3M names America’s Top Young Scientist of 2021: 14-year-old Sarah Park, for music therapy treatment to improve mental health

3M and Discovery Education 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 personalises 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.

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 celebrates their accomplishments.

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 personalised 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 personalised wristbands for all interests and ages, so that anyone seeking improvement in mental health can be treated with Spark Care+.

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 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 2-day competition as a virtual event on 18 and 19 October 2021. Each finalist was evaluated through a series of interactive, virtual challenges and the final presentation of their innovation. 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.

Discovery Education is the worldwide EdTech leader whose state-of-the-art digital platform supports learning wherever it takes place. Through its award-winning multimedia content, instructional supports, and innovative classroom tools, Discovery Education helps educators deliver equitable learning experiences engaging all students and supporting higher academic achievement on a global scale. Discovery Education serves approximately 4.5 million educators and 45 million students worldwide, and its resources are accessed in over 140 countries and territories. Inspired by the global media company Discovery, Inc., Discovery Education partners with districts,
JOHNSON & JOHNSON

Fortune included Johnson & Johnson on its 2021 Change the World list, which spotlights companies across the globe that have leveraged their core business strategies to drive positive social impact.

While the vaccine makers on last year’s list were recognised for their unprecedented collaboration on fighting the coronavirus, this year’s list highlights those that are helping expand access to COVID-19 vaccines around the world. Johnson & Johnson was honoured to be included for its efforts to make available its Janssen COVID-19 vaccine, for which it received Emergency Use Authorization from the U.S. Food and Drug Administration in February.

To compile the prestigious list, Fortune evaluated companies on the impact they have made in addressing one or more of society’s problems, the business results of those actions, and the level of innovation involved. Also taken into consideration: how essential the company’s initiative was to its overall business strategy.

A Commitment to Social Responsibility and Innovation

For more than a century, Johnson & Johnson has relied on a core set of values to guide every aspect of the way it does business.

When COVID-19 hit, the company was able to respond to the once-in-a-lifetime global health challenge by harnessing its capabilities, scientific expertise, global partnerships, and experience in helping fight pandemics for over a century—and its 130,000-plus employees around the world mobilised with urgency to address the critical needs of families, communities, and healthcare providers.

That sort of innovation and a commitment to social responsibility provide the foundation for Our Credo, the company’s mission statement that compels everyone who works at Johnson & Johnson to put the needs and well-being of people who depend on its products and services first.

This is not the first time Fortune has recognised Johnson & Johnson. Earlier this month, Jennifer Taubert, the company’s Executive Vice President and Worldwide Chairman, Pharmaceuticals, was named to Fortune’s 2021 list of the Most Powerful Women in Business for the sixth consecutive year. In June, the company landed the #4 spot on Fortune’s Return on Leadership List, a ranking of the top 100 companies on the Fortune 500 list. And early this year, the brand included Johnson & Johnson among the World’s Most Admired Companies, placing it at #1 in the Pharmaceutical category worldwide for the eighth consecutive year.

SWIFT MEDICAL

AI-powered digital wound platform used by medical researchers to make clinical trials more accessible, efficient, and equitable

Swift Medical, the global leader in digital wound care, announced the launch of Swift Scientific, an innovative new digital imaging platform to support medical researchers conducting decentralised clinical trials. Swift Scientific’s launch also marks Swift Medical’s entry into the clinical trial market, enabling the company to take on this growing $44 billion market.

Swift Medical’s core product, Swift Skin and Wound, is an AI-powered, digital wound platform that allows any patient or clinician to easily capture high-precision images of skin or wound conditions with any smartphone camera. Swift Skin and Wound autonomously determines clinical characteristics, tracks disease progression, enables remote communication, and securely shares patient data in real time. Swift Medical’s technology is used by more than 4000 healthcare organisations internationally, including health systems and providers across the continuum, academic institutions, research organisations, and pharmaceutical companies.

The COVID-19 pandemic has severely impeded clinical trials—making participant recruitment, monitoring, and retention more difficult, which has resulted in more expensive, delayed, and sometimes cancelled clinical trials. With the implementation of public safety measures, participant access to trial sites was reduced by up to 80% at the onset of the pandemic. Further, as 70% of potential trial participants live over 2 hours from a trial site, remote clinical trials are vital to improving accessibility and equity, especially for low-income, rural, and physically impaired participants—which, in turn, will increase diversity in trial populations and efficacy of new clinical interventions.

As the need to analyse skin conditions during medical research is critical to many studies, Swift Medical is able to support clinical trials across multiple sites, whether in the clinic or the participant’s home, without the need for expensive equipment or extended travel. Swift Scientific is a purpose-built tool that enables efficient and cost-effective decentralised clinical trials by allowing researchers to analyse skin and wound conditions imaged with any smartphone, from any location.
Organizations conducting and managing clinical trials are facing unprecedented challenges caused by the pandemic, yet their research is needed now more than ever. We have already proven that the Swift Medical platform is a trusted solution for producing clinical-quality images, but now we see an opportunity to help researchers develop life-saving treatments in a faster, more efficient manner’, said Carlo Perez, co-founder and CEO of Swift Medical. ‘Even after the pandemic, decentralized clinical trials represent the future for medical research, enabling applications like Swift Scientific to power the next generation of data analysis and scientific discovery’.

Swift Scientific produces 3D-generated models, enables automated region-of-interest detection, and calculates precise, clinically validated measurements that eliminate data variability. Study coordinators can continuously monitor the effects of new medications or interventions on participants from any location, and with real-time reports and analytics, investigators can easily identify and analyse trends for each subject and study.

Some of the largest pharmaceutical companies and clinical research organisations in the world are already using Swift Medical’s technology across more than 50 sites in North America and Europe.

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