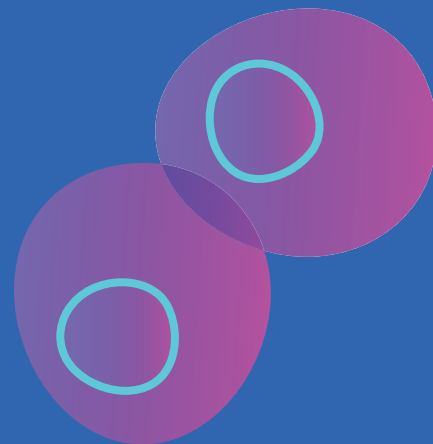


INVISIBLE WARRIOR



Learn how sickle cell disease affects patients every day and the things that can help them deal with each of these problems by playing a fun card game for 2 players.

SECTION 1: INTRODUCTION

Hello, my name is Linda. I teach adults about science through facts and experiments. I also run the **Invisible Warrior** project where I organise school visits and events to talk about sickle cell disease (SCD) and what it means to live with this disease. For these roles I have to think creatively about how to make complex science understandable, for example by developing games and quizzes for people to learn in a fun way.

I am curious and like to discover how things work, which made me want to be a scientist. After working as a scientist for a few years, I decided I wanted to talk more about science and think about it creatively. This led me to become a science communicator, where I design different ways to teach science or help people become interested in science. I love working with people, especially patients with SCD. Patients with SCD often find talking about their disease helps them to feel better about themselves, and this is very rewarding. It makes me very happy to see how I can bring positivity into other people's lives.

**I'M LINDA.
NICE TO
MEET YOU!**

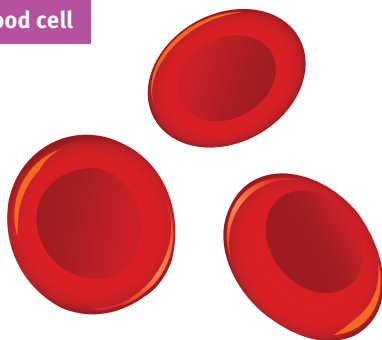


I work in a small team for the Invisible Warrior project and together we design creative resources to help people learn about and understand SCD. As a result, we have created many resources, including a quiz and creative activities, that help people use their artistic and language skills to think about the disease and invisible disabilities more broadly.

SECTION 2: SICKLE CELL DISEASE

Sickle cell disease (SCD) is what we call a genetic disease. You can be born with it and then you have it your whole life. The disease changes the shape of red blood cells into a sickle or crescent shape, which is where the name comes from. Red blood cells carry oxygen from the lungs to organs and tissues in the body, so they can function, and then take away carbon dioxide. Sickle shaped red blood cells cannot carry as much oxygen as healthy cells and they cannot survive as long. This can reduce the amount of oxygen in the blood and cause patients to feel dizzy, short of breath, tired or faint.

Normal red blood cell

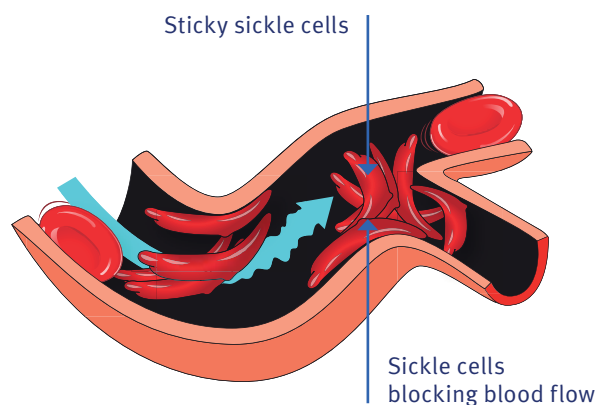
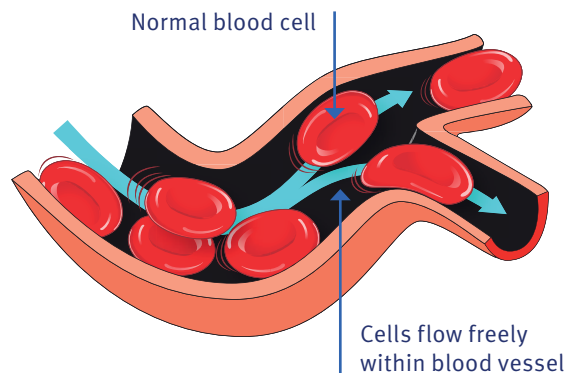


Sickle cell



Sickle shaped red blood cells can also become trapped inside the body and cause a lot of pain. This is called a pain crisis or sickle crisis. There are many things that may cause a sickle crisis. These include cold temperatures, dehydration, infection, stress, and low oxygen. Since people have SCD their whole life, this can affect how much time they can spend in school, work, or on their hobbies.

Difference in flow between healthy red blood cells and sickle cells.



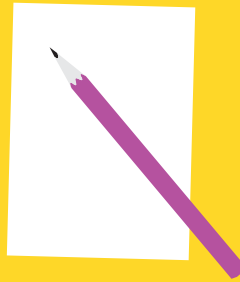
I find it very important to tell people about SCD and what it means to live with this disease. SCD is what we call an invisible disability because you cannot see who has it. This means it is not always obvious that someone suffers from it. However, there are ways to help people with SCD, including donating blood. Donating blood can really help someone else who is sick because once they receive healthy blood, the sick person could then spend more time on the things important to them.

Through my work I hope that more people will learn about SCD and how people live with it. I also hope that more people will become blood donors when they are able to: you can donate blood from 17 years of age! I want to continue helping people to become excited about science, as there are so many fun and interesting parts about science that everyone can love. I hope I can spread some of that love because I love science a lot!

SECTION 3: OXYGEN RACE CARD GAME

YOU WILL NEED

- Scissors
- Pen or pencil
- Paper
- Game cards (30 in total)

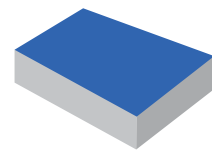


→ SET UP

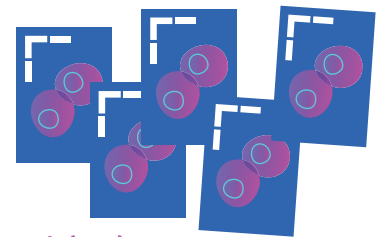
- 1 Cut out all the game cards using scissors.
- 2 Write each player's name on the paper and their score underneath their name – each player starts with **10 oxygen points**.
- 3 Shuffle the cards and deal 5 cards to each player face down – this is your hand, don't show the other player!
- 4 Place the remaining cards face down, between the 2 players – this is the **draw pile**.
- 5 Used cards will be placed face up next to the draw pile – this is the **discard pile**.



Score sheet



Card draw pile



Player's hand

→ AIM

To gather the most oxygen points by the end of the game.

- **Short game** – Ends when both players have played all their cards or one player cannot play a card.
- **Medium game** – When there are no cards left in the draw pile, shuffle the discard pile and place it face down to create a new draw pile. The game ends when both players have played all their cards or one player cannot play a card.

→ TAKING A TURN

- 1 Play 1 card only, from your hand by showing it to the other player.
Either:
a. Play a red blood cell card to add the number of oxygen points on the card to your score.
Or:
b. Use an attack card to try and steal oxygen points from the other player. (see 'Attacking and Defending' section)
Then:
c. Place any played cards next to the draw pile, face up – this is the discard pile.
- 2 Any player that played a card in the turn takes a card from the draw pile and adds it to their hand, so they have 5 cards in their hand again.
- 3 Your turn ends.

→ ATTACKING AND DEFENDING

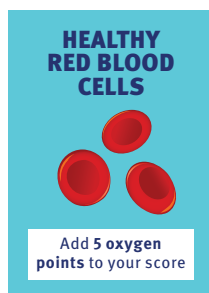
- 1 When you show your attack card, if the other player has the matching defence card (see 'Card types' section) in their hand, they may show it to stop you stealing oxygen points from them.
- 2 If they do not have the matching defence card, your attack is successful and you steal 3 oxygen points from their score – change the scores on the paper.
- 3 If they have less than 3 oxygen points, you steal all their remaining points.
- 4 If they have no points left, then you gain no points but the attack card is still discarded.
- 5 Any cards used in attack or defence must be added to the discard pile.
- 6 Any player who played a card may take a card from the draw pile so that they have 5 cards in their hand again.

NOTE: If you only have defence cards on your turn, you can place one at the bottom of the draw pile and take a new card from the top. If the new card is a defence card, you can do this again until you draw a card you can play.

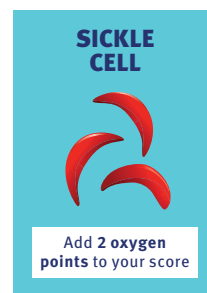
→ CARD TYPES

RED BLOOD CELL CARDS

Red blood cell cards allow you to add oxygen points to your score when they are played:



■ Healthy red blood cell cards allow you to gain **5 oxygen points**



■ Sickle shaped red blood cells allow you to gain **2 oxygen points**

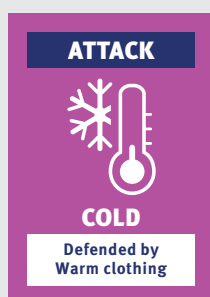
ATTACK AND DEFENCE CARDS



defended by



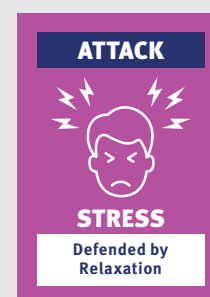
defended by



defended by



defended by



defended by





Cut along all
the dotted lines



SICKLE CELL



Add 2 oxygen points
to your score

SICKLE CELL



Add 2 oxygen points
to your score

SICKLE CELL



Add 2 oxygen points
to your score

SICKLE CELL



Add 2 oxygen points
to your score

SICKLE CELL



Add 2 oxygen points
to your score

DEFEND



BLOOD DONATION

Defends against
Sickle Cell Disease

DEFEND



BLOOD DONATION

Defends against
Sickle Cell Disease

DEFEND



ANTIBIOTICS

Defends against
Bacteria

DEFEND



ANTIBIOTICS

Defends against
Bacteria

DEFEND



WARM CLOTHING

Defends against
Cold

DEFEND



WARM CLOTHING

Defends against
Cold

DEFEND



WATER

Defends against
Dehydration

DEFEND



WATER

Defends against
Dehydration

DEFEND



RELAXATION

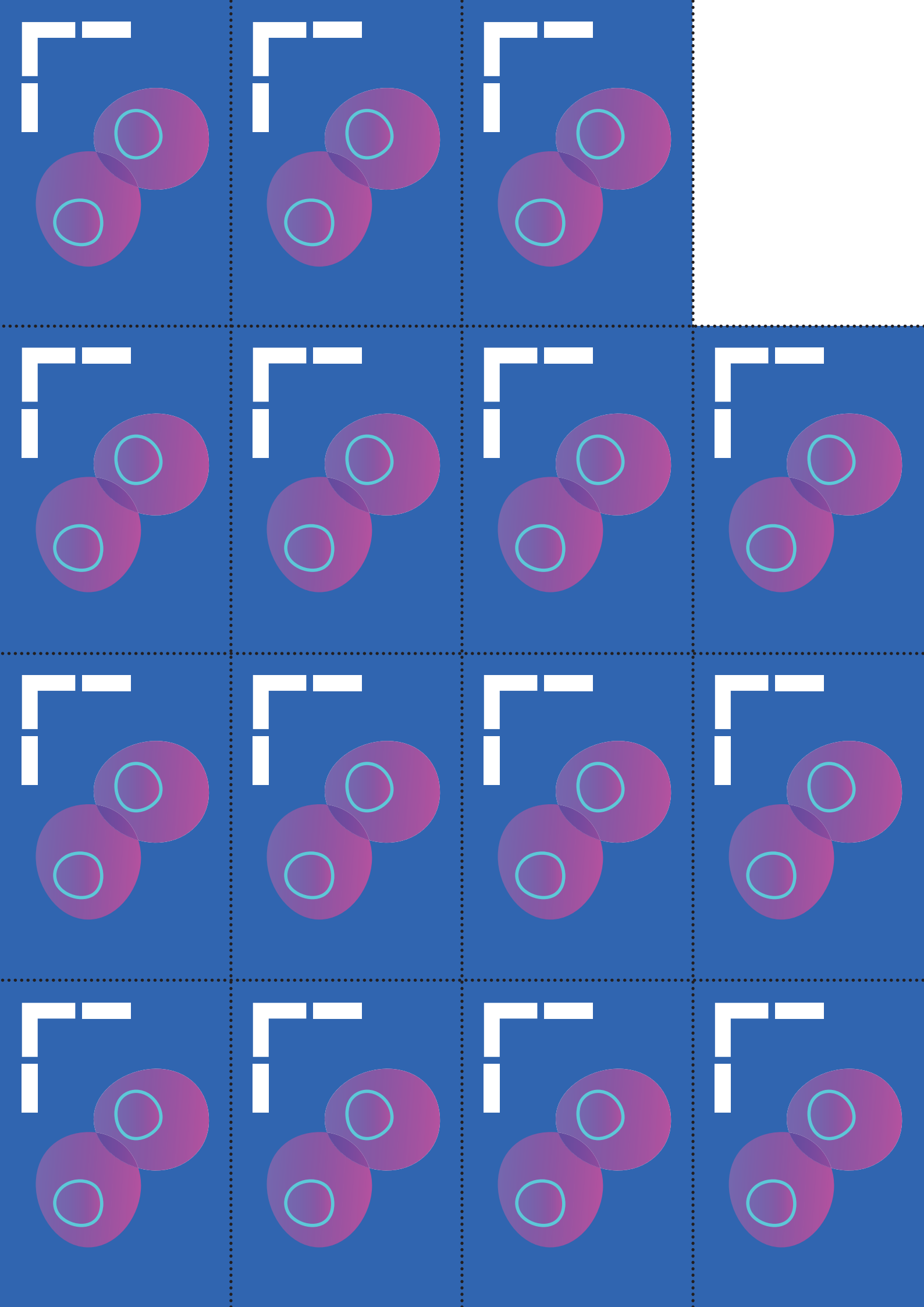
Defends against
Stress

DEFEND



RELAXATION

Defends against
Stress

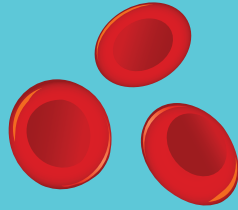




Cut along all
the dotted lines

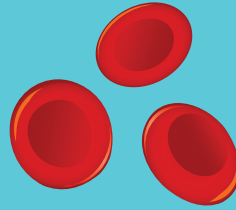


HEALTHY RED BLOOD CELLS



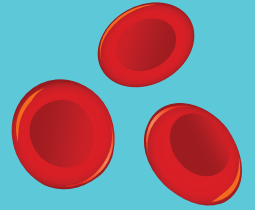
Add 5 oxygen points
to your score

HEALTHY RED BLOOD CELLS



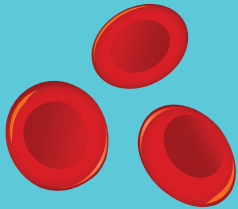
Add 5 oxygen points
to your score

HEALTHY RED BLOOD CELLS



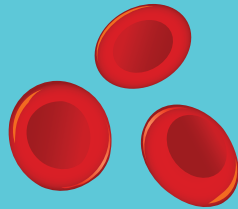
Add 5 oxygen points
to your score

HEALTHY RED BLOOD CELLS



Add 5 oxygen points
to your score

HEALTHY RED BLOOD CELLS



Add 5 oxygen points
to your score

ATTACK



SICKLE CELL DISEASE

Defended by
Blood donation

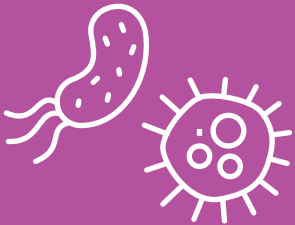
ATTACK



SICKLE CELL DISEASE

Defended by
Blood donation

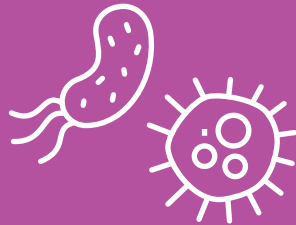
ATTACK



BACTERIA

Defended by
Antibiotics

ATTACK



BACTERIA

Defended by
Antibiotics

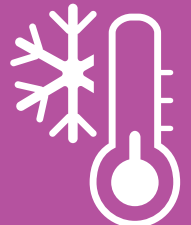
ATTACK



COLD

Defended by
Warm clothing

ATTACK



COLD

Defended by
Warm clothing

ATTACK



DEHYDRATION

Defended by
Water

ATTACK



DEHYDRATION

Defended by
Water

ATTACK



STRESS

Defended by
Relaxation

ATTACK



STRESS

Defended by
Relaxation

