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Coccidioides immitis/posadasii, Molecular<br>Detection, PCR, Varies

## Overview

## Useful For

Rapid detection of Coccidioides DNA, preferred method

An aid in diagnosing coccidioidomycosis

## Testing Algorithm

For more information see Meningitis/Encephalitis Panel Algorithm.

## Special Instructions

- Meningitis/Encephalitis Panel Algorithm


## Method Name

Real-Time Polymerase Chain Reaction (PCR)
NY State Available
Yes

## Specimen

## Specimen Type

Varies

## Additional Testing Requirements

This test should always be performed in conjunction with fungal culture; order FGEN / Fungal Culture, Routine.

## Shipping Instructions

Specimen must arrive within 7 days of collection; specimen >7 days will be rejected.

## Necessary Information

Specimen source is required.

## Specimen Required

The high sensitivity of amplification by polymerase chain reaction (PCR) requires the specimen to be processed in an environment in which contamination of the specimen by Coccidioides species DNA is unlikely.

Preferred Specimens: Body fluid, cerebrospinal fluid (CSF), ocular fluid, respiratory (eg, bronchoalveolar lavage [BAL], bronchial washing, sputum), fresh tissue, or bone

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[^0]Submit only 1 of the following specimens:

Specimen Type: Body fluid
Sources: Body, ocular, or CSF
Container/Tube: Sterile container
Specimen Volume: 1 mL
Additional Information: Only fresh, non-NALC/NaOH-digested body fluid is acceptable.

Specimen Type: Respiratory
Sources: BAL, bronchial washing, or sputum
Container/Tube: Sterile container
Specimen Volume: 1 mL if only PCR ordered or 3 mL if PCR ordered with smear and culture

Specimen Type: Tissue
Sources: Fresh tissue or bone
Container/Tube: Sterile container
Specimen Volume: 5 to 10 mm
Collection Instructions: Keep moist with sterile water or sterile saline
Additional Information: Only fresh, non-NALC/NaOH-digested tissue is acceptable.

## Acceptable

Specimen Type: NALC/NaOH-digested respiratory specimens
Sources: BAL, bronchial washing, respiratory fluid, sputum, or tracheal secretion
Container/Tube: Sterile container
Specimen Volume: 2 mL
Collection Instructions:

1. Submit digested specimen treated with $\mathrm{NALC} / \mathrm{NaOH}$.
2. Clearly indicate on container and order form that specimen is a digested specimen.

## Forms

If not ordering electronically, complete, print, and send a Microbiology Test Request (T244) with the specimen.

## Specimen Minimum Volume

Body fluid or nondigested respiratory specimen: 0.5 mL ; Fresh tissue or bone: 5 mm ; NALC-NaOH-digested specimen: 1 mL

## Reject Due To

| Blood <br> Bone marrow <br> Specimen in | Reject |
| :--- | :--- |

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```
anaerobe vial
or viral
transport
medium
(including but
not limited to
M4, M5, BD
viral transport
media,
thioglycolate
broth)
Feces
Swabs
Tissues in
formalin fluid
Urine
```


## Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
| :--- | :--- | :--- | :--- |
| Varies | Refrigerated (preferred) | 7 days |  |
|  | Frozen | 7 days |  |

## Clinical \& Interpretive

## Clinical Information

Coccidioidomycosis is caused by the dimorphic fungi, Coccidioides immitis and Coccidioides posadasii. These organisms are endemic to the southwestern regions of the United States, northern Mexico, and areas of Central and South America, with recent literature suggests the geographic area of endemicity may be expanding over time.

The gold standard for the diagnosis of coccidioidomycosis is culture of the organism from clinical specimens due to its high sensitivity. However, growth in culture may take up to several weeks, which can delay diagnosis and treatment. In addition, the propagation of Coccidioides species in the clinical laboratory is a significant safety hazard to laboratory personnel.

This polymerase chain reaction method can identify Coccidioides species directly from clinical specimens, allowing for a rapid diagnosis. Fungal culture should also always be performed since it may enhance detection, and the isolate may be needed for antifungal susceptibility testing.

## Reference Values

Not applicable

## Interpretation

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## A positive result indicates presence of Coccidioides DNA. <br> A negative result indicates absence of detectable Coccidioides DNA. <br> Cautions <br> This test should always be performed in conjunction with fungal culture.

This rapid polymerase chain reaction assay detects Coccidioides nucleic acid and, therefore, does not distinguish between viable, disease-related organisms and transient colonizing organisms or nucleic acid persisting from old disease. Test results should be correlated with patient symptoms and clinical presentation before a definitive diagnosis is made.

A negative result does not rule out the presence of Coccidioides or active disease because the organism may be present at levels below the limit of detection for this assay.

This test does not distinguish between Coccidioides immitis and Coccidioides posadasii.

## Clinical Reference

1. Williams SL, Chiller T: Update on the epidemiology, diagnosis, and treatment of coccidioidomycosis. J Fungi (Basel). 2022 Jun 25;8(7):666. doi: 10.3390/jof8070666
2. Thompson GR, Ampel NM, Blair JE, et al: Controversies in the management of central nervous system coccidioidomycosis. Clin Infect Dis. 2022 Sep 10;75(4):555-559. doi: 10.1093/cid/ciac478
3. Boro R, Iyer PC, Walczak MA: Current landscape of coccidioidomycosis. J Fungi (Basel). 2022 Apr 17;8(4):413. doi: 10.3390/jof8040413

## Performance

## Method Description

Following specimen processing, nucleic acids are extracted, and the extract transferred to individual self-contained cuvettes for amplification using the LightCycler real-time polymerase chain reaction (PCR) platform (Roche Applied Sciences). The LightCycler is an automated instrument that amplifies and monitors the development of target nucleic acid (amplicon) after each cycle of PCR. The detection of amplicon is based on fluorescence resonance energy transfer, which utilizes hybridization probes. The presence of the specific organism nucleic acid is confirmed by performing a melting curve analysis of the amplicon.(Binnicker MJ, Buckwalter SP, Eisberner JJ, et al: Detection of Coccidioides species in clinical specimens by real-time PCR. J Clin Microbiol. 2007 Jan;45(1):173-178)

## PDF Report

No

Day(s) Performed
Monday through Sunday

## Report Available

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1 to 3 days

## Specimen Retention Time

7 days

## Performing Laboratory Location

Rochester

## Fees \& Codes

## Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.


## Test Classification

This test was developed and its performance characteristics determined by Mayo Clinic in a manner consistent with CLIA requirements. It has not been cleared or approved by the US Food and Drug Administration.

## CPT Code Information

87798

## LOINC® Information

| Test ID | Test Order Name | Order LOINC ${ }^{\circledR}$ Value |
| :--- | :--- | :--- |
| CIMRP | Coccidioides PCR | $97916-1$ |


| Result ID | Test Result Name | Result LOINC ${ }^{\oplus}$ Value |
| :--- | :--- | :--- |
| SRC64 | Coccidioides PCR, Specimen Source | $31208-2$ |
| 88804 | Coccidioides PCR, Result | $97916-1$ |


[^0]:    Acceptable Specimens: If no fresh specimen is available, digested respiratory specimens treated with N -acetyl-L-cysteine-sodium hydroxide (NALC/NaOH) are acceptable (eg, BAL, bronchial washing, respiratory fluid, sputum, or tracheal secretion)

