

# Microbia!

## The Microbiome Board Game

Created by Dhruvi Joshi and Kristen Santarin

### What is it?

The human microbiome has a profound impact on human health. With microbes as the game's currency, explore how our daily lifestyle choices and surrounding environment influence our microbiomes! Land on a square, pull a card with the same color, and discover which specific choices can alter our microbial diversity for better and for worse. The player to reach the end with the most microbes wins!

### Game Square Key

#### Good Choice

Earn microbes for good lifestyle choices

#### Bad Choice

Lose microbes for bad lifestyle choices

#### Disease Treatment

Pay microbes for antibiotic usage for the disease drawn at the start of the game

#### Probiotic Day

Paydays! Collect 150 microbes for taking your probiotics

#### Sick Day

Lose microbes for taking antibiotics for relatively mild illnesses

#### Wild Card

Draw a heavily impactful lifestyle choice, environmental exposure, or illness

## Setting Up the Game

Print and cut out all [playing cards](#). Place them in piles, sorted by color.

Print the [game board](#) across two sheets of paper and tape together. Players are also encouraged to get creative and create their own game board out of scraps of colored paper, foam sheets, or even sticky notes. Use the following distribution of colors: 40 Green, 40 Purple, 20 Blue, 10 Yellow, 10 Orange, 30 Pink.

Reuse dice from another board game or write the numbers 1 through 6 on separate folded slips of paper and have players draw a number for each turn.

Each player should have a game piece to move across the game board. Try reusing game pieces from other board games, use small toys, charms, and trinkets, or even make your own tiny player pieces out of clay or paper!

Print out the [microbe “money” currency sheets](#). Alternatively, players can keep track of their total amount of microbes by writing down their gains and losses of microbes as the game goes on.

## Playing Microbia! 2 to 6 Players. Ages 8+

Determine the order of players by rolling the dice. The player with the largest number rolled goes first. Each player must draw and keep a blue disease card. Each player will begin the game with 300 microbes. Players take turns rolling the dice and moving their game piece. Once a player lands on a green, purple, orange, or yellow square, they must draw a card of the same color and follow its instructions. If a player lands on a blue square, they must pay the bank the number of microbes listed on their disease card. If a player lands on a pink square, it is “Probiotic Day”, and they instantly collect 150 microbes from the bank. The player with the most microbes at the end wins! If there is a tie between players, both players may choose to each pull a wild card and lose/gain the listed number of microbes drawn.

## The Making of Microbia!

During the summer of 2019, Dhruvi Joshi and Kristen Santarin, two Ambassadors from Institute for Systems Biology's "STEAM Towards a Healthier World" program\*, teamed up together to showcase their recent learnings. Over the course of a week, "Microbia! The Microbiome Board Game" was diligently handcrafted and created.

Learn more about the creators by visiting:

Dhruvi Joshi:

<https://see.systemsbiology.net/steam2019/dhruvi-2/>

Kristen Santarin:

<https://see.systemsbiology.net/steam2019/kristen-2/>

*\*This program was made possible through generous funding from the Dean Witter Foundation & Dee Dickinson.*

## Our Inspiration

*"We were inspired to focus on the subject of the microbiome after listening to ISB's own Dr. Sean Gibbon's lecture about how the microbiome impacts human health. It was really incredible for us to learn how this is still a relatively new field of research in biology. Scientists are just beginning to understand how profound a role the human microbiome has on our health. Because of this, the information of human microbiota was entirely new to both of us as it was never taught in either of our AP or IB Biology classes in high school. It was also mind blowing that even though it's such an important part of our health it's never covered by the school curriculum or our doctors. With our project we hope to bring the microbiome into the spotlight and educate more of the general public about these amazing little organisms."*

## Our Target Audience

The target audience of this project is families with members of all ages. We recommend this board game for ages 8 and up to ensure that the message can be fully comprehended by players but can still be received at a young and impressionable age.

*“We chose to target this particular audience because we want to improve the general public knowledge of the human microbiome. By placing the subject in a fun, easily digestible, and accessible family friendly board game, we are able to raise awareness of the importance of our habits and the impacts of lifestyle and the environment on our health. We believe that people are never too young or too old to gain control over their own wellbeing and this board game serves as a reminder to take care of our microbiota to do so. We also hope that by using small lifestyle changes, such as buying whole grain bread over white bread, it inspires people to start making small changes in their own lives and instilling these small, healthy habits in their kids.”*

## Environment & Health Connections

Multiple examples of the relationship between the environment and health are made throughout the entirety of the board game. The vast majority of the squares players can land on are green “Good Choice” squares and purple “Bad Choice” squares. Because they impact the microbiome, the “choices” make players gain or lose microbes, thus changing the diversity of their microbiomes. The “choices” listed on cards are very common, such as what foods we eat and where we go during the day, and though they are seemingly miniscule choices they can accumulate to cause major changes in the wellness of our microbiomes and overall health. Each choice and its impact on health was weighted so players can form a clear understanding of how impactful certain daily decisions are on health. The bottom of each card also explains how each choice directly influences the health of the microbiome. There are also “sick day”, “wild card”, and “disease day” cards that demonstrate the factors out of our control such as getting sick and having to take antibiotics. These squares show that sometimes antibiotics are needed to cure a certain sickness or manage a disease but you can still have a healthy microbiome and bounce back by making good lifestyle choices.