

Ganesan Nagarajan

Center for Marine Bioscience and Biotechnology, National Taiwan Ocean University, Keelung-20224, Taiwan. **E-mail:** nagarajangi@yahoo.com;
Mobile: +886-963446241; **Fax:** +886-2-2462-1579



GENERAL INFORMATION:

Academic position : Postdoctoral research fellow
Date of Birth : Sep-07-1982
Marital status : Married
Nationality : Indian

EDUCATIONAL BACKGROUND:

Ph. D., (Fish Neuroendocrinology)	2012	Lab of Molecular Biology & Endocrinology Center for Marine Bioscience & Biotechnology National Taiwan Ocean University Keelung-20224, Taiwan
M. Sc., (Animal Biotechnology)	2005	Department of Zoology School of life science Bharathiar University Coimbatore-641 046 Tamilnadu, India
B. Sc., (Zoology)	2002	Madurai Kamarajar University, Tamilnadu, India

DISSERTATION TITELS:

M.Sc., DISSERTATION:

An epidemiological study in a student population: semen analysis as an index of fertility.

Ph.D., DISSERTATION:

Neurosteroids synthesis and estrogen (E₂) signaling in the early brain of the orange-spotted grouper, *Epinephelus coioides*

FIELD OF INTEREST:

- + Fish Neuroendocrinology
 - + Reproductive Endocrinology
 - + Animal Biotechnology
 - + Physiology of Aquatic animals
 - + Molecular Biology and Bioinformatics
-

TECHNICAL SPECIALIZATION:

Molecular Cloning

- + Molecular Cloning,
- + RNA isolation from animal tissues (brain, gill, kidney, intestine, liver and gonad)
- + DNA isolation
- + Protein isolation
- + cDNA synthesis
- + PCR, race-PCR, RT-PCR, Q-PCR

Genetic Engineering

- + Plasmid DNA isolation
- + Restriction Digestion
- + Ligation
- + Transformation and plating
- + DNA Gel Electrophoresis
- + DNA Gel Extraction
- + Preparation of *E. Coli* Competent Cells
- + Plasmid DNA Isolation

Bioinformatics

- + Phylogenetic analysis
- + Bioinformatics of cDNA sequence database (NCBI GenBank)
- + Sequence Analysis
- + Sequence Homologous Analysis
- + Designing of Degenerate and Specific PCR and Q-PCR primers

Cellular Localization

- + General Histology
- + Tissue fixation
- + Tissue processing

- ✚ Tissue embedding
- ✚ Immunohistochemistry (Bright & Dark field and double IHC for two proteins)
- ✚ In situ hybridization (Bright & Dark field and double ISH for two genes)
- ✚ Fluorescence Microscopy

Other Molecular Techniques

- ✚ Western blot
- ✚ Northern blot
- ✚ In vivo technique (brain organ culture)
- ✚ In vitro technique
- ✚ Enzyme activity studies
- ✚ ELISA

FELLOWSHIPS AND AWARDS:

Taiwan Fellowship	2005-2008	Taipei Economic and Cultural Center, New Delhi, India.
NTOU Fellowship	2008-2009	National Taiwan Ocean University, Keelung Taiwan
NTOU Departmental Fellowship	2009-2012	Department of Aquaculture, National Taiwan Ocean University, Keelung, Taiwan

LIST OF PUBLICATIONS:

<http://www.ncbi.nlm.nih.gov/sites/myncbi/collections/public/1NmzqhZbztCA40snPkqEKDcA/>

1. **Nagarajan G**, Tsai YJ, Chen CY, and Chang CF, 2011. Development expression of genes involved in neural estrogen biosynthesis and signaling in brain of the orange-spotted grouper *Epinephelus coioides* during gonadal sex differentiation. J. Steroid Biochem. Mol. Biol. 127; 155–166. (SCI, IF: 3.053)
2. **Nagarajan G**, Aruna A, and Chang CF, 2011. A novel peak of functional neurosteroidogenesis and estrogen signaling in the early brain development of the orange-spotted grouper *Epinephelus coioides*. Indian J. Sci. Technol, **4** (8), 7-8.
3. **Nagarajan G**, Aruna A, and Chang C.F, 2011 Increase of estrogen signaling in the early brain of the orange-spotted grouper *Epinephelus coioides* . Fish Physiol. Biochem. (SCI, in press) (IF: 1. 607)
4. **Nagarajan G**, Aruna A, and Chang CF. 2011. Neurosteroidogenic enzymes and their regulation in the early brain of the protogynous grouper *Epinephelus coioides*: A possible role in gonadal sex differentiation. Gen. Comp. Endocrinol. 181; 271-287. (SCI, IF: 3.267).
5. **Nagarajan G**, Aruna A, and Chang CF. 2012. sf-1, dax-1 and steroidogenic enzyme genes in the early brain of the orange-spotted grouper *Epinephelus coioides* during

gonadal sex differentiation. (under preparation).

6. **Nagarajan G**, Aruna A, and Chang CF. 2012. Integrated functions of neuropeptide, neurosteroidogenic enzymes and estrogen receptors in the early brain of orange-spotted grouper (*Epinephelus coioides*): Potential for functional interactions during gonadal sex differentiation. (under preparation).
7. Aruna A, **Nagarajan G**, Chang CF, 2011. Negative impact of stress on reproduction: role of brain and gill during salinity response in tilapia. Indian J. Sci. Technol, **4** (8), 17-18.
8. Aruna A, **Nagarajan G**, Chang CF, 2011. Involvement of corticotrophin releasing hormone and corticosteroid receptor in the brain-pituitary-gill of tilapia (*Oreochromis mossambicus*) during the course of seawater acclimation. J. Neuroendocrinol. (SCI, IF: 4.7)
9. Aruna A, **Nagarajan G**, Chang CF, 2012. Differential expression pattern and localization of glucocorticoid and mineralocorticoid receptors transcripts in osmoregulatory organs of fresh water and seawater acclimated tilapia. Gen. Comp. Endocrinol. 179; 465–476. (IF: 3.267)
10. Aruna A, **Nagarajan G**, Chang CF, 2012. Mineralocorticoid receptor and Prolactin Releasing Peptide as Potential Stress mediators in Tilapia: A Novel Dual Role of Prolactin Releasing Peptide during Salinity Changes. J. Neuroendocrinol. (SCI, IF: 4.7) (submitted). (IF. 4.192)
11. Aruna A, Lan DS, **Nagarajan G**, Wang TP, Cao JC, Chen YH, Prof. Chang C, 2011. Differential expression pattern of the hypothalamic- and gill-crh system in response to ambient salinity, CRH and cortisol treatment in euryhaline black porgy. (under preparation).

PUBLISHED GENE SEQUENCES IN NCBI GENBANK:

http://www.ncbi.nlm.nih.gov/sites/myncbi/collections/public/1dw6vmpfo9o_2neysqa3_jtQY/

1. **Nagarajan G** and Chang CF. 2009. Molecular cloning and characterization of cholesterol side chain cleavage enzyme gene (*cyp11a1*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). FJ807733
2. **Nagarajan G** and Chang CF. 2009. Molecular cloning and expression profiles of 3 β -hydroxysteroid dehydrogenase (*hsd3b1*) from brain of *Epinephelus coioides* (*Epinephelus coioides*). FJ807731
3. **Nagarajan G** and Chang CF. 2009. Molecular cloning and expression profile of P450c17 (*cyp17a1*, 17 α -hydroxylase/17,20-lyase) from the brain of the orange-spotted grouper (*Epinephelus coioides*). FJ807732
4. **Nagarajan G** and Chang CF. 2010. Molecular cloning and expression pattern of steroidogenic acute regulatory protein (*Star*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 788 bp mRNA, partial cds. GU929702
5. **Nagarajan G** and Chang CF. 2010. Molecular cloning and expression profile of proliferating cell nuclear antigen (*pcna*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 566 bp mRNA, partial cds. HM637102
6. **Nagarajan G** and Chang CF. 2010. Molecular cloning and characterization of Dax-1 (*nr0b1*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 467 bp

mRNA, partial cds. GU929703

7. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning and characterization of estrogen receptor alpha (*ERα*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 477 bp mRNA, partial cds. GU929705
8. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning and characterization of estrogen receptor beta 2 (*ERβ2*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 679 bp mRNA, partial cds. GU929706
9. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning and characterization of androgen receptor (*AR*) from the brain of orange-spotted grouper (*Epinephelus coioides*). 660 bp mRNA, partial cds. GU929707
10. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning of G protein-coupled estrogen receptor (*GPR30*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 682 bp mRNA, partial cds. HM637103
11. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning and characterization of arginine vasotocin precursor (*AVT*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 462 bp mRNA, complete cds. GU831571
12. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning and characterization of an arginine vasotocin receptor (*AVT-R*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 895 bp mRNA, partial cds. GU929704
13. **Nagarajan G**, Aruna A and Chang CF. 2010. Molecular cloning of mineralocorticoid receptor (*MR, NR3C2*) in orange-spotted grouper (*Epinephelus coioides*). 717 bp mRNA, partial cds. GU831572
14. **Nagarajan G**, Aruna A and Chang CF. 2011. Molecular cloning and characterization of estrogen receptor beta 1 (*ERβ1*) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 528 bp mRNA, partial cds. JF304611
15. **Nagarajan G**, Aruna A and Chang CF. 2011. Molecular cloning of rapamycin (serine/threonine kinase) from the brain of the orange-spotted grouper (*Epinephelus coioides*). 608 bp mRNA, partial cds. JN850959
16. Aruna A, **Nagarajan G** and Chang CF. 2009. Molecular cloning and characterization of glucocorticoid receptor (*NR3C1*) in mozambique tilapia (*Oreochromis mossambicus*). 782 bp mRNA, partial cds. GU296354
17. Aruna A, **Nagarajan G** and Chang CF. 2010. Molecular cloning of glucocorticoid receptor isoform 2 (*GR2*) in mozambique tilapia (*Oreochromis mossambicus*). 596 bp mRNA, partial cds. HQ704389
18. Aruna A, **Nagarajan G** and Chang CF. 2010. Molecular cloning and expression of mineralocorticoid receptor (*MR, NR3C2*) in mozambique tilapia (*Oreochromis mossambicus*). 629 bp mRNA, partial cds. HM769956
19. Aruna A, **Nagarajan G** and Chang CF. 2010. Molecular cloning and expression of sodium/potassium-transporting ATPase subunit beta ($\text{Na}^+\text{K}^+/\text{ATPase-beta1}$) mRNA in mozambique tilapia (*Oreochromis mossambicus*). 514 bp mRNA, partial cds. HQ214054
20. Aruna A, **Nagarajan G** and Chang CF. 2009. Molecular cloning and expression profile of corticotropin-releasing hormone (*CRH*) in the mozambique tilapia (*Oreochromis mossambicus*). 666 bp mRNA, partial cds. GU146060.
21. Aruna A, **Nagarajan G** and Chang CF. 2009. Molecular cloning and expression of corticotropin-releasing hormone receptor (*CRH-R*) in the mozambique tilapia (*Oreochromis mossambicus*). 415 bp mRNA, partial cds. GU146059

22. Tsai YJ, **Nagarajan G**, Chen CY and Chang CF. 2012. *Epinephelus coioides* FTZ-F1 protein 574 mRNA, partial cds. JQ320496

ORAL AND POSTER PRESENTATIONS IN THE NATIONAL / INTERNATIONAL CONFERENCE:

1. **Nagarajan G***, Tsai YJ, Chen CY, Aruna A, and Chang CF. **Taiwan-France Conference “Biodiversity and Ecophysiology of Marine Organisms”** at National Taiwan Ocean University, Keelung, Taiwan. November 19-23rd, 2010. Poster presentation: Neurosteroidogenic enzyme genes in the brain of protogynous grouper *Epinephelus coioides*: Possible role in sex differentiation.
2. **Nagarajan G***, Aruna A, and Chang CF. **Annual Meeting “The Fisheries Society of Taiwan”** at National Taiwan Ocean University, Keelung, Taiwan. December 11-12th, 2010. Platform oral presentation: Genes involved in neural estrogen biosynthesis and signaling in the brain of protogynous orange-spotted grouper *Epinephelus coioides* during gonadal sex differentiation: *in situ* hybridization and immunohistochemical analyses.
3. **Nagarajan G**, and Chang CF*. **6th International Conference on “Steroids and Nervous System”** at Torino, Italy, Villa Gualino. February 19-23rd, 2011. Poster presentation: Increased expression of neurosteroidogenesis and estrogen signaling in the early brain during gonadal sex differentiation in teleosts.
4. **Nagarajan G***, Aruna A and Chang CF. **9th International Symposium on “Reproductive Physiology of Fish (9th ISRPF)”** at Cochin, India. August 9-4th, 2011. Platform oral presentation: A novel peak of functional neurosteroidogenesis and estrogen signaling in the early brain development of orange-spotted grouper *Epinephelus coioides*.
5. **Nagarajan G***, Aruna A and Chang CF. **7th International Symposium on “Fish Endocrinology (7th ISFE)”** at Buenos Aires, Argentina. September 1-6th, 2012. Platform oral presentation: sf-1, dax-1 and steroidogenic enzyme genes in the early brain of the orange-spotted grouper *Epinephelus coioides* during gonadal sex differentiation
6. Aruna A*, **Nagarajan G** and Chang CF. **Taiwan-France Conference “Biodiversity and Ecophysiology of Marine Organisms”** at National Taiwan Ocean University, Keelung, Taiwan. November 19-23rd, 2010. Poster presentation: Long-term salinity effects on stress genes in tilapia, *Oreochromis mossambicus*.
7. Aruna A*, **Nagarajan G** and Chang CF. **9th International Symposium on Reproductive Physiology of Fish** at Cochin, India. August 9-4th, 2011. Poster presentation: Negative impact of stress: Role of brain and gill during salinity response in tilapia.
8. **Nagarajan G***, Aruna A and Chang CF. 2012 **Annual meeting for “Fisheries Society of Taiwan”** at National Taiwan Ocean University. January 19th, 2013. Platform, oral presentation: Integrated functions of neuropeptide, neurosteroidogenic and estrogen receptors in the early brain of orange-spotted grouper (*Epinephelus coioides*): Potential for functional interactions during gonadal sex differentiation.
9. Aruna A*, **Nagarajan G** and Chang CF. 2012 **Annual meeting for “Fisheries Society of**

Taiwan” at National Taiwan Ocean University. January 19th, 2013. Platform, oral presentation: Mineralocorticoid receptor and prolactin releasing peptide as potential stress mediators in tilapia: A novel dual role of prolactin releasing peptide during salinity changes.

PARTICIPATED IN CONFERENCE / SEMINARS/SYMPOSIUM:

1. State Level Seminar on “**Role of Student Community in Environmental Management**” at Kongunadu Arts and Science College, Coimbatore on 6th March 2004.
 2. One Day Seminar on “**Environmental for Future Generation**” at VLB Janakiammal College of Engineering and Technology, Kovaipudur Coimbatore on 19th March 2004.
 3. One day Seminar on “**Application of Bioinformatics in Animal Science**” at Government Arts College, Coimbatore on 19th September 2004.
 4. International conference on “**1) Dormancy in Crustaceans: Research Findings and Applications, 2) Zooplankton Behavior, Ecology and Aquaculture**” at National Taiwan Ocean University, Keelung on October 6-8, 2009.
 5. International conference on “**2nd Bio-Asia Regional Conference France Bio-Asia Scheme**” at National Taiwan Ocean University, Keelung on November 26-28, 2009.
 6. Tutorial training program on “**Pan Ocean Remote Sensing (PORSEC)**” at National Taiwan Ocean University, Keelung on October 14-22, 2010.
-

SUMMER TRAINING PROGRAM:

- ▶ Cancer Treatment using Telecobalt Machine, and Specimen processing of histopathology in G.Kuppuswamy Memorial Hospital and Valavadi Center of Oncology, Coimbatore, 2004.
- ▶ Summer Training Program for School Children’s at National Taiwan Ocean University, Keelung in, 2009.

SKILL:

COMPUTER SKILLS:

- ▶ Knowledge and experience of operating system (Windows XP, Windows 7), MS office, MS Access, using email and the Internet.

LANGUAGE KNOWN:

- ▶ Tamil (very good in communication and writing)
- ▶ English (very good in communication and writing)
- ▶ Chinese (poor in talking)

INTEREST:

I enjoy researching, reading, listening music, travelling and surfing the internet. I also keep fit by going gym thrice a week and running every day.

REFERENCES:

1. **Dr. Ching-Fong Chang**
President (National Taiwan Ocean University, NTOU)
Distinguished Professor (National Taiwan Ocean University, NTOU)
National Chair professor (Ministry of Education)
Department of Aquaculture
National Taiwan Ocean University, Keelung 20224, Taiwan
Tel: +886-2-2737-7506, +886-2-2462-2192 ext 5209
Email: B0044@mail.ntou.edu.tw
<http://ind.ntou.edu.tw/%7Ecfcchang/index.htm>
2. **Dr. K. Murugan**
Professor
Department of zoology, School of life science
Bharathiar University
Coimbatore-641 046
Tamil nadu, India Tel: +91-422-2428 492,
E-mail: kmvbk@yahoo.com; kmvbk@rediffmail.com
<http://www.b-u.ac.in/faculty/zoology/murugan.html>
3. **Dr. M. Ramesh**
Associate Professor
Unit of Toxicology
Department of Zoology
Bharathiar University
Coimbatore-641 046
Tamil nadu, India Tel: +91-422-2428 493,
E-mail: mathanramesh@yahoo.com
<http://www.b-u.ac.in/faculty/zoology/ramesh.html>

DECLARATION:

I hereby declare that the above information is correct to the best of my knowledge and belief.

Yours Truly,
G. Nagarajan