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Gregor Mendel and Combinatorial Mathematics at the DNA Level.

One of the great mathematical achievements in the history of biology was Gregor Mendel's employment of combinatorial mathematics to derive a theory of inheritance that has stood the test of time. Mendel was student of Andreas von Ettingshausen, who was a renowned physicist and mathematician at the University of Vienna, and also author of the 1826 book, Die combinatorische Analysis, a standard work on combinatorial mathematics. Though Mendel did not know it at the time, his mathematical theory at its most fundamental level is based in the nature of DNA replication, and the segregation and assortment of DNA molecules. This presentation examines the combinatorial mathematical symmetry of Mendel's dihybrid experiments, depicting them, however, at the level of DNA molecules replicating, segregating, and re-assorting. (Received September 10, 2020)