Preface

The importance of microRNA in medical and biological sciences has been increasing every day. Now we are moving from basic science to translational science and on the field of application in biology and medicine. The content of the first 2021 issue of the MicroRNA journal reports a good overlook of this situation. The importance of microRNA analysis in oncology is well consolidated. Indeed, the microRNA machinery is a powerful tool to prevent and counteract cancer or promote it when its function is damaged. It is generally accepted that no cancer can occur and develop without a failure of the microRNA machinery. According to this view, microRNA analysis can be used to study cancer occurrence and cancer prognosis. The identification of specific microRNA alteration characterizing each cancer as well as the different stages of its development and progression is a formidable tool to increase our ability to set up early diagnosis. In this regard, new data are provided dealing with of miR-20a and miR-145 in colon cancer, as reported by Eslamizadeh et al. MicroRNA in cancer play a fundamental role in modulating chemo-resistance to cancer therapies, as here reported by Rattanapan et al. for ovarian cancer examining miR-483. The interest of similar studies is remarkable because miRNA involved in chemo-resistance can be modulated in their expression by delivery or suppression, thus re-establishing chemo-sensitivity of cancer cells.

MicroRNA plays a fundamental role in the early stage of the carcinogenesis process. It is of remarkable importance for predictive medicine to identify high risk to address tailored preventive and screening interventions. Hepatitis C virus infection is a major risk factor for liver cancer. In this perspective, Moayedi et al. evaluated the feasibility of using a liver-specific microRNA, miR-122, to evaluate the severity of Hepatitis C infection.

MicroRNA alteration does not play a pivotal role only in the progression of solid cancers but also in hematological malignancies, as here reported by Jayaraman et al. for Jurkat Leukemia analyzing miR-494.

One of the most intriguing aspects of the microRNA machinery is that its mechanisms have been highly preserved during evolution and are similar among different species. Accordingly, microRNA investigation is of great interest not only in humans but also in other species bearing relevance for science, biology, and economics. The study of virally encoded microRNA in silkworms is an intriguing example of such an approach.

On the whole, the experimental and review papers contained in this issue provide important information dealing with the practical applicability of microRNA science in biology and medicine, demonstrating that the era of pioneer research has been completed, and we are now moving to obtain the practical advantage of microRNA science.

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