Dr. K. Balamurugan
Professor

Contact

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Date of Birth	:	04-03-1970
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Academic Qualifications:

M. Sc., Ph. D.

Teaching Experience:

17 Years

Research Experience:

23 Years

Additional Responsibilities

- Member of the Institutional Animal Ethical Committee (IAEC)
- Coordinator: Incubation and Technology Transfer center (Govt. of TN Scheme) (Since 01-05-2015)
- Expert Member of the Inspection Commission for Affiliation of B.Sc., Biotechnology
- Expert Member of the Inspection Commission for Affiliation of M.Sc., Biotechnology
- Co-Coordinator: Bioinformatics Infrastructure Facility (funded by DBT, Govt. of India)
- Deputy Coordinator: UGC-SAP (DRS-I) Department of Biotechnology.

Areas of Research

- **Host pathogen-interactions using *C. elegans* as model organism**
- **Understanding innate immune regulations through functional genomics and proteomics**

Research Supervision / Guidance

Program of Study		Completed	Ongoing
Research	**PDF**	-	01
	Ph.D.	10	08
	M.Phil.	-	-
Project	**PG**	46	07
	UG / Others	9	-

Publications

International		National		Others
Journals	**Conferences**	**Journals**	**Conferences**	**Books / Chapters / Monographs / Manuals**
85	129	03	49	11

Cumulative Impact Factor (as per JCR) : 249.305 (Avg. I.F. 2.933)
h-index : 18
i10 index : 23
Total Citations : 833

Funded Research Projects

Completed Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1.	DBT	Dec-2007	Dec-2010	RNA-interference mediated silencing of antimicrobial genes of *Caenorhabditis elegans.*	24.73
2.	UGC	Apr-2008	Mar-2011	Screening of marine bioresources for antibacterial compounds	11.76
3.	ICMR	Mar-2011	Mar-2014	Analysis of antimicrobial gene expression pattern	25.23

4.	DBT	Mar-2011	Mar-2014	Studies on Immune regulatory proteins	26.546
5.	CSIR	Apr-2011	Mar-2014	*Caenorhabditis elegans* response to human pathogens	21.92
6.	DST	July-2011	July-2014	Characterization of innate immune regulators during *Shigella spp.*	23.30
7.	DST	Feb-2012	Jan-2015	*Caenorhabditis elegans* response against *Vibrio spp.* infection	20.03
8.	ITC-AU Collaborative project	July-2011	Dec-2014	Anti-aging: Role of target genes	19.14
9.	UGC Major Research Project	01 April 2013	31 March 2017	Physiological and molecular changes in *Caenorhabditis elegans* during subsequent bacterial infections	10.85

On-going Projects

S. No	Agency	Period		Project Title	Budget (Rs. In lakhs)
		From	To		
1	ITC-AU Collaborative Project	Jul-2016	Jun-2019	*C. elegans*: An *in vivo* model for dermal inflammation studies	41.17
2	DBT	June 2017	June 2020	Impact of *Cronobacter sakazakii* infection on the neuroimmunity	70.24

Patents

S. No.	Title	Inventors	Patent Number	Filing Date	Publication date
1	Personal Care Compositions for Anti-Aging	Prasanth MI, **Balamurugan K**, Pandian SK, Gayathri S, James PB	676/KOL/2015	18 June 2015	20/10/17
2	Personal Care Compositions for Anti-Aging	Prasanth MI, **Balamurugan K**, Pandian SK, Gayathri S, James PB	679/KOL/2015	18 June 2015	20/10/17
3	Composition Comprising Green Tea and Naringenin for Anti-Aging	Prasanth MI, **Balamurugan K**, Pandian SK, Gayathri S, James PB	677/KOL/2015	18 June 2015	20/10/17
4	Personal Care	Prasanth MI,	680/KOL/201	18 June	20/10/17

	Compositions for Anti-Aging	**Balamurugan K**, Pandian SK, Gayathri S, James PB	5	2015	
5	Personal Care Compositions for Anti-Aging	Prasanth MI, Pandian SK, Gayathri S, James PB, **Balamurugan K**	766/KOL/2015	15 July 2015	13/10/17
6	Personal Care Compositions for Anti-Aging	Prasanth MI, Pandian SK, Gayathri S, James PB, **Balamurugan K**	779/KOL/2015	17 July 2015	13/10/ 17
7	An anti-acne synergistic composition and process thereof	Sivasankar C, Pandian SK and **Balamurugan K**	Application No. 201641010057	22 March 2016	
8	An antibacterial composition and implementations thereof	Swetha TK, Pandian SK, Sivasankar C, **Balamurugan K**, Veera Ravi A, Bhaskar JP, Venkateswaran K, Deepa M, Das SS	Application No. 201831008480	07 March 2018	
9	A composition comprising phytochemicals and applications thereof	Swetha TK, Pandian SK, Sivasankar C, **Balamurugan K**, Veera Ravi A, Bhaskar JP, Venkateswaran K, Deepa M, Das SS	Application No. 201831008481	07 March 2018	
10	A composition comprising phytochemicals and applications thereof	Swetha TK, Pandian SK, Sivasankar C, **Balamurugan K,** Veera Ravi A, Bhaskar JP, Venkateswaran K, Deepa M, Das SS	Application No. 201831008482	07 March 2018	
11	Antibacterial composition and uses thereof	Swetha TK, Pandian SK, Sivasankar C, **Balamurugan K**, Veera Ravi A, Bhaskar JP, Venkateswaran K, Deepa M, Das SS	Application No. 201831008483	07 March 2018	

Distinctive Achievements / Awards

1. 2008-DBT-RGYI Young Scientist award project for Young Investigator under 40 Years.
2. 2011- DST Young Scientist Award project.
3. 2011-DST International Travel award for attending FEMS 2011 Conference held at Geneva, Switzerland during June 26-30, 2011.
4. Best Poster Award -"**AMI-Panjab University**" for the poster presentation entitled "*Modification of pathogen lipopolysaccharide during the interaction with Caenorhabditis elegans*" presented by Vignesh Kumar B and Balamurugan, K, at 52nd Annual Conference of Association of Microbiologists of India (AMI), "International

Conference on Microbial Biotechnology for Sustainable Development" during Nov 3-6, 2011 held at Panjab University, Chandigarh, India.

5. Invited ORAL presentation at the 10th Asia Pacific Bioinformatics Conference conducted by LA Trobe University, Melbourne, Australia, 17-19 Jan 2012.
6. Second Best Oral Presentation Award at the 5th International Conference on Natural Products for Health and Beauty (NATPRO 5) in Phuket, Thailand, 05-07 May 2014.
7. **Best Faculty Award- Biotechnology 2013- Senior** by Shri PK Das Memorial, Nehru Group of Institutions, Coimbatore.
8. **Dr. R. R. Mani Maran Memorial Lecture Award** on 26 November 2014 by Indian Society for Comparative Endocrinology for the scientific contribution in the field of Host-Pathogen interactions related to Reproduction.
9. Adjunct Faculty, National Institute of Pharmaceutical Education and Research (NIPER) Kolkata, since 06 Dec 2016
10. Visiting Professor, Department of Biochemistry and Molecular Biology, Faculty of Agriculture and Life Science, Hirosaki University, Japan, March 12, 2018- March 28, 2018.

Events organized in leading roles

Number of Seminars / Conferences / Workshops / Events organized: 0**9**

Events Participated (optional)

Conferences / Seminars / Workshops: 178

Overseas Exposure / Visits

1. Japan
2. Malaysia
3. Israel
4. Portugal
5. Thailand
6. Germany
7. London, United Kingdom
8. Australia
9. Switzerland
10. USA
11. Taiwan

Membership in

Professional Bodies

LIFE MEMBER: Association of Microbiologists of India
LIFE MEMBER: Society of Biological Chemists, India (SBC)
LIFE MEMBER: The Biotech Research Society, India (BRSI)
LIFE MEMBER: Indian Society for Comparative Endocrinology (ISCE)

LIFE MEMBER: Proteomics Society, India (PSI)

- The Indian Science Congress Association
- American Gastroenterological Association
- European Congress of Clinical Microbiology and Infectious Diseases
- American Society for Microbiology

Editorial Board

- Gene Reports
- Journal of Proteins and Proteomics
- CRC Press: Taylor and Francis

Advisory Board

- UGC-SAP (DRS-1) Advisory Committee member- Department of Biosciences, Mangalore University (2016-)

Academic Bodies (such as Board of Studies etc.,)

MEMBER IN BOARD OF STUDIES

- M.Sc. Biotechnology, Alagappa University (2007 onwards)
- Biotechnology, Manonmaniam Sundaranar University, Tirunelveli (2008-2010)
- Biochemistry, Dr. G.R. Damodaran College of Science (2010-2012)
- B.Sc. (Chairman) Biotechnology, Alagappa University (2008-2011)&(2015-2017)
- B.Sc. Biotechnology, Alagappa University (2011-2014)
- B.Sc. Biochemistry, Alagappa University (2011-2014)
- B.Sc. Advanced Zoology & Animal Biotechnology (2015-2017)

Resource persons in various capacities

Number of Invited / Special Lectures delivered: **74**

Others

1. Articles published in Newspapers / Magazines : 11 **Book chapters**
2. Products developed : 0**7**
3. No. of PhD Thesis evaluated : **18**
4. No. of PhD Public Viva Voce Examination conducted : **14**
5. Sequences submitted in GenBank: **103**

Recent Publications (selective)

1.	Mohana M, PraveenKumar B, Mariya Salomi L, Murugan V and **Balamurugan K** (2018). Methylene Blue-Fortified Molybdenum Trioxide Nanoparticles: Harnessing Radical Scavenging Property. ACS Applied Materials & Interfaces [Publisher: American Chemical Society (United States); Impact Factor: 8.097] (In Press).
2.	Sharika R, Subbiah P and **Balamurugan K**. (2018). Studies on reproductive stress caused by candidate Gram positive and Gram negative bacteria using model organism, Caenorhabditis elegans. Gene 649:113-126; https://doi.org/10.1016

	/j.gene.2018.01.088; [Country: UK; Elsevier Ltd; Impact Factor: 2.415]
3.	Kavitha S, Pooranachithra M, **Balamurugan K** and Goel G (2018) Probiotic mediated colonization resistance against *E.coli* infection in experimentally challenged *C. elegans*. Microbial Pathogenesis. [Elsevier] [IF: 2.332] (In Press).
4.	Kamaladevi A, Marudhupandiyan S and **Balamurugan K** (2017). Model system based proteomics to understand the host response during bacterial infections. Molecular BioSystems 13: 2489-2497. DOI: 10.1039/C7MB00372B; [Country: UK; Royal Society of Chemistry] (Impact Factor: 2.781).
5.	Vigneshwari L and **Balamurugan, K**. Involvement of O-GlcNAcylation in *Caenorhabditis elegans* during pathogenic infection. FEBS Journal. Volume 75: Page 75. [ISSN: 1742-464X]; [Wiley; UK] (Impact Factor: 4.237);
6.	Kamaladevi A and Balamurugan K (2017). Global proteomics revealed *Klebsiella pneumoniae* induced autophagy and oxidative stress in *Caenorhabditis elegans* by inhibiting PI3K/AKT/mTOR pathway during infection. Frontiers in Cellular and Infection Microbiology 7:393; DOI: 10.3389/fcimb.2017.00393 [Country: Switzerland; Frontiers Media S. A.] (Impact Factor: 4.3).
7.	Marudhupandiyan S, Prithika U, Balasubramaniam B and **Balamurugan K** (2017). RACK-1, a multifaceted regulator is required for C. elegans innate immunity against S. flexneri M9OT infection. Developmental and Comparative Immunology. Vol. 74; September 2017, Pages 227-236. DOI:10.1016/j.dci.2017.05.008 [Country: UK; Elsevier] (Impact Factor: 3.62).
8.	Dhanashree, Sharika R, **Balamurugan K** and Rajagopal K (2017). Bifid shape is intrinsic to *Bifidobacterium adolescentis*. Front. Microbiol. 8:478. doi: 10.3389/ fmicb.2017.00478. (Impact Factor: 4.165).
9.	Prithika U, Vikneswari R and **Balamurugan K** (2016). Short term memory of *Caenorhabditis elegans* against bacterial pathogens involves CREB transcription factor. Immunobiology. DOI: 10.1016/j.imbio.2016.12.008 [Country: Netherlands; Publisher: Elsevier BV] (Impact Factor: 2.99).
10.	Marudhupandiyan S and **Balamurugan K** (2016). Intrinsic JNK-MAPK pathway involvement requires *daf-16* mediated immune response during *Shigella flexneri* infection in *C. elegans*". Immunologic Research DOI: 10.1007/s12026-016-8879-6. [Country: USA; Springer] (Impact Factor: 2.934).
11.	Kamaladevi A and **Balamurugan K** (2016). *Lactobacillus casei* triggers TLR mediated RACK-1 dependent p38 MAPK pathway *in Caenorhabditis elegans* to resist *Klebsiella pneumoniae* infection. Food & Function 7: 3211- 3223. DOI: 10.1039/C6FO00510A [Country: UK; Royal Society of Chemistry] (Impact Factor: 2.791).
12.	Prithika U, Deepa V and **Balamurugan K** (2016). External induction of heat shock stimulates the immune response and longevity of *C. elegans* towards pathogen exposure. Innate Immunity 22(6): 466-478. DOI: 10.1177/1753425916654557 [Country: UK; SAGE Publishing] (Impact Factor: 3.271)
13.	Vigneshkumar B, Durai S, Kundu S and **Balamurugan K** (2016). Proteome Analysis Reveals Translational Inhibition of *Caenorhabditis elegans* enhances susceptibility to *Pseudomonas aeruginosa* PAO1 pathogenesis. Journal of Proteomics 145: Pages 141-152. DOI: 10.1016/j.jprot.2016.03.047 [Elsevier, Country: UK] (Impact Factor: 3.888)
14.	JebaMercy G, Durai S, Prithika U, Marudhupandiyan S, Dasauni P, Kundu S and **Balamurugan K** (2016). Role of DAF-21 in *Caenorhabditis elegans* immunity against *Proteus mirabilis* infection. Journal of Proteomics 145: Pages 81-90.

	DOI:10.1016/j.jprot.2016.03.047 [Elsevier, Country: UK] (Impact Factor: 3.888)
15.	Kamaladevi A and **Balamurugan K** (2016). Lipopolysaccharide of *Klebsiella pneumoniae* attenuates immunity of *Caenorhabditis elegans* and evades by altering its supramolecular structure. *RSC Advances* 6:30070-30080. DOI: 10.1039/C5RA18206A. [Country: UK; Royal Society of Chemistry] (Impact Factor 3.84)
16.	Prasanth MI, Santoshram GS, Bhaskar JP and **Balamurugan K** (2016). Ultraviolet-A triggers photoaging in model nematode *Caenorhabditis elegans* in a DAF- 16 dependent pathway. *AGE* (Dordr) 38(27): 1-13; DOI: 10.1007/s11357-016-9889-y (Country: American Aging Association, Dordrecht, The Netherlands; Publisher: Springer; Impact Factor: 3.445)
17.	Kamaladevi A, Ganguli A and **Balamurugan K** (2016). *Lactobacillus casei* stimulates phase-II detoxification system and rescues malathion induced physiological impairments in *Caenorhabditis elegans*. Comparative Biochemistry and Physiology-Part C: Toxicology & Pharmacology 179: 19-28. DOI: 10.1016/j.cbpc.2015.08.004 (Country: New York, USA; Publisher: Elsevier Science; Impact Factor: 2.301).
18.	Sivamaruthi BS, Madhumita R, **Balamurugan K** and Rajan KE (2015). *Cronobacter sakazakii* infection alters serotonin transporter and improved fear memory retention in the rats. Frontiers in Pharmacology, section Neuropharmacology 6:188. doi: 10.3389/fphar.2015.00188 (Country: Switzerland; Publisher: Lausanne: Frontiers Media; Impact factor: 3.8).
19.	Kamaladevi A and **Balamurugan K** (2015). Role of PMK-1/p38 MAPK defense in *Caenorhabditis elegans* against *Klebesiella pneumoniae* infection and changes in supra-molecular aggregate structure of LPS during host-pathogen interaction. *Pathogens and Disease* 73 (5) (Formerly FEMS Immunology & Medical Microbiology. Published on behalf of the Federation of European Microbiological Societies) DOI: 10.1093/femspd/ftv021 (Country: UK; Oxford University Press. Impact Factor: 2.554)
20.	Sivamaruthi B, Prasanth MI and **Balamurugan K** (2015). Alterations in *Caenorhabditis elegans* and *Cronobacter sakazakii* lipopolysaccharide during interaction. *Archives of Microbiology* 197:327-337 DOI:10.1007/s00203-014-1064-1 (Country: USA; Springer-Verlag; Impact Factor: 1.8)
21.	Kesika P, Prasanth MI and **Balamurugan K** (2015). Modulation of *Caenorhabditis elegans* immune response and modification of *Shigella* endotoxin upon interaction. *Journal of Basic Microbiology*. doi: 10.1002/jobm.201400511 [Impact factor: 1.822].
22.	JebaMercy G, Prithika U, Lavanya N, Sekar C and **Balamurugan K** (2015). Changes in host, *Caenorhabditis elegans* and Staphylococcal Lipoteichoic acid during their interactions. Gene 558 (1): 159-172. DOI: 10.1016/j.gene.2014.12.056 [Country: UK; Elsevier Ltd; Impact Factor: 2.341].
23.	Durai S, Nirpendra S, Suman K and **Balamurugan K** (2014). Proteomic investigation of *Vibrio alginolyticus* challenged *Caenorhabditis elegans* revealed regulation of cellular homeostasis proteins and their role in supporting innate immune system. Proteomics 14(15):1820-32. DOI 10:1002/pmic.201300374. [Country: Germany; WILEY-VCH Verlag GmbH & Co. KGaA, Germany; Impact Factor: 4.150].
24.	Vigneshkumar B, Radhakrishnan S and **Balamurugan K** (2014). Analysis of Gram negative pathogen Lipid A changes during the interaction with model organism, *Caenorhabditis elegans*. Lipids. 49(6):555-75. DOI:10.1007/s11745-014-3898-3 [Country: Germany; Springer Berlin Heidelberg; Impact Factor: 2.129].

25.	Durai S, Vigneshwari L and **Balamurugan K** (2013). *Caenorhabditis elegans* based *in vivo* screening of bioactives from marine sponge associated bacteria against *Vibrio alginolyticus*. Journal of Applied Microbiology Dec;115(6):1329-42. DOI: 10.1111/jam.12335y [Wiley] [Impact Factor: 2.337].
26.	Sivamaruthi B and **Balamurugan K** (2013) Physiological and immunological regulations in *Caenorhabditis elegans* infected with *Salmonella enterica* serovar Typhi. Indian Journal of Microbiology 54 (1): 52-58. DOI:10.1007/s12088-013-0424-x [Springer] [Impact Factor: 0.511].
27.	Jebamercy G, Vigneshwari L and **Balamurugan K** (2013). A MAP Kinase pathway in *Caenorhabditis elegans* is required for defense against infection by opportunistic *Proteus species*. *Microbes and Infection* 15(8-9): 550-568. DOI:10.1016/j.micinf.2013.03.009 [ELSEVIER] (Impact Factor: 3.101).
28.	Kamaladevi A, Ganguli A, Kumar M and **Balamurugan K** (2013). *Lactobacillus casei* protects malathion induced oxidative stress and macromolecular changes in *Caenorhabditis elegans*. Pesticide Biochemistry and Physiology 105: pp. 213-223. DOI: 10.1016/j.pestbp.2013.02.005 [ELSEVIER] (Impact Factor: 2.009).
29.	VigneshKumar B, Durai S, Nirpendra Singh, Suman K and **Balamurugan K.** (2013). Understanding host-pathogen interaction by proteomic studies involving *C. elegans* and *P. aeruginosa*. Protein Science, 2013 August: Vol 22, Special Issue- Issue Supplement S1, Pages 1-258 (Impact factor: 2.735).
30.	Vigneshkumar B, Pandian SK and **Balamurugan K** (2013). Catalase Activity and Innate Immune Response to the Heavy Metal Toxin Lead by the *Caenorhabditis elegans* Environmental Toxicology 28(6):313-321. Doi:10.1002/tox.20722. [Country: USA; Impact Factor: 1.831].
31.	Jebamercy G and **Balamurugan K** (2012). Effects of subsequent infections in Caenorhabditis elegans with Staphylococcus aureus and Proteus mirabilis. Microbiology and Immunology 56(12):825-35. doi: 10.1111/j.1348-0421.2012.00509.x. [Wiley-Blackwell, Japan, Impact Factor: 1.304].
32.	Durai S and **Balamurugan K** (2012). Rescue of model organism, *Caenorhabditis elegans* by *Lagerstroemia speciosa* flower extract against clinical and drug resistant *Staphylococcus aureus* infection. International Journal of Infectious Diseases 2012;16S1:e317-e473; No. 54.009. [Country: USA; Impact Factor: 2.529].
33.	JebaMercy, G and **Balamurugan, K.** Response of *Caenorhabditis elegans* during subsequent infections with Gram positive and negative bacteria. BMC Infectious Diseases 2012; 12:P44 (Impact Factor: 3.118).
34.	**Balamurugan K** and Kesika P (2012). Role of immune pathways in *Caenorhabditis elegans* during *Serratia marcescens* infection. Clinical Microbiology and Infection 18(s3):1-902.
35.	**Balamurugan K and Sivamauthi B (2012).** Changes in immune pathway and proteins of *Caenorhabditis elegans* during *Cronobacter sakazakii* infection. The FASEB Journal 26: 1156.2 [Country: USA; Impact Factor: 6.79].
36.	**Balamurugan K** and JebaMercy G (2012). Role and contribution of conserved p38MAP kinase pathway in *Caenorhabditis elegans* immunity during *Proteus vulgaris* infection. The FASEB Journal 26: 835.2 [Country: USA; Impact Factor:6.79].
37.	Kesika P and **Balamurugan K** (2012). Studies on *Shigella boydii* infection in *Caenorhabditis elegans* and bioinformatics analysis of immune regulatory protein interactions. *BBA: Proteins and Proteomics* 1824 (12): 1449–1456 [http://dx.doi.org/ 10.1016 /j.bbapap. 2012.07.008]. [Country: Germany; Impact Factor: 3.635]

38.	Vigneshkumar B, Pandian SK and **Balamurugan K** (2012). Regulation of *Caenorhabditis elegans* and *Pseudomonas aeruginosa* machinery during interactions. Archives of Microbiology 2012 Apr; 194(4):229-42 [Country: Germany; Impact Factor: 1.927].
39.	Jebamercy G, Pandian SK and **Balamurugan K** (2011). Changes in *Caenorhabditis elegans* life-span and selective innate immune genes during *Staphylococcus aureus* infection. Folia Microbiologica 56: 373-380 (Springer Publishers; Country: Netherlands; Impact Factor: 0.978).
40.	Durai S, Pandian SK and **Balamurugan K** (2011). Changes in *Caenorhabditis elegans* exposed to *Vibrio parahaemolyticus*. Journal of Microbiology and Biotechnology 21(10): 1026–1035 [Country: South Korea; Impact Factor: 1.381].
41.	Sivamaruthi B, Ganguli A, Kumar M, Bhaviya S, Pandian SK and **Balamurugan K** (2011). *Caenorhabditis elegans* as a model for studying *Cronobacter sakazakii* ATCC BAA-894 pathogenesis. Journal of Basic Microbiology 51, 540–549 DOI 10.1002/jobm.201000377. [Country: UK; Impact Factor: 1.822]
42.	Kesika P, Pandian SK and **Balamurugan K** (2011). Analysis of *Shigella flexneri* mediated infections in model organism, *Caenorhabditis elegans*. Scandinavian Journal of Infectious Diseases 43(4):286-95 DOI:10.3109/00365548. 2010.548400 [Country: UK; Impact Factor: 1.70].
43.	Durai S, Pandian SK and Balamurugan K (2011). Establishment of a *Caenorhabditis elegans* infection model for *Vibrio alginolyticus*. Journal of Basic Microbiology 51(3):243-52. DOI 10.1002/jobm.201000303 [Country: UK; Impact Factor: 1.822] .

Faculty Profile as of 04 January 2019