Intracellular Clearance by Nobel Laureates

We were pleased to learn that the 2016 Nobel Prize in Physiology or Medicine has been awarded to Yoshinori Ohsumi for his discoveries of the mechanisms involved in autophagy. The terms *autophagism*, *autophagia*, and *autophagy* were first used at the beginning of the 20th century, applied in different contexts including tumor wound-healing [1], phagocytosis of microphages [2], and traumatized rats [3]. However, the word *autophagy* as a term to describe the clearance of damaged organelles, removing cytosolic components and maintaining bioenergetic homeostasis, was introduced in the early 1960s by another Nobel laureate, Christian de Duve [4]. He received the Nobel Prize together with George E. Palade in 1974 for discoveries concerning the structural and functional organization of the cell. Three decades later, the first published autophagy paper by Yoshinori Ohsumi and colleagues [5] described yeast cells lacking vacuolar proteases, showing extensive accumulation of autophagic bodies under various adverse environmental conditions.

Notably, more than 180 outstanding and groundbreaking papers have followed, underlining the importance of these findings. Today, we know that autophagy is an essential cytosolic clearance mechanism that not only helps to maintain normal cell homeostasis, but is also a critical regulator of the intracellular immune system [6]. The *Journal of Innate Immunity* has recently issued a couple of articles dealing with this area of research [7–9]. In this volume, there is a paper by Katarina Nurmi et al. [10] on a study reporting that hemin and cobalt protoporphyrin can inhibit NLRP3 inflammasome activation by enhancing autophagy.

Pulmonary complications often involve a modulation of innate immune responses [11–19], and many studies have shown that surfactant proteins play a critical role in these processes [review in 20]. In this issue, Sylvia Ujma et al. [21] present an excellent review article, describing surfactant proteins A and B as being expressed also in many other parts of the body, such as the reproductive, urinary, and gastrointestinal tracts, where they have important innate immune functions and combat a wide range of microbial infections.

Apart from this review, there are contributions from Jonathan Leffler et al. [22] and Bethany M. Biron et al. [23], analyzing the degradation of neutrophil extracellular traps (NETs) in Shiga toxin-associated hemolytic uremic syndrome, and showing that the chemical inhibition of protein arginine deiminases and, consequently, that of histone citrullination and NET formation, leads to increased survival against septic insult. Along with other NET articles published in the *Journal of Innate Immunity* [24–26], these studies emphasize the importance of neutrophils and extracellular traps in the early immune response to an invading pathogen. Together with the other contributions in the first 2017 issue, this collection of articles covers a number of essential scientific problems within the field of innate immunity that should be of great interest to our readers.

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