

Vaccines are like giving your body's defenses a cheat sheet

Image 1. A girl gets a bandage on the spot where she just received a flu vaccine. Photo: Center for Disease Prevention and Control on Unsplash

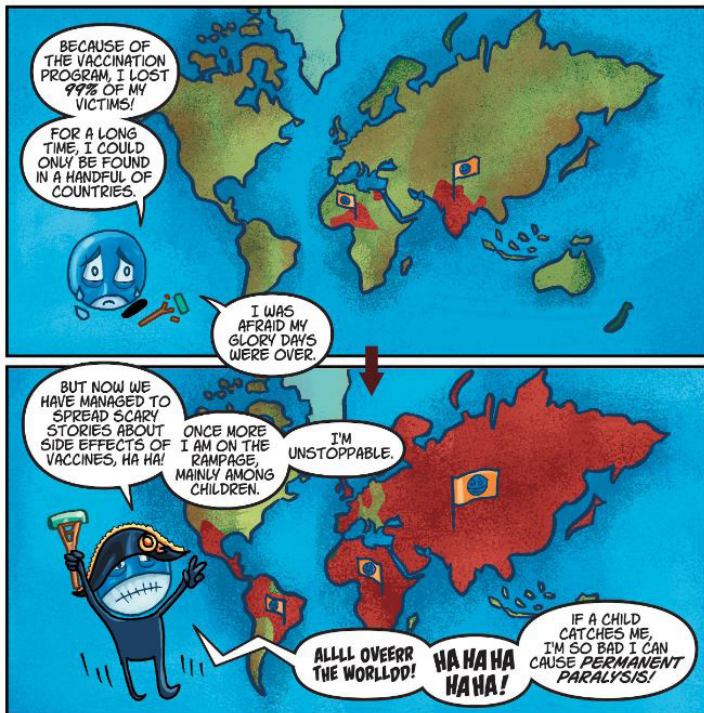


Image 2. Susan Nasif, an expert on viruses and an artist, helps educate kids about vaccines with comics. In this one, she tells a story about poliovirus, which paralyzed thousands of people before a vaccine was developed. Polio cases nearly disappeared until some people avoided the vaccine. Image: Susan Nasif

A needle's sting in the arm or leg is nobody's favorite thing. However, the vaccines within those shots are significant. They are some of the most important medical inventions in the history of science.

There can be misunderstandings about what vaccines are and how they work. The Washington Post newspaper reached out to Susan Nasif on the topic. Nasif is an expert in the study of viruses. She is also an artist who specializes in creating comics that tackle difficult subjects in science.

"When I was 8 years old, I remember watching a cartoon that explained the immune system to children," Nasif said. She talked to the Post by email.

She enjoyed the science cartoon she saw as a child. "I loved it, and I decided then to draw and create my own comics."

Immune System

The immune system is the body's natural protection against viruses, bacteria and other nasty stuff, Nasif said. Viruses are especially good at developing disguises that help them hide from the immune system. This is why we need vaccines. They help our bodies see through the disguise.

Most vaccines contain a weakened or dead version of the virus they are meant to protect against. Some vaccines carry only the proteins found on the virus's surface. In both cases, after these substances are injected into the body, your immune system grabs them up. Then it learns how to identify them. It works kind of like a cheat sheet that helps you prepare for a big test.

Protecting Against A Virus

After receiving a vaccine, when the body comes into contact with a live virus, it knows what to do. The body now knows how to protect against the virus. It can set to work gobbling up the viruses before they can do too much damage.

You may be wondering why you still have to get

shots for something such as polio. Polio is a virus that can make it hard for a person to move. It can be deadly. You might not know anyone who has gotten it. This is called "herd immunity" which is explained below.

"Vaccines act as a firewall that prevents the spread of diseases to others," Nasif said.

Vaccines Make People Resistant To Disease

When enough people develop resistance to a disease by getting a vaccine, the chance that a virus can infect someone drops. Its chances to keep spreading can drop to near zero. This is "herd immunity."

Polio was infecting 350,000 people a year in 1988. Herd immunity reduced the spread of the disease. Just 33 cases were reported worldwide in 2018. The protection continues only if people continue to give their bodies a cheat code to beat polio through vaccines.

Coronavirus

Many people are concerned about a new virus coming from China. They fear it could become a big problem for people around the world. This virus is called coronavirus. Nasif said that scientists are working hard to create a vaccine for this coronavirus. The virus causes a disease called covid-19. Nasif said that it takes time to produce a vaccine that will be safe to use in people.

For now, she said the best thing you can do to protect yourself is to wash your hands often. That helps to protect against this or any other viruses, bacteria and other things that cause diseases. She also suggested avoiding being close to people who are coughing or sneezing.

Nasif also suggests eating healthy food and getting plenty of sleep at night. Those are two ways you can give your immune system a helping hand.

Dream Jobs: Movie monster



Maxson played the alligator-like monster Leatherhead in the movie "Ninja Turtles: Blood Brothers." Photo courtesy of Alan Maxson, @monster_maxson on Instagram.

Some children dream of becoming a hero when they grow up: conquering dragons, villains and beasts.

But not Alan Maxson. He didn't want to **vanquish** monsters. He wanted to become one.

"I've always loved monsters and nonhuman creatures," Maxson said. "It was difficult to have a favorite monster growing up, because I loved so many."

As an adult, Maxson has turned his love of monsters into a career as a Hollywood actor. He's played about 40 monsters — everything from an **orc**, to a creepy elf, to a Godzilla-sized gorilla. He follows in the large (and hairy) footsteps of some of Hollywood's most legendary actors.

How To Play A Monster

Playing a monster is different from playing a regular role. You still have to study a script, memorize lines and create your character's voice and movement. But you also have to deal with additional challenges. For example, you may have to wear costumes that restrict your movement and heavy makeup that can take hours to put on.

The actor Boris Karloff was famous for playing Frankenstein's monster in 1930s movies. He often spent five hours a day in the makeup chair. He reported for makeup as early as 4:00 a.m. to be ready for filming at nine. Then he worked up to 11 hours on the set while wearing boots weighing 13 pounds each. Karloff scheduled an hour at the end of each day just for removing his makeup!

In addition to ordinary makeup, monster actors are frequently fitted with **prosthetic**, or artificial, body parts and masks to give them unusual features, such as scaly, reptilian skin or a werewolf's snout. Prosthetics help transform an ordinary human into a mythical creature, but they can also create problems for the actor.

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The Journey To Becoming A Monster

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Growing up, Maxson loved watching Roddy McDowall in the original 1968 version of "Planet of the Apes." "I distinctly remember watching him and studying how he moved as he played the apes Cornelius and Caesar. I would walk around the house **channeling** my inner ape. I remember particularly McDowall's performance in 'Conquest of the Planet of the Apes.' Behind his prosthetics, he had so much emotion!"

Maxson studied film in college. Then he moved to Los Angeles and started auditioning for projects. One day he was on the set of a horror movie, and the director asked him to fill in as the monster. He put on the suit, and the rest is history.

Tips For Aspiring Monsters

Trusting your intuition is a big part of being an actor, especially one that specializes in non-human creatures. Andy Serkis is the actor who played Gollum in "The Lord of the Rings" trilogy and Caesar in "Rise of the Planet of the Apes." He once said, "I've always been really in touch

with my **primal instincts**. In my profession, you have to be. You have to be open to going where your emotions take you."

Maxson agrees. "Sometimes on the set, directors will want a monster to do a certain behavior, but they don't have a vision of how the creature moves or what would cause it to act that way," he said. "So you have to be able to **improvise**, to come up with a backstory in your imagination that motivates your monster and helps bring the character to life."

Another tip is that aspiring actors embrace what makes them unique. As Lon Chaney once told a young Boris Karloff, "The secret of success in Hollywood lies in being different from everyone else. Find something no one else can or will do, and they'll begin to take notice of you. Hollywood is full of competent actors. What the screen needs is individuality."

Maxson recommends that aspiring monster actors gain experience by performing in front of people in school plays or by making short films. But just playing around and experimenting with your monstrous ideas is also important. It's fun, too!

"Let yourself have zero restrictions," he said. "You can't be afraid to run around your house acting like an ape. You have to get into that character all the way. From your toes and fingers to your head, not a single part of you can seem human. Just be yourself, play and don't hold back!"

REVERSE & FAST FORWARD

FOR CONTEXT CLUES

New word

vanquish

DURING READING: Use context clues strategies.
What do you think this word means?

What clues did the author provide that helped you make that inference?

New word

orc

DURING READING: Use context clues strategies.
What do you think this word means?

What clues did the author provide that helped you make that inference?

New word

prosthetic

DURING READING: Use context clues strategies.
What do you think this word means?

What clues did the author provide that helped you make that inference?

REVERSE & FAST FORWARD

FOR CONTEXT CLUES

New word

channeling

DURING READING: Use context clues strategies.
What do you think this word means?

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New word

primal instincts

DURING READING: Use context clues strategies.
What do you think this word means?

What clues did the author provide that helped you make that inference?

New word

improvise

DURING READING: Use context clues strategies.
What do you think this word means?

What clues did the author provide that helped you make that inference?

AUTHORS PROVIDE

CONTEXT CLUES

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Short definition in **commas, parentheses, or em-dashes.**

Among the corals, you'll also discover thousands of species of **invertebrates**—**animals without backbones.**

Simple restatement.**This means...**

My favorite color is **fuchsia**. **That's a fancy way of saying purple.**

Longer explanation before or after the word.

But Ted wanted to be great. He wanted to hit a .400. He knew he wouldn't get a hit every time he got up to bat – no major leaguer has ever done that. In fact, major leaguers don't even get hits half the time they're at bat. **But getting a hit 40 percent of the time—batting .400**—Ted thought it might be possible.

Literal **translation** of the word parts (with pronunciation).

Slugs, like snails, are **GASTROPODS** (gas-trah-pods), **which means "stomach-foot"** (although they don't digest with their feet).

Purpose or function or **what it does.**

Unlike snails, which have a shell to duck into, slugs have only a **head-covering called a mantle, a loose flap of skin they can hide under if they get scared.**

A type, kind, or example of it.

Some feared that it could be dangerous to object. **Vigilante groups, like the Ku Klux Klan,** reacted violently against those who tried to change the way blacks were treated.

A list of related words, separated by commas.

The four-sided shapes included **squares, rectangles, and rhombuses.**

An antonym or opposite idea.

Some senators offer only a **few words in support of an issue,** while others provide a **filibuster.**
