

LIFTING ROOM

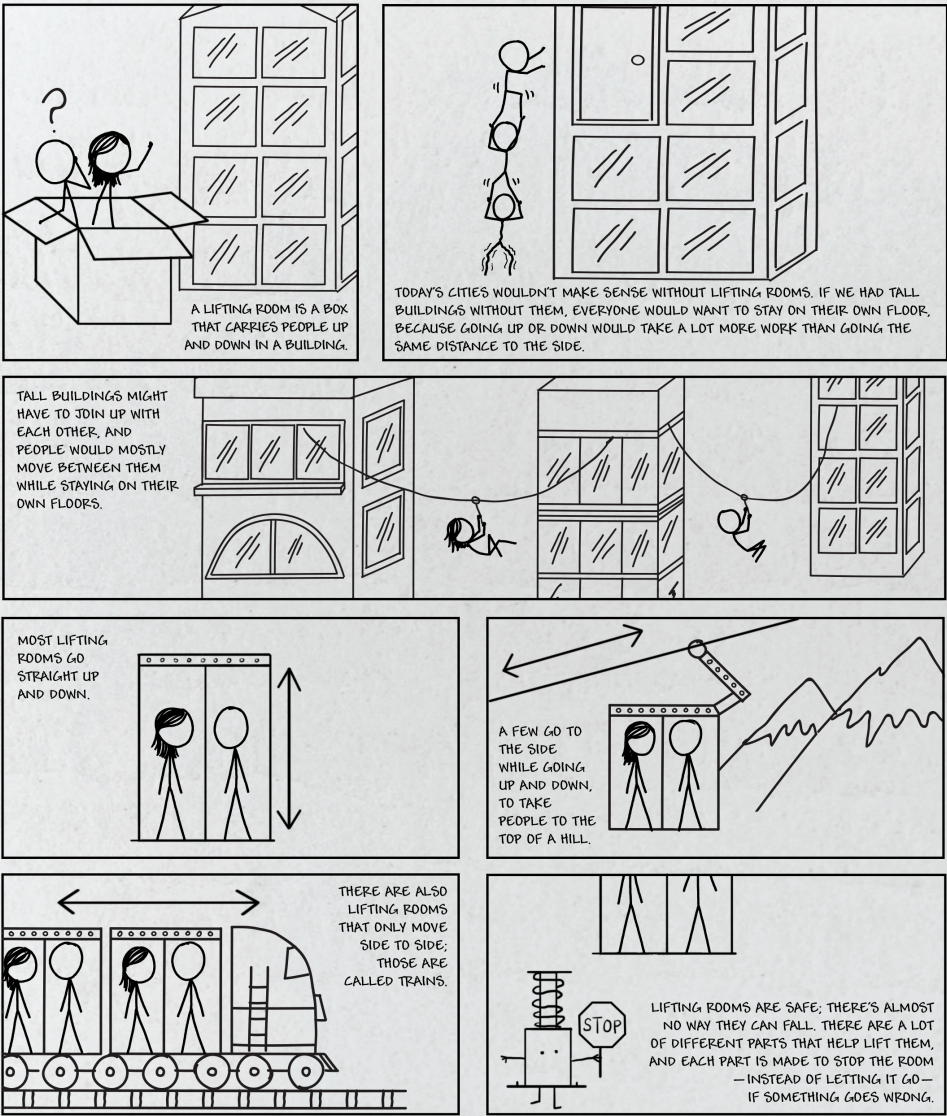
Boxes that carry people up and down

You've learned about both horizontal and vertical one-dimensional motion. A classic example of vertical one-dimensional motion is an elevator. Here's an explanation of how elevators work—and why they are a safe way to travel up and down.

A BOOK EXPLAINING
COMPLEX IDEAS USING
ONLY THE 1,000 MOST
COMMON WORDS



THE STORY OF LIFTING ROOMS



LIFTER

These lifters usually sit in a machine room above the top floor the lifting room can visit. They use power to turn a big wheel that pulls a line running between the room and a weight.

WEIGHT

This weight makes it easier for the puller to lift the room. It hangs down on the other end of the line holding the room, so when the puller at the top lifts the room, it's also lowering the weight.

PULLING LINES

Lifting rooms are held and lifted by a big group of metal lines. There are usually around four to eight of them, but it can be more or less than that. These lines are very strong. Usually, even just one of them would be enough to hold the whole room on its own, but we use more just to be safe.

GRABBERS

If the fall feeler pulls on the line, these grab the metal stick really hard and stop the room from moving.

FALL FEELER

This wheel is joined to the room's stopping grabbers by a line. As the room moves up and down, the wheel turns. If the room starts going down fast, the wheel starts spinning fast, and the little arms in the middle of the wheel swing out and catch onto the teeth around them. This makes the wheel stop turning, which makes the room suddenly pull on the line—setting off the room's stopping grabbers.

METAL STICK

LIFTING ROOM

PRETEND CONTROLS

There are controls on the inside of a lifting room that you use to tell it where you want to go. Some of these controls, like the one marked "DOOR CLOSE," don't always seem to do anything. Some people say that those controls don't even go anywhere, because the lifting room's computer knows when to open and close the door better than you do. This is half true. On some new lifting rooms, the DOOR CLOSE control might not normally do anything. This is different in different buildings; it's up to the person who owns the building to decide whether to make these controls work. But the DOOR OPEN control is always joined to the lifting room's systems, in case fire fighters need to take full control of the lifters—by putting a special key into the control place—to use them while fighting a fire.

LIFTING ROOM

LINE STOPPER

This thing listens to the different parts of the machines, sometimes with the help of a computer, and grabs the line if anything goes wrong.

The line stopper also grabs the line when the room stops at a floor to make sure it doesn't move while people get on and off. It's made so it will keep holding on if the power goes out.

POWER LINE

This line brings power for the lights and controls in the lifting room. It sometimes runs to the top of the hallway, where the pulling machines are, or sometimes to the side of the wall part of the way up the hallway.

WEIGHT LINE

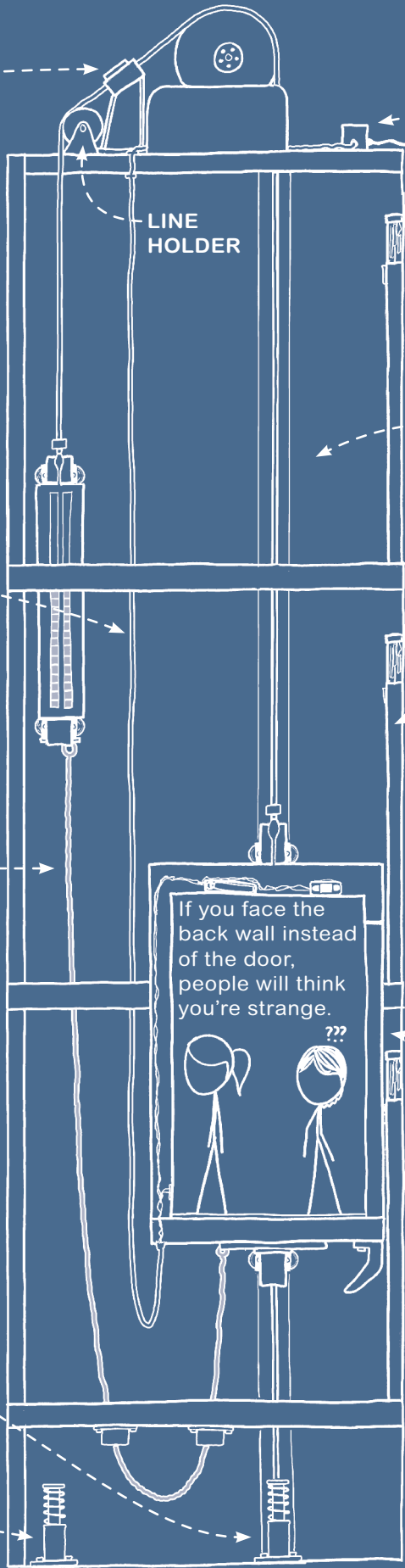
This line is used in the lifting rooms in tall buildings to help keep the weight on the puller even.

When a room is all the way at the top or bottom, the lines holding it add to the weight on one side. When that happens, most of the weight of this line hangs on the other side, which keeps things even.

CATCHER

If a lifting room does fall, these catchers hit a metal plate on the bottom of the room and make the landing a little softer.

There's a second catcher for the weight.



POWER FROM BUILDING

Lifting rooms use a lot of power, but the lights and air systems in the building use even more.

TALL HALLWAY

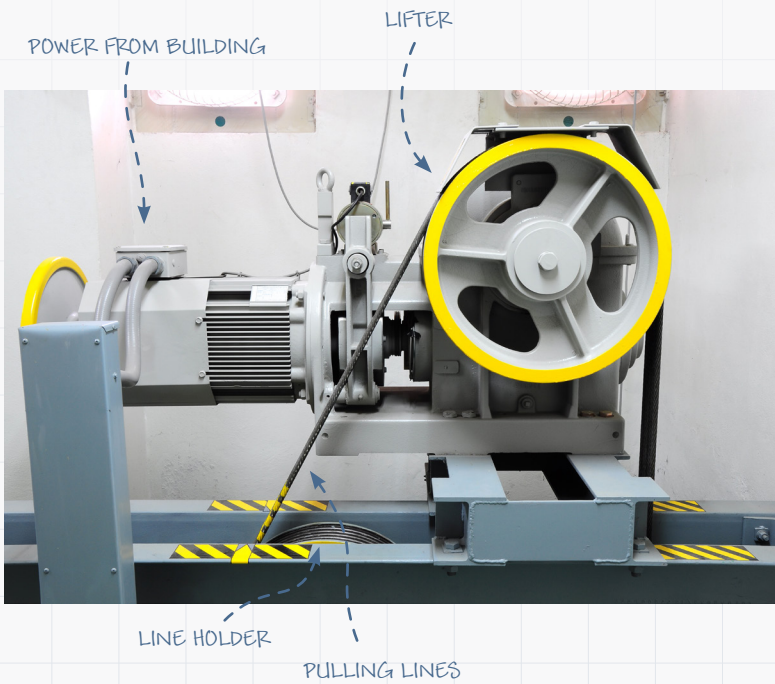
The lifting room sits inside a long hallway that goes up and down instead of to the side. It can be longer than any of the normal hallways in the building, but most people never see it.

DOORS

These doors line up with the doors on the room. When the lifting room stops, both doors open together.

EMPTY ROOM

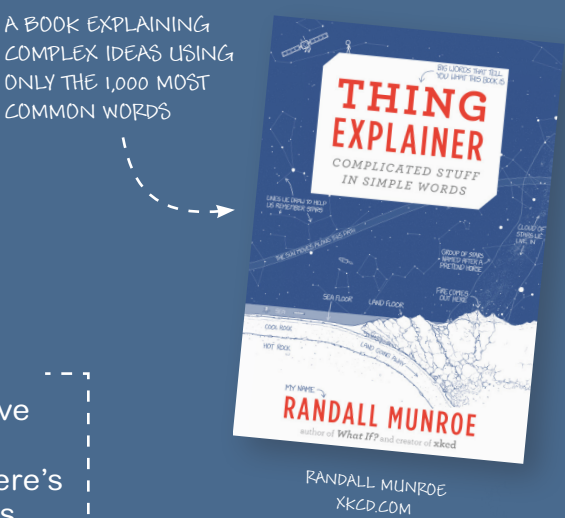
Lifting rooms are usually empty. People don't put chairs or tables in them except to move those things to other floors. If you tried to use one of these rooms as an office, someone would probably yell at you.



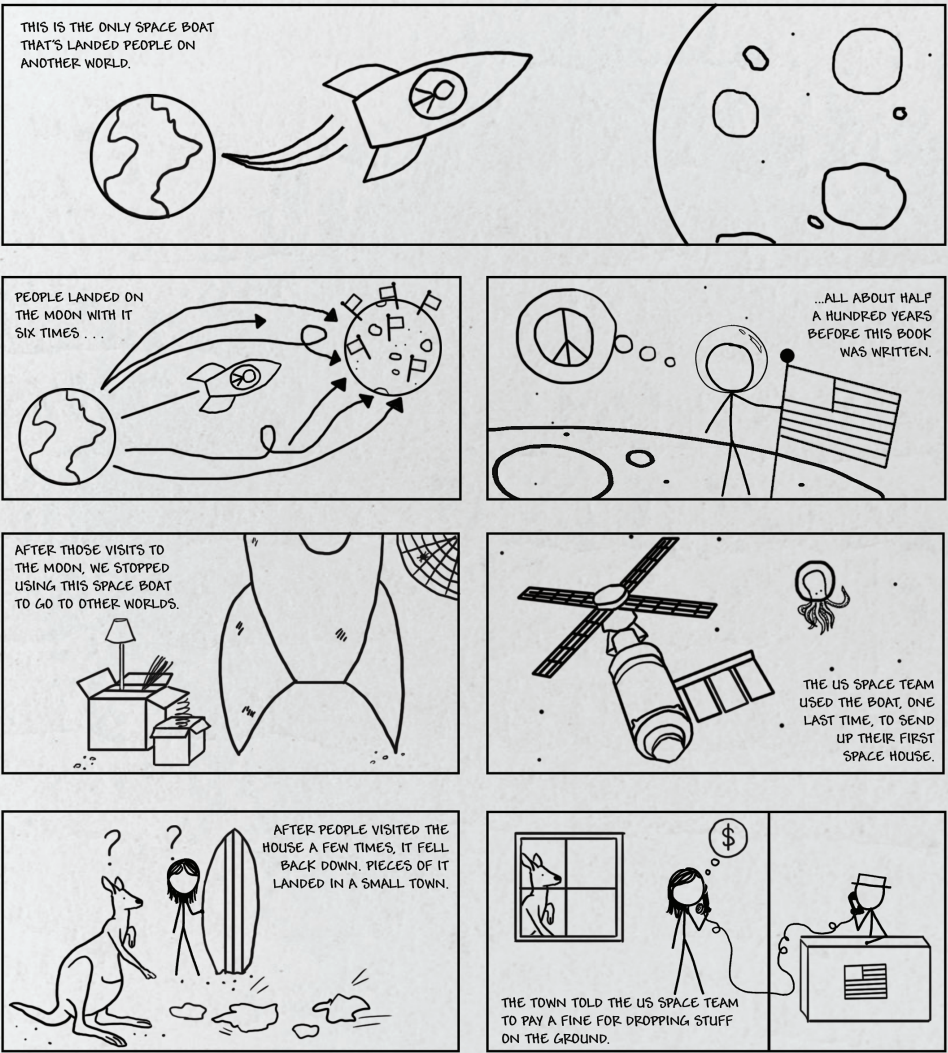
US SPACE TEAM'S UP GOER FIVE

The space boat that took people to the moon and back

You've learned the velocity required to attain orbit. Have you ever wondered how engineers design a vehicle capable of putting astronauts and cargo into orbit? Here's an explanation of what they designed and why it works.



THE STORY OF TRAVELING TO OTHER WORLDS



PART THAT FLIES AROUND THE OTHER WORLD AND COMES BACK HOME WITH THE PEOPLE IN IT AND FALLS INTO THE WATER

PART THAT GOES ALONG TO GIVE PEOPLE AIR, WATER, COMPUTERS, AND STUFF
It comes back home with them but burns up without landing.

PART THAT FLIES DOWN TO THE OTHER WORLD WITH TWO PEOPLE INSIDE

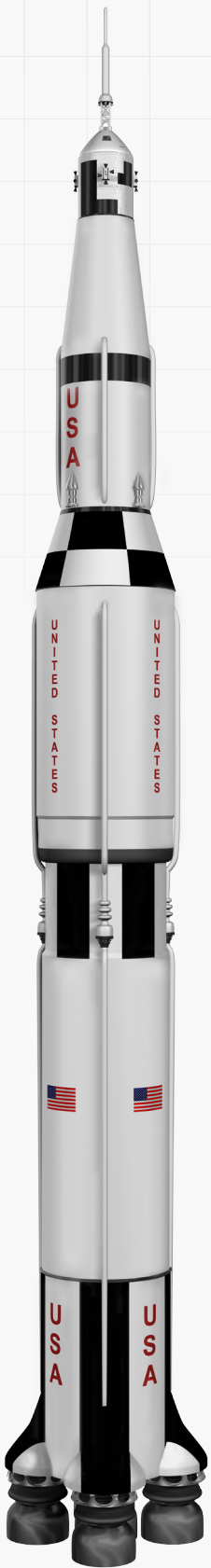
PART THAT FALLS OFF THIRD
This part flew away from our world into space and hit the world we were going toward.

PART THAT FALLS OFF SECOND

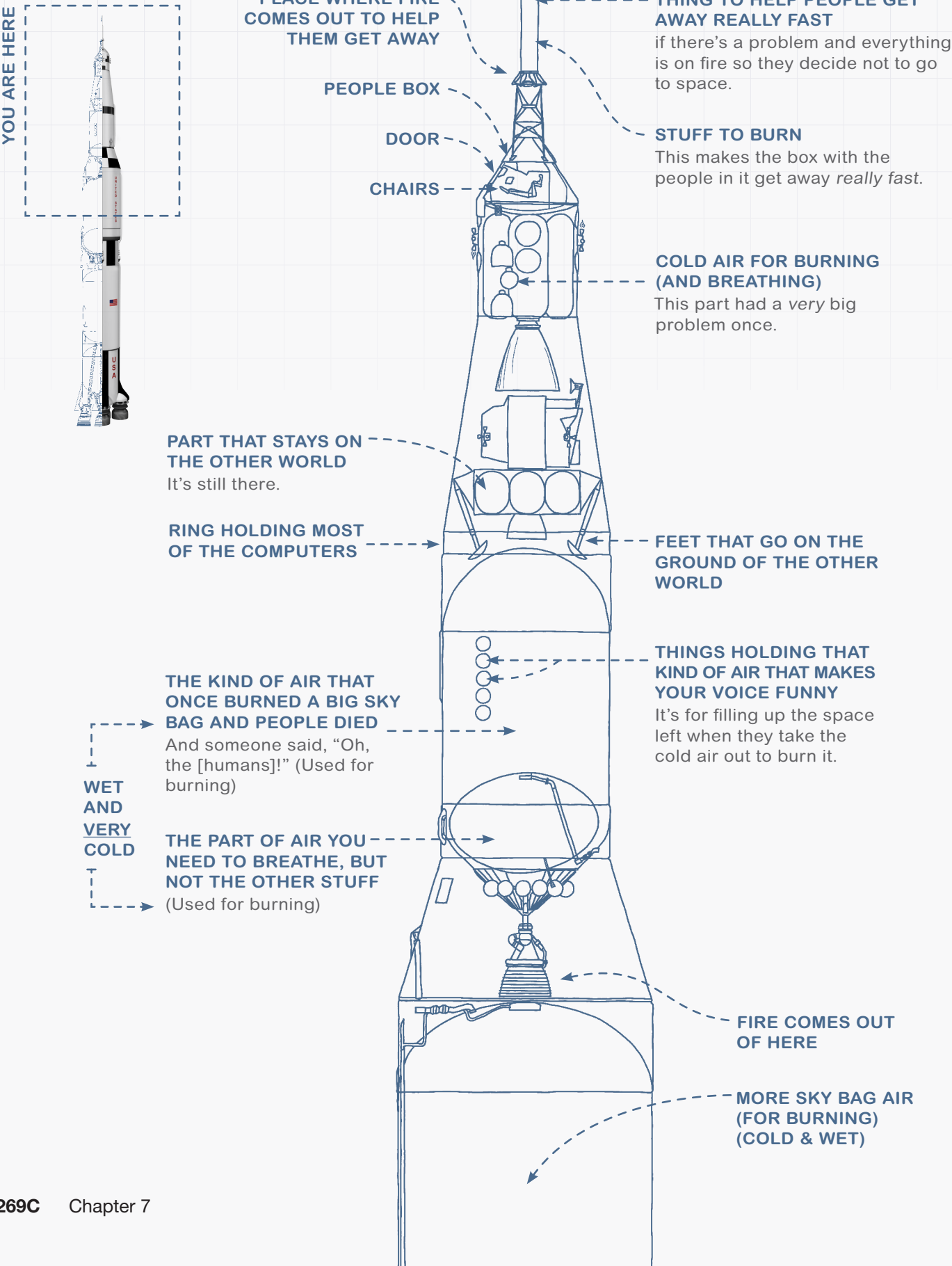
PART THAT FALLS OFF FIRST

THIS END SHOULD POINT TOWARD THE GROUND IF YOU WANT TO GO TO SPACE.
If it starts pointing toward space you are having a bad problem, and you will not go to space today.

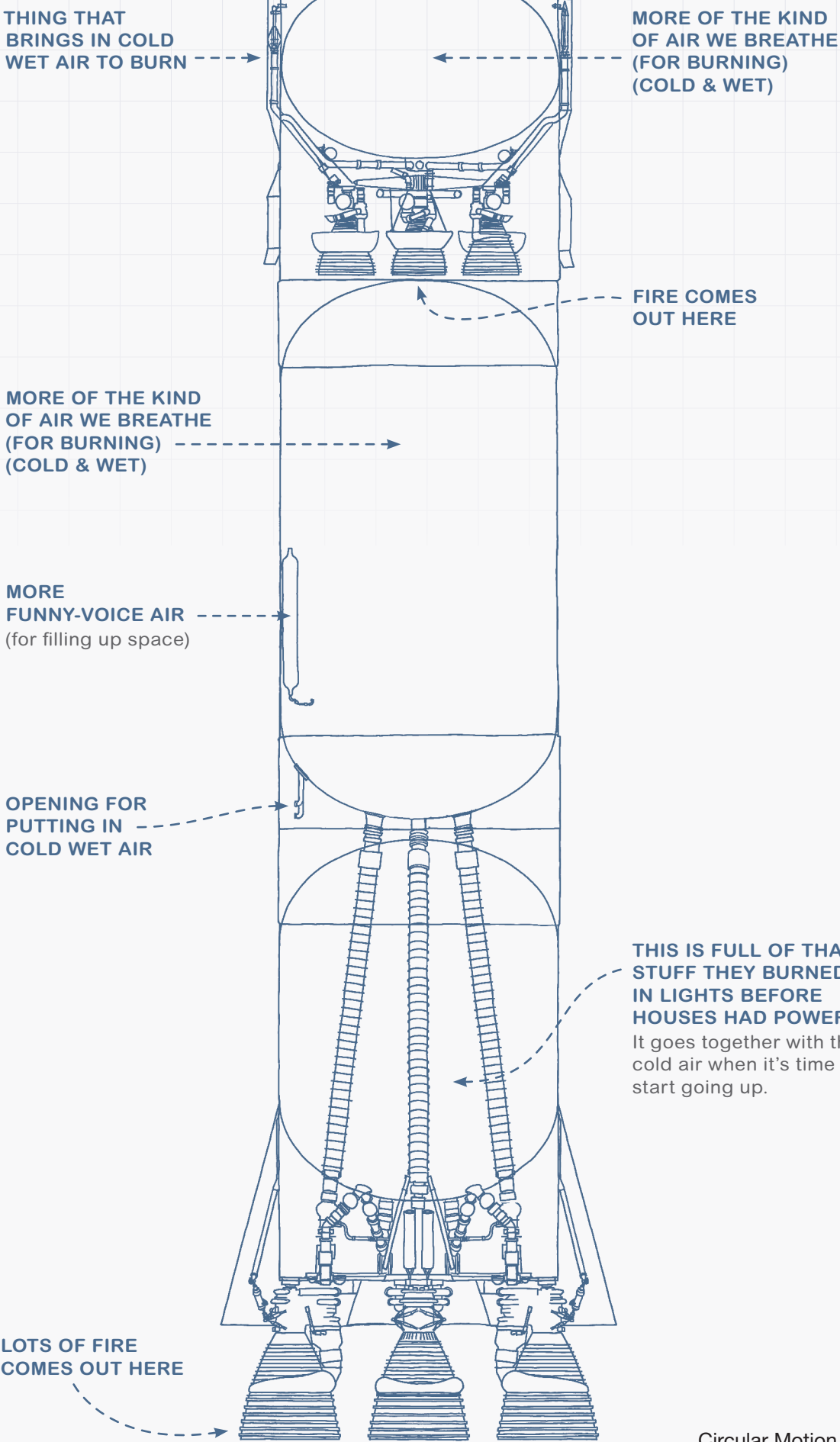
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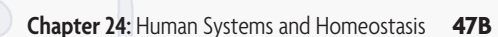
US SPACE TEAM'S
UP GOER FIVE



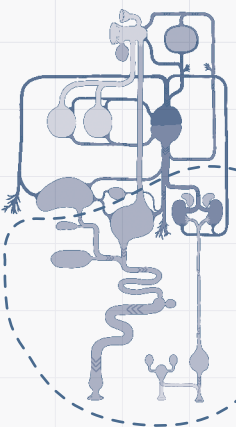
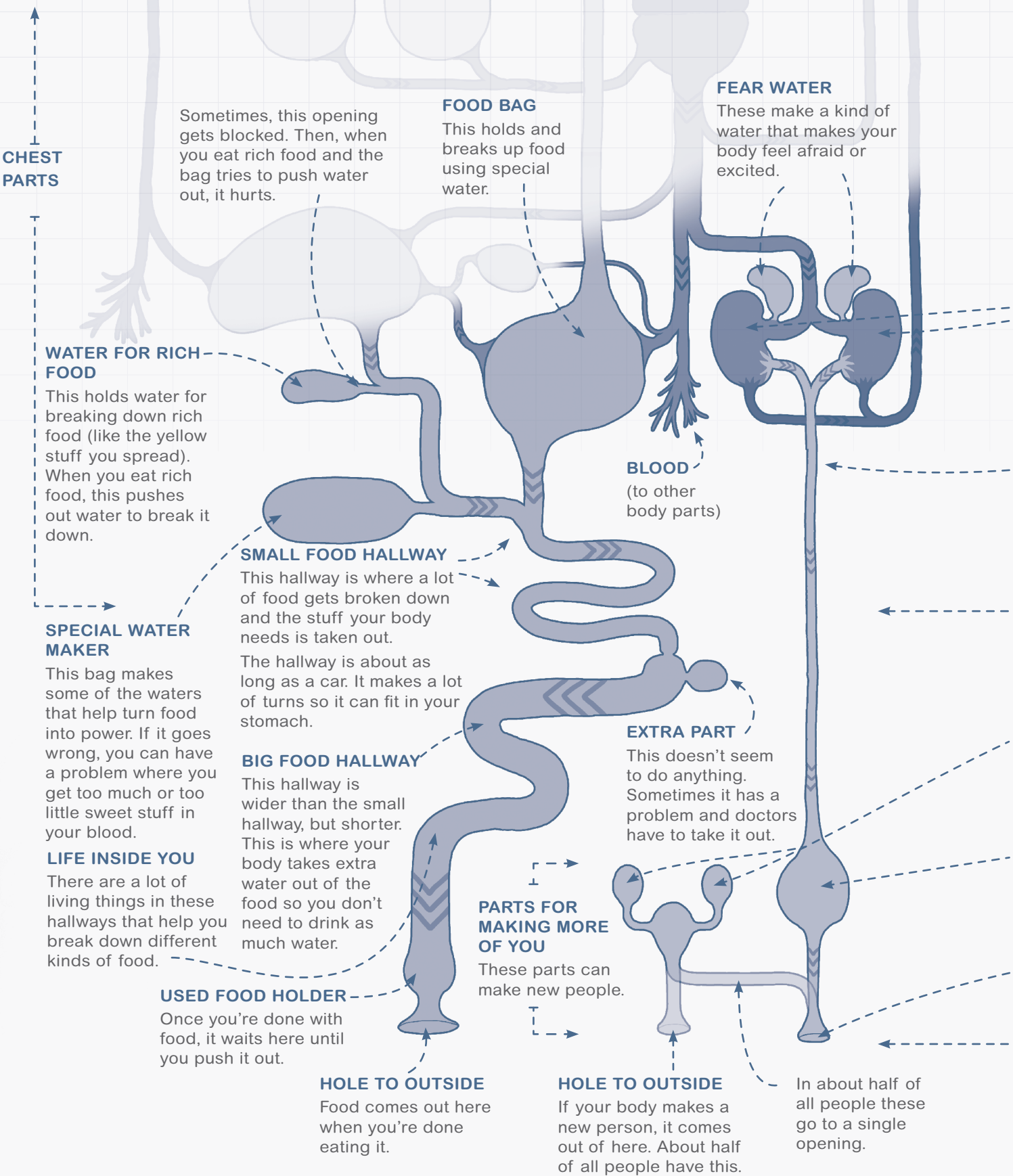
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BAGS OF STUFF INSIDE YOU



AND NOW YOU ARE HERE

BLOOD CLEANERS

These look for stuff in your blood that you're done with or have too much of—like extra sweet stuff, or stuff from the doctor that you ate to feel better—and send it to be pushed out of your body.

YELLOW WATER HALLWAY

Most of the time, the water from your blood cleaners is yellow, but eating certain colorful foods can make it change color for a while. (If it turns dark or red, it may mean you're sick.)

BODY PLAN HOLDERS

These parts hold lots of plans for new people. Each plan is made from pieces of the plans used to make you. These parts also control how your voice, hair, and body grow.

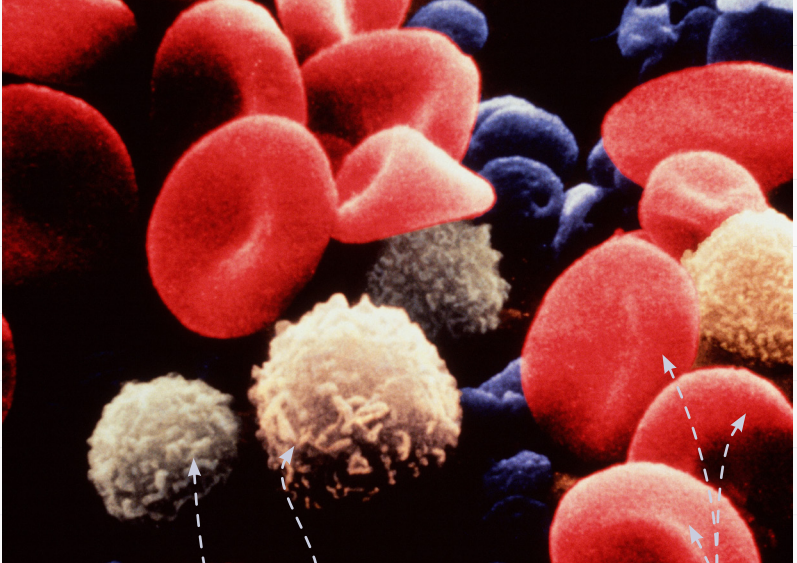
YELLOW WATER HOLDER

This holds yellow water until you push it out.

HOLE TO OUTSIDE

The yellow water from your blood comes out here.

©Kenneth Eward/BioGratz/Science Source



WHITE BLOOD PIECES

RED BLOOD PIECES

PUSHED TOGETHER

In real life, these parts are all pushed together inside your chest like this.

