REPLICA

INTRODUCTION

In Replica, you are a scientist researching human DNA. Your objective is to replicate the DNA sequences of cells by forming pairs of *nitrogenous bases*.

However, you are not the only one with this objective. Other scientists are working on the same DNA sequences and whoever completes them first collects that entire cell for themselves!

Additionally, you shouldn't focus all your attention on the DNA sequences: any player can spend *nitrogenous bases* to create their own RNA sequence and score points even if they don't collect the cell.

As a scientist, you can also create mutations in the cell by breaking the rules of pairing. Life is full of surprises after all! But be careful - too many mutations result in cell death!

Replica is a game for **2-4 players**.

HOW TO WIN

The objective of Replica is to score the most points by creating **DNA** and **RNA SEQUENCES**. Points are scored by collecting **BASE** cards of the same color as your **SCIENTIST** card.

SCORING POINTS:

There are 2 ways of scoring points:

1. Collecting **BASE** cards from the **DNA** and **RNA SEQUENCES** of the same color as your **SCIENTIST** card. At the end of the game, each card in your color is worth **1 point**.
2. Collecting **AMINO ACID** tokens by playing **BASE** cards in your **RNA SEQUENCE**. At the end of the game, each token is worth **3 points**.

CONTENTS

- 1 **DNA SEQUENCE** card
- 4 **SCIENTIST** cards
- 4 **RNA SEQUENCE** cards
- 4 **QUICK RULES/TURN RULES** cards
- 24 **ACTION** cards:
  - 14 **MUTATION** cards
  - 10 **STOP** cards
- 96 **BASE** cards (24 of each color):
  - 6 **ADENINE** cards
  - 6 **CYTOSINE** cards
  - 6 **GUANINE** cards
  - 6 **THYMINE/URACIL** cards
- 12 **AMINO ACID** tokens
- 1 Rulebook

SETTING UP

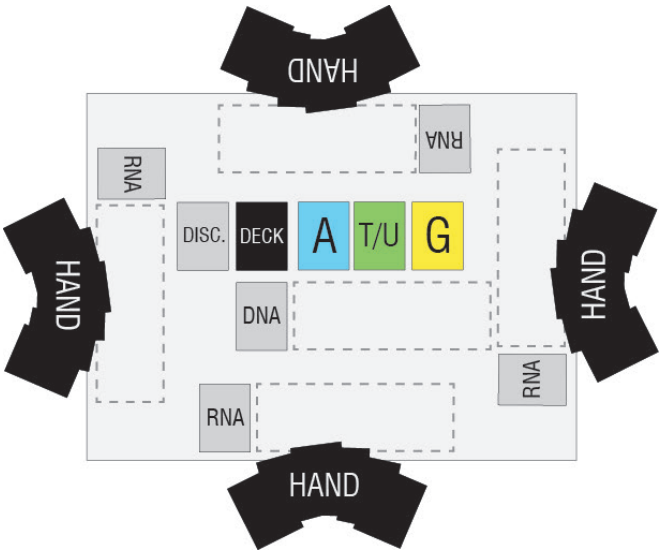

IMAGE 1: The table should look like this

1. Shuffle the **SCIENTIST** cards and deal one to each player, face down. Players may look at their cards at any moment during the game. They will score points for each collected **BASE** card that is the same color as their **SCIENTIST** card.
2. Shuffle the **RNA SEQUENCE** cards and put one in front of each player. The player with the **RNA SEQUENCE** card with the **lowest number** goes first. Play proceeds clockwise from the first player.
3. The **QUICK RULES/TURN RULES** cards may be dealt to each player. Players can refer to these cards at any moment during the game.
4. Deck: Shuffle all the **ACTION** and **BASE** cards together into a single deck and deal **6 cards** to each player, beginning with the first player.
5. Reveal: Reveal cards from the top of the deck until **3 BASE** cards are revealed. Place revealed **BASE** cards in a line beside the deck as they are drawn. These are called the *Revealed Bases*. Shuffle any **ACTION** cards revealed this way back into the deck. Put the **DNA SEQUENCE** card below the deck.

TAKING TURNS

Each turn has 3 stages:

STAGE 1: PLAY

Pick any **2** of the following **Play** options listed below. You may perform 2 of the same play on one turn.

- Pair a **BASE** card from your hand with a *Revealed Base*. (See: Forming Pairs of Bases)
- Play a **BASE** card from your hand into your **RNA SEQUENCE**. (See: The RNA sequence)
- Play an **ACTION** card from your hand.
- Reveal cards from the deck until you reveal a **BASE** card. Put it beside the last *Revealed Base*. This allows for another pairing possibility. Shuffle any **ACTION** cards revealed this way back into the deck.
- Discard a card from your hand and draw a card from the deck. Place discarded cards into a separate discard pile beside the deck.

STAGE 2: DRAW

After finishing your **2 plays**, draw cards from the deck until there are **6 cards in your hand.**

STAGE 3: REVEAL

Before the next player starts their turn, check if there are at least **3** *Revealed Bases*. If not, reveal cards from the top of the deck until there are **3 BASE** cards revealed and shuffle any **ACTION** cards revealed this way back into the deck.

FORMING PAIRS OF BASES

As in real life, the **DNA SEQUENCE** is formed by pairs of *nitrogenous bases*. In Replica, each **BASE** card represents a *nitrogenous base*, a chemical compound that forms our DNA. Pairs are formed when you play a **BASE** card from your hand on top of a *Revealed Base*.

BASE cards pair with one another, following these rules:

- **ADENINE** pairs with **THYMINE/URACIL**
- **CYTOSINE** pairs with **GUANINE**
- **GUANINE** pairs with **CYTOSINE**
- **THYMINE/URACIL** are 2 nitrogenous bases that pair with **ADENINE**. In Replica, these *nitrogenous bases* are represented by the **T/U** card.

The *Revealed Bases* follow a sequence with the one closest to the deck being first, meaning it will enter the **DNA SEQUENCE** before the others when it is paired. If the first *Revealed Base* isn't paired, but the following ones are, the first one will block the others from entering the **DNA SEQUENCE** until it is paired.

Players can form pairs with any *Revealed Base*, but pairs will only move to the **DNA SEQUENCE** when they are first in line. When a pair of **BASES** moves to the **DNA SEQUENCE**, all the *Revealed Bases* and any cards paired with them move one space closer to the deck.

After moving unblocked pairs of *Revealed Bases* to the **DNA SEQUENCE**, if there are fewer than **3** *Revealed Bases*, reveal cards from the top of the deck until there are **3** *Revealed Bases* and shuffle any revealed **ACTION** cards back into the deck.

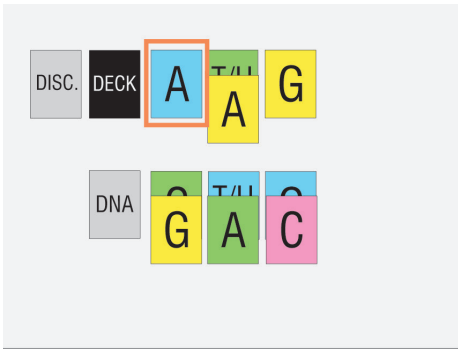

IMAGE 2A: The A card - the first in line - is not paired and is blocking the pair formed in the second position from entering the **DNA SEQUENCE**.

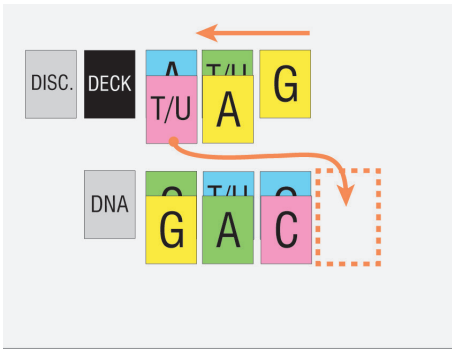

IMAGE 2B: As soon as the A card forms a pair, it moves to the **DNA SEQUENCE** and the following *Revealed Bases* move closer to the deck.

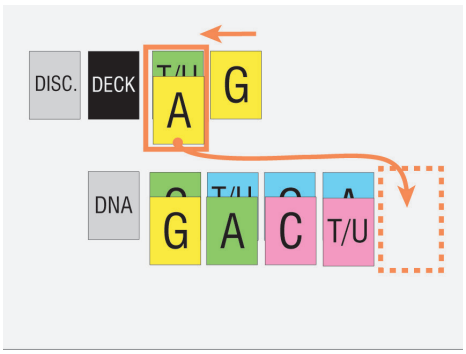

IMAGE 2C: Since the next revealed base is already paired, it also immediately moves to the **DNA SEQUENCE**, making the G card move closer to the deck.

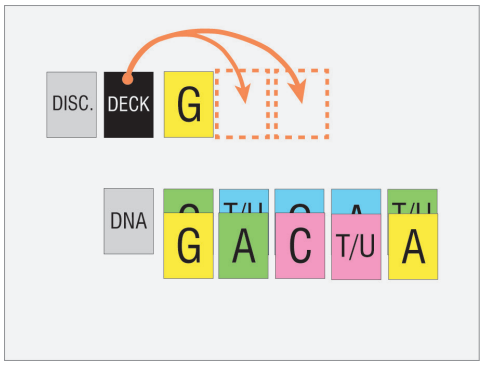

IMAGE 2D: Since there are no more unblocked pairs in the *Revealed Bases*, reveal cards from the deck until there are **3** *Revealed Bases*.

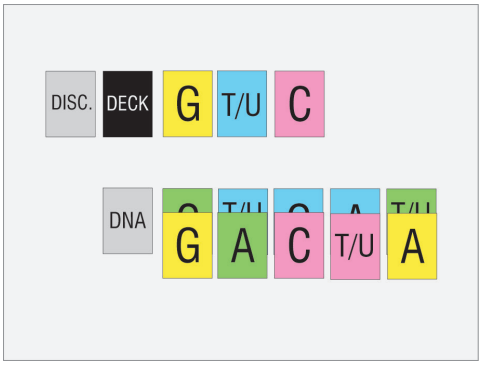

IMAGE 2E: The table is now ready for the next player to take their turn.

THE RNA SEQUENCE

The **RNA SEQUENCE** is formed during transcription in the cell. RNA is used to determine the amino acid sequence of proteins that are necessary for the cell to function. Unlike DNA, which is formed by two strands of bases — a double helix —, RNA is a single strand of *nitrogenous bases*, but it matches the DNA it was transcribed from.

To form an **RNA SEQUENCE** in Replica, players play a **BASE** card from their hand beside their **RNA SEQUENCE** card. The bases must pair with the top row of the **DNA SEQUENCE**, following the same order.

When a player forms a group of **3 BASE** cards of any color in their **RNA SEQUENCE**, they immediately get **1 AMINO ACID** token. These tokens are worth **3 points**.

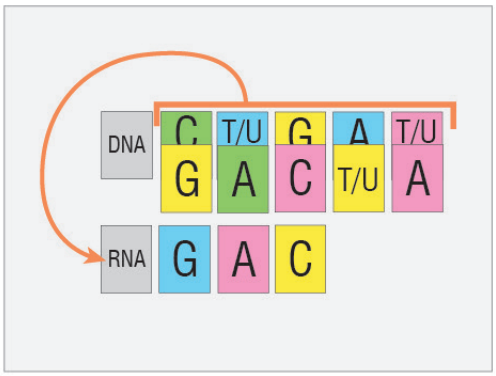

IMAGE 3: BASE cards played in the **RNA SEQUENCE** must form a pair with the top row of the **DNA SEQUENCE** and follow the same order. In the example above, G forms a pair with C in the DNA, A forms a pair with T/U, C with G and so forth.

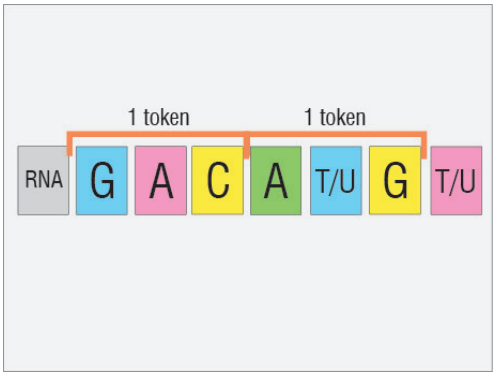

IMAGE 4: Counting the number of **AMINO ACID** tokens that should be collected, based on the **RNA SEQUENCE**.

MUTATION

The **MUTATION** card allows players to ignore the pairing rules when forming a pair in the **DNA SEQUENCE** or adding a **BASE** to their **RNA SEQUENCE.**

To play a **MUTATION** card in the **DNA SEQUENCE**, place it on top of an unpaired *Revealed Base* and then play any **BASE** card from your hand on top of it. This newly created pair enters the **DNA** just like any other pair would. (See: Forming Pairs of Bases)

To play a **MUTATION** card in the **RNA SEQUENCE**, place it to the right of the last card in your sequence, or if you are just starting your RNA sequence, directly beside the **RNA SEQUENCE** card. Then play any **BASE** card from your hand on top of the **MUTATION** card.

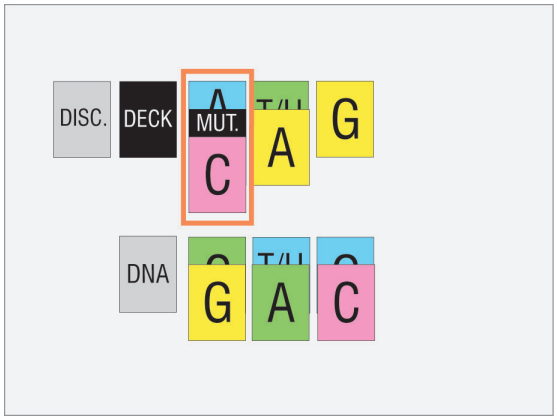

IMAGE 5A: A **MUTATION** card was played over the A card so it can form a pair with the C card and move to the **DNA SEQUENCE** normally.

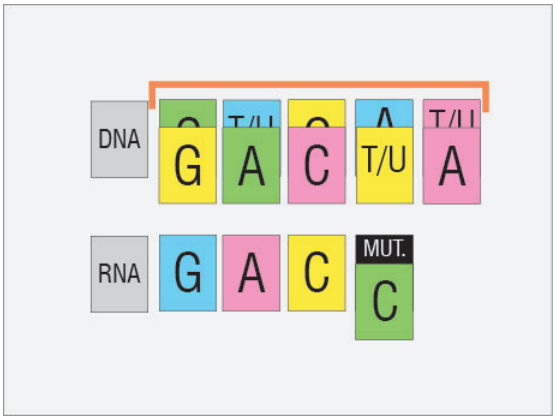

IMAGE 5B: A **MUTATION** card was played in the **RNA SEQUENCE** so the player can play a C card to form a pair with the A card of the **DNA SEQUENCE**.

CELL DEATH

Mutations are not always advantageous. When a cell undergoes too many mutations, it activates a mechanism that stops its growth to prevent further mutations from occurring.

When **3 MUTATION** cards are present in the **DNA SEQUENCE**, the cell dies immediately. **No points are scored:** all cards in the **DNA SEQUENCE** and all players' **RNA SEQUENCES** are discarded.

When **3 MUTATION** cards are present in a player's **RNA SEQUENCE**, only that sequence is discarded. The **DNA SEQUENCE** and other players' **RNA SEQUENCES** are still active as long as they have fewer than **3 MUTATIONS.**

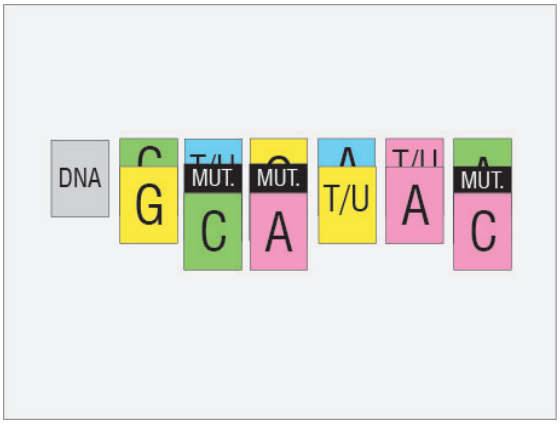

IMAGE 6: Example of a **DNA SEQUENCE** that would trigger cell death.

STOPPING A CELL

Players can play a **STOP** card to stop the current **DNA SEQUENCE** — and, as a result, all the **RNA SEQUENCES**. When a player uses a **STOP** card, that player collects all cards from the current **DNA SEQUENCE** and puts them in a pile in front of them. This pile is called their *Collected Cards*.

Each player takes all the cards from their **RNA SEQUENCE** and adds them to their *Collected Cards*.

Players can also use a **STOP** card outside of their turn to immediately **cancel** another **STOP** card being played. Starting with the player on the left of the active player (who played the **STOP** card) and following the order clockwise, the other players have the opportunity to play a **STOP** card from their hand.

The canceled **STOP** card doesn't stop the cell. Once a **STOP** card is canceled, it cannot be "uncanceled" by another **STOP** card. The active player must spend another play — if they haven't already used their second one — to try to stop the cell again. If all the other players choose not to **cancel** this action, the **STOP** card resolves normally. To keep track of **STOP** cards, use the included **track** and **STOP token**.

END OF GAME

The game ends **immediately** if one of 3 things happen:

1. There are no more cards in the deck
2. The maximum number of complete cells was reached
3. All **10 STOP** cards were played

The maximum number of complete cells depends on the number of players:

- 2 players: **5 cells**
- 3 players: **6 cells**
- 4 players: **7 cells**

Players then count the **BASE** cards that match their **SCIENTIST** color in their *Collected Cards* pile, scoring **1 point** for each card. Finally, players add the points scored by their **AMINO ACID** tokens (**3 points** per token). The player with most points wins! In the case of a tie, both players win or they may play another round as a tiebreaker :)

CREDITS

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A **Adenine**

Base

Pairs with Thymine/Uracil.

A **Adenine**

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Pairs with Thymine/Uracil.

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Thymine/Uracil

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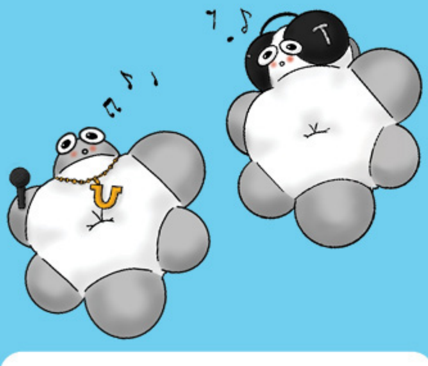
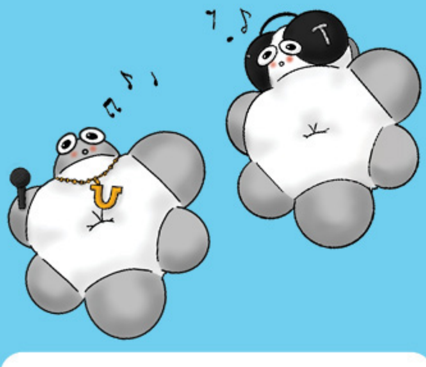
Pairs with Adenine.

T/U
Thymine/Uracil
Base



Pairs with Adenine.

T/U
Thymine/Uracil
Base



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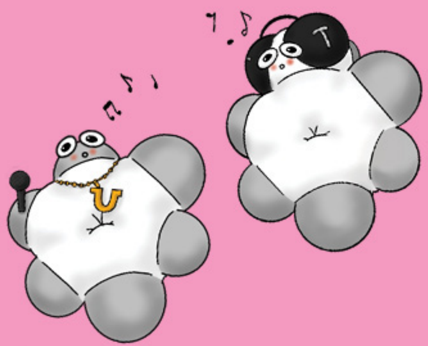

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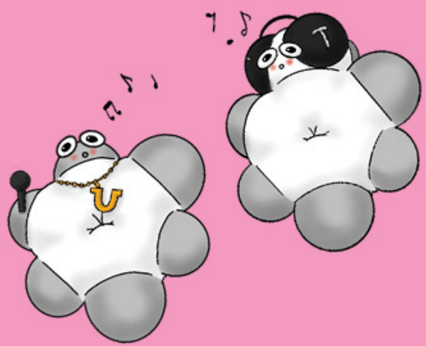

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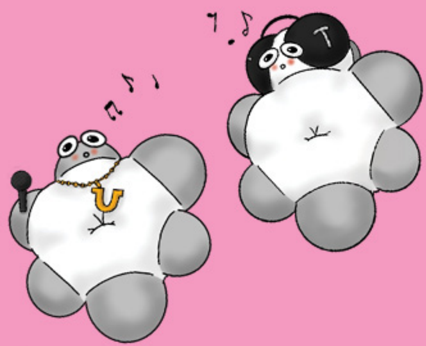

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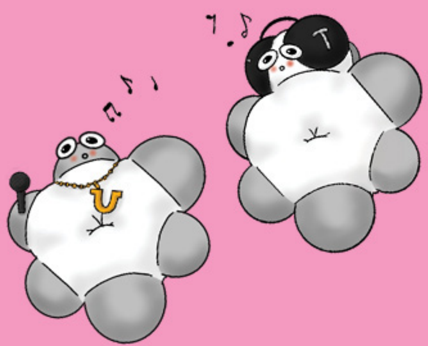

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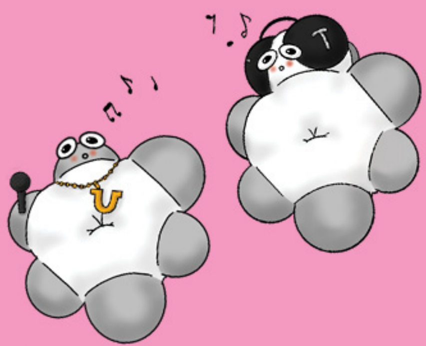

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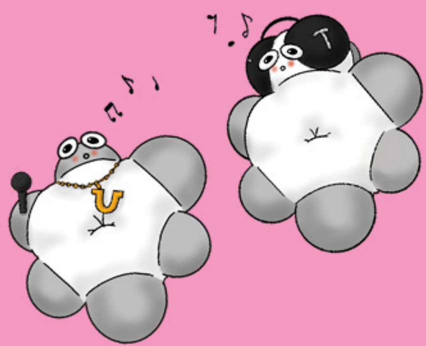

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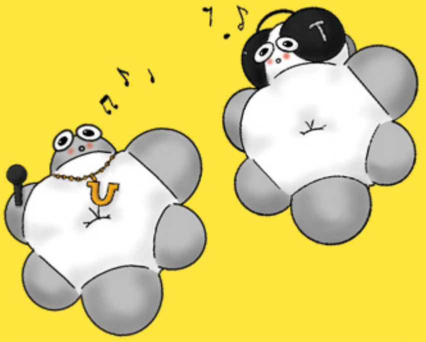

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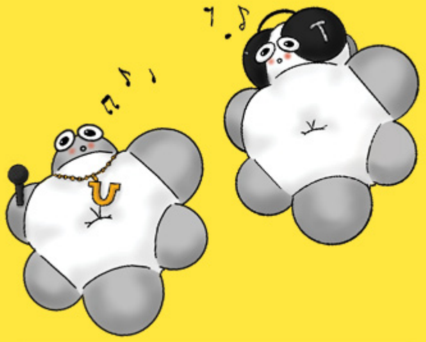

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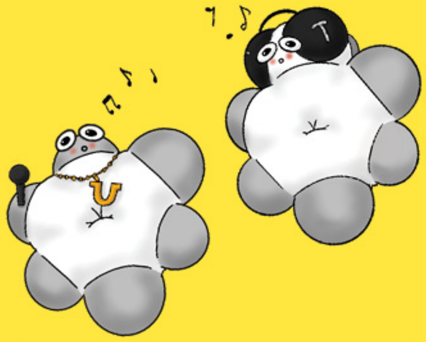
Base



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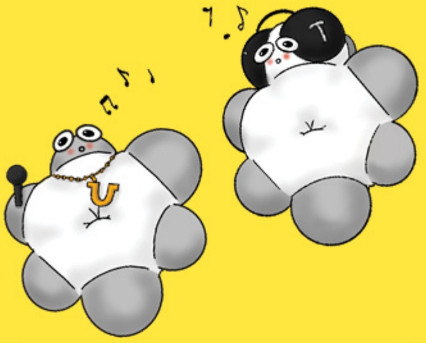

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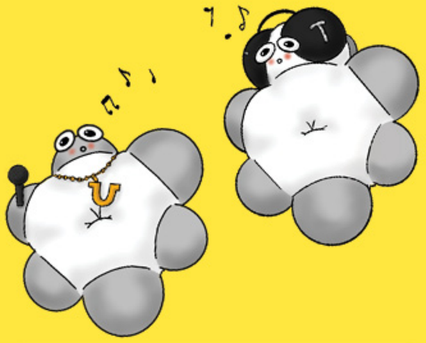

Pairs with Adenine.

T/U

Thymine/Uracil

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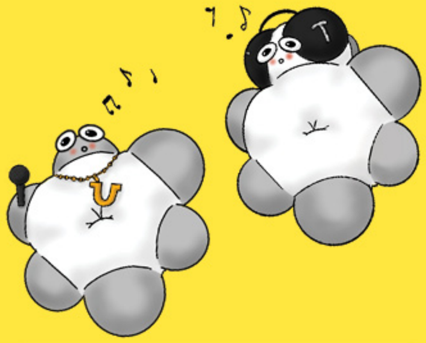

Pairs with Adenine.

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Thymine/Uracil

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Thymine/Uracil

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Pairs with Adenine.

T/U — Thymine/Uracil

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Pairs with Adenine.

T/U — Thymine/Uracil

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Pairs with Adenine.

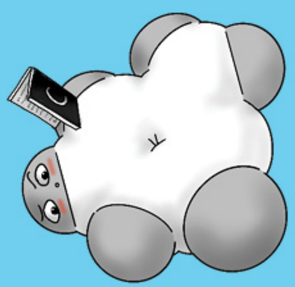
T/U — Thymine/Uracil

Base

Pairs with Adenine.

C — Cytosine

Base



Pairs with Guanine.

C — Cytosine

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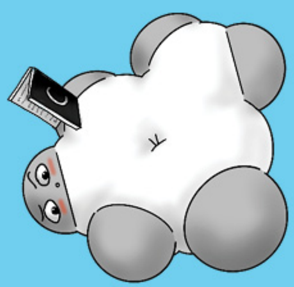
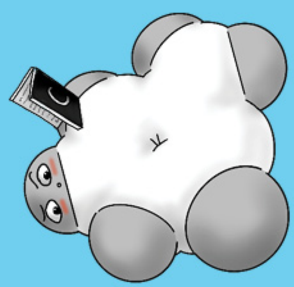


Pairs with Guanine.

C — Cytosine

Base



Pairs with Guanine.

C — Cytosine

Base

Pairs with Guanine.

C — Cytosine

Base

Pairs with Guanine.

C — Cytosine

Base

Pairs with Guanine.

C

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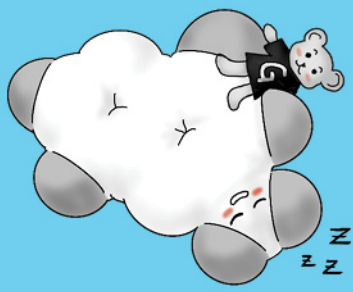
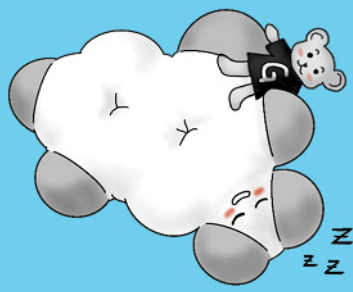


Pairs with Cytosine.

G

Guanine

Base

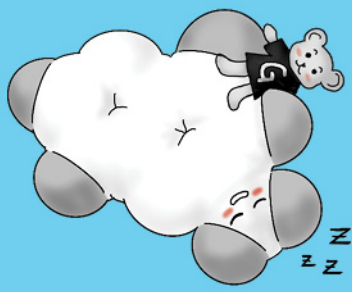


Pairs with Cytosine.

G

Guanine

Base



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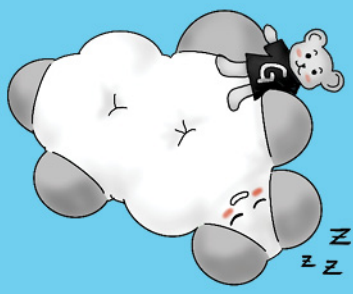
Guanine

Base



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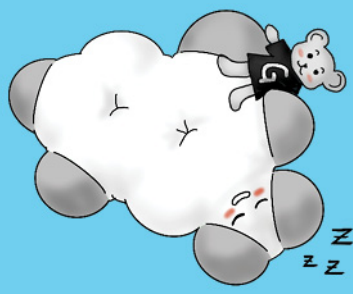
Guanine

Base



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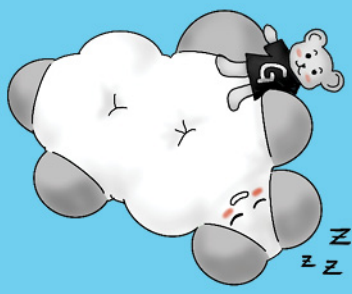
Guanine

Base

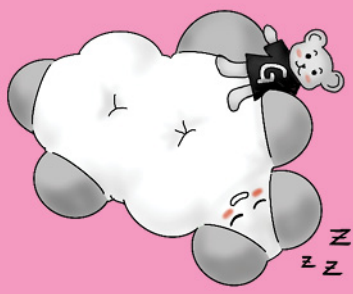


Pairs with Cytosine.

G

Guanine

Base

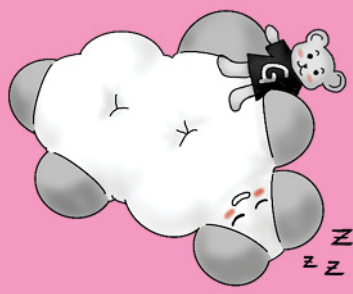


Pairs with Cytosine.

G

Guanine

Base

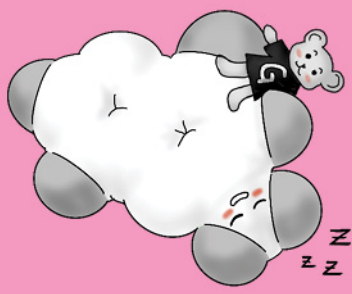


Pairs with Cytosine.

G

Guanine

Base

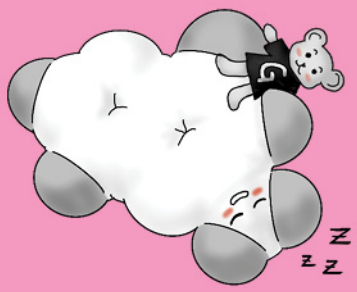


Pairs with Cytosine.

G

Guanine

Base

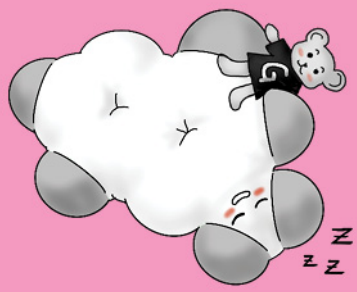


Pairs with Cytosine.

G

Guanine

Base



Pairs with Cytosine.

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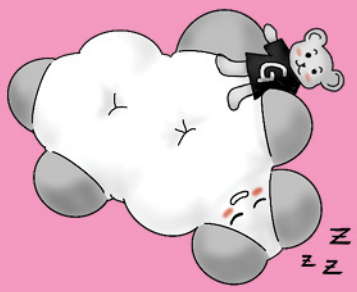
Guanine

Base



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Guanine

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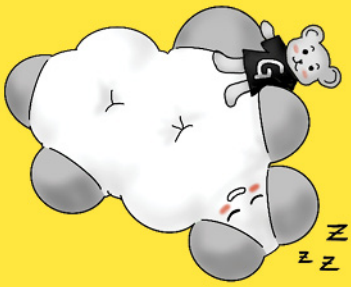

Pairs with Cytosine.

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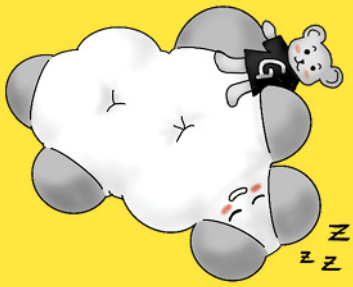
Guanine

Base



Pairs with Cytosine.

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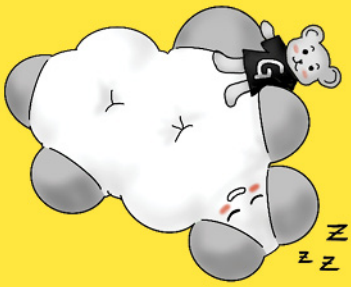
Guanine

Base



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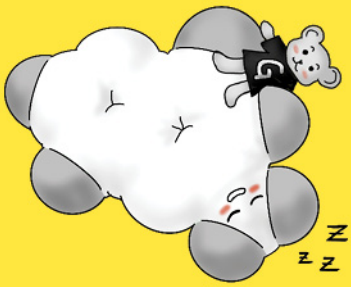

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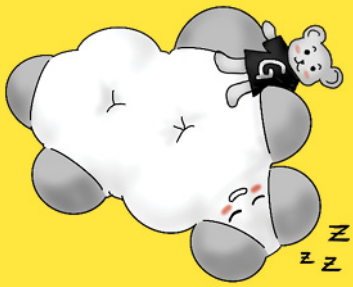
Guanine

Base



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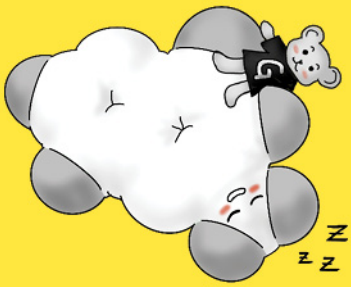
G

Guanine

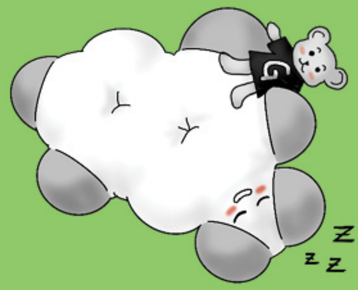
Base



Pairs with Cytosine.

G **Guanine**

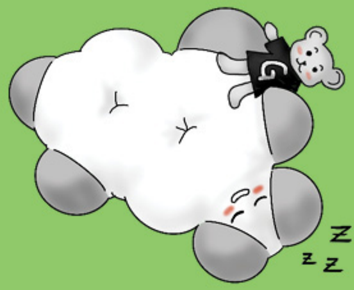
Base



Pairs with Cytosine.

G **Guanine**

Base



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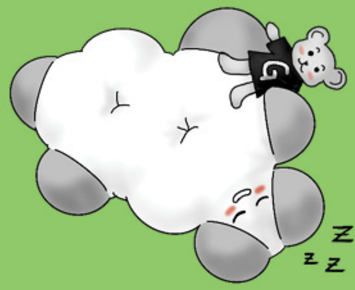

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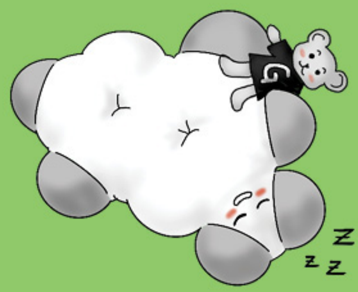

Pairs with Cytosine.

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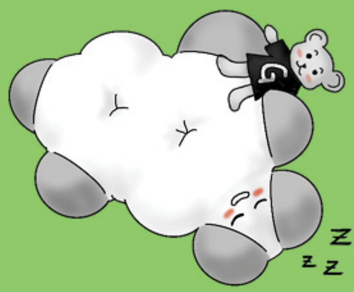
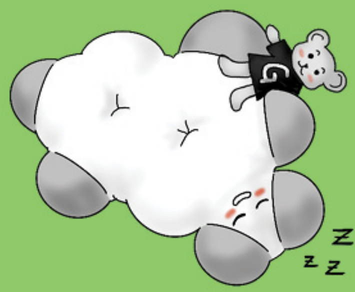
Base



Pairs with Cytosine.

G **Guanine**

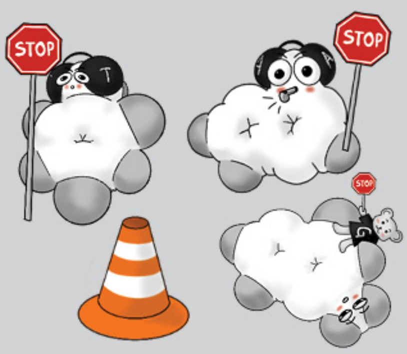
Base



Pairs with Cytosine.

STOP **Stop** STOP

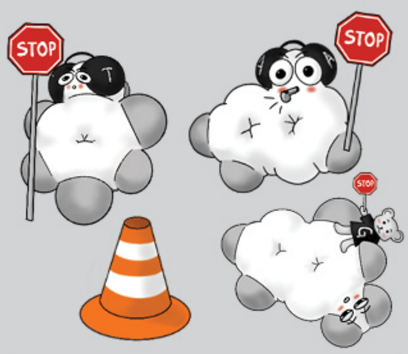
Action



Stop the DNA Sequence and collect all the cards in it. All RNA Sequence cards are collected by their owners. **Can be used to cancel a Stop card.**

STOP **Stop** STOP

Action



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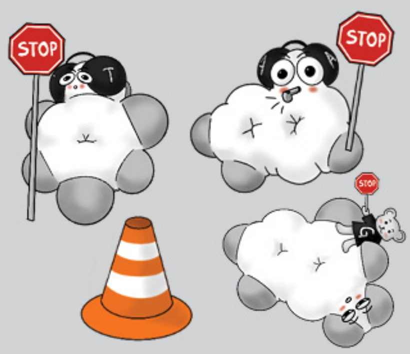

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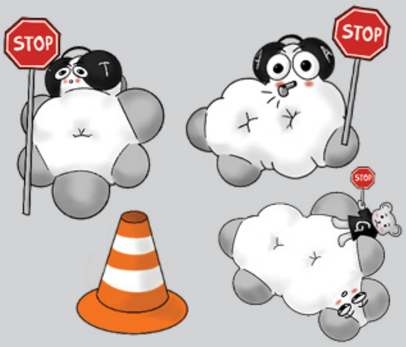
Stop

STOP STOP

Action



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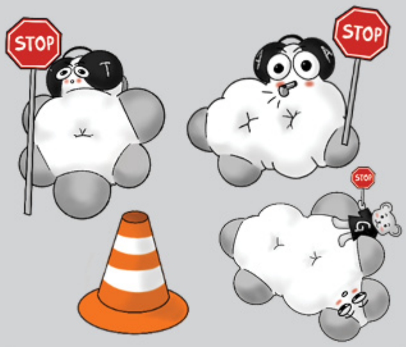

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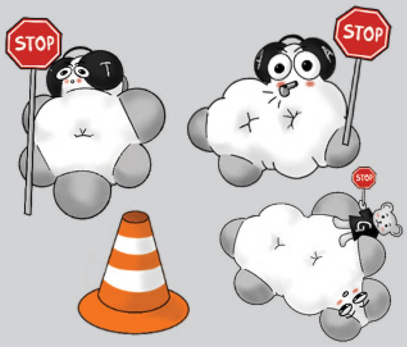

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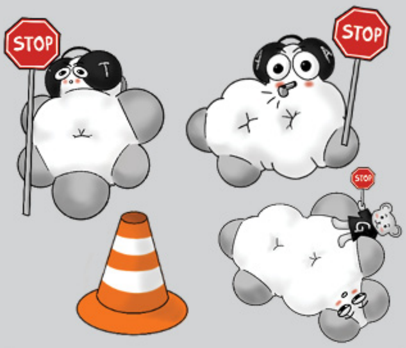

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Stop

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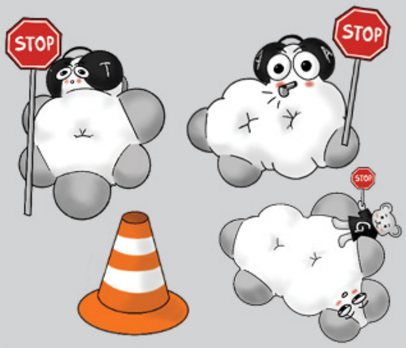
Action

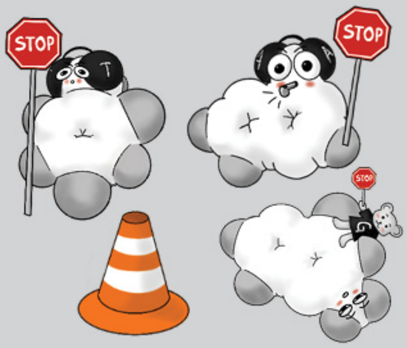


Stop the DNA Sequence and collect all the cards in it. All RNA Sequence cards are collected by their owners. **Can be used to cancel a Stop card.**

Stop

STOP STOP

Action

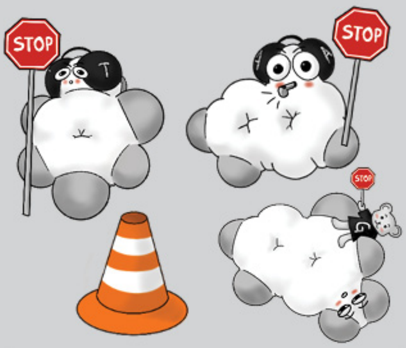


Stop the DNA Sequence and collect all the cards in it. All RNA Sequence cards are collected by their owners. **Can be used to cancel a Stop card.**

Stop

STOP STOP

Action



Stop the DNA Sequence and collect all the cards in it. All RNA Sequence cards are collected by their owners. **Can be used to cancel a Stop card.**

Mutation

Action

Pair one of the *Base* cards in your hand with any unpaired base. Placing **3 Mutations** in a DNA/RNA Sequence terminates that Sequence.

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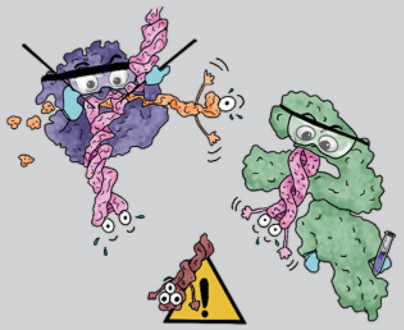

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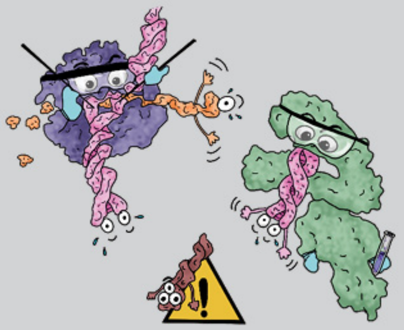

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Pair one of the *Base* cards in your hand with any unpaired base. Placing **3 Mutations** in a DNA/RNA Sequence terminates that Sequence.

Quick Rules

A → T/U

C → G

STOP Stops DNA Sequence

Pair any *Base* card with any other unpaired one

Quick Rules

A → T/U

C → G

STOP Stops DNA Sequence

Pair any *Base* card with any other unpaired one

Quick Rules

A → T/U

C → G

STOP Stops DNA Sequence

Pair any *Base* card with any other unpaired one

Quick Rules

A → T/U

C → G

STOP Stops DNA Sequence

Pair any *Base* card with any other unpaired one

Turn Rules

Choose any **2** of the following. You may choose the same action twice:

- Pair **1** card from your hand with a *Revealed Base* card
- Play **1** card from your hand in your RNA Sequence
- Play **1** *Action* card from your hand
- Reveal **1** additional *Base* card from the deck to *Revealed Base* cards
- Discard **1** card from your hand and draw **1** card from the deck

Turn Rules

Choose any **2** of the following. You may choose the same action twice:

- Pair **1** card from your hand with a *Revealed Base* card
- Play **1** card from your hand in your RNA Sequence
- Play **1** *Action* card from your hand
- Reveal **1** additional *Base* card from the deck to *Revealed Base* cards
- Discard **1** card from your hand and draw **1** card from the deck

Turn Rules

Choose any **2** of the following. You may choose the same action twice:

- Pair **1** card from your hand with a *Revealed Base* card
- Play **1** card from your hand in your RNA Sequence
- Play **1** *Action* card from your hand
- Reveal **1** additional *Base* card from the deck to *Revealed Base* cards
- Discard **1** card from your hand and draw **1** card from the deck

Turn Rules

Choose any **2** of the following. You may choose the same action twice:

- Pair **1** card from your hand with a *Revealed Base* card
- Play **1** card from your hand in your RNA Sequence
- Play **1** *Action* card from your hand
- Reveal **1** additional *Base* card from the deck to *Revealed Base* cards
- Discard **1** card from your hand and draw **1** card from the deck

Arthur Kornberg

Scientist

Biochemist, discoverer of the DNA polymerase and major contributor to the discovery of the basic principles of DNA polymerization. Represented by a DNA polymerase ( ).

Rosalind Franklin

Scientist

Chemist, X-ray crystallographer, co-discoverer of the DNA structure. Represented by a crystal ( ).

Francis Crick

Scientist

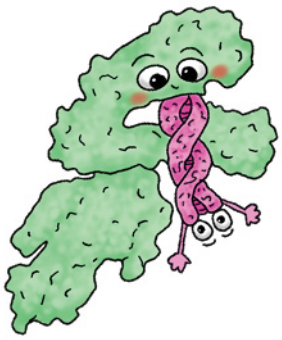
Molecular biologist, biophysicist, co-creator of the double helix model of the DNA. Represented by a DNA ( ).

Joan A. Steitz

Scientist

Molecular biologist and biochemist, pioneer researcher on the mechanisms of RNA synthesis and processing. Represented by a ribosome ( ).

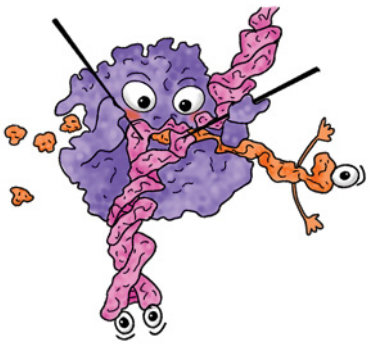
DNA Sequence



Form pairs next to this card using the *Revealed Cards* and the *Base* cards in your hand.

RNA Sequence 1

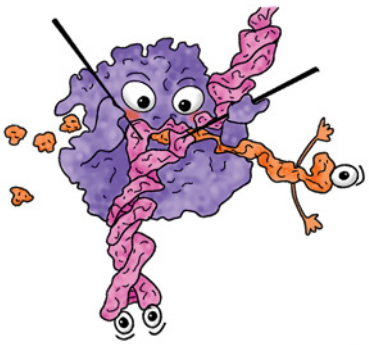
1



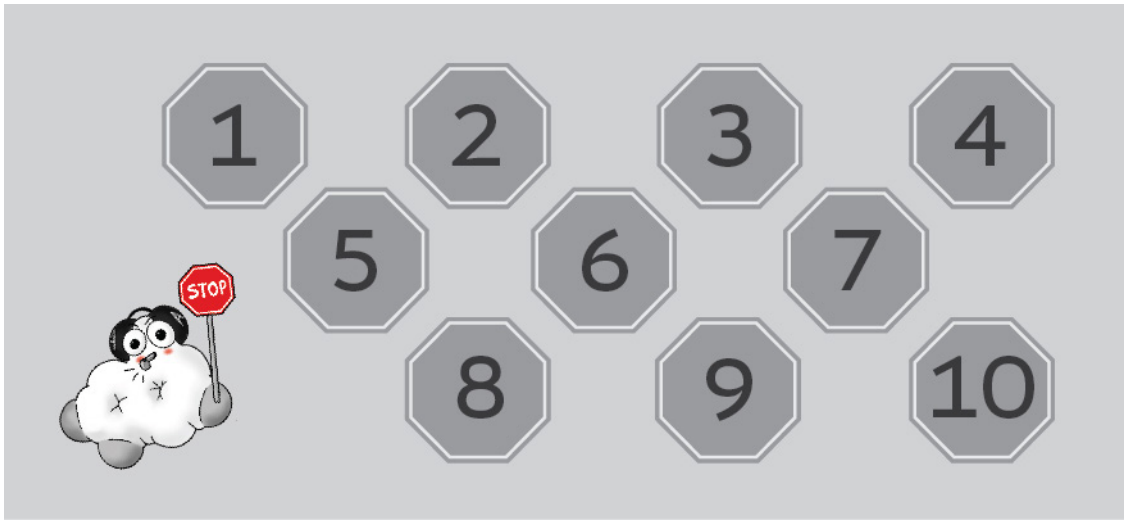
Play *Base* cards next to this one, that can pair with the *Base* cards in the top row of the DNA Sequence.

RNA Sequence 2

2

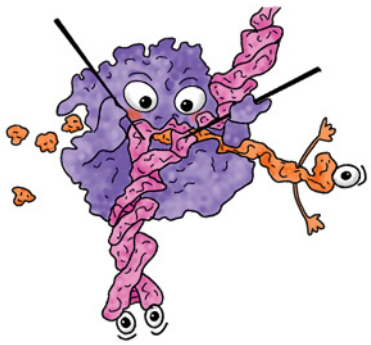


Play *Base* cards next to this one, that can pair with the *Base* cards in the top row of the DNA Sequence.



RNA Sequence

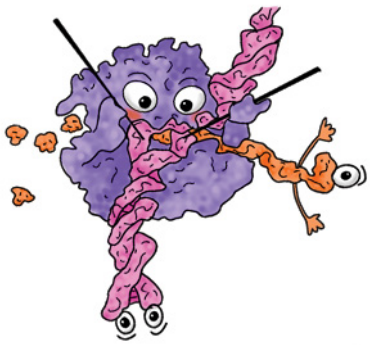
3 **3**



Play *Base* cards next to this one, that can pair with the *Base* cards in the top row of the DNA Sequence.

RNA Sequence

4 **4**



Play *Base* cards next to this one, that can pair with the *Base* cards in the top row of the DNA Sequence.