

Meet IS-MPMI Board of Directors



Steven Lindow, Director

Q: Tell us about yourself and your work.

A: I received my Ph.D. in Plant Pathology at the University of Wisconsin-Madison in 1977. A wonderful experience! I was fortunate to have stumbled upon a very interesting biological question—how do plants

freeze?—and discovered bacterial ice nucleation as a graduate student. My studies of ice nucleation active strains of *Pseudomonas syringae* and *Erwinia herbicola* led me to my permanent interest in leaf surface microbiology. After joining the Department of Plant Pathology at UC-Berkeley in 1978 (now disbanded), I continued my studies of the biochemistry of ice nucleation as well as more general studies of phyllosphere microbiology. It was at Berkeley that I was fortunate to have as a colleague Nick Panopoulos, who really opened my eyes to the power of the newly-developing molecular genetic techniques for studying microbial physiology and ecology. It was through interactions with Nick that we produced ice nucleation-deficient strains of *P. syringae* that were the first recombinant microbes to be tested outside of the laboratory. These early adventures in molecular techniques stimulated the continued exploration of such tools in my work. My current program is broad, and we have a number of projects that could be bundled under the heading “molecular microbial ecology.” We address a variety of issues related to the epiphytic fitness of *P. syringae*, including the identification and methods of regulation of plant-inducible genes in this species as well as exploring the role of quorum sensing in the lifestyle of *P. syringae*. This has led to our addressing new strategies of disease control based on pathogen confusion by altering *n*-acyl homoserine lactone levels on and in plants by various means. Also underway are studies of factors of *P. syringae* that contribute to overcoming nutrient-limited growth in the apoplast as well as the interactions of epiphytes that produce IAA with plants. Recently, we have become quite involved in studying Pierce’s Disease of grape caused by *Xylella fastidiosa*. We are exploring a regulatory system that involves the production of a diffusible fatty-acid signal molecule that suppresses the virulence of this pathogen at high cell densities. Our studies include determining the regulon of this global regulatory system, identification of plant-inducible genes, and of altering signal molecule abundance in plants to alter pathogen virulence.

Q: When did you first join the society?

A: Unsure—I have been a member on and off for many years and have served the society as a senior editor of MPMI even when I was not an “official” member.

Q: Which IS-MPMI Congress did you first attend?

A: Bielefeld, Germany 1982. I have attended most of the meetings since then as well. It was very encouraging to see the remarkable discoveries that cutting edge molecular tools made possible in the study of *Agrobacterium* and *Rhizobium*, which was a major focus of the early meetings.

Q: Do you think it is important that Ph.D. post-docs and students in your lab are IS-MPMI members? What can/should IS-MPMI offer young scientists in our field.

A: As my lab is rather broad, some identify more closely with more classical microbial ecology. However, I encourage those who are working more directly on plant-microbe interactions to join the society and especially to participate in the bi-annual meetings. It is through the meetings that they can make valuable contacts needed for future professional development and gain a better appreciation for research directions. This is the most important function that IS-MPMI can provide. With many competing meetings, especially as research becomes more interdisciplinary, it is difficult for students to find the time or money to attend meetings that would prove beneficial to them.

Q: What drew you to plant-microbe interactions?

A: I grew up on a farm and saw first hand the problems associated with plant diseases and frost injury, which led me to a career in plant pathology. For me, the fundamental study of plant-microbe interactions is an ideal way to merge my interests, both in microbiology and plants, with the potential for developing new and better means of plant disease control.

Q: What inspired you most in your career?

A: As a graduate student at the University of Wisconsin, I was fortunate to have had role models such as Arthur Kelman, Luis Sequiera, and Paul Williams, who illustrated how fundamental studies of plant-microbe interactions could lead to a new appreciation for disease control. In addition, there was a tradition of keeping “one foot in the furrow” that held that basic and more applied research could be merged; I have always found the fact that my

work has led to practical disease-control solutions to be very rewarding.

Q: What's the most exciting paper that you read recently?

A: Wright, C. A., and Beattie, G. A. 2004. *Pseudomonas syringae* pv. tomato cells encounter inhibitory levels of water stress during the hypersensitive response of *Arabidopsis thaliana*. Proc. Natl. Acad. Sci. U.S.A. 101:3269-3274.

Q: What is the next "big thing" in plant-microbe interactions?

A: I expect that further exploration will show that various forms of intercellular communication, such as quorum sensing, will be found to have large and unexpected effects on interactions between microbes and also between them and plants.

Q: What is your favorite gene?

A: Bacterial genes conferring ice nucleation such as *inaZ* have been of interest to me for along time. The phenomenon is fascinating and ice nucleation genes have proven to be real workhorses for our studies of bacterial gene expression in "dirty" biological systems, such as in and on plants.

Q: What are your favorite activities outside of the lab?

A: Hiking, snowshoeing, downhill skiing. Occasional golf is fun without being habit-forming or frustrating. Woodworking is a real treat; a great weekend is one that I can make a pile of sawdust!

Q: What books are you reading these days?

A: I have enjoyed re-reading a murder mystery by Isaac Asimov entitled "A Whiff of Death." It explores the murder of a graduate student in a chemistry lab and does an excellent job of capturing the stresses of being a grad student, post-doc, assistant professor, and their interactions with each other and with administrators.

Q: What's your favorite vacation?

A: Two recent vacations that stand out were driving/boating around the fjords of Norway and hiking in the four-corners area of the U.S. Southwest with the big red rock country, huge stone arches, etc. Any place with great vistas and interesting flora is good.