

## **Engineering of Primary Carbohydrate Metabolism for Increased Production of Antibiotic Production in *Streptomyces coelicolor* M510 and M145**

Yong-Ku Ryu

*Microbiology Lab., Korea Ocean Research & Development Institute*

The objectives of the current studies were to determine the role of key enzymes in the central carbon metabolisms in conjunction with the increased production of antibiotics in *Streptomyces coelicolor* M510 and M145. Glucose-6-phosphate dehydrogenase and phosphoglucomutase were selected as the targeted enzymes to be in frame deleted, respectively, and acetyl-CoA carboxylase complex (ACCase) as the one to be over-expressed extra chromosomally. Glucose 6-phosphate dehydrogenase encoded by *zwf2* gene plays more essential role to regulate the carbon flux to actinorhodin, while the function of phosphoglucomutase encoded by SCO7443 is not clearly understood. And acetyl-CoA carboxylase complex are very essential for both mycelium growth and as well as actinorhodin biosynthesis. From the quantitative demonstrating the involvement of enzymes in the carbon flux from substrate to antibiotics production, as the first attempts, it is concluded that the increased production of actinorhodin in *S. coelicolor* is possible by manipulation the central carbohydrate metabolism.