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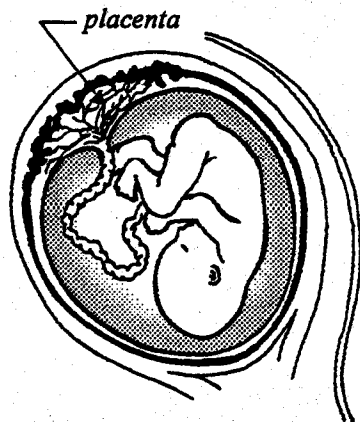
by Lanny and Marilyn Johnson

A BABY'S HEART

I was recently present at the birth of my first grandson and I marveled at the tiny person who had begun his life nine months before and was now entering this world. When my grandson was born he started to breathe and, from that first breath, an amazing change took place in his heart.

In a child or adult, blood with very little oxygen returns from parts of the body to the right side of the heart. This blood is then pumped to the lungs, where it gets oxygen, and is then sent back to the left side of the heart, which pumps it to the brain and the rest of the body where the oxygen is needed.

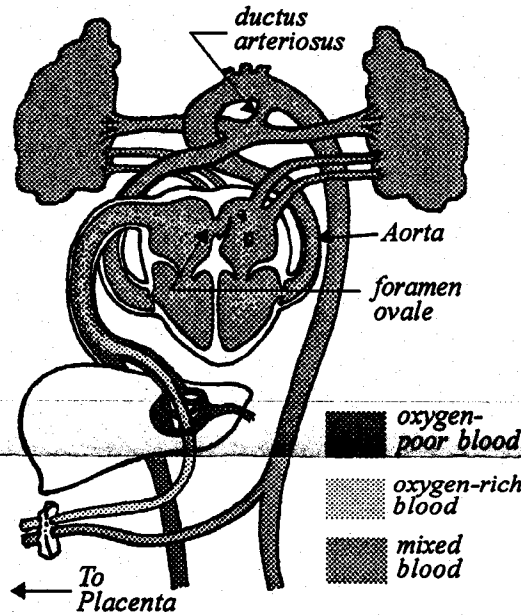
While the baby is still inside the mother, its lungs are not fully inflated. The unborn child does not need to breathe for itself because the mother supplies all the oxygen to it through a wonderful organ called the placenta. The placenta lets oxygen and



nutrients from the mother's blood pass through a membrane to the baby's blood. From here, the baby's blood

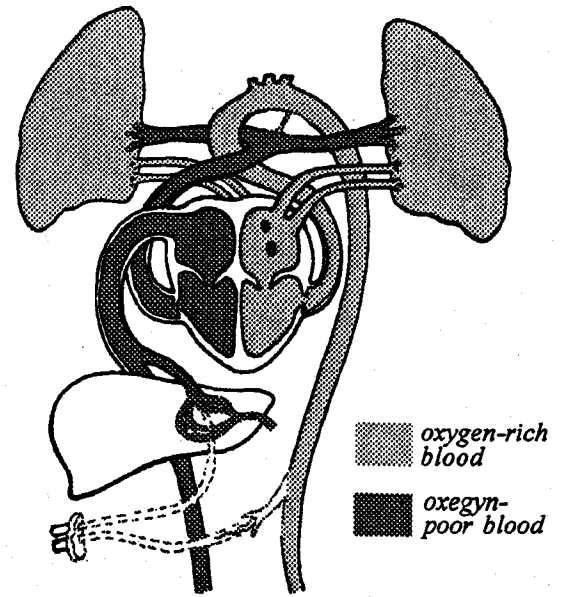
flows through the umbilical cord into the baby. Since the lungs aren't used for oxygen supply, there is no need for the right side of the heart to send blood to the lungs. After all, the blood already has lots of oxygen that it receives through the placenta.

Instead, there are two short cuts that let the blood bypass (go around) the lungs. One is called the *ductus arteriosus* (a tube) and the other is the *foramen ovale* (an opening, pronounced: *four-A-men*



Circulatory System before birth

oh-VALley). The ductus arteriosus takes blood that would normally go to the lungs and directs it into the aorta where it is carried to the rest of the body. The foramen ovale is actually a hole in the middle wall of the heart, which lets blood in the right side flow into the left side and out to the rest of the body. In both cases, the lungs are



Circulatory System after birth

bypassed.

When a baby's lungs are in their unborn collapsed state, it takes a lot of pressure to try to pump blood through them. When the baby is born, and takes those first breaths of air, the lungs expand for the first time and become soft, air-filled bags. When they inflate, the pressure falls enabling blood to flow into them.

It is now easier to pump blood through the lungs than through the ductus arteriosus and foramen ovale. The flow in the heart becomes stronger on the left, which causes a one-way flap to slam shut over the foramen ovale, closing it. The ductus arteriosus is no longer needed so the tube withers and closes. What a truly amazing design!

When I see wonderful designs such as these that take place in a forming child, I see evidences of an intelligent Creator. The evolutionary process of chance and accident could never make anything so wonderful. The evidence demands a creator!

"I will praise thee; for I am fearfully and wonderfully made: marvelous are thy works; and that my soul knoweth right well." Psalms 139:14

S P O E E S E O N B A B Y H C D R O
T U A E G S Y N E S T R F T O E A X
W M L N I D E C R E A T O R L S U Y
D P U A O M T T S B N E N E L I T G
N L R D A H L M T D A T S E A G R E
D P L R T S L M Y N I O L S P N T N
E B O R M A R V E L L O U S S N M R
R F I T S A H U R C E O E O E P E C
F B F P I R W P M T T A E V D M M H
U E P E A T N E L B W T C A T A B A
L A R D A E C S I A I O C L F D R N
L B E U B R I D E B C L R E S E A G
Y R S C A I F N R R L E I K E E N E
B E S T G O E U F D R N N C S I E P
E B U U S S R H L L M O T T A O E L
P N R S S U E S L L A A U R A L C A
L R E T W S H O L E Y T B N E K E E
T H I B R E A T H L M H E A R T R O

A baby begins as one single cell, but grows to 60 to 100 trillion cells as an adult. How big is one trillion? ... If you start counting one number for every second in the hour, it will take you about 32,000 years to get to the number 1 trillion!



WORD LIST

Look for the words hidden in the puzzle from the words in the word box. The hidden words might be up and down, sideways, or slanted (not backwards.)

ARTERIOSUS	HOLE
BABY	INFLATE
BAGS	LUNGS
BIRTH	MADE
BLOOD	MARVELOUS
BRAIN	MEMBRANE
BREATH	OVALE
CHANGE	OXYGEN
CLOSE	PLACENTA
COLLAPSED	PRAISE
CORD	PRESSURE
CREATOR	PSALMS
DESIGN	PUMP
DUCTUS	TUBE
FEARFULLY	UMBILICAL
FORAMEN	WONDERFULLY
HEART	WORKS

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