

Ten-to-One: The Microbiome Game!

In The Microbiome Game! players compete to develop the healthiest microbiome, while attempting to disrupt each others efforts.

"I'm going to raid the pharmacy, treat you with tetracycline, and then give you a fungal infection"

"Oh yeah, I'm going to give you botulism"

"That's fine because I'm going to give myself a fecal transplant"

Game preparation

- Give one play sheet to each player, put the board in the center
- Remove all 6 "Checkup" cards (teal) from the deck
- Set all plasmid cards (purple) in a face-up pile as indicated on board
- Shuffle the remaining cards and give 5 to each player (if none are microbes, that player may redraw)
- Deal 3 cards face up as indicated on board
- Shuffle the "Checkup" cards into the main deck
- The player who has most recently eaten yogurt goes first, play proceeds clockwise

The Short Version of the Rules (for people who don't like to read)

- Play as many cards per turn as you'd like.
- You can only play one microbe per turn. Pathogens go in pathogen zone, Beneficials go in beneficial zone, Opportunistics go in either. You can play microbes on any player.
- Once per turn you can discard a card and take one of the face-up cards from the middle
- At the end of your turn, draw back up to 5 cards
- When a "Checkup" event is drawn everyone scores their microbiome, points are indicated on the cards depending on which zone the microbe is in.
- If someone plays an "Antibiotic" card, then read the rules below called "Plasmids"
- The game ends when the last card is drawn. Each other player gets a final turn and then there is a final Checkup. Player with the most health wins.
- Enjoy!

The Actual Rules

Card Types

There are three types of cards in the main deck; Microbes, Events, and Infections.

-Microbes (Orange): These represent bacteria that you are using to either make a healthier microbiome for yourself, or to disrupt your opponents microbiome(s). See the "Main Phase" rules for playing Microbes.

-Events (Pink): These cards are played, their effect is resolved, and they are discarded. Some of them increase or decrease a player's health. These effects are indicated in the green and red circles on the card and occur instantly. You can play events for no effect, but only if there is a valid target (e.g. "*Milk*" can be played even it has no effect, but "*Lateral Gene Transfer*" can only be played if a plasmid is in play)

-Infections (Yellow): Infections are played on a player and remain in play until the conditions described on the card are fulfilled. They are not considered Microbes and are therefore immune to cards such as "*Bacteriophage therapy*" and the various antibiotics. They are scored during checkups, similar to Microbes.

Turn order

1. Main phase

During your main phase you can play as many cards as you want, with the exception of Microbes. You can only play one Microbe per turn (either on yourself or another player). You can never play cards during another players turn. Cards can be played in any order you'd like.

-Playing a Microbe: Pathogen Microbes can only be played in the Pathogen Zone. Beneficial Microbes can only be played in the Beneficial Zone. Opportunistic Microbes can be played into either zone. Note that you can play a microbe on yourself, or on an opponent.

-Exchange (Optional) Discard one card and draw one of the face up cards. You may only do this once per turn but it can happen at any point during the main phase. Replace the missing card with the top card of the deck.

2. Draw back to 5 cards

3. Turn ends

Checkup Event (teal)

When a "*Checkup*" card is drawn, immediately stop play and resolve the checkup. After the checkup is resolved, place the "*Checkup*" card to the side and draw another card to replace it. Keep the discarded checkup cards in their own pile so players know how many are left (there are 6). Cards that search through the library (e.g. "*Probiotics*" and "*Raid the pharmacy*") do not trigger checkups)

During a checkup, you score your microbiome. Microbes in your beneficial zone give points as indicated in the green circles on the card. Microbes in your pathogen zone subtract points as indicated in the red circles on the card. Infections are also scored at this time. All cards (except for the checkup) remain in play after scoring.

There can never be two checkups in the same turn, if a second one is drawn then shuffle it back into the deck. In addition, there cannot be a checkup until every player has had a turn.

There is a 7th, automatic, checkup at the very end of the game that is not represented by a card.

Plasmids

Every time antibiotics are played, all surviving microbes of the player receiving the antibiotics get an appropriate plasmid (e.g. after tetracycline is played, the remaining microbes receive the "*Tetracycline resistance plasmid*"). If no plasmids of the appropriate type are available, nothing happens. This effect does not occur for microbes which were already resistant to that antibiotic. When a microbe carrying plasmids is destroyed, put its plasmids back into the plasmid pile.

Tracking Health

Various events during the game, including checkups, cause the players health status to go up or down as indicated on the player sheets. All players start at 10 health. If a player's health ever reaches zero health, they are out of the game and all their cards in play and hand are discarded.

Game End

The game ends after the deck has been exhausted. The player who draws the last card finishes their turn, then each other player gets one final turn. This is followed by a final checkup. The player with the highest health after the final checkup is the winner. It is also possible to win if all other players are dead.

Rules for 5-6 players

When playing with 5 or 6 players there are a couple of small changes to the rules. Instead of 6 "*Checkup*" cards, play with only 3, but cycle through the deck twice. There will be 3 random checkups, then an instantaneous midpoint checkup when the deck is exhausted for the first time. Reshuffle the deck, again with 3 "*Checkup*" cards, then continue play. Game end is as the same for 2-4 players (e.g. every player gets a final turn before the game-ending checkup).

Tips on Strategy (not needed to play the game)

Don't forget to exchange cards through the middle. Think not only of cards that would benefit you but take negative cards that you don't want to see played on you, or positive cards that might help your opponents.

Card cycling (i.e. playing cards for no effect... such as "*Milk*" when you have nothing to digest it) can be very useful. If you're doing well, it's potentially worth cycling as much as possible to increase the chances of drawing a checkup. If you're doing poorly, you might need to hold back from playing many cards to lower the risk of drawing a checkup.

The game plays very differently depending on the number of players. A good strategy with 2 players may not work with 4 and vice versa.

Notes on Microbiology

An attempt has been made to be as scientifically accurate as possible, within the (significant) constraints of making a playable game. The core concepts of the game, e.g. antibiotic resistance, lateral gene transfer, opportunistic microbes etc. are all derived from current knowledge.

However, the real world of the human microbiome is significantly messier than it might appear from this game. Important caveats include the fact that in reality we know relatively little about our own microbiome. It's clear that having a healthy microbiome is important, but much less clear is how to measure that, what species that might involve, how it is influenced by diet/culture/lifestyle etc.

Likewise, nutrition in real life is much murkier than here. While we know that microbes in the gut produce certain vitamins we're often not sure which ones. Likewise it's also unlikely that a single microbe could be responsible for the ability to digest milk, grains, or plants for example... but certainly our total microbiome is intimately involved in these processes.