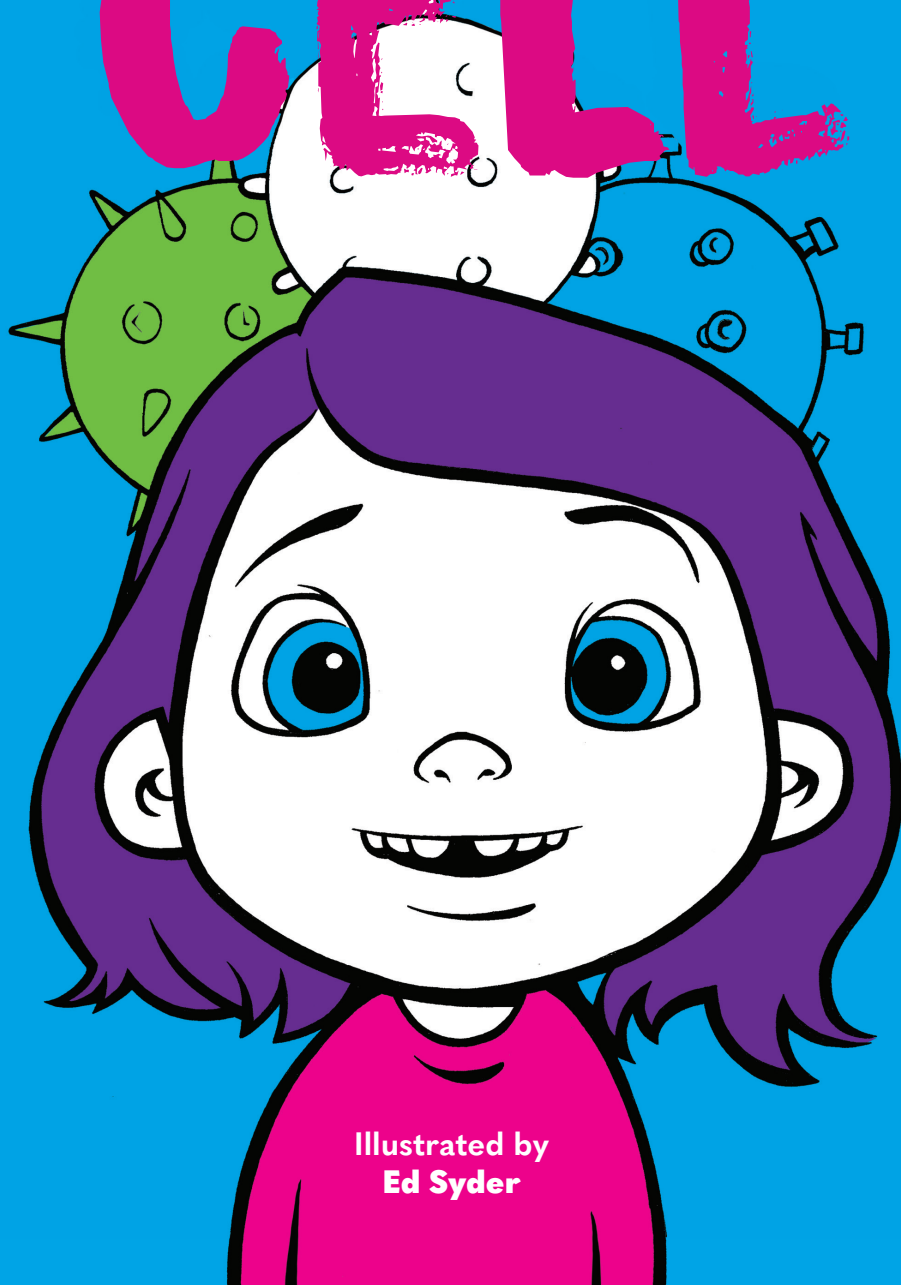
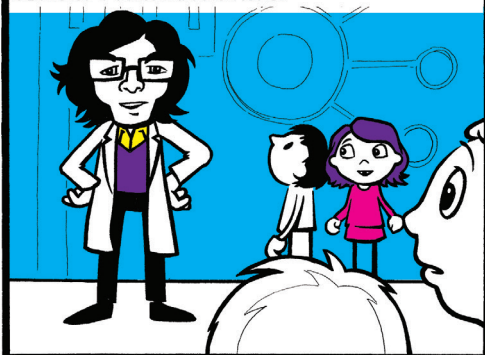


# CELL

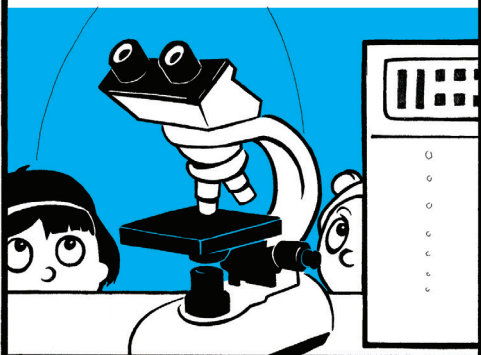


Illustrated by  
**Ed Syder**

DR. MASAHIRO IS GIVING A TOUR OF HIS LAB. HE'S AN IMMUNOLOGIST WHO STUDIES 'T CELLS,' A SPECIAL TYPE OF BLOOD CELL THAT PROTECTS OUR BODY FROM INFECTIONS.

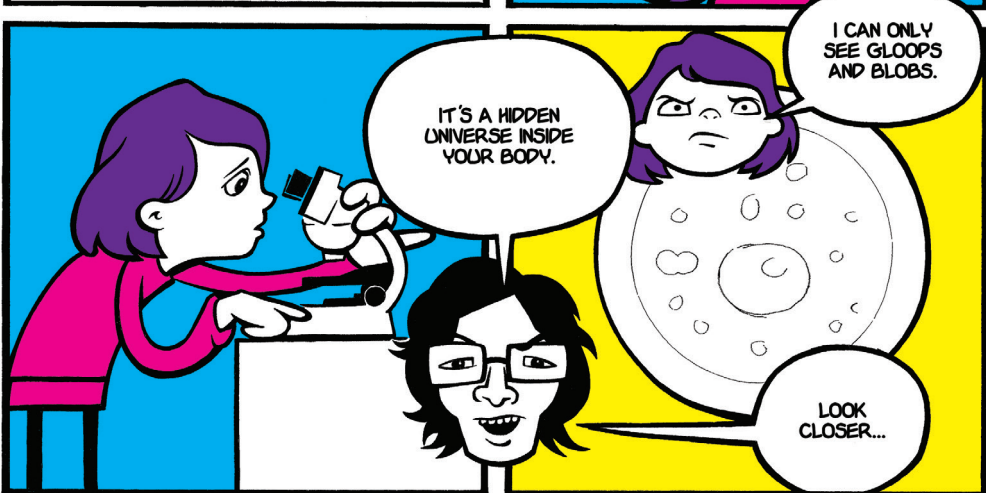


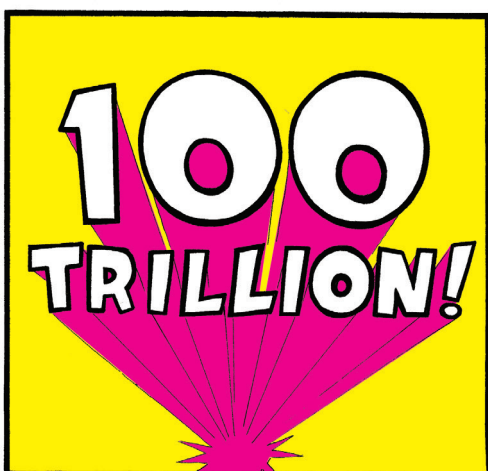
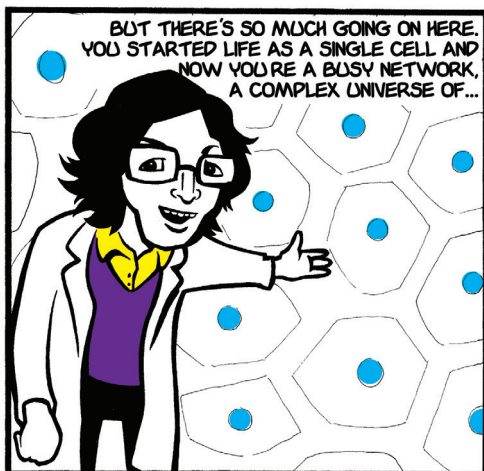
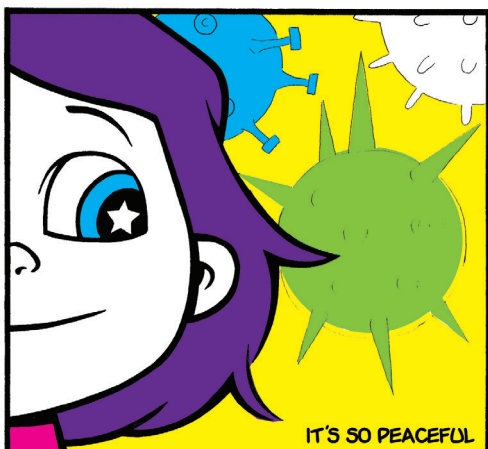
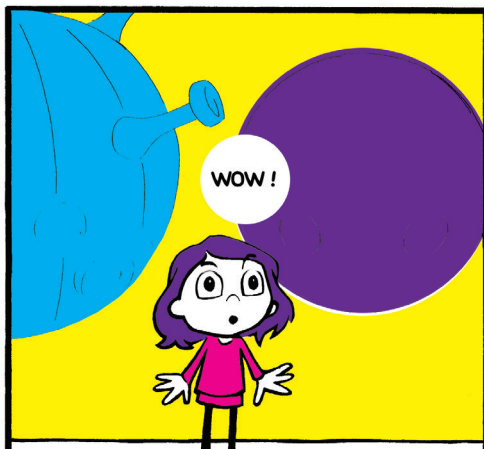
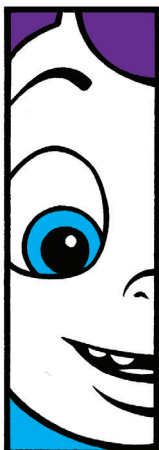
DR. MASAHIRO EXPLORES INDIVIDUAL CELLS USING SPECIAL EQUIPMENT INCLUDING A MICROSCOPE.

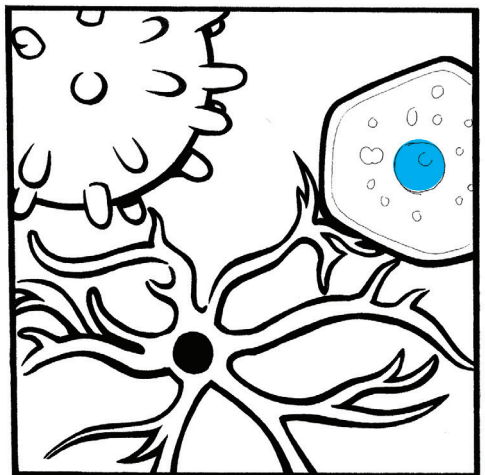
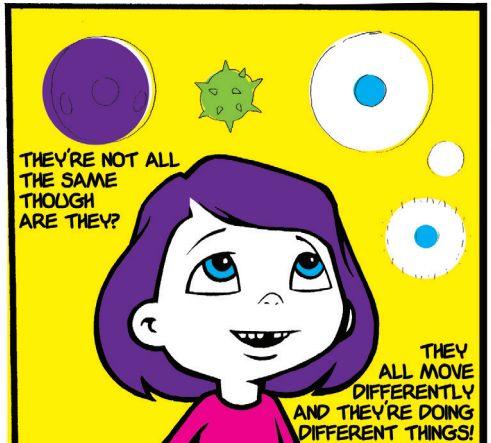
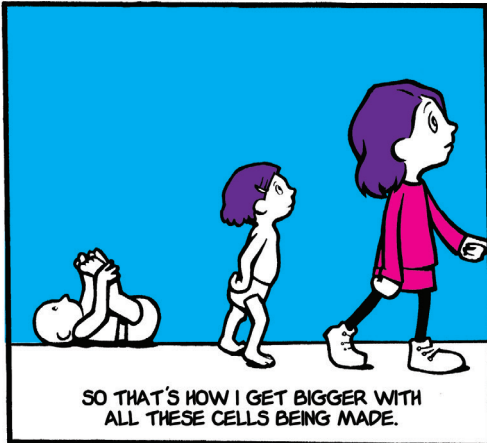
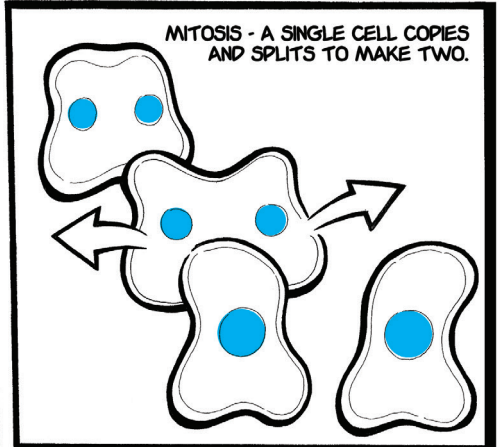


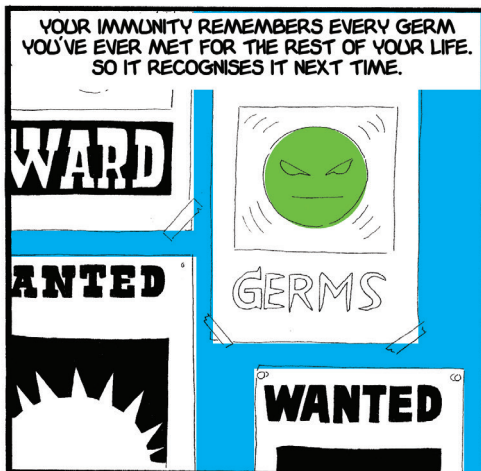
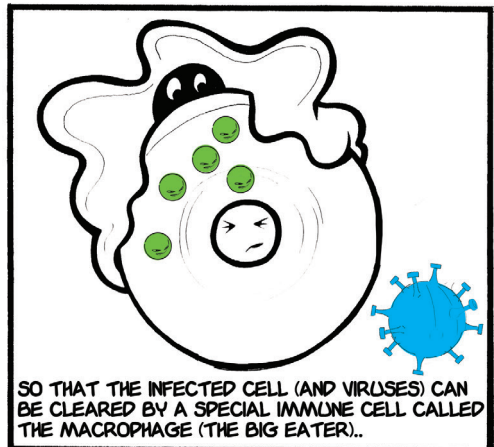
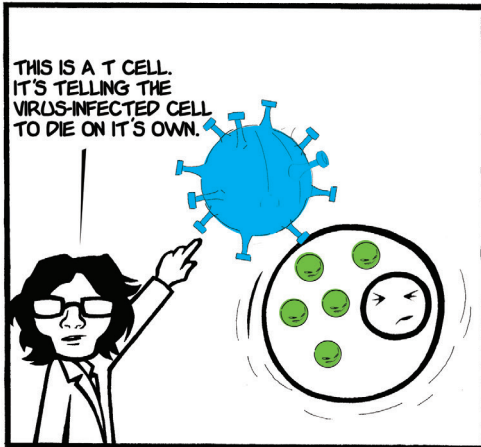
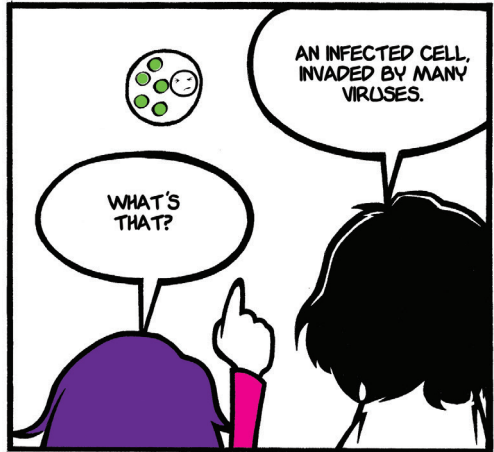
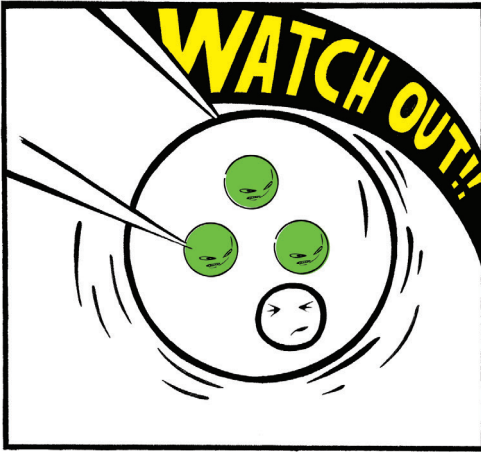
SCIENCE IS NOT ONLY ABOUT FINDING THE RIGHT ANSWER BUT ABOUT FINDING THE RIGHT QUESTION FIRST.

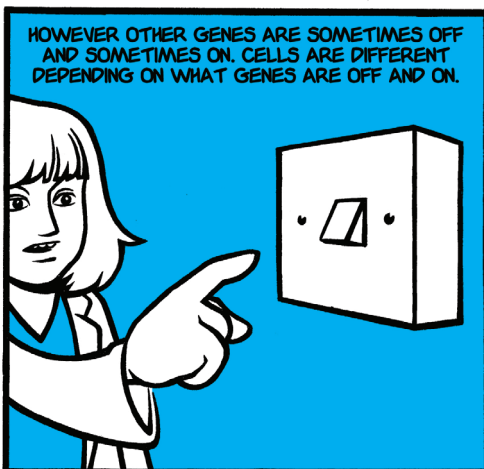
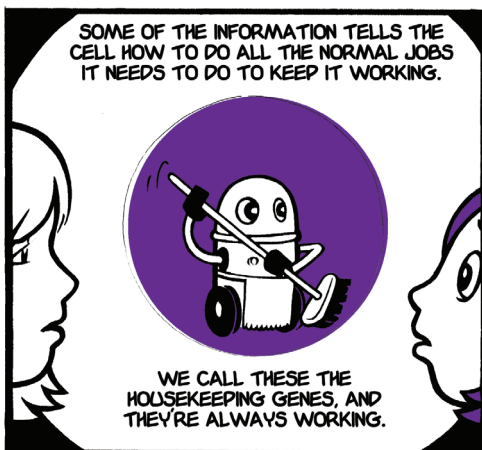
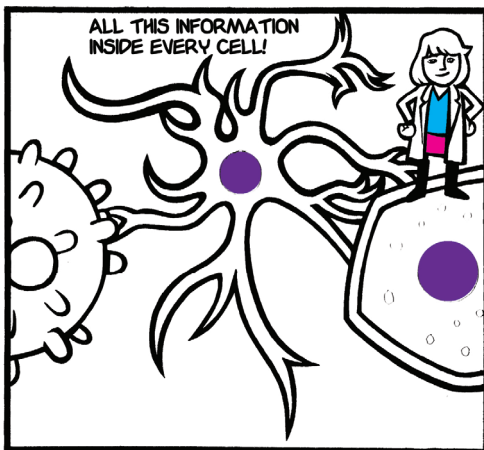
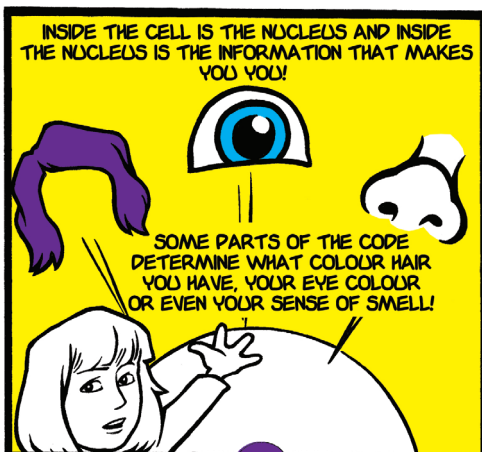
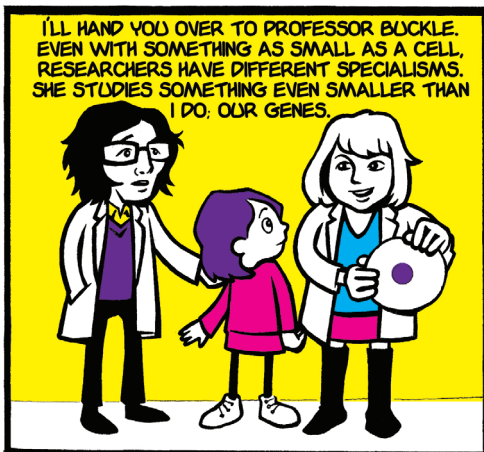
I'VE GOT A QUESTION, WHAT IS A CELL?

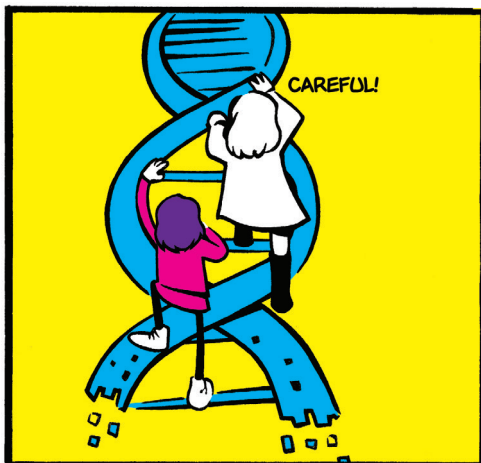
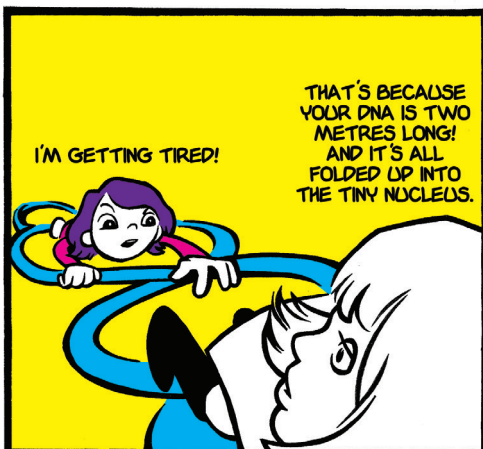
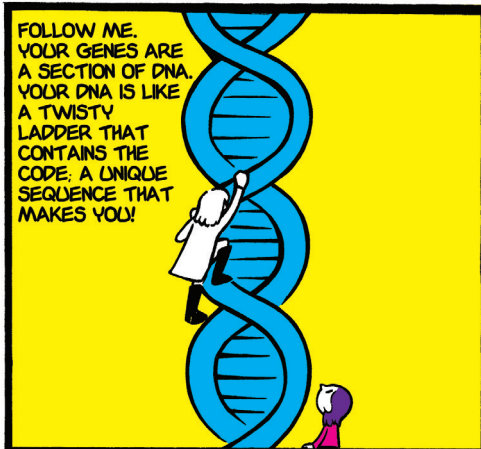












# WORDSEARCH

Help Dr. Masahiro to find these words in the wordsearch below. We've done one for you to get you started! How many can you find?

BIOLOGIST

**CELL**

CELLS

CENTRIFUGE

DIVISION

DNA

EXPERIMENTS

GENE

IMMUNE

MICROSCOPE

MIGRATION

NUCLEUS

PIPETTE

QUESTIONS

TCELL

VORTEX



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

# GLOSSARY

You've searched for the words,  
now find out what they all mean!

**BIOLOGIST** - A scientist who studies living creatures including animals, plants and small germs. Biologists who study cells are called cell biologists. Those who study immune cells are called immunologists. There are many different areas in biology.

**QUESTIONS** - Scientists begin their research with questions. There are so many in biology as so much is unknown. Questions have to be specific to achieve a clear answer.

**EXPERIMENTS** - We learn new things by performing experiments. By analysing the results we can find answers.

**PIPETTE** - A tool to take a measured volume of liquid.

**VORTEX** - An important piece of equipment which mixes cells and reagents to create a reaction that can be studied.

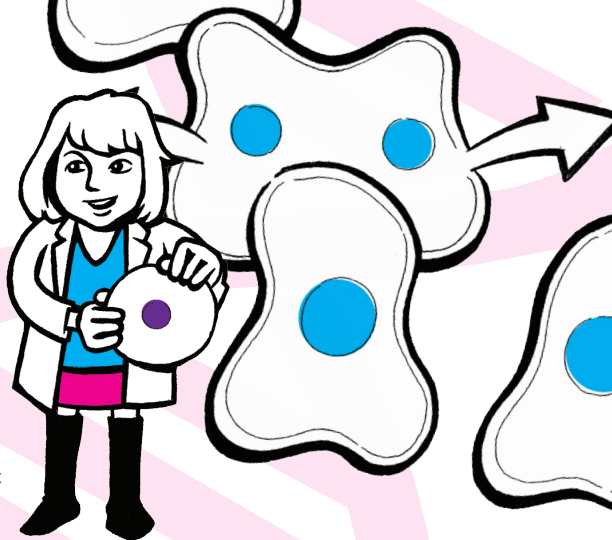
**CENTRIFUGE** - This spins test tubes to separate cells so they can be analysed.

**MICROSCOPE** - Allows us to see cells which are more than 100,000 times smaller than an object that can be seen by the human eye.

**CELL** - The smallest 'living' unit inside our body. The parts that make up the cell can't survive on their own, a cell can. Cells come together to make tissues and organs which come together to make our body.

**NUCLEUS** - Found inside the cell, it contains DNA, which has all the information needed to produce all the different types of cells.

**DIVISION** - Cells divide and copy themselves. One cell becomes two cells which look similar.



**MIGRATION** - Although cells do not have legs they can move. Immune cells need to move to reach an infection which could be anywhere in our body.

**IMMUNE CELLS** - Work together to find invaders and destroy them. They can do this by eating the infections (if they are big enough), attacking them using small weapons, or eliminate them by killing the cells that are infected by those invaders (if they are very small and living inside cells).

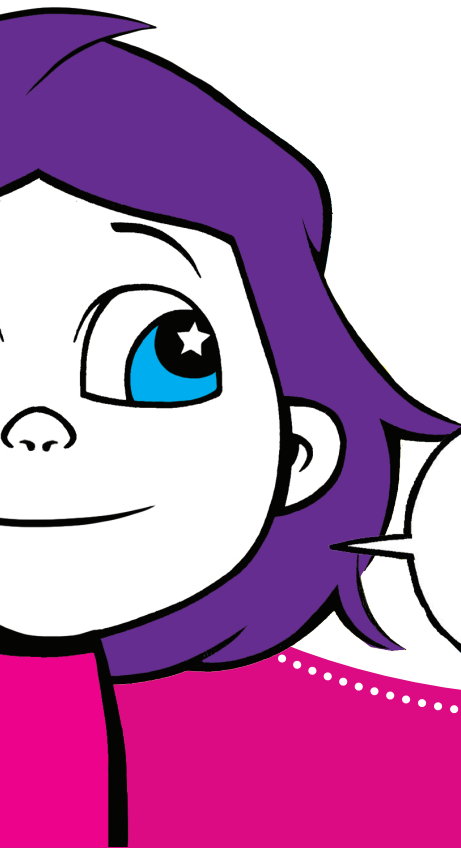
**T CELL** - A special type of white blood cell that has special 'eyes' to distinguish different infections. They can even detect viruses that are hidden and infecting our cells - and tell those virus-infected cells to die, so that viruses can be eliminated together with those infected cells.

**MACROPHAGE** - Another type of white blood cell which fights infections by eating it. The word means 'big eater'.

**DNA** - A chain of molecules which carries a code with all the information about how a living thing will look and function.

**GENE** - Sections of DNA that provide specific bits of information. Housekeeping genes tell the cell how to do all the normal jobs it needs to do to keep it working. Other genes can be switched on and off depending on what job that cell needs to do.

# DOODLE



IMAGINE  
THE  
**UNIVERSE**  
UNDER  
YOUR SKIN!



Director **AMANDA GRIFFKIN**  
Producer **LAUREN HUSSEIN**  
Composer **TCHAD BLAKE**  
Set Designer **STEVE MESSAM**  
Dancers **ROSA CARLESS, CLARA RUST,**  
**BETHAN COOPER & MIRIAM GARNETT**

Access Consultant **JONNY COTSEN**  
Marketing **STELLA PATRICK & JEMMA THOMAS**  
Science Consultants **DR MASAHIRO ONO & CATHERINE**  
**(MO) DUCKER** from Imperial College London, Professor  
**VERONICA BUCKLE & CAROLINE HARROLD** from  
MRC Molecular Haematology Unit - University of Oxford,  
**JEREMY THOMAS & DR ROBERT JEFFREYS** from  
Abingdon Science Partnership.

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& **LAUREN HUSSEIN**  
Graphic Design by **MATT WRIGHT**  
Illustrated by **ED SYDER**

With thanks to **DR ANNA FENEMORE, DAVID FINNIGAN**  
& **TASSOS STEVENS** from Coney, **SILJE ANDERSEN** from  
Imperial College London & **CATARINA VICENTE** from MRC  
Molecular Haematology Unit - University of Oxford.

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