



## 第 64 回

# インターゲノミクス セミナー

神戸大学大学院・農学研究科  
インターゲノミクス研究会 主催  
(若手研究者育成支援経費)  
国際共同研究強化事業【B型】共催  
「気候変動・感染症リスク下において持続  
可能な食糧生産システムの確立」

日時：2月27日（金）15時10分～17時30分  
場所：自然科学総合研究棟1号館512セミナー室

### 「植物はどう病原体を見抜くのか？—細胞表層から細胞内免疫受容体まで—」

15:10 はじめに

15:15 **Plant cell-surface receptors: Past, present, and future**

Dr. Bruno Pok Man Ngou (理化学研究所 横浜事業所 環境資源科学研究センター(CSRs))

要旨内容: Plant cell-surface receptors have evolved to perceive peptides, proteins, glycans, lipids, and small molecules through diverse ectodomains, integrating these inputs into distinct physiological outputs across stress responses, development, symbiosis, and reproduction. I will introduce how plants use modular receptor architectures to generate functional diversity. Cell-surface immune receptors (pattern-recognition receptors; PRRs) have diversified significantly during land-plant evolution, resulting in lineage-specific receptors and creating opportunities to transfer broad-spectrum disease resistance across species. I will outline strategies to identify and characterize PRRs across land plants, and discuss how structure prediction and phylogenomics can be leveraged to engineer immune receptors.

16:15 **Engineering recognition in plant intracellular immune receptors for novel disease resistance**

Dr. Mark Banfield (John Innes Centre, UK)

要旨内容: Plant intracellular immune receptors detect the presence of pathogen effectors, virulence-associated proteins delivered by adapted pathogens to host cells. A subset of the well-studied nucleotide-binding leucine-rich repeat (NLR) family of immune receptors contain “integrated domains”. These domains act as baits to directly bind effectors and trigger robust immune responses resulting in cell-death to contain pathogen infection. We have studied pathogen effector recognition by the rice NLR pair “Pik” that has an integrated heavy metal-associated (HMA) domain that binds the effector Avr-Pik. These studies have included protein engineering for novel immune responses. Recently, a new class of plant intracellular immune receptor, the tandem kinase proteins (TKPs), were also shown to contain integrated domains, including HMAs, which can bind effectors. I will introduce our latest work on this novel immune receptor family and highlight new opportunities for engineering integrated domains in both NLRs and TKPs.

17:15～ 総合討論

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