



# Our Immune System

A story  
for children  
with primary  
immunodeficiency  
diseases



Written by  
Sara LeBien

## A note from the author

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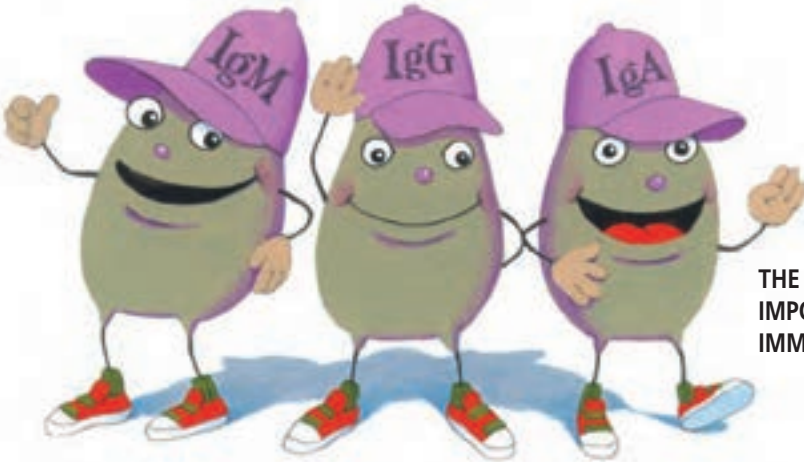
**W**e have things  
inside our bodies that  
protect us from being  
sick. These things  
are found in our  
immune system.



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.



Come on  
everybody!  
Let's get busy,  
we've got  
work to do!



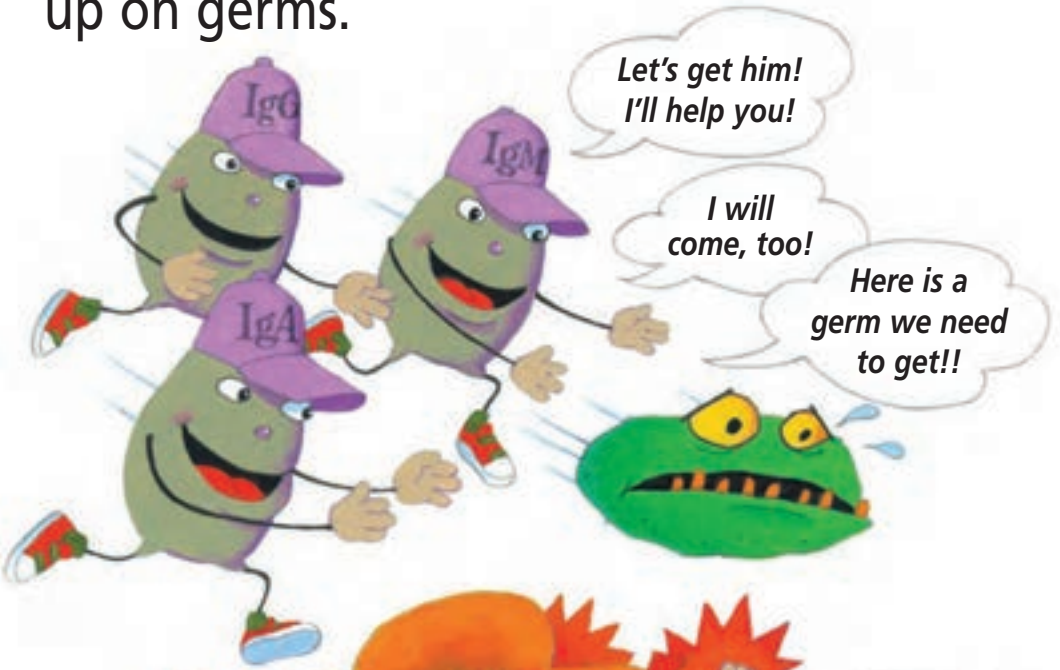
**IgM** protects our blood and other things inside us.

**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!

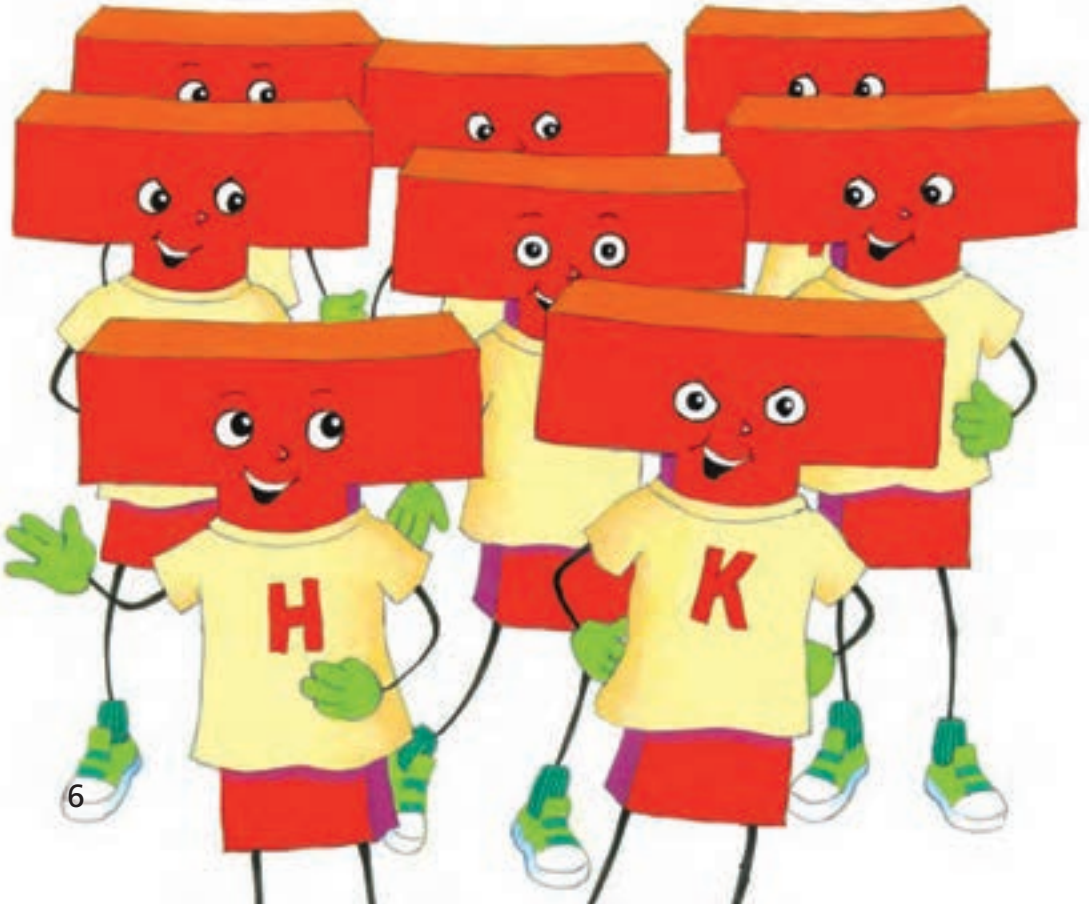


Gotcha!

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

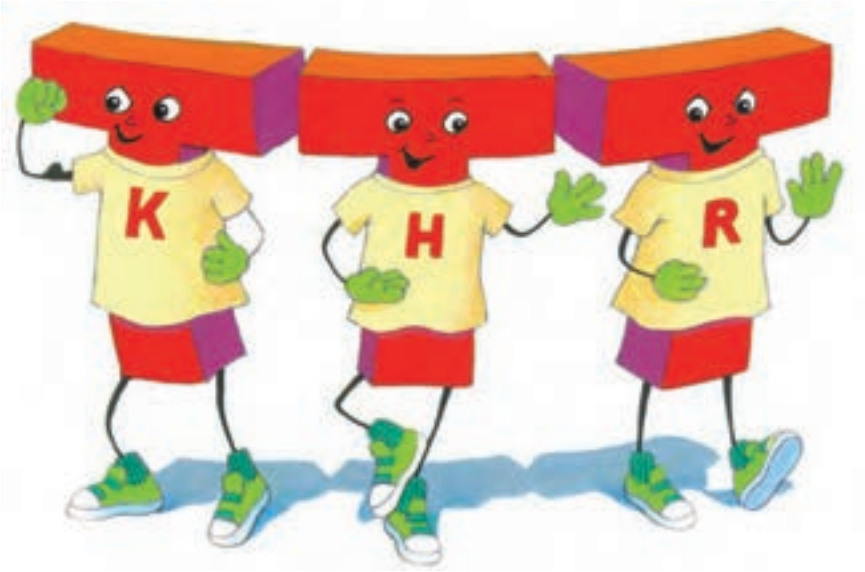
T-cells are  
very important, too.  
They are in our blood.

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

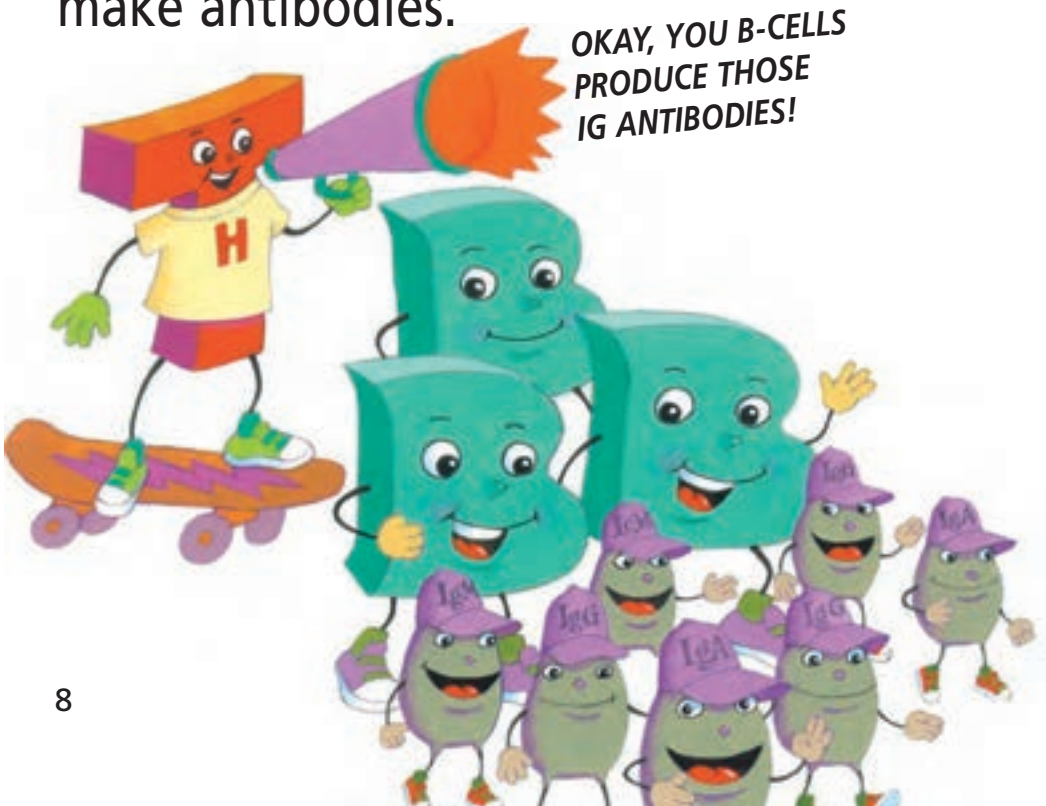


Killer T-cells kill germs.





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



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



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



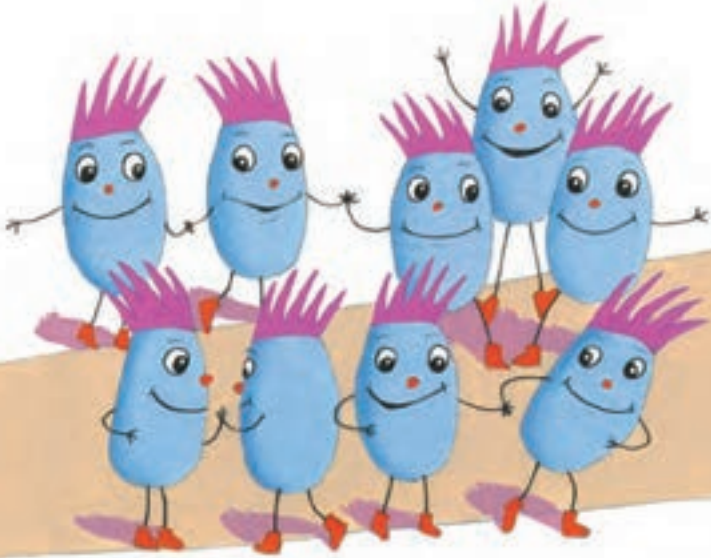
Phagocytes kill germs by eating them!  
They also send  
signals to other Phagocytes  
to help.



*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,**

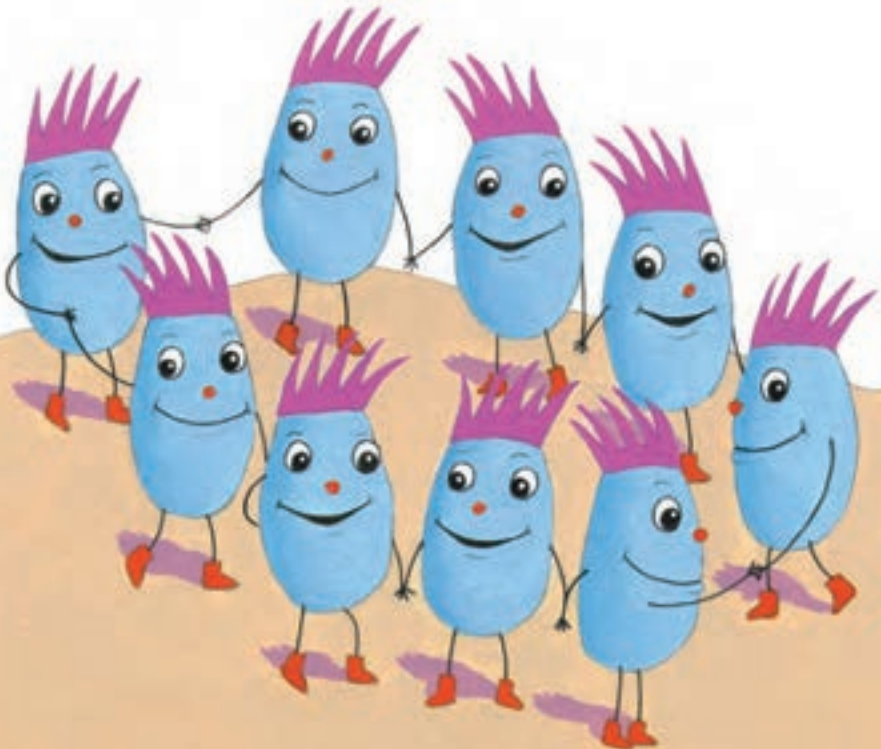
*I kill  
germs!*



# 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



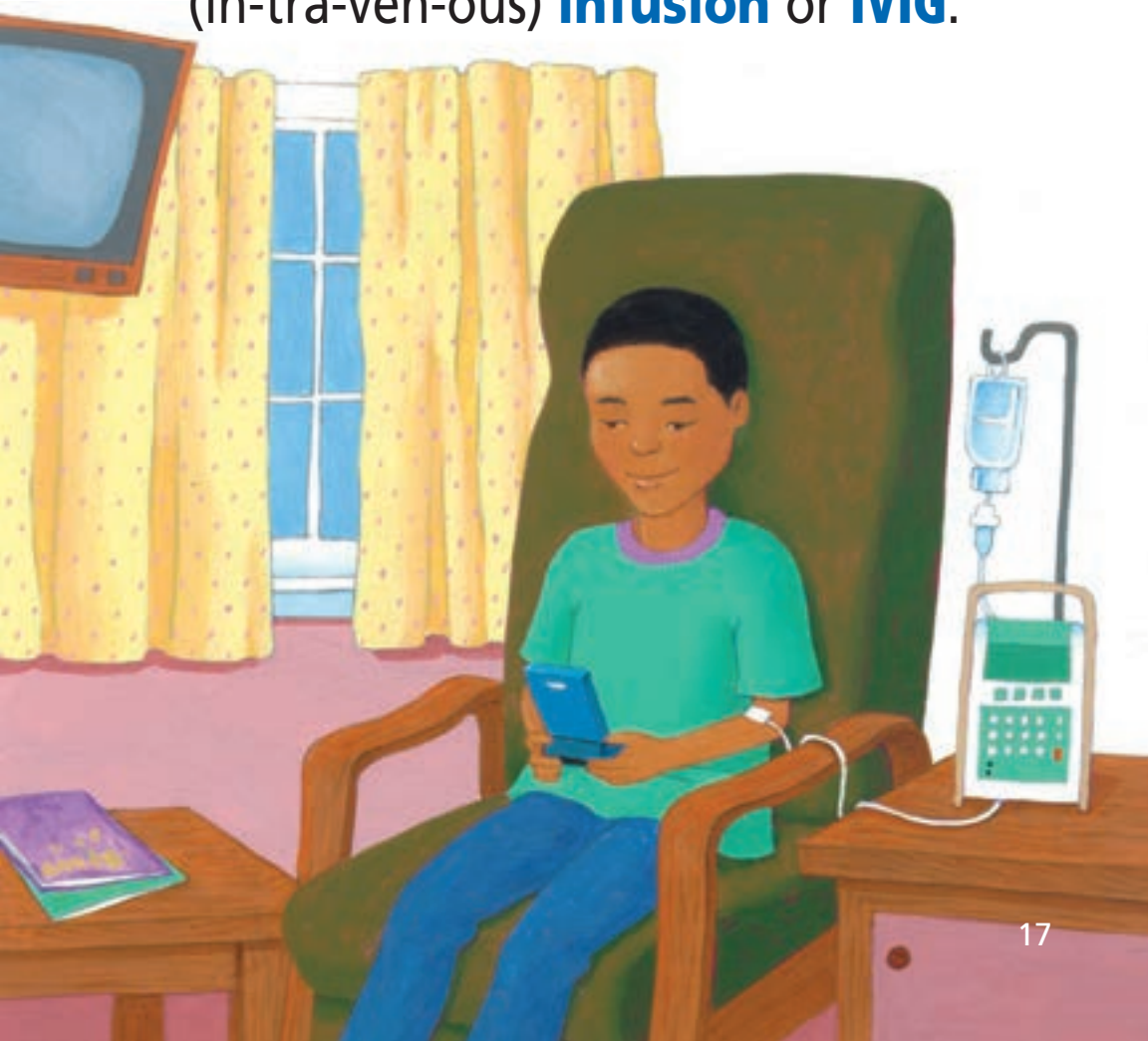
or have a fever,  
or have a sore throat,  
or have a bad cough,  
or our ears hurt,  
or our chest hurts,  
or our stomach hurts.  
The doctor calls it an  
**infection** (in-fec-tion).

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.

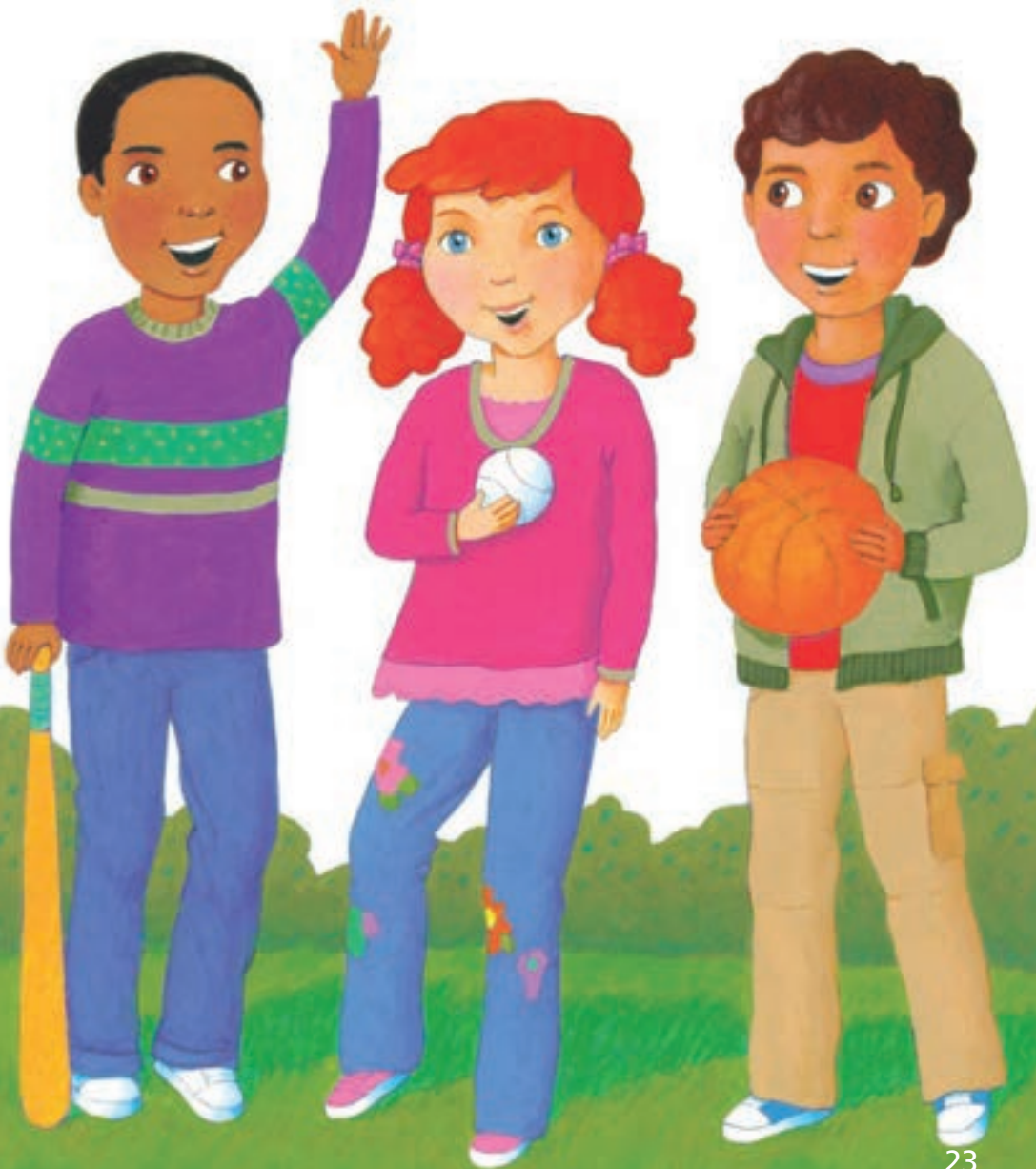
Some people  
need glasses  
to help them  
see better.

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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