

NIH News in Health

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Be a Citizen Scientist Help Researchers Solve Puzzling Problems

Did you know that you can team up with scientists to help medical research? You don't need an advanced degree or special knowledge of science. You can become a "citizen scientist" by simply devoting some of your free time to ongoing research projects. Your efforts can help to increase medical knowledge and might lead to new treatments.

Your role could be as simple as playing an online game or sharing a blood sample. Or you could help collect data in your community. You might even help guide the types of questions researchers are investigating by sharing your ideas or concerns.

"People are creative and innovative. They have all sorts of skills and contextual knowledge," says Dr. Jennifer Couch, who heads NIH's citizen science working group. "Citizen science in its broadest sense draws on the insights and talents individuals have to offer."

Citizen science can go by different names. Each can have slightly different meanings. It may be called participatory or contributory science. It's sometimes called crowdsourcing, community-engaged



research, or public-partnered research.

Some projects are limited to specific types of volunteers. You might need to be of a certain age or live in a specific region. Some projects are designed for people who have certain health conditions. But others are open to everyone.

All of Us • NIH's *All of Us* Research Program invites just about anyone in the U.S. to join. The program aims to partner with at least 1 million people nationwide to build one of the most diverse health databases in history. So far, about 500,000 people have fully enrolled. Researchers are using their data to study a wide range of health issues.

Diversity among participants is key for this study. Our cultural practices, biology, and **genetic** make-up can have a big impact on our health. So can the places where we live and work. Researchers aim

to understand how these many factors affect our health.

"Some groups, like Asian Americans, Native Hawaiians, and Pacific Islanders, have been left out of these kinds of studies in the past. But we don't want any groups of individuals to be left behind," says Dr. Fornessa T. Randal, executive director for the Asian Health Coalition, a national community engagement partner for *All of Us*. "*All of Us* is trying to include everyone."

To join *All of Us*, you complete an online consent form and surveys. You can get more involved by agreeing to share data from your electronic health records. You may be invited to a free appointment to give samples like blood or saliva. You can decide how much information you're willing to share.

One benefit of joining is you can choose to get information about your own health. You might learn more about your genes or disease risk. You'll also be contributing to scientific knowledge. This could improve medical care for yourself and future generations.

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Definitions

Genetic

Having to do with genes, stretches of DNA you inherit from your parents. Genes can affect your risk for certain diseases.

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Game Time • NIH has also supported several online games and activities over the years that contribute to science. The games are free to play.

All of Us has a new game component called “Exploring the Mind.” It includes online quizzes and puzzles that measure things like your attention span and ability to recognize emotions. It’s available to most participants enrolled in the program.

Another project called “Mind-Crowd” is studying how brain function changes with age (mindcrowd.org). Volunteers take a 10-minute online memory test. You can take the test several times. The gathered data may help scientists find ways to protect memory as we get older.

“Eyewire” is an online puzzle game that’s somewhat like a 3D coloring book (eyewire.org). Players view images of brain tissue. Their challenge is to color in areas to define the 3D structure of nerve cells in the brain. The results have helped scientists find previously unknown types of nerve cells. Spin-off projects are now in development that will gather even more details about nerve cells and the brain.

“Some people are really good at puzzle solving. So games can make the most of their skills,” says Couch. “Games can give you that ‘aha’ moment, where you stumble across something interesting that you weren’t necessarily looking for.”

Community Matters • Several NIH-supported citizen science projects involve working closely with communities. “One clear message we get from community members is that they don’t just want to be the subjects of research. They want to be active partners,” says NIH’s Liam O’Fallon, an expert in community-engaged science. “They want to help with defining the questions and collecting the data. And they want to help communicate the findings.”

One project lets people report on neighborhood features that can affect healthy behaviors. “The goal is to get residents to partner with researchers, so we can understand the barriers to leading healthy lives,” says study lead Dr. Abby King, a professor of population health at Stanford University.

Residents use a smartphone app to collect and share data. Through photos, texts, or voice recordings, they point out problems like unsafe intersections. They report on neighborhood features like access to sidewalks, trails, or groceries. This approach is called Our Voice.

“Residents not only collect data, they also interpret it and decide what’s most important,” King explains. “Then they work with community leaders or policymakers to make changes that are meaningful to them, not just to researchers.”

Community data has led to sidewalk repairs and other exercise-friendly changes. An ongoing study is testing to see if the Our Voice approach can help increase physical activity among older women.

Other NIH-supported researchers

worked with community groups to test levels of lead and other metals in urban gardens and yards. They shared results and recommendations with the community. They discussed ways to reduce harmful metals in gardens. Several neighborhoods in Atlanta found high levels of lead in soil. They then applied for and received funding from the Environmental Protection Agency to clean up those polluted sites.

“That was just one of many success stories,” O’Fallon says. “I see citizen science as valuable for building skills and capacities. People get to really see how science works. And they can see how their environment affects their health. So this can inform decision making. It really democratizes science.” ■



Wise Choices Contribute to Science

- Enroll in NIH’s *All of Us* program at www.joinallofus.org/newsinhealth.
- Visit the NIH-supported SciStarter website for an overview of more than 1,000 citizen science projects nationwide at www.scistarter.org.
- Test your memory skills at mindcrowd.org, and add to our understanding of brain function.
- Enroll your dog in citizen science projects. Learn more by visiting go.nih.gov/NIHNIHAug23PetDogs.
- Ask at your library. Many libraries can help find citizen science projects you can join. Some have toolkits you can borrow to take measurements or gather data.
- Find projects supported by NIH and other federal agencies at www.citizenscience.gov.

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**Web
Links**

For more about citizen science, see “Links” in the online article: newsinhealth.nih.gov/2023/11/be-citizen-scientist

Sore, Scratchy Throat?

Soothing Pain From Illness or Allergy

It's a familiar sensation as the days grow shorter and colder: a scratchy, painful feeling when you swallow, talk, or even just breathe. Sometimes, a sore throat is little more than a nuisance. But it can also be a sign of serious infection. So how do you know which is which? And what can you do to soothe a sore throat?

Many things can trigger a sore throat, explains Dr. Alison Han, an infectious disease expert at the NIH Clinical Center. "It can be an **allergen**. It can be an infection, like a virus or bacteria. Sometimes, it's even just dry air," she says.

So, when should you call your health care provider? That depends on how bad the sore throat is and what symptoms come with it, Han explains. "If it's a mild sore throat and a runny nose, some congestion, that's probably a typical cold," she says. But severe pain plus symptoms like a high fever and a loss of interest in eating or drinking may be serious.



Wise Choices

Soothing a Sore Throat

- Warm liquids can help. Try hot tea with lemon or gargling with warm salt water.
- Keep your throat moist with lozenges or hard candies. Do not give these to young kids.
- Ice chips or popsicles may help numb the pain.
- Painkillers like acetaminophen or ibuprofen can reduce throat pain. Read the label to make sure products are safe for children. Never give aspirin to kids.
- Keep the air in your bedroom moist with a clean humidifier or vaporizer.
- Avoid smoking or inhaling second-hand smoke. Smoke can irritate the throat.

How long a sore throat lasts also matters. "If it's been more than three days, then you might want to seek medical advice," Han says. "But at any time, it's always reasonable to call your doctor and get an opinion."

A very contagious bacterial infection called strep can cause a sore throat, high fever, and swollen glands. Children may also have nausea, vomiting, or stomach pain. Strep can cause other serious health problems. So it's important to see a doctor as soon as possible if you think someone in your household has strep.

If test results confirm strep, your doctor will prescribe antibiotics. Even if you feel better after a few days, it's important to finish the entire prescription. Most causes of a sore throat, though, don't need antibiotics. These include allergies as well as colds, flu, COVID-19, and RSV, which are all caused by viruses. Antibiotics only work against bacteria. Doctors can sometimes prescribe antiviral medication for certain viruses, like flu or COVID-19.

There is no treatment for the common cold, but over-the-counter products for symptom relief may help. For example, acetaminophen, ibuprofen, or aspirin (not for kids) can reduce pain. Mild allergies can be treated using over-the-counter antihistamines, decongestants, or nasal sprays. But you may need prescription medication or allergy shots for severe allergies.

A sore throat is a common symptom for the current variants of COVID-19. "If you have a sore throat and some other cold-like symptoms, it's reasonable to do a COVID-19 test," Han says. **This can help you stop spreading the disease to others.**



For most causes of a sore throat, time is the best healer. Lozenges, lollipops, or other hard candies can help soothe your throat. Experts now recommend that children under the age of 4 don't use any over-the-counter cold and cough medications.

For young kids who might choke on candy, cold liquids or popsicles can help numb the pain. See the Wise Choices box for other tips.

The best way to prevent a sore throat is to avoid the germs that cause them. Wash your hands or use hand sanitizer often. Steer clear of other people who are sick. And stay up to date with the vaccines recommended for your age group, including flu, COVID-19, and RSV. "These shots can help protect ourselves and our loved ones," Han says. ■



Definitions

Allergen

Substance that produces an allergic reaction when a person comes in contact with them, like pollen or dust.



Web Links

For more about sore throats, see "Links" in the online article: newsinhealth.nih.gov/2023/11/sore-scratchy-throat



Health Capsules

For links to more information, please visit our website and see these stories online.

Insights Into Long COVID

Some people end up with long-lasting illness after being infected with SARS-CoV-2, the virus that causes COVID-19. This is called Long COVID. Symptoms can include extreme tiredness, difficulty thinking or concentrating, and breathing problems. Researchers are trying to understand why some people get Long COVID and others do not.

To learn more, a team of scientists compared blood samples from more than 250 people. Some had been infected with SARS-CoV-2 and some

had not. Among those who had been infected, some had Long COVID and some did not.

The team found that people with Long COVID had different amounts of germ-fighting immune cells and antibodies than those without Long COVID. Those with Long COVID had more antibodies that attack SARS-CoV-2. And they had stronger responses to an unrelated virus called Epstein-Barr virus (EBV). EBV is a common virus that causes mononucleosis. After infection,

EBV remains in the body and can be inactive or reactivate. The researchers suggest that EBV might reactivate in some people who have Long COVID.

The study's findings could lead to ways to help diagnose Long COVID. They also shed light on factors that could affect Long COVID.

“These findings can inform more sensitive testing for Long COVID patients and personalized treatments for Long COVID,” says study co-lead Dr. David Putrino of Mount Sinai. ■

Helping a Child Who Is Overweight

Children naturally gain weight as they grow and develop. Some kids may gain extra pounds, but lose them as they develop and grow taller. For others, gaining too much weight may lead to obesity. Children with obesity are more likely to have obesity as adults. Over time, excess weight may lead to health problems like heart disease, joint pain, or type 2 diabetes.

Genes and family history can affect a child's weight. Other factors include getting too little physical activity or having too many high-calorie foods

and drinks. Not getting enough sleep and too much screen time may also contribute to excess weight.

Adopting healthy lifestyle habits can help your child reach and stay at a healthy weight. Help them learn healthy habits by being a good role model. Encourage your family to do the same. Replace processed foods with fruits, vegetables, and whole grains. Instead of sugary drinks, serve water or low-fat milk. Encourage fun activities like running, biking, dog-walking,

or dancing. Keep bedrooms and mealtimes screen-free. Listen to your child's concerns and reward your child's healthy choices with praise and love.

If you're concerned about your child's weight, talk with a health care professional. Some kids who are overweight don't need to lose weight. They may just need to gain weight more slowly as they grow taller.

Learn more about children and weight gain at go.nih.gov/NIHNiHNov23ChildhoodWeightGain. ■

Featured Website

Genetic and Rare Diseases Information Center

rarediseases.info.nih.gov

Scientists have discovered more than 10,000 rare diseases. These include cancers, blood diseases, and genetic diseases passed from parent to child. This website has

easy-to-understand information about rare diseases. Get help with information in English or Spanish by calling 1-888-205-2311 or submitting a request on the website.



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