First structural insights into how plant immune receptors interact

April 17 2014

Researchers at The Sainsbury Laboratory (TSL), Norwich, collaborating with structural biologist Bostjan Kobe in Brisbane, have made a major advance in understanding plant disease resistance.

"Before, we knew that proteins called RRS1 and RPS4 are required to recognize specific molecules from pathogenic bacteria, and then use this recognition as a cue to activate defence. However, we had no idea how they did it," says co-corresponding author Jonathan Jones of TSL.

RPS4 and RRS1 are both required for resistance to *Pseudomonas syringae*, the soil-borne *Ralstonia solanacearum* and the fungal pathogen *Colletotrichum higginsianum*. How this unique dual-protein recognition system operates has remained unknown and is the focus of investigations in Prof Jones' lab.

"Now we know that these proteins intimately associate and we have revealed part of that association at atomic detail," he says.

"We also found that mutations which perturb this association disrupt its function and leave plants more vulnerable to attack".

The work is published in the 18th April edition of *Science* magazine. It provides the first structural definition of how plant immune receptors interact and has broad implications for understanding their function.

More information: "Structural Basis for Assembly and Function of a

Heterodimeric Plant Immune Receptor" *Science*, 2014.

Provided by Norwich BioScience Institutes