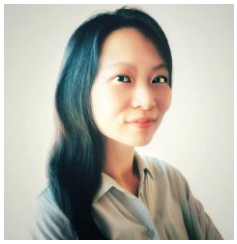
研究機構戦略研究センター・グリーンバイオサイエンス研究領域
（理学部分子生物学科共催）
セミナーのご案内

Light and heat stress responses – lessons from natural strains of the green microalga *Chlamydomonas reinhardtii*

（光と熱に対するストレス応答 ー 緑藻クラミドモナスの野生種から学んだこと）



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場所　理学部 3 号館 2 階 11 番教室

As a result of climate change, fluctuations in light intensity and temperature have a deleterious impact on photosynthetic organisms. Natural differences within a species that result in distinct phenotypes can aid in identifying significant genes and pathways that are essential for high light and heat acclimation. Yet, studies using natural variations in plants are still inconclusive due to differences in plant age, tissue types, cultivation methods, and applied stress regimens. To resolve this discrepancy, the single-celled green microalga *Chlamydomonas reinhardtii* was used as a model system to investigate the response of natural strains to high light and heat stress. The results demonstrated that natural strains of this alga exhibited varying degrees of light and heat sensitivity. Surprisingly, comparisons between a high light resistant strain and a high light sensitive strain revealed that well-known protective mechanisms such as the adjustment of antenna size, non-photochemical quenching (NPQ), and the ability to eliminate reactive oxygen species (ROS) did not differ significantly. Proteomic data suggested that it is the ability to form aggregates and palmelloid colonies that is crucial to cell survival under high light in the resistant strain. It has been proposed that this ability is linked to signaling molecules secreted. In addition to light tolerance, *Chlamydomonas* can also acclimate to high temperatures, which might also be controlled by signaling molecules. These results support the idea that single-celled algae live as a community and that cell-to-cell communication contributes to their survival in the wild.

アンチャリー先生はシカゴ大学をご卒業後、カリフォルニア大学バークレー校で微生物学博士号を取得し、同校、植物・微生物生物学科博士研究員、カセサート大学理学部遺伝学科講師を経て、2017 年より同校で助教をされております。セミナーでは、緑藻の光・温度ストレス応答について講演をしていただきます。奮ってのご参加よろしくお願いします。

問い合わせ先：　**西山 佳孝**（理学部分子生物学科/戦略研究センター・グリーンバイオサイエンス研究領域・領域長[nishiyama@mail.saitama-u.ac.jp]）