Accepted Manuscript

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PII: S0149-7634(17)30065-9
DOI: http://dx.doi.org/doi:10.1016/j.neubiorev.2017.05.011
Reference: NBR 2851

To appear in:

Received date: 29-1-2017
Revised date: 9-5-2017
Accepted date: 10-5-2017

Please cite this article as: Szutorisz, Henrietta, Hurd, Yasmin L., High times for cannabis: Epigenetic imprint and its legacy on brain and behavior.Neuroscience and Biobehavioral Reviews http://dx.doi.org/10.1016/j.neubiorev.2017.05.011

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ACCEPTED MANUSCRIPT

High times for cannabis: epigenetic imprint and its legacy on brain and behavior

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HIGHLIGHTS

- Long-term developmental effects of cannabis largely lack in-depth scientific data.
- The epigenome underlies molecular and behavioral effects of cannabinoids.
- We discuss epigenetic dysregulation by prenatal, adolescent and germline cannabis.
- Expanding epigenetic knowledge will provide targets for treatment interventions.

Abstract

Extensive debates continue regarding marijuana (*Cannabis spp*), the most commonly used illicit substance in many countries worldwide. There has been an exponential increase of cannabis studies over the past two decades but the drug's long-term effects still lack in-depth scientific data. The epigenome is a critical molecular machinery with the capacity to maintain persistent alterations of gene expression and behaviors induced by cannabinoids that have been observed across the individual's lifespan and even into the subsequent generation. Though mechanistic investigations regarding the consequences of developmental cannabis exposure remain sparse, human and animal studies have begun to reveal specific epigenetic disruptions in the brain and the periphery. In this article, we focus attention on long-term disturbances in epigenetic regulation in relation to prenatal, adolescent and parental germline cannabinoid exposure. Expanding knowledge about the protracted molecular memory could help to

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