The Miracle of Me: The Endocrine System

Glands are special cells which manufacture and discharge chemical substances, called hormones, into the bloodstream. The bloodstream carries them to the places where they are needed. The hormones regulate various body activities as well as the glands themselves.

The pituitary gland, located under the brain, determines whether the person is tall or short. It makes very small amounts of a special liquid which is delivered to all parts of the body. Bones grow when they have food and this special growth liquid. When the supply of liquid stops, the chemical message is, "Stop growing taller!" It is at this time that I am full grown and ready to respond to my surroundings in a more mature way.

At the fifth grade level, girls usually grow more rapidly than boys. A year of two later, boys will grow more rapidly. Later on, as a group, boys will be taller than girls and will take on a different appearance.

Between the ages of about nine and seventeen, I may expect to begin feeling more like a young adult and less like a young boy or girl. This happens because the pituitary gland sends special hormones to special body tissues with the message, "Grow up!" This is a perfectly normal experience that occurs in all boys and girls, but at different rates.

The thyroid gland, located in the sides of the neck, sends hormones to control the burning, or oxidation, of food. The thyroid gland indirectly affects the heart, blood vessels, nervous system, and body growth activities.

The adrenal glands, located above the kidneys, are helpful when I am angry or about to fight. They secrete a special hormone which helps get some starches changed quickly to sugar for use by the muscles. People have been known to lift heavy objects such as automobiles when danger arose, and not be able to lift the same heavy objects under normal conditions.

These strange situations are due to the secretions of the adrenal glands. The secretions of the adrenal glands also cause blood to clot more readily. Without adequate clotting ability, the body could lose too much blood in a short period of time.

Some glands pour their secretions through ducts or tubes, and are called duct glands. Examples of these are the sweat glands and salivary glands. Other glands have no ducts and send their secretions directly into the bloodstream. Examples of these are the pituitary, the thyroid, and the adrenal glands.

The Miracle of Me:
The Reproductive System

Along with all other living things, I have the power to reproduce myself. A new plant grows to be the same kind of living thing the parents are. A new animal grows to be the same kind of living thing its parents are. In both plants and animals, the reproductive system makes it possible for plants and animals to reproduce themselves.

Unlike the other systems that we have studied, the organs of the reproductive system differ in boys and girls, on the inside of the body as well as on the outside. The parts that are different are called sex organs or genital organs.

The male organs are mostly on the outside of the body. The penis, a cylinder-shaped organ, is composed of spongy tissue. The end is completely covered at birth with a fold of skin called the foreskin. This is sometimes removed by a small operation called circumcision. The penis will vary considerably in size and length just as other parts of our body vary.

Behind the penis hangs a pouch called the scrotum which contains the two testes. These testes have two major functions:

* First, they produce male hormones which start the boy on his way to manhood. He grows hair on his face, under his arms, and around his sex organs, and develops a deeper voice.

*Second, the testes produce sperm cells. The sperm cells are very important in human reproduction. A sperm cell from the male must unite with an egg cell from the female in order to start a new life. Sperm cells are passed through the penis.

A sperm cell is extremely small. Only through a high-powered microscope can it be seen. It has a head and a very long tail. With the tail it can wiggle and swim.

The body also makes a white liquid which the sperm need in order to swim from one place to another. Semen is the name given to the liquid and sperm together. It is discharged from the body through the penis.

During the adolescent years, a boy's penis may become stiff and erect and semen is discharged from it unexpectedly. Sometimes this happens when he is asleep. This is known as a nocturnal emission, or wet dream. It is a natural thing to happen and is an indication that a boy is maturing physically.

The sex organs of the girl or woman are on the inside of the body. They are the uterus, the Fallopian tubes, and the vagina. The two ovaries, no bigger than almonds, contain thousands of eggs so tiny they can be seen only with a microscope. The ovaries produce hormones that change a girl into a woman. Her figure changes, and she grows hair under her arms and around her sex organs.

When a girl is somewhere between the ages of 9 and 17, the pituitary gland sends a special new hormone to the ovaries. A cycle begins that will continue until she is about 50 years old. Now the ovaries produce a hormone of their own. When the lining of the uterus, a small pear-shaped muscular organ, receives this hormone, the cells begin to multiply and fill with blood and watery fluid.

Meanwhile, in one ovary (usually alternating each month from the left ovary to the right one) an egg cell matures and bursts from its egg case. It is swept into the Fallopian tube and travels through this canal into the uterus. All unfertilized eggs come to the end of their life cycle there and are dissolved.

Now there is no need for the special lining of blood and fluids in the uterus, so it flows out through the vagina, the passageway to the outside of the body. This is known as the menstrual cycle, menstruation, or a "period" and recurs about every 28 days. At this time, a girl may feel a little discomfort, but is not ill, and should be able to go about her normal activities.

If sperm cells are placed in the vagina during intercourse, they may move through the uterus and meet and unite with an egg cell in the Fallopian tube. This is fertilization. The fertilized egg, instead of "dissolving," tucks itself into the lining of the uterus and a baby begins to develop.

The moment the sperm and egg join, the question of whether a baby is to be a girl or a boy is decided. That, and many other things, are determined when the sperm and egg meet. A baby may have brown eyes like his father or a dimpled chin like his mother. Sometimes someone may say a baby looks like his grandfather.

The sperm and egg hold in themselves and pass along the gifts from the past generations to the new child. So babies may resemble their mother, father, grandparents, or great-grandparents so far back one cannot count them.

Now and then one hears of twins being born. Usually one egg leaves an ovary each month. Once in awhile, two eggs leave at about the same time and it may happen that the two eggs meet two sperm. If both of these grow and become babies, they are called twins. One may be a boy and the other a girl, or they may both be boys or both girls. They are like any other brother and sister, except that they are born at the same time. These are called "fraternal" twins.

Much more rarely, after a fertilized egg starts to grow, it divides into two even parts and separates. These two parts grow into two separate babies. These are called "real twins," "true twins," or "identical twins." They are so alike that it can sometimes be difficult to tell them apart.

At the time the fertilized egg tucks itself into the lining of the uterus, or womb, it begins to grow. This remarkable cell divides into two cells, two cells into four, and on until the cells form the small body of a baby.

The developing baby obtains food and oxygen through the umbilical cord that is connecting his or her body to the mother's body, inside her uterus.

For about nine months, the baby continues to grow inside the mother's body, where it is protected and kept at the right temperature in a sac.

When the time comes for the baby to leave the mother's body, a wonderful thing happens. The baby is lying inside the uterus near a passage called the vagina, which leads to the outside of the mother's body. The walls of the uterus begin to push the baby into the vagina by means of a series of muscular contractions. From the vagina, the baby is pushed outside into the world.

Most babies are born in a hospital because this is a convenient place for the mother and baby to get the special attention they need.

With the birth of the baby, there is in the world another remarkable creation worthy of respectful care and attention. The gift of life has been passed along, and in this new child is continued a long line of inheritance which reaches back farther than recorded history.

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I have a reproductive system which, when I am mature, will enable me to pass on my inheritance and this gift of life.

The Miracle of Me: Character

I realize what a special person I really am. I have special duties I owe myself and others. My physical body is undergoing some wonderful changes that often seem to happen quite rapidly.

These changes can be both welcome and unsettling at the same time. It becomes even more important, as I face new challenges, to call upon all I have learned from my home, school, and community about building good character.

First of all, I must **respect** my own body. This respect includes practicing good hygiene by keeping my body clean at all times, eating healthy food, exercising, and getting plenty of rest.

Respect for my body also includes avoiding substances that harm me, such as alcohol, drugs, and cigarettes.

I can also show respect for myself by making good choices about activities and friends that are right for me, and staying away from people who could influence me to try risky behaviors.

Of course showing proper respect for adults is a habit I will continue, even though it will be hard at times as I enter adolescence.

Along with growing up physically, my **responsibilities** are beginning to grow. My family should expect me to share in the chores at home, and my teachers will expect more of me, also.

Rather than depending on parents and teachers to direct my studies, I should begin to take responsibility for my homework, belongings, and projects without constant reminders.

As I get older, my privileges may begin to increase, and I must prove that I can handle new freedoms in a mature way. I can be a positive example for younger members of my family, clubs, or religious groups.

It will take **self-discipline** to develop into the kind of young man or woman I would like to be. I may have to choose studies over playing with my friends at times. I may have to look carefully at how much time I spend on television, videos, or computer games. But I will find it very rewarding to set a goal and meet it, or stick to a task and complete it. This ability to **persevere** sets me apart from the child I used to be, and shows what kind of young adult I want to become.

As I begin to grow up, people will judge me by the way I treat others.

*Am I a **caring** person? Do I look for ways to be of service to those in need? Am I accepting of those who may be different from me in some way?

*Do I show **courage** by standing up to defend someone or something I believe in? My actions will speak much louder than my words.

* If I show **integrity** and **honesty** in my daily life, if I can be trusted, if I can control my temper, then good friendships will follow.

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The next few years of my life will offer many exciting challenges, but by placing good character at the center of my actions, and relying on the guidance of my family and other trusted adults, I can be ready to face all that is ahead of me. I am on the edge of an exciting adventure--the journey from childhood to adulthood!