Embryonic stem (ES) cells derived from the inner cell mass of the blastocyst exhibit the remarkable capacity to differentiate into all cell types of the body. ES cells are capable of unlimited, undifferentiated proliferation in vitro, while still maintaining the capacity for development into a wide variety of normal and extra-embryonic tissues. The integration of a vast array of environmental cues and signal transduction events orchestrates these processes. Recently, it has been shown that adult cells can adapt to conditions and signals that trigger self-renewal, a key feature of embryonic stem cell regulation. Although more is yet to be learned, these induced pluripotent stem (iPS) cells show great promise as an alternative source for ES-like cells. The use of iPS cells is not only driven by the fact that ES cells are limited in their ability to be safely used for therapeutic purposes. Part of this research includes the ability to identify each distinct stem cell lineage. Most often, the exquisite sensitivity of antibodies is used to assess the expression of markers specific for given cell types. The following table highlights a range of markers expressed as pluripotent stem cells develop along endodermal, mesodermal, and ectodermal fates.