

Our Immune System

A story
for children
with primary
immunodeficiency
diseases



Written by
Sara LeBien

A note from the author

The purpose of this book is to help young children who are immune deficient to better understand their immune system. What is a "B-cell," a "T-cell," an "immunoglobulin" or "IgG"? They hear doctors use these words, but what do they mean?

With cheerful illustrations, *Our Immune System* explains how a normal immune system works and what treatments may be necessary when the system is deficient. In this second edition, a description of a new treatment has been included.

I hope this book will enable these children and their families to explore together the immune system, and that it will help alleviate any confusion or fears they may have.

Sara LeBien

This book contains general medical information which cannot be applied safely to any individual case. Medical knowledge and practice can change rapidly. Therefore, this book should not be used as a substitute for professional medical advice.

SECOND EDITION

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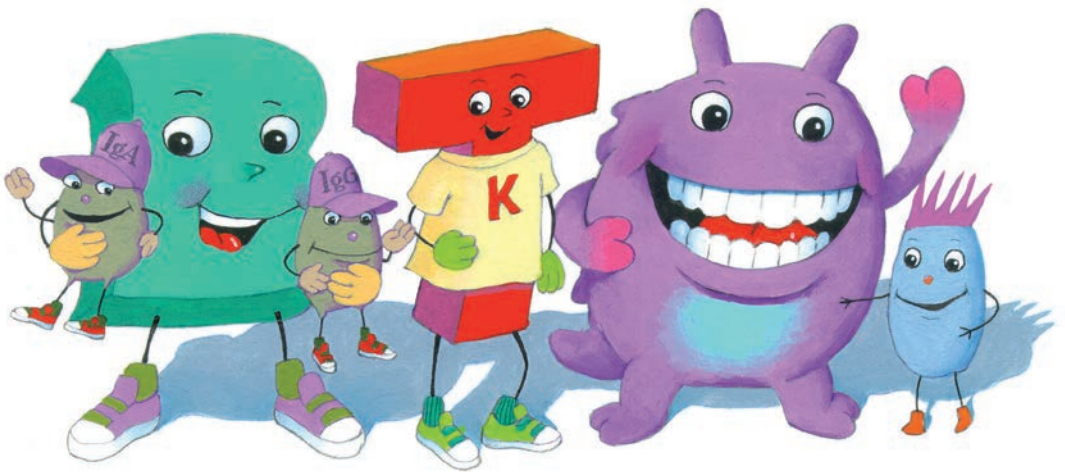
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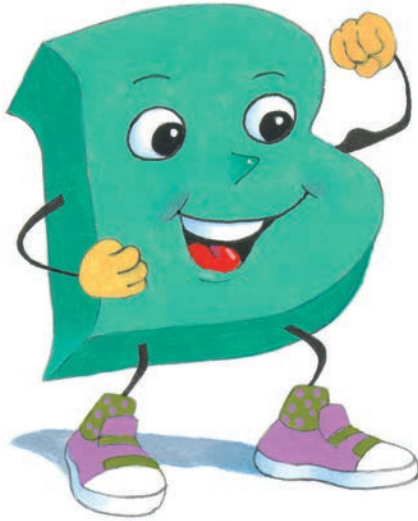
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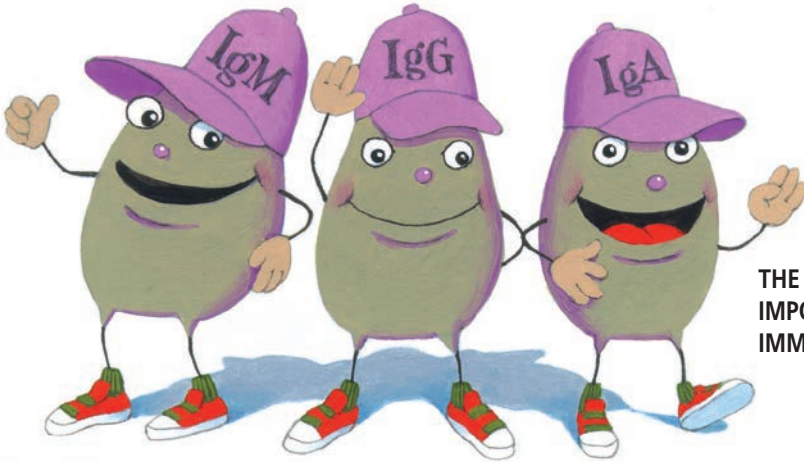
We have things inside our bodies that protect us from being sick. These things are found in our immune system.



One kind of protector is the **B-Cell**.



B-Cells make **immunoglobulins** (im-mu-no-glob-u-lins), also called **antibodies** (an-ti-bod-ies) or Igs. Each has a certain job



THE 3 MOST
IMPORTANT
IMMUNOGLOBULINS

to do to keep us well. They are like guards. They guard us from getting sick.

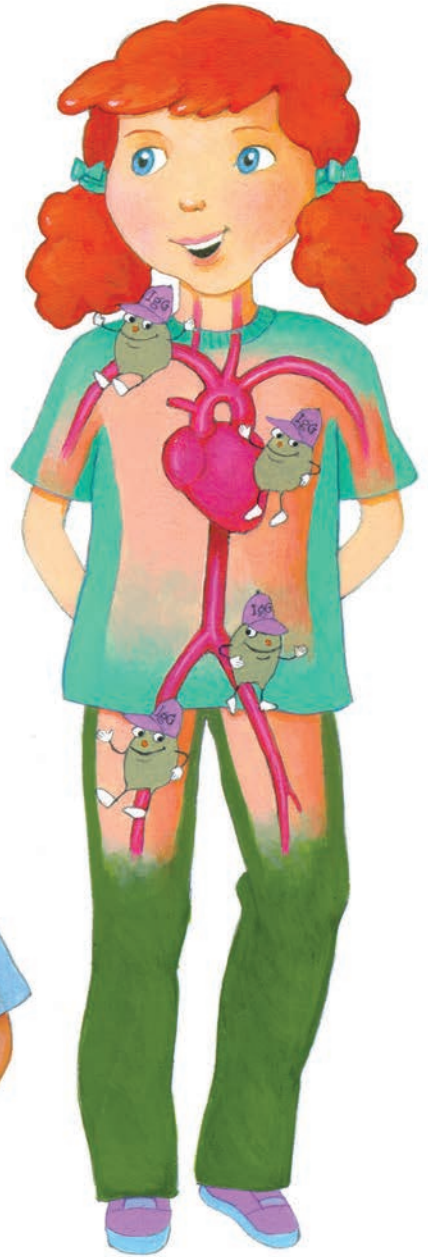
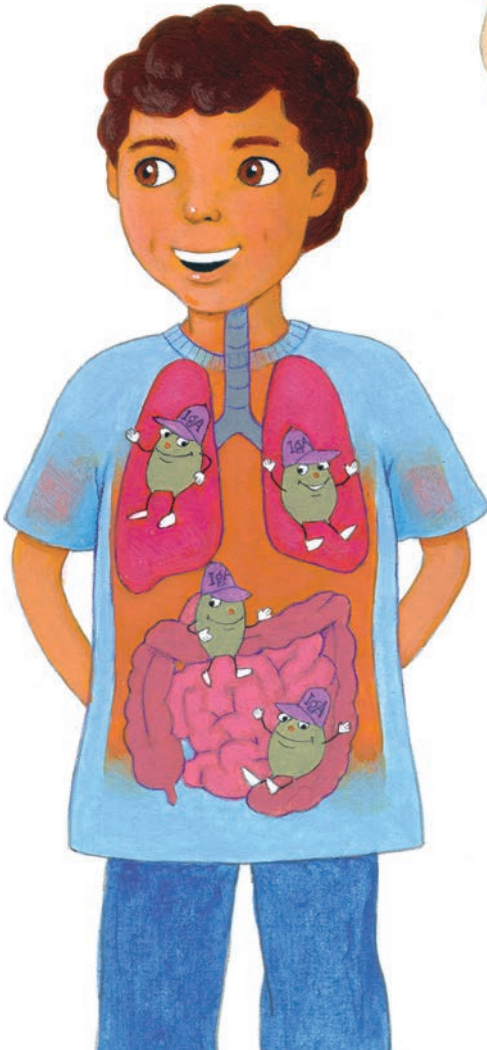
Their job is to kill **germs**, such as viruses, fungi, and bacteria that get into our bodies and make us sick.



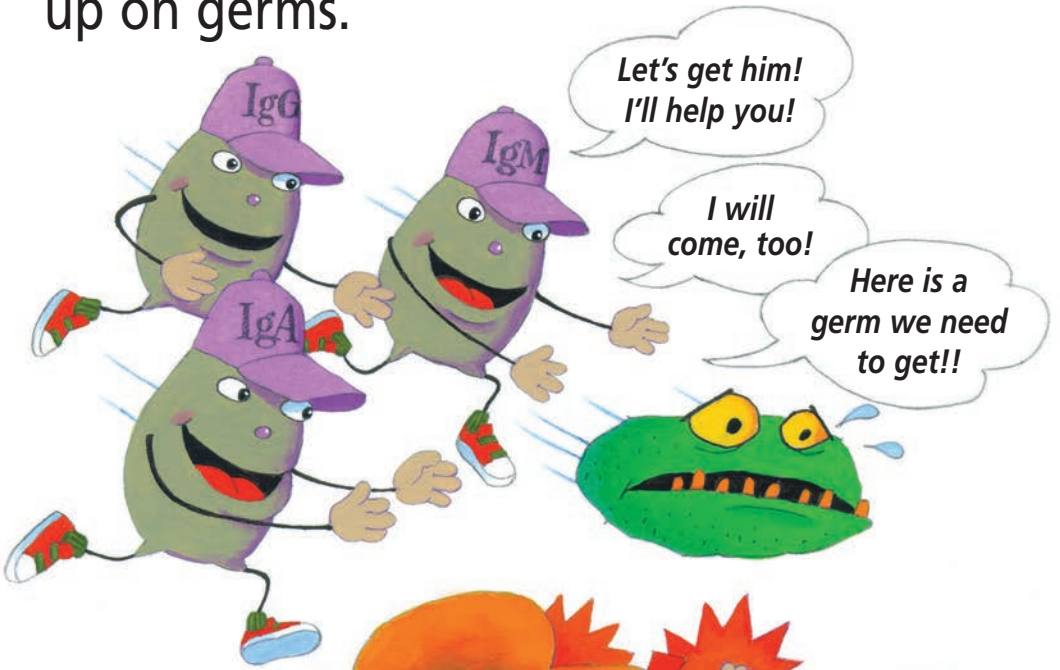
IgM protects our blood and other things inside us.

IgG travels in our blood to get to the germs.

IgA protects the places where we have saliva, tears, and mucus like our mouth, nose, lungs, and intestines.



Sometimes the **Igs** help each other gang up on germs.



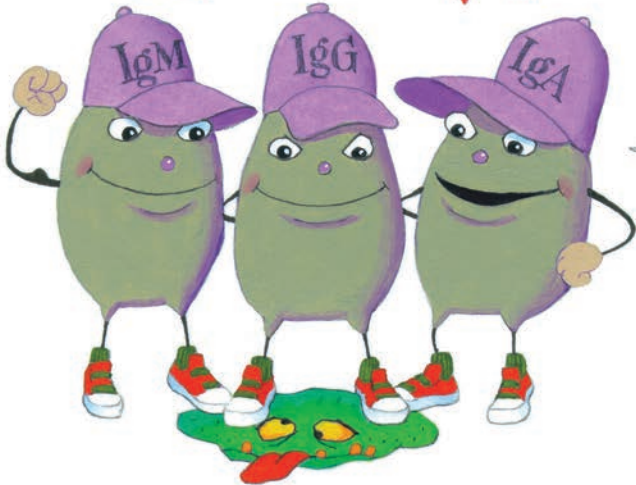
Let's get him!
I'll help you!

I will
come, too!

Here is a
germ we need
to get!!



It's all over,
Germie!

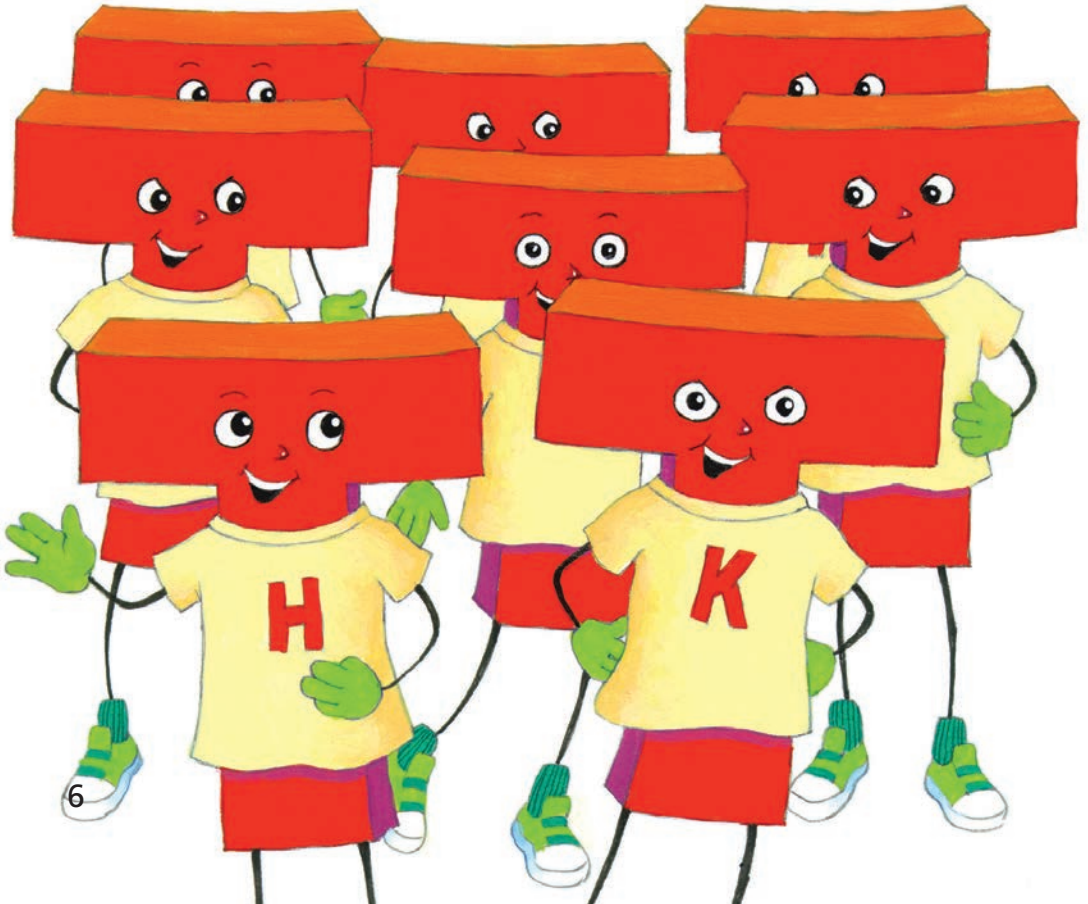


Gotcha!

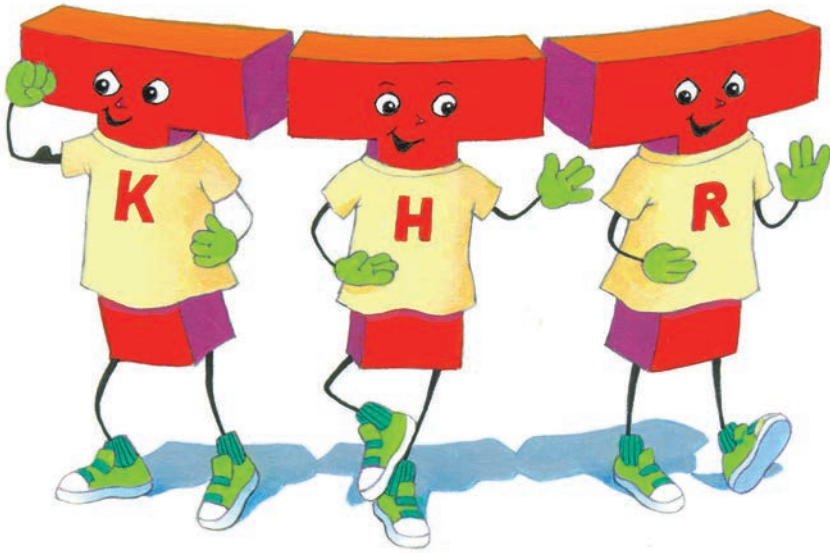
Another kind of protector
is the **T-cell**.

T-cells are
very important, too.
They are in our blood.

But they also
go to other places
inside our body.



There are 3 kinds of T-cells-
Killer T-cells, Helper T-cells and Regulatory T-cells



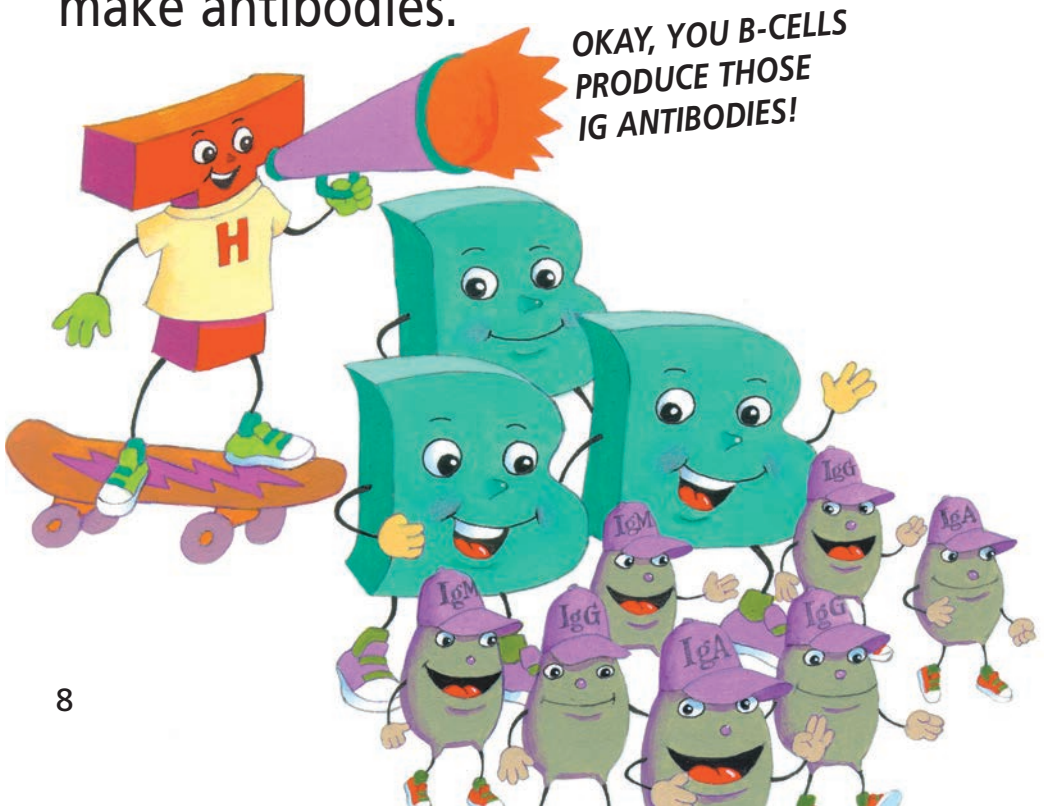
Killer T-cells kill germs.





**CALLING ALL
KILLER T-CELLS! WE
NEED MORE OF YOU!**

Helper T-cells call in more Killer T-cells to kill germs and tell the B-cells when to make antibodies.

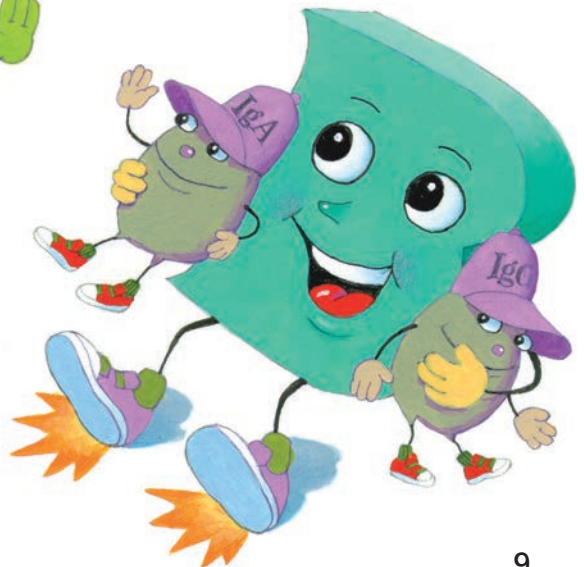


**OKAY, YOU B-CELLS
PRODUCE THOSE
IG ANTIBODIES!**

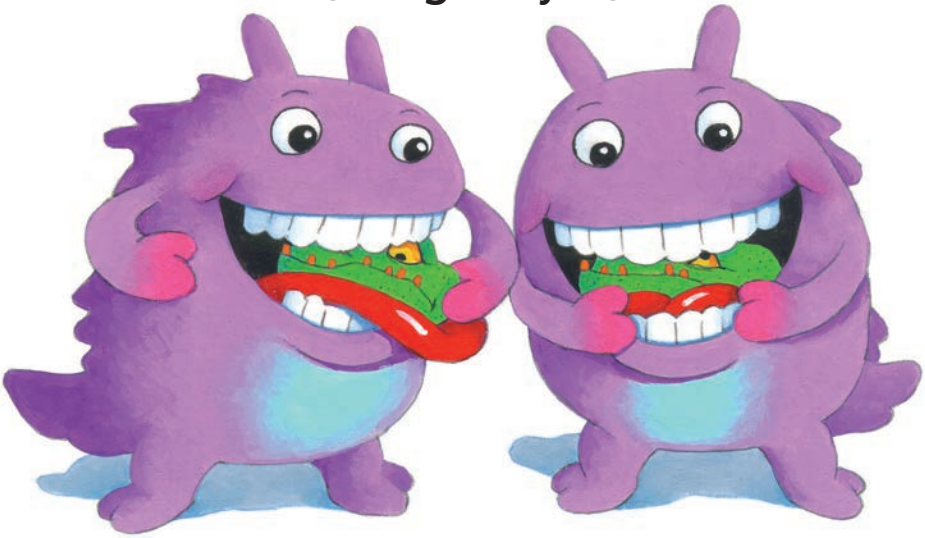
The
Regulator T-cell
tells the B-cells
and other T-cells
when the body is better
and they can stop
making antibodies.



*Okay B-cells
you can
stop now!*



Another protector is the **Phagocyte**
(Phag-o-cyte).



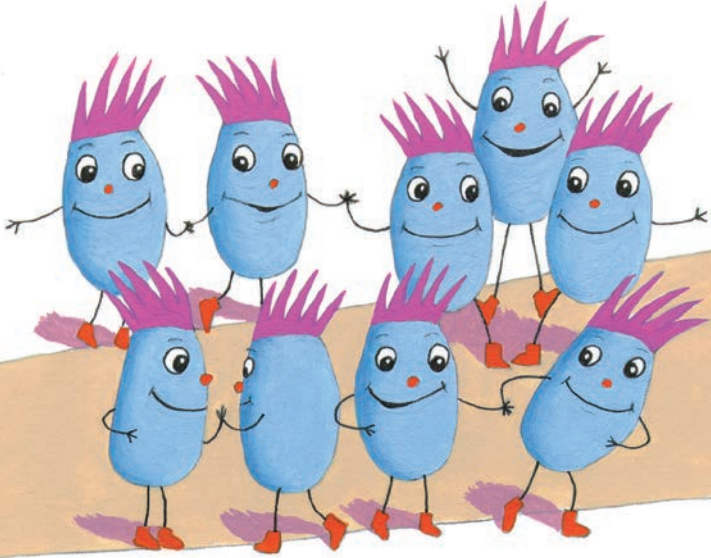
Phagocytes kill germs by eating them!
They also send
signals to other Phagocytes
to help.



*Calling all Phagocytes!
Calling all Phagocytes!
Help! Help!
Help!*



The last protector is the **Complement** (Com-ple-ment). The Complement is made of many pieces working together

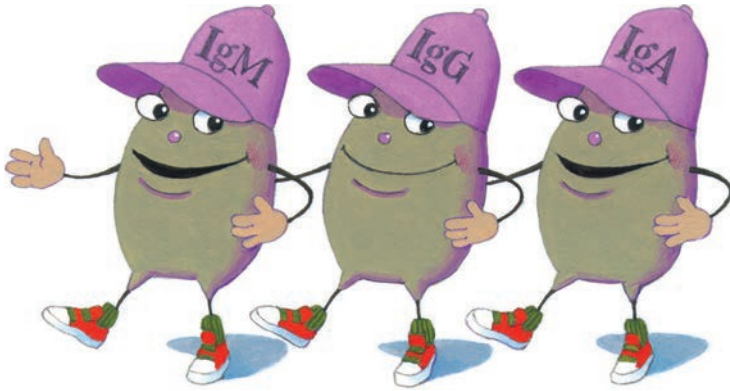


to protect us from infection. The Complement system works with

the **Ig**s and Phagocytes to help get rid of germs faster.



So there are **antibodies**
(immunoglobulins or Igs) made in **B-cells**,



I make the
cells go into
action!



I tell the
Killer T-cells to
attack germs!
I tell the B-cells when
to make antibodies.

I tell the
B-cells when
to stop!

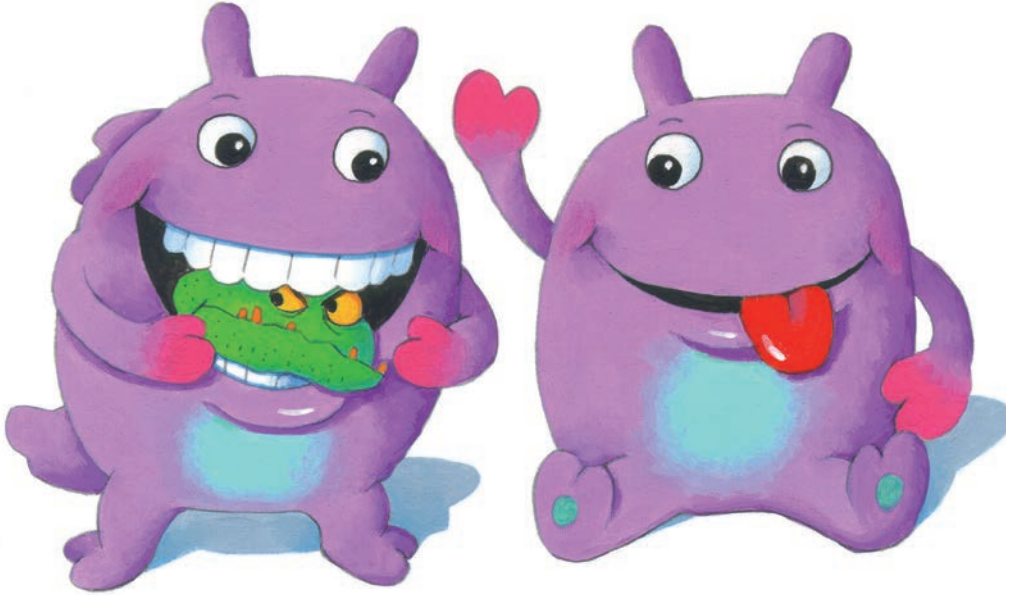


3 kinds of
T-cells,

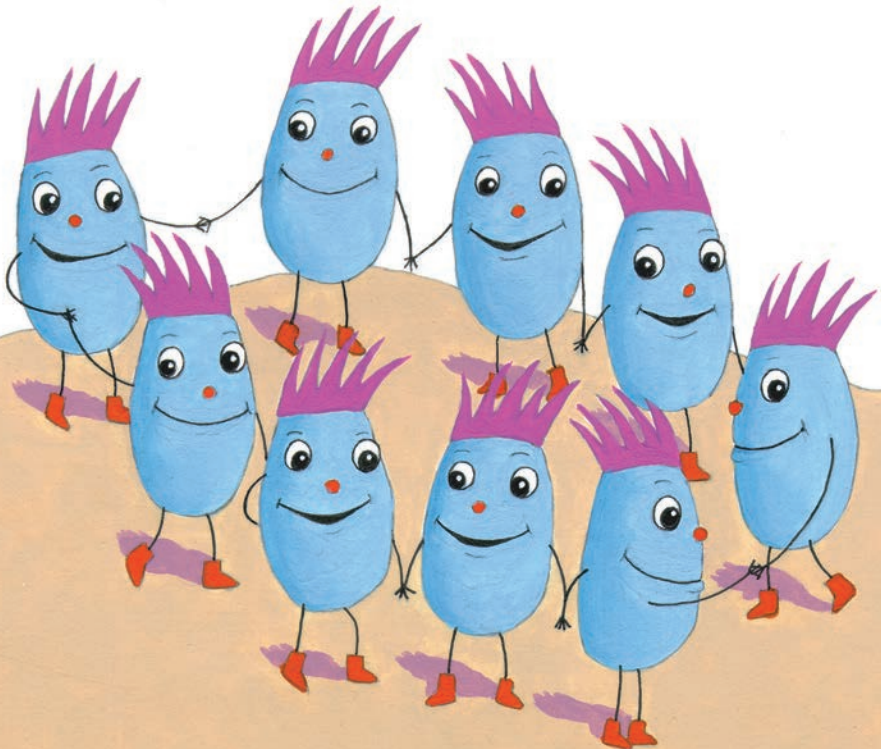
I kill
germs!



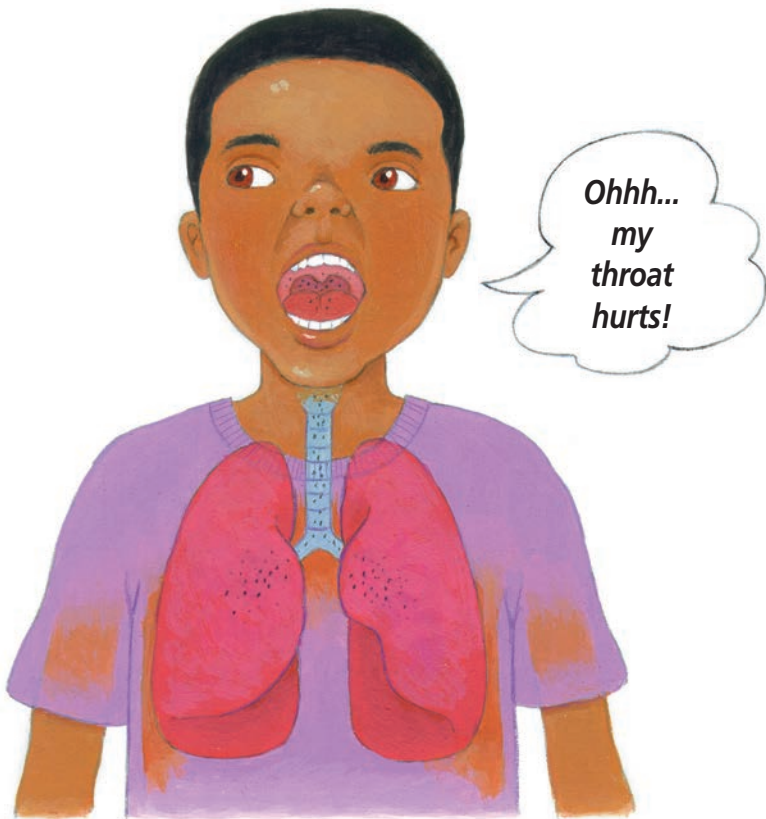
Phagocytes



and **Complement.**



But some of us don't have all of our protectors, or we have them but they do not work. Sometimes germs get into our bodies through our eyes, nose, mouth, lungs or blood.



We do not have all the protection we need to kill the germs. So the germs grow into many germs,

and we get sick.
Maybe we feel very tired



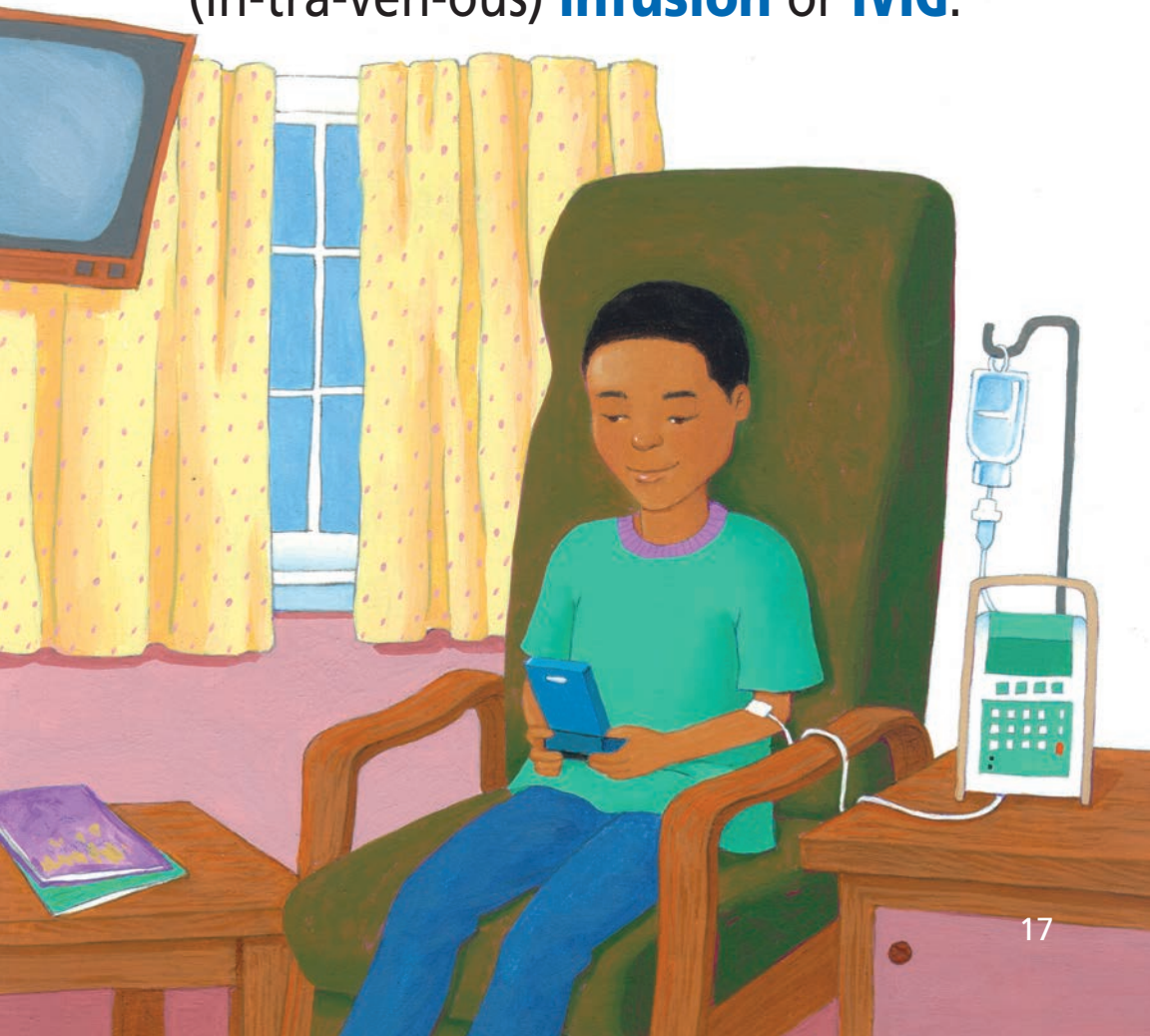
or have a fever,
or have a sore throat,
or have a bad cough,
or our ears hurt,
or our chest hurts,
or our stomach hurts.
The doctor calls it an
infection (in-fec-tion).

Sometimes
we have to go
to the doctor.
We may have to go
to the hospital



so the doctors and nurses
can take care of us.

But, if we do not have enough IgG protectors there are ways to get more. We may get them from an **infusion** (in-fu-sion) or IV into a vein in our hand or arm. What is an IV? IV means into a vein. The nurse gets the antibodies (IgGs) into our vein. This is called an **intravenous** (in-tra-ven-ous) **infusion** or **IVIG**.



This is how IVIG is done.
The nurse puts a little needle into
our hand or our arm.
It goes into our blue vein.
Can you see your blue vein?
If we sit still, it only hurts a little bit.
The nurse puts a little piece of tape on
the needle to hold it in place. A pump
pumps the antibodies into our vein.



Some people get their infusion under the skin. This is called a **subcutaneous** (sub-cu-ta-ne-ous) **infusion** or **SCIG**.

This is how SCIG is done. A few tiny needles are put under the skin on our belly or legs. If we sit still it only hurts a tiny bit.

Little pieces of tape hold the tiny needles in place. A small pump pumps the antibodies under our skin.



The **IgG** antibodies run
down,
down,
down

inside the plastic tube
into our vein
or under our skin.
The IgG antibodies
get into our blood
and go all through our body
to protect us.

When we get an
intravenous infusion
or subcutaneous infusion
we can do
quiet activities
like read a book,
play a game or watch TV.

Now the antibodies can go all through
our body to protect us.



Sometimes,
we also
need
medicine
to make
the
infection
go away.

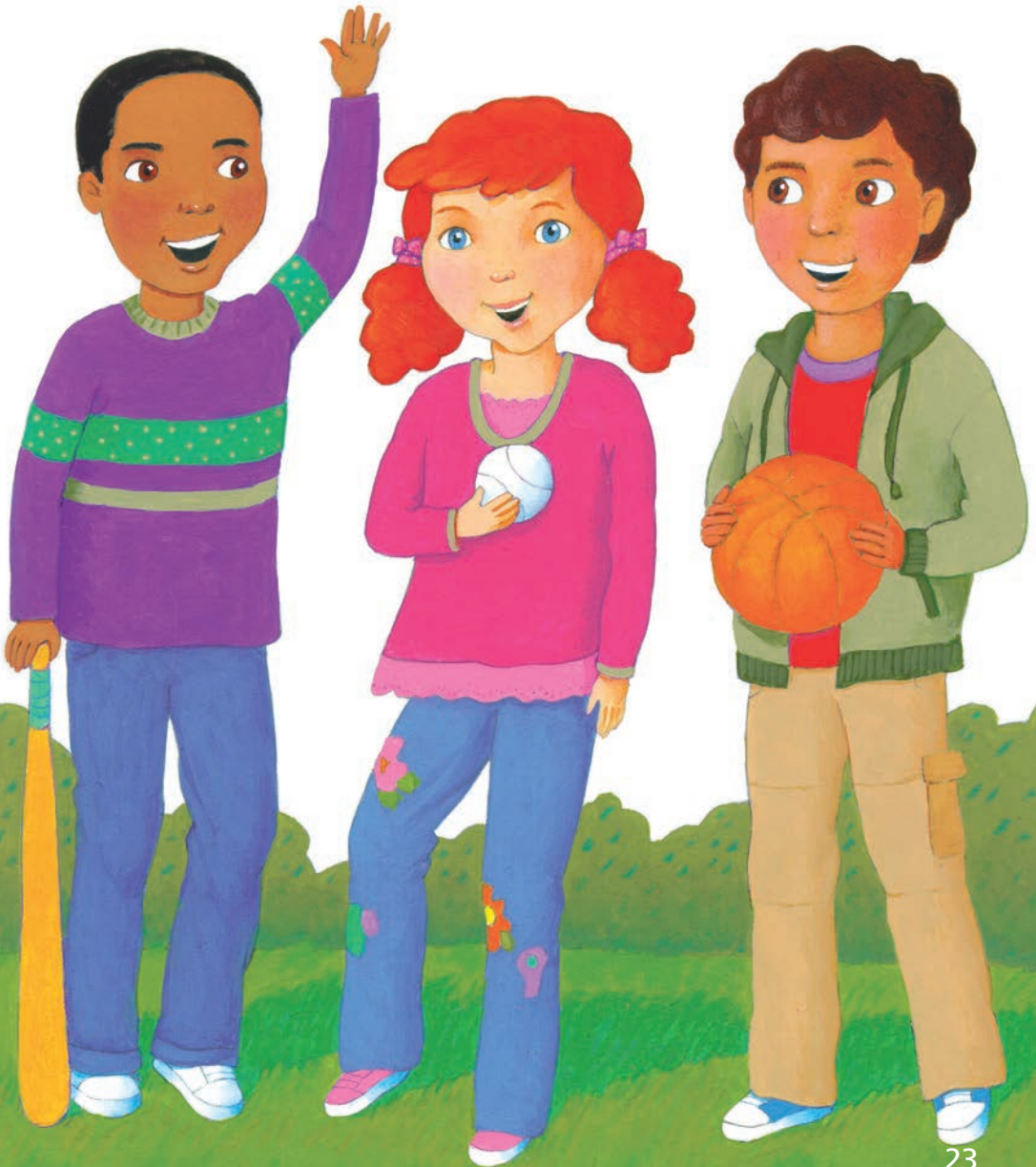
It may be an injection,
a pill or a liquid.
This medicine is called an
antibiotic (an-ti-bi-ot-ic).
It kills germs, too.

Some people
need glasses
to help them
see better.

Some people
need hearing aids
to help them
hear better.



We need **IgGs**
and antibiotics
to help us
feel better.



Follow these Healthy Habits

1. Eat healthy foods
2. Get plenty of rest
3. Get regular exercise
4. Wash your hands:
 - Before you eat
 - After you use the rest room
 - After being in a public place
 - After playing with your pet
 - After you cough or sneeze
5. Brush your teeth twice each day
6. Don't share food or drinks with other people
7. Cover your cough or sneeze with a tissue



Important Words

This list will help you understand some of the important words in this book.

Antibiotics (*an-ti-bi-ot-ics*) special medicine that can help your body fight germs

Antibodies (*an-ti-bod-ies*) also called immunoglobulins protect our bodies from germs

B-Cells make immunoglobulins

Complement (*com-ple-ment*) a group of proteins that work together, like a team, to fight germs

Germ a tiny living thing that may make you sick

Immunoglobulins (*im-mu-no-glob-u-lins*) also called antibodies or Igs

IVIG immunoglobulin infused into a vein

Intravenous (*in-tra-ven-ous*) into a vein

Phagocyte (*phag-o-cyte*) identifies germs and gets rid of them by eating them

SCIG immunoglobulin infused under the skin

Subcutaneous (*sub-cu-ta-ne-ous*) under the skin

T-Cells identify germs and tell the body how to fight them

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The national patient organization dedicated to improving the diagnosis, treatment and quality of life of persons with primary immunodeficiency diseases through advocacy, education and research.