

日時:12月6日(木)5限(16:20~17:50)

場所:理学部3号館2階11番教室

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Living the Dry Life:

Metabolic Basis of Desiccation Tolerance in Resurrection Plants

Resurrection plants have evolved the ability to survive vegetative tissue drying, defined as the near complete loss (80–95%) of protoplasmic water. This resurrection trait is referred to as desiccation tolerance (DT). The DT trait is relatively common in algae, lichens, and mosses. However, among vascular plants, DT is extremely rare with only about ~0.15% of species being recognized as resurrection plants. In order to better understand the molecular basis of DT, sister group comparisons using DT and desiccation sensitive (DS) species were conducted within the Selaginellaceae (spike mosses) and the Poaceae

Model plant: *Selaginella lepidophylla*

- Resurrection fern or club moss native to N. America
- Traditional medicinal plant; renewed interest as drug source
- Ancient lineage ~400 million years old
- Can recover within hours from years of desiccation
- Maintains chlorophyll at least inside microphylls



(resurrection grasses) using high throughput metabolic profiling. These studies revealed that DT species employ a combination of diverse constitutive and inducible metabolic strategies to survive and recover from desiccation of vegetative tissues. Such information is currently being used to design novel strategies for improving drought tolerance in crop species.

乾燥地に生きる: 復活草の乾燥耐性機構のメタボローム解析

通常、植物は極度の乾燥に曝されると枯死してしまいます。しかし、ヒカゲノカズラ類やイネ科で見られる「復活

草」は、組織に細胞を保護する物質を大量に貯めるなどして、何年間も枯れることなく乾燥を耐え抜きます。そして再び水が得られると、それを吸収し数時間で青々とした葉を「復活」させ、光合成を再開します。

米国ネヴァダ大学の John C. Cushman 教授は、植物の乾燥耐性機構を分子レベルで研究してきた、植物分子生理学の第一人者です。今回のセミナーでは、この「復活草」の大変ユニークな乾燥耐性機構を、代謝産物を網羅的に調べる最新の解析手法で明らかにした研究をご紹介します。

なお、セミナー終了後、2階セミナー室で懇親会を開きます。こちらもふるってご参加下さい。

共催 理学部分子生物学科、HiSEP 実行委委員会、環境科学研究センター

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