

**S5-4**

## Cell Cycle Regulation in the Budding Yeast

Cuong Nguyen, Chang No Yoon and Seung Kee Han\*

*Department of physics, Chungbuk National University*

Cell cycle is regulated cooperatively by several genes. The dynamic regulatory mechanism of protein interaction network of cell cycle will be presented taking the budding yeast as a sample system. Based on the mathematical model developed by Chen et al. (MBC, 11, 369), at first, the dynamic role of the feedback loops is investigated. Secondly, using a bifurcation diagram, dynamic analysis of the cell cycle regulation is illustrated. The bifurcation diagram is a kind of 'dynamic road map' with stable and unstable solutions. On the map, a stable solution denotes a 'road' attracting the state and an unstable solution 'a repelling road'. The 'START' transition, the initiation of the cell cycle, occurs at the point where the dynamic road changes from a fixed point to an oscillatory solution. The 'FINISH' transition, the completion of a cell cycle, is returning back to the initial state. The bifurcation analysis for the mutants could be used uncovering the role of proteins in the cell cycle regulation network.