



Editorial

# Editorial for the Special Issue “Extracellular Chaperones and Related miRNA as Diagnostic Tools of Chronic Diseases”

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Molecular chaperones are a family of proteins that are highly conserved during phylogenesis. They are among the oldest molecules since the appearance of life on Earth, and it is believed that they contributed to the survival of protocells in response to several stressors, both chemical and physical (radiation, temperature, pH, osmolarity, etc.) [1]. Further, these proteins are critically involved in cell proliferation and differentiation, tissue homeostasis, and organ remodeling [1,2].

Since chaperones are very important in preserving cell physiology and tissue homeostasis, their malfunction (for genetic or environmental factors) can result in the pathogenesis of several diseases [3–9]. Many illnesses, either congenital or not, are now referred to as “chaperonopathies” including a few neurodegenerative disorders, cancers, and autoimmune diseases [10]. This novel classification as chaperonopathies could serve as a guide for physicians and biomedical researchers toward the design of novel diagnostic tools or better disease-modifying therapies.

It has only been a few decades since the discovery that molecular chaperones can be actively released by cells and can have a variety of functions in the extracellular environment [11–13]. The most attentive is the interaction between these molecules and the immune system, thus leading to either triggering or modulating the immune response [14,15]. However, other paracrine roles have also been proposed, e.g., in tumorigenesis, favoring tumor cell survival and metastasizing [16]. This latter discovery promoted increasing interest in elucidating not yet fully understood secretory pathways of molecular chaperones [17,18]. Among them, the multivesicular bodies pathway is gaining growing attention as exosomes were “re-discovered” in the last decades.

More recently, a growing interest among the scientific community aims to explore the significance of miRNA secretion by exosomes. Interestingly, a link has been found between these miRNA and molecular chaperones’ expression in target cells [19]. This fact increased enormously the interest in the field of chaperonology, as supported by the increased number of experimental protocols that have been proposed to test molecular chaperones as novel diagnostic tools of human diseases [20].

This Special Issue includes several examples of studies conducted in this sense [21–28]. Further, the goal of this issue is to provide novel scientific perspectives and experimental protocols that can be considered in the study of extracellular chaperones and related miRNA.

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