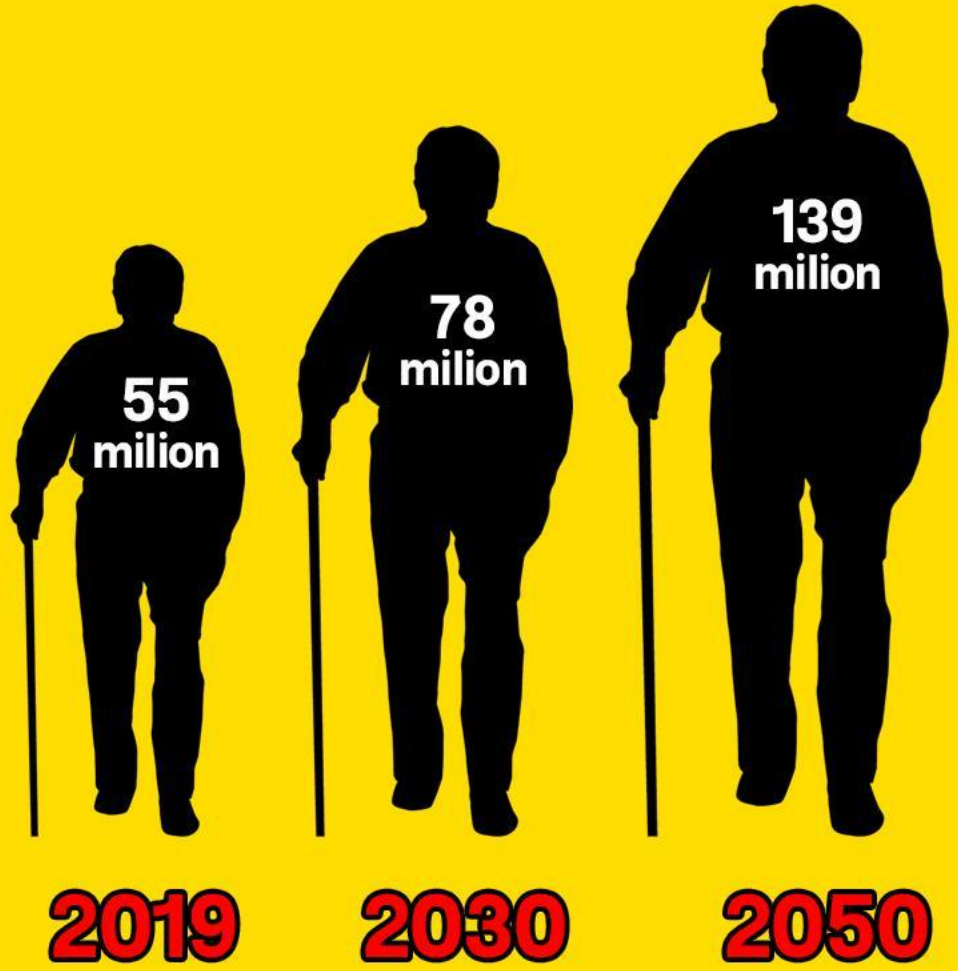
Alzheimer 's

The most important cause of dementia

In 60+ people

Every 3 seconds, one person in the world gets dementia

Every 7 minutes, one person in Iran develops dementia



Estimating the growth of the population of people with dementia

Global Market Size

Current Methods of Managing Alzheimer's

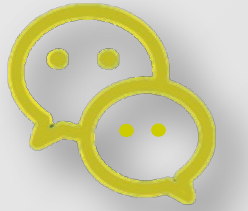
Medication

Sport

Music

Art

Reminiscing about the past

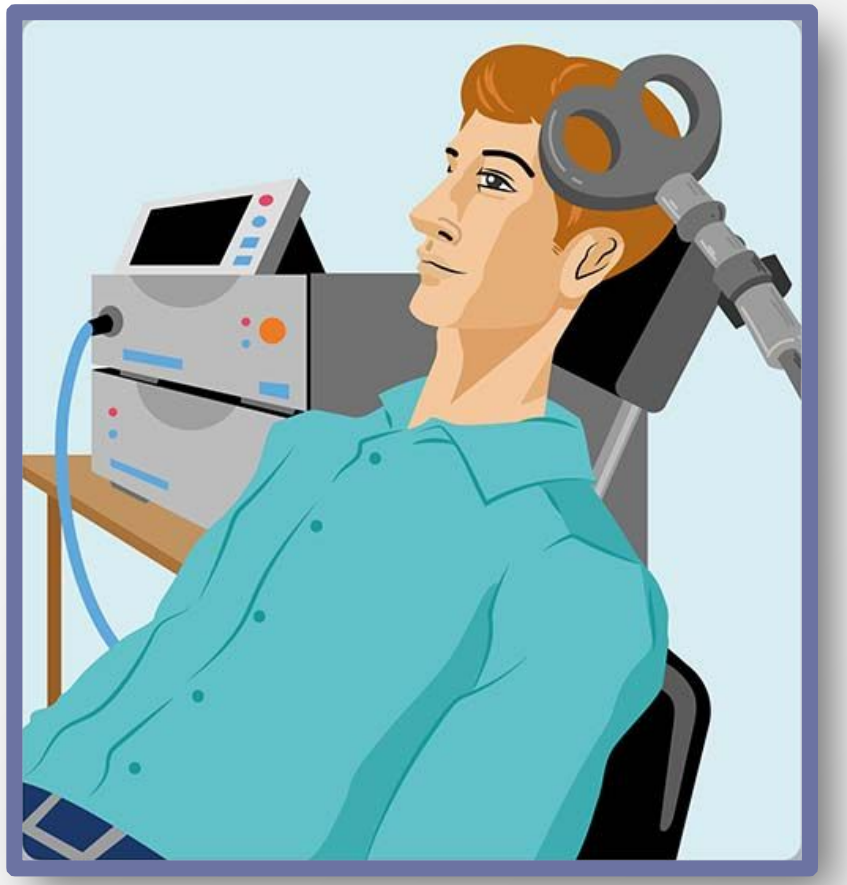


Strengthening social connections

Sensory stimulation

Cognitive Occupational Therapy

Technology-based methods



rTMS

tDCS

The problem of common treatment methods

tDCS

- ✗ Poor efficacy
- ✗ Unpleasant use

rTMS

- ✗ Use only clinically
- ✗ Treatment is not permanent
- ✗ Unpleasant use

Medicine

- ✗ Not applicable in the long term
- ✗ It has many side effects
- ✗ No lasting effects
- ✗ In some cases, drug resistance is observed

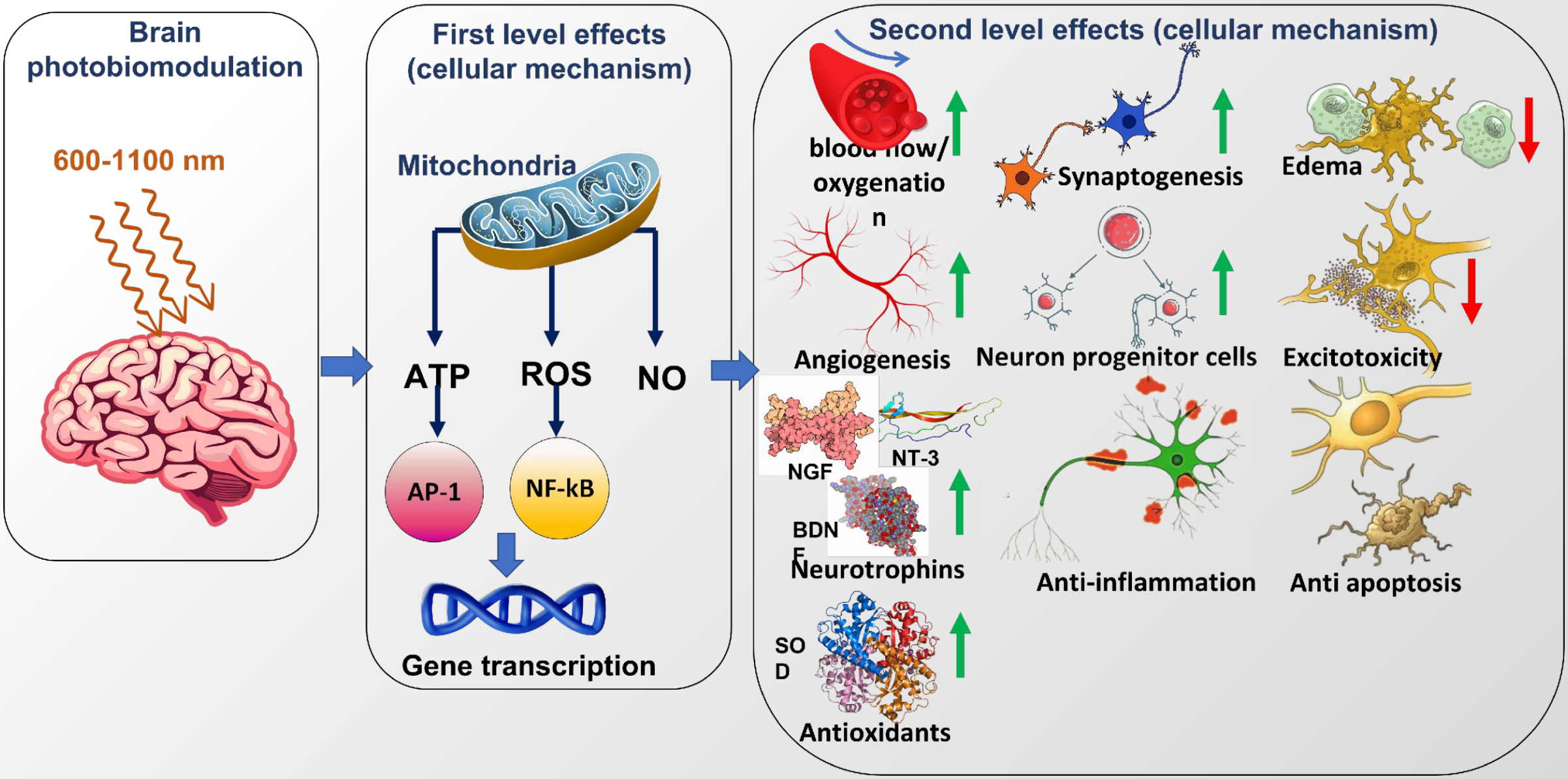
Our Offer

Improving Cognitive Functions With Brain Photobiomodulation

Photobiomodulation

Photobiomodulation (PBM) therapy is defined as a form of light therapy that utilizes non-ionizing light sources, including lasers, light emitting diodes, and/or broadband light, in the visible (400 – 700 nm) and near-infrared (700 – 1100 nm) electromagnetic spectrum. It is a nonthermal process involving endogenous chromophores eliciting photophysical and photochemical events at various biological scales. This process results in beneficial therapeutic outcomes including but not limited to the alleviation of pain, immunomodulation, and promotion of wound healing and tissue regeneration.

Red/NIR light is able to stimulate the mitochondrial respiratory chain (cytochrome c oxidase) and increase ATP synthesis. Moreover, light absorption by ion channels results in release of Ca^{2+} and leads to activation of transcription factors and gene expression. Brain PBM therapy enhances the metabolic capacity of neurons and stimulates anti-inflammatory, anti-apoptotic, and antioxidant responses, as well as neurogenesis and synaptogenesis Brain PBM therapy is an innovative treatment for a wide range of neurological and psychological conditions.


Brain photobiomodulation
600-1100 nm
First level effects (cellular mechanism)
Mitochondria
ATP
ROS
NO
AP-1
NF-kB
Gene transcription
Second level effects (cellular mechanism)
blood flow/ oxygenation
Synaptogenesis
Edema
Angiogenesis
Neuron progenitor cells
Excitotoxicity
NGF
NT-3
BDNF
Neurotrophins
Anti-inflammation
Anti apoptosis
SOD
Antioxidants

Our Offer

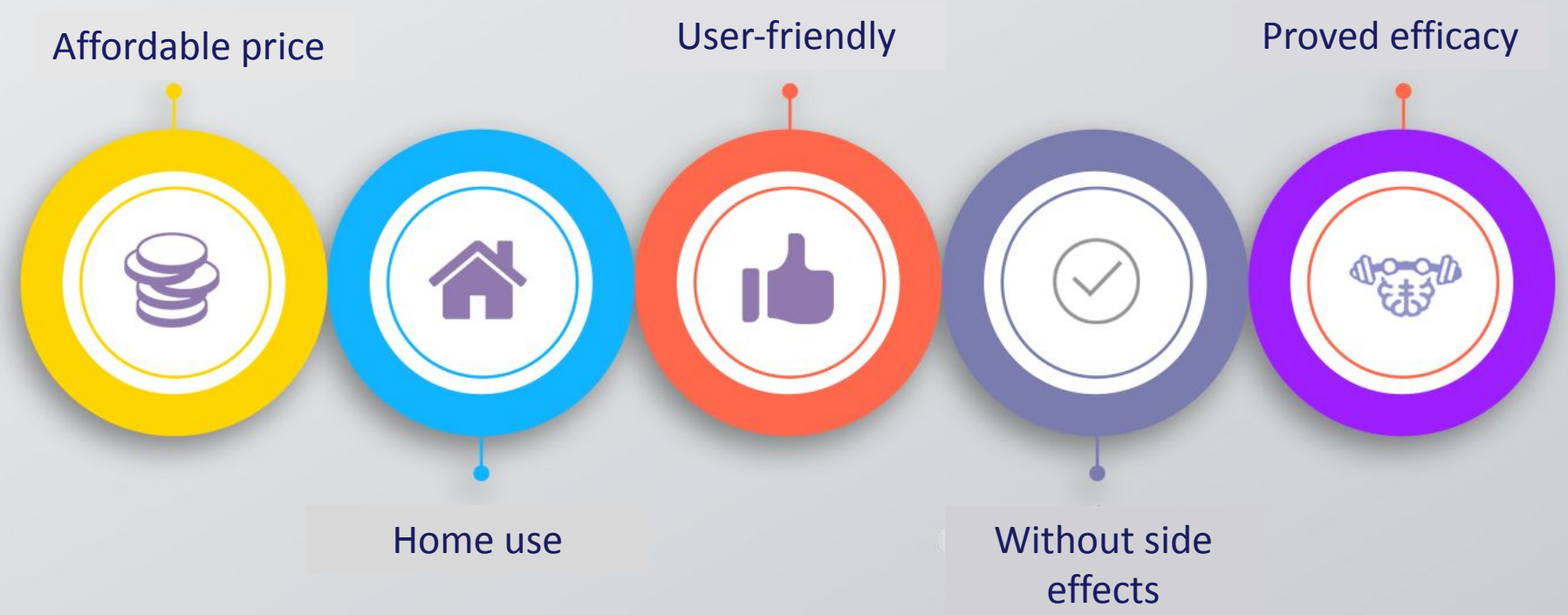
Brain photobiomodulation headset

Proper choose of light sources

Designing a comfortable and electrical safe device

Increasing device lifetime by suitable nano particle cover

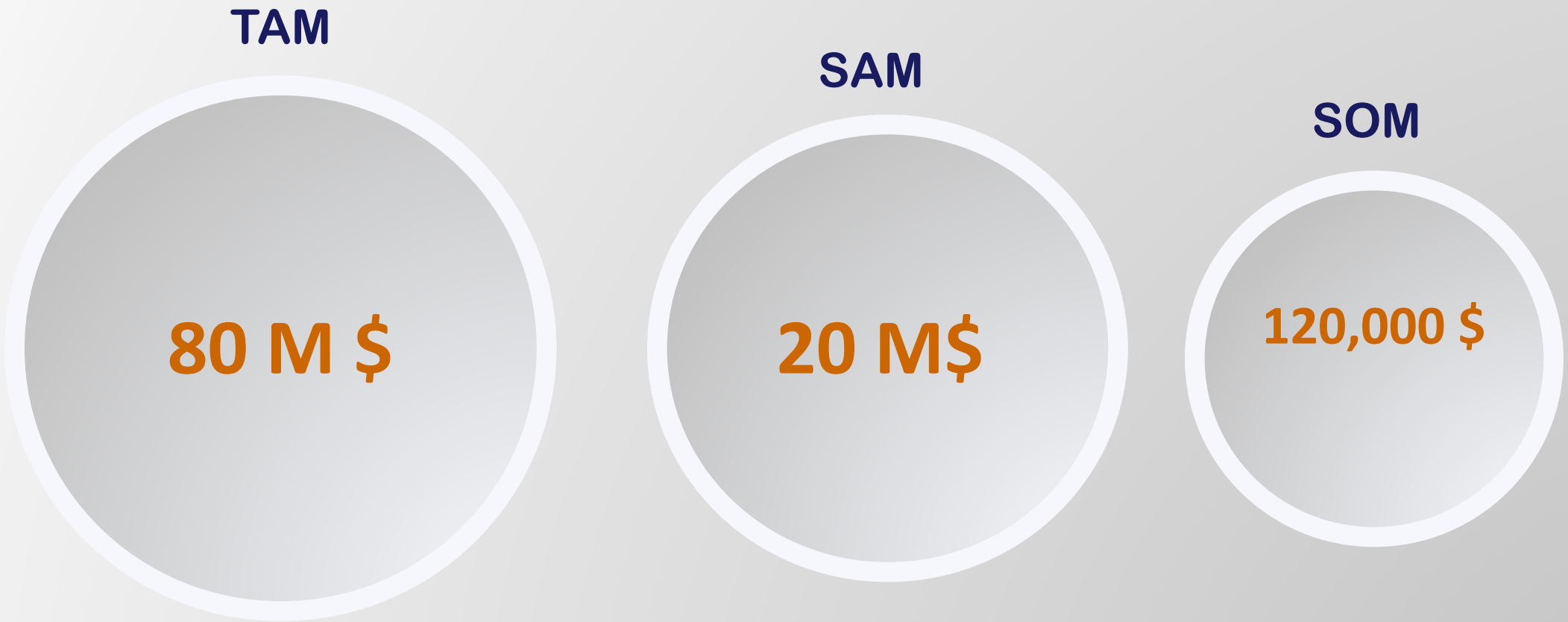
Value Proposition



Achievements

Obtaining a production license from Iran medical device authority

Market Overview



More than 200,000 people with moderate Alzheimer's disease in Iran

50,000 people living in the cities of Tehran, Karaj, Isfahan, and Mashhad

300 people in the first year of production

Hoping to create better mental health For All Through Ethical Acceptance Technologies

Thanks

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