

46th World Congress on

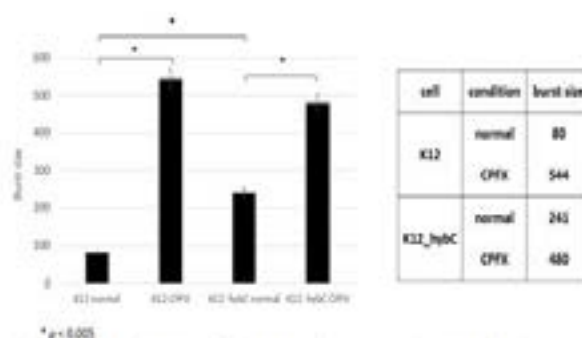
MICROBIOLOGY

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Increase of phage production resulting from overexpression of *hybC* in *Escherichia coli*

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Phage-antibiotic synergy (PAS) refers to the phenomenon where phage production increases in the presence of sub-lethal concentrations of antibiotics. In our previous studies, PAS was related to bacterial SOS-response (increase in *recA* and decrease in *ftsZ*) and resulting filamentation. We have checked various combinations of phage-bacteria-antibiotics and observed that SOS-response and filamentation did not always accompany increased phage production. We carried out RNA-sequencing from total RNA of *Escherichia coli* where phage T4 infected in the presence of sub-lethal concentration of an antibiotic, ciprofloxacin. Expression of *hybC* increased in the presence of the antibiotic. *hybC* encodes a hydrogenase involved in hydrogen uptake. We overexpressed *hybC* in the absence of the antibiotic and could observe bacterial filamentation and increase in burst size when the cell was infected by phages. Although the phenomenon resembled PAS, there was no increase in *recA*. Thus, we concluded that there is a case where PAS is not dependent on SOS-response.



A three-fold increase in burst size was observed when phage T4 infected *E. coli* overexpressing *hybC*. In the presence of ciprofloxacin, the burst size increased even more, but the *hybC* effect was lost.

Biography

Yoonjung Hwang is a graduate student in Hankuk University of Foreign Studies, Korea. She has been doing research on isolation of new bacteriophages from water or soil since 2015. Now she focuses on immune responses caused by bacteriophage.

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