

CURRICULUM VITAE

N. SELVAKUMAR

Address for Communication

797, Big Street
Vaniyam Pettai (Village)
Thanigai Polur (Post)
Arakkonam (Taluk)
Vellore (District)
Pin - 631003

Tamil Nadu, India.

E-mail: selva1704@gmail.com

Mobile: +91-9786851727



Academic credentials:

Degree	Name of the institution	Year of Awarded	Marks (%)
Ph. D.			
Ocean Science & Technology-Zoology (Inter-disciplinary)	University of Madras, Guindy Campus, Chennai Tamil Nadu, India	August, 2018	-
Supervisor: Prof. N. Munuswamy, D.Sc.			
Committee: A. Panigrahi, Ph.D & Prof. M. Arumugam, Ph.D.			
Thesis: Studies on sperm quality and cryopreservation of spermatophores in the whiteleg shrimp, <i>Litopenaeus vannamei</i> (Boone, 1931).			
M. Sc.			
Ocean Science & Technology	University of Madras, Guindy Campus, Chennai Tamil Nadu, India	May, 2011	72.73%
B. Sc.			
Plant Biology & Plant Biotechnology	Presidency College, Chennai Tamil Nadu, India	May, 2008	69.08%

Research experience

Senior Research fellowship

National Institute of Ocean Technology
Atal Centre for Ocean Science and Technology, Port Blair
Ministry of Earth Sciences, Govt. of India. September, 2018 - till date

Senior Research fellowship

DST-SERB Project
Dept. of Zoology
University of Madras, Chennai, India May, 2015 - May, 2016

Junior Research fellowship

DST-SERB Project
Dept. of Zoology
University of Madras, Chennai, India May, 2013 - May, 2015

M.Sc., dissertation:

ICMAM – PD, NIOT Campus, Chennai, India
Short term beach profile, Sediment size and wave
characteristics of Mamallapuram coast November, 2010 - May, 2011

M.Sc., Internship:

Institute for Ocean management, Anna University, Chennai. May, 2010
Sea water quality analysis

Teaching Experience

Postgraduate Level

Teaching Research Associate	Dept. of Zoology	2013 -2017
	University of Madras	

Course taught – Aquaculture, Marine Biology, Marine Pollution, Biostatistics,

– Co-supervised one M.Sc. student dissertation.

Project 1- Cryopreservation of sperm retrieved from the cadaveric shrimp
Fenneropenaeus indicus – A case study”. - Ms. D. Buelah Carmel

Research interest: Marine Science, Aquaculture, Cryobiology and Environmental Science.

Honours & Awards

✓ **Best Poster award** in International Conference Low Temperature Science and
Biotechnological Advances”, ICAR, New Delhi, April 2015.

Synopsis of Doctoral Research

The Ph.D thesis documents a feasible protocol for long-term cryopreservation of spermatophores in whiteleg shrimp, *Litopenaeus vannamei* (Boone, 1931). The quality of sperm was assessed based on the surface topography (SEM), viability, DNA integrity assessment using acridine orange with propidium iodide (Bio stain assay), functional integrity using Hypo osmotic swelling test (HOST), fertility potential assessment using Acrosome reaction (AR) and biochemical composition of sperm suspension. For cryopreservation studies, the cryoprotectant toxicity assay, Dimethyl sulfoxide and Methanol were selected for further cryopreservation studies. Extended samples were cooled slowly to 27°C and equilibrated for 30 min, and loaded into 1.5 ml cryovial; and frozen using controlled programmable freezer with one step freezing protocol of -0.5°C/min from 27°C to -80°C. After 120 days of storage, cryopreserved samples were thawed individually at 37°C for 60 seconds in water bath and subjected to quality assessment. SEM showed no significant deformity on the surface topography of sperm as well as cryopreserved. Results indicated that Viability, Bio stain assay, HOST and AR were high in the sperm subjected to DMSO (5%) + MeOH (5%). This study clearly documented that spermatophores freezed with the Ca-F saline in combination of DMSO (5%) + MeOH (5%) at 30 min of equilibration time with freezing protocol-0.5°C/min to -80°C maintained the sperm quality of post-thaw sperm of whiteleg shrimp after 120 days storage under -196°C (LN2). This protocol thus established remarkable cryotolerance of whiteleg shrimp *Litopenaeus vannamei* spermatophores and can be used for long-term storage of spermatophores.

Research project experience

Periodic collection of fishes by fishing boats at different estuarine systems and assessment of the quality of male gamete of fishes. Morphological examination of sperm, if any structural deformities are present using various microscopic techniques (Light microscopy, SEM & TEM) and histological examination of male reproductive system. Physio-chemical characteristics of water samples collected from polluted and unpolluted environment. The biological characteristics of brooders such as reproductive performance, fecundity and endurance in captivity will be assessed. Sperm quality would be assessed using biomarker enzymes and biochemical analysis. DNA damage studies using SCGE (Comet assay) technique. A cryopreservation protocol will be formulated for long-term preservation of spermatozoa of the finfish and shellfish species. This technique was also analysed for the benefit of aqua-farmers. Moreover, effects were made to study the impact of cadaveric fish spermatozoa.

Field of specialization

- ✓ Cryopreservation of fish male gamete
- ✓ Environmental impact on gametes quality of fishes
- ✓ Sea water quality analysis

Technical Proficiency

- ✓ Histology and Histochemistry, Ultrastructure studies (SEM/TEM), Flow cytometry, Single-Cell Gel Electrophoresis techniques (Comet assay), Electrophoresis (SDS-PAGE and AGE), Basic Biochemical Techniques, Basic Microbial Techniques, Polymer Chain Reaction (PCR), Real time – quantitative PCR (RT-qPCR), Plankton collection & Culture, Live feed culture and Shrimp & fish maintenance, breeding.

Publications:

1. **Narasimman Selvakumar**, Krishnamoorthy Dhanasekar, Buelah Carmel. D & Natesan Munuswamy. 2018. Retrieval and cryopreservation of spermatophores from cadaveric Indian white shrimp, *Fenneropenaeus indicus* (H. Milne Edwards, 1837). **Anim. Reprod. Sci.**, 192, 185-192.
2. **N. Selvakumar**, K. Dhanasekar, N. Munuswamy. 2017. Impact of January 2017 oil spill on the biota off Chennai, southeast coast of India with emphasis on histological impact on crab, *Grapsus albolineatus*. **J. Mar. Biol. Ass. India.**, 59(2).
3. Krishnamoorthy Dhanasekar, **Narasimman Selvakumar**, Natesan Munuswamy. 2017. Ultrastructure of spermatozoa in cobia, *Rachycentron canadum* (Linnaeus, 1766). **Anim. Reprod. Sci.**, 189, 43-50.
4. P. Valentina claudet, **Narasimman Selvakumar**, Munuswamy Natesan. 2016. Effect of cryoprotectants and cooling rates on fertility potential of sperm in the giant freshwater prawn, *Macrobrachium rosenbergii* (De Man). **Anim. Reprod. Sci.**, 171: 49 - 57.
5. Dhanasekar, K., **N. Selvakumar**, Munuswamy, N. 2017. Occurrence of Intersex in Grey mullet, *Mugil cephalus* L. from Kovalam coast, Tamil Nadu. **Turk. J. Fish. Aquat. Sci.**, 18:603-609.
6. Dhanasekar Krishnamoorthy, **Narasimman Selvakumar**, Natesan Munuswamy. 2017. Ultrastructure of Spermatozoa in a Freshwater Fairy Shrimp, *Streptocephalus dichotomus* (Crustacea: Anostraca). **Proceedings Zoological Society**, 1-6.
7. P. Valentina Claudet, **Narasimman Selvakumar** & Natesan Munuswamy. Preliminary Studies on the Sperm Characteristics and Sperm Quality of *Macrobrachium rosenbergii* (De Man, 1879). **I.J.I.R.S.E.T. Vol. 5, Issue 9, September 2016.**

Paper presented:

1. **Poster presentation: Best Poster award** for “Cryopreservation of spermatophores in whiteleg shrimp, *Litopenaeus vannamei* – A case study”. International Conference Low Temperature Science and Biotechnological Advances”, ICAR, New Delhi, April 2015.
2. **Oral presentation** on “Preliminary studies on cryopreservation of spermatophores in the whiteleg shrimp, *Litopenaeus vannamei*” in the Second international conference on Agriculture, Aquaculture & Animal Sciences 2015” organized by ICRD at Galadari hotel, Colombo, Sri Lanka on 28th -29th December, 2015.
3. **Oral presentation** on “Cryopreservation of gametes and conservation strategy for shrimps - A case study” in the International Conference on Biodiversity and Sustainable Resource Management (ICBSRM – 2018), University of Madras, Chennai on March 12-13, 2018.

Workshop & trainings attended:

- ✓ Participated in the National workshop on “**Techniques and Applications of Transmission Electron Microscopy**” organized by the Department of Electron Microscopy, Cancer Institute (WIA), Chennai on 22nd August 2014.
- ✓ Training on “**OSMOMAT 3000**” organized by the Gonotec, Germany authorized dealer of Wheecon Instruments Private Limited, Chennai on 18nd December 2014.
- ✓ Participated in the **First National Workshop on Ballast Water Management (NWBM 2016)** Organized by National Institute of Ocean Technology, Ministry of Earth Sciences, Government of India, Chennai. (7th October 2016).

Seminars/conferences/ workshops/Trainings attended: 24**Computer literacy:**

- ✓ HDCA
- ✓ Softwares : MS Office, C, C++, CASP, SPSS 23, CLP
- ✓ Typewriting : English Lower

Personal profile

Father's Name	:	Mr. M. Narasimman
Date of Birth	:	17 th April 1988
Gender	:	Male
Nationality	:	Indian
Language Proficiency	:	Tamil, English & Telugu (Lingual)

Residential address : No.797, Big Street
Vaniyampettai (Village)
Thanigai Polur (Post)
Arakkonam (Taluk)
Vellore (District)
Pin - 631003
Tamil Nadu, India.

Referees

1. Prof. N. Munuswamy

(Ph.D - Supervisor)
UGC-BSR Faculty Fellow
Department of Zoology
University of Madras
Guindy Campus
Chennai-600 025
Mobile: +91 - 9884171945
E-mail: munuswamynm@yahoo.com

3.Dr. A. Panigrahi

Principal Scientist
Crustacean Culture Division
ICAR- Central Institute of
Brackishwater Aquaculture
R.A. Puram, Chennai - 600 028
Mobile: +91- 9025739499
E-mail: apanigrahi2k@gmail.com

2.Prof. A. Shanmugam

Professor
Faculty of Marine Sciences
Center for Advance Studies in Marine Biology
Annamalai University
Parangipettai – 608502
Tamil Nadu
Mobile: +91-9443043597
E-mail: shanpappu48@gmail.com,

4. Dr. N. Godhantaraman

Director - Academic staff college
Head i/c
Centre for Environmental Sciences
University of Madras
Chepauk Campus
Chennai – 600 005
Mobile: +91- 9444895145
E-mail: godhantaraman@yahoo.com

Declaration

I hereby declare that all the above particulars are true to the best of my knowledge.



(N. SELVAKUMAR)