BACTERIA



Bacteria

rods and dots (cocci)

Tiny dots and rods: the base of the soil food web.

BACTERIA

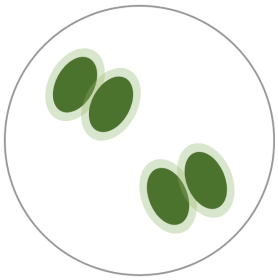


Bacteria

rods and dots (cocci)

Tiny dots and rods: the base of the soil food web.

BACTERIA

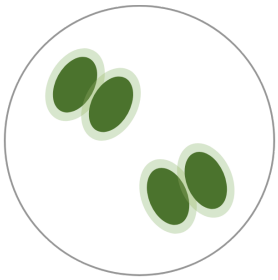


Azotobacter

nitrogen fixer

Fat paired cells that turn nitrogen from the air into plant food.

BACTERIA



Azotobacter

nitrogen fixer

Fat paired cells that turn nitrogen from the air into plant food.

BACTERIA



Purple bacteria

PNSB

Purple-red rods that use light and clean up smelly, sour spots.

BACTERIA

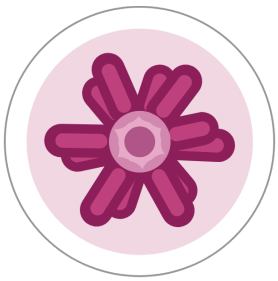


Purple bacteria

PNSB

Purple-red rods that use light and clean up smelly, sour spots.

BACTERIA

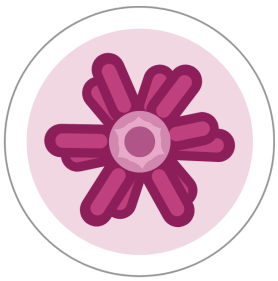


Purple bacteria rosette

PNSB

Purple rods spreading out from a soft centre, like a flower.

BACTERIA

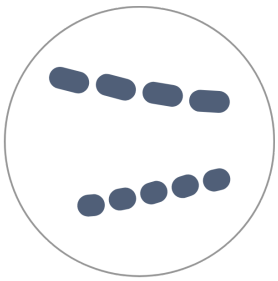


Purple bacteria rosette

PNSB

Purple rods spreading out from a soft centre, like a flower.

BACTERIA

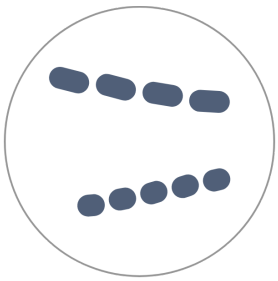


Lactic acid bacteria

LAB

Rods in short chains that ferment, as in bokashi and sauerkraut.

BACTERIA



Lactic acid bacteria

LAB

Rods in short chains that ferment, as in bokashi and sauerkraut.

BACTERIA



Actinobacteria

Thin, branching threads that give soil its earthy smell.

BACTERIA



Actinobacteria

Thin, branching threads that give soil its earthy smell.



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

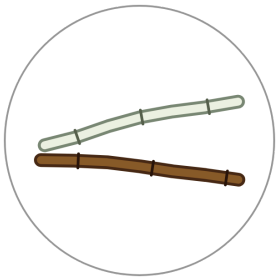


Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

FUNGI

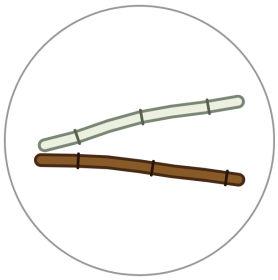


Decomposer fungus

clear or brown threads

Wide, even threads with cross-walls. It breaks down woody stuff.

FUNGI

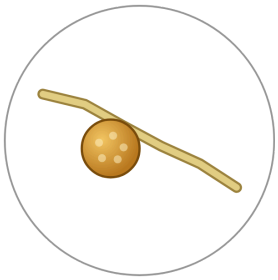


Decomposer fungus

clear or brown threads

Wide, even threads with cross-walls. It breaks down woody stuff.

FUNGI

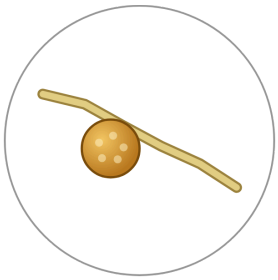


Mycorrhizal fungus

root-partner threads

No cross-walls, round spores. It trades water for root sugar.

FUNGI

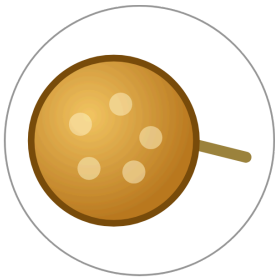


Mycorrhizal fungus

root-partner threads

No cross-walls, round spores. It trades water for root sugar.

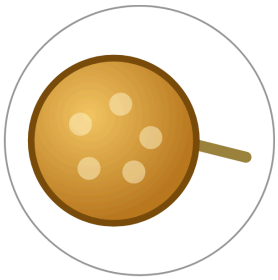
FUNGI



Mycorrhizal spore

A big round spore that grows a new root-partner thread.

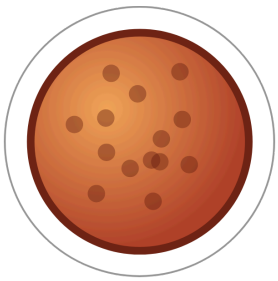
FUNGI



Mycorrhizal spore

A big round spore that grows a new root-partner thread.

FUNGI

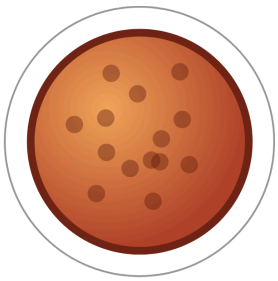


Acaulospora spore

volcanic soils

A pitted orange-red root-partner spore of young volcanic ash soils.

FUNGI

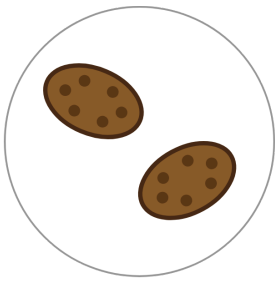


Acaulospora spore

volcanic soils

A pitted orange-red root-partner spore of young volcanic ash soils.

FUNGI

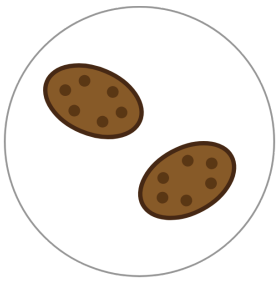


Forest root-partner spores

ectomycorrhizal

Small brown warty spores of fungi that wrap tree roots.

FUNGI

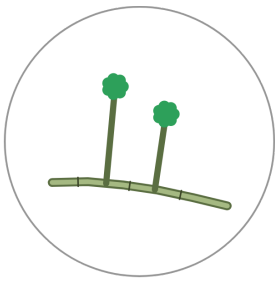


Forest root-partner spores

ectomycorrhizal

Small brown warty spores of fungi that wrap tree roots.

FUNGI

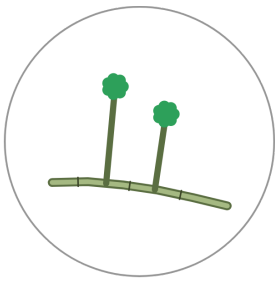


Trichoderma

helper fungus

Right-angle branches and green spore tufts. It guards roots.

FUNGI



Trichoderma

helper fungus

Right-angle branches and green spore tufts. It guards roots.



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

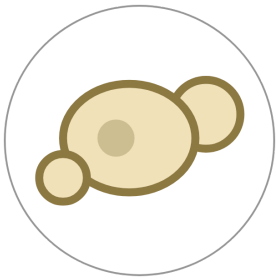


Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

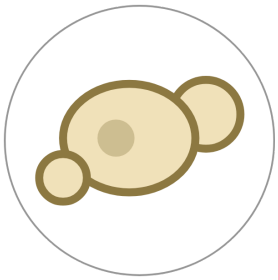
FUNGI



Yeast

A one-celled fungus that buds off little daughter cells.

FUNGI



Yeast

A one-celled fungus that buds off little daughter cells.

FUNGUS LOOKALIKE



False fungus

lookalike, often a water mold

Thin, wispy, broken threads. Not a true fungus.

FUNGUS LOOKALIKE

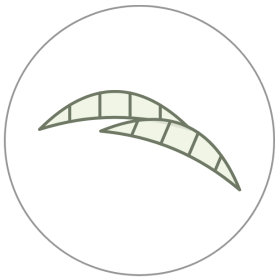


False fungus

lookalike, often a water mold

Thin, wispy, broken threads. Not a true fungus.

DISEASE FUNGUS

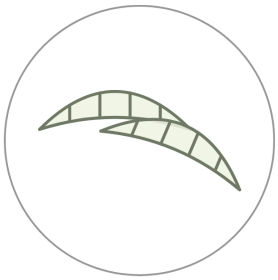


Fusarium spores

disease fungus

Clear curved canoes with cross-walls. It can cause root rot.

DISEASE FUNGUS



Fusarium spores

disease fungus

Clear curved canoes with cross-walls. It can cause root rot.

DISEASE FUNGUS



Alternaria spore

disease fungus

A dark brown club with a beak and a brick-wall pattern.

DISEASE FUNGUS

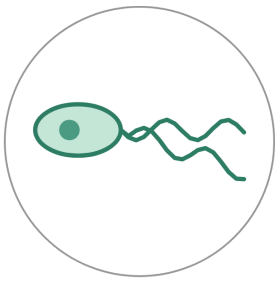


Alternaria spore

disease fungus

A dark brown club with a beak and a brick-wall pattern.

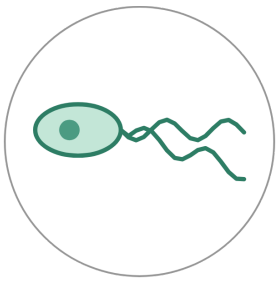
PROTOZOA



Flagellate

A small oval that whips about with its tails and eats bacteria.

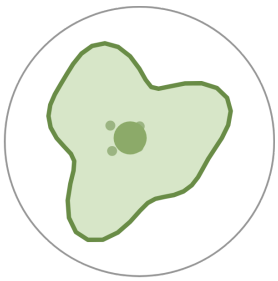
PROTOZOA



Flagellate

A small oval that whips about with its tails and eats bacteria.

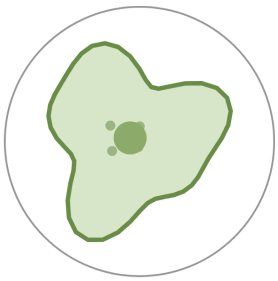
PROTOZOA



Naked amoeba

A shape-changing blob that squeezes into tiny pores to eat bacteria.

PROTOZOA



Naked amoeba

A shape-changing blob that squeezes into tiny pores to eat bacteria.



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

PROTOZOA

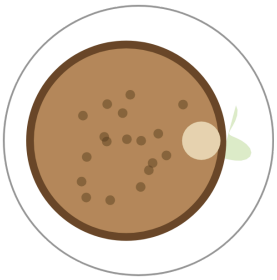


Testate amoeba

amoeba in a shell

It lives in a shell and pokes a soft foot out of the opening.

PROTOZOA

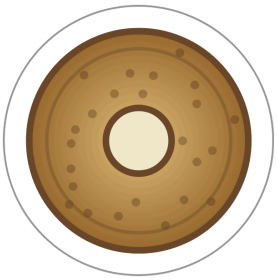


Testate amoeba

amoeba in a shell

It lives in a shell and pokes a soft foot out of the opening.

PROTOZOA

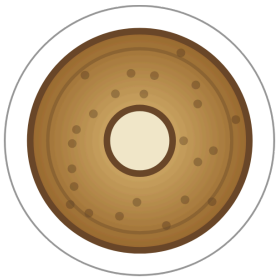


Arcella

testate amoeba, seen from below

A shelled amoeba that looks like a little brown donut.

PROTOZOA

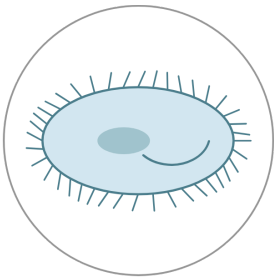


Arcella

testate amoeba, seen from below

A shelled amoeba that looks like a little brown donut.

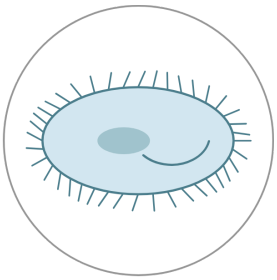
PROTOZOA



Ciliate

Covered in tiny hairs (cilia). A fast swimmer that eats bacteria.

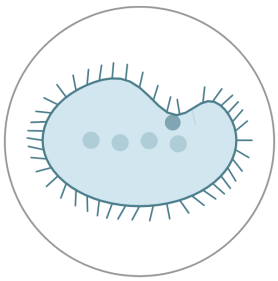
PROTOZOA



Ciliate

Covered in tiny hairs (cilia). A fast swimmer that eats bacteria.

PROTOZOA

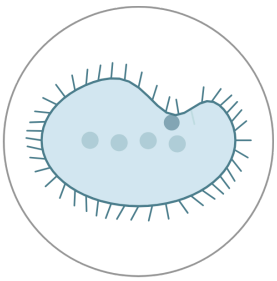


Colpoda

bean-shaped ciliate

The commonest soil ciliate, shaped like a kidney bean.

PROTOZOA

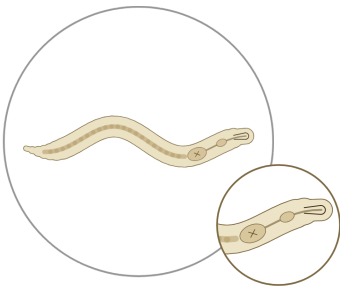


Colpoda

bean-shaped ciliate

The commonest soil ciliate, shaped like a kidney bean.

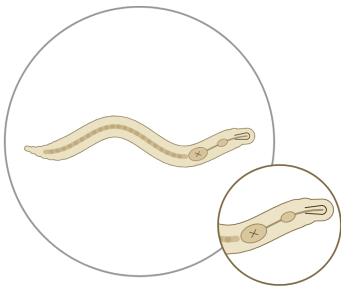
NEMATODES



Bacteria-eating nematode

An open tube mouth. It eats bacteria and releases plant food.

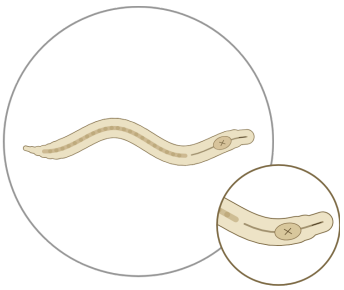
NEMATODES



Bacteria-eating nematode

An open tube mouth. It eats bacteria and releases plant food.

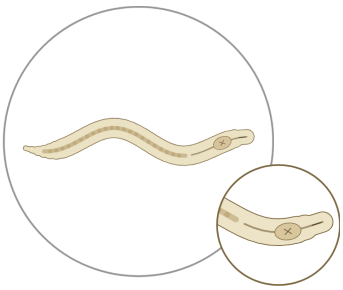
NEMATODES



Fungus-eating nematode

A thin, small spear for piercing fungal threads.

NEMATODES



Fungus-eating nematode

A thin, small spear for piercing fungal threads.



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

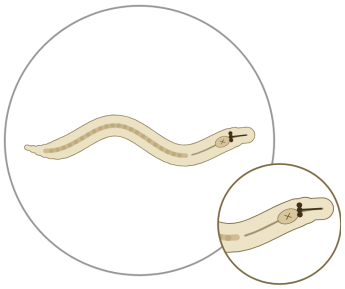


Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

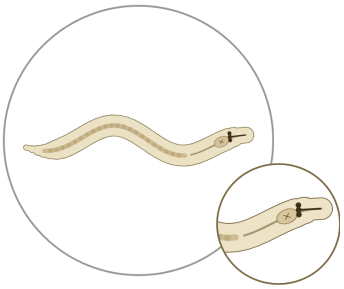
NEMATODE (PEST)



Root-eating nematode

A big spear with knobs that stabs roots. A pest!

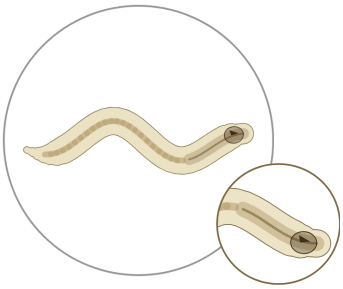
NEMATODE (PEST)



Root-eating nematode

A big spear with knobs that stabs roots. A pest!

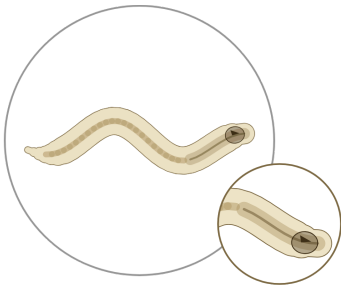
NEMATODES



Predatory nematode

A big mouth with a tooth. It eats other nematodes.

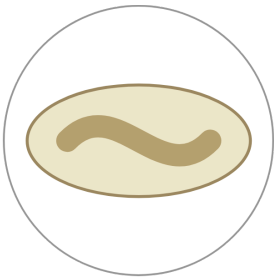
NEMATODES



Predatory nematode

A big mouth with a tooth. It eats other nematodes.

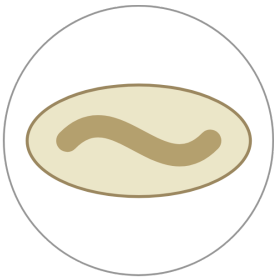
NEMATODES



Nematode egg

A smooth oval egg. Sometimes a little worm is coiled inside.

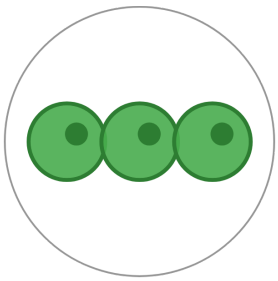
NEMATODES



Nematode egg

A smooth oval egg. Sometimes a little worm is coiled inside.

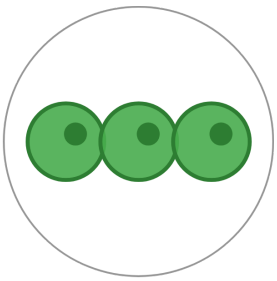
ALGAE



Algae

Green cells that make their own food from sunlight.

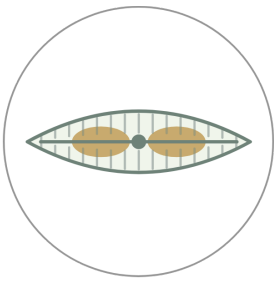
ALGAE



Algae

Green cells that make their own food from sunlight.

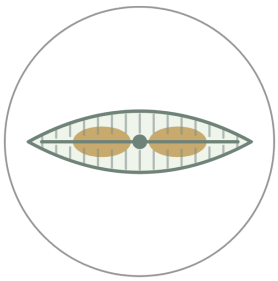
ALGAE



Diatom

A living alga in a glass shell, shaped like a little boat.

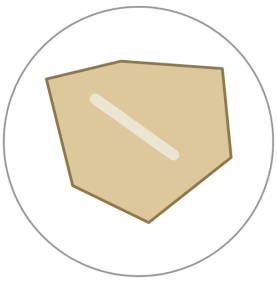
ALGAE



Diatom

A living alga in a glass shell, shaped like a little boat.

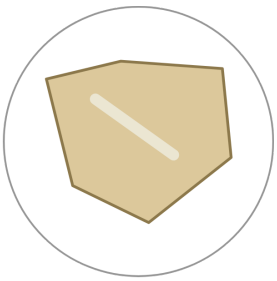
NOT SOIL LIFE



Sand grain

An angular mineral grain. Not alive: the soil's skeleton.

NOT SOIL LIFE



Sand grain

An angular mineral grain. Not alive: the soil's skeleton.



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

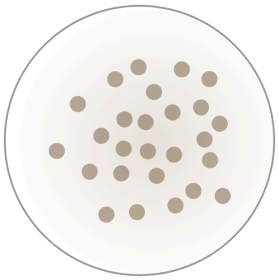


Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory

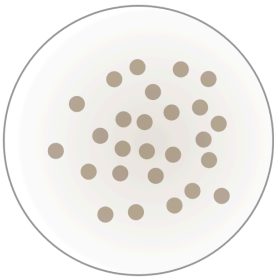
NOT SOIL LIFE



Clay flakes

Too tiny to see one by one: a faint, fuzzy haze and clumps.

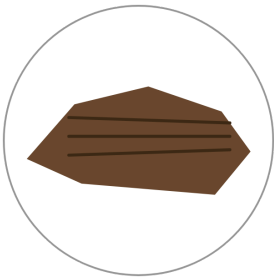
NOT SOIL LIFE



Clay flakes

Too tiny to see one by one: a faint, fuzzy haze and clumps.

NOT SOIL LIFE

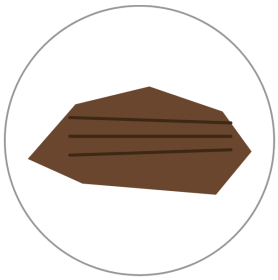


Organic bits

old leaves and roots

Brown bits of old plants: food for the soil life.

NOT SOIL LIFE

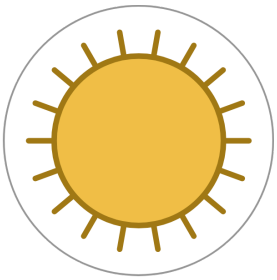


Organic bits

old leaves and roots

Brown bits of old plants: food for the soil life.

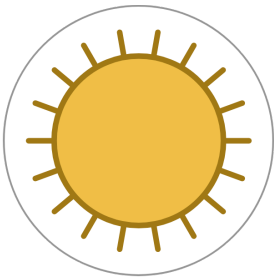
NOT SOIL LIFE



Pollen

A spiky grain from a flower, blown or washed into the soil.

NOT SOIL LIFE



Pollen

A spiky grain from a flower, blown or washed into the soil.

NOT SOIL LIFE



Microfiber

plastic thread

A thread from clothing. Litter, not soil life.

NOT SOIL LIFE

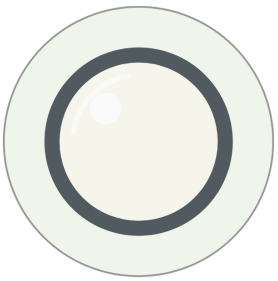


Microfiber

plastic thread

A thread from clothing. Litter, not soil life.

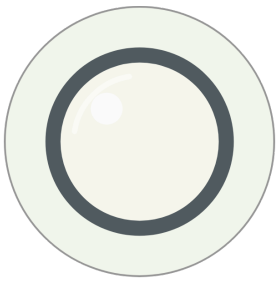
NOT SOIL LIFE



Air bubble

A dark ring with a bright middle, from making the slide.

NOT SOIL LIFE



Air bubble

A dark ring with a bright middle, from making the slide.

How to play

DR. DIRT'S MICROBE MEMORY

2 to 4 players, ages 4 and up

1. Shuffle. Lay all the cards in rows, Dr. Dirt side up.
2. On your turn, flip over two cards and read both names out loud.
3. A match? Keep the pair and go again.
4. No match? Turn them back over in the same spots. Next player's turn.
5. When every pair is found, the most pairs wins!

Little ones: start with 8 to 12 pairs. Big kids: try all 35!

Print at Actual size (100%), 2-sided



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory



Dr. Dirt's
Microbe Memory