Most living organisms rely on the ticking of the circadian clock to anticipate periodical fluctuations of external cues, such as daily alternations of light and temperature imposed by Earth rotation. Fundamental aspects of physiology and behaviour are controlled by this clock, and the importance of this field of investigation has been acknowledged this year by the Nobel Prize of Medicine, which awarded the work of the laboratories of Professors Jeffrey C. Hall, Michael Rosbash and Michael W. Young, on the molecular mechanisms of the circadian clock[1-3]. Their work demonstrated that the interplay between PER, TIM and DBT proteins is compulsory to circadian rhythm generation. More specifically, they showed that the negative feedback loop mechanism at the heart of this timing device is orchestrated by PER-TIM interaction and nuclear translocation, and that the clock frequency is tuned by DBT. Today, our apprehension of the connexions between dysfunctions of the circadian clock and numerous pathologies is fuelled by the work from Professors Hall's, Rosbash's, Young's and others' laboratories as my previous mentor Pr. CJ Weitz's (HMS, Boston). Personally, since a decade, their work seed a long lasting inspiration on understanding both the core clock composition in mammals[4,5], as well as how abnormal daily re-shaping of cellular signalling network is associated to oncogenesis, cellular adhesion, migration and invasion processes alterations[6].

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