

D-N-A CARD GAME

Understanding the mysteries of DNA replication

2 to 6 players for one deck of cards

CONTENTS

96 cards as follows:

- 16 blue cards of nucleotides A, T, G and C
- 16 red cards of nucleotides A, T, G and C
- 16 green cards of nucleotides A, T, G and C
- 16 yellow cards of nucleotides A, T, G and C
- 6 Mutation/Insertion cards (M+)
- 6 Mutation/Deletion cards (M-)
- 6 Reverse cards (R)
- 6 Skip cards (S)
- 4 *DNA Polymerase I* cards (DP1)
- 4 *DNA Polymerase III* cards (DP3)

Instructions

OBJECTIVE OF THE GAME

- To understand the importance of base-pairing in DNA replication, A to T and G to C.*
- The first player to deal all of the cards in his/her hand in each game wins the game.

GENERAL SETUP

1. Each player draws a card, player with higher standing card (A>T>G>C>other cards) will initiate the game.
2. Shuffle the cards.
3. Each player is dealt with 6 cards in hands for the game.
4. Initiate the play.

DESCRIPTION OF CARDS

ATGC Cards

- For the pairing up of nucleotides (A with T and G with C)

Special Cards

Mutation/Deletion Cards (M-)

- This card will benefit the player dealing the card, he/she will get the chance to eliminate a card from his/her hand.

Mutation/Insertion Cards (M+)

- This card will benefit the player dealing the card, he/she will get the chance to eliminate a card from his/her hand and pass the card to the following player.

Reverse Cards (R)

- This card reverses the direction of the play. Anticlockwise direction will

change to clockwise direction and vice versa.

Skip Cards (S)

- The next person in line of play will lose his/her turn for that round.

DNA Polymerase I Cards (DP1)

- The card will enable the player to pair up with any one of the nucleotides (A, T, G or C) in whatever colour.

DNA Polymerase III Cards (DP3)

- The card will enable the player to pair up with any one of the nucleotides (A, T, G or C) in whatever colour and on top of that, the player can also remove all the cards in hand of ONE chosen colour.

PLAYING THE GAME

1. After dividing the cards for every player, the remaining cards will be placed facedown to form a DRAW pile. The top card of the DRAW pile will be turn over to form a DISCARD pile. If the top card is not either A, T, G or C, return it to the DRAW deck and pick the following card.
2. The initiating player will play first.
3. Play by matching the top card on the DISCARD pile by base pairing only with the same colour or Special Cards.
4. For example, if the top card on the DISCARD deck is Blue A, then one must play a Blue T, after pairing up, one have to take a card (any card) in his/her hand and put it on the DISCARD deck for the next pair-up by the following player.
5. If nothing matches, one must draw a card from the DRAW pile. If you manage to a card you can play, then play it immediately, otherwise the turn goes to the next player.
6. If special cards like M-, DP1 and DP3, then the last card facing up in the
7. To end the game, you must plan and play in such a way that all your cards are played.
8. Once a player plays his/her last card, the game is over. Points will be totalled up according to the Scoring Table.

GAME PLAY

If no one is out of cards by the time the DRAW deck is finished, reshuffle the DISCARD deck and continue to play.

If you choose not to deal a playable card in your hand, then you must draw a card from the DRAW deck. If playable, you can play the card immediately, but you cannot play any card from your hand.

If the player has both DP1 and DP3 cards in hand for the final round, he/she can end the game by playing the two cards together.

END OF GAME/SCORING TABLE

If you are the first to finish dealing all your cards in hand, then you will have 0 points for that round of game, other players that did not finish their cards can total up their points according to the Scoring Table that follows:

All the ATGC cards	5 points each
All Mutation cards	10 points each
Reverse (R) cards	10 points each
Skip (S) cards	10 points each
DP1 cards	20 points each
DP3 cards	20 points each

The winner is the player who maintains the lowest points at the end of the games.

RULES

Two players

- Playing a reverse card is the same as playing a Skip card. By doing so, one need to play another card immediately.

Partnership Play (4 Players)

- Sit across from your partner for the game play. Skip card played will immediately give your partner the turn to deal.

*NOTE

A stands for nucleotide Adenosine, T stands for Thymine, G stands for Guanine and C stands for Cytosine.

In the replication of DNA, A pairs up with T and G pairs up with C and vice versa.

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2005