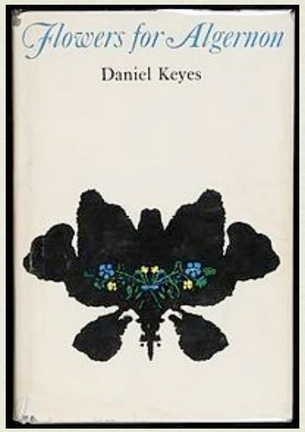
CAN WE INCREASE HUMAN INTELLIGENCE?

By Gina Dukes

FLOWERS FOR ALGERNON

- Synopsis:
- This is the story of a man named Charlie Gordon who is a 32 year old mentally retarded man. Though the help of a team of scientists, Charlie embarks on a journey to boost his intelligence with an experimental surgery.



PURPOSE OF PROJECT

- For my 10% time project, I wanted to do a bit of research to determine whether or not it is possible to increase human intelligence through artificial means. My inspiration for the project stemmed from the book, Flowers for Algernon.

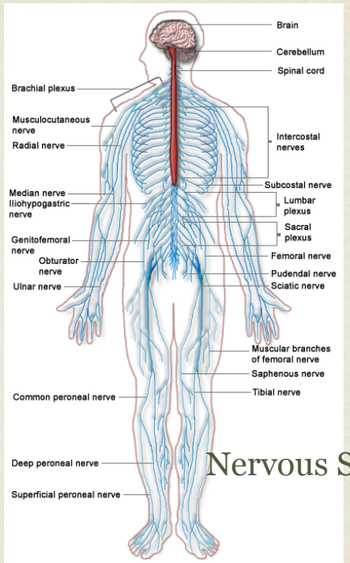
HOW THE BRAIN DEVELOPS

Embryo

- During pregnancy, an embryo begins to develop the moment after conception. Once a sperm and egg unite during fertilization, they form a zygote. The zygote then forms into a blastocyst, which is a tiny ball of rapidly dividing cells that contains what will later develop into the placenta. The blastocyst then implants itself in the uterus. The still developing circulatory system will form in the middle layer of the blastocyst cell, called the mesoderm. This layer of cells will also develop to become the foundation for the baby's bones, muscles and kidneys.In week 5, the baby's brain, spinal cord, heart, and other major organs, such as the stomach, begin to develop. The top layer of the embryo, the ectoderm, will serve as the foundation for the baby's skin, peripheral nervous systems, eyes, ears and connective tissue.

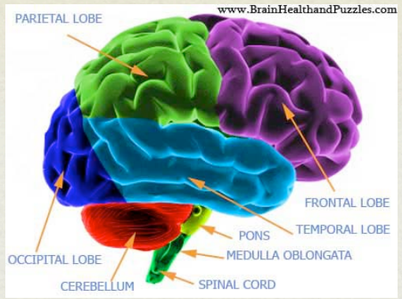
HOW THE BRAIN DEVELOPS

- The nervous system develops from the ectoderm, which later thickens in the area of the longitudinal axis to form the neural plate. Once the neural plate is completely developed, it folds along the the longitudinal axis to form the foundation for the neural folds that will later become the neural tube. The neural tube is the precursor to the brain and spinal cord.Small cells that lay above the neural plate, called neural crests, then separate themselves to form the peripheral nervous system, autonomic nervous system and the sensory brain nerves. The front tip of the neural tube lays the foundation for the three major areas of the brain, such as the forebrain (also known as the prosencephalon), the midbrain (mesencephalon) and the hindbrain (rhombencephalon). The hindbrain contains the major structures such as the medulla oblongata, pons and cerebellum. By now the fetus is only a month old and about the size of the tip of a pen.



Nervous System

THE BRAIN:CENTER OF INTELLIGENCE



- One major component of the nervous system is the brain. The brain is composed of four major regions, the cerebral hemispheres, diencephalon, brain stem and the cerebellum. The cerebral hemispheres, which are often talked about in a pair as the cerebrum, contain the largest area of brain matter. It's primary function serves as the place where speech, memory, interpretations of sensation, voluntary movement consciousness and logical and emotional responses develops. The primary functions of the diencephalon are to pass sensory impulses to the sensory cortex, regulate drives (appetitie, sex, pleasure) and other visceral impulses such as sight or smell.

THE BRAIN:CENTER OF INTELLIGENCE

- The brain stem functions to be a channel for autonomic nerve impulses that the brain sends out, such as instincts, the cranial nerve and also controls blood pressure and breathing.The cerebellum functions to control skeletal muscle activity, balance, and equilibrium. Last but not least, one main component that helps direct messages from the nervous system to other parts of the body, is the spinal cord. Its primary function is to be a pathway or channel that goes back and forth from the brain to send and receive internal and external messages. It is essentially a giant reflex center.

WHAT IS INTELLIGENCE?

1. The ability to acquire and apply knowledge and skills.
2. The collection of information of military or political value: "military intelligence" - www.Dictionary.com

SCIENTIFIC GAINS

Scientists at the Medical College of Georgia, tried to find a solution to increasing human intelligence by testing on a rat. Joe Z.Tsien led a team to inject genetic material into the embryo of a rat, in order to heighten the gene NR2B, which is responsible for controlling the rate that brain cells communicate. Injecting the gene material into the brain cells of the rat allowed it to communicate longer than most rats. In addition to this, the rat has a large capacity for memory, meaning that it can remember objects 3x longer. This increase in brain power allows the rat to be able to solve very difficult tasks.

Hobbie J, Smartest rat in the world

INCREASING INTELLIGENCE:HELPFUL OR HARMFUL?

Despite scientists improving the intelligence of the rat Hobbie j, there are still factors that will be challenges in the way of improving human intelligence. The first one is that at the moment, it is not considered ethical to modify human embryos genetically. Because of this, it's not possible to heighten the NR2B gene in humans except with drugs. The second challenge is that increasing intelligence and enlarging human capacity for memory may have adverse effects on the human mind. While this may help people with Alzheimer's disease, it may also have harmful effects. Because humans have the ability to forget events that were painful, enlarging memory and strengthening the capacity to remember may not prove to be beneficial in the long run.

CONCLUSION

- Due to recent scientific gains, it is a possibility that scientists can increase the intelligence of humans due to stem cell research, gene modification and possibly the use of drugs. However, due to lack of substantial evidence and testing, the true effects of using science to increase human intelligence are unclear. Unfortunately, like the character from Flowers from Algernon, a viable form of increasing human intelligence seems still far from our reach.

CITATIONS

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