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Social stress

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Preface

Social stress:
Acute and long-term effects on physiology and behavior

The stress response represents a set of functional and behavioral reactions adopted by an organism to cope with a challenging environment. In situations where the organism has poor or no control over its environment, the stress response may be inadequate and a series of physiological and behavioral changes may be initiated that will ultimately produce an increased susceptibility to psychosomatic diseases (including cardiovascular, gastrointestinal, and immunological disturbances) and psychopathologies (such as affective disorders). Our current understanding of the physiological mechanisms underlying stress-related disorders is based both on clinical data and on experimental studies in a variety of animal models. However, laboratory stress models often bear little resemblance to the environmental challenges faced by animals in real life. This is especially true of highly domesticated laboratory animals and farm animals which may no longer share key characteristics with their feral ancestors whose evolution enabled them to survive in a complex physical and social environment. For this reason, it is now recognized by the scientific community that advancing our knowledge of the mechanisms responsible for stress pathology will require the use of more realistic, biologically relevant experimental paradigms and models. Based on this, contemporary research has focused on animal models which better mimic the etiology and symptomatology of stress-related pathology in humans. Toward this end, social stimuli represent an ideal experimental tool. Every individual encounters a certain level of stress originating from its interaction with conspecifics. Some individuals, by achieving a sufficient degree of control over social stimuli, cope positively, whereas others, incapable of developing adequate coping strategies, fare more poorly.

A workshop titled “Ethology and Biomedical Science” was held in Erice, Sicily, in December 1998. At this event, Andrea Sgoifo (University of Parma, Italy) and Jaap Koolhaas (University of Groningen, The Netherlands) planned an upcoming international meeting that would summarize (at least partly) the considerable experimental evidence describing the effects of the social

environment on physiology and behavior. The intent was to gather scientists who, although belonging to different scientific disciplines (neurobiology, psychoneuroendocrinology, physiology, nutrition, psychoneuroimmunology, chronobiology, psychology, psychiatry, ethology), share a common interest in social factors and their potential pathophysiological implications. The project was further developed, thanks to important suggestions from Enrico Alleva (ISS, Italy), Ezio Musso, and Stefano Parmigiani (University of Parma, Italy). The project was ultimately realized as an International Workshop titled “Social Stress: Acute and Long-Term Effects on Physiology and Behavior,” held at the University of Parma, 31 August to 2 September, 2000.

By all measures, the meeting was a huge success. The participants agreed that the lectures and discussions were extremely interesting and the atmosphere was most appropriate for fostering stimulating interactions. The contribution of each of the invited speakers, as well as all who attended the meeting, provided new and fundamentally important views. Moreover, potentially useful findings were discussed for possible clinical applications with a long-term goal of implementing new pharmacological and behavioral therapies for the treatment and prevention of cardiovascular diseases, nutritional disturbances, or psychopathologies. In addition to this biomedical context, the scientific views presented at the meeting were directly relevant to the field of animal welfare. The issues discussed provided helpful indications for those who deal with intensive animal husbandry, suggesting alternative methods for optimization of production, housing and animal well-being. We believe that new guiding directions emerged from the meeting, upon which future research projects aimed at a more precise comprehension of the mechanisms underlying stress adaptation and the development of stress-related pathologies can be based.

This special issue of *Physiology and Behavior* comprises contributions from scientists who enthusiastically discussed and confronted their ideas during the Parma Workshop. All manuscripts have been subject to rigorous

peer review, for which the editors are sincerely grateful to the referees. In this regard, special thanks go to Robert and Caroline Blanchard and Lorey Takahashi of the University of Hawaii, and to Kathryn Graham Lee of the University of Cincinnati. We are also immensely grateful to the authors of the present articles, whose commitment and expertise turned this small project into a reality. We hope that the readers of this special issue will be as excited by the contents of its articles as the

workshop delegates were by the corresponding oral presentations and general discussions.

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