

Mold

A Study of Common Fungi

Photography and Article
by Ryan Brown

General Information

The most common type of household mold grows primarily on bread, but also lives on many other foods. This type of mold, *Rhizopus stolonifer*, is actually the most prevalent type of mold in the world. It is more commonly known as black bread mold, although it more likely to appear green, grey, or even white. Over time it will darken and occasionally become black on certain hosts. Although sharing a similar name as the dangerous household black mold (*Stachybotrys*), it comes from a different phylum of mold and is significantly less dangerous. *Rhizopus stolonifer* is of the Fungi Kingdom, the Mucorales Order, and Mucoraceae Family. It is most commonly found on bread, but will occur on crop type vegetables such as papayas and sweet potatoes. In vegetables like, this it will cause soft rot along with the usual appearance of green color and white fuzz.

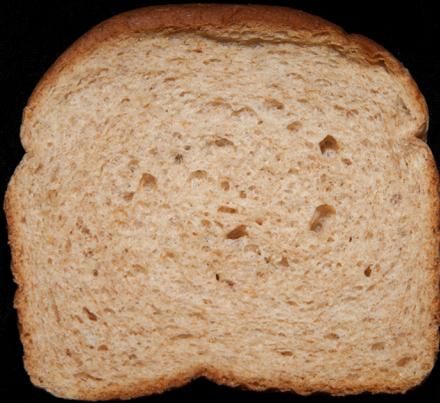
The mold itself is a mass of mycelium which is comprised of multinucleate and when the spores are released the mycelium is produced in greater quantities via germination. To survive, black bread mold needs sugar or starch for its source of carbon substances for food. Due to these reasons, healthier breads like wholewheat will develop mold more quickly as opposed to white bread which lacks the nutrients for bacteria to thrive. The spores spread through the air and grows quicker in a moist or wet environment, particularly within a range of 15 degrees to 30 degrees celsius (59-86 fahrenheit).

Rhizopus stolonifer is a heterothallic species meaning it produces sexually but only when opposing mating types (+ and -) are paired. Zygospores are produced when this sexual contact occurs and they then sporulate to create a sporangiophore. This contains a sporangiophore that contains both + and - haploid species.

Pictured below is wheat hot dog buns after 50 days



Progression



Fresh Bread, 0 Days
Elapsed

1 Week After Expiration



1 Month After
Expiration

3 Months After
Expiration



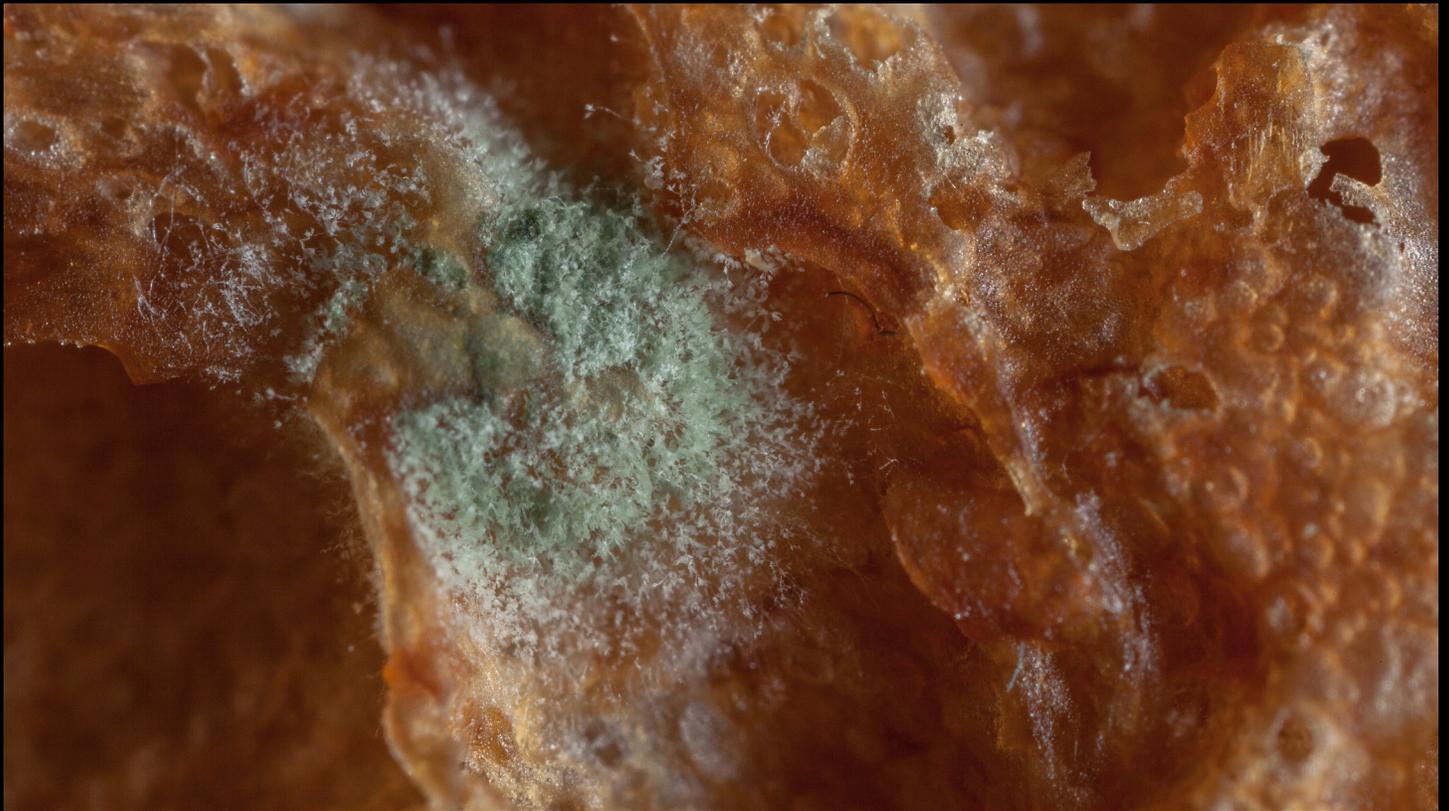
A Closer Look



Fresh Bread, 0 Days Elapsed



1 Week After Expiration



1 Month After Expiration



2 Months After Expiration

Is it safe?



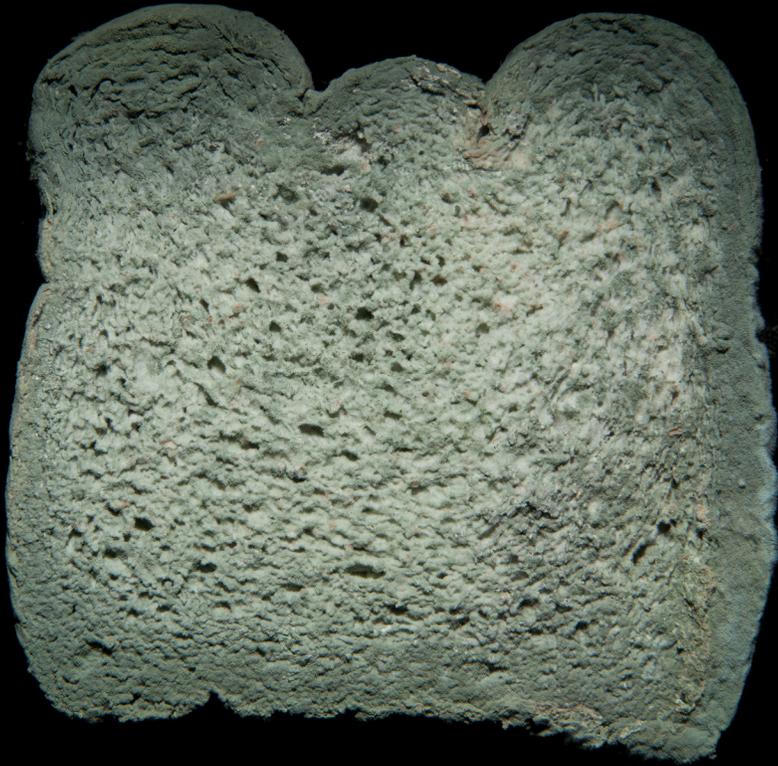
Pictured above is fresh wholemilk blue cheese

Despite popular belief, most household food type molds are relatively safe to eat. Especially with the case of hard cheeses, usually the mold has trouble penetrating the cheese which makes it easier to cut around the affected part. Mold becomes dangerous when it gets deeply rooted, as the toxins that can harm humans usually lives within these roots. In general, *Rhizopus stolonifer* is an opportunistic infector, meaning it will only make the average person ill if their immune system was already weak or damaged. The main disease caused by it is *Zygomycosis*, which is dangerous and not entirely understood yet. One of the simplest mistakes people make is smelling the item in question to see if it has gone bad. Mold being inhaled allows the spores to access the respiratory system which can lead to infection.

Bread however, although technically not a huge risk, should be discarded when beginning signs of mold appear. Due to its porous nature, it more easily spreads and absorbs spores from the mold; pieces that may not visibly have signs of mold may still be affected.

The average person views mold as dangerous to their health and ruinous to food. This is true to an extent in the case of black mold and certain diseases that stem from *R.stolonifer* (such as *zygomycosis*), however mold is an essential part of life. As most people know, most delicatessen cheeses are made from or with mold, but other bacterias such as penicillin have also been derived from mold. The more one understands about common molds the safer and more avoidable health hazards will be.

Contact & References



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All images shot on a Canon 5d mk II using a Canon 65mm macro lens or Tamron 24-70 with 1-2 wireless flashes.

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