

## S10-4 Anti-aging research that uses SMP30/GNL knockout mouse

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Senescence Marker Protein-30 (SMP30) was originally identified as a novel protein in the rat liver, the expression of which decreases androgen-independently with aging in the Tokyo Metropolitan Institute of Gerontology in 1991. SMP30 is imagined closely taking part from the decrease in the physiology function of irreversibility aging in the aging mechanism. However, an essential function of SMP30 was not clear for a long time. In 2005, we identified SMP30 as the lactone-hydrolyzing enzyme gluconolactonase (GNL) of animal species<sup>1</sup>). GNL is a key enzyme involved in vitamin C biosynthesis. We found that SMP30/GNL knockout mice developed symptoms of scurvy when fed a vitamin C-deficient diet, verifying the pivotal role of SMP30 in vitamin C biosynthesis. It was ascertained that aging progressed from the wild type mouse fast when SMP30/GNL knockout mice were bred with bait with a little vitamin C (only 2.5% of the amount of vitamin C that the mouse needs in a day)<sup>1,2</sup>). It has been said that there is 'Effect of the anti-aging' in vitamin C than before. However, the scientific basis did not exist. These results of the research are the first reports that prove 'Effect of the anti-aging' of vitamin C in a scientific manner. The human cannot synthesize vitamin C in the inside of the body. Therefore, SMP30/GNL knockout mouse is an aging promotion model mouse extremely near the human.

1) Kondo Y., *et al.* : Proc. Nat. Acad. Sci. USA, 103, 5723-5728 (2006)

2) Ishigami A., *et al.* : Biochem. Biophys. Res. Commun., 315, 575-580 (2004)