

## MGB Alert® *Candida* species with *C. auris* RUO Detection Reagent

For Research Use Only. Not for use in diagnostic procedures.



ELITechGroup MDx LLC  
21720 23rd Dr SE, Suite 150  
Bothell, WA 98021 USA  
Telephone: 1-800-453-2725



M400869

**SPIN TUBES  
PRIOR TO  
OPENING**



≤ -10°C

### Intended Use

The **MGB Alert *Candida* species with *C. auris* RUO Detection Reagent** is intended for use in a nucleic acid amplification test, to detect and distinguish *Candida* species DNA in a nucleic acid sample. This product is intended for use with a real-time PCR system with appropriate optical specifications and melt curve analysis capability.

### Assay Principle

The **MGB Alert *Candida* species with *C. auris* RUO Detection Reagent** is a multiplex real-time PCR reagent designed with MGB Pleiades® hybridization probe chemistry to detect and distinguish among DNA from *C. auris*, *C. albicans*, *C. glabrata* (*Nakaseomyces glabrata*), *C. parapsilosis* species complex, *C. dubliniensis*, *C. tropicalis*, and *C. krusei*. To use this product effectively, thermal cycler parameters must include PCR thermal cycling with 5-color fluorescence detection and a dissociation stage, or melt stage. (See Recommended Reaction Setup below.) The reagent contains a primer set and seven probes to detect and distinguish the seven *Candida* species/complex. Six probes are labeled with one of three fluorophores such that each fluorophore identifies two species/complex, which are then distinguished by the melt analysis. The probe specific to *C. auris* is labeled with a fourth fluorophore. The reagent also contains a primer set and probe specific to an internal control (IC, sold separately).

The hybridization probe chemistry of MGB Pleiades probes is unique. The fluorescence of unhybridized Pleiades probes is double-quenched by a 5' minor groove binder (MGB) and a 3' Eclipse® Dark Quencher (EDQ). During each cycle of PCR, the primers and probes anneal to their target template, if present, and a new DNA strand is synthesized from the primers by a polymerase. Hybridization of the Pleiades probe to its target separates the fluorophore from its MGB and EDQ, allowing fluorescence emission. As the polymerase encounters the probe annealed to the template downstream of the primer, the 5' MGB on the probe blocks any 5'-exonuclease activity of the polymerase and the probe is displaced, and the MGB and EDQ once again block fluorescence emission from the fluorophore. The PCR cycles result in exponential amplification of target DNA and fluorescence levels. The dissociation stage results in exponential decrease of fluorescence of the probe fluorophore, i.e., a melt curve. The melt temperatures ( $T_m$ s) of the melt curves discriminate between the different species/complex detected by the fluorophores.

### Product Description

The **MGB Alert *Candida* species with *C. auris* RUO Detection Reagent** is a ready-to-use 20X mix of primer and probe sets specific to the DNA of the target pathogens, and to a synthetic sequence that serves as an internal control to monitor assay performance. (The IC DNA template is sold separately, see below.) Probes are labeled with FAM or an AquaPhluor® (AP) fluorophore (Table 1), and an MGB and EDQ.

**Table 1.** MGB Alert Candida species with *C. auris* RUO Detection Reagent components description. The number in the AP fluorophore name indicates its peak excitation wavelength.

Target template	Probe fluorophore	Analogous fluorophore (for optical channel selection)
<i>C. auris</i> ITS2 region	AP639	Cy5, Quasar 670
<i>C. glabrata</i> ITS2 region	FAM	FAM
<i>C. albicans</i> ITS2 region	FAM	FAM
<i>C. parapsilosis</i> species complex ITS2 region	AP525	VIC, JOE, HEX
<i>C. dubliniensis</i> ITS2 region	AP525	VIC, JOE, HEX
<i>C. tropicalis</i> ITS2 region	AP593	ROX, Texas Red
<i>C. krusei</i> ITS2 region	AP593	ROX, Texas Red
Internal control IC2	AP690	Cy5.5, Quasar 705

The **MGB Alert Candida species with *C. auris* RUO Detection Reagent** is provided at a volume of 120 µL, and designed to be combined with a master mix containing the necessary components for PCR (not provided). The 20X concentration is relative to the optimal final concentration of the primers and probes in the PCR.

#### Recommended Materials Not Provided

**Table 2.** Additional materials recommended for real-time PCR not provided in the MGB Alert Candida species with *C. auris* RUO Detection Reagent.

Material	Use	Vendor	Part Number
Internal Control IC2 DNA	Internal control DNA template to monitor nucleic acid extraction and PCR performance	ELITechGroup	M800737
MGB Alert® ELITaq Master Mix (2X)	Contains DNA polymerase with exonuclease activity, buffers, dNTPs, excipients for PCR	ELITechGroup	M800809, 48 reactions M800810, 480 reactions
Molecular biology grade water	Reaction mix preparation, negative controls	NA	NA
Positive controls	Positive control DNA for each pathogen target if available	NA	NA

#### Recommended Reaction Setup

For optimal performance, protect all reagents from light, store at ≤-10°C while not in use, and limit the number of freeze-thaw cycles.

The following is an example of how to set up a real-time PCR using the MGB Alert Candida species with *C. auris* RUO Detection Reagent for 50 µL reactions. Preparation of the reaction mix should be done in an area separate from preparation and addition of samples and controls.

**Table 3.** Example recipe for real-time PCR reaction mix.

Reagent	Stock concentration	Volume per reaction (µL)
PCR master mix	2X	25.0
Molecular biology grade water	--	12.5
RUO Detection Reagent	20X	2.5
<b>Total reaction mix</b>	--	40.0
Sample/control template	--	10.0

1. Prepare reaction mix as above (Table 3), or adjust volumes per reaction based on PCR master mix stock concentration and final reaction volume, multiplying the volumes per reaction by the number of samples + controls being run and an appropriate overage to add the needed dead volume.
2. Array 40 µL of the reaction mix into the wells of an optical plate or tubes.
3. Prepare positive and negative controls as appropriate.
4. Pipette 10 µL of sample or control into the appropriate well or tube containing reaction mix.
5. Seal the plate with optical adhesive film or cap PCR tubes.
6. Load the plate/tubes onto the real-time PCR instrument and program the thermal cycling as below (Table 4). Start the run.

**Table 4.** Recommended thermal cycling conditions. Adjustments may be required to optimize the PCR and dissociation for various real-time PCR master mixes and instruments. Refer to the instrument manual to set up the real-time PCR.

Stage		Temperature	Time
Denaturation	Hold	95°C	2 min
PCR (50 cycles)	Denaturation	95°C	5 sec
	Annealing*	56°C	20 sec
	Extension	76°C	20 sec
Dissociation (melt)	Hold	95°C	15 sec
	Annealing	45°C	15 sec
	Melt*	45→80°C	Ramp at 0.06°C/sec

\* Read fluorescence at the annealing stage of PCR and while ramping during the melt stage of dissociation.

### Data Analysis Guidelines

Analysis of results from the MGB Alert *Candida* species with *C. auris* RUO Detection Reagent should be performed for both the PCR stage and dissociation stage. Amplification of AP639 fluorescence signal during PCR indicates the sample is positive for the DNA of *C. auris*. Amplification of FAM, AP525, and/or AP593 indicates the sample is positive for the DNA of either or both species identified by that fluorophore. (See Table 1.) Amplification of the internal control AP690 signal indicates the PCR performed as expected. Amplification of the internal control AP690 signal may or may not be observed in samples that test positive for *Candida* DNA, but must be observed in samples that test negative for *Candida* DNA to ensure the PCR performed as expected.

For the dissociation stage, each fluorescence signal that identifies multiple *Candida* species (FAM, AP525, and/or AP593) that amplified during PCR should be analyzed. The  $T_m$  (or  $T_{ms}$ ) of each melt curve distinguishes between the two species identified by each fluorophore. The DNA of more than one species may be present in a nucleic acid sample.

### Warnings and Precautions

- **This product is for Research Use Only, and not for use in diagnostic procedures.**
- Use of this product requires personnel trained in molecular biology techniques.
- This product shall be protected from light and stored at  $\leq -10^{\circ}\text{C}$  while not in use.
- This product shall not be used after its expiration date.
- This product shall be used in accordance with local, state, and federal regulations or accreditation requirements.
- Disposal of all waste material shall be done in accordance with local, state, and federal regulations or accreditation requirements.

### Technical Support

For technical support, call or email the ELITechGroup MDx (EG MDx) Technical Support Center: 1.800.453.2725 or [mdx@elitechgroup.com](mailto:mdx@elitechgroup.com), or contact your EG MDx Field Applications Specialist.

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MGB Alert detection reagents are covered by one or more of US Patents Numbers 6972339, 7319022, 7348146, 7381818, 7541454, 7582739, 7601851, 7671218, 7718374, 7723038, 7759126, 7767834, 7851606, 8008522,

8067177, 8163910, 8389745, 8569516, 8969003, 9056887, 9085800, 9169256, 9328384, 10677728, 10738346, 10890529, 11155713, and 11320376 as well as applications that are currently pending.

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MGB Alert, MGB Pleiades, AquaPhluor, and Eclipse are trademarks of ELITechGroup BV.

### **Symbols**

The following symbols are used within ELITechGroup MDx MGB Alert labeling

	Catalog number		Upper limit of temperature
	Lot or Batch Code		Expiration Date YYYY-MM-DD
	Manufacturer		Keep away from sunlight
	Contains sufficient for <N> tests		