2016 CFAI Seminar Series

Mechanisms of initiation and termination of DNA replication

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Venue : Lecture room No.10

Our genetic information is stored in DNA sequence which is precisely copied during S-phase so that each daughter cell receives an identical information after M-phase. Control of DNA replication is fundamental of all life as its dysfunction results in an inaccurate genome sequence, which can cause some genetic diseases such as cancer in human.
In this lecture, I will present the regulation of 1) how DNA replication machinery is established, 2) how the initiation of replication is temporally controlled in S-phase, and 3) how replication termination is achieved. I will summarize the basic findings mostly in yeast but also discuss common and different features in higher eukaryote cells including some discussion on recent studies.

Hustedt N, Seeber A, Sack R, Tsai-Pflugfelder M, Bhullar B, Vlaming H, van Leeuwen F, Guénolé A, van Attikum H, Srivas R, Ideker T, Shimada K, Gasser SM. Yeast PP4 interacts with ATR homolog Ddc2-Mec1 and regulates checkpoint signaling. *Mol Cell*. 57: 273-289 (2015)

Shimada K, Filipuzzi I, Stahl M, Helliwell SB, Studer C, Hoepfner D, Seeber A, Loewith R, Movva NR, Gasser SM. TORC2 signaling pathway guarantees genome stability in the face of DNA strand breaks. *Mol Cell* 51: 829-839 (2013)

Shimada K, Oma Y, Schleker T, Kugou K, Ohta K, Harata M, Gasser SM. Ino80 chromatin remodeling complex promotes recovery of stalled replication forks. *Curr Biol*. 18: 566-575 (2008)

Shimada K, Gasser SM. The origin recognition complex functions in sister-chromatid cohesion in Saccharomyces cerevisiae. *Cell*.128: 85-99 (2007)