Introductory Remarks to Symposium 19

Epigenetic mechanisms of behavior and physiological regulation

Aron Weller and Noam Meiri, Ramat-Gan and Bet-Dagan (Israel)

There is now accumulating evidence that on an individual level health or disease critically depend on the interaction between genes and environment. Epigenetic mechanisms such as histone-modification, DNA-methylation and non-coding RNA-mediated processes are key-regulators of gene-environment interactions. Furthermore, the environmental effects of epigenetic regulation have recently been implicated in the pathogenesis of a wide range of diseases. In addition, these mechanisms have also been implicated in mediating individual differences in resilience vs. susceptibility to environmental stressors. These individual differences accumulate throughout life. They are probably marked during embryogenesis, modified according to lifelong events, and there are some indications that they are inherited to next generations. Thus our current hypothesis is that dysregulation of genome-environment interactions, especially via altering epigenetic gene-expression in key circuits in the brain, underlies pathological behavioral and physiological phenotypes. The symposium will detail diverse studies from cellular models, animal models including chicks, mice and rats to humans. It will highlight epigenetic effects on diverse phenotypes including social behavior, social trauma, responsivity to environmental stress, obesity and cognitive decline using a combination of behavioral, physiological, molecular, genetic and bioinformatic techniques to address these issues. The perspective will be critical, examining the promise of epigenetic mechanisms for understanding underlying mechanisms and for future potential treatments, while highlighting the limitations and complexity of this emerging field.

Symposium 19, Friday, March 24, 11:30 - 13:30

Symposium 19

Friday, March 24, 2017
11:30 – 13:30, Lecture Hall 8

Chairs: *Aron Weller and Noam Meiri, Ramat-Gan and Bet-Dagan (Israel)*

11:30 **Opening Remarks**

11:35 Andre Fischer, Göttingen
EPIGENETIC MECHANISMS OF BEHAVIOR AND PHYSIOLOGICAL REGULATION (S19-1)

12:00 Inga Neumann, Regensburg
EPIGENETIC REGULATION OF THE OXYTOCIN SYSTEM WITHIN THE LATERAL SEPTUM IN SOCIAL FEAR CONDITIONING (S19-2)

12:25 Noam Meiri, Bet Dagan, Israel
THE BALANCE BETWEEN HEAT STRESS RESILIENCE AND VULNERABILITY IS MEDIATED BY DYNAMIC DNA METHYLATION AND DEMETHYLATION ALONG THE CORTICOTROPIN-RELEASING-HORMONE GENE (S19-3)

12:50 Aron Weller, Ramat-Gan, Israel
EPIGENETIC MECHANISMS UNDERLYING PARENTAL HIGH-FAT DIET INDUCED OBESITY IN THE OFFSPRING (S19-4)

13:15 Laura Spindler, Mainz
GENE REGULATION AND EPIGENETICS OF A LIFETIME BODY-SIZE MEMORY IN DROSOPHILA (S19-5)

13:25 **Concluding Remarks**

Symposia