Omics Approach of Cell Response during Pathogen Infection

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The pathogens that infect living animals and cause disease have evolved the ability to overcome the immune resistance of their hosts to infection. Attempts to quantify proteomic changes in animal pathogen interactions are technically challenging. In this study, we utilized 2-dimensional electrophoresis and electrochemical assay systems to characterize the proteomic host response of human epithelial cells after exposure to several pathogens. We observed how protein families are changed and shared during the infection with the host to cause disease. Cell was cultured in the KCLB media. CRG-MAP was purchased from Peptron (Korea). Surface topography of Au substrate, the cells were investigated with atomic force microscopy (AFM, XE-100, PSIA Inc., Korea) with non contact mode at room temperature under air conditioning. All electrical property of cell chip was obtained using potentiostat (CHI-660, CHI, USA). Comparison of the spot patterns of the samples with and without infection indicated that of more than 500 total spots, the consistently corresponding spots of 31 proteins were identified; 14 proteins that were up-regulated, and 17 proteins that were down-regulated. By the clustering, several proteins were identified as immunological gene products. Biosurface fabrication composed of synthetic oligopeptide was developed for the application to cell chip platform. Also, potentially significant pathogenetic cellular processes were identified. The proposed cell immobilization method using self-assembly technique and the electrochemical detection meth-

od can be applied to construct the cell chip for the diagnosis and drug detection. [This work was supported by the Korea Science and Engineering Foundation (KOSEF) through the ADvanced Environment Monitoring Research Center at Kwangju Institute of Science and Technology.]

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