

J.J. College of Arts and Science (Autonomous)
J.J. Nagar, Sivapuram Post, Pudukkottai

PG and Research Department of Microbiology



**3.3.2. Seminars/Conferences/Workshops/Guest Lectures-
Report of the Events**

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PG and Research Department of Microbiology

**A Two Day National Conference on
“Novel Approaches to Mitigate Emerging and Re-Emerging Diseases”
(NAMERD- 2023) on 27th and 28th January, 2023**

Report of the Conference

In 2007, WHO warned that infectious diseases are emerging and re-emerging at a rate that has not been seen before. The potential for infectious diseases to spread rapidly results in high morbidity and mortality, causing a potential global public health threat of major concern. Several factors contribute to the emergence of infectious diseases-population growth, living in close contact with animals, frequent travelling, poverty, destructive ecological changes due to economic development and land use and climate-change resulting in global warming.

The Department of Microbiology of J.J. College of Arts and Science (Autonomous), Pudukkottai, organized a TwoDay National Conference On “Novel Approaches to Mitigate Emerging and Re-Emerging Diseases (NAMERD- 2023)” on 27.01.2023 and 28.01.2023.

The aim of the Conference is to expose participants to the advanced updates in the emergence, transmission and management of infectious diseases. NAMERD – 2023 will be a hub for knowledge-dissemination on emerging infectious diseases and innovative surveillance techniques and methods. However, it is vital for all stakeholders to be aware of continuous updates, current and future challenges and moreover to exchange knowledge regarding epidemic preparedness. This NAMERD – 2023 provides the platform bringing together public health personnel students of biological science and specialists in emerging infectious diseases in an interactive Conference-setting.

On Day One, at the inaugural function **Dr. J. Parasuraman**, Principal, J.J. College of Arts and Science (Autonomous), Pudukkottai, welcomed the Resource Persons and the delegates from various Institutions. He stressed the relevance of the Conference in the Post-Covid scenario. **Dr. Kavitha Subramanian**, Management Trustee, Karpaga Vinayaga Educational Trust,



Pudukkottai, in her Presidential address congratulated the Department for organizing the Conference in an important topic.

The Conference was inaugurated by **Dr. P. Ganesh Kumar**, Scientist D and Assistant Director, Division of Epidemiology and Biostatistics, ICMR–National Institute of Epidemiology, Chennai. He also released the Conference-Souvenir and **Mr. N. Subramanian**, Secretary, J.J. Group of Institutions, Pudukkottai, received the first copy. **Dr. P. Jeevan**, Head, Department of Microbiology, J.J. College of Arts and Science (Autonomous), Pudukkottai, proposed the Vote of Thanks.

In the First technical session, **Dr. P. Ganesh Kumar**, addressed the importance of “**Surveillance Systems in Managing Emerging and Re-emerging Infections**”. He spoke on the efforts of the WHO in surveillance programmes and their efficacy against infectious diseases like H1N1 (Swine Flu) and Covid-19. Surveillance includes study of patterns of spreading, causes of spread and international efforts to contain epidemics, like regulation of travel, vaccination, drug-delivery etc. Surveillance requires the efforts of volunteers who feed and interpret data and help easy detection and cure, through clinical and paramedical studies. Surveillance systems facilitate international cooperation in the fight against emerging and re-emerging infections. Since infectious diseases can spread quickly across borders, an effective response requires coordinating efforts across multiple countries.

In the Second technical session **Dr. P. Gopal**, Assistant Professor, Department of Plant Biotechnology, School of Biotechnology, Madurai Kamaraj University, Madurai, delivered a key note address on Virology- “**Do Plant Viruses evade the DNA Methylation?**”

He focused on the mode of propagation of various Viral species that reveal a baffling variety in methods of replication and modification. They develop resistance to usual antiviral procedures like Methylation. His presentation focused on how BYVMV codes DNA Methylation. It is understood that these viral proteins interact with different host proteins to facilitate replication, transcription by forming a protein-protein interaction network. The invasion of these viruses is warded off by the host defense system by epigenetic modifications at chromatin level including histone modifications and DNA methylation (TGS) or siRNA mediated RNA silencing (PTGS). Mutational studies on BYVMV C2 and C4 proteins have revealed their roles in DNA methylation as well as varying degrees of PTGS suppressor properties along with β C1. My presentation will be focused on how BYVMV C4 evades the DNA methylation.



The third speaker **Dr. S. Ramganes**, Special Assistant Researcher, Laboratory of Extraterrestrial Ocean Systems (LEOS), Institute of Deep –Sea Science and Engineering, Chinese 16, Academy of Science (CAS), Sanya, China, gave a Scholarly lecture on the topic **“Do our Daily Activities have an impact on the Microbes- a cause of (re)- emerging diseases?”** He emphasized the role of human microbiota in the promotion of human health Changing life styles in the LPG era have considerably reduced the potency of human microbiota and as a result, we are more prone to diseases than our forefathers. Microbes have shown a tendency to develop immunity against our protection-microbes. Regrettably, the normal, day-to-day activities that we engage in are eliminating these beneficial microbes and opening the door for disease-causing pathogens to take hold. Our healthy relationship with beneficial microbes has recently been disrupted by our daily activities, allowing pathogens to re-emerge. Let us discuss how our daily activities limit the beneficial microbes in our bodies and possible solutions to emerging diseases.

In the second day, **Dr. N. Sivakumar**, Assistant Professor, Department of Molecular Microbiology, School of Biotechnology, Madurai Kamaraj University, Madurai. He delivered a key note lecture on **“Crosstalk to Bacterial Pathogenesis: Antivirulence Strategies to Combat Drug Resistance of *Pseudomonas aeruginosa*”**.

His paper was based on, the findings of a study on pathogenesis in *Pseudomonas aeruginosa*, and he identified some therapeutic agents to combat Quorum-Sensing-Mediated pathogenesis in *Pseudomonas aeruginosa*. Targeting the virulence factors production without hampering the growth of the pathogens is a potential strategy to control pathogenesis. To accomplish this, a total of 43 mangrove isolates were screened for quorum quenching (QQ) activity against *Pseudomonas aeruginosa* (PA), in which eight bacteria have shown antibiofilm activity without hampering the growth of the PA. Prominent QQ activity was observed in *Bacillus subtilis* BR4. Previously, we found that BR4 produces stigmatellin Y, a structural analogue of PQS signal of PA, which could competitively bind with PqsR receptor and inhibits the quorum sensing (QS) system of PA.

In the Last session, **Dr. Mukesh Pasupuleti**, Principal Scientist and Associate Professor (AcSIR), Division of Microbiology, CSIR–Central Drug Research Institute, Lucknow, spoke on **“Taming the Innate Immune System to Emerging and Re-emerging Pathogenic Infections”**.

He stressed the need to keep the innate immune system in a state of preparedness to control both endogenous and exogenous bacteria. The human body itself is an antimicrobial fungicidal, viricidal laboratory capable of secreting chemicals that can control diseases. He pointed out the



advantages of Host Defense Peptides (HDP's) in microbial control and stressed the need for keeping the body and its immune systems in proper condition.

In the post lunch session, **Dr. Mukesh Pasupuleti**, Principal Scientist and Associate Professor (AcSIR), Division of Microbiology, CSIR-Central Drug Research Institute, Lucknow, delivered the valedictory address. He stressed that eternal vigilance and international collaborative research are the only roads to continuing good health and well-being. Mankind has still to learn lessons from the invisible world to combat emerging and re-emerging epidemics. We have been caught unawares once, and we should not allow the mistake to be repeated again. Finally, he gave away the Certificate to the Participants.

Totally **304 participants** were participated, among them 106 were external participants and 198 were internal participants. **13 researchers** from various Colleges and Universities presented their studies leading to an active discussion on Epidemiology, clinical practice, prevention of diseases and development of safe zones and their expansion. **22 posters** were also displayed. This was followed by **feedback from participants** and the distribution of certificates. A parallel session was devoted to paper presentation. The best papers and Posters were awarded **Cash Prizes and Certificates**. The Vote of Thanks was Proposed by **Dr. M. Poornima**, Assistant Professor, Department of Microbiology, J.J. College of Arts and Science (Autonomous), Pudukkottai.


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PG & Research Department of Microbiology

A Two Days Hands on Training in “Mushroom Cultivation - 28.09.2022

Report of the Event

Jenner Club of Microbiology, organized a two days Hands on Training in “Mushroom Cultivation” for I and II M.Sc. and III B.Sc. Students of Microbiology. The training was given by **Mr. V. Bhuvaneshbarani, Managing Director, B2 Healthcare, Pudukkottai and Mr. R. Hariharan, Manager, B2 Healthcare, Pudukkottai.**

In the morning session, they suggested that the Mushroom Cultivation is **one of the most significant agribusinesses in the world.** It is also very profitable as it can be started with a low investment and small space. Mushroom cultivation is an up and coming source of alternative income for many agripreneurs in India. It includes greenhouse technology, irrigation system, fertilizer control system, greenhouse air-conditioning system, planting supplies and innovative knowhow, all of which ensure that the cultivation is on a par with global standards in terms of success rate, quality, and profit generation for farmers.

They insisted that the Mushrooms are edible fungus that can provide several important nutrients. The many kinds of mushroom have varying compositions and nutritional profiles. Mushrooms contain protein, vitamins, minerals, and antioxidants. These can have various health benefits. Consumption of mushrooms helps to fight different types of cancer, regulates blood cholesterol levels, and thus helps to fight diabetes. Mushrooms aid in strengthening our immune system and also help to lose weight. Adding Mushrooms in your food diet, can change your health. Since it offers numerous health benefits not only to toddlers but also for adults. Mushrooms good for eye health, high blood pressure problems, and even people suffering from thyroid and kidney problems can easily consume.

In the afternoon session they taught how to grow mushrooms, where to grow mushrooms, types of mushrooms to grow and process of growing mushrooms. They stated that the small mushrooms can grow in about 1 day while medium to larger sized mushrooms can



grow in about 3-4 days. In order for the mushroom to grow steadily, the environment needs to provide steady moisture so that the mushroom life cycle can run its course. The mushroom life cycle is mesmerizing.

They explained how to start planning for business, how to acquire the land, how to decide the design of mushroom farm, how to acquire materials and equipment, how to hire a team, how to get mushroom production right, how to market the farm and how to have a profitable Large-Scale mushroom business. They trained the students for cultivating mushrooms and to become an agripreneur.


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Special Lecture Programme

Actinobacterial Genome Mining for Biosynthetic Gene Cluster Analysis – 17.08.2022

Report of the Event

Jenner Club of Microbiology, Conducted a Special Lecture Programme on 17.08.2022. Dr. D. Dhanasekaran, Associate Professor, State President, Microbiologists Society, India, Department of Microbiology, Bharathidasan University, Tiruchirappalli delivered a lecture on the topic of “Actinobacterial Genome Mining for Biosynthetic Gene Cluster Analysis”.

In his lecture he propounded about Metagenomics is the direct genetic analysis of genomes contained with an environmental sample. The field initially started with the cloning of environmental DNA, followed by functional expression screening. The broad field may also be referred to as environmental genomics, ecogenomics or community genomics. He differentiated genomics and metagenomics is the number of organisms evaluated in an assay or sample. Genomics studies the genome of a single organism while metagenomics studies the collection of different organisms' genomes within a sample.

He explained about the Next-generation sequencing (NGS) is a massively parallel sequencing technology that offers ultra-high throughput, scalability, and speed. The technology is used to determine the order of nucleotides in entire genomes or targeted regions of DNA or RNA. He distinguished qPCR technologies, the key difference is discovery power. While both offer highly sensitive and reliable variant detection, qPCR can only detect known sequences. In contrast, NGS is a hypothesis-free approach that does not require prior knowledge of sequence information.

He suggested that the biology of pre-, pro- and post-biotic as follows a healthy and diverse microbiome is critical to good health, Probiotics contain live microbes that will (hopefully) populate our gut and give us health benefits, Prebiotics are food for our beneficial gut



inhabitants, Post-biotic are helpful chemicals produced by the microbes in our gut, We can manipulate and improve our microbiome using pre-, pro-, and post-biotic food and supplements, We all have unique microbiomes, so to best nurture your microbiome you need to know what's in there.

In his speech he also stated that The microbiome functions like any ecosystem – survival of the fittest - so the bugs that survive in your gut are the ones that have plenty to eat. And if you provide the right food, the microbes that like to eat it will come, just like putting out birdseed will encourage feathered friends to visit. So eating prebiotics can help increase the number and diversity of organisms in our microbiome.

Finally, he motivated the students to pursue higher studies and do research in metagenomics. UG and PG students of Microbiology actively took part in the discussion. Earlier **Dr. P. Jeevan**, Head, Department of Microbiology, welcomed the gathering. **Dr. M. Poornima**, Assistant professor proposed vote of thanks.


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3.3.2. Report of the Event (2022 – 2023)

22.07.2022

On behalf of Jenner Club, PG and Research Department of Microbiology Conducted a **Special Lecture Programme** on the topic of **“Preparation Strategy for Competitive Exams”**. **Mrs.A.Edith Rena, Village Administrative Officer, Thirukogarnam Village, Pudukkottai District** acted as a resource person.

In her speech she informed that the Government sector is one of the largest employment providing sectors and every year lakhs of candidates are given an opportunity to join this sector and enjoy the perks of being a Government employee. She has listed many competitive exams such as TNPSC Group exams, SET, NET, RRB, Bank exams etc.,

Then she explained the Preparation strategy for Competitive exams and gave answers for several questions, such as which come into a candidate's mind before starting the preparation for the competitive exams. These questions may include: How to start the Government Exam preparation? What strategy should I follow? Can I prepare for Govt exams at home? Can I crack the Government exams in the first attempt? What are the tips to crack the competitive exams? What are the important topics and syllabus for the exam? What strategy and approach to use for the preparation of Government exams?

She stated that there is no limit to the syllabus for General Awareness and Current affairs section. Any Government or competitive exam conducted in the country has this section as a part of its syllabus. The common fields from which questions may be picked for this section are: General Knowledge/ Static GK, Daily News, History & Geography, Politics and Banking Awareness and the list goes on. Mostly the questions framed are based on any recent event of importance across the Globe but this is not mandatory. Current affairs for around 4 to 5 months prior to the examination are also equally important.

She suggested several essential rules which will help candidates crack the upcoming exams these rules will mainly help candidates look at these exams with a much positive and optimistic approach. To understand these points for competitive exam preparation strategy, candidates can refer to the point below: Having the desire to achieve something is extremely

able to apprehend which sections need more preparation, Focus on self-study. This will ensure that you plan accordingly and devote equal time for preparation of each section and subject.

Finally, she motivated our students to prepare well and attend many Competitive exams. U.G. & P.G. Students of Microbiology actively took part in the discussion. Earlier Dr.P.Jeevan, Head, Department of Microbiology presided over the Programme, Dr.M.Poornima, Assistant professor welcomed the gathering and Ms.K.Sindhu, III B.Sc. Microbiology, proposed vote of thanks.


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Online Quiz in Commemoration of World Youth Skills Day – 15.07.2022

Report of the Event

In Commemoration of “World Youth Skills Day” PG and Research Department of Microbiology organized an Online Quiz based on the theme of “ Skills Development to Improve Youth Employment. The World Youth Skills Day is celebrated every year on July 15 after the United Nations General Assembly's (UNGA) declaration in 2014. The day is celebrated to mark the “strategic importance of equipping young people with skills for employment, decent work and entrepreneurship”, said a statement by UNESCO.

The day helps in disseminating awareness about the importance of skills in getting good work opportunities. This day is significant as it provides a better opportunity for employment, higher income levels, and lifelong learning to the new generation. The World Youth Skills Day encourages the elimination of gender inequality and ensures disadvantaged people have access to resources.

The ideal way to observe World Youth Skills Day will be to reflect, brainstorm, and debate how we can meet the skilling needs of countries like India, which has a rapidly growing working population. Hence to develop the Skills for the future fifteen question based on the Life Skills were asked in the Quiz. Two marks were given for each question and totally 30 marks. 412 students were responded from various Departments such as Microbiology, Biotechnology, Computer Applications, Information Technology etc., and most of the students has scored full marks.


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