



**Dr. K. Balamurugan**  
**Professor**

### Contact

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**Academic Qualifications: M.Sc., Ph.D.**

**Teaching Experience: 16 Years**

**Research Experience: 22 Years**

### Additional Responsibilities

- 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**
- **Functional genomics**
- **Interacting Proteomics**

## Research Supervision / Guidance

Program of Study		Completed	Ongoing
Research	Ph.D.	7	8
Project	PG	36	-
	UG / Others	4	-

## Publications

International		National		Others
Journals	Conferences	Journals	Conferences	Books / Chapters / Monographs / Manuals
73	120	3	38	6

<b>Cumulative Impact Factor (as per JCR) :</b>	<b>201.07 (Avg. I.F. 2.754)</b>
<b>h-index</b>	<b>: 16</b>
<b>i10 index</b>	<b>: 21</b>
<b>Total Citations</b>	<b>: 715</b>

## 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 <i>Caenorhabditis elegans</i> .	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	<i>Caenorhabditis elegans</i> response to human pathogens through proteomics studies	21.92
6.	DST	July-2011	July-2014	Characterization of innate immune regulators during <i>Shigella spp.</i>	23.30

7.	DST	Feb-2012	Jan-2015	<i>Caenorhabditis elegans</i> response against <i>Vibrio spp.</i> 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 <i>Caenorhabditis elegans</i> 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	<i>C. elegans</i> : An <i>in vivo</i> model for dermal inflammation and healing	41.17
2	DBT	June 2017	June 2020	Impact of <i>Cronobacter sakazakii</i> infection on the neuroimmunity using multiple model systems, <i>C. elegans</i> and Rat	70.24

### Patents

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

5	Personal Care Compositions for Anti-Aging	Prasanth MI, Pandian SK, Gayathri S, James PB, <b>Balamurugan K</b>	766/KOL/2015	15 July 2015
6	Personal Care Compositions for Anti-Aging	Prasanth MI, Pandian SK, Gayathri S, James PB, <b>Balamurugan K</b>	779/KOL/2015	17 July 2015
7	An anti-acne synergistic composition and process thereof	Sivasankar C, Pandian SK and <b>Balamurugan K</b>	Application No. 201641010057	22 March 2016

### 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 52<sup>nd</sup> 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 5<sup>th</sup> 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.

### Events organized in leading roles

Number of Seminars / Conferences / Workshops / Events organized: **8**

### Events Participated (optional)

**Conferences / Seminars / Workshops: 169**

### Overseas Exposure / Visits

1. Portugal
2. Thailand
3. Germany
4. London, United Kingdom
5. Australia
6. Switzerland

7. USA
8. 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: **56**

## Others

1. Articles published in Newspapers / Magazines : **09 Book chapters**
2. Products developed : **7**
3. No. of PhD Thesis evaluated : **13**
4. No. of PhD Public Viva Voce Examination conducted : **12**

5. Sequences submitted in GenBank: 103

**Recent Publications**

1.	Marudhupandiyan S, Prithika U, Balasubramaniam B and <b>Balamurugan K</b> (2017). RACK-1, a multifaceted regulator is required for <i>C. elegans</i> innate immunity against <i>S. flexneri</i> M9OT infection. <i>Developmental and Comparative Immunology</i> . Vol. 74; September 2017, Pages 227-236. DOI:10.1016/j.dci.2017.05.008 [Country: UK; Elsevier] (Impact Factor: 3.62).
2.	Dhanashree, Sharika R, <b>Balamurugan K</b> and Rajagopal K (2017). Bifid shape is intrinsic to <i>Bifidobacterium adolescentis</i> . <i>Front. Microbiol.</i> 8:478. doi: 10.3389/fmicb.2017.00478. (Impact Factor: 4.165).
3.	Prithika U, Vikneswari R and <b>Balamurugan K</b> (2016). Short term memory of <i>Caenorhabditis elegans</i> against bacterial pathogens involves CREB transcription factor. <i>Immunobiology</i> . DOI: 10.1016/j.imbio.2016.12.008 [Country: Netherlands; Publisher: Elsevier BV] (Impact Factor: 2.99).
4.	Marudhupandiyan S and <b>Balamurugan K</b> (2016). Intrinsic JNK-MAPK pathway involvement requires <i>daf-16</i> mediated immune response during <i>Shigella flexneri</i> infection in <i>C. elegans</i> ". <i>Immunologic Research</i> DOI: 10.1007/s12026-016-8879-6. [Country: USA; Springer] (Impact Factor: 2.934).
5.	Kamaladevi A and <b>Balamurugan K</b> (2016). <i>Lactobacillus casei</i> triggers TLR mediated RACK-1 dependent p38 MAPK pathway in <i>Caenorhabditis elegans</i> to resist <i>Klebsiella pneumoniae</i> infection. <i>Food &amp; Function</i> 7: 3211- 3223. DOI: 10.1039/C6FO00510A [Country: UK; Royal Society of Chemistry] (Impact Factor: 2.791).
6.	Prithika U, Deepa V and <b>Balamurugan K</b> (2016). External induction of heat shock stimulates the immune response and longevity of <i>C. elegans</i> towards pathogen exposure. <i>Innate Immunity</i> 22(6): 466-478. DOI: 10.1177/1753425916654557 [Country: UK; SAGE Publishing] (Impact Factor: 3.271)
7.	Vigneshkumar B, Durai S, Kundu S and <b>Balamurugan K</b> (2016). Proteome Analysis Reveals Translational Inhibition of <i>Caenorhabditis elegans</i> enhances susceptibility to <i>Pseudomonas aeruginosa</i> PAO1 pathogenesis. <i>Journal of Proteomics</i> 145: Pages 141-152. DOI: 10.1016/j.jprot.2016.03.047 [Elsevier, Country: UK] (Impact Factor: 3.888)
8.	JebaMercy G, Durai S, Prithika U, Marudhupandiyan S, Dasauni P, Kundu S and <b>Balamurugan K</b> (2016). Role of DAF-21 in <i>Caenorhabditis elegans</i> immunity against <i>Proteus mirabilis</i> infection. <i>Journal of Proteomics</i> 145: Pages 81-90. DOI:10.1016/j.jprot.2016.03.047 [Elsevier, Country: UK] (Impact Factor: 3.888)
9.	Kamaladevi A and <b>Balamurugan K</b> (2016). Lipopolysaccharide of <i>Klebsiella pneumoniae</i> attenuates immunity of <i>Caenorhabditis elegans</i> and evades by altering its supramolecular structure. <i>RSC Advances</i> 6:30070-30080. DOI: 10.1039/C5RA18206A. [Country: UK; Royal Society of Chemistry] (Impact Factor 3.84)
10.	Prasanth MI, Santoshram GS, Bhaskar JP and <b>Balamurugan K</b> (2016). Ultraviolet-A triggers photoaging in model nematode <i>Caenorhabditis elegans</i> in a DAF-16 dependent pathway. <i>AGE (Dordr)</i> 38(27): 1-13; DOI: 10.1007/s11357-016-9889-y (Country: American Aging Association, Dordrecht, The Netherlands; Publisher: Springer; Impact Factor: 3.445)

11.	Kamaladevi A, Ganguli A and <b>Balamurugan K</b> (2016). <i>Lactobacillus casei</i> stimulates phase-II detoxification system and rescues malathion induced physiological impairments in <i>Caenorhabditis elegans</i> . <i>Comparative Biochemistry and Physiology-Part C: Toxicology &amp; Pharmacology</i> 179: 19-28. DOI: 10.1016/j.cbpc.2015.08.004 (Country: New York, USA; Publisher: Elsevier Science; Impact Factor: 2.301).
12.	Sivamaruthi BS, Madhumita R, <b>Balamurugan K</b> and Rajan KE (2015). <i>Cronobacter sakazakii</i> infection alters serotonin transporter and improved fear memory retention in the rats. <i>Frontiers in Pharmacology, section Neuropharmacology</i> 6:188. doi: 10.3389/fphar.2015.00188 (Country: Switzerland; Publisher: Lausanne: Frontiers Media; Impact factor: 3.8).
13.	Kamaladevi A and <b>Balamurugan K</b> (2015). Role of PMK-1/p38 MAPK defense in <i>Caenorhabditis elegans</i> against <i>Klebsiella pneumoniae</i> infection and changes in supra-molecular aggregate structure of LPS during host-pathogen interaction. <i>Pathogens and Disease</i> 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)
14.	Sivamaruthi B, Prasanth MI and <b>Balamurugan K</b> (2015). Alterations in <i>Caenorhabditis elegans</i> and <i>Cronobacter sakazakii</i> lipopolysaccharide during interaction. <i>Archives of Microbiology</i> 197:327-337 DOI:10.1007/s00203-014-1064-1 (Country: USA; Springer-Verlag; Impact Factor: 1.8)
15.	Kesika P, Prasanth MI and <b>Balamurugan K</b> (2015). Modulation of <i>Caenorhabditis elegans</i> immune response and modification of <i>Shigella</i> endotoxin upon interaction. <i>Journal of Basic Microbiology</i> . doi: 10.1002/jobm.201400511 [Impact factor: 1.822].
16.	JebaMercy G, Prithika U, Lavanya N, Sekar C and <b>Balamurugan K</b> (2015). Changes in host, <i>Caenorhabditis elegans</i> and Staphylococcal Lipoteichoic acid during their interactions. <i>Gene</i> 558 (1): 159-172. DOI: 10.1016/j.gene.2014.12.056 [Country: UK; Elsevier Ltd; Impact Factor: 2.341].
17.	Durai S, Nirpendra S, Suman K and <b>Balamurugan K</b> (2014). Proteomic investigation of <i>Vibrio alginolyticus</i> challenged <i>Caenorhabditis elegans</i> revealed regulation of cellular homeostasis proteins and their role in supporting innate immune system. <i>Proteomics</i> 14(15):1820-32. DOI 10:1002/pmic.201300374. [Country: Germany; WILEY-VCH Verlag GmbH & Co. KGaA, Germany; Impact Factor: 4.150].
18.	Vigneshkumar B, Radhakrishnan S and <b>Balamurugan K</b> (2014). Analysis of Gram negative pathogen Lipid A changes during the interaction with model organism, <i>Caenorhabditis elegans</i> . <i>Lipids</i> . 49(6):555-75. DOI:10.1007/s11745-014-3898-3 [Country: Germany; Springer Berlin Heidelberg; Impact Factor: 2.129].
19.	Durai S, Vigneshwari L and <b>Balamurugan K</b> (2013). <i>Caenorhabditis elegans</i> based <i>in vivo</i> screening of bioactives from marine sponge associated bacteria against <i>Vibrio alginolyticus</i> . <i>Journal of Applied Microbiology</i> Dec;115(6):1329-42. DOI: 10.1111/jam.12335y [Wiley] [Impact Factor: 2.337].
20.	Sivamaruthi B and <b>Balamurugan K</b> (2013) Physiological and immunological regulations in <i>Caenorhabditis elegans</i> infected with <i>Salmonella enterica</i> serovar Typhi. <i>Indian Journal of Microbiology</i> 54 (1): 52-58. DOI:10.1007/s12088-013-0424-x [Springer] [Impact Factor: 0.511].
21.	Jebamercy G, Vigneshwari L and <b>Balamurugan K</b> (2013). A MAP Kinase pathway in <i>Caenorhabditis elegans</i> is required for defense against infection by opportunistic <i>Proteus species</i> . <i>Microbes and Infection</i> 15(8-9): 550-568. DOI:10.1016/j.micinf.2013.03.009 [ELSEVIER] (Impact Factor: 3.101).

22.	Kamaladevi A, Ganguli A, Kumar M and <b>Balamurugan K</b> (2013). <i>Lactobacillus casei</i> protects malathion induced oxidative stress and macromolecular changes in <i>Caenorhabditis elegans</i> . Pesticide Biochemistry and Physiology 105: pp. 213-223. DOI: 10.1016/j.pestbp.2013.02.005 [ELSEVIER] (Impact Factor: 2.009).
23.	VigneshKumar B, Durai S, Nirpendra Singh, Suman K and <b>Balamurugan K.</b> (2013). Understanding host-pathogen interaction by proteomic studies involving <i>C. elegans</i> and <i>P. aeruginosa</i> . Protein Science, 2013 August: Vol 22, Special Issue- Issue Supplement S1, Pages 1-258 (Impact factor: 2.735).
24.	Vigneshkumar B, Pandian SK and <b>Balamurugan K</b> (2013). Catalase Activity and Innate Immune Response to the Heavy Metal Toxin Lead by the <i>Caenorhabditis elegans</i> Environmental Toxicology 28(6):313-321. Doi:10.1002/tox.20722. [Country: USA; Impact Factor: 1.831].
25.	Jebamercy G and <b>Balamurugan K</b> (2012). Effects of subsequent infections in <i>Caenorhabditis elegans</i> with <i>Staphylococcus aureus</i> and <i>Proteus mirabilis</i> . Microbiology and Immunology 56(12):825-35. doi: 10.1111/j.1348-0421.2012.00509.x. [Wiley-Blackwell, Japan, Impact Factor: 1.304].
26.	Durai S and <b>Balamurugan K</b> (2012). Rescue of model organism, <i>Caenorhabditis elegans</i> by <i>Lagerstroemia speciosa</i> flower extract against clinical and drug resistant <i>Staphylococcus aureus</i> infection. International Journal of Infectious Diseases 2012;16S1:e317-e473; No. 54.009. [Country: USA; Impact Factor: 2.529].
27.	JebaMercy, G and <b>Balamurugan, K.</b> Response of <i>Caenorhabditis elegans</i> during subsequent infections with Gram positive and negative bacteria. BMC Infectious Diseases 2012; 12:P44 (Impact Factor: 3.118).
28.	<b>Balamurugan K</b> and Kesika P (2012). Role of immune pathways in <i>Caenorhabditis elegans</i> during <i>Serratia marcescens</i> infection. Clinical Microbiology and Infection 18(s3):1-902.
29.	<b>Balamurugan K and Sivamauthi B (2012).</b> Changes in immune pathway and proteins of <i>Caenorhabditis elegans</i> during <i>Cronobacter sakazakii</i> infection. The FASEB Journal 26: 1156.2 [Country: USA; Impact Factor: 6.79].
30.	<b>Balamurugan K</b> and JebaMercy G (2012). Role and contribution of conserved p38MAP kinase pathway in <i>Caenorhabditis elegans</i> immunity during <i>Proteus vulgaris</i> infection. The FASEB Journal 26: 835.2 [Country: USA; Impact Factor:6.79].
31.	Kesika P and <b>Balamurugan K</b> (2012). Studies on <i>Shigella boydii</i> infection in <i>Caenorhabditis elegans</i> and bioinformatics analysis of immune regulatory protein interactions. <i>BBA: Proteins and Proteomics</i> 1824 (12): 1449-1456 [http://dx.doi.org/ 10.1016 /j.bbapap. 2012.07.008]. [Country: Germany; Impact Factor: 3.635]
32.	Vigneshkumar B, Pandian SK and <b>Balamurugan K</b> (2012). Regulation of <i>Caenorhabditis elegans</i> and <i>Pseudomonas aeruginosa</i> machinery during interactions. Archives of Microbiology 2012 Apr; 194(4):229-42 [Country: Germany; Impact Factor: 1.927].
33.	Jebamercy G, Pandian SK and <b>Balamurugan K</b> (2011). Changes in <i>Caenorhabditis elegans</i> life-span and selective innate immune genes during <i>Staphylococcus aureus</i> infection. Folia Microbiologica 56: 373-380 (Springer Publishers; Country: Netherlands; Impact Factor: 0.978).
34.	Durai S, Pandian SK and <b>Balamurugan K</b> (2011). Changes in <i>Caenorhabditis elegans</i> exposed to <i>Vibrio parahaemolyticus</i> . Journal of Microbiology and Biotechnology 21(10): 1026-1035 [Country: South Korea; Impact Factor: 1.381].



35.	Sivamaruthi B, Ganguli A, Kumar M, Bhaviya S, Pandian SK and <b>Balamurugan K</b> (2011). <i>Caenorhabditis elegans</i> as a model for studying <i>Cronobacter sakazakii</i> ATCC BAA-894 pathogenesis. Journal of Basic Microbiology 51, 540–549 DOI 10.1002/jobm.201000377. [Country: UK; Impact Factor: 1.822]
36.	Kesika P, Pandian SK and <b>Balamurugan K</b> (2011). Analysis of <i>Shigella flexneri</i> mediated infections in model organism, <i>Caenorhabditis elegans</i> . Scandinavian Journal of Infectious Diseases 43(4):286-95 DOI:10.3109/00365548.2010.548400 [Country: UK; Impact Factor: 1.70].
37.	Durai S, Pandian SK and Balamurugan K (2011). Establishment of a <i>Caenorhabditis elegans</i> infection model for <i>Vibrio alginolyticus</i> . Journal of Basic Microbiology 51(3):243-52. DOI 10.1002/jobm.201000303 [Country: UK; Impact Factor: 1.822] .

Faculty Profile as of 25 July 2017