Dr. N.G.P. ARTS AND SCIENCE COLLEGE

An Autonomous Institution, Approved by Government of Tamil Nadu
Affiliated to Bharathiar University, Coimbatore. Re-accredited by NAAC with 'A' Grade
Coimbatore - 641 048

News Letter 2017 - 18

EDITORIAL BOARD

Patrons

Dr. Nalla G.Palaniswamy
Chairman

Dr. Thavamani D.Palaniswamy
Managing Trustee & Secretary

Advisor

Dr. P.R. Muthuswamy
Principal

Chief Editor

Dr. V. Shanmugaraju
Head of the Department

Members

Mr. Arun. P
Dr. P. Chidambara Rajan
Dr. K. Arungandhi
Mrs.M.Shanmugavadivu
Dr.L.Nivetha
Dr.M.Poongothai
Dr.Radha Palaniswany
Mrs.N.Kiruthiga

DEPARTMENT OF BIOTECHNOLOGY

EDITOR'S DESK

(DR.V.Shanmugaraju)

I am extremely happy to bring out the news letter of the Department for the academic year 2017-18. The modern scenario focuses much on new technologies like Biotechnology, Nanotechnology and Pharmaceutical Biotechnology. I strongly believe that this news letter will be of more use to the young readers in order to motivate the Bioscience community.

VISION

To improve the quality of education for research expansion and to construct excellent bio entrepreneurship for self reliance with societal development.

MISSION

To impart knowledge and skills in students to equip themselves to be ready to face the emerging challenges in the Biotechnological field.

To contribute in the advancement of knowledge through the applied research leading to the newer products and process.

To prepare the students to work for societal transformation with commitment to justice and equality.

FACULTY ACHIEVEMENTS:

DR.V.Shanmugaraju has published a paper in International journal. He has acted as resource person in Short Term Training Courses on "Basic Technology in Plant & Animal Tissue Culture for mid Career Scientist & Teaching Faculty (UG & PG)" organized by Hindusthan College of Arts and Science, Coimbatore on 22nd November 2017. He has presented papers in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018.

Mr. Arun. P has presented a papers in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

DR. P. Chidambara Rajan has published a paper in International journal. He has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

DR. K. Arungandhi acted as resource person in TNSCST sponsored Science awareness programme organized by Department of Biotechnology, Bharathidasan University Constituency College, Perambulur on 29th December 2017. He has published a paper in International journal. He has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

Mrs. M. Shanmugavadivu has published 4 papers in International journal. She has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

DR. L. Nivetha has published a paper in International journal. She has participated in the Science Academies' Refresher Course on "Innovations in Genetics and Plant Breeding with Special Reference to Biotic and Abiotic Stress" organized by P.G & Research Department of Botany, Vivekanandha College of Arts and Science for Women, Tiruchengode from 6th November 2017 to 18th November 2017. She has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018. She has also attended two months Science Academie's Summer Research Programme at Banaras Hindu University, Varanasi from 19th April 2018 to 16th June 2018.

DR. M. Poongothai has published a paper in International journal. She has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

DR. Radha Palaniswamy acted as resource person in KSCSTE sponsored National Seminar on "Current Trends in Biotechnology" organized by Department of Biotechnology, St. Joseph's College, Irinjanakuda, Kerala on 15th December 2017.She has published a paper in International journal. She has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018. She has also attended a Technical workshop on "IPR" organized by Department of Social work, Sri Ramakrishna College of Arts and Science, Coimbatore on 15th & 16th November 2017.

Mrs. N. Kiruthiga has presented a paper in National Seminar on "Challenges and Advances in Microbiology (CAM-2018)" organized by Department of Microbiology, Annamalai University on 1st & 2nd February 2018 and participated in UGC sponsored State level Seminar on "Current strategies in forest Resources Management" organized by Department of Zoology, Virudhunagar Hindu Nadar's Senthikumara Nadar College on 16th February 2018.

CONFERENCE - MARINA'17

Our Department has organized One Day National Conference on **"Bioprospecting – Indian Perspectives, Challenges & Opportunities"** on 28th December 2017.

S.No	Name of the Resource Person	Address	Topic
1.	Prof. DR. V. Gopal	Principal, College of Pharmacy, Mother Theresa Postgraduate and Research Institute of Health Sciences, Puducherry.	Indian Perspective of Bioprospecting – A SWOC Analysis
2.	DR. Geetha. N	Department of Biotechnology, University of Mysore, Mysuru.	Bioprospecting and Structural Elucidation of Novel anti-diabetic Metabolite from *Salacia* Endophytic fungal assemblage using Biotechnological tools
3.	DR. P. M. Ayyasamy	Department of Microbiology, Periyar University, Salem.	Microbes and their Surface active Metabolites: An Alternative Tool for Environmental Management
4.	Dr. Ranjith Kumavath	Department of Genomic Science, School of Biological Science, Central University of Kerala, Kerala.	Genomics and Metagenomics: Current opportunities and challenges in a Microbial perspective
5.	Dr. P.K. Senthilkumar	Head, Department of Microbiology, Annamalai University, Chidambaram.	Diversity of Antibiotic Resistance and the role of Bioprospecting

INVITED LECTURES/TALKS

S.No	Date	Name of the Resource persons	Topic
1.	16.08.2017	DR.P. Siddhuraju, Professor and Head, Department of Environmental Science, School of Life Sciences, Bharathiar University, Coimbatore.	Recent Trends in Environmental Sciences and Functional Ecosystem
2.	17.08.2017	DR. K.Selvaraju, Assistant professor, Department of pharmaceutics, KMCH College of Pharmacy, Coimbatore.	Pharmaceutical Technology
3.	29.08.2017	DR. P. Sundararaj, Assistant Professor, Department of Zoology, Bharathiar University, Coimbatore.	*Caenorhabditis elegans* - a Potential model of Drug Discovery
4.	30.08.2017	DR. Mathish Nambiar-Veetil, Scientist E and Genetic Transformation lab In-charge, Plant Biotechnology Division, Institute of Forest Genetics and Tree Breeding, Forest Campus, Coimbatore.	Transgenics and Genome Engineering - Applications in Forestry
5.	02.01.2018	Dr. S.Srinivasan, Technical Officer, Department of Cancer Biology and Therapeutics, The John Curtin School of Medical research, ANU College of Health and Medicine, Australia National University.	Molecular Insights of Lipid- based antigen recognition by Natural Killer T-cells receptors
6.	07.02.2018	Dr. M. Palanisamy, Scientist-D, Botanical Survey of India, Southern Regional Centre, TNAU Campus, Coimbatore.	Perspectives of Indian Seaweed Biodiversity

University Rank Holders (April 2017)

B.Sc Biotechnology

Reshma R - IV, Sownthariya R - VII, Niranjana J - IX

S.No	Name of the Student	Date	Competition	Venue	Prize
1.	N.A.Gowtham A. Lingeswar III B.Sc Biotechnology	24.07.2017	Quiz Competition	Dr. N.G.P. Arts and Science College, Coimbatore	3rd Prize
2.	S.Renuga Devi III B.Sc Biotechnology	10.08.2017 & 11.08.2017	Poster presentation	National Conference on "Plant Based Drugs-Biotechnological Implications (NCPDB-2017)" organized by Department of Biotechnology, Karpagam Academy of Higher Education, Coimbatore.	1st Prize
3.	K.K. Priyadharshini, II-M.Sc Biotechnology	06.10.201 & 07.10.2017	Ball Badminton Intercollegiate Tournament	N.G.M. College, Pollachi	2nd Place
4.	M.Mohammed Suhaib, I-B.Sc Biotechnology	17.11.2017	Karate-KATA	Aysha Mahal, Coimbatore	Gold Medal
5.	R. Mohammed Arif, III-B.Sc Biotechnology	20.12.2017	Solo Dance	NGP Fest, Dr.N.G.P. Arts and Science College, Coimbatore	3rd Prize
6.	J. Niranjana & V. Harsini I- M.Sc Biotechnology	01.03.2018	Paper Presentation	Dept. of Information Technology, Dr.N.G.P. Arts and Science College, Coimbatore	1st Prize
7.	S.Padmapriya II- B.Sc Biotechnology	12.02.2018	Poetry Competition	Centre for Women Development, Dr.N.G.P. Arts and Science College, Coimbatore	II Prize
8.	S. Sruthilay I- B.Sc Biotechnology	16.02.2018	Thirupavai & Thiruvenpavai recitation competition	Tamil Sangam	III Prize
9.	P.G. Bivya Ph.D Scholar	07.04.2018	Dr. Thavamani D. Palaniswamy Research awards	Dr.N.G.P. Arts and Science College, Coimbatore	Best Research paper award

10th National Conference on "Bioprospecting - Indian Perspectives, Challenges and Opportunities" on 28.12.2017. The Conference was inaugurated by Prof. DR. V. Gopal, Registrar Academic, MTPG & RIHS, Principal, College of Pharmacy, Mother Theresa Postgraduate and Research Institute of Health Sciences, Puducherry.

Orientation Programme for freshers on "Personality Development" by DR.B. Selvaraj, Associate Professor, Department of Psychology,
Government Arts College, Coimbatore on 20.06.2017.

Invited lecture on
"Recent Trends in Environmental Science and Functional Ecosystem" by Dr. P. Sidduraju, Department of Environmental Sciences,
School of Life Sciences, Bharathiar University,
Coimbatore on 16.08.2017.

Alumni - Student Interaction on "Career Opportunities in Bioinstrumentation Logistics"
by Ms. K. Bhuvaneshwari, Associate of Global Export Team, VWR Internatioanl Ltd, Coimbatore on 13.12.2017.

Extension Activity - Awareness program on "Mushroom Cultivation and Dengue Prevalence" to the public of Veeriyampalayam village on 03.02.2018.

Student Development Programme
"Bio-innovate'18" - A state level Idea Contest on 28.02.2018

Production of cellulase by *Aspergillus niger* under submerged and solid state fermentation using coir waste as a substrate

Vishnu Balamurugan, *II B.Sc. Biotechnology*

Aspergillus niger was used for cellulase production in submerged (SmF) and solid state fermentation (SSF). The maximum production of cellulase was obtained after 72 h of incubation in SSF and 96 h in Smf. The CMCase and FPase activities recorded in SSF were 8.89 and 3.56 U per g of dry mycelial bran (DBM), respectively. Where as in Smf the CMase & FPase activities were found to be 3.29 and 2.3 U per ml culture broth, respectively. The productivity of extracellular cellulase in SSF was 14.6 fold higher than in SmF. The physical and nutritional parameters of fermentation like pH, temperature, substrate, carbon and nitrogen sources were optimized. The optimal conditions for maximum biosynthesis of cellulase by *A. nigher* were shown to be at pH 6, temperature 30 ℃. The additives like lactose, peptone and coir waste as substrate increased the productivity both in SmF and SSF. The moisture ratio of 1:2 (w/v) was observed for optimum production of cellulase in SSF.

Preparation and evaluation of isoniazid Microbeads by using different membrane

R. Ramyaasree, *II B.Sc Biotechnology*

Current experimental investigation is dedicate to formulate alginate floating microbeads of Isoniazid as a model drug by ion cross-linking method or ion gelation technique using calcium chloride as cross-linking agent. Drug effectiveness might be influenced by blood plasma protein binding. The less bound drug is more viable which can cross cell membrane and diffuse. Protein binding can impact the drug's biological half-life in the body. Isoniazid was first generation antibiotic which are used for the resistance is an obstacle to the treatment of tuberculosis disease and latent tuberculosis infection. The permeability of isoniazid study is using different membrane (Egg membrane and cellophane membrane). The in vitro drug release studies showed the optimized formulation of drug release 91 % in cellophane membrane and 88 % in egg membrane at 60 mins. The percentage buoyancy and swelling index of microbeads F1-F4 respectively 53-72% and 56-76%. The drug entrapment efficiency of the microbeads prepared from sodium alginate alone were found to be in the range of 52-71%.Experimental report revealed that isoniazid loaded microbeads may act as ideal nano formulation with elaborated studies.

Cloning of Macaque Monkeys by Somatic Cell Nuclear Transfer

Sheerin Fatima M A, *II B.Sc. Biotechnology*

Generation of genetically uniform non-human primates may help to establish animal models for primate biology and biomedical research. In this study, we have successfully cloned cynomolgus monkeys *(Macaca fascicularis)* by somatic cell nuclear transfer (SCNT). We found that injection of H3K9me3 demethylase Kdm4d mRNA and treatment with histone deacetylase inhibitor trichostatin A at one-cell stage following SCNT greatly improved blastocyst development and pregnancy rate of transplanted SCNT embryos in surrogate monkeys. For SCNT using fetal monkey fibroblasts, 6 pregnancies were confirmed in 21 surrogates and yielded 2 healthy babies. For SCNT using adult monkey cumulus cells, 22 pregnancies were confirmed in 42 surrogates and yielded 2 babies that were short-lived. In both cases, genetic analyses confirmed that the nuclear DNA and mitochondria DNA of the monkey offspring originated from the nucleus donor cell and the oocyte donor monkey, respectively. Thus, cloning macaque monkeys by SCNT is feasible using fetal fibroblasts.