



Interpreting Plates



(<https://web.archive.org/account/login-classroom-only-popup?t=undefined>)

Bacteria grow tremendously fast when supplied with an abundance of nutrients. Different types of bacteria will produce different-looking colonies, some colonies may be colored, some colonies are circular in shape, and others are irregular. The characteristics of a colony (shape, size, pigmentation, etc.) are termed the colony morphology. Colony morphology is a way scientists can identify bacteria. In fact there is a book called Bergey's Manual of Determinative Bacteriology (commonly termed Bergey's Manual) that describes the majority of bacterial species identified by scientists so far. This manual provides descriptions for the colony morphologies of each bacterial species available at [Amazon.com](https://www.amazon.com)


(http://web.archive.org/web/20160405043117/http://www.amazon.com/gp/product/0683006037/ref=as_li_ss_tl?ie=UTF8&tag=sciencebuddie-20&linkCode=as2&camp=1789&creative=390957&creativeASIN=0683006037).

Although bacterial and fungi colonies have many characteristics and some can be rare, there are a few basic elements that you can identify for all colonies:(1)


- Form - What is the basic shape of the colony? For example, circular, filamentous, etc.
- Elevation - What is the cross sectional shape of the colony? Turn the Petri dish on end.
- Margin - What is the magnified shape of the edge of the colony?
- Surface - How does the surface of the colony appear? For example, smooth, glistening, rough, dull (opposite of glistening), rugose (wrinkled), etc.
- Opacity - For example, transparent (clear), opaque, translucent (almost clear, but distorted vision, like looking through frosted glass), iridescent (changing colors in reflected light), etc.
- Chromogenesis (pigmentation) - For example, white, buff, red, purple, etc.

Please note that 3 additional elements of morphology should be examined only in a supervised laboratory setting: consistency, emulsifiability, and odor.

Refer to the diagram below for illustrated examples of form, elevation, and margin:(2)



[Bergey's Manual of Determinative Bac...](#)
 John G. Holt PhD
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Form

Circular



Irregular



Filamentous



Rhizoid

Elevation

Raised

Convex

Flat

Umbonate

Crateriform

Margin

Entire



Undulate



Filiform



Curled



Lobate

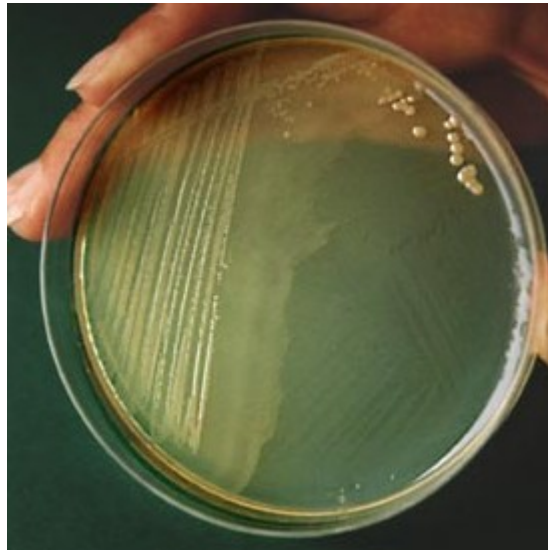
What Can Grow on a Nutrient Agar Plate?**Bacteria**

Each distinct circular colony should represent an individual bacterial cell or group that has divided repeatedly. Being kept in one place, the resulting cells have accumulated to form a visible patch. Most bacterial colonies appear white, cream, or yellow in color, and fairly circular in shape.

For example:



Bacillus subtilis(3)



Proteus vulgaris(4)



Staphylococcus aureus(5)



Streptococcus pyogenes(6)

Yeasts

Yeast, a type of fungi (plural for fungus), is found in many places from nature, to research labs and even everyday kitchens for baking. Yeast colonies generally look similar to bacterial colonies. Some species, such as *Candida*, can grow as white patches with a glossy surface.

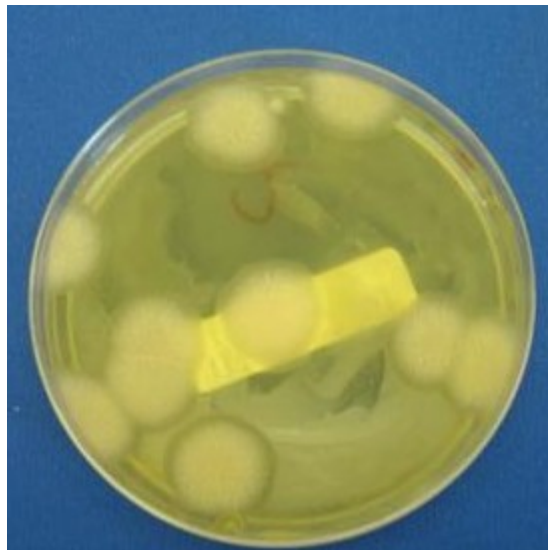
For example:



Candida Albicans) is a type of yeast that can grow on the surface of skin(7)



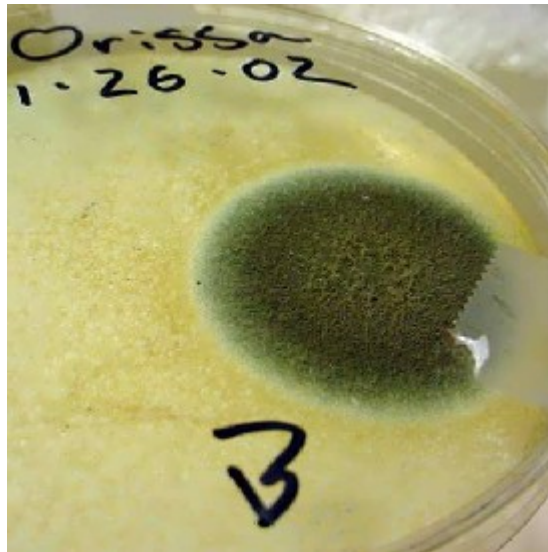
Round yeast colonies(8)



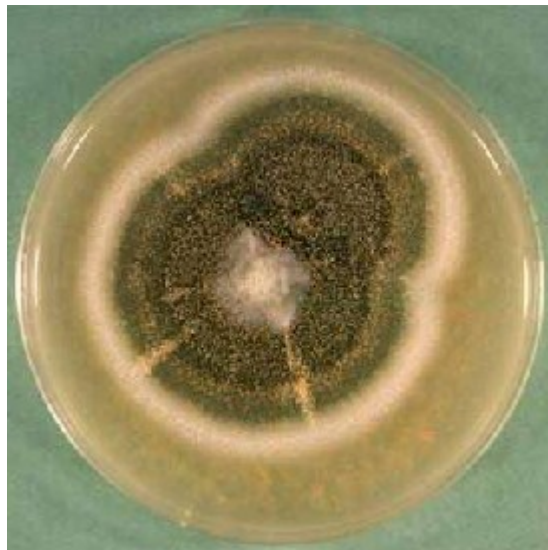
Pink yeast colonies(9)

Molds

Molds are actually fungi, and they often appear whitish grey, with fuzzy edges. They usually turn into a different color, from the center outwards. Two examples of molds are shown below:



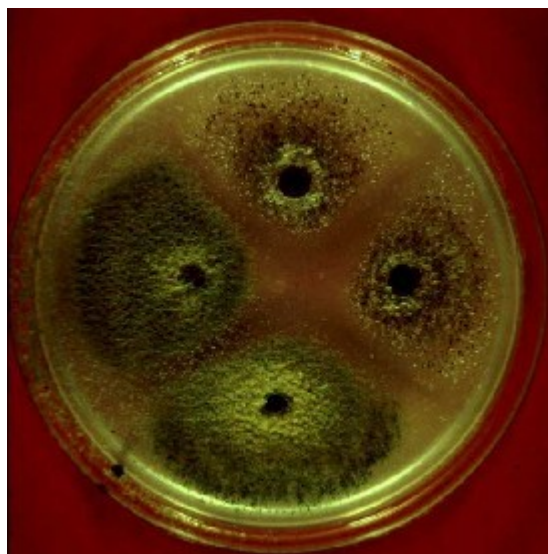
Green Mold (*Trichoderma harzianum*)(10)



Black Mold (*Aspergillus nidulaus*)(11)

Other Fungi

Moss green colonies, a white cloud, or a ring of spores can be attributed to the growth of *Aspergillus*, which is common in such fungal infections as athlete's foot. Here is an example of what *Aspergillus* looks like:



Aspergillus(12)

Finally, whenever a thorough, visual identification is not possible, examples of additional tests are gram stains (http://www.austincc.edu/microbugz/gram_stain.php (http://web.archive.org/web/20160405043117/http://www.austincc.edu/microbugz/gram_stain.php)), growths on selective media, and enzymatic tests.

Endnotes

- (1) "Microbiology 101 Laboratory Manual." Washington State University. http://www.rlc.dcccd.edu/mathsci/reynolds/micro/lab_manual/colony_morph.html, accessed January 14, 2005.
- (2) "Microbiology 101 Laboratory Manual." Washington State University. <http://www.slic2.wsu.edu:82/hurlbert/micro101/pages/101lab4.html>, accessed January 14, 2005.
- (3) "Bacterial Colony Morphology." Austin Community College. <http://www.austin.cc.tx.us/microbugz/03morphology.html>, accessed January 14, 2005.
- (4) "Bacterial Colony Morphology." Austin Community College. <http://www.austin.cc.tx.us/microbugz/03morphology.html>, accessed January 14, 2005.
- (5) "Bacterial Colony Morphology." Austin Community College. <http://www.austin.cc.tx.us/microbugz/03morphology.html>, accessed January 14, 2005.
- (6) "Bacterial Colony Morphology." Austin Community College. <http://www.austin.cc.tx.us/microbugz/03morphology.html>, accessed January 14, 2005.
- (7) Silvermedicine. <http://www.silvermedicine.org/Candidaalbicans.jpg>, accessed January 14, 2005.
- (8) Biology at the University of Cincinnati Clermont College. http://biology.clc.uc.edu/fankhauser/Labs/Microbiology/Yeast_Plate_Count/07_yeast_0.2mL_plate_P7201181.jpg, accessed January 14, 2005.
- (9) Teachers Experiencing Antarctica and the Arctic. http://tea.rice.edu/Images/stoyles/stoyles_pinkJPG.JPG.jpg, accessed January 14, 2005.
- (10) The Shroomery. <http://www.shroomery.org/images/23418/green5.jpg>, accessed January 14, 2005.
- (11) The Shroomery. http://www.shroomery.org/images/23418/Aspergillus_nidulaus.jpg, accessed January 14, 2005.

(12) ETH Life International. <http://www.ethlife.ethz.ch/images/aspergillus-l.jpg>, accessed January 14, 2005.

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