

# Collection of unengorged larvae of trombiculid mites and establishment of *Orientia tsutsugamushi* gene bank

## Abstract:

Tsutsugamushi disease is transmitted by unengorged larvae of trombiculid mite, which carrying the pathogen *Oreintia tsutsugamushi*. In the past, trombiculid mites survey have mainly been done by rodent trapping. Although this method was easily preformed and can detect *O. tsutsugamushi* from mites. However we cannot make sure whether the pathogen was from mite or rodent. Therefore rodent trapping is not suitable to confirm vector species. We need to detect unengorged larvae of trombiculid mites on the ground. In this year, we collected free-living trombiculid mites with bakelite plates, Suzuki method and Direct method in Hualien County, Kinmen County and Lanyu Island. More trombiculid mites have been collected by Direct method than Suzuki method, but comparing with bakelite plates these three methods had merit and drawback, we should use them depending on breeding site of trombiculid mites. To study *O. tsutsugamushi*, rickettsial isolation was very popular. It no only can analyze characters of *O. tsutsugamushi* such as antigenecity, virulence and genetic phylogeny, but also increase the accuracy of indirect immunoassay. We collected trombiculid mites from rodents in Hualien County and isolated *Rickettsia* with cell culture. The infection rate of *O. tsutsugamushi* in trombiculid mites was 73%. Six strains of *O. tsutsugamushi* were found, and the most abundant strain was sequence like TW45R and TW73R. The infection rates of *O. tsutsugamushi* in trombiculid mites, which collected in Kinmen County and Lanyu Island, were 50% and 96% respectively. Three strains of *O. tsutsugamushi* were found, and the most abundant strains were sequence like Karp and like TW201 in Kinmen County and Lanyu Island respectively. In the same time, we detected *Rickettsia* of Spotted fever, and found the infection rates of *Rickettsia* of Spotted fever in trombiculid mites in Hualien County, Kinmen County and Lanyu Island were 65%, 12.5% and 46% respectively. Three strains of Spotted fever *Rickettsia* were found, and the most abundant strain was sequence OmpB like *Rickettsia australis* and CS like TwKM02. Detecting seropositive rate of rodents in three areas showed *O. tsutsugamushi*, *R. rickettsii*, *R. conorii* and *R. typhi* were 86.6%, 88.2%, 77.2% and 3.15% respectively.

## Keyword:

unengorged larvae of trombiculid mites, tsutsugamushi disease, *Oreintia tsutsugamushi*, Spotted fever, PCR