Krajana Tainchum 2015: Distribution of *Anopheles* Species Complexes and Groups of Public Health Importance with Emphasis on the Bionomics, Behavior and Bacterial Biodiversity of Anophelines in Western Thailand. Doctor of Philosophy (Entomology), Major Field: Entomology, Department of Entomology. Thesis Advisor: Professor Theeraphap Chareonviriyaphap, Ph.D. 150 pages.

The distribution of closely related *Anopheles* species (groups and complexes) of public health importance was investigated in Thailand. Based on use of molecular techniques for accurate species identification, countrywide malaria vector distribution maps using GIS coordinates were produced.

Species diversity, blood feeding behavior and host preference of *Anopheles* mosquitoes in two malaria endemic areas of Tak and Mae Hong Son Provinces were studied for a two-year period (2011-2012). Multiplex Allele Specific-PCR assays were used to differentiate species within respective *Anopheles* (*Cellia*) complexes or groups. Real-time PCR was performed for parasite detection (malaria/filaria) in mosquitoes. Eight species of mosquitoes were described, the most common being *Anopheles minimus*. Populations of *An. minimus* were comparatively high between February and April. In addition, the blood feeding behavior of important vectors was evaluated. One specimen of *An. minimus* (Mae Sot) was found infected with *Plasmodium vivax.*

Additionally, bacterial biodiversity of *Anopheles* abdomen was assessed by 16S rRNA gene PCR-Temporal Temperature Gradient Gel Electrophoresis (TTGE) profiling and sequence analysis. Nineteen bacteria genera were identified from eight field-caught *Anopheles* species. Seven genera are newly reported in *Anopheles* mosquitoes, suggesting that the abdominal bacterial diversity of *Anopheles* remains underestimated.

_____ _____ __ / __ / __

Student's signature Thesis Advisor's signature