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Short Communication

Behavioral Epigenetics

M Noah*

Department of Molecular Biology and Genetic Engineering, Lovely Professional University, Jalandhar, India

DESCRIPTION

Behavioral epigenetics can be defined as the study of genetic, environmental, psychological, and developmental mechanisms through the application of the epigenetic principles. Abnormal and normal behaviors were studied to find how individual behavior affects and affected by the genetic process. It is considered as the interdisciplinary approach as it brings different fields of sciences such as psychology, genetics, neuroscience, biochemistry, psychopharmacology, and psychiatry. Though there are many epigenetics studies conducted in past years to study epigenetics yet its application to study the behavior is just starting comparatively [1].

The articles on epigenetics application when compared with the articles on behavioral epigenetics are quite low. A neuroscientist namely, Meaney from Douglas Mental Health University Institute, studies how experience at the beginning of the life could shapes behavior in the latter days of life [2]. Meaney in his findings shows that less attentive rat mothers have raised the offspring to be more anxious when grown into an adult compared with offspring raised by more nurturing mothers. He continued saying that the activity of genes related to stress was altered in less nurtured offspring. Neuroscience past knowledge proclaims that long-term changes in behavior are the result of the physical changes in neural circuits, which are like building new synapses by neurons and becoming more sensitive to the neighbouring messages.

Over the past two decades, the studies of the relationship between nature and nurture in shaping the human behavior have gained new interest. Behavioral genetics has shown that various polymorphisms of genes encoding proteins that control the metabolic and synaptic function of neurotransmitters are linked to individual susceptibility to aversive experiences, such as traumatic and stressful life events, and to an increased risk for them development of psychopathologies related to violence can result.

Nature and Nurture interaction at the molecular level inside our bodies influence, how genes function. The environmental factors influencing the activity of gene include social status, diets and parenting styles. In addition to early postnatal life and prenatal, adolescence also represents a time period that is particularly sensitive to external/environmental events, as the brain completes its maturation process during this time [3].

Mechanism of epigenetics involves the influence of epigenetic factors which can alter the accession to genetic information in many ways, for example Histones, the large molecules are in association with DNA which can be modified to variety of methods, one such is acetylation called as histone acetylation that causes the DNA segments to be more accessible and leading to increased amount of gene expression, finally for the production of the proteins which are associated with the respective segments [4].

CONCLUSION

an individual can be effected by the influence of the specific factors on gene activity, it can be expressed by the genes either completely on or off with varying degrees (greater or lesser). Some factors influence genetic activity through physical epigenetics. The most important epigenetic changes that play an active role in the regulation of gene expression are DNA methylation, post-translational histone modifications, and post-transcriptional regulation by microRNAs.

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Correspondence to: M Noah, Department of Molecular Biology and Genetic Engineering, Lovely Professional University, Jalandhar, India, E-mail: noahsraj20@gmail.com

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