
Preface

“Stress Challenges and Immunity in Space” although seemingly specific in its title is broad in nature. The field of stress research is inherently multidisciplinary and complex as stress can arise from an almost limitless combination of situations and factors, and has the potential to influence all organ systems, either directly or indirectly. As a result, in approaching immune system changes during spaceflight, a highly unusual condition of life with a vast array of stressors and interactions, an integrative and holistic pathway is needed. Yet biological research in space is inherently limited in scope and detail. And therefore the question arises as to how to obtain sufficient detail and understanding to ensure the safety of our astronauts/cosmonauts.

This book is an attempt to approach this issue. It begins with a brief introduction to stress, describes the general interactions between stress, the central nervous system, and immunity; summarizes the current state of research with regard to immunity during spaceflight; and finally concludes with the latest technology and approaches to stress and immune monitoring, therapeutics, and future research platforms. The aim is not only to provide the current state of the art but also to serve as an impetus and drive for new research, which will eventually help mitigate the risks of voyage far beyond Earth. Furthermore, knowledge gained will help humans adapt to many extreme conditions of life, such as the critically ill, shift-workers, miners, Antarctic expedition crews, submariners, and more.

The participation of authors and expert scientists spanning a number of fields both from spaceflight and non-spaceflight research is a step toward an integrative and holistic approach, from basic science to applied science to technology. However, integrative and holistic implies that the current knowledge and views as presented are far from complete or comprehensive and by default are open to future discoveries and interpretations.

There, therefore, will be *space* to continue this approach. This book will hopefully serve as a starting point for a more integrative approach to research in the field of stress and immunity.

Munich, Germany

Alexander Choukèr

Stress Challenges and Immunity in Space
From Mechanisms to Monitoring and Preventive
Strategies

Chouker, A. (Ed.)

2012, XIII, 469 p., Hardcover

ISBN: 978-3-642-22271-9