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Microbial Metabolite Profiling

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Microorganisms and in particular actinomycetes and microfungi are known to produce a vast number of bioactive secondary metabolites. Natural product research needs to continually improve the efficiency of the selection, screening, dereplication, isolation, and structure elucidation processes, in order for natural product chemistry to continue to be competitive with purely synthetic-based discovery methods. For industrially important fungal genera such as *Penicillium* and *Aspergillus*, the production of these compounds has been demonstrated to be very consistent at the species level. This means that direct metabolite profiling techniques such as direct injection mass spectrometry or NMR can easily be used for metabolomics of strains from both culture collections and natural samples using modern informatics tools. Metabolomics can be used for the identification and classification of filamentous fungi and for the discovery of novel compounds when used in combination with modern methods for dereplication. Such approaches will be important for future effective drug discovery strategies, especially for the dereplication of culture collections in order to avoid redundancy in the selection of species. This will maximize the chemical diversity of the microbial natural product libraries that can be generated from fungal collections.

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