HEMATOPOIESIS

- **A Stem Cell:**
  - is also called a blast cell.
  - is an immature, undifferentiated, unspecialized cell.
  - can replace itself and is capable of repeated cell divisions (proliferation)
  - gives rise, by differentiation, to one or more specific specialized mature cell types, such as blood cells.

- **Pluripotent Hemopoietic Stem Cell:**
  - is also referred to as a hemocytoblast
  - is the primordial stem cell of red bone marrow.
  - is capable of developing into any type of blood cell.
- **Hematopoiesis:**
  - is the process of the formation of the formed elements in blood.
  - occurs in the red bone marrow.

- **The formed elements:**
  - are *descendants* of the pluripotent hemopoietic stem cell.
  - are formed by the processes of proliferation (*making more of the same cell*) and differentiation (*making different kinds of cells*).

**From:** [http://lymphoma.about.com/od/glossary/g/What-Is-Hematopoiesis.htm](http://lymphoma.about.com/od/glossary/g/What-Is-Hematopoiesis.htm)

**Definition of hematopoiesis:**

Hematopoiesis is the process of production, multiplication, and specialization of blood cells in the bone marrow.

Hematopoiesis begins with the most basic blood cell, the stem cell or “pluripotent hemopoietic stem cell” (PHSC). The end products of this process are mature white blood cells (which provide our bodies with protection from infection), mature red blood cells (which carry oxygen to the cells and tissues in our bodies), and platelets (which help control bleeding after injury).

PHSCs have the ability to either divide and create other PHSCs, or to commit into one of several “differentiation” pathways. These pathways eventually result in the production of a type of blood cell.

If a PHSC commits to producing mature blood cells, they will undergo several (usually five or more) cell divisions before becoming that cell. Every time the cell divides, it takes on more and more of the characteristics of the adult cell it will become. In other words, it becomes more differentiated or specialized.

The term hematopoiesis describes the process of blood cell development, from PHSC, through differentiation, to a mature blood cell.