

SOCIAL NEUROSCIENCE

Summary

Social neuroscience is a newly arising scientific discipline devoted to the experimental analysis of bi-directional information flow between social environment of the individual and its nervous system. Research in the domain of social neuroscience is focused both on neurobiological mechanisms underlying social phenomena and processes, and on downward influences of social context on the phenotype of the individual. In the present paper I discuss briefly main methods and techniques used by the scientists working in the field of social neuroscience. They include the use of transgenic animals (in particular, knockout mutants and genetically modified animals obtained by means of transfections with the use of viral factors), non-invasive techniques of the analysis of brain activity (in particular, functional magnetic resonance imaging), lesions of specific brain structures, and a wide spectrum of techniques employed in classical and modern histology and ethopharmacology. I also discuss some recent findings obtained in the research devoted

to the mechanisms involved in social recognition, to the role of the reward system of the brain in the mediation of affiliative behaviour and of social bonding, and of the effect of social context on the expression of behaviour, including effects of social stress on the hormonal state, neuronal morphology and neurogenesis, and effects of social context on behavioural development of social insects. The paper also contains a brief summary of main results of several studies carried out in Poland, including those carried out by my team in the Laboratory of Ethology of the Nencki Institute of Experimental Biology in Warsaw. Our current research is focused on two sets of problems, related to two main directions of information flow between various levels of organization encountered in insect societies: neurobiological mechanisms underlying social ties existing in ant colonies, and downward influences of social context on the expression/suppression of specific behaviour patterns.