

## **C2-2**

---

### **Exploitation of the Endocytic Pathway by *Orientia tsutsugamushi* in Non-professional Phagocytes**

Hyuk Chu<sup>1\*</sup>, Jung-Hee Lee<sup>2</sup>, Seung-Hoon Han<sup>2</sup>, Se-Yoon Kim<sup>2</sup>, Nam-Hyuk Cho<sup>2</sup>,  
Ik-Sang Kim<sup>2</sup>, and Myung-Sik Choi<sup>2</sup>

<sup>1</sup>*Division of Zoonoses, Center for Immunology & Pathology,  
National Institute of Health, Korea Center for Disease Control & Prevention,*

<sup>2</sup>*Department of Microbiology and Immunology, Seoul National University College of Medicine*

*Orientia tsutsugamushi*, a causative agent of scrub typhus, is an obligate intracellular bacterium that requires the exploitation of the endocytic pathway in the host cell. We observed the localization of *O. tsutsugamushi* with clathrin or adaptor protein 2 (AP-2) within 30 min after infection in non-professional phagocytes. We have further confirmed that the infectivity of *O. tsutsugamushi* is significantly reduced by drugs that block clathrin-mediated endocytosis, but not by filipin III, an inhibitor that blocks caveolar-mediated endocytosis. In the present study using a confocal microscope, *O. tsutsugamushi* were sequentially colocalized with early and late endosomal markers, EEA1 and LAMP2 respectively, within 1 h after infection. The colocalization of *O. tsutsugamushi* with EEA1 and LAMP2 gradually disappeared until 2 h post-infection and then free *O. tsutsugamushi* were found in cytoplasm. When the acidification of endocytic vesicles was blocked by treating the cells with NH<sub>4</sub>Cl or bafilomycin A, *O. tsutsugamushi* escaping from endocytic pathway was severely impaired and the infectivity of *O. tsutsugamushi* was drastically reduced. To our knowledge, this is the first report, that invasion of *O. tsutsugamushi* is dependant on the clathrin-dependant endocytic pathway and the acidification process of the endocytic vesicles in non-professional phagocytes.