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Sommario/riassunto	Circadian rhythms are biological processes displaying endogenous and entrainable oscillations of about 24 hours. They are driven by a group of genes called clock genes that have been widely observed in plants, animals and even in bacteria. In mammals, the core clock genes are rhythmically expressed in both the suprachiasmatic nucleus (SCN), the master clock residing in the hypothalamus, and almost all peripheral tissues where they control numerous target genes in a circadian manner, and thus affect many physiological and biochemical processes. Evidence suggests that disruption of the circadian rhythms (or desynchronization) is a significant risk factor for the development of metabolic diseases, cardiovascular diseases, cancer and sleep disorders. Evidence also suggests that the disruption suppresses immune function and increases vulnerability to infectious diseases. Restoring or strengthening the circadian rhythm may be therapeutic for these conditions. This becomes exceptionally important in modern societies because many people are suffering from frequent desynchronization due to shift working, exposure to artificial light, travel by transmeridian air flight, and involvement in social activities.

Besides, the temporal variations in the incidence and severity of many diseases, such as the onset of cardiovascular events, chronic obstructive pulmonary disease (COPD), inflammatory diseases and mental disorders have also drawn increasing attention to the circadian clock. The circadian rhythms affect not only the health status, but also the drug efficiency. The effects (and side effects) of many drugs vary with biological timing. The tolerance of many medications displays circadian variation as well. The timing of medical treatment in coordination with the body clock may significantly increase the desired effects of drugs, and lower the dose and toxicity. In addition, circadian rhythms can also be modulated by some therapeutic drugs, for example, melatonin and modafinil, which are used to treat circadian rhythm sleep disorders. In this Research Topic, we assemble a series of critical review and research articles that focus on the therapeutic implications of circadian rhythms.
