

# 3M names America's Top Young Scientist of 2021: 14-Year-Old Sarah Park, for music therapy treatment to improve mental health

## 14-year-old Samarth Mahapatra Wins Improving Lives Award at This Year's 3M Young Scientist Challenge

ST. PAUL, Minn. and SILVER SPRING, Md., Oct. 20, 2021 /PRNewswire/ -- [3M](#) (@3M) and [Discovery Education](#) (@DiscoveryEd) have named 14-year-old Sarah Park from Jacksonville, Fla. the winner of the 2021 [3M Young Scientist Challenge](#) ([#YoungScientist](#)), the nation's premier middle school science competition. Sarah created Spark Care+, an innovation that personalizes music therapy treatment for mental health improvement using artificial intelligence (AI), skin response (GSR) and photoplethysmography (PPG). As the *3M Young Scientist Challenge* grand prize winner, Sarah received a \$25,000 cash prize, the prestigious title of "America's Top Young Scientist," and a special destination trip.

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"The *3M Young Scientist Challenge* aligns with 3M's commitment to fostering the next generation of science leaders, and exemplifies how a quality STEM education can get young people interested and excited about science as a way to improve lives all around the world," said **Dr. Denise Rutherford, senior vice president and chief corporate affairs officer at 3M**. "Against the backdrop of an ongoing global pandemic, the *3M Young Scientist Challenge* finalists have each shown how grit, determination, resiliency, innovative thinking, and the scientific process come together to create truly incredible innovations with the potential to address major global challenges. 3M is inspired by these young inventors, and we celebrate their accomplishments. Congratulations to this year's winner, Sarah Park, and to all our *3M Young Scientist Challenge* finalists. We thank you for inspiring us through your efforts."

The global pandemic has had a profound impact on mental health – negatively affecting millions of people and creating new barriers for people already suffering from mental health disorders. For her project, Sarah developed SparkCare+ as an efficient, affordable, portable, and personalized music therapy for mental health improvement. SparkCare+ is made up of two components: a communication with the participant, and a mechanism that uses deep neural networks to select therapeutic music.

The communication component of SparkCare+ asks the participant questions and elaborates on the Hamilton Anxiety and Depression rating scales, providing insight for the AI. Sarah used Arduino (an open-source electronic prototyping platform) so a PPG sensor could gauge indicators regarding the participant's mental state, including their heart rate and blood pressure. The GSR sensor is an additional tool Sarah developed to indicate mental state, and to provide the AI the necessary information to pick suitable music for the participant and sense progress. Sarah envisions developing personalized wristbands for all interests and ages, so that anyone seeking improvement in mental health can be treated with Spark Care+.

The *3M Young Scientist Challenge* also named 14-year-old Samarth Mahapatra from Marietta, Ga. as the

recipient of the [\*Improving Lives Award\*](#), a special recognition award based on online public voting to choose the final project from the challenge that has the greatest potential to make a positive impact on the world. Inspired by his great aunt who had to give up cooking due to glaucoma-induced blindness, Samarth's project, "Accessibility Friendly Guidance System for Optimal Cooking Operations based on Machine Learning," deployed edge computing and advance vision algorithms to help people with vision impairments cook with ease.

Now in its fourteenth year, the 2021 *3M Young Scientist Challenge* hosted the two-day competition as a virtual event on Oct. 18 and 19, 2021. Sarah Park, an eighth-grader at Bolles School – Bartram in Jacksonville, Fla. at the time of entry, competed against nine other finalists. Each finalist was evaluated through a series of interactive, virtual challenges and the final presentation of their innovation. These ten young inventors, aged 12 to 14, won the top spots in this year's challenge through their innovative thinking, scientific acumen, and exceptional communication skills.

Over the past few months, each *3M Young Scientist Challenge* finalist worked with a 3M scientist who mentored and worked one-on-one with them to transform their idea from concept to physical prototype. Sarah Park was paired with Dr. Ann Fornof, a senior research specialist in the adhesives division at 3M.

All ten *3M Young Scientist Challenge* finalists received a variety of prizes from 3M and Discovery Education. The grand prize winner received a \$25,000 cash prize, the prestigious title of "America's Top Young Scientist," and a special destination trip. The second and third place winners each received a \$1,000 prize and a special destination trip. These exceptional students at the time of entry are:

In second place, Samarth Mahapatra from Marietta, Ga., an eighth-grader at Dodgen Middle School in Cobb County High School Area 1. Samarth deployed edge computing and advance vision algorithms to help people with vision impairments cook with ease.

In third place, Snigtha Mohanraj from West Haven, Conn., an eighth-grader at Engineering and Science University Magnet School in New Haven Public School District. Snigtha invented Ferro-Sponge, a novel way to remove microplastics and oil from contaminated water.

The fourth through tenth place winners each receive a \$1,000 prize and a \$500 [\*excitations gift card\*](#). These finalists at the time of entry, in alphabetical order by last name, are:

Abhinav Anne from Plainfield, Ill., a seventh-grader at Clifford Crone Middle School in Indian Prairie Community Unit School District 204.

Veda Murthy from Herndon, Va., a seventh-grader at Rachel Carson Middle School in Fairfax County Public School District.

Viraj Pandey from San Jose, Calif., a seventh-grader at Bret Harte Middle School in San Jose Unified School District.

Moitri Santra from Oviedo, Fla., a seventh-grader at Jackson Heights Middle School in Seminole County Public School District.

Danielle Steinbach from San Jose, Calif., a seventh-grader at Harker Middle School.

Aadrit Talukdar from San Jose, Calif., a seventh-grader at Basis Independent Silicon Valley.

Sydney Zhang from San Diego, Calif., an eighth-grader at Mesa Verde Middle School in Poway Unified School District.

"For 14 years, Discovery Education and 3M have partnered to help empower young people to bring STEM learning to life," said **Lori McFarling, president of social impact at Discovery Education**. "Every single one of this year's participants demonstrated the power of STEM to change the world and improve lives."

The *3M Young Scientist Challenge* inspires and challenges middle school students to think creatively and apply the power of STEM to discovering real-world solutions. America's Top Young Scientists have gone on to give TED Talks, file patents, found nonprofits, make the Forbes 30 Under 30 list, ring the bell at the New York Stock Exchange, and exhibit at the White House Science Fair. These young innovators have also been named Time

Magazine's first Kid of the Year, featured in The New York Times Magazine, Forbes, Business Insider, and on national television programs such as Good Morning America, CNN's Cuomo Prime Time, The Ellen DeGeneres Show, and more.

The award-winning *3M Young Scientist Challenge* supplements the 3M and Discovery Education program – *Young Scientist Lab* – which provides no-cost dynamic digital resources for students, teachers, and families to explore, transform, and innovate the world around them. All the resources are also available through the Young Scientist Lab Channel and in the [Social Impact Partnerships channel](#) on Discovery Education's recently enhanced [K-12 learning platform](#).

To download images from the 2021 science competition, click [here](#). To learn more about the *3M Young Scientist Challenge* and meet this year's winners and finalists, visit [youngscientistlab.com](http://youngscientistlab.com).

For more information about Discovery Education's digital resources and professional learning services, visit [www.discoveryeducation.com](http://www.discoveryeducation.com), and stay connected with Discovery Education on social media through [Twitter](#) and [LinkedIn](#).

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