

# Syngenta Award

This award is given by Syngenta to an APS member for an outstanding contribution to teaching, research, or extension in plant pathology.

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## Sophien Kamoun



Sophien Kamoun received his Maitrise (B.S.) degree from Pierre and Marie Curie University, Paris, France, in 1987 and his Ph.D. degree in genetics in 1991 from the University of California, Davis, where he conducted his research in the Department of Plant Pathology. Following post-doctoral studies at the NSF Center for Engineering Plants for Resistance Against Pathogens at Davis and at the Department of Phytopathology, Wageningen University, The Netherlands,

Dr. Kamoun joined the Department of Plant Pathology, Wooster campus, at The Ohio State University in 1998. His research program is focused on oomycete molecular genetics, and he was promoted to associate professor in 2002.

Dr. Kamoun has made outstanding contributions to the science of plant pathology that have been described in more than 50 journal articles and book chapters. His research at Ohio State is aimed at understanding the molecular basis of interactions between oomycete pathogens and plants. He has rapidly become a global leader on oomycete molecular genetics and genomics and has opened many new research fronts. He pioneered the study of nonhost resistance of *Nicotiana* and *Arabidopsis* to *Phytophthora infestans*. A major accomplishment included the cloning and characterization of a multigene family of *P. infestans* encoding extracellular elicitor proteins. These proteins, called elicitors, induce the hypersensitive response in some plant species, and he showed that recognition of the major elicitor, INF1, is a component of nonhost resistance. This work has greatly influenced many scientists working on the molecular genetics of *Phytophthora*-plant interactions and in basic studies on the hypersensitive response of plants.

Dr. Kamoun's laboratory has also been involved in pioneering studies in genomics and functional genomics of *Phytophthora*. In 1998, he published the first functional analysis of a *Phytophthora* gene, and his laboratory is performing similar gene silencing analyses with other putative avirulence/virulence genes. Recent contributions in functional genomics have revolved around developing data mining algorithms and high throughput functional assays that link sequences to phenotypes for *Phytophthora* genes and facilitate the discovery of novel *Phytophthora* effector proteins. Dr. Kamoun also pioneered the use of in planta functional

analyses of *Phytophthora* genes using virus vectors. His research is currently supported by the NSF Plant Genome Program.

Dr. Kamoun's early research focused on genetic analysis of the pathogenicity of *Xanthomonas campestris* and included characterization of a pathogenicity locus of the *hrp* class, discovery of a phenotypic switching phenomenon, and the development of novel strategies for refined genetic manipulations of xanthomonads. Dr. Kamoun also was one of the first to recognize and classify races of the crucifer pathogen *X. campestris* pv. *campestris*. His knowledge and expertise is in much demand around the world. Over the years, he has offered more than 60 invited seminars and presentations at national and international venues, has served as a panel member in the USDA-NRI program, currently serves as a senior editor for *Molecular Plant Pathology*, as an associate editor for *Molecular Plant-Microbe Interactions*, and is on the advisory committee of the NSF Potato Genome Project and the NSF *Phytophthora* Collaboration Network. At Ohio State, he has organized two international workshops on oomycete genetics, and there is a steady stream of international scholars visiting his laboratory.

In addition to his research, Dr. Kamoun is highly committed to the education of students in the areas of genetics, molecular biology, and genomics. He and colleagues developed and co-teach two upper-level graduate courses at Ohio State: Agricultural Genomics—Principles and Applications and Plant-Microbe Interactions. Both courses aim at exposing students to modern research themes in these areas. In addition, he has organized and managed an interactive website for agricultural genomics that has been heavily used by students. Three of Dr. Kamoun's graduate students have won travel and research awards, including a first-place award for a research poster at the International Congress of Molecular Plant-Microbe Interactions in Madison, Wisconsin, in 2002.

Dr. Kamoun has a continuing interest in and commitment to training undergraduate and high school students from diverse backgrounds and in involving underrepresented groups in molecular plant pathology research. Several undergraduate interns from multiple institutions and students from Wooster High School have conducted internships in his laboratory and received training in molecular biology, plant biology, and bioinformatics. Undergraduate students have often coauthored his publications, and several have moved on to graduate studies. Dr. Kamoun also organizes a summer program, entitled Internships in Plant Immunity, that promotes the use of plant-microbe interaction systems in research and teaching at minority institutions. He serves on The Ohio State University College of Food, Agricultural, and Environmental Sciences Diversity Advisory Council and contributes to the outreach efforts of his department in the area of biotechnology education.