THE WAR AGAINST HIV

Created by: The Centre for Medical Ethics and Law
Stellenbosch University, Faculty of Medicine and Health Sciences

This activity book belongs to:

SOME STATISTICS:

There are 36.7 million people worldwide currently living with HIV/ AIDS- 66% are in Sub-Saharan Africa. 7 million of them are in South Africa.

According to the World Health Organization over 35 million people have died from AIDS-related illnesses thus far.

1.8 million of them are young people under the age of 15.

Ending the AIDS epidemic by 2030 is part of the

United Nations Sustainable Development Goals.

South Africa is the country with the largest rollout of ARVs in the world.

Of all these people, only about 54% of HIV positive people know that they are positive.

18.2 million people are on ARVs worldwide. 3.1 million of them are living in South Africa.

WHAT IS HIV?

HIV stands for Human Immunodeficiency Virus, which is a virus that specifically attacks the immune system, leaving the body open to other illnesses.

Once you have contracted HIV you can never get rid of it completely, and if left untreated it will eventually lead to AIDS (Acquired Immunodeficiency Syndrome).

This is why it is important to protect yourself from getting HIV in the first place. Prevention, regular testing to know your status and antiretroviral (ARV) treatment are all important aspects in someday having an AIDS-free generation- that could potentially start with you!

HOW CAN YOU BECOME INFECTED WITH HIV?

What do you think are some of the ways to become infected with HIV?

The main route of contracting HIV is through sexual contact. HIV lives in bodily fluids like blood, breast milk, semen, vaginal and anal fluids. It is important to know that you cannot get HIV through kissing (sharing of saliva), sweat or tears.

HIV AT THE HOOKUP CLUB:

In order to see how easy it is to become infected when engaging in unprotected sex with multiple partners, let's play the following game.

Each of you will receive a glass of water (representing your own bodily fluids) and a card with different instructions.

When the music starts please follow the instructions.

Now that the music has stopped, the party has ended. Some of you will have shared your water with many people and some with only a few, whilst others did not share at all.

All of your glasses will now undergo an “HIV test” to see who would have picked up HIV through sharing.

You will notice that some of you became infected. See how easy that was!

What key lessons did you learn from this game?

QUIZ TIME:

Are the following statements TRUE/FALSE?

In order to get infected with HIV your bodily fluids have to be in direct contact with infected fluids of someone else.

TRUE ☐ FALSE ☐

You can get HIV from hugging.

TRUE ☐ FALSE ☐

There is no cure for HIV.

TRUE ☐ FALSE ☐

Rape victims cannot be prevented from getting HIV.

TRUE ☐ FALSE ☐

From the age of 12 you are allowed to consent for an HIV test without permission from a parent/guardian.

TRUE ☐ FALSE ☐

CAN YOU GET HIV FROM A BLOOD TRANSFUSION?

IF YOU ARE HIV POSITIVE IS THERE A WAY TO ENSURE THAT YOUR BABY IS BORN AND STAYS HIV NEGATIVE?

PREVENTION PUZZLE:

S	C	G	O	A	V	X	P	S	D	P
H	C	O	N	D	O	M	R	E	P	R
J	B	A	U	B	E	S	E	Y	A	O
I	S	B	L	K	A	R	V	S	T	P
T	E	S	T	I	N	G	E	K	S	H
E	A	T	R	M	A	X	N	Z	U	Y
P	U	A	Z	M	B	A	T	C	L	L
D	K	I	H	U	I	P	I	S	C	A
A	K	N	F	N	N	P	O	P	I	I
A	Q	Z	O	E	D	L	N	O	O	D
R	E	S	I	S	T	A	N	C	E	S

Clues:

1. What barrier method can you use to protect yourself from contracting HIV through sexual intercourse? _____ ("safe" sex, 6 letters)
2. What is the best method of protecting yourself from HIV caused through sexual contact? _____ (staying away, 7 letters)
3. If HIV is left untreated it progresses to? _____ (4 letters)
4. How can you tell if you are HIV positive? _____ (7 letters)
6. Complete the saying "_____ is better than cure" (10 letters)
7. The bodily system that HIV attacks? _____ (6 letters)
8. The treatment we use for HIV is well known as? _____ (4 letters)

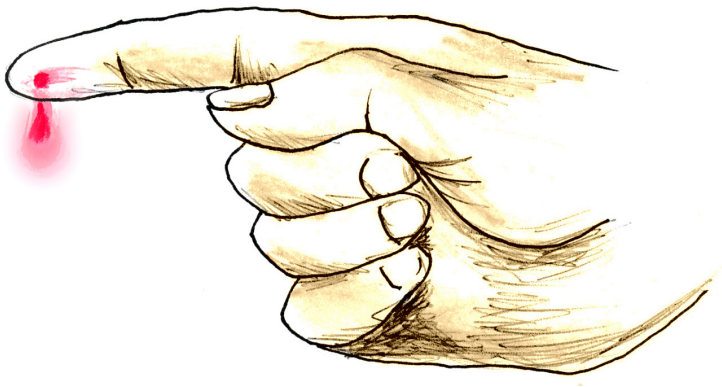
TESTING FOR HIV:

You cannot see if someone has HIV. If someone has an AIDS related illness like TB, it does not mean that they have HIV.

SO HOW WOULD YOU KNOW?

GET TESTED REGULARLY!

A simple finger prick test can tell you your HIV status.

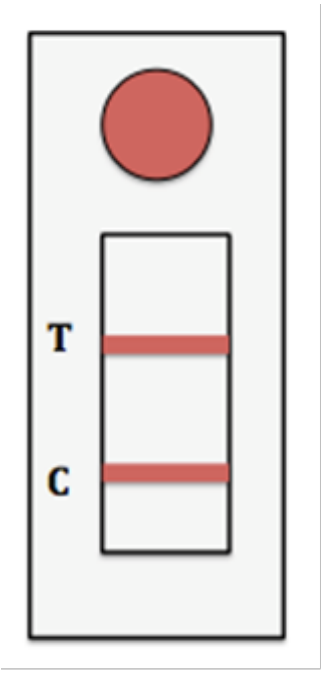


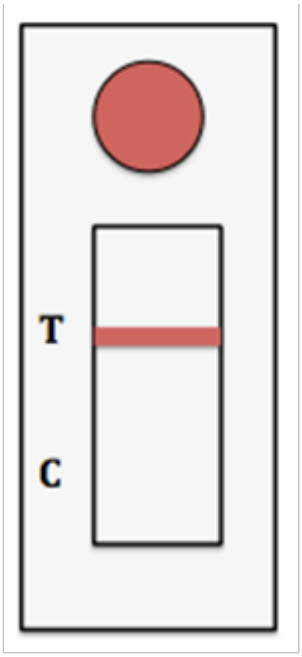
After some counseling the health care worker will use a rapid finger prick test, which requires a drop of blood from your finger.

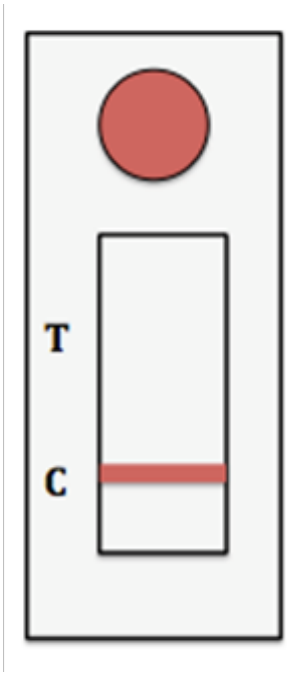
The test has 2 lines:

The test line (T): If this appears then you are infected.
Control line (C): This line must always appear to ensure that the test is working properly.

Look at the following pictures.
Which test is a positive test for HIV and which is negative? Which test is invalid?







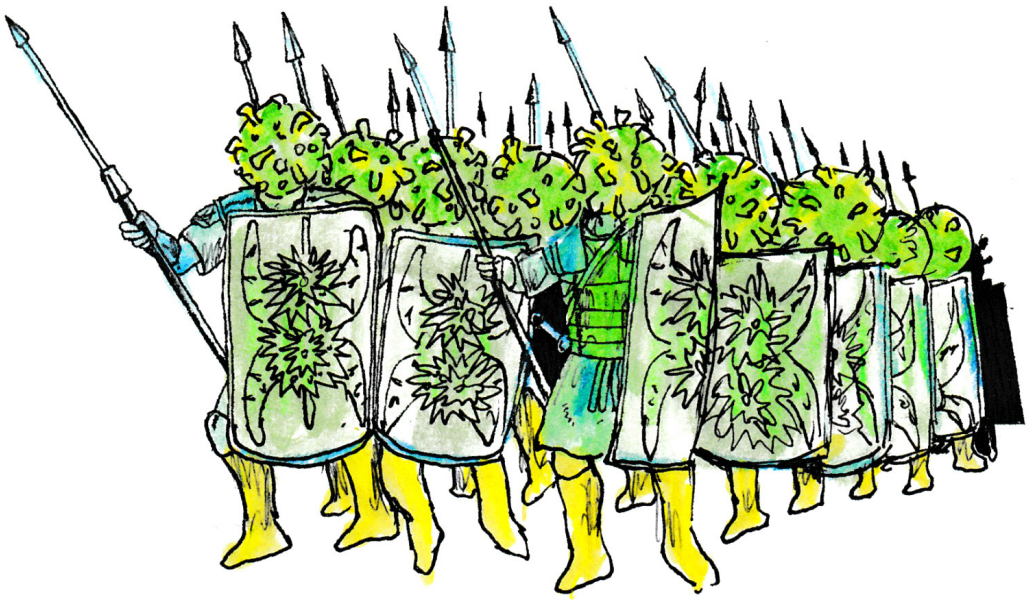
It is important to know that HIV has a “window period” of about 3 months. This means that it might take up to three months for a newly infected person to test as positive.

WAR AGAINST HIV

In a tale as old as time itself there lived a powerful King with an army that stood fierce and strong. His ranks consisted of tough knights known, as antibodies. However, the major strength of his army was his CD4 T troops.
The CD4s were part of a special force that went out into the furthest lands of the Kingdom where they stood on the lookout for invading troops.

Throughout the years many an invading army came. But, each time the CD4 forces reacted quickly. They alerted the antibody knights who swiftly defeated the invaders and restored the peace. Until one fateful day, the Kingdom's borders were breached by a new enemy- one that was strong, but also very sneaky.

Along came the HIV army. The HIV troops were smart and targeted the CD4 lookout forces instead of outright attacking the antibody knights.

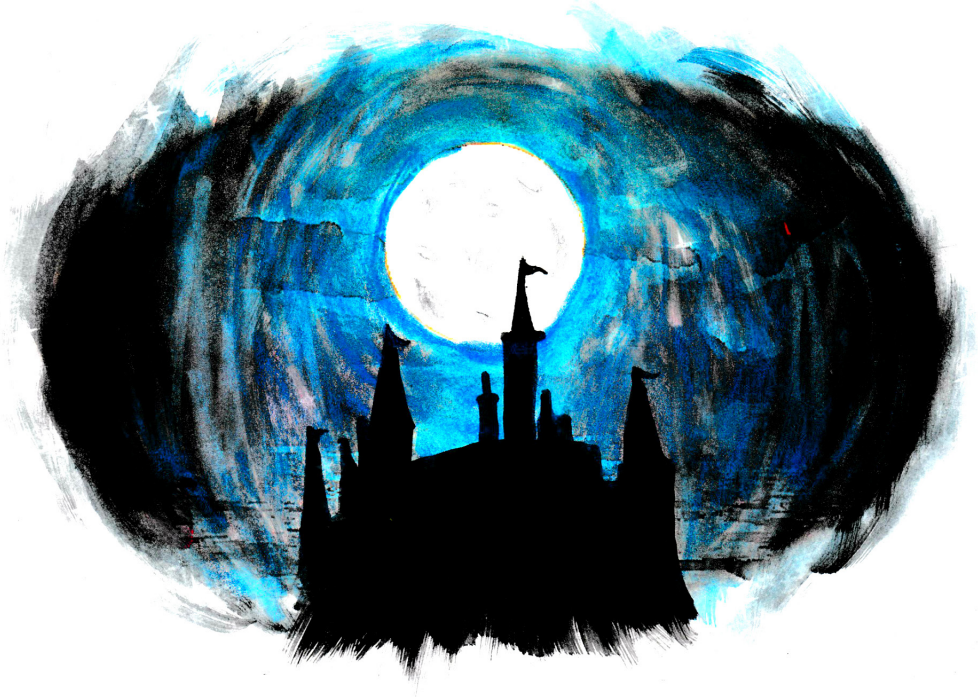


Once they had captured a CD4 soldier they would kill him and steal his armor, so that their own soldiers could use it.

Slowly but surely all of the CD4 soldiers were killed off and replaced by HIV soldiers in disguise. The antibody knights were unaware of what had happened. Without their CD4 troops on the lookout for invading enemies they were caught off guard by even the weakest of invaders. Alas! The worst part was that the disguised HIV soldiers even started families in the land. They were increasing in numbers that could spread vast and wide.

Very soon the kingdom was in turmoil and the King was weakening. All sorts of armies – from bacteria, to viruses and even some fungi, were attacking him. And all the while his knights stood strong and tall, but never defended him, because they never received the orders from their Special Force CD4 generals.

And such is the tale of the powerful kingdom that was destroyed by the HIV invasion. Although, some legends have it that many moons later the King had found a way to revive the strength of his army and keep the HIV soldiers at bay, but never was he able to fully get rid of them...



Now that you have read the tale of the HIV invasion- what do you think the story is trying to teach you about HIV?

WIN!!

COMPETITION TIME!

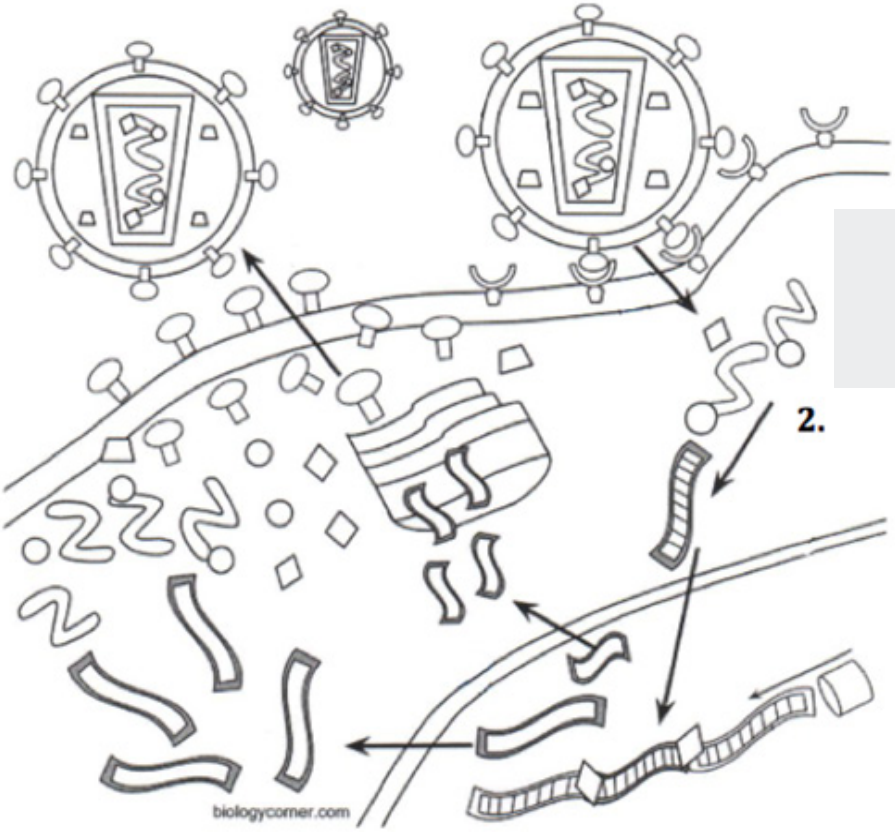
Draw and colour in a picture depicting the invasion and replication of HIV in the human body - this can be as creative or scientific as you like...

LIFE CYCLE OF HIV:

Look at the drawing on the next page showing the life cycle of HIV. Please cut out the labels on the next page and stick them down next to the numbers you think that they best fit with. Once you have completed, the steps of the cycle should make sense.

LIFE CYCLE OF HIV:

1.



2.

3.

4.

5.

This image was modified from: https://www.biologycorner.com/worksheets/HIV_coloring.html

HIV uses the organelles of the CD4 cell to make more HIV proteins.

The new HIV leaves the CD4 cell.

HIV RNA is made into HIV DNA.

HIV attaches to and enters the CD4 cells.

HIV DNA inserts itself into the DNA of the CD4 cell.

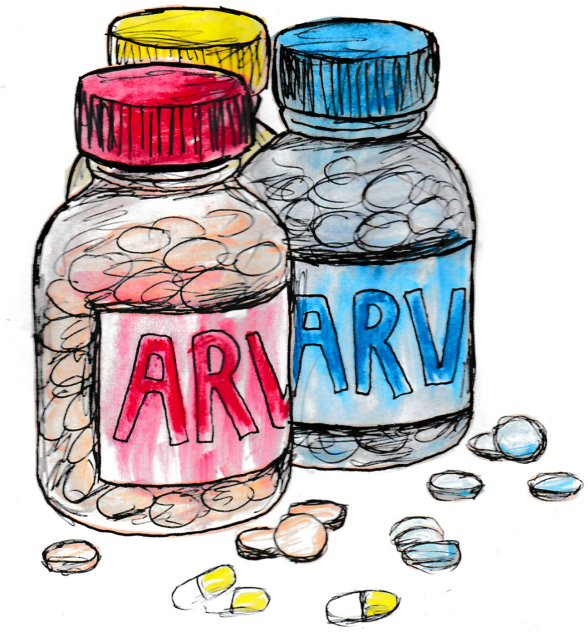
Now that you understand it you may also colour in the picture.

TREATING HIV:

Now that we know how HIV invades the body and replicates, we can use various drugs known as antiretrovirals (ARVs) to try and stop this or at least slow it down.

After a long battle with government and finding sufficient funding, ARVs are now available to all people who are HIV positive. This is why it is important to know your HIV status, so that you may be started on ARVs.

Doctors often start patients on multiple ARVs to attack the HIV at different levels of its life cycle. As part of treating HIV, doctors carefully monitor the amount of viral particles in the body. The higher the viral load the sicker the patient. This means that the ARVs are not managing to keep the HIV under control.



ARVs may have some side effects, such as nausea, vomiting and diarrhoea and rarely some that may be serious, such as liver damage. This is why some people do not want to take ARVs and often stop them. This is a very DANGEROUS thing to do, as once you have started a drug- if you leave it the HIV will develop resistance against it and it will not work against HIV in the future. Imagine if many people did this and eventually we ended up back at square one with no way to treat HIV?

The side effects can be managed and new medications do not have as many side effects. Doctors will be on the lookout for these side effects and change the medication if needed.

Now that you know why taking your ARVs EVERYDAY is so important, what are some ways we can help people to continue taking their ARVs?

Some HIV positive people use a pillbox and set alarms to remember to take their ARVs. Sadly, some people do not take ARVs because they do not want people to know that they are HIV positive, as they fear the stigma.

Stigma- judging people who are HIV positive causes more spread of the disease. It is important to understand that HIV positive people are not “evil” or “being punished for their sins”. They are just normal people who became sick- similar to getting the flu. Except that this “flu” is life long.

For now there is no complete cure for HIV although scientists are working very hard to find one. There has been promising research in developing some kind of vaccine that could replace the ARVs and act as a very long-term treatment.

A CURE FOR HIV?

Have you heard stories of people being “cured” of HIV?

Let’s tell you about an interesting case known as the Mississippi baby. The Mississippi baby was born in 2010 in the United States. Her mother was HIV positive and not on any mother-to-child prevention programme. At birth she was started on high doses of ARVs and continued until about 18 months when her mother stopped bringing her to the clinic.

About 5 months later when she returned to the clinic her HIV tests were suddenly negative. Doctors were shocked and wondered - would high doses of ARVs very early in life cure one from HIV?

Lots of research was conducted. Although, sadly, the Mississippi baby began to test positive once again about 2 years later. This case was interesting as it showed scientists that HIV could potentially hide in the body for a long time and only become active again after some time. It also showed that ARVs have the potential to make HIV “dormant”.

This case also showed that in some ways HIV is similar to Cancer, as it is possible to go into “remission” from the disease and later test positive again.

What about cure research in South Africa?

In July 2017, researchers published data on a nine-year-old South-African girl who is currently thought to be in remission from HIV.

The little girl was infected with HIV at birth and tested positive at one month old. She was then enrolled in a research trial that provided ARVs to HIV positive children very early on in life. After being on ARVs for 10 months the researchers decided to stop her ARVs and closely monitor her immune system.

The girl is now reportedly nine years old and has remained healthy throughout without any ARVs. She is the first reported child who is able to control HIV for so long without being on continuous ARVs.

Scientists hope that her case will help us understand the replication of HIV better, so that we can control the virus and keep HIV positive people in remission for longer.

What do you understand by the word cure?

_____

_____

_____

_____

_____

Tabulate the differences between Cancer and HIV:	
Cancer	**HIV**

Do you think going into remission from HIV can be counted as being cured?

Do you think we can use Cancer treatment techniques to help find a "cure" for HIV? Please explain:

THINK BOX

What about PMTCT- Prevention of Mother-to-Child Transmission programmes?

These are special programmes that identify HIV positive mothers and provide them with extra ARVs during their pregnancy and labour. Once the baby is born it is also given ARVs for up to 6 weeks or longer if the mother is breastfeeding.

This is done to reduce the risk of HIV infection to the baby. The baby is regularly tested and followed up to ensure that it does not get HIV.

South Africa has a very good PMTCT programme with a huge decline in babies that are born HIV positive.

ALL HIV POSITIVE PREGNANT WOMEN MUST TAKE PART IN PMTCT.

Meet Timothy Brown - also known as the Berlin patient:

Timothy was diagnosed with HIV in 1995. In 2006 he found out that he had Leukemia - a blood cancer. In order to treat his cancer, Timothy needed a bone marrow transplant. His doctors found a bone marrow donor for him who had resistance to HIV. Some people have natural resistance to HIV, but this is very rare.

After the bone marrow transplant, Timothy was cured of cancer and HIV. This transplant replaced his damaged and diseased cells with healthy donor cells. However, when this was tried in other patients, it did not work. Timothy currently appears to be the only patient who has been cured of HIV.

These cases sparked the ideas for cure research and the hopes to find a “cure” that involves very early treatment or even treatment taken every once in a while rather than daily ARVs.

Now that you have heard about cure research - what do you think about it?

COMPETITION TIME:

Write an essay of 300 words or more on "New ways to educate the community about HIV cure research"

HAVE YOUR SAY

Thank you for participating. Please take the time to anonymously rate the content of this activity book and provide your feedback for ways in which it can be improved:

(Please X the appropriate block)

1. This activity book was simple and easy for me to understand:

Always ☐ Mostly ☐ Sometimes Rarely ☐

2. This book taught me something new today:

Yes ☐ No ☐

Please explain why you think so in a few short sentences:

_____

_____

_____

_____

3. I feel that the information in this book is useful for me and people in my community at large:

Strongly Agree ☐ Agree ☐ Not Sure ☐ Disagree ☐ Strongly Disagree ☐

Please explain why you think so in a few short sentences:

_____

_____

_____

_____

4. I would be interested in such an activity book on other health-related topics in the future:

Strongly Agree ☐ Agree ☐ Not Sure ☐ Disagree ☐ Strongly Disagree ☐

Please explain why/why not:

5. Please explain in a few short sentences what you liked about this activity book:

6. Please explain in a few short sentences what you did not like about this activity book and how we can make it better:

7. I feel that this activity book should be sent out to more schools in the future:

Strongly Agree ☐ Agree ☐ Not Sure ☐ Disagree ☐ Strongly Disagree ☐

8. My scores in the pre and post workshop test were as follows:
(Please use ✓and **x** to indicate whether your answers were correct or incorrect respectively)

Question:	1	2	3	4	5	6	7	8	9	10	Total
Pre- test											
Post- test											

Strictly for demographic purposes only:

AGE: _____

GENDER:

MALE ☐ FEMALE ☐ OTHER ☐

SELF REPORTED ETHNICITY:

- ☐ WHITE
- ☐ COLOURED
- ☐ BLACK
- ☐ INDIAN
- ☐ ASIAN
- ☐ OTHER
- ☐ DO NOT WISH TO DISCLOSE

This book was developed by:
The Centre for Medical Ethics and Law at the Faculty of Medicine and Health Sciences, Stellenbosch University.

Written by:
Farha Cassim

Illustrated by:
Lisa Africa

Edited by:
Prof. Keymanthri Moodley
Ms. Claire de Koker
Ms. Zulpha Geyer

A special Thank You to:
Dr Theresa Rossouw
Prof Valerie Corfield

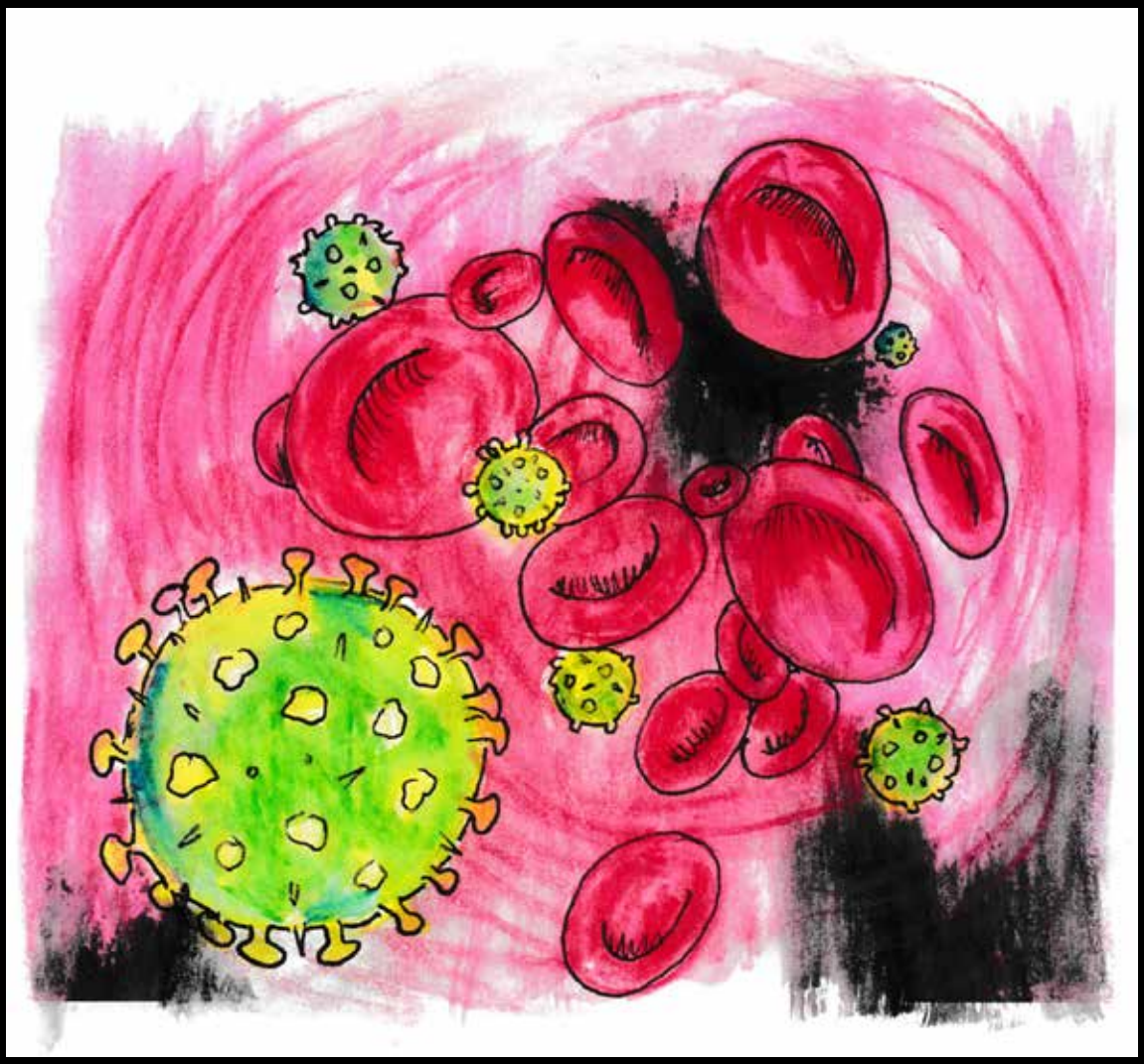
Contributions to this book and its activities were also made by:
www.biologycorner.com
Wellcome Trust

Printing and Design by:
SUN MeDIA

Research reported in this publication was supported by the National Institute Of Allergy And Infectious Diseases of the National Institutes of Health under Award Number R01A108366. The content is solely the responsibility of the authors and does not necessarily represent the official views of the National Institutes of Health.

UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

This activity book was created by:
The Centre for Medical Ethics and Law
Stellenbosch University, Faculty of Medicine and Health Sciences



Written By: Farha Cassim
Illustrated by: Lisa Africa

Medicine and Health Sciences
Geneeskunde en Gesondheidswetenskappe
EsoNyango nezeNzululwazi kwezeMpilo