

-----The Biography of Speakers-----



Dr Emily Breeze

Dr Emily Breeze is a Research Fellow in Prof Lorenzo Frigerio's lab at the School of Life Sciences at the University of Warwick, UK. Her research investigates the fundamental relationship between the intricate form of the endoplasmic reticulum (ER) - its architecture and dynamics- and its function- the biosynthesis, folding and quality control of secretory and membrane proteins.

Focusing on the plant ER, Emily's research asks how cellular perturbations caused by exposure to environmental stress, notably pathogen infection, impact on this ER form-function relationship and, ultimately, on the ability of the plant to produce an effective and timely stress response. In addition to its core function as a 'protein factory', the pervasive nature of the ER make it ideally suited as a conduit for intra-organellar signalling and thus, Emily is also interested in understanding the wider role of the ER in coordinating the cellular response to environmental stress.



Professor Miriam Gifford

Miriam Gifford's interests are in studying complex networks involved in plant responses to the environment and plasticity, with a particular focus on modelling cell type specific mechanisms, gene networks enabling symbiosis with rhizobia and currently the impact of the circadian clock on nodulation in the rhizosphere.

After postdoctoral work at New York University (USA) she started her lab at Warwick University (UK) in 2009 where she is now Professor and the Head of School of Life Sciences.



Professor Murray Grant

Murray Grant is currently the Elizabeth Creak Chair in Food Security at the University of Warwick. Prior to that he held a Chair in Plant Molecular Biology, at Exeter University from 2006 and worked in the area of “food security” for the past 30 years. Following a 1st Class Honors degree with a double major in Biochemistry and Botany, he completed his PhD in Biochemistry at Otago University in New Zealand.

His team study the molecular basis of plant immunity. They use the model *Arabidopsis-Pseudomonas/Xanthomonas* pathosystems to investigate three key processes; mechanisms underpinning activation of plant disease resistance proteins (ETI), establishment of systemic immunity (SAR) and pathogen orchestrated suppression of basal defence. They deploy multidisciplinary approaches, integrating transcriptomics, metabolomics, real-time imaging and genomics to understand these responses. They are particularly interested in the role of the chloroplast in orchestrating immunity, and its perturbation by pathogens. They are currently deploying and developing genetically encoded receptors to address the importance of inter-organelle communication in plant-microbe interactions. This includes investigating how plant-microbe interactions modify the dynamics and interconnectivity of metabolites such as ATP, NAD/PH and H₂O₂, in the developing field of metabolic immunity. Central to this is the emerging role of nucleosides in activation and suppression of plant defences.



Professor Niklaus J. Grünwald

Niklaus J. Grünwald is a Research Plant Pathologist with the Horticultural Crops Research Unit, USDA Agricultural Research Service, in Corvallis, Oregon and Professor in the Department of Botany and Plant Pathology and the Center for Quantitative Life Sciences at Oregon State University.

He received his Ph.D. in plant pathology from the University of California at Davis and conducted postdoctoral research at Cornell University.

His principal research interests include the ecology, genetics, evolution, and management of emerging *Phytophthora* diseases with a special emphasis on the Sudden Oak Death pathogen *Phytophthora ramorum* and the Irish famine pathogen *P. infestans*. More recently, his work focuses on projects involving oomycete biodiversity, comparative genomics of *Phytophthora*, and development of computational and bioinformatics tools for comparative genomics, genotyping-by-sequencing, population genomics, metabarcoding, metagenomics and diagnostics based on CRISPR-Cas. Grünwald has served as editor-in-chief for *Phytopathology*, editor for *Plant Pathology*, and currently serves as founding editor-in chief for CABI Agriculture and Bioscience.

He currently is the vice president of the American Phytopathological Society (APS). He is a recipient of the USDA ARS Early Career Scientist of the Year award, the APS' Syngenta, Ruth Allen Award awards, and was elected Fellow of APS and the American Association for the Advancement of Science (AAAS).



Professor Huishan GUO

Professor Huishan GUO is a principal Investigator of Institute of Microbiology, Chinese Academy of Sciences (IMCAS).

Dr. GUO obtained her PhD from Centro Nacional de Biotecnología CSIC, Universidad Autónoma de Madrid, Spain. She is the first researcher applying RNA silencing (RNAi) for development of antiviral defense in plants (Guo and Garcia 1997, MPMI cover story). Dr. Guo has also made significant contributions to understanding the molecular basis of plant viral suppressors of RNA silencing (VSRs) and plant miRNAs.

Recent years, a great deal of her research works have been carried out on trans-kingdom RNAi in plant-fungal pathogen interactions and its application in cotton to defend against a soil-borne fungal pathogen *Verticillium dahlia*, one of the major causal pathogens of Verticillium wilt. Her team also successfully identified the infectious structure “hyphopodium” of *Verticillium dahlia* and characterized its pathogenesis. More recently, they revealed a novel strategy by deacetylation of chitin oligomers to prevent chitin-triggered host immunity by soil-borne fungal pathogens.



Professor Xiaoping HU

Professor Xiaoping HU is a plant pathologist, working on epidemiology and control of wheat stripe rust and Fusarium head blight in Northwest A&F University, including development of models for predicting disease epidemics, population structures, functional genomics of the stripe rust and fusarium.

He is serving as associate editor of *S R* and *PV*.

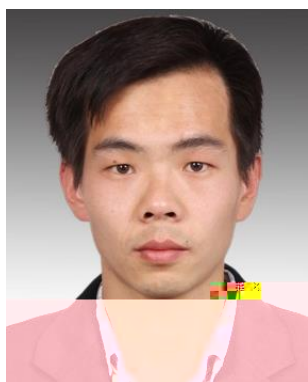
He published peer-reviewed journal articles 200+ in *PV*, *S R*, *PP*, *S R*, etc., and invented a crop disease predictor and extended in more than 300 counties in China.



Professor Wanquan JI

Dr. Wanquan JI is a Professor of Crop Genetics and Breeding in the College of Agronomy, Northwest A&F University. He is currently the Vice Chairman of the Crop Science Society of China, Director of the Yangling Branch of the National Wheat Improvement Center, panel member of the Fourth National Crop Variety Validation Committee, the Chairman of the Shaanxi Wheat Professional Committee, the Chairman of the Shaanxi Genetics Society, and the Editor-in-Chief of the *Journal of Triticeae Crops*.

Professor Wanquan JI is focused on wheat distant hybridization and molecular chromosome engineering breeding. In wheat chromosome engineering research, he has created 20 stable self-inbred and solid deficiency systems, which were awarded with prestigious national technological invention. In wheat distant hybridization and chromosome engineering breeding, he created a number of genetic resources resistant to powdery mildew, stripe rust and head blight, and released 15 new varieties, including 6 approved by national committee and 9 by Shaanxi provincial committee, with significant social and economic benefits. He has been awarded with 6 national, provincial, and ministerial awards and published over 220 papers.



Professor Lei LI

Lei LI is a group leader of Institute of Genetics and Developmental Biology, Chinese Academy of Sciences.

Dr LI got his BS in biotechnology at Northwest A&F University. He obtained his PhD working on plant immune pattern recognition receptor complex and virulence function of pathogen effectors at the Institute of Genetics and Developmental Biology in the laboratory of Prof. Jian in ZHOU. Then, he moved to the Max-Planck-Institute for Developmental Biology as a postdoc working with Prof. Detlef Weigel on the mechanism of plant hybrid necrosis. Now Lei's lab is interested in the molecular mechanism of plant-microbe interaction. Focusing on plant immune signaling and the molecular mechanism of plant-microbe interaction, they are interested in understanding the molecular dialogue between plants and fungal pathogens and mechanisms of plant immune genes conferring resistance to pathogens.



Professor Jun LIU

Jun LIU is a professor of China Agricultural University.

He obtained his Ph.D from Nanjing Agricultural University, China, followed by the Postdoctoral training in Chinese Academy of Sciences and University of California at Davis.

Research in the LIU's laboratory primarily focuses on the molecular mechanisms of plant innate immunity upon pathogen invasion. He is interested in elucidating each component's function of the host immune

signaling complexes and attempts to understand how plants utilize the immune complexes to fight against pathogen invasion. The *Arabidopsis-Pseudomonas syringae* model system is currently employed in the laboratory to investigate the effectors' targets in plants, in order to understand how the pathogen subverts plant immune response. Recently, he also focused on characterizing the functions of secreting proteins from rice blast fungus *Magnaporthe oryzae* as well as the corresponding basal defenses in rice.

In the last five years, he has published many high profile papers including *EMBO Journal*, *Nature Communications*, *Plant Cell*, *Cell Reports*, and many others.



Professor Yule LIU

Dr. Yule LIU is Professor of Plant Biology at Tsinghua University, China. His research group works on plant-virus interactions. He and his group develop several widely-used virus-based tools to study gene function in plants, and first links autophagy to plant immunity and cell death.

His group also found that autophagy function as a new antiviral mechanism, and contributes to leaf starch degradation, first link calcium signaling to RNAi and antiviral RNAi defense in plants, first link vacuolar acidification to antiviral defense in plants. He is also a pioneer in Cotton leaf curl Multan viral pathogenesis.



Professor Gary John Loake

Gary is interested in the redox regulation of immunity. In addition, his lab explores the regulation, biosynthesis and production of plant immune-related natural product molecules.

He obtained his PhD from the University of Durham, UK, followed by a Salk-Noble Postdoctoral Fellowship, enabling him to pursue research at the Noble Foundation, Oklahoma USA with Rick Dixon and subsequently the Salk Institute, California with Chris Lamb.

Gary returned to the UK where he took a faculty position at the University of Edinburgh, where he is now Professor of Plant Molecular Sciences. Gary is a former President of the Society of International Plant Reactive Oxygen and Nitrogen Species, co-founder of the Scottish Industrial Biotechnology Innovation Centre (IBioIC) and founder and CEO of a plant biotechnology company.

He has published ~120 publications with many in high profile journals including *Nature*, *Nature Biotechnology* and *Nature Communications*, among others.



Professor John M. McDowell

John McDowell is the J.B. Stroobants Professor of Biotechnology in the School of Plant and Environmental Sciences at Virginia Tech USA. He received his Ph.D. in Genetics from the University of Georgia and conducted postdoctoral research in plant-pathogen interactions at the University of North Carolina. His current research explores the mechanisms through which oomycete pathogens manipulate plant cells.

His group conducts fundamental research on oomycete virulence proteins and their targets in plant cells. Another set of projects is designed to identify mechanisms through which oomycetes and plants compete for nutrients. Dr. McDowell's group is keenly interested in translating this fundamental research into new strategies for durable disease resistance; for example, using pathogen effector proteins as probes to identify new sources of plant resistance genes, or identifying plant genes that could be edited to restrict pathogen access to nutrients. Dr. McDowell recently served as the Editor-in-Chief of the journal *Molecular Plant-Microbe Interactions* and currently serves as co-Editor-in-Chief of *The Annual Review of Phytopathology* as well as on the editorial boards of *Science Advances* and *Phytofrontiers*.

Professor Vardis Ntoukakis

Professor Vardis Ntoukakis studied Plant Sciences at the Aristotle University of Thessaloniki and received his PhD degree in Plant Biochemistry from the University of California Riverside. He worked at top UK institutions, as a research fellow at the Sainsbury Laboratory and the John Innes Centre, and as Professor at the University of Warwick. His track record includes publications in high impact journals for aspects of plant-microbe interactions, biochemistry, and proteomics. As recognition of his research in plant signalling cascades, he was awarded a Royal Society University Research Fellowship and more recently appointed as theme leader at the Warwick Centre for Integrative Synthetic Biology (WISB) and as a Deputy Director of Midlands Integrative Biosciences Training Partnership (MIBTP). His laboratory addresses the fundamental questions of how plant cells transduce receptor activation to downstream signalling in order to express a subset of genes and respond appropriately to pathogen infection. They also take advantage of strategies employed by plant pathogenic microbes to create tools for synthetic biology.

Professor Corné Pieterse

Corné Pieterse (1964) is professor Plant-Microbe Interactions and scientific director of the Institute of Environmental Biology of the Faculty of Science.

Corné Pieterse performed his PhD research in Wageningen on the molecular interactions and sci



Professor Yongli QIAO

Professor Yongli QIAO received his Ph.D from the Seoul National University (SNU) in Korea and postdoc in UC Riverside.

Now he works as a professor in Shanghai Normal University in China.

His work mainly focuses on the molecular mechanisms underlying microbial pathogenesis. In particular, he is interested in elucidating the strategies employed by fungi and oomycete pathogens to facilitate the establishment and maintenance of symbiotic relationship with plant hosts.

His research aims to define the fungi and oomycete pathogens effectors required to cause plant disease and regulate specific physiological processes in host cells using reverse genetic, genomics and bioinformatics techniques.



Professor Patrick Schäfer

Professor Patrick Schäfer studied agricultural sciences at the Justus Liebig University, where he also obtained his PhD degree in plant pathology and symbioses.

After 8 years as PI at the University in Warwick (UK) and 2 years as professor at Ulm University (Germany), he is chair of the Institute of Phytopathology at Justus Liebig University.

His research focus is on the identification of stress resilience mechanisms in plants using approaches that range from microbiome analyses to single plant cell transcriptomics.

Dr. Ming-Bo WANG

Dr. Ming-Bo WANG is currently a senior principal research scientist in CSIRO Agriculture & Food in Canberra, Australia.

He received a Bachelor of Science degree in 1984 from Peking University of China, a Master of Science degree in 1987 from Chinese Academy of Sciences, and a Ph.D in 1994 from Durham University, United Kingdom.

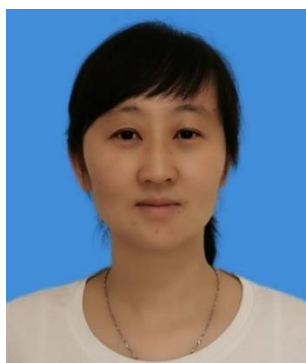
He joined CSIRO after the PhD and has since been working on gene silencing in plants, and has made critical contributions to the discovery of double-stranded RNA-induced gene silencing in plants and the hairpin RNA gene silencing technology, for which he was awarded the Prime Minister's Prize for Science 2007. The focuses of his recent research include applying gene silencing to understanding plant disease resistance and developing improved gene silencing methods for pest and pathogen control.

Professor Wenming WANG

Dr. Wenming WANG is a Professor of Plant Pathology at State Key Laboratory of Crop Gene Exploitation and Utilization in Southwest China, Sichuan Agricultural University.

He is also the President of Sichuan Society of Plant Pathology, Associate editor of *Phytopathology Research* and *Frontiers in Plant Science*, Handling Editor of *the Journal of Experimental Botany*.

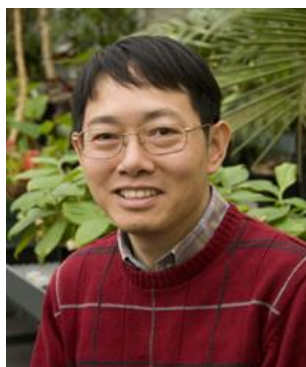
His lab works on resistance mechanism and application of rice blast, rice false smut and Arabidopsis powdery mildew. He has presided over more than 10 projects, including key project of National Natural Science Foundation of China and other provincial and ministerial level projects. His research has led



Professor Qin YANG

Professor Qin YANG currently works in College of Agronomy, Northwest A&F University. She received her Bachelor and Ph.D degrees in crop genetics and breeding from China Agricultural University. She conducted postdoctoral research at North Carolina State University in Department of Entomology and Plant Pathology.

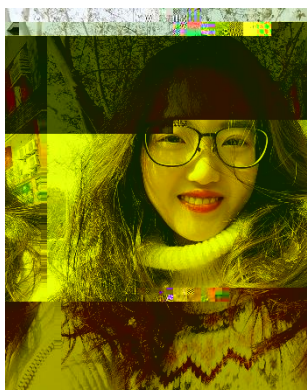
Her long-term objective is to understand molecular mechanisms controlling quantitative disease resistance in maize and to use this knowledge to develop more resistant varieties. Her current research focus on mining genetic variation for disease resistance and understanding how those genes are influencing host-microbe interactions.



Professor Yuelin ZHANG

Yuelin ZHANG is interested in signal transduction pathways downstream of plant immune receptors and regulation of systemic acquired resistance. He obtained his PhD from Oklahoma State University, followed by postdoctoral training at University of North Carolina, Chapel Hill and Duke University.

Yuelin co-founded the plant biotech company Tellus Genetics together with Professors Xinnian DONG and Pamela Ronald after his postdoctoral training and was appointed as an honorary assistant professor at University of British Columbia. In 2005, Yuelin returned to China to start a research group at the National Institute of Biological Sciences in Beijing, where his group performed various genetic screens to identify signal components in plant immunity. In 2012, Yuelin joined the faculty of Botany Department at University of British Columbia, where he currently works as a professor. Using molecular genetic approaches, Yuelin's group identified a large number of genes involved in the regulation of plant immunity and made several key discoveries in SA biosynthesis, regulation of SA biosynthesis and SA perception. He has published ~100 publications with many in high profile journals including *Cell*, *Nature*, *Science*, *Cell Host & Microbe*, *Cell Research*, and *Plant Cell*, among others.



Ms. Yingqi ZHANG

Yingqi's PhD thesis is mainly about the mechanism of *Piriformospora indica* effectors contributing on plant immunity to *Phytophthora* pathogens. She obtained her Bachelor of Agronomy degree in Horticulture in 2017 from College of Horticulture, China Agricultural University.

During 2017 to 2019, she got her Master degree in Science of Agriculture from the University of Copenhagen in Denmark and spent more than one year in Professor Hans Thordal-Christensen's lab for her Master thesis with supervision by Dr. Hans Jørgen Lyngs Jørgensen and Dr. Kenneth Madriz-Ordeñana. In 2020, she joined Professor Weixing Shan's lab as a PhD student in crop genetics and breeding.



Dr. Chengcheng ZHONG

Dr. ZHONG obtained her PhD from Northwest A&F University, China in 2019 and has since been a postdoctoral research fellow in CSIRO Agriculture & Food and The University of Queensland, Australia.

She has been focusing her research on the roles of small RNAs in plant-pathogen interaction and the improvement of RNAi technology for pest and pathogen control.

She developed a yeast expression system for production of full-length hairpin or other structured RNAi molecules for exogenous RNAi application. She discovered a distinct processing pattern of G-U base-paired hpRNA in plant cells, and used this finding to develop a potent small RNA decoy technology that can be applied to both sRNA functional analysis and control of sRNA-mediated diseases.