

## Blastomyces

Blastomyces is a genus of dimorphic fungi known to be the causative agent of blastomycosis. Like the other dimorphic fungi, it exists as hyphae on the colder end of the temperature spectrum, like in soil, and as yeast on the warmer end of the temperature spectrum, like in the body. The most well-known species of this genus is *Blastomyces dermatitidis*. This organism exists as a round yeast form that is 5-15 micrometers (similar to the size of red blood cells) and is known for single broad-based buds during replication. The organism is also encapsulated with thick doubly-refractive walls that help with diagnosis when visualized in sputum or tissues. It is endemic to areas east of the Mississippi River and around the Great Lakes. The symptoms of blastomycosis vary considerably and can include an acute illness resembling bacterial pneumonia, skin lesions that appear as ulcerative lesions with small pustules or resembling squamous cell carcinoma, and lytic bone lesions that lead to bone or joint pain. Blastomyces can infect normal, immunocompetent hosts and cause granulomatous lesions in the affected organs. Blastomycosis can be treated with itraconazole or amphotericin B.



PLAY PICMONIC

### Characteristics

#### Fungi

[Fun-guy](#)

Blastomyces is a genus of dimorphic fungi known to be the causative agent of blastomycosis.

#### Hyphae Form at 20°-25°C

[Frozen Hyphae](#)

Like other dimorphic fungi, Blastomyces exists as hyphae on the colder end of the temperature spectrum, such as in dirt or soil.

#### Yeast Form at 37°C

[Yeast-map on Fire](#)

Like the other dimorphic fungi, Blastomyces exists as yeast on the warmer end of the temperature spectrum, like in the body.

#### Round Yeast

[Round-compass pointing East](#)

Blastomyces exists as a round yeast form.

#### 5-15 Micrometer (um or ?m)

[5-15 um-ruler](#)

The yeast form of Blastomyces is 5-15 micrometers, which is similar in size to a red blood cell (RBC).

#### Single Broad-Based Buds

[Broad-Based Buds](#)

Blastomyces can be visualized as single broad-based buds on sputum or tissue prep.

#### Thick Doubly-Refractive Walls

[Double Walls](#)

Blastomyces is also encapsulated with thick doubly-refractive walls that help with diagnosis when visualized in sputum or tissues.

#### East of the Mississippi River and Around the Great Lakes

[Map with East of the Mississippi River and Great Lakes highlighted](#)

Blastomyces is endemic to areas east of the Mississippi River and around the Great Lakes.

### Signs and Symptoms

## **Pneumonia**

[Nude-Mona](#)

Blastomycosis can present as an acute illness resembling bacterial pneumonia, with symptoms of high fever, chills, productive cough and pleuritic chest pain. Lung disease caused by blastomycosis can easily spread to the skin and bones.

## **Skin Infection**

[Skin-suit](#)

Blastomycosis can cause skin lesions with ulcerations and small pustules. Additionally, it can lead to verrucous skin lesions that often resemble squamous cell carcinoma (SCC).

## **Bone Infection**

[Skeleton](#)

Blastomycosis can disseminate to the bone causing local pain, joint pain and lytic lesions.

## **Granulomatous Response**

[Granny-llama](#)

Blastomycosis has been known to disseminate in normal, immunocompetent hosts, in which it leads to mixed suppurative granulomas in the lungs or causes granulomatous nodules on the skin. This happens because of a limited ability to phagocytize the organism alongside continued recruitment of neutrophils and alveolar macrophages.

## **Treatment**

### **Itraconazole**

[Eye-in-the-A-hole](#)

Itraconazole is usually used to treat blastomycosis, as it has been shown to be effective and well-tolerated with minimal side effects. However, many different medications from the "-azole" class have been used to treat blastomycosis in respective circumstances.

### **Amphotericin B**

[Amphibian-terminator \(B\) Bee](#)

Amphotericin B is a medication reserved for systemic blastomycosis because of its side effect profile. It is also commonly used to treat blastomycosis with CNS involvement because of its penetration of the blood-brain-barrier.