Baby--1lb. Adult—3lb  6 years--full size  85% water Needs the skull to keep its shape. 2% of body’s weight, but uses 20% of bodies oxygen

ADDICTIONS  see nucleus accumbens

AGGRESSIVE THOUGHTS
The left temporal lobe is often the seat of aggressive thoughts

AGING
Reverse the natural progression
Calcium, phosphorus and fluoride deposits in the PINEAL GLAND have been linked with aging

ALZHEIMER’S
Plaque buildup between nerve cells

AMYGDALA  see memory
1. The emotional memory center of the brain where a lot of spirit memories reside, because they are emotional memories. The hippocampus stores dates, times, places, names; all the factual memory data.
2. The central **Nucle of the Amagdalae** are involved in the genesis of many fear responses: including freezing (immobility) tachycardia (rapid heartbeat) increased respiration stress-hormone release.

3. The amygdale is also involved in positive **appetitive** conditioning.

**ANTERIOR CINGULATED CORTEX**  
**ACC**
Helps sort through difficult decisions; learns to predict bad consequences –warns us of danger.

**APPETITE**  
See Amygdala

**ASTROCYTES**  
**IN THE BRAIN AND SPINAL CORD; THEY ARE A SUB-TYPE OF GLIAL CELLS**
Astrocytes ingest injured nerve cells repairing the nervous system.
The only cells with insulin receptors in the brain
1. Star-shaped cells
2. Give shape, support & nourishment to the delicate nerve cells.
3. They provide neurons with nutrients such as lactate.
4. Linked to the blood flow in the brain.
5. Astrocytes express potassium channels at a high density. Abnormal accumulation of extracellular potassium is well known to result in **epileptic neuronal activity**.
6. Nervous system repair: Upon injury to nerve cells within the central nervous system, astrocytes become phagocytic to injest the injured nerve cells. They then fill up the space to form a scar repairing the area & replacing cells that can not regenerate.
7. May have an executive-coordinating role in the brain.
8. Plays an active role in the brain including the secretion or absorption of neural transmitters. Stop harmful substances from reaching nerve cells.
9. Astrocytes ingest injured nerve cells repairing the nervous system.
10. The only cells with insulin receptors in the brain

**BODY-BRAIN CONECTIONS**  
**see body memories**
The brain sends signals to control the muscles and functions of the body.
The body has an effect on how well the brain works.

**BRAIN STEM**
1. Connects brain & spinal cord – **a relay station**
2. **Controls** actions of internal organs such as heart & lungs.
3. Made up of **pons & medulla oblongata**
4. Regulates: cardiac, respiratory, central nervous systems
5. Critical in maintaining consciousness and **sleep cycle**
6. The pons contain nuclei that relay signals from the cerebrum to the, cerebellum, along with the nuclei. Deals primarily with sleep, respiration, swallowing, bladder control, hearing, equilibrium, taste, eye movement, facial sensations and posture

**CANCER**
Cancer starts when DNA code within the cell’s nucleus becomes corrupted. Separate the “brain” of the cancerous cell—the nucleus—from the body—the cytoplasm, and close down the nucleus to stop it from reproducing corrupted DNA codes.
CEREBELLUM  (SEHR-UH-BELL-UM)
1. Back of skull, size of fist, wrinkled..
2. Covered by gray matter which is made up of nerve cell bodies.
3. Inside is white matter and closely packed nerve fibers.
4. Controls posture, hand-eye coordination and muscle coordination.
5. Allows different muscles to work together at the same time.

CORPUS CALLOSUM  (KAH-LOW-SUM)
1. Connects the two hemispheres of the cerebrum.
2. The only bridge between the two hemispheres.
3. Make up 70% of the nervous system.
4. Nerve fibers cross the corpus callosum at the bottom of the groove.
5. Proper connections are broken by trama; boys, rejection—girls, sexual perversion.

CEREBRUM  (SUH-REE-BRUM)
1. Largest part of the brain. (2/3 of brain)
2. There are two cerebral hemispheres; right & left
3. Controls thoughts, memories, and learning.
4. The surface of the cerebrum is called the CEREBRAL CORTEX.

CEREBRAL CORTEX
1. The surface of the cerebrum, 1/4” thick
2. Area where all sensory input is mixed & blended to produce: actions, ideas, intelligence, speech, emotion, memory and learning.
3. Covered by a maze of fissures.
4. The cerebral cortex is divided into four regions or lobes

   1. OCCIPITAL LOBE  rear of the brain  The vision area
      Color, Size
      Form & Movement

   2. TEMPORAL LOBE  on side above ear  The auditory area
      Hearing, sight & smell

   3. FRONTAL LOBE  forehead  The short-term memory activates this area
      Reasoning, planning
      Speech and judgment
      Making decisions
      Controlling emotions
      Conveying ideas with language

   4. PARIETAL LOBE  under scalp  Holds tactile sensations and maps the space us. around us
      Taste & Touch

EMOTIONS
The Caudate Nucleus is the place where positive emotions, unconditional love, happiness, romantic and maternal love; also related to feelings of joy.

FEAR
The central Nucle of the Amagdalae are involved in the genesis of many fear responses, including freezing (immobility), tachycardia (rapid heartbeat), increased respiration, and stress-hormone release.

GENERATIONAL MEMORIES
Covenants, curses, body memories, shame

GLIAL CELLS (commonly called neuroglia)
1. Known as the glue of the nervous system.
2. Roughly one glial for every neuron, with a ratio of about two neurons for every three glial in the cerebral gray matter.
3. Four main functions: Surround neurons and hold them in place; support & protect
   Supply nutrients and oxygen to neurons
   To insulate one neuron from another
   To destroy pathogens and remove dead neurons

GOD SPOT
The brain does not contain a single “God Spot”
As we pray in the Spirit, there is activity that begins in our brains. As we engage in our heavenly language, the brain releases two chemical secretions that are directed into our immune system giving a 35-40% boost to our immune system. The secretion is triggered from a part of our brain that has no apparent activity in our humans.” Only those who pray in tongues activate this part of the brain. There is no medicine, no homeopathy, no exercise that give the immune system such a boost. Many anti-oxidants, green leafs boost it, but none 35-40%. If you have a tumor in your body, the immune system can swallow it if it is strong enough.

Dr. Carl Peterson  A born again psychiatrist and brain surgeon from Roberts University, Tulsa, Oklahoma.

The Physiological Effects Of Praying In Tongues

When we connect with the Spirit, more than a dozen different areas of the brain are activated at once. One of the regions, called caudate nucleus is connected to positive emotions such as happiness, romantic love and maternal love, and feelings of joy and unconditional love.

HEART 60-65% of nervous-transmitters are located in the heart

HYPOTHALAMUS (hi-po-THAL-a-mus)
1. Just above midbrain
2. Controls the thermostat, body temperature, heart rate, sleep, crying, laughing, sexual development, how to store fat, emotional expression, long-term memories, special awareness.
3. The hippocampus synapse molecules change to define a network path and hense, a pattern and memory.
4. COLOR When the energy of color enters our bodies through the eye it is directed to the hypothalamus than it stimulates the pituitary and pineal glands. Photoreceptors in the retina called cones, translate this energy into colors. Light and color affecting the pituitary gland affects the production of certain hormones, which in turn affect a variety of
physiological processes. Color has a direct influence on our thoughts, moods, and behavior.

HEMISPHERES
We process information using our dominant side. The learning and thinking process is enhanced when both sides of the brain participate; the left and right, the emotions and words connect. (balanced thinking)
The left and right sides connect from ages 2-13; emotions and words.

LEFT SIDE  LOGICAL
* **Controls** the right side of the body
* Logical, Sequential, Rational, Analytical, Objective
* Processes from part to whole; draws conclusions
* Takes pieces, lines up, arranges in logical order
* **Reasoning, language, writing, speech, & math**
* Provides resilience and capacity to grow mature
* Learn by focusing on logical thinking, analysis, and accuracy.
* Careful, deliberate steps
* Enjoy making master schedules and daily planning.

RIGHT SIDE  ARTISTIC, INTUITIVE
- **Controls** the left side of the body
- Musical and artistic
- Understanding & interpreting the world
- Able to give an immediate answer or solution
- Ability to see things as a **whole**, rather than in parts
- Looks at a situation or problem in general and able to give an immediate solution
- Learn by focusing on aesthetics, feeling, and creativity
- Pictures and images stored here
- May flit from one tack to another
- May get just as much done, but perhaps without having addressed priorities.
- **Random, intuitive, holistic**

HIPPOCAMPUS
Decides to **store** information or **discard** it
Memories start here
Eventually pushed outward to the **neocortex** to be consolidated
The hippocampus stores dates, times, places, names; all the **factual memory** data.

HYPOTHALAMUS  (**hi-po-THAL-a-mus**)  
1. Just above midbrain
2. **Controls** the thermostat, body temperature, heart rate, sleep, crying, laughing, sexual development, how to store fat, emotional expression, long- term memories, special awareness.
3. The hippocampus synapse molecules change to define a network path and hence, a pattern and memory.
4. **COLOR** When the energy of color enters our bodies through the **eye** it is directed to the **hypothalamus** than it stimulates the **pituitary** and **pineal** glands. Photoreceptors in the **retina** called **cones**, translate this energy into colors.

5. Light and color affecting the **pituitary** gland affects the production of certain hormones, which in turn affect a variety of **physiological** processes. Color has a direct influence on our thoughts, moods, and behavior.

**LEVELS**

**ADRENALINE** Stress increases adrenaline levels leading to anxiety.

**BLOOD**
Astrocytes help in the neuronal regulation of the blood flow. Thought to maintain the blood-brain barrier

**CALCIUM, PHOSPHORUS AND FLUORIDE DEPOSITS** in the **PINEAL GLAND** have been linked with aging

**CHEMICALS AND HORMONES**
The average person has over 30,000 thoughts a day. Research shows that **fear**, all on its own, triggers more than 1,400 known physical and chemical responses and activates more than 30 different hormones. There are mental, medical and spiritual reasons to forgive. Toxic waste generated by toxic thoughts causes many diseases.

**CORTISOL** *(the adrenaline glands make cortisol)*
Repeated or prolonged trauma or stress increases **cortisol** leading to many ills and decreased levels of the hormones **DHEA** and **testosterone**—leading to loss of muscle tone, increased fat, and decreased libido.

Destroys new nerve connections causing to be “unlearned” or “unremembered”, whatever led to stress. Cortisol can also cause us to forget many details of newly learned explicit memory.

Before the age of three, cortisol secretion destroys whatever part of the brain is new growth, leaving a permanent lesion. Between the ages of two and three it leaves a scar in the hippocampus.

Stress is good and bad. Good when it causes us to pay attention to what is going on around us (traffic, finances, relationships.) Stress is bad when it overloads our resources. Too much stress can kill you. The hippocampus shrinks when cortisol is used up.

**DOPAMINE** Dopamine is the feel-good chemical. Almost every recreational drug has been shown to increase dopamine levels in the **nucleus accumbus**, the site of action of highly-addictive drugs.

**MELETONIN** sleep

**OXYGEN** 2% of body’s weight, but uses 20% of bodies oxygen
POTASSIUM
An axon involves movement of IONS or tiny electrically charged particles of two common metallic elements - - SODIUM & POTASSIUM. Normally there is more potassium inside the axon and more sodium outside.

SUGAR
Flooding the brain with dopamine and changes it’s neurochemistry in one month. Dopamine is a feel-good chemical associated with motivation. Sugar may hijack leptin, a hormone that is associated with the regulation of appetite and body-weight WATER 85% water Needs the skull to keep its shape.

SARATONIN    awake

SODIUM      An axon involves movement of IONS or tiny electrically charged particles of two common metallic elements - - SODIUM & POTASSIUM. Normally there is more potassium inside the axon and more sodium outside.

STRESS
2. Stress causes:
   increased levels of adrenaline, leading to anxiety.
   increased levels of cortisol, leading to many ills
   decreased levels of the hormones DHEA and testosterone

SUGAR

THYROID

MEMORY-THOUGHTS

MEMORY
1. Memory is stored over large parts of the brain surface hippocampus, amygdala stratum or the mammillary bodies.
2. There is always a large amount of unused storage space
3. Short Term Memory A quick scan & forgotten
4. Long Term Memory Must be thought about, repeated to self – “rehearsed”
5. Storage Space Memories can be "misfiled" in the enormous filling system
6. The hippocampus synapse molecules change to define a network path and hence, a pattern and memory.
7. Emotional pain comes not from the trauma event itself but rather from the message believed because of the events.
8. The amygdala is thought to be involved in emotional memory, the hippocampus is believed to be involved in spatial learning and declarative learning, but memory or learning is not solely dependent on any specific brain region.
9. Memories can be hidden in compartments of the brain where pieces and parts of us are hidden. Pray that the walls come down, so you can see and know about the whole person; every part saved.

10. Factual Memory: The hippocampus stores dates, times, places, names; all the factual memory data.

THOUGHTS
1. Doctors say that 87% to 95% of illnesses are a direct result of our thought life. What we think about affects us physically and emotionally. The average person has over 30,000 thoughts a day. Research shows that fear, all on its own, triggers more than 1,400 known physical and chemical responses and activates more than 30 different hormones.

2. Thoughts are real things: they have a structure in your brain and occupy space. Thoughts are the same as memories. Thoughts and memories look like trees and are called neurons or nerve cells.

3. You build a double memory of everything as a mirror image of each other. This means that the memory on the left side of the brain builds from the detail to the big picture; and the memory on the right side builds from the big picture to the detail.

4. As information comes in from the five senses, you process it in certain areas of the brain, then you grow branches on “trees” to hold this information in long term memory. This means that whatever you grow is part of you, actual branches in your brain that create your attitude and influence your decisions.

NERVE CELLS (also see “nerves” below)
1. Tough, pale, like telephone wire.
2. Carries millions of tiny electrical nerve signals every second.
3. Brain contains over 100 billion nerves
4. Epineurium:
   Tough outer covering
5. Axons:
   Long wire like fibers: can be 3’ long, like a tube filled with chemicals dissolved in water. Passing a signal along an axon involves movement of ions or tiny electrically charged particles of two common metallic elements; sodium and potassium. Normally there is more potassium inside the axon and more sodium outside.
6. Myelin Sheath:
   Axons are covered by the myelin sheath which prevents loss of the nerve signal.
7. Fascicles:
   Axons bundled together are called fascicles.
8. Perineurium:
   Fascicles are wrapped by the perineurium.

NERVES
1. Form a web of communication that send and receive impulses.
2. Neurons: (see MEMORY-THOUGHTS)
   The neuron network stores and retrieves memories. A neuron is a cell that processes and transmits information by electrochemical signaling, via connections with other cells called synapses. Nerve impulses pass from one neuron to another. SENSORY NEURONS respond to touch, sound, and light. MOTOR NEURONS cause muscle contractions and affect glands.
INTERNEURONS connect neurons to other neurons in same region of the brain or spinal cord.

3. **Neurotransmitters:**
   Most nerve impulses travel as chemical messages called **neurotransmitters**.

4. **Synaptic Cleft:**
   The **neurotransmitters** cross a gap between two neurons called the **synaptic cleft**.

5. **Receptors:**
   The **neurotransmitters** lock into **receptors**.

6. **Chemicals:**
   Chemicals generate a new **electrical signal**.

NERVE DISORDERS
1. **Electrical Faults**  
   wrong wiring
2. **Chemical Cause**  
   lack or excess or a certain neurotransmitter
3. **Emotional Difficulties**  
   connected with the thought process
4. **Epilepsy**  
   an “electrical storm”; nerve cells become chaotic & random

NEURON  HOW MESSAGES ARE PASSED ALONG A NEURON
A signal carried by a **NEURON** may seem like an electrical current carried along a wire, but in reality it is quite different. A tiny electrical charge is produced, but the movement of the signal along the **AXON** is more like a burning gun powdered fuse. It moves along at anything between 5 and 300 ft. each second.

The **AXON** is a tin tube filled with **CHEMICALS** dissolved in water. Many are covered on the outside with a fatty material, like electrical insulation.

Passing a signal along an **axon** involves movement of **IONS** or tiny electrically charged particles of two common metallic elements - - **SODIUM & POTASSIUM**. Normally there is more **potassium inside** the axon and more **sodium outside**.

When a signal is passed, the thin skin or **membrane covering the axon** changes to allow the **IONS** to leak through, causing a sudden change in the electrical properties at that point. These changes surge along the axon like a wave.

When the signal reaches the **SYNAPSE**, it must cross a small gap to reach the next **NEURON**. Tiny bubbles in the knobs at the end of the axon contain **chemical substances** called **TRANSMITTERS**. They are released as the signal reaches them, and they flow across the gap in the synapse. When they contact the **DENDRITES** of the next cell, they start the movement of **sodium** and **potassium**, passing on the signal.

Now the first **NEURON** returns to its normal resting state, waiting for another signal.

NUCLEUS ACCUMBENS
1. A collection of neurons
2. Thought to play an important role in **reward, laughter, pleasure, addiction, fear, and the placebo effect**...
3. The site of action of **highly-addictive drugs** such as cocaine, amphetamine and almost every
recreational drug which cause increase in **dopamine** levels in the nucleus accumbens  
4. Each half of the brain has one nucleus accumbens. Each has a core and a shell.

4. Plays an important role in processing many rewards such as food and sex.

5. Involved in the regulation of emotions induced by music.

6. The Nucleus Accumbens plays a role in rhythmic timing and is considered to be of central importance to the limbic-motor interface

**PANIC DISORDER**
A chemical is missing in panic-disorder patients. The serotonin receptor is reduced by 1/3rd in a structure in the center of the brain. It regulates emotion (anxiety) and panic disorder. It is hereditary, one or more genes are affected-the DNA. Pray for new brain cells to be formed around the center of the brain.

**PATHWAYS**
Myelinated pathways are destroyed in childhood if not used. (by ages 10-11?)

**PITUITARY GLAND**
1. Considered the master gland of the body----regulates all hormones.
2. Directs other organs of the body; example the thyroid
3. Directed by **hypothalamus**
4. Directs **physical & sexual growth**

**PINEAL GLAND**
1. Once considered the “third eye” & resting place of ancient knowledge.
2. **Inner time keeper. Close relationship to light & our biological clock**
3. Tied to earth’s rotation around the Sun.
4. Produces serotonin derivative of melatonin; a hormone
5. Shaped like a pine cone, thus its name; the size of a grain of rice
6. Located near center of the brain, between the two hemispheres

**RAGE** see septum pellucidum

**SEPTUM PELLUCIDUM**
1. Located under the Corpus Callosum, the large collection of nerve fibers that connect the two hemispheres.
2. **Involved in pleasure, mood, rage, sexual gratification as well as problems of vision, coordination, and intelligence.**
3. **Lesions of the septum lead to rage.**

**SHAME** see septum pellucidum

**SPEECH CENTER**
1. On side of brain toward rear
2. Sense of **written** and **spoken** words

**SLEEP** See Brain Stem
STRESS
2. Stress causes increased levels of adrenaline, leading to anxiety.
   - Increased levels of cortisol, leading to many ills
   - Decreased levels of the hormones DHEA and testosterone

Changes:
1. Recognize too much stress makes you sick.
2. OK to say no and to renegotiate your commitments.
3. Get enough sleep.
4. Laughter….Joy!!

TEENAGE YEARS
1. The ten year old brain is like an overgrown garden that needs to be pruned.
2. The teenager has “hundreds of billions” of brain NEURONS that are unruly.
3. They make unnecessary or inappropriate connections.
4. The cells talk to everybody – and everybody talks to everybody else.
5. Much of the confusion occurs in the FRONTAL LOBE, the part that’s involved in planning, making decisions, controlling emotions and conveying ideas with language; all things teens have problem with.
6. As teen begins to form habits of thought, behavior and speech. As choices are made
certain avenues in the brain take precedence over others.
7. These paths become established while the unused ones shrivel to the side
8. The brain that you wire as a teen by your habits, patterns of thought, behavior and the speech you establish is the one you get as an adult. That is why some emerge with a sense of purpose and others don’t.

TEMPORAL LOB  The left temporal lob often the seat of aggressive thoughts

THALAMUS
1. Mixes impulses from the senses
2. Important relay station for impulses that are later coordinated by cerebral cortex.

TIMING, RHYTHMIC
The Nucleus Accumbens plays a role in rhythmic timing and is considered to be of central importance to the limbic-motor interface.

TONGUES see GOD SPOT
“As we pray in the Spirit, there is activity that begins in our brains. As we engage in our heavenly language, the brain releases two chemical secretions that are directed into our immune system giving a 35-40% boost to our immune system. The secretion is triggered from a part of our brain that has no apparent activity in our humans.” Only those who pray in tongues activate this part of the brain. There is no medicine, no homeopathy, no exercise that give the immune system such a boost. Many anti-oxidants, green leafs boost it, but none 35-40%. If you have a tumor in your body, the immune system can swallow it if it is strong enough.

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The Physiological Effects Of Praying In Tongues
Psalm 86-11 “Unite my heart to know you”