

CSIR Jigyasa Newsletter



91

Programmes
Conducted

21700

Students
Benefitted

568

Teachers
Benefitted

37

Labs
Covered

Eminent Scientist Column

Studying bacterial cell wall biology for development of novel antibiotics

Today, antibiotics are routinely used in surgeries, childbirth, chemotherapy, and dental procedures, and are widely employed in agriculture, animal husbandry, and aquaculture too, to prevent infections and promote growth. However, decades of overuse and misuse, ranging from prescribing antibiotics for viral infections to their preventive use in farming, have contributed to an alarming rise of antimicrobial resistance (AMR). Antibiotic residues from hospitals and industries entering the environment further accelerate this problem. In such settings, bacteria evolve resistance, surviving despite antibiotic exposure and giving rise to “superbugs.” These are antibiotic-resistant bacteria that no longer respond to multiple antibiotics threaten to make even common infections untreatable.

AMR has emerged as one of the most pressing global health threats. To counter this, scientists are investigating new bacterial pathways and targets in the hope of developing the next generation of antibiotics.

At the CCMB, Hyderabad, Dr. Manjula Reddy’s laboratory has been making pioneering contributions to this quest. Her group focuses on understanding the basic biology of bacterial cell wall synthesis, a crucial process for bacterial growth and survival. This work, which earned Dr. Reddy the Infosys Prize for Life Sciences in 2019, is shedding light on previously unexplored steps in cell wall construction and opening possibilities for novel antibiotic development.

The Bacterial Cell Wall: Structure and Function

Most bacteria are encased in an envelope that protects them from osmotic pressure and



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environmental stresses. A key component of this envelope is the cell wall, primarily made of peptidoglycan (PG)—a mesh-like, elastic polymer composed of repeating sugar units cross-linked with short peptides of unique amino acids. This structure completely surrounds the bacterial cell, acting like a protective cage.

For a bacterium to grow, its PG layer must also expand. This involves a carefully coordinated process: first, some of the existing peptide cross-links are cut to make space for new material; then, enzymes called PG synthases incorporate new glycan strands and peptides, stitching them into the expanding mesh. Many well-known antibiotics—including penicillin, cephalosporin and vancomycin—work by binding PG synthases, blocking cross-linking, and ultimately killing the bacterial cell.

Discovering “Space-Maker” Enzymes

Dr. Reddy’s lab has focused on an earlier, less-explored step in this cycle: the cleavage of peptide cross-links. Her team discovered that PG hydrolysis—cutting existing bonds—is a prerequisite for incorporating new

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Eminent Scientist Column

Studying bacterial cell wall biology for development of novel antibiotics

during cell wall synthesis. They identified several PG hydrolytic enzymes, or “space-maker hydrolases,” that perform this cleavage, enabling PG synthases to expand the wall.

Crucially, this cleavage is tightly regulated. If PG were cut indiscriminately, the bacterium would die. Reddy’s group showed that most space-maker hydrolases are regulated through controlled degradation by a protease linked to an adaptor protein. Recent studies revealed that this adaptor protein senses metabolic signals—particularly the availability of phospholipids—and adjusts hydrolase stability accordingly. In growing cells, hydrolases are stabilized to enable PG expansion, while in stationary phase, they are degraded to prevent unnecessary wall remodeling. Intriguingly, the same signal also governs lipopolysaccharide synthesis in the bacterial outer membrane, suggesting a coordinated system linking cell wall and membrane construction.

These findings mark PG hydrolysis as the rate-limiting step in bacterial cell envelope synthesis. This opens up the exciting prospect of developing a new class of antibiotics targeting PG hydrolases, rather than PG synthases.

Editing Errors in Cell Wall Construction

Beyond hydrolysis, Dr. Reddy’s lab has uncovered additional pathways critical to cell wall fidelity. Recently, her team discovered an enzyme that acts like a molecular editor, removing incorrectly incorporated amino acids during PG biosynthesis. Maintaining the correct peptide composition in PG is vital

for the bacterial cells, as errors can weaken the cell wall and make bacteria more vulnerable to antibiotics. This conserved error-correction pathway represents yet another potential target for antibiotic development.

Implications for Combating AMR

Together, these discoveries underscore the importance of studying fundamental bacterial biology in the fight against AMR. By identifying novel enzymes and pathways essential for cell wall synthesis, Dr. Reddy’s research points to new vulnerabilities in bacteria that could be exploited by next-generation drugs. Unlike existing antibiotics that primarily target PG synthases, inhibitors of space-maker hydrolases or amino acid-editing enzymes could bypass common resistance mechanisms, offering fresh therapeutic strategies.

Conclusion

The global challenge of antimicrobial resistance demands urgent innovation. As bacteria continue to outwit existing antibiotics, basic research into their essential survival pathways is more critical than ever. By illuminating the intricate choreography of bacterial cell wall growth, Dr. Manjula Reddy’s lab is not only advancing our understanding of microbiology but also paving the way for a new generation of antibiotics capable of outsmarting resistant bacteria.

Student Column

Standing at the Edge of Discovery: My Experience at CSIR-CCMB



B. Adviteeya
X Std, Little Flower High School, Hyderabad

I visited the CSIR- CCMB for two weeks as part of the Young Innovators Program in January 2025. Walking into CCMB felt like stepping into the future, with corridors filled with research posters and buzzing laboratories.

Through lectures and lab visits, I explored fields from proteomics to genomic medicine. Despite the complexity of these topics, all the scientists and researchers made it easy to understand. My favorites were the Drosophila lab, where fruit flies revealed how simple organisms help answer complex questions in human biology, and the DNA isolation lab, where I witnessed the blueprint of life firsthand. Visits to facilities like zebrafish, crystallography, and malaria labs further deepened my curiosity.

The peer interactions were not only enriching but also empowering as we shared our academic goals. I realized that science is not an exclusive club, but rather it is a shared pursuit. This was not just an educational opportunity; it was a turning point that strengthened my passion for science. Before I came to CCMB, I saw science primarily through the lens of textbooks but after it, I understood that science is a living ecosystem. I believe that this experience has strengthened my resolve to seek out every opportunity to be a part of research and innovation.

From Curiosity to Clarity: A journey that brought out the researcher in me!



Gandham Likitha Sadhguna Tulasi
VIII Std, CM Academy, Hyderabad

On July 25, 2025, I had the unique opportunity to step into the world of research through the CSIR Jigyasa “One Day Scientist” program at the CCMB, Hyderabad. The day unfolded as an inspiring journey into modern biology, blending orientation, hands-on activities, and exposure to cutting-edge research.

The program began with an engaging introduction by Dr. Aditya, followed by a film showcasing CCMB’s pioneering contributions and state-of-the-art laboratories. A session by Dr. Vinod Kumar from LaCONES (Laboratory for Conservation of Endangered Species) was particularly enlightening, as he explained how genetic resources and research support wildlife conservation across India.

Equally thrilling was the opportunity to perform experiments ourselves—preparing and observing onion peel cells under the microscope. This simple yet powerful activity transformed classroom concepts into tangible discoveries. Guided visits to specialized facilities such as the Zebrafish Facility, the greenhouse, and biosafety labs (BSL-1 to BSL-3) further deepened our understanding of how science tackles real-world challenges.

The program highlighted that science is not limited to textbooks; it is a process of inquiry, exploration, and innovation. By the end of the day, I left CCMB not just enriched with knowledge, but inspired to think like a scientist.

Jigyasa Mentor / Nodal Column

Telling the stories of biology where textbooks fall short

Ask anyone of what they think of biology and two things will stand out in most people's responses - that it is boring and requires a lot of rote memorization. They are led to this belief because the biology they learn in schools is often highly disconnected from the activities that happen in real life biology labs. Such advanced functioning requires resources beyond the reach of most schools. However, the CSIR Jigyasa programme, has enabled the CSIR Labs to bridge this gap by engaging students and teachers in scientific exploration.

Through Jigyasa, high school students and teachers regularly visit CCMB for programs ranging from a few hours to two weeks. These visits expose them to cutting-edge facilities and highlight how biology connects with physics, chemistry, math, engineering, and data analysis. They also provide opportunities to interact with scientists and learn how addressing fundamental questions can shape careers in science.

Students are most interested in doing hands-on experiments, though challenges such as contamination risks and equipment training limit them from directly working in the research facilities most of the time. To address this, CCMB has developed simpler experiments, activities, and games aligned with school curricula, making molecular biology more tangible. Teachers are also trained, and many of these activities have been commercialized to expand outreach.

At CCMB, We have also noted that urban students come more frequently for the more



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intensive programmes. So, we designed special programs for the rural students. One such effort, Gene-Health Connect, is a mobile exhibition with 20 interactive displays on genes and genetic diseases. Conducted in collaboration with science museums, the exhibition-on-wheels has reached over two lakh students, teachers, and the public across Telangana and Andhra Pradesh.

To keep up the engagement with highly interested students, we run the popular science website, SciTales by CCMB. Through articles, videos, zines and podcasts, the website describes many complex questions of biology and how scientists try solving them.

Overall, Jigyasa has pioneered meaningful science outreach, creating avenues for young learners to experience technical subjects beyond their textbooks. In the coming years, we hope that the program will grow and contribute further in science education.

One Day As A Scientist (ODAS)



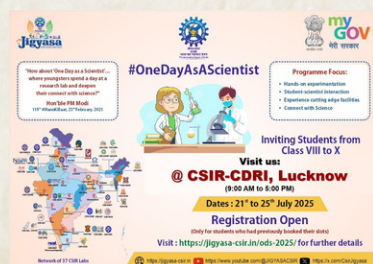
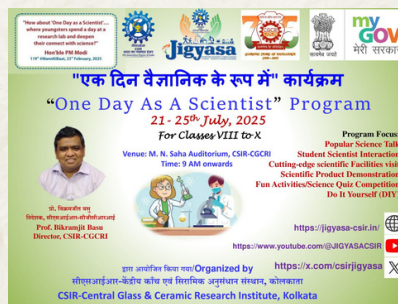
The Council of Scientific and Industrial Research (CSIR), as part of its flagship Jigyasa programme, inaugurated its new student initiative, **“One Day As A Scientist” Week**, on **July 21, 2025**.

One Day As A Scientist (ODAS) Week, was inspired by the visionary message of the **Hon’ble Prime Minister of India, Shri Narendra Modi** during his **119th episode of Mann Ki Baat**, where he encouraged the youth to spend **“One Day As A Scientist”**. During this ODAS week under the Jigyasa Programme all the **37 CSIR labs** participated and together received an active participation of **14,694 students** from various schools all over India.

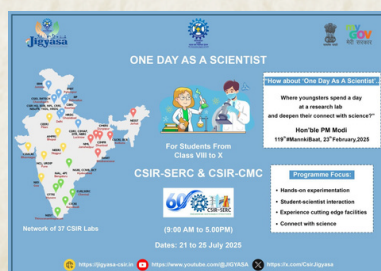
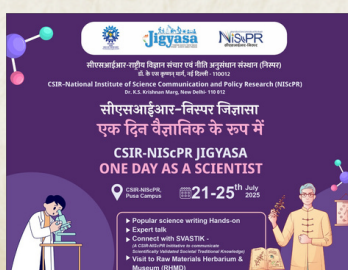
In this programme, the students shadowed scientists, conducted experiments, and observed real research, helping them see how science addresses real-world problems. Through this, CSIR Jigyasa aimed to bridge classroom learning with applied science, fostering a deeper understanding of science’s role in society and technology.

ODAS Week Highlights

Lab Name	Total no. of Students benefitted
CSIR-4PI	170
CSIR-AMPRI	465
CSIR-CBRI	70
CSIR-CCMB	500
CSIR-CDRI	334
CSIR-CECRI	450
CSIR-CEERI	310
CSIR-CFTRI	297
CSIR-CGCRI	550
CSIR-CIMAP	349
CSIR-CIMFR	254
CSIR-CLRI	343
CSIR-CMERI	489
CSIR-CRRI	540
CSIR-CSIO	385
CSIR-CSMCRI	451
CSIR-IGIB	435
CSIR-IHBT	454
CSIR-IICB	376



ODAS Week Highlights



Lab Name	Total no. of Students benefitted
CSIR-IICT	480
CSIR-IIM	690
CSIR-IIP	365
CSIR-IITR	426
CSIR-IMMT	698
CSIR-IMTECH	284
CSIR-NAL	436
CSIR-NBRI	304
CSIR-NCL	443
CSIR-NEERI	590
CSIR-NEIST	405
CSIR-NGRI	364
CSIR-NIST	438
CSIR-NIO	151
CSIR-NIScPR	238
CSIR-NML	451
CSIR-NPL	320
CSIR-SERC	389
Total	14694

Jigyasa Monthly Highlights

Lab Name	No. of events	Total no. of Students benefitted	Total number of Teachers benefitted	Engagement Activities
CSIR-IHBT	4	225	17	Lab Visit, Field Visit
CSIR-IGIB	1	45	2	Lab Visit
CSIR-4PI	1	36	2	Lab Visit
CSIR-IICB	4	449	13	Lab Visit, Field Visit
CSIR-CECRI	5	1764	110	Lab Visit, Field Visit, Popular Lectures, Science Quiz, Distribution of DIY kits
CSIR-IMMT	9	1447	106	Lab Visit, Popular Lecture, Field Visit, Teacher Training, Live Demonstrations
CSIR-AMPRI	3	480	110	Lab Visit, Popular Lecture, Science Exhibition
CSIR-CDRI	1	55	5	Health Awareness Camp
CSIR-CEERI	1	45	2	Lab Visit
CSIR-NEERI	1	218	13	Lab visit
CSSIR-CSIO	1	92	2	Lab Visit
CSIR-SERC	2	100	30	Lab Visit
CSIR-NBRI	1	23	2	Lab Visit
CSIR-IIIM	1	33	2	Lab Visit
CSIR-CIMAP	2	80	5	Lab Visit, Popular Lecture
CSIR-IITR	4	980	31	Lab Visit, Field Visit
CSIR-NEIST	4	195	10	Lab Visit, Hands-on Experiments, Skill Development Sessions
CSIR-CLRI	1	9	2	Lab Visit
CSIR-NIIST	2	118	23	Lab Visit
CSIR-NGRI	2	204	27	Lab Visit, Field Visit
CSIR-IICT	2	204	27	Lab Visit, Field Visit
CSIR-CCMB	2	204	27	Lab Visit, Field Visit
Total	54	7006	568	

Jigyasa Monthly Highlights

CSIR-IHBT, Palampur



July 2, 2025

- On the occasion of the 43rd Foundation day, 21 students and 1 teacher from PM SHRI Kendriya Vidyalaya, Palampur participated in the Foundation Day celebrations .

July 9, 2025

- 119 Students and 11 Teachers from PM SHRI G(U)SSS, Paprola, PM SHRI G(U)SSS, Baroh, PM SHRI Govt Girls Sr. Sec. School, Dharamshala visited CSIR-IHBT and interacted with scientists.

July 10, 2025

- 65 students and 4 teachers from PM Shri G(U)SSS Daroh, District Kangra visited different R&D facilities and interacted with scientists.

July 28, 2025

- 20 students and 1 teacher from Mount Carmel School, Palampur, H.P visited different R&D facilities and interacted with scientists.

CSIR-IGIB, New Delhi

July 4, 2025

- 45 Students and 2 Teachers from Army Public School, Delhi Cantt) visited the lab and interacted with scientists.



Jigyasa Monthly Highlights

CSIR-4PI, Bengaluru

July 18, 2025

- 36 Students and 2 Teachers from Government PU College Kadugodi visited the lab and interacted with scientists.



CSIR-IICB, Kolkata

July 7, 2025

- Jigyasa programme was conducted at Satish Chandra Memorial School, Chakdaha, Nadia. 214 students and 2 Teachers participated.

July 8, 2025

- Outreach Programme was conducted at Samar Smriti Uchcha Vidyalaya (High School). 58 students and 4 teachers were benefitted.

July 17, 2025

- 105 students and 3 Teachers participated in a Jigyasa programme conducted at the Biidyadharpur Nabakumar Vidyamandir (H.S), Mandirbazar, South 24 Parganas.

July 31, 2025

- 72 students and 4 teachers from Ramakrishna Mission Vidyalaya, Narendrapur visited the lab facilities and interacted with scientists.



Jigyasa Monthly Highlights

CSIR-CECRI, Karaikudi

July 3, 2025

- A Student-Scientist Programme was organized at KV Mandapam and KV Sivagangai with the participation of 220 students and 13 teachers.

July 4, 2025

- 614 students and 24 teachers from 4 different schools from Karaikudi visited the lab.



July 28, 2025

- A Jigyasa Programme was held at Vidhya Giri Matric Higher Secondary School, Karaikudi, and Shree Raja Rajan (CBSE) School, Amaravathipudur, with the participation of 163 students and 14 teachers.

July 29, 2025

- 27 students and 2 teachers from Sir Isaac Newton Arts & Science College, Nagapattinam, visited the lab.

July 30, 2025

- 740 students and 57 teachers from 6 different schools from Karaikudi participated in the outreach programme.



Jigyasa Monthly Highlights

CSIR-IMMT, Bhubaneswar

July 2, 2025

- Scientists visited Sainik school and mentored a group of 31 students and 2 Teachers for ATL lab.

July 9, 2025

- 29 students and 2 Teachers were mentored by scientists for ATL lab at Sainik school.

July 11, 2025

- A Jigyasa programme was conducted at ODM Public School with 300 Students and 10 Teachers.

July 22, 2025

- 539 students and 19 Teachers participated in an outreach programme at JNV Konark Public School.



July 23, 2025

- A teacher training programme was organized for 40 Teachers from Kendriya Vidyalaya.

July 23, 2025

- A student scientist connect programme was conducted at JNV Konark with 248 Students and 2 Teachers.

July 26, 2025

- 300 students and 10 teachers participated in a Jigyasa Programme at ODM Public School.

July 26, 2025

- An outreach programme was conducted at JNV Konark with 248 Students and 2 Teachers.

July 30, 2025

- Scientists visited Sainik school and mentored a group of 29 students and 1 Teachers for ATL lab.



Jigyasa Monthly Highlights

CSIR-AMPRI, Bhopal

July 6, 2025

- On World Youth Skills Day, 200 students and 10 teachers of Kendriya Vidyalaya No. 3 interacted with scientists.

July 7, 2025

- 30 students and 70 teachers participated in a Jigyasa programme at the Bansal Institute of Research, Technology & Science, Bhopal

July 31, 2025

- An online Cluster-Level Science Exhibition was organized at JNV Narsinghpur with participation of 250 students, and 30 teachers from 23 schools.



CSIR-CDRI, Lucknow



July 29 to 30, 2025

- CSIR-CDRI organized a two-day Health Awareness and Free Screening Camp for community engagement and sensitization, with participation from 55 students and 5 teachers of Primary School, Nai Basti Dhanewa, Malihabad.

Jigyasa Monthly Highlights

CSIR-CEERI, Pilani



July 31, 2025

- 45 students and 2 teachers from CEERI Vidya Mandir visited the lab and interacted with scientists.

CSIR-NEERI, Nagpur

July 3 to 28, 2025

- 218 students and 13 teachers from Sarvajanik Arogya Shushrusha Vidyalaya (Nagpur), Gandhi Vidyalay (Belgaon), and G.H. Rasoni College (Nagpur) participated in the outreach programme.



CSIR-CSIO, Chandigarh



July 17, 2025

- As part of STEM Week celebrations, 92 students and 2 teachers from PM Shri KV No.1 Ambala Cantt, PM Shri Kendriya Vidyalaya, and AFS High Ground visited CSIO.

Jigyasa Monthly Highlights

CSIR-SERC, Chennai

July 9, 2025

- 10 student winners of the Vidyarthi Vigyan Manthan (Sastra Pratibhas) accompanied by 5 teachers from the Science India Forum, Bahrain, visited CSIR-SERC.

July 10, 2025

- 90 students and 25 teachers from across Tamil Nadu, who secured top ranks in the national-level science aptitude test Vidyarthi Vigyan Manthan (VVM), participated in a one-day science field trip to CSIR-SERC.



CSIR-NBRI, Lucknow

July 29, 2025

- 23 students and 2 teachers from Bhavdiya Public School, Ayodhya, visited the lab facilities.



CSIR-IIIM, Jammu

July 17, 2025

- On the occasion of STEM Week celebration, 33 students and 2 Teachers from Kendriya Vidyalaya (KV) Samba visited the lab.



Jigyasa Monthly Highlights

CSIR-CIMAP, Lucknow

July 17, 2025

- 40 students and 3 teachers from PM Shri Kendriya Vidyalaya, Aliganj, Lucknow, visited the lab facilities and interacted with scientists.

July 18, 2025

- A student scientist connect programme was conducted for 40 students, along with 2 teachers of PM Shri Kendriya Vidyalaya.



CSIR-IITR, Lucknow



July 7 to 11, 2025

- One-week summer internship was organized for 30 students from nearby government schools.

July 2, 2025

- 270 students and 2 teachers from Raj kumar Academy visited the lab facilities.

July 3, 2025

- A Jigyasa programme was organized for 300 students and 10 teachers from Shri Ramswaroop Memorial Public school and APS academy.

July 29, 2025

- 380 students and 19 teachers from DPS and Green Field School participated in an outreach programme.



Jigyasa Monthly Highlights

CSIR-NEIST, Jorhat

June 26 to July 17, 2025

- A group of 37 students and 3 teachers from Sarbodaya College participated in a Student-Scientist Connect Programme at the lab.

July 16, 2025

- A group of 25 students and 2 teachers from KV RRL, Jorhat, visited the institute.



July 18, 2025

- 100 students and 4 teachers from KV Nagaon visited the lab and interacted with scientists.

July 18, 2025

- 33 students and 1 teacher from Jonaki Sangha Vidyalaya, Jorhat visited the lab and interacted with scientists.

CSIR-CLRI, Chennai

July 9, 2025

- 9 student winners (Classes 6–11) and 2 teachers from Kuwait and UAE, selected through the Sastra Pratibha Contest (Science Talent Search by Vijnana Bharati), visited the lab facilities.



Jigyasa Monthly Highlights

CSIR-NIIST, Trivandrum

July 2, 2025

- As part of a Green Hydrogen training programme, 30 students and 1 teacher from the College of Engineering, Trivandrum, visited the lab.

July 15, 2025

- 88 students & 22 teachers from Udumalpet Galileo Science Club visited the lab facilities.



CSIR-NGRI CSIR-IICT, CSIR-CCMB, Hyderabad

July 9, 2025

- 104 Students and 11 Teachers from the Telangana women & child Welfare org, DurgaBhai Deashmuk polytechnic college, Ameerpet Hyderabad, Telangana visited 3 CSIR labs; IICT, CCMB and NGRI.

July 15-16, 2025

- 100 Students, 16 teachers from social welfare school at Rajahmundry along with 100 young jail inmates and police staff from Rajahmundry central jail interacted with scientists from CSIR-IICT, CSIR-CCMB and CSIR-NGRI at Rajahmundry Central Jail.



Jigyasa Lab Spotlight

CSIR-Centre for Cellular & Molecular Biology (CSIR-CCMB), Hyderabad



CSIR-Centre for Cellular & Molecular Biology (CSIR-CCMB), Hyderabad

CSIR-Centre for Cellular and Molecular Biology (CCMB) is India's first national research institute dedicated to modern biology. Established as an independent institute in 1987 in Hyderabad, born out of CSIR-Indian Institute of Chemical Technology, it marked a shift in studying biology at cellular and molecular levels. In 2007, it opened its annex 1 – Laboratory for the Conservation of Endangered Species enabling wildlife population studies. And, in 2015, its annex 2 – Medical Biotechnology Complex opened where the centre offers many services in form of genetic disease diagnostics, wildlife forensics and incubation of early stage biotech startups.

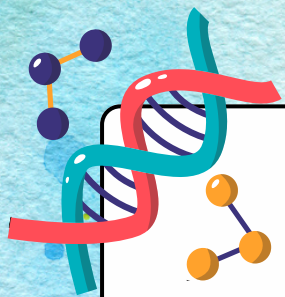
The cellular and molecular biology research at CCMB spans across scales – from studying structures and functions of the biomolecules at even atomic details to studying their effects on cells and tissues and even organisms – be it microbes, plants, animals including humans to the effect of ecosystems on populations and their better health and conservation. These studies form the basis for the PhD theses of students studying at CCMB.

CCMB has made pioneering contributions in science and technology, including developing India's DNA fingerprinting and universal primer technologies to aid criminal investigations and wildlife protection. They created improved rice varieties like Samba Masuri for better farmer income and resilience, and played a crucial role in COVID-19 testing, surveillance, and vaccine development. Their work also extends to combating sickle cell anemia through improved diagnostics and treatment methods.

CSIR-CCMB

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The Curious Corner

Into the wild



1. There is an ongoing pandemic in frogs, caused by a fungus. CCMB scientist Karthikeyan Vasudevan is trying to make a diagnostic kit for it. What is the name of this disease?

- a. Candidiasis
- b. Histoplasmosis
- c. Chytridiomycosis
- d. Salmonellosis

2. With the rains, you might see crawlies with many legs around you. But, they aren't all the same. CCMB scientist Jahn timer Joshi studies two of them. Which of them is not venomous?

- a. Decapedes
- b. Millipedes
- c. Centipedes
- d. Scorpions

3. We might all know of Galapagos islands where Charles Darwin studied evolution. But which biodiversity hotspot is the place that many Indian evolutionary biologists study?

- a. Rann of Kutch
- b. Western Ghats
- c. Deccan Plateau
- d. Indo-Gangetic Plain

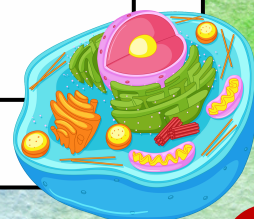
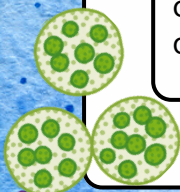
4. Which is the country with the largest cases of snakebites?

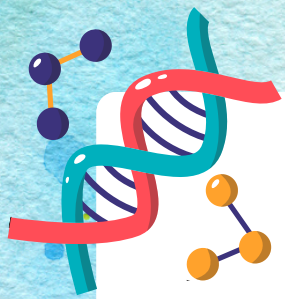
- a. India
- b. Poland
- c. Australia
- d. Morocco

5. We have the big four of Indian snakes. One of them is falsely believed to have a gem on its head. Which one is it?

- a. King cobra
- b. Black mamba
- c. Periyar shieldtail
- d. Indian cobra

Answers will be shared in the next month's Newsletter





The Curious Corner

The big science of small brains



In recent years, hospitals in several countries began reporting a rise in new-borns with unusually small heads and underdeveloped brains. Some of these children faced severe developmental delays, seizures, and other neurological complications. What puzzled doctors was the pattern — it seemed to appear in clusters, often linked to viral outbreaks or infections during pregnancy.

Scientists began tracing the origin of this condition, trying to understand what caused it, how it develops, and what could be done to prevent it. To do this, they turned to models, methods, and tools that revealed the inner workings of biology — from genes to cells to whole organisms.

You're now retracing their steps.

1. To study how brain development is affected by viruses or genetic disruptions, researchers turned to a small, fast-breeding organism also known as *Drosophila melanogaster*, a classic model in biology. Despite its size, it shares many developmental genes with humans, and scientists can manipulate these genes to mimic certain disorders.

What is this model organism's common name?

Unscramble the letters to identify it:

I U F R T Y L F

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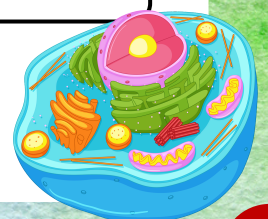
2. To study how infections affect developing brain cells, scientists grow the cells in the lab. These cells are kept in controlled conditions and given nutrients, warmth, and the right environment to divide and form networks. Using this system, researchers can infect the cells, observe their growth, and test interventions.

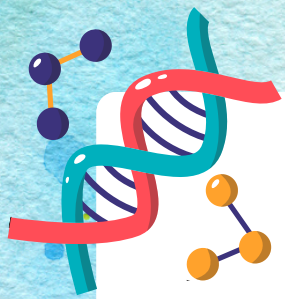
What is this technique?

E L C R T C U L E U A

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Answers will be shared in the next month's Newsletter





The Curious Corner

The big science of small brains



3. Once the samples were infected, scientists looked for changes at the cellular level — in brain tissue, organoids, or embryos. They used this tool to see how neurons were forming, where damage occurred, and whether brain structures were affected.

What method did they use to observe these changes?

O Y M S I R P C O C

○		○					○	○	
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4. You now have three pieces of the investigation:

- a. A model organism used to study brain development.
- b. A facility to grow brain cells.
- c. An imaging method to observe how the brain forms and where it goes wrong.

All of these were part of the global effort to understand a neurological condition marked by an abnormally small head and underdeveloped brain in new-borns.

What is the name of this condition?

○	I	○	○	○	○	E	○	H	A	○	○
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Answers will be shared in the next month's Newsletter







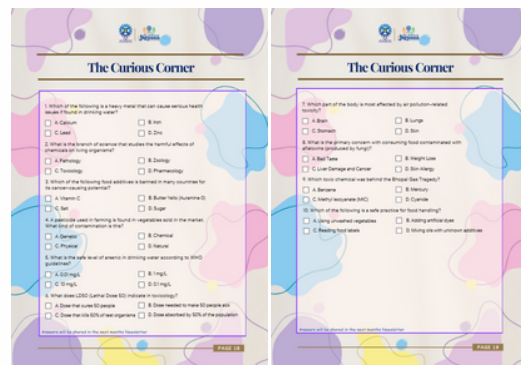
Answers to previous month's quiz

1. Air Pollution
2. Argemone Oil
3. A science Laboratory
4. A microscope



Pg 17

1. C. Lead
2. C. Toxicology
3. B. Butter Yellow (Auramine O)
4. B. Chemical
5. A. 0.01 mg/L
6. C. Dose that kills 50% of test organisms
7. B. Lungs
8. C. Liver damage and cancer
9. C. Methyl isocyanate (MIC)
10. C. Reading food labels



Pg 18-19





Models of Engagement



Contact Us for contribution to this Newsletter

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