E305 The stationary phase sigma factor RpoS is required for biocide tolerance response in *Escherichia coli* and *Salmonella typhimurium*

Hyun Soo Kim*, Duk In Yun, Eun Jeong Kim, So Eun Choi, Hye Won Lee, Ho Gun Rhie Department of Biology, Kyunghee University

To examine the effect of glucose starvation on biocide tolerance, aliquots from an *E. coli* and *S. typhimurium* culture during logarithmic growth and stationary growth were challenged by various concentration of imidazolidinyl urea. After a 60 min challenge, a culture in logarithmic growth was 15-25% viable, whereas aliquots of the same culture starved for 4 h were 50-57% viable. To determine the role of RpoS in starvation induced biocide tolerance, aliquots from Wild type and KatF mutant culture starved for 4 h were challenged by imidazolidinyl urea. After a 60 min challenge, a culture from KatF mutant was nonviable, whereas aliquots from Wild type were 55% viable, showing that RpoS is required for biocide tolerance. To determine whether protein synthesis during starvation was required for the development of tolerance, a culture starved in the presence of chloramphenicol for 4 h was challenged by imidazolidinyl urea, The tolerance was similar to that exhibited by starved cell, suggesting that protein degradation is essential for the observed biocide tolerance.

E306 Lead Binding of an Fe-Superoxide Dismutase from *Streptomyces subrutilus* P5.

Nam-woo So, Jae-heon Kim*,
Dept. of Microbiology, Dan-kook University,

Streptomyces subrutilus P5 grew in the presence of relatively high concentration of lead ion. *S. subrutilus* P5 produced extracelluar Fe-superoxide dismutase(SOD) which possess lead binding activity. At 0.25 mM lead, the highest Fe-SOD activity was observed. Fe-SOD was purified from *S. subrutilus* P5 and lead binding activity was compared with commercially available Fe-SODs. The result shows that the Fe-SOD from *S. subrutilus* P5 can be bound with approximately 1000 lead ions per SOD. In contrast, Fe-SOD and Ni-SOD from *E. coli* (Sigma Co. USA) could bind approximately 240 and 200 lead ions per SOD, respectively. Therefore, it was concluded that the lead-resistance of *S. subrutilus* P5 is due to the removal of lead by Fe-SOD as a lead binding protein.