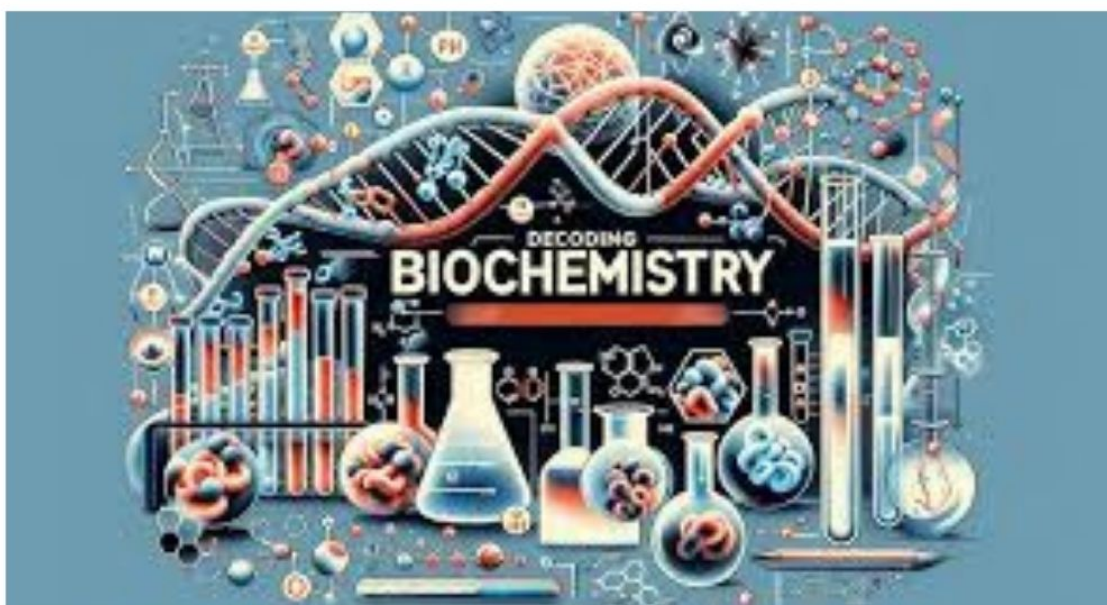


BIOCHEMISTRY

# NEWSLETTER

JUNE - NOVEMBER 2024



## Vision of the Department

To develop highly qualified competitive professionals required for both academics and industries with excellent leadership, communication and teamwork skills.

[www.ksrcas.edu](http://www.ksrcas.edu)

## Mission of the Department

- To provide basics and latest concepts in biochemistry to the young minds.
- To offer excellent opportunities to acquire hands on experience in Research-oriented education in Biochemistry.



# DEPARTMENT OF BIOCHEMISTRY

## Faculty Members



**Dr.G.Saravanan**  
Assistant Professor & Head



**Dr.S.Vadivukkarasi**  
Assistant Professor



**Dr.V.V.Sathibabu Uddandrao**  
Assistant Professor



**Mrs.M.Suganya**  
Assistant Professor



**Ms.S.Madhura**  
Assistant Professor



**Ms.G.M.Dhevikarunaa**  
Assistant Professor



**Mr.S.Gokul**  
Assistant Professor

## Association Activities

### Inauguration of the Bio pearl Association &

**Fresher's Day**  
**DATE : 15.07.2024**



The Department of Biochemistry was proud to organise the inauguration of the Biopearl Association (2024-2025) and Fresher's Day on 15.07.2024. The event was a resounding success and was met with enthusiasm and positive feedback from the students. Everyone enjoyed the activities and festivities, making it a memorable start to the academic year.

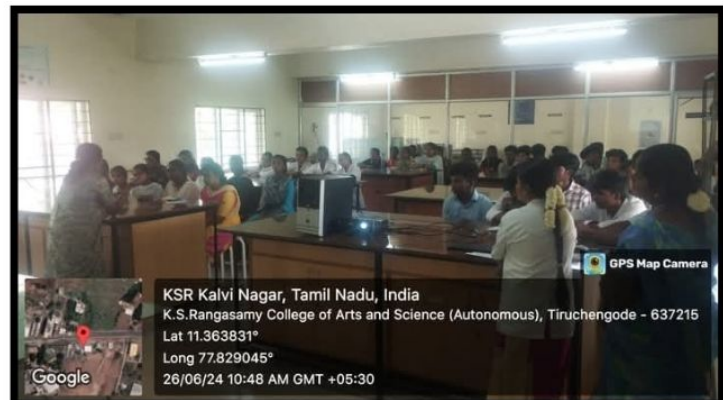
## International Webinar

**“Impact of Endocrine Disrupting Chemicals (EDCs) on Human Health and Ecosystems: Insights from Biochemical and Toxicological Perspectives” by Dr. Victor Rajmohan, Taiwan on 12.06.2024.**



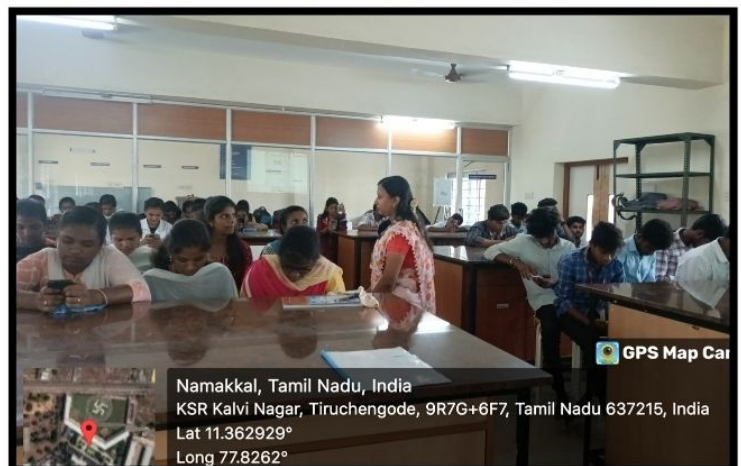
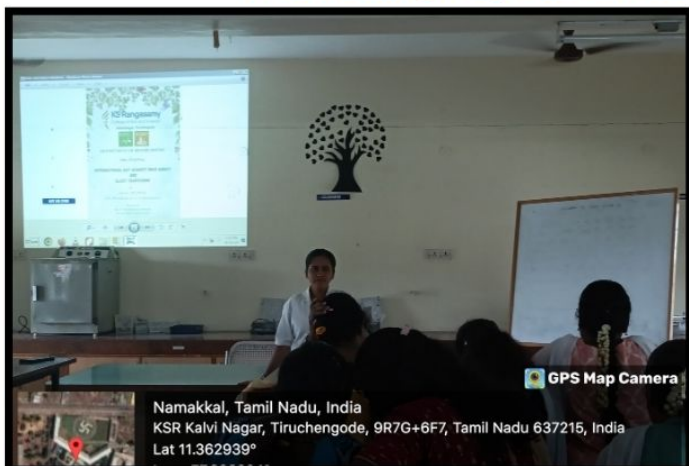
## Skill Development

**“Entrepreneurial Insights: A Journey of Inspiration” by Mrs. C. Kalaiselvi, CEO Biomed care Lab, Erode on 24.06.2024.**



## Day celebration

**“International Day against Drug Addict and Illicit Trafficking” by Ms.G.M.Dhevikarunaa on 24.06.2024.**



## Guest Lecture

**“Advanced Techniques in Clinical Enzymology” by Dr. T. Palvannan, PhD(Biochemistry)., PhD (Biotechnology)., Periyar University on 12.07.2024.**



## Science awareness programme organized at school level (Offline)

**Science awareness Programme 2024 Theme: “Biochemical Phenomenon in Daily life” Organized by III B.Sc. and II M.Sc. Students, KSRCAS on 27.07.2024  
28.07.2024.**



## Hands on Training

**“Mushroom Cultivation” by Senior mentoring Junior**



## September Diaries

### Day Celebration

**National Nutritious Week 2024 under the theme "Nutritious Diet for Everyone,"  
organized by the Bio Pearl Association Mr.S.Gokul  
Assistant Professor, Biochemistry Department, KSRCAS on 04.09.2024.**



# Food festival

**Fest of Delicacy-Nutri Fiesta 2k24 organized by Ms.M.Suganya, Assistant Professor, Biochemistry Department, KSRCAS on 04.09.2024.**



# Online Lecture Series

**Organized by the School of Science and Humanities under the guidance of Dr.V.V.Sathibabu Uddandrao & Dr.S.Vadivukkarasi Assistant Professor, Biochemistry Department, KSRCAS on 06.09.2024 - 12.09.2024.**

**Diabetes Management:** Diabetes is a chronic metabolic disorder primarily characterized by impaired production (Type 1 diabetes) or insulin resistance (Type 2 diabetes), leading to elevated blood sugar levels. Several therapeutic mechanisms target the long issues of diabetes management, focusing on regulating blood glucose enhancing insulin action, and improving pancreatic function. Here are some specific mechanisms to treat diabetes.

**Insulin Therapy:** Rapid acting and Long acting

- Insulin:** Directly reduces blood glucose levels by promoting glucose uptake into articularily in muscles and adipose tissue, and inhibiting hepatic glucose production.
- Sulfonylureas:** Sulfonylureas (Sulfonylureas) stimulate insulin secretion from the beta cells of the pancreas.
- Metformin:** Metformin lowers blood glucose primarily by decreasing hepatic glucose production (gluconeogenesis) and increasing insulin sensitivity in peripheral tissues.
- DPP-4 Inhibitors:** DPP-4 Inhibitors increase the levels of incretin hormones, which in turn reduces glucose absorption in the gut and enhances glucose uptake by muscle cells, thus improving insulin sensitivity.

**Different HIV Strains**

- HIV-1:** p22, gp120, gp41, p17, p24, p10, p15, p18, p27, p30
- HIV-2:** p34, gp100, gp36, p16, p18, p28, p31

**Interaction between B cells and Th Cells**

Diagram illustrating the interaction between a B cell and a Th cell. The B cell is shown interacting with the Th cell through various receptors and signaling molecules, leading to the activation of the B cell and the production of antibodies.

# Alumni meet

**Empowering your future: "Alumni insights and journey Unveiled"**  
organized by Ms.G.M.Dhevikarunaa, Assistant Professor,  
Biochemistry Department, KSRCAS  
on 21.09.2024.



# Medicinal Garden

**Medicinal Garden - Maintained by Mr.S.Gokul, Assistant Professor, Department of Biochemistry, KSRCAS on 23.09.2024.**





## *Industrial Visit*

**Students Visited Masco Tea Factory, Vagamon, Kerala co-ordinated by Dr.G.Saravanan, Head & Dr.S.Vadivukkarasi (AP)  
Department of Biochemistry, KSRCAS on  
26.09.2024 – 29.09.2024**



# Administrative Training Programme

Physical activity and Mental health hosted by Ms.P.Sathya, Assistant Professor, KSRCAS on 04.10.2024.



# Professional Development Programme

Yoga and Work-Life balance for Educators hosted by Ms. P.Sathya, Assistant Professo, KSRCAS on 25.10.2024.



# Science Awareness Programme

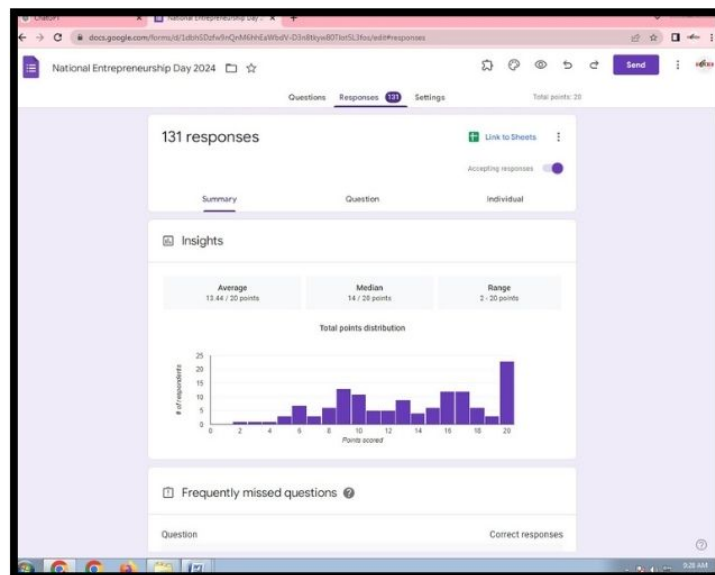
**Science Sparks: Nurturing Tomorrows Innovators organized by Mr.S.Gokul, Assistant Professor Biochemistry Department , KSRCAS on 27.10.2024 - 03.11.2024.**

The poster is for a competition organized by the Department of Biochemistry at KS Rangasamy College of Arts and Science. The title is "Science Sparks: Nurturing Tomorrow's Innovators" programme. It is an online quiz and drawing competition for school students. The theme is "Biochemistry as an innovator and Entrepreneur". There are cash prizes of 1000/- for the first place and 500/- for the second place. The competition is for 12th students in Biology, Pure science, and Biology with computer science. The link to participate is <https://forms.gle/6iCy5j72oSoDkhH7> and the date is from 27th October to 9th November, 2024. The staff co-ordinator is Mr.S.Gokul, Assistant professor, Department of Biochemistry, KSRCAS.

## Day Celebration

**National Entrepreneurship Day Mr.S.Gokul Assistant Professor, Biochemistry Department , KSRCAS on 09.11.2024**

The screenshot shows a Google Form titled "National Entrepreneurship Day 2024". The form is for a day celebration by the Department of Biochemistry. It includes a text area for a message, a QR code, and several short answer text fields for "Name of the student", "Register number", and "Class". The class options are: 1. B.Sc BC, 2. II B.Sc BC, 3. III B.Sc BC, and 4. I.M.Sc BC.





## Congratulations

To

**Dr. V. V. Sathibabu Uddand Rao**

Assistant Professor  
Department of Biochemistry

on Receiving the

**“Young Scientist Award”**

from the Asian PGPR Society, USA & Bharathiar University

Appreciated by the Management  
and Principal of KSRCAS

**Dr.V.V.Sathibabu  
Uddand Rao received  
Young Scientist  
Award, Asian PGPR  
Society,USA &  
Bharathiar University  
on 29.07.2024**



**Dr. G. Saravanan  
received the Best  
Research Project Award  
during the Teachers'  
Day celebration at  
KSRCAS on 05.09.2024**



**Dr. S.Vadivukkarasi  
received the Best  
Research paper,Best  
Teacher-Senior, Best  
Class Tutor  
during the Teachers'  
Day celebration at  
KSRCAS on  
05.09.2024.**



***Dr.V.V.Sathibabu  
Uddandrao received the  
Best Research paper,  
Best Teacher-Senior  
during the Teachers' Day  
celebration at KSRCAS  
on 05.09.2024.***



***Ms.S.Madhura received  
Self Learner Award  
during the Teachers'  
Day celebration at  
KSRCAS on 05.09.2024.***



***Ms.G.M.Dhevikarunaa  
received participation in  
Social Service during the  
Teachers' Day  
celebration at KSRCAS  
on 05.09.2024.***



***Ms. K. S. Kanishhma achieved 2nd place in the Quiz Competition organized by the Tamil Nadu Forest Department's Wildlife Division 2024 in Namakkal. She was honored with a trophy and medal, presented by Dr. S. Uma, IAS, District Collector.***



## CONGRATULATIONS TO Department of Biochemistry NPTEL - Faculty Achievers



**Dr. G. Saravanan**  
(Head/Biochemistry) - *Elite*



**Dr. V.V. Sathibabu Uddand Rao**  
(AP/Biochemistry) - *Elite-Silver*



**Ms. M. Suganya**  
(AP/Biochemistry) - *Elite*



**Ms. G.M. Dhevikarunaa**  
(AP/Biochemistry) - *Elite*

## NPTEL - Students Achievers



**R. Ashika**  
II M.Sc. Biochemistry - *Elite*



**P. Priyadarshini**  
II M.Sc. Biochemistry - *Elite*



**G. Indhumathi**  
II M.Sc. Biochemistry - *Completed*



**A. Sangavi**  
II M.Sc. Biochemistry - *Completed*



**S. Srinithi**  
II M.Sc. Biochemistry - *Completed*



**R. Gowri**  
Sc. Biochemistry - *Elite*



**S. Sovviya**  
III B.Sc. Biochemistry - *Elite*



**P. Dhanush**  
III B.Sc. Biochemistry - *Completed*



**E. Gowshika**  
III B.Sc. Biochemistry - *Completed*



**S.V. Kiruba**  
III B.Sc. Biochemistry - *Completed*

**Cell Culture Technologies- Aug-Oct 2024 (8 week course)**

**Faculties and Students achievers in the NPTEL "Cell Culture Technologies" course - 21.11.2024**

Received: 14 August 2024 | Accepted: 21 October 2024

DOI: 10.1002/bab.2689

ORIGINAL ARTICLE



## Carboplatin-loaded zeolitic imidazolate framework-8: Induction of antiproliferative activity and apoptosis in breast cancer cell

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Abdurahman Hajinur Hirad<sup>3</sup> | Abdullah A. Alarfaj<sup>3</sup> | Indumathi Thangavelu<sup>4</sup> |  
Palanisamy Arulselvan<sup>5</sup> | Ravindran Jaganathan<sup>6</sup> | Rajeswari Ravindran<sup>6</sup> |  
Jagadeesh Suriyaprakash<sup>7</sup> | Thalakulam Shanmugam Boopathi<sup>8,9</sup>

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<sup>2</sup>Centre for Bioinformatics, Department of Biochemistry, Karpagam Academy of Higher Education, Coimbatore, Tamil Nadu, India

<sup>3</sup>Department of Botany and Microbiology, College of Science, King Saud University, Riyadh, Saudi Arabia

<sup>4</sup>Department of Chemistry, CHRIST (Deemed to be University), Bangalore, India

<sup>5</sup>Department of Chemistry, Saveetha School of Engineering, Saveetha Institute of Medical and Technical Sciences (SIMATS), Saveetha University, Chennai, Tamil Nadu, India

<sup>6</sup>Preclinical Department, Faculty of Medicine, Universiti Kuala Lumpur, Royal College of Medicine Perak (UniKL-RCMP), Ipoh, Perak, Malaysia

<sup>7</sup>Guangdong Provincial Key Laboratory of Nanophotonic Functional Materials and Devices, School of Information and Optoelectronic Science and Engineering, South China Normal University, Guangzhou, China

<sup>8</sup>Department of Chemistry, Amrita School of Physical Sciences, Amrita Vishwa Vidyapeetham, Coimbatore, India

<sup>9</sup>Functional Materials Laboratory, Amrita School of Engineering, Amrita Vishwa Vidyapeetham, Coimbatore, India

### Correspondence

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### Funding information

RSPD2024R677

### Abstract

The challenge with breast cancer is its ongoing high prevalence and difficulties in early detection and access to effective care. A solution lies in creating tailored metal-organic frameworks to encapsulate anticancer drugs, enabling precise and targeted treatment with less adverse effects and improved effectiveness. Zeolitic imidazolate framework-8 (ZIF-8) and carboplatin (CP)-loaded ZIF-8 were synthesized and characterized using various analytical techniques. High Resolution-transmission electron microscopy of ZIF-8 and CP@ZIF-8 indicates that the particles had a spherical shape and were nanosized. The drug release rate of CP is 98% under an acidic medium (pH 5.5) because of the dissolution of ZIF-8 into its coordinating ions, whereas 35% in a physiological medium (pH 7.4) with the addition of CP, the high porosity, and pore diameter of ZIF-8 decrease from 1243 to 1041 m<sup>2</sup>/g. Breast cancer MCF-7 cells were shown greater IC<sub>50</sub> in CP@ZIF-8 (15.01 ± 3.03 µg/mL) than free CP (34.98 ± 4.25 µg/mL) in

**ABBREVIATIONS:** AO, acridine orange; BET, Brunauer-Emmett-Teller; BJH, Barrett-Joyner-Halenda; CP, carboplatin; FTIR, Fourier transform infrared; MOFs, metal-organic frameworks; MTT, methylthiazolyldiphenyl-tetrazolium bromide; HR-TEM, High resolution transmission electron microscope/microscopy; XRD, x-ray diffraction; ZIF-8, zeolitic imidazolate framework-8.

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*Biotechnol Appl Biochem.* 2024;1–12.

wileyonlinelibrary.com/journal/bab | 1

**Faculties and Students achievers in the NPTEL "Cell Culture Technologies" course - 21.11.2024**



# Certificate of Patent



ORIGINAL

क्रम सं/ Serial No. : 168983



पेटेंट कार्यालय, भारत सरकार

The Patent Office, Government Of India

डिजाइन के पंजीकरण का प्रमाण पत्र

Certificate of Registration of Design

डिजाइन सं. / Design No.

407579-001

तारीख / Date

15/02/2024

पारस्परिकता तारीख / Reciprocity Date\*

देश / Country

प्रमाणित किया जाता है कि संलग्न प्रति में वर्णित डिजाइन जो **ARTIFICIAL INTELLIGENCE BASED WATER TREATMENT DEVICE** से संबंधित है, का पंजीकरण, श्रेणी 23-01 में 1.Dr. S.Shaik Parveen 2. Dr. Shankar Karuppannan 3.Dr. B. Thangagiri 4.Dr. P. Uma Maheswari 5.Dr. P Lakshmi 6.Dr. Sreejith Vignesh B P 7.Shamika Shantaram Sawant 8.Dr. G Saravanan 9.Dr. P. Shanmugam के नाम में उपर्युक्त संख्या और तारीख में कर लिया गया है।

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In pursuance of and subject to the provisions of the Designs Act, 2000 and the Designs Rules, 2001.

जारी करने की तिथि :

Date of Issue : 10/05/2024



उत्पाद की संरक्षित

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