

MS01-4 **Circadian rhythm of neural stem cells and application to chronotherapy**

○Takahiro MORIYA¹, Tomoko MAEKAWA¹, Norimichi NAKAHATA¹

¹Grad. Sch. Pharma. Sci., Tohoku Univ.

Recent extensive efforts have revealed that neurons, astrocytes and oligodendrocytes in the brain originate from the immature precursor cells referred to as neural stem cells (NSCs). The NSCs possess self-renewal and multipotential abilities and are located not only in the developing mammalian brain but also in the adult brain, especially abundant in the hippocampal dentate gyrus. Recently, it was reported that the cell proliferation in the brain of mice as well as crustacean showed the circadian variation *in vivo*. These proliferated cells, however, have not been demonstrated to be NSCs. Furthermore, mechanism underlying the circadian regulation of the cell proliferation remains to be clarified. On the other hand, it is becoming abundantly clear that a core circadian clock mechanism involves self-sustained transcriptional positive and negative feedback loops composed of various clock-related genes.

Using the isolated NSCs from the mouse hippocampus, we observed that the proliferation of NSCs showed the clear circadian rhythms *in vitro*. Furthermore, we demonstrated that clock-related genes were involved in circadian rhythms of the proliferation. In this symposium, we will introduce the molecular mechanism underlying the circadian proliferation of the NSCs and discuss the perspective of chronopharmacotherapy for drugs such as antidepressants acting on NSCs.