

International Congress on
Vaccines, Immunology & Antibiotics

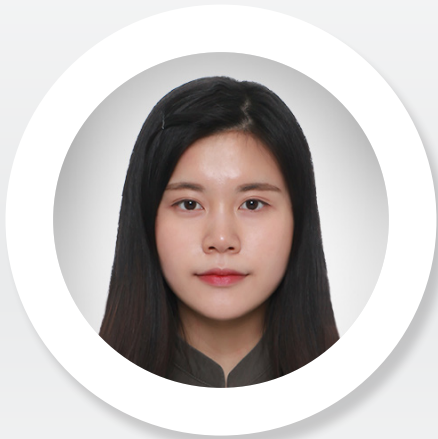
December 06-07, 2018 | Amsterdam, Netherlands

Ferritin-based middle east respiratory syndrome-Coronavirus nanoparticles using chaperna-mediated assembly

For robust and effective production of nanoparticle (NP) vaccines, it is important that folding of monomeric antigens and subsequent high-dimensional assembly be done in a timely and reproducible manner. While there have been significant advances in in silico design and structure-based assembly, engineered NPs have significant hurdles in manufacturing processes not only at the step of soluble expression but assembly of monomeric antigens. The problem lies in the lack of understanding the kinetic pathway for assembly and enabling technical platform. Utilizing the novel functions of RNA as a molecular chaperon (chaperna: chaperone+RNA), we have established a protein folding vehicle that can implement the correct NP assembly in the bacterial host. The receptor binding domain of the MERS-CoV fused with the RNA interaction domain and the bacterioferritin was expressed in soluble form in *E. coli*. Site specific proteolytic removal of RID promoted the assembly of monomers into nanoparticles, which were confirmed by electron microscopy and dynamic light scattering. Mutations affecting RNA binding to the receptor binding domain significantly increased soluble aggregation into the nonstructural structure and that reduced the overall yield of nanoparticles of defined size. This underscores the importance of RNA-protein interactions during the folding of monomers and their subsequent assembly into NP. The results suggest RNA binding affects the overall kinetic network of the antigen-folding pathway and supports enhanced assembly of NPs in an immunologically relevant manner. The chaperna function for macromolecular assembly enables the development and delivery of NPs and VLP, and the serological detection of viral infections.

Biography

Minjin Kim received MA in international studies from Graduate School of International Studies, Yonsei University, Korea. She was one of the council member for The 5th Creative Technology Management Student Council, CUANTUM Yonsei University, Korea. Her research interests include vaccines.

alswls0430@naver.com**Minjin Kim**

Yonsei University, Republic of Korea

Notes: