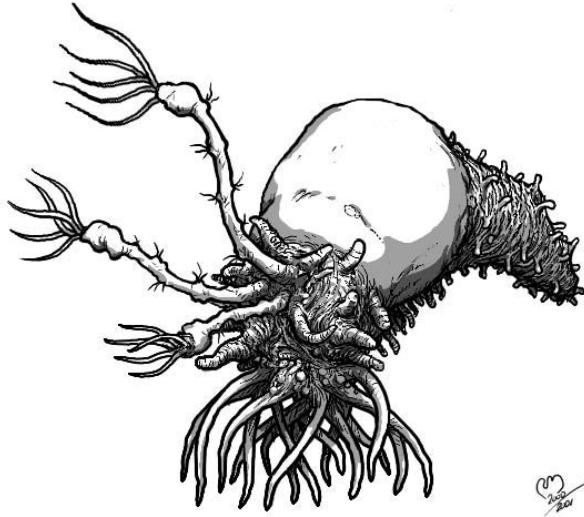


# A Taxonomical Analysis of the "Flood" Organism



bungie.net

Artist Robert McLees for HALO [2000]

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## Preface:

I've been a fan of the Halo series and Bungie Studios quite some time now, and yet, I've never really contributed anything unique to the community. I frequent HBO, and after "discovering" the Halo Story Page, I've come to cherish the regular updates that Jillybean, Finn, and mnemesis have contributed to it. So naturally I've come to the point where I've decided to combine two of my passions: science and Halo, and create something for the benefit of the community and for myself. I'm currently in Grade 11, and in particular my AP Biology class has given me the knowledge I needed to write this report. The Taxonomical classification system, which originated with Aristotle, is a way to sort between different organisms based on their biology. I hope to classify the Flood organism, and perhaps offer insights into the purpose of this creature, its relationship with the Forerunner, and what its significance is in the context of the Halo universe. This paper is written in an informal lab report style, and any original ideas expressed here are merely speculation and pending confirmation from Bungie, cannot be confirmed.

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### Purpose:

Classify the Flood organism into one of the 6 taxonomic Kingdoms through canonical and theoretical knowledge of the organism, and then using this information; infer the purpose and history of the Flood in the context of the Halo universe.

### Hypothesis:

The Flood organism belongs to the Kingdom Fungi, and is in the phylum/division of Imperfect Fungi (*Deuteromycota*). The Flood organism begins life as a fungal **conidiospore**, and progresses in asexual reproduction into a colony, producing a Ranger/Infection form of the Flood organism in order to take over host bodies.

### Observations:

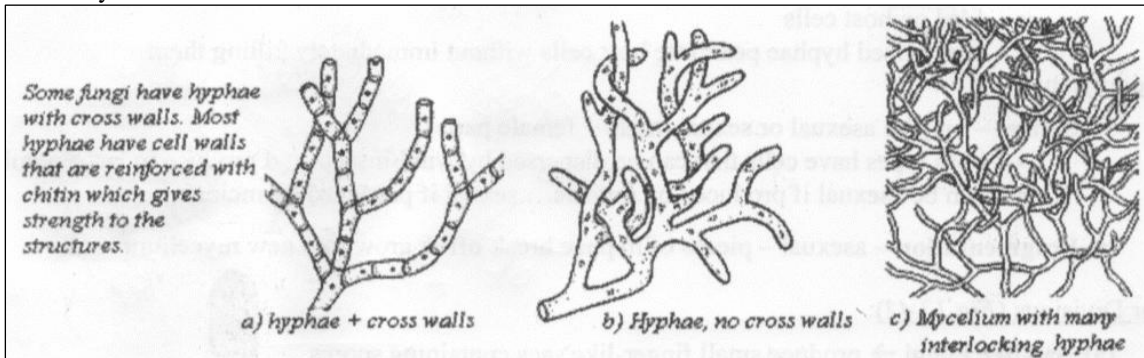
Although the amount of information on the Flood is not nearly enough to present a conclusive case, I have found game play, cutscene, and empirical data to further my hypothesis and hopefully shed some light on the origins of this species. To begin, you need to first understand what constitutes an organism that belongs to the Kingdom Fungi. This kingdom is Eukaryotic (compartmentalized organelles, mostly multi-cellular, true nucleus) and use cell walls made of the protein 'chitin' in order to maintain their integrity and strength. All fungi are composed of threadlike filaments called **hyphae** and as filaments grow they become tangled and form a mass of filaments called **mycelium**.

Fungi are heterotrophic (meaning they can't produce their own food and need organic materials instead) and can either be categorized as saprophytes or parasites. However for the duration of this report the Flood organism will be categorized as a parasitic fungus. Two main characteristics of a parasite are that they feed on host cells, and they have specialized hyphae that can penetrate host cells without killing them. Finally, fungi reproduce either by means of sexual or asexual reproduction, but in this case, the Imperfect Fungi division is only known to reproduce asexually, and have thus been chosen as best reflecting the Flood life cycle.

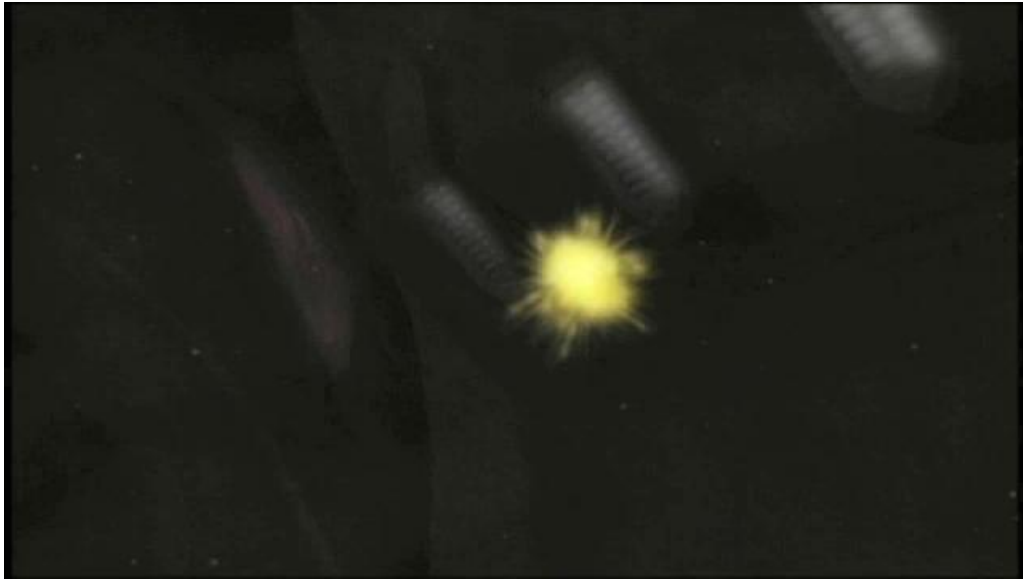
Before starting this paper I had seriously considered another category unto which the Flood organism might belong, the Kingdom Bacteria. Bacteria feature many of the same traits that I was looking for in a Flood organism; most promising however, was the dormant state **endospore** production that most bacteria use in unfavorable conditions. Endospores are very hard to eradicate, and even temperatures of 100°C (boiling point) do not ensure eradication of the spores. Sterilization is needed to totally rid of these spores, generally either temperature over 120°C, or extremely high levels of pressure or radiation. The most likely candidate among the bacteria types would be chemoheterotrophs (meaning they use organic molecules as an energy source, as well as a carbon source). However, due to the size of the Flood organisms, and their base intelligence, bacteria could be ruled out as they are too simple a life form to evolve into something resembling the Flood species.

I've collected evidence to prove my theory, and in the following I present pictures I've collected that may prove the Flood is a member of the Kingdom Fungi.

The tentacles that sprout from the chest of either a Human or Elite Flood Worker/Soldier class Flood strongly resemble the fungal **hyphae** that I spoke of earlier. Any fungi uses hyphae to sense out its surroundings (moisture content, organic waste) and the Flood use these "tentacles" for this very purpose. Acting as a sensory organ the flood infection form grows these tentacles in order to replace the sensory functions of its mutated host.



Further proof comes in the form of a screenshot and video ([http://useruploads.mythica.org/view/Flood\\_spore.wmv](http://useruploads.mythica.org/view/Flood_spore.wmv)) that was extracted from the Post-Credits Teaser cutscene. I venture that the opening few seconds of the cutscene depict a Flood fungal conidiospore floating inside the space of High Charity. Compared to a bacterial endospore, fungal spores may be macro-sized objects. In the case of the Flood the spore would be created through a means of fragmentation (asexual reproduction) where a piece of hyphae breaks off and forms into a new mycelium, creating a fungal offshoot. It would seem that the Flood spore is relatively large in size, perhaps from 3-5cm in diameter (about 1-2 inches) and due to its advanced genetic structures (the ability to form into a number of different structures to benefit a hive community) the fungal spore would most likely be larger, as the Flood organism exists on a much larger scale than any other known terrestrial fungal species.



A screenshot of a theoretical Flood conidiospore

Finally, I've discovered something in-game that at first glance may seem extraneous to the topic of this paper, but may prove to be one of the best pieces of evidence. This discovery begins in the level 343 Guilty Spark, playing on Halo PC, as I was exploring the outside of the level, and walking around the entrance to the underground Flood facility. Around certain bushes and trees I noticed these small bulb-shaped objects, crouching down and getting a better look at them they have a similar appearance to that of *mushrooms*. When I went to write this report I remembered the little guys, and decided to come back to them. Interestingly enough, on the very level where you first meet the Flood, and the fact that all the surrounding trees seem to be infected by the Flood organism, some show glowing bulging green sacs, these little mushrooms show up in various areas around the outside of the level. These could easily be a base form of the Flood, and as the fungal colony matures, the individual organisms form these mushrooms, which in turn can spawn airborne Flood spores, to contaminate and infect

susceptible species. And perhaps evolve and mature into creating a Ranger/Infection form. After the Covenant unwittingly released the Flood from stasis (stasis or some form of containment) within the facility, the Flood fungal conidiospores would be able to leave the facility and take hold of the first susceptible organic matter they could find, being the surrounding plant and fauna. After establishing a colony of mushroom like structures, the Flood fungi would create a Ranger/Infection form, which is simply a colony of tinier Flood spores, acting in a cohesive fashion. This would be evidence that the Flood organism exists on a basic cellular level, and converges when necessary into larger multi-cellular structures. This is similar in principle to the biology of Covenant Hunters, where their mass is just a colony of worms held together by a suit of armor.



An un-edited screenshot of the “mushrooms” in the level 343 Guilty Spark

### Links to Higher-Res Images

- <http://useruploads.mythica.org/view/mushroom1.JPG>
- <http://useruploads.mythica.org/view/mushroom1bright.jpg>
- <http://useruploads.mythica.org/view/mushroom2.JPG>
- <http://useruploads.mythica.org/view/reference1.JPG>





“Mushrooms” with flashlight on



Brightened screenshot of “mushrooms”, edited in Photoshop

A reference screenshot of the “mushrooms”, they can be seen in the lower left-hand of the image. They can also be found on various other parts of the outdoor area of the level, but this is the best spot based on the recognizable location.



The mushrooms cannot be interacted with at all. Any explosives (frag grenades), bullets, or plasma weapons, don't affect them, and will only scorch the ground beneath them. They seem to be a 2D texture on top of the level texture.

After the release of Halo 2, we've come to meet an entirely new form of the Flood organism, *Gravemind*. Gravemind is certainly an enigma in the Halo universe. What is his role? What are his motives? As the apparent leader of the Flood species, his incredible intelligence and physical abilities give him the power to do almost anything (most notably his manipulation of the Halo transportation grid, and the massive length of his tentacles and body). However at his base form he's still a Flood organism. In terms of fungal organism I would classify him as an immense fungal colony. Perhaps consisting of millions of individual fungal organisms, they coalesce and form a single entity, capable of carrying out complex thought and movement. This evolution of sorts is plausible given the Flood's nature to absorb and infect more and more advanced life forms. In order to have proved a real danger to the Forerunner, greater intelligence was needed. The fungal colony adapted to meet these needs and created a sentient being that was able to command the Flood organisms and direct their movements. Exactly how this link to other Flood organisms over vast distances is achieved is subject to question. Perhaps the

*Gravemind* entity adapted telepathic abilities in order to communicate with other Flood organisms. Either way, it seems clear that from Halo canon, in particular Pvt. Jenkins' experiences as a Flood host in Halo: The Flood that the Flood Ranger/Infection form has formidable physic capabilities in its takeover of sentient minds. Additionally, the long tentacles that Gravemind displays are akin to the hyphae of fungal organisms.

## Conclusions:

Based on all the evidence I have collected from the game literature, in-game screenshots, and cutscene footage the classification of the Flood organism as belonging to the Kingdom Fungi seems very fitting. Not only does the Flood exhibit biological characteristics that are similar to characteristics of known fungal species, but their nature and instincts are also recognizable with fungi. The Flood organism was created as a parasitic fungus and has a complex DNA code enabling it to create a colony of spores into different shapes & roles (Ranger/Infection class, Gravemind) in order to suit the species needs as a whole.

## Discussion:

Now that the Flood has been categorized into a respective kingdom, we can begin to extrapolate that fact into useful information on their place in the Halo universe. There are several characteristics that kingdom fungi organisms exhibit. One of these is the ability to destroy bacteria, which often compete directly with certain fungal species for food. Even today fungi have helped produce successful antibiotics, the species *Penicillium* is used to produce the antibiotic penicillin, and is used towards killing bacteria. Now what are the implications of this concerning the Halo universe?

**THEORY #1:** The Forerunner used advanced genetic engineering to design and grow the Flood fungal species. The Forerunner were battling a super-bacterium that was quickly killing off its population, and any attempts to control the spread of the contagion proved futile. In order to save their species and the entire galaxy the Forerunner used their advanced engineering to construct the Flood species, this fungal parasite (many fungi species kill bacteria) was dispersed on infected worlds and soon went to work destroying bacteria in animals and plants. However, the advanced fungi began to evolve and created infection and command/pilot forms in order to destroy the Forerunner, who was now identified as a "target bacteria" to be eliminated. After finally containing the dangerous species, the Forerunner enabled the Halo system, ensuring the galaxy was sterilized of Flood hosts.

**THEORY #2:** The other obvious reason, paints the Forerunner in a negative light, more akin to *Gravemind's* "**Those who built this place knew what they wrought**". The Forerunner are an overconfident race whose aspirations to achieve greatness have led them to pursuing immortality. Although they are not a military



species, lacking powerful weapons and ships, the Forerunner have incredible abilities in the field of genetic engineering. Having dominion over their galaxy the Forerunner are able to make their own experiments and strive for genetic purity (READ: Bungie's numerous connections with Blizzard's Starcraft series abound, let's just hope this isn't the ACTUAL SECRET as this would just be a clone of Starcraft's mysterious Xel-Naga). Creating the Flood, the Forerunner hope to create a symbiotic relationship with the Flood organism thus giving them the immortality they seek. However, the "experiment" goes wrong and the new host body (*Gravemind*) grows malignant intelligence and tries to destroy the Forerunner. Panic ensues, the Halo installations are created, and the Flood are wiped out, all except for *Gravemind*. This is an interesting theory as it proves that the Humans/Forerunner have had a past relationship with the Flood.

The two above are just basic theories that can be attributed to this report, although they are not entirely original, I think they provide a basis for expanding upon the information that I found. Hopefully others in the community will be able to think of unique theories and ideas concerning the Flood, now that they can be classified as a fungal species.

## Unanswered Questions:

- What are Gravemind's goals for the Flood organism?
- What are the Flood's origins? Did they evolve on their own, or were they genetically engineered?
- [The Covenant apparently have a history with the Flood](#), what was this all about?

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