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**Timothy Patrick Barry\*** (timbarry@umd.edu). *A mathematical model of iron metabolism in the human body.*

Iron-related diseases are prevalent throughout the world. Anemia, which has iron deficiency as a major cause, affects nearly one quarter of the world's population. Hereditary hemochromatosis, a disease of iron overload, is the most common inherited disease of gene mutation in Caucasians. Understanding the mechanisms of iron metabolism in the human body can facilitate individualized treatments strategies for these and other conditions. A mathematical model using ordinary differential equations is developed to simulate the distribution of iron in the major organs of the body. The model is calibrated for a healthy person using experimental time course data obtained from literature. The inclusion of hormones in the model, such as erythropoietin and hepcidin, enable the investigation of common iron disorders and potential treatments. This model provides a foundation for the creation of a personalizable model in which the specifics of an individual's condition form the parameter set, so that the outcomes of various treatments can be predicted. (Received September 26, 2017)