

**UNIVERSITY OF CALICUT
(IQAC)**

**INFORMATION FOR
ACADEMIC AND ADMINISTRATIVE AUDIT OF THE DEPARTMENT
Year: 2020 - 21**

(Provide information for last five years from 2016-17 to 2020-21)

1. **Name of the Department:** Dept. of Biotechnology
2. **Year of establishment:** 1995
3. **Courses offered:** PG, M. Phil., Ph.D., Others

Year	PG	M. Phil	Ph.D.
2016-17	Yes	Nil	Yes
2017-18	Yes	Nil	Yes
2018-19	Yes	Nil	Yes
2019-20	Yes	Yes	Yes
2020-21	Yes	Yes	Yes

4. **Courses introduced during last 5 years:** Nil
5. **Does the department have Academic flexibility? If yes since when?**
 - a) Students are having flexibility for the electives courses offered in the department for post-graduate and M. Phil programmes.
 - b) Students also select the topics for their project/dissertation work in consultation with the faculty to whom they may associate with for MSc and M. Phil programmes.
6. **Interdisciplinary programs offered and departments involved:**

In general the courses offered in the Biotechnology programmes, are of interdisciplinary in nature. Special emphasis are given for the courses like Computer application, Biostatistics, Biophysics and Bioinformatics by getting experts in the specific area on the basis of contract/guest appointments/visiting members from other departments/universities / institutes.

From 2019 onwards, to facilitate better understanding of interdisciplinary aspects of Biotechnology for the MSc. Students, Basic Mathematics & Statistics and Basics of Chemistry and Physics courses were introduced. These courses are offered by the sister departments of this University.

7. **Courses conducted in collaboration with other universities and Institutions:**

Nature of linkage	Title of the linkage	Name of the partnering institution/ industry /research lab with contact	Duration (From-	participant
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		details	To)	
Academic Collaboration	Specific topics in Biophysics/Bioinformatics and Plant Biotechnology for M.Sc. Biotechnology teaching programme in the Department	Department of Biotechnology & Microbiology, Kannur University	2017 onwards	Dr. Sadasivan Dr. Anu Augustine,
Research Collaboration	collaboration in the areas of research and education in Transplantation Immunology and related fields	Malabar Institute of Medical Sciences, Mini Bypass Road, Govindapuram P.O. Calicut -673016, Cont No. 04953911400, mimsclt@mimsindia.com	December 2013 onwards	Prof. K.K. Elyas, Research Scholars -2,
		IQRAA International Hospital & Research Center, Calicut	2020 onwards for 5 years	Msc Students -1

8. **Details of programmes discontinued, if any, with reasons:** Nil

9. **Examination System: Annual/ Semester/Choice Based Credit System/ Credit and Grading system/ any other system, specify:**

Semester System is followed for both MSc. and MPhil. programmes. The credits for the core, elective and practical courses are 3, 2 and 4 respectively. For theory examination evaluations, internal departmental assessment and external University examinations are given equal weightage for most of the courses. Practical evaluations are done on continuous evaluation mode.

10. **Participation of the department in the curriculum development for courses offered by the Departments.**

The post graduate programme is sponsored by Department of Biotechnology (DBT) Government of India M.Sc. syllabus was revised in 2019 by the department with the framework given by DBT.

M. Phil and PhD programmes are also in tune with the requirement in Biotechnology area.

11. **Does the department have different syllabus than the one used by university for PG courses?**

Yes. The post graduate programme is sponsored by Department of Biotechnology Government of India and the curriculum is prepared by the national body constituted for this purpose in consultation with academia and industry.

12. **Number of teaching posts sanctioned, filled and vacant.**

Designation	Sanctioned	Filled	Filled under CAS
Professor	1	1	--
Associate Professor	1	0	--
Assistant Professor	3	2	--
Total	5	3	--

13. Faculty profile with name, qualification, designation, experience, nature of appointment (confirmed/ probation/temporary):

a) Appointed on Government Sanctioned Post.

Name	Designation	Qualifications	Teaching/Research Experience	Nature of appointment,
Dr. K.K. Elyas	Professor	*M.Sc. Biotechnology, M.Tech. Biotechnology, Ph.D in Immunology (Medical Immunology)	More than 21 years of teaching Experience at post graduate level	Permanent
Dr.P.R.Manish Kumar	Professor	*M.Sc. Zoology , Ph.D Zoology (Cell & Molecular Biology) ,PDF – Recombinant DNA Technology	More than 24 years of teaching Experience at post graduate level	Permanent (Retired on 31.03.2020)
Sri. Gopinathan	Asso. Professor	M.Sc. Life Science with specialization in Microbiology , M.Tech Biotechnology	More than 24 years of teaching Experience at post graduate level	Permanent
Dr. Smitha V.B.	Asst. Professor	M.Sc. Biotechnology, Ph.D. Biotechnology	More than 10 years of teaching Experience at post graduate level	Permanent

b) Appointed from University Fund (Ad-hoc/Guest/contract Faculty).

Name	Designation	Qualifications	Teaching/Research Experience	Nature of appointment,
Sri.Sreekrishnan	Guest Faculty	M A Economics, MBA (Finance), M. Com, M Phil in Commerce,	More than 5 years	Contract basis
Dr. Anusha T S.	Guest Faculty	M. Sc. Biotechnology M. Phil. Biotechnology, Ph. D	More than 5 years	Contract basis
Dr. Madayi Deepti,	Guest Faculty	M. Sc. Biotechnology, Ph. D. and NET	More than 5 years	Contract basis

14. List of Visiting Fellows/Teachers, Adjunct and Emeritus Professors, (for last 5 years).

(a) Dr. S. D. Krishnarani,

Assistant Professor, Department of Statistics, Farook College

(b) **Dr. Sadasivan,**

Department of Biotechnology & Microbiology, Kannur University

(c) **Dr. Anu Augustine,**

Department of Biotechnology & Microbiology, Kannur University, Thalassery Campus, Palayad.

15. Percentage of classes taken by temporary/visiting faculty (programme-wise information):

8 to 10% of the total syllabus is covered by Visiting/ Guest faculties.

16. Programme-wise Student Teacher Ratio: (Average of 5 Years)

4:1

17. Number of academic support staff (technical) and administrative staff sanctioned, filled and vacant:

Sr. No.	Posts	Sanctioned posts	Filled	Actual
1	Laboratory Assistant	2	1	2
2	Clerk (office) (assistant)	1	1	1
3	Laboratory Attendant	0	0	0
4	Peon	1	0	1
5	Other (SO, Library Asst, Tech Asst, Typist)	4	2 (Library Asst, Tech Asst)	4

18. Thrust areas of research as identified by the department:

The department is actively engaged in research in the area of Plant Biotechnology, Immunology, Cell & Molecular biology, recombinant DNA technology, Enzyme & Medical Biotechnology, Molecular Oncology, and Bioprocess Technology & Computational Biology.

19. Information about research grants, projects completed and ongoing during the period of last 4 years

a) From National funding agencies (like UGC, CSIR, DST, DBT etc):

Sr. No.	Name of the Principle Investigator	Title of the Project	Funding Agency, Duration & date of sanction	Amount (in Lakh)	Remarks if any
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1	Dr.Smitha V.B.	Isolation , identification and characterization of the anticancer principle from the medicinal plant <i>Corallocarpus epigaeus</i>	KSCSTE 2016 September - 2019 December (3 years)	Rs. 30,64,400/ -	
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b) From International funding agencies: Nil

20. Funds received at Departmental level through DST-FIST; CSIR, UGC-SAP/CAS, DAE, DBT, BRNS, ICSSR, AICTE, etc

Scheme and Funding Agency	Non-Recurring	Recurring	Project Fellow	Total
DBT , Govt. of India, for running the M.Sc. Biotechnology programme in the Department	----	1,11,19,728	--	1,11,19,728
Bioinformatics Structural Facility programme, DBT, Govt. of India.	-----	5,50,863	--	5,50,863

21. Research facilities available in the department and recognition received, if any?

Immunotechnology Laboratory

The major focus of the laboratory is on identification, isolation and characterization of bioactive molecules especially phytochemicals having immunomodulatory and in vitro cytotoxic activity against cancers (mouse and human). In vivo antitumour studies are carried out employing mouse models. In silico screening of compounds and docking studies are also being pursued actively. Other lab interests include immunological aspects related to *Helicobacter pylori* as well as monoclonal antibody production for therapeutic applications.

Cell & Molecular Biology / Recombinant DNA technology Laboratory

The major research interests of the laboratory include (i) molecular biology of cell cycle regulation - G2/M arrest, G2 abrogation and apoptotic pathways employing aseptic cultures of the lower eukaryote, *Physarum polycephalum*, human peripheral blood lymphocytes and human cancer cell lines (ii) phytochemical analysis, screening for antiproliferative, anticancerous and cell cycle blocking agents (iii) studies on multidrug resistant strains of clinical bacterial isolates – genome and plasmid based gene characterization and molecular typing and (iv) cloning and characterization of cell cycle related genes, expression profiling studies in human cancers. Studies are also being planned on molecular systematics of insect pests and parasitoids.

Bioprocess Laboratory

The laboratory is interested in cost effective biopesticide production to control mosquitoes; cost effective process development for biogas production from agro-wastes; biogas production from chicken /poultry wastes by two phase anaerobic digestion process; cost effective production of oyster mushrooms using solid state fermentation technology.

Enzymology and Medical Biotechnology Laboratory

The laboratory is working in the area of bio-molecular interaction for the application of food preservation and disease diagnosis. The serine protease inhibitors are screened from plants which can block the digestive enzyme Trypsin. The molecular characterization of these inhibitors is done using physicochemical and biochemical techniques. These plant derived high affinity inhibitors are used where the control of protease activity is of prime importance such as for preservation of food items like meat and therapeutic applications for wound infections.

The group is also working in the area bio-molecular interaction of lectins with specific glycoproteins for diagnostic application and MHC molecule for its involvement in transplantation rejection.

Molecular Oncology Laboratory

Pioneering research into new avenues for cancer treatment and management is undertaken in this lab exploring molecular level dynamics of the disease and its response to chemotherapeutics. Cancer remains one of the most dreaded diseases afflicting mankind across space and time. Despite tremendous advances in medical science, it still remains a major clinical challenge. as opposed to the use of general cytotoxics, the new trend in cancer drug development is to target the exact molecular cause of individual cancer and its progression. This is based on the understanding of the underlying processes involved in the development of cancer. A general outline of the research work undertaken in this Lab is to understand these processes and to identify key proteins that can be intervened therapeutically. Another aspect is to analyse the signaling pathways activated in response to conventional as well as new targeted therapeutic agents in the cancer cells so as to identify and find solution for the factors that limits the success of both the first and second generation of therapeutic agents. One another aspect of the research undertaken in this lab is to explore the vast natural resources that has yet not been fully tapped, to find out bioactive compounds with anticancer activity that could represent novel lead structures, for drug development either directly or indirectly, in that they serve as lead compounds for the synthesis of new drugs.

22. Special research laboratories sponsored by / created by industry or corporate bodies. **Nil**

23. Publications: **2016**

Sl. No	Author(s)	Title	Journal & year, Volume pages	Publisher, Date of Publication with doi	Impact Factor if any
1	Soumya Tumbath, Lakshmi priya Theyyankandi, Jayasree, Manish Kumar P.R.	Evaluation of total phenolics, antioxidant and antiproliferative activities of rhizome extracts from select Zingiberaceae species in South India	International Journal of Pharmaceutical Sciences and Research Nov, 2016 Vol 8337-342	Pharmaceutica Science and Research Publishing Group, DOI:10.5138/09750185.1893	--
2	Manju, S., Nithya, N.,	Detection and prevalence of efflux pump-mediated	Asian J Pharm Clin Res,	Online - 2455-3891 Print -	--

	Jayasree, P.R. & Kumar, P.R. Manish Kumar	drug-resistance in clinical isolates of multidrug-resistant Gram-negative bacteria from north Kerala, India.	9,324-327	0974-2441., 10.03.2016	
3	Nithya, N., Manju S., Jayasree P. R., Kumar, P.R. Manish Kumar	Detection of blaNDM-1 and genetic relatedness in clinical isolates of Escherichia coli producing Extended spectrum β -lactamase from tertiary care centres in South India	Adv Microbiol. 6,125-132 ISSN 2165-3410	ISSN 2165-3410 DOI:10.4236/aim.2016.63013 Jan,2016	--
4	Gopinathan.C,Ari ndam Chaudhury and A.T. Vivek	Novel techniques for cost-effective production of Bacillus thuringiensis Subsp. israelensis	International Journal of Mosquito Research 2016; 3(4): 17-29	ISSN: 2348-5906 05-06-2016	
5	Gopinathan.C, A. T. Vivek	Bioprocess Optimization for Enhanced Biogas Production from Grape Pulp Waste	Int. Journal of Science and Research, Vol 5 Issue 6, June 2016, 673 - 676	ISSN (Online): 2319-7064 DOI:10.21275/v5i6.no v164132	6.391 (as per SJIF)
6	C. Gopinathan, A.T.Vivek	Process Optimization for Enhanced Biogas production from Mango Pulp Waste	International Journal of Science and Research (IJSR)	1772 – 1775 May 2016 DOI:10.21275/v5i5.nov163761	6.391 (as per SJIF)
7	A. Priyadarsini, A. Vivek, C. Gopinathan	Cost Effective Production of Penicillin and Biogas from Rotten Oranges by Microbial Fermentation Technique	Int. Journal of Science and Research (IJSR), Vol 5 Issue 4, April 2016, 2379 - 2382	ISSN (Online): 2319-7064 DOI:10.21275/v5i4.26041601	6.391 (as per SJIR).
8	M.T. Ramesan, P. Jayakrishnan, V.K. Athira, C. Gopinathan	Preparation, characterization, electrical and antibacterial properties of sericin/poly (vinyl alcohol)/poly (vinyl pyrrolidone) composites	J.Appl. Polym. Sci., 133(24): 5827- 5836	https://doi.org/10.1002/ap.43535 04.03.2016	1.768 (Thomson Rueter s)
9	Vijith. C. C., Swarna gauri thota, A.T.Vivek and C. Gopinathan	Improved Bacillus thuringiensis based biopesticide production using cheap carbon and nitrogen sources by solid state fermentation technique.	IOSR Journal of Enviromental Science, Toxicology and Food Technology (IOSR ESTFT) Vol 10, Issue 3 Mar. 2016, PP 49-53	e-ISSN: 2319-2402, p- ISSN: 2319-2399, DOI: 10.9790/2402-1003024953	1.8 (as per SJIR).
10	Smitha V. Bava, Arun Kumar T. Thulasidasan, C	Cervical cancer: A comprehensive approach towards extermination	Annals of Medicine Pages 149-161	doi: 10.3109/07853890.2016.1145	--

	hanickal N. Sreekanth & Ruby John Anto			796, 25.02.2016	
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2017

Sl. No	Author(s)	Title	Journal & year, Vol, pages	Publisher, Date of Publication with doi	Impact Factor if any
1	T.Lakshmipriya, T. Soumya, Jayasree, P. R. Manish Kumar.	Selective induction of DNA damage, G2 abrogation, and mitochondrial apoptosis by leaf extract of traditional medicinal plant <i>Wrightia arborea</i> in K562 cells	Protoplasma July 2017	Springer publications, 20, July 2017 (doi: 1007/500709-017-1137-5)	2.87
2	Lakshmipriya T., Soumya T. Jayasree P.R Manish Kumar P.R	Antioxidant, antimicrobial and antiproliferative activities of Indian traditional medicinal plant <i>Wrightia arborea</i> leaves.	Int. Journal of Pharmaceutal Science and Research March, 2017 Vol 8(3) 1124-1133	Pharmaceutical Science and Research Publishing Group, 01, March, 2017 Doi:13040/IJPSR.0975-8232.8(3) 1124-33	1.83
3	V.S.Shaniba, Ahlam Abdul Aziz, P.R. Manish Kumar	Phytomediated synthesis of silver nanoparticles from <i>Annona muricata</i> fruit extract, assessment of their biomedical and photocatalytic potential	Int. Journal of Pharmaceutica l Science and Research Jan 2017 Vol.8(1): 170-181	Pharmaceutical Science and Research Publishing Group ,01,Jan,2017 Doi:10.13040/IJP SR.0975-8232.8(1) 170-81	1.83
4	Soumya T., Lakshmipriya T., Jayasree P.R. P.R. Manish Kumar	Evaluation of total phenolics, antioxidant and antiproliferative activities of rhizome extracts from select Zingiberaceae species in South India	Int. Journal of Phytomedicine, Nov 2017 8(2016) 337-342	Advanced Research Journals 10, Nov 2017, Doi: 10.5138/09750.185.1893	1.06
5	Anusha Tharayil, Koonapra Sasidharan, K.K. Elyas Joseph Madassery	Phytochemical screening of invitro raised clones and mothers plant of <i>Celastrus paniculatus</i> willied, an endangered Medicinal plant	Asian Journal of Biotechnology 2017,9(2) 50-70	Science Alert Publisher (Scopus Indexed) 26.09.2017 Doi:10.3923/ajbkr.2017.50.70	-
6	Anusha Tharayil, Koonapra Sasidharan, K.K. Elyas Joseph Madassery	Development of an efficient technology for rapid clonalmultiplication of <i>Celastrus paniculatus</i> willied, an endangered Medicinal plant	Asian Journal of Biotechnology 2017,16(4) 184-192	Science Alert Publisher 15.09.2017 Doi:10.3923/ajps.2017.184.192	-

2018

Sl. No	Author(s)	Title	Journal & year,Vol pages	Publisher, Date of Publication with doi	Impact Factor, if any
1	V C Deepthi, Seepana Sumathi, M. Faisal and K.K. Elyas	Isolation and Identification of endophytic fungi with antimicrobial activities from the leaves of <i>Elaeocarpus sphaericus</i> (Gaertn.) K.Schum. And <i>Myristica fragrans</i> Houtt.	Int.journal of pharmaceutical Sciences and research 2018,Vol 9, 2783-2791.	Int.Journal of Pharmacy and Pharmaceutical Sciences ,01.07.2018 Doi:10.13040/IJP SR.09758232.9(7).2783-91	1.83
2	ManjuMohan, Shireen Kozhithidi, AnurajNayarisseri, K.K Elyas	Screening,Purification And Characterization of Protease Inhibitor from <i>Capsicum frutescens</i>	Bioinformatics ,2018 Vol :14(6) 285-293	Biomedical Informatics 30,June 2018 Doi:10.6026/97320630014285	0.8
3	Manju Suresh, Nithya N., Jayasree P. R., Vimal K. P., Manish Kumar P. R.	Mutational analyses of regulatory genes, mexR, nalC, nalD and mexZ of mexAB-oprM and mexXY operons, in efflux pump hyperexpressing multidrug-resistant clinical isolates of <i>Pseudomonas aeruginosa</i>	World Journal of Microbiology and Biotechnology 2018,Vol : 34 1-11	Springer publications , 30, May,2018 (Doi:10.1007/s11274-018-2465-0.	2.100
4	Surya P H, Elyas K K, Deepti Madayi	Bacterial Agglutination by a Lectin from the Leaves of the Medicinal Plant, <i>Pimenta dioica</i> (L.) Merr	International Journal of Pharmacy and Pharmaceutical Sciences 2018,Vol.10 35-43	Int.Journal of Pharmacy and Pharmaceutical Sciences 01.04.2018,Doi:10.22159/ijpps.2018v10i4.20068	0.75
5	T. Lakshmipriya, T. Soumya, P. R. Jayasree P. R. Manish Kumar	Selective induction of DNA damage, G2 abrogation, and mitochondrial apoptosis by leaf extract of traditional medicinal plant <i>Wrightia arborea</i> in K562 cells	Protoplasma 2018 Vol :255: 203-216	Springer publications, Jan 2018 doi: 10.1007/s00709-017-1137-5	2.457

2019

Sl. No	Author(s)	Title	Journal & year,Volume pages	Publisher, Date of Publication with doi	Impact Factor , if any
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1	Mohan Shankar G,Vijai V. Alex, Amrutha Nisthul , Smitha V. Bava, Sankar Sundaram,Archana P. Retnakumari,Sadasivan C,Ruby John Anto	Pre-clinical evidences for the efficacy of tryptanthrin as a potent suppressor of skin cancer	Cell Proliferation Vol 53, Issue1	Wiley 30.102019 https://doi.org/10.1111/cpr.12710	5.039
2	Anupama R.,Prasad Sabeel M.,Basheer ,Induja R.Gupta ,K.K.Elyas, Abraham Joseph.	Investigation on Bovine Serum Albumin (BSA) binding efficiency and antibacterial activity of ZnO nanoparticles	Materials Chemistry and Physics Sept,2019 Volume 240	https://doi.org/10.1016/j.matchemphys.2019.122115	2.781
3	Dr. P. R. Manish Kumar T. Soumya, P. R. Jayasree, M Deepak, P. R Manish Kumar	Chemical composition, antioxidant and antiproliferative activities of essential oil from rhizome and leaves of <i>Curcuma mutabilis</i> _Skorni_ck., M. Sabu & Prasanthk., endemic to Western Ghats of India	Naturalproduct research, 2019 Volume : 1478-6419 (Print) 1478-6427	DOI: 10.1080/14786419.2018.1533826	1.999
4	P. R. Manish Kumar V. S. Shaniba, Ahlam Abdul Aziz, P. R. Jayasree, P. R. Manish Kumar	Manilkara zapota (L.) P. Royen Leaf Extract Derived Silver Nanoparticles Induce Apoptosis in Human Colorectal Carcinoma Cells Without Affecting Human Lymphocytes or Erythrocytes	Biological trace elements research Volume : 1653-56	https://doi.org/10.1007/s12011-019-019-0	2.431
5	P. R. Mainish Kumar Lakshmipriya T, Soumya T, P. R. Jayasree, P. R. Manish Kumar	'Cytotoxic And Apoptogenic Effects Of A Bioactive Fraction Isolated From The Leaves Of A Traditional Medicinal Plant <i>Tridax Procumbens</i> .'	IJPSR/RA-11983/04-19.	Accepted	0.65
6	Sri. Gopinathan C & K.K. Elyas	Cost effective fermentation Techniques for the enhanced production of <i>Bacillus Thuringiensis</i>	Int.Journal of Recent Scientific Res.Vol10,30 999-31005	0976-3031	7.383

2020 -21

Sl. No	Author(s)	Title	Journal &year,Volume pages	Publisher, Date of Publication with doi	Impact Factor, if any
1	Deepti Madayi,Surya P H,Elyas K K	A Glucose binding lectin from <i>Leucaena leucocephala</i> seeds and its mitogenic activity against human lymphocytes	Int. Journal of Biological Macromolecules.	ELSEVIER, doi.org/10.1016/j.ijbiomac.2020.07.025 ,Vol 163, 15 Nov 2020, 431-441	5.162
2	KK.Elyas, Tancia Rosalin	Thermal and spectroscopic investigations on three phosphonium based ionic liquids for industrial and	Journal of Molecular Liquids	ELSEVIER, doi.org/10.1016/j.molliq.2020.112960 , Vol 307, 1 June 2020	5.065

		biological application			
3	Induja R.Gupta, K.K.Elyas	Investigation on Bovine Serum Albumin (BSA) binding efficiency and antibacterial activity of ZnO nanoparticles	Materials Chemistry and Physics	ELSEVIER, DOI:10.1016/j.matchemphys.2019.122115, <u>Vo 240</u> , 15 January 2020	2.781
4	Ahlam, A.A., Shaniba, V.S., Jayasree, P.R. and Kumar, P.M	Spondias pinnata (Lf) Kurz Leaf Extract Derived Zinc Oxide Nanoparticles Induce Dual Modes of Apoptotic-Necrotic Death in HCT 116 and K562 Cells.	<i>Biological Trace Element Research</i> , 199(5):1778-1801	SPRINGER, DOI: 10.1007/s12011-020-02303-8, 06.08.2020	--
5	T. Soumya, T. Lakshmi Priya, Karel. D. Klika, P. R. Jayasree and P. R. Manish Kumar	Anticancer potential of rhizome extract and a labdane diterpenoid from <i>Curcuma mutabilis</i> plant endemic to Western Ghats of India.	Scientific Reports..	Nature Publishing Group, doi: 10.1038/s41598-020-79414-8, 12.01.2021	Impact factor: 3.998 (Accepted).
6	Gopinathan.C And K.K Elyas	Cost effective fermentation techniques for the enhanced production of bacillus thuringiensis subsp. israelensis	International Journal of Recent Scientific Research	DOI: http://dx.doi.org/10.24327/ijrsr.2019.1002.3170 , 10(02), pp. 30999-31005. January 2020	6.86
7	Isha Godwin, Nikhil Anto, Smitha V Bava, Mani Shankar Babu, Goodwin G Jinesh	Targeting K-Ras and apoptosis-driven cellular transformation in cancer;	Cell death discovery	Springer Nature DOI: 10.1038/s41420-021-00457-5 Apr 14, 2021	4.114

Book Chapters

2017 : Nil

2018 : Nil

2019 : Nil

2020:

Sl. No	Author(s) in order	Title	Publisher, Volume, pages	Date of Publication	International/National
1	V. S. Shaniba, Ahlam Abdul Aziz, Jobish Joseph, P. R. Jayasree, P. R. Manish Kumar	Selective targeting of human colon cancer HCT116 cells by phytomediated silver nanoparticles	Natural Product chemistry. Apple academic press by Taylor and Francis group. Chapter 10	Accepted for publishing in 2020 May	International
2	Dr. Elyas K K	Plant Lectins: Sugar-Binding Properties and Biotechnological Applications	Springer Nature	2020	International

24. Details of patents filed & granted and income generated:

Name of the	Patent	Title of the patent	Year of
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Patenter	Number		Award of patent
Gopinathan, Asso. Professor, Dept. of Biotechnology,	281240:	1.Fed - batch fermentation techniques for the enhanced production of delta- endotoxin of Bacillusthuringeinsis israelensis	2017
Gopinathan, Asso. Professor, Dept. of Biotechnology,	Application No.20184100 5087	Penicillin Production using Solid State Fermentation Technique” Complete specification filed to the Controller general of Patents, Designs and Trademarks, Chennai.	2018
Gopinathan, Asso. Professor, Dept. of Biotechnology,	Application No.20204100 7261	Fixed volume FED Batch Fermentation Technioque for enhanced production of Delta and endotoxin og thuringeinsis sub species israelensis using pretreated Mollasses – Provisional specification filed to the Controller general of Patents, Designs and Trademarks, Chennai	2020

25. Consultancy services provided, name of the teacher/s and income generated: Nil

Sr. No.	Year	Name of the teacher	Nature of consultancy	Funds generated (In Lakh)

26. Details of teachers invited as resource persons for Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.

2016

Sl. No	Name	Title of the event	Organizer & venue	Int.natio nal/Nati onal	Date
1	Dr. Smitha V.B.	Talk titled Cancer prevention: A case approach with Cervical Cancer” atNa Seminar titled New trends in Biotechnolog	St. Joseph’s College, Thrissur	National	Jan 5 th and 2016

2017

Invited lectures delivered by the Faculties of Dept. of Biotechnology as shown below.

Sl. No	Name	Title of the event	Organizer & venue	International/ National	Date
1	Dr. P.R Manish Kumar	Advances in DNA Science	Dept. of Chemistry, ProvidanceCollege,Calicut.	National	11.01.2017
2	Dr. P.R Manish Kumar	Trends in Molecular Biology	Chinmaya Arts and Science College for Women, Kannur	State level	08.02.2017
3	Dr. P.R Manish Kumar	Advances in DNA Science	Dept. of Botany, Nirmalagiri College, Koothuparambu, Kannur	State level	21.02.2017

4	Dr. P.R Manish Kumar	Recent trends in DNA Science	Dept. of Botany, KKTMM Govt. College, Kodungallur	State level	01.03.2017
5	Dr. P.R Manish Kumar	Anti Cancer Research	Dept. of Zoology, University of Calicut Workshop sponsored by Indian Academy of Sciences	National	09.03.2017
6	Dr. P.R Manish Kumar	Molecular Biology of Cell Cycle Regulation and Cancer.	Dept. of Biotechnology, Mannuthy, Kerala Agricultural University.	State level	18.03.2017
7	Dr. P.R Manish Kumar	Molecular Diagnostics in Health and Diseases	Dept. of Health and Allied Sciences, Manipal University	National	01.04.2017
8	Dr. P.R Manish Kumar	Recent trends in Molecular Biology	Depty. Of Biotechnology, Botany and Bioinformatics Union Christian College, Aluva	State level	07.08.2017
9	Dr. P.R Manish	Frontiers in Biotechnology	Dept. of Botany, KKTMM Govt. College, Pullut	State level	22.11.2017
10	Dr. P.R Manish Kumar	Gene Chips and their Applications	Chinmaya Arts and Science College for Women, Kannur	State level	18.12.2017
11	Dr. Smitha V.B.	Bioprospecting for Cancer Chemotherapeutic agents from plants at National Seminar on Phytochemistry and Pharmacognosy	Directorate of Collegiate Education, Govt. of Kerala Govt. College for Women, Trivandrum	National	November and 5 th , 20

2018

Invited lectures delivered by the Faculties of Dept. of Biotechnology as shown below.

Invited Lectures					
Sl.	Name	Title of the event	Organizer & venue	International/National	Date
1	Smitha V.B.	Cancertherapeutics and preventives from Nature	Academic staff College, University of Calicut, sponsored by UGC/National	National	25 th October
2	Dr. P.R. Manishkumar	Focus 2018	Dept. of Molecular Biology Kannur University,	National	6 th August
3	Smitha V.B.	Cancer chemotherapeutic agents from Nature	The National Seminar on "New Avenues in Bioscience Research conducted at School of Biosciences, M.G. University, in association with DST and PURSE 2	National	19 and 20 th March

4	Smitha V.B.	Bioprospecting for chemotherapeutic agents for Cancer	National Seminar " New horizons in Cancer Treatment and Prevention: From Bench to Bedside " organized by the Department of Chemistry and Biochemistry, SreeNarayana College, Kollam, jointly sponsored by DST and KSCSTE	National	16th and 17th March
5	Sri. Gopinathan C	Solid State Fermentation-Scale up possibilities	Dept. of Biotechnology,SAFI Institute , Vazhayoor as part of Symbiosis 18.	National	15.03.2018 16.03.2018
6	Dr. P.R. Manishkumar	Advances in DNA Science	UGC-Human Development Centre, Kannur University	National	28.02.2018
7	Dr.K.K.Elyas	Vaccinology: Advancements and prospects	UGC-Human Development Centre, Kannur University	National	16.02.2018
8	Dr.K.K.Elyas	Recent Advance in Immunology	GEMS Arts and Science College, Ramapuram, Malappuram	National	18.01.2018
9	Dr. P.R. Manishkumar	Scope & Role of Biotechnology in theContemporary World	School of Legal Studies, CUSAT	National	12.01.2018
10	Dr. P.R. Manishkumar	Advances in DNA Science	PG & RESEARCH CENTRE OF ZOOLOGY, Jayaraj Annapackiam College for Women,Periyakulam	National	09.01.2018
Sessions Chaired					
1	Smitha V.B.	Chair person for Oral presentation Sessions at the Int.national Conference on Molecular Biology : An underpinning of Life Science	Dept. of Zoology, Farook College; Kozhikodesponsored by UGC	International	January 8-9

*Dr. P.R. Manish kumar, HoD, was invited as subject expert in the selection committee for recruitment of Asst. professors in Biotechnology at SAFI Institute of Advanced Study, Vazhayur, Malappuram

*Dr. P.R. Manish kumar, HoD was appointed as M.G University V.C's nominee for Selection Committee in connection with recruitment of Asst. professors in Biotechnology at Newman College, Thodupuzha

*Dr. P.R. Manish kumar, HoD was appointed as external expert member in the Board of Examiners in connection with IV th semester project work/ Dissertation evaluation and conduct of viva-voce, Dept. of Biotechnology, Kerala University of Fisheries and Ocean studies on 25 th June 2018.

*Dr. Elyas K.K., Professor, attended the 3rd Steering Committee Meeting of MoEF held on 30.08.2018 at New Delhi and made power point presentations of the Final Technical Report of the project entitled " A process development of ameliorating alarming environmental and health hazards posed by Phthalates

in Plastics via chemical, biochemical and bioremediation approaches” under the Investigatorship of (Late) Dr. sailas Benchamin

*Prof. (Dr.) P.R. Manish Kumar, head and Coordinator, Inaugurated the Event FOCUS-2018 organized by the Dept. of Molecular Biology, Kannur University and delivered keynote address.

*Prof.(DR.). P.R. Manish kumar, has delivered a lecture on ‘ *Plant based drug evaluation : An overview of standard techniques involving biochemical, molecular and cell based assays*’ in the National workshop on ‘ *Frontier areas in Plant Biotechnology* at Centre for Plant Biotechnology and Molecular Biology, College of Horticulture, Kerala Agricultural University, Thrissur, on 26th, November, 2018

*Prof.(DR.). P.R. Manish kumar has delivered a lecture presentation on ‘ Molecular Diagnostics in Health and Disease ’ on Dec 8th, 2018 at Thrissur in connection with SILEX 2018 (6th National conference and 19th South Indian Annual Conference) organized by Students Association of Medical Lab Technologists

*Prof. (Dr.) Elyas K.K., has handled a session on *Biopharmaceuticals – Biotech Approaches* in the Faculty and Staff Development Training Programme on Processing and Engineering of Drugs and Pharmaceuticals at the Dept. of Chemical Engineering, Govt. Engineering College, Thrissur on 13.12.2018.

*Dr. Elyas K.K., Professor, participated and presented the progress report at the Third Meeting of DBT-HRD Task Force to review the progress of postgraduate teaching programme funded by DBT Govt. of India on 12th and 13th of December, 2018 at the Conference Hall, CGO Complex, New Delhi.

*Sri. Gopinathan C, Associate Professor, has been invited as a speaker for one day seminar on the topic “ Biogas Technology – Advances, as a part of SWASTHA SHUDHI- Science popularization programme” on solid waste management organized by Dept. of Biotechnology, supported and sponsored by KSCSTE at St. Mary’s College, Thrissur on 16.11.2018.

2019

Invited Lectures					
Sl.	Name	Title of the event	Organizer & venue	Int.nation al/Nation	Date
1	Prof. (Dr.) Elyas K.K	Inauguration of the Common Instrumentation Laboratory	inaugurated the Common Instrumentation Laboratory of GEMS Arts and Science College, Ramapuram, Malappuram and delivered a talk on ‘ Recent Advances on Microscopic Techniques’	National	19.02.2019
Sessions Chaired					
1	Prof.(Dr.) P.R. Manish Kumar	Chairman of Board of adjudicators	open defence of Ms. Haritha H Nair, Dept. of Biotechnology, Kariavattom Campus, University of Kerala.	National	24.01.2019

2	Prof.(Dr.) P.R. Manish Kumar	Inaugurated B.sc. Botany programme	S.N. College, Vatakara.	National	07.08 .2019
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- Dr. P.R. Manish Kumar, Professor, served as the Chairman of Board of adjudicators for holding the open defence of Ms. Haritha H Nair, Dept. of Biotechnology, Kariavattom Campus, University of Kerala on 24.01.2019.
- Prof. (Dr.) P.R. Manish Kumar, has attended a confidential meeting on 14.03.2019 at CE's Office at Kannur University, Thavakkara Campus, kannur
- Ms. Megha K.B., Joseph Madassery, Dr. Elyas K.K., presented oral in a Conference on Deliberation on translation of Basic Scientific Insights into affordable Health care Products, organized by CSIR-NIIST, Trivandrum during 25th to 27th February, 2019.
- Aiswarya U.S. , Dr. Smitha V.B., presented oral in a Conference on Evaluation of Medicinal Plant *Corallocarpus epigaeus* for anticancer property, organized by CSIR-NIIST, Trivandrum during 25th to 27th February, 2019.
- Ahlam Abdul Aziz, Shaniba V.S. and Dr.P.R. Manish Kumar, presented a paper entitled 'Antimicrobial and antiproliferative potential of phyto-mediated zinc oxide nanostructures synthesized employing *Annona muricata* L. CRDB-2019' in an International Conference on Research and Development in Biosciences organized by Department of Biotechnology and Microbiology, Kannur University during 17th to 19th January, 2019.
- Soumya T., Lakshmipriya T., Jayasree P.R., Dr. Manish Kumar P.R., presented a paper entitled 'Phytochemical analysis, antioxidant and antiproliferative activities of organic solvents from *Curcuma haritha* - an endemic species from Western ghats of Kerala. CRDB-2019' in an International Conference on Research and Development in Biosciences organized by Department of Biotechnology and Microbiology, Kannur University during 17th to 19th January, 2019. (**Best Poster Award**).
- Ms. Deepthi Madayi, Surya P.H., Dr. Elyas K.K., presented poster in ICACSB - 2019 at Prist University, Thanjavoor during 19th to 21st February, 2019.
- Prof. (Dr.) Elyas K.K., Head & Coordinator, inaugurated the Common Instrumentation Laboratory of GEMS Arts and Science College, Ramapuram, Malappuram and delivered a talk on 'Recent Advances on Microscopic Techniques'
- Dr. Elyas K.K., was invited as a **Speaker** to the 9th World Congress on Immunology, held in Barcelona, Spain on 09 - 10 December 2019. This event is a gathering of the best scientists from around the world who share a common interest in sustainable development of the research field through innovative ideas. The conference provided the participants a dynamic platform to share their views and ideologies about their topic of interest.

2020

Invited Lectures					
Sl. No	Name	Title of the event	Organizer & venue	Int.national/National	Date
1	Dr.K.K.Elyas	Webinar on Ocular Immunology - an Update	Department of Optometry and Ophthalmological Techniques by MES Keveeyam College, Valanchery	State level	13.08.2020

27. **Details of teachers participated in Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.(participant, presented paper, chaired the session)**

2016

Sl No	Name	Title of the event	Organizer & Venue	International/National	Period
1	Dr. Smitha V.B.	New trends in Biotechnology	St. Joseph's College, Thrissur	National	Jan 5th and 6th, 2016
2	Dr. Smitha V.B.	Neutraceuticals and Chronic diseases)	Kochi	International	September 2016

2017

Sl No	Name	Title of the event	Organizer & Venue	Int.national/National	Period
1	Ahlam Abdul Aziz, V.S.Shaniba, Dr. P.R. Manish Kumar	National seminar on emerging trends in chemical research	Christ college, Irinjalakuda	National	Feb 28-Mar 1
2	Ahlam Abdul Aziz, V.S.Shaniba, Dr. P.R. Manish Kumar	Int.national conference on advances in functional materials	Anna University, Chennai	National	Jan 6-8,
3	V.S.Shaniba, Ahlam Dr. P.R. Manish Kumar	National seminar on emerging trends in chemical research	Christ College, Irinjalakuda,	National	Feb 28-Mar 1, 2017.
4	V.S.Shaniba, Ahlam Abdul Aziz, Dr. P.R. Manish Kumar	International Conference on Advances in Functional Materials (ICAFM)	Anna University, Chennai	National	Jan 6-8, 2017
5	Soumya T., Lakshmi priya T., Jayasree Dr. P.R. Manish Kumar	International 36th Annual conference of Indian Association for Cancer Research	Amala Cancer Research Centre, Thrissur	National	Feb-9-11, 2017
6	Soumya T Lakshmi priya T., Jayasree Dr. P.R. Manish Kumar	29th Kerala science congress,	Marthoma college, Thiruvalla, Pathanamthitta	National	28-30 Jan, 2017.

7	Lakshmi Priya T., Soumya T., Jayasree Dr. P.R. Manish Kumar	International 36th Annual conference of Indian Association for Cancer Research	Amala Cancer Research Centre, Thrissur	National	Feb-9- 11, 2017
8	Lakshmi Priya T., Soumya T., Jayasree Dr. P.R. Manish Kumar	29th Kerala Science Congress	Marthoma college, Thiruvalla, Pathanamthitta	National	28-30 Jan, 2017.
9	Anusha T.S. Dr. Elyas K.K	International conference on Neutraceuticals and chronic diseases	Indian Institute of Technology and Society for Neutraceuticals and chronic diseases	International	1-3, Septemb er 2017
10	Anusha T.S. Dr. Elyas K.K	109 th Indian Science Congress	S V University, Tirupati	National	3-7 Sep 2017
11	Manju Mohan Dr. Elyas K.K	International conference on Neutraceuticals and chronic diseases	Indian Institute of Technology and Society for Neutraceuticals and chronic diseases	International	1-3, Septemb er 2017
12	Manju Mohan Dr. Elyas K.K	109 th Indian Science Congress	S V University, Tirupati	National	3-7 Sep 2017
13	Deepthi V.C Dr. Elyas K.K	29 th Kerala Science Congress	Marthoma College, Thiruvalla	National	28-30 Jan 2017
14	Deepthi V.C Dr. Elyas K.K	Recent trends in Microbiology	Dept. of Life Science, Calicut Uty	National	26,27- Sep, 2017
15	Manju Mohan Dr. Elyas K.K	29 th Kerala Science Congress	Marthoma College, Thiruvalla	National	28-30 Jan 2017
16	Dr. Smitha VB	National Seminar on Phytochemistry and Pharmacognosy	Directorate of Collegiate Education ,Govt. College for Women ,Trivandrum	National	4-6, October 2017
17	Dr. Smitha VB	cashless transactions”	Insight, ICTcentrefo the differently abled at CHMK Library, University of Calicut	National	January 31 and February 1, 2017
18	Dr. Smitha VB	36 th Annual Conf. of Indian Association for Cancer Research	Amala Cancer Research Centre, Thrissur	National	Feb 9-11, 2017
19	Dr. Smitha VB	National Seminar on Recent Trends in Microbiology	Dept. of Life Science, University of Calicut	National	Septemb er 26 - 27, 2017
20	Dr. Smitha VB	National Seminar on Phytochemistry and Pharmacognosy	DCE, Govt. of Kerala at Govt. College for Women, TVM	National	4-6, October 201
21	Sri.Gopinathan C.	Global Biotechnology Congress 2017- poster presentation	Westin Copley Place, Boston, USA	International	July, 10- 13, 2017
22	Sri.Gopinathan C.	International Conference on Biotechnology and	PJTSAU, Hyderabad, India	International	Oct, 26- 27, 2017

		Health care			
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2018

Si No	Name	Title of the event	Organizer & Venue	International /National	Period
1	Sri. Gopinathan C	4 th Int.national Con.on Biotechnology and Genetic Eng.	Madrid, Spain	International	Sept24-25,2018
2	Dr. Smitha V.B	Tubers of the Medicinal Plant <i>Corallocarpusepigaeus</i> Possess Potent Anti-Cancer Principles Effective against Hepatocellular Carcinoma	3 rd Int.national Con. on "Nutraceuticals andChronicDiseases",Ris hikesh-Dehradun, India	International	Sept14-16, 2018
3	Dr. Smitha V.B	New Avenues in Bioscience Research	School of Biosciences, M.G.University, in association with DST and PURSE	International	19 and 20 th March, 2018
4	Dr.K.K.Elyas	Endophytic Fungus from the leaves of th medicinal Plant <i>Elaeocarpus sphaeracus</i> (Gaertn.) K. Schum.and their antibacterial activity	ICPM-2018 (International conference on phytomedicine)	International	29-31 August 2018
4	Dr. Smitha V.B	Bioprospecting a Strategy for Discovering Chemotherapeutic Agents for Cancer	National Seminar on New Horizons in Cancer Treatment and Prevention, Sri Narayana College kollam	National	March 16,17 2018
5	Dr. Smitha V.B	A Bioactive Fraction from the Medicinal Plant <i>Corallocarpusepigaeus</i> Induces Apoptosis in Hepato-Carcinoma cells	Seminar on New Horizons in Cancer Treatment and Prevention,Sri Narayana College kollam	National	March 16,17 2018
6	Sri.Gopinathan C.	Enhancede production of Bacillus thuringiensis subspecies Israelensis Delta endotoxin by supplementation of Rotten Mango Juice and Fish aminoacid as medium suppliments	3 rd International Conference on Bioscience and Biotechnology (Biotech - 2018) Colombo, Srilanka	International	March 8-9, 2018
7	Dr. P.R. Manishkumar	'Synthesis, Characterization and in lab assessment of biofunctionalized Zinc oxide nano structure.'	Con.on emerging synergies in agriculture,food processing engineering and biotechnology. KarunyaUty, Coimbatore	International	21 st – 23 rd February, 2018.
8	Dr.K.K.Elyas	Endophytic Fungi from the	(International	International	February

		medicinal plants <i>Elaeocarpus sphaeracus</i> (Gaertn.) K. Schum. And <i>Myristica fragrans</i> Houtt . Antimicrobial properties	Conference on Emerging Synergies in Agriculture, Food Processing Engineering and Biotechnology -		21-23, 2018
9	Dr.K.K.Elyas	Kinetic properties and MASCOT analysis of a purified proteinaceous protease inhibitor from <i>Macrotyloma uniflorum</i> seeds and its medicinal properties.	(International Conference on Emerging Synergies in Agriculture, Food Processing Engineering and Biotechnology -	International	February 21-23, 2018
10	Dr. P.R. Manishkumar	a potent fraction from the medicinal plant, <i>Corallocarpusepigaeus</i> induces cytotoxicity in hepatocellular carcinoma via induction of apoptosis	7 th International Conference on Translational Cancer Research, February 2018, IIT Madras,Chennai,	International	Feb 8-11 2018
11	Dr. Smitha V.B	A Study on the Anticancer Potential of the Medicinal Plant <i>Corallocarpusepigaeus</i>	30 th KeralaScience Congress,Brannan College,Thalassery, Kannur	National	January 28-30, 2018
12	Dr. Smitha V.B	Scientific Analysis of the Bioactive Properties of Mistletoe <i>Dendrophthoefalcat</i> <i>a</i> , Growing on the Spice Plant <i>Myrisitcafragrans</i>	30 th Kerala Science Congress, , Brannan College,Thalassery, Kannur	National	January 28-30, 2018
13	Dr. Smitha V.B	Conference on Translational Cancer Research	7 th Int.national Con. on Translational Cancer Research, Feb 2018, IIT Madras,Chennai	International	February 2018
14	Dr.K.K.Elyas	Isolation,Identification of EndophyticFungus from the leaves of <i>Elaeocarpus</i> <i>sphaeracus</i> K. Schum.	30 th Kerala science congress	National	28-30 January 2018
15	Dr.K.K.Elyas	Purification and biochemical characterization if a novel serine protease inhibitor from <i>Albizia procera</i> seeds: insight into structural and medicinal properties.	30 th Kerala science congress	National	28-30 January 2018
16	Dr.K.K.Elyas	Molecular Biology- An Underpinning to life sciences	Two day Int.national seminar on Molecular BiologyAn Underpinning to life sciences Farook college CLT	International	08 to 09 January 2018.
17	Dr.K.K.Elyas	Peptide mass fingerprinting and MASCOT analysis of a purified proteinaceous protease inhibitor from <i>Macrotyloma uniflorum</i> seeds	Two day Int.national seminar on Molecular BiologyAn Underpinning to life sciences Farook college CLT	International	08 to 09 January 2018.
18	Dr. Smitha V.B	A potent Fraction from the Medicinal Plant	Proceedings of 7 th ICTCR	International	February 2018

		Corallocarpusepigaeus induces cytotoxicity in hepatocellular carcinoma via Induction of Apoptosis			Page 78
19	Aiswarya U S, Haritha JaiceRavindran,RaviShankar Lankalapalli, Ruby John Anto, Smitha V B	Corallocarpusepigaeus: A Potent Medicinal Plant with Anti-Cancer Property, State Level Seminar on Biotechnology for "Biodiversity Conservation and Utilization"	Sree Narayana College of Technology, Kollam.	National	November 2, 2018

2019

Sl No	Name	Title of the event	Organizer & Venue	International/National	Period
1	Ms. Megha K.B., Joseph Madassery, Dr. Elyas K.K	8 th Annual meeting of Indian academy of biomedical science	CSIR-NIIST, Trivandrum	National	25 th to 27 th February, 2019
2	Dr. Smitha V.B.	8 th Annual meeting of Indian academy of biomedical science.	CSIR -NIIST Trivandrum	National	25 th to 27 th February, 2019
3	Deepthi Madayi, Surya P.H., Dr. Elyas K.K	ICACSB - 2019	Prist University , Thanjavoor	National	19 th to 21 st February, 2019
4	AiswaryaU.S, Dr. Smitha V.B	Conference on Evaluation of Medicinal Plant Corallocarpus epigaeus for anticancer property	CSIR-NIIST, Trivandrum	National	25 th to 27 th February, 2019
5	Ahlam Abdul Aziz, Shaniba V.S. and Dr.P.R. Manish Kumar	International Conference on Research and Development in Biosciences	Department of Biotechnology andMicrobiology, Kannur Uty	International	17 th to 19 th January, 2019.
6	Soumya T., Lakshmipriya T., Jayasree P.R., Dr. Manish Kumar P.R	International Conference on Research and Development in Biosciences organized	Department of Biotechnology andMicrobiology, Kannur Uty	International	17 th to 19 th January, 2019.
7	Faisal MoossaAthikkavil ,RemyaJohny , Ruby John Anto & V.B. Smitha	XLII All India Botanical Con. & National Symposium on "Innovations and Inventions in Plant Science Research	Dept. of Botany, University of Calicut	National	November 6-8,2019

- Dr. Smitha V.B., Asst. Professor, attended Refresher Course conducted by HRDC, Karyavattom, Kerala University from 24.01.2019 to 14.02.2019.

2020-21

Sl No	Name	Title of the event	Organizer & Venue	International/National	Period
1	Dr. Smitha V.B.	Annual meeting of Indian Association of Cancer Research	Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram	National	Feb 5-7, 2020
2	Dr. Smitha V.B.	32nd Kerala Science Congress	organised by the KSCSTE at Muntoor, Palakkad	National	Jan 25 to 27,2020]
3	Faisal Moossa, RemyaJohny, Aiswarya U.S., Ruby John Anto & Smitha V.B.	ANTICANCER POTENTIAL OF AN AROMATIC MEDICINAL PLANT Plectranthus vettiveroides	THE INT.NATIONAL CONF. ON AGRICULTURE, CLIMATE CHANGE & LIFE SCIENCES 2021 Organized by International Multidisciplinary Research Foundation, India	International	05 March 2021

28. Participation of teachers in various academic activities as members of committees at University level, State level, National level, International level bodies. (give details)

A. Dr. P.R. Manish Kumar

NATIONAL

1. Served as Chairman, Board of studies (Single Board) in Genetics, Univ. of Calicut
2. Member – Board of Studies in Biotechnology, Univ. of Calicut.
3. Served as DBT (Govt. of India) nominee – Institutional Biosafety Committee - at Indian Institute of Spices Research (IISR), Calicut.
4. External subject Expert nominee– Research Admission Committee – IISR, Calicut; Department of Biotechnology, VIT, Vellore.
5. Member – Board of Studies (Marine Biotechnology) KUFOS –Kerala University of Fisheries and Ocean Studies, Panangad, Kochi.

INTERNATIONAL

1. Member – PhysarumPlus.org – International community of scientists researchers of Physarum polycephalum and other slime molds

B. Dr. K.K. Elyas

Membership in Scientific bodies

- Life Member, Society for Biotechnologists of India (SBTI).
- Life Member, Association of Microbiologists of India, (AMI)
- Life Member, Society of Clinical Chemists, Kerala
- Life Member, Society for Neurochemistry, India

Membership in academic bodies

- Chairman, Board of Studies in Biotechnology, Calicut University.
- Chairman Board of Examiners, BSc Biotechnology Calicut University.
- Member Board of Examiners, MSc General Biotechnology Calicut University
- Member Board of Examiners, MSc Food Science and Technology Calicut University
- Member Board of Examiners, MSc Biotechnology/ Microbiology M.G. University
- Member Board of Examiners, MSc Biotechnology/ Microbiology Kannur University
- Member Board of Examiners, M.Sc Biotechnology, Cochin university of Science and Technology,
- Member, Board of studies in Marine Biotechnology, Cochin university of Science and Technology.

C. Sri. Gopinathan C

- Industrial consultant for Blackwater biotech private Ltd. Mumbai (Biopesticides) and for national research development cooperation (Biomethane Project).
- Former **Solid waste management consultant** for Corporation of Calicut, Tellicherry municipality and Vallikunnu panchayath, Kerala, India.
- Member of Academic council, University of calicut.
- Former member of Doctoral committees of Chemistry , Botany and zoology Departments, University of Calicut.
- Member of the Waste management committee, constituted by the Vice chancellor, University of calicut.

D. Dr. Smitha V.B.

- Member, Society **For Biotechnologists, India**
- **Member, Indian Association of Cancer Research**
- **Member, Society for Neutraceuticals and Chronic Diseases**
- Board of Studies-Biotechnology.

29. **Details of teachers appointed/nominated on Editorial Boards at university, state, national and international levels. : Nil**

30. **Awards / Prizes and recognitions received by teachers at university, state, national and international level: Nil**

31. **Awards and Prizes received by students at university, state, national and international level: Nil**

32. **Details of Seminars/ Conferences/Workshops organized at university, state, national and international level and the source of funding with details:**

Name of Conference/ Seminars / Workshops	Funding agency	No. of Participants	University/State/National/International	Dates
<i>Cheminformatics " Insilico Crafts Innovations".</i>	DBT fund	50	University level	06-12-2016 to 8/12/2016
Practical Training in Biotechnology and Allied Areas".	UGC- GDA Ext. Activities	50	University level	Feb, 2017
Young Scientist meet	State Plan Grant	100	National level	Feb 22 nd & 23 rd , 2018

Genom sequence and its application in Plantation crops by Dr. Rajesh M.K., Principal Scientist, CPCRI	DBT fund	50	University level	29.03.2019
Role of STIL in colorectal Cancer Stemcells' by Tapas Pradhan. Research Scholar, RGCB, TVM	DBT fund	50	University level	28.03.2019
one day workshop in Bioinformatic	BIF, DBT fund	50	University level	08.03.2019
Three Day workshop in Biotechnology	State plan Grant		University level	11 –13 Feb,2019

33. Student profile programme-wise at PG

PG	Applications Received	No. of students Admitted	Seats Available	Male	Female	Total	Year
2016-17	JNU prepares ranklist and send to the Dept. Of Biotechnology, UoC	9	12	2	7	9	
2017-18	JNU prepares ranklist and send to the Dept. Of Biotechnology, UoC	9	12	4	5	9	
2018-19	JNU prepares ranklist and send to the Dept. Of Biotechnology, UoC	6	12	2	4	6	
2019-20	JNU prepares ranklist and send to the Dept. Of Biotechnology, UoC	8	12	2	6	8	
2020-21	163	17	15 +2(open all india)	2	15	17	

34. Year-wise results of students at PG:

PG	Year	Appeared	Passed	Pass %	Grade %			
					O	A	B	C
2015-17 batch	2017	9	9	100				
2016-18 batch	2018	9	9	100				
2017-19 batch	2019	9	9	100				

2017-19 batch	2020	6	6	100				
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35. Information about M. Phil. programme:

Year	Applications Received	No. of students admitted	Male	Female	Total
2016-17	4	None Qualified	None Qualified		0
2017-18	13	None Qualified	None Qualified	---	---
2018-19	5	None Qualified	None Qualified		
2019 -20	5	1	0	1	1
2020-21	13	2	0	2	2

36. Information about Ph. D. programme :

Year	Applications Received	No. of students admitted	Male	Female	Total
2016-17	0	0	--	--	--
2017-18	25	1	0	1	1
2018-19	7	3	1	2	3
2019-20	10	2	0	2	2
2020-21	0	*1	0	1	1

Direct appointment. Qualified NET/JRF.

37. Number of students awarded M.Phil., Ph.D ,Degree :

Year	M.Phil	Ph.D.	Male	Female	Total
2016-17	3	1	1	3	4
2017-18	Nil	Nil	--	--	--
2018-19	Nil	2	0	2	2
2019-20	Nil	6	0	6	6
2020-21	0	2	0	2	2

38. Diversity of Students : (Year-wise)

Name of the Programme	% of students from the same university	% of students from other universities within the State	% of students from universities outside the State	% of students from other countries
UG	Nil	Nil	Nil	Nil
PG	2016-17(Nil)	2016-17(44%)	2016-17(56%)	2016-17(Nil)
	2017-18 (11%)	2017-18(11%)	2017-18(77%)	2017-18(Nil)
	2018-19 (17%)	2018-19(17%)	2018-19 (66%)	2018-19 (Nil)
	2019-20(63%)	2019-20(Nil)	2019-20(27%)	2019-20(Nil)
	2020-21 (65%)	2020-21 (12%)	2020-21 (23%)	2020-21 (Nil)
M.Phil.	2019-20(100%)	----	-----	----
	2020-21(100%)	---	---	---
Ph. D.	2016-17 (Nil)	2016-17 (Nil)	2016-17 (Nil)	2016-17 (Nil)
	2017-18 (100%)	2017-18(Nil)	2017-18(Nil)	2017-18(Nil)
	2018-19 (67%)	2018-19 (Nil)	2018-19 (33%)	2018-19 (Nil)
	2019-20 (50%)	2019-20 (50%)	2019-20(Nil)	2019-20(Nil)
	2020-21(100%)	2020-21 (Nil)	2020-21 (Nil)	2020-21 (Nil)

39. Number of students cleared Civil Services and Defense Services examinations, NET, SET, GATE and other competitive examinations? Give Category wise data.

Year	MPSC/UPSC	NET/SET	GATE	Other Exams	Total
2016-17	1	3	2	Nil	6
2017-18	Nil	5	2	1(DBT – JRF)	8
2018-19	Nil	2	4	Nil	6
2019-20	Nil	Nil	Nil	Nil	Nil
2020-21	Nil	Nil	Nil	Nil	Nil

40. Student progression/ placement record: Number/ percentage of students proceeded for higher studies Number/percentage of students placed:

Year	% proceeded for higher studies		% of students placed
	UG to PG	PG to Ph.D./ M. Phil	
2015-16	---	33.33%	44.4%
2016-17	---	22%	44.4%
2017-18	---	56 %	11 %
2018-19	--	--	33%

41. Diversity of Faculty:

Teaching faculty	%
from the same university	33
from other universities within the State	66
from other States	--
from outside the country	--

42. Number of faculty who were awarded M.Phil., Ph.D., D.Sc. / D.Lit.: 2

43. Present details of departmental infrastructural & other facilities with regard to

a) Central Library Books and Journals, etc, relevant to Department :

e-Books	These facilities are centrally purchased by CHMK Library and available in the campus through LAN .
Journals	
e-Journals	
Digital Database	
CD & Video	

b) Departmental Library (books, journals etc.) :

	Existing		Newly added		Total	
	No.	Value	No.	Value	No.	Value
Text Books	1,958	59,05,985	15	1,00,000	1,958	60,05,985
Reference Books	363		3		363	
Library automation	Open source software Koha fully automated since 2013.					

- c) Computers and Internet facilities for staff : Available
- d) Total number of class rooms : 4
- e) Class rooms with ICT facility : 2
- f) Students' laboratory : 6
- g) Research laboratories : 8
- h) Seminar Hall : 2
- i) Smart class room : 2
- j) Any other facility LCDs, : 4

44. List of post-doctoral students and Research Associates

a) Post-doctoral. Students-

Sr. No.	Name of the Faculty	Post-doctoral Students	Research Topic
1	Dr. K.K. Elyas	Safia	Enhancing the anti tumor effect of genistein and sulphoraphane with a biocompatible super paramagnetic nano drug delivery

b) Research Associates : Nil

45. Number of post graduate students getting financial assistance from the university/state / central government

M.Sc. Biotechnology programme was financially supported by DBT, Govt. of India and students admitted to the programme were eligible for a monthly student ship of Rs.5000/-, till DBT, Govt. of India ceased the financial assistance on 31.03.2020, and continues the support to the ongoing batch admitted in 2019 Academic year. For the mentioned period (2016-2020), a total of 49 students got this stipend.

46. Curricular Aspects:

a) Does the faculty take initiative in curriculum development process?

At least in every 3 - 5 years the curriculum is revised. The board of studies in Biotechnology does the revision in consultation with the department. The basic requirement and advancements are considered by the members to initiate the process. The revised syllabus is approved by the faculty of science, academic council and other higher bodies of the University. Last time revised the entire curriculum in 2019 for M.Sc.

b) Is curriculum suitable to make students globally competitive in the

Subject? If yes, substantiate.

Yes. Students are getting selected in National and International academic and research Institution for their higher studies. Our Alumni are also placed in industries and other academic Institutions.

c) Does the department offer program with sufficient no. of electives options.

Yes. There are seven elective courses offered by the Dept. in the Second Semester and the students can opt from these electives

d) While framing curriculum, is feed-back taken from stakeholder's viz. Students/Alumni/Parents/Employers considered?

Yes.M.Sc. Syllabus is framed by the National body constituted by Dept. Of Biotechnology. Govt. of india, New Delhi.

Feedback was received from 165 experts and 20 students belonging to academic institutions, research organizations and industry regarding addition of advanced topics, deletion of elementary, redundant and overlapping topics, updation of laboratory practicals, re-adjustment of credit load, incorporating 'technology' component in the curriculum, among others. It was also suggested that re-orientation of curricula should be done keeping in view the needs of the industry.

e) What is the frequency of curriculum revision? (3/4/5 years or more)

Periodical Revision of Curriculam based on recommendations/ Guidelines of Biotechnology Consortium of Govt. of India. Revision is made at an Interval of 3 to 5 years

f) Does the curriculum have emerging thrust areas, including interdisciplinary areas? (If yes, elaborate).

Yes. Recently we have incorporated thrust areas of all biotechnology subjects along with the other scientific disciplines like physics, Chemistry, mathematics, Statistics, Bioentrepreneurship

47. Teaching-Learning, Evaluation.

1) Number of teachers preparing & following Academic Teaching plan

All the three teachers are preparing & following Academic Teaching plan

2) How many teachers use the following teaching methods?

a) Interactive lecture method using blackboard, Group discussions, Problem solving, Seminars.

All the teachers use Interactive lecture method using blackboard, Group discussions, Problem solving. Weekly Seminars are conducted for the students by selecting a topic in recent advancements in Biotechnology from a standard journal and all the teachers and students participate in the seminar for the critical evaluation .

b) Use ICT methods to support lectures. : All the faculty members are using ICT based system for the teaching purpose.

3) Does the Department have Peer review processes? If yes, are the suggestions Effectively used to improve the teaching quality?

Nil.

4) Does the department have any mechanism to ensure that entire syllabus is completed?

Yes. Department Council discusses the completion of Syllabus before going for the terminal examination.

5) Do you offer Bridge/Remedial courses? If yes, Give details.

Every week one class hour is given for tutorial, during which students clarify the doubts and concepts about their concerned courses and also discuss about their seminar papers.

6) What is the method for conducting internal evaluation?

Two Internals and One External for Theory and Laboratory Course

48. Teacher Performance:

1) Whether the performance of the teacher assessed by the students? If yes, are the feedback reports analysed and suggestions communicated to teachers?

Yes.

**2) Number of teachers getting a) Very Good ___ b) Good : 3
c) Average _____ remarks from students.**

3) Whether suggestion boxes are kept in the department to get suggestions from students on infrastructural facilities available in the department?

Yes

4) Are the suggestions received from students used for improvement of facilities?

Yes

5) Do teachers submit Self-Appraisal Reports? Are these reports appraised by HOD and forwarded to the university with comments?

Yes

6) What is the individual faculty wise h index?

7) Give details of “beyond syllabus scholarly activities” of the department.

Workshops/Seminars are conducted in the Department with the participation of faculties and students annually. Cultural activities are conducted in connection with National festival.

49. List the distinguished alumni of the department (maximum 10)

Sl no.	Name of alumni	Batch	Position held, Details of Award/ Recognition, Contact address
1	Dr .Sohail Akhtar	1997-1999	Senior Scientist (CSIR Young Scientist Award-2006, National Academy of Sciences, India, Young Scientist Award-2006) Molecular and Structural Biology Division, LSN005, CSIR-CDRI, Sector 10, Jankipuram Extension Lucknow, 226031, UP, INDIA, sohail@cdri.res.in,, sohailcdri@yahoo.co.in
2	Dr. Manju Y K	1997-	Senior Scientist , Microbiology Division, CSIR-CDRI

		1999	Sector 10, Jankipuram Extension, Lucknow, 226031 UP, INDIA, Email:manju@cdri.res.in
3	Dr. Mukesh Pasupuleti	1998-2000	Senior Scientist ,PCN 206, Microbiology Division CSIR-Central Drug Research Institute, LUCKNOW 226 031, INDIA, Email:mukesh.p@cdri.res.in, mukeshpasupuleti@gmail.com
4	Dr. Aruna Naorem	1999-2001	Associate Professor ,,Dept.of Genetics,Delhi University Bachhawat Block Basement, University of Delhi, South Campus Benito Juarez Road New,Delhi- 110021, +91-11-24110189 ext- 336,Email:aruna.naorem@south.du.ac.in
5	Dr.Sudhir Singh	2000-2002	Scientific Officer F ,Nuclear Agriculture and Biotechnology Division Bhaba atomic research centre, Mumbai
6	Dr. Jata sankar	1999-2001	Assistant Professor (Senior Grade) Jaypee University of Institute of Biotechnology and Bioinformatics, Himachal Pradesh, Email:jata.shankar@juit.ac.in, , jata_s@yahoo.com
7	Dr.Rama Krishna Kancha	1999-2001	Assistant Professor ,Plant Biotech Division, Osmaniya University, Hyderabad,Email : ickrishna@gmail.com
8	Dr. Viswanadham D	2000-2002	CEO, Knowledge park, Secodarabad, Hyderabad
9	Dr.Jay Kant Yadav	2000-2002	Asst Professor, Department of Biotechnology Central University, Rajasthan, jky.bio@gmail.com , jky_cftri @yahoo.com,jaykant Yadav@curaj.ac.in
10	Sudhanshu sukla	2006-2008	Faculty , IIT
11	Rahul Roy	2016-18	Pilot (Air force)

50. Give details of student enrichment programmes (special lectures / workshops / seminar) involving external experts.

Special lectures are conducted on selected topics by faculty members from other Universities including our Alumnis who are working in highly specialised areas.

51. How does the department ensure that programme objectives are constantly met and learning outcomes are monitored?

Mentoring system is available in the Department through which all the faculty members meet the students and guide them with their studies and extra-curricular activities. They also provide advice relating to selection of major, career guidance and personal problems. The mentors act as guides to the students during their summer and final projects. Mentors coordinate with the parents regarding the progress of the students. Mentors communicate with fellow faculty and promote mentees at the time of difficulty / opportunity to help them develop further in their areas of interest.

52. Highlight the Special facilities (if, any) of the Department.

Facilities are created in the Department for doing Research in the Biotechnology area.Specialised Instruments like HPLC, FPLC, Real time PCR, Multimode Microplate reader, High speed centrifuge, UV Visible Spectro photometer, Nanotrope etc are used by the Scholars to get in-hand experience. Tissue culture facility, Animal House facilities are also available in the Department

53. Highlight the unique features of the department.

So far the Department is having intake from different parts of the country by All India entrance exam conducted by DBT, Govt. of India, making it very diverse.

54. State the Innovative practices adopted in the department.

Teachers use smart classrooms for the presentations. Computers, over head projectors, and LCD projectors are used for teaching purpose. Power-point presentation, hand written or printed transparencies for class notes and hand outs are given to the students as teaching materials. Teachers use ICT enabled online Classes for teaching and evaluation.

55. Highlight the participation of students and faculty in extension activities.

- Demonstrations are made by the students for the public and other students of the college in Biotechnology related areas to popularise the subject.
- Special lectures were conducted by the faculty members for the general public especially on National science day celebrations and General seminars.
- 8000 litre improved anaerobic digester for the production of food/canteen waste implemented in the Calicut University Campus under the technical supervision of Sri. Gopinathan C, Asso. Professor, Dept. of Biotechnology, University of Calicut.
- As part of NABARD (NABARD PRANCHE) funded project on Bioenergy, Dept. Will be providing technologies for the Implementation of Biogas project to produce electricity from organic waste. University will be benefitted by having an annual return of approx. 1.15 crore per annum.
- Calicut Corporation has requested for renovation of 4 ton per day biogas plant with technical assistance of Sri. Gopinathan C.
- Lakshadweep administration has requested for technical consultancy for installation of 2.5 ton per day biogas plants in Kavarathi as per meeting held on 27.04.2021.
- Department have collaboration in the areas of research and education in Transplantation Immunology and related fields with IQRAA International Hospital & Research Center, Calicut and MIMS Hospital, Calicut

56. Detail five major Strengths, Weaknesses, Opportunities and Challenges (SWOC) of the department.

a. Strengths:

- i. Infrastructure facility including specialised instruments for the biotechnology research and teaching.
- ii. In hand training practical oriented training programmes enabling the Scholars to take the challenges in the area of Biotechnology.
- iii. Exchange of academic and Research knowledge and facilities through Collaboration with other Universities and hospital.
- iv. Nationwide selection and promotion of activities and Job opportunities in biotech areas.
- v. Financial support from DBT, govt. of India for the M.Sc. Biotechnology teaching programme

b. Weaknesses:

- i. Improvement of faculty positions needed for the interdisciplinary areas
- ii. Outsourcing high facilities required for the Research programme.
- iii. Strengthening extra mural projects for the sustainability of the research activities.
- iv. Need more Industrial collaboration.
- v. Working models and pilot plant requirement to be satisfied.

c. Opportunities:

- i. Multi disciplinary nature of Biotechnology gives more opportunities in the area of own interest.
- ii. More National and International opportunities especially in research, Industrial field of red and green Biotechnology.
- iii. Promotion of Academic and research activities at the state and Central Government levels.
- iv. Start up opportunities as a Bio entrepreneurship.
- v. IPR , patent and Bioinformatics opportunities in the area of Biotechnology.

d. Challenges:

- i. Financial requirement for building the Infrastructure.
- ii. Updating the technological status.
- iii. Renewing the Infra structure based on the technological developments in Biotechnology.
- iv. Manpower Diversity required for the programme.
- v. National and international collaboration for this Inter disciplinary area of Biotechnology.

57. Future plans of the department:

- a. **Long term plans-** Building the Infrastructure for an International Standard. National and International research collaborations.
- b. **Short term plans** Extending laboratory services to academic and research Institutions for generating funds for sustainability. Creation of new opportunities and filling up of existing vacancies. Improvement of Infrastructural facility.

Declaration by the Head of the Department/Institution:

I am aware that the above information provided by the department will be validated by the AAA committee during the visit.

**Sd/-
Dr. K.K. Elyas
Head of Department**

Date:10.05.2021

Format for preparing the faculty profile:

(Provide the information for last five years from 2016-17 to 2020-21)

1. Name of the faculty: Dr. Smitha V B
2. Name of the Department: Dept of Biotechnology
3. Educational qualifications: Ph.D in Biotechnology
4. Present position: Asst Professor
5. Address for correspondence: C61 Sunflower, Sreenagar C, Venchavode, Sreekariyam, Trivandrum – 695 581
6. E-mail and contact number: smithanishad@gmail.com / 81398 66731
7. Specialization: Molecular Oncology
8. Total teaching experience: 10.5yrs
9. Courses taught: MSc Biotechnology, M.Phil Biotechnology
10. Research experience: 16.5yrs
11. Major research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI.
 - 1) Isolation, identification and characterisation of anti-cancer principle from the medicinal plant, "*Corallocarpusepigieus*" / 19/09/2016 – 4yrs / 31lakhs / KSCSTE / PI
12. Minor research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI.

Nil
13. Number of students awarded Ph.D. degree: Name of the student, topic of research, date of registration, date of declaration of Ph.D. degree.

Nil

14. Number of students registered for Ph.D. degree: Name of the student, topic of research, date of registration.

- 1) Aishwarya US / Mechanistic evaluation of anti-cancer potential of plants belonging to the family Cucurbitaceae against solid tumor cell lines / 16/03/2016.
- 2) Faisal MoossaAthikkavil / Isolation and identification of potential anti-cancer compounds from plants belonging to family of Lamiaceae against carcinoma cell lines, using *in silico* and *in vitro* techniques / 16/03/2016
- 3) RemyaJohny /scientific exploration of the anticancer potential of mistletoe, *dendrophthoe falcata*, growing on the spice plant *myristica fragrans* against colon cancer/21.06.2017

15. Provide information as indicated in 11 and 12 above.

16. Participation in conferences, symposia, seminars and workshops: International, national, state or university level, attended. Presented paper, chaired session. Resource person.

- 1) Chaired sessions in the International Conference on Molecular Biology : An underpinning of Life Science conducted by the Dept. of Zoology, Farrok College; Kozhikode, for two days [January 8-9,2018].
- 2) National Seminar titled New trends in Biotechnology Conducted at St. Joseph's College, Thrissur on Jan 5th and 6th, 2016
- 3) International Conference on Nutraceuticals and Chronic diseases, held at Kochi, Kerala, September 2016
- 4) Workshop on cashless transactions by Insight, ICT centre for the differently abled at CHMK
Library, University of Calicut, for two days [January 31 and February 1,2017]
- 5) IACR 2017 36 th Annual Conference of Indian Association for Cancer Research at Amala Cancer Research Centre, Thrissur; Feb 9-11, 2017
- 6) National Seminar on Recent Trends in Microbiology conducted by the Dept. of Life Science, University of Calicut; September 26 -27, 2017
- 7) National Seminar on Phytochemistry and Pharmacognosy organized by Directorate of Collegiate Education, Govt. of Kerala at Govt. College for Women, Trivandrum

- 8) National Seminar on New Horizons in Cancer Treatment and Prevention: From Bench to Bedside, March 2018, Sree Narayana College, Kollam
- 9) 7 th International Conference on Translational Cancer Research, February 2018, Chennai
- 10)30th Kerala Science Congress, January 2018, Thalassery, Kannur
- 11)National Seminar on “New Avenues in Bioscience Research conducted at School of Biosciences, M.G.University, in association with DST and PURSE 2 on 19 and 20 th March, 2018
- 12)Annual meeting of Indian Association of Cancer Research organised by Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram [Feb 5-7, 2020] at Thiruvananthapuram
- 13)32nd Kerala Science Congress organised by the KSCSTE [January 25 to 27,2020] at Munderoor, Palakkad
- 14)33rd Kerala Science Congress organised by the KSCSTE [January 25 to 27,2021
- 15)Talk titled “ Cancer therapeutics and preventives from Nature at Academic staff College, University of Calicut, October 25 th , 2018 sponsored by UGC/National
- 16)Talk titled” Bioprospecting for chemotherapeutic agents for Cancer” at National Seminar "New horizons in Cancer Treatment and Prevention: From Bench to Bedside” organized by the Department of Chemistry and Biochemistry, Sree Narayana College, Kollam, jointly sponsored by DST and KSCSTE, on 16th and 17th March 2018
- 17)Talk titled”Cancer chemotherapeutic agents from Nature” at The National Seminar on “New Avenues in Bioscience Research conducted at School of Biosciences, M.G. University, in association with DST and PURSE 2 on 19 and 20 th March, 2018,
- 18)Talk Titled “Bioprospecting for Cancer Chemotherapeutic agents from plants” at National Seminar on Phytochemistry and Pharmacognosy organized by Directorate of Collegiate Education, Govt. of Kerala at Govt. College for Women, Trivandrum on November 4 th and 5 th , 2017
- 19)Talk titled Cancer prevention: A case study approach with Cervical Cancer” at National Seminar titled New trends in Biotechnology Conducted at St. Joseph’s College, Thrissur on Jan 5 th and 6 th , 2016
- 20)Talk titled Cancer: Through the lens of Molecular Biology: February, 2015 ., on

World cancer day, at Audio Visual Theater of Farook college, Calicut

17. Innovative processes developed in teaching and learning.

Nil

18. Participation in curricular development:

Nil

19. Participation in co-curricular and extra-curricular activities.

Nil

20. Refresher and Orientation courses attended:

- 1) Refresher course on "Women studies and women empowerment" for teachers conducted by Academic staff college, Kerala university – 24/01/2019-14/02/2019

21. Examination /Evaluation reforms initiated:

Nil

22. Publication of research papers: in peer reviewed journals, non-peer reviewed journals, conference proceedings, impact factors, citations, h-index. Numbers in SCOPUS.

1. Mohan Shankar G.1., Vijai V. Alex, AmruthaNisthul A., Smitha V. Bava, SankarSundaram, Archana P. Retnakumari, SadasivanChittalakkottu and Ruby John Anto;Pre-clinical evidences for the efficacy of tryptanthrin as a potent suppressor of skin cancer;CellProliferation;Oct 30-2019 (IF-5.02)

2. Bava, Smitha V., Arun Kumar T. Thulasidasan, Chanickal N. Sreekanth, and Ruby John Anto. "Cervical cancer: A comprehensive approach towards extermination." Annals of medicine 48, no. 3 (2016): 149-161. IF : 3.886

3. Isha Godwin, Nikhil Ponnor Anto, Smitha V Bava, Mani Shankar Babu, Goodwin G Jinesh; Targeting K-Ras and apoptosis-driven cellular transformation in cancer; Cell death discovery, No. 7/1, Apr 14, 2021, IF - 4.114

4. FFC, A potent Fraction from the Medicinal Plant *Corallocarpusepigaeus* induces cytotoxicity in hepatocellular carcinoma via Induction of Apoptosis. Proceedings of 7th ICTCR 2018 page 78.
5. Aiswarya U.S., Haritha H. Nair, Ruby John Anto and Smitha V.B. - A study on the anticancer potential of the medicinal plant *Corallocarpusepigaeus*. Proceedings of 30th Kerala Science Congress 69-70 (2018 Jan.)
6. RemyaJohnny, Aiswarya U.S., Smitha V.B. Ruby John Anto scientific analysis of the bioactive properties of mistletoe *Dendrophthoefalcata*, growing on the spice plant *Myristica fragrans* Proceedings of 30th Kerala Science Congress 71-72 (2018 Jan.)
7. Faisal MoossaAthikkavil ,RemyaJohnny , Ruby John Anto & V.B. Smitha ., Cytotoxic activity of an endemic South Indian aromatic medicinal plant *Plectranthusvettiveroides* . XLII All India Botanical Conference & National Symposium on "Innovations and Inventions in Plant Science Research November 6-8,2019
8. Aiswarya U S, Haritha H Nair, JaiceRavindran, Ravi Shankar Lankalapalli, Ruby John Anto, Smitha V B, Evaluation of the Medicinal Plant *Corallocarpusepigaeus* for Anti-Cancer Property, 8th Annual meeting of Indian Academy of Biomedical Sciences & conference on Deliberation on Translation of Basic Scientific Insights into Affordable Health Care Products February 25-27,2019, Page No. 174-175, CSIR-NIIST, Thiruvananthapuram. .(Poster Presentation)
9. Aiswarya U S, Haritha H Nair, JaiceRavindran, Ravi Shankar Lankalapalli, Ruby John Anto, Smitha V B, *Corallocarpusepigaeus*: A Potent Medicinal Plant with Anti-Cancer Property, State Level Seminar on Biotechnology for "Biodiversity Conservation and Utilization" November 2, 2018, Page No. 24-25, Sree Narayana College of Technology, Kollam. (Oral Presentation)

10. Aiswarya U S, Haritha H Nair, JaiceRavindran, Ravi Shankar Lankalapalli, Ruby John Anto, Smitha V B, Tubers of the Medicinal Plant *Corallocarpusepigaeus* Possess Potent Anti-Cancer Principles Effective against Hepatocellular Carcinoma Cells, 3rd International Conference on “Nutraceuticals and ChronicDiseases” September14-16, 2018, Rishikesh-Dehradun, India.(Poster Presentation)
11. Smitha V B, Aiswarya U S, Bioprospecting a Strategy for Discovering Chemotherapeutic Agents for Cancer, National Seminar on New Horizons in Cancer Treatment and Prevention: From Bench to Bedside, March 2018, ISBN 978- 93-5300-765-2, Page No. 27.
12. Aiswarya U S, Haritha H Nair, Ravi Shankar L, Ruby John Anto, Smitha V B, A Bioactive Fraction from the Medicinal Plant *Corallocarpusepigaeus* Induces Apoptosis in Hepatocellular Carcinoma cells, National Seminar on New Horizons in Cancer Treatment and Prevention: From Bench to Bedside, March 2018, ISBN 978-93-5300-765-2, Page No. 13-14. (Poster Presentation)
13. Aiswarya U S, Haritha H Nair, Ruby John Anto, Smitha V B, FFC, a potent fraction from the medicinal plant, *Corallocarpusepigaeus* induces cytotoxicity in hepatocellular carcinoma via induction of apoptosis, 7th International Conference on Translational Cancer Research (7th ICTCR 2018) , February 2018, Page No.78. (Poster Presentation)
14. Aiswarya U S, Haritha H Nair, Ruby John Anto, Smitha V B, A Study on the Anticancer Potential of the Medicinal Plant *Corallocarpusepigaeus*, 30th Kerala Science Congress, January 2018, Page No.69. (Poster Presentation)
15. RemyaJohny, Aiswarya U S, Ruby John Anto, Smitha V B, Scientific Analysis of the Bioactive Properties of Mistletoe *Dendrophthoefalcata*, Growing on the Spice Plant *Myrsitcafragrans*, 30th Kerala Science Congress, January 2018, Page No.71. (Poster Presentation)

16. Faisal MoossaAthikkavil, RemyaJohny, Aiswarya U.S., Ruby John Anto & Smitha V.B. ANTICANCER POTENTIAL OF AN AROMATIC MEDICINAL PLANT Plectranthus vettiveroides. (THE INTERNATIONAL CONFERENCE ON AGRICULTURE, CLIMATE CHANGE & LIFE SCIENCES 2021), 05 March 2021, ISBN: 978-93-90146-15-4 Organized by International Multidisciplinary Research Foundation, India (Oral Paper Presentation)

23. Books published: with ISBN No., Without ISBN No., Chapters in books.

Nil

24. Patents Applied/Granted: National. International, commercialized:

Nil

25. Consultancy services provided and revenue generated:

Nil

26. Conferences, seminars, symposia and workshops organized as convener/coordinator:

1) Convener "Young Scientists Meet" 22nd to 23rd Feb 2018 organised by Dept of Biotechnology, Calicut University.

27. Number of collaborations:

One

28. Awards /recognitions received: International, National, State, University level.

Nil

Note: If necessary for Item No. 11 and 12 provide information in Enclosure-I, for 13,14 and 15 Enclosure- II, for 16 Enclosure-III, for 22 and 23 Enclosure- IV and so on.

Format for preparing the faculty profile:

(Provide the information for last five years from 2016-17 to 2020-21)

1. Name of the faculty: Dr.P.R. Manish Kumar (Retired on 31.03.2020).
2. Name of the Department: Biotechnology
3. Educational qualifications: M.Sc. Zoology , Ph.D Zoology (Cell & Molecular Biology) ,PDF
– Recombinant DNA Technology
4. Present position: Professor
5. Address for correspondence: Dr. P.R. Manishkumar, Sree Ananyam, Vidya Nagar,
Thnhipalam.
6. E-mail and contact number: manishramakrishnan123@gmail.com, 9447760771
7. Specialization: Cell & Molecular Biology / recombinant DNA Technology
8. Total teaching experience: More than 24 years of teaching Experience at post graduate level
9. Courses taught: M.Sc.,M.Phil,PhD
10. Research experience: More than 24 years of teaching Experience at post graduate level
11. Major research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI.:
 - Principal Investigator of the M.Sc.Biotechnology programme, from 17.11.2016 to 10.01.2019. The programme was established on 1995 and supported by DBT, Govt. of India. For the FY 2017-18 and 2018-19, total expenditure incurred for the programme is, 50,27,177/-
 - Principal Investigator of the Bioinformatics structural facility (BIF) programme, from 17.11.2016 to 10.01.2019. The programme was established on 2006 and supported by DBT, Govt. of India. For the FY FY 2017-18 and 2018-19, the expenditure incurred for the programme is, 32,958/-
12. Minor research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI. : **Nil**
13. Number of students awarded Ph.D. degree: Name of the student, topic of research, date of registration, date of declaration of Ph.D. degree.

Name of the student	topic of research	date of registration	date of declaration of Ph.D. degree.
Nithya N	Molecular investigations on plasmid bearing clinical isolates of multidrug resistant bacteria	03. 08. 2010.	31. 05.2016
Lakshmipriya	Molecular investigations on anticancer activities of selected Ayurvedic formulations and medicinal plants on human cancer cell lines	21-8-2011	06.02.2018
Ms. Manju Suresh	Investigations on efflux pump related gene sequences in selected clinical isolates of multidrug resistant gram negative bacteria	06-06-2012	07.03.2019
Ms. Shaniba V.S.	Lab scale production of select biogenic nanoparticles and evaluation of their cellular effects employing cultures of microbial eukaryote <i>Physarum polycephalum</i> and human cells	1/11/2012	30.09.2019
Ahlam Abdul Aziz	Evaluation of cellular effects of zinc nanoparticles & nanostructures on human lymphocyte and cancer cell lines	21.10.2013	19.11.2020
Soumya T.	Investigation on anticancer activity of plant extracts from select Zingiberaceal spices on human cancer and normal cells	12.11.2013	27.01.2021

14. Number of students registered for Ph.D. degree: Name of the student, topic of research, date of registration.

Name of the student	topic of research	date of registration
Ms. Meghna Sudhesh.	Molecular investigations on G2 abrogation by selective cell killing employing human lymphocyte cultures and cancer cell lines	04.03.2018
Mr. Jobish Joseph	Cloning, expression and cellular effects of venom-derived bioactive peptides for biotechnological applications from the South Indian scorpion, <i>Heterometrus scaber</i>	03.02.2018

15. Provide information as indicated in 11 and 12 above.

16. Participation in conferences, symposia, seminars and workshops: International, national, state or university level, attended. Presented paper, chaired session. Resource person.

Resource persons for Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.

Sl. No	Name	Title of the event	Organizer & venue	International/ National	Date
1	Dr. P.R Manish Kumar	Advances in DNA Science	Dept. of Chemistry, Providance College, Calicut.	National	11.01.2017
2	Dr. P.R Manish Kumar	Trends in Molecular Biology	Chinmaya Arts and Science College for Women, Kannur	State level	08.02.2017

3	Dr. P.R Manish Kumar	Advances in DNA Science	Dept. of Botany, Nirmalagiri College, Koothuparambu, Kannur	State level	21.02.2017
4	Dr. P.R Manish Kumar	Recent trends in DNA Science	Dept. of Botany, KKTMM Govt. College, Kodungallur	State level	01.03.2017
5	Dr. P.R Manish Kumar	Anti Cancer Research	Dept. of Zoology, University of Calicut Workshop sponsored by Indian Academy of Sciences	National	09.03.2017
6	Dr. P.R Manish Kumar	Molecular Biology of Cell Cycle Regulation and Cancer.	Dept. of Biotechnology, Mannuthy, Kerala Agricultural University.	State level	18.03.2017
7	Dr. P.R Manish Kumar	Molecular Diagnostics in Health and Diseases	Dept. of Health and Allied Sciences, Manipal University	National	01.04.2017
8	Dr. P.R Manish Kumar	Recent trends in Molecular Biology	Depty. Of Biotechnology, Botany and Bioinformatics Union Christian College, Aluva	State level	07.08.2017
9	Dr. P.R Manish Kumar	Frontiers in Biotechnology	Dept. of Botany, KKTMM Govt. College, Pullut	State level	22.11.2017
10	Dr. P.R Manish Kumar	Gene Chips and their Applications	Chinmaya Arts and Science College for Women, Kannur	State level	18.12.2017
11	Dr. P.R. Manishkumar	Focus 2018	Dept. of Molecular Biology Kannur University,	National	6 th August
12	Dr. P.R. Manishkumar	Advances in DNA Science	UGC-Human Development Centre, Kannur University	National	28.02.2018
13	Dr. P.R. Manishkumar	Scope & Role of Biotechnology in the Contemporary	School of Legal Studies, CUSAT	National	12.01.2018
14	Dr. P.R. Manishkumar	Advances in DNA Science	PG & RESEARCH CENTRE OF ZOOLOGY, Jayaraj Annapackiam College for	National	09.01.2018
15	Prof.(Dr.) P.R. Manish Kumar	Chairman of Board of adjudicators	open defence of Ms. Haritha H Nair, Dept. of Biotechnology,	National	24.01.2019
16	Prof.(Dr.) P.R. Manish Kumar	Inaugurated B.sc. Botany programme	S.N. College, Vatakara.	National	07.08.2019

- Dr. P.R. Manish kumar, HoD, was invited as subject expert in the selection committee for recruitment of Asst. professors in Biotechnology at SAFI Institute of Advanced Study, Vazhayur, Malappuram
- Dr. P.R. Manish kumar, HoD was appointed as M.G University V.C's nominee for Selection Committee in connection with recruitment of Asst. professors in Biotechnology at Newman College, Thodupuzha
- Dr. P.R. Manish kumar, HoD was appointed as external expert member in the Board of Examiners in connection with IV th semester project work/ Dissertation evaluation and conduct of viva-voce, Dept. of Biotechnology, Kerala University of Fisheries and Ocean studies on 25 th June 2018.
- Prof. (Dr.) P.R. Manish Kumar, head and Coordinator, Inaugurated the Event FOCUS-2018 organized by the Dept. of Molecular Biology, Kannur University and delivered keynote address.
- Prof.(DR.). P.R. Manish kumar, has delivered a lecture on '*Plant based drug evaluation : An overview of standard techniques involving biochemical, molecular and cell based assays*' in the National workshop on '*Frontier areas in Plant Biotechnology* at Centre for Plant Biotechnology and Molecular Biology, College of Horticulture, Kerala Agricultural University, Thrissur, on 26th, November, 2018
- Prof.(DR.). P.R. Manish kumar has delivered a lecture presentation on '*Molecular Diagnostics in Health and Disease*' on Dec 8th, 2018 at Thrissur in connection with SILEX 2018 (6th National conference and 19th South Indian Annual Conference) organized by Students Association of Medical Lab Technologists
- Dr. P.R. Manish Kumar, Professor, served as the Chairman of Board of adjudicators for holding the open defence of Ms. Haritha H Nair, Dept. of Biotechnology, Kariavattom Campus, University of Kerala on 24.01.2019.
- Prof. (Dr.) P.R. Manish Kumar, has attended a confidential meeting on 14.03.2019 at CE's Office at Kannur University, Thavakkara Campus, kannur
- Ahlam Abdul Aziz, Shaniba V.S. and Dr.P.R. Manish Kumar, presented a paper entitled '*Antimicrobial and antiproliferative potential of phyto-mediated zinc oxide nanostructures synthesized employing Annona muricata L. CRDB-2019*' in an International Conference on Research and Development in Biosciences organized by Department of Biotechnology and Microbiology, Kannur University during 17th to 19th January, 2019.
- Soumya T., Lakshmipriya T., Jayasree P.R., Dr. Manish Kumar P.R., presented a paper entitled '*Phytochemical analysis, antioxidant and antiproliferative activities of organic solvents from Curcuma haritha - an endemic species from Western ghats of Kerala. CRDB-2019*' in an International Conference on Research and Development in Biosciences organized by

Department of Biotechnology and Microbiology, Kannur University during 17th to 19th January, 2019. (Best Poster Award).

Details of teachers participated in Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.(participant, presented paper, chaired the session)

Si No	Name	Title of the event	Organizer & Venue	Int.national/ National	Period
1	Ahlam Abdul Aziz, V.S.Shaniba, Dr. P.R. Manish Kumar	National seminar on emerging trends in chemical research	Christ college, Irinjalakuda	National	Feb 28- Mar 1
2	Ahlam Abdul Aziz, V.S.Shaniba, Dr. P.R. Manish Kumar	Int.national conference on advances in functional materials	Anna University, Chennai	National	Jan 6-8,
3	V.S.Shaniba, Ahlam Dr. P.R. Manish Kumar	National seminar on emerging trends in chemical research	Christ College, Irinjalakuda,	National	Feb 28 - Mar 1, 2017.
4	V.S.Shaniba, Ahlam Abdul Aziz, Dr. P.R. Manish Kumar	International Conference on Advances in Functional Materials (ICAFM)	Anna University, Chennai	National	Jan 6-8, 2017
5	Soumya T., Lakshmipriya T.,Jayasree Dr. P.R. Manish Kumar	International 36th Annual conference of Indian Association for Cancer Rresearch	Amala Cancer Research Centre, Thrissur	National	Feb-9- 11, 2017
6	Soumya T LakshmipriyaT.,Jayasree Dr. P.R. Manish Kumar	29th Kerala science congress,	Marthoma college, Thiruvalla, . Pathanamthitta	National	28-30 Jan, 2017.
7	Lakshmipriya T., Soumya T.,Jayasree Dr. P.R. Manish Kumar	International 36th Annual conference of Indian Association for Cancer Research	Amala Cancer Research Centre, Thrissur	National	Feb-9- 11, 2017
8	Lakshmipriya T., Soumya T.,Jayasree Dr. P.R. Manish Kumar	29th Kerala Science Congress	Marthoma college, Thiruvalla, Pathanamthitta	National	28-30 Jan,2017.
9	Dr. P.R. Manishkumar	'Synthesis, Characterization and in lab assessment of biofunctionalized Zinc oxide nano structure.'	Con.on emerging synergies in agriculture,food processing engineering and biotechnology. KarunyaUty, Coimbatore	International	21 st – 23 rd February , 2018.
10	Dr. P.R. Manishkumar	a potent fraction from the medicinal plant, <i>Corallocarpusepigaeus</i> induces cytotoxicity in hepatocellular	7 th International Conference on Translational Cancer Research, February 2018, IIT	International	Feb 8-11 2018

		carcinoma via induction of apoptosis	Madras, Chennai,		
11	Ahlam Abdul Aziz, Shaniba V.S. and Dr.P.R. Manish Kumar	International Conference on Research and Development in Biosciences	Department of Biotechnology and Microbiology, Kannur Uty	International	17 th to 19 th January, 2019.
12	Soumya T., Lakshmipriya T., Jayasree P.R., Dr. Manish Kumar P.R	International Conference on Research and Development in Biosciences organized	Department of Biotechnology and Microbiology, Kannur Uty	International	17 th to 19 th January, 2019.

17. Innovative processes developed in teaching and learning. : Nil
18. Participation in curricular development: Nil
19. Participation in co-curricular and extra-curricular activities.: Nil
20. Refresher and Orientation courses attended: Nil
21. Examination /Evaluation reforms initiated: Nil
22. Publication of research papers: in peer reviewed journals, non-peer reviewed journals, conference proceedings, impact factors, citations, h-index. Numbers in SCOPUS.

Sl. No	Author(s)	Title	Journal & year, Volume pages	Publisher, Date of Publication with doi	Impact Factor if any
1	Soumya Tumbath, Lakshmipriya Theyyankandi, Jayasree, Manish Kumar P.R.	Evaluation of total phenolics, antioxidant and antiproliferative activities of rhizome extracts from select Zingiberaceae species in South India	International Journal of Pharmaceutical Sciences and Research Nov, 2016 Vol 8337-342	Pharmaceutica Science and Research Publishing Group, DOI:10.5138/09750185.1893	--
2	Manju, S., Nithya, N., Jayasree, P.R. & Kumar, P.R. Manish Kumar	Detection and prevalence of efflux pump-mediated drug-resistance in clinical isolates of multidrug-resistant Gram-negative bacteria from north Kerala, India.	Asian J Pharm Clin Res, 9,324-327	Online - 2455-3891 Print - 0974-2441., 10.03.2016	--
3	Nithya, N., Manju S., Jayasree P. R., Kumar, P.R. Manish Kumar	Detection of blaNDM-1 and genetic relatedness in clinical isolates of Escherichia coli producing Extended spectrum β -lactamase from tertiary care centres in South	Adv Microbiol. 6,125-132 ISSN 2165-3410	ISSN 2165-3410 DOI:10.4236/aim.2016.63013 Jan, 2016	--

		India			
4	T.Lakshmipriya, T. Soumya, Jayasree, P. R. Manish Kumar.	Selective induction of DNA damage, G2 abrogation, and mitochondrial apoptosis by leaf extract of traditional medicinal plant <i>Wrightia arborea</i> in K562 cells	Protoplasma July 2017	Springer publications, 20,July 2017 (doi: 1007/500709-017-1137-5)	2.87
5	Lakshmipriya T., Soumya T. Jayasree P.R Manish Kumar P.R	Antioxidant, antimicrobial and antiproliferative activities of Indian traditional medicinal plant <i>Wrightia arborea</i> leaves.	Int. Journal of Pharmaceutial Science and Research March, 2017 Vol 8(3) 1124-1133	Pharmaceutical Science and Research Publishing Group, 01, March,2017 Doi:13040/IJPS R.0975-8232.8(3) 1124-33	1.83
6	V.S.Shaniba, Ahlam Abdul Aziz, P.R. Manish Kumar	Phytomediated synthesis of silver nanoparticles from <i>Annona muricata</i> fruit extract, assessment of their biomedical and photocatalytic potential	Int.Journal of Pharmaceutical Science and Research Jan 2017 Vol.8(1): 170-181	Pharmaceutical Science and Research Publishing Group ,01,Jan,2017 Doi:10.13040/IJPSR.0975-8232.8(1) 170-81	1.83
7	Soumya T., Lakshmipriya T., Jayasree P.R. P.R. Manish Kumar	Evaluation of total phenolics, antioxidant and antiproliferative activities of rhizome extracts from select Zingiberaceae species in South India	Int.Journal of Phytomedicine, Nov 2017 8(2016) 337-342	Advanced Research Journals10,Nov 2017,Doi: 10.5138/09750 .185.1893	1.06
8	Manju Suresh, Nithya N., Jayasree P. R., Vimal K. P., Manish Kumar P. R.	Mutational analyses of regulatory genes, mexR, nalC, nalD and mexZ of mexAB-oprM and mexXY operons, in efflux pump hyperexpressing multidrug-resistant clinical isolates of <i>Pseudomonas aeruginosa</i>	World Journal of Microbiology and Biotechnology 2018,Vol : 34 1-11	Springer publications , 30, May,2018 (Doi:10.1007/s 11274-018-2465-0.	2.100
9	T. Lakshmipriya, T. Soumya, P. R. Jayasree P. R. Manish Kumar	Selective induction of DNA damage, G2 abrogation,and mitochondrial apoptosis by leaf extract of traditionalmedicinal plant <i>Wrightia arborea</i> in K562	Protoplasma 2018 Vol :255: 203-216	Springer publications, Jan 2018 doi: 10.1007/s00709-017-1137-5	2.457

		cells			
10	Dr. P. R. Manish Kumar T. Soumya, P. R. Jayasree, M Deepak, P. R Manish Kumar	Chemical composition, antioxidant and antiproliferative activities of essential oil from rhizome and leaves of <i>Curcuma mutabilis</i> Skorni_ck., M. Sabu & Prasanthk., endemic to Western Ghats of India	Natural product research, 2019 Volume : 1478-6419 (Print) 1478-6427	DOI: 10.1080/14786419.2018.1533826	1.999
11	P. R. Manish Kumar V. S. Shaniba, Ahlam Abdul Aziz, P. R. Jayasree, P. R. Manish Kumar	Manilkara zapota (L.) P. Royen Leaf Extract Derived Silver Nanoparticles Induce Apoptosis in Human Colorectal Carcinoma Cells Without Affecting Human Lymphocytes or Erythrocytes	Biological trace elements research Volume : 1653-56	https://doi.org/10.1007/s12011-019-	2.431
12	P. R. Mainish Kumar Lakshmi priya T, Soumya T, P. R. Jayasree, P. R. Manish Kumar	'Cytotoxic And Apoptogenic Effects Of A Bioactive Fraction Isolated From The Leaves Of A Traditional Medicinal Plant <i>Tridax Procumbens</i> .'	IJPSR/RA-11983/04-19.	Accepted	0.65
13	Ahlam, A.A., Shaniba, V.S., Jayasree, P.R. and Kumar, P.M	<i>Spondias pinnata</i> (Lf) Kurz Leaf Extract Derived Zinc Oxide Nanoparticles Induce Dual Modes of Apoptotic-Necrotic Death in HCT 116 and K562 Cells.	<i>Biological Trace Element Research</i> , 199(5):1778-1801	SPRINGER, DOI: 10.1007/s12011-020-02303-8 , 06.08.2020	--
14	T. Soumya, T. Lakshmi priya, Karel. D. Klika, P. R. Jayasree and P. R. Manish Kumar	Anticancer potential of rhizome extract and a labdane diterpenoid from <i>Curcuma mutabilis</i> plant endemic to Western Ghats of India.	Scientific Reports..	Nature Publishing Group, doi: 10.1038/s41598-020-79414-8 , 12.01.2021	Impact factor: 3.998 (Accepted).

23. Books published: with ISBN No., Without ISBN No., Chapters in books.

Sl. No	Author(s) in order	Title	Publisher, Volume, pages	Date of Publication	International/National
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1	V. S. Shaniba, Ahlam Abdul Aziz, Jobish Joseph, P. R. Jayasree, P. R. Manish Kumar	Selective targeting of human colon cancer HCT116 cells by phytomediated silver nanoparticles	Natural Product chemistry. Apple academic press by Taylor and Francis group. Chapter 10	Accepted for publishing in 2020 May	International
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24. Patents Applied/Granted: National. International, commercialized: Nil

25. Consultancy services provided and revenue generated: Nil

26. Conferences ,seminars, symposia and workshops organized as convener/coordinator: Nil

27. Number of collaborations: Nil

28. Awards /recognitions received: International, National, State, University level.: Nil

Note: If necessary for Item No. 11 and 12 provide information in Enclosure-I, for 13, 14 and 15 Enclosure- II, for 16 Enclosure-III, for 22 and 23 Enclosure- IV and so on.

Format for preparing the faculty profile:

(Provide the information for last five years from 2016-17 to 2020-21)

1. Name of the faculty: Sri. Gopinathan C
2. Name of the Department: Biotechnology
3. Educational qualifications: M.Sc. Life Science with specialization in Microbiology ,
M.Tech Biotechnology
4. Present position: Asso.Professor
5. Address for correspondence: 38/612 C, NAVAMI, Near Viplava Kala Vedi, Athanikkal, west
Hill PO, Calicut - 5
6. E-mail and contact number: shinuu@rediffmail.com, 9446252722
7. Specialization: Bioprocess Technology
8. Total teaching experience: More than 24 years of teaching Experience at post graduate
level
9. Courses taught: M.Sc.,M.Phil,
10. Research experience: More than 24 years of teaching Experience at post graduate level
11. Major research projects completed: Title of the project, Date of sanction and Duration, Grant
received, Funding agency. PI or Co-PI.: **Nil**
12. Minor research projects completed: Title of the project, Date of sanction and Duration,
Grant received, Funding agency. PI or Co-PI. : **Nil**
13. Number of students awarded Ph.D. degree: Name of the student, topic of research, date of
registration, date of declaration of Ph.D. degree. : Nil
14. Number of students registered for Ph.D. degree: Name of the student, topic of research, date
of registration.

Nil
15. Provide information as indicated in 11 and 12 above.
16. Participation in conferences, symposia, seminars and workshops: International, national,
state or university level, attended. Presented paper, chaired session. Resource person.

Invited lectures delivered by the Faculties of Dept. of Biotechnology as shown below.

Invited Lectures					
Sl.	Name	Title of the event	Organizer & venue	International/National	Date
1	Sri. Gopinathan C	Solid State Fermentation- Scale up possibilities	Dept. of Biotechnology, SAFI Institute , Vazhayoor as part of Symbiosis 18.	National	15.03.2018 16.03.2018
2	Sri. Gopinathan C	Biogas Technology – Advances, as a part of SWASTHA SHUDHI- Science popularization programme” on solid waste management	Dept. of Biotechnology, supported and sponsored by KSCSTE at St. Mary's College, Thrissur	National	16.11.2018

participated in Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.(participant, presented paper, chaired the session)

Si No	Name	Title of the event	Organizer & Venue	International/National	Period
1	Sri. Gopinathan C	4 th International Conference on Biotechnology and Genetic Engineering	Madrid, Spain	International	Sept 24-25,2018
2	Sri.Gopinathan C.	Enhanced production of Bacillus thuringiensis subspecies Israelensis Delta endotoxin by supplementation of Rotten Mango Juice and Fish aminoacid as medium supplements	3 rd International Conference on Bioscience and Biotechnology (Biotech - 2018) Colombo, Srilanka	International	March 8-9, 2018
3	Sri.Gopinathan C.	Global Biotechnology Congress 2017- poster presentation	Westin Copley Place, Boston, USA	International	July,10-13,2017
4	Sri.Gopinathan C.	International Conference on Biotechnology and Health care	PJTSAU, Hyderabad, India	International	Oct,26-27,2017

17. Innovative processes developed in teaching and learning. : Nil

18. Participation in curricular development: Nil

19. Participation in co-curricular and extra-curricular activities.

- a. 8000 litre improved anaerobic digester for the production of food/canteen waste implemented in the Calicut University Campus under the technical supervision of Sri. Gopinathan C, Asso. Professor, Dept. of Biotechnology, University of Calicut.
- b. As part of NABARD (NABARD PRANCHE) funded project on Bioenergy, Dept. Will be providing technologies for the Implementation of Biogas project to produce electricity from organic waste. University will be benefitted by having an annual return of approx. 1.15 crore per annum. The overall project is under the technical supervision of Sri. Gopinathan C, Asso. Professor, Dept. of Biotechnology, University of Calicut

20. Refresher and Orientation courses attended: Nil

21. Examination /Evaluation reforms initiated: Nil

22. Publication of research papers: in peer reviewed journals, non-peer reviewed journals, conference proceedings, impact factors, citations, h-index. Numbers in SCOPUS.

Sl. No	Author(s)	Title	Journal & year, Volume pages	Publisher, Date of Publication with doi	Impact Factor, if any
1	Gopinathan. C, Arindam Chaudhury and A.T. Vivek	Novel techniques for cost-effective production of Bacillus thuringiensis Subsp. israelensis	International Journal of Mosquito Research 2016; 3(4): 17-29	ISSN: 2348-5906 05-06-2016	
2	Gopinathan. C, A. T. Vivek	Bioprocess Optimization for Enhanced Biogas Production from Grape Pulp Waste	International Journal of Science and Research, Volume 5 Issue 6, June 2016, 673 - 676	ISSN (Online): 2319-7064 DOI:10.21275/v5i6.nov164132	6.391 (as per SJIF)
3	C. Gopinathan, A.T. Vivek	Process Optimization for Enhanced Biogas production from Mango Pulp Waste	International Journal of Science and Research (IJSR)	1772 - 1775 May 2016 DOI:10.21275/v5i5.nov163761	6.391 (as per SJIF)
4	A. Priyadarsini, A. Vivek, C. Gopinathan	Cost Effective Production of Penicillin and Biogas from Rotten Oranges by Microbial Fermentation Technique	International Journal of Science and Research (IJSR), Volume 5 Issue 4, April 2016, 2379 - 2382	ISSN (Online): 2319-7064 DOI:10.21275/v5i4.26041601	6.391 (as per SJIR).
5	M.T. Ramesan, P. Jayakrishnan, V.K.	Preparation, characterization, electrical and antibacterial properties of sericin/poly (vinyl	J. Appl. Polym. Sci., 133(24):5827- 5836	https://doi.org/10.1002/app.43535 04.03.2016	1.768 (Thomson Reuters)

	Athira, C. Gopinathan	alcohol)/poly (vinyl pyrrolidone) composites			
6	Vijith. C. C., Swarna gauri thota, A.T.Vivek and C. Gopinathan	Improved Bacillus thuringiensis based biopesticide production using cheap carbon and nitrogen sources by solid state fermentation technique.	IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT) Vol 10, Issue 3 (Mar. 2016), PP 49-53	e-ISSN: 2319-2402, p-ISSN: 2319-2399, DOI:10.9790/2402-1003024953	1.8 (as per SJIR).
7	Sri. Gopinathan C & K.K. Elyas	Cost effective fermentation Techniques for the enhanced production of Bacillus Thuringiensis	International Journal of Recent Scientific Research Vol 10, 30999-31005	0976-3031	7.383
8	Gopinathan. C And K.K Elyas	Cost effective fermentation techniques for the enhanced production of bacillus thuringiensis subsp. israelensis	International Journal of Recent Scientific Research	DOI: http://dx.doi.org/10.24327/ijrsr.2019.1002.3170,10(02),pp.30999-31005 . January 2020	6.86

23. Consultancy services provided and revenue generated:

- a. Calicut Corporation has requested for renovation of 4 ton per day biogas plant with technical assistance of Sri. Gopinathan C.
- b. Lakshadweep administration has requested for technical consultancy for installation of 2.5 ton per day biogas plants in Kavarathi as per meeting held on 27.04.2021.

24. Conferences, seminars, symposia and workshops organized as convener/coordinator: Nil

25. Number of collaborations:

An MoU Was signed with NATIONAL RESEARCH DEVELOPMENT CORPORATION, New Delhi on 27.05.2019 for the purpose of commercialization of improved Biogas Technology by Sri. Gopinathan C, Asso. Professor, Dept. of Biotechnology, University of Calicut

26. Awards /recognitions received: International, National, State, University level. : Nil

Note: If necessary for Item No. 11 and 12 provide information in Enclosure-I, for 13, 14 and 15 Enclosure- II, for 16 Enclosure-III, for 22 and 23 Enclosure- IV and so on.

Format for preparing the faculty profile:

(Provide the information for last five years from 2016-17 to 2020-21)

1. Name of the faculty: Dr.Elyas.K.K.
2. Name of the Department: Biotechnology
3. Educational qualifications: M.Sc. Biotechnology, M.Tech. Biotechnology, Ph.D in Immunology (Medical Immunology)
4. Present position: Professor
5. Address for correspondence: Mehar, Ambalappady, Eranjikkal, Kozhikkode
6. E-mail and contact number: kkelyas@yahoo.com, 9846156890
7. Specialization: Medical Biotechnology
8. Total teaching experience: More than 21 years of teaching Experience at post graduate level
9. Courses taught: M.Sc.,M.Phil,PhD
10. Research experience: More than 21 years of teaching Experience at post graduate level
11. Major research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI.:
 - Principal Investigator of the M.Sc.Biotechnology programme, from 11.01.2019 onwards. The programme was established on 1995 and supported by DBT, Govt. of India. For the FY 2019-20 and 2020-21, total expenditure incurred for the programme is, 36,32,592/-
 - Principal Investigator of the Bioinformatics structural facility (BIF) programme, from 11.01.2019 onwards. The programme was established on 2006 and supported by DBT, Govt. of India. For the FY 2019-20, the expenditure incurred for the programme is, 3,44,515/-
12. Minor research projects completed: Title of the project, Date of sanction and Duration, Grant received, Funding agency. PI or Co-PI. : **Nil**
13. Number of students awarded Ph.D. degree: Name of the student, topic of research, date of registration, date of declaration of Ph.D. degree.

Name of the student	topic of research	date of registration	date of declaration of Ph.D. degree.
Anusha T.S.	Evaluation of responses to plant growth regulators	16/09	19.02.201

	elicitors and analysis of phytoconstituents of in vitro raised clones of <i>Celastrus paniculatus</i> Willd an endangered medicinal plant	/2011	8
Ms. Megha K.B.	Isolation and characterization of anti-carcinogenic compounds from medicinal plants	01-11-2012	10.07.2019
Ms. Manju Mohan	Isolation and characterization of proteinaceous protease inhibitor from medicinal plants	1/11/2012	19.07.2019
Ms. Deepthi V.C.	A comparative study of antioxidant enzymes and heat shock proteins (HSPs) under abiotic stress responses in different varieties of rice plant	1/11/2012	31.10.2019
Ms. Deepthi Madayi	Isolation and characterization of plant lectins and its role in antimicrobial and anticancer activities	1/11/2012	25.07.2019

14. Number of students registered for Ph.D. degree: Name of the student, topic of research, date of registration.

Name of the student	topic of research	date of registration
Suhana Koothradan	Role of biomarkers in monitoring cellular and humoral responses in transplant outcome	01.07.2019
Anju V.V.	Anti-hyperglycemic effect of plant extracts of selected medicinal plants and edible fruits for their therapeutic potential	25.11.2019
Jesna	Molecular Investigations on efflux pumps of multi drug resistant acinetobacter baumannii for their role in beta lactam resistance and biofilm formation	On process
Tancia Rosalin,	A study in the effect of selected plant extracts on prostate cancer and leukemic cancer cell lines	28-05-2015
Nidheesh Roy T.A.	Immuno-Molecular Biological Approach for Characterizing Major Histocompatibility Complex for the Prediction of Rejection and Survival of Kidney Transplants	09-02-2015

15. Provide information as indicated in 11 and 12 above.

16. Participation in conferences, symposia, seminars and workshops: International, national, state or university level, attended. Presented paper, chaired session. Resource person.

Invited lectures delivered by the Faculties of Dept. of Biotechnology as shown below.

Invited Lectures					
Sl.	Name	Title of the event	Organizer & venue	International/National	Date
1	Dr.K.K.Elyas	Vaccinology: Advancements and prospects	UGC-Human Development Centre, Kannur University	National	16.02.2018
2	Dr.K.K.Elyas	Recent Advance in Immunology	GEMS Arts and Science College, Ramapuram, Malappuram	National	18.01.2018

3	Dr.K.K.Elyas	Inauguration of the Common Instrumentation Laboratory	inaugurated the Common Instrumentation Laboratory of GEMS Arts and Science College, Ramapuram, Malappuram and delivered a talk on ‘Recent Advances on Microscopic Techniques’	National	19.02.2019
4	Dr.K.K.Elyas	Webinar on Ocular Immunology - an Update	Department of Optometry and Ophthalmological, Techniques by MES Keveeyam College, Valanchery	State level	13.08.2020

*Dr. Elyas K.K., Professor, attended the 3rd Steering Committee Meeting of MoEF held on 30.08.2018 at New Delhi and made power point presentations of the Final Technical Report of the project entitled “ A process development of ameliorating alarming environmental and health hazards posed by Phthalates in Plastics via chemical, biochemical and bioremediation approaches” under the Investigatorship of (Late) Dr. sailas Benchamin

*Prof. (Dr.) Elyas K.K., has handled a session on *Biopharmaceuticals – Biotech Approaches* in the Faculty and Staff Development Training Programme on Processing and Engineering of Drugs and Pharmaceuticals at the Dept. of Chemical Engineering, Govt. Engineering College, Thrissur on 13.12.2018.

*Dr. Elyas K.K., Professor, participated and presented the progress report at the Third Meeting of DBT-HRD Task Force to review the progress of postgraduate teaching programme funded by DBT Govt. of India on 12th and 13th of December, 2018 at the Conference Hall, CGO Complex, New Delhi.

*Ms. Megha K.B., Joseph Madassery, Dr. Elyas K.K., presented oral in a Conference on Deliberation on translation of Basic Scientific Insights into affordable Health care Products, organized by CSIR-NIIST, Trivandrum during 25th to 27th February, 2019.

*Ms. Deepthi Madayi, Surya P.H., Dr. Elyas K.K., presented poster in ICACSB – 2019 at Prist University, Thanjavoor during 19th to 21st February, 2019.

*Prof. (Dr.) Elyas K.K., Head & Coordinator, inaugurated the Common Instrumentation Laboratory of GEMS Arts and Science College, Ramapuram, Malappuram and delivered a talk on ‘Recent Advances on Microscopic Techniques’

*Dr. Elyas K.K., was invited as a **Speaker** to the 9th World Congress on Immunology, held in Barcelona, Spain on 09 – 10 December 2019. This event is a gathering of the best scientists from around the world who share a common interest in sustainable development of the

research field through innovative ideas. The conference provided the participants a dynamic platform to share their views and ideologies about their topic of interest.

Details of teachers participated in Refresher courses, Orientation courses, Seminars, Workshops, Conferences at national and international levels.(participant, presented paper, chaired the session)

Si No	Name	Title of the event	Organizer & Venue	International/National	Period
1	Anusha T.S. Dr. Elyas K.K	International conference on Neutraceuticals and chronic diseases	Indian Institute of Technology and Society for Neutraceuticals and chronic diseases	International	1-3, September 2017
2	Anusha T.S. Dr. Elyas K.K	109 th Indian Science Congress	S V University, Tirupati	National	3-7 September 2017
3	Manju Mohan Dr. Elyas K.K	International conference on Neutraceuticals and chronic diseases	Indian Institute of Technology and Society for Neutraceuticals and chronic diseases	International	1-3, September 2017
4	Manju Mohan Dr. Elyas K.K	109 th Indian Science Congress	S V University, Tirupati	National	3-7 September 2017
5	Deepthi V.C Dr. Elyas K.K	29 th Kerala Science Congress	Marthoma College, Thiruvalla	National	28-30 January 2017
6	Deepthi V.C Dr. Elyas K.K	Recent trends in Microbiology	Dept. of Life Science, University of Calicut	National	26,27-September, 2017
7	Manju Mohan Dr. Elyas K.K	29 th Kerala Science Congress	Marthoma College, Thiruvalla	National	28-30 January 2017
8	Dr.K.K.Elyas	Endophytic Fungus from the leaves of th medicinal Plant <i>Elaeocarpus sphaeracus</i> (Gaertn.) K. Schum.and their antibacterial activity	ICPM-2018 (International conference on phytomedicine)	International	29-31 August 2018
9	Dr.K.K.Elyas	Endophytic Fungi from the medicinal plants <i>Elaeocarpus sphaeracus</i> (Gaertn.) K. Schum. And <i>Myristica</i>	ICAFB-2018 (International Conference on Emerging Synergies in Agriculture, Food Processing	International	February 21-23, 2018

		<i>fragrans</i> Houtt . Antimicrobial properties	Engineering and Biotechnology –		
10	Dr.K.K.Elyas	Kinetic properties and MASCOT analysis of a purified proteinaceous protease inhibitor from <i>Macrotyloma uniflorum</i> seeds and its medicinal properties.	ICAFB-2018 (International Conference on Emerging Synergies in Agriculture, Food Processing Engineering and Biotechnology –	International	February 21- 23, 2018
11	Dr.K.K.Elyas	Isolation,Identification of EndophyticFungus from the leaves of <i>Elaeocarpus sphaeracus</i> (Gaertn.) K. Schum.	30 th Kerala science congress	National	28-30 January 2018
12	Dr.K.K.Elyas	Purification and biochemical characterization if a novel serine protease inhibitor from <i>Albizia procera</i> seeds: insight into structural and medicinal properties.	30 th Kerala science congress	National	28-30 January 2018
13	Dr.K.K.Elyas	“ Molecular Biology- An Underpinning to life sciences	Two day International seminar on Molecular Biology- An Underpinning to life sciences Farook college (autonomous) Kozhikode	International	08 to 09 January 2018.
14	Dr.K.K.Elyas	Peptide mass fingerprinting and MASCOT analysis of a purified proteinaceous protease inhibitor from <i>Macrotyloma uniflorum</i> seeds	Two day International seminar on Molecular Biology- An Underpinning to life sciences Farook college (autonomous) Kozhikode	International	08 to 09 January 2018.
15	Ms. Megha K.B., Joseph	8 th Annual meeting of Indian academy	CSIR-NIIST,	National	25 th to 27 th February,

	Madassery, Dr. Elyas K.K	of biomedical science	Trivandrum		2019
16	Ms. Deepthi Madayi, Surya P.H., Dr. Elyas K.K	ICACSB – 2019	Prist University , Thanjavoor	National	19 th to 21 st February, 2019

17. Innovative processes developed in teaching and learning. : Nil
18. Participation in curricular development: Nil
19. Participation in co-curricular and extra-curricular activities.: Nil
20. Refresher and Orientation courses attended: Nil
21. Examination /Evaluation reforms initiated: Nil
22. Publication of research papers: in peer reviewed journals, non-peer reviewed journals, conference proceedings, impact factors, citations, h-index. Numbers in SCOPUS.

Sl. No	Author(s)	Title	Journal & year, Vol pages	Publisher, Date of Publication with doi	Impact Factor if any
1	Anusha Tharayil, Koonapra Sasidharan, K.K. Elyas Joseph Madassery	Phytochemical screening of invitro raised clones and mothers plant of <i>Celastrus paniculatus</i> willied, an endangered Medicinal plant	Asian Journal of Biotechnology 2017,9(2) 50-70	Science Alert Publisher (Scopus Indexed) 26.09.2017 Doi:10.3923/ajbkr.2017.50.70	-
2	Anusha Tharayil, Koonapra Sasidharan, K.K. Elyas Joseph Madassery	Development of an efficient technology for rapid clonal multiplication of <i>Celastrus paniculatus</i> willied, an endangered Medicinal plant	Asian Journal of Biotechnology 2017,16(4) 184-192	Science Alert Publisher 15.09.2017 Doi:10.3923/ajps 2017.184.192	-
3	V C Deepthi, Seepana Sumathi, M. Faisal and K.K. Elyas	Isolation and Identification of endophytic fungi with antimicrobial activities from the leaves of <i>Elaeocarpus sphaericus</i> (Gaertn.) K.Schum. And <i>Myristica fragrans</i> Houtt.	International journal of pharmaceutical Sciences and research 2018, Vol 9, 2783-2791.	International Journal of Pharmacy and Pharmaceutical Sciences ,) 01.07.2018 Doi:10.13040/IJP SR.0975-8232.9(7).2783-91	1.83

4	ManjuMohan, Shireen Kozhithidi, AnurajNayariss er i, K.K Elyas	Screening, Purification And Characterization of ProteaseInhibitor from Capsicumfrutescens	Bioinformatio n ,2018 Vol :14(6) 285-293	Biomedical Informatics 30,June 2018 Doi: 10.6026/973206 30014285	0.8
5	Surya P H, Elyas K K, Deepti Madayi	Bacterial Agglutin ation by a Lectin from the Leaves of the Medicin al Plant, Pimenta dioica(L.) Merr	International Journal of Pharmacy and Pharmaceutica l Sciences 2018 Vol.10 35-43	International Journal of Pharmacy and Pharmaceutical Sciences , 01,April,2018 (Doi: 10.22159/ijpps.2 018v10i4.20068	0.75
6	Anupama R.,Prasad Sabeel M.,Basheer ,Induja R.Gupta ,K.K.Elyas, Abraham Joseph.	Investigation on Bovine Serum Albumin (BSA) binding efficiency and antibacterial activity of ZnO nanoparticles	<u>Materials Chemistry and Physics</u> September 2019 <u>Volume 240</u>	https://doi.org/1 0.1016/j.matche mphys.2019.122 115	2.781
7	Sri. Gopinathan C & K.K. Elyas	Cost effective fermentation Techniques for the enhanced production of Bacillus Thuringiensis	International Journal of Recent Scientific Research Vol 10, 30999-31005	0976-3031	7.383
8	Deepti Madayi,Surya P H,Elyas K K	A Glucose binding lectin from Leucaena leucocephala seeds and its mitogenic activity against human lymphocytes	International Journal of Biological Macromolecul es.	ELSEVIER, https://doi.org/1 0.1016/j.ijbiomac .2020.07.025,Vol ume 163, 15 November 2020, Pages 431-441	5.162
9	KK.Elyas, Tancia Rosalin	Thermal and spectroscopic investigations on three phosphonium based ionic liquids for industrial and biological application	Journal of Molecular Liquids	ELSEVIER, https://doi.org/1 0.1016/j.molliq.2 020.112960, Volume 307, 1 June 2020	5.065
10	Induja R.Gupta, K.K.Elyas	Investigation on Bovine Serum Albumin (BSA) binding efficiency and antibacterial activity of ZnO nanoparticles	<u>Materials Chemistry and Physics</u>	_ELSEVIER, DOI:10.1016/j.m atchemphys.2019 .122115, Volume 240, 15 January 2020	2.781

11	Gopinathan.C And K.K Elyas	Cost effective fermentation techniques for the enhanced production of bacillus thuringiensis subsp. israelensis	International Journal of Recent Scientific Research	DOI: http://dx.doi.org/10.24327/ijrsr.2019.1002.3170 , pp. 30999-31005. January 2020	6.86
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23. Books published: with ISBN No., Without ISBN No., Chapters in books.

Sl. No	Author(s) in order	Title	Publisher, Volume, pages	Date of Publication	International/National
2	Dr. Elyas K K	Plant Lectins: Sugar-Binding Properties and Biotechnological Applications	Springer Nature	2020	International

24. Patents Applied/Granted: National. International, commercialized: Nil

25. Consultancy services provided and revenue generated: Nil

26. Conferences ,seminars, symposia and workshops organized as convener/coordinator: Nil

27. Number of collaborations:

Nature of linkage	Title of the linkage	Name of the partnering institution/ industry /research lab with contact details	Duration (From-To)	participant
Research Collaboration	Transplantation Immunology	Malabar Institute of Medical Sciences, Mini Bypass Road, Govindapuram P.O. Calicut 673 016, Contact No. +91 495 3911400 ,E.Mail : mimsclt@mimsindia.com	December 2013 onwards	Dr. K.K. Elyas, Professor, Dept. of Biotechnology
Research Collaboration	collaboration in the areas of research and education in Transplantation Immunology and related fields	IQRAA International Hospital & Research Center, Calicut	2020 onwards for 5 years	Students -3 Teacher - 1

28. Awards /recognitions received: International, National, State, University level.: Nil

Note: If necessary for Item No. 11 and 12 provide information in Enclosure-I, for 13, 14 and 15 Enclosure- II, for 16 Enclosure-III, for 22 and 23 Enclosure- IV and so on.
