

Grade 8 Science Cells **The Specialization of Cells**

Name: _____ Class: _____ Date: _____

The cell theory states that all cells come from pre-existing cells. We know this because we can see that all larger organisms start with one cell and develop into mature, fully formed organisms. As a larger organism develops, the cells take on specific functions as tissues, organs, organ systems and then finally the entire organism that is capable of reproducing another organism.

The original cells are now seen as very important since they are not specialized or differentiated. We call these cells **stem cells**. Stem cells have the ability to generate new types of cells. If you think about it, there are some very different types of cells even within the human body – skin cells, bone cells, blood cells, nerve cells and muscle cells to name a few.

Not only do cells start out as one but, in developing larger organisms, the early stages of embryo development in different animals look the same. See the chart below.



It is easy to see that the early stages are very much the same for many animals. These cells further specialize as they grow into a mature organism.

When cells are specialized, they cannot produce cells that are less differentiated. They can only produce cells that are more specialized. Cells do not naturally become less specialized. The specialization of cells is programmed through the DNA of each cell.

Stem cells are used in treating more and more disorders since it introduces healthy cells from which to generate more healthy cells instead of diseased cells. If not treated with new, healthy cells, only more diseased cells are produced – this harms the organism and may lead to its death. Stem cell research is promising.