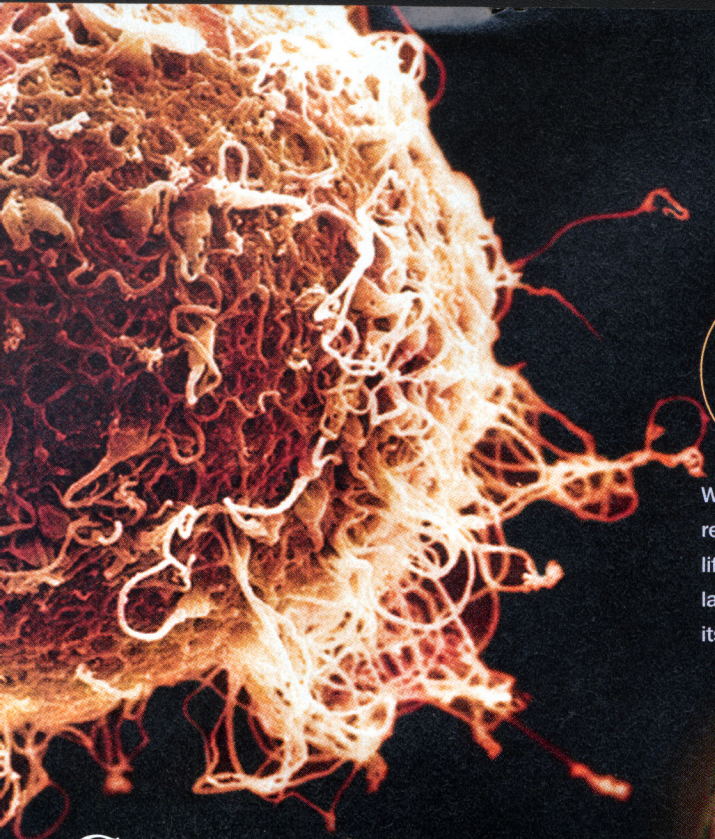
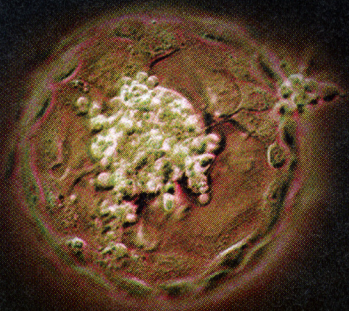


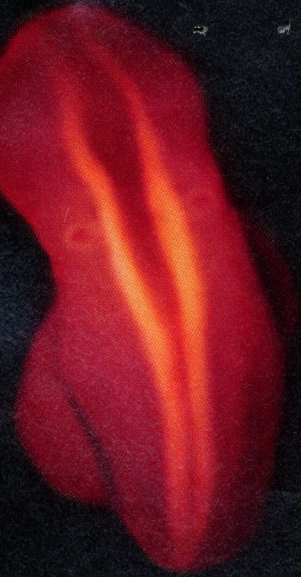
Conception

During intercourse, 300 million sperm may enter the vagina, but only one will penetrate and fertilize the egg to create an embryo

1 week

Within hours of fertilization, the resulting zygote starts the first of a lifetime of cell divisions. A week later, the tiny ball of cells attaches itself to the wall of the uterus



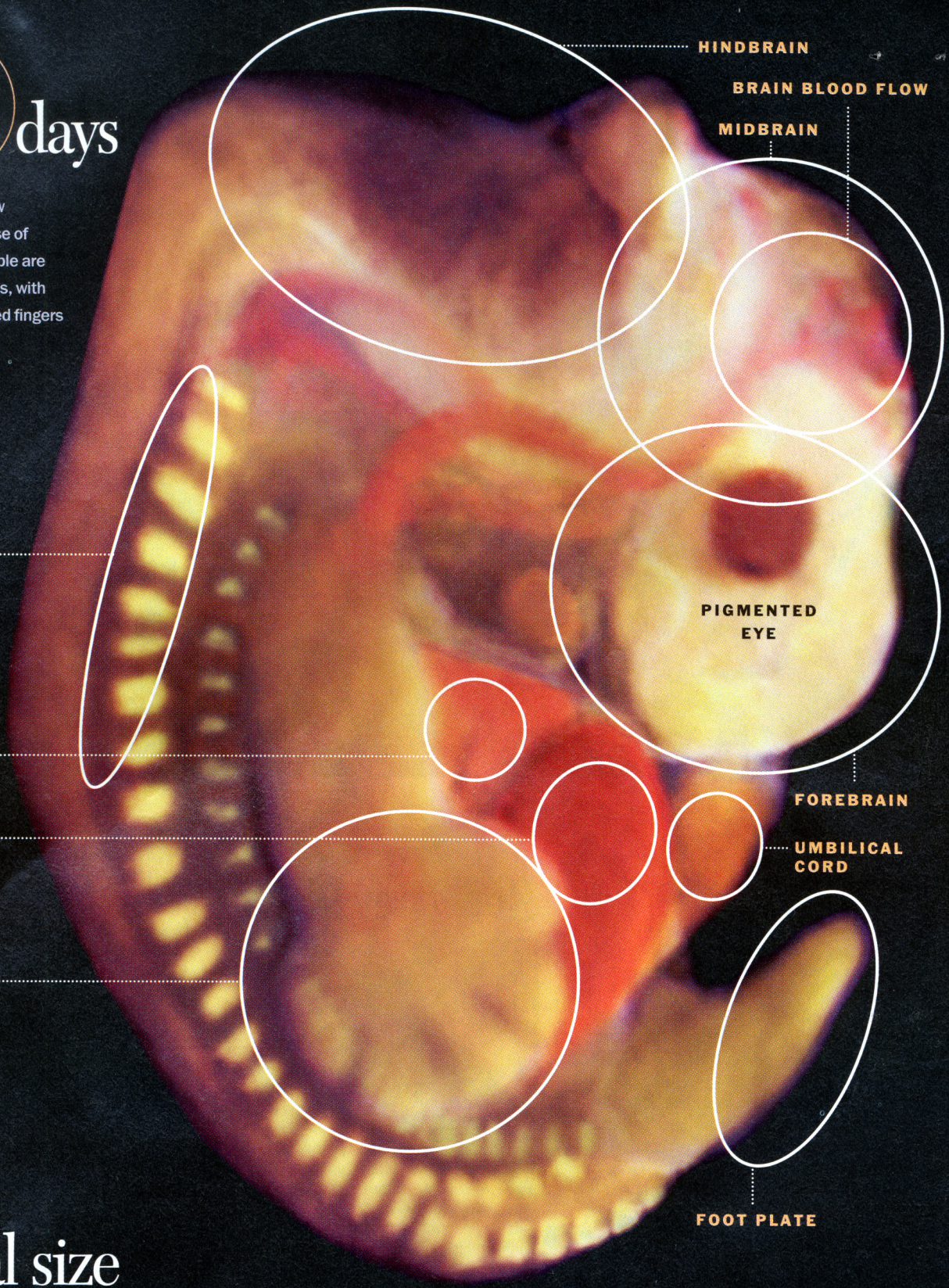


23 days

The nervous system, the first to develop, starts as a depression that folds in on itself to form a tube along the back of the embryo

42 days

The embryo is now developing a sense of smell. Clearly visible are cartoon-like hands, with crudely segmented fingers

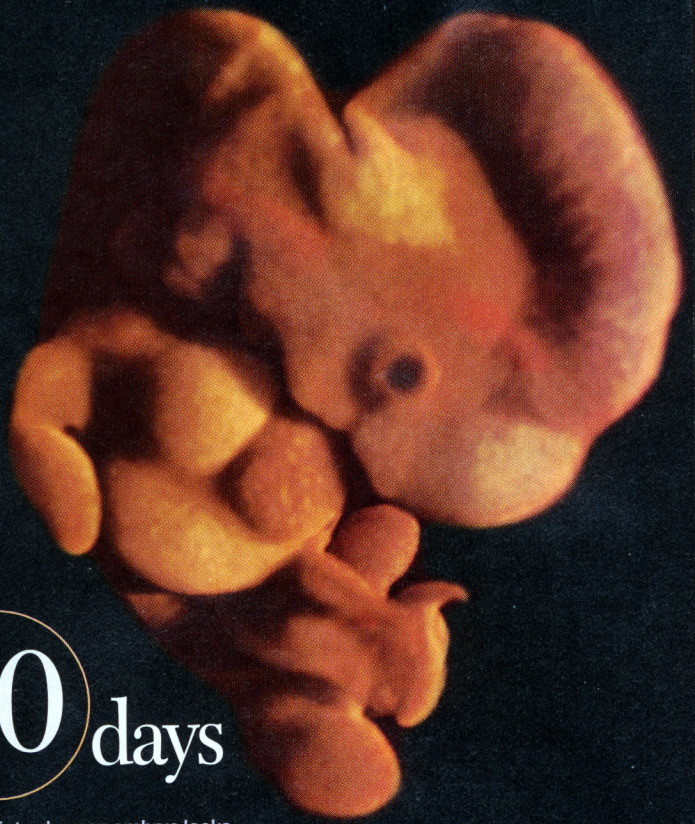


Actual size

The embryo grows rapidly throughout the first trimester. By Week 12, most of the body systems are already present, albeit in miniature form

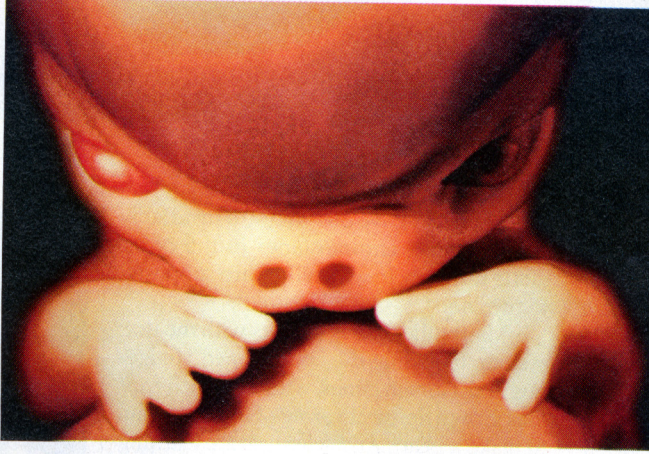
32 days

No bigger than a ladybug, the embryo forms a primitive heart, eyes and blood vessels. The brain is a labyrinth of cell-lined cavities, while the emerging arms and legs still resemble flipper-like paddles



40 days

At this point, a human embryo looks no different from that of a pig, chick or elephant. All have a tail, a yolk sac and rudimentary gills

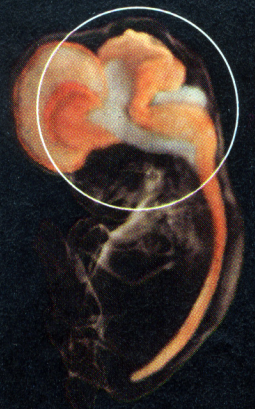


52 days

Still no bigger than a grape, the fetus now has nostrils and pigmented eyes. The eyes won't be able to sense light for another four months, when more optic nerves will be laid down

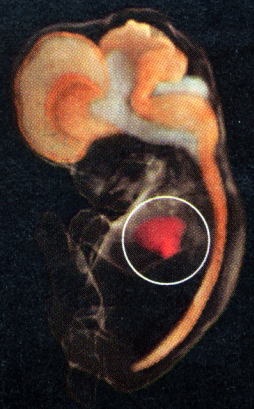
54 days

At two months, much of the construction work is done. All the fetus' major organs are in place, ready to grow



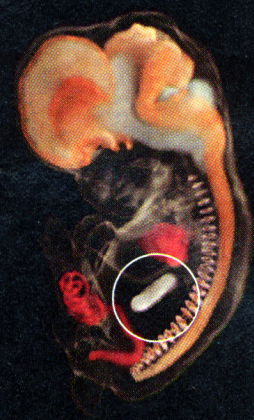
BRAIN

Still just a collection of cells without any coordinated cognitive function, the brain is, however, encased in the newly formed skull



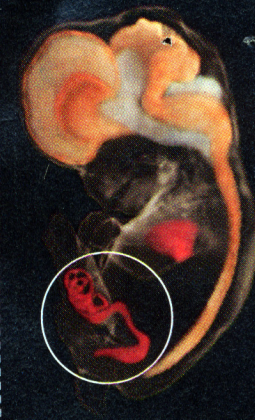
HEART

It can pump only about 20% of what an adult heart can, but the fetal heart now has valves, shunts and four distinct chambers



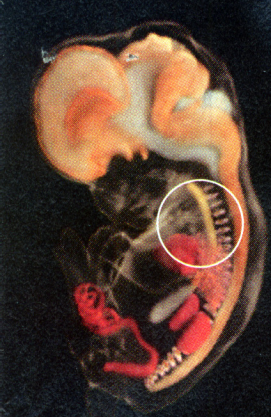
STOMACH

Thanks to a steady supply of Mom's nutrient-rich blood, the stomach won't need to digest food until after birth



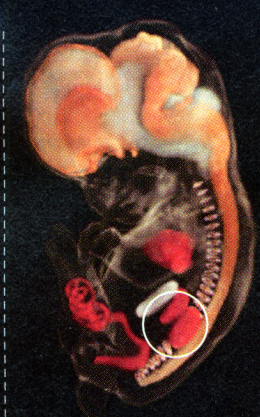
UMBILICAL CORD

Initially no thicker than a hair, it expands to anchor the embryo to the mother's placenta and also houses the developing intestines



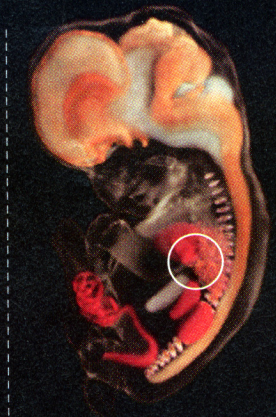
ESOPHAGUS

At four weeks, this food pipe separates from the breathing apparatus and eventually connects the mouth to the stomach



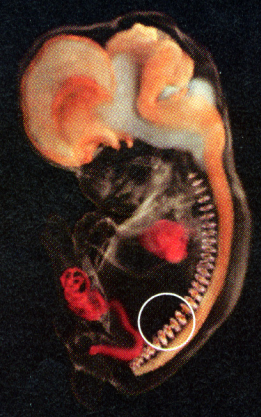
KIDNEYS

By now, the embryo is working on its third and final set of kidneys, which can already eliminate waste from the blood



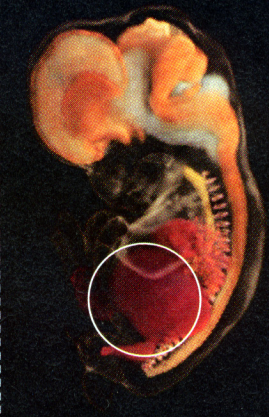
LUNGS

These begin as buds in Week Four and continue to branch again and again, even after birth, into tiny tubules



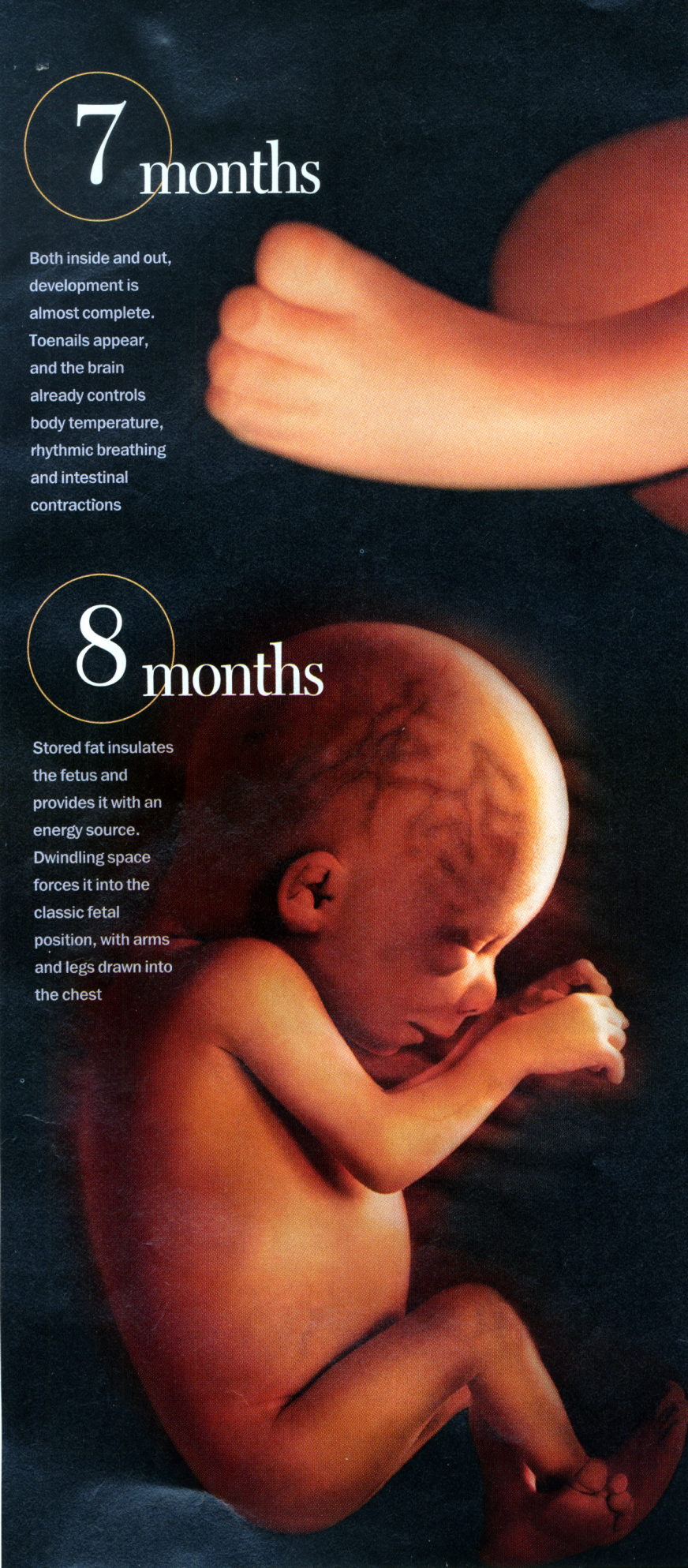
VERTEBRAE

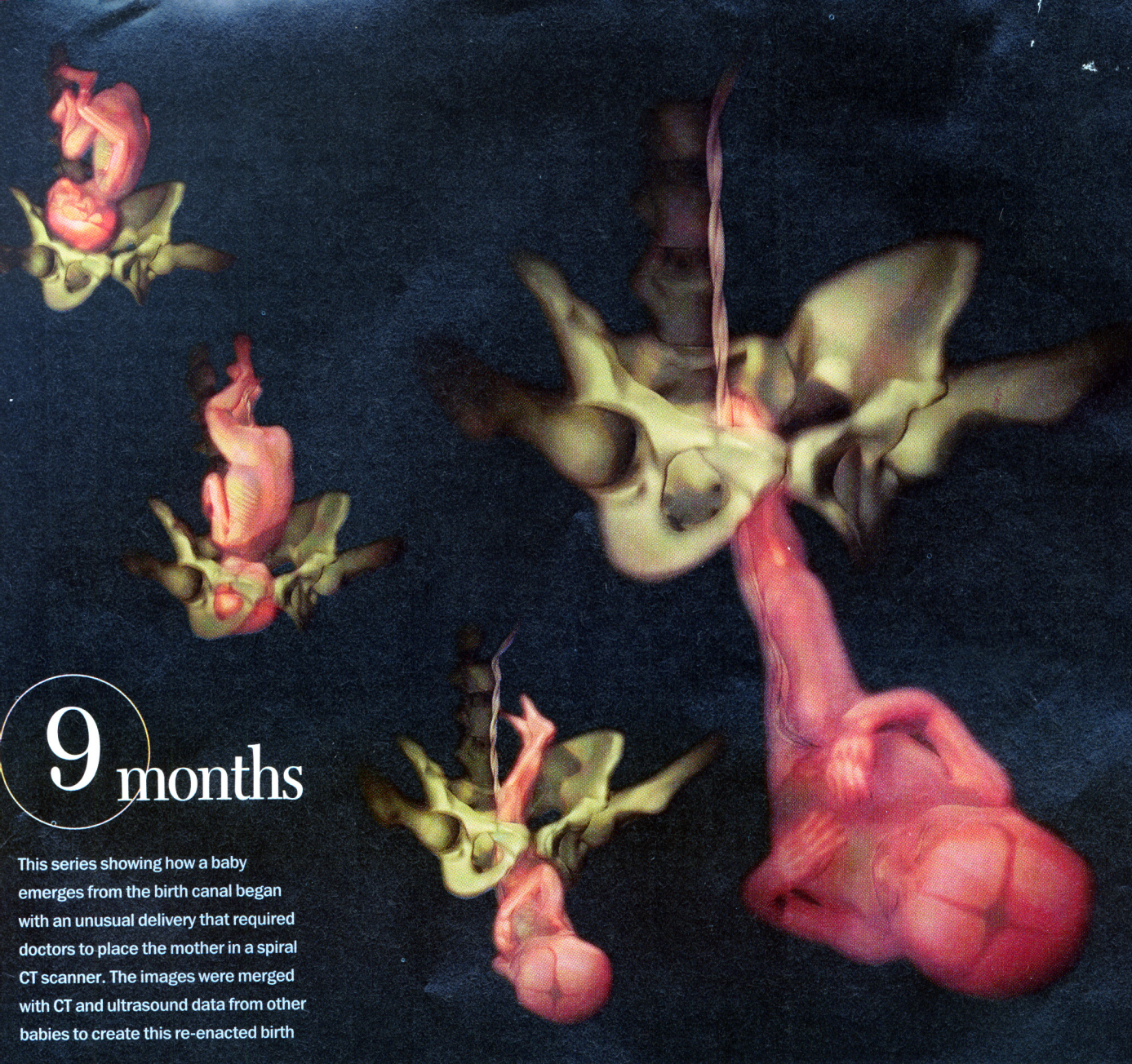
Like pearls in a necklace, these spinal segments are strung together with nerves that will connect the brain to the rest of the body



LIVER

Until birth, the liver pumps out red and white blood cells. After birth, it starts its real job: processing proteins and fats

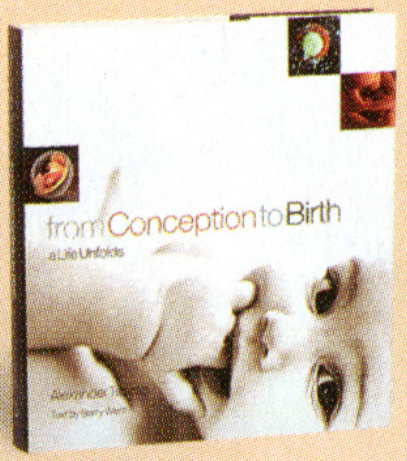

7 months
Both inside and out, development is almost complete. Toenails appear, and the brain already controls body temperature, rhythmic breathing and intestinal contractions
8 months
Stored fat insulates the fetus and provides it with an energy source. Dwindling space forces it into the classic fetal position, with arms and legs drawn into the chest



9 months

This series showing how a baby emerges from the birth canal began with an unusual delivery that required doctors to place the mother in a spiral CT scanner. The images were merged with CT and ultrasound data from other babies to create this re-enacted birth

How They Did It



With just a few keystrokes, Alexander Tsiaras does the impossible. He takes the image of a 56-day-old human embryo and peers through its skin, revealing liver, lungs, a bulblike brain and the tiny, exquisite vertebrae of a developing spine.

These are no ordinary baby pictures. What Tsiaras and his colleagues are manipulating are layers of data gathered by CT scans, micro magnetic resonance imaging (MRI) and other visualization techniques. When Lennart Nilsson took his groundbreaking photographs in the 1960s, he was limited to what he could innovatively capture with a flash camera. Since then, says Tsiaras, "there's been a revolution in imaging."

What's changed is that development can now be viewed through a wide variety of prisms, using different forms of energy to illuminate different aspects of the fetus. CT scans, for example, are especially good at showing bone, and MRI is excellent for soft tissue. These two-dimensional layers of information are assembled, using sophisticated computer software, into a three-dimensional whole.

MARLIN MINKS

FETAL ATTRACTION: The computer lab where Tsiaras performs his digital magic

The results are painstakingly accurate and aesthetically stunning. Tsiaras, who trained as a painter and sculptor, used medical specimens from the Carnegie Human Embryology Collection at the National Museum of Health and Medicine in Washington as models for all but a few images. The specimens came from a variety of sources, according to museum director Adrianne Noe, including miscarriages and medically necessary procedures. None were acquired from elective abortions. —***By David Bjerklie***