The changing concept of epigenetics
One of the oldest concepts regarding human behavior is the tabula rasa, or blank slate. The idea is that, at birth, the human intellect starts from nothing and develops through experience and education. In a sense, intelligence or behavior reflects past inputs from environment. More importantly, ‘epigenetics’ today commonly refers to changes that are heritable but do not involve changes in the DNA sequence. Specifically, these are changes that affect gene expression, without changing DNA sequence, which can be passed on at least one generation. For single cells, epigenetic changes simply need to be passed through mitotic divisions. For complex organisms, they are changes that are passed on to a later point in life or, better yet, to offspring. Sharpening the Vision. Epigenetics is the study of heritable phenotype changes that do not involve alterations in the DNA sequence. The Greek prefix epi- (ἐπι - “over, outside of, around”) in epigenetics implies features that are “on top of” or “in addition to” the traditional genetic basis for inheritance. Epigenetics most often denotes changes that affect gene activity and expression, but can also be used to describe any heritable phenotypic change. Such effects on cellular and physiological phenotypic traits may result. The concept of epigenetics, then, would be like directing. The script can be the same, but the director can choose to eliminate or tweak certain scenes or dialogue, altering the movie for better or worse. After all, Steven Spielberg’s finished product would be drastically different than Woody Allen’s for the same movie script, wouldn’t it? Want to learn what is epigenetics in scientific detail? Read on: Fundamentals of Epigenetics. Continue Reading Below. Next Step… Epigenetics is the study of mechanisms that switch genes on or off. It is involved in every aspect of life and such reversible, potentially heritable changes affect the way we live as well as our future generations.