

Special Issue

Secondary Metabolites of Pathogenic Fungi: From Mechanism to Medicine

Message from the Guest Editors

Fungal secondary metabolites, though not essential for growth, mediate adaptation, competition, and host colonization. Toxic ones (mycotoxins) threaten food safety. The saprophyte-to-pathogen shift often relies on SMs that suppress immunity and damage cells.

Evolutionarily, costly SM production offers selective advantages: in nutrient-limited settings, SMs act as defenses, signals, and ecological mediators. Fungal dynamic responses boost diversity, exploited by the OSMAC approach to activate silent biosynthetic gene clusters (BGCs) via varied culture conditions. Under One Health, environmental change elevates mycotoxin risks—climate shifts expand aflatoxin distribution and upregulate production under crop stress; agricultural fungicides drive azole resistance in *Aspergillus fumigatus*, demanding cross-sector management. This Special Issue links metabolite discovery to clinical relevance. We invite studies using genomics, metabolomics, structural biology, and medicinal chemistry to dissect fungal virulence. Insights into ribotoxic stress and BGC regulation may yield new diagnostics and therapies. Original research and reviews on fungi–environment chemical interplay are encouraged.

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