

**Plenary Lecture I**

**Current status and future projections on mosquito-borne diseases and their vectors in Korea**

**Dong-Kyu Lee**

Department of Public Health and Environment, Kosin University

In light of global climate change, Korea faces significant challenges with indigenous mosquito-borne diseases, notably malaria and Japanese encephalitis. Moreover, there is a growing incidence of imported arboviral diseases attributable to the increasing number of international travelers. Dengue fever emerges as the predominant mosquito-borne ailment among Korean travelers, while cases of Japanese encephalitis and chikungunya are also seeing an upward trend. Many countries have witnessed arboviral infections transmitted by pathogens-carrying mosquitoes, primarily due to the introduction of viruses by travelers. Additionally, the ongoing processes of global warming and urbanization are creating increasingly favorable environments for mosquitoes and the proliferation of mosquito-borne pathogens. This underscores the urgency of assessing both the current status and future projections of mosquito-borne diseases in Korea.

**Key words:** vector, mosquito, mosquito-borne disease, Korea

**Plenary Lecture II**

**Pterostichine carabid beetles and why fundamental taxonomic science is critical to modern conservation efforts**

**Kipling Will**

Department of Environmental Science, Policy, and Management, University of California, Berkeley, USA

The hyperdiverse beetle family Carabidae is one of the largest families of Coleoptera. Nearly 10% of described carabid species are classified in the tribe Pterostichini or tribes historically closely associated with Pterostichini. Beetles in these groups are found worldwide and in habitats from ocean beaches to high-elevation glacial edges. Pterostichines are often abundant and local species richness can be exceptionally high. I will present an overview of the diversity, biogeography, and current phylogenetic arrangement of the included taxa. I will discuss some of the many amazing aspects of the group's natural history including cases of mate marking during copulation, secondary sexual characters, mate guarding, burrow construction, maternal care for eggs and larvae, and apparent stridulatory structures. I will introduce the Australian trichosternus group and discuss the conservation status of these imperiled beetles and how fundamental taxonomic science led to gaining protection for some species. I will make the case that taxonomy has a unique role among the life sciences to explore, describe, classify, and provide an understanding of the diversity of life, at and above the species level, focusing on individual characters, and within the context of evolutionary history.

**Key words:** Ground beetle, Carabidae, Coleoptera, phylogeny, evolution

Plenary Lecture III

**Mechanisms, diagnosis and management of pesticide resistance: Current status and future prospects**

Si Hyeock Lee

Department of Agricultural Biotechnology, Seoul National University

전 세계적으로 농업해충의 약제 저항성 발달에 따른 방제 효율 저하는 농약의 과다 사용을 초래하여 농업의 생산성 저하 및 환경 파괴 문제 등을 야기하고 있다. 뿐만 아니라 위생해충의 경우에도 약제 저항성 발달이 심각한 수준으로 나타남에 따라 인류 보건에 큰 위협이 되고 있다. 해충의 약제 저항성은 자연계에 존재하는 극히 낮은 빈도의 저항성 형질이 반복적인 약제 사용에 따라 선발되는 과정을 통해 발달 되는데, 해충 약제 저항성의 효과적인 관리를 위해서는 저항성 발달 기작의 규명과 신속·정확한 진단법의 확립이 필수적이다. 현재까지의 저항성 관리는 저항성 발달 후 대응적(reactive)으로 이루어져 왔으나, 미래에는 보다 다양한 분자 마커를 활용하여 저항성 형질 빈도를 관리 가능한 수준에서 유지하는 선제적(proactive) 저항성 관리도 가능할 것으로 예상하고 있다. 본 발표에서는 해충 약제 저항성 연구의 현재 상황과 미래 전망에 대해 소개하고자 한다.

**검색어:** Pesticide resistance, Mechanism, Diagnosis, Management