Special Issue

Epidemiology of Toxigenic Fungi and Mycotoxins in Plant Pathology: Virulence and Plant Responses

Message from the Guest Editors

Mycotoxins are harmful secondary metabolites produced by filamentous fungi, causing human and animal diseases. Crop contamination varies widely by region and environment; changing climates highlight the need for robust epidemiological data to assess mycotoxin risks. Beyond food safety threats, many mycotoxins act as critical virulence factors in plant–pathogen interactions, targeting essential cellular processes to enhance fungal colonization and disease development. Plants counter with sophisticated defense systems: upon exposure, they activate glutathione S-transferases, cytochrome P450 monooxygenases, and UDP-glucosyltransferases to detoxify or sequester toxins. Additional responses include reactive oxygen species (ROS) accumulation, cell wall reinforcement, phytoalexin synthesis, and pathogenesis-related protein induction. Sublethal mycotoxin levels can even prime plant immunity for enhanced resistance. To date, the crucial role of some mycotoxins, such as trichothecenes and alternariol, in the fungal infection process and in host-plant interaction, is well known, while for other ones has been poorly elucidated.

Guest Editors

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Deadline for manuscript submissions

30 September 2026

Toxins

an Open Access Journal by MDPI

Impact Factor 4.0
CiteScore 8.2
Indexed in PubMed

mdpi.com/si/264155

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Toxinology is an incredibly diverse area of study, ranging from field surveys of environmental toxins to the study of toxin action at the molecular level. The editorial board and staff of *Toxins* are dedicated to providing a timely, peer-reviewed outlet for exciting, innovative primary research articles and concise, informative reviews from investigators in the myriad of disciplines contributing to our knowledge on toxins. We are committed to meeting the needs of the toxin research community by offering useful and timely reviews of all manuscripts submitted. Please consider *Toxins* when submitting your work for publication.

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