

The Secret of Life

Lahore Science Mela 2022

Event Report

[Documentary 1](#) – [Documentary 2](#)

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Khwarizmi Science Society

Why the Lahore Science Mela?

[Khwarizmi Science Society \(KSS\)](#), founded by Dr. Saadat Anwar Siddiqi (Late), a life-long teacher of physics and materials science and foremost science popularizer, is one of Pakistan's most active and oldest grassroots science awareness movements. [The Lahore Science Mela \(Festival\)](#) Series is its flagship activity initiated in 2017 to foster a scientific culture in the public of Lahore. Culminating from years of science outreach events, the series has made its mark as a new cultural icon for Lahore and Pakistan.

The idea behind the science melas is to impact the public's outlook towards science, celebrate the idea that science belongs to everyone, catapult students to a new pedestal where they can think beyond science textbooks and classrooms, create a cultural melting pot of intellectual discussion and scientific inquiry by providing a meeting place for the minds, and to inspire the next generation of scientists and technologists in Pakistan. The word *mela* is common parlance in the local language and means the mingling of ideas, people, and activities.

The previous Lahore Science Mela was held in October 2019. When the COVID-19 pandemic hit the world far and wide, any possibility of having the Lahore Science Mela was eradicated. This year, therefore, we returned, after a gap of two years. And in full flurry!

For 2022, the KSS team decided to give a school an opportunity to host the Lahore Science Mela. The idea was to empower schools, its students, and teachers, bringing the festivity and excitement of science and technology a tad closer to them. To make this possible, a competition



was held between the schools of Lahore wherein we gauged the belief of the prospective host in our mission, making scientific learning accessible to everyone. The Divisional Public School & Intermediate College, Model Town emerged as the lucky winner and how faithfully have they stood to their promise of welcoming us with open doors, open arms, and open arms. As tens of thousands of eager visitors descended on the school premises, our collective nervousness was being tested but very soon, we all realized the power of our mission. It all happened so smoothly, as if the elements all conspired to make it happen!

Though the event actualized on the 29th and 30th of October, the runup to the mela spanned over months and months. As both of us worked with our core team, we realized the attractive pull of the idea with college and university students, as they flocked to come and help us. Very early on, we connected with about a hundred volunteers who powered the preparations in myriad ways: artwork, digital dissemination, building and adorning the KSS Exploratorium, crafting instruments and exhibits, and mentoring workshops for KSS's demonstrators, map planning, reaching out to performers, responding to their diverse logistics needs, blogging, engagements with media, and of course, raising more than ten million rupees (45,000\$) to make such an event happen in the first place. We must say, the preparations were a *tour de force* in public science engagement, whose magnitude even our organization hasn't seen before.



The theme

The previous Lahore Science Melas were based on a specific theme around which the entire mela was set. This year for Lahore Science Mela 2022, the theme that was chosen from the excerpts of a poem written by Dr. Muhammad Iqbal in *Baang-e-Dara* ('Call of the Marching Bell'):

رازِ حیات پوچھ لے

In English, if translated, the phrase goes like this, "Discover the secret of life." The motive was straight forward: to encapsulate the evolution of humankind's quest for knowledge of its material world and harnessing its power for public good. This is driven by the never-ending craving to know more, commonly called 'curiosity'. The curious mind has never let humanity settle in the caves, it has led to all the progress of the world around us and all the progress to come.

Breaking scientific barriers, creating knowledge, and sharing it with others is the most crucial part. We intended that this Lahore Science Mela 2022 should be all about just that.

The KSS Exploratorium

This year's Lahore Science Mela 2022 was distributed across three significant arenas. The first one was the arena where Khwarizmi Science Society's demonstrators and science communicators, or public engagers, were creating magic through their activities and experiments, and not stopping for a moment to



rest, even for lunch. The demonstrators ensured that the people and children's interests always remained at their peak. With over 35 different museum scale exhibits, activities, specimens, and experiments, enabled by the passionate verve of over 70 science demonstrators, the Khwarizmi Science Society's Exploratorium, as we call it, remained a constant and significant attraction of the Lahore Science Mela 2022.

One of the major hits of the KSS Exploratorium was the indigenously made 3D printer called "[Markhor3D](#)." Markhor3D is the world's cheapest 3D printer, and promises to make additive printing, still not very common in Pakistan, accessible and widespread.

The KSS Exploratorium was abuzz with the hustle and bustle of thousands of eager visitors, children and parents who were welcomed by giant monuments of DNA. With life-scale molecules and crystalline structures hanging all around, and our graphene walkway providing convenient walking trajectories to the visitors, the place was bursting with roars of applause, synchronized waves of 'wow' or its



vernacular equivalent 'wah' (واہ واہ واہ), collapsing dominoes, and the zaps of electrical discharge from a Tesla coil.

The Exploratorium abounded with mathematical games, centered around patterns and symmetry, floor mosaics and tessellations, and building puzzles that piqued the interests of math's lovers.

Real-time monitoring of blood pressure by directly observing oscillations of the brachial artery on a computer screen attracted many keen observers, while others were taken for real-time monitoring of electrical signals from their hearts in an ECG booth.



Another corner was dedicated to looking through digitally connected microscopes, to the small world including microbes, insects, leaves, plants, cells, and crystals. A collection of fascinating

rocks and minerals also became an instant hit. Yet another popular activity was making molecules in three dimensions using macroscopic ball and stick. Vitamins and medicinal drug molecules remained popular choices!



One could easily be stunned by the pretty patterns being traced on a harmonic machine and furthermore, a giant pendulum descended from the top of a four-storey building as it slowly and majestically cruised through the air depositing mesmerizing patterns on a sandy platform.

Spectators were also guided towards eager demonstrators who were making Lichtenberg patterns, were taught how to extract DNA, and connect music, metronomes, and symphony with science. And of course, one cannot forget the artistic rendering of popular astro-images from the Hubble and the James Webb Space Telescope, a pure treat for art lovers who are inspired by the world around us.



Finally, our *camera obscura* or بیت المظلم was a purpose-built dark room that aroused the interest of the by-stander and was adorned with shadowgraphs and water tanks, high power lasers demonstrating Poisson spots, bending of light with temperature and refractive index gradients and Schlieren photography.

Studded with many other smaller demonstrations such as the making of liquid oxygen, the team of artisans demonstrating injection molding and churning out plastic and metal objects to the extreme awe of acutely observing public, and the never-ending catharsis that derives from sculpting earthenware in our potter's corner, the Exploratorium proved to be a visual delight for the senses, a magical excursion for children and the catalyst for partnerships and collaborations with experts and specialists.

KSS's planetarium held a place in people's hearts, with shows ranging from stellar nurseries and bursting galaxies to the nature of life on earth, being played repeatedly under a massive dome of



mind-blowing visual appeal. This planetarium is one of its kind in the country and don't forget, it's astoundingly simple to replicate.

But behind the scenes, and before all this humdrum, our instrument builders led by Mr. Umar Hassan, co-founder of the [Qosain Scientific](#), KSS's partners, and our public science communicators mentored and led by Dr. Muhammad Mustafa, Executive Member KSS and Professor of Life Sciences in F.C. College, had stirred a revolution in the minds of a hundred avid science communicators, craftsmen, and artists, through months of training in public communication, science popularization and just pure leadership. This chain reaction of inspiration really become super-critical on the 29th and 30th of October and we are sure, has left an indelible imprint on the consciousness of the thousands who touched the Lahore Science Mela.



From small steps to giant leaps

In front of the KSS Exploratorium, stood a line of exhibits of different schools, notably our host, the Divisional Public School, with students from grade 4 to grade 9, exhibiting their projects. A lineup of solar telescopes was also present in the same area keeping Pakistan's astronomers busy talking about stars, planets, galaxies, and, most importantly, looking at the sun, which is not possible with the naked eye. Our astronomers from the *Lahore Astronomical Society*, *Cosmic Perspective* and *Kainaat Studios* showcased the most impressive lineup of mobile telescopes in the country and thousands of universe-lovers were awe-struck by direct views of solar spots, solar prominences, and views of the sun in calcium and hydrogen.



Atoms for Life

As one took a 90-degree turn away from the opening field, one approached the [Pakistan Atomic Energy Commission \(PAEC\)](#) who had brought in, all of its centers of excellence from across the country. From geological prospection of minerals and ores to nuclear power plant models, genetic variants



of Pakistan's crops, to rocks, and demonstrations of medical therapies, the Commission's exhibits were intriguing and piqued the interest of visitors. Within the folds of the Commission, the [National Institute of Agricultural Biology \(NIAB\)](#), [National Institute of Lasers and Optics \(NILOP\)](#) and the [Pakistan Institute of Engineering and Allied Sciences \(PIEAS\)](#) were also represented, who collectively harbored the theme: جوہری تحقیق برائے حیات which means 'nuclear research for life'.

National icons descend to the Mela

This year, in fact, we saw a blossoming of interest from government organizations. We've always struggled in the past to lull the interest of our country's highest icons for scientific inquiry.

However, this year was different, and being inundated with requests for participation, we were in the position to make careful and diverse choices even from the government sector. The [Pakistan Meteorology Department](#) brought its observational telescopes to apprise onlookers of mechanisms to look at the weather. [Sargodha's Citrus Research Institute](#)



showcased varieties of citrus fruits, *kinnows*, tangerines, lemons and

demonstrated methods to horticulture novel breeds. The formidable [Pakistan Council for Scientific and Industrial Research \(PCSIR\)](#) have been regular entries to previous editions of the mela as well. This year, they came with renewed vigor and shared their decades-long journey in product development.



Honorable mentions include friends who traveled all the way from Karachi to Lahore and hailed victory with the audience. [The Dawood Foundation](#)'s exhibit with exhilarating, mind-bending, and nerve-wracking exhibit that once you enter it you cannot leave without your brain sparking new neurons and tingled with the sensation that something has seriously played with your brain.

Also, from Karachi we had among us Mr. Abdul Rauf and his team from [Pakistan Science Club](#) with their cost-effective scientific equipment which can be replicated by anyone, anywhere. Pakistan Science Club has been working tremendously in Karachi for science popularization and in making science accessible for all.

Going mobile

Mobile buses from the [Pakistan Science Foundation](#) and the [Virtual University](#) harbored wide appeal as children witnessed amazing experiments from the biological, forensic, chemical, and genetic realms. They experimented on chromatography, polymerase chain reactions (PCR) and



observed fine specimens through microscopes. Mobile museums have the potential to take wonders of curiosity to remote places and in far-flung areas. [Science Fuse](#) also revealed its mobile

vehicle that promises to take the chutzpah of scientific learning outside the bigger urban centres, reaffirming their partnership with KSS' vision لیے سائنس سب کے لیے which means 'science for all'.

Lithospheric treasures

For the first time in our history, the KSS welcomed the *Geological Survey of Pakistan* whose enthusiastic team brought in their most proudly possessed collections from Pakistan's lithosphere, ores carrying rare elements, metals, and minerals whose bedazzling luster and appearance sent out



waves of inspiration. Adding to these geological treasures, students from the *University of Engineering and Technology (UET)*'s geotechnical discipline collected finest samples from their collection and decided to share with curious and bewildered onlookers. In fact, the *Cosmic Girl* Yumna Majeed's stall (labeled ٹوٹے تارے) took these lithographic delights to the lunar regolith and

shooting stars, while Shaheer Niazi's exhibit titled خزانے پاکستان carried Zhob's famous meteorite.

Dr. Sher Shah from the *University of Swat* brought dendro-archeological samples which manifest how the region's forest reserves and trunks can be used for mapping out ancient events including abrupt changes in climate, fire eruptions and other natural calamities.



Technology that works

The Mela showed an interspersal of robots and machines that were seen transporting goods, taking pretty pictures, automating chores, and some of them, aiding in safety. For example, Dr. Muhammad Abbas's *Moving Wheels* aimed at using artificial intelligence and facial recognition to track driver gestures in an automobile. *Bitsource Technologies* proudly showcased their virtual reality headsets and the immense appeal they harbor for our future lives. As students played their first virtual reality-based games, they were teleported into a new metaverse. How difficult could it have been in bringing their feet back on the ground! Welcome back, folks.



The [Centre for Water Informatics and Technology](#) mesmerized visitors with their robots used for water resource management, in the agricultural field and for monitoring snow deposits. The greatest roar of awe was of course heard when *Hobby Lobby*, a team of engineers and amateurs who instill the craving for do-it-yourself electronics among thousands of eager enthusiasts, flew their remote-controlled helicopters, chopping the atmospheric serenity. [Hallroad.org](#) has for all these years been an avid supporter of the KSS Lahore Science Mela and this year too, they came in full colors demonstrating their gadgetry, sensors and automation devices to enthusiasts and hobbyists.



Hundreds of school students, untainted by the challenges of the real work, pure and pristine, had mustered their talents to exhibit full working robots, walking insects, hydraulically powered

vehicles, sticks that aid the disabled and the blind, communicating motes and sophisticated controllers of home appliances.

And yes, imagine the [Aviation Department at the University of Management and Technology](#), populated by neatly uniformed trainee pilots and aviation cadets, bringing in a full-sized flight simulator and flocks of plastic model airplanes under the banner of *Plastic Modelers Association of Pakistan*. And oh yes, couple this with *Aeroengine Aircraft's* ambition through its hands-on workshops on plane-building all done by our technology expert [Dr. Sarah Qureshi](#).



The art and artisans of the Mela

The Khwarizmi Science Society has always endeared the fusion of science and technology with arts, archeology, heritage, and history. Our art galleries included artworks on different themes and subjects, including medieval Islamic art, calligraphy, and geometric patterns. At the institution of traditional arts called [Hast-o-Neest's](#) booth, children and adults learned to write their names fashionably and came to know about the heritage of Islamic architecture, which was once the epitome of the Muslim reign. This architecture is shaped by sophisticated geometric and mathematical structures. Our photographic performers displayed stunning nanoscopic and macroscopic views from a field emission scanning electron microscope in their walk-through

exhibits titled *عکس جہانِ نادیدہ* which literally means 'seeing the unseen'. Hamza Khalid, an avid young artist also welcomed art lovers to his displays of scientific artwork and shattered the stereotypes we profess about the large chasms between science and art. They're closely related and our curation of the mela was meant to precisely highlight this symbiosis.

But as one speaks of the arts, mention of music is inescapable! At the mela, fans of music were intrigued by Mr. Saad



Farooq who grabbed the audience with the art of "راگ" or melody, and as rapturous tunes, with

their scientific underpinnings were beaming across the DPS auditorium, one could feel the sensation of musical inspiration! Hard to miss the trance!

Talking of artisans at this festival, there was a huge queue of children in front of the potter who was making live clay pots and handing them over to every kid that came his way. The eyes of children, especially the ones who had never seen a clay pot being made, sparked that even though the artisan's hands and clothes were covered in



clay, he made everyone who came his way, smile. In the meantime, a metalworker was seen making aluminum articles as he poured molten metal into a mold, and the stall of *Art Ratan* captured the visitors' attention with his antique brassware.

Flora and fauna

At the Lahore Science Mela, even mother nature was not left behind. The *Bonsai Society of Lahore* set up their stall right in the middle of the entire *Mela* and mesmerized the audience by the beauty of bonsai plants and how they add not just to the environment around us but also the aesthetic appeal of our homes and workplaces. The [WBM Foundation](#) is working in Lahore and beyond, distributing saplings around the city and beyond. Plant lovers were especially attracted to the different species of saplings that were up for the grab, for subsequent plantation and nurturing. What better way of creating awareness about conservation and environmental protection than giving away free plants!

Pakistan is home to a diverse range of species alive, but little is known about the animals that used to live here and are now extinct. Commissioned by the KSS, Mr. Muhammad Ahmed Ilyas, a graduate of the Punjab University College of Arts and Design made ravishing sculptures of two of these animals, the *Caracal* and the *Pakicetus*. These sculptures stood at the center of the KSS



Exploratorium in all their magnificence showcasing not just the work of nature but also how our country was at one point in time home to such a wide range of species.

Welcome to the world of CERN

Just like the year 2019, this year, Khwarizmi Science Society partnered with the world's largest particle physics laboratory, the [CERN](#), once again, inviting and hosting Joao Antunes Pequeno. The knowledge transfer process from CERN's Medialab to KSS, and by extension Pakistan and the wider region, has been so exciting that we can now reach remote areas far and wide and educate people on this dark, deep, fascinating world of particles and fields. In fact, it wouldn't be an understatement that the Lahore Science Mela owes its appeal a lot to CERN and particularly the mighty Joao, who have enlivened not just CERN's exhibits but the whole festival erupts with joy and wonder, as he meanders through the arena with laughter, big doses of motivation and disbursts the sheer love for our understanding of the universe we inhabit.



This year along with the Large Hadron Collider Interactive Tunnel, whose design and technology, were gifted in 2019 by CERN, the KSS experimented with an updated design, which is compact, modular, and adaptive. This is dubbed the LIT-Disco. The Tunnel and the Disco were inescapable components of KSS's Exploratorium and a team of eager physics and science enthusiasts, explained deep concepts about our particulate origins, and yes, some quantum interactions and quantum field theory, while they played and played and played. How enjoyable could such a physics be! Absolutely mind-blowing.

Collaborations between KSS and CERN have in fact, taken a new leaf with Joao's presence at the Lahore Science Mela as we discuss more ways of contributing to research and the journey



of discovery and of course, take outreach to the further nooks of the seventh most populous country of the world with all its exploding youth bulge.

A glimpse into the Inside World

The Lahore Science Mela 2022 did not just consist of outdoor amazement, but part of its riches was also present inside the massive Auditorium of the Divisional Public School. The lineup of the auditorium sessions consisted of storytelling, music, theatre, arts, sciences, with both in person and online modes. The best thing about the auditorium schedule, just like the rest of the Mela, is that the sessions catered to a diverse range of audiences. For example, there were plays, theatre, and musical sessions, and targets were part kids and part specialists.



The sessions melted the audience's hearts, especially the performances by the students of the junior wing of Divisional Public School. Children along with their parents learned as much as they enjoyed because that's how the true spirit of science and festivity is united into one grand Lahore Science Mela.



Inside the auditorium, the audience peeked into of the largest ground-based telescopes of [KECK-II Observatory](#) on a cosmic journey led by [Dr. Raja Guhathakurta](#), chair of Astronomy at the University of California, Santa Cruz. [Discussions of cosmology, galaxies, stars, and the secrets of the universe](#) were uncovered in a virtual talk by [Dr. Paul Davies](#) from the Arizona State University, who is also a renowned science broadcaster and world-acclaimed author. [Dr. Ahmed Shibli](#) had his own aura when he walked up to the stage to share with the audience an insight into his decades of learnings about museums. [Dr. Nidhal Guessom](#), a renowned Astrophysicist and public intellectual of the Arab world mesmerized the audience in his engaging style of communicating big ideas about supernovae in his talk titled *Cosmic Explosions*. Of course, [Joao Pequeno](#) represented CERN and talked about the inclusivity and diversity of the organization and how the

scientific enterprise is a means to connect the world together. “United we (under)stand” was his apt title.

From the big bang to particle physics, from the atomic bomb’s destructive powers to far away galaxies, from a book launch to a higher education seminar, and last but not the least, the plays, and skits of nursery school students; the auditorium was an amalgam of ever-changing emotions. Filled with vibrations of



laughter and the exchanging questions, the sessions consisted of everything that can encapsulate a *mela*. The crowd was never-settling, new faces and new expressions would be witnessed every now and then. This was enough to let everyone know that the sessions were never to miss out on and how they would glue the people to their seats until the next announcement was made.

Transforming Lives

Lahore Science Mela 2022 brought together more than 200 exhibitors including more than 30 schools, and more than 2000 demonstrations, experiments etc. under one roof. This is Khwarizmi Science Society’s record number to date for any event including the previous Lahore Science Melas. This year, Khwarizmi Science Society was also able to support school students from FATA and Balochistan through [TAKMIL Foundation](#). TAKMIL Foundation is working in those specific areas with out-of-school children. For some students, the Lahore Science Mela is the first thing they have visited except for their own village.



Other schools that must be notably mentioned are Little Stars Home School, The Trust School, and [Zawiya Trust School](#). These are not-for-profit schools and focus on the development of children who cannot afford to attend big, expensive schools. Therefore, Lahore Science Mela 2022 is such a crucial stage for children like these, giving them a chance to interact with the rest of the world and share the same stage with established and privileged schools, universities, and organizations.





Lahore Science Mela 2022's statistics:

Statistical Features	Lahore Science Mela 2018	Lahore Science Mela 2019	Lahore Science Mela 2022
No. of Visitors	15,000 to 17,000	25,000 to 28,000	60,000 to 75,000
No. of Exhibitors	48	54	80
No. of Schools	33	61	30
Sponsors	Babar Ali Foundation, ECOSF	Babar Ali Foundation, ECOSF, J. S. Bank, Latif Brothers, Professional Systems, Hilton Pharma	Science Diplomacy – MoFA, ECOSF, USEFP, STEMx, Oxbridge Summer Education, CERP, ASPIRE College, Qosain Scientific, ETD Consulting, Allied Bank, Arbisoft, Institute of Biorobotics (Iyaly), APWA Pakistan, USIP, Babar Ali Foundation, NuAxis Innovations, TRG Pakistan, STEAM Pakistan
Individual Donors	Shahid Alvi, Ali Abbas	Shahid Alvi, Ali Abbas, Abdullah Butt, Rashid Minhas, Salman Khalid, Mueen Sehdi, Faisal Mahmood, Shoaib Javed, Shahid Ramay, Khusro Arustu, Asad Abbas, Joao Pequena	Dr. Muhammad Iqbal Qadir, Dr Amir Iqbal (Shaheed), Wardah Mahmood, Falak Sher, Osman Bokhari, Mubeen Bhatti, Farhan Haq, Muzammil Hameed, Raza Omar, Jawad Aslam, Hamza Kamran, Dr. Nomaan Mufti, Absar Kareem, Hamza Kamran, Salman Khalid, Naveed ul Hassan, Dr. Shahid Ramay, Shahid Alvi, Waqar Saleem, Dr. Asad Abidi, Dr. Ahmad Jan Durrani, Mudassir Khan, Dr. Ahmad Shibli, Dr. Tariq Abdullah, Dr Awais



			<p>Younas, Dr. Shahid Sattar, Dr Murtaza Saleem, Joao Pequenao, Hasnain Aslam, Dr. Tehmina Khan, Raza Latif, Dr. Raza Hashim, Faisal Naeem, Dr. Khalid Rasheed, Mehdi Hassan, Navaid Qureshi, Hassan Javaid Zaidi, Dr. Rasheed Bhatti, Armughan Javed, Syed Aal-e-Ali, Dr. Jonathan Jones, Shoaib Javed, Fozia Tanveer, Dr. Umar Waheed, Sohail Aslam, Benjamim Quadt, Dr. Muhammad Anwar, Ethesham Sarwar, Dr. Muhammad Sabieh Anwar</p>
Organizer	Khwarizmi Science Society	Khwarizmi Science Society	Khwarizmi Science Society
Managing Partner	Ali Institute of Education	Ali Institute of Education	Humrung
Working Partners	Isfahan School of Mathematics, ECOSF, FM 84	School Education Department of Government of Punjab, ECOSF, Qosain Scientific, Careem	Divisional Public School & Intermediate College, Model Town, Lahore, Qosain Scientific, Discover Pakistan

Khwarizmi Science Society

Developing a culture of science



خوارزمی سائنس سوسائٹی

پاکستانی معاشرے میں فروغ سائنس کی علمی اور عملی تحریک



Important Links for Media Coverage:

- [Science Mela Held at DPS and Intermediate College in Lahore | Discover Pakistan](#)
- [Dekho Lahore Science Mela | Amin Hafeez Kay Sath | Discover Pakistan](#)
- [KSS team Interview at Morning Show of Discover Pakistan | 27-10-2022](#)
- [KSS Team at Expresso Show, Express News | 27-10-2022](#)
- [Express News' coverage of the Lahore Science Mela and CERN and KSS LHC Interactive Tunnel at LSM](#)