



Dr. SHANTHI SATHAPPAN

Email: shantisathappan@gmail.com

Mobile: +91-7339224257

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h- index: **13**

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Total Impact factor: **56.347**

PROFESSIONAL OBJECTIVE

Seeking an interesting research position in life science with a goal of service to the society utilizing my extensive research background and the rich set of opportunities to excel in all endeavors.

EDUCATION

July 2014	Ph. D	Department of Animal Health and Management, Alagappa University, Karaikudi	Highly commended
April 2008	M.Sc in Biotechnology	Vels college of science, Pallavaram, Chennai, Madras University, Pallavaram, chennai	First class (62%)
April 2006	B. Sc in Biotechnology	JJ college of arts & science, Pudukottai, Bharathidhasan University, Pudukottai	First class (74%)
Mar 2003	Higher Sec (Biology)	Sahayamatha Matriculation Hr.sec School, Karaikudi	First class (65%)
Mar 2001	High School	Sahayamatha Matriculation Hr.sec School Karaikudi,	First class with Distinction 75%)

PUBLICATIONS – 23

- International – **21**, National – **2**; Total Publication – **23** (**20**- Peer reviewed Journal & **3** Abstracts)
- **Submission of Sequences in NCBI Genbank**, HM535650, HM535649, ADT91768, HM992835, ADN44616, HM36816.

AWARDS & WORK EXPERIENCE

Year	Awards/Position	University/ Department
October 21 st 2020 – till date	Post-Doctoral Scientist	Institute of Animal Science Poultry and Aquaculture Sci. Dept. Agricultural Research Organization, The Volcani Center, Israel.
April 7 th 2017- March 31 st 2020	Post-Doctoral Fellow- UGC Dr.D.S.Kothari fellowship	Department of Zoology, University of Madras, Guindy Campus, Chennai, Tamilnadu, India.
July 20 th 2015- July 30 th 2016	Post-Doctoral Scientist- ARO Postdoctoral Fellowships - India & China	Institute of Animal Science Poultry and Aquaculture Sci. Dept. Agricultural Research Organization, The Volcani Center, Israel.
Sep 2013- April 2015	Senior Research Fellow – CSIR Project	Department of Animal Health and Management Alagappa University, Karaikudi, TamilNadu, India.
October 2010-2012	Junior Research Fellow – DBT project	Department of Animal Health and Management Alagappa University, Karaikudi, TamilNadu, India.
Jan 2010 -March 2010	Temporary Teaching Assistant	Department of Animal Health and Management Alagappa University, Karaikudi, TamilNadu, India.
October 2008- March 2009	Lab Technician	Department of Biotechnology, University of Madras, Guindy Campus, Chennai.

RESEARCH SKILLS

- Biochemistry** : Protein and DNA estimation, Paper Chromatography, TLC, Column Chromatography, Poly Acrylamide Gel Electrophoresis (SDS), Estimation analysis.
- Biotechnology** : Isolation of DNA from blood, animal tissue and microbial source, Plasmid isolation, mRNA, cDNA synthesis, PCR-RFLP, RAPD, RT-PCR, RACE, Agarose Gel Electrophoresis, Cloning, Expression and protein purification of cloned products, synthesis of nanoparticles and Toxicity analysis
- Embryology** : Microinjection, Dissection of chicken embryos, Histology, Transfection, Immunohistochemistry
- Microbiology** : Aseptic procedures of Streaking, Spread plating, Staining, MIC, Disc & Well diffusion.
Microscopic analysis- Confocal Laser Scanning Microscopy, Nikon microscope, Fluorescent microscopy and ELISA
- Bioinformatics** : BLAST, FASTA, EXPASY Tools, Phylogenetic tree construction, Analysis of DNA Sequences using Vector NTI software usage and other bioinformatics tools

RESEARCH EXPERIENCE (5 yrs Post-Doctoral Experience)

1. Post-Doctoral Fellow (PDF)- III- ISRAEL (2 years)

Title: Finding off -targets in the chicks Pgc's germ cells.

Location: Institute of Animal Science, Department: Poultry and Aquaculture, Israel

Duration: 2020-2022

2. Post-Doctoral Fellow (PDF)- II- UGC-Kothari fellow (3 Years)

Title: Study the Efficacy of Recombinant Antimicrobial Peptide (Penaeidin) against *Mycobacterium* spp. using protein encapsulated ZnO NPs (Zinc oxide - Penaeidin nanoformulation).

Location: Department of Zoology, University of Madras, Chennai, TamilNadu, India

Duration: 2017-2020

Description: To study the efficacy of recombinant Penaeidin against *Mycobacterium* spp. with nanostructured ZnO as potential delivering and stabilizing agent to enhance potential of antimicrobial action. Because, core-shell nanoparticles formed by self-assembly of an amphiphilic peptide have strong antimicrobial properties against a wide range of bacteria. Moreover, AMPs are used to develop a novel therapeutic agent in order to overcome MDR because of its unique mechanism of action. This study is important to develop an alternative approach for antibiotic treatment and serve as a remarkable step in AMP based nanotherapeutic development in the future for human welfare.

3. Post-Doctoral Fellow(PDF)- I- ISRAEL (1 Year)

Title: Roles of the PPAR β/δ signaling pathway in embryogenesis

Location: Institute of Animal Science, Department: Poultry and Aquaculture, Israel

Duration: 2015-16

Description: Peroxisome Proliferator-Activated Receptors (PPARs) function as transcription factors regulating gene expression which play essential roles in development and metabolism. Little is known about the roles of PPAR β/δ during embryonic development however the expression pattern of this gene suggests a critical role in cardiac and skeletal muscle formation. The chicken embryo is an excellent model for studying the function of the PPAR β/δ gene as it allows an excellent *in vivo* visualization and analysis, administration of specific agonists and antagonists and gene manipulations. Using this model, this project aims to study the involvement of PPAR β/δ in embryonic cardiac function and skeletal muscle formation. Results obtained in this study will set the basis for future research, related to the poultry industry.

4. Senior Research Fellow (SRF) (2 Years)

Title : "c-DNA Cloning mRNA transcript and Functional Analysis of Novel Immune Related Genes Prophenoxidase and Peroxinectin from Indian Shrimp *Fenneropenaeus indicus*".

Location : Department of Animal Health and Management, Alagappa University, Karaikudi

Duration : Two Years

Description: The characterization of full length gene Peroxinectin isolated from the Indian white shrimp *Fenneropenaeus indicus* (Fi-Pxn). Quantification of expression of peroxinectin from the *F. indicus* were analyzed when it was injected with the immunostimulants. Fi-Pxn had an open reading frame of 2415 nucleotide encoding 804 amino acids with putative 20-aa (1-21) signal peptide. The mature protein has molecular mass of 89.8 kDa with an estimated pI of 8.6. The Fi-Pxn transcript levels in different tissues, immune challenges with immunostimulants (Peptidoglycon) and bacteria (*V. harveyi*) and molting stage responses showed Fi-Pxn expression involvement in the immune system. These findings suggested that peroxinectin expression is susceptible to exterior stimulus and maintains at a high expression level during bacterial infection.

5. Junior Research Fellow (JRF) (3 years)

Title : “Genome characterization and mRNA transcript analysis of novel gene serine Proteinase and alpha-2- macroglobulin from *Fenneropenaeus indicus*”.

Location : Department of Animal Health and Management, Alagappa University, Karaikudi

Duration : Three Years

Description:

The full-length sequence of Serine proteinase and α 2-macroglobulin (α 2M) were cloned from the hemocytes of Indian white shrimp *Fenneropenaeus indicus* by reverse transcription polymerase chain reaction (RT-PCR), cloning and sequencing of overlapping PCR, and the rapid amplification of cDNA ends method. The cDNA sequence and deduced amino acid sequence of both genes were submitted to NCBI Genbank. For the immune challenges, the qRT-PCR mRNA transcript analysis showed that *Vibrio harveyi*, *Vibrio parahaemolyticus* β glucan, Peptidoglycon influenced the up-regulation of the gene transcript levels at 3 h to 6 h. The three-dimensional structures of both genes were predicted by in silico homology modelling studies. The host –pathogenic interactions were confirmed by CLSM studies.

6. Post graduate project

Title : Invitro Characterization of Bacteriocin producing *Bacillus subtilis* from Milk samples.

Location : Vels College of Science, Pallavaram

Description:

Bacillus subtilis was isolated from milk samples. Antibiotic resistance and the antimicrobial activity of *B. subtilis* were studied. All the four isolates of *B. subtilis* were sensitive to antibiotics such as streptomycin (25 μ g/ml), ampicillin (10 μ g/ml), penicillin (10 μ g/ml), erythromycin (15 μ g/ml), amoxicillin (10 μ g/ml). But they were resistant to bacitracin (10 μ g/ml). *B. subtilis* shown antibacterial activity against the selected human pathogens such as *Salmonella* spp, *Streptococcus* spp, *Klebsiella* spp and *E. coli*. The antimicrobial substance from *B. subtilis* extracted with organic solvent such as ethyl acetate have also shown antibacterial activity against the human pathogens. The proteineaceous nature of the *B. subtilis* exerted antimicrobial activity. The amount of protein varied between 0.05 - 0.55 mg/ml and the protein was qualitatively analyzed by SDS-PAGE. The entire samples have shown peptide < 62 kDa.

List of PUBLICATIONS (Total Impact Factor 56.347) ♦ - Abstract

1. **Shanthi S**, Nithya K, Dharanivasan G, Piyush GK, Verma RS, Janarthanan S (2021). Green Synthesis of Zinc Oxide Nanoparticles (ZnO NPs) Using *Cissus quadrangularis*: Characterization, Antimicrobial and Anticancer Studies. Proc. Natl. Acad. Sci., India, Sect. B Biol. Sci (Impact Factor: 0.396)
2. G.Dharanivasan, DMI.Jessie,T. Rajamuthuramalingam, G.Rajendran, **S.Shanthi**, K.Kathiravan (2019) Scanometric Detection of Tomato Leaf Curl New Delhi Viral DNA Using Mono- and Bifunctional AuNP-Conjugated Oligonucleotide Probes. ACS Omega 4, 6, 10094-10107 (Impact Factor: 2.584)
3. S Jayanthi , **S Shanthi**, B Vaseeharana, N Gopi , M Govindarajan, N.S. Alharbid , S Kadaikunnand , J. M. Khaledd , G. Benellie. (2017). Growth inhibition and antibiofilm potential of Ag nanoparticles coated with lectin, an invertebrate immune molecule. J. Photochem. Photobiol.B (Impact Factor: 4.067).
4. Vijayakumar S, Vaseeharan B, Malai kozhundan, **Shanthi S**, Thajuddin N. (2017). Control of biofilm forming human pathogenic bacteria by green synthesized ZnO nanoparticles and its ecotoxicity on *Ceriodaphnia cornuta*. *Microbial Pathogenesis* (Impact factor 2.581).
5. ♦ **Shanthi S**, Vaseeharan B (2016) - Acute toxicity of silver nanoparticles synthesized from *Cissus quadrangularis* in *Poecilia reticulata* larvae and its antibiofilm activity against gram positive & gram negative bacteria. Fish & Shellfish Immunology, 2016 Vol 53 page no 99. (Impact factor 3.298).
6. Ishwarya, R., Vaseeharan, B., **Shanthi, S.** et al. (2016) - Green Synthesized Silver Nanoparticles: Toxicity against *Poecilia reticulata* Fishes and *Ceriodaphnia cornuta* Crustaceans. Journal of cluster science (Impact Facator 2.125)
7. Thaya R, Malaikozhundan B, Vijayakumar S, Sivakamavalli J, Jeyasekar R, **Shanthi S**, Vaseeharan B, Ramasamy P, Avinash S (2016). Chitosan coated Ag/ZnO nanocomposite and their antibiofilm, antifungal and cytotoxic effects on murine macrophages. *Microbial Pathogenesis* 100, 124-132 (Impact factor 2.581).
8. Gobi N, Malaikozhundan B, Vijayakumar S, **Shanthi S**, Vaseeharan B, Jayakumar R (2016). GFP tagged *Vibrio parahaemolyticus* Dahn2 infection and the protective effects of the probiotic *Bacillus licheniformis* Dahn1 on the growth, immune and antioxidant responses in *Pangasius hypophthalmus*. *Fish and Shellfish Immunology* 52:230-8 (Impact factor 3.298).
9. **Shanthi S**, David jayaseelan B, Velusamy P, Vijayakumar S, Cheng T (2015) Biosynthesis of silver nanoparticles using a probiotic *Bacillus licheniformis* Dahn1 and their antibiofilm activity and toxicity effects in *Ceriodaphnia cornuta*. *Microbial pathogenesis* 93 (2016) 70-77. (Impact factor 2.581).
10. Manju S, Malaikozhundan B, Vijayakumar S, **Shanthi S**, Jaishbanu A, Ekambaram P, Vaseeharan B (2015). Antibacterial, antibiofilm and cytotoxic effects of *Nigella sativa* essential oil coated gold nanoparticles. *Microbial pathogenesis* 91, 129-135. (Impact factor 2.581).
11. Vinoj G, Vaseeharan B, Thomas S, Spiers A J, **Shanthi S** (2015). Quorum-Quenching activity of the AHL-Lactonase from *Bacillus licheniformis* DAHB1 inhibits *Vibrio* biofilm formation invitro and reduces shrimp intestinal colonization and mortality. *Marine Biotechnology* 16(6):707-15 Impact Factor: 2.798).
12. Vijayakumar S, Vinoj G, Malaikozhundan B, **Shanthi S** and Vaseeharan B (2015). Plectranthus amboinicus leaf extract mediated synthesis of zinc oxide nanoparticles and its control of methicillin resistant *Staphylococcus aureus* biofilm and blood sucking mosquito larvae. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy* 137; 886-891 (Impact factor- 2.931)

13. **Shanthi S**, Manju S, Rajakumaran P, Vaseeharan B (2014). Molecular cloning of peroxinectin gene and its expression in response to peptidoglycan and *Vibrio harveyi* in Indian white shrimp *Fenneropenaeus indicus*. *Cell Communication and Adhesion* 21(6):281-9 (Impact Factor- 2.414)
14. **Shanthi S**, Vaseeharan B (2014) Alpha 2 macroglobulin gene and their expression in response to GFP tagged *Vibrio parahaemolyticus* and WSSV pathogens in Indian white shrimp *Fenneropenaeus indicus*. *Aquaculture* 418: 48-54 (Impact factor- 3.022)
15. Vinoj G, Jayakumar R, Chen JC, Boonsirm W, **Shanthi S**, Vaseeharan B (2014). N-hexanoyl-L-homoserine lactone-degrading *Pseudomonas aeruginosa* PsDAHP1 protects zebrafish against *Vibrio parahaemolyticus* infection. *Fish and Shellfish immunology* 42(1):204-12. (Impact Factor: 3.298).
16. **Shanthi S**, Vaseeharan B (2013) Molecular cloning, characterization and expression of serine proteinase homolog from the hemocytes of Indian white shrimp *Fenneropenaeus indicus*. *Fish and shellfish immunology* 34: 1692-1752. (Impact Factor: 3.298).
17. ♦ Vaseeharan B, **Shanthi S** (2013) cDNA cloning, characterisation, expression and purification of antimicrobial peptides (penaeidin and anti-lipopolysaccharide factor) from *Penaeus semisulcatus*. *Fish and shellfish immunology* 34: 1635-1691. (Impact Factor: 3.298).
18. David Jayaseelan B, Vaseeharan B, Maharajan A, **Shanthi S**, Vinoj G (2013) Vibrostatic effect of probiotics *Bacillus licheniformis* Dahb1 and its molecular phylogeny resolved through RAPD markers. *Annals in microbiology*, 63:1601-1609. (Impact factor 1.549).
19. **Shanthi S**, Vaseeharan B (2012) cDNA cloning, characterization and expression analysis of novel anti microbial peptide gene penaeidin-3 (Fi-Pen3) from the haemocytes of Indian white shrimp *Fenneropenaeus indicus*. *Microbiological Research* 167: 127– 134. (Impact factor 3.701).
20. B Vaseeharan, **Shanthi S**, Chen JC, Espiñeira M (2012) Molecular cloning, sequence analysis and expression of Fein-penaeidin from the haemocytes of Indian white shrimp *Fenneropenaeus indicus*. *Results in Immunology*, 2: (Impact factor- 0.766)
21. Sivakamavalli J, Vaseeharan B, **Shanthi S**, Prabhu NM, Manikandan R, Ravi C, Prem Anand T (2012) *In silico* analysis of lipopolysaccharide and β -1, 3-glucanbinding protein (LGBP) gene from the haemocytes of Indian white shrimp *Fenneropenaeus indicus*. *Research in Biotechnology* 3(3): 26-36.
22. Vaseeharan B, **Shanthi S**, Prabhu NM (2011) A novel clip domain serine proteinase (SPs) gene from the haemocytes of Indian white shrimp *Fenneropenaeus indicus*. *Fish and Shellfish Immunology* 30(3): 980-5. (Impact Factor: 3.298).
23. Hemalatha S, **Shanthi S** (2010) *In vitro* characterization of bacteriocin producing *Bacillus subtilis* from milk samples. *African Journal of Microbiology Research* Vol. 4(19).

SUMMER TRAINING

University : Bharathidhasan University, Department of Animal Science, Trichy.

Areas of Training: Chromosomal abbreviations, Micronucleus test, Sperm abnormality, Animal handling and rat dissection.

Duration : One month (April, 2007 – May, 2007)

PAPER PRESENTATIONS

1. Cloning, Sequencing analysis and tissue expression of antimicrobial peptides (Penaeidin & Penaeidin-3) in Indian white shrimp *Fenneropenaeus indicus* at National conference on Aquatic Animal Health and Management, held on Sep 14 & 15th 2012, Organized by CAS in marine biology, Faculty of marine science, Annamalai University, Parangipettai.
2. Molecular cloning and characterization of serine proteinase cDNA from Indian white shrimp *Fenneropenaeus indicus* at Indo-UK Conference on Shrimp Aquaculture: Challenges & Innovative solutions, held on Jan 25-27th 2012, Dept of Bioinformatics, Bharathidhasan University, Tiruchirapalli.
3. Genomic fingerprinting of artemia parthenogenitica isolates of wild populations in India by RAPD and protein profile analysis at 6th World Fisheries Congress, Sustainable Fisheries in a Changing World, 7th - 11th May 2012, Edinburgh, Scotland.
4. Immune Stimulatory Effect of Zymogen on the Flower Prawn *Penaeus semisulcatus* and its resistance against *Vibrio Parahaemolyticus*. National Conference on Biotechnological Approaches in Aquaculture held on Feb 1-3, Dept of Zoology, School of Life Science, Bharathiyar University, Coimbatore.
5. Effects of Curcumin against renal injuries mediated by inducible nitric oxide synthase during gentamicin induced toxicity in wistar rats, National seminar on Advances in Zoology and life Processes held on Feb 9th- 11th, 2012, Department of Zoology, Goa University, Taleigao Plateau, Goa.
6. Biosynthesis of Silver Nanoparticles using medicinal plant and its effect against *Vibrio SPP*. isolated from commercially important marine fishes at National seminar on Advances in Zoology and Life Processes held on Feb 9th- 11th, 2012, Department of Zoology, Goa University, Taleigao Plateau, Goa.
7. Cloning and characterization of a antimicrobial peptide gene Penaeidin-3 (Fi-Pen3) from the haemocytes of Indian white shrimp *Fenneropenaus indicus* at Eight symposium on Diseases in Asian Aquaculture, held on Nov 21-25, 2011 Karnataka Veterinary Animal and Fisheries Science University Mangalore, India.
8. *In silico* analysis of pattern of pattern recognition protein lipopolysaccharide and β - 1-3,glucon binding protein (LGBP) gene from the haemocytes of Indian White shrimp *Fenneropenaeus indicus* at 4th National Symposium Cum Work shop on Recent Trends in Structural Bioinformatics and Computer Aided Drug Design SBCADD, Alagappa University, Karaikudi, 2012.
9. Effect of symbiotic supplements on growth rate, digestive enzymes activity, total protein and antibody titre of *Labio rohita* at National Conference on Emerging trends in Biological Research (NCEBR'11), Madras University, Chennai.
10. Inhibitory Activity of commercially available antibiotics against vibrio spp. *pseudomonas spp.* and *salmonella spp.* from Cattle (*bos indicus*) farms of

south, Tamil Nadu, India at National Conference on Emerging trends in Biological Research (NCEBR'11) on Feb 21& 22, 2011, Madras University, Chennai.

11. Control measures of salmonella in poultry. In National conference on Ariviyal Tamil - held on 7-8 October 2010, Manonmanium Sundaranar University, Tirunelveli.
12. Isolation of rpoN gene and characterization of *Vibrio anguillarum* from vibriosis infected *Penaeus monodon*. In Tamizha Ariviyal pæravai "Tamizhkathin Sakthi Valam" 2009- held on 11th to 13th September 2009, Alagappa University, Karaikudi-630 003.
13. Participated in National workshop on characterization techniques (NWCT-1, 2012) held at school of Physics, Alagappa University, Karaikudi on March 24-26, 2012.
14. Won 3rd Prize for a poster titled Agricultural Biotechnology in "National level industry and academic meet" held on 31st Jan –Feb 1st , 2008, conducted by Vels college of science, Chennai.

MEMBERS AND EDITOR

- Advisory Board - Indigenous and Frontier Technology Research (IFTR) Centre, Chennai.

REVIEWER OF JOURNAL

- Microbial pathogenesis
- Process Biochemistry
- Limnologica
- Materials Today Communications

COUNTRIES VISITED

- ISRAEL,
- BELGIUM
- PARIS

PERSONAL INFORMATION

Date of birth : 13.09.1985
Age : 35 years
Sex : Female
Marital status : Married
Husband : Dr. G. Dharanivasan (Ph D)
Nationality : Indian
Passport no : T3561362
Languages known : Tamil & English
Permanent Address: No: 951, Thiru V.Ka Street, Navarathina Nagar, Sekkalai,
Karaikudi-630002

REFEREES

Dr.B.Vaseeharan

Registrar i/c
Professor and Head
Department of Animal Health and Management
Alagappa University
Science Block 4th Floor
Burma colony
Karaikudi- 630004
Tamilnadu, India
Mobile: +91-9894720893
E-mail: vaseeharanb@gmail.com

Dr. S. Janarthanan

Professor and Head
Department of Zoology
University of Madras
Guindy campus, Chennai- 25
Tamil Nadu, India
Mobile: +91 9486362887
E-mail: janas_09@yahoo.co.in

Dr. Yuval Cinnamon,

Institute of Animal Science
Poultry and Aquaculture Sci. Dept.
Agricultural Research Organization,
The Volcani Center,
P.O.Box 6, Bet Dagan 50250, Israel
Office Location :
Robert H Smith, Faculty of Agriculture,
P.O. Box 12, Rehovot 76100, Israel
Email: yuval.cinnamon@mail.huji.ac.il
Mobile: 972 (0)522-400214
Office: 972(0)8-9484416