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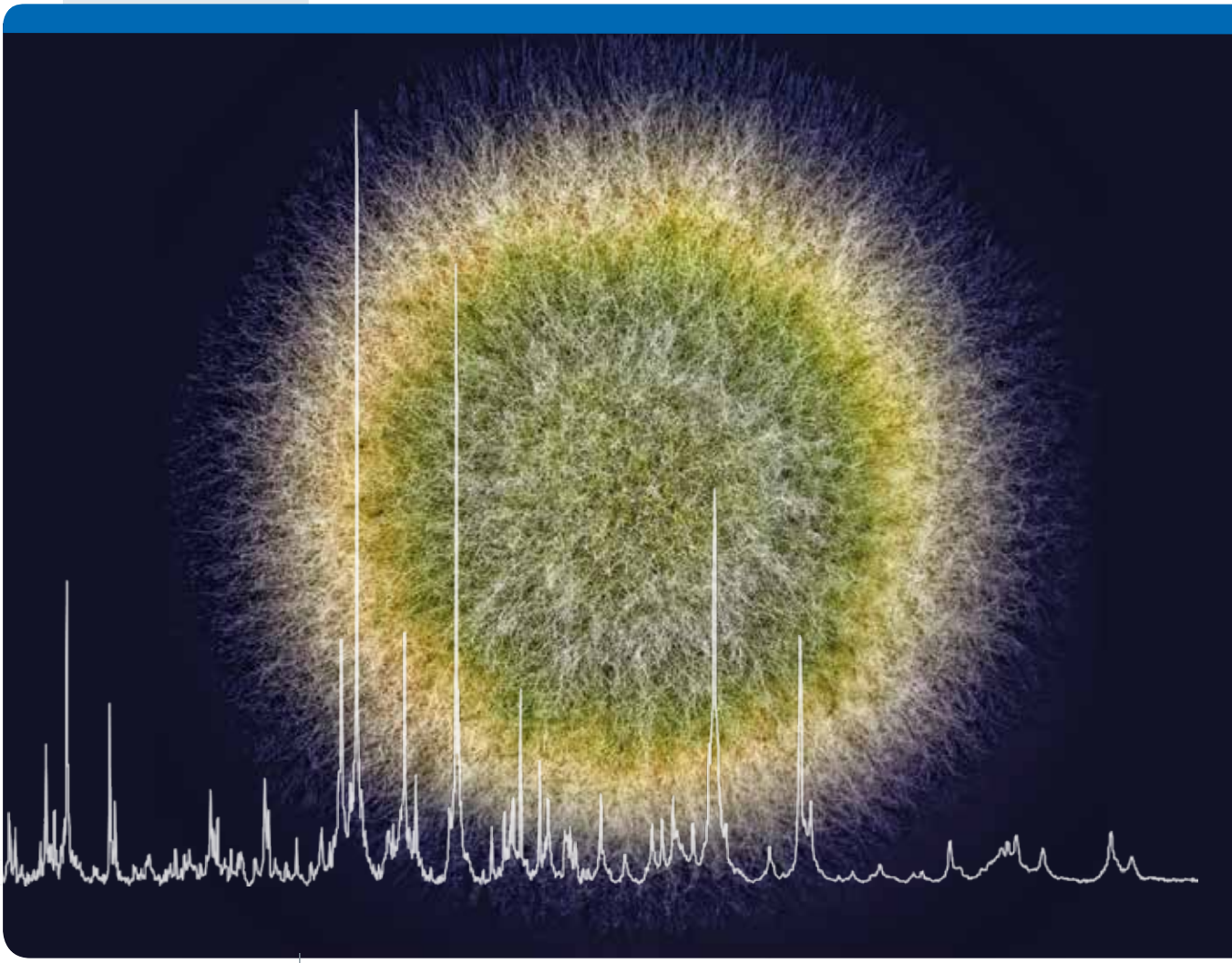


MBT Filamentous Fungi Library

- MALDI Biotyper®

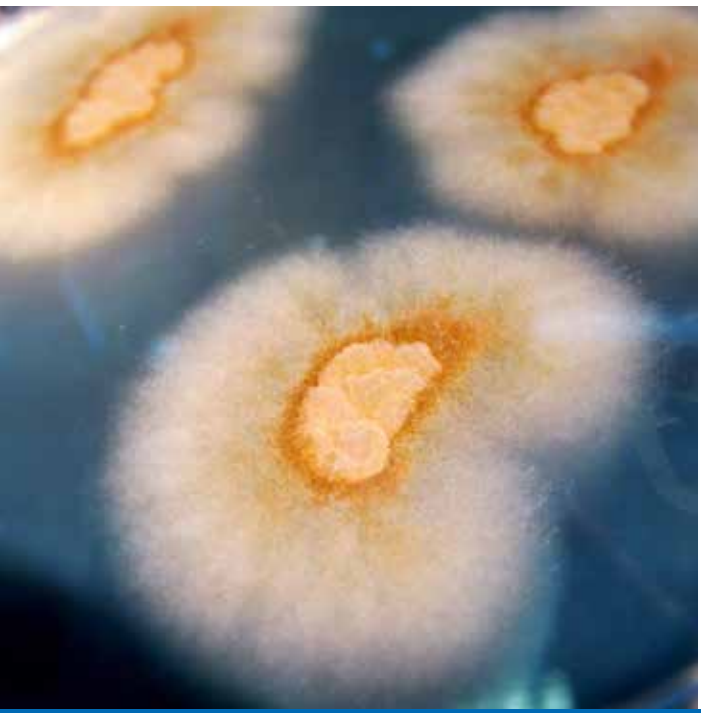
For research use only. Not for use in clinical diagnostic procedures.

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.

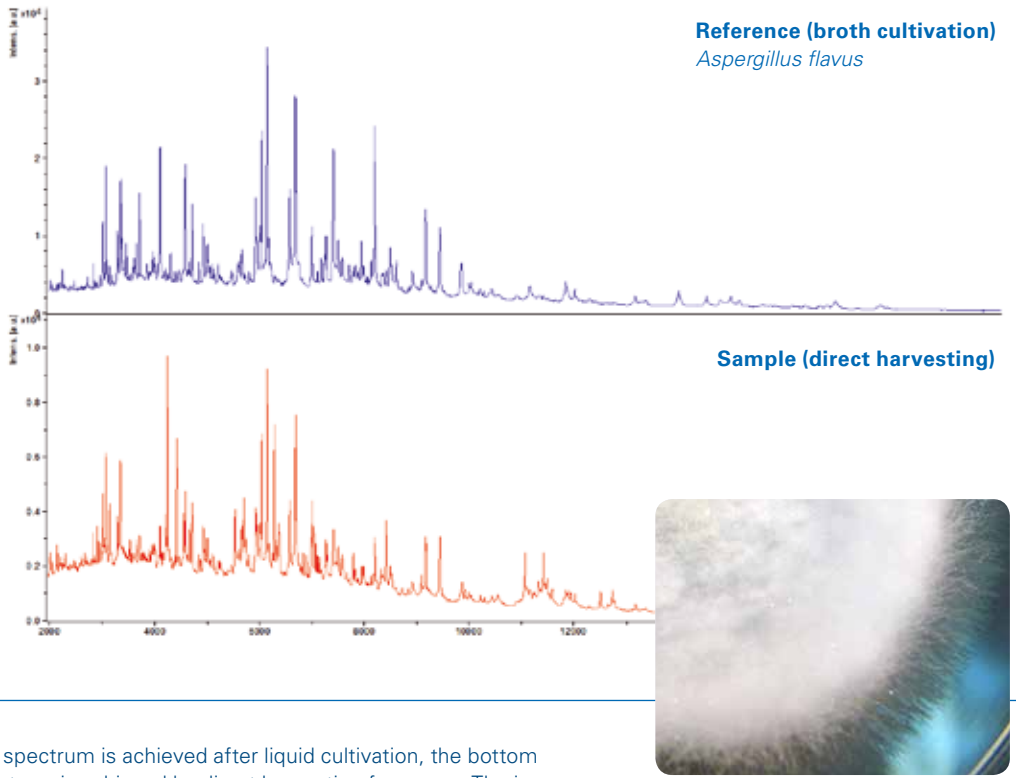
Identification of filamentous fungi by isolation of their mycelium enables fast and reliable species identification.

Daily Routine Workflow – Analysis Possible Directly 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 / extended 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 where direct harvesting is difficult, the liquid cultivation method should be used.

Typical MALDI Biotyper mass spectra

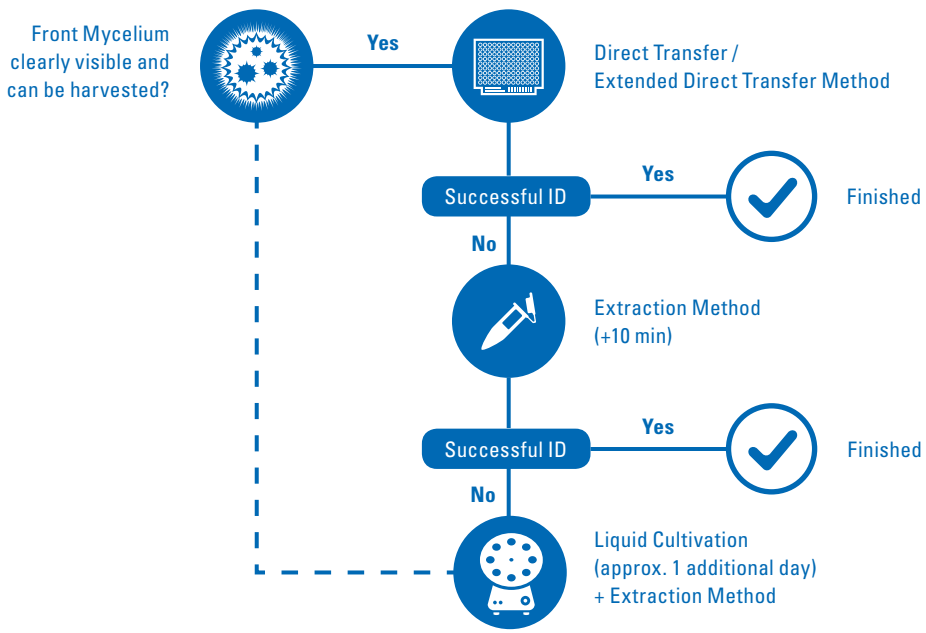


Top spectrum is achieved after liquid cultivation, the bottom spectrum is achieved by direct harvesting from agar. The image shows that the "front mycelium" is clearly visible and can easily be harvested.

A three-step workflow for identification; covering the diversity of filamentous fungi

The fastest identification procedures are the Direct Transfer (DT) and the extended Direct Transfer (eDT) Method, which can conveniently be used in parallel for molds grown on agar plates. These procedures can be used in the majority of the cases if front mycelium is available for harvesting. In case DT / eDT procedures fail to give an identification, as a second option the Extraction (Ext) Method can be used, starting from the same front mycelium.

Standard three-step identification workflow



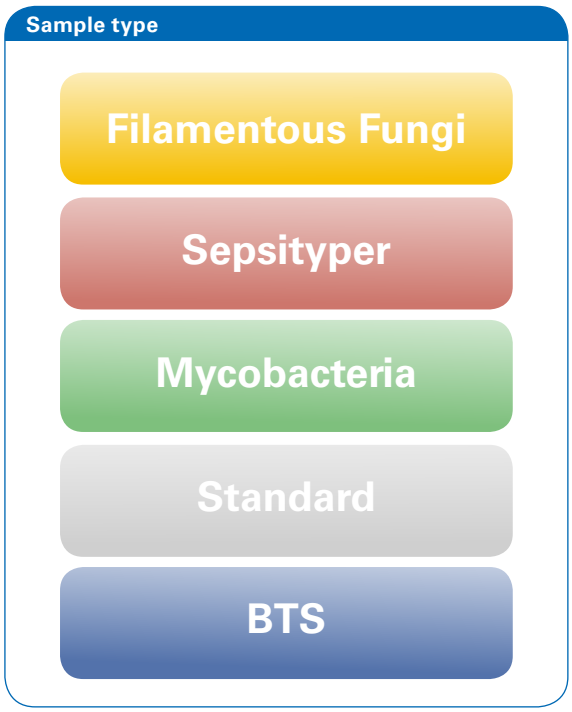
As a further option the so-called "Liquid Cultivation" can be used for filamentous fungi identification. One big advantage of this method is the ability to identify filamentous fungi strains which cannot be harvested from agar plates, due to a solid surface of the fungi or due to their strong adherence to the agar.

Growth in liquid medium is usually very fast and produces biological material in a standardized physiological status after overnight cultivation. The Liquid Cultivation in combination with protein extraction has also been applied to create the MBT Filamentous Fungi library, which can be used for identification after all mentioned sample preparation techniques (DT / eDT / Ext / Liquid Cultivation), since all generated spectra are compatible with the reference spectra.

More than a library

The MBT Filamentous Fungi Suite combines a comprehensive library with an optimized software module, including adapted thresholds for identification of Filamentous Fungi.

Optimized data acquisition and analysis contributes to a high identification success rate.



Easy selection of the sample type during sample preparation for optimized data acquisition and analysis

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."

MBT Filamentous Fungi Library

The MBT Filamentous Fungi Library 3.0 covers 180 species / species groups, additionally 10 strains can be identified at genus level. Contributions to this library have been received from 26 laboratories across 10 countries.

180 species / species groups

Absidia caerulea	*Aspergillus parasiticus*	*Curvularia clavata*
Absidia glauca	*Aspergillus penicillioides*	*Curvularia lunata*
Acaulium acremonium	*Aspergillus pseudoglaucus*	*Curvularia pallescens*
Acremonium cereale	*Aspergillus pulvinus*	*Curvularia verruculosa*
Alternaria alternata	*Aspergillus ruber*	*Dichotomopilus funicola*
Arthrinium arundinis	*Aspergillus sclerotiorum*	*Didymella aurea*
Arthrinium phaeospermum	*Aspergillus* sp[4]	*Epicoccum nigrum*
Arthroderma amazonicum	*Aspergillus sydowii*	*Epicoccum sorghinum*
Arthroderma cuniculi	*Aspergillus tamarii*	*Epidermophyton floccosum*
Arthroderma eboreum	*Aspergillus terreus*	*Exophiala dermatitidis*
Arthroderma flavescens	*Aspergillus tritici*	*Fusarium aquaeductuum*
Arthroderma gertleri	*Aspergillus unguis*	*Fusarium aveanceum*
Arthroderma gloriae	*Aspergillus ustus*	*Fusarium cerealis_culmorum*_group
Arthroderma insingulare	*Aspergillus versicolor*	*Fusarium chlamydosporum*
Arthroderma lenticulare	*Aspergillus westerdijkiae*	*Fusarium delphinoides*
Arthroderma melis	*Aureobasidium melanogenum*	*Fusarium dimerum*
Arthroderma multifidum	*Aureobasidium pullulans*	*Fusarium equiseti*
Arthrographis kalrae	*Beauveria bassiana*	*Fusarium graminearum*
Aspergillus brasiliensis	*Botrytis cinerea*	*Fusarium incarnatum*
Aspergillus calidoustus	*Byssochlamys fulva*	*Fusarium oxysporum*
Aspergillus clavatus	*Byssochlamys lagunculariae*	*Fusarium petroliphilum*
*Aspergillus flavus_oryzae*_group	*Byssochlamys nivea*	*Fusarium poae*
Aspergillus fumigatus	*Byssochlamys spectabilis*	*Fusarium proliferatum*
Aspergillus glaucus	*Chaetomium globosum*	*Fusarium solani*
Aspergillus iizukae	*Chrysosporium keratinophilum*	*Fusarium* sp
Aspergillus japonicus	*Chrysosporium shanxiense*	*Fusarium sporotrichioides*
Aspergillus lentulus	*Cladosporium cladosporioides*	*Fusarium verticillioides*
Aspergillus minisclerotigenes	*Cladosporium herbarum*	*Isaria farinosa*
Aspergillus montevidensis	*Cladosporium* sp	*Lasiodiplodia* sp
Aspergillus nidulans	*Cladosporium sphaerospermum*	*Lichtheimia corymbifera*
Aspergillus niger	*Coniochaeta hoffmannii*	*Lomentospora prolificans*
Aspergillus nomius	*Coniochaeta mutabilis*	*Metarhizium marquandii*
Aspergillus ochraceus	*Cunninghamella elegans*	*Microascus melanosporus*

180 species / species groups

Microsporum canis	*Penicillium digitatum*	*Sarocladium kiliense*
Monascus ruber	*Penicillium expansum*	*Sarocladium strictum*
Monilinia laxa	*Penicillium fellutanum*	*Scedosporium apiospermum*
Mortierella acrotona	*Penicillium glabrum*	*Scedosporium aurantiacum*
Mortierella clonocystis	*Penicillium italicum*	*Scedosporium dehoogii*
Mortierella gamsii	*Penicillium menonorum*	*Scedosporium prolificans*
Mortierella polygonia	*Penicillium nalgiovense*	*Schizophyllum commune*
Mucor circinelloides	*Penicillium namyslowskii*	*Scopulariopsis brevicaulis*
Mucor genevensis	*Penicillium olsonii*	*Scytalidium lignicola*
Mucor hiemalis	*Penicillium onobense*	*Scytalidium* sp
Mucor indicus	*Penicillium oxalicum*	*Sporothrix schenckii*
Mucor lanceolatus	*Penicillium pimiteouse*	*Stachybotrys chartarum*
Mucor moelleri	*Penicillium roqueforti*	*Syncephalastrum racemosum*
Mucor racemosus	*Penicillium singorense*	*Talaromyces pseudostromaticus*
Nannizzia fulva	*Penicillium* sp[2]	*Talaromyces ruber*
Nannizzia gypsea	*Penicillium* sp[6]	*Talaromyces rugulosus*
Nannizzia incurvata	*Penicillium turbatum*	*Talaromyces* sp
Nannizzia persicolor	*Penicillium verrucosum*	*Thanatephorus cucumeris*
Nannizzia praecox	*Phaeoacremonium cinereum*	*Trichoderma hamatum*
Neoscytalidium hyalinum	*Phialemoniopsis curvata*	*Trichoderma longibrachiatum*
Paraphyton cookei	*Phoma herbarum*	*Trichoderma orientale*
Penicillium aurantiogriseum	*Plectosphaerella cucumerina*	*Trichoderma* sp[3]
Penicillium brevicompactum	*Pseudogymnoascus pannorum*	*Trichophyton benhamiae*
Penicillium camemberti	*Purpureocillium lilacinum*	*Trichophyton equinum*
Penicillium chrysogenum	*Rasamsonia argillacea*	*Trichophyton erinacei*
Penicillium citreonigrum	*Rhizomucor pusillus*	*Trichophyton interdigitale*
Penicillium citrinum	*Rhizopus microsporus*	*Trichophyton rubrum*
Penicillium commune	*Rhizopus oryzae*	*Trichophyton tonsurans*
Penicillium corylophilum	*Rhizopus sexualis*	*Trichophyton violaceum*
Penicillium crustosum	*Rhizopus stolonifer*	*Trichurus* sp

Order Information

Part No. 1867813
MBT Filamentous Fungi Suite

Consists of the MBT Filamentous Fungi Library and license for the MBT Filamentous Fungi software module. Prerequisite for the use of the module is the MBT Compass RUO software.

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