Source:

Kolios, G., & Moodley, Y. (2012). Introduction to stem cells and regenerative medicine. Respiration, 85(1), 3-10. doi:http://dx.doi.org.edgewood.idm.oclc.org/10.1159/000345615

Literature review:

The article by Kolios, G., an Moodley, Y. introduces us to stem cells and the types of medical uses that can be produced by them. It starts out by defining stem cells as, “a population of undifferentiated cells characterized by the eabiliyu to proliferate (self-renewal) usually arise from a single cell (clonal), and differentiate into different types of cells and tissues (potent) (Kolios, Moodley, 2012, p. 1)”. These cells are present throughout each person’s lifetime, however, adult, embryonic, and fetal can be different due to the ability for these cells to proliferate. Embryonic stem cells have a wider use for being able to differentiate into multiple types of cells, whereas adult stem cells can only differentiate into tissue-specific stem cells (Kolios, Moodley, 2012, p. 2). These stem cells can be broken up into different types based on how adaptable they are to differentiate. Totipotent cells can differentiate between embryonic, and extraembryonic tissues and are extremely adaptable when used in medical treatments. Pluripotent stem cells (called ESCs) differentiate into 3 germ layers; Ectoderm, Endoderm, and Mesoderm. These layers are where tissues and organs are developed making them extremely useful in treatments as well (Kolios, Moodley, 2012, p. 2). ESCs can also be reprogrammed adult somatic cells, in which the name is changed to induced pluripotent stem cells (IPSCs). Multipotent stem cells can differentiate into a single germ layer. A very popular multipotent stem cell used in medical treatments is the Mesenchymal stem cell (MSCs). Oligopotent stem cells can differentiate into two or more lineages from specific tissues (Kolios, Moodley, 2012, p. 3). These cells can also self-renew. The last is Unipotent stem cells, which like oligopotent cells can self- renew. They can also differentiate into only a single cell type, forming a single lineage. These types of cells provide medical research with unsurmountable opportunities when it comes to cell regeneration and other broad areas of the medical field.