

# ASK THE DOCTORS What Are Viruses, And How Do They Work?

by **Eve Glazier, M.D., and Elizabeth Ko, M.D.**

**Dear Doctor:** Every-body is talking about the coronavirus right now, but I still don't really know what a virus is. How do they work? Why don't antibiotics kill them?

**Dear Reader:** You're far from alone in your struggle to understand viruses. They are simultaneously simple and quite complex, and so small that it wasn't until the invention of the electron microscope almost 90 years ago that we were even able to

see them.

A virus is neither plant nor animal; it isn't a bacterium, fungus or one-celled organism; and it can't live or reproduce outside of a living host cell. Considering all that, it's not surprising that the scientific community continues to debate whether or not viruses are even alive. In fact, it's almost easier to talk about what a virus isn't than to explain what it is. But we'll do our best.

A single virus particle is known as a virion. It's a packet of genetic material

-- either DNA or RNA -- wrapped in a layer of proteins, known as a capsid. In many kinds of viruses, the protein shell is topped by a layer of lipids, a type of organic compound that's roughly comparable to fat and is not soluble in water. Taken together, the protein and lipid structure is known as an envelope.

Viruses are mind-bendingly small. They range from about 20 nanometers to upward of 300 nanometers in size, with many tending toward the lower end of the scale. As a point



**Elizabeth Ko, M.D. and Eve Glazier, M.D.**

of reference, there are 25.4 million nanometers in one inch. Viruses come in a wide range of shapes, including circular, cylindrical and stringlike. Some, like the coronavirus, are studded with spikes. These act as docking devices to attach to host cells and then use their unique chemical composition to penetrate the cell membranes.

The sole purpose of a virus is to infect another organism -- either an animal, plant or bacterium -- make billions of copies of itself and then move on to infect a new host. Small wonder the name for these infectious agents derives from a Latin word that

roughly translates to "poisonous slime."

To achieve its aim, the virion injects its genetic material into the host cell and hijacks that cell's internal machinery. Instead of doing its designated job, the cell now goes to work replicating the virus. Each virion is so ruthlessly efficient, it can force a cell to make a million copies. The infected cells send out a chemical distress signal in the form of proteins known as cytokines. They set off the inflammatory reaction that causes our immune systems to attack, which results in the symptoms we feel when we're sick, such as fever, congestion, coughing and

sneezing, headache, body aches and gastric distress.

You are correct that antibiotics have no effect on viral illnesses. Antibiotics work by breaching a bacterium's cell walls, which viruses don't have, or disrupting its reproduction, which viruses do differently. Due to antibiotic resistance, which is now a serious problem, it's important not to use these drugs to fight a viral infection. Instead, for viruses such as the flu, your doctor will prescribe an antiviral, which works by interfering when the virus tries to force the cell to make copies of it.

(Eve Glazier, M.D., MBA, is an internist and associate professor of medicine at UCLA Health. Elizabeth Ko, M.D., is an internist and assistant professor of medicine at UCLA Health.)

(Send your questions to askthedoctors@mednet.ucla.edu, or write: Ask the Doctors, c/o UCLA Health Sciences Media Relations, 10880 Wilshire Blvd., Suite 1450, Los Angeles, CA, 90024. Owing to the volume of mail, personal replies cannot be provided.)

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## SENSE & SENSITIVITY Husband Won't Take Health Warnings Seriously

by **Harriette Cole**

**DEAR HARRIETTE:**

My husband thinks that he is invincible. He never gets sick -- or so he says. He is not afraid of the new coronavirus. Meanwhile, my three kids and I suffer from asthma.

Reports say that anybody with asthma should be extra careful right now. We have been staying at home and following the rules, but it's hard to know if we will be safe when my husband goes out every day without a mask or gloves and seems oblivious to the health risks. Am I being overly paranoid? How can I get him to be more cautious -- if not for himself, then for us? -- Fair Warning

**DEAR FAIR WARNING:** Gather research that explains the risks of coronavirus, especially to people with respiratory conditions. Because it often causes a so-far-untreatable form of pneumonia, it is particularly dangerous for someone with a compromised pulmonary system.

Show your husband that it is essential for you and your children to limit your exposure to the disease. That includes not being in close contact with anyone who is out and about and not taking the recommend-

ed precautions. Ask your husband to help keep you safe by wearing protective gear, showering and changing his clothes the moment he comes into your house, keeping his distance from you during this questionable period and taking this situation seriously.

Here is a layman's description of how one gets sick from the disease: bit.ly/2vOfAbX. Invite your husband to read it.

**DEAR HARRIETTE:** I am so worried about how to survive right now. I have a decent job, and I have been able to make ends meet in the past, but my family barely lives beyond paycheck-to-paycheck. I'm afraid that I am going to be laid off if this epidemic doesn't change soon. I need to decide what to pay and what not to pay so that I have enough money to buy food. I had good credit going into this. What can I say to my creditors? I don't want to just stop paying bills, but I think I have to. -- Dealing With Debt

**DEAR DEALING WITH DEBT:** You are not alone, and this is a time when that may work to your advantage. Gather your bills, and figure out exactly what you owe and to whom. Rath-

er than running away from your creditors, be proactive. Contact each of them and explain your circumstances. Stay calm and focused. Ask for debt forgiveness, deferred payment plans or waived late penalties. Be direct when you ask for them to work with you. Make it clear that you are not trying to walk away from your responsibilities, but circumstances mean that you need to figure out a different way to handle these bills. Chances are, your candor and proactive approach will yield you the best possible results. It may take time, and it could be humiliating, but stick to your reality. Do not agree to pay more than you can afford at this time.

(Harriette Cole is a stylist and founder of DREAMLEAPERS, an initiative to help people access and activate their dreams. You can send questions to askharriette@harriettecole.com or c/o Andrews McMeel Syndication, 1130 Walnut St., Kansas City, MO 64106.)

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## Andrews McMeel Almanac

Today is the 97th day of 2020 and the 19th day of spring.

**Today's History:** In 1830, Joseph Smith established the Mormon Church in Fayette Township, New York.

In 1896, the first modern Olympic Games opened in Athens, 1,500 years after the last recorded original games.

In 1917, the United States formally entered World War I by declaring war on Germany.

In 1947, the first Tony Awards were presented for achievement in live Broadway theater.

In 1992, the Bosnian War began in Bosnia and Herzegovina.

**Today's Birthdays:** Lincoln Steffens (1866-1936), journalist; Gil Kane (1926-2000), illustrator; Gerry Mulligan (1927-96), jazz musician; Merle Haggard (1937-2016), singer-songwriter; Billy Dee Williams (1937-), actor; Barry Levinson (1942-), director/producer; John Ratzenberger (1947-), actor; Michael Rooker (1955-), actor; Paul Rudd (1969-), actor; Zach Braff (1975-), actor.

**Today's Fact:** American explorer Robert Peary and his team were long believed to be the first humans to reach the North Pole, on this day in 1909. Navigational errors documented in Peary's journals and analyzed decades later placed the expedition roughly 30 miles outside the Pole.

**Today's Sports:** In 2004, the University of Connecticut became the first university to win the NCAA Division I

men's and women's basketball championships in the same year. UConn repeated the feat in 2014.

**Today's Quote:** "Nothing is done. Everything in the world remains to be done or done over. The greatest picture is not yet painted, the greatest play isn't written, the greatest poem is unsung." — Lincoln Steffens

**Today's Number:** 20 — medals won by the United States at the first modern Olympic Games, second only to host nation Greece (46).

**Today's Moon:** Between first quarter moon (April 1) and full moon (April 7).

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## SUDOKU

DIFFICULTY RATING: ★☆☆☆☆

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### PREVIOUS SOLUTION

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**HOW TO PLAY:** Each row, column and set of 3-by-3 boxes must contain the numbers 1 through 9 without repetition.

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### PUBLIC NOTICE

**ADVERTISEMENT FOR BIDS**

The City Council, the governing authority of the City of Morgan City, Louisiana, will receive sealed bids until 10:00 A.M. (local time), on Monday, May 4, 2020, in the office of the Administrative Secretary, City Hall, 512 First Street, Morgan City, Louisiana, for the following:

**MOSQUITO CONTROL CHEMICALS**

Plans and specifications for the above may be procured from the Administrative Office, City Hall, First and Everett Streets, Morgan City, Louisiana (985) 385-1770 or g.bonner@city-ofmc.com.

The Council reserves the right to reject any and all bids received and to waive informalities.

SIANA (S) Frank P. Grizzaffi, III  
Frank P. Grizzaffi, III  
Mayor  
Adv. April 6, 13, 20 and 27, 2020

### PUBLIC NOTICE

**PUBLIC NOTICE TO BIDDERS MORGAN CITY HARBOR AND TERMINAL DISTRICT SALE OF SURPLUS PROPERTY TAKE NOTICE,**

that the Morgan City Harbor and Terminal District will accept sealed bids until 2:00 p.m. on April 20, 2020, for the sale of the following surplus property:  
2 used Yamaha 350 outboard motors, with wheels, related rigging & control components and 2 stainless wheels (herein "Engine Package").  
Make: Yamaha  
Model: LF350X-CA  
Serial Number: 6AX-X-1003873  
Description: 25"

shaft left hand rotation motor. Date purchased new 06/23/2014

Hours: Approximately 1400  
Make: Yamaha  
Model: F350X-CA

Serial Number: 6AX-X-1003873  
Description: 25" shaft right hand rotation motor. Date purchased new 06/23/2014

Hours: Approximately 1400  
DEC Dual Binical controls, Key switch, Harness and Digital Multi-Function Tachometer. Yamaha 3 blade stainless steel propellers. Motors are installed in motor create for easy pick-up.

All bids must provide a fixed purchase price and be delivered to the Morgan City Harbor and Terminal District, 7327 Highway 182, Morgan City, La. 70380, clearly marked "SEALED BID". Bids will be opened and read aloud at the above stated time. The

minimum bid for the Engine Package is \$13,000.00. The successful bidder must remove said Engine Package, within 14 days of acceptance of bid. The Equipment Package will be transferred to the successful bidder(s) "as is" without any warranty whatsoever. The Morgan City Harbor and Terminal District reserves the right to reject any and all bid(s) and the right to waive informalities.

Bids can also be viewed, downloaded and submitted online by at: <https://www.centralauctionhouse.com/rfp.php?cid=60>. For more information and/or to make an appointment to inspect the equipment package, please call 985-384-0850 or send e-mail requests to [tor@portofmc.com](mailto:tor@portofmc.com).

Adv. March 30 and April 6, 2020