

Epigenetically supported imprinting of trauma and violence

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Domestic as well as organized violence usually mean continuous exposure to massive stressors. These experiences burn themselves into the memory and cause generalizations of threat scenarios.

The adaptation to this ongoing threat is essential for survival, requiring learning – even across generations. Disturbed attachment and upbringing, social and cultural factors as well as learned behavioural patterns contribute to this transgenerational transmission of trauma, mostly in a maladaptive way.

Moreover, traumata of ancestors change the epigenetic code and with it the patterns of gene expression in children and grandchildren, a process that tilts biological regulatory systems. The stress hormones regulating HPA axis, i.e. the elite unit of our defence system, helps us in dealing with acute threats. However, when there is no time for recovery mental (depression, fatigue) as well as somatic diseases (obesity, diabetes, cancer) are the price to be paid.

The epigenetic codes controlling these processes are particularly plastic in the developing organism. In this way, stressful environmental experiences of parents and grandparents ultimately affect the phenotypes of children and grandchildren, i.e., terror and fear influence behaviour and learning of even subsequent generations.

The biological aim of this process would actually be adaptation: Fearful caution rather than exploratory curiosity, for example, can ensure survival in threatening situations. But it prevents optimal development when the environment has changed to peaceful conditions. Studies in humans and animals show that maternal care, maternal separation, fear conditioning, chronic stress, and addictive substances each generate epigenetic networks that specifically restructure learning and behaviour in the offspring. In animals it can be shown that transgenerational vulnerability as well as resilience occurs even if the children were not raised by their own mother, or artificial insemination made it possible that the father had not even met the mother.

Appropriate psychotherapy can modulate these processes: It has been shown that Narrative Exposure Therapy, can not only alleviate mental suffering, but with it the phenotype can be modified via the induction of molecular biological changes including altered epigenetic coding.