DBT - AIST International Laboratory for Advanced Biomedicine

DAILAB

Classroom for Advanced & Frontier Education

CAFE

SILVER Jubilee SERIES – BEING light up with BIOLUMINESCENCE !!!!
Abstract: In the entire world, there are many kinds of bioluminescent livings, including several kinds of bioluminescent beetles; firefly, railroad-worms, click-beetles. For firefly, there are about 2,000 species in the world, and about 40 species in Japan alone. In biological standpoint, firefly is a good indicator of environmental change and evolutionary relationship [1,2]. In chemistry viewpoint, bioluminescence is a simple chemical reaction, where luciferin is oxidized by oxygen, converted to excited oxyluciferin and finally emits a light catalyzed by luciferase enzyme [3-5]. Until ten years ago, many researchers believed this reaction occurs with a highest efficiency; one chemical reaction produce one photon. However, based on the research in Japan (including my team), it is currently established that this reaction has only a moderate efficiency (quantum yield=0.41) [6]. In bioengineering, beetle luciferase serves as a good enzymatic reporter assay for gene expression analysis, imaging and several other applications [7,8]. I have been studying the basic biology of bioluminescence of luminescent beetles, and developing several useful applications for last quarter of a century. In this seminar, I will share my experiences with bioluminescent beetles, the amazingly beautiful players of bioluminescence!

Further readings:
Series 24
Speaker: Yoshihiro OHMIYA
Topic: Blessed with Bioluminescence: Firefly, Click Beetle and Railroad Worm Acts
Date: 18th Dec., 2017 (16:00-17:00 h JST)
Host: DAILAB@AIST, Japan

Thanks for participation!