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St. JOSEPH'S COLLEGE OF ENGINEERING
(An Autonomous Institution)
St. Joseph's Group of Institutions
OMR, CHENNAI - 119

BIO VOICE

DEPARTMENT OF BIOTECHNOLOGY

NEWSLETTER

May 2026

About Us

The Biotechnology Department was incepted in the year 2002 and Accredited by NBA.

Having a state-of-art laboratory, the department offers both Bachelors and Ph.D courses which are affiliated with Anna University, Chennai

Vision

To provide a world-class department to facilitate learning, training and research in Biotechnology by providing infrastructural facilities and competent faculty leading to technological innovations to serve the global society

Mission

The Mission of the Department is to provide quality education to students and to produce competent Biotechnologists to meet the challenges faced by industry and mankind.

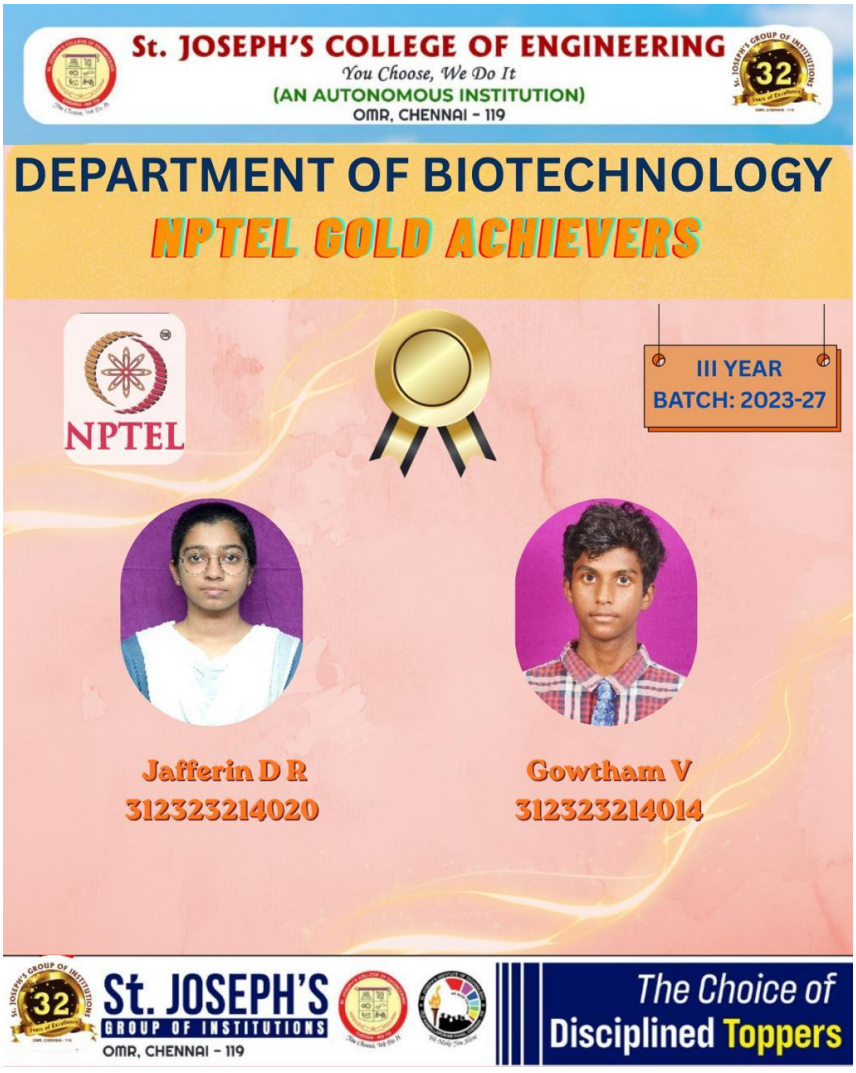
To inculcate high moral and professional standards among our students.

To develop the overall personality of the students.

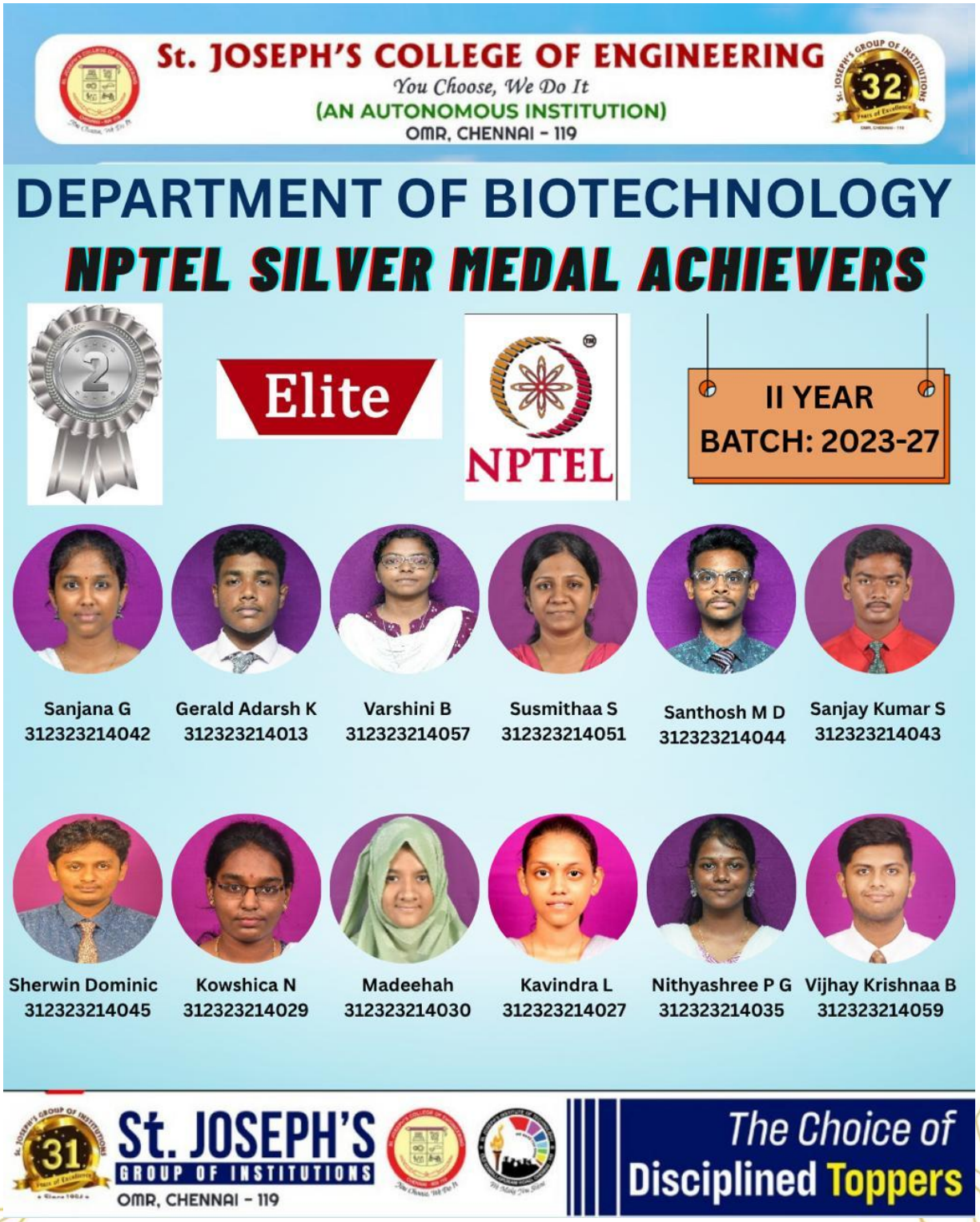
STUDENT ACHIEVEMENTS

NPTEL Medal Winners

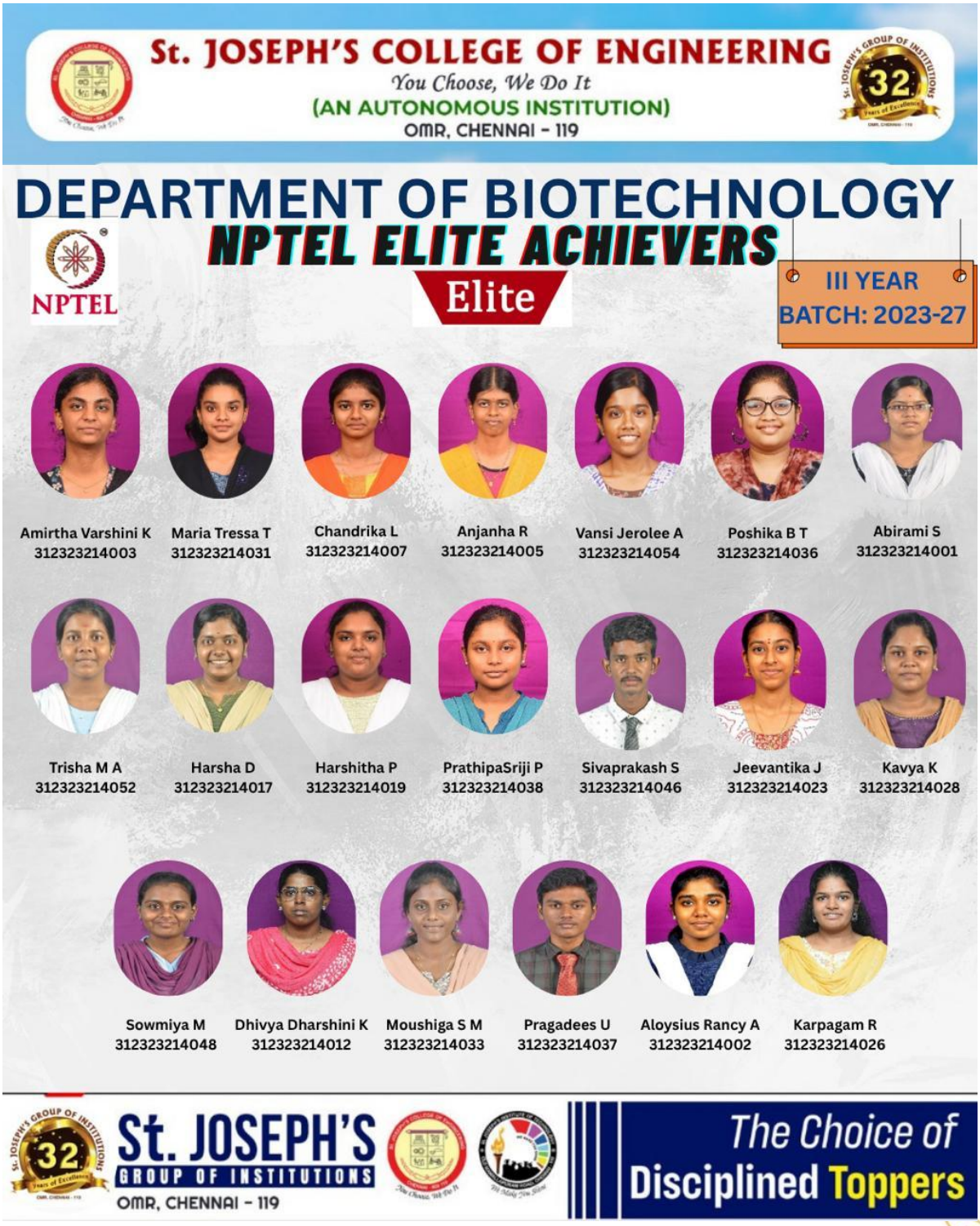
Our Biotechnology students have showcased academic excellence by securing medals in the NPTEL examinations, reflecting their dedication and strong conceptual understanding.



STUDENT ACHIEVEMENTS



STUDENT ACHIEVEMENTS



STUDENT ACHIEVEMENTS

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Department of Biotechnolagy

Batch 2024 - 2028

NPTEL

NPTEL Gold Medal Achievers

ADDLENE PONSIYA K
312324214001

KEERTHI SHRI R
312324214023

NETHRA SRINIVASAN
312324214032

NIKHILL S
312324214033

NITHYASHREE G
312324214034

POOJA PARAKUNNI S
312324214038

PRADEEPTHIKA K H
312324214039

PRIYADHARSHIKA M
312324214042

RASHMIKA RAGHUNATH NAIR
312324214046

SABRIN H
312324214048

SANDHIYA SIVARAMAN RAMESH
312324214050

SURIYA TEJAL S
312324214056

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The Choice of **Disciplined Toppers**

STUDENT ACHIEVEMENTS

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DEPARTMENT OF BIOTECHNOLOGY

NPTEL

NPTEL
SILVER MEDAL ACHIEVERS

BATCH 2024 - 2028

ARUNASRI P M
312324214007

TANUSHRI T
312324214057

HARINI S R
312324214017

HARSHITHA R
312324214019

KENIIT JELINA J
312324214024

SRI VIDYAA A B
312324214054

SMERA ATHIBAN
312324214053

JOTHEESWARI G
312324214021

NIVETAA M
312324214036

MONIKA S
312324214029

VARNIKA S
312324214059

MATHI E
312324214027

MERCY SHALIN A
312324214028

NIVEDHITHA V S
312324214035

HARINI M
312324214016

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DEPARTMENT OF BIOTECHNOLOGY

NPTEL SILVER MEDAL ACHIEVERS

BATCH 2024 - 2028

SAMYUKTHA C
312324214049

ANUSHAYA MARY S
312324214004

AKSHAYA S
312324214002

ARUNA P
312324214006

KEERTHANA R
312324214022

ROSHIKA V
312324214047

ANGELIN ASHNA A S
312324214003

GOVADHARSHINI K
312324214014

BALAMURUGAN S
312324214009

RAGUL P
312324214044

VEDIYAPPAN P
312324214061

VARUN RAAJA M R
312324214060

NAVEEN S
312324214031

PRAJIN RAJA J
312324214040

GOVINDARAJ M
312324214015

STUDENT ACHIEVEMENTS

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Department of Biotechnolagy

NPTEL

Elite Achievers

Batch 2024 - 2028

ARUN PRASAD R M
312324214005

DEVAPRAKASH K
312324214010

DHANEESH P J
312324214011

GOPIKA V
312324214013

HARSHAN I
312324214018

LEKHA SHRI S M
312324214025

JANANI R
312324214020

MADHUMITHA K
312324214026

NANDA KUMAR D
312324214030

SHREYASHRI V S
312324214051

RAAM PRAKASH V
312324214043

SINDHUGOWRI G
312324214052

SRIDHAR N
312324214055

VIJAY MOHAN M
312324214062

THIRUTAMIL SACHIN A
312324214058

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The Choice of **Disciplined Toppers**

STAFF ACHIEVEMENTS

Paper Publication

Dr. G. Baskar from the Department of Biotechnology has published a paper entitled "Green Synthesized MOS-Zinc Oxide Nanoparticles from *Dictyota bartayesiana* Extract with enhanced antioxidant, antimicrobial and anticancer efficacy" in BioNanoScience Journal

BioNanoScience (2026) 16:385
https://doi.org/10.1007/s12668-026-02629-y

RESEARCH

Green Synthesized MOS-Zinc Oxide Nanoparticles from *Dictyota bartayresiana* Extract with Enhanced Antioxidant, Antimicrobial, and Anticancer Efficacy

Gurunathan Baskar[1,2] · Vadivel Kalkieshwari[1] · Christian David Paul Bernita Celas[1] · Muthusamy Muthulakshmi[1]

Received: 19 February 2026 / Accepted: 20 May 2026

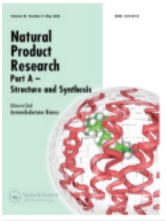
Abstract
In the present study, the key problem addressed is the limited biocompatibility, toxicity and lack of multifunctionality in conventional nanoparticles based therapeutic system, which necessitates the development of safer, sustainable, and functionally enhanced alternatives. A green synthesis method utilizing *Dictyota bartayresiana* (macroalgae) extract and zinc acetate were used to produce zinc oxide nanoparticles. Glutaraldehyde was used as a cross-linker to integrate the green synthesised nanoparticles into mannanoligosaccharide (MOS), a naturally occurring prebiotics biopolymer. Glutaraldehyde was utilized as a crosslinking agent to form covalent linkages among MOS and ZNPs, enhancing structural stability, dispersion, and biological activity compared to simple physical mixtures. The synthesized zinc nanoparticles (ZNPs) and MOS-ZNPs crosslinked with glutaraldehyde have been independently characterized the usage of UV-Vis spectroscopy, FTIR, XRD, TGA, and SEM with EDX analyses. The antioxidant activity has been assessed the usage of the DPPH (2, 2-diphenyl-1-picrylhydrazyl) assay of (56.8% at 500 µg/mL). The integration of MOS with zinc nanoparticles showed remarkable antimicrobial activities against pathogenic bacteria and fungi, the MIC values was found to be MIC values (125–250 µg/mL) and (125–500 µg/mL), respectively, suggesting its potential as a multifunctional bioactive material. The anticancer effect of the substance was evaluated through MTT assay testing and apoptosis examination at the A549 lung cancer cell line. The IC50 value of 20.64 µg/mL showed strong cytotoxic effects which caused cell death through apoptosis. Overall, the incorporation of zinc nanoparticles greatly enhanced the stability and biocompatibility of mannanoligosaccharides. These results show that the MOS-ZNPs composite has great potential, offering prebiotic benefits along with antimicrobial and anticancer properties, making it a valuable option for biomedical and therapeutic applications.

Keywords *Dictyota bartayresiana* · Mannanoligosaccharide · Zinc oxide nanoparticles · Anti-microbial effect · Anti-cancer potential · Apoptosis

STAFF ACHIEVEMENTS

Paper Published

Dr. M. Chamundeeswari from the Department of Biotechnology has published a research article entitled "Green way aqueous extraction of *Corbichonia decumbens* leaves produced from Kolli hills and investigation of their various biological activities" in the journal Natural Product Research



Natural Product Research
Formerly Natural Product Letters

ISSN: 1478-6419 (Print) 1478-6427 (Online) Journal homepage: www.tandfonline.com/journals/gnpl20

Green way aqueous extraction of *Corbichonia decumbens* leaves procured from Kolli hills, Tamil Nadu, India, and investigation of their various biological activities

Gayathri Ramalingam, Ashwini Devi Balaraman, Poojasri Sribal, Meenakumari S, Arjun Chandra Balaji B, Chamundeeswari M, Sathiya Gunasekaran, Andrew Charles, Venkatesan D & Rubalakshmi G

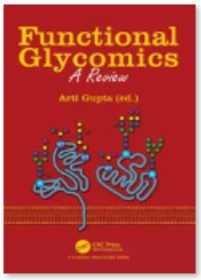
To cite this article: Gayathri Ramalingam, Ashwini Devi Balaraman, Poojasri Sribal, Meenakumari S, Arjun Chandra Balaji B, Chamundeeswari M, Sathiya Gunasekaran, Andrew Charles, Venkatesan D & Rubalakshmi G (13 May 2026): Green way aqueous extraction of *Corbichonia decumbens* leaves procured from Kolli hills, Tamil Nadu, India, and investigation of their various biological activities, Natural Product Research, DOI: 10.1080/14786419.2026.2661268

To link to this article: https://doi.org/10.1080/14786419.2026.2661268

STAFF ACHIEVEMENTS

Book Chapter Publication

Dr. M. Chamundeeswari from the Department of Biotechnology has published 2 book chapters in the book entitled "Functional Glycomics"



Chapter

Glycomics as Potential Biomarkers of Behavioural Disorders, Infection, and Diseases

By M. Barathi, M. Chamundeeswari, Mary R. Nancy Flora

Book Functional Glycomics

Edition	1st Edition
First Published	2026
Imprint	CRC Press
Pages	24

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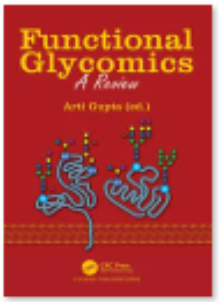
ABSTRACT

Glycans, the fundamental architects of biological systems, govern cellular interactions, immune recognition, and disease mechanisms with remarkable precision. These multi-faceted sugar molecules impact everything from neurology to the development of cancer, and are dynamic participants in regulating both illness and health beyond their roles in structure. Unlike traditional protein and nucleic acid indicators, glycomics are able to interpret the complex code of glycans to find new biomarkers that are more sensitive and disease-specific. Infectious diseases and neurodegenerative diseases and all the intervening categories, through everyone, glycan signatures hold unprecedented hope for early prognosis and diagnosis. Glycomics, proteomics, metabolomics, and lipidomics converge to enable a systems-level perspective on disease mechanisms and unprecedented therapeutic opportunities. High-throughput analysis of glycans is being propelled by mass spectrometry, glycosyl microarrays, and machine learning. Nevertheless, clinical translation remains challenging, inter-individual variability issues persist, and standardization continues to be an issue. As precision medicine becomes the norm, glycomics, with its extremely individualized diagnostics and next-generation glycoengineered therapeutics, is poised to transform healthcare. By taking molecular sophistication to the bedside, glycomics is transforming biomedical science and defining the future of

STAFF ACHIEVEMENTS



Chapter

Disruption of Homeostasis via Functional Glycomic Mechanisms

By R. Mary Nancy Flora, M. Barathi, M. Chamundeeswari

Book Functional Glycomics

Edition	1st Edition
First Published	2026
Imprint	CRC Press
Pages	23

Share

ABSTRACT

Glycans are the large sugar molecules that coat proteins and lipids. They are vital for maintaining homeostasis both inside cells and throughout the body. From protein folding and host protection against infection to immunological response and cell-to-cell communication, they are involved in almost every biological function. In modern biology, functional glycomics, the scientific study of glycan structure and function, has emerged as a crucial field that offers profound understanding of how glycans work in both health and illness. This chapter addresses the complex interplay between homeostasis and glycans, such as causes and consequences of glycan dysfunction and their contribution to disease. The chapter proceeds to explain how the glycans can achieve homeostasis, through cell adhesion, receptor regulation, and protein folding. Current technological advance within Glycomics, namely mass spectrometry, glycan micro arraying, and glycoengineering, are discussed as main forces for growth in the subject.These technologies have facilitated the discovery of glycan-based biomarkers and the creation of glycan-based therapies, like glycoengineered biologics and glycan-based vaccines. Despite these developments, challenges persist, including the structural intricacy of glycans, their immunogenicity, and the necessity for interdisciplinary collaboration and technological advancement.The chapter concludes with a call for additional research, emphasizing the necessity of combining Glycomics with other omics technologies, translating research into clinical applications, and generating public awareness of the significance of glycans. Functional Glycomics has tremendous potential for expanding our understanding of biology and for revolutionizing medicine, offering new promise for disease diagnosis, treatment, and prevention. The future of glycomics is huge, and the impact of glycomics on human health and well-being will be tremendous.

STAFF ACHIEVEMENTS

NPTEL

Dr. B. Sangeetha from the Department of Biotechnology has secured Silver medal in the NPTEL exam for completing Biomass Conversion and Biorefinery.

Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत-कुशल भारत

This certificate is awarded to

SANGEETHA BASKARAN

for successfully completing the course

Biomass Conversion and Biorefinery

with a consolidated score of 83 %

Online Assignments	25/25	Proctored Exam	57.75/75

Total number of candidates certified in this course: 797

Jan-Apr 2026

(12 week course)

Dr. Salil Kashyap
Coordinator, Centre for Educational Technology,
IIT Guwahati

Indian Institute of Technology Guwahati

swayam

Roll No: NPTEL26CH19S1550301418 To verify the certificate No. of credits recommended: 4

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