

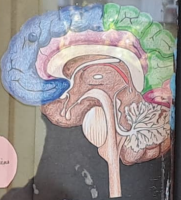
BIO SPHERE

Human Brain

ANNEX WALL
Magazine
DEPARTMENT OF
ZOOLOGY
Special Test on
— Human Brain
Volume - 2nd Year - 2013

5 FACTS

- The spinal cord is the main source of somatic motor control.
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ANATOMY OF HUMAN BRAIN

The forebrain gives rise to the cerebral cortex, the thalamus, and the hypothalamus. The midbrain gives rise to the cerebral peduncles and the midbrain. The hindbrain gives rise to the cerebellum and the medulla oblongata.

AUTONOMIC

These are the nerves that control the internal organs. They are divided into the sympathetic and parasympathetic systems.

SOMATIC

These are the nerves that control the muscles and skin. They are divided into the somatic motor and somatic sensory systems.

Myasthenia Gravis

Myasthenia Gravis (MG) is characterized by fluctuating muscle weakness, which is related to the inhibition of acetylcholine receptors at the neuromuscular junction.

Symptoms

The most characteristic symptom of myasthenia gravis is a change in the patient's condition over time, which may be day to day or week to week.

Treatment

Treatment includes cholinesterase inhibitors, which help to increase the amount of acetylcholine available at the neuromuscular junction.

Brain Tumor

Brain tumors are abnormal growths of cells within the brain or the meninges. They can be primary or secondary.

Symptoms:

- Headaches
- Nausea and vomiting
- Changes in vision
- Weakness or numbness in the limbs
- Seizures
- Changes in personality

Treatment:

- Surgery
- Radiation therapy
- Chemotherapy
- Targeted therapy

BRAIN HEMORRHAGE

A brain hemorrhage is a type of stroke that occurs when a blood vessel in the brain ruptures and bleeds into the surrounding brain tissue.

Symptoms:

- Sudden weakness or numbness in the face, arm, or leg
- Sudden confusion or trouble speaking
- Sudden trouble seeing in one or both eyes
- Sudden trouble walking, dizziness, or loss of balance
- Sudden severe headache

Brain

CENTRAL NERVOUS SYSTEM

The central nervous system (CNS) is made up of the brain and the spinal cord. It is responsible for processing and coordinating all the information that enters and leaves the body.

REFLEX

A reflex is an involuntary, automatic response to a stimulus. It is a rapid response that does not require conscious thought.

Brain Cells

The brain is made up of billions of cells. The most important cells are the neurons, which are responsible for transmitting information throughout the brain.

Brain Hemorrhage

A brain hemorrhage is a type of stroke that occurs when a blood vessel in the brain ruptures and bleeds into the surrounding brain tissue.

Bio of Brain

The brain is the most complex part of the human body. It is responsible for all the functions of the body, from thinking and feeling to moving and breathing.

TREATMENT

Treatment for brain hemorrhage includes surgery to remove the blood clot, medication to reduce swelling, and rehabilitation to help the patient recover.

ALZHEIMER DISEASE

Alzheimer's disease is a neurodegenerative disorder that affects memory, thinking, and behavior. It is the most common cause of dementia.

Symptoms:

- Memory loss
- Confusion
- Changes in personality
- Weight loss
- Changes in sleep patterns

Treatment:

- Medication
- Therapy
- Support groups

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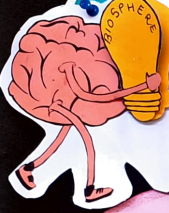
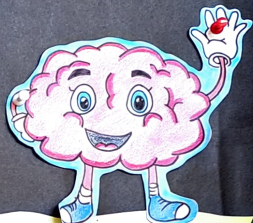
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- Therapy
- Support groups

Zoology
Department



100% RECYCLED PAPER

Human Brain



Annual Walt Magazine
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 Volume - 27th Year-2023

Etymology
 The word "brain" is derived from the Old English word "bræn", which is related to the Old Norse word "brainn", meaning "to burn". This is because the brain was once thought to be a source of heat and fire.

The word "brainiac" is derived from the word "brain", and it refers to a person who is very intelligent or knowledgeable.

The word "brainstorm" is derived from the word "brain" and "storm", and it refers to a sudden idea or a group of ideas that come together.

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5 FACTS

- 1. The spinal cord is the main cable of communication between the brain and the rest of the body.
- 2. Our brain is made up of billions of neurons.
- 3. The brain is the most complex organ in the human body.
- 4. The brain is the most powerful organ in the human body.
- 5. The brain is the most important organ in the human body.



CENTRAL NERVOUS SYSTEM

The Central Nervous System (CNS) is made up of the brain and the spinal cord. It is the main control center for the body's actions and responses.

Our brain is made up of billions of neurons. These neurons are connected to each other, forming a complex network that allows the brain to process information and control the body's actions.



SPINAL CORD - The spinal cord is a long, thin, tube-like structure that runs down the back. It is made up of many small segments called vertebrae. The spinal cord is the main pathway for information between the brain and the rest of the body.

THE BRAIN - The brain is the most complex organ in the human body. It is made up of billions of neurons that are connected to each other, forming a complex network that allows the brain to process information and control the body's actions.

REFLEX MECHANISM

A reflex mechanism is a rapid, involuntary response to a stimulus that helps an organism react quickly to potential danger or maintain its equilibrium. It involves sensory receptors detecting a stimulus, which then triggers a response that bypasses the brain and goes directly to the muscles.

SIGNALS - The brain sends signals to the muscles to control their actions. These signals are carried by electrical impulses called action potentials.

REFLEX - A reflex is a rapid, involuntary response to a stimulus. It is a type of automatic response that helps an organism react quickly to potential danger.

EXAMPLES - Examples of reflexes include the knee-jerk reflex, the startle reflex, and the reflex to pull your hand away from a hot object.

Peripheral Nerve System
 The peripheral nervous system (PNS) consists of all the nerves that are not part of the central nervous system (CNS). It carries signals between the brain and the rest of the body.

AUTONOMIC - These are nerves that control involuntary functions like heart rate, breathing, and digestion.

SOMATIC - These are nerves that control voluntary movements like walking, talking, and writing.

Myasthenia Gravis
 Myasthenia gravis (MG) is a chronic autoimmune disease that affects the neuromuscular junction. It causes muscle weakness and fatigue, which worsen over time.

Myasthenia gravis (MG) is a chronic autoimmune disease in which antibodies destroy the communication between nerves and muscles, resulting in weakness of the skeletal muscles. Myasthenia gravis can begin at any age, but it is slightly more common in women.

SYMPTOM - Myasthenia gravis is a muscle weakness disease that causes your muscles to tire out. The most characteristic symptom of myasthenia gravis is drooping of the eyelids. This condition may change from one day to the next.

TREATMENT - Certain medicines have proved fairly effective. Among these are Neostigmine or Pyridostigmine, Mestinon, and Mytelbe.

Brain Tumor

Brain tumors refer to an abnormal growth of cells within the brain or its surrounding tissue. Some tumors can be benign, while others can be malignant and spread to other parts of the body.

SYMPTOMS - Symptoms of a brain tumor can include headaches, seizures, changes in vision, and changes in personality.

TREATMENT - Treatment for a brain tumor depends on the type and location of the tumor. Options include surgery, radiation therapy, and chemotherapy.

Healthy Brain

- 1. **Exercise Regularly** - Regular exercise can help improve brain function and reduce the risk of cognitive decline.
- 2. **Stay Mentally Active** - Engaging in mentally stimulating activities like reading, puzzles, and learning new skills can help keep the brain healthy.
- 3. **Get Enough Sleep** - Getting enough sleep is essential for brain health. Lack of sleep can lead to cognitive impairment.
- 4. **Stay Hydrated** - Drinking enough water is important for brain health. Dehydration can lead to headaches and difficulty concentrating.
- 5. **Eat a Healthy Diet** - A diet rich in fruits, vegetables, and whole grains can help support brain health.

Brain Inflammation - Inflammation in the brain can lead to cognitive decline and other neurological problems.

Brain Plasticity - The brain's ability to reorganize itself by forming new neural connections is called brain plasticity. This allows the brain to recover from injury and adapt to new challenges.

Brain Health - Maintaining good brain health is essential for overall well-being. This includes eating a healthy diet, exercising regularly, and staying mentally active.

Brain Function - The brain's ability to process information and control the body's actions is called brain function. This is a complex process that involves many different parts of the brain.

Brain Development - The brain continues to develop throughout childhood and adolescence. This is a critical period for brain development, and it is important to provide a stimulating environment during this time.

Brain Injury - A brain injury is damage to the brain caused by trauma, such as a fall or a blow to the head. This can lead to a variety of symptoms, including headaches, dizziness, and changes in behavior.

Brain Disease - There are many different types of brain diseases, including Alzheimer's disease, Parkinson's disease, and multiple sclerosis. These diseases can affect the brain's ability to function properly.

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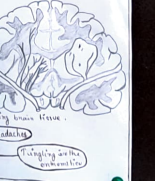
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Brain Health - Maintaining good brain health is essential for overall well-being. This includes eating a healthy diet, exercising regularly, and staying mentally active.

BRAIN HEMORRHAGE

A brain hemorrhage, also known as an intracerebral hemorrhage, is a type of stroke caused by bleeding within the brain. This can lead to brain damage and other neurological problems.



BIO of BRAIN

The brain is the most complex part of the human body. It is made up of billions of neurons that are connected to each other, forming a complex network that allows the brain to process information and control the body's actions.

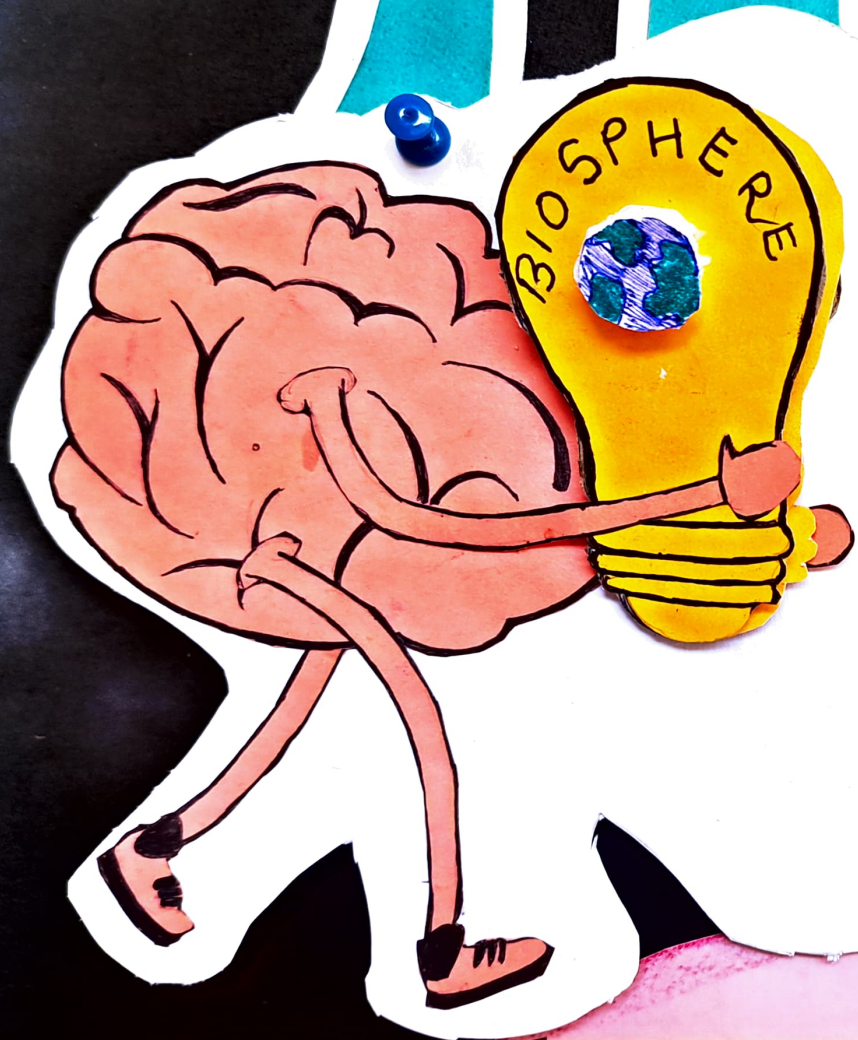
Alzheimer Disease

Alzheimer's disease is a type of dementia that causes memory loss and other cognitive problems. It is the most common cause of dementia, and it is named after the German physician who first described it.

SYMPTOMS - The first symptoms of Alzheimer's disease are usually memory loss and changes in personality. As the disease progresses, other symptoms like language problems and difficulty with daily activities may appear.

TREATMENT - There is no cure for Alzheimer's disease, but there are treatments that can help manage the symptoms. These include medications that can improve memory and other cognitive functions, and non-pharmaceutical interventions like cognitive stimulation and social support.

Inauguration Signature



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Magazine

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Special issue on
— Human brain

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Acknowledgement :

We would like to express our special thanks of gratitude to our teachers, seniors, teammates and everyone who contributed in the wall magazine.

Editorial

Biosphere is an annual wall magazine initiated in the year 1994 by the department of Zoology, Pragjyotish College.

The word biosphere means the part of the world where life naturally exists, spreading from the deep crust to the lower atmosphere.

This is the 27th volume of Biosphere titled 'Human Brain', articles on several facts and interesting information of human brain is highlighted.

I would like to thank all our teachers seniors and our teammates for contributing in this wall magazine.

— Niharika Kalita
1st semester

Peripheral Nerves.....

The peripheral nerves have the task of bringing information to and from the brain and spinal column. Depending on their location, they may be cranial or spinal nerves. The sensory fibres in the peripheral nerves receive information from the outside world, the skin and the internal organs and transmit it to the central nervous system; the motor fibres begin to contact the skeletal muscles and transmit signals in the opposite direction from the sensors. The nerves are located deep in the body, with some exceptions, such as the cubital nerve in the elbow.



by Riga Chetry.

AUTONOMOMIC

These are nervous system processes you brain runs automatically & without you thinking about them.

SOMATIC

These are functions you manage by thinking about them.

Myasthenia Gravis

Introduction- Myasthenia gravis (MG) is characterized by fluctuating muscular weakness, which is relieved by cessation of activity and aggravated by intense physical activity. Majority of the patients are adults; however, an increase in children below 15 years of age has been reported in certain Asian region.

Myasthenia gravis (MG) is a chronic autoimmune disorder in which antibodies destroy the communication between nerve and muscles, resulting in weakness of the skeletal muscles. Myasthenia gravis may begin at any age. It is slightly more common in women.

SYMPTOM- Myasthenia gravis is a most mysterious disease which causes grave muscular weakness. The most characteristic symptom of myasthenia gravis is drooping of the eyelids. This condition may change from one day to the next.

TREATMENT- Certain medicines have proved fairly effective. Among these are Neostigmine or Prostigmine, Mestinon, and Mylelase.

Brain Tumor

Brain tumor refers to an abnormal growth of cells within the brain or its surrounding tissue. Brain tumors can be benign or malignant and they significantly impact neurological functions.

SYMPTOMS:

- ↳ Headache.
- ↳ Seizure.
- ↳ Neurological deficits.
- ↳ Personality change.
- ↳ Vision and Hearing Problems.
- ↳ Speech Difficulties.



TREATMENT:

↳ To treat brain tumor common treatment options include surgery, radiation therapy and chemotherapy, often used in combination. Newer therapies like immunotherapy and target drug therapy are also being used.

Healthy Brain

Exercise Regularly

Physical exercise increases blood flow to muscles, heart and brain

Stay Mentally Active

We can do many things to keep our brain in shape such as doing crossword puzzles, reading, playing cards etc.

Remain Socially Involved

Social interaction helps ward off depression and stress.

Keep Your Blood Vessels Healthy

check your blood pressure, blood sugar and cholesterol regularly

Get Plenty of Sleep

Aim for 7 to 8 consecutive hours of sleep per night.

It gives our brains the time to consolidate and store our memories effectively

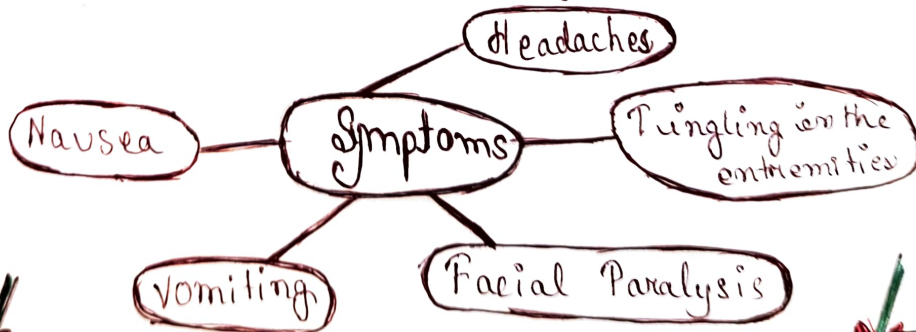
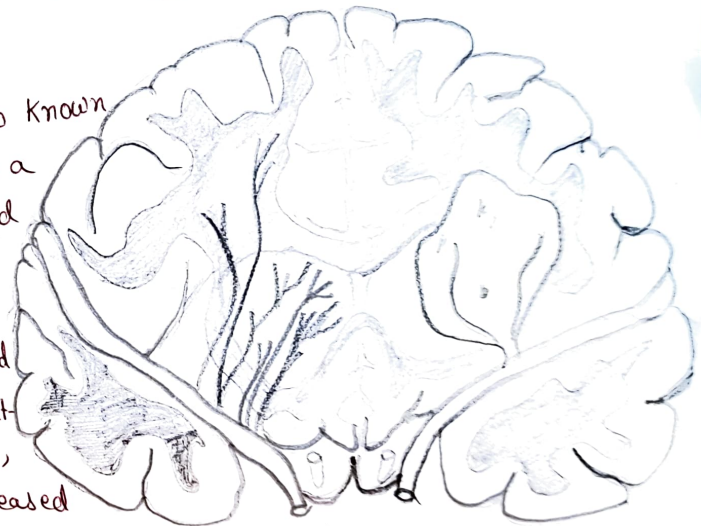
- Shenaz Khatun

BRAIN

HEMORRHAGE

- Priyam Cheloy

A brain hemorrhage, also known as intracerebral hemorrhage, is a medical condition characterized by bleeding within the brain tissue. The bleeding can be caused by the rupture of a blood vessel, leading to the accumulation of blood in the brain, which can result in increased pressure and damage to surrounding brain tissue.



CENTRAL NERVOUS SYSTEM

The Central Nervous System (CNS) is made up of the brain and spinal cord. It is one of two parts of the nervous system. The other part is the peripheral nervous system, which consists of nerves that connect the brain and spinal cord to the rest of the body.

SPINAL CORD:- The spinal cord is a vital aspect of the CNS found within the vertebral column. The purpose of the spinal cord is to send motor commands from the brain to the peripheral body as well as to relay sensory information from the sensory organs to the brain.

THE BRAIN

The brain is an organ of nervous tissue that is responsible for responses, sensation, movement, emotions, thoughts etc.

5 FACTS

:: The spinal cord is the main source of communication between the body & brain::



:: Our brain limit capacity is considered as virtually unlimited.

:: The human brain can generate about 23 watts of power. (enough to power light bulbs)

:: Brain information travels up an impressive 268 miles per hour.

:: A piece of brain tissue the size of a grain of sand contains 100,00 neurons & 1 billion synapses!!



an annual wall magazine
the year 1994 by the
of Zoology, Pragyotish

Biosphere means the
world where life
exists, spreading from
the top to the lower

7th volume of Biosphere
'Brain', articles on
and interesting information
main is highlighted.

to thank all our teachers
our teammates for
this wall magazine.

— Niharika Kalita
1st Semester

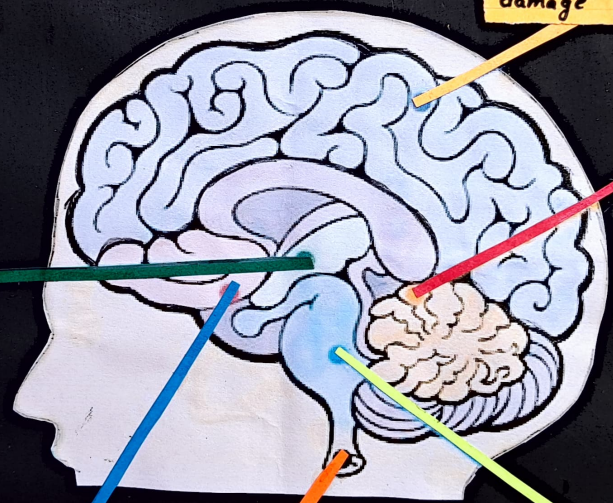
How alcohol affects the brain

Drinking alcohol affects the way your brain works: Changing everything from the way you act to your ability to walk, acts learn about how alcohol affects different parts of the brain.

Cerebral Cortex: This is the main area involved in thinking, decision-making, emotions and the five senses. Alcohol's effects on this area can impair your ability to think clearly and lower your inhibitions. It may make you act without thinking or make you angry for no reason. Alcohol may affect your senses, such as blurring your vision. Long-term alcohol abuse can permanently damage this region. - Proben Blownick

Hippocampus: Your memory is controlled by the Hippocampus. Drinking a lot of alcohol at one time can cause you to blackout or forget a period of time. Long-term alcohol abuse can permanently damage the hippocampus, making it difficult for a person to learn.

Cerebellum: This part of the brain is important for coordinating many of your daily movements such as walking and grabbing objects. Alcohol can slow your reflexes. It may cause you to lose your balance or make your hands shake.



Hypothalamus: Many body processes, such as heart rate and the feeling of hunger or thirst, are controlled in this small area. Alcohol can slow your heart rate and may make you hungrier and thirstier.

Central Nervous System
Alcohol slows down this system which is made up of the brain, spinal cord and nerves. That affects how signals flow through your body, making you think, speak and move more slowly.

Medulla: Involuntary processes such as breathing and maintaining body temperature are controlled here. Drinking a lot of alcohol at one time can shut down the medulla leading to a coma.

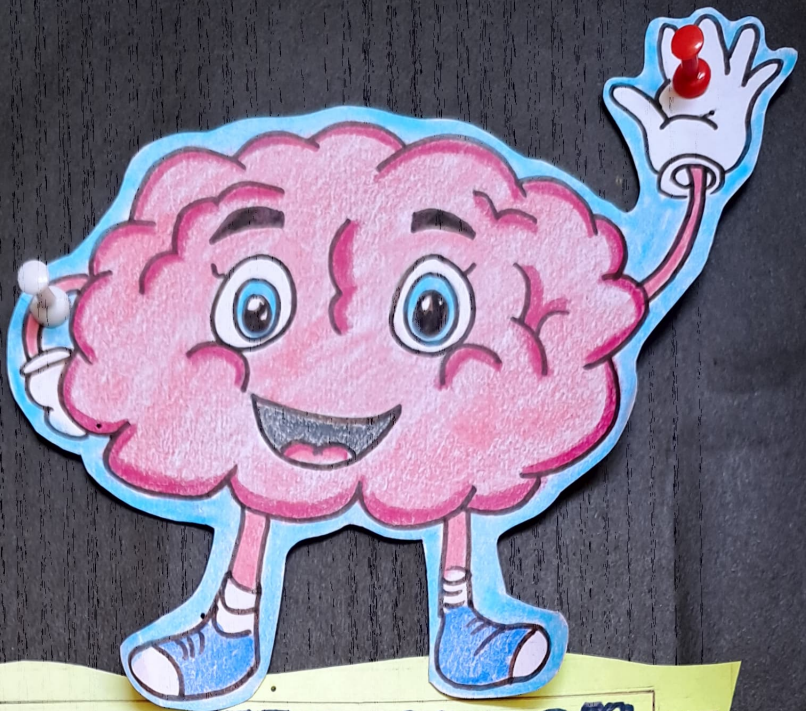
-Neha Shamma

BIO of BRAIN



The brain is the most complex part of the human body. It is the body control centre. Underneath it folds more than 100B neurons which function is receiving and sending signals to different part of body. The human brain just like the most other mammals, has the same basic structure but it is better developed than other mammalian. It is mainly composed of neurons:- the fundamental unit of the brain and nervous system. The brain along the spinal cord, constitutes the central nervous system. It is responsible for thoughts, interpretation and origin of control for body movements. Anatomically the brain is contained within the cranium and is surrounded by the cerebrospinal fluid.

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REFLEX MECHANISM

A reflex mechanism is a rapid, involuntary response to a stimulus that helps an organism react quickly to potential danger or maintain its equilibrium. It involves sensory receptors detecting a stimulus, which then triggers a signal to be sent along a nerve pathway to the spinal cord or brain stem. From there, the signal is processed, and a response is generated through motor neurons, which lead to muscle contractions or glandular secretions.

The reflex action of withdrawing the hand or another part of the body from an object that may cause pain (for example, by being pricked or subjected to heat) is an automatic response. Thus the pain receptors in the skin of fingers detect the heat stimulus from a flame and send nerve impulses via the sensory nerves to the spinal cord. The impulses move at high speed through medulla along pathways of associated neurons.

Within thousands of a second after detecting the pain stimulus, the nerve impulse reach the motor neurons. These neurons transmit the impulses to the flexor muscles in the upper part of the arm. Once the impulses have been received, the muscles contract, the arm bends and fingers move away from the flame before any pain is consciously felt.

Reflexes are designed to be automatic and protective. They don't require conscious thought.

SIGNALS

The nerve endings receive pain signals that arrive at the brain through the spinal column.

REFLEX

The retransmission of nerve impulses provokes the reflex of withdrawing the hand.

PAIN

The signal arrives at the brain, and the person perceives and experiences pain.

The pain is felt when the nerve fibres in the spinal cord bring the nerve impulses to the sensory areas of the brain. The sensation of pain is felt only after the hand has been withdrawn from the fire by reflex action.

Alzheimer Disease

Alzheimer's disease, which has no cure, affects mostly persons over 60 yrs of age. Age and the aging process are determining factors. The cortex of the brain suffers atrophy, which is permanent because nerve cells cannot regenerate. In a brain affected by Alzheimer's, the abnormal deposits of amyloid protein forms neuritic (senile) plaques in the brain tissue. Tangles of degeneration (neurofibrillary tangles) form, which progressively damage the brain's functioning.

SYMPTOMS

The first manifestations of the disease are linked to the loss of ability for verbal expression. There is also a gradual loss of memory as the disease progresses. In later phases, people with Alzheimer's can become incapable of taking care of themselves because of damage to the motor cortex.

TREATMENT

A medication known as memantine, an N-methyl-D-aspartate (NMDA) antagonist, can be prescribed to treat moderate to severe Alzheimer's. This drug's main effect is to decrease symptoms, which could enable some people to maintain certain daily functions a little longer than they would without the medication. For example, memantine may help a person in the later stages of the disease maintain their ability to use the bathroom independently for several more months, a benefit for both people with Alzheimer's and their caregivers.