
Sepsis

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Sepsis and septic shock are major medical challenges of the 21st century, especially with regards to the aging population and the spread of antibiotic resistance. Sepsis continues to show a steadily growing incidence and is a leading cause of in-hospital mortality in developed countries. It is estimated that sepsis affects more than 30 million people worldwide every year, potentially leading to 6 million deaths. Sepsis is responsible for 30-50% of all deaths in hospitals. Financial costs associated with sepsis are enormous; they amount to 20 billion USD/year in USA and 8 billion Euros/year in Europe, thus representing 5% of total health care costs in developed world. In 2017, sepsis has been recognized as a global health priority by World Health Organization. Despite huge clinical impact, pathophysiological mechanisms of sepsis remain only poorly understood. There is a critical need to improve our understanding of underlying processes and to develop innovative and efficacious therapies for the treatment of this deadly disease. Within this research topic, pathophysiology of sepsis is addressed in large animal models on various levels of biological complexity, from entire organism responses to cellular, subcellular and molecular processes. Based on better understanding of pathophysiology of sepsis, novel therapeutic and diagnostic approaches are developed and tested. The global spread of antibiotic resistance contributes to the severity of the disease and limits therapeutic options. Therefore, molecular epidemiology of antibiotic resistance, early diagnosis of antibiotic susceptibility and novel methods for overcoming the antibiotic resistance represent another major line of research.

Selected outputs

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