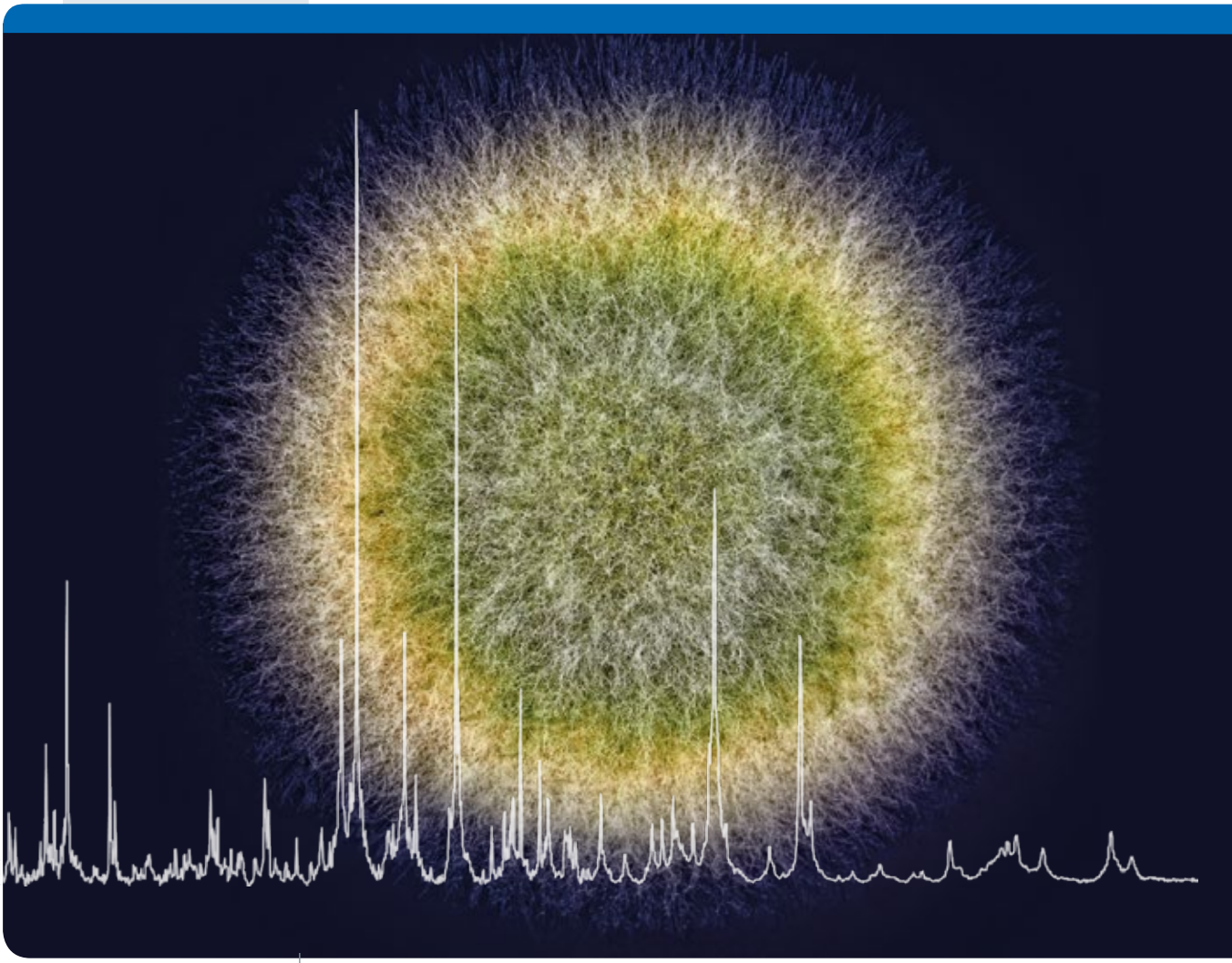
RUO



MBT Filamentous Fungi Library

- MALDI Biotyper®

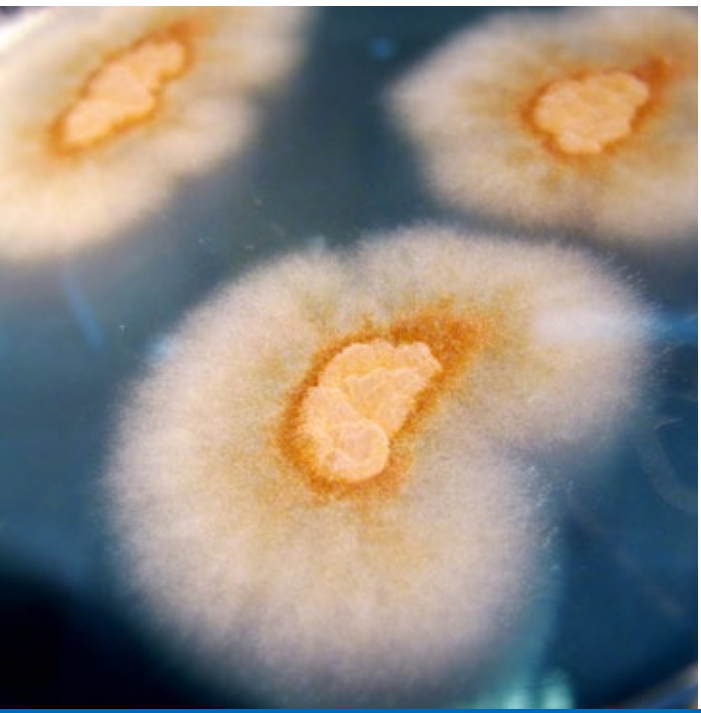
For research use only. Not for use in clinical diagnostic procedures.

MALDI-TOF

Innovation with Integrity

MALDI Biotyper®

Tackle the filamentous fungi challenge



The MALDI Biotyper has revolutionized the identification of microorganisms within the past decade, setting new standards in speed, ease of use, reliability and cost-effectiveness. But even in these advanced times of microbial mass spectrometry, the identification of molds and multicellular fungi still persists as one of the most challenging aspects of microbiology. This can be mainly attributed to the effects of culture conditions.

To facilitate the identification of these microorganisms, Bruker has developed a cultivation method for the creation of reference spectra for the MBT Filamentous Fungi Library, and a standard three-step workflow for identification.

Standardized liquid cultivation for the creation of the reference library

In order to reduce the effects of culture conditions on the mass spectrum and to aid in the production of a uniform mycelium, a liquid based cultivation method has been developed which standardizes the physiological status. This method has been used to create the MBT Filamentous Fungi library and is recommended where quick identification using front mycelium is not possible.

To create the reference library, tubes with liquid medium have been inoculated with the fungi and placed on a rotator to incubate overnight or until enough biological material was observed.

Using the standardized liquid cultivation method prevents the germination process and the formation of spores, which, in turn, permits the creation of reproducible library entries.

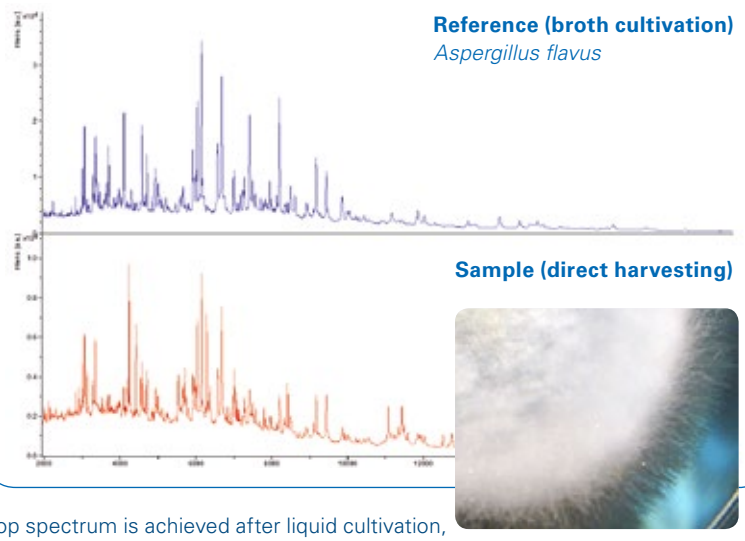
Identification of filamentous fungi by isolation of their mycelium enables fast and reliable species identification of slow- or fast-sporulating filamentous fungi and many other difficult to handle organisms such as agar adhering filamentous fungi.

Daily Routine Workflow – Analysis Possible Direct from Agar

If front mycelium is clearly visible, as in this example, and can be harvested, then it is possible to sample directly from the agar and start with the simple direct transfer method. Eventually, the extraction method can be used to obtain better results. Usually, good results can be obtained for most of the samples without the need for liquid cultivation.

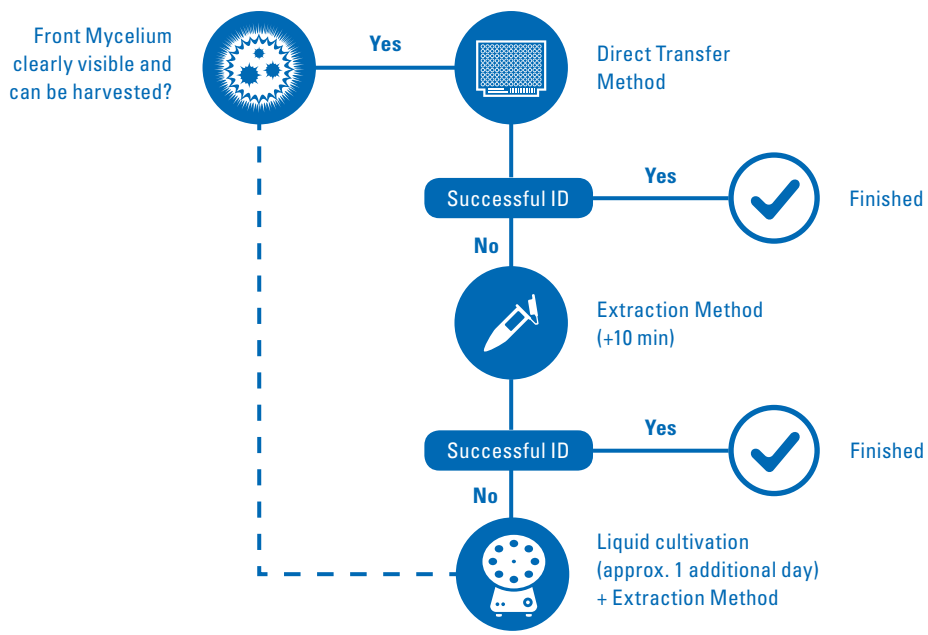
In cases were direct harvesting is difficult, the liquid cultivation method should be used.

Typical MALDI Biotyper mass spectra



Top spectrum is achieved after liquid cultivation, the bottom spectrum is achieved by direct harvesting from agar. The image shows that the "front mycelium" is clearly visible and can easily be harvested.

Standard three-step identification workflow



MBT Filamentous Fungi Library

The MBT Filamentous Fungi Library Version 2.0 covers 152 species / species groups, for which contributions have been received from over 20 laboratories across 8 countries.

152 species / species groups

Absidia caerulea	*Aspergillus tamarii*	*Exophiala dermatitidis*
Absidia glauca	*Aspergillus terreus*	*Fusarium aquaeductuum*
Acaulium acremonium	*Aspergillus tritici*	*Fusarium aveanceum*
Alternaria alternata	*Aspergillus unguis*	*Fusarium cerealis_culmorum_*group
Arthrinium arundinis	*Aspergillus ustus*	*Fusarium chlamydosporum*
Arthrinium phaeospermum	*Aspergillus versicolor*	*Fusarium delphinoides*
Arthroderma amazonicum	*Aspergillus westerdijkiae*	*Fusarium dimerum*
Arthroderma eboreum	*Aureobasidium melanogenum*	*Fusarium equiseti*
Arthroderma flavescens	*Aureobasidium pullulans*	*Fusarium incarnatum*
Arthroderma gloriae	*Beauveria bassiana*	*Fusarium oxysporum*
Arthroderma lenticulare	*Botrytis cinerea*	*Fusarium petroliphilum*
Arthrographis kalrae	*Byssochlamys fulva*	*Fusarium proliferatum*
Aspergillus calidoustus	*Byssochlamys nivea*	*Fusarium solani*
Aspergillus clavatus	*Byssochlamys spectabilis*	*Fusarium* sp
*Aspergillus flavus_oryzae_*group	*Chaetomium globosum*	*Fusarium verticillioides*
Aspergillus fumigatus	*Chrysosporium keratinophilum*	*Isaria farinosa*
Aspergillus glaucus	*Chrysosporium shanxiense*	*Lasiodiplodia* sp
Aspergillus iizukae	*Cladosporium cladosporioides*	*Lichtheimia corymbifera*
Aspergillus japonicus	*Cladosporium herbarum*	*Lomentospora prolificans*
Aspergillus lentulus	*Cladosporium* sp	*Metarhizium marquandii*
Aspergillus minisclerotigenes	*Cladosporium sphaerospermum*	*Microascus melanosporus*
Aspergillus montevidensis	*Coniochaeta hoffmannii*	*Microsporum canis*
Aspergillus nidulans	*Coniochaeta mutabilis*	*Monascus ruber*
Aspergillus niger	*Cunninghamella elegans*	*Monilinia laxa*
Aspergillus nomius	*Curvularia clavata*	*Mucor circinelloides*
Aspergillus ochraceus	*Curvularia lunata*	*Nannizzia fulva*
Aspergillus parasiticus	*Curvularia pallescens*	*Nannizzia gypsea*
Aspergillus penicillioides	*Curvularia verruculosa*	*Nannizzia incurvata*
Aspergillus pseudoglaucus	*Dichotomopilus funicola*	*Nannizzia persicolor*
Aspergillus pulvinus	*Didymella aurea*	*Nannizzia praecox*
Aspergillus sclerotiorum	*Epicoccum nigrum*	*Paraphyton cookei*
Aspergillus sp[4]	*Epicoccum sorghinum*	*Penicillium brevicompactum*
Aspergillus sydowii	*Epidermophyton floccosum*	*Penicillium chrysogenum*

152 species / species groups

Penicillium citrinum	*Penicillium verrucosum*	*Scytalidium* sp
Penicillium commune	*Phaeoacremonium cinereum*	*Sporothrix schenckii*
Penicillium corylophilum	*Phialemoniopsis curvata*	*Stachybotrys chartarum*
Penicillium crustosum	*Phoma herbarum*	*Syncephalastrum racemosum*
Penicillium digitatum	*Plectosphaerella cucumerina*	*Talaromyces pseudostromaticus*
Penicillium expansum	*Pseudogymnoascus pannorum*	*Talaromyces ruber*
Penicillium fellutanum	*Purpureocillium lilacinum*	*Talaromyces rugulosus*
Penicillium glabrum	*Rasamsonia argillacea*	*Talaromyces* sp
Penicillium italicum	*Rhizomucor pusillus*	*Thanatephorus cucumeris*
Penicillium menonorum	*Rhizopus microsporus*	*Trichoderma hamatum*
Penicillium nalgiovense	*Rhizopus oryzae*	*Trichoderma longibrachiatum*
Penicillium namyslowskii	*Rhizopus sexualis*	*Trichoderma orientale*
Penicillium olsonii	*Rhizopus stolonifer*	*Trichoderma* sp[3]
Penicillium onobense	*Sarocladium kiliense*	*Trichophyton benhamiae*
Penicillium oxalicum	*Scedosporium apiospermum*	*Trichophyton equinum*
Penicillium pimiteouse	*Scedosporium aurantiacum*	*Trichophyton erinacei*
Penicillium roqueforti	*Scedosporium dehoogii*	*Trichophyton interdigitale*
Penicillium singorense	*Scedosporium prolificans*	*Trichophyton rubrum*
Penicillium sp[2]	*Schizophyllum commune*	*Trichophyton tonsurans*
Penicillium sp[6]	*Scopulariopsis brevicaulis*	*Trichophyton violaceum*
Penicillium turbatum	*Scytalidium lignicola*	*Trichurus* sp

Prof. Dr. med H. Hof,
Mycology Lab, Laboratory of Limbach Heidelberg, Germany

"The identification of multicellular fungi to the species level is one of the most challenging tasks of many microbiological laboratories in medicine, hygiene as well as food industries. In cooperation with Bruker's dedicated microbiology team we worked as part of an international group of fungi experts on the identification of filamentous fungi using the MALDI Biotyper approach.

Based on Bruker's existing development on fungi sample preparation procedure, we contributed, established and validated a reference library of a large panel of the most important fungal strains. Our common efforts during the last years have shown that MALDI-TOF based molecular fingerprints of filamentous fungi provide a high differentiation power both at species and strain level.

The analytical performance of the MALDI Biotyper when used with the Filamentous Fungi library is a major technological breakthrough and practical improvement when compared to more conventional approaches and technologies using microscopy and sequencing methods only."

Order Information

Part No. 1829014
MBT Filamentous Fungi Library

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