Fetal Circulation

- Umbilical cord
 - 2 umbilical arteries: return nonoxygenated blood, fecal waste, CO2 to placenta
 - 1 umbilical vein: brings oxygenated blood and nutrients to the fetus

- Oxygenated blood flows from the placenta to the fetus via the <u>umbilical</u> <u>vein</u>
- After reaching fetus the blood flows through the <u>inferior vena cava</u>

 On approaching the liver, most of this blood flows through the ductus venosus directly into the inferior vena cava, short-circuiting the liver.

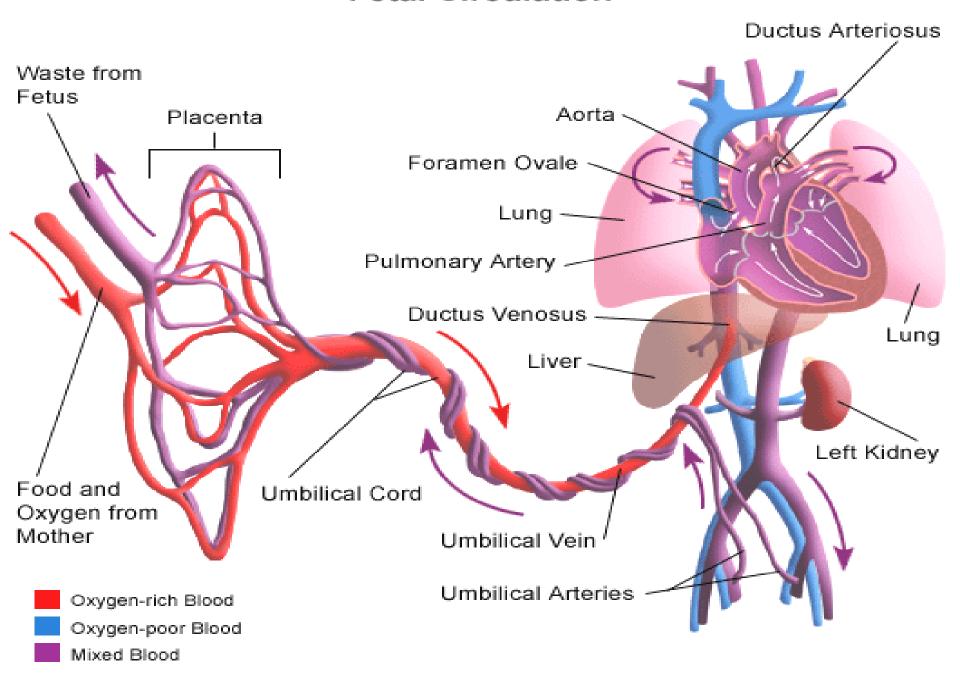
- Blood continues to travel up the inferior vena cava
- Empties into the <u>right atrium</u> of the heart
- The blood then passes to the <u>left</u> atrium through the <u>foramen ovale</u>

- Foramen ovale- Small opening in the septum of the heart
- Blood continues journey to the <u>left</u> ventricle blood is then pumped into the <u>aorta</u>
- Blood is circulated to the upper extremities
- Blood then returns to the <u>right atrium</u>

- From the right atrium, the blood goes to the <u>right ventricle</u> then to the <u>pulmonary arteries</u>
- Pulmonary arteries
 - Small amount goes to the maturing lungs
- Rest of blood is shunted away from lungs by <u>ductous ateriosus</u> back to aorta

- Blood travels back from aorta to the two <u>umbilical arteries</u> to the <u>placenta</u>
- The placenta will re-supply the blood with oxygen

Fetal Circulation



- What happens to these special structures after birth?
 - Umbilical arteries atrophy
 - Umbilical vein- ligamentum teres
 - The foramen ovale- fossa ovalis
 - ductus arteriosus- ligamentum arteriosus
 - ductus venosus- ligamentum venosus