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### **Alveolar macrophages treated with bioparticles, mediated through MyD88-dependent manner, are indispensable for the protection in mice infected with respiratory syncytial virus A2**

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Alveolar macrophages treated with bioparticles, mediated through MyD88-dependent manner, are indispensable for the protection in mice infected with Respiratory Syncytial Virus A2 (E-BABE): Respiratory syncytial virus (RSV) causes a common respiratory disease. But we have no effective ways to prevent RSV infection until now. Indeed, poor innate defense mechanisms at the initial stage of the infection brought about the serious consequences in RSV infection. One of the primary innate immune cells in the lung is alveolar macrophages (AM), which play a pivotal role to maintain homeostasis at rest and induce effective defense mechanism against infectious disease. However, a precise function of AM in RSV infected mice remains unclear. We here report that bioparticles derived from *Bacillus subtilis* could induce the activation of AM that played a critical function in protection against RSV infection. These bioparticles induced innate immune responses, increasing number of AM coincident with enhancing GM-CSF and IFN- $\gamma$ , known as differentiation factors for classically activated macrophages (M1-macrophages). Selective depletion of AM in wild-type mice or MyD88 knock mice failed to induce IL-12p40 and impaired the clearance of dead cells associated with severe morbidity during RSV infection. Taken together, our results suggest a definitive role of AM induced by bioparticles derived *Bacillus subtilis* in protection from RSV infection.

#### **Biography**

Cheol-Heui YUN completed his PhD at the University of Saskatchewan, Canada in the area of immune modulation and mucosal immunology. Then, he pursued his professional career at different parts of the World including International Vaccine Institute, Korea; USDA, USA; NIH, USA and Gothenburg University, Sweden. He has published more than 150 papers in reputed journals and serves as Editor of many societies including *World Journal of Immunology*, *Frontiers in Molecular Innate Immunity*, and *Journal of Biomaterials and Tissue Engineering*. Currently, he is a president of Korean Dendritic Cell Academic Society. His interest has focused on relationship between mucosal immune responses regarding infectious diseases and vaccine/adjuvant.

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