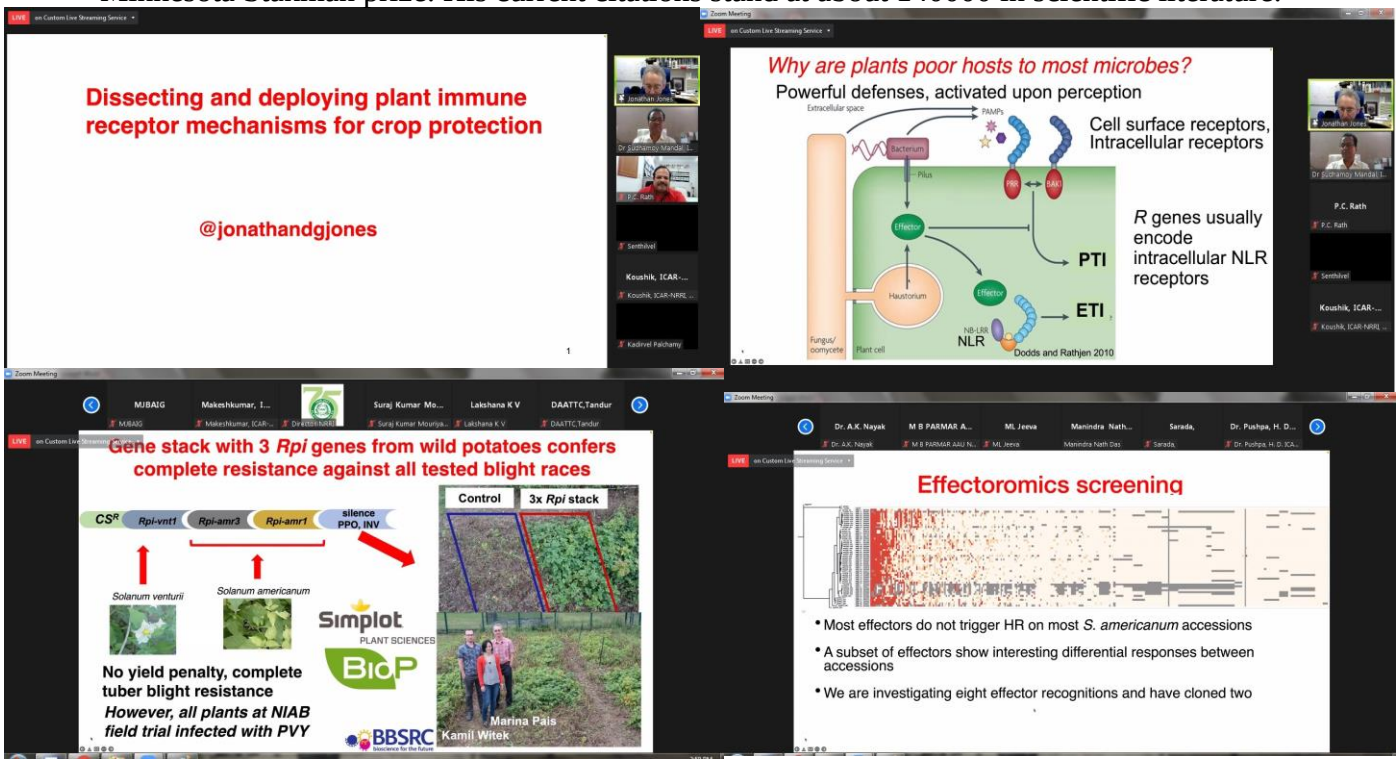
ICAR-National Rice Research Institute (ICAR-NRRI)
(An ISO9001:2015 Certified Institute)
Cuttack - 753006

***Azadi ka Amrit Mahotsav* - Celebration of 75 Years of India's Independence at ICAR-National Rice Research Institute, Cuttack, India**

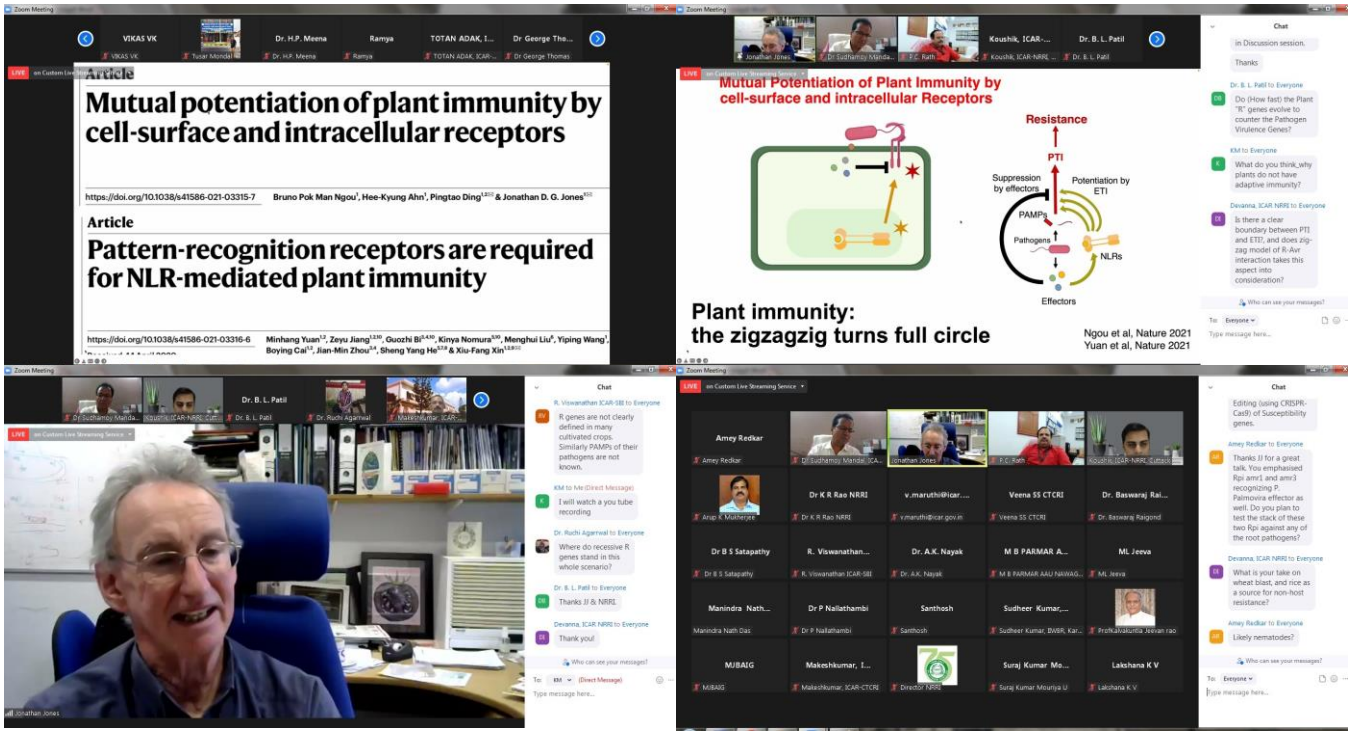
Special Talk - "Dissecting and deploying plant immune receptor mechanisms for crop protection"

The ICAR-National Rice Research Institute, Cuttack is conducting a Special Talk series to celebrate 75 years of India's independence as *Azadi ka Amrit Mahotsav* (AKAM). The seventh Special Talk in the series – **"Dissecting and deploying plant immune receptor mechanisms for crop protection"** was delivered by **Prof (Dr) Joathan D G Jones (FRS), Group Leader, The Sainsbury Laboratory and Professor, University of East Anglia, Norwich, UK** on 29 March 2022 at 03:00 PM IST (10:30 AM UK time) on virtual mode.

Prof Jonathan Jones (JJ) is a plant molecular geneticist who has made distinctive contributions to understanding how plants resist disease, and to how pathogens circumvent host immune mechanisms. He obtained a Ph D jointly between Cambridge Genetics Department and the Plant Breeding Institute in Trumpington (1980). After postdoctoral work with legendary Fred Ausubel at Harvard on symbiotic nitrogen fixation (1981-2), he worked at start-up agbiotech company AGS in Oakland USA, working closely with Hugo Dooner to study the behavior of maize transposons in tobacco. Since 1988, JJ has worked at The Sainsbury Laboratory (TSL) Norwich UK, serving as Head of Laboratory during 1994-97 and again 2003-09. He was elected member of European Moleular Biology Organization (EMBO) in 1998, Fellow of Royal Society in 2003 and International Member of the US National Academy of Sciences in 2015. In 2012, he was awarded the prestigious U Minnesota Stakman prize. His current citations stand at about 140000 in scientific literature.



JJ was among the first to isolate and characterize disease resistance genes. His discovery of receptor-like proteins (RLPs) preceded discovery of leucine-rich repeat innate immune receptors in animals. Jones' work also revealed intracellular nucleotide binding leucine-rich repeat (NLR) immune receptors, which often function in pairs to detect pathogen molecules, known as effector proteins, to activate defense. With biologist Jeffery Dangl, Jones authored two highly cited review papers published in Nature (2001 and 2006). The first review paper outlined the guard hypothesis, while the second integrated thinking about cell surface-triggered immunity and intracellular receptor-triggered effector-triggered immunity (ETI) into one unified model: zigzagzig.



JJ talked about his current research in the Jones laboratory at length. i) Paired NLR immune receptor function. The Arabidopsis RPS4 and RRS1 genes encode an intracellular immune receptor complex that is required for recognition of bacterial effectors AvrRps4 and PopP2 via their interactions with the RRS1 WRKY DNA-binding "integrated decoy" domain. The Jones lab is investigating how recognition of effectors results in defense activation by the complex. ii) Novel resistance genes *to P. infestans.* The oomycete *Phytophthora infestans* causes potato late blight, that once resulted in the infamous Irish Famine in 1840s. The Jones lab is isolating novel *Resistance to P. infestans* (*Rpi*) genes from wild diploid potatoes, notably *Solanum americanum*, source of Rpi-amr1 and Rpi-amr3. *Rpi-vnt1* is the first such resistance gene deployed transgenically in commerce. To accelerate *R* gene cloning the Jones lab developed RenSeq (R-gene enrichment Sequencing), a method to define all the intracellular immune receptor sequences (the "NLRome") of a plant of interest, to reveal receptor diversity and evolution.

The scintillating talk by JJ on "Dissecting and deploying plant immune receptor mechanisms for crop protection" elicited a flurry of questions from the audience. More than 135 participants attended the special talk in virtual mode from across the country.

The special was presided by Dr Padmini Swain, Director (A), ICAR-NRRI. Dr PC Rath Head (A), CPtD & Chairman, AKAM Committee at NRRI welcomed the Special Guest. Dr Sudhamoy Mandal, Principal Scientist, CPtD & Convener, AKAM introduced Prof Jonathan DG Jones to the august virtual gathering. The program was moderated by Dr Koushik Chakraborty, Scentist, CPBD & Member of AKAM. ARIS Cell of the institute hosted the program on virtual mode.