

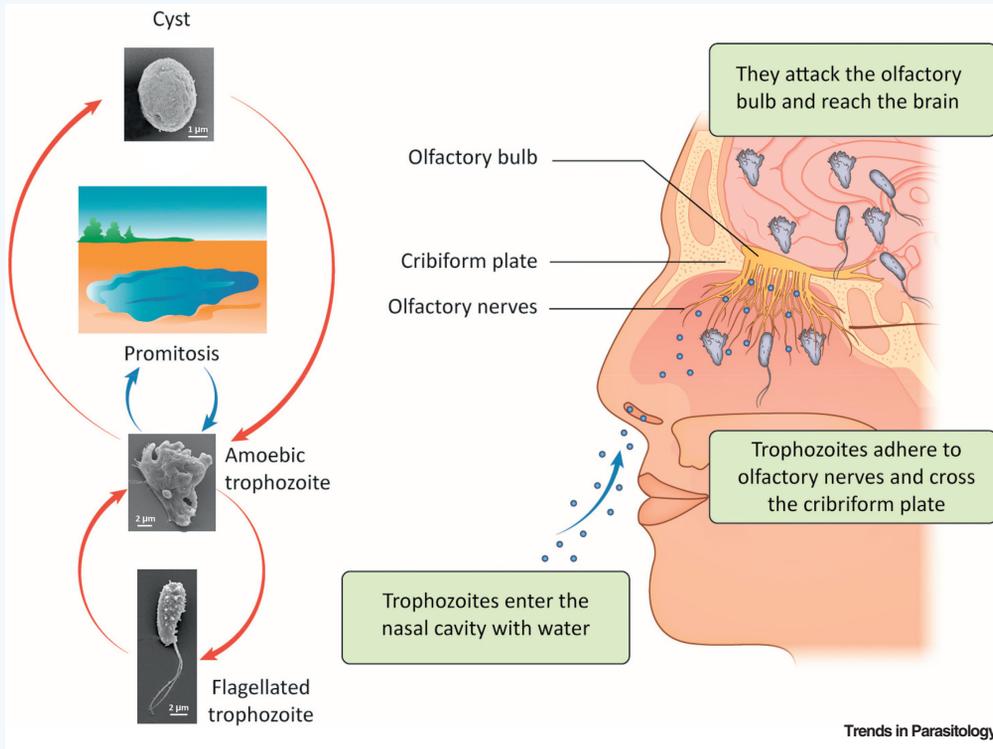
Naegleria fowleri

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KEY FACTS:

N. fowleri has been isolated from both soils and different types of water bodies, such as swimming pools, thermal waters, tap water, and lakes.

N. fowleri can cause an aggressive infection of the human central nervous system (CNS), which is called primary amoebic meningoencephalitis (PAM).

Most reported cases of PAM patients present a history of contact with *N. fowleri*-contaminated water bodies in the week prior to the appearance of the first symptoms.

DISEASE FACTS:

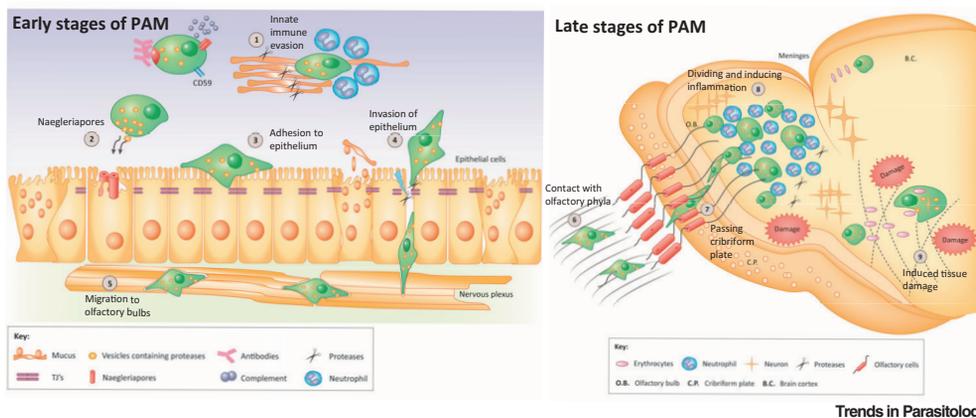
N. fowleri penetrates through the nasal passage, where it adheres to the olfactory nerves and makes its way to the brain through the cribriform plate.

The amoeba attacks the olfactory bulb, producing an inflammatory process and leading to brain infection, which is fatal in more than 97% of cases.

Naegleria fowleri, also known as the ‘brain-eating amoeba’, is a free-living amoeba capable of living in the environment, especially in bodies of warm water. Three distinct life stages exist: amoeboid trophozoite, flagellated trophozoite, and cyst. In the amoeboid trophozoite phase cell division occurs by mitosis. The sizes of the trophozoite forms range from 15 to 25 µm. Like most protists, the trophozoites form cysts under unfavorable conditions. The cysts measure between 7 and 10 µm and are covered by a thin double wall with one or two pores. It is possible that all three phases of *N. fowleri* reach or invade the human nasal mucosa, but only the trophozoite amoeboid form has been isolated in cerebrospinal fluid or tissue. It is feasible that, upon reaching the nasal area, the cyst quickly becomes a trophozoite and forms flagella before it invades the nasal and olfactory nerve tissue. Infection occurs when individuals swim or dive in *Naegleria*-contaminated warm freshwater bodies such as lakes or rivers.

Clinical symptoms are characterized by the sudden onset of bifrontal or bitemporal headache, high fever, stiff neck, followed by nausea, vomiting, and irritability. In advanced stages of the infection, photophobia and neurological alterations are observed, such as lethargy, seizures, confusion, coma, diplopia, or strange behavior, which leads to death within a week.

The treatment is based on the use of amphotericin B in combination with other drugs such as rifampin, fluconazole, azithromycin, miltefosine, and dexamethasone.



TAXONOMY AND CLASSIFICATION:

- PHYLUM:** Percolozoa
- CLASS:** Heterolobosea
- ORDER:** Schizopyrenida
- FAMILY:** Vahlkampfiidae
- GENUS:** *Naegleria*
- SPECIES:** *N. fowleri*

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Resources

www.cdc.gov/dpdx/freelivingamebic/
www.cdc.gov/parasites/naegleria/general.html
www.jordansmelskifoundation.org/

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