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Per1 Plays as Immediate Early Gene in Serum-shocked Cells: An Integrative Role of *Per1* in Cellular Senescence

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Per1 is one of the biological clock gene which control of circadian rhythm in the individual cells. In this study, we shows that *per1* gene expression plays as immediately early gene as like other such a genes in serum-shocked cells. Also, Cells entering state of senescence undergo a permanent cell cycle arrest, accompanied by a functional and morphological changes. Senescence of cells occurs following an extended period of proliferation in culture or in response to various physiologic stress, yet little is known about the role this phenomenon plays *in vivo*. The study of senescence has focused largely on its hypothesized roles as a barrier to extended cell division, governed by a division-counting mechanism in the cellular functional retardation due to shortening telomere length. Here, we discuss the biological functions of cellular senescence and suggest that it should be viewed in terms of its role as a general cellular stress response program, rather than strictly as a barrier to unlimited cycles of cell growth and division. We also discuss the relative roles played by biological clock gene, specifically *per1* gene expression and telomere uncapping in the induction of senescence.

Key words) *Biological clock, Per1 gene, Circadian rhythm, Cell growth and division, Cellular senescence*

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