
Recent developments in the field of nongenetic inheritance

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Abstract

The debate about nongenetic inheritance is now shifting from questions about its reality to the dissecting of the underlying molecular mechanisms. I will review recent evidence for the existence of pathways by which the environment can affect inheritance, potentially leading to the transmission of acquired characters. I will then provide a theoretical model of how the mutagenicity of epigenetic marks can accelerate the engraving of recently acquired adaptations into the DNA sequence. Thus, epigenetics appears as the conductor by which nongenetically inherited environmentally induced traits can become genetically encoded over generations, in a form of epigenetically-facilitated genetic assimilation.

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