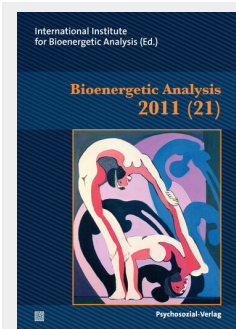


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## Book Review of: Epigenetics and Body Psychotherapy



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# BOOK REVIEWS

## EPIGENETICS AND BODY PSYCHOTHERAPY

*Margit Koemeda-Lutz*

Prof. Dr.med. Joachim Bauer from the University of Freiburg in Germany will be one of our key note speakers at the next International Conference of the IIBA, October 26<sup>th</sup>–30<sup>th</sup> in San Diego, California.

There are two books which impressed me as extremely valuable for body psychotherapists and which made me suggest his invitation to our next conference.

“Das Gedächtnis des Körpers – Wie Beziehungen und Lebensstile unsere Gene steuern” (The Memory of the Body – how relationships and life styles regulate our genes; transl. M. K.) was first published in 2002.

In his first chapters Bauer explains the structure and function of DNS sequences in each of our cells, of gene transcription and protein synthesis, in a way that readers not familiar with microbiological knowledge easily grasp some of the major principles of current genetic knowledge.

New to me, whose neurobiological and neuropsychological education dates back to the 1970s, was, that Mendel’s laws of heredity explain only a very small proportion of phenotypic variation, i.e., there exist very few genes that get active, mostly insensitive to environmental conditions (like the ones that determine the colour of our eyes, or illnesses as Chorea Huntington, hemophilia etc.).

Human beings share the same genetic blueprints to the incredible degree of 99.9%! The obvious variation between individuals therefore is due to the interaction between environmental (including cellular and proprioceptive) signals and genes.

Joachim Bauer is a medical doctor, specializing in internal and psychosomatic medicine and psychiatry. In addition he is a psychotherapist. He has done research in molecular biology and is, since 1992, professor for psychoneuroimmunology at the University of Freiburg in Germany.

He successfully conveys his vast knowledge to a wider public interested in questions of psychosomatic health and illness. He has frequently been an appreciated guest in scientifically oriented talk shows on TV and a valued keynote speaker at many scientific conferences.

Bauer reviews and reflects on an immense body of microbiological, psychiatric and psychosomatic research literature to propose a quite coherent model of how life experiences, especially early in life, interact with the genetically designed human potential in order to shape individual personalities on different – mental, emotional, behavioural, physiological and morphological – levels.

He demonstrates that – more than anything – interpersonal relationships influence somatic processes. This influence reaches as “deep” as to the regulation of gene activity. It is effective in adult human beings, and even more so during infancy and prenatal development.

As psychotherapists we know that early experiences shape feeling, thinking and behavioural patterns. Bauer reviews several empirical studies, which prove that they also shape our somatic functioning, such as physiological patterns and the neuronal architecture in our brains (p 195). Attuned positive bonding in early childhood protects stress genes from over-reactivity in later life. Our brain “translates” sensory input into biological signals. Positive human relationships constitute the best “medication without side effects” for coping with psychic and somatic stress.

Early in life neuronal networks develop that later determine how a person appraises his or her environment and how he/she copes with challenging events in his/her life. The “construction” of neuronal networks (morphology/architecture and functional patterns) depends on early (relational) experiences. If they are positive, they foster resilience, if they are detrimental (like e.g. neglect, abuse, violence), they may lead to dissociative patterns and contribute as etiological factors to the evolution of psychiatric disorders. Each of our experiences is stored in neuronal networks and changes their microstructure, which results in a life long plasticity of the brain (p. 90).

All mental operations are facilitated by the interconnections of nerve cell assemblies (p. 72). Perceptions and notions are based on synaptic connections between nerve cells, forming networks, which by this establish representations of perceptions and notions.

Synapses are involved in exchanging information, which activate specific genes in these nerve cells. In this way active synapses enhance their structure, while inactive synapses dissolve: “Use it or lose it”. Frequent and intense experiences strengthen and enhance the interconnection of cell assemblies and networks. Simultaneous, synchronic, rhythmical bioelectric activities (ca. 40 Hz) in cells create networks. “Cells that fire together, wire together”.

This happens by activation of nerve cell growth genes like BDNF (brain derived neurotrophic factor), CNTF (ciliary neurotrophic factor), NGF (nerve growth factor) etc. (p. 80). Neurotransmitters activate genes that cause protein production and by this a strengthening of receptors.

With the Human Genome Project, which was accomplished in 2000, the totality of all human genes – comprising about 3.9 billions of nucleotides – was decoded. Genetic “texts”, i.e. DNS sequences, are fixed for each organism and subject to hereditary processes. The “expression” and activity of most genes though is subject to regulation in interaction with “contextual” (cells and other organs, proprioception) and environmental stimuli and is a life long “task”. Individual experiences provoke and form reaction patterns that influence this regulation.

Only 1–2% of all human diseases are caused by gene mutations.

Certain substances or environmental factors (transcription factors, UV light, nutritional factors, perceived relational situations) absorb or activate promoters, i.e. regulatory sequences on specific genes.

## **STRESS**

Most perceptions are processed unconsciously in human organisms. Our nervous system initiates or triggers many psychic and somatic reactions without our awareness.

Stress in so-called civilized societies is mainly caused by interpersonal

conflicts and lack of social support, as when needs and desires are not communicated, or by offenses, hurt and humiliation.

As clinicians we are familiar with the Hypothalamus-pituitary and adrenal gland-stress axis and its regulatory functions in cortisol synthesis and release. But that this stress system is individually coined (conditioned) in every single organism may not have been so widely known. In addition to heightened (raised) cortisol levels, stress also causes the release of other transmitters noxious to nerve cells, e.g. adrenaline, noradrenalin and glutamate (p. 74). Increased cortisol and glutamate concentrations in the brain can cause cell decline, especially in the hippocampus, responsible for memory functions (p. 50).

Cortisol has lasting effects on the immune system, blocks interleukins and tumor necrosis factor. These immunological transmitters are no longer produced in sufficient quantities, because cortisol blocks all genes responsible for their production.

Stress increases the susceptibility for virus infections. Cortisol represses fever and other important defence reactions necessary for healing (p. 49).

Stress can have negative effects on the course of several diseases: multiple sclerosis, rheumatoid arthritis, skin diseases (like psoriasis), diabetes, coronary and heart conditions.

According to Bauer, relationships are biologically based factors of health. When interpersonal relationships decrease quantitatively and qualitatively, health disorders increase (p. 19).

In addition to these more basic principles of interactions between individual organisms and environmental factors, Bauer delineates neurobiologically and interpersonally based etiological models on some of the most prevalent illnesses in Western societies: depression, coronary and heart diseases, cancer, pain syndromes, post traumatic stress disorders and burnout states.

**Depression:** Life events not only influence the well-being of a person, but substantially dysregulate gene activity and other somatic processes, resulting e.g. in sleep disorders, lack of motivation and agitation. With repeated depressive episodes there need not be any triggering events for a new episode any more. Depression is biologically conditioned. Depression is an over activation of the stress system. It has been demonstrated

that depressive patients have significantly more problems and losses in their early relationships as compared to non-depressive controls.

**Coronary and Heart Diseases:** Several studies have shown the relationship between stress and depression and their influence on coronary and heart diseases. A combination of heart condition and depression bears a triple risk of mortality. Depression decreases heart rate variability and therefore increases the risk of heart diseases.

**Cancer:** Stress and depression also influence the immunological defence and risk of tumor growth. Increased cortisol levels block immunological and inflammatory responses (reduction of natural killer cells). Psychotherapeutic support reduces the risk of mortality.

**Pain syndromes:** Pain experiences leave imprints in our neuronal system like any other experiences, namely in the sensory area of the cortex and in the gyrus cinguli, and facilitate future sensations of pain. Psychological and somatic pains “use” the same brain structures. Therefore psychological support and relaxation decrease the probability of pain sensations.

**Post traumatic stress disorder (PTSD):** In traumatic situations dissociation serves as a protective mechanism as genes for the production of endorphins are activated. The alarm reaction is stored in the amygdala and the person develops a chronic amygdaloid over activity and exhibits an increased sensitization towards stress. This is the starting point for dissociative disorders, borderline personality or eating disorders to evolve.

Summarizing, Bauer reviews several studies that demonstrate that psychotherapy is a method of healing which influences psyche and body at the same time.