

# "Blood Cells and Blood Vessels Formation"

## <- Origin ->

- Blood cells and blood vessels arise from mesoderm.

## <- Blood Vessels Formation ->

- > Vasculogenesis: Vessels arise from blood islands
- > Angiogenesis: Entails sprouting from existing vessels

## <- Blood Islands ->

- First blood islands appear in mesoderm surrounding the wall of the yolk sac at 3 weeks of development
- Slightly later in lateral plate mesoderm and other regions
- These islands arise from mesoderm cells that are induced to form hemangioblasts, a common precursor for vessel and blood cell formation

### <- First Blood Cells ->

- Arise in blood islands in the wall of the yolk sac.
- This population is transitory

### <- Definitive Hematopoietic Stem Cells ->

- Derived from mesoderm surrounding the aorta in a site near the developing mesonephric kidney called the aorta-gonad-mesonephros region (AGM).
- Colonize the liver, which becomes the major hematopoietic organ of the embryo and fetus from approximately the second to seventh months of development

### <- Liver to Bone Marrow Transition ->

- Stem cells from the liver colonize the bone marrow, the definitive blood-forming tissue in the seventh month of gestation.
- Thereafter, the liver loses its blood-forming function