



第46回岩手大学 COE-フォーラム 第39回岩手大学 CRC セミナー

岩手大学 21 世紀 COE プログラム「熱一生命システム相関学拠点創成」と岩手大学農学部附属寒冷バイオシステム研究センター (CRC) は、合同で、CRC に 2006 年 10 月に赴任された Abidur Rahman 博士による植物ホルモン・オーキシンの作用分子機構に関する講演会を開催いたします。Rahman 博士は、従来とは異なる新規のオーキシン作用機構を提唱されており、興味深い講演が聴けることと思います。万障繰り合わせの上、ぜひご参加いただきますようご案内申し上げます。

担当・21 世紀 COE プログラム
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日時：2007 年 4 月 13 日 (金) 16:30～18:00
場所：岩手大学農学部 2 番講義室

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Are all auxins equal?

Molecular and cellular evidence separating the responses to endogenous auxin IAA and its chemical analogue 2,4-D

The plant hormone auxin influences the plant behavior from embryogenesis to senescence. Over the past decade aided by *Arabidopsis* genetics, a wealth of information underlying the molecular mechanism of action of this hormone has been understood. Interestingly, in most of these studies, including the screening of the mutants, the native auxin IAA was replaced by the chemical analogue 2,4-dichlorophenoxyacetic acid (2,4-D). The differences between these compounds are recognized in transport where 2,4-D is suggested to efflux more slowly than IAA, and in metabolism where it has slower rate of breakdown. However, traditionally the mechanism of action of these two hormones is widely assumed to be the same. Our recent work has challenged this traditional concept. By analyzing and characterizing an *Arabidopsis* mutant anti-auxin resistant (*aar1*), which shows a specific resistance to 2,4-D yet responds like wild-type to IAA, we have shown that the 2,4-D specificity of plants reside in a protein SMAP1. Consistent with the observed difference at the molecular level, we also found that 2,4-D and IAA affect the down stream events such as root growth, cell division and cell cytoskeletal organization differentially. Taken together our results strongly suggest that IAA and 2,4-D are perceived by mechanistically distinct pathways, albeit partially overlapping and regulate the physiological and cellular responses through separate pathways.