Beginning and Development of Human Life
From Conception

Day 1

You began when the sperm cell from your father met and united with the ovum (egg) cell from your mother. During this act of conception or fertilization, the two cells became a single living cell. YOU began. A unique individual, you never existed before in the history of the world and you are not entirely like either of your parents nor are you entirely like any of your ancestors. When conceived, you were so tiny that you could not be seen with the naked eye. You were but the size of a pin prick, smaller than a grain of sand, smaller even than a period typed at the end of a sentence.

As the nuclei of the ovum and sperm unite during the first hours of fertilization they bring together twenty-three chromosomes from the mother and twenty-three chromosomes from the father. These chromosome sets carry some 15,000 genes from each parent cell.

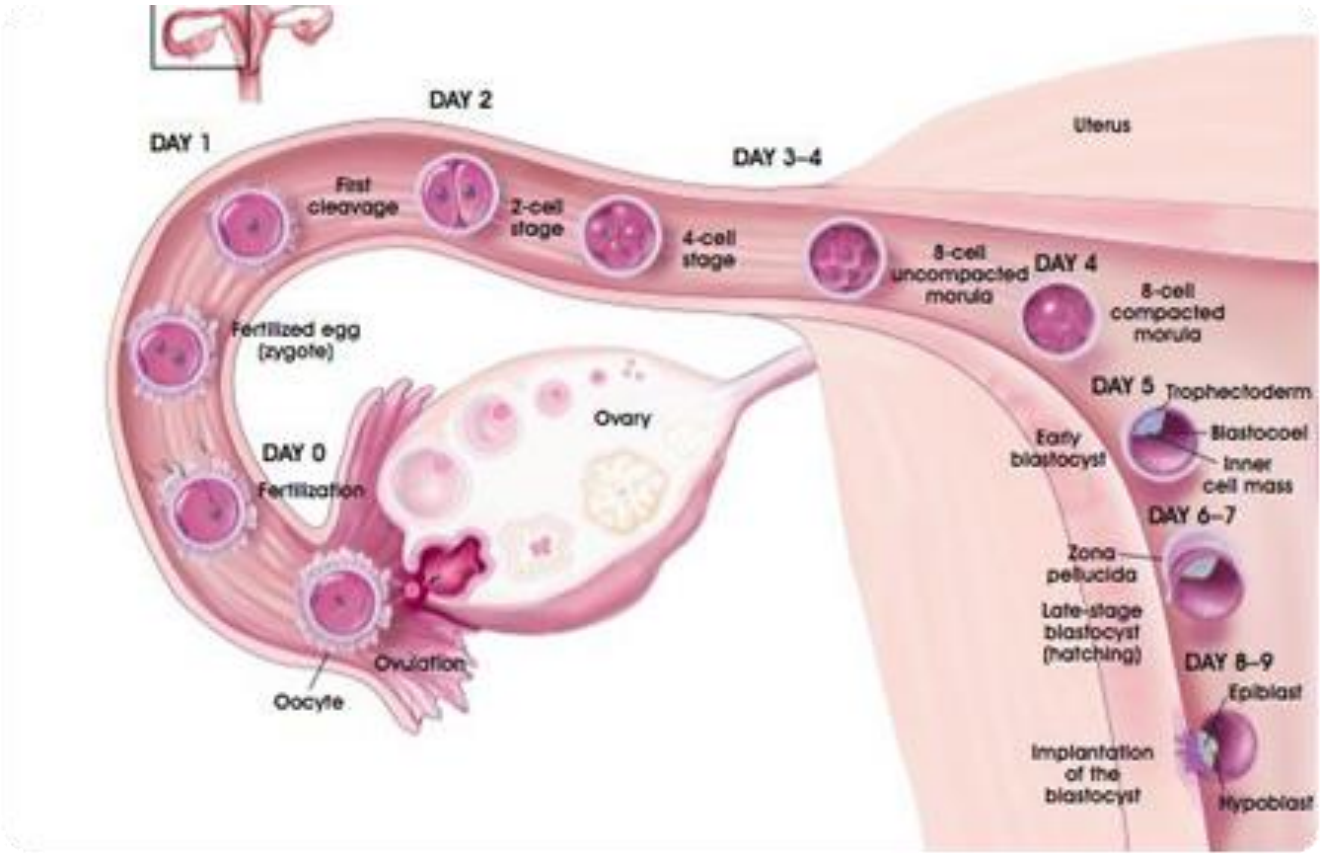
In the first quiet hours of human conception, the genes, like letters of a divine alphabet, spell out the unique characteristics of the new individual. The color of the eyes, hair, and skin, facial features, body type and certain qualities of personality and intelligence are all determined by this genetic coding. Whether the baby just begun will be a boy or a girl is determined by an X or Y chromosome carried in the father's sperm cell. X=Girl Y=Boy

This quiet, yet sacred act of conception has produced not a "potential human being", but rather a "human being with vast potential". A new human life has begun and will continue until natural or violent death.

You continue to grow at a rapid rate and began looking like a cluster of cells. You actually looked a bit like a variety of berry so at this stage of your growth you were termed "morula", which is Latin for mulberry. Your mother had no idea you had "nested" into her womb and had not yet missed a menstrual period.

Within six to twelve hours after the nuclei have merged and the chromosomes have exchanged genetic coding, the fertilized egg divides into two cells; creating after some 266 days a newborn babe weighing approximately seven and a half pounds and containing millions upon millions of cells.

During the first three to four days, the fertilized egg journeys down the mother's fallopian tube and enters her pear-shaped uterus or womb. The lining of the womb is very spongy, having



been specially prepared to receive the new life by a hormone called progesterone. By the end of seven days, the "ball of life", still no bigger than a dot, sinks into the soft wall of the uterus where it implants itself, much like a wind-blown seed becomes imbedded in the furrow of a recently plowed, moist, spring field,

The morula (seen below) or "cluster of cells" which comprises the new individual immediately begins to tap into tiny blood vessels and draw nourishment, just as a sprouting seed does from the wet soil. Barring unforeseen difficulties, this "ball of life" will grow at a rapid, almost dizzying rate to become an embryo, the next stage of human development.

MORULA

Week 2

Having now firmly situated yourself in the supplying goodness of your mother's womb, at about ten days you begin to send her signals that you are there. Through placental chemicals and hormones, you begin to influence virtually all of your mom's organs and tissues. She will soon miss a menstrual period, experience some "morning sickness" or tenderness in her breasts and might suspect that you have been conceived. Even though you exert this absolute influence, you and the balloon-like sac of water which surrounds and protects you are still smaller than the seed of apple.

According to the "instructions" packaged in the genes, the cluster of cells has been increasing and changing virtually every hour. Already different tasks have been appointed to different groups of cells. Some cells have gathered and formed a bubble-like sac which is filled with fluid. This sac is called the amnion, which is a Greek term meaning "little lamb", chosen because lambs are often born enclosed in these

pre-natal membranes and fluid. This “bag of water” will cushion, protect, insulate and provide free movement to the developing individual.

Another group of cells has formed a tree-like placenta which brings the baby’s blood into contact with the mother’s bloodstream. Though the bloods “touch” through a thin partition or membrane, they normally do not intermix and may even be of different types. In an interchange of materials, oxygen and food is absorbed from the mother, and wastes from the baby are filtered out.

The umbilical cord, composed out of two arteries and one larger vein, surrounded by a thick jelly, has formed and becomes a lifeline transporting nutrients and wastes to and from the embryo and placenta.

The amniotic sac, together with placenta and umbilical cord, comprise a sort of self-generated space scapsule and life support system for the developing “embryo”, which is swelling in size, teeming with life and in the process of forming.

Weeks 3 and 4

As you completed the first month of your life, you were now about the size of an apple seed or one-sixth to one-fourth inch in length.

Your heart began beating at three weeks and has the “rhythm of life” for all your days. Your brain began to form and soon would send out impulses throughout your body. On your twenty-fourth day you had no arms or legs. Then, suddenly, just two days later, tiny buds for your arms appeared, and then your legs budded in only two more days!

In a mere four weeks you looked every bit like a tiny baby and even began to react and respond like one.

By the end of the third week, the backbone, spinal column and nervous system are forming. The rapid growth of the backbone causes the body to “double-up” and curl about its axis. Inside, the foundation of all the organic systems is being carefully established. Simple kidneys, a liver and the digestive tract are already taking shape.

By the end of four weeks, the month-old embryo is ten thousand times larger than the fertilized egg.

The new individual is a self-contained biological workshop. The master genetic code imparted to each cell continues to dictate the formation of specialized tissues and organs in a universally fixed sequence. This perfect ordering, regimenting and orchestration of cells, while not yet fully understood, is truly marvelous to behold. Indeed, we are fearfully and wonderfully made.

Month 2

During this period you were able to move with a delightfully easy grace in your buoyant world. By the end of the month, you could swim. Unborn children your age have been recorded doing full flips in less than two seconds!

With your head "resting on your chest", the tip of your nose showed up on your thirty-seventh day and you could pull away if it was tickled. As your inner ear formed, you began to hear the rushing sounds of your watery world. By the end of the month your mom had missed two menstrual periods and probably pointed out that at this stage you were "a splendidly functioning baby".

The head of the embryo is almost one-half of its total size. The brain tissues rapidly grow and divide to become a miniature rain that is unmistakably human. Brain waves can be detected, recorded and read at approximately forty days. Impulses begin

to control and regulate body functions such as circulation digestion, and waste elimination, as soon as these structures are formed.

The facial features along with the ears, nose, lips and tongue, form with clarity during this month. The eyes form and darken when pigment is first produced around the thirty-fifth day. Eyelids cover most of the eyeball by the forty-fourth and soon after will seal to protect the developing light-sensitive cells. The eyes will not re-open until the seventh month.

Near the end of the month the completed skeleton begins to change from cartilage to true bone. The jaws also form, complete with milk teeth buds in the gums. Muscle cells have been moving into position and soon the forty muscle sets begin their first exercises. As they work with the nervous system for the first time, the body responds to touch, and feeble movements are recorded, although most mothers will not feel movement until the fourth or fifth month.

Month 3

In your third month of life, you grew to be more than two inches in length and you now weighed one ounce. Your movements became more energetic, less mechanical and more graceful and fluid, very much like an astronaut floating and enjoying his gravity-free space capsule. Your arms grew to be as long as exclamation marks and your fingers and toes quickly formed, complete with fingerprints which gave you a separate legal identity that would never change except for size. As your eyelids closed, as with butterfly wings, and as a translucent skin covered you, looking like a frosted glass jacket slipped on, you assumed an ethereal, transcendent beauty. Special grace seemed to envelop and permeate you as you moved into your second trimester of life.

The fetus or "little one", now riding in the girdle of the mother's pelvic bone in a womb which as doubled in size, becomes quite active and his physical abilities leap ahead. Nerve and muscle connections increase threefold. The entire body, except for non-facial portions of the head, is sensitive to touch. Since the brain has developed to allow independent movement of limbs, the tiny infant can turn his head, curl and fan his toes and open and close his mouth with or without puckering the lips. If a palm is stroked, the fetus will make a tight fist.

This unborn child has been able to experience pain from the sixth week and can even be taught conditioned responses. Fingernails and toenails appear, and the child's genitals show a clear sexual differentiation and already contain primitive egg or sperm cells. The fetus now sleeps and wakes, "breathes" amniotic fluid regularly to exercise and develop the respiratory system, and also drinks, digests and excretes portions of the fluid. He will drink more fetal fluids if sweetened and less if they are made better or sour.

In every way, this new offspring begins to manifest a distinct individuality in appearance and behavior. Since the vocal chords are completed we are told he would even cry if he could, and indeed, does try to at times.

Months 5 and 6

Sometime before the end of this second trimester you had a very wonderful experience: you heard and recognized your mother's voice!

Perhaps this is why some of you had such an unearthly peace upon your countenance during this period. One observer said you looked as if you might be awaiting eternity.

Your eyes once again opened, and this time you could perceive the shadowy outlines and the dimly lighted forms in your environment.

Passing the mid-point of pregnancy and moving toward the end of the second trimester, the "little one" has been fully formed for a number of months. Now very coordinated, the baby curls as the mother moves and stretches when the mother rests. He will also firmly grasp the umbilical core when it is encounter3d. Sounds provoke energetic reactions, even though repetitive signals may bore the fetus. Most every mother now has to contend with bouts of hiccups and repeated kicks and punches, especially if the infant cannot settle into his favorite "lie" position.

Oil and sweat glands now function. The entire body is covered by fine hair as well as a white, greasy-looking ointment called vernix, Latin for “varnish”, which protects the infant ‘s skin from the fetal waters.

Image of newborn still covered with “Vernix”

Having increased in size to twelve inches or more, weighing up to one and one-half pounds, some infants who might now be born, though premature, would survive without adequate care. The lungs are usually well developed and stand ready to perform their function.

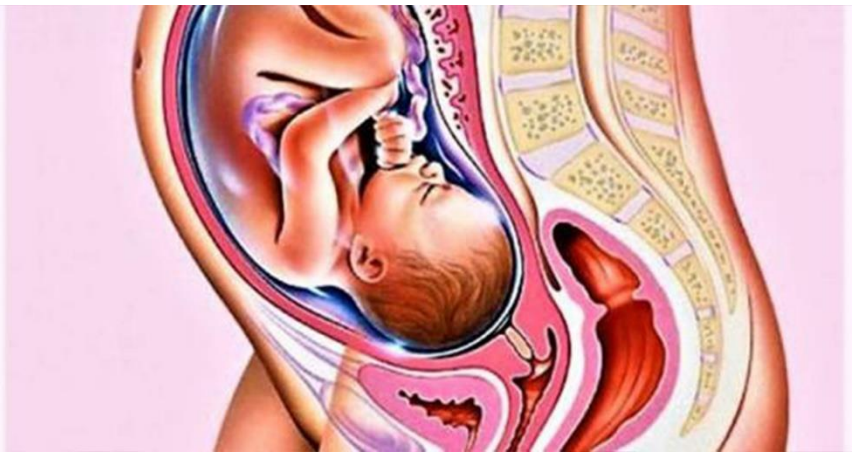
6 month 3D ultrasound

Months 7 to 9

During the last three months before your birth, your mother, with her womb stretched to its limits, probably felt like she had been pregnant forever. As you tripled in weight to more than seven pounds and grew to twenty inches during these same months, you began to find your quarters becoming very cramped.

As you settle into waiting, you found your favorite positions when possible or sometimes just pulled your knees up to your nose….and waited. The unborn child, now using the four senses of vision, hearing, taste and touch, has experienced his own motion, secretions, the difference between waking and sleeping, and has even related to the moods and emotions of the mother. These first perceptions will be stored and will form a basis for later experience.

The skin of the infant thickens and begins to look polished. A layer of fat is produced and stored beneath the skin, both for insulation and as a food supply. Antibodies that give immunity to diseases are built up. A gallon per day of amniotic fluid is absorbed by the baby and the fluid is totally replaced every three hours. The baby's heart now pumps three hundred gallons of blood per day and the placenta begins to age. Approximately one week before the two hundred and sixtieth day the infant stops growing and "drops", usually head downward, into the pelvic cavity. All preparations are finished, and both the mother and child can but wait for the drama of birth.



Birth

On the day of birth, the child, already a living and active person as we have seen, makes a change in his place of residence, in his external life support system, and in his eating habits. As he has already gone through many progressive, overlapping stages of growth and development, so will he, from birth, continue the life begun nine months ago, moving through childhood, adolescence, maturity, old age and death. Once again, all that is needed is nourishment, loving care and time to grow. The act of birth is thought to be triggered by a complexity of processes. A unilateral "decision" is made by the mature fetus and communicated electro-chemically from his brain to the aging placenta, which is also changing hormonally, and which, in turn notifies the uterus. The contractions and the labor begin.

The uterine muscles contract and eventually the mother is allowed to "bear down". Pressures of up to one hundred pounds push and propel the infant through the birth canal and out into his new environment. The jelly in the umbilical cord begins to swell immediately upon contact with air, restricting flow to the placenta and forcing the infant's blood to its own lungs for oxygen. As the baby gasps and air sweeps into the lungs and fills the thousands of tiny air sacs, a first cry is vocalized.

As you quietly waited, “locked” in the position for birth, a time came when you heard a loving whisper from afar saying, ‘It is time!” And with all the strength of your being, you responded with a resounding “YES!” And then the sounds around you began to change as you felt the first squeezes from the uterine muscles which you triggered into actions. Within hours, ythe noble labor of birth transported you from your warm, watery world out into an environment which was a chilly twenty degrees colder. Not having the buoyance of water around you, it was harder for you to hold your head upright and fibe times as hard for you to breather. You experienced pangs of hunger as you adjusted from a constant flow of nourishment to some six meals a day.

Though you nursed clumsily at first, you soon caught on and, after a good meal, would snuggle, drawing up your arms and legs as you had in the womb.

You soon began communicating your discomforts and needs to your mom, and you again found solace and peace in her shared warmth. If she held your head next to her beating heart, you heard it and fell asleep. As your mother looked down upon you she spotted your fingernails which needed trimming, and sas she continued to study you in your sleep, her heart would often fill with joy, realizing that you would now know grace in

the light of life. Her hope had become a certain, living, love. She was very, very glad!