Serious, Severe, Sepsis

There is an important reason as to why the article by Genga and Russell [1] entitled “Update of Sepsis in the Intensive Care Unit” has been the most frequently downloaded article when this editorial was written in December 2019. The last years have witnessed that this potentially deadly condition is caused by multiple pathomechanisms causing systemic complications [2–5]. Especially at a time when antibiotic resistance is becoming a serious problem in hospitals, sepsis has to be considered a severe clinical problem. Already now, approximately 33,000 patients die from antibiotic-resistant bacterial infections according to the European Centre for Disease Prevention and Control [6]. The numbers presented by the OECD are even more alarming as this organization estimates that more than 2.4 million people in Europe, North America and Australia will succumb due to infections caused by multi-resistant bacteria within the next 30 years if therapies are not improved [7]. In this issue, two articles dealing with sepsis are published. Beenakker et al. [8] present a study showing that men had a higher monocyte-derived cytokine production response upon stimulation with a Gram-negative stimulus when compared to women, emphasising the need of a personalised medicine approach for the treatment of infectious diseases. The second article is also in line with this concept as Linder et al. [9] demonstrate that different organisms evoke different cytokine profiles in the infected sepsis patient, supporting the notion that “one-treatment-fits-all” strategies

will also further fail in the future. Precision medicine takes the individual variations of the human being into account, such as genetic polymorphisms as seen for instance in proteins such as IL20 [3], but there are other immune responses such as the complement system that, based on its genetic variants, can evoke different immune responses as outlined in the review article by van den Broek et al. [10] or by the work from van Dalen et al. [11] on the genetic variation of CD207 that can compromise the cellular uptake of *Staphylococcus aureus* bacteria. One of the hallmarks in sepsis is the systemic response to the infection leading to an inflammatory response. Thus, within the last years, the journal has published a number of articles deciphering the molecular mechanisms leading to the induction of inflammatory processes [12–15], and also in this issue, the modulation of inflammation has been addressed. For instance, Wu et al. [16] describe how exogenous prostaglandins can regulate *S. aureus*-induced macrophage activation through TLRs and NLRP3 inflammasome signalling, and Lemaitre et al. [17] provide new insights into the involvement of neutrophils in the pathogenesis of HIV infection.

As always, we hope that this issue of *Journal of Innate Immunity* will provide a collection of articles which will be of great interest to the readership with a general interest in topics related to the innate immune system.

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