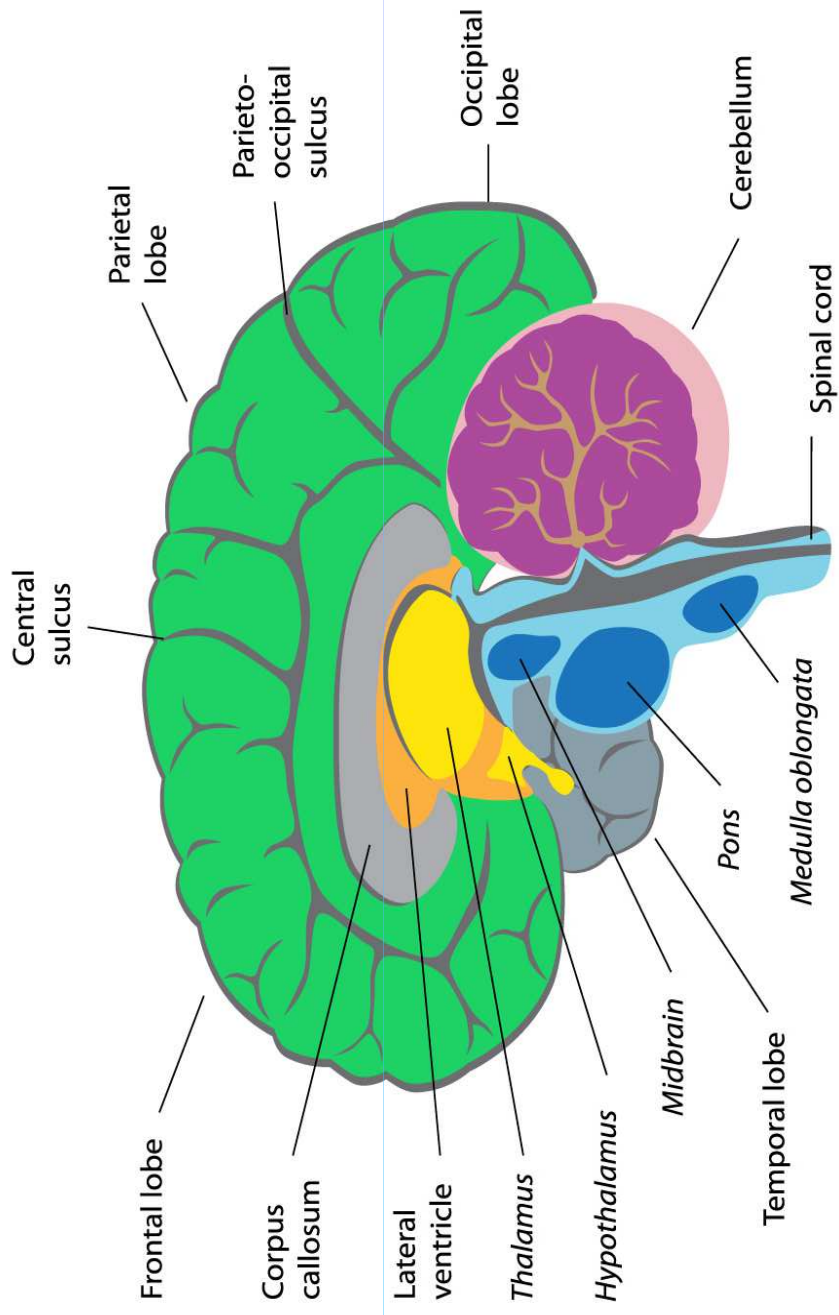


Median section of the brain



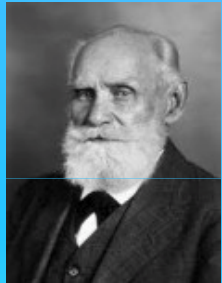


Basic Primary Reflexes



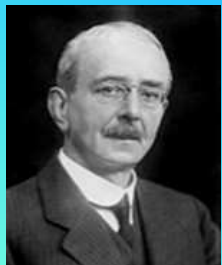
Ivan Sechenov (1829-1905). *The “Father” of Physiology on “Reflexes of the Brain”*

- Brain activity is linked to electric currents (electrophysiology)
- The cerebral inhibition of spinal reflexes.
- Chemical factors in the environment of the neuron



Ivan Pavlov (1849-1936). Nobel Prize -1904

- Involuntary and conditioned reflex action
- Involuntary reactions to stress and pain. Stress and types of nerve system (temperament)
- Inhibitory mechanism of the cortex



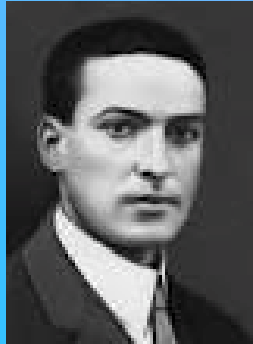
Charles Sherrington (1857 – 1952). Nobel Prize - 1932.

- Reflexes do not occur as isolated activity within a reflex arc, they require integrated reciprocal innervation of muscles

The unconditioned reflex should develop in infancy by 4-6 months



Lev Vygotsky



Lev Vygotsky (1896-1934). Psychologist.

- Theory of natural and cultural development in a child
- Theory of the development of higher cognitive functions in children (emergence of the reasoning through practical activity in a social environment).
- A concept of the zone of proximal development
- A concept of age development in children and developmental transitions (“Natural Crisis”)
- Moro Reflex development and neurophysiology.

- Natural development of inner control
- Maturation of automatism at the reflex level allows an individual to move to language and abstract thinking

[www. MasgutovaMethod.com](http://www.MasgutovaMethod.com)

2013 © S. Masgutova and Svetlana Masgutova Educational Institute→ for Neuro-Sensory-Motor and Reflex Integration, LLC. All rights reserved.



Basic Primary Reflexes



- A. Luria (1902-1977).** Neurophysiologist and developmental psychologist. In 1924 met L. Vygotsky and A. Leontjev.
- Studies of perception, problem solving, and memory
 - Relation between language, thought, and cortical functions (aphasia)



- P. Anokhin (1898 – 1974).** Biologist and physiologist.
- Concept on feedback in 1935
 - Subtle neuro-physiological mechanisms and integral
 - Activity of an individual “methodological bridge” between psychology and physiology

The concept of brain inter-functional links is one of the most important paradigms of the complexity of the genetic nature of a reflex.



REPATTERNING TECHNIQUES



Nikolai Bernstein (1896–1966)

- Pioneer in the field of motor programming, control and motor learning.
 - Studies on the role of the CNS in postural control and movement, in forming stereotypical patterns of kinematics and muscle activation.
 - Father of biomechanics and physiology of movements
 - CNS capability of controlling the many degrees of freedom of the musculoskeletal system (“Reflex circuit”, 1935, after A. Samojlov, 1930).
- **Studies on Isometric technique:** activates the “inner isometric technique and regulates muscle tone”
 - **Isotonic activation:** allows to explore the freedom and range of motion.

[www. MasgutovaMethod.com](http://www.MasgutovaMethod.com)

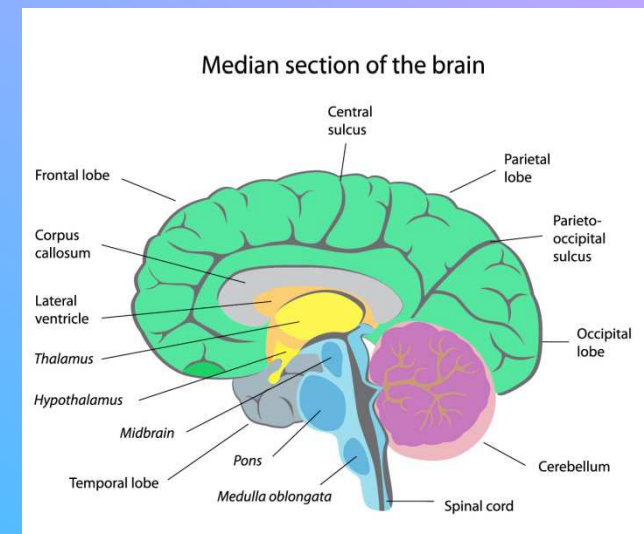
2013 © S. Masgutova and Svetlana Masgutova Educational Institute→ for Neuro-Sensory-Motor and Reflex Integration, LLC. All rights reserved.



E. Asratian (1903-1981). Physiologist, Pavlov's student.



- Study of unconditioned reflex – 5 components (sensory receptors, sensory neuron, spinal cord, motor neuron, efferent organ)
- Unconditioned Reflex is not a lineal system, it has a multi-level structure.
- Reflex reaches all levels of the CNS:
 - Spinal cord
 - Brain Stem:
 - Medulla and
 - Midbrain
 - Thalamus
 - Cortex
- ***Protection role of inhibition in shock and trauma***



[www. MasgutovaMethod.com](http://www.MasgutovaMethod.com)

2013 © S. Masgutova and Svetlana Masgutova Educational Institute → for Neuro-Sensory-Motor and Reflex Integration, LLC. All rights reserved.



SVETLANA MASGUTOVA INSTITUTE®
Neuro-Sensory-Motor and Reflex Integration (USA)

MNRI® CONCEPT

MNRI® is an interdisciplinary program based on the following concepts:

- Integration of reflexes and reflex patterns affects brain functioning, neurodevelopment, learning patterns, the protective mechanisms of the organism, immune system.
- A person's motor/physical, emotional and mental health is based on healthy neuro-sensory-motor functioning of reflex patterns and affects the 'Well-being', neurological resilience and flexibility.
- Any dysfunction can negatively affect the neurodevelopment (disease, brain damage, genetic disorders, post-trauma) can cause delay or diminishing of reflex circuits. Neuro-Integration can correct sensory-motor patterns and re-integrate reflexes which are damaged or immature.
- Integrated reflex patterns support the optimal brain functioning, behavioral regulation, emotional stability and consciously controlled sensory-motor abilities and skills and cognitive functions.

[www. MasgutovaMethod.com](http://www.MasgutovaMethod.com)

2013 © S. Masgutova and Svetlana Masgutova Educational Institute→ for Neuro-Sensory-Motor and Reflex Integration, LLC. All rights reserved.



SVETLANA MASGUTOVA INSTITUTE®
Neuro-Sensory-Motor and Reflex Integration (USA)

Concept basis: Our program presents the concept and application of reflex pattern integration on the level of sensory-motor circuits.

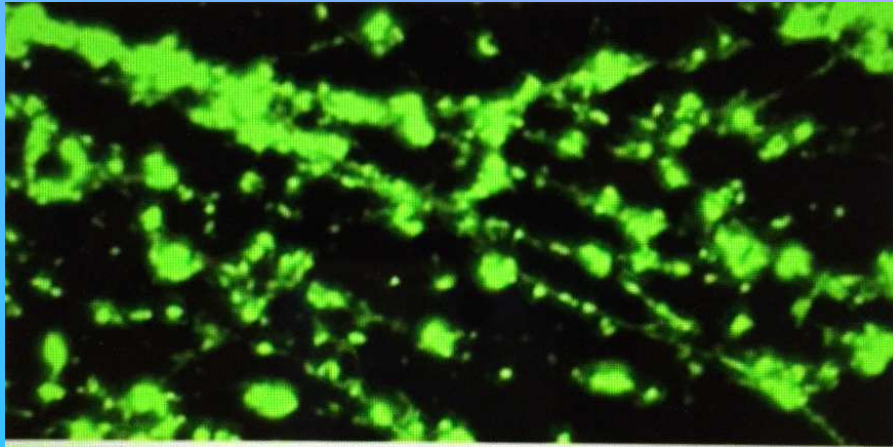
The understanding of this work is supported by:

- Brain integration concepts developed by A. Luria (1969), A. Anokhin (1968), N. Amosov (1978), A. Ukhtomsky (1968).
- Concepts of neurological reflex functions as a response of the “brain-body” system to external and internal stimuli by I. Pavlov (1960), I. Setchenov (1995), V. Simonov (1987), Sherington (1947).
- Concepts of movement development by N. Bernstein (1947, 1997), F. Lesfaft (1998), N. Leontiev (1971).

[www. MasgutovaMethod.com](http://www.MasgutovaMethod.com)

2013 © S. Masgutova and Svetlana Masgutova Educational Institute→ for Neuro-Sensory-Motor and Reflex Integration, LLC. All rights reserved.

Axon degeneration - restoration



Axon degeneration: caused by nerve injury or disease, depletes the energy supply within axons, shutting down link between nerve cells.



Axon restoration after blocked axon degeneration

Nerves – whether harmed by disease or traumatic injury – start to die. An unhealthy axon is known to trigger its own death. Prof. Jeffrey Milbrandt and Aaron DiAntonio, MD, PhD, Prof. Edith L. Wolff, Developmental Biology, and et al): “a SARM1 protein already known to be involved in axon degeneration, acts like a switch to trigger axon degeneration after an injury. When a nerve is diseased or injured, SARM1 becomes more active, initiating a series of events that quickly causes an energetic catastrophe within the axon, and the axon undergoes self-destruction.”

Washington University scientists blocked axon degeneration by supplementing neurons with a chemical called nicotinamide riboside, which kept the axons energized and healthy.

(Source: Diane Duke Williams – [Washington University School of Medicine in St. Louis](#)

Image Credit: The image is credited to Milbrandt lab

Original Research: [Abstract for “SARM1 activation triggers axon degeneration locally via NAD⁺ destruction” by Josiah Gerdts, E.J. Brace, Yo Sasaki, Aaron DiAntonio, and Jeffrey Milbrandt in *Science*. Published online April 23 2015 doi:10.1126/science.1258366\).](#)