



Rotary

Spectrum



RI District 3291

December 31, 2022

Weekly bulletin of Rotary Club of Salt Lake Metropolitan Kolkata

VOL 16 NO 27

PRESIDENT ARCHANA GOYAL

SECRETARY KUSUM CHAMARIA

EDITOR DR RAJESH GOEL

CLUB NO 78956

CHARTERED ON APRIL 30, 2008

WEBSITE www.rcslmk.org

Rufus Moagi: A Health Advocate in South Africa

Posted on December 29, 2022 by rotaryservice

A conversation between the Rotary Action Group for Family Health & AIDS Prevention and Rufus Moagi, a member of the Rotary E-Club of District 9400



Rufus Moagi, member of Rotary E Club of District 9400

Meet Rufus Moagi, a Rotarian who is working relentlessly to ensure that the people of the Tembisa township in Gauteng, South Africa live healthy lives — and he does so without a second thought. The Rotary Action Group for Family Health & AIDS Prevention calls Rufus Moagi a hero.

For the past 10 years, Rufus has been tirelessly advocating for the right to a healthy life for the people of Tembisa, connecting them with Rotary Family Health Days services — the Rotary Action Group for Family Health & AIDS Prevention's signature program — to ensure that free health services are accessible to each and every individual. "I have benefited emotionally more than I have given. That is the beauty of working with an organization like Rotary," he says.

A Day at the Rotary Family Health Days Site

Describing the buzz at the Family Health Days, Rufus says, "I have a truck and a bakkie (pickup truck), so I carry all the tents, banners, and posters, and help set up everything at the site. I travel a lot with Sue Paget, CEO of Rotary Action Group for Family Health & AIDS Prevention, and I have seen her go above and beyond to make sure help reaches the people in need."

Rufus explains that Health Days are emotional events. In some provinces, people struggle to get proper healthcare, and diseases like HIV and TB go undetected. "We go out in the local areas, talk to people, convince them to come and avail of the free health check-ups. Sometimes, we also reach out to the older people who cannot travel to the sites and ensure that they receive the health services they need."

Working Relentlessly

For these health heroes, the day starts with setting up at the site as early as 4 a.m., and they're often still serving the community late

into the evening. "We are the first ones to arrive at the site and the last ones to leave - but it is all worth it when you serve a large community of people who, otherwise have no access to even basic healthcare. My heart goes out to these people, and I wish the government could do more for them. They all deserve to live a healthy life, and they must not struggle with that," Rufus says. Rufus not only helps with the site set-up and banner printing, but you might also spot him wandering around the local areas with a loudspeaker in his hands, educating people about the importance of the Rotary Family Health Day program. "People must be made aware of the importance of such initiatives."



Beneficiaries visit Rotary Family Health Days to get free preventative health checks at a site in Uganda.

A Small Step Makes a Big Difference

Sharing an incident that was particularly heart-warming, Rufus says, "You meet so many people at these events, hear so many stories, learn about their struggles, and it moves you. I remember meeting two girls who worked as sex workers. I listened to their stories, talked to them, and finally convinced them to come for a free screening for HIV and other diseases. They turned up on the next Health Day, and I was happy. What really touched my heart was when I received a call from one of the girls a few days after, and she informed me that she found a job and had also enrolled in a course. I have no words to describe how I felt that day. The girl calls me once in a while and shares her progress in her job and studies. That is fulfilling," he says with pride.

Back to School

Apart from his work with his Rotary club, Rufus is also actively helping the kids in his community start school. Rufus provides stationery and uniforms from his shop and encourages local children to get a proper education.

Watching someone find the light at the end of the tunnel is an indescribable feeling. Thanks to his tireless work with his Rotary club and his impact on his local community, Rufus benefits from this rewarding feeling every day. "I am a happy man. I have four children and two beautiful grandkids. They are sitting next to me as I am doing this interview. I'm a 52-year-old 'young' grandfather," he signs off, with a chuckle.

Help Us Do More

We meet calendar months' 2nd & 4th Saturdays at GPT Group, JC 25, Salt Lake, Kolkata 700098 at 6.00 PM

Printed by Archana Goyal, President, Rotary Club of Salt Lake Metropolitan Kolkata • Editor: Dr. Rajesh Goel

For private circulation only • Web site: www.rcslmk.weebly.com • Email: es.rcslm@gmail.com

Rotary Action Group for Family Health & AIDS Prevention envisions a society where everyone has the right to a healthy, happy, and dignified life. It is changing communities by bringing free preventative healthcare solutions, vaccinations, counseling, and health education to them. Through its signature program, Rotary Family Health Day, Rotary Action Group for Family Health & AIDS Prevention has helped over 2.65 million patients by providing over 11 million free health services.

Feeling inspired and want to be a part of this change? Get in touch today by visiting rfha.org or connect with Sue Paget, CEO of Rotary Action Group for Family & AIDS Prevention Inc, by telephone at +27 (0) 83 456 3923 or email at spaget@rfha.org.



Sue Paget, CEO of Rotary Action Group for Family Health & AIDS Prevention Inc at the Rotary Family Health Days in Abuja, Nigeria

The Biggest Health and Biology Breakthroughs of 2022

From reviving dead pig organs to measuring viruses in our poop, here are some of the most intriguing medical advances of the year
By Tanya Lewis, senior editor at Scientific American on December 20, 2022 in Scientific American



A healthcare worker administers COVID-19 booster shots at a vaccination clinic in April 2022 in San Rafael, California.

Credit: Justin Sullivan/Getty Images

It's been a rough year, especially on the health beat. The COVID pandemic continued to bulldoze its way through the population, causing surges in cases and related deaths. Somewhat forgotten viruses such as mpox, flu and RSV reared their head unexpectedly. And the U.S. Supreme Court overturned a nearly 50-year-old right to reproductive freedom established by *Roe v. Wade*.

But it wasn't all bad news in 2022. In fact, biology and medicine saw exciting advances across fields as diverse as epidemiology, human evolution and artificial intelligence. Here are some of the discoveries that gave us hope for humanity and the future of human health.

WE GOT UPDATED VERSIONS OF COVID VACCINES

The development of COVID vaccines within a year of the discovery of SARS-CoV-2, the coronavirus that causes the disease, is undoubtedly one of the greatest medical achievements in recent memory. Two of the most effective vaccines, developed using mRNA technology, were proved to significantly protect against severe disease and death from SARS-CoV-2. But the virus continued to evolve, and newer variants began to find a way around human immune defenses. Fortunately, vaccine manufacturers developed new shots to target both the Omicron variant and the original strain. Early data suggest these “bivalent” vaccines effectively boost protection against the virus—all the more reason to make sure everyone in your family is up-to-date with their shots.

DISCOVERIES IN HUMAN EVOLUTION WON A NOBEL PRIZE

This year's Nobel Prize in Physiology or Medicine was awarded to Svante Pääbo for his discoveries involving the genetic relationships among our hominin ancestors. Pääbo, a Swedish geneticist and director of the Department of Evolutionary Genetics at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany, pioneered methods for reconstructing ancient DNA. He and his colleagues sequenced the genome of Neandertals and discovered a new hominin species, Denisovans. The research led to the surprising revelation that early humans interbred with these now extinct species. These primeval trysts gave us traits that persist in some people today, including an ability to survive at high altitude and a vulnerability to infections such as COVID.

SCIENTISTS REVIVED DEAD PIGS' ORGANS

In a feat that sounds like something out of the pages of Mary Shelley's *Frankenstein*, a team of scientists at Yale University developed a perfusion system that restored vitality to pigs' organs after the animals had died. The system—known as OrganEx—pumped a mixture of blood and nutrient-rich fluid through each animal's circulatory system. (The animals didn't regain consciousness.) The technology holds the potential to keep more human organs alive longer for transplants.

RESEARCHERS FOUND SECRETS IN OUR POOP

It sounds gross, but human waste contains a cornucopia of useful information for infectious disease scientists. Wastewater tracking systems enabled researchers to spot COVID cases and new SARS-CoV-2 variants in regions before they caused surges. By monitoring sewage, scientists also detected the virus that causes polio—a disease that has been declared eradicated in much of the world—in sewage systems in New York State and the U.K. This type of monitoring could also reveal spikes in opioid use or in levels of antibiotic-resistant microbes, scientists say.

WE LEARNED THAT INDOOR AIR QUALITY MATTERS

Before the COVID pandemic, most of us probably didn't give much thought to the air we breathe indoors. Over the past few years, though, it's become clear that SARS-CoV-2 frequently spreads through airborne droplets, which can build up inside indoor spaces and make us sick. Fortunately, we can reduce that risk by ventilating buildings and filtering the air we breathe. And cleaner indoor air has other benefits: it reduces the risk of respiratory diseases in general, and it may even help us think more clearly.

AI SOLVED ONE OF THE BIGGEST PROBLEMS IN BIOLOGY

One of the hardest problems for biologists is predicting the three-dimensional structure of proteins from their amino acid sequence. But earlier this year an AI program built by the Google-owned company DeepMind, called AlphaFold, solved the 3-D structures of about 200 million proteins. These structures are already enabling scientists to unlock mysteries in biology, and they could help lead to new pharmaceutical drugs and more sustainable crops.

Nature's biggest news stories of 2022

Nature news of December 15, 2022

From Russia's invasion of Ukraine to predicting protein structures with AI and transplanting pig organs into people, our news editors choose the defining moments in science this year.

Russia invades Ukraine

The global science community was quick to condemn Russian's invasion of Ukraine in February. Research organizations moved fast to cut ties with Russia, stopping funding and collaborations, and journals came under pressure to boycott Russian authors.

The situation escalated when Russian forces attacked Europe's largest nuclear power plant, Zaporizhzhia, in March, prompting fears of a nuclear accident. Russian troops continue to occupy the power plant. Since the invasion began, thousands of civilians have been killed and millions displaced; many others, including scientists, have fled the country.

The war has affected research in space and climate science, disrupted fieldwork and played a significant part in the global energy crisis. The invasion could also precipitate a new era for European defense research.

JWST delights astronomers



Stephans Quintet, a grouping of five galaxies, in a photograph taken by NASA's James Webb Space Telescope. Credit: NASA, ESA, CSA, and STScI via Getty

NASA's James Webb Space Telescope (JWST) - the most complex telescope ever built - reached its destination in space in January after decades of planning. In July, astronomers were awed by the telescope's first image - of thousands of distant galaxies in the constellation Volans. Since then, the US\$10-billion observatory has captured a steady stream of spectacular images, and astronomers have been working feverishly on early data.

Insights include detailed observations of an exoplanet, and leading contenders for the most distant galaxy ever seen.

NASA also decided not to rename the telescope, despite calls from some astronomers to do so because the telescope's namesake, a former NASA administrator, held high-ranking government positions in the 1950s and 1960s, when the United States systematically fired gay and lesbian government employees. A NASA investigation "found no evidence that Webb was either a leader or proponent of firing government employees for their sexual orientation", the agency said in a statement in November.

AI predicts protein structures

Researchers announced in July that they had used the revolutionary artificial-intelligence (AI) network AlphaFold to predict the structures of more than 200 million proteins from roughly one million species, covering almost every known protein from all organisms whose genomes are held in databases. The development of AlphaFold netted its creators at the London-based AI company DeepMind, owned by Alphabet, one of this year's US\$3-million Breakthrough prizes - the most lucrative awards in science.

AlphaFold isn't the only player on the scene. Meta (formerly Facebook), in California, has developed its own AI network, called ESMFold, and used it to predict the shapes of roughly 600 million possible proteins from bacteria, viruses and other microorganisms that have not been isolated or cultured. Scientists are using these tools to dream up proteins that could form the basis of new drugs and vaccines.

Monkeypox goes global

The rapid global spread of monkeypox (recently renamed 'mpox' by the World Health Organization) this year caught many scientists off guard. Previously, the virus had mainly been confined to Central and West Africa, but from May this year, infections started appearing in Europe, the United States, Canada and many other countries, mostly in young and middle-aged men who have sex with men. The virus is related to smallpox, and the circulating strain only rarely causes severe disease or death. But its fast spread led the World Health Organization to declare the global outbreak a 'public-health emergency of international concern', the agency's highest alert level, in July.

As cases soared, researchers got to work trying to understand the dynamics of the disease. Studies confirmed that it is transmitted primarily through repeated skin-to-skin contact, and trials of possible treatments got under way. Existing smallpox vaccines were also used to suppress the virus in some countries. Six months after mpox infections first started increasing, vaccination efforts and behavioural changes seemed to have curbed its spread in Europe and the United States. Researchers predict a range of scenarios from here — the most hopeful being that the virus fizzles out in non-endemic countries over the next few months or years.

The Moon has a revival

The Moon has become a popular destination for space missions this year. First off the launch pad, in August, was South Korea's Danuri probe, which is expected to arrive at its destination in January and orbit the Moon for a year. The mission is the country's first foray beyond Earth's orbit and is carrying a host of experiments.

Last month, NASA's hotly anticipated Artemis program - which aims to send astronauts to the Moon in the next few years - finally kicked off with the launch of an un-crewed capsule called Orion, a joint venture with the European Space Agency. As part of a test flight to see whether the system can transport people safely to the Moon, the capsule flew out past the Moon and made its way back to Earth safely this month.

A lunar spacecraft made by a Japanese company launched this month. ispace's M1 lander is aiming to be the first of several private ventures to land on the surface of the Moon next year. The lander will carry two rovers, one for the United Arab Emirates and another for the Japan Aerospace Exploration Agency, JAXA. The rovers will be a first for both countries.

Climate-change funding

There were many reasons to feel despondent about the United Nations Climate Change Conference of the Parties (COP27) in Egypt last month, but an agreement on a new 'loss and damage' fund was one bright spot. The fund will help low- and middle-income countries to cover the cost of climate-change impacts, such as the catastrophic floods in Pakistan this year, which caused more than US\$30 billion worth of damage and economic losses.

But calls at COP27 to phase out fossil fuels were blocked by oil-producing states, and many blamed the lack of progress on the energy crisis sparked by Russia's invasion of Ukraine. High natural-gas prices have led some European nations to rely temporarily on coal. Global carbon emissions from fossil fuels are expected to hit 37.5 billion tons this year, a new record. The window to limit warming to 1.5–2 °C above pre-industrial temperatures is disappearing fast - and might even have passed.

Omicron's offspring drive the pandemic

Omicron and its descendants dominated all other coronavirus variants this year. The fast-spreading strain was first detected in southern Africa in November 2021, and quickly spread around the globe. From early on, it was clear that Omicron could evade immune-system defenses more successfully than previous variants, which has meant that vaccines are less effective. Throughout the year, a diverse group of immune-dodging offshoots of Omicron has

emerged, making it challenging for scientists to predict coming waves of infection.

Vaccines based on Omicron variants have been rolled out in some countries in the hope they will offer greater protection than previous jabs, but early data suggest the extra benefit is modest. Nasal sprays against COVID-19 have also become a tool in the vaccine line-up. The idea is that these stop the virus at the site where it first takes hold. In September, China and India approved needle-free COVID-19 vaccines that are delivered through the nose or mouth, and many similar vaccines are in various stages of development.

Pig organs transplanted into people



Surgeons in Baltimore, Maryland, transplanted the first pig heart into a person in January.

Credit: EyePress News/Shutterstock

In January, US handyman David Bennett became the first person to receive a transplanted heart from a genetically modified pig - a crucial first step in determining whether animals could provide a source of organs for people who need them. Bennett survived for another eight weeks after the transplant, but researchers were impressed that he lived for that long, given that the human immune system attacks non-genetically modified pig organs in minutes.

A few months later, two US research groups independently reported transplanting pig kidneys into three people who had been declared legally dead because they did not have brain function. The organs weren't rejected and started producing urine. The next step is clinical trials to test such procedures thoroughly in living people.

Elections and science

National elections in Brazil, Australia and France brought relief for many researchers. After three years of science-damaging policies under right-wing president Jair Bolsonaro, Brazil narrowly elected leftist labor leader and former president Luiz Inácio Lula da Silva to lead the country in October. Scientists are hopeful that Lula's return will result in a desperately needed boost to research funding and greater protection for the Amazon rainforest.

French researchers were buoyed by President Emmanuel Macron's victory over far-right candidate Marine Le Pen in April, and the election of Anthony Albanese as prime minister in Australia in May was seen as a good thing for science and climate-change action, too. In China, Xi Jinping cemented his legacy with a historic third term as head of the Chinese Communist Party. Xi has placed science and innovation at the heart of his country's growth strategy.

In other nations, it was unclear how research would fare under new leaders, such as Giorgia Meloni, the far-right candidate elected as Italy's first female prime minister in October. Science was not a priority for the UK's three prime ministers this year, although they have retained previous commitments to raise research funding.

Environmental push begins

This week, conservation and political leaders are attempting to finalize a global deal to protect the environment. The UN's Convention on Biological Diversity Conference of the Parties (COP15) is under way in Montreal, Canada. A new biodiversity treaty, known as the post-2020 Global Diversity Framework, has been delayed by more than two years because of the COVID-19 pandemic. Progress towards an agreement has been slow, and the deal seemed under threat when negotiations stalled over financing during international talks in Nairobi in June. Financial pledges from some nations to support biodiversity helped discussions to move forward, but estimates suggest that US\$700 billion more is needed annually to protect the natural world. At the meeting, delegates will hopefully agree on targets to stabilize species' declines by 2030 and reverse them by mid-century.

Brief outline of the Global Grant 1991152

Purpose: 'Fight against Anemia in Women'

Objectives: Treat women of Anemia by screening and treatment and prevent by educating them

Title: 'Matri-Raksha' - protection of mothers

Scope of work: Provide screening camps, minor and major surgeries, medicines, awareness training, healthcare professional training and providing diagnostic equipment at community health centers

Coverage: Both districts of 24 Parganas, West Bengal, India

Sponsors: Rotary clubs of Salt Lake Metropolitan Kolkata of District 3291, India and Nidau-Biel, Biel-Bienne, Biel-Buttengen of District 1990, Switzerland:

Grant Partners: Rotary Foundation India, the Rotary Foundation of Rotary International,

Associates: Related Government and civic bodies, NGO's

QUOTE

Happiness is the longing for repetition. —Milan Kundera

UNWIND

He: You look like a smart girl; let's get married.

She: Nothing doing: I'm just as smart as I look.

Birthdays of members in January 2023

PP Uma Shankar Agarwal on January 9, 2023

VP Indrakumar Bagri on January 10, 2023

Club Treasurer Ashok Kumar Surana on January 10, 2023

PP Dr Aruna Tantia on January 19, 2023

Anniversaries of members in January 2023

Spouse Sushila & Treasurer Ashok K Surana on January 19, 2023

Spouse Dr Nandita & PP Dr Ankush Bansal on January 28, 2023

January is Vocational Service Month

TAILPIECE

An astronaut on a moonscape? No, a specialist collecting glowing lava on a pitchfork



HOTOGRAPH BY ARTURO RODRÍGUEZ

This image is on the cover of Nat Geo's Year in Pictures issue. In all, 132 photographers visited 60 countries and submitted 2,238,899 images to document the multifaceted world we live in. The photo editors selected 118 of their favorites for consideration.