環境分子生物学セミナー　第 22 回
Environmental Molecular Biology Seminar 22nd

Dr. Theodore Muth (Brooklyn College, City University of New York)

<< Part 1 >>

Title:

***Agrobacterium tumefaciens* Attachment and T-DNA Integration – understanding the "root" to infection of host plants**

Summary:

While several aspects of A. tumefaciens infection and transformation of plants are well understood, there are questions that remain concerning the attachment of the bacteria to host plants and the integration of T-DNA into the host cell genome. Work from our lab has focused on these questions and has applied novel approaches in an attempt to gain a more thorough understanding of these steps in the infection.

The standard approach to genetically modify plants relies on Agrobacterium tumefaciens to transfer foreign DNA (T-DNA) into plant cells where it can become a permanent part of the plant cell's genome and express engineered traits. While A. tumefaciens transformation of plants has been used extensively, there are aspects of the process that are incompletely understood. To study the timing and factors influencing the location of T-DNA insertions, we used a modified adapter ligation-mediated PCR strategy, coupled with next generation sequencing, to identify T-DNA integration sites into the genome of Arabidopsis. Previous reports examining T-DNA integration have relied on selective conditions, floral dip transformation, artificial virulence induction or use of cultured suspension plant cells. Our approach attempts to closely match natural infection conditions by using cut Arabidopsis root segments infected with uninduced A. tumefaciens and no selection for T-DNA integration events. A more thorough understanding of T-DNA integration will guide future experiments to develop the techniques to engineer plants more efficiently than is currently possible.

Date/Time & Venue:
2019 年 7 月 25 日（木）10:00 - 11:00
地球環境科学研究院　管理棟２階会議室
10:00-11:00, 25th July, 2019
Graduate School of Environmental Science, Room E206

世話人：三輪京子
Caretaker: Kyoko Miwa

<< Part 2>>

Title:

The Urban Microbiome – a new census of the city

Summary:

Our recent work using culture-independent (metagenomic) based strategies to study microbial communities shows an unexpectedly high level of biodiversity in urban microbiomes in a number of sites including parks, waterways, subway systems, and green infrastructure installations. The factors underlying the establishment of these diverse communities are not well understood, but it suggests that urban microbial communities represent a significant unknown element of phylogenetic, genetic, and functional biodiversity. A better understanding of these influences on multiple aspects of biodiversity will inform the design, construction, placement, and maintenance of urban environmental elements (such as green infrastructure) to maximize their ecosystem services. More fundamentally, our work offers a novel platform for exploration of basic science aspects of dimensions of biodiversity.

Date/Time & Venue:
2019 年 7 月 25 日（木）16:00 - 17:00
地球環境科学研究院　管理棟２階会議室
16:00-17:00, 25th July, 2019
Graduate School of Environmental Science, Room E206

世話人：森川正章
Caretaker: Masaaki Morikawa

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