

PUBLIC HEALTH PROGRAMME

Oral health campaign in schools. Children teach the whole family how to brush properly.

If you are a **child**,

If you are **not** a **child**,

35

ANTIBIOTIC TREATMENT

Antibiotics cure bacterial infections, but they greatly disrupt the oral microbiota.

If you have a , remove it.

Then roll a and a or .

36

GOOD ORAL HEALTH

Brushing and flossing after eating promote good oral health.

If you **brush correctly** put a or a in their balance value.

If not,

 or

37

GOOD ORAL HEALTH

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If you **brush correctly** put a or a in its balance value.

If not,

 or

38

PROBIOTICS

Taking probiotics (living microorganisms in foods, such as yogurt, or supplements) helps building up beneficial bacteria and keep *Candida* at bay.

If you do not **drink alcoholic** beverages, place *Candida* or one in its balance value.

Instead, if you are **smoker**,

 or

39

PREBIOTICS

Prebiotics are complex carbohydrates and other compounds that our body cannot digest, but that stimulate the growth and activity of beneficial bacteria.

If you do **not** drink **alcohol**, place one or one in its balance value.

If you drink **alcohol**,

 or

40

VACCINES

Vaccines provide immunity against a specific disease and are the most effective method of preventing infectious diseases.

Put this card on the table. If during this round an **epidemic** card appears, you can cancel it and discard both cards; otherwise, discard this card at the end of the round.

41

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42

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Or


 and

43


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If you are **child**,




If not,



44

PREBIOTICS

Prebiotics are complex carbohydrates or other compounds that our body cannot digest, but that stimulate the growth and activity of beneficial bacteria.



45

RESEARCH
Popular science

Good science communication empowers the population. An informed population thinks and decides wisely.


You and the two players next to you, move one of your dice towards balance.




46

RESEARCH
Mass sequencing

Illumina's new MiSeq sequencer analyzes 96 samples on each board and produces 30 million readings, generating 7 Gb of data.

If you have 3 dice in balance, remove 

If you have 4 or more dice in balance, remove 


47

PROLONGUED ANTIBIOTIC TREATMENT


Taking antibiotics long-term reduces the population of most species of bacteria and increases the growth of the yeast *Candida*.

If you have any , remove it.

Then,



Also, if you have **Down syndrome**,



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49

RESEARCH
Study population

You contact the Celiac Association and decide to collaborate to expand the study population. Your research advances.




Then recover from the discard pile an already played action card; you can play it right now or keep it for the next rounds.

50

RESEARCH
Pipetting robot

The new pipetting robot allows scientists to save a lot of time in preparing genetic libraries for the sequencer.

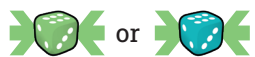


then, discover *Veillonella*. Roll the die to determine its initial value.

51

RESEARCH
Study population

New schools are added to the project. Your research advances.



Then, discover *Gemella*. Roll the die to determine its initial value.

52

RESEARCH

International conference

ACTIONS

Introduction of new software for data analysis. The research advances.

or

Then, discover *Porphyromonas*. Roll the die to determine its initial value.

53

RESEARCH

Project renewal

ACTIONS

The funding body grants new funding to the project.

or

Then,

54

RESEARCH

Postdoc hiring

ACTIONS

A new postdoc expert in data analysis is hired.

Discover *Veillonella*, *Gemella* or *Porphyromonas*. Roll the die to determine its initial value

55

RESEARCH

Intern

ACTIONS

A bioinformatics scholarship holder will support the research team for 6 months. Your research advances.

Discover *Veillonella*, *Gemella* or *Porphyromonas*. Roll the die to determine its initial value

56

VACUNACIÓ

ACCIO

Les vacunes proporcionen immunitat davant d'una determinada malaltia i són el mètode més eficaç de prevenir les malalties infeccioses.

Deixa aquesta carta sobre la taula. Si en aquesta ronda apareix alguna carta d'**epidèmia**, pots anul·lar-la i descartar les dues cartes; si no, descarta aquesta carta al final de la ronda.

57

ORAL HYGIENE

Poor hygiene

HABITS

Poor dental hygiene builds up plaque and anaerobic bacteria like *Prevotella*, *Porphyromonas* and *Veillonella*.

If you **brush properly**, increase only one.

If you **floss**, this card cannot cause you any

1

INFECTION

Pneumonia

EXTERNAL AGENTS

Streptococcus pneumoniae infection forces you to rest for a few days.

Receive

Moreover, if you have **cystic fibrosis**, receive

Place the die in one of your black boxes and roll it to determine its initial value.

2

INFECTION

Chronic periodontitis


EXTERNAL AGENTS

Dental pulp infection. You need to combine two antibiotics to attack *Porphyromonas gingivalis* and *Aggregatibacter actinomycetemcomitans*.


and receive

Place the die in one of your black boxes with value = 1.

3




HABITS
Toothbrush sharing



Toothbrushes are full of bacteria. Sharing them will pass your bacteria on to other people and alter their oral microbiota.


Give your *Streptococcus* the same value as the player to your right.

Then move




HABITS

4




HABITS
Passive smoker




Passive smoking is detrimental. Like active smokers, you can lose the sense of taste and smell.

If you are **adult** or **teenager**:




If you are **senior** or **child**:




HABITS

5




INFECTION
P. aeruginosa




You get infected with *Pseudomonas aeruginosa*, an opportunistic pathogen with natural and acquired resistance to many commonly used antibiotics.

If you have **cystic fibrosis**, you get




Put the die in one of your black squares; throw it to know its initial value.

If you do not have **cystic fibrosis**




EXTERNAL AGENTS

6




INFECTION
Viral



You attempt to cure a viral infection with antibiotics (which only fight bacteria). You pointlessly alter your microbiota.

Roll all your dice showing value 2.

Then receive  for each die with value 6.

EXTERNAL AGENTS

7



DIETARY CHANGES
Exotic trip




Drinking different water and eating different foods alter your microbiota when traveling to different parts of the planet.

Decrease by 6 your dice (max. 2 per die).


Remember, you cannot decrease any black die.

LIFE IS TOUGH

8




INFECTION
Streptococcal stomatitis



Bacterial infections might disrupt the oral microbiota.

Receive



Place the die in one of your black boxes and roll it to determine its initial value.

EXTERNAL AGENTS

9



FOOD POISONING
Salmonella



Salmonella can be found in raw meat, dairy products and eggshells.

Also, if you are a **child** or an **adult**,




Also, if you have **cystic fibrosis**




EXTERNAL AGENTS

10





INFECTION
Leukoplakia




Whitish plaques appear on the inside of the cheeks and tongue.

Apply the following increments:

 if you are **smoker**

 if you drink **alcoholic beverages**

 if you are **adult** or **senior**

EXTERNAL AGENTS

11



INFECTION
Candidiasis



The fungus *Candida albicans* colonizes your mouth and establishes a synergy with *Streptococcus mutans*.

Equalize *Streptococcus* and *Candida* to the higher value of the two.

If you do not **brush** properly, you also receive 

EXTERNAL AGENTS

12

RESEARCH

Research problems

3

The sequencer is broken. It takes two weeks to repair and research results are delayed.

Return to the reserve *Veillonella*, *Porphyromonas* or *Gemella*. In the next round you cannot receive any **action** card.

Next, reshuffle played and not yet drawn event cards, creating a new stack.

RESEARCH

13

ORAL HYGIENE

Poor hygiene

2

Streptococcus and *Gemella* thrive with poor dental hygiene.

Also, if you drink **sweet beverages**,

If you use **dental floss**, this card cannot cause you any

HABITS

14

TOOTH

Hypoplasia

1

Defect of tooth enamel often irreversible in untreated celiac disease.

If you have **celiac disease**, you also get

LIFE IS TOUGH

15

ORAL HYGIENE

Plaque

2

After each meal, food debris and bacteria stick to the teeth and form plaque. In the absence of good oral hygiene, plaque becomes tartar.

all dice with a value of 1, 2, or 3.

If you **brush** properly, only the dice with a value of 3.

If you **floss**, this card cannot cause you any

HABITS

16

ORAL HYGIENE

Plaque

2

After each meal, food debris and bacteria stick to the teeth and form plaque. In the absence of good oral hygiene, plaque becomes tartar.

all dice with a value of 4, 5 or 6.

If you **brush** correctly, only the dice with a value of 4.

If you **floss**, this card cannot cause you any

HABITS

17

PET

Dog

2

People share bacteria with their dogs, and canine bacteria interact with the human oral microbiota.

You get a die, with the same value as the lowest value of the dice you have.

Then,

HABITS

18

EPIDEMIC!

Seasonal flu
(Influenza virus)

0

You are sick with the flu for a few days. The flu weakens your immune system.

You receive for each player next to you with a

If you have **cystic fibrosis**, you also get

Put the dice in one of your black squares with value = 1.

EXTERNAL AGENTS

19

EPIDEMIC!

Bacterial meningitis

0

Neisseria meningitidis infection. Protection against certain types of bacterial meningitis can only be achieved by completing the recommended vaccination schedule.

Receive

Place the die in one of your black boxes and roll it to determine its initial value.

EXTERNAL AGENTS

20

EPIDEMIC!

Parotitis

1

Viral disease of the salivary glands, also known as mumps.

Roll

Receive

EXTERNAL AGENTS

21

0

EPIDEMIC!
Whooping cough
(*Bordetella pertussis*)

Highly contagious infectious disease
of the upper respiratory tract.

Receive

*Place the die in one of your black
boxes and roll it to determine its
initial value.*

RESEARCH

New results

Scientists discover that *Porphyromonas* and *Veillonella* compete for the same niche and thus hinder the growth of the other species.

Discover *Porphyromonas* or *Veillonella*. Roll the dice to find out the initial value.



Then,



(or vice versa).





3



RESEARCH

24

RESEARCH

New results


3

Synergy has been observed between *Porphyromonas* and *Gemella*.

Discover *Porphyromonas* or *Gemella*. Roll the dice to find out the initial value.



Then,

OR




DIET

Aphta




Lack of some vitamins and minerals and food allergies promote the appearance of canker sores.


If you have **celiac disease**



If not,




25




ENVIRONMENTAL FACTORS

Contamination




2




You live in an area with high pollutant concentration.

If you are **smoker**,



If not,



26



DIET

Metabolic changes


2



HABITS

You eat fast food many times a week.



Also, if you drink
sweet beverages,



27



ENVIRONMENTAL FACTORS


Damp housing




Your building has severe damp issues, particularly the walls in your bedroom.





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DRINKING WATER CHARACTERISTICS

Fluorine





Fluorine-rich water.


Porphyromonas is sensitive to high concentration of fluorine.


If you don't have it, you discover *Porphyromonas*. Roll the die to find out its initial value.

Then take *Porphyromonas*




29





DRINKING WATER CHARACTERISTICS


Hardness



Mineral-rich water:
decreases *Veillonella*.

If you don't have it, you
discover *Veillonella*.
Roll the die to find out its
initial value.

Then decrease
Veillonella



LIFE IS TOUGH

30

DRINKING WATER CHARACTERISTICS
Chlorine

LIFE IS TOUGH

Chlorine-rich water: affects *Veillonella*.

If you don't have it, you discover *Veillonella*. Roll the die to find out its initial value.

Then move *Veillonella*

31

DRINKING WATER CHARACTERISTICS
Alkalinity

LIFE IS TOUGH

Very alkaline water inhibits growth of *Veillonella* and boosts *Porphyromonas*.

If you don't have them, discover *Porphyromonas* and *Veillonella*. Roll the dice to find out their initial values.

Then
Porphyromonas and *Veillonella*

32

RESEARCH
Study population

RESEARCH

You contact the Down Syndrome Association and collaborate to expand the study population.

You and another player discover *Veillonella* or *Porphyromonas*. Roll the dice to find out their initial values.

— Or —

Put one of your dice at its balance value.

33

RESEARCH
Study population

RESEARCH

You contact the Cystic Fibrosis Association and collaborate to expand the study population.

You and another player discover *Veillonella* or *Gemella*. Roll the dice to find out their initial values.

— Or —

Put one of your dice at its balance value.

34

CANVI D'HÀBITS
Efectes a llarg termini

HÀBITS

Intentar canviar d'hàbits és difícil a curt termini. Els teus esforços es veuran recompensats ... però en la partida següent!

Aquesta carta no té cap efecte en aquesta partida ... però en la teva pròxima partida, hauràs de jugar amb un personatge de la següent franja d'edat i no podràs repetir carta de característiques.


35

INFECCIÓ
Candidiasi

AGENTS EXTERNS

El fong *Candida albicans* colonitza la teva boca i estableix una sinergia amb *Streptococcus mutans*.

Iguala *Streptococcus* i *Candida* al valor més baix dels dos.


Si no et **raspalles correctament**, a més a més, reps  amb el mateix valor que *Candida*.

36

EPIDÈMIA!
Pesta negra

AGENTS EXTERNS

Construeixes una màquina del temps i no se t'acut res millor que anar a 1348, en plena epidèmia de pesta negra. Sembla ser fou causada pel bacteri *Yersinia pestis* i va provocar la mort d'uns 100 milions de persones a tot el món.

Reps 

No hi ha vacuna efectiva contra la pesta negra. Les cartes de **vacunació** no eliminen aquesta epidèmia.

Posa el dau en una de les teves caselles negres i llança'l per saber-ne el valor inicial.

37



P- 5 SENIOR
Amelia, female, 70

Streptococcus

	5
<i>Prevotella</i>	
	3
<i>Haemophilus</i>	
	3
<i>Neisseria</i>	
	4
<i>Candida (fungus)</i>	
	5



P- 6 ADULT
Oliver, male, 40

Streptococcus

	4
<i>Prevotella</i>	
	3
<i>Haemophilus</i>	
	3
<i>Neisseria</i>	
	3
<i>Candida (fungus)</i>	
	2



P- 7 ADULT
Ethan, male, 55

Streptococcus

	4
<i>Prevotella</i>	
	3
<i>Haemophilus</i>	
	3
<i>Neisseria</i>	
	3
<i>Candida (fungus)</i>	
	3



P- 8 CHILD
Nikau, male, 10

Streptococcus

	4
<i>Prevotella</i>	
	2
<i>Haemophilus</i>	
	3
<i>Neisseria</i>	
	3
<i>Candida (fungus)</i>	
	4

During contagion, the two neighbour players receive 






Smoker
Alcoholic beverages

C- 13

This card **CANNOT** be paired with a child.



Veillonella
3

Porphyromonas
2

Gemella
2

* ?

* ?

Celiac disease
Alcoholic beverages

C- 14

This card **CANNOT** be paired with a child.



Veillonella
4

Porphyromonas
2

Gemella
3

* ?

* ?

Correct tooth brushing
Flossing

C- 15



Veillonella
4

Porphyromonas
3

Gemella
2

* ?

* ?

Celiac disease

C- 16



Veillonella
4

Porphyromonas
2

Gemella
3

* ?

* ?

Cystic fibrosis

C- 17

This card **CANNOT** be paired with a senior.

Veillonella

3

Porphyromonas

2

Gemella

3

*

?

*

?

Cystic fibrosis

C- 18

Correct tooth brushing

This card **CANNOT** be paired with a senior.

Veillonella

3

Porphyromonas

3

Gemella

3

*

?

*

?

Down syndrome

C- 19

Correct tooth brushing

This card **CANNOT** be paired with a senior.

Veillonella

4

Porphyromonas

3

Gemella

3

*

?

*

?

Down syndrome

C- 20

Sweet beverages

This card **CANNOT** be paired with a senior.

Veillonella

4

Porphyromonas

3

Gemella

2

*

?

*

?