

The professionally designated mold panels for fungal identification using EPA-licensed MSQPCR technology

➤ Analysis Code: **PCR01.36 (ERMI)**

ERMI panel: This panel, developed by USEPA, includes a total of 36 fungal species/clusters that are broad enough to help address the mold problems of water-damaged indoor environments and to help assess the risk of mold exposure. MSQPCR analysis of the dust using these indicators creates an index that helps determine the relative moldiness of the indoor environments and facilitate the further remediation process.

<ul style="list-style-type: none"> • <i>Acremonium strictum</i> • <i>Alternaria alternate</i> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigatus</i>, <i>Neosartorya fischeri</i> • <i>Aspergillus niger/ awamori/ foetidus/ phoenicis</i> • <i>Aspergillus ochraceus/ostianus</i> • <i>Aspergillus penicillioides</i> • <i>Aspergillus restrictus/ caesillus/ conicus</i> • <i>Aspergillus sclerotiorum</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus unguis</i> • <i>Aspergillus ustus</i> 	<ul style="list-style-type: none"> • <i>Aspergillus versicolor</i> • <i>Aureobasidium pullulans</i> • <i>Chaetomium globosum</i> • <i>Cladosporium cladosporioides</i>, svar.1 • <i>Cladosporium cladosporioides</i>, svar.2 • <i>Cladosporium herbarum</i> • <i>Cladosporium sphaerospermum</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Epicoccum nigrum</i> • <i>Mucor amphibiorum/..& Rhizopus azygosporus/...</i> • <i>Paecilomyces variotii</i> • <i>Penicillium brevicompactum/ stoloniferum</i> 	<ul style="list-style-type: none"> • <i>Penicillium chrysogenum</i>, svar.2 • <i>Penicillium corylophilum</i> • <i>Penicillium crustosum/ camembertii</i> • <i>Penicillium purpurogenum</i> • <i>Penicillium glabrum/ spinulosum...</i> • <i>Penicillium variabile</i> • <i>Rhizopus stolonifer</i> • <i>Scopulariopsis brevicaulis/ fusca</i> • <i>Scopulariopsis chartarum</i> • <i>Stachybotrys chartarum</i> • <i>Trichoderma viride/ atroviride/ koningii</i> • <i>Wallemia sebi</i>
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➤ Analysis Code: **PCR02.23 (Comprehensive Nosocomial panel)**

Comprehensive Nosocomial panel: This panel covers important indicators of fungal contamination and potential pathogenic fungal species that can be of concerns if the indoor environments of hospitals/health facilities are contaminated. This comprehensive panel is the first choice for hospitals and health care facilities in order to proactively monitor the air quality of the indoor environment.

<ul style="list-style-type: none"> • <i>Acremonium strictum</i> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigatus</i>, <i>Neosartorya fischeri</i> • <i>Aspergillus niger/ awamori/ foetidus/ phoenicis</i> • <i>Aspergillus ochraceus/ ostianus</i> • <i>Aspergillus penicillioides</i> • <i>Aspergillus restrictus/ caesillus/ conicus</i> • <i>Aspergillus sclerotiorum</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus terreus</i> • <i>Aspergillus unguis</i> • <i>Aspergillus ustus</i> • <i>Aspergillus versicolor</i> 	<ul style="list-style-type: none"> • <i>Candida albicans</i> • <i>Chaetomium globosum</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Fusarium solani</i> • <i>Mucor amphibiorum...and Rhizopus azygosporus/ microsporus/..</i> • <i>Penicillium brevicompactum/ stoloniferum</i> • <i>Penicillium chrysogenum/...and Eupenicillium crustaceum/...</i> • <i>Paecilomyces variotii</i> • <i>Scopulariopsis brevicaulis/ fusca</i> • <i>Stachybotrys chartarum</i>
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➤ Analysis Code: **PCR03.15 (Nosocomial panel)**

Cost-Effective Nosocomial panel: This is an alternative cost-effective panel to address the concerns raised in the contaminated indoor environments of hospital and health care facility.

<ul style="list-style-type: none"> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigatus</i>, <i>Neosartorya fischeri</i> • <i>Aspergillus niger/ awamori/ foetidus/ phoenicis</i> • <i>Aspergillus ochraceus/ ostianus</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus ustus</i> • <i>Aspergillus terreus</i> 	<ul style="list-style-type: none"> • <i>Aspergillus versicolor</i> • <i>Candida albicans</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Fusarium solani</i> • <i>Mucor amphibiorum... and Rhizopus azygosporus/microsporus/..</i> • <i>Paecilomyces variotii</i> • <i>Scopulariopsis brevicaulis/fusca</i> • <i>Stachybotrys chartarum</i>
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MSQPCR PANELS

➤ Analysis Code: **PCR04.15**

Budget 15 mold panel: Top 15 important indoor indicators of fungal contamination.

<ul style="list-style-type: none"> • <i>Acremonium strictum</i> • <i>Aspergillus fumigates</i> • <i>Aspergillus niger</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus ustus</i> 	<ul style="list-style-type: none"> • <i>Aspergillus versicolor</i> • <i>Chaetomium globosum</i> • <i>Memmoniella echinata</i> • <i>Penicillium aurantiogriseum/ viridicatum</i> • <i>Penicillium brevicompactum/ stoloniferum</i> 	<ul style="list-style-type: none"> • <i>Penicillium chrysogenum</i> • <i>Penicillium corylophilum</i> • <i>Penicillium variabile</i> • <i>Stachybotrys chartarum</i> • <i>Ulocladium botrytis</i>
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➤ Analysis Code: **PCR05.8**

Signature mold panel: These 8 signature fungi are associated with a water-damaged environment.

<ul style="list-style-type: none"> • <i>Acremonium strictum</i> • <i>Aspergillus versicolor</i> • <i>Chaetomium globosum</i> • <i>Memmoniella echinata</i> 	<ul style="list-style-type: none"> • <i>Penicillium brevicompactum/stoloniferum</i> • <i>Penicillium chrysogenum</i> • <i>Stachybotrys chartarum</i> • <i>Ulocladium botrytis</i>
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➤ Analysis Code: **PCR06.13**

ARMI Testing Panel: This is an alternative and cost-effective panel for evaluating the moldiness of the water-damaged indoor environments, called American Relative Moldiness Index (ARMI). MSQPCR analysis of the dust, only selects 13 fungal species/clusters are needed to create an index.

<ul style="list-style-type: none"> • <i>Alternaria alternata</i> • <i>Aspergillus niger/awamori/foetidus/phoenicis</i> • <i>Aspergillus ochraceus/ostianus</i> • <i>Aspergillus penicillioides</i> • <i>Aspergillus restrictus/caesillus/conicus</i> • <i>Aspergillus sydowii</i> • <i>Chaetomium globosum</i> 	<ul style="list-style-type: none"> • <i>Cladosporium cladosporioides</i>, svar. 1 • <i>Cladosporium herbarum</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Paecilomyces variotii</i> • <i>Penicillium chrysogenum</i>, svar. 2 • <i>Wallemia sebi</i>
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➤ Analysis Code: **PCR07.15**

Combination of **Asp/Pen panel:** The most common *Aspergillus* and *Penicillium* species found in indoor environments.

<ul style="list-style-type: none"> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigates</i> • <i>Aspergillus niger</i> • <i>Aspergillus ochraceus/ostianus</i> • <i>Aspergillus sydowii</i> 	<ul style="list-style-type: none"> • <i>Aspergillus ustus</i> • <i>Aspergillus versicolor</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Penicillium brevicompactum/ stoloniferum</i> • <i>Penicillium chrysogenum</i> 	<ul style="list-style-type: none"> • <i>Penicillium corylophilum</i> • <i>Penicillium crustosum/ camembertii</i> • <i>Penicillium purpurogenum</i> • <i>Penicillium glabrum/ spinulosum</i> • <i>Penicillium variabile</i>
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➤ Analysis Code: **PCR08.15**

Common *Aspergillus* species plus *Chaetomium globosum* and *S. chartarum* panel: this panel includes the top common 13 *Aspergillus* species plus *Chaetomium globosum* and *Stachybotrys chartarum*.

<ul style="list-style-type: none"> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigates</i> • <i>Aspergillus niger</i> • <i>Aspergillus ochraceus/ostianus</i> • <i>Aspergillus penicillioides</i> 	<ul style="list-style-type: none"> • <i>Aspergillus restrictus/ caesillus/ conicus</i> • <i>Aspergillus sclerotiorum</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus terreus</i> • <i>Aspergillus unquis</i> 	<ul style="list-style-type: none"> • <i>Aspergillus ustus</i> • <i>Aspergillus versicolor</i> • <i>Chaetomium globosum</i> • <i>Eurotium (Asp.) amstelodami</i> group* • <i>Stachybotrys chartarum</i>
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MSQPCR PANELS

➤ Analysis Code: **PCR09.15**

Top 15 Penicillium panel: Top 15 Penicillium species commonly found in indoor environments.

<ul style="list-style-type: none"> • <i>Penicillium aurantiogriseum/viridicatum</i> • <i>Penicillium brevicompactum</i> • <i>Penicillium chrysogenum</i> • <i>Penicillium citreonigrum</i> • <i>Penicillium citrinum</i> 	<ul style="list-style-type: none"> • <i>Penicillium corylophilum</i> • <i>Penicillium crustosum/commune</i> • <i>Penicillium decumbens</i> • <i>Penicillium expansum</i> • <i>Penicillium glabrum/spinulosum...</i> 	<ul style="list-style-type: none"> • <i>Penicillium oxalicum</i> • <i>Penicillium purpurogenum</i> • <i>Penicillium roquefortii</i> • <i>Penicillium sclerotiorum</i> • <i>Penicillium variabile</i>
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➤ Analysis Code: **PCR010.5 (HERTSMI or HERTSMI-2)**

HERTSMI panel: 5 species of mold

<ul style="list-style-type: none"> • <i>Aspergillus penicillioides</i> • <i>Aspergillus versicolor</i> 	<ul style="list-style-type: none"> • <i>Chaetomium globosum</i> • <i>Stachybotrys chartarum</i> 	<ul style="list-style-type: none"> • <i>Wallemia sebi</i>
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Investigators are encouraged to select from the professional designated panels listed above or customized your own choices based on the requirement of investigation from the following available fungal species. Please call us at 732-355-9018 if the species you needed are not in the list.

➤ Analysis Code: **PCR10.X** {X=number(s) of selection}.

Customized panel: Quantitative PCR analyses for a single specific fungus or a combination of your choice from our available fungal list. PCR10.X, "X" denotes the number(s) of species selected. (e.g. PCR10.3 indicates there are 3 customized species selected.

The available fungal species:

<ul style="list-style-type: none"> • <i>Acremonium strictum</i> • <i>Alternaria alternata</i> • <i>Aspergillus flavus/oryzae</i> • <i>Aspergillus fumigatus</i> • <i>Aspergillus niger</i> • <i>Aspergillus ochraceus</i> • <i>Aspergillus penicillioides</i> • <i>Aspergillus restrictus/caesiellus/conicus</i> • <i>Aspergillus sclerotiorum</i> • <i>Aspergillus sydowii</i> • <i>Aspergillus terreus</i> • <i>Aspergillus unguis</i> • <i>Aspergillus ustus</i> • <i>Aspergillus versicolor</i> • <i>Aureobasidium pullulans</i> • <i>Chaetomium globosum</i> 	<ul style="list-style-type: none"> • <i>Cladosporium cladosporioides</i> • <i>Cladosporium herbarum</i> • <i>Cladosporium sphaerospermum</i> • <i>Emericella (Asp.) nidulans</i> • <i>Epicoccum nigrum</i> • <i>Eurotium (Asp.) amstelodami group*</i> • <i>Memnoniella echinata</i> • <i>Mucor amphibiorum/.& Rhizopus azygosporus/...group</i> • <i>Paecilomyces variotii</i> • <i>Penicillium aurantiogriseum/viridicatum</i> • <i>Penicillium brevicompactum</i> • <i>Penicillium chrysogenum</i> • <i>Penicillium citreonigrum</i> • <i>Penicillium citrinum</i> • <i>Penicillium corylophilum</i> • <i>Penicillium crustosum/...group</i> 	<ul style="list-style-type: none"> • <i>Penicillium decumbens</i> • <i>Penicillium expansum</i> • <i>Penicillium glabrum/spinulosum... group</i> • <i>Penicillium oxalicum</i> • <i>Penicillium purpurogenum</i> • <i>Penicillium roquefortii</i> • <i>Penicillium sclerotiorum</i> • <i>Penicillium variabile</i> • <i>Rhizopus stolonifer</i> • <i>Scopulariopsis brevicaulis/fusca</i> • <i>Scopulariopsis chartarum</i> • <i>Stachybotrys chartarum</i> • <i>Trichoderma harzianum</i> • <i>Trichoderma viride/koningii</i> • <i>Ulocladium botrytis</i> • <i>Wallemia sebi</i>
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